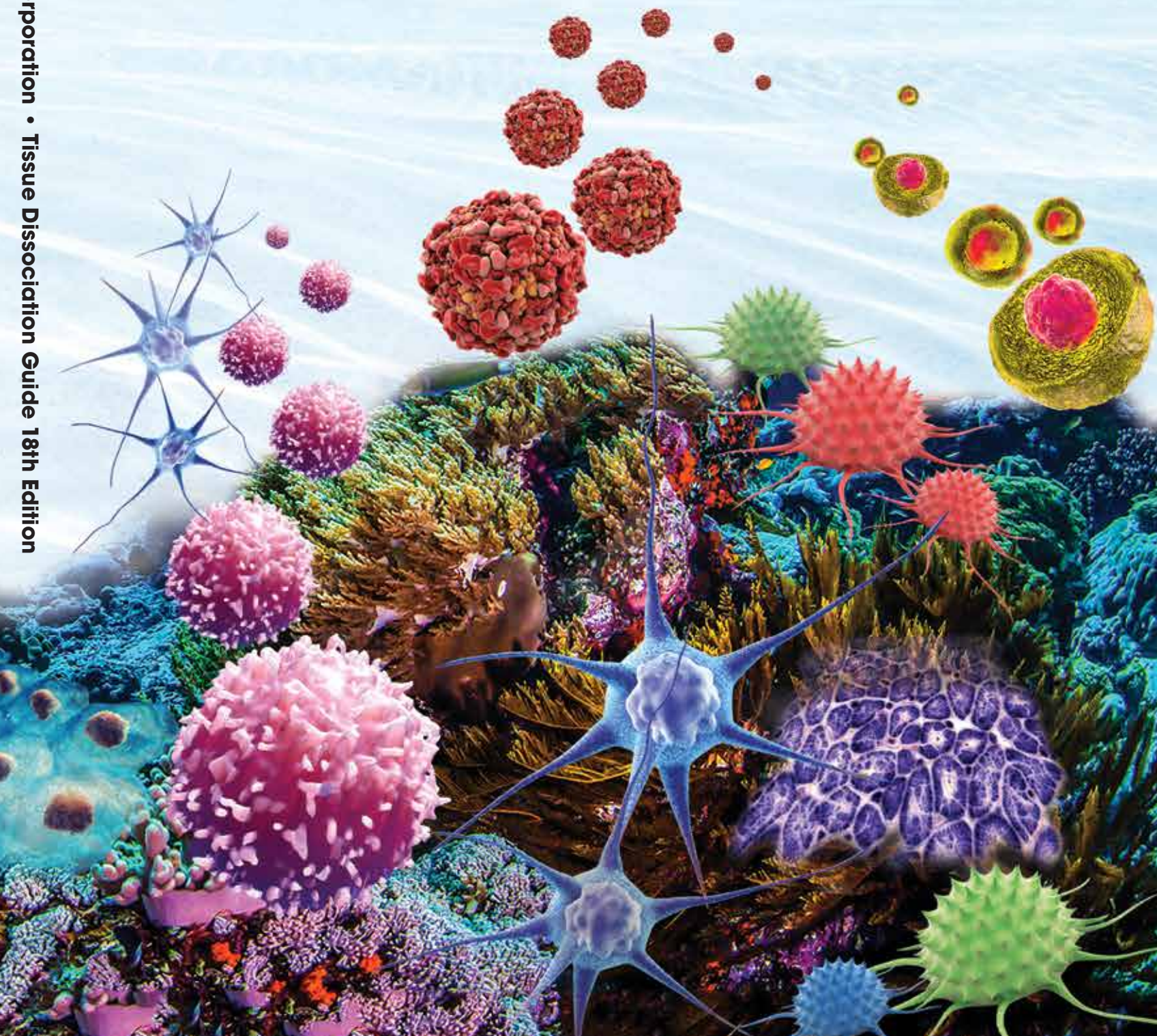
Worthington Biochemical Corporation

TISSUE
DISSOCIATION GUIDE



Worthington Biochemical Corporation • Tissue Dissociation Guide 18th Edition

A Personal Note of Thanks

Worthington wishes to thank our loyal customers for their continued support and feedback. Your comments and suggestions help us to constantly evolve our product lines and enhance educational materials and service.

We invite researchers to work with us hand-in-hand to build our technical library by submitting:

- Research photos and data for potential use in future publications and
- Protocols, citations and articles referencing Worthington enzymes that can be shared with your colleagues.

We look forward to working with you, and we welcome the opportunity to discuss your specific application requirements.

Von and Nancy Worthington
and the entire Worthington team

For details on submissions, contact your local Worthington Account Manager or forward suggestions to: techservice@worthington-biochem.com

WORTHINGTON TISSUE DISSOCIATION GUIDE

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FREE Collagenase Sampling Program and Online Lot Selection Tool Simple as 1,2,3

1. Go to: www.worthington-biochem.com/cls/clssamp.html

Worthington Collagenase Sampling Program

The lot-to-lot variation which is typical of crude enzyme preparations such as Worthington crude collagenase makes it important to pre-test a particular lot of enzyme you are planning to use in your experiment. Many years ago we found that the most practical approach for the researcher is to presample several different lots of collagenase at a time and select the best of the group. As the world's leading manufacturer of collagenase, Worthington is able to offer the greatest number of different lots at any given time and recommend specific lots for an application.

There is no charge for participating in the collagenase sampling program. Under the program, individual researchers are provided with 100 mg samples of up to three different lots of collagenase for evaluation in their own assay systems. A period of 60 days is allowed for your evaluation of these samples. A minimum of 3 grams of each lot will be placed on HOLD, reserved in your name. When you determine which lot performs best for you, simply specify the lot desired when ordering.

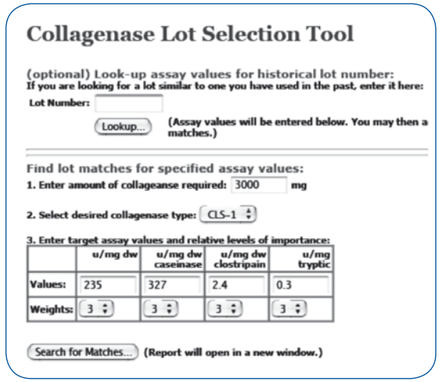
To become part of this program, or to discuss any of the Worthington products, just call our **Technical Service group toll-free at 800.445.9603** from anywhere in the United States or Canada or Email **techservice@worthington-biochem.com**

International customers should check our International Distributor listing for a distributor. If you do not have a Worthington Distributor for your country, please contact International Sales or Technical Service.

2. Consider using the interactive lot selection tool

Collagenase Lot Selection Tool Now Available Online

Worthington's 'Collagenase Lot Selection Tool' is now available online at our website, This new feature was designed to help researchers select and evaluate current collagenase lots that match previous lots or desired activity profiles. Users may enter target values for collagenase, caseinase, clostripain, and tryptic activities or specify previous lot numbers. Each value can be weighted based on the relative level of importance to the application. After the search for matches is completed, a ranked list of collagenase lots currently available is generated. The selected lots can then be sampled simply by using the built in link to the **Free Collagenase Sampling Program**. As always, Worthington Customer and Technical Service personnel are available via phone at **800.445.9603/732.942.1660** and Email to assist with collagenase or any other products.


Collagenase Lot Selection Tool

(optional) Look-up assay values for historical lot number:
If you are looking for a lot similar to one you have used in the past, enter it here:
Lot Number:
Lookup... (Assay values will be entered below. You may then a matches.)

Find lot matches for specified assay values:
1. Enter amount of collageanse required: 3000 mg
2. Select desired collagenase type: CLS-1
3. Enter target assay values and relative levels of importance:

	u/mg dw	u/mg dw caseinase	u/mg dw clostripain	u/mg tryptic
Values:	235	327	2.4	0.3
Weights:	3	3	3	3

Search for Matches... (Report will open in a new window.)


Collagenase Sampling Program Request

Mailing Address:
Email:
Contact Name:
Phone:
Requested Collagenase Type:
Specify up to 3 lot numbers if known:
How much would you like us to reserve for you? 3 grams
(Minimum 3 grams)
Describe tissue to be dissociated:

3. Complete the online Sampling request form

Samples will be shipped and reserved amount of each lot placed on hold for 60 days pending your evaluation. Completely free and without obligation.

Cell Isolation Theory

Tissue dissociation/primary cell isolation and cell harvesting are principal applications for enzymes in tissue culture, stem cell research and cell biology studies. Despite the widespread use of enzymes for these applications over the years, their mechanisms of action in dissociation and harvesting are not well understood. As a result, the choice of one technique over another is often arbitrary and based more on past experience than on an understanding of why the method works and what modifications could lead to even better results.

The goal of a cell isolation procedure is to maximize the yield of functionally viable, dissociated cells. There are many parameters which may affect the outcome of any particular procedure including but not limited to:

- Type of tissue
- Species of origin
- Age of the animal
- Genetic modification(s) (knockouts, etc.)
- Dissociation medium used
- Enzyme(s) used
- Impurities in any crude enzyme preparation used
- Concentration(s) of enzyme(s) used
- Temperature
- Incubation times

Techniques/Characterization

The first four items generally are not a matter of choice. To achieve suitable results the other variable conditions are best defined empirically.

Researchers searching the scientific literature for information on the ideal enzymes and optimal conditions for tissue dissociation are often confronted with conflicting data. Much of the variation stems from the complex and dynamic nature of the extracellular matrix and from the historical use of relatively crude, undefined enzyme preparations for cell isolation applications. Also, the extracellular matrix is composed of a wide variety of proteins, glycoproteins, lipids and glycolipids, all of which can differ in abundance from species to species, tissue to tissue and with developmental age. Commonly used crude enzyme preparations such as Pronase, NF 1:250 and collagenase contain several proteases in variable concentrations, as well as a variety of polysaccharidases, nucleases and lipases.

This guide summarizes our knowledge of how these enzymes accomplish the "routine" operations of tissue dissociation and primary cell harvesting; describes standard lab procedures; offers a logical experimental approach for establishing a cell isolation protocol; and lists many tissue specific references to aid development of an effective method.

***Note**: We have not limited the references listed to only those papers using Worthington enzymes. Generally speaking, the tissue dissociation enzymes offered by Worthington can be used interchangeably for most preparations cited.*

Tissue Types

This section summarizes the general characteristics of extracellular matrices associated with various types of tissue. Coupled with the descriptions of individual enzymes offered in the next section, this information will aid in choosing the enzyme(s) best suited for a particular tissue. Animal tissues are grouped into four basic types: epithelial, connective, muscle and neural.

Epithelial Tissue

In the adult, epithelium forms such tissues as the epidermis, the glandular appendages of skin, the outer layer of the cornea, the lining of the alimentary and reproductive tracts, peritoneal and serous cavities, and blood and lymph vessels (where it is usually referred to as "endothelium"). Structures derived from outpouchings from the primitive gut, including portions of the liver, pancreas, pituitary, gastric and intestinal glands, are also composed of epithelial tissue.

Epithelial cells are typically packed so closely together that there is very little intercellular material between them. An extremely tight bond exists between adjacent cells making dissociation of epithelium a difficult process.

On the lateral surfaces of adjacent epithelial cells there are four distinct types of intercellular bonds: the *zonula occludens*, *zonula adherens*, *macula adherens* and *nexus*. The former three are often closely associated to form a junctional complex. In the zonula occludens, or "tight junction", there are multiple sites of actual fusion of the adjacent unit membranes interspersed by short regions of unit membrane separation of approximately 100-150 Å. In a zonula adherens, or "intermediate junction", a fine network of cytoplasmic filaments radiates from the cell membrane into the cytoplasm. The space between unit membranes of adjacent cells is approximately 150-200 Å and is composed of an intercellular amorphous substance of unknown composition. In the macula adherens, or "desmosome", there is a somewhat similar array of intracellular filaments. The adjacent unit membrane space is approximately 150-200 Å and consists of an extracellular protein and glycoprotein ground substance, often with an electron-dense bar visible within it. The integrity of the desmosome requires calcium, and it is broken down by EDTA and calcium-free media. The enzymes collagenase, trypsin and hyaluronidase can also dissociate the desmosome. The nexus, or "gap junction", covers most of the epithelial cell surface. In these areas, the unit membranes appear tightly attached and are separated by only 20Å. The intercellular material consists of an amorphous, darkly-staining substance.

On the basal surface of the epithelium where it overlays connective tissue, there is an extracellular bonding layer or sheet called the basal lamina. The lamina is composed of a network of fine, collagen-like reticular fibers embedded in an amorphous matrix of high and low molecular weight glycoproteins.

Connective Tissue

Connective tissue develops from mesenchymal cells and forms the dermis of skin, the capsules and stroma of several organs, the sheaths of neural and muscular cells and bundles, mucous and serous membranes, cartilage, bone, tendons, ligaments and adipose tissue.

Connective tissue is composed of cells and extracellular fibers embedded in an amorphous ground substance and is classified as loose or dense, depending upon the relative abundance of the fibers. The cells, which may be either fixed or wandering, include fibroblasts, adipocytes, histiocytes, lymphocytes, monocytes, eosinophils, neutrophils, macrophages, mast cells, and mesenchymal cells.

There are three types of fibers: *collagenous*, *reticular*, and *elastic*, although there is evidence that the former two may simply be different morphological forms of the same basic protein. The proportion of cells, fibers and ground substance varies greatly in different tissues and changes markedly during the course of development.

Collagen fibers are present in varying concentrations in virtually all connective tissues. Measuring 1-10 μm in thickness, they are unbranched and often wavy, and contain repeating transverse bands at regular intervals. Biochemically, native collagen is a major fibrous component of animal extracellular connective tissue; skin, tendon, blood vessels, bone, etc. In brief, collagen consists of fibrils composed of laterally aggregated polarized tropocollagen molecules (M.W. 300,000). Each rod-like tropocollagen unit consists of three helical polypeptide α-chains wound around a single axis. The strands have repetitive glycine residues at every third position and an abundance of proline and hydroxyproline. The amino acid sequence is characteristic of the tissue of origin. Tropocollagen units combine uniformly in a lateral arrangement reflecting charged and uncharged amino acids along the molecule, thus creating an axially repeating periodicity. Fibroblasts and possibly other mesenchymal cells synthesize the tropocollagen subunits and release them into the extracellular matrix where they undergo enzymatic processing and aggregation into native collagen fibers. Interchain cross-linking of hydroxyprolyl residues stabilizes the collagen complex and makes it more insoluble and resistant to hydrolytic attack by most proteases. The abundance of collagen fibers and the degree of cross-linking tend to increase with advancing age, making cell isolation more difficult.

Reticular fibers form a delicate branching network in loose connective tissue. They exhibit a regular, repeating subunit structure similar to collagen and may be a morphological variant of the typical collagen fibers described above. Reticular fibers tend to be more prevalent in tissues of younger animals.

Elastic fibers are less abundant than the collagen varieties. They are similar to reticular fibers in that they form branching networks in connective tissues. Individual fibers are usually less than 1 μm thick and exhibit no transverse periodicity. The fibers contain longitudinally-arranged bundles of microfibrils embedded in an amorphous substance called elastin. Like collagen, elastin contains high concentrations of glycine and proline, but in contrast has a high content of valine and two unusual amino acids, desmosine and isodesmosine. Fibroblasts and possibly other mesenchymal cells synthesize the elastin precursor, tropoelastin, and release it into the extracellular matrix where enzymes convert the lysine residues into the desmosines. Polymerization of elastin occurs during interchain cross-linking of the latter. In this state, elastin is very stable and also highly resistant to hydrolytic attack by most proteases.

The viscous extracellular ground substance in which connective tissue cells and fibers are embedded is a complex mixture of various glycoproteins, the most common being hyaluronic acid, chondroitin sulfate A, B, and C and keratin sulfate. Each of these glycoproteins is an unbranching polymer of two different alternating monosaccharides attached to a protein moiety. Hyaluronic acid, for example, contains acetyl glucosamine and glucuronate monomers and about 2% protein, while the chondroitin sulfates contain acetyl galactosamine and glucuronate or iduronate monomers and more than 15% protein. The relative abundance of these glycoproteins varies with the origin of the connective tissue.

Muscle Tissue

Muscle cells form the contractile tissue of the body known as muscular tissue or muscle tissue. Muscle tissue varies with function and location in the body. In mammals there are three types: cardiac, skeletal or striated and smooth or non-striated.

Neural Tissue

Neural tissue regulates and controls bodily functions and activity. Neural tissue is made up of different types of nerve cells which have an axon, the long stem-like part of the cell. Neural cells are derived from the central nervous system (brain and spinal cord) and the peripheral nervous system. Neural tissue contains neurons and neuroglial cells. Astrocytes, ependymal cells, microglial cells and oligodendrocytes are found in the central nervous system. Satellite cells and Schwann cells are found in the peripheral nervous system.

Dissociating Enzymes

While many enzyme systems have been investigated by researchers performing primary cell isolations, the enzymes discussed here have been found satisfactory for a wide variety of tissues from many different species of various ages.

Collagenase

Bacterial collagenase is a crude complex containing a collagenase more accurately referred to as clostridiopeptidase A which is a protease with a specificity for the X-Gly bond in the sequence Pro-X-Gly-Pro, where X is most frequently a neutral amino acid. Such sequences are often found in collagen, but only rarely in other proteins. While many proteases can hydrolyze single-stranded, denatured collagen polypeptides, clostridiopeptidase A is unique among proteases in its ability to attack and degrade the triple-helical native collagen fibrils commonly found in connective tissue.

True collagenase may cleave simultaneously across all three chains or attack at a single strand. Mammalian collagenases split collagen in its native triple-helical conformation at a specific site yielding fragments, TC A and TC B, representing 3/4 and 1/4 lengths of the tropocollagen molecule. After fragmentation the pieces tend to uncoil into random polypeptides and are more susceptable to attack by other proteases.

Bacterial collagenases are usually extracted from host invasive strains. These enzymes differ from mammalian collagenases in that they attack many sites along the helix. Collagenases from *Clostridium histolyticum*, first prepared by Mandl, *et al*., have been most thoroughly studied. Commercially available collagenase has been limited primarily to that from *Cl. histolyticum*; although, other sources have recently become available. Clostridial collagenase also degrades the helical regions in native collagen preferentially at the X-Gly bond in the sequence Pro-X-Gly-Pro where X is most frequently a neutral amino acid. This bond in synthetic peptide substrates may also be split.

Purified clostridiopeptidase A alone is usually inefficient in dissociating tissues due to incomplete hydrolysis of all collagenous polypeptides and its limited activity against the high concentrations of non-collagen proteins and other macromolecules found in the extracellular matrix. The collagenase most commonly used for tissue dissociation is a partially purified preparation containing clostridiopeptidase A in addition to a number of other proteases, polysaccharidases and lipases. Partially purified collagenases are well suited for tissue dissociation since they contain the enzyme required to attack native collagen and reticular fibers in addition to the enzymes which hydrolyze the other proteins, polysaccharides and lipids in the extracelluar matrix of connective and epithelial tissues.

The first commercially available collagenase was offered by Worthington in 1959. At that time we offered one type of crude enzyme which we tested only for collagenase activity. Eventually, with the cooperation of many in the research community, four basic profiles were identified:

Type 1 Containing average amounts of assayed activities (collagenase, caseinase, clostripain, and tryptic activities). It is generally recommended for epithelial, liver, lung, fat, and adrenal tissue cell preparations.

Type 2 Containing greater proteolytic activities, especially clostripain activities. It is generally used for heart, bone, muscle, thyroid and cartilage.

Type 3 Selected because of low proteolytic activity. It is usually used for mammary cells.

Type 4 Selected because of low tryptic activity. It is commonly used for islets and other applications where receptor integrity is crucial.

More recently Worthington has introduced higher activity collagenases (Types 5-7) and expanded the Animal Free collagenase line to CLSAFA, CLSAFB and CLSAFC. The profiles of newer types are detailed below:

Type 5 Containing higher collagenase and caseinase activities (>450 u/mg).

Type 6 Containing higher activity with the caseinase to collagenase ratio ~2:1 designed to be enriched for type II (col H) collagenase relative to type I (col G).

Type 7 Containing collagenase and caseinase activities four times higher than collagenase Types 1 and 2.

Animal Free collagenase is derived from cultures grown in medium completely devoid of animal-based components and designed for stem and primary cell isolation and bioprocessing applications where introduction of potential animal derived pathogens must be prevented. Initial product release was code CLSAFA where levels of secondary proteases are similar to Types 1 and 2. The current Animal Free Collagenase line contains CLSAFA, CLSAFB and CLSAFC with details below:

CLSAFA Animal Free collagenase with balanced activities for stem cell and tissue processing.

CLSAFB Animal Free collagenase with higher activities (>300 u/mg) for stem cell and tissue processing

CLSAFC Animal Free collagenase with low tryptic activity similar to Type 4.

See the Enzyme Digestion Scale on page 10 for comparable Animal Free types.

Correlations between type and effectiveness with different tissues have been good, but not perfect, due in part to variable parameters of use. Nevertheless most researchers consider the tissue-typing of crude collagenase lots to be a valuable service. A detailed description of the Worthington collagenase assay can be found in the Worthington Enzyme Manual or at: Worthington-Biochem.com.

If you find one of the types of collagenases suitable for your cell isolation procedure, you may want to try Worthington's Collagenase Sampling Program. This cost-free program lets researchers pre-sample different lots of collagenase and evaluate them in their specific applications to achieve the best combination of cell yield and viability. (See page 1 of this guide for further information.)

Trypsin

Trypsin is a pancreatic serine protease with a specificity for peptide bonds involving the carboxyl group of the basic amino acids, arginine and lysine. Trypsin is one of the most highly specific proteases known, although it also exhibits some esterase and amidase activity.

(Continued on page 5)

Purified trypsin alone is usually ineffective for tissue dissociation since it shows little selectivity for extracellular proteins. Combinations of purified trypsin and other enzymes such as elastase and/or collagenase have proven effective for dissociation.

"Trypsin" is also the name commercial suppliers have given to pancreatin, a crude mixture of proteases, polysaccharidases, nucleases and lipases extracted from porcine pancreas. NF 1:250, a commonly used "trypsin" preparation, has the potency to bring about the proteolytic digestion of 250 times its weight of casein under assay conditions specified by the National Formulary. It is important to realize that this assay procedure is not specific for trypsin, although pancreatin does contain this enzyme. Nomenclature notwithstanding, crude "trypsins" like NF 1:250 and 1:300 are widely used for dissociating tissues, perhaps because the tryptic and contaminating proteolytic and polysaccharidase activities do bring about a preferential attack of the extracellular matrix. It appears, however, that crude trypsin and crude collagenase dissociate tissues by different mechanisms, and difficulties are often encountered when using NF 1:250 preparations -- the most common being incomplete solubility, lot-to-lot variability, cell toxicity, and cell surface protein/receptor damage.

In tissue culture laboratories, researchers use purified trypsin to release cells into suspension from monolayers growing on the interior surfaces of culture vessels. Most cells originating from normal tissues and not highly adapted to artificial culture conditions grow in monolayers, i.e., a layer of cells one cell thick adhering to the interior surface of the culture vessel. Because such cells are more like cells in normal tissues, many tissue culture researchers are studying cells that grow in monolayer culture.

Monolayer cultures are commonly grown in glass or polystyrene roller bottles, culture flasks, or Petri dishes. Plastic vessels used in tissue culture work are specially treated to ensure good adherence of cells to the vessel walls. For a detailed discussion of cell harvesting, see page 8 of this guide.

Some of the most frequently used grades of purified trypsin for cell isolation procedures are the Worthington product Codes: TRL, TRLS, TRLVMF or TRTVMF. These products are suitable for cell harvesting as well as tissue dissociation.

Elastase

Pancreatic elastase is a serine protease with a specificity for peptide bonds adjacent to neutral amino acids. It also exhibits esterase and amidase activity. While elastase will hydrolyze a wide variety of protein substrates, it is unique among proteases in its ability to hydrolyze native elastin, a substrate not attacked by trypsin, chymotrypsin or pepsin. It is produced in the pancreas as an inactive zymogen, proelastase, and activated in the duodenum by trypsin. Elastase is also found in blood components and bacteria.

Because elastin is found in highest concentrations in the elastic fibers of connective tissues, elastase is frequently used to dissociate tissues which contain extensive intercellular fiber networks. For this purpose, it is usually used with other enzymes such as collagenase, trypsin, and chymotrypsin. Elastase is the enzyme of choice for the isolation of Type II cells from the lung.

Hyaluronidase

Hyaluronidase is a polysaccharidase with a specificity for endo-N-acetylhexosaminic bonds between 2-acetoamido-2-deoxy-beta-D-glucose and D-glucuronate. These bonds are common in hyaluronic acid and chondroitin sulfate A and C. Because these substances are found in high concentrations in the ground substance of virtually all connective tissues, hyaluronidase is often used for the dissociation of tissues, usually in combination with a crude protease such as collagenase.

Papain

Papain is a sulfhydryl protease from *Carica papaya* latex. Papain has wide specificity and it will degrade most protein substrates more extensively than the pancreatic proteases. It also exhibits esterase activity. Papain is widely used with neural tissue.

With some tissues papain has proven less damaging and more effective than other proteases. Huettner and Baughman (*J. Neuroscience, 6*, 3044 (1986)) describe a method using papain to obtain high yields of viable, morphologically intact cortical neurons from postnatal rats which is the basis of our Papain Dissociation System for neural and endocrine cell isolation.

Chymotrypsin

Chymotrypsin is a protease which preferentially catalyzes the hydrolysis of peptide bonds involving the aromatic amino acids tyrosine, phenylalanine, and tryptophan. In addition it acts upon the peptide bonds of leucyl, methionyl, asparagenyl and glutamyl residues, and the amides and esters of susceptible amino acids.

Chymotrypsin is used to a limited extent in tissue dissociation, usually in combination with trypsin and elastase.

Deoxyribonuclease I

Often as a result of cell damage, deoxyribonucleic acid leaks into the dissociation medium increasing viscosity and causing handling and recovery problems. Purified deoxyribonuclease (DNase) is sometimes included in cell isolation procedures to digest the nucleic acids without damaging the intact cells. Deoxyribonuclease I reduces clumping and improves samples for flow cytometry. Typical DNase concentrations used range from 100-2,000 u/ml and should be optimized for each specific application.

Neutral Protease (Dispase®)

Neutral Protease (Dispase®) is a bacterial enzyme produced by *Bacillus polymyxa* that hydrolyses N-terminal peptide bonds of non-polar amino acid residues and is classified as an amino-endopeptidase. Its mild proteolytic action makes the enzyme especially useful for the isolation of primary and secondary (subcultivation) cell culture since it maintains cell membrane integrity.

Neutral Protease is also frequently used as a secondary enzyme in conjunction with collagenase and/or other proteases in many primary cell isolation and tissue dissociation applications. Neutral Protease dissociates fibroblast-like cells more efficiently than epithelial-like cells so it has also been used for differential isolation and culture applications. Other advantages are its non-mammalian (bacterial) source and its ability to be inhibited by EDTA.

Trypsin Inhibitor (soybean)

The trypsin inhibitor from soybean inactivates trypsin on an equimolar basis; however it exhibits no effects on the esterolytic, proteolytic or elastolytic activities of porcine elastase. Cell isolation procedures occasionally call for a trypsin inhibitor, usually the inhibitor from soybean (Worthington Code: SIC).

Trypsin Inhibitor (ovomucoid)

The trypsin inhibitor from ovomucoid (egg white) also inhibits papain activity. With papain's increased use in neural and endocrine cell isolation applications, ovomucoid trypsin inhibitor is more widely used as an efficient way to stop these digestions. It is also a component of Worthington's Papain (Neural) Dissociation System, supplied combined with BSA to create a single step density gradient for papain inhibition and cell recovery.

STEMxyme®

A specialized combination of Animal Free clostridium histolyticum collagenase and Animal Free *bacillus polymyxa* neutral protease. The two enzymes work synergistically and are designed for stem cell and or primary cell isolations where the introduction of potential animal derived pathogens must be prevented. *STEMxyme®* 1 has a ratio of collagenase to caseinase (neutral protease) activity of 250 u/mg collagenase and 1,000 u/mg caseinase. *STEMxyme®* 2 contains more neutral protease so collagenase to caseinase(neutral protease) activity is 250 u/mg collagenase and 2,000 u/mg caseinase.

Animal Free Enzymes

General interest in Animal Free (AF) tissue dissociation and primary cell isolation enzymes has dramatically increased in order to avoid potential contamination with mammalian agents such as prions (BSE/TSE) and viruses. Worthington produces several AF collagenases, proteases and nucleases for those requiring AF enzymes. Worthington AF enzymes include collagenase codes CLSAFA, CLSAFB, CLSAFC, deoxyribonuclease I codes DR1, DR1S, DR2, neutral protease (Dispase®), papain and ***STEMxyme®*** 1 and 2. Please check our current catalog for these products. Please inquire.

***Note**: Application specific cell isolation systems have been developed by Worthington to eliminate the need for experimenting with various enzyme combinations and use testing several lots of collagenase. Descriptions for these systems begin on page 13 of this guide.*

Cell Isolation Techniques

Working With Enzymes

All of the enzymes Worthington offers for tissue dissociation applications are available as lyophilized powders for convenience, versatility, and stability. As such they may be stored at 2 – 8°C, and they can be shipped without special handling. While lyophilization makes shipping and storing the enzymes easier, special care is required when opening any of the vials.

Lyophilized proteins tend to be very hydroscopic so they should not be opened in humid areas. Be sure that any vial has been brought to room temperature before opening. Ideally, the vials should be taken from the refrigerator at least a half hour before opening, and they should be left in a dessicator. Before opening any of the vials, be sure it is not at all cool to the touch. All of the cell isolation enzymes cited in this section can be repeatedly warmed to room temperature and then returned to the refrigerator as long as these precautions are followed.

Once diluted with media or buffer, proteolytic enzymes may undergo autolysis. Dissolve enzymes immediately before use and store cold during use.

Special care must be taken with the deoxyribonuclease (DNase). This product is very prone to shear denaturation. Mix gently.

Reconstituted enzymes should not be stored at 2–8°C. If necessary they can be aliquoted and frozen at –20°C. Avoid repeated freeze-thaw cycles.

All enzymes, upon reconstitution, can be sterile filtered through a 0.22μm pore size membrane.

Generally most of the enzymes used in cell isolation procedures (except trypsin) can be directly dissolved in a balanced salt solution or buffer of choice. Stock solutions of trypsin should be made initially by reconstituting the enzyme in 0.001N HCl. This solution can be diluted into the digestion medium or buffer immediately prior to use.

Basic Primary Cell Isolation Protocol
(Refer to references for application specific parameters)

1. For non-perfusion, mince or cut the isolated piece of tissue into 2-4 millimeter pieces with sterile scissors or scalpel.

2. Add the tissue pieces to the appropriate buffer or balanced salt solution on ice and wash 2-3 times.

3. Add appropriate amount of enzyme(s) and incubate at optimum temperature (usually 37°C) for appropriate time, mixing intermittently.

4. Gently disperse the cells by pipeting (trituration).

5. Filter the cell suspension through fine mesh.

6. Allow the cells to settle and decant excess liquid containing enzymes. Wash and repeat 2-3 times.

7. Resuspend cells in appropriate medium or buffer.

8. Quantitate cell yield and viability.

9. Seed cells for culture, if required.

Perfusion procedures require special equipment and techniques for recirculating the buffers, media and enzymes. Please refer to referenced texts for additional information and guidance.

Balanced Salt Solutions
The compilation of standard balanced salt solutions with their references found in the following table can be helpful in selecting an appropriate dissociation solution.

Standard Solution Table
Composition of Selected Balanced Salt Solutions[a,b]

	Ringer[c]	Tyrode[de]	Gey[f]	Earle[g]	Puck[h]	Hanks[I]	Dulbecco (PBS)[jk]
NaCl	9.00	8.00	7.00	6.80	8.00	8.00	8.00
KCl	0.42	0.20	0.37	0.40	0.40	0.40	0.20
$CaCl_2$	0.25	0.20	0.17	0.20	0.012	0.14	0.40
$MgCl_2•6H_2O$		0.10	0.21			0.10	0.10
$MgSO_4•7H_2O$			0.07	0.10	0.154	0.10	
$Na_2HPO_4•1_2H_2O$			3.00		0.39	0.12	2.31
$NaH_2PO4•H_2O$		0.05		0.125			
KH_2PO_4			0.03		0.15	0.06	0.20
$NaHCO_3$		1.00	2.27	2.20		0.35	
Glucose		1.00	1.00	1.00	1.10	1.00	
Phenol Red				0.05	0.005	0.02	
Atmosphere	air	air	95%air/ 5%CO_2	95%air/ 5%CO_2	air	air	air

a. Amounts are given as grams per liter of solution
b. In some instances the values given represent calculations from data presented by the authors to account for the use of hydrated or anhydrous salts
c. S. Ringer, *J. Physiol. (London) 18*, 425 (1895)
d. M.V. Tyrode, *Arch. Int. Pharmacodyn. Ther., 20*, 2025 (1910)
e. R.C. Parker, *Methods of Tissue Culture*, 3rd ed., p. 57, Harper, New York, 1961
f. G.O. Gey and M.K. Hey, *Am J. Cancer, 27*, 55 (1936)
g. W.R. Earle, *J. Natl. Cancer Inst, 4*, 165 (1943)
h. T.T. Puck, S.J. Cieciura, and A. Robinson, *J. Exp. Med. 108*, 945 (1958)
i. J.H. Hanks and R.E. Wallace, *Proc. Soc. Exp. Biol. Med., 71*, 196 (1949)
j. PBS, phosphate-buffered saline
k. R. Dulbecco and M. Vogt, *J. Exp. Med., 99*, 167 (1954)

Equilibration with O_2: CO_2

In many cell isolation procedures it is important to the survival of the tissue during dissociation that the incubation medium be both well oxygenated and buffered at physiological pH. Both requirements are satisfied when the medium is equilibrated with 95% air: 5%CO_2. Several balanced salt solutions contain the pH sensitive indicator dye, phenol red. When it is red or purple in color, the medium is too alkaline. This sometimes occurs when the tissue is placed in the dissociation enzyme solution. Reequilibration with O_2:CO_2 is usually necessary prior to incubation.

Gas should not be bubbled directly into any solution containing protein. This can result in frothing and denaturation of the protein with loss of biological activity. Gas can be sterilized by passage through a 0.22 micron membrane filter or through a sterile fiber plug such as the cotton plug in a sterile Pasteur or volumetric pipette. While mixing the solution, pass O_2:CO_2 continuously through the space above the liquid until color indicates pH 7.2-7.4. The balanced salt solution is often pre-gassed but should be equilibrated with sterile O_2:CO_2 each time the bottle is opened.

Buffered balanced salt solutions will usually maintain constant pH regardless of the degree of oxygenation/carbonation and as a result can be easier to work with. Certain cell types may be sensitive to particular buffer salts. The reference tables can be useful in selecting an appropriate balanced salt solution, buffer, or dissociation media for a specific application.

Trituration

Cell dispersion through mild pumping action is referred to as trituration. This can be a crucial procedure. It serves to break up the tissue fragments following incubation in the dissociation mix. If done too vigorously, cells will be destroyed lowering viability; too weakly and tissue fragments will be left intact lowering yield. Gentle trituration, using a 10ml pipette, constitutes filling and emptying the barrel at a rate of about 3.0ml per sec. You can best determine a suitable rate for your tissue through trial and error. Avoid bubbling the cell suspension.

Enzymatic Cell Harvesting

Most non-malignant cells growing *in vitro* move about and divide until they form a monolayer one cell thick completely covering the surfaces of the culture vessel. Movement and proliferation normally cease when confluence is reached. Harvesting cells for study, processing or subculture requires dissociation and detachment of the monolayer. Limited treatment of the cell layer with the enzyme trypsin is the method most frequently applied.

It was formerly thought that trypsin preparations simply hydrolyzed a proteinaceous adhesive bonding substance responsible for the tenacious attachment of cells to their substratum with the resultant detachment of the cells from the culture vessel. It is now felt that the mechanism of action of trypsin in cell harvesting is more complex. This section summarizes recent information on this subject.

Cell Adhesion and Harvesting

During interphase, fibroblast-like cells in culture are spread out on the substratum in a characteristic, spindle-shaped configuration. There are differences of opinion as to whether the actual areas of cell adhesion are distributed over most of the undersurface of the cell or are localized in relatively narrow patches near the cell margins, principally in the vicinity of ruffling activity. In either case, these areas of adhesion appear to be composed of clusters of attachment points, each about 1 μm in diameter. The individual attachment points are apparently the distal portions of a cell cytoskeleton structure bound to the substratum.

Within minutes after subjecting cultured cells to cold temperatures, chelating agents or trypsin solutions, they change shape drastically by rounding up and blebbing. Electron micrographs show many long retraction fibers with a diameter of 0.25 – 0.5μm running from the surface of the rounded cell body to enlarged, terminal bulb attachment points previously located on the flattened cell's undersurface.

The cells remain attached to the substratum until the fibers are broken, either mechanically by tapping or shaking the culture vessel, or chemically by the continued action of chelators and/or trypsin. (Cold temperatures alone are sufficient for rounding up but not for detachment. These conditions also greatly diminish the entry of trypsin into the cell.) Soon after cell detachment from the surface of the culture vessel, and subculture into new vessels containing trypsin-free medium, cytoplasm flows into the broken retraction fibers and refills them. Within an hour the rounded cells begin to take on their characteristic shape.

Trypsin for Cell Harvesting

In 1916, Rous and Jones used "the trypsin powders of Merck, Brubler and Kahlbaum" to digest the plasma clots in which living cells were growing in order to obtain a cell suspension for subculturing. Vogelaar and Erlichman in 1934 were the next researchers to utilize the digestive enzymes in a crude trypsin preparation to liquify the coagulated plasma in which human fibroblasts were growing prior to subculturing. Techniques using trypsin similar to those used today were introduced by Scherer, Syverton and Gey in 1953 to harvest the then newly cultivated HeLa cell strain for subculturing and biochemical analysis. These workers tested both recrystallized trypsin and NF 1:250 trypsin for cell harvesting and found that the purified trypsin was more potent and less toxic to cells. Nevertheless the NF 1:250 preparation was employed for routine harvesting simply because it was less expensive.

Relatively crude pancreatic preparations like NF 1:250 trypsin are still used today for cell harvesting in spite of the fact that they exhibit considerable lot-to-lot variability and contain extraneous substances and other enzymatic activities. Impurities in crude trypsin can cause unnecessary damage to cells and a reduction of cloning efficiency. Use of higher purity crystalline trypsin can eliminate many of these difficulties.

None of the contaminants present in the NF 1:250 materials appears to be essential for cell harvesting activity since purified trypsin is very effective for monolayer dissociation, and since crude NF 1:250 trypsin plus soybean trypsin inhibitor is ineffective.

McKeehan and Ham report markedly improved viability and multiplication potential to single cells in low serum medium when harvesting with crystalline trypsin at reduced temperatures, i.e., at 4°C.

Cell Release Procedure

In order to transfer or pass cells in monolayer culture from one culture vessel to another it is necessary to release cells from the monolayer into suspension so that they can be easily handled by pipetting and diluting. Releasing cells from the monolayer is almost always accomplished with purified trypsin by a procedure known as trypsinization. A usual trypsinization procedure follows.

(Continued on page 9)

Trypsinization Procedure

1. Remove culture medium from cells.

2. Add sterile trypsin solution (in BSS-balanced salt solution, normally calcium-free Hanks).

3. Allow trypsin solution to act on monolayer for several minutes at room temperature or 37°C (or longer at 2-8°C).

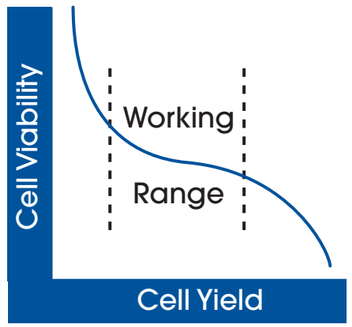
4. Remove trypsin solution gently, so as not to disturb cells.

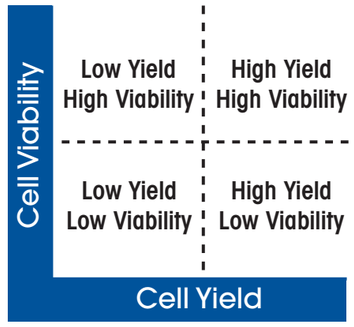
5. Add BSS or media (often with serum or trypsin inhibitor to inactivate residual trypsin) and agitate vessel to disrupt monolayer and suspend cells.

Note: *Some researchers have found that procedures using crystalline trypsin can provide increased viability in cells after they are released. Viability is usually determined by measuring cloning efficiency, i.e., the ability of a single cell to attach to the wall of a culture vessel and divide to produce a colony of cells which is visible to the naked eye after staining.*

Optimization Techniques

Although optimization of a cell isolation procedure for a particular cell type is dependent upon the adequate recovery of cells having various required characteristics, some guidelines can be established. The information in this guide regarding cell isolation and the enzymes used, when combined with logic and suitable experimental design, should lead to the development of a satisfactory cell isolation method (see Freshney, 2010 for a detailed discussion). The complex relationship between cell yield and viability can be represented by the simplified illustrations shown below. In general there is an area of optimized recovery balanced between yield and viability; working near the middle of this range will reduce variability in the results of the cell isolation procedure. Understanding this relationship and how it can vary with a particular cell type and application, can make the optimization process easier.





For troubleshooting purposes various possible results, along with suggested corrective actions are listed below. Keep in mind that there are no clear lines between the quadrants but rather converging zones with variable areas of overlap.

Low Yield/Low Viability: *Over/under dissociation, cellular damage*. Change to less digestive type enzyme and/or decrease working concentration. (e.g. from trypsin to collagenase/ from Type 2 collagenase to Type 1).

Low Yield/High Viability: *Under dissociation.* Increase enzyme concentration and/or incubation time and monitor both yield and viability response.

If yield remains poor, evaluate a more digestive type enzyme and/or the addition of secondary enzyme(s).

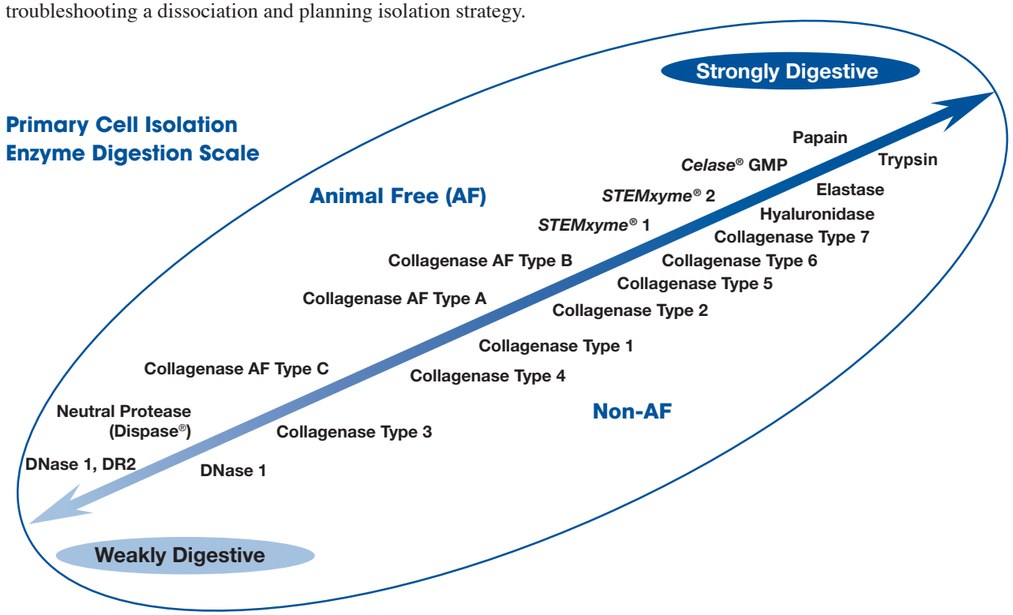
High Yield/Low Viability: *Good dissociation, cellular damage*. Enzyme overly digestive and/or at too high a working concentration. Reduce concentration and/or incubation time and monitor yield and viability response.

Try diluting the proteolytic action by adding bovine serum albumin (BSA) (0.1 - 0.5% w/v) or soybean trypsin inhibitor (0.01 - 0.1% w/v) to the dissociation.

Try using less proteolytic enzyme although yield may be affected and should be monitored.

High Yield/High Viability: ***The place to be!*** Consider evaluating the effect of dissociation parameters to learn their limitations for future reference.

The scale below demonstrates the relative digestive power of the enzymes commonly used. Refer to this scale when troubleshooting a dissociation and planning isolation strategy.



Optimization Strategy

Review the reference tables starting on page 31 for the particular tissue and cell type of interest, and then apply this information to the practical application of tissue dissociation. An example of a basic optimization strategy follows:

Based upon the enzyme(s) cited, working concentrations and the buffer or media system used, set up proposed preliminary dissociation conditions similar to the closest available reference(s) listed in the tables.

If a majority of the most similar referenced procedures cite the use of more than one enzyme, optimize the concentration of the primary enzyme (the one at the highest relative concentration) before adding the secondary enzyme(s). For example, if the two most similar references cite collagenase 0.1% with DNase 0.01% and collagenase 0.075% with hyaluronidase 0.025%, optimize the collagenase concentration empirically before evaluating the effects of either the hyaluronidase or the deoxyribonuclease. After optimizing the primary enzyme's concentration and incubation conditions evaluate any secondary enzyme(s).

Initially vary the concentration of the primary enzyme approximately 50% relative to the referenced procedure(s). The above example of collagenase concentrations 0.1% and 0.075% suggests an evaluation of enzyme concentrations between 0.025% and 0.15%. The concentration increments should be evenly distributed to cover this entire range. As a result incremental concentrations of 0.025%, 0.05%,0.075%, 0.10%, 0.125% and 0.15% would be indicated. To simplify the initial screening the middle of the range can be selected and, after evaluation of yield and viability results, a decision can be made regarding the need for further studies. In this case initial collagenase concentrations evaluated may be 0.05%, 0.075%, 0.10% and 0.125%.

Historically, most tissue dissociation and cell isolation protocols have cited the enzyme concentration used in terms of weight per unit volume (w/v). More recently, however, some researchers have begun to use the enzymes on an activity basis, that is, units per milliliter (u/ml). Use either method but consider the advantages and disadvantages of each:

A. The traditional weight per unit volume method most likely resulted from the use of cruder, partially purified mixtures of enzymes and is used independently of any specific or contaminating activities which may be present. With some of these crude preparations the lot-to-lot variation can be significant resulting in up to a two-fold difference in the amount of enzymatic activity added on a weight basis.

(Continued on page 11)

B. Adding by activity can result in a possible two-fold difference in the amount of weight added to a dissociation; however, normalizes the potency used based upon the primary activity for each lot.

Both methods ignore the relative contaminant activity levels. Upon establishing a basic method, consider pre-sampling different lots of enzyme(s) to evaluate these factors and to select a lot of enzyme which has minimal effect upon the critical parameters of a specific application.

Important: For accurate evaluation of a particular procedure's performance, cell yield and viability should be quantitated and compared. After optimizing basic dissociation and isolation conditions, the specific application parameters such as metabolic function(s) or receptor binding capability should also be evaluated. Based upon these results the method may be judged suitable for use or re-optimized for higher retention of native cellular charactaristics.

Cell Quantitation and Characterization

It is important to quantitate the results of each dissociation step in order to effectively evaluate each procedure. The use of a cell counting chamber (hemocytometer) for yield quantitation and the use of trypan blue for viability quantitation are recommended. The use of a hemocytometer for cell yield quantitation is outlined; however, newcomers to this procedure can refer to more detailed discussions (see Freshney, *Culture of Animal Cells* or Stein GS. *et. al. Human Stem Cell Technology and Biology: A Research Guide and Laboratory Manual*. Wiley & Sons, Hoboken, New Jersey, (2011).

Required Supplies:

- Improved Neubauer Hemocytometer
- Cell Compatible Media or BSS
- Pasteur Pipet or Micropipettor
- Microscope (10X)
- Counter

Cell Counting Procedure:

1. Carefully clean the counting chamber surface and the coverslip of the hemocytometer with 70% isopropanol and allow to air dry. Be careful not to scratch these surfaces.

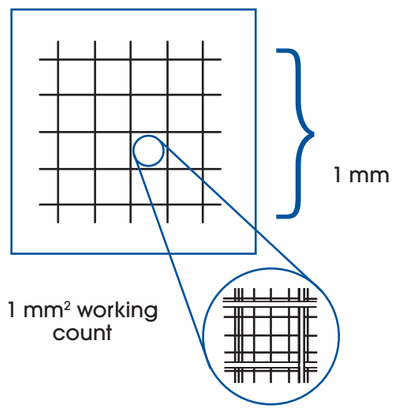
2. Wet the sides of the coverslip with reagent grade water and align the coverslip over the counting chamber.

3. Take a **well mixed** 20-50 μl aliquot of the dissociated cell suspension using either a Pasteur pipet or a micropipettor only drawing the cells into the tip. **Immediately** transfer the cell suspension to the counting chamber by placing the tip of the pipet at the edge of the chamber and allowing the chamber to fill completely via capillary action. Do not over- or underfill the chamber.

4. Repeat this procedure using another aliquot sample for the second chamber on the opposite side of the hemocytometer.

5. Place the hemocytometer on the microscope stage and, using the 10X objective, focus on the counting chamber grid lines. Adjust the contrast as needed to clearly see both the grid and the dispersed cells.

6. Adjust the field area by slowly moving the slide to obtain a central grid bounded by three lines on all sides (see figure below). Count the total number of cells present in this 1 mm^2 area including those cells which are on the top and left borders and excluding those on the right and bottom borders.



7. For accuracy count at least 100-500 cells. Depending upon yield and density more or fewer areas may be counted.

8. Repeat the count for the second chamber. If no second chamber exists, the slide should be cleaned and the process repeated.

Calculation:

$C = \tilde{N} \times 10^4$

where C = cells per milliliter
$\tilde{N}$ = average of cells counted
10^4 = volume conversion factor for 1 mm^2

Total Yield = C x V
where V = total volume of cells (ml)

Example:

$Count_1 = 182$ cells/mm^2
$Count_2 = 175$ cells/mm^2

Volume of Cells = 55 ml

$$\text{Average cells counted} = \frac{Count_1 + Count_2}{2} = \frac{182 + 175}{2} = 178.5$$

$C = 178.5 \times 10^4 = 1{,}785{,}000$ cells/ml

Total yield = C x V = 1,785,000 x 55 = 98,175,000 cells

Note: *For best results the cell density should be at least 10^5 cells per milliliter. Common errors occur by improper mixing of the cell suspension prior to sampling and/or by allowing the cells to settle in the pipet prior to loading the hemocytometer counting chamber. Avoid the counting of multiple cell aggregates; the presence of aggregates indicates incomplete dissociation which may require further optimization of the isolation parameters. A single cell suspension provides the best results. Deoxyribonuclease I reduces clumping and improves samples for flow cytometry. Typical DNase concentrations used range from 100-2,000 u/ml and should be optimized for each specific application.*

Flow Cytometry

Flow cytometry is a laser- or impedance-based, biophysical technology increasingly used in cell counting and characterization, sorting, biomarker detection and protein engineering. Cells are suspended in a stream of fluid and passed through an electronic detection apparatus. A flow cytometer allows simultaneous multi-parametric analysis of the physical and chemical characteristics of up to thousands of particles per second.

Flow cytometry is routinely used in the diagnosis of health disorders, especially blood cancers, but has many other applications in basic cell biology research. A common variation involves linking the analytical capability of the flow cytometer to a sorting device, to physically separate and purify cells and particles of interest based on their optical properties. Fluorescence-activated cell sorting (FACS) is a specialized type of flow cytometry. It provides a method for sorting a heterogeneous mixture of biological cells into two or more containers, one cell at a time, based upon the specific light scattering and fluorescent characteristics of each cell. The technique was expanded by Len Herzenberg, who was responsible for coining the term FACS.

FACS is widely used for quantitation and sorting of numerous cellular characteristics including apoptosis, adherence, surface antigens, markers and receptors, viability, chromosome analysis, enzymatic activity, protein expression and monitoring and DNA/RNA content.

A single cell suspension provides the best results in flow cytometry and quantitation. Cell clumping and increased viscosity can occur when damaged cells lyse and release intracellular DNA into the isolation environment. Adding Deoxyribonuclease I reduces clumping and improves samples for flow cytometry. Typical DNase concentrations used range from 100-2,000 u/ml and should be optimized for each specific application. However, it should not be used in applications where DNA is being characterized. Other enzymes such as collagenase and neutral protease may also help reduce clumping.

Measure of Viability

One of the simplest methods to approximate cell viability is the dye exclusion technique. This method utilizes an indicator dye to demonstrate cell membrane damage. Cells which absorb the dye become stained and are considered non-viable. Dyes such as trypan blue, erythrosin, and nigrosin are commonly used with trypan blue being the most common in preliminary cell isolation procedures.

This procedure can be performed along with the cell counting procedure but cell density may require adjustment in order to obtain approximately 10^6 cells per milliliter.

(Continued on page 13)

Procedure

1. Mix 1 drop of trypan blue with one drop of the cell suspension and allow 1 - 2 minutes for absorption

2. Prepare hemocytometer and load chambers as described in "Cell Quantitation".

3. Count both the total number of cells and the number of stained (dark) cells.

Calculation:

Percent Viability =

$$\frac{\text{Total Cells Counted - Stained Cells}}{\text{Total Cells Counted}} \times 100$$

Example:

Total Cells / 1 mm^2 = 182
Stained Cells = 24

$$\% \text{ Viability} = \frac{182 - 24}{182} = \frac{158}{182} \times 100$$

= 86.8% Viability

Note: *Dye exclusion viability procedures tend to give high estimates of cell viability when compared to cell attachment or metabolic assays, but for optimization of cell isolation procedures trypan blue does provide a rapid estimate of dissociation performance in conjunction with yield quantitation.*

Use-Tested Cell Isolation Systems

Worthington currently offers Cell Isolation Systems which are kits containing enzymes and other required reagents for performing tissue dissociation without having to purchase individual packages of one or more enzymes and pre-testing various lots of some enzymes. Some are designed for working with specific tissues, and one kit is a general purpose procedure development system. In all cases the enzymes which are included in the kits are regular Worthington products which can be purchased independently as needed.

Cell Isolation Optimizing System (CIT)

The Cell Isolation Optimizing System is a complete method development kit containing an assortment of enzymes most frequently used in tissue dissociation and cell isolation procedures. The kit includes instructions, references and strategies for the handling, use and optimization of enzymatic cell isolation methods to achieve maximum yield of viable cells. The system is designed to offer versatility in developing a method of obtaining cells from many different tissue types and sources in a cost-efficient manner.

The "System" contains all of the enzymes produced by Worthington commonly referenced in tissue dissociation and cell isolation procedures along with the Cell Isolation Guide detailing the various enzymes, tissue culture techniques, and protocol optimization guidelines similar to those outlined in this guide. In addition the guide lists hundreds of cell and tissue specific isolation references for getting started in enzymatic cell isolation.

CIT Kit Contents

Enzyme	Code*	Qty/Vial
Collagenase Type 1	CLS-1	500 mg dw
Collagenase Type 2	CLS-2	500 mg dw
Collagenase Type 3	CLS-3	500 mg dw
Collagenase Type 4	CLS-4	500 mg dw
Trypsin	TRL	500 mg dw
Hyaluronidase	HSE	50,000 Units
Elastase	ESL	100 mg P
NeutralProtease (Dispase®)	NPRO	10 mg dw
Papain	PAPL	100 mg P
Deoxyribonuclease I	DP	25 mg dw
Trypsin Inhibitor	SIC	100 mg dw

dw = dry weight
P = protein

* The code which appears in the table for each of the enzymes corresponds to the codes found in our regular catalog.

It is intended to serve both as a development tool for the experienced researcher and as an educational aid for students of cell biology.

Hepatocyte Isolation System

Most traditional methods published for isolating hepatocytes use crude and partially purified enzyme preparations including various types of collagenase and other proteases. More recently the use of better characterized preparations of collagenase such as Worthington Types 1 and 4 (CLS-1, 4) have provided better results. All crude collagenase preparations can contain lot-variable contaminating proteases, esterases and other enzymes requiring researchers to pre-screen several lots of enzyme and/or continually modify isolation parameters and protocols.

The Worthington Hepatocyte Isolation System has been developed to provide researchers with a reliable, convenient, and consistent hepatocyte cell isolation system. By using the pre-optimized combination of enzymes contained in this kit, it is possible to minimize the lot-to-lot variation and improve the quality of the isolated hepatocytes. In addition, Worthington use-tests each lot by isolating hepatocytes from adult rat to assure performance, reliability, and consistent yield of viable cells.

The method is based on that described by Berry, M.N., modified by Seglen, P.O. (Methods in Cell Biology, vol XIII, David M. Prescott ed., Academic Press, 1976; Chapter 4, "Preparation of Isolated Rat Liver Cells", pp 29-83), and further optimized in conjunction with several researchers.

The Hepatocyte Isolation System has also been adapted for the isolation of hepatocytes from mice. Please contact Worthington's Technical Service for additional mouse application information.

Description and Package Contents

The package contains sufficient materials for five separate adult rat liver perfusions. For larger or smaller tissue applications, prepare proportionate volumes of reagents at each step and combine them in the same ratio as described in the protocol.

Vial #1: 10X CMF-HBSS Concentrate, 1 bottle, 500ml Sterile calcium- and magnesium-free Hank's Balanced Salt Solution (CMF-HBSS). The solution is used for washing and perfusing the liver prior to the addition of the dissociating enzyme solution.

Vial #2: Collagenase-Elastase Enzyme Vial, 5 Vials Worthington collagenase (Code: CLS-1) and elastase (Code: ESL), filtered through 0.22μm pore size membrane, and lyophilized. Before use, reconstitute with the L-15/MOPS solution and swirl gently to dissolve contents as directed in the following procedure. Store unreconstituted vials at 2–8°C.

Vial #3: 1,000 Units DNase I each, 5 Vials Worthington DNase I (Code: D), filtered through 0.22μm pore size membrane, and lyophilized. Before use, reconstitute with L-15/MOPS solution and swirl gently to dissolve contents as directed in the following procedure. Store unreconstituted vials at 2–8°C.

Vial #4: 0.15M MOPS, pH 7.5, 1 bottle, 75ml 0.15M MOPS, pH 7.5 buffer concentrate, used to buffer the reconstituted Leibovitz L-15 media.

Vial #5: 7.5% Sodium Bicarbonate ($NaHCO_3$), 1 bottle, 100ml 7.5% Sodium bicarbonate concentrate, used to buffer the diluted CMF-HBSS.

Pouch, containing Leibovitz L-15 Media Powder: 1 x 1L Reconstitute entire contents of pouch by cutting open top of envelope and pouring contents into beaker containing approximately 800ml of cell culture grade water. Rinse pouch 2 - 3 times with an additional 100ml water. Bring total volume to 1000ml and filter through a 0.22 micron pore size membrane.

Required for Perfusion Isolation but not Included:

- Equipment and tools for animal anesthesia and surgery
- A perfusion apparatus with a bubble trap suitable for liver perfusion at 10-30ml/min, 37°C. The tubing to be inserted into the portal vein is thin-walled with an inner diameter of 0.35-0.45mm

Note: *Measure the dead volume of the perfusion circuit*

- A low-speed centrifuge suitable for sedimentation of hepatocytes
- Labware for cell sedimentation, and culture or incubation including sterile 150 X 25mm culture plates
- A means to count or estimate the yield of cells
- A means to sterile-filter solutions, if desired
- Cell culture media and supplies, if needed
- Sterile cell culture grade water
- Concentrated antibiotics: penicillin, streptomycin, Fungazone, etc. for culture, if needed.
- Surgical thread, silk, size 000
- Heparin (optional)

For Cell Quantitation and Viability Assessment:

- Improved Neubauer hemocytometer
- Counter
- Pasteur pipet or micropipettor
- Microscope (10X), preferably inverted phase-contrast
- Standard 10ml serological pipets

Note: The following procedure presumes previous experience in liver digestion and cell isolation. For those not experienced, refer to the publication by Seglen referenced above, or to Alpini *et al*. entitled "Recent Advances in the Isolation of Liver Cells" published in *Hepatology* (1994) 20:494-514. Perfusion of the liver while still in the peritoneal cavity is described in "Isolated Hepatocytes Preparation, Properties and Application," by Berry, M.N., Edwards, A.M. and Barritt, GJ; RH Burdon and PH Van Knippenberg, eds., Elsevier, Amsterdam, New York, Oxford, Chapter 2, (1991)

Procedure For Cell Isolation

I. Preliminary Steps for Digestion of 1 Liver

The volumes specified in the following protocol are suitable for perfusion volumes of approximately 80-100ml. Proportional adjustments may be necessary for different perfusion systems.

Note: *Sterile techniques, glassware and plasticware should be used. The use of a sterile hood is also recommended to avoid culture contamination.*

Prepare:

1. Vial #1, 10X CMF-HBSS: Dilute 100ml of the 10X CMF-HBSS with 850ml of sterile water and add 4.7ml of 7.5% Sodium Bicarbonate (Vial #5, $NaHCO_3$) in a sterile 1L bottle. Adjust pH if necessary to 7.4. Bring (QS) to a total volume of 1L with sterile water. If sterile water is not available, mix ingredients and sterile (0.22u) filter. Makes a total of 5L.

2. Leibovitz L-15 Media, 1 x 1L: Reconstitute entire contents of pouch by cutting open top of envelope and pouring contents into beaker containing 800ml of cell culture grade water. Rinse

(Continued on page 15)

pouch 2 - 3 times with an additional 100ml water. Bring total volume to 1000ml and filter through a 0.22 micron pore size membrane.

3. Enzyme Buffer Solution:, Combine 13.3ml of MOPS concentrate with 10ml sterile water and 76.7ml of L-15 in a sterile 100ml bottle. Transfer sufficient L-15/MOPS into one each of Vial #2 and into one Vial #3 to dissolve the contents, mix gently to completely dissolve and transfer the enzymes back to the 100ml bottle. The collagenase, elastase and DNase concentrations will be approximately 225U/ml, 0.3U/ml and 10U/ml, respectively.

4. Flush the sterile perfusion apparatus with CMF-HBSS, eliminating all air from the system except that in a bubble trap.

5. Place the 150 x 25mm or equivalent Petri dish close to the perfusion apparatus to receive the perfused liver.

II. Perfusion and Digestion of Adult Rat Liver

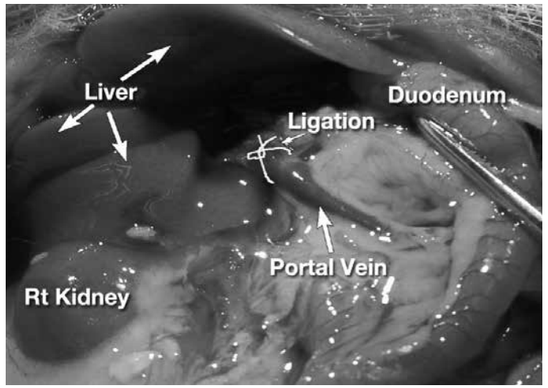
The following steps should be performed in a laminar flow hood or safety cabinet. In particular, the digested liver should be processed under sterile conditions unless acute incubations will terminate the procedures.

1. Pretreatment of the rat with heparin is helpful. Inject i.p. about 20 minutes before perfusion, or into a vein (Seglen suggests the iliolumbar vein) after opening the abdomen. Use from 100-200U/100g body weight.

2. Anesthetize a rat, 200-400g weight, and position it for dissection. Install sufficient padding under the rat to hold the blood and initial perfusate. Place the rat on its back, tape down the legs, sterilize the abdomen with an iodine solution or 70% ethanol, and open the abdomen to expose the liver. Move the intestines to the left side of the abdomen (to the right as you look down with the rat's head away from you) exposing the hepatic portal vein.

3. Using a pair of fine, curved forceps, place a segment of 000 surgical thread underneath and around the portal vein just above (toward the head) the intersection of the portal vein and the final mesenteric vein close to the liver. Tie a loose half-square or equivalent knot around the vein. Locate the vena cava so it can be opened for drainage just before the portal vein (vena porta) is cannulated.

4. Turn on the perfusion pump containing plain CMF-HBSS with a flow rate 10-15ml/min so that the tubing or cannula can be inserted into the portal vein. The bath temperature is adjusted so that the perfusate temperature is 37°C. Cut a nick in the vena cava near the right kidney to lower the blood pressure, and then with fine surgical scissors cut a nick in the portal vein (partially through) about 5mm below (towards the tail) the knotted thread. Insert the tubing into the portal vein towards the liver and only several millimeters past the loose knot. The liver should clear of blood. Tie the surgical threads tightly around the portal vein and tubing. Cut the vena cava through and increase the perfusate flow rate to 20-25ml/min.



***Note**: Establishment of an effective perfusion that flushes the entire vasculature is essential to the success of the digestion.*

5. Remove the liver from the animal with great care; do not rush. Place the liver onto a mesh stage in such a manner that it can be perfused in a recirculating fashion. The initial CMF-HBSS perfusate, however, goes to waste.

6. After 7-10 min of CMF-HBSS perfusion, switch to perfusion with the Enzyme Buffer Solution (L-15 digestion medium containing the enzymes). **Start recirculation** after one system-dead-volume of the remaining CMF-HBSS has gone to waste.

7. Perfuse the liver with the digestion mixture until it swells fully (but not prematurely) and the liver is fully digested, about 20-30 minutes.

***Note:** Halt the perfusion immediately by stopping the pump and removing the liver if the portal vein breaks or if the surface of the liver shows signs of disintegration when touched with forceps or a blunt object.*

8. At the end of the perfusion, stop the pump, gently place the liver in the 150ml or equivalent culture dish and remove the perfusion tube. Transfer the culture dish to a sterile hood if not already in one, and add approximately 150ml of fresh CMF-HBSS to the dish.

9. In the culture dish, gently pull off the lobular capsule membranes with forceps or dog comb (recommended by Seglen), and rake out the cells. Remove the large central tree of connective and vascular tissue, and any undigested tissue or connective tissue.

10. Gently agitate the dish to disperse the cells. Place the dish at an angle by propping one side on the lid. Allow clumps or connective tissue to settle for a minute or so, then remove the dispersed cells from the top of the buffer at the deepest part

of the plate, i.e. close to the lower edge, and transfer the cell suspension to 50ml sterile tubes.

11. Centrifuge for three minutes at low speed (just rapidly enough for loose cell pellets, e.g. 100 x g) at room temperature.

12. Add more CMF-HBSS to the culture dish and repeat the process to increase the yield of cells. Repeat as long as clean cells can be removed.

13. As soon as cells are sedimented, add fresh CMF-HBSS, suspend the cells by inverting the capped tubes, and re-centrifuge as above. Repeat process once more to remove traces of the digestive enzymes from the cells. Discard the supernatant(s) and transfer cells to culture medium or buffered medium in a second 100mm or 150mm culture dish. The yield of cells from a good digestion of a liver of a 300gm rat is approximately 4-5ml of packed volume after gentle sedimentation in a centrifuge.

Neonatal Cardiomyocyte Isolation System (NCIS)

The Worthington Neonatal Cardiomyocyte Isolation System has been introduced to provide researchers with a reliable, convenient, and consistent cell isolation system. By utilizing purified rather than crude enzyme preparations, it has been possible to minimize the lot-to-lot variation. In addition, Worthington use-tests the kits by isolating cardiomyocytes from neonatal rat hearts to assure performance, reliability, and consistent yield of viable cells.

The kit has been formulated in conjunction with Dr. Ronal MacGregor. The method is based on that described by Toraason, *et al.* (1988) in which the minced tissue is incubated overnight with trypsin in the cold. As pointed out by Toraason, this step reduces the hands on time required to harvest cells compared to the time involved in sequential incubations in warm trypsin or collagenase.

The package contains sufficient materials for five separate tissue dissociations, each containing up to twelve hearts. For larger or smaller tissue samples prepare proportionate volumes of reagents at each step and combine them in the same ratio as described in the protocol.

NCIS Kit Contents

Vial #1: 1 bottle, 500 ml
Sterile calcium- and magnesium-free Hank's Balanced Salt Solution (CMF HBSS), pH 7.4. The solution is used for reconstituting the contents of Vials #2 and #3 in addition to serving as the medium for the dissociation.

Vial #2: 5 vials, 1000 μg each
Worthington Trypsin (Code: TRLS), 3X crystallized, dialyzed against 1 mM HCl, filtered through 0.22 μm pore size membrane, and lyophilized. Before use, reconstitute with 2 ml CMF HBSS (Vial #1) and swirl gently to dissolve contents. Store at 2–8°C.

Vial #3: 5 vials, 2000 μg each
Worthington Soybean Trypsin Inhibitor (Code: SIC), a 0.22 μm pore size membrane filtered, lyophilized powder. Before use, reconstitute with 1 ml CMF HBSS (Vial #1) and swirl gently to dissolve contents. Store at 2–8°C.

Vial #4: 5 vials, 1500 Units each
Worthington Purified Collagenase (Code: CLSPA), a 0.22 μm pore size membrane filtered, lyophilized powder which has been chromatographically purified. It contains less than 50 caseinase units per milligram and is composed of two separable but very similar collagenases. Before use, reconstitute with 5 ml Leibovitz L-15 Media (prepared as described below) and swirl gently to dissolve contents. Store at 2–8°C.

Pouch containing Leibovitz L-15 Media Powder: 1x1 L
Reconstitute entire contents of pouch by cutting open top of envelope and pouring contents into beaker containing 800 ml of cell culture grade water. Rinse pouch 2 - 3 times with additional 100 ml. Bring total volume to 1 liter and filter through a 0.22 micron filter.

The kit also includes 5 Cell Strainers (Falcon), and a card correlating phenol red color with pH for checking the pH of balanced salt solution and culture medium.

NCIS Procedure

Day 1: Perform the following in the afternoon

Prepare:

- Reagent #1, CMF HBSS: 50-60 ml from Vial #1, *ice cold.*
- Reagent #2, Trypsin: reconstitute one of Vial #2 with 2 ml Reagent #1, *ice cold.*
- One sterile 50 ml centrifuge tube, *in ice.*
- 10 cm Petri dish, sterile, *on ice.*

1. Transfer 30–40 ml of Reagent #1 to the centrifuge tube.

2. Anesthetize each rat pup, sterilize the abdomen with an antiseptic solution, and surgically remove the beating heart; immediately place the heart in the centrifuge tube to chill and rinse. Repeat for remaining rat pups. Swirl the tube to rinse hearts, then pour off most of the liquid. Rinse the hearts with 10 ml of Reagent #1, pour off the liquid as before, then transfer the hearts to the Petri dish. Mince the tissue with small scissors or a razor blade to less than 1 mm^3 pieces keeping tissue at 0°C.

3. Add Reagent #1 to Petri dish to a final volume of approximately 9 ml.

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4. Transfer 1 ml of the contents of the trypsin vial (Vial #2) into the Petri dish and mix completely by swirling. Final trypsin concentration is 50 μg/ml.

5. Place the lid on the petri dish and immediately place in refrigerator overnight (16–20 hours) at 2–8°C.

Note: *If animals are 4 days old or older, increase the trypsin concentration up to a maximum of 100 μg/ml.*

Day 2: Begin the following in the morning:

Prepare:

- Reagent #1, CMF HBSS: 30 ml. *Ice cold.*
- Reagent #3, Trypsin Inhibitor: reconstitute one of Vial #3 with 1 ml Reagent #1. *Room temperature.*
- Reagent #4 Collagenase: reconstitute one of Vial #4 with 5 ml prepared Leibovitz L-15. Room temperature.
- Enough culture medium containing calcium and magnesium for digestion, centrifugations, and plating in cultureware. (approximately 100 ml for 10 hearts). Room temperature.
- Wide-mouth 10 ml serological pipet, sterile (opening about 3 mm diameter)
- Standard 10 ml plastic serological pipet

6. Remove Petri dish from refrigerator and bring to sterile hood on ice. Transfer tissue and buffer to 50 ml centrifuge tube on ice using wide-mouth pipet.

7. Transfer contents of Vial #3 into tube and mix.

8. Oxygenate tissue for 30 seconds to 1 minute if O_2 is available by passing oxygen over the surface of the liquid.

9. Warm tissue and buffer to 30–37°C in water bath, maintaining sterility (i.e. cap if needed). DO NOT add calcium-containing medium until tissue fragments are warm.

10. Slowly transfer the contents of Vial #4 into tube and mix. Cap tube tightly.

11. Place tube in/on slowly rotating (tumbling) or shaking instrument (2–4 rpm) at 37°C and incubate for 30 to 45 minutes.

All subsequent steps at room temperature.

12. Remove tube from incubator and return to sterile hood. With standard 10 ml plastic serological pipet, triturate about 10 times to release cells. (Trituration is discussed in the following inset.) Pipet as gently as possible consistent with successful tissue dispersion.

13. Rinse a Cell Strainer with 1 ml of the L-15 culture medium. Allow tissue residue to settle 3–4 minutes, then (with same pipet) filter the supernatant through the Cell Strainer into a fresh 50 ml centrifuge tube.

14. Add 5 ml additional L-15 culture medium to tissue residue, repeat trituration step. Allow tissue residue to settle as before, then filter cells through the same Cell Strainer. Rinse mesh gently with 2 ml culture medium, oxygenate cells 1 minute, then allow filtered cells to remain undisturbed for about 20 minutes at room temperature. This allows complete digestion of the partially degraded collagen. Cells can be held up to 1 hour at this point.

15. Swirl cells gently; if no clumps have formed and appearance is uniform, sediment cells at 50–100 x g for 5 minutes (enough to settle the myocytes and some but not all red cells.) Suspend cells in additional portions of L-15 culture medium and repeat sedimentation as desired. If no sedimentation is desired, cells can be plated directly from the initial filtrate. Serum is generally required for plating cells in cultureware.

16. Suspend final cell pellet in suitable culture medium. Pipet gently to disperse. No clumps or connective tissue strands should be visible. Count the cells using a hemocytometer or other method, adjust cell concentration and add serum as desired, then dispense to tissue cultureware. (Some brands of uncoated cultureware do not encourage high plating efficiencies. Use Falcon or equivalant for best results.) Routine cell yields are 2–3 x 10^6 cardiomyocytes per heart digested. Good (fairly heavy) seeding levels of cells should be obtained at 125,000 cardiomyocytes per cm^2 of culture wells or flasks. Adhesion may be improved by collagen or fibronectin coating of the plastic. Cell Quantitation and Estimation of Viability are discussed in the following sections.

17. Place each plate or flask in a 37°C incubator as soon as it is plated. Do not touch or otherwise disturb the cells for at least 24 hours.

Papain Dissociation System (PDS)

The Worthington Papain Dissociation System is a set of reagents intended for use in the neural cell isolation method of Huettner and Baughman. The materials are designed for convenience and simplicity and are useful to the occasional user as well as the more experienced and frequent user. Each lot is use tested for performance in tissue dissociation and provides freshly prepared enzyme solutions for each dissociation.

The reagents are stable at ambient temperatures for the periods of time expected in normal shipping procedures, but the package should be refrigerated upon arrival and can be stored at 2-8°C for up to 4 months before use.

Papain Dissociation Kit Contents

The package contains sufficient materials for dissociation of five separate tissue aliquots of up to 0.3 - 0.4 cm^3 each. For larger tissue samples prepare proportionately larger volumes of reagents at each step and combine them in the same ratio as described in the protocol.

Vial #1: 1 bottle, 250 ml
Sterile Earle's Balanced Salt Solution (EBSS) with bicarbonate and phenol red. Aliquots of this vial are used to reconstitute other vials and to prepare dilute inhibitor solution. Refrigerate between uses and equilibrate with sterile O_2:CO_2 before each use.

Vial #2: 5 vials, 100 Units each
Papain containing L-cysteine and EDTA. This material is 0.22 micron membrane filtered and lyophilized in autoclaved vials. A vial reconstituted with five mls of EBSS (vial 1) yields a solution at 20 units of papain per ml in one millimolar L-cysteine with 0.5 millimolar EDTA. Brief incubation is needed to insure full solubility and activity.

Vial #3: 5 vials, 1000 Units each
Deoxyribonuclease I (DNase). This material is 0.22 micron membrane filtered and lyophilized in autoclaved vials. A vial reconstituted with 0.5 ml of EBSS (vial #1) yields a solution at 2000 units of deoxyribonuclease per ml. Avoid vigorous mixing.

Vial #4: 1 vial, 320 mg
Ovomucoid protease inhibitor with bovine serum albumin. This material is 0.22 micron membrane filtered and lyophilized in autoclaved vials. A vial reconstituted with 32 mls of EBSS (vial #1) yields a solution at an effective concentration of 10 mgs of ovomucoid inhibitor and 10 mgs of albumin per ml. The inner rubber stopper can be discarded after reconstitution. Aliquots of this vial are used for each dissociation. Refrigerate between uses and equilibrate with sterile O_2:CO_2 before each use. Stable after reconstitution when stored at 4°C.

Also included is a card correlating color with pH for use as a guide in O_2:CO_2 equilibration.

PDS Procedure

Sterile procedures should be used throughout:

1. Add 32 mls of EBSS (vial 1) to the albumin ovomucoid inhibitor mixture (vial 4) and allow the contents to dissolve while preparing the other components. Mix before using and equilibrate with O_2:CO_2. Reconstitute for the first use, then store and reuse.

2. Add 5 mls of EBSS (vial 1) to a papain vial (vial #2). Place vial #2 in a 37°C water bath for ten minutes or until the papain is completely dissolved and the solution appears clear. If solution appears alkaline (red or purple) equilibrate the solution with 95% air: 5%CO_2. The solution should be used promptly but can be held at room temperature during the dissection. A separate papain vial is provided for each dissociation. (If desired the papain can be transferred to a centrifuge tube or other container before proceeding.)

3. Add 500 μls of EBSS to a DNase vial (vial #3). Mix gently -- DNase is sensitive to shear denaturation. Add 250 μls of this solution to the vial containing the papain. This preparation contains a final concentration of approximately 20 units/ml papain and 0.005% DNase. Save the balance of the DNase vial to use in step #7. A separate DNase vial is provided for each dissociation.

4. Place tissue in the papain solution. Tissue should be slightly minced or cut into small pieces (this can be done separately or on the side of the tube containing the papain). Displace air in vial with sterile O_2:CO_2. Do not bubble gas through the solution. Immediately cap vial.

5. Incubate the vial containing the tissue at 37°C with constant agitation (a rocker platform is ideal) for 30 min to 1 1/2 hrs. The amount of time must be determined empirically; however, embryonic tissue generally requires less time than postnatal tissue.

6. Triturate the mixture with 10 ml pipette. Allow any pieces of undissociated tissue remaining after trituration to settle to the bottom of the tube. Vigorous trituation of neuronal tissue results in a high yield of cells, most of which are spherical and devoid of processes. Gentle trituration results in more undissociated tissue fragments and a lower yield of cells although many of these now retain their proximal processes.

7. Carefully remove the cloudy cell suspension, place in sterile screwcapped tube and centrifuge at 300g for 5 minutes at room temperature. Be careful to avoid including any pieces of undissociated tissue during this time -- prepare medium to resuspend the pelleted cells.

Mix 2.7 mls EBSS (vial #1) with 300 μls reconstituted albumin-ovomucoid inhibitor solution (vial #4) in a sterile tube. Add 150 μls of DNase solution (vial #3) saved at step #3.

8. Discard supernatant and immediately resuspend cell pellet in DNase dilute albumin-inhibitor solution.

9. Prepare discontinuous density gradient. Add 5.0 ml of albumin-inhibitor solution (vial #4) to centrifuge tube, carefully layer cell suspension on top, then centrifuge at 70g for 6 minutes at room temperature. The interface between the two layers of the gradient should be clearly visible although minimal mixing at this boundary does not affect the result. Dissociated cells pellet at the bottom of the tube, membrane fragments remain at the interface.

10. Discard the supernatant and immediately resuspend the pelleted cells in medium for cell culture or for flow cytometric analysis.

Tissue/Cell Culture Glossary

Adventitious: Developing from unusual points of origin, such as shoots or root tissues from callus or embryos from sources other than zygotes. This term can also be used to describe agents which contaminate cell cultures.

Anchorage-dependent cells or cultures: Cells, or cultures derived from them, which will grow, survive, or maintain function only when attached to a surface such as glass or plastic. The use of this term does not imply that the cells are normal or that they are or are not neoplastically transformed.

Aneuploid: The situation which exists when the nucleus of a cell does not contain an exact multiple of the haploid number of chromosomes; one or more chromosomes being present in greater or lesser number than the rest. The chromosomes may or may not show rearrangements.

Asepsis: Without infection or contaminating microorganisms.

Aseptic technique: Procedures used to prevent the introduction of fungi, bacteria, viruses, mycoplasma or other microorganisms into cell, tissue and organ culture. Although these procedures are used to prevent microbial contamination of cultures, they also prevent cross contamination of cell cultures as well. These procedures may or may not exclude the introduction of infectious molecules.

Attachment efficiency: The percentage of cells plated (seeded, inoculated) which attach to the surface of the culture vessel within a specified period of time. The conditions under which such a determination is made should always be stated.

Autocrine cell: In animals, a cell which produces hormones, growth factors or other signaling substances for which it also expresses the corresponding receptors. (See also Endocrine and Paracrine.)

Axenic culture: A culture without foreign or undesired life forms. An axenic culture may include the purposeful cocultivation of different types of cells, tissues or organisms.

Callus: An unorganized, proliferative mass of differentiated plant cells; a wound response.

Cell culture: Term used to denote the maintenance or cultivation of cells *in vitro* including the culture of single cells. In cell cultures, the cells are no longer organized into tissues.

Cell generation time: The interval between consecutive divisions of a cell. This interval can best be determined, at present, with the aid of cinephotomicrography. This term is not synonymous with "population doubling time".

Cell hydridization: The fusion of two or more dissimilar cells leading to the formation of a synkaryon.

Cell line: A cell line arises from a primary culture at the time of the first successful subculture. The term "cell line" implies that cultures from it consist of lineages of cells originally present in the primary culture. The terms finite or continuous are used as prefixes if the status of the culture is known. If not, the term line will suffice. The term "continuous line" replaces the term "established line". In any published description of a culture, one must make every attempt to publish the characterization or history of the culture. If such has already been published, a reference to the original publication must be made. In obtaining a culture, as originally named and described, must be maintained and any deviations in cultivation from the original must be reported in any publication.

Cell strain: A cell strain is derived either from a primary culture or a cell line by the selection or cloning of cells having specific properties or markers. In describing a cell strain, its specific features must be defined. The terms finite or continuous are to be used as prefixes if the status of the culture is known. If not, the term strain will suffice. In any published description of a cell strain, one must make every attempt to publish the characterization or history of the strain. If such has already been published, a reference to the original publication must be made. In obtaining a culture from another laboratory, the proper designation of the culture, as originally named and described, must be maintained and any deviations in cultivation from the original must be reported in any publication.

Chemically defined medium: A nutritive solution for culturing cells in which each component is specifiable and ideally, is of known chemical structure.

Clonal propagation: Asexual reproduction of plants that are considered to be genetically uniform and originated from a single individual or explant.

Clone: In animal cell culture terminology a population of cells derived from a single cell by mitoses. A clone is not necessarily homogeneous and , therefore, the terms clone and cloned do not indicate homogeneity in a cell population, genetic or otherwise. In plant culture terminology, the term may refer to a culture derived as above or it may refer to a group of plants propagated only be vegetative and asexual means, all members of which have been derived by repeated propagation from a single individual.

Cloning efficiency: The percentage of cells plated (seeded, inoculated) that form a clone. One must be certain that the colonies formed arose from single cells in order to properly use this term. (See Colony forming efficiency)

Colony forming efficiency: The percentage of cells plated (seeded, inoculated) that form a colony.

Complementation: The ability of two different genetic defects to compensate for one another.

Contact inhibition of locomotion: A phenomenon characterizing certain cells in which two cells meet, locomotory activity diminishes, and the forward motion of one cell over the surface of the other is stopped.

Continuous cell culture: A culture which is apparently capable of an unlimited number of population doublings; often referred to an as immortal cell culture. Such cells may or may not express the characteristics of *in vitro* neoplastic or malignant transformation. (See also Immortalization)

Crisis: A stage of the *in vitro* transformation of cells. It is characterized by reduced proliferation of the culture, abnormal mitotic figures, detachment of cells from the culture substrate, and the formation of multinucleated or giant cells. During this massive cultural degeneration, a small number of colonies usually, but not always, survive and give rise to a culture with an apparent unlimited *in vitro* lifespan. This process was first described in human cells following infection with an oncogenic virus (SV40). See also Cell line, *In vitro* transformation and *In vitro* senescence.

Cryopreservation: Ultra-low temperature storage of cells, tissues, embryos or seeds. This storage is usually carried out using temperatures below -100°C.

Cumulative population doublings: See Population doubling level.

Cybrid: The viable cell resulting from the fusion of a cytoplast with a whole cell, thus creating a cytoplasmic hybrid.

Cytoplast: The intact cytoplasm remaining following the enucleation of a cell.

Cytoplasmic hybrid: Synonymous with "cybrid"

Cytoplasmic inheritance: Inheritance attributable to extranuclear genes; for example genes in cytoplasmic organelles such as mitochondria or chloroplasts, or in plasmids, etc.

Density-dependent inhibition of growth: Mitotic inhibition correlated with increased cell density.

Differentiated: Cells that maintain, in culture, all or much of the specialized structure and function typical of the cell type *in vivo*.

Diploid: The state of the cell in which all chromosomes, except sex chromosomes, are two in number and are structurally identical with those of the species from which the culture was derived. Where there is a Commission Report available, the experimenter should adhere to the convention for reporting the karyotype of the donor. Commission Reports have been published for mouse[1], human[2], and rat[3]. In defining a diploid culture, one should present a graph depicting the chromosome number distribution leading to the modal number determination along with representative karyotypes.

[1] Committee on Standardized Genetic Nomenclature of Mice. Standard karyotype of the mouse, *Mus musculus*. *J. Hered. 63*, 69-72 (1972)

[2] Paris Conference (1971), Supplement (1975). Standardization in Human cytogenetics. *Birth Defects: Original Article Series, XI*, 9, 1975. The National Foundation, New York (Reprinted in *Cytogenet. Cell Genet., 15, 201-238*, 1975.

[3] Committee for a Standardized Karyotype of *Rattus norvegicus*. Standard karyotype of the Norway rat, *Rattus norvegicus*., *Cytogenet. Cell Genet. 12*, 199-205, 1973

Electroporation: Creation , by means of an electrical current, of transient pores in the plasmalemma usually for the purpose of introducing exogenous material, especially DNA, from the medium.

Embryo culture: *In vitro* development or maintenance of isolated mature or immature embryos.

Embryogenesis: The process of embryo initiation and development.

Endocrine cell: In animals, a cell which produces hormones, growth factors or other signaling substances for which target cells, expressing the corresponding receptors, are located at a distance. (See also Autocrine and Paracrine

Epigenetic event: Any change in a phenotype which does not result from an alteration in DNA sequence. This change may be stable and heritable and includes alteration in DNA methylation, transcriptional activation, translational control and posttranslational modifications

Epigenetic variation: Phenotypic variability which has a nongenetic basis.

Epithelial-like: Resembling or characteristic of, having the form or appearance of epithelial cells. In order to define a cell as an epithelial cell, it must possess characteristics typical of epithelial cells. Often one can be certain of the histologic origin and/or function of the cells placed into culture and, under these conditions, one can be reasonably confident in designating the cells as epithelial. It is incumbent upon the individual reporting on such cells to use as many parameters as possible in assigning this term to a culture. Until such time as a rigorous definition is possible, it would be most correct to use the term "epithelial-like".

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Euploid: The situation which exists when the nucleus of a cell contains exact multiples of the haploid number of chromosomes.

Explant: Tissue taken from its original site and transferred to an artificial medium for growth or maintenance.

Explant culture: The maintenance or growth of an explant in culture.

Feeder layer: A layer of cells (usually lethally irradiated for animal cell culture) upon which are cultured a fastidious cell type. (See also Nurse culture)

Fibroblast-like: Resembling or characteristic of, having the form or appearance of fibroblast cells. In order to define a cell as a fibroblast cell, it must possess characteristics typical of fibroblast cells. Often one can be certain of the histologic origin and/or function of the cells placed into culture and, under these conditions, one can be reasonably confident in designating the cells as fibroblast. It is incumbent upon the individual reporting on such cells to use as many parameters as possible in assigning this term to a culture. Until such time as a rigorous definition is possible, it would be most correct to use the term "fibroblast-like."

Finite cell culture: A culture which is capable of only a limited number of population doubling after which the culture ceases proliferation. (See *In vitro* senescence)

Friability: A term indicating the tendency for plant cells to separate from one another.

Gametoclonal variation: Variation in phenotype, either genetic or epigenetic in origin, expressed by gametoclones.

Gametoclone: Plants regenerated from cell cultures derived from meiospores, gametes or gametophytes.

Habituation: The acquired ability of a population of cells to grow and divide independently of exogenously supplied growth regulators.

Heterokaryon: A cell possessing two or more genetically different nuclei in a common cytoplasm, usually derived as a result of cell-to-cell fusion.

Heteroploid: The term given to a cell culture when the cells comprising the culture possess nuclei containing chromosome numbers other than the diploid number.This is a term used only to describe a culture and is not used to describe individual cells. Thus, a heteroploid culture would be one which contains aneuploid cells.

Histiotypic: The *in vitro* resemblance of cells in culture to a tissue in form or function or both. For example, a suspension of fibroblast-like cells may secrete a glycosaminoglycan-collagen matrix and the result is a structure resembling fibrous connective tissue, which is, therefore, histiotypic. This term is not meant to be used along with the word "culture". Thus, a tissue culture system demonstrating form and function typical of cells *in vivo* would be said to be histiotypic.

Homokaryon: A cell possessing two or more genetically identical nuclei in a common cytoplasm, derived as a result of cell-to-cell fusion.

Hybrid cell: The term used to describe the mononucleate cell which results from the fusion of two different cells, leading to a formation of a synkaryon.

Hybridoma: The cell which results form the fusion of an antibody producing tumor cell (myeloma) and an antigenically-stimulated normal plasma cell. Such cells are constructed because they produce a single antibody directed against the antigen epitope which stimulated the plasma cell. This antibody is referred to as a monoclonal antibody.

Immortalization: The attainment by a finite cell culture, whether by perturbation or intrinsically , of the attributes of a continuous cell line. An immortalized cell is not necessarily one which is neoplastically or malignantly transformed.

Immortal cell culture: See Continuous cell culture.

Induction: Initiation of a structure, organ or process *in vitro*.

***In vitro* neoplastic transformation:** The acquisition, by cultured cells, of the property to form neoplasms, benign or malignant, when inoculated into animals. Many transformed cell populations which arise *in vitro* intrinsically or through deliberate manipulation by the investigator, produce only benign tumors which show no local invasion or metastasis following animal inoculation. If there is supporting evidence, the term "*in vitro* malignant neoplastic transformation" or "*in vitro* malignant transformation" can be used to indicate than an injected cell line does, indeed, invade or metastasize.

***In vitro* propagation:** Propagation of plants in a controlled, artificial environment, using plastic or glass culture vessels, aseptic techniques and a defined growing medium.

***In vitro* senescence:** In vertebrate cell cultures, the property attributable to finite cell cultures; namely, their inability to grow beyond a finite number of population doublings. Neither invertebrate nor plant cell cultures exhibit this property.

***In vitro* transformation:** A heritable change, occurring in cells in culture, either intrinsically or from treatment with chemical carcinogens, oncogenic viruses, irradiation, transfection with oncogenes, etc. and leading to the acquisition of altered morphological, antigenic, neoplastic, proliferative or other properties. This expression is distinguished from "*in vitro* neoplastic transformation" in that the alterations occurring in the cell population may not always include the ability of the cells to produce tumors in appropriate hosts. The type of transformation should always be specified in any description.

Juvenile: A phase in the sexual cycle of a plant characterized by differences in a appearance from the adult and which lacks the ability to respond to flower-inducing stimuli,

Karyoplast: A cell nucleus, obtained from the cell by enucleation, surrounded by a narrow rim of cytoplasm and a plasma membrane.

Line: See Cell line.

Liposome: A closed lipid vesicle surrounding an aqueous interior; may be used to encapsulate exogenous materials for ultimate delivery of these into cells by fusion with the cell.

Meristem culture: *In vitro* culture of a generally shiny, dome-like structure measuring less than 0.1 mm in length when excised, most often excised from the shoot apex.

Microcell: A cell fragment, containing one to a few chromosomes, which is formed by the enucleation or disruption of a micronucleated cell.

Micronucleated cell: A cell which has been mitotically arrested and in which small groups of chromosomes function as foci for the reassembly of the nuclear membrane thus forming miconuclei the maximum of which could be equal to the total number of chromosomes.

Micropropagation: *In vitro* clonal propagation of plants from shoot tips or nodal explants, usually with an accelerated proliferation of shoots during subcultures.

Morphogenesis: (a) The evolution of a structure from an undifferentiated to a differentiated state. (b) The process of growth and development of differentiated structures.

Mutant: A phenotypic variant resulting from a changed or new gene.

Nurse culture: In the culture of plant cells, the growth of a cell or cells on a contiguous culture of different origin which in turn is in contact with the tissue culture medium. The cultured cell or tissue may be separated from the feeder layer by a porous matrix such as filter paper or membranous filters. (See also Feeder layer)

Organ culture: The maintenance or growth of organ primordia or the whole or parts of an organ *in vitro* in a way that may allow differentiation and preservation of the architecture and/or function.

Organized: Arranged into definite structures.

Organogenesis: The evolution, from dissociated cells, of a structure which shows natural organ form or function or both.

Organotypic: Resembling an organ *in vivo* in three dimensional form or function or both. For example, a rudimentary organ in culture may differentiate in an organotypic manner, or a population of dispersed cells may become rearranged into an organotypic structure and may also function in an organotypic manner. This term is not meant to be used along with the word "culture" but is meant to be used as a descriptive term.

Paracrine: In animals, a cell which produces hormones, growth factors or other signaling substances for which the target cells, expressing the corresponding receptors, are located in its vicinity, or in a group adjacent to it. (See also Autocrine and Endocrine)

Passage: The transfer or transplantation of cell, with or without dilution, from one culture vessel to another. It is understood that any time cells are transferred from one vessel to another, a certain portion of the cells may be lost and, therefore, dilution of cells, whether deliberate or not, may occur. This term is synonymous with the term "subculture".

Passage number: The number of times the cells in the culture have been subcultured or passaged. In descriptions of this process, the ration or dilution of the cells should be stated so that the relative cultural age can be ascertained.

Pathogen free: Free from specific organisms based on specific tests for the designated organisms.

Plant tissue culture: The growth or maintenance of plant cells, tissues, organs or whole plants *in vitro*.

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Plating efficiency: This is a term which originally encompasses the terms "Attachment ("Seeding") efficiency", Cloning efficiency", and "colony forming efficiency" and which is now better described by using one or more of them in its place as the term "plating" is not sufficiently descriptive of what is taking place. (See Attachment, Cloning, Colony forming efficiency)

Population density: The number of cells per unit area or volume of a culture vessel. Also the number of cells per unit volume of medium in a suspension culture.

Population doubling level: The total number of population doubling of a cell line or strain since its initiation *in vitro*. A formula to use for the calculation of "population doublings" in a single passage is:

Number of population doublings=$Log_{10}(N/N_0)$ X 3.33

where: N=number of cells in the growth vessel at the end of a period of growth. N_0=number of cells plated in the growth vessel. It is best to use the number of viable cells or number of attached cells for this determination. Population doubling level is synonymous with "cumulative population doublings."

Population doubling time: The interval, calculated during the logarithmic phase of growth in which, for example, 1.0 X 10^6 cells increase to 2.0 X 10^6 cells. This term is not synonymous with "cumulative population doublings".

Primary culture: A culture started from cells, tissues or organs taken directly from organisms. A primary culture may be regarded as such until it is successfully subcultured for the first time. It then becomes a "cell line".

Protoplast: A cell from which the entire cell wall has been removed. This term is used to describe such plant, bacterial or fungal cells. (See Spheroplast for comparison.)

Protoplast fusion: Technique in which protoplasts are fused into a single cell.

Pseudodiploid: This describes the condition where the number of chromosomes in a cell is diploid but, as a result of chromosomal rearrangements, the karyotype is abnormal and linkage relationships may be disrupted.

Recon: The viable cell reconstructed by the fusion of a karyoplast with a cytoplast.

Reconstituted cell: Synonymous with "Recon".

Reculture: The process by which a cell monolayer or a plant explant is transferred, without subdivision, into fresh medium. (See also Passage)

Regeneration: In plant cultures, a morphogenetic response to a stimulus that results in the production of organs, embryos or whole plants.

Saturation density: The maximum cell number attainable, under specified culture conditions, in a culture vessel. This term is usually expressed as the number of cells per square centimeter in a monolayer culture or the number of cells per cubic centimeter in a suspension culture.

Seeding efficiency: (See Attachment efficiency)

Senescence: (See *In vitro* senescence)

Shoot apical meristem: Undifferentiated tissue, located within the shoot tip, generally appearing as a shiny dome-like structure distal to the youngest leaf primordium and measuring less than 0.1 mm in length when excised.

Shoot tip (apex) culture: A structure consisting of the shoot apical meristem plus one to several primordial leaves, usually measuring from 0.1-1.0 mm in length; in instances where more mature leaves are included, the structure can measure up to several centimeters in length.

Somaclonal variation: Phenotypic variation, either genetic or epigenetic in origin, displayed among somaclones.

Somaclone: Plants derived from any form of cell culture involving the use of somatic plant cells.

Somatic cell hybrid: The cell or plant resulting from the fusion of animal cells or plant protoplasts respectively, derived from somatic cells which differ genetically.

Somatic cell genetics: The study of genetic phenomena of somatic cells. The cells under study are most often cells grown in culture.

Somatic cell hybridization: The *in vitro* fusion of animal cells or plant protoplasts derived from somatic cells which differ genetically.

Somatic embryogenesis: In plant culture, the process of embryo initiation and development from vegetative or nongametic cells.

Spheroplast: A cell from which most of the cell wall has been removed. (See Protoplasts for comparison)

Stage I: A step in *in vitro* propagation characterized by the establishment of an aseptic tissue culture of a plant.

Stage II: A step in *in vitro* plant propagation characterized by the rapid numerical increase of organs other structures

Stage III: A step in *in vitro* plant propagation characterized by preparation of propagules for successful transfer to soil, a process involving rooting of shoot cuttings, hardening of plants and initiating the change from the heterotrophic to the autotrophic state.

Stage IV: A step in *in vitro* plant propagation characterized by the establishment in soil of a tissue culture derived plant, either after undergoing a Stage III pretransplant treatment or, in certain species, after the direct transfer of plants form Stage II into soil.

Sterile: (a) Without Life. (b) Inability of an organism to produce functional gametes.

Strain: See Cell strain.

Subculture: See Passage. With plant cultures, this is the process by which the tissue or explant is first subdivided, then transferred into fresh culture medium.

Substrain: A substrain can be derived from a strain by isolation a single cell or groups of cells having properties or markers not shared by all cells of the parent strain.

Surface or substrate dependent cells or cultures: See Anchorage dependent cells.

Suspension culture: A type of culture in which cells, or aggregates of cells, multiply while suspended in liquid medium.

Synkaryon: A hybrid cell which results from the fusion of the nuclei it carries.

Tissue culture: The maintenance or growth of tissues, *in vitro*, in a way that may allow differentiation and preservation of their architecture and/or function.

Totipotency: A cell characteristic in which the potential for forming all the cell types in the adult organism is retained.

Transfection: The transfer, for the purposed of genomic integration, of naked, foreign DNA into cells in culture. The traditional microbiological usage of this term implied that the DNA being transferred was derived from a virus . The definition as stated here is that which is in use to describe the general transfer of DNA irrespective of its source. (See also Transformation)

Transformation: In plant cell culture, the introduction and stable genomic integration of foreign DNA into a plant cell by any means, resulting in a genetic modification. This definition is the traditional microbiological definition. For animal cell culture, see *In vitro* transformation, *In vitro* neoplastic transformation and Transfection.

Type I callus: A type of adventive embryogenesis found with gramineous monocots, which has been induced on an explant where the somatic embryos are arrested at the coleptilar or scutellar stage of embryogeny. The embryos are often fused together especially at the coleorhizal end of the embryo axis. This tissue can be subcultured and maintain this morphology.

Type II callus: A type of adventive embryogenesis found with gramineous monocots, which has been induced on an explant where the somatic embryos are arrested at the globular stage of embryogeny. The globular embryos often arise individually from a common base. The tissue can be subcultured and maintain this morphology.

Variant: A culture exhibiting a stable phenotypic change whether genetic or epigenetic in origin.

Vegetative propagation: Reproduction of plants using a nonsexual process involving the culture of plant parts such as stem and leaf cuttings.

Undifferentiated: With plant cells, existing in a state of cell development characterized by isodiametric cell shape, very little or no vacuole, and a large nucleus, and exemplified by cells comprising an apical meristem or embryo. With animal cells, this is the state wherein the cell in culture lacks the specialized structure and/or function of the cell type *in vivo*.

Virus-free: Free from specified viruses based on tests designed to detect the presence of the organisms in question.

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Stem Cell Glossary

Adult stem cell: See somatic stem cell.

Astrocyte: A type of supporting (glial) cell found in the nervous system.

Blastocoel: The fluid-filled cavity inside the blastocyst, an early, preimplantation stage of the developing embryo.

Blastocyst: A preimplantation embryo of about 150 cells produced by cell division following fertilization. The blastocyst is a sphere made up of an outer layer of cells (the trophoblast), a fluid-filled cavity (the blastocoel), and a cluster of cells on the interior (the inner cell mass).

Bone marrow stromal cells: A population of cells found in bone marrow that are different from blood cells.

Bone marrow stromal stem cells (skeletal stem cells): A multipotent subset of bone marrow stromal cells able to form bone, cartilage, stromal cells that support blood formation, fat, and fibous tissue.

Cell-based therapies: Treatment in which stem cells are induced to differentiate into the specific cell type required to rpair damaged or destroyed cells or tissues.

Cell culture: Growth of cells in vitro in an artificial medium for research or medical treatment.

Cell division: Method by which a single cell divides to create two cells. There are two main types of cell division depending on what happens to the chromosomes: mitosis and meiosis.

Chromosome: A structure consisting of DNA and regulatory proteins found in the nucleus of the cell. The DNA in the nucleus is usually divided up among several chromosomes. The number of chromosomes in the nucleus varies depending on the species of the organism. Humans have 46 chromosomes.

Clone: (v) To generate identical copies of a region of a DNA molecule or to generate genetically identical copies of a cell, or organism; (n) The identical molecule, cell, or organism that results from the cloning process.
1. In reference to DNA: To clone a gene, one finds the region where the gene resides on the DNA and copies that section of the DNA using laboratory techniques.
2. In reference to cells grown in a tissue culture dish:a clone is a line of cells that is genetically identical to the originating cell. This cloned line is produced by cell division (mitosis) of the original cell.
3. In reference to organisms: Many natural clones are produced by plants and (mostly invertebrate) animals. The term clone may also be used to refer to an animal produced by somatic cell nuclear transfer (SCNT) or parthenogenesis.

Cloning: See Clone.

Cord blood stem cells: See Umbilical cord blood stem cells.

Culture medium: The liquid that covers cells in a culture dish and contains nutrients to nourish and support the cells. Culture medium may also include growth factors added to produce desired changes in the cells.

Differentiation: The process whereby an unspecialized embryonic cell acquires the features of a specialized cell such as a heart, liver, or muscle cell. Differentiation is controlled by the interaction of a cell's genes with the physical and chemical conditions outside the cell, usually through signaling pathways involving proteins embedded in the cell surface.

Directed differentiation: The manipulation of stem cell culture conditions to induce differentiation into a particular cell type.

DNA: Deoxyribonucleic acid, a chemical found primarily in the nucleus of cells. DNA carries the instructions or blueprint for making all the structures and materials the body needs to function. DNA consists of both genes and non-gene DNA in between the genes.

Ectoderm: The outermost germ layer of cells derived from the inner cell mass of the blastocyst; gives rise to the nervous system, sensory organs, skin, and related structures.

Embryo: In humans, the developing organism from the time of fertilization until the end of the eighth week of gestation, when it is called a fetus.

Embryoid bodies: Rounded collections of cells that arise when embryonic stem cells are cultured in suspension. Embryoid bodies contain cell types derived from all 3 germ layers.

Embryonic germ cells: Pluripotent stem cells that are derived from early germ cells (those that would become sperm and eggs). Embryonic germ cells (EG cells) are thought to have properties similar to embryonic stem cells.

Embryonic stem cells: Primitive (undifferentiated) cells that are derived from preimplantation-stage embryos, are capable of dividing without differentiating for a prolonged period in culture, and are known to develop into cells and tissues of the three primary germ layers.

Embryonic stem cell line: Embryonic stem cells, which have been cultured under in vitro conditions that allow proliferation without differentiation for months to years.

Endoderm: The innermost layer of the cells derived from the inner cell mass of the blastocyst; it gives rise to lungs, other respiratory structures, and digestive organs, or generally "the gut."

Enucleated: Having had its nucleus removed.

Epigenetic: Having to do with the process by which regulatory proteins can turn genes on or off in a way that can be passed on during cell division.

Feeder layer: Cells used in co-culture to maintain pluripotent stem cells. For human embryonic stem cell culture, typical feeder layers include mouse embryonic fibroblasts (MEFs) or human embryonic fibroblasts that have been treated to prevent them from dividing.

Fertilization: The joining of the male gamete (sperm) and the female gamete (egg).

Fetus: In humans, the developing human from approximately eight weeks after conception until the time of its birth.

Gamete: An egg (in the female) or sperm (in the male) cell. See also Somatic cell.

Gastrulation: The process in which cells proliferate and migrate within the embryo to transform the inner cell mass of the blastocyst stage into an embryo containing all three primary germ layers.

Gene: A functional unit of heredity that is a segment of DNA found on chromosomes in the nucleus of a cell. Genes direct the formation of an enzyme or other protein.

Germ layers: After the blastocyst stage of embryonic development, the inner cell mass of the blastocyst goes through gastrulation, a period when the inner cell mass becomes organized into three distinct cell layers, called germ layers. The three layers are the ectoderm, the mesoderm, and the endoderm.

Hematopoietic stem cell: A stem cell that gives rise to all red and white blood cells and platelets.

Human embryonic stem cell (hESC): A type of pluripotent stem cells derived from early stage human embryos, up to and including the blastocyst stage, that are capable of dividing without differentiating for a prolonged period in culture, and are known to develop into cells and tissues of the three primary germ layers.

Induced pluripotent stem cell (iPSC): A type of pluripotent stem cell, similar to an embryonic stem cell, formed by the introduction of certain embryonic genes into a somatic cell.

In vitro: Latin for "in glass"; in a laboratory dish or test tube; an artificial environment.

In vitro fertilization: A technique that unites the egg and sperm in a laboratory instead of inside the female body.

Inner cell mass (ICM): The cluster of cells inside the blastocyst. These cells give rise to the embryo and ultimately the fetus. The ICM may be used to generate embryonic stem cells.

Long-term self-renewal: The ability of stem cells to replicate themselves by dividing into the same non-specialized cell type over long periods (many months to years) depending on the specific type of stem cell.

Mesenchymal stem cells: A term that is currently used to define non-blood adult stem cells from a variety of tissues, although it is not clear that mesenchymal stem cells from different tissues are the same.

Meiosis: The type of cell division a diploid germ cell undergoes to produce gametes (sperm or eggs) that will carry half the normal chromosome number. This is to ensure that when fertilization occurs, the fertilized egg will carry the normal number of chromosomes rather than causing aneuploidy (an abnormal number of chromosomes).

Mesoderm: Middle layer of a group of cells derived from the inner cell mass of the blastocyst; it gives rise to bone, muscle, connective tissue, kidneys, and related structures.

Microenvironment: The molecules and compounds such as nutrients and growth factors in the fluid surrounding a cell in an organism or in the laboratory, which play an important role in determining the characteristics of the cell.

Mitosis: The type of cell division that allows a population of cells to increase its numbers or to maintain its numbers. The number of chromosomes remains the same in this type of cell division.

Multipotent: Having the ability to develop into more than one cell type of the body. See also pluripotent and totipotent.

Neural stem cell: A stem cell found in adult neural tissue that can give rise to neurons and glial (supporting) cells. Examples of glial cells include astrocytes and oligodendrocytes.

Neurons: Nerve cells, the principal functional units of the nervous system. A neuron consists of a cell body and its processes—an axon and one or more dendrites. Neurons transmit information to other neurons or cells by releasing neurotransmitters at synapses.

(Continued on page 27)

Oligodendrocyte: A supporting cell that provides insulation to nerve cells by forming a myelin sheath (a fatty layer) around axons.

Parthenogenesis: The artificial activation of an egg in the absence of a sperm; the egg begins to divide as if it has been fertilized.

Passage: In cell culture, the process in which cells are disassociated, washed, and seeded into new culture vessels after a round of cell growth and proliferation. The number of passages a line of cultured cells has gone through is an indication of its age and expected stability.

Pluripotent: The state of a single cell that is capable of differentiating into all tissues of an organism, but not alone capable of sustaining full organismal development. Scientists demonstrate pluripotency by providing evidence of stable developmental potential, even after prolonged culture, to form derivatives of all three embryonic teratoma after injection into an immunosuppressed mouse.

Polar Body: A polar body is a structure produced when an early egg cell, or oogonium, undergoes meiosis. In the first meiosis, the oogonium divides its chromosomes evenly between the two cells but divides its cytoplasm unequally. One cell retains most of the cytoplasm, while the other gets almost none, leaving it very small. This smaller cell is called the first polar body. The first polar body usually degenerates. The ovum, or larger cell, then divides again, producing a second polar body with half the amount of chromosomes but almost no cytoplasm. The second polar body splits off and remains adjacent to the large cell, or oocyte, until it (the second polar body) degenerates. Only one large functional oocyte, or egg, is produced at the end of meiosis.

Preimplantation: With regard to an embryo, preimplantation means that the embryo has not yet implanted in the wall of the uterus Human embryonic stem cells are derived from preimplantation-stage embryos fertilized outside a woman's body (in vitro).

Proliferation: Expansion of the number of cells by the continuous division of single cells into two identical daughter cells.

Regenerative medicine: A field of medicine devoted to treatments in which stem cells are induced to differentiate into the specific cell type required to repair damaged or destroyed cell populations or tissues. (See also cell-based therapies).

Reproductive cloning: The process of using somatic cell nuclear transfer (SCNT) to produce a normal, full grown organism (e.g., animal) genetically identical to the organism (animal) that donated the somatic cell nucleus. In mammals, this would require implanting the resulting embryo in a uterus where it would undergo normal development to become a live independent being. The first mammal to be created by reproductive cloning was Dolly the sheep, born at the Roslin Institute in Scotland in 1996. See also Somatic cell nuclear transfer (SCNT).

Sigals: Internal and external factors that control changes in cell structure and function. They can be chemical or physical in nature.

Somatic cell: Any body cell other than gametes (egg or sperm); sometimes referred to as "adult" cells. See also Gamete.

Somatic cell nuclear transfer (SCNT): A technique that combines an enucleated egg and the nucleus of a somatic cell to make an embryo. SCNT can be used for therapeutic or reproductive purposes, but the initial stage that combines an enucleated egg and a somatic cell nucleus is the same. See also therapeutic cloning and reproductive cloning.

Somatic (adult) stem cells: A relatively rare undifferentiated cell found in many organs and differentiated tissues with a limited capacity for both self renewal (in the laboratory) and differentiation. Such cells vary in their differentiation capacity, but it is usually limited to cell typesin the organ of origin. This is an active area of investigation.

Stem cells: Cells with the ability to divide for indefinite periods in culture and to give rise to specialized cells.

Stromal cells: Connective tissue cells found in virtually every organ. In bone marrow, stromal cells support blood formation.

Subculturing: Transferring cultured cells, with or without dilution, from one culture vessel to another.

Surface markers: Proteins on the outside surface of a cell that are unique to certain cell types and that can be visualized using antibodies or other detection methods.

Telomere: The end of a chromosome, associated with a characteristic DNA sequence that is replicated in a special way. A telomere counteracts the tendency of the chromosome to shorten with each round of replication.

Teratoma: A multi-layered benign tumor that grows from pluripotent cells injected into mice with a dysfunctional immune system. Scientists test whether they have established a human embryonic stem cell (hESC) line by injecting putative stem cells into such mice and verifying that the resulting teratomas contain cells derived from all three embryonic germ layers.

Tetraploid complementation assay: An assay that can be used to test a stem cell's potency. Scientists studying mouse chimeras (mixing cells of two different animals) noted that fusing two 8-cell embryos produces cells with 4 sets of chromosomes (tetraploid cells) that are biased toward developing into extra-embryonic tissues such as the placenta. The tetraploid cells do not generate the embryo itself; the embryo proper develops from injected diploid stem cells. This tendency has been exploited to test the potency of a stem cell. Scientists begin with a tetraploid embryo. Next, they inject the stem cells to be tested. If the injected cells are pluripotent, then an embryo develops. If no embryo develops, or if the resultant embryo cannot survive until birth, the scientists conclude that the cells were not truly pluripotent.

Therapeutic cloning: The process of using somatic cell nuclear transfer (SCNT) to produce cells that exactly match a patient. By combining a patient's somatic cell nucleus and an enucleated egg, a scientist may harvest embryonic stem cells from the resulting embryo that can be used to generate tissues that match a patient's body. This means the tissues created are unlikely to be rejected by the patient's immune system. See also Somatic cell nuclear transfer (SCNT).

Totipotent: Having the ability to give rise to all the cell types of the body plus all of the cell types that make up the extraembryonic tissues such as the placenta. (See also Pluripotent and Multipotent).

Transdifferentiation: The process by which stem cells from one tissue differentiate into cells of another tissue.

Trophectoderm: The outer layer of the preimplantation embryo in mice. It contains trophoblast cells.

Trophoblast: The outer cell layer of the blastocyst. It is responsible for implantation and develops into the extraembryonic tissues, including the placenta, and controls the exchange of oxygen and metabolites between mother and embryo.

Umbilical cord blood stem cells: Stem cells collected from the umbilical cord at birth that can produce all of the blood cells in the body (hematopoietic). Cord blood is currently used to treat patients who have undergone chemotherapy to destroy their bone marrow due to cancer or other blood-related disorders.

Undifferentiated: A cell that has not yet developed into a specialized cell type.

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Note: The following abbreviations appear throughout the Tissue Tables:

BALB.....Bagg Albine (obtained from H.J Bagg in 1923)
BSA.....Bovine Serum Albumin
BSS ..... Balanced Salt Solution
CF ..... Calcium Free
CLSPA.....Worthington Purified Collagenase
CMF ..... Calcium Magnesium Free
DMEM .....Dulbecco's Modified Eagle Medium
EBSS ..... Earle's Balanced Salt Solution
FBS .....Fetal Bovine Serum
HBSS.....Hank's Balanced Salt Solution
HECG.....Human Embryonic Germ Cells
HESC .....Human Embryonic Stem Cells
HIS .....Worthington Hepatocyte Isolation System
ISPC ..... Induced Pluripotent Stem Cell
L-15..... Liebowitz L-15 Medium
MEM .....Minimum Essential Medium
MES .....Mouse Embryonic Stem Cells
MSC .....Mesenchymal Stem Cell
NCIS .....Worthington Neonatal Cardiomyocyte Isolation System
PBS ..... Phosphate Buffered Saline
PDS ..... Worthington Papain Dissociation System
RPMI.....Roswell Park Memorial Institute (Moore, *et al, Tissue Culture Association Manual, 3*, 503-508, 1976)
SD ..... Sprague-Dawley
SW .....Swiss Webster

TISSUE TABLES

Adipose/Fat

Adipose/Fat

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Bear	Bear, *Ursus arctos*	Adipocytes	Collagenase Type 1: 0.1%	HBSS	Gehring, J., Rigano, K., Evans, H., Nelson, O., Robbins, C. and Jansen, H.: A Protocol for the Isolation and Cultivation of Brown Bear (*Ursus arctos)* Adipocytes., *Cytotechnology 68*, 2177-91, 2016 (*11669*)
Bovine	Bovine	Adipocytes	Collagenase Type 1: 40 u/ml	Krebs-Ringer bicarbonate	Yang, Y., Baldwin, R.: Preparation and Metabolism of Isolated Cells from Bovine Adipose Tissue, *J Dairy Sci 56*, 350, 1973 (*10340*)
Canine	Canine	Renal adipose derived cells	Collagenase Type 1: 0.3%	DMEM	Basu, J., Genheimer, C., Sangha, N., Quinlan, S., Guthrie, K., Kelley, R., Ilagan, R., Jain, D., Bertram, T. and Ludlow, J.: Organ Specific Regenerative Markers in Peri-Organ Adipose: Kidney., *Lipids Health Dis 10*, 171, 2011 (*10665*)
	Canine, 20-25 kg	Adipose stem cells	Collagenase: see reference	Media-199	Fischer, L., McIlhenny, S., Tulenko, T., Golesorkhi, N., Zhang, P., Larson, R., Lombardi, J., Shapiro, I. and DiMuzio, P.: Endothelial Differentiation of Adipose- Derived Stem Cells: Effects of Endothelial Cell Growth Supplement and Shear Force., *J Surg Res 152*, 157, 2009 (*10599*)
	Canine	White fat	Collagenase: 0.05%	Kreb's Ringer bicarbonate buffer	DiGirolamo, M., Mendlinger, S., and Fertig, J.W.: A Simple Method to Determine Fat Cell Size and Number in Four Mammalian Species, *Am J Physiol 221*, 850, 1971 (*284*)
Equine	Equine	Adipose derived stem cells	Collagenase Type 1: 0.1%	PBS	Vidal, M., Robinson, S., Lopez, M., Paulsen, D., Borkhsenious, O., Johnson, J., Moore, R. and Gimble, J.: Comparison of Chondrogenic Potential in Equine Mesenchymal Stromal Cells Derived from Adipose Tissue and Bone Marrow., *Vet Surg 37*, 713, 2008 (*10561*)
	Equine, 1-5 year	Adipose derived stem cells	Collagenase Type 1: 0.1%	PBS	Vidal, M., Kilroy, G., Lopez, M., Johnson, J., Moore, R. and Gimble, J.:Characterization of Equine Adipose Tissue-Derived Stromal Cells: Adipogenic and Osteogenic Capacity and Comparison with Bone Marrow-Derived Mesenchymal Stromal Cells., *Vet Surg 36*, 613, 2007 (*10533*)
Fish	Fish, Atlantic salmon	Preadipocytes	Collagenase Type 1: 0.1%	HBSS	Todorcevic, M., Vegusdal, A., Gjoen, T., Sundvold, H., Torstensen, B., Kjaer, M. and Ruyter, B.: Changes in Fatty Acids Metabolism During Differentiation of Atlantic Salmon Preadipocytes; Effects of n-3 and n-9 Fatty Acids., *Biochim Biophys Acta 1781*, 326, 2008 (*10597*)
Gerbil	Gerbil of unknown age (also rat, hamster, rabbit, lamb, guinea- pig)	Brown fat	Collagenase Type 1: 0.10%	Bicarbonate buffer	Nedergaard, J. and Lindberg, O.: The Brown Fat Cell, *Int Rev Cytol 74*, 187, 1982 (*544*)
Guinea-Pig	Guinea-pig, adult (also rat, hamster, gerbil, rabbit, lamb)	Brown fat	Collagenase Type 1: 0.10%	Bicarbonate buffer	Nedergaard, J. and Lindberg, O.: The Brown Fat Cell, *Int Rev Cytol 74*, 187, 1982 (*544*)
Hamster	Hamster, adult (also rat, gerbil, rabbit, lamb, guinea- pig)	Brown fat	Collagenase Type 1: 0.10%	Bicarbonate buffer	Nedergaard, J. and Lindberg, O.: The Brown Fat Cell, *Int Rev Cytol 74*, 187, 1982 (*544*)
	Hamster, 5 week-12 month	White fat	Collagenase: 0.05%	Kreb's Ringer bicarbonate buffer	DiGirolamo, M., Mendlinger, S., and Fertig, J.W.: A Simple Method to Determine Fat Cell Size and Number in Four Mammalian Species, *Am J Physiol 221*, 850, 1971 (*284*)
Human	Human	Adipocytes	Collagenase Type 2: 0.01-0.5%	DMEM	Tsurumachi, N., Akita, D., Kano, K., Matsumoto, T., Toriumi, T., Kazama, T., Oki, Y., Saito-Tamura, Y., Tonogi, M., Shimizu, N. and Honda, M.: Effect of Collagenase Concentration on The Isolation of Small Adipocytes from Human Buccal Fat Pad., *J Oral Sci* , , 2018 (*11588*) Adiposity, *Nature 541*, 81, 2017 (*11494*)
	Human	Stromal	Collagenase Type 2: 0.075%	DMEM	Duscher, D., Maan, Z., Luan, A., Aitzetmuller, M., Brett, E., Atashroo, D., Whittam, A., Hu, M., Walmsley, G., Houschyar, K., Schilling, A., Machens, H., Gurtner, G., Longaker, M. and Wan, D.: Ultrasound-Assisted Liposuction Provides a Source for Functional Adipose-Derived Stromal Cells., *Cytotherapy 19*, 1491-1500, 2017 (*11637*)
	Human	Mesenchymal stromal	Collagenase Type 1: 0.075%	PBS	Lin, Y., Marin-Argany, M., Dick, C., Redhage, K., Blancas-Mejia, L., Bulur, P., Butler, G., Deeds, M., Madden, B., Williams, A., Wall, J., Dietz, A. and Ramirez-Alvarado, M.: Mesenchymal Stromal Cells Protect Human Cardiomyocytes from Amyloid Fibril Damage, *Cytotherapy 19*, 1426-1437, 2017 (*11638*)
	Human	Mesenchymal stem	Collagenase Type 2: 0.2%	DMEM/F-12	Munir, H., Ward, L., Sheriff, L., Kemble, S., Nayar, S., Barone, F., Nash, G. and McGettrick, H.: Adipogenic Differentiation of Mesenchymal Stem Cells Alters Their Immunomodulatory Properties in a Tissue- Specific Manner., *Stem Cells 35*, 1636-1646, 2017 (*11641*)
	Human	Adipose derived endothelial	Collagenase Type 1: 0.1%	DMEM	Szoke, K., Reinisch, A., Ostrup, E., Reinholt, F. and Brinchmann, J.: Autologous Cell Sources in Therapeutic Vasculogenesis: In Vitro and In Vivo Comparison of Endothelial Colony-Forming Cells from Peripheral Blood and Endothelial Cells Isolated from Adipose Tissue., *Cytotherapy 18*, 242-52, 2016 (*11563*)
	Human	Adipose stem	Collagenase Type 1: 0.1%	DMEM/F12	Cheng, N., Hsieh, T., Lai, H. and Young, T.: High Glucose-Induced Reactive Oxygen Species Generation Promotes Stemness in Human Adipose-Derived Stem Cells, *Cytotherapy 18*, 371-83, 2016 (*11571*)
	Human	Mesenchymal stromal	Collagenase Type 4: 0.2%	PBS	Choudhery,M, Badowski, M, Muise, A and Harris, D: Effect of Mild Heat Stress on the Proliferative and Differentiative Ability of Human Mesenchymal Stromal Cells., *Cytotherapy 17*, 359-68, 2015 (*11265*)
	Human	Adipose derived stem cells	Collagenase Type 2: 0.1%	HBSS	Satish, L., Krill-Burger, J., Gallo, P., Etages, S., Liu, F., Philips, B., Ravuri, S., Marra, K., LaFramboise, W., Kathju, S. and Rubin, J.: Expression Analysis of Human Adipose- Derived Stem Cells During In Vitro Differentiation to an Adipocyte Lineage., *BMC Med Genomics 8*, 41, 2015 (*11422*)
	Human, female	Adipose stromal	Collagenase Type 1: 0.075%	DMEM	Kinoshita, K., Kuno, S., Ishimine, H., Aoi, N., Mineda, K., Kato, H., Doi, K., Kanayama, K., Feng, J., Mashiko, T., Kurisaki, A. and Yoshimura, K.: Therapeutic Potential of Adipose-Derived SSEA-3-Positive Muse Cells for Treating Diabetic Skin Ulcers., *Stem Cells Transl Med 4*, 146, 2015 (*11462*)
	Human	Adipocytes	Collagenase Type 1: 0.1%	PBS	Seaman, S., Tannan, S., Cao, Y., Peirce, S. and Lin, K.: Differential Effects of Processing Time and Duration of Collagenase Digestion on Human and Murine Fat Grafts., *Plast Reconstr Surg 136*, 189e- 199e, 2015 (*11510*)

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Adipose/Fat					Adipose/Fat
Species	**Species Detail**	**Cell(s)**	**Enzyme(s)**	**Medium**	**Reference**
Human	Human	Adipose stroma-vascular	Neutral Protease: 2.4 u/ml Collagenase: 250 u/ml	PBS	Esteve, D., Boulet, N., Volat, F., Zakaroff-Girard, A., Ledoux, S., Coupaye, M., Decaunes, P., Belles, C., Gaits-Iacovoni, F., Iacovoni, J., Remaury, A., Castel, B., Ferrara, P., Heymes, C., Lafonta, M. Boloumie, J.: Human White and Brite Adipogenesis is Supported by MSCA1 and is impaired by Immune Cells., *Stem Cells 33*, 1277-91, 2015 (*11654*)
	Human, adult	Adipose derived mesenchymal stem	Collagenase Type 2: 0.1%	see reference	Al-Saqi, S., Saliem, M., Asikainen, S., Quezada, H., Ekblad, A., Hovatta, O., Le Blanc, K., Jonasson, A. and Gotherstrom, C.: Defined Serum-Free Media for In Vitro Expansion of Adipose- Derived Mesenchymal Stem Cells., *Cytotherapy 16*, 915, 2014 (*11046*)
	Human, adult	Adipose derived stem	Collagenase Type 1: 0.15%	DMEM	Koellensperger, E., Bollinger, N., Dexheimer, V., Gramley, F., Germann, G. and Leimer, U.: Choosing the Right Type of Serum for Different Applications of Human Adipose Tissue-Derived Stem Cells: Influence on Proliferation and Differentiation Abilities., *Cytotherapy 16*, 789, 2014 (*11057*)
	Human	Mesenchymal stromal	Collagenase Type 1: 0.1%	PBS	Najar, M, Rodrigues, R, Buyl, K, Branson, S, Vanhaecke, T, Lagneaux, L, Rogiers, V and De Kock, J: Proliferative and Phenotypical Characteristics of Human Adipose Tissue- Derived Stem Cells: Comparison of Ficoll Gradient Centrifugation and Red Blood Cell Lysis Buffer Treatment Purification Methods., *Cytotherapy 16*, 1220-8, 2014 (*11264*)
	Human	Adipose stromal stem	Collagenase animal free: 200 u/ml	DMEM/Hams F-12	Carvalho, P., Gimble, J., Dias, I., Gomes, M. and Reis, R.: Xeno-free Enzymatic Products for the Isolation of Human Adipose-Derived Stromal/Stem Cells., *Tiss Eng 19*, 473-8, 2013 (*10891*)
	Human	Stromal vascular fraction	Collagenase Type 1: 0.075%	PBS	Doi, K., Tanaka, S., Iida, H., Eto, H., Kato, H., Aoi, N., Kuno, S., Hirohi, T. and Yoshimura, K.: Stromal Vascular Fraction Isolated from Lipo-Aspirates Using an Automated Processing System: Bench and Bed Analysis., *J Tissue Eng Regen Med 7*, 864, 2013 (*11052*)
	Human	Adipose-derived stem	Collagenase Type 1: 0.1%	PBS	Cervelli, V., Scioli, M., Gentile, P., Doldo, E., Bonanno, E., Spagnoli, L. and Orlandi, A.: Platelet- Rich Plasma Greatly Potentiates Insulin-Induced Adipogenic Differentiation of Human Adipose-Derived Stem Cells Through a Serine/Threonine Kinase Akt-dependent Mechanism and Promotes Clinical Fat Graft Maintenance., *Stem Cells Transl Med 1*, 206-20, 2012 (*10880*)
	Human	Perivascular stem	Collagenase Type 2: 0.1%	DMEM	James, A., Zara, J., Corselli, M., Askarinam, A., Zhou, A., Hourfar, A., Nguyen, A., Megerdichian, S., Asatrian, G., Pang, S., Stoker, D.,Zhang, X., Wu, B., Ting, K., Peault, B. and Soo, C.: An Abundant Perivascular Source of Stem Cells for Bone Tissue Engineering., *Stem Cells Transl Med 1*, 673, 2012 (*10939*)
	Human	Adipose derived stromal vascular	Collagenase Type 1: 0.1%	PBS	Gentile, P., Orlandi, A., Scioli, M., Di Pasquali, C., Bocchini, I. and Cervelli, V.: Concise Review: Adipose- Derived Stromal Vascular Fraction Cells and Platelet- Rich Plasma: Basic and Clinical Implications for Tissue Engineering Therapies in Regenerative Surgery., *Stem Cells Transl Med 1*, 230-6, 2012 (*10954*)
	Human	Stromal vascular, adipocytes	Collagenase Type 1: 0.1%	DMEM	Gentile, P., Orlandi, A., Scioli, M., Di Pasquali, C., Bocchini, I., Curcio, C., Floris, M., Fiaschetti, V., Floris, R. and Cervell, V.: A Comparative Translational Study: The Combined Use of Enhanced Stromal Vascular Fraction and Platelet-Rich Plasma Improves Fat Grafting Maintenance in Breast Reconstruction., *Stem Cells Transl Med 1*, 341-51, 2012 (*10998*)
	Human, adult	Stromovascular	Collagenase Type 1: 0.1%	PBS with BSA	Hagman, D., Kuzma, J., Larson, I., Foster-Schubert, K., Kuan, L., Cignarella, A., Geamanu, E., Makar, K., Gottlieb, J. and Kratz, M.: Characterizing and Quantifying Leukocyte Populations in Human Adipose Tissue: Impact of Enzymatic Tissue Processing., *J Immunol Methods 386*, 50, 2012 (*11050*)
	Human	Adipose derived stromal	Collagenase Type 1: 0.1%	PBS	Naaijkens, B., Niessen, H., Prins, H., Krijnen, P., Kokhuis, T., de Jong, N,, van Hinsbergh, V., Kamp, O., Helder, M., Musters, R., van Dijk, A. and Juffermans, L.: Human Platelet Lysate as a Fetal Bovine Serum Substitute Improves Human Adipose-Derived Stromal Cell Culture for Future Cardiac Repair Applications., *Cell Tissue Res 348*, 119, 2012 (*11076*)
	Human	Adipose derived stem	Collagenase Type 1: 0.1%	DMEM/F-12	Wu, I., Nahas, Z., Kimmerling, K., Rosson, G. and Elisseeff, J.: An Injectable Adipose Matrix for Soft-Tissue Reconstruction., *Plast Reconstr Surg 129*, 1247, 2012 (*11085*)
	Human, male 40-60 years	Adipose derived stem cells	Collagenase: 0.25% Deoxyribonuclease I: 0.002%	PBS	Blasi, A., Martino, C., Balducci, L., Saldarelli, M., Soleti, A., Navone, S., Canzi, L., Cristini, S., Invernici, G., Parati, E. and Alessandri, G.: Dermal Fibroblasts Display Similar Phenotypic and Differentiation Capacity to Fat-Derived Mesenchymal Stem Cells, but Differ in Anti-Inflammatory and Angiogenic Potential, *Vasc Cell 3*, 5, 2011 (*10486*)
	Human	Renal adipose derived cells	Collagenase Type 1: 0.3%	DMEM	Basu, J., Genheimer, C., Sangha, N., Quinlan, S., Guthrie, K., Kelley, R., Ilagan, R., Jain, D., Bertram,T. and Ludlow, J.: Organ Specific Regenerative Markers in Peri-Organ Adipose: Kidney., *Lipids Health Dis 10*, 171, 2011 (*10665*)
	Human	Adipose derived mesenchymal	Collagenase Type 1: 0.1%	L-DMEM	Yang, X., He, X., He, J.,Zhang, L., Su, X., Dong, Z.,Xu, Y., Li, Y. and Li, YL.: High Efficient Isolation and Systematic Identification of Human Adipose-Derived Mesenchymal Stem Cells., *J Biomed Sci 18*, 59, 2011 (*10930*)
	Human	Adipose derived stem	Collagenase Type 1: 0.1%	DMEM/Ham's F-12	Yu, G. Floyd, ZE., Wu, X., Halvorsen, Y. and Gimble, J.: Isolation of Human Adipose-Derived Stem Cells from Lipoaspirates., *Methods Mol Biol 702*, 17-27, 2011 (*10955*)
	Human	Adipocytes	Collagenase Type 1: 0.1%	RPMI	Basu, S., Haghiac, M., Surace, P., Challier, J., Guerre-Millo, M., Singh, K., Waters, T., Minium, J., Presley, L., Catalano, P. and Hauguel-de Mouzon, S.: Pregravid Obesity Associates with Increased Maternal Endotoxemia and Metabolic Inflammation., *Obesity 19*, 476, 2011 (*11056*)
	Human	Adipocytes	Collagenase Type 1: 0.1%	KRB	Peters, R., Wolf, M., van den Broek, M., Nuvolone, M., Dannenmann, S., Stieger, B., Rapold, R., Konrad, D., Rubin, A., Bertino, J., Aguzzi, A., Heikenwalder, M. and Knuth, A.: Efficient Generation of Multipotent Mesenchymal Stem Cells from Umbilical Cord Blood in Stroma-Free Liquid Culture., *PLoS ONE 5*, e15689, 2010 (*10669*)
	Human	Adipose tissue- derived stem	Collagenase Type 2: 1.0%	DMEM/F12	Tan, H., DeFail, A., Rubin, J., Chu, C. and Marra, K.: Novel Multiarm PEG-Based Hydrogels for Tissue Engineering., *J Biomed Mater Res 92*, 979, 2010 (*10925*)

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Adipose/Fat

Adipose/Fat

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human	Stromal vascular	Collagenase Type 2: 0.1%	HBSS	Zimmerlin, L., Donnenberg, V., Pfeifer, M., Meyer, EM, Peault, B., Rubin, JP and Donnenberg, A.: Stromal Vascular Progenitors in Adult Human Adipose Tissue., *Cytometry 77*, 22-30, 2010 (*11408*)
	Human	Adipose stromal	Collagenase Type 1: 0.1%	DMEM/Hams F-12	Yu, G., Wu, X., Dietrich, M., Polk, P., Scott, LK, Ptitsyn, A. and Gimble, J.: Yield and Characterization of Subcutaneous Human Adipose-Derived Stem Cells by Flow Cytometric and Adipogenic mRNA Analyzes., *Cytotherapy 12*, 538, 2010 (*11463*)
	Human	Adipocytes	Collagenase: 0.075%	DMEM	Suga, H., Eto, H., Shigeura, T., Inoue, K., Aoi, N., Kato, H., Nishimura, S., Manabe, I., Gonda, K. and Yoshimura, K.: IFATS Collection: Fibroblast Growth Factor-2- Induced Hepatocyte Growth Factor Secretion by Adipose- Derived Stromal Cells Inhibits Postinjury Fibrogenesis Through a c-Jun N-Terminal Kinase- Dependent Mechanism., *Stem Cells 27*, 238, 2009 (*10872*)
	Human	Adipose stromal	Collagenase Type 1: 0.1%	DMEM	Cai, L., Johnstone, B., Cook, T., Tan, J., Fishbein, M., Chen, P. and March, K.: IFATS Collection: Human Adipose Tissue-Derived Stem Cells Induce Angiogenesis and Nerve Sprouting Following Myocardial Infarction, in Conjunction with Potent Preservation of Cardiac Function., *Stem Cells 27*, 230, 2009 (*10875*)
	Human	Adipose tissue-derived stem	Collagenase Type 2: 1.0%	DMEM/F12	Tan, H., Ramirez, C., Miljkovic, N., Li, H., Rubin, J. and Marra, K.: Thermosensitive Injectable Hyaluronic Acid Hydrogel for Adipose Tissue Engineering., *Biomaterials 30*, 6844, 2009 (*10924*)
	Human	Adipose derived stem cells	Collagenase Type 1: 0.1%	DMEM	Tandon, N., Goh, B.,Marsano, A., Chao, P., Montouri-Sorrentino, C., Gimble, J. and Vunjak- Novakovic, G.: Alignment and Elongation of Human Adipose-Derived Stem Cells in Response to Direct- Current Electrical Stimulation., *Conf Proc IEEE Eng Med Biol Soc 2009*, 6517-21, 2009 (*10995*)
	Human	Adipose derived stromal cells	Collagenase Type 1: see reference	DMEM	Traktuev, D., Merfeld- Clauss, S., Li, J., Kolonin, M., Arap, W., Pasqualini, R., Johnstone, B., and March, K.: A Population of Multipotent CD34-Positive Adipose Stromal Cells Share Pericyte and Mesenchymal Surface Markers, Reside in a Periendothelial Location, and Stabilize Endothelial Networks, *Circ Res 102*, 77, 2008 (*10350*)
	Human	Stromal	Collagenase Type 1: 0.2%	PBS	Minana, M., Carbonell-Uberos, F., Mirabet, V., Marin, S. and Encabo, A.: IFATS Collection: Identification of Hemangioblasts in the Adult Human Adipose Tissue., *Stem Cells 26*, 2696, 2008 (*10876*)
	Human	Stromal	Collagenase Type 1: 0.1% Neutral Protease:	DMEM	Nie, J., Chang, B., Traktuev, D., Sun, J., March, K., Chan, L., Sage, H., Pasqualini, R., Arap, W. and Kolonin, M.: IFATS Collection: Combinato-rial Peptides Identify alpha-5 beta-1 Integrin as a Receptor for the Matricellular Protein SPARC on Adipose Stromal Cells., *Stem Cells 26*, 2735, 2008 (*10877*)
	Human	Stem	Collagenase: 280 u/ml	D-PBS	Pilgaard, L., Lund, P., Rasmussen, J., Fink, T. and Zachar, V.: Comparative Analysis of Highly Defined Proteases for the Isolation of Adipose Tissue-Derived Stem Cells., *Regen Med 3*, 705-15, 2008 (*11261*)
	Human	Adipocytes	Collagenase Type 1: 0.2%	HBSS	Bujalska I., Durrani O., Abbott J., Onyimba C., Khosla P., Moosavi A., Reuser T., Stewart P., Tomlinson J., Walker E., Rauz S.: Characterisation of 11beta-Hydroxysteroid Dehydrogenase 1 in Human Orbital Adipose Tissue: A Comparison with Subcutaneous and Omental Fat, *J Endocrinol 192*, 279-88, 2007 (*10222*)
	Human	Adipose derived stromal cells	Collagenase Type 1: 0.15%	DMEM	Schaffler, A., Buchler, C.: Concise Review: Adipose Tissue-Derived Stromal Cells-- Basic and Clinical Implications for Novel Cell-Based Therapies, *Stem Cells 25*, 818-27, 2007 (*10308*)
	Human	Adipose derived stem cells	Collagenase Type 1: 0.1%	DMEM/F12	Kilroy, G., Foster, S., Wu, X., Ruiz, J., Sherwood, S., Heifetz, A., Ludlow, J., Stricker, D., Potiny, S., Green, P., Halvorsen, Y., Cheatham, B., Storms, R. and Gimble, J.: Cytokine Profileof Human Adipose-Derived Stem Cells: Expression of Angiogenic, Hematopoietic, and Pro-Inflamma-tory Factors., *J Cell Physiol 212*, 702-9, 2007 (*11000*)
	Human	Mesenchymal stem	Collagenase Type 1: 0.1%	HBSS	Jeon, E., Song, H., Kim, M., Moon, H., Bae, Y., Jung, J., Kim, J.: Sphingosylphosphorylcholine Induces Proliferation of Human Adipose Tissue-Derived Mesenchymal Stem Cells via Activation of JNK, *J Lipid Res 47*, 653-64, 2006 (*10328*)
	Human	Preadipocytes	Collagenase Type 1: 196 u/ml	M199	Koellensperger, E., Von Heimburg, D., Markowicz, M. and Pallua, N.: Human Serum from Platelet-Poor Plasma for the Culture of Primary Human Preadipocytes., *Stem Cells 24*, 1218-25, 2006 (*10997*)
	Human	Adipocytes, stromal vascular	Collagenase: 0.2%	HBSS	Boquest, A., Shahdadfar, A., Fronsdal, K., Sigurjonsson, O., Tunheim, S., Collas, P., Brinchmann, J.: Isolation and Transcription Profiling of Puri-fied Uncultured Human Stromal Stem Cells: Alteration of Gene Expression After In Vitro Cell Culture, *Mol Biol Cell 16*, 1131-41, 2005 (*10312*)
	Human	Multipotent adipose derived stem	Collagenase: 0.2%	DMEM	Rodriguez, A., Pisani, D., Dechesne, C., Turc-Carel, C., Kurzenne, J., Wdziekonski, B., Villageois, A., Bagnis, C., Breittmayer, J., Groux, H., Ailhaud, G., Dani, C.: Transplantation of a Multipotent Cell Population from Human Adipose Tissue Induces Dystrophin Expression in the Immunocompetent MDX Mouse, *J Exp Med 201*, 1397-405, 2005 (*10326*)
	Human	Adult stem cells	Collagenase Type 1: 0.1%	PBS	Devireddy, R., Thirumala, S. and Gimble, J.: Cellular Response of Adipose Derived Passage-4 Adult Stem Cells to Freezing Stress., *J Biomech Eng 127*, 1081, 2005 (*10600*)
	Human, adult, obese	Adipocytes	Collagenase Type 2: 0.1%	DMEM/F12	Seboek, D., Linscheid, P., Zulewski, H., Langer, I., Christ-Crain, M., Keller, U., and Muller, B.: Somatostatin Is Expressed and Secreted by Human Adipose Tissue Upon Infection and Inflammation, *J Clin Endocrinol Metab 89(10)*, 4833, 2004 (*9794*)
	Human, adult, female	Preadipocytes	Collagenase Type 1: 0.2%	DMEM/F-12	Quickler, M., Sinha, B., Tomlinson, J., Bujalska, I., Stewart, P., Arlt, W.,: Androgen Generation in Adipose Tissue in Women with Simple Obesity--a Site-specific Role for 17Beta- hydroxysteroid Dehydrogenase Type 5, *J Endocrinol 183*, 331, 2004 (*9795*)
	Human, adult	Adipocytes	Collagenase Type 1: 0.13%	see reference	Fain, J.N., Madan, A.K., Hiler, M.L., Cheema, P., and Bahouth, S.W.: Comparison of the Release of Adipokines by Adipose Tissue, Adipose Tissue Matrix, and Adipocytes from Visceral and Subcutaneous Abdominal Adipose Tissues of Obese Humans, *Endocrinology 145*, 2273, 2004 (*10064*)

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TISSUE TABLES

Adipose/Fat

Adipose/Fat

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human	Stromal vascular, adipocytes	Collagenase: 0.2%	DMEM/F12	Planat-Benard, V., Silvestre, J., Cousin, B., Andre, M., Nibbelink, M., Tamarat, R., Clergue, M., Manneville, C., Saillan-Barreau, C., Duriez, M., Tedgui, A., Levy, B., Penicaud, L., Casteilla, L.: Plasticity of Human Adipose Lineage Cells Toward Endothelial Cells: Physiological and Therapeutic Perspectives, *Circulation 109*, 656-63, 2004 (*10298*)
	Human	Stromal vascular, adipocytes, stem	Collagenase: 300 u/ml	PBS	Miranville A, Heeschen C, Sengenes C, Curat CA, Busse R, Bouloumie A: Improvement of Postnatal Neovascularization by Human Adipose Tissue-derived Stem Cells, *Circulation 110*, 349-55, 2004 (*10300*)
	Human, adult, female, non-obese	Adipocytes	Collagenase Type 2: 0.05%	DMEM	Gesta, S., Lolmede, K., Daviaud, D., Berlan, M., Bouloumie, A., Lafontan, M., Valet, P., and Saulnier- Blache, J.: Culture of Human Adipose Tissue Explants Leads to Profound Alteration of Adipocyte Gene Expression, *Horm Metab Res 35*, 158, 2003 (*1306*)
	Human	Adipocytes	Collagenase Type 1: see reference	Saline	Patwardhan, R., Tubbs, R., Leonard, R., Kelly, D., Killingsworth, C., Rollins, D., Smith, W., Ideker, R., and Oakes, W.: Discernment of Adipose versus Nervous Tissue: A Novel Adjunct Solution in Lipomyelomeningocele Surgery, *Ped Neurosurg 36*, 314, 2002 (*1308*)
	Human, adult, male and female	Adipocytes	Collagenase Type 1: 0.2%	DMEM/F12	McTernan, P., Anderson, L., Anwar, A., Eggo, M., Crocker, J., Barnett, A., Stewart, P., and Kumar, S.: Glucocorticoid Regulation of P450 Aromatase Activity in Human Adipose Tissue: Gender and Site Differences, *J Clin Endocrinol Metab 87*, 1327, 2002 (*9792*)
	Human	Processed lipoaspirate cells	Collagenase Type 1: 0.075%	PBS	Zuk, P., Zhu, M., Ashjian, P., De Ugarte, D., Huang, J., Mizuno, H., Alfonso, Z., Fraser, J., Benhaim, P., Hedrick, M.: Human Adipose Tissue is a Source of Multipotent Stem Cells, *Mol Biol Cell 13*, 4279-95, 2002 (*10333*)
	Human	Adipocytes	Collagenase Type 1: 0.2%	HBSS	McTernan, P., Anwar, A., Eggo, M., Barnett, A., Stewart, P., Kumar, S.: Gender Differences in the Regulation of P450 Aromatase Expression and Activity in Human Adipose Tissue, *Int J Obes Relat Metab Disord 24*, 875-81, 2000(*10330*)
	Human, adult, male and female	Adipocytes	Collagenase Type 1: 0.1%	DMEM/Ham's F-12	Gottschling-Zelle, H., Birgel, M., Scriba, D., Blum, W., and Hauner, H.: Depot-specific Release of Leptin from Subcutaneous and Omental Adipocytes in Suspension Culture: Effect of Tumor Necrosis Factor-alpha and Transforming Growth Factor- beta1, *Eur J Endocrinol 141 (4)*, 436, 1999 (*1309*)
	Human, adult, male and female	Adipocytes	Collagenase Type 1: 0.1%	DMEM/F12	Zhang, H., Kumar, S., Barnett, A., and Eggo, M.: Intrinsic Site-Specific Differences in the Expression of Leptin in Human Adipocytes and Its Autocrine Effects on Glucose Uptake, *J Clin Endocrinol Metab 84*, 2550, 1999 (*9789*)
	Human, non- diabetic, male	Adipocytes	Collagenase Type 1: 0.05%	Kreb's Ringer bicarbonate buffer	Anderson, O., Gliemann, J., and Gammeltoft: Receptor Binding and Biological Effect of Insulin in Human Adipocytes, *Diabetologia 13*, 589, 1977 (*674*)
Mouse	Mouse	Adipose stromal	Collagenase Type 1: 0.1%	HBSS	Bowles, A., Strong, A., Wise, R., Thomas, R., Gerstein, B., Dutreil, M., Hunter, R., Gimble, J. and Bunnell, B.: Adipose Stromal Vascular Fraction-Mediated Improvements at Late-Stage Disease in a Murine Model of Multiple Sclerosis., *Stem Cells 35*, 532-544, 2017 (*11645*)
	Mouse	Adipose mesenchyal stromal	Collagenase Type 2: 0.2%	DMEM	Maria, O., Shalaby, M., Syme, A., Eliopoulos, N. and Muanza, T.: Adipose Mesenchymal Stromal Cells Minimize and Repair Radiation-Induced Oral Mucositis., *Cytotherapy 18*, 1129-45, 2016 (*11572*)
	Mouse	Adipose stromal	Collagenase Type 1: 0.1%	PBS	Yao, W., Lay, Y., Kot, A., Liu, R., Zhang, H., Chen, H., Lam, K. and Lane, N.: Improved Mobilization of Exogenous Mesenchymal Stem Cells to Bone for Fracture Healing and Sex Difference., *Stem Cells 34*, 2587-2600, 2016 (*11651*)
	Mouse	Adipocytes	Collagenase: 0.1%	Krebs	Jang, H., Bhasin, S., Guarneri, T., Serra, C., Schneider, M., Lee, M., Guo, W., Fried, S., Pencina, K. and Jasuja, R.: The Effects of A Single Developmentally-Entrained Pulse of Testosterone in Female Neonatal Mice On Reproductive and Metabolic Functions in Adult Life., *Endocrinology 156*, 3737, 2015 (*11417*)
	Mouse	Adipocytes	Collagenase Type 1: 0.1%	PBS	Seaman, S., Tannan, S., Cao, Y., Peirce, S. and Lin, K.: Differential Effects of Processing Time and Duration of Collagenase Digestion on Human and Murine Fat Grafts., *Plast Reconstr Surg 136*, 189e- 199e, 2015 (*11510*)
	Mouse, 20 week	Stromal vascular	Collagenase Type 2: 0.2%	RPMI-1640	Kondo, T, Toyoshima, Y., Ishii, Y and Kyuwa, S.: Natural Killer T Cells in Adipose Tissue are Activated in Lean Mice., *Exp Anim 62*, 319, 2013 (*11039*)
	Mouse	Adipose derived stem	Collagenase Type 2: 0.1%	DMEM	Takahashi, H., Haraguchi, N., Nishikawa, S., Miyazaki, S., Suzuki, Y., Mizushima, T., Nishimura, J., Takemasa, I., Yamamoto, H., Mimori, K., Ishii, H., Doki, Y. and Mori, M.: Biological and Clinical Availability of Adipose- Derived Stem Cells for Pelvic Dead Space Repair., *Stem Cells Transl Med 1*, 803, 2012 (*10937*)
	Mouse	Stem and progenitor	Collagenase Type 2: 0.2%	HBSS	Han, J., Koh, Y., Moon, H., Ryoo, H., Cho, C., Kim, I. and Koh, G.: Adipose Tissue is an Extramedullary Reservoir for Functional Hematopoietic Stem and Progenitor Cells., *Blood 115*, 957, 2010 (*10494*)
	Mouse, 3 week	Adipocytes	Collagenase Type 1: 0.2%	HBSS	De Matteis, R., Zingaretti, M., Murano, I., Vitali, A., Frontini, A., Giannulis, I., Barbatelli, G., Marcucci, F., Bordicchia, M., Sarzani, R., Raviola, E. and Cinti, S.: In Vivo Physiological Transdifferentiation of Adult Adipose Cells., *Stem Cells 27*, 2761, 2009 (*10552*)
	Mouse	White adipocytes	Collagenase Type 2: 0.1%	DMEM	Wong, K., Szeto, F, Zhang, W., Ye, H., Kong, J., Zhang, Z., Sun, X. and Li, Y: Involvement of the Vitamin D Receptor in EnergyMetabolism: Regulation of Uncoupling Proteins., *Am J Physiol/Endo 296*, 820, 2009(*10572*)
	Mouse	Adipose stromal	Collagenase Type 2: 0.075%	DMEM	Thangarajah, H., Vial, I., Chang, E., El-Ftesi, S., Januszyk, M., Chang, E., Paterno, J., Neofytou, E., Longaker, M. and Gurtner, G.: IFATS Collection: Adipose Stromal Cells Adopt a Proangiogenic Phenotype Under the Influence of Hypoxia., *Stem Cells 27*, 266,2009 (*10874*)
	Mouse	Adipose tissue-derived stem	Collagenase Type 1: 0.075%	Modified Eagles	Cho, K., Park, H., Park, H., Jung, J., Jeon, S., Kim, Y. and Roh, H.: IFATS Collection: Immunomodulatory Effects of Adipose Tissue-Derived Stem Cells in an Allergic Rhinitis Mouse Model., *Stem Cells 27*, 259-65, 2009 (*10921*)
	Mouse, C57Bl/6J	Adipocytes	Collagenase Type 1: 0.15%	DMEM/F12	Aoyagi T, Shimba S, Tezuka M: Characteristics of Circadian Gene Expressions in Mice White Adipose Tissue and 3T3-L1 Adipocytes, *J Health Sci 51*, 21, 2005 (*10028*)

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Adipose/Fat

Adipose/Fat

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse, 3-6 day and 2-3 month	Adipose-derived stromal cells	Collagenase Type 2: 0.075%	PBS	Cowan, C., Shi, Y., Aalami, O., Chou, Y., Mari, C., Thomas, R., Quarto, N., Contag, C., Wu, B., Longaker, M.: Adipose-Derived Adult Stromal Cells Heal Critical-size Mouse Calvarial Defects, *Nat Biotechnol 22*, 560-7, 2004 (*10140*)
	Mouse	Stromal vascular, adipocytes	Collagenase: 0.2%	DMEM/F12	Planat-Benard, V., Silvestre, J., Cousin, B., Andre, M., Nibbelink, M., Tamarat, R., Clergue, M., Manneville, C., Saillan-Barreau, C., Duriez, M., Tedgui, A., Levy, B., Penicaud, L., Casteilla, L.: Plasticity of Human Adipose Lineage Cells Toward Endothelial Cells: Physiological and Therapeutic Perspectives, *Circulation 109*, 656-63, 2004 (*10298*)
	Mouse, C57BL/6J and FVB, male, 8-9 week	Adipocytes	Collagenase: see reference	DMEM	Ruan, H., Zarnowski, MJ., Cushman, S., and Lodish, H.: Standared Isolation of Primary Adipose Cells from Mouse Epididymal Fat Pads Induces Inflammatory Mediators and Down- regulates Adipocyte Genes, *J Biol Chem 278*, 47585, 2003 (*9793*)
	Mouse, both sexes	Adipocytes	Collagenase: 0.05%	Krebs-Ringer Phosphate HEPES (KRPH)	Nadler, S., Stoehr, J., Rabaglia, M., Schueler, K., Birnbaum, M., and Attie, A.: Normal Akt/PKB with Reduced PI3K Activation in Insulin-resistant Mice, *Am J Physiol/Endo 281*, E1249, 2001 (*1310*)
	Mouse, B6D2F1, F1 hybrids, New Zealand black female & New Zealand white male	Vascular endothelial	Collagenase: 0.2%	PBS	Launder, T., Gegen, N., Knedler, A., and Harbeck, R.: The Isolation and Characterization of Enriched Microvascular Endothelial Cells From Mouse Adipose Tissue, *J Immunol Methods 102*, 45, 1987 (*882*)
Porcine	Porcine, female, <1 year	Adipose mesenchymal stem	Collagenase Type 1: 0.1%	DMEM	Williams, K., Picou, A., Kish, S., Giraldo, A., Godke, R. and Bondioli, K: Isolation and Characterization of Porcine Adipose Tissue- Derived Adult Stem Cells., *Cells Tissues Organs 188*, 251, 2008 (*10370*)
	Porcine, crossbred, male 1-4 day	Adipocytes	Collagenase Type 1: 0.2%	DMEM/F12	Ramsay, T.G.: Porcine Leptin Inhibits Lipogenesis in Porcine Adipocytes, *J Anim Sci 81*, 3008, 2003 (*9797*)
	Porcine, crossbred	Adipocytes	Collagenase Type 1: 0.067%	Krebs-Ringer	Liang, W. and Mills, S.: Quantitative Analysis of beta-Adrenergic Receptor Subtypes in Pig Tissues., *J Anim Sci 80*, 963-70, 2002 (*10721*)
	Porcine, 8-9 week	Adipose	Collagenase Type 1: 300 u/ml	HEPES	Ding, S., McNeel, R., and Mersmann, H.: Expression of Porcine Adipocyte Transcripts: Tissue Distribution and Differentiation *In Vitro* and *In Vivo*, *Comp Biochem Physiol B 123*, 307, 1999 (*1144*)
	Porcine, neonatal	Adipocytes	Collagenase Type 1: 0.3%	Krebs-Ringer bicarbonate albumin	Wang, Y., Fried, S.K., Petersen, R.N., Schoknecht, P.A.: Somatotropin Regulates Adipose Tissue Metabolism in Neonatal Swine, *J Nutr 129*, 139-45, 1999 (*10339*)
	Porcine, crossbred, 1-3 day	Adipose, stromal-vascular	Collagenase Type 1: 0.2%	DMEM/F12	Suryawan, A., Swanson, L., and Hu, C.: Insulin and Hydrocortisone, But Not Triiodothyronine, Are Required for the Differentiation of Pig Preadipocytes in Primary Culture, *J Anim Sci 75*, 105, 1997 (*9790*)
Rat	Rat, SD, 2-3 month	Mesenchymal stromal	Collagenase Type 1: 0.1%	DMEM	Dayer, D., Tabar, M., Moghimipour, E., Tabandeh, M., Ghadiri, A., Bakhshi, E., Orazizadeh, M. and Ghafari, M.: Sonic Hedgehog Pathway Suppression and Reactivation Accelerates Differentiation of Rat Adipose-Derived Mesenchymal Stromal Cells Toward Insulin-Producing Cells, *Cytotherapy 19*, 937-946, 2017 (*11557*)
	Rat, 9 week	Adipose stromal	Collagenase: 0.1%	DMEM	Ohta, Y., Hamaguchi, A., Ootaki, M., Watanabe, M., Takeba, Y., Iiri, T., Matsumoto, N. and Takenaga, M.: Intravenous Infusion of Adipose-Derived Stem/Stromal Cells Improves Functional Recovery of Rats with Spinal Cord Injury., *Cytotherapy 19*, 839-848, 2017 (*11569*)
	Rat	Mesenchymal stem	Collagenase Type 1: 0.075%	DMEM	Emre, E, Yuksel, N, Duruksu, G, Pirhan, D, Subasi, C, Erman, G and Karaoz, E: Neuroprotective Effects of Intravitreally Transplanted Adipose Tissue and Bone Marrow-Derived Mesenchymal Stem Cells in an Experimental Ocular Hypertension Model., *Cytotherapy 17*, 543-59, 2015 (*11263*)
	Rat, SD, 5 month	Mesenchymal stromal	Collagenase Type 2: 0.075%	DMEM	Veronesi, F, Torricelli, P, Della, B, Pagani, S and Fini, M: In Vitro Mutual Interaction Between Tenocytes and Adipose- Derived Mesenchymal Stromal Cells., *Cytotherapy 17*, 215-23, 2015 (*11266*)
	Rat	Adipocytes	Collagenase Type 1: 0.3%	Krebs-Ringer	Ogasawara, J., Izawa, T., Sakurai, T., Shirato, K., Ishibashi, Y., Ohira, Y., Ishida, H., Ohno, H. and Kizaki, T.: Habitual Exercise Training Acts as a Physiological Stimulator for Constant Activation of Lipolytic Enzymes in Rat Primary White Adipocytes., *Biochem Biophys Res Commun 464*, 348-53, 2015 (*11423*)
	Rat, adult	Stromal vascular	Collagenase Type 1: 0.2%	PBS	Leblanc, A., Nguyen, Q., Touroo, J., Aird, A., Chang, R., Ng, C., Hoying, J. and Williams, S.: Adipose- derived Cell Construct Stabilizes Heart Function and Increases Microvascular Perfusion in an Established Infarct., *Stem Cells Transl Med 2*, 896-905, 2013 (*11012*)
	Rat, male, 300g	Adipocytes	Collagenase Type 2: 0.33%	RPMI 1640	Thompson, A., Nunez, M., Davidson, R., Horm, T., Schnittker, K., Hart, M., Suarez, A. and Tsao, T.: Mitigation of Isolation- Associated Adipocyte Interleukin-6 Secretion Following Rapid Dissociation of Adipose Tissue., *J Lipid Res 53*, 2797, 2012 (*11047*)
	Rat, Lewis, male	Renal adipose derived cells	Collagenase Type 1: 0.3%	DMEM	Basu, J., Genheimer, C., Sangha, N., Quinlan, S., Guthrie, K., Kelley, R., Ilagan, R., Jain, D., Bertram, T. and Ludlow, J.: Organ Specific Regenerative Markers in Peri-Organ Adipose: Kidney., *Lipids Health Dis 10*, 171, 2011 (*10665*)
	Rat, SD, neonatal	Brown adipocytes	Collagenase Type 4: 0.1% Neutral Protease: 0.1% Trypsin: 0.05%	PBS	Liu, Z., Wang, H., Zhang, Y., Zhou, J., Lin, Q., Wang, Y., Duan, C., Wu, K. and Wang, C.: Efficient Isolation of Cardiac Stem Cells from Brown Adipose., *J Biomed Biotechnol 2010*, 104296, 2010 (*10598*)
	Rat	Adipose derived stem	Collagenase Type 1: 0.1%	DMEM	Wei, X., Du, Z., Zhao, L., Feng, D., Wei, G., He, Y., Tan, J., Lee, W., Hampel, H., Dodel, R., Johnstone, B., March, K., Farlow, M. and Du, Y.: IFATS Collection: The Conditioned Media of Adipose Stromal Cells Protect Against Hypoxia- Ischemia-Induced Brain Damage In Neonatal Rats., *Stem Cells 27*, 478, 2009 (*10873*)
	Rat	Adipose tissue-derived stem	Collagenase Type 2: 0.075%	DMEM	Tomiyama, K., Murase, N., Stolz, D., Toyokawa, H., O'Donnell, D., Smith, D., Dudas, J., Rubin, J. and Marra, K.: Characterization of Transplanted Green Fluorescent Protein+ Bone Marrow Cells Into Adipose Tissue., *Stem Cells 26*, 330, 2008 (*10922*)
	Rat, Wistar, 4 week	Adipocytes	Collagenase: 0.2%	Ham's F12	Aoki, S., Toda, S., Sakemi, T., and Sugihara, H.: Coculture of Endothelial Cells and Mature Adipocytes Actively Promotes Immature Preadipocyte Development In Vitro, *Cell Struct Funct 28*, 55, 2003 (*9791*)

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Adipose/Fat

Adipose/Fat

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat, SD	Adipocytes	Collagenase Type 1: 0.2%	KRHB	Mora, S., Yang, C., Ryder, J., Boeglin, D and Pessin, J: The MEF2A and MEF2D Isoforms are Differentially Regulated in Muscle and Adipose Tissue during States of Insulin Deficiency, *Endocrinology 142*, 1999, 2001 (*9796*)
	Rat, SD, male, 4-7 weeks	Brown adipocytes	Deoxyribonuclease I: 0.5%	DMEM	Omatsu-Kanbe, M., and Matsuura, H.: Inhibition of Store-operated Ca^{2+} Entry by Extracellular ATP in Rat Brown Adipocytes, *J Physiol 521 (3)*, 601, 1999 (*1307*)
	Rat	Adipocytes	Collagenase Type 2: 0.2%	DMEM /F-12	Serrero, G: Primary Culture in Defined Medium of Adipocyte Precursors, *Cell & Tissue Culture: Laboratory Procedures Vol. 1*,Doyle, A., Griffiths, J., and Newell, D., John Wiley and Sons, Ltd., 11B:6.1, 1995 (*1285*)
	Rat, SD, male, 130- 160 g	Adipose Epididymal fat pads	Collagenase: 0.3%	Kreb's-Ringer bicarbonate buffer modified	Charron, M.J. and Kahn, B.B.: Divergent Molecular Mechanisms for Insulin- Resistant Glucose Transport in Muscle and Adipose Cells *In Vivo*, *J Biol Chem 265*, 7994, 1990 (*571*)
	Rat, 3 day	Preadipocytes	Collagenase Type 3: 0.10%	Parker Medium 199	Gaben-Cogneville, A., Poussin, B., Chamblier, M., Forgue-Fafitte, M., and Rosselin, G.: Development of Insulin and Epidermal Growth Factor Receptors During the Differentiation of Rat Preadipocytes in Primary Culture, *Biochim Biophys Acta 968*, 231, 1988 (*336*)
	Rat, SD, various weights and ages	Brown adipocytes Inter-scapular & cervical depots	Collagenase: 0.2% Soybean Trypsin Inhibitor: 0.3%	Krebs Ringer bicarbonate buffer	Woodward, J., and Saggerson, E.: Effect of Adenosine Deaminase, N6-Phenylisopropyladenosine and Hypothroidism on the Responsiveness of Rat Brown Adipocytes to Noradrenaline, *Biochem J 238*, 395, 1986 (*311*)
	Rat, CD, male, 150- 200 g	Adipocytes, Epididymal fat pads	Collagenase: 0.1%	Krebs Ringer bicarbonate buffer	Pessin, J.E., Gitomer, W., Oka, Y., Oppenheimer, C.L., and Czech, M.P.: ß- Adrenergic Regulation of Insulin and Epidermal Growth Factor Receptors in Rat Adipocytes, *J Biol Chem 258*, 7386, 1983 (*558*)
	Rat, Wistar, albino, male, 100-140 g	Adipocytes, Epididymal fat pads	Collagenase: 0.3%	Kreb's Ringer	Green, A. and Newsholme, E.: Sensitivity of Glucose Uptake and Lipolysis of White Adipocytes of the Rat to Insulin and Effects of Some Metabolites, *Biochem J 180*, 365, 1979 (*310*)
	Rat, Fischer, 344, male, 9 - 13 week	White fat	Collagenase: 0.3%	Kreb's Ringer bicarbonate buffer	Stiles, J.W., Francendese, A.A. and Masoro, E.J.: Influence of Age on Size and Number of Fat Cells in the Epididymal Depot, *Am J Physiol 229*, 1561, 1975 (*285*)
	Rat, Wistar, male, 5 week-16 month	White fat	Collagenase: 0.05%	Kreb's Ringer bicarbonate buffer	DiGirolamo, M., Mendlinger, S., and Fertig, J.W.: A Simple Method to Determine Fat Cell Size and Number in Four Mammalian Species, *Am J Physiol 221*, 850, 1971 (*284*)
	Rat (CFE), albino, female	Brown fat	Collagenase Type 1: 0.10%	Bicarbonate buffer	Fain, J., Reed, N., and Saperstein, R.: Isolation and Metabolism of Brown Fat Cells, *J Biol Chem 242*, 1887, 1967 (*549*)
	Rat, SD, male, 160- 210 g	Fat	Collagenase: 0.3%	Albumin-bicarbonate buffer	Rodbell, M.: Metabolism of Isolated Fat Cells. I. Effects of Hormones on Glucose Metabolism and Lipolysis, *J Biol Chem 239 (2)*, 375, 1964 (*548*)
Squirrel	Squirrel	Brown adipocytes	Collagenase Type 2:0.16%	Krebs-Ringer phosphate	McFarlane, S., Mathers, K. and Staples, J.: Reversible Temperature-Dependent Differences in Brown Adipose Tissue Respiration During Torpor in a Mammalian Hibernator., *Am J Physiol Regul Integr Comp Physiol 312*, R434-R442, 2017 (*11671*)

Adrenal

Adrenal

Bovine	Bovine	Chromaffin	Collagenase Type 1:0.1-0.2% Deoxyribonuclease I: 0.003-0.015% Hyaluronidase: 0.015%	DMEM/F12	Dominguez, N., Rodriguez, M., Machado, J. and Borges, R.: Preparation and Culture of Adrenal Chromaffin Cells., *Methods Mol Biol 846*, 223, 2012 (*10950*)
	Bovine, 6 month	Chromaffin	Collagenase Type 1: 0.125%	Locke's solution	Moustafa, T., Girod, S., Tortosa, F, Li, R., Sol, J.C., Rodriguez, F., Bastide, R., Lazorthes, Y., Sallerin, B.: Viability and Functionality of Bovine Chromaffin Cells Encapsulated into Alginate-PLL Microcapsules with a Liquefied Inner Core, *Cell Transplant 15*, 121-33, 2006 (*10341*)
	Bovine	Chromaffin cells	Collagenase: 0.1% Deoxyribonuclease I: 30 u/ml	DMEM	Hahm, S., Chen, Y., Vinson, C. and Eiden, L.: A Calcium- Initiated Signaling Pathway Propagated Through Calcineurin and cAMP Response Element-Binding Protein Activates Proenkephalin Gene Transcription after Depolarization., *Mol Pharmacol 64*, 1503, 2003 (*10565*)
	Bovine	Chromaffin	Collagenase: 0.2%	Locke's solution	Ortega, J., Sagen, J., and Pappas, G.: Short-term Immunosuppression Enhances Long-term Survival of Bovine Chromaffin Cell Xenografts in Rat CNS, *Cell Transplant 1*, 33, 1992 (*359*)
	Bovine	Chromaffin	Deoxyribonuclease I: 30 u/mg	HEPES	Zhu, J., Li, W., Toews, M., and Hexum, T.: Neuropeptide Y Inhibits Forskolin-Stimulated Adenylate Cyclase in Bovine Adrenal Chromaffin Cells *via* a Pertussis Toxin-Sensitive Process, *J Pharmacol Exp Ther 263 (3)*, 1479, 1992 (*1232*)
	Bovine (also rat)	Heart, Adrenal chromaffin, Paraneurons	Trypsin: 0.06%	25mM HEPES buffered Locke's solution, CMF	Trifaro, J., Tang, R., and Novas, M.: Monolayer Co- Culture of Rat Heart Cells and Bovine Adrenal Chromaffin Paraneurons, *In Vitro Cell Dev Biol 26*, 335, 1990 (*438*)
	Bovine	Chromaffin	Collagenase Type 1:0.25 %	DMEM	Dahmer, M., Hart, P., and Perlman, R.: Studies on the Effect of Insulin-Like Growth Factor-I on Catecholamine Secretion from Chromaffin Cells, *J Neurochem 54 (3)*, 931, 1990 (*1231*)
	Bovine	Chromaffin	Collagenase: 0.2% Deoxyribonuclease I: 0.015%	Locke's solution	Higgins, L., and Berg, D.: Immunological Identification of a Nicotinic Acetylcholine Receptor on Bovine Chromaffin Cells, *J Neurosci 7 (6)*, 1792, 1987 (*974*)
	Bovine	Chromaffin	Collagenase: 0.05%	Locke's solution, CMF	Aunis, D., Rotllan, P., and Miras-Portugal, M.: Incorporation of Adenosine into Nucleotides of Chromaffin Cells in Culture, *Neurochem Int 7*, 89, 1985 (*644*)
	Bovine	Chromaffin	Collagenase: 0.15%	Kreb's, CMF	Almazan, G., Aunis, D., Garcia, A., Montiel, C., Nicolas, G., and Sanchez- Garcia, P.: Effects Of CLS on the Release of Noradrenaline From Chromaffin Cells, *Br J Biomed Sci 81*, 599, 1984 (*343*)

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Adrenal

Adrenal

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Bovine	Bovine	Chromaffin	Collagenase: 0.1%	(see reference)	Pollard, H., Pazoles, C., Creutz, C., Scott, J., Zinder, O., and Hotchkiss, A.: An Osmotic Mechanism For Exocytosis From Dissociated Chromaffin Cells, *J Biol Chem 259*, 1114, 1984 (*559*)
	Bovine	Chromaffin	Collagenase Type 1: 0.05%	CF Kreb's	Cena, V., Garcia, A., Montiel, C., and Sanchez- Garcia, P.: Uptake of [^{3}H]- nicotine and [^{3}H]- noradrenaline by Cultured Chromaffin Cells, *Br J Pharmacol 81*, 119, 1984 (*342*)
	Bovine	Chromaffin	Collagenase Type 1: 0.025%	HBSS, modified	Waymire, J., Bennett, W., Boehme, R., Hankins, L., Gilmer-Waymire, K., and Haycock, J.: Bovine Adrenal Chromaffin Cells: High-Yield Purification and Viability in Suspension Culture, *J Neurosci Methods 7*, 329, 1983 (*608*)
	Bovine	Medulla	Hyaluronidase: 0.2%	Saline w/BSA 0.5%	Knight, D. and Baker, P.: Stimulus-Secretion Coupling in Isolated Bovine Adrenal Medullary Cells, *Q J Exp Physiol 68*, 123, 1983 (*715*)
	Bovine	Medulla	Collagenase: 0.2%	Krebs-Ringer bicarbonate buffer, CMF	Greenberg, A. and Zinder, O.: alpha- and beta-Receptor Control of Catecholamine Secretion from Isolated Adrenal Medulla Cells, *Cell Tissue Res 226*, 655, 1982 (*356*)
	Bovine	Chromaffin	Deoxyribonuclease I: 15 µg/ml	Medium A (see reference)	Wilson, S.P., and Viveros, O.H.: Primary Culture of Adrenal Medullary Chromaffin Cells in a Chemically Defined Medium, *Exp Cell Res 133*, 159, 1981(*392*)
	Bovine	Medulla	Protease: 0.2%	Saline	Baker, P., and Knight., D: Calcium Control of Exocytosis and Endocytosis in Bovine Adrenal Medullary Cells, *Phil Trans R Soc Lond 296*, 83, 1981 (*1158*)
	Bovine	Chromaffin	Collagenase: 0.05%	Locke's solution, CMF	Trifaro, J.M., and Lee, R.W.: Morphological Characteristics and Stimulus- Secretion Coupling in Bovine Adrenal Chromaffin Cell Cultures, *Neuroscience 5*, 1533, 1980 (*647*)
	Bovine, adult (also rat, Hanover- Wistar, young; guinea-pig, newborn)	Chromaffin	Collagenase: 0.5%	HBSS	Unsicker, K., Rieffert, B., and Ziegler, W.: Effects of Cell Culture Conditions, Nerve Growth Factor, Dexamethasone, and Cyclic AMP on Adrenal Chromaffin Cells *In Vitro*, *Adv Biochem Psychopharmacol 255*, 51, 1980 (*713*)
	Bovine	Chromaffin	Collagenase: 0.25%	F-12 medium	Kumakura, K., Karoum, F., Guidotti, A., and Costa, E.: Modulation of Nicotinic Receptors by Opiate Receptor Agonists in Cultured Adrenal Chromaffin Cells, *Nature 283*, 489, 1980 (*714*)
	Bovine	Medulla	Collagenase: 0.05%	Locke's solution, CF	Kilpatrick, D., Ledbetter, F., Carson, K., Kirshner, A., Slepetis, R., and Kirshner, N.: Stability of Bovine Adrenal Medulla Cells in Culture, *J Neurochem 35 (3)*,679, 1980 (*1157*)
	Bovine, adult	Medulla	Collagenase Type 1: 0.5%	HBSS	Unsicker, K., and Griesser, G.: Establishment, Characterization and Fibre Outgrowth of Isolated Bovine Adrenal Medullary Cells in Long-Term Cultures, *Neuroscience 5*, 1445, 1980(*1160*)
	Bovine	Chromaffin	Collagenase: 0.05%	DMEM	Aunis, D., Guerold, B., Bader, M-F., and Cieselski- Treska, J.: Immunocytochemical and Biochemical Demonstration of Contractile Proteins in Chromaffin Cells, *Neuroscience 5*, 2261, 1980 (*1161*)
	Bovine	Medullary	Collagenase Type 2: 0.2%	HEPES	Hersey, R., and DiStefano, V.: Control of Phenylethanolamine N- Methyltransferase by Glucocorticoids in Cultured Bovine Adrenal Medullary Cells, *J Pharmacol Exp Ther 209 (1)*, 147, 1979 (*1159*)
	Bovine	Foreskin	Collagenase: 0.5%	Dulbecco's MEM w/10% calf serum	Folkman, J., Haudenschild, C. C., and Zetter, B. R.: Long-term Culture of Capillary Endothlial Cells, *Proc Natl Acad Sci U S A 76*, 5217, 1979 (*653*)
	Bovine	Medulla	Collagenase Type 1: 0.05%	Kreb's, CF	Fenwick, E., Fajdiga, P., Howe, N., and Livett, B.: Functional and Morphological Characterization of Isolated Bovine Adrenal Medullary Cell, *J Cell Biol 76*, 12, 1978 (*591*)
	Bovine	Chromaffin	Hyaluronidase: 0.2%	HEPES, CF	Brooks, J.C.: The Isolated Bovine Adrenomedullary Chromaffin Cell: A Model of Neuronal Excitation- Secretion, *Endocrinology 101*, 1369, 1977 (*373*)
	Bovine, male	Chromaffin	Collagenase Type 1: 0.2%	Kreb's Ringer bicarbonate buffer, CF	Schneider, A., Herz, R., and Rosenheck, K.: Stimulus- Secretion Coupling in Chromaffin Isolated From Adrenal Medulla, *Proc Natl Acad Sci U S A 74*, 5036, 1977 (*651*)
Guinea-Pig	Guinea-pig, 500-700 g	Chromaffin, Medulla	Collagenase:	BSS (see reference)	Role, L.W., Leeman, S.E., and Perlman, R.L.: Somatostain and Substance P Inhibit Catecholamine Secretion from Isolated Cells of Guinea-pig Adrenal Medulla, *Neurochem Int 6*, 1813, 1981 (*643*)
	Guinea-pig(also rat, Hanover-Wistar, young; newborn; cattle)	Chromaffin	Collagenase: 0.5%	HBSS	Unsicker, K., Rieffert, B., and Ziegler, W.: Effects of Cell Culture Conditions, Nerve Growth Factor, Dexamethasone, and Cyclic AMP on Adrenal Chromaffin Cells *In Vitro*, *Adv Biochem Psychopharmacol 255*, 51, 1980 (*713*)
	Guinea-pig	Adrenal, Chromaffin	Collagenase: 0.05%-0.20%	Kreb's-Ringer bicarb glucose buffer, CF	Hochman, J., and Perlman, R.L.: Catecholamine Secretion by Isolated Adrenal Cells, *Biochim Biophys Acta 421*, 168, 1976 (*320*)
Hamster	Hamster (*Mesocricetus auratus*) 100-150 g	Adrenal, Chromaffin	Hyaluronidase: 0.20%	Kreb's Ringer bicarbonate buffer	Liang, B.T., and Perlman, R.L.: Catecholamine Secretion by Hamster Adrenal Cells, *J Neurochem 32*, 927, 1979 (*606*)
Human	Human	Adrenal medulla progenitor	Collagenase: 0.2%	DMEM/F-12	Santana, M., Chung, K., Vukicevic, V., Rosmaninho- Salgado, J., Kanczkowski, W., Cortez, V., Hackmann, K., Bastos, C., Mota, A., Schrock, E., Bornstein, S., Cavadas, C. and Ehrhart- Bornstein, M.: Isolation, Characterization, and Differentiation of Progenitor Cells from Human Adult Adrenal Medulla., *Stem Cells Transl Med 1*, 783, 2012 (*10938*)
	Human	Chromaffin	Collagenase: 0.2%	Locke's solution	Jeon, Y., Baek, W., Chung, S., Shin, N., Kim, H., and Lee, S.: Cultured Human Chromaffin Cells Grafted in Spinal Subarachnoid Space Relieves Allodynia in a Pain Rat Model., *Korean J Anesthesiol 60*, 357, 2011 (*10566*)

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TISSUE TABLES

Adrenal

Adrenal

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human	Adrenocortical	Collagenase Type 1: 0.2% Deoxyribonuclease I: 0.01%	Krebs Ringer	Caroccia, B., Fassina, A., Seccia, T., Recarti, C., Petrelli, L., Belloni, A., Pelizzo, M. and Rossi, G.: Isolation of Human Adrenocortical Aldosterone- Producing Cells by a Novel Immunomagnetic Beads Method., *Endocrinology 151*, 1375, 2010 (*10680*)
	Human, adult	Chromaffin	Trypsin: 0.25%	Eagle's MEM	Tischler, A., DeLellis, R., Bailes, B., Nunnemacher, G.,Carabba, V., and Wolfe, H.: Nerve Growth Factor- Induced Neurite Outgrowth from Normal Human Chromaffin Cells, *Lab Invest 43*, 399, 1980 (*625*)
	Human, adult and child	Foreskin	Collagenase: 0.5%	Dulbecco's MEM w/10% calf serum	Folkman, J., Haudenschild, C. C., and Zetter, B. R.: Long-term Culture of Capillary Endothlial Cells, *Proc Natl Acad Sci U S A 76*, 5217, 1979 (*653*)
Mouse	Mouse	Chromaffin	Collagenase Type 1: 0.1-0.2% Deoxyribonuclease I: 0.003-0.015% Hyaluronidase: 0.015%	DMEM/F12	Dominguez, N., Rodriguez, M., Machado, J. and Borges, R.: Preparation and Culture of Adrenal Chromaffin Cells., *Methods Mol Biol 846*, 223, 2012 (*10950*)
	Mouse, 8-10 week	Chromaffin	Papain: 40 u/ml	DMEM	Kolski-Andreaco, A., Cai, H., Currle, D., Chandy, K. and Chow, R.: Mouse Adrenal Chromaffin Cell Isolation., *J Vis Exp 2*, 129, 2007 (*11029*)
	Mouse, embryonic	Chromafin	Papain: 20-25 u/ml	DMEM	Tian, J., Wu, Z., Unzicker, M., Lu, L., Cai, Q., Li, C., Schirra, C., Matti, U., Stevens, D., Deng, C., Rettig, J., Sheng, Z.: The Role of Snapin in Neurosecretion: Snapin Knock-out Mice Exhibit Impaired Calcium-dependent Exocytosis of Large Dense-core Vesicles in Chromaffin Cells, *J Neurosci 25*, 10546- 55, 2005 (*10118*)
Ovine	Ovine, adult and fetal	Adrenocortical	Collagenase Type 1: 0.4%	DMEM/Ham's F12	Valego, N. and Rose, J.: A Specific CRH Antagonist Attenuates ACTH-Stimulated Cortisol Secretion in Ovine Adrenocortical Cells., *Reprod Sci 17*, 477, 2010 (*10562*)
	Ovine, fetal	Adrenocortical	Collagenase Type 1: 0.4%	DMEM/Ham's F12	Valego, N., Su, Y., Carey, L., Young, S., Tatter, S., Wang, J. and Rose, J.: Hypothalamic-Pituitary Disconnection in Fetal Sheep Blocks the Peripartum Increases in Adrenal Responsiveness and Adrenal ACTH Receptor Expression., *Am J Physiol Regul Integr Comp Physiol 289*, R410, 2005 (*10563*)
	Ovine, adult	Chromaffin	Collagenase Type 2: 0.2% Deoxyribonuclease I: 100 u/ml	Locke's solution	Keating, D., Rychkov, G., Adams, M., Holgert, H., McMillen, I.C. and Roberts, M.: Opioid Receptor Stimulation Suppresses the Adrenal Medulla Hypoxic Response in Sheep by Actions on Ca(2+) and K(+) Channels., *J Physiol 555*, 489, 2004 (*10567*)
	Ovine, 3 year	Anterior pituitary	Trypsin: 2.5% Deoxyribonuclease I: 0.004%	DMEM	Canny, B., O'Farrell, K., Clarke, I., Tilbrook, A.: The Influence of Sex and Gonadectomy on the Hypothalamo-pituitary- adrenal Axis of the Sheep, *J Endocrinol 162*, 215-25, 1999 (*10324*)
Rat	Rat	Chromaffin	Collagenase Type 1: 0.1-0.2% Deoxyribonuclease I: 0.003-0.015% Hyaluronidase: 0.015%	DMEM/F12	Dominguez, N., Rodriguez, M., Machado, J. and Borges, R.: Preparation and Culture of Adrenal Chromaffin Cells., *Methods Mol Biol 846*, 223, 2012 (*10950*)
	Rat	Chromaffin	Collagenase Type 1: 0.26% Deoxyribonuclease I: 0.015% Hyaluronidase: 0.015%	HBSS	Gilabert, J, Montalvo, G, and Artalejo A.: Rat Chromaffin Cells Primary Cultures: Standardization and Quality Assessment for Single-Cell Assays, *Nat Protoc* , 294, 2006 (*10349*)
	Rat, SD	Chromaffin	Collagenase Type 1: 0.26% Deoxyribonuclease I: 0.015% Hyaluronidase: 0.015%	HBSS	Gilabert, J: Necessary Conditions to Maintain Rat Adrenal Chromaffin Cells in Primary Culture, *Cell Biology of the Chromaffin Cell*,Borges, R. and Gandia, L., Instituto Teofilo Hernando, , 2004 (*10564*)
	Rat, SD, male	Zona fasciculata/ reticularis	Collagenase: 0.4%	Krebs-HEPES	Bruder, E., Ball, D., Goodfriend, T., Raff, H.: An Oxidized Metabolite of Linoleic Acid Stimulates Corticosterone Production by Rat Adrenal Cells, *Am J Physiol Regul Integr Comp Physiol 284*, R1631-5, 2003 (*10134*)
	Rat, Wistar, newborn	Chromaffin	Collagenase Type 1: 0.025% Deoxyribonuclease I: 0.0015%	DMEM	Zhang, L., Castell, A., Avila, E., Drucker-ColÃn, R., Escobar, A.: Immunocytochemical, Ultrastructural and Neurochemical Evidences on Synaptogenesis and Dopamine Release of Rat Chromaffin Cells Co-cultured with Striatal Neurons, *J Neuropathol Exp Neurol 59*, 170-4, 2000 (*10247*)
	Rat, SD, male	ZG ZFR	Collagenase Type 1: 0.2%	Kreb's	Sayed, S., Whitehouse, B., and Jones, P.: Phosphoserine/Threonine Phosphatases in the Rat Adrenal Cortex: A Role in the Control of Steroidogenesis, *J Endocrinol 154*, 449, 1997 (*1072*)
	Rat, Fischer, male, 10-16 weeks	Adrenocortical	Deoxyribonuclease I: 0.005%	BSS	Roskelley, C.D. and Auersperg, N.: Density Separation of Rat Adrenocortical Cells: Morphology, Steroidogenesis, and P- 450scc Expression in Primary Culture, *In Vitro Cell Dev Biol 26*, 493, 1990 (*425*)
	Rat, male, 120-160 g, Rat, SD, male, 400- 450 g	Leydig, Adrenal	Collagenase Type 2: 0.03%	Krebs Ringer bicarbonate buffer	Ng, T. and Liu, W.: Toxic Effect of Heavy Metals on Cells Isolated from the Rat Adrenal and Testis, *In Vitro Cell Dev Biol 26*, 24, 199 (*435*)
	Rat, SD, 2-4 day old (also bovine)	Heart, Adrenal Chromaffin,Paraneurons	Trypsin: 0.06%	25mM HEPES buffered Locke's solution, CMF	Trifaro, J., Tang, R., and Novas, M.: Monolayer Co- Culture of Rat Heart Cells and Bovine Adrenal Chromaffin Paraneurons, *In Vitro Cell Dev Biol 26*, 335, 1990 (*438*)
	Rat, Long-Evans, female, 150-200 g	Glomerulosa	Collagenase: 0.2%	MEM-d-Val	Payet, N., Deziel, Y., and Lehoux, J.-G.: Vasopressin: A Potent Growth Factor in Adrenal Glomerulosa Cells in Culture, *J Steroid Biochem 20*, 449, 1984 (*621*)
	Rat, Fischer, male, 1-10 months	Adrenocortical	Deoxyribonuclease I: 0.005%	BSS	Leonard, R.K., Auersperg, N., and Parkes, C.O.: Ascorbic Acid Accumulation by Cultured Rat Adrenocortical Cells, *In Vitro 19*, 46, 1983 (*527*)
	Rat, SD, male, 400- 450 g	Decapular, Capsular, Glomerulosa	Deoxyribonuclease I: 0.01%	Medium 199	Li, C.H., Ng, T.B., and Cheng, C.H.K.: Melanotropins: Aldosterone- and Corticosterone- Stimulating Activity in Isolated Rat Adrenal Cells, *Int J Pept Protein Res 19*, 361, 1982 (*543*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat	Chromaffin	Trypsin: 0.10%	Ham's F-12 w/HEPES	Englert, D.F.: An Optical Study of Isolated Rat Adrenal Chromaffin Cells, *Exp Cell Res 125*, 369, 1980 (*389*)
	Rat, Hanover- Wistar, 2nd postnatal week (also guinea-pig, cattle)	Chromaffin	Collagenase: 0.5%	HBSS	Unsicker, K., Rieffert, B., and Ziegler, W.: Effects of Cell Culture Conditions, Nerve Growth Factor, Dexamethasone, and Cyclic AMP on Adrenal Chromaffin Cells, *Adv Biochem Psychopharmacol 25*, 51, 1980 (*711*)
	Rat , SD, female, 200 g	Glomerulosa	Deoxyribonuclease I: 0.05%	Kreb's	Braley, L., Williams, G., and Bradwin, G.: The Effect of Unit Gravity Sedimentation on Adrenal Steroidogenesis by Isolated Rat Glomerulosa and Fasciculata Cells, *Endocrinology 106 (1)*, 50,1980 (*769*)
	Rat	Foreskin	Collagenase: 0.5%	Dulbecco's MEM w/10% calf serum	Folkman, J., Haudenschild, C. C., and Zetter, B. R.: Long-term Culture of Capillary Endothlial Cells, *Proc Natl Acad Sci U S A 76*, 5217, 1979 (*653*)
	Rat, Wistar- Hanover, 7-12 day	Medullary	Trypsin: 0.125%	HBSS	Unsicker, K., Krisch, B., Otten, U., and Thoenen, H.: Nerve Growth Factor- Induced Fiber Outgrowth From Isolated Rat Adrenal Chromaffin Cells: Impairment by Glucocorticoids, *Proc Natl Acad Sci U S A 75 (7)*, 3498, 1978 (*988*)
	Rat, SD, male	Cortical	Trypsin: 0.25%	Kreb's Ringer bicarbonate buffer	Barofsky, A., Feinstein, M., and Halkerston, I.: Enzymatic and Mechanical Requirements for the Dissociation of Cortical Cells From Rat Adrenal Glands, *Exp Cell Res 79*, 263, 1973 (*1010*)
	Rat, Holtzman, male, 180-250 g	Adrenal	Collagenase Type 1: 0.5%	Kreb's Ringer bicarbonate buffer	Kloppenborg, P., Island, D., Liddle, G., Michelakis, A., and Nicholson, W.: A Method of Preparing Adrenal Cell Suspensions and Its Applicability to the *In Vitro* Study of Adrenal Metabolism, *Endocrinology 82*, 1053, 1968 (*383*)

Bone

Bone

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Bovine	Bovine	Chondrocytes	Collagenase Type 2: 0.4%	DMEM	Buschmann, M., Gluzband, Y., Grodzinsky, A., and Hunziker, E.: Mechanical Compression Modulates Matrix Biosynthesis in Chondrocyte/ Agarose Culture, *J Cell Sci 108*, 1497, 1995 (*1133*)
Chicken	Chick, day old	Osteoblasts	Trypsin: 0.03%	DMEM	Gay, C., Lloyd, Q., and Gilman, V.: Characteristics and Culture of Osteoblasts Derived From Avian Long Bone, *In Vitro Cell Dev Biol 30A*, 379, 1994 (*1036*)
	Chick, Peterson/Arbor Acre, male, 4 weeks old (*Gallus domesticus*)	Chondrocytes	Trypsin: 0.25%	Ham's F12	Rosselot, G., Reginato, A.M., and Leach, R.M.: Development of a Serum- Free System to Study the Effect of Growth Hormone and Insulinlike Growth Factor-1 on Cultured Postembryonic Growth Plate Chondrocytes, *In Vitro Cell Dev Biol 28A*, 235, 1992 (*481*)
	Chick, embryo	Vertebrae chondroblasts	Trypsin: 0.25%	Simm's, CMF	Schiltz, J.R., Mayne R., and Holtzer, H.: The Synthesis of Collagen and Glycosaminoglycans by Dedifferentiated Chondroblasts in Culture, *Differentiation 1*, 97, 1973 (*678*)
Human	Human	Bone-cartilage- stromal	Collagenase Type 2: 0.75%	HBSS	Agarwal, S., Loder, S., Sorkin, M., Li, S., Shrestha, S., Zhao, B., Mishina, Y., James, A. and Levi, B.: Analysis of Bone-Cartilage- Stromal Progenitor Populations in Trauma Induced and Genetic Models of Heterotopic Ossification., *Stem Cells 34*, 1692-701, 2016 (*11649*)
	Human	Osteoblasts	Collagenase Type 2: 0.2% Trypsin: 0.25%-1.0%	DMEM	Taylor, S., Shah, M. and Orriss, I.: Generation of Rodent and Human Osteoblasts., *Bonekey Rep 3*, 585, 2014 (*11491*)
	Human	Osteoblasts	Collagenase Type 3: 0.2%	MEM	Kode, A.,Manavalan1, J.,Mosialou1, I., Bhagat G., Rathinam, C, Luo, N et al.: Leukemogenesis Induced by an Activating β-catenin Mutation in Osteoblasts, *Nature 506*, 240, 2014 (*11515*)
	Human, 22-73 year	Osteoblasts	Trypsin: 0.5%	Basal Medium	Kneser, U., Voogd, A., Ohnolz, J., Buettner, O., Stangenberg, L., Zhang, YH., Stark, G., Schaefer, D.: Fibrin Gel-Immobilized Primary Osteoblasts in Calcium Phosphate Bone Cement: In Vivo Evaluation with Regard to Application as Injectable Biological Bone Substitute, *Cells Tissues Organs 179*, 158-69, 2005 (*10316*)
	Human, 60+ year	Bone Cells, Osteoblasts	Collagenase Type 2: 200-250 u/ml	DMEM	Chen, X., Qian, H., Nef, L., Satomura, K., and Horowitz, M.: Thy-1 Antigen Expression by Cells in the Osteoblast Lineage, *J Bone Miner Res 14*, 362, 1999 (*9811*)
	Human	Osteoblasts	Trypsin: 0.1%	DMEM	Meikle, M., Boyd, S., Hembry, R., Compston, J., Croucher, P., and Reynolds, J.: Human Osteoblasts in Culture Synthesize Collagenase and Other Matrix Metalloproteinases in Response to Osteotropic Hormones and Cytokines, *J Cell Sci 103*, 1093, 1992 (*1229*)
	Human	Osteoblasts	Collagenase Type 4: 250 u/ml	DMEM	Fedarko, N.S., Termine, J.D., Young, M.F. and Robey, P.G.: Temporal Regulation of Hyaluronan and Proteoglycan Metabolism by Human Bone Cells in Vitro, *J Biol Chem 265*, 12200, 1990 (*567*)
Mouse	Mouse	Osteoblast	Collagenase Type 1: 0.3%	HBSS	Wang, W., Majihail, G., Lui, C. and Zhou, L.: Osteoblast Sorting and Intracellular Staining of CXCL12., *Bio Protoc 8*, , 2018 (*11696*)
	Mouse	Bone-cartilage- stromal	Collagenase Type 2: 0.75%	HBSS	Agarwal, S., Loder, S., Sorkin, M., Li, S., Shrestha, S., Zhao, B., Mishina, Y., James, A. and Levi, B.: Analysis of Bone-Cartilage- Stromal Progenitor Populations in Trauma Induced and Genetic Models of Heterotopic Ossification., *Stem Cells 34*, 1692-701, 2016 (*11649*)
	Mouse	Bone stromal	Collagenase Type 1: 0.3%	DMEM	Igarashi, H., Akahoshi, N., Ohto-Nakanishi, T., Yasuda,D. and Ishii, S.: The Lysophosphatidic Acid Receptor LPA4 Regulates Hematopoiesis-Supporting Activity of Bone Marrow Stromal Cells., *Sci Rep 5*, 11410, 2015 (*11416*)
	Mouse	Osteoblasts	Collagenase Type 1: 1.0% Neutral Protease: 1.6%	MEM	Lee, D., Choung, H., Kim, H., Gronostajski, R., Yang, Y., Ryoo, H., Lee, Z., Kim,H., Cho, E. and Park, J.: NFI- C Regulates Osteoblast Differentiation Via Control of Osterix Expression., *Stem Cells 32*, 2467-79, 2014(*11385*)
	Mouse, 2-5 day	Osteoblasts	Collagenase Type 2: 0.2% Trypsin: 0.25%-1.0%	DMEM	Taylor, S., Shah, M. and Orriss, I.: Generation of Rodent and Human Osteoblasts., *Bonekey Rep 3*, 585, 2014 (*11491*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse	Osteoblasts	Collagenase Type 3: 0.2%	MEM	Kode, A.,Manavalan, J.,Mosialou, I., Bhagat G., Rathinam, C, Luo, N et al.: Leukemogenesis Induced by an Activating β-catenin Mutation in Osteoblasts, *Nature 506*, 240, 2014(*11515*)
	Mouse, 4-22 month	Osteocytes	Collagenase Type 1: 300 u/ml	MEM	Stern, A., Stern, M., Van Dyke, M., Jahn, K., Prideaux,M. and Bonewald, L.: Isolation and Culture of Primary Osteocytes from the Long Bones of Skeletally Mature and Aged Mice., *Biotechniques 52*, 361, 2012 (*10803*)
	Mouse	Endosteal cells	Collagenase Type 1: 0.3%	DMEM	Nakamura, Y., Arai, F., Iwasaki, H., Hosokawa, K., Kobayashi, I., Gomei, Y., Matsumoto, Y., Yoshihara, H. and Suda, T.: Isolation and Characterization of Endosteal Niche Cell Populations that Regulate Hematopoietic Stem Cells., *Blood 116*, 1422,2010 (*10621*)
	Mouse	Bone marrow	Collagenase: 0.2%	DMEM	Morikawa, S., Mabuchi, Y., Kubota, Y., Nagai, Y., Niibe, K., Hiratsu, E., Suzuki, S., Miyauchi-Hara, C., Nagoshi, N., Sunabori, T., Shimmura, S., Miyawaki, A., Nakagawa, T., Suda, T., Okano, H. and Matsuzaki, Y.: Prospective Identification, Isolation, and Systemic Transplantation of Multipotent Mesenchymal Stem Cells in Murine Bone Marrow., *J Exp Med 206*, 2483-96, 2009 (*11407*)
	Mouse, male, 6-8 week old	Osteoclasts	Collagenase Type 3: 0.1%	DMEM	Sakai, E., Miyamoto, H., Okamoto, K., Kato, Y., Yamamoto, K., and Sakai, H.: Characterization of Phagosomal Subpopulations Along Endocytic Routes in Osteoclasts and Macrophages, *J. Biochem. 130*, 823, 2001 (*1145*)
	Mouse, 3-5 day, 6-8 week	Bone Cells, Osteoblasts	Collagenase Type 2: 200-250 u/ml	DMEM	Chen X., Qian H., Neff L., Satomura K., and Horowitz M.: Thy-1 antigen Expression by Cells in the Osteoblast Lineage, *J Bone Miner Res 14*, 362, 1999(*9811*)
	Mouse, BALB/c	Osteoblast-like Cells, Stromal Cell Lines, Hematopoietic Blast Cells	Trypsin: 0.1%	Eagle's MEM	Takanashi, H., Matsuishi, T., and Yoshizato, K.: Establishment and Characterization of Stromal Cell Lines That Support Differentiation of Murine Hematopoietic Blast Cells into Osteoblast-like Cells, *In Vitro Cell Dev Biol 30A*, 384, 1994 (*1037*)
	Mouse, Swiss- Webster	Neonatal bone	Collagenase Type 2: 0.20%	Tris-buffered saline	Chen,T. and Feldman,D.: Regulation of 1,25- Dihydroxyvitamin D3 Receptors in Cultured Mouse Bone Cells, *J Biol Chem 256*, 5561, 1981 (*554*)
Rat	Rat, 2 day	Osteoblasts	Collagenase Type 2: 0.1% Trypsin: 0.25%	DMEM	Jeon, J., Lee, M. and Yang, H.: Differentiated Osteoblasts Derived Decellularized Extracellular Matrix to Promote Osteogenic Differentiation., *Biomater Res 22*, 4, 2018(*11587*)
	Rat, Wistar, 250g	Proximal femur stem	Collagenase Type 1: 0.075%	HBSS	Jacobs, F., Gijsen, H., Van de Vyver, M. and Ferris, W.: Vanadate Impedes Adipogenesis inMesenchymal Stem CellsDerived from Different Depots within Bone., *Front Endocrinol 7*, 108, 2016(*11505*)
	Rat, 2-3 day	Osteoblasts	Collagenase Type 2: 0.2% Trypsin: 0.25%-1.0%	DMEM	Taylor, S., Shah, M. and Orriss, I.: Generation of Rodent and Human Osteoblasts., *Bonekey Rep 3*, 585, 2014 (*11491*)
	Rat, fetal, 21 days of gestation	Calvaria	Collagenase: 0.2%	MEM	Owen, T., Aronow, M., Shalhoub, V., Barone, L., Wilming, L., Tassinari, M., Kennedy, M., Pockwinse, S., Lian, J., and Stein, G.: Progressive Development of the Rat Oseoblast Phenotype *In Vitro*: Reciprocal Relationships in Expression of Genes Associated with Osteoblast Proliferation and Differentiation During Formation of the Bone Extracellular Matrix, *J Cell Physiol 143*, 420, 1990(*1235*)
	Rat, newborn	Osteoblast-like	Collagenase Type 2: 0.3%	MEM	Ernst, M., and Froesch, E.: Osteoblastlike Cells in a Serum-Free Methylcellulose Medium Form Colonies: Effects of Insulin and Insulinlike Growth Factor I, *Calcif Tissue Int 40*, 27, 1987 (*1007*)
	Rat, fetus, 17-21 day	Calvaria	Collagenase: 0.01%-0.6%	Tris-buffered saline	Peck, W., Birge, S., and Fedak, S.: Bone Cells: Biochemical and Biological Studies After Enzymatic Isolation, *Science 146*, 1476, 1964 (*2599*)

Brain

Brain

Bovine	Bovine	Microvascular endothelial	Neutral Protease: 0.005%	Medium 199	Kanda, T., Yoshino, H., Ariga, T., Yamawaki, M., and Yu, R.: Glycosphingolipid Antigens in Cultured Microvasular Bovine Brain Endothelial Cells: Sulfoglucuronosyl Paragloboside as a Target of Monoclonal IgM in Demyelinative Neuropathy, *J Cell Biol 126 (1)*, 235, 1994 (*950*)
	Bovine	Brain endothelial	Collagenase Type 2: 0.35%	DMEM	Wolburg, H., Neuhaus, J., Kniesel, U., Krauss, B., Schmid, E., Ocalan, M., Farrell, C., Risau, W.: Modulation of tight junction structure in blood-brain barrier endothelial cells. Effects of Tissue Culture, Second Messengers and Cocultured Astrocytes, *J Cell Sci 107*, 1347, 1994 (*10048*)
	Bovine	Endothelial	Neutral Protease: 0.125%	MEM	Miller, D., Audus, K., and Borchardt, R.: Application of Cultured Endothelial Cells of the Brain Microvasculature in the Study of the Blood- Brain Barrier, *J Tiss Cul Meth 14*, 217, 1992 (*942*)
	Bovine, adult	Cerebral artery, Endothelial	Collagenase: 0.2%	HBSS	Machi, T., Kassell, N.F., and Scheld, W.M.: Isolation and Characterization of Endothelial Cells From Bovine Cerebral Arteries, *In Vitro Cell Dev Biol 26*, 291, 1990 (*436*)
	Bovine	Capillary endothelial	Collagenase: 0.1%	DMEM	Estrada, C., Bready, J., Berliner, J., and Cancilla, P.: Choline Uptake by Cerebral Capillary Endothelial Cells in Culture, *J Neurochem 54*, 1467, 1990 (*949*)
	Bovine	Endothelial	Neutral Protease: 0.5%	MEM	Audus, K., and Borchardt, R.: Characterization of an *In Vitro* Blood-Brain Barrier Model System for Studying Drug Transport and Metabolism, *Pharm Res 3 (2)*, 81, 1986 (*855*)
	Bovine	Endothelial, Brain arteries	Collagenase Type 2: 0.2%	Dulbecco's PBS	Goetz, I., Warren, J., Estrada, C., Roberts, E., and Krause, D.: Long-Term Cultivation of Arterial and Capillary Endothelium From Adult Bovine Brain, *In Vitro Cell Dev Biol 21*, 172, 1985 (*413*)
	Calf (also lamb)	Oligodendroglia, Neural	Trypsin: 0.1%	(see reference)	Poduslo, S., Miller, K., and McKhann, G.: Metabolic Properties of Maintained Oligodendroglia Purified from Brain, *J Biol Chem 253*, 1592, 1978 (*552*)
Guinea-Pig	Guinea-pig, 200-400 g	Neurons	Trypsin: 0.06-0.08%	PIPES saline	Kay, A.R., and Wong, R.K.S.: Isolation of Neurons Suitable for Patch-Clamping from Adult Mammalian Central Nervous Systems, *J Neurosci Methods 16*, 227, 1986 (*607*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human	Microglia	Collagenase Type 1: 300 u/ml Trypsin: 0.125%	DMEM	Mizee, M., Miedema, S., van der Poel, M., Adelia , S., van Strien, M., Melief, J., Smolders, J., Hendrickx, D., Heutinck, K., Hamann, J. and Huitinga, I.: Isolation of Primary Microglia from the Human Post-Mortem Brain: Effects of Ante- and Post- Mortem Variables., *Acta Neuropathol 5*, 16, 2017 (*11604*)
	Human, adult	Neuronal	Papain: 20 u/ml	Neurobasal	Spaethling, J., Na, Y., Lee, J., Ulyanova, A., Baltuch, G., Bell, T., Brem, S., Chen, H., Dueck, H., Fisher, S., Garcia, M., Khaladkar, M., Kung, D., Lucas, T., O'Rourke, D. and Stefanik, D.: Primary Cell Culture of Live Neurosurgically Resected Aged Adult Human Brain Cells and Single Cell Transcriptomics., *Cell Rep 18*, 791-803, 2017 (*11673*)
	Human, fetal and mature	Astrocytes and neurons	Papain: 7.5-20 u/ml	RPMI	Zhang, Y., Sloan, S., Clarke, L., Caneda, C., Plaza, C., Blumenthal, P., Vogel, H., Steinberg, G., Edwards, M., Li, G., Duncan, J., Cheshier, S., Shuer, L., Chang, E., Grant, G., Gephart, M. and Barres, B.: Purification and Characterization of Progenitor and Mature Human Astrocytes Reveals Transcriptional and Functional Differences with Mouse., *Neuron 89*, 37-53, 2016 (*11490*)
	Human	Microglia	Neutral Protease: 10 u/ml Papain: 2.5 u/ml	Hibernate A	Rustenhoven, J., Park Thomas, I., Schweder, P., Scotter, J., Correia, J., Smith, A., Gibbons, H., Oldfield, R., Bergin, P., Mee, E., Faull, R., Curtis, M., Scott, G. and Dragunow, M.: Isolation of Highly Enriched Primary Human Microglia for Functional Studies., *Sci Rep 6*, 19371, 2016 (*11513*)
	Human, 25-81 yr	Brain tumor	Neutral Protease: 0.11 u/ml Collagenase Type 4: 0.05% Hyaluronidase: 1,000 u/ml Deoxyribonuclease I: 5 u/ml	HBSS	Volovitz, I, Shapira, N., Ezer, H., Gafni, A., Lustgarten, M., Alter, T., Ben-Horin, I., Barzilai, O., Shahar, T., Kanner, A., Fried, I., Veshchev, I., Grossman, R.and Ram, Z,: A Non-Aggressive, Highly Efficient, Enzymatic Method for Dissociation of Human Brain-Tumors and Brain- Tissues to Viable Single- Cells., *BMC Neurosci 17*, 30, 2016 (*11525*)
	Human	Brain tumor	Collagenase Type 1: 0.04% Hyaluronidase: 0.01% Deoxyribonuclease I: 0.02% Neutral Protease: 0.008%	DMEM/F12	Hussein, D., Punjaruk, W., Storer, L., Shaw, L., Othman, R., Ottoman, R., Peet, A., Miller, S., Bandopadhyay, G., Heath, R., Kumari, R., Bowman, K., Braker, P., Rahman, R., Jones, G., Watson, S. and Lowe, J.: Pediatric Brain Tumor Cancer Stem Cells: Cell Cycle Dynamics, DNA Repair, and Etoposide Extrusion., *Neuro Oncol 13*, 70-83, 2011 (*11598*)
	Human	Tumor	Collagenase Type 4: 0.1% Hyaluronidase: 0.07% Deoxyribonuclease I: 0.04%	see reference	Sauvageot, C., Weatherbee, J., Kesari, S., Winters, S., Barnes, J., Dellagatta, J., Ramakrishna, N., Stiles, C., Kung, A., Kieran, M. and Wen, P.: Efficacy of the HSP90 Inhibitor 17-AAG in Human Glioma Cell Lines and Tumorigenic Glioma Stem Cells., *Neuro Oncol Vol. 11*,, , 109, 2009 (*10592*)
	Human	Microglia	Trypsin: 0.25% Deoxyribonuclease I: .005%	DMEM/F12	Klegeris, A., McGeer, P.: Chymotrypsin-like Proteases Contribute to Human Monocytic THP-1 Cell as Well as Human Microglial Neurotoxicity, *Glia 51*, 56-64, 2005 (*10112*)
	Human	Microvessels	Collagenase Type 4: 0.1%	DMEM	Gerhart, D. Z., Broderius, M. A., and Drewes, L. R.: Cutlured Human and Canine Endothelial Cells from Brain Microvessels, *Brain Res Bull 21*, 785, 1988 (*344*)
	Human	Neuronal	Deoxyribonuclease I: 10 µg/ml	Tris-HCl, 50 mM, CaCl2, 2 mM	Roher, A.E., Palmer, K.C., Chau, V., and Ball, M.J.: Isolation and Chemical Characterization of Alzheimer's Disease Paired Helical Filament Cytoskeletons:Differentiation from Amyloid Plaque Core Protein, *J Cell Biol 107*, 2703, 1988 (*581*)
	Human, 15-54 years	Microvessels	Collagenase: 0.1%	Serum-free modified Lewis medium	Vinters, H.V., Reave, S., Costello, P., Girvin, J.P., and Moore, S.A.: Isolation and Culture of Cells Derived From Human Cerebral Microvessels, *Cell Tissue Res 249*, 657, 1987 (*357*)
Insect	Drosophilia	Neurons	Papain: 50 u/ml	Modified Dissecting Saline	Hadzic, T., Park, D., Abruzzi, K., Yang, L., Trigg, J., Rohs, R., Rosbash, M. and Taghert, P.: Genome-Wide Features of Neuroendocrine Regulation in Drosophila by the Basic Helix-Loop-Helix Transcription Factor DIMMED., *Nucleic Acids Res 43*, 2199-215, 2015 (*11595*)
	Drosophila	Neurons	Papain: 20 u/ml	Saline	Gu, H. and O'Dowd, D.: Whole Cell Recordings from Brain of Adult Drosophila., *J Vis Exp 6*, 248, 2007 (*10651*)
	Drosophila	Neurons	Papain: 4 u/ml	DMEM	Sicaeros, B. Campusano, J. and O'Dowd, D.: Primary Neuronal Cultures from the Brains of Late Stage Drosophila Pupae., *J Vis Exp 4*, 200, 2007 (*10989*)
	Drosophilia	Kenyon	Papain: 20 u/ml	Recording saline	Gu, H. and O'Dowd, D.: Cholinergic Synaptic Transmission in Adult Drosophila Kenyon Cells in Situ., *J Neurosci 26*, 265-72, 2006 (*11594*)
Monkey	Monkey, Rhesus	Brain cells	Collagenase Type 2: 500 u/ml Deoxyribonuclease I: 28 u/ml	HBSS	Marcondes, M., Burudi, E., Huitron-Resendiz, S., Sanchez-Alavez, M., Watry, D., Zandonatti, M., Henriksen, S., Fox, H.: Highly Activated CD8(+) T Cells in the Brain Correlate with Early Central Nervous System Dysfunction in Simian Immunodeficiency Virus Infection, *J Immunol 167*, 5429-38, 2001 (*10125*)
Mouse	Mouse, fetal and mature	Astrocytes and neurons	Papain: 7.5-20 u/ml	RPMI	Zhang, Y., Sloan, S., Clarke, L., Caneda, C., Plaza, C., Blumenthal, P., Vogel, H., Steinberg, G., Edwards, M., Li, G., Duncan, J., Cheshier, S., Shuer, L., Chang, E., Grant, G., Gephart, M. and Barres, B.: Purification and Characterization of Progenitor and Mature Human Astrocytes Reveals Transcriptional and Functional Differences with Mouse., *Neuron 89*, 37-53, 2016 (*11490*)
	Mouse	Chloroid plexus	Collagenase Type 4: 400 u/ml	PBS	Baruch, K., Rosenzweig, N., Kertser, A., Deczkowska, A., Sharif, A., Spinrad, A., Tsitsou-Kampeli, A., Sarel, A., Cahalon, L. and Schwartz, M.: Breaking Immune Tolerance by Targeting Foxp3(+) Regulatory T Cells Mitigates Alzheimer's Disease Pathology., *Nat Commun 6*, 7967, 2015 (*11428*)
	Mouse, 3 week	Neural	Papain: 20 u/ml	PBS	Luo,Y.,Coskun, V., Liang, A.,Yu, J., Cheng, L.,Ge, W., Shi, Z., Zhang, K., Li, C., Lin, H., Luo, D., Wang, J., Lin, C., Dai, Z., Zhu, H., Zhang, J., Liu, J., Liu, H.,deVellis, J., Horvath, S., Sun, Y. and Li, S.: Different Patterns of Molecular Forms of Somatostatin are Released by the Rat Median Eminence and Hypothalamus., *Cell 161*, 1175, 2015 (*11529*)
	Mouse	Brain-sequestered leukocytes	Collagenase Type 4: 0.05% Deoxyribonuclease I: 2 u/ml	RPMI	Ryg-Cornejo, V., Ioannidis, L. and Hansen, D.: Isolation and Analysis of Brain- Sequestered Leukocytes from Plasmodium Berghei ANKA- Infected Mice., *J Vis Exp 71*, e50112, 2013 (*10908*)
	Mouse	Cerebral pericytes	Collagenase Type 2: 0.1% Deoxyribonuclease I: 30 u/ml	DMEM	Shah. G., Price, T., Banks, W., Morofuji, Y., Kovac, A., Ercal, N., Sorenson, C., Shin, E., Sheibani, N.: Pharmacological Inhibition of Mitochondrial Carbonic Anhydrases Protects Mouse Cerebral Pericytes from High Glucose-Induced Oxidative Stress and Apoptosis., *J Pharmacol Exp Ther 344*, 637-45, 2013 (*11080*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse, P13-15	Glial	Papain: 20 u/ml Deoxyribonuclease I: 0.0005%	EBSS	Haseleu, J., Anlauf, E., Blaess, S., Endl, E. and Derouiche, A.: Studying Subcellular Detail in Fixed Astrocytes: Dissociation of Morphologically Intact Glial Cells (DIMIGs)., *Front Cell Neurosci 7*, 54, 2013 (*11388*)
	Mouse, P0-P15	Astrocytes	Papain: 5 u/ml Deoxyribonuclease I: 0.004%	DPBS	Foo, L.: Purification of Rat and Mouse Astrocytes by Immunopanning., *Cold Spring Harb. Protoc. 2013*, 421-32, 2013 (*11541*)
	Mouse, adult	Neurons	PDS kit: with modifications	DMEM/F12	Saxena, A., Wagatsuma, A., Noro, Y., Kuji, T., Asaka- Oba, A., Watahiki, A., Gurnot, C., Fagiolini, M., Hensch, T. and Carninci, P.: Trehalose-Enhanced Isolation of Neuronal Sub-Types from Adult Mouse Brain., *Biotechniques 52*, 381, 2012 (*10801*)
	Mouse, 1-2 day	Oligodendrocytes, dorsal root ganglia	Papain: 0.15% Deoxyribonuclease I: 0.006%	DMEM	O'Meara, R., Ryan, S., Colognato, H. and Kothary, R.: Derivation of Enriched Oligodendrocyte Cultures and Oligodendrocyte/Neuron Myelinating Co-Cultures from Post-Natal Murine Tissues., *J Vis Exp 54*, 3324, 2011 (*10650*)
	Mouse, 6-12 week	Vascular smooth muscle cells	Papain: 0.05% Collagenase Type 4: 0.15% Elastase: 0.05%	PBS	Chung, W., Farley, J., Swenson, A., Barnard, J., Hamilton, G., Chiposi, R. and Drummond, H.: Extracellular Acidosis Activates ASIC-like Channels in Freshly Isolated Cerebral Artery Smooth Muscle Cells., *Am J Physiol Cell Physiol 298*, C1198, 2010 (*10575*)
	Mouse, 4-6 day	Neurons	PDS kit: with modifications	HBSS	Lee, H., Greene, L., Mason, C. and Manzini, M.: Isolation and Culture of Post-Natal Mouse Cerebellar Granule Neuron Progenitor Cells and Neurons., *J Vis Exp 23*, 990, 2009 (*10652*)
	Mouse, postnatal	Astrocytes	Trypsin: 0.25% Deoxyribonuclease I: 1,000 u/ml	HBSS	Sher, F., Rossler, R., Brouwer, N., Balasubramaniyan, V., Boddeke, E. and Copray, S.: Differentiation of Neural Stem Cells Into Oligodendrocytes: Involvement of the Polycomb Group Protein Ezh2., *Stem Cells 26*, 2875, 2008 (*10507*)
	Mouse, neonatal	Neurons	Papain: 20 u/ml	Neurobasal	Fasano, C., Thibault, D. and Trudeau, L.: Culture of Postnatal Mesencephalic Dopamine Neurons on an Astrocyte Monolayer, *Current Protocols in Neuroscience Vol. 44*,3.21.1, 2008 (*10687*)
	Mouse, embryonic and postnatal	Cortical neurons	Papain: 4-10 u/ml	Neurobasal	Hilgenberg, L. and Smith, M.: Preparation of Dissociated Mouse Cortical Neuron Cultures., *J Vis Exp 10*, 562, 2007 (*10660*)
	Mouse	Neurosperes	PDS kit: per instructions	DMEM/F12	Klein C, Butt SJ, Machold RP, Johnson JE, and Fishell G.: Cerebellum- and forebrain-derived stem cells possess intrinsic regional character, *Development 132*, 4497, 2005 (*10062*)
	Mouse, 1 day	Neural progenitor	PDS kit: per instructions	see reference	Seaberg, R., Smukler, S. and Van der Kooy, D.: Intrinsic Differences Distinguish Transiently Neurogenic Progenitors from Neural Stem Cells in the Early Postnatal Brain., *Dev Biol 278*, 71, 2005 (*10363*)
	Mouse	Granule cell precur-sors, pre- neoplastic and tumor cells	Papain: 10 u/ml Deoxyribonuclease I: 250 u/ml	Neurobasal/B27	Oliver, T., Read, T., Kessler, J., Mehmeti, A., Wells, J., Huynh, T., Lin, S. and Wechsler-Reya, R.: Loss of Patched and Disruption of Granule Cell Development in a Pre-Neoplastic Stage of Medulloblastoma., *Development 132*, 2425, 2005 (*10555*)
	Mouse	Cortical neurons	PDS kit: per instructions	Neurobasal	Hernandez, F., Perez, M., Lucas, J., Mata, A., Bhat, R. and Avila, J.: Glycogen Synthase Kinase-3 plays a Crucial Role in Tau Exon 10 Splicing and Intranuclear Distribution of SC35. Implications for Alzheimer's Disease., *J Biol Chem 279*, 3801, 2004 (*10361*)
	Mouse, 3 day	Microglia	Papain: 90 u/ml Deoxyribonuclease I: 2000 u/ml	Eagle's MEM	Nishioku T, Hashimoto K, Yamashita K, Liou SY, Kagamiishi Y, Maegawa H, Katsube N, Peters C, von Figura K, Saftig P, Katunuma N, Yamamoto K, Nakanishi H: Involvement of cathepsin E in exogenous antigen processing in primary cultured murine microglia, *J Biol Chem 277*, 4816, 2002 (*10043*)
	Mouse, SD, 8-12 week	Microglia	Trypsin: 0.125% Collagenase Type 2: 0.01% Deoxyribonuclease I: .005%	RPMI-1640	O'Donnell SL, Frederick TJ, Krady JK, Vannucci SJ, Wood TL: IGF-I and microglia/macrophage proliferation in the ischemic mouse brain, *Glia 39*, 85, 2002 (*10050*)
	Mouse, 2-5 day	Postnal substantia nigra	PDS kit: per instructions	see reference	Smeyne Michelle, Smeyne RichardJ: Method for culturing postnatal substantia nigra as an in vitro model of experimental Parkinson's disease, *Brain Res Brain Res Protoc 9*, 105-11, 2002 (*10274*)
	Mouse, embryonic	Cortical progenitors	PDS kit: per instructions	Serum free medium	Estivill-Torrus, G., Pearson, H., Van Heyningen, V., Price,D. and Rashbass, P.: Pax6 is Required to Regulate the Cell Cycle and the Rate of Progression from Symmetrical to Asymmetrical Division in Mammalian Cortical Progenitors., *Development 129*, 455, 2002 (*10364*)
	Mouse, 1 day	Neurons and glia	PDS kit: per instructions	Neurobasal	Martin-Aparicio, E., Yamamoto, A., Hernandez, F., Hen, R., Avila, J. and Lucas, J.: Proteasomal- Dependent Aggregate Reversal and Absence of Cell Death in a Conditional Mouse Model of Huntington's Disease., *J Neurosci 21*, 8772, 2001(*10362*)
	Mouse	Cerebellar granule cell precursors	Papain: 0.435% Deoxyribonuclease I: 0.05%	EBSS	Miyazawa K, Himi T, Garcia V, Yamagishi H, Sato S, and Ishizaki Y.: A role for p27/Kip1 in the control of cerebellar granule cell precursor proliferation, *J Neurosci 20*, 5756, 2000(*10060*)
	Mouse	Astrocytes	Trypsin: 0.25%	DMEM	Lim, D, and Alvarez-Buylla, A.: Interaction Between Astrocytes and Adult Subventricular Zone Precursors Stimulates Neurogenesis, *Proc Natl Acad Sci U S A 96*, 7526, 1999 (*1128*)
	Mouse, newborn	Hippocampal cells	Papain: 10 u/ml	DMKM	Jun K, Choi G, Yang SG, Choi KY, Kim H, Chan GC, Storm DR, Albert C, Mayr GW, Lee CJ, Shin HS: Enhanced hippocampal CA1LTP but normal spatiallearning in inositol 1,4,5- trisphosphate 3-kinase(A)- deficient mice, *Learn Mem 5*, 317-30, 1998 (*10130*)
	Mouse, SWR or CF1, 1-3 months	Papillae, taste receptor	Pronase E: 0.15%	Carbonate- Phosphate buffer (see reference)	Spielman, A., Mody, I., Brand, J., Whitney, G., MacDonald, J., and Salter, M.: A Method for Isolating and Patch-Clamping Single Mammalian Taste Receptor Cells, *Brain Res 503*, 326,1989 (*350*)
	Mouse, 0-30 day	Neural	Trypsin NF 1:250: 50 0.25%	BSS	Shrier, B., Wilson, S., and Nirenberg, M.: Cultured Cell Systems and Methods for Neurobiology, *Vol. 32*, 765,1974 (*637*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Ovine	Ovine	Neurons	Papain: 0.2% Deoxyribonuclease I: 0.1%	Hibernate	Reddy, R., Amodei, R., Estill, C., Stormshak, F., Meaker, M. and Roselli, C.: Effect of Testosterone on Neuronal Morphology and Neuritic Growth of Fetal Lamb Hypothalamus- Preoptic Area and Cerebral Cortex in Primary Culture., *PLoS ONE 10*, e0129521, 2015 (*11482*)
	Ovine	Neurons	PDS kit: per instructions	DMEM	Lepore G, Gadau S, Mura A, Zedda M, Farina V: Aromatase Immunoreactivity in Fetal Ovine Neuronal Cell Cultures Exposed to Oxidative Injury., *Eur J Histochem 53*, e28, 2009(*11483*)
	Lamb (also calf)	Oligodendroglia, Neural	Trypsin: 0.1%	(see reference)	Poduslo, S., Miller, K., and McKhann, G.: Metabolic Properties of Maintained Oligodendroglia Purified from Brain, *J Biol Chem 253*, 1592, 1978 (*552*)
Porcine	Mini pigs, Yucatan (*Susscrofa Yucatan*), 4-6 months	Microvascular	Collagenase: 0.1%	HBSS	Robinson, D.H., Kang,Y., Deschner, S.H., and Nielsen, T.B.: Morphologic Plasticity and Periodicity : Porcine Cerebral Microvascular Cells in Culture, *In Vitro Cell Dev Biol 26*, 169, 1990 (*432*)
Rat	Rat, SD, 1-2 day	Oligodendrocyte precursor cells	Papain: 16.5 u/ml	HBSS	Kurachi, M., Mikuni, M. and Ishizaki, Y.: Extracellular Vesicles from Vascular Endothelial Cells Promote Survival, Proliferation and Motility of Oligodendrocyte Precursor Cells., *PLoS ONE 11*, e0159158, 2016 (*11506*)
	Rat, SD, E18	Neurons	Papain: 20 u/ml	HBSS	Folts, C., Scott-Hewitt, N., Proschel, C., Mayer- Proschel, M. and Noble, M.: Lysosomal Re-acidification Prevents Lysosphingolipid- Induced Lysosomal Impairment and Cellular Toxicity., *PLoS Biol 14*, e1002583, 2016 (*11542*)
	Rat, P0-P15	Astrocytes	Papain: 5 u/ml Deoxyribonuclease I: 0.004%	DPBS	Foo, L.: Purification of Rat and Mouse Astrocytes by Immunopanning., *Cold Spring Harb. Protoc. 2013*, 421-32, 2013 (*11541*)
	Rat, SD, neonatal	Neurons	Papain: 20 u/ml	Neuro medium	Kaiser, O., Aliuos, P., Wissel, K., Lenarz, T., Werner, D., Reuter, G., Kral, A. and Warnecke, A.: Dissociated Neurons and Glial Cells Derived from Rat Inferior Colliculi After Digestion with Papain., *PLoS ONE 8*, e80490, 2013 (*11682*)
	Rat, SD, 19-21 day	Suprachiasmatic nucleus neurons	Papain: 100 u/ml	MEM	Cao, R., Li, A., Cho, H., Lee, B. and Obrietan, K.: Mammalian Target of Rapamycin Signaling Modulates Photic Entrainment of the Suprachiasmatic Circadian Clock., *J Neurosci 30*, 6302, 2010 (*10512*)
	Rat, Fisher, 7-21 month	Hippocampal neurons	Papain: 0.2%	Hibernate A	Chen, N., Newcomb, J., Garbuzova-Davis, S., Davis Sanberg, C., Sanberg, P. and Willing, A.: Human Umbilical Cord Blood Cells Have Trophic Effects on Young and Aging Hippocampal Neurons in Vitro., *Aging Dis 1*, 173, 2010 (*10663*)
	Rat, SD, 7 day	Cerebellar granule neurons	PDS kit: per instructions	PBS	Tanaka, S., Shaikh, I., Chiocca, E. and Saeki, Y.: The Gs-Linked Receptor GPR3 Inhibits the Proliferation of Cerebellar Granule Cells During Postnatal Development., *PLoS ONE 4*, e5922, 2009 (*10487*)
	Rat, neonatal	Astrocytes	Papain: 20 u/ml	EBSS	Shigetomi, E. and Khakh, B.: Measuring Near Plasma Membrane and Global Intracellular Calcium Dynamics in Astrocytes., *J Vis Exp 26*, 1142, 2009 (*10656*)
	Rat, neonatal	Hippocampal neurons	Papain: 10 u/ml	EBSS	Richler, E., Chaumont, S., Shigetomi, E., Sagasti, A., Khakh, B.: Tracking Transmitter-gated P2X Cation Channel Activation In Vitro and In Vivo, *Nat Methods 5*, 87-93, 2008 (*10319*)
	Rat, SD	Hippocampal	Trypsin: 0.1%	Neurobasal	Akanda, N., Tofighi, R., Brask, J., Tamm, C., Elinder, F. and Ceccatelli, S.: Voltage- Dependent Anion Channels (VDAC) in the Plasma Membrane Play a Critical Role in Apoptosis in Differentiated Hippocampal Neurons but not in Neural Stem Cells., *Cell Cycle 7*, 3225, 2008 (*10945*)
	Rat, neonatal	Dura mater	Collagenase Type 1: 0.075%	DMEM	Peptan, I., Hong, L. and Evans, C.: Multiple Differentiation Potentials of Neonatal Dura Mater- Derived Cells., *Neurosurgery 60*, 346, 2007 (*10887*)
	Rat, E18	Hippocampal neurons	Papain: 0.2%	Hibernate	Jekabsons, M., Nicholls, D.: Bioenergetic Analysis of Cerebellar Granule Neurons Undergoing Apoptosis by Potassium/Serum Deprivation, *Cell Death Differ 13*, 1595- 610, 2006 (*10129*)
	Rat, Wistar, 1-3 day	Hippocampal neurons	Trypsin: 0.05%	DMEM	Velasco, M., Garcia, E., Onetti, C.: Glucose Deprivation Activates Diversity of Potassium Channels in Cultured Rat Hippocampal Neurons, *Cell Mol Neurobiol 26*, 307-19, 2006 (*10321*)
	Rat, E19	Hippocampal neurons	Papain: 10 u/ml	MEM	Khakh, B., Fisher, J., Nashmi, R., Bowser, D., Lester, H.: An Angstrom Scale Interaction Between Plasma Membrane ATP-gated P2X2 and Alpha^{4}Beta^2 Nicotinic Channels Measured with Fluorescence Resonance Energy Transfer and Total Internal Reflection Fluorescence Microscopy, *J Neurosci 25*, 6911-20, 2005 (*10307*)
	Rat, Wistar, 14 day	Visual cortical	PDS kit: per instructions	EBSS	Mizoguchi, Y., Kanematsu, T., Hirata, M., Nabekura, J.: A Rapid Increase in the Total Number of Cell Surface Functional GABAA Receptors Induced by Brain-derived Neurotrophic Factor in Rat Visual Cortex, *J Biol Chem 278*, 44097, 2003 (*10022*)
	Rat, Wistar, male	Cerebral endothelial	Collagenase Type 3: 0.2%	MEM	Floris, S., Van den Born, J., Van der Pol, S., Dijkstra, C., De Vries H.: Heparan Sulfate Proteoglycans Modulate Monocyte Migration Across Cerebral Endothelium, *J Neuropathol Exp Neurol 62*, 780, 2003 (*10041*)
	Rat, SD, E18	Cortical cells	Papain: 20 u/ml Deoxyribonuclease I: .005%	EBSS	Behar, T., Smith, S., Kennedy, R., Mckenzie, J., Maric, I., and Barker, J.: GABA(B) Receptors Mediate Motility Signals for Migrating Embryonic Cortical Cells, *Cereb Cortex 11*, 744-53,2001 (*10116*)
	Rat, Wistar, 250-300 g	Cerebral artery smooth muscle cells	Papain: 1.5 mg/ml Collagenase Type 4: 1.5 mg/ml	Physiological Salt Solution	Brzezinska, A., Gebremedhin, D., Chilian, W., Kalyanaraman, B., Elliott, S.: Peroxynitrite Reversibly Inhibits Ca(2+)- Activated K(+) Channels in Rat Cerebral Artery Smooth Muscle Cells, *Am J Physiol Heart Circ Physiol 278*, H1883, 2000 (*10049*)
	Rat, SD, E16	Cortical neurons	PDS kit: with modifications	Neurobasal Medium	Varney, M., Cosford, N., Jachec, C., Rao, S., Sacaan, A., Lin, F., Bleicher, L., Santori, E., Flor, P., Allgeier, H., Gasparini, F., Kuhn, R., Hess, S., Velicelebi, G., Johnson, E.: SIB-1757 and SIB-1893: Selective, Noncompetitive Antagonists of Metabotropic Glutamate Receptor Type 5, *J Pharmacol Exp Ther 290*, 170, 1999 (*10023*)
Rat	Rat, wistar, neonatal	Hippocampal cells	Papain: 1 mg/ml	DMEM	Boehm, S., Betz, H.: Somatostatin Inhibits Excitatory Transmission at Rat Hippocampal Synapses Via Presynaptic Receptors, *J Neurosci 17*, 4066, 1997(*10047*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat, SD, Fisher	Hippocampal neurons	Papain: 0.2%	HibernateA/B27	Brewer, G.J.: Isolation and Culture of Adult Rat Hippocampal Neurons of Any Age, *J Neurosci Methods 71*,143, 1997 (*10067*)
	Rat, E18	Hippocampal and cortical neurons	PDS kit: per instructions	Neurobasal media	Naeve, G., Ramakrishnan, M., Kramer, R., Hevroni, D., Citri, Y., Theill, L.: Neuritin: A Gene Induced by Neural Activity and Neurotrophins that Promotes Neuritogenesis, *Proc Natl Acad Sci U S A 94*, 2648-53, 1997 (*10107*)
	Rat, SD, newborn	Glial	Trypsin: 0.0625%	MEM, sterile	Pixley, S.K.: The Olfactory Nerve Contains Two Populations of Glia, *In Vitro 5*, 269, 1992 (*536*)
	Rat, newborn	Astrocytes	Trypsin: 0.25%	DMEM, HBSS	Holzwarth, J., Glaum, S., and Miller, R.: Activation of Endothelin Receptors by Sarafotoxin Regulates Ca^{2+} Homeostasis in Cerebellar Astrocytes, *Glia 5*, 239, 1992 (*948*)
	Rat, 60-72 hours old	Fibroblasts	Trypsin: 0.2%	HEPES buffered DMEM	Acheson, A., Barker, P., Alderson, R., Miller, F., and Murphy, R.: Detection of Brain-Derived Neurotrophic Factor-like Activity in Fibroblasts and Schwann Cells: Inhibition by Antibodies to NGF, *Neuron 7*, 265, 1991 (*675*)
	Rat, SD, adult	Endothelial	Collagenase Type 2: 0.5%	Medium 199	Doron, D., Jacobowitz, D., Heldman, E., Feurerstein, G., Pollard, H., and Hallenbeck, J.: Extracellular Matrix Permits the Expression of Von Willebrand's Factor, Uptake of Di-I-Acetylated Low Density Lipoprotein and Secretion of Prostacyclin in Cultures of Endothelial Cells from Rat Brain Microvessels, *In Vitro Cell Dev Biol 27A*, 689, 1991 (*860*)
	Rat, SD, 5 day	Hippocampal neurons	Trypsin: 0.2% Deoxyribonuclease I: 10 ug/ml	HBSS	Mattson, M., and Kater, S.: Development and Selective Neurodegeneration in Cell Cultures From Different Hippocampal Regions, *Brain Res 490*, 110, 1989 (*1003*)
	Rat, SD, female	Fetal rat brain	Collagenase Type 4: 0.1%	DMEM	Matsuda, M.: Serum Proteins Enhance Aggregate Formation of Dissociated Fetal Rat Brain Cells in an Aggregating Culture, *In Vitro Cell Dev Biol 24 (10)*, 1031,1988 (*861*)
	Rat, albino, adult and newborn	Cerebral cortices	Trypsin: 0.25%	PBS	Giulian, D. and Baker, T.J.: Characterization of Ameboid Microglia Isolated From Developing Mammalian Brain, *J Neurosci 6*, 2163, 1986 (*616*)
	Rat, Wistar, newborn	Germinal matrix	Trypsin: 0.25%	HBSS	Goldman, J.E., Geier, S.S., and Hirano, M.: Differentiation of Astrocytes and Oligodendrocytes From Germinal Matrix Cells in Primary Culture, *J Neurosci 6*, 52, 1986 (*618*)
	Rat, fetus, 18-20 day	Hippocampal neurons	Trypsin: 0.25%	HBSS, CMF	Bartlett, W. and Banker, G.: An Electron Microscopic Study of the Development of Axons and Dendrites by Hippocampal Neurons in Culture. I. Cells Which Develop Without Intercellular Contacts, *J Neurosci 4*, 1944, 1984 (*613*)
	Rat, fetus, 18 day	Hippocampi	Trypsin: 0.1%	HBSS	Rothman, S.: Synaptic Release of Excitatory Amino Acid Neurotransmitter Mediates Anoxic Neuronal Death, *J Neurosci 4 (7)*, 1884, 1984 (*1011*)
	Rat, SD, 19-20 days pregnant	Neural	Trypsin: 0.25%	DMEM	Ahmed, Z., Walker, P., and Fellows, R.: Properties of Neurons from Dissociated Fetal Rat Brain in Serum- Free Culture, *J Neurosci 3 (12)*, 2448, 1983 (*1202*)
	Rat, SD, fetal	Cerebral cortex, Hypothalmus	Deoxyribonuclease I: 0.001%	HEPES	Peterfreund, R. and Vale, W.: High Molecular Weight Somatostatin Secretion by Cultured Rat Brain Cell, *Brain Res 239*, 463, 1982 (*349*)
	Rat, Wistar-Kyoto, male, 100 - 200 g	Endothelial, Cerebral	Collagenase Type 2: 0.05%	HBSS	Diglio, C.A., Grammas, P., Filiberto Giacomelli, M.S., and Wiener, J.: Primary Culture of Rat Cerebral Microvascular Endothelial Cells, *Lab Invest 46*, 554, 1982 (*626*)
	Rat, fetus	Cortical	Trypsin: 0.25%	Puck's D1 (see reference)	Swaiman, K., Neale, E., Fitzgerald, S., and Nelson, P.: A Method for Large-scale Production of Mouse Brain Cortical Cultures, *Brain Res 255*, 361, 1982 (*1281*)
	Rat, Wistar, pregnant	Glial	Trypsin: 0.05%	Eagle's MEM/DMEM	Abney, E., Bartlett, P., and Raff, M.: Astrocytes, Ependymal Cells, and Oligodendrocytes Develop on Schedule in Dissociated Cell Cultures of Embryonic Rat Brain, *Dev Biol 83*, 301, 1981 (*858*)
	Rat, SD, one month old	Capillary endothelium, Pericytes	Neutral Protease: 0.1%	Medium 199	Bowman, P., Betz, A., Ar, D., Wolinsky, J., Penney, J., Shivers, R., and Goldstein, G.: Primary Culture of Capillary Endothelium From Rat Brain, *In Vitro 17 (4)*, 353, 1981 (*935*)
	Rat, Wistar, male, 300-500 g	Microvessels Endothelial	Collagenase Type 2: 0.75%	Ringers-HEPES buffer	Williams, S., Gillis, J., Matthews, M., Wagner, R., and Bitensky, M.: Isolation and Characterization of Brain Endothelial Cells: Morphology and Enzyme Activity, *J Neurochem 35 (2)*, 374, 1980 (*885*)
	Rat, Wistar, adult, 170 g	Endothelial	Trypsin: 0.5%	BSS	Phillips, P., Kumar, P., Kumar, S., and Waghe, M.: Isolation And Characterization of Endothelial Cells From Rat And Cow Brain White Matter, *J Anat 129*, 261, 1979 (*708*)
	Rat, Holtzmann, 18 day	Hippocampal neurons	Trypsin: 0.1%	HBSS	Banker, G., and Cowan, M.: Rat Hippocampal Neurons in Dispersed Cell Culture, *Brain Res 126*, 397, 1977 (*1004*)
	Rat, SD, 2 days	Pineal	Trypsin: 0.25%	DMEM, MEM	Rowe, V., Neale, E., Avins, L., Guroff, G., and Schrier, B.: Pineal Gland Cells in Culture. Morphology, Biochemistry, Differentiation, and Co- culture with Sympathetic Neurons, *Exp Cell Res 104*, 345, 1977 (*1311*)
Shellfish	*Helisoma trivolvis*	Neurons Buccal ganglia	Trypsin: 0.2%	Saline, Sterile	Hadley, R.D., Bodnar, D.A., and Kater, S.B.: Formation of Electrical Synapses Between Isolated, Cultured Helisoma Neurons Requires Mutual Neurite Elongation, *J Neurosci 5*, 3145, 1985 (*615*)

Cartilage

Bovine	Bovine, 18-36 month	Chondrocytes	Collagenase Type 1: 0.1%	DMEM	White, R. and Gibson, J.: The Effect of Oxygen Tension on Calcium Homeostasis in Bovine Articular Chondrocytes., *J Orthop Surg Res 5*, 27, 2010 (*10610*)
	Bovine, 6-8 week	Chondrocytes	Collagenase Type 2: 0.2%	DMEM	Hwang, Y., Sangaj, N. and Varghese, S.: Interconnected Macroporous Poly(ethylene glycol) Cryogels as a Cell Scaffold for Cartilage Tissue Engineering., *Tissue Eng Part A 16*, 3033-41, 2010 (*10631*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Bovine	Bovine, 1-3 month	Chondrocytes	Collagenase Type 4: 390 u/ml	DMEM	Lima, E., Tan, A., Tai, T., Marra, K., DeFail, A., Ateshian, G. and Hung, C.: Genipin Enhances the Mechanical Properties of Tissue-Engineered Cartilage and Protects Against Inflammatory Degradation When Used as a Medium Supplement., *J Biomed Mater Res 91*, 692, 2009 (*10923*)
	Steers, 1-2 years	Chondrocytes	Trypsin: 0.20%	HBSS	Mackintosh, D., and Mason, R.: Pharmacological Actions of 17 Beta-oestradiol on Articular Cartilage Chondrocytes and Chondrosarcoma Chondrocytes in the Absence of Oestrogen Receptors, *Biochim Biophys Acta 964*, 295, 1988 (*334*)
	Calf, 1-14 days	Chondrocytes	Collagenase Type 2: 0.20%	PBS	Klagsbrun, M.: Large Scale Preparation of Chondrocytes, *Methods of Enzymology Vol. 58*,, , 560, 1979 (*1263*)
Canine	Canine	Chondrocytes	Collagenase Type 2: 0.3% Trypsin: 0.25%	Ham's F12	Lee, J., Kim, H., Kim, J., Bae, S., Joo, D., Huh, K., Fang, Y., Jeong, J., Kim, M. and Kim, Y.: Microencapsulation of Pancreatic Islets with Canine Ear Cartilage for Immunoisolation., *Transplant Proc 44*, 1091-4, 2012 (*11003*)
Chicken	Chick embryos, HH stage	Mesenchymal	Trypsin: 0.1%	DMEM (see reference)	Wong, M., and Tuan, R.: Nuserum, A Synthetic Serum Replacement, Supports Chondrogenesis of Embryonic Chick Limb Bud Mesenchymal Cells in Micromass Culture, *In Vitro Cell Dev Biol 29A*, 917, 1993 (*965*)
	Chicken, broiler strain, 8-10 weeks	Matrix vesicles, Epiphyseal growth plate	Trypsin: 0.1%	Tris-buffered saline	Genge, B., Wu, L. and Wuthier, R.: Differential Fractionation of Matrix Vesicle Proteins: Further Characterization of the Acidic Phospholipid- dependent Ca^{2+}-Binding Proteins, *J Biol Chem 265*, 4703, 1990 (*569*)
	Chicken, broiler strain, 8-10 week	Matrix vesicles	Trypsin: 0.1%	(see reference)	Genge, B.R., Wu, L.N.Y., and Wuthier, R.E.: Identification of Phospholipid-dependent Calcium-binding Proteins as Constituents of Matrix Vesicles, *J Biol Chem 264*, 10917, 1989 (*564*)
	Chick embryos, White Leghorn, 19 day old	Fibroblasts Epithelial-like	Trypsin: 0.25%	E 199 medium	Gionti, E., Capasso, O., and Cancedda, R.: The Culture of Chick Embryo Chondrocytes and the Control of Their Differentiated Functions *in Vitro*, *J Biol Chem 258 (11)*, 7190, 1983 (*982*)
	Chick embryos, 19 day old	Chondrocytes	Trypsin: 0.75%	Coon's modified F-12	Capasso, O., Gionti, E., Pontarelli, G., Ambesi- Impiobato, F., Nitsch, L., Tajana, G., and Cancedda, R.: The Culture of Chick Embryo Chondrocytes and the Control of Their Differentiated Functions In Vitro, *Exp Cell Res 142*, 197, 1982 (*983*)
	Chick embryos, White Leghorn	Wing buds	Trypsin: 0.1%	Saline G	Ahrens, P., Solursh, M., and Reiter, R.: Stage-Related Capacity for Limb Chondrogenesis in Cell Culture, *Dev Biol 60*, 69,1977 (*967*)
Equine	Equine	Chondrocytes	Collagenase Type 2: 0.15%	DMEM	Visser, J., Levett, P., te Moller, N., Besems, J., Boere, K., van Rijen, M., de Grauw, J., Dhert, W., van Weeren, P. and Malda, J.: Crosslinkable Hydrogels Derived from Cartilage, Meniscus, and Tendon Tissue., *Tissue Eng Part A 21*, 1195-206, 2015 (*11655*)
	Equine	Chondrocytes	Collagenase Type 2: 0.08%	DMEM/F12	Ley, C., Svala, E., Nilton, A., Lindahl, A., Eloranta, M., Ekman, S. and Skioldebrand, E.: Effects of High Mobility Group Box Protein-1, Interleukin-1B, and Interleukin-6 on Cartilage Matrix Metabolism in Three- Dimensional Equine Chondrocyte Cultures., *Conn Tissue Res 52*, 290-300, 2011 (*11257*)
Goat	Goat	Chondrocytes	Collagenase Type 2: 2%	DMEM	Bekkers,J, Creemers, L, Tsuchida, A, van Rijen, M, Custers, R, Dhert, W and Saris, D.: One-Stage Focal Cartilage Defect Treatment with Bone Marrow Mononuclear Cells and Chondrocytes Leads to Better Macroscopic Cartilage Regeneration Compared to Microfracture in Goats., *Osteoarthritis Cartilage 21*, 950-6, 2013 (*11258*)
Human	Human	Chondrocytes	Trypsin: 0.25% Hyaluronidase: 0.1% Collagenase Type 2: 1000 u/ml Collagenase Type 1: 400 u/ml	Ham's F12	Muraglia, A., Nguyen, V., Nardini, M., Mogni, M., Coviello, D., Dozin, B., Strada, P., Baldelli, I., Formica, M., Cancedda, R. and Mastrogiacomo, M.: Culture Medium Supplements Derived from Human Platelet and Plasma: Cell Commitment and Proliferation Support., *Front Bioeng Biotechnol 5*, 66, 2017 (*11533*)
	Human	Chondrocytes	Collagenase Type 2: 0.15%	DMEM	Capsoni, F., Ongari, A., Lonati, C., Accetta, R., Gatti, S. and Catania, A.: Alpha- Melanocyte-Stimulating- Hormone (a-MSH) Modulates Human Chondrocyte Activation Induced by Proinflammatory Cytokines., *BMC Musculoskelet Disord 16*, 154, 2015 (*11412*)
	Human	Chondrocytes	Collagenase: 0.3%	DMEM	Tamai, M., Nagasao, T., Yanaga, H., Hamamoto, Y., Kogure, T. and Tanaka, Y.: Correction of Secondary Deformity after Nuss Procedure for Pectus Excavatum by Means of Cultured Autologous Cartilage Cell Injection., *Int J Surg Case Rep 15*, 70-3, 2015 (*11448*)
	Human, 52-82 years	Chondrocytes	Collagenase Type 2: 0.2% Pronase: 0.15%	DMEM/F12	Pallu, S., Francin, P., Guillaume, C., Gegout- Pottie, P., Netter, P., Mainard, D., Terlain, B. and Presle, N.: Obesity Affects the Chondrocyte Responsiveness to Leptin in Patients with Osteoarthritis., *Arthritis Res Ther 12*, R112, 2010 (*10619*)
	Human	Synoviocytes	Collagenase Type 1: 0.4%	DMEM	Kim, W., Kwok, S., Hong, K., Yoo, S., Kong, J., Choe, J., Cho, C.: Soluble Fas Ligand Inhibits Angiogenesis in Rheumatoid Arthritis, *Arthritis Res Ther 9*, R42, 2007 (*10173*)
	Human, 26-68 year	Meniscus and cartilage	Collagenase Type 2: 0.15%	DMEM	Marsano, A., Millward-Sadler, S., Salter, D., Adesida, A., Hardingham, T., Tognana, E., Kon, E., Chiari-Grisar, C., Nehrer, S., Jakob, M., Martin, I.: Differential Cartilaginous Tissue Formation by Human Synovial Membrane, Fat Pad, Meniscus Cells and Articular Chondrocytes, *Osteoarthritis Cartilage 15*, 48-58, 2007 (*10338*)
	Human, 64-83 yr	Chondrocytes	Collagenase Type 2: 0.08%	DMEM/F12	Tallheden T, Bengtsson C, Brantsing C, Sjogren-Jansson E, Carlsson L, Peterson L, Brittberg M, and Lindahl A.: Proliferation and Differentiation Potential of Chondrocytes from Osteoarthritic Patients, *Arthritis Res Ther 7(3)*, R560, 2005 (*9755*)
	Human, adult	Synovial	Collagenase: 0.15% Hyaluronidase: 0.1% Deoxyribonuclease I: 0.015%	DMEM	Liagre B, Vergne-Salle P, Corbiere C, Charissoux JL, and Beneytout JL.: Diosgenin, a Plant Steroid, Induces Apoptosis in Human Rheumatoid Arthritis Synoviocytes with Cyclooxygenase-2 Overexpression, *Arthritis Res Ther 6(4)*, R373, 2004 (*9815*)
	Human, adult	Chondrocytes	Collagenase Type 2: 0.15%	DMEM	Jakob M, Demarteau O, Schafer D, Stumm M, Heberer M, and Martin I.: Enzymatic Digestion of Adult Human Articular Cartilage Yields a Small Fraction of the Total Available Cells, *Conn Tissue Res 44*, 173, 2003 (*9812*)

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Cartilage

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human, adults	Synoviocytes	Collagenase Type 1: 0.1%	RPMI	McEvoy A., Murphy E., Ponnio T., Conneely O., Bresnihan B., FitzGerald O., and Murphy E.: Activation of Nuclear Orphan Receptor NURR1 Transcription by NF-kappa B and Cyclic Adenosine 5'- Monophosphate Response Element-binding Protein in Rheumatoid Arthritis Synovial Tissue, *J Immunol 168(6)*, 2979, 2002 (*9754*)
	Human, 15-60 years	Chondrocytes	Collagenase Type 2: 0.2%	DMEM	Rotter, N., Bonassar, L., Tobias, G., Lebl, M., Roy, A., Vacanti, C.: Age Dependence of Cellular Properties of Human Septal Cartilage: Implications for Tissue Engineering, *Arch Otolaryngol Head Neck Surg 127*, 1248-52, 2001 (*10219*)
	Human	Synovial fibroblasts	Collagenase: 0.4%	DMEM	Sarkissian, M., Lafyatis, R.: Integrin Engagement Regulates Proliferation and Collagenase Expression of Rheumatoid Synovial Fibroblasts, *J Immunol 162*, 1772-9, 1999 (*10174*)
	Human	Septal chondrocytes	Collagenase Type 2: 0.2% Hyaluronidase: 0.01% Deoxyribonuclease I: 0.015%	DMEM/F12	Dunham, B., Koch, R.: Basic Fibroblast Growth Factor and Insulinlike Growth Factor I Support the Growth of Human Septal Chondrocytes in a Serum-free Environment, *Arch Otolaryngol Head Neck Surg 124*, 1325-30, 1998 (*10172*)
	Human w/ rheumatoid arthritis	Synovial tissue	Trypsin: 0.05%	DMEM (see reference)	Dayer, J., Krane, S., Russell, R., and Robinson, D.: Production of Collagenase and Prostaglandins by Isolated Adherent Rheumatoid Synovial Cells, *Proc Natl Acad Sci U S A 73 (3)*, 945, 1976 (*780*)
	Human, 13-62 years	Articular chondrocytes	Trypsin: 0.2%	BSS	Srivastava, V.M.L., Malemud, C.J., Hough, A.J., Bland, J.H., and Sokoloff, L.: Preliminary Experience with Cell Culture of Human Articular Chondrocytes, *Arthritis Rheum 17*, 165, 1974 (*726*)
	Human, 26-84 years	Chondrocytes	Collagenase:	GBSS	Manning, W.K., and Bonner, W.M.: Isolation and Culture of Chondrocytes From Human Adult Articular Cartilage, *Arthritis Rheum 10*, 235, 1967 (*727*)
Mouse	Mouse, 2-5 day	Chondrocytes	Trypsin: 0.25% Collagenase Type 1: 86.5 u/ml	DMEM	Otsuru, S., Hofmann, T., Raman, P., Olson, T., Guess, A., Dominici, M. and Horwitz, E.: Genomic and Functional Comparison of Mesenchymal Stromal Cells Prepared Using Two Isolation Methods., *Cytotherapy 17*, 262-70, 2015 (*11267*)
	Mouse, 1 day	Chondrocytes	Collagenase: 0.2%	DMEM	Terpstra, L, Prud'homme, J, Arabian, A, Takeda, S, Karsenty, G, Dedhar, S, and St-Arnaud, R.: Reduced Chondrocyte Proliferation and Chondrodysplasia in Mice Lacking the Integrin- linked Kinase in Chondrocytes, *J Cell Biol 162*, 139, 2003 (*9756*)
Ovine	Sheep, 2 month	Chondrocytes	Collagenase Type 2: 0.3%	Ham's F-12	Kojima Koji, Bonassar Lawrence J, Roy Amit K, Mizuno Hirokazu, Cortiella Joaquin, Vacanti Charles A: A Composite Tissue- Engineered Trachea Using Sheep Nasal Chondrocyte and Epithelial Cells, *FASEB J 17*, 823-8, 2003 (*10216*)
Porcine	Porcine, 1 year	Chondrocytes	Collagenase Type 1: 0.2%	DEMEM	Chowdhury, T., Schulz, R., Rai, S., Thuemmler, C., Wuestneck, N., Bader, A and Homandberg, G: Biomechanical Modulation of Collagen Fragment- Induced Anabolic and Catabolic Activities in Chondrocyte/Agarose Constructs., *Arthritis Res Ther 12*, R82, 2010 (*10611*)
	Porcine, 2-4 month	Chondrons	Neutral Protease: 0.3% Collagenase: 0.2%	PBS	Graff, R., Lazarowski, E., Banes, A., Lee, G.: ATP Release by Mechanically Loaded Porcine Chondrons in Pellet Culture, *Arthritis Rheum 43*, 1571-9, 2000 (*10253*)
Rabbit	Rabbit, New Zealand, 1.2-1.4 kg	Chondrocytes	Collagenase Type 2: 0.025% Pronase: 0.2%	DMEM	Ju, X., Deng, M., Ao, Y., Yu, C., Wang, J., Yu, J., Cui, G. and Hu, Y.: Protective Effect of Sinomenine on Cartilage Degradation and Chondrocytes Apoptosis., *Yakugaku Zasshi 130*, 1053- 60, 2010 (*10604*)
	Rabbit, New Zealand, 1.8-2.3kg	Chondrocytes	Hyaluronidase: .05% Collagenase Type 2: 0.2% Trypsin: 0.2%	Gey's solution	Mehraban, F., Tindal, M., Proffitt, M., Moskowitz, R.: Temporal Pattern of Cysteine Endopeptidase (Cathepsin B) Expression in Cartilage and Synovium from Rabbit Knees with Experimental Osteoarthritis: Gene Expression in Chondrocytes in Response to Interleukin-1 and Matrix Depletion, *Ann Rheum Dis 56*, 108, 1997 (*10031*)
	Rabbit, New Zealand, white, 4-6 wk & 22-25 wk	Chondrocytes	Protease XIV: 5 mg/g of tissue	Ham's F-12	Plaas, A., Sandy, J., and Kimura, J.: Biosynthesis of Cartilage Proteoglycan & Link Protein Articular Chondrocytes, *J Biol Chem 263*, 7560, 1988 (*562*)
	Rabbit, white, male, 8 weeks	Chondrocytes	Trypsin: 0.2%	Gey's BSS	Benya, P.D., Padilla, S.R., and Nimni, M.E.: The Progeny of Rabbit Articular Chondrocytes Synthesize Collagen Types I and III and Type I Trimer, but Not Type II, *Biochemistry 16*, 865, 1977 (*312*)
	Rabbit, New Zealand white or Dutch, 1 week (also human,newborn)	Chondrocytes	Trypsin: 0.1%	Saline G, CMF	Schindler, F.H., Ose, M.A., and Solursh, M.: The Synthesis of Cartilage Collagen by Rabbit and Human Chondrocytes in Primary Cell Culture, *In Vitro 12*, 44, 1976 (*495*)
	Rabbit, New Zealand white, immature, 2.25 - 3.3 Kg	Articular chondrocytes Hyaline	Trypsin: 0.2%	Gey's BSS	Green, J.R., and William, T.: Articular Cartilage Repair. Behavior of Rabbit Chondrocytes During Tissue Culture and Subsequent Allografting, *Clin Orthop Relat Res* , 237, 1976 (*710*)
	Rabbit, New Zealand white, male, 250-350 g	Epiphyseal Articular cartilage	Trypsin: 0.25%	Eagle's basal medium	Bentley, G., and Greer , R.: Homotransplantation of Isolated Epiphyseal and Articular Cartilage Chondrocytes into Joint Surfaces of Rabbits, *Nature 230*, 385, 1971 (*641*)
Rat	Rat, SD, young, 100-120 g	Chondrocytes	Trypsin: 0.2%	Ham's F-12 medium	Shimomura, Y., Yoneda, T., and Suzuki, F.: Osteogenesis by Chondrocytes from Growth Cartilage of Rat Rib, *Calcif Tissue Res 19*, 179, 1975 (*351*)

Colon

Colon

Avian	Human	Lamina propria mononuclear	Collagenase Type 1: 0.1% Deoxyribonuclease I: 5 u/ml	HBSS	Moser, A., Spindelboeck, W., Strohmaier, H., Enzinger, C., Gattringer, T., Fuchs, S.,Fazekas, F., Gorkiewicz, G., Wurm, P., Hogenauer, C. and Khalil, M.: Mucosal Biopsy Shows Immunologic Changes of the Colon in Patients with Early MS, *Neurol Neuroimmunol Neuroinflamm 4*, e362, 2017 (*11635*)
Guinea-Pig	Guinea-pig, adult	Enterochromaffin	Trypsin: 0.05% Collagenase Type 1: 0.1%	DMEM	Raghupathi, R., Duffield, M., Zelkas, L., Meedeniya, A., Brookes, S., Sia, T., Wattchow, D., Spencer, N. and Keating, D.: Identification of Unique Release Kinetics of Serotonin From Guinea-pig and Human Enterochromaffin Cells., *J Physiol 591*, 5959-75, 2013 (*11389*)

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Species	**Species Detail**	**Cell(s)**	**Enzyme(s)**	**Medium**	**Reference**
Guinea-Pig	Guinea-Pig, male, 200-250g	Myenteric ganglia	Collagenase Type 4: 0.2% Protease: 0.1%	Kreb's solution	Kang, M., Maguma, H., Smith, T., Ross, G., Dewey, W. and Akbarali, H.: The Role of Î²-arrestin2 in the Mechanism of Morphine Tolerance in the Mouse and Guinea Pig Gastrointestinal Tract., *J Pharmacol Exp Ther 340*, 567-76, 2012 (*10992*)
Human	Human	Lamina propria mononuclear	Collagenase Type 1: 0.1% Deoxyribonuclease I: 5 u/ml	HBSS	Moser, A., Spindelboeck, W., Strohmaier, H., Enzinger, C., Gattringer, T., Fuchs, S., Fazekas, F., Gorkiewicz, G., Wurm, P., Hogenauer, C. and Khalil, M.: Mucosal Biopsy Shows Immunologic Changes of the Colon in Patients with Early MS, *Neurol Neuroimmunol Neuroinflamm 4*, e362, 2017(*11635*)
	Human	Colon enteric neural	Neutral Protease: 0.5% Collagenase animal free: 0.1% Hyaluronidase: 0.1% Deoxyribonuclease I: 0.01%	Ham's F-12	Rollo, B., Zhang, D., Stamp, L., Menheniott, T., Stathopoulos, L., Denham, M., Dottori, M., King, S., Hutson, J. and Newgreen, D.: Enteric Neural Cells from Hirschsprung Disease Patients Form Ganglia in Autologous Aneuronal Colon, *Cell Mol Gastroenterol Hepatol 2*, 92, 2016 (*11493*)
	Human	Gastrointestinal epithelial	Collagenase Type 1: 0.2%	DMEM/F12	VanDussen, K., Marinshaw, J., Shaikh, N., Miyoshi, H., Moon, C., Tarr, P., Ciorba, M. and Stappenbeck, T.: Development of an Enhanced Human Gastrointestinal Epithelial Culture System to Facilitate Patient-Based Assays., *Gut 64*, 911-20, 2015 (*11610*)
	Human	Colon	Trypsin: 0.1% Collagenase: 0.1%	HBSS	Ali, M., Anand, S., Tangella, K., Ramkumar, D. and Saif, T.: Isolation of Primary Human Colon Tumor Cells from Surgical Tissues and Culturing Them Directly on Soft Elastic Substrates for Traction Cytometry., *J Vis Exp* , e52532, 2015 (*11633*)
	Human	Enterochromaffin	Trypsin: 0.05% Collagenase Type 1: 0.1%	DMEM	Raghupathi, R., Duffield, M., Zelkas, L., Meedeniya, A., Brookes, S., Sia, T., Wattchow, D., Spencer, N. and Keating, D.: Identification of Unique Release Kinetics of Serotonin From Guinea-pig and Human Enterochromaffin Cells., *J Physiol 591*, 5959-75, 2013 (*11389*)
	Human	Colonic epithelial	Collagenase: 150 u/ml Neutral Protease: 0.04 mg/ml	Basal X media	Roig, A., Eskiocak, U., Hight, S., Kim, S., Delgado, O., Souza, R., Spechler, S., Wright, W. and Shay, J.: Immortalized Epithelial Cells Derived from Human Colon Biopsies Express Stem Cell Markers and Differentiate In Vitro., *Gastroenterol 138*, 1012, 2010 (*10560*)
	Human	Colorectal cancer	Collagenase Type 4: 1% Deoxyribonuclease I: 0.2%	HBSS	Zhou, J., Belov, L., Huang, P., Shin, J., Solomon, M., Chapuis, P., Bokey, L., Chan, C., Clarke, C., Clarke, S. and Christopherson, R.: Surface Antigen Profiling of Colorectal Cancer Using Antibody Microarrays With Fluorescence Multiplexing., *J Immunol Methods 355*, 40, 2010 (*10571*)
	Human	Colonic epithelial	Collagenase Type 4: 0.1%	not listed	Huang, E., Hynes, M., Zhang, T., Ginestier, C., Dontu, G., Appelman, H., Fields, J., Wicha, M. and Boman, B.: Aldehyde Dehydrogenase 1 is a Marker for Normal and Malignant Human Colonic Stem Cells (SC) and Tracks SC Overpopulation During Colon Tumorigenesis., *Cancer Res 69*, 3382-9, 2009 (*10489*)
	Human	Colon cancer	Collagenase Type 1: 300 u/ml Hyaluronidase: 100 u/ml	DMEM/F12	Varnat, F., Duquet, A., Malerba, M., Zbinden, M., Mas, C., Gervaz, P. and Ruiz i Altaba, A.: Human Colon Cancer Epithelial Cells Harbour Active HEDGEHOG-GLI Signalling that is Essential for Tumour Growth, Recurrence, Metastasis and Stem Cell Survival and Expansion., *EMBO Mol Med 1*, 338-51, 2009 (*11082*)
	Human	Cancer stem cell	Collagenase Type 3: 200 u/ml Deoxyribonuclease I: 100 u/ml	RPMI-1640	Dalerba Piero, Dylla Scott J, Park In-Kyung, Liu Rui, Wang Xinhao, Cho Robert W, Hoey Timothy, Gurney Austin, Huang Emina H, Simeone Diane M, Shelton Andrew A, Parmiani Giorgio, Castelli Chiara, Clarke Michael F: Phenotypic characterization of human colorectal cancer stem cells, *Proc Natl Acad Sci U S A 104*, 10158-63, 2007 (*10221*)
	Human	Colonic epithelial	Collagenase: Neutral Protease: 0.3% Deoxyribonuclease I: 0.05%	RPMI 1640	Fukushima, K. and Fiocchi, C.: Paradoxical Decrease of Mitochondrial DNA Deletions in Epithelial Cells of Active Ulcerative Colitis Patients., *Am J Physiol Gastrointest Liver Physiol 286*, G804-13, 2004 (*10355*)
	Human	Colonic endothelial	Collagenase Type 2: 0.25%	HBSS/5%FBS	Wang D., Lehman, R., Donner, D., Matli, M., Warren, R., and Welton, M.: Expression and Endocytosis of VEGF and Its Receptors in Human Colonic Vascular Endothelial Cells, *Am J Physiol/Gastro 282*, G1088, 2002 (*9817*)
	Human	Colonocytes	Collagenase: 0.15%	DMEM/F12	Emenaker, N., Calaf, G., Cox, D., Basson, M. and Qureshi, N.: Short Chain Fatty Acids Differentially Modulate Cellular Phenotype and C-myc Protein Levels in Primary Human Nonmalignant and Malignant Colonocytes, *J Nutr 46*, 96-105, 2001 (*10143*)
	Human	Epithelial and mucosal lymphocytes	Neutral Protease: 0.1% CLSPA: 0.02% Deoxyribonuclease I: 0.01%	RPMI 1640	Hisamatsu, T., Watanabe, M., Ogata, H., Ezaki, T., Hozawa, S., Ishii, H., Kanai, T. and Hibi, T.: Interferon- Inducible Gene Family 1-8U Expression in Colitis- Associated Colon Cancer and Severely Inflamed Mucosa in Ulcerative Colitis., *Cancer Res 59*, 5927-31, 1999 (*10357*)
	Human	Colonic epithelial	Neutral Protease: 1.2 u/ml Collagenase Type 4: 50 u/ml	HBSS	Gibson, P., Rosella, O., Wilson, A., Mariadason, J., Rickard, K., Byron, K. and Barkla, D.: Colonic Epithelial Cell Activation and the Paradoxical Effects of Butyrate., *Carcinogenesis 20*, 539, 1999 (*10359*)
	Human	Lamina propria lymphocytes	Collagenase: 25 u/ml	HBSS	Ueyama H, Kiyohara T, Sawada N, Isozaki K, Kitamura S, Kondo S, Miyagawa J, Kanayama S, Shinomura Y, Ishikawa H, Ohtani T, Nezu R, Nagata S, Matsuzawa Y: High Fas ligand expression on lymphocytes in lesions of ulcerative colitis, *Gut 43*, 48-55, 1998 (*10244*)
Mouse	Mouse	Lamina propria	Collagenase: 100 u/ml Deoxyribonuclease I: 0.004%	RPMI 1640	Larmonier, C., Shehab, K., Laubitz, D., Jamwal, D., Ghishan, F. and Kiela, P.: Transcriptional Reprogramming and Resistance to Colonic Mucosal Injury in Poly(ADP- ribose) Polymerase 1 (PARP1)-deficient Mice., *J Biol Chem 291*, 8918-30, 2016 (*11632*)
	Mouse	Colon organoid	Collagenase Type 1: 800 u/ml Neutral Protease: 0.013%	DMEM	Fattahi, F., Steinbeck, J., Kriks, S., Tchieu, J., Zimmer, B., Kishinevsky, S., Zeltner, N., Mica, Y., El-Nachef, W., Zhao, H., de Stanchina, E., Gershon, M., Grikscheit, T., Chen, S. and Studer, L.: Deriving Human ENS Lineages for Cell Therapy and Drug Discovery in Hirschsprung Disease., *Nature 531*, 105-9, 2016 (*11679*)
	Mouse, 8-10 week	Lamina propria lymphocytes	Neutral Protease: 3 u/ml Collagenase Type 4: 0.05%	HBSS	Round, J. and Mazmanian, S.: Inducible Foxp3+ Regulatory T-cell Development by a Commensal Bacterium of the Intestinal Microbiota., *Proc Natl Acad Sci U S A 107*, 12204-9, 2010 (*11634*)
	Mouse	Lamina propria	Collagenase Type 2: 0.1% Neutral Protease: 0.1% Deoxyribonuclease I: 0.004%	RPMI 1640	Atarashi, K., Nishimura, J., Shima, T., Umesaki, Y., Yamamoto, M., Onoue, M., Yagita, H., Ishii, N., Evans, R., Honda, K. and Takeda, K.: ATP Drives Lamina Propria T(H)17 Cell Differentiation., *Nature 455*, 808, 2008 (*10685*)

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Species	**Species Detail**	**Cell(s)**	**Enzyme(s)**	**Medium**	**Reference**
Mouse	Mouse, 6-8 week	Cancer stem cell	Collagenase Type 3: 200 u/ml Deoxyribonuclease I: 100 u/ml	RPMI-1640	Dalerba, P., Dylla, S., Park, I., Liu, R., Wang, X., Cho, R., Hoey, T., Gurney, A., Huang, E., Simeone, D., Shelton, A., Parmiani, G., Castelli, C., Clarke, M.: Phenotypic Characterization of Human Colorectal Cancer Stem Cells, *Proc Natl Acad Sci U S A 104*, 10158-63, 2007 (*10221*)
	Mouse	Lamina propria mononuclear cells	Collagenase: 0.05% Deoxyribonuclease I: 0.05% Neutral Protease: 0.3%	HBSS	Weigmann, B,, Tubbe, I., Seidel, D., Nicolaev, A., Becker, C., Neurath, M.: Isolation and Subsequent Analysis of Murine Lamina Propria Mononuclear Cells from Colonic Tissue, *Nat Protoc 2*, 2307-11, 2007 (*10252*)
	Mouse	Dentritic	Collagenase: 300 u/ml Deoxyribonuclease I: 0.002%	RPMI 1640	Abe, K., Nguyen, K., Fine, S., Mo, J., Shen, C., Shenouda, S., Corr, M., Jung, S., Lee, J., Eckmann, L. and Raz, E.: Conventional Dendritic Cells Regulate the Outcome of Colonic Inflammation Independently of T Cells., *Proc Natl Acad Sci U S A 104*, 17022, 2007 (*10356*)
	Mouse	Lympocytes	Collagenase/Dispase: 100 u/ml	RPMI 1640	Annacker O, Coombes JL, Malmstrom V, Uhlig HH, Bourne T, Johansson- Lindbom B, Agace WW, Parker CM, Powrie F.: Essential role for CD103 in the T cell-mediated regulation of experimental colitis, *J Exp Med 202*, 1051, 2005 (*10034*)
	Mouse, 6-8 week	Lamina propria lymphocytes	Collagenase Type 1: 0.2% Deoxyribonuclease I: 0.01%	HBSS	Totsuka, T., Kanai, T., Uraushihara, K., Iiyama, R., Yamazaki, M., Akiba, H., Yagita, H., Okumura, K., Watanabe, M.: Therapeutic Effect of Anti-OX40L and Anti-TNF-alpha MAbs in a Murine Model of Chronic Colitis, *Am J Physiol/Gastro 284*, G595-603, 2003 (*10243*)
	Mouse, 6-8 week	Lamina propria mononuclear cells	Collagenase Type 2: 0.015% Deoxyribonuclease I: 0.01%	RPMI	Wirtz, S., Becker, C., Blumberg, R., Galle, P., and Neurath, M.: Treatment of T Cell-dependent Experimental Colitis in SCID Mice by Local Administration of an Adenovirus Expressing IL-18 Antisense mRNA, *J Immunol 168(1)*, 411, 2002 (*9826*)
Rat	Rat, adult	Colon smooth muscle	Soybean Trypsin Inhibitor: 0.01% Collagenase Type 2: 0.1%	DMEM	Somara, S., Bashllari, D., Gilmont, R. and Bitar, K.: Real-Time Dynamic Movement of Caveolin-1 During Smooth Muscle Contraction of Human Colon and Aged Rat Colon Transfected with Caveolin-1 cDNA., *Am J Physiol Gastrointest Liver Physiol 300*, G1022, 2011 (*10883*)
Endothelial					
Bovine	Bovine	Bovine umbilical cord (BUVEC)	Collagenase: 0.1%	Dulbecco's/Ham F-12	Ricken, A., Traenkner, A., Merkwitz, C., Hummitzsch, K., Grosche, J., Spanel-Borowski, K.: The Short Prolactin Receptor Predominates in Endothelial Cells of Micro- and Macrovascular Origin, *J Vasc Res 44*, 19-30, 2007 (*10302*)
	Bovine	Pulmonary artery endothelial and smooth muscle cells	Collagenase: 0.04-0.05% Soybean Trypsin Inhibitor: 0.04%	RPMI-1640	Yu, M., McAndrew, R., Al- Saghir, R., Maier, K., Medhora, M., Roman, R. and Jacobs, E.: Nitric Oxide Contributes to 20-HETE- Induced Relaxation of Pulmonary Arteries., *J Appl Physiol 93*, 1391, 2002 (*10723*)
	Bovine, (*Bos taurus*), calf	Endothelial Pulmonary	Collagenase: 1000 u/ml	PBS, CMF	Del Vecchio, P.J., Siflinger- Birnboim, A., Belloni, P.N., Holleron, L.A., Lum, H., and Malik, A.B.: Culture and Characterization of Pulmonary Microvascular Endothelial Cell, *In Vitro Cell Dev Biol 28A*, 711, 1992 (*487*)
	Calf	Endothelial	Trypsin: 0.25%	HEPES	Vender, R.: Role of Endothelial Cells in the Proliferative Response of Cultured Pulmonary Vascular Smooth Muscle Cells to Reduced Oxygen Tension, *In Vitro Cell Dev Biol 28A*, 403, 1992 (*1146*)
	Bovine, adult	Cerebral artery Endothelial	Collagenase: 0.2%	HBSS	Machi, T., Kassell, N.F., and Scheld, W.M.: Isolation and Characterization of Endothelial Cells From Bovine Cerebral Arteries, *In Vitro Cell Dev Biol 26*, 291, 1990 (*436*)
	Bovine	Endothelial Aortic	Trypsin: 0.05%	Krebs Ringer solution	DeNucci, G., Gryglewski, R.J., Warner, T.D., and Vane, J.R.: Receptor-Mediated Release of Endothelium- Derived Relaxing Factor and Prostacyclin From Bovine Aortic Endothelial Cells Is Coupled, *Proc Natl Acad Sci U S A 85*, 2334, 1988 (*659*)
	Bovine	Endothelial, pulmonary artery	Collagenase: 0.1%	CMF- Dulbecco's PBS	Martin, T.: Formation of Diacylglycerol by a Phospholipase D- phosphatidate Phosphatase Pathway Specific for Phosphatidylcholine in Endothelial Cells, *Biochim Biophys Acta 962*, 282, 1988 (*333*)
	Bovine	Endothelial Aorta	Collagenase Type 2: 0.1%	PBS	Carson, M.P. and Haudenschild, C.C.: Microvascular Endothelium and Pericytes: High Yield, Low Passage Cultures, *In Vitro Cell Dev Biol 22*, 344, 1986 (*417*)
	Bovine	Endothelial Aortic	Collagenase Type 2: 0.1%	DMEM	Kinsella, M. and Wight, T.: Modulation of Sulfated Proteoglycan Synthesis by Bovine Aortic Endothelial Cells During Migration, *J Cell Biol 102*, 679, 1986 (*576*)
	Bovine	Endothelial	Collagenase: 0.5%	DMEM/Ham's F-12	Gospodarowicz, D., Massoglia, S., Cheng, J., and Fujii, D.: Effect of Fibroblast Growth Factor and Lipoproteins on the Proliferation of Endothelial Cells Derived From Bovine Adrenal Cortex, Brain Cortex, and Corpus Luteum Capillaries, *J Cell Physiol 127*, 121, 1986 (*959*)
	Bovine	Endothelial Brain arteries	Collagenase Type 2: 0.2%	Dulbecco's PBS	Goetz, I.., Warren, J., Estrada, C., Roberts, E., and Krause, D.: Long-Term Cultivation of Arterial and Capillary Endothelium From Adult Bovine Brain, *In Vitro Cell Dev Biol 21*, 172, 1985 (*413*)
	Calf	Endothelial Smooth muscle	Collagenase: 0.75%	DMEM	Voyta, J., Via, D., Butterfield, C., and Zetter, B.: Identification and Isolation of Endothelial Cells Based on Their Increased Uptake of Acetylated-Low Density Lipoprotein, *J Cell Biol 99*, 2034, 1984 (*881*)
	Bovine	Endothelial Corneal	Trypsin: 0.2%	PBS: DMEM	Scott, D., Murray, J., and Barnes, M.: Investigation of the Attachment of Bovine Corneal Endothelial Cells, *Exp Cell Res 144*, 472, 1983 (*393*)
	Bovine, 2-3 weeks	Endothelial Pulmonary artery	Collagenase Type 1: 0.2%	RPMI 1640w/1% Fetal Bovine Serum	Lee, S., Douglas, W., Deneke, S., and Fanburg, B.: Ultrastructural Changes in Bovine Pulmonary Artery Endothelial Cells Exposed to 80% O_2 *In Vitro*, *In Vitro 19*, 714, 1983 (*531*)
	Bovine	Endothelial, Corneal	Trypsin: 0.05%	0.01MPhosphate buffer with 0.02% EDTA 0.9% NaCl (See Reference)	Robinson, J. and Gospodarowicz, D.: Glycosaminoglycans Synthesized by Cultured Bovine Corneal Endothelial Cells, *J Cell Physiol 117*, 368, 1983 (*594*)

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Bovine	Bovine	Endothelial Subclavian vein	Collagenase Type 1: 0.10%	PBS	Olander, J., Marasa, J., Kimes, R., Johnston, G., and Feder, J.: An Assay Measuring the Stimulation of Several Types of Bovine Endothelial Cells by Growth Factor(s) Derived from Cultured Human Tumor Cells, *In Vitro 18*, 99, 1982 (*525*)
	Bovine	Aortic Pulmonary artery	Collagenase Type 2: 0.10%	PBS	Makarski, J.: Stimulation of Cyclic AMP Production by Vasoactive Agents in Cultured Bovine Aortic and Pulmonary Artery Endothelial Cells, *In Vitro 17*, 450, 1981 (*513*)
	Calf, fetal, 4-9 months	Endothelial	Collagenase Type 1: 0.25%	PBS	Rosen, E., Mueller, S., Noveral, J., and Levine, E.: Proliferative Characteristics of Clonal Endothelial Cell Strains, *J Cell Physiol 107*, 123, 1981 (*880*)
	Bovine, adult	Aorta	Collagenase Type 1: 125 u/ml	Dulbecco's PBS with calcium and magnesium	Cotta-Pereira, G., Sage, H., Bornstein, P., Ross, R., and Schwartz, S.: Studies of Morphologically Atypical ("Sprouting") Cultures of Bovine Aortic Endothelial Cells. Growth Characteristics and Connective Tissue Protein Synthesis, *J Cell Physiol 102*, 183, 1980 (*592*)
	Bovine, young	Pulmonary artery	Collagenase: 0.1%	Medium 199	Ryan, U., Mortara, M., and Whitaker, C.: Methods for Microcarrier Culture of Bovine Pulmonary Artery Endothelial Cells Avoiding the Use of Enzymes, *Tissue Cell 12*, 619, 1980 (*670*)
	Bovine	Foreskin	Collagenase: 0.5%	Dulbecco's MEM w/10% calf serum	Folkman, J., Haudenschild, C. C., and Zetter, B. R.: Long-term Culture of Capillary Endothlial Cells, *Proc Natl Acad Sci U S A 76*, 5217, 1979 (*653*)
	Bovine	Saphenous, Vein, Aorta	Collagenase: 0.01%	PBS	Eskin, S., Sybers, H., Trevino, L., Lie, J., and Chimoskey, J.: Comparison of Tissue-Cultured Bovine Endothelial Cells from Aorta and Saphenous Vein, *In Vitro 14*, 903, 1978 (*500*)
	Bovine	Endothelial Thoracic aorta Saphenous veins	Collagenase Type 2: 0.1%	PBS	Schwartz, S.M.: Selection and Characterization of Bovine Aortic Endothelial Cells, *In Vitro 14*, 966, 1978 (*501*)
	Bovine	Pulmonary artery	Collagenase Type 2: 0.25%	Puck's solution	Ryan, U.S., Clements, E., Habliston, D., and Ryan, J.W.: Isolation And Culture of Pulmonary Artery Endothelial Cells, *Tissue Cell 10*, 535, 1978 (*669*)
	Calf	Endothelial	Collagenase Type 2: 0.1%	DMEM	Howard, B., Macarak, E., Gunson, D., and Kefalides, N.: Characterization of the Collagen Synthesized by Endothelial Cells in Culture, *Proc Natl Acad Sci U S A 73 (7)*, 2361, 1976 (*954*)
Canine	Dog (also human)	Microvessels	Collagenase Type 4: 0.1%	DMEM	Gerhart, D. Z., Broderius, M. A., and Drewes, L. R.: Cutlured Human and Canine Endothelial Cells from Brain Microvessels, *Brain Res Bull 21*, 785, 1988 (*344*)
	Dog, mongrel, adult	Endothelium Jugular vein	Trypsin: 0.1%	Earle's PBS, CMF	Ford, J., Burkel, W., and Kahn, R.: Isolation of Adult Canine Venous Endothelium for Tissue Culture, *In Vitro 17*, 44, 1981 (*512*)
Guinea-Pig	Guinea pig, female, 300-350g	Coronary endothelial	Collagenase Type 2: 0.1%	see reference	Buxton I L, Kaiser R A, Oxhorn B C, Cheek D J: Evidence supporting the Nucleotide Axis Hypothesis: ATP release and metabolism by coronary endothelium, *Am J Physiol Heart Circ Physiol 281*, H1657-66, 2001 (*10171*)
Human	Human	Vascular endothelial	Collagenase Type 1: 0.1%	HBSS	Ganguly, A., Zhang, H., Sharma, R., Parsons, S. and Patel, K.: Isolation of Human Umbilical Vein Endothelial Cells and Their Use in the Study of Neutrophil Transmigration Under Flow Conditions., *J Vis Exp 66*, e4032, 2012 (*10897*)
	Human, 18-68 yr	Corneal endothelial	Collagenase: 0.2% Neutral Protease: 1.0%	DMEM/F12	Li, W., Sabater, A., Chen, Y., Hayashida, Y., Chen, S., He Hua, T. Scheffer, C.: A Novel Method of Isolation, Preservation, and Expansion of Human Corneal Endothelial Cells, *Inv Ophthal Visual Sci 48*, 614-20, 2007 (*10306*)
	Human	Endothelial and vascular smooth muscle	Collagenase Type 1: 0.2%	HBSS	Moss, S., Bates, M., Parrino, P. and Woods, TC.: Isolation of Endothelial Cells and Vascular Smooth Muscle Cells from Internal Mammary Artery Tissue., *Ochsner J 7*, 133, 2007 (*10636*)
	Human	HUVEC	Collagenase Type 1: 0.1%	HBSS	Davis, J., Crampton, S. and Hughes. C.: Isolation of Human Umbilical Vein Endothelial Cells (HUVEC)., *J Vis Exp 3*, 183, 2007 (*10978*)
	Human	HUVEC	Collagenase Type 4: 0.1%	RPMI 1640	Silva, A., Kaufmann, J., Vivancos, C., Fakan, S., Cavadas, C., Shaw, P., Brunner, H., Vischer, U., and Grouzmann, E.: Neuropeptide Y Expression, Localization and Cellular Transducing Effects in HUVEC, *Biol Cell 97(6)*, 457, 2005 (*9816*)
	Human	Endothelial	Collagenase Type 2: 0.1%	DMEM	Patel, V., Logan, A., Watkinson, J., Uz-Zaman, S., Sheppard, M., Ramsden, J. and Eggo, M.: Isolation and Characterization of Human Thyroid Endothelial Cells., *Am J Physiol Endocrinol Metab 284*, E168, 2003 (*10586*)
	Human	Esophageal microvascular endothelial	Collagenase Type 2: 0.2%	MCDB-131	Rafiee, P., Ogawa, H., Heidemann, J., Li, M., Aslam, M., Lamirand, T., Fisher, P., Graewin, S., Dwinell, M., Johnson, C., Shaker, R. and Binion, D.: Isolation and Characterization of Human Esophageal Microvascular Endothelial Cells: Mechanisms of Inflammatory Activation., *Am J Physiol Gastrointest Liver Physiol 285*, G1277, 2003 (*10726*)
	Human	Colonic endothelial cells	Collagenase Type 2: 0.25%	HBSS/5%FBS	Wang D., Lehman R., Donner D., Matli M., Warren R., and Welton M.: Expression and Endocytosis of VEGF and Its Receptors in Human Colonic Vascular Endothelial Cells, *Am J Physiol/Gastro 282*, G1088, 2002 (*9817*)
	Human	Pulmonary vascular endothelial cells	Neutral Protease: 1.18 u/ml Elastase: 10 u/ml	M199	Muller, A., Hermanns, M., Skrzynski, C., Nesslinger, M., Muller, K., and Kirkpatrick, C.: Expression of the Endothelial Markers PECAM- 1, vWf, and CD34 In Vivo and In Vitro, *Exp Mol Pathol 72*, 221, 2002 (*9823*)
	Human	HUVEC	Collagenase Type 2: 0.1%	PBS	Takano, M., Meneshian, A., Sheikh, E., Yamakawa, Y., Wilkins, K., Hopkins, E., Bulkley, G.: Rapid Upregulation of Endothelial P-selectin Expression Via Reactive Oxygen Species Generation, *Am J Physiol Heart Circ Physiol 283*, H2054-61, 2002 (*10311*)
	Human	Endothelial	Trypsin: 2%	PBS	Goolcharran, C., Cleland, J., Keck, R., Jones, A., and Borchardt, R.: Comparsion ofthe Rates of Deamidation, Diketopiperazine Formation and Oxidation in Recombinant Human Vascular Endothelial Growth Factor and Model Peptides, *AAPS PharmSci 2 (1)*, 5, 2000 (*742*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human	HUVEC, porcine pulmonary arterial endothelial cells	Collagenase Type 2: 0.2%	DMEM	Kwak, H., Lee, S., Lee, Y., Ryu, C., Koh, K., Choi, H., and Koh, G.: Angiopoietin-1 Inhibits Irradiation and Mannitol-induced Apoptosis in Endothelial Cells, *Circulation 101(19)*, 2317, 2000 (*9818*)
	Human	Vascular endothelial cells	Collagenase: 0.1%	DMEM	Schonbeck, U., Sukhova, G., Graber, P., Coulter, S., Libby, P.: Augmented Expression of Cyclooxygenase-2 in Human Atherosclerotic Lesions, *Am J Pathol 155*, 1281-91, 1999 (*10343*)
	Human	Hepatic endothelial cells	Collagenase: 0.2%	DMEM	Sanyal, A., and Mirshahi, F.: A Simplified Method for the Isolation and Culture of Endothelial Cells from Pseudointima of Transjugular Intrahepatic Portasystemic Shunts, *Lab Invest 78(11)*, 1469, 1998 (*9819*)
	Human	Foreskin microvascular endothelial	Trypsin: 0.3%	HBSS	Wojta, J., Gallicchio, M., Zoellner, H., Filonzi, E., Hamilton, J., McGrath, K.: Interleukin-4 Stimulates Expression of Urokinase-type- Plasminogen Activator in Cultured Human Foreskin Microvascular Endothelial Cells, *Blood 81*, 3285-92, 1993 (*10262*)
	Human	Endothelial	Trypsin: 0.3.%	HBSS (see reference)	Lee, K., Lawley, T., Xu, Y., and Swerlick, R.: VCAM-1-, ELAM-1-, and ICAM-1-Independent Adhesion of Melanoma Cells to Cultured Human Dermal Microvascular Endothelial Cells, *J Invest Dermatol 98*, 79, 1992 (*960*)
	Human	Vascular endothelial	Neutral Protease: 0.15% Trypsin: 0.25%	M-199	Farber, H., Antonov, A., Romanov, Y., Smirnov, V., Scarfo, L., Beer, D.: Cytokine Secretion by Human Aortic Endothelial Cells is Related to Degree of Atherosclerosis, *Am J Physiol 262*, H1088-95, 1992 (*10152*)
	Human	Umbilical vein HUVEC	Collagenase: 0.1%	Cord Buffer (See Reference)	Grant, D.S., Lelkes, P.I., Fukuda, K., Kleinman, H.K.: Intracellular Mechanisms Involved in Basement Membrane Induced Blood Vessel Differentiation *In Vitro*, *In Vitro Cell Dev Biol 27*, 327, 1991 (*462*)
	Human	Crypt cells	Collagenase: 125 u/ml	RMPI 1640	Whitehead, R., and Eeden, P.: A Method For the Prolonged Culture of Colonic Epithelial Cells, *J Tiss Cul Meth 13*, 103, 1991 (*912*)
	Human	Endothelial	Collagenase Type 1: 0.2%	Medium 199	Fischer, E., Stingl, A., and Kirkpatrick, C.: Migration Assay for Endothelial Cells in Multiwells Application to Studies on the Effect of Opioids, *J Immunol Methods 128*, 235, 1990 (*1080*)
	Human	Human umbilical vein endothelial cells	Collagenase Type 2: 75 u/ml	M199	Muller WA, Ratti CM, McDonnell SL, Cohn ZA: A human endothelial cell- restricted, externally disposed plasmalemmal protein enriched in intercellular junctions, *J Exp Med 170*, 399-414, 1989 (*10099*)
	Human	Microvessels	Collagenase Type 4: 0.1%	DMEM	Gerhart, D. Z., Broderius, M. A., and Drewes, L. R.: Cutlured Human and Canine Endothelial Cells from Brain Microvessels, *Brain Res Bull 21*, 785, 1988 (*344*)
	Human	Endothelial/HUVEC Foreskin & umbilical cord	Trypsin: 0.3%	HBSS/PBS, Medium 199 (see reference)	Kubota, Y., Kleinman, H., Martin, G., and Lawley, T.: Role of Laminin and Basement Membrane in Morphological Differentiation of Human Endothelial Cells into Capillary-like Structures, *J Cell Biol 107*, 1589, 1988 (*580*)
	Human	Umbilical cord Smooth muscle	Collagenase: 0.1%	HEPES	Hoshi, H., Kan, M., Chen, J., and McKeehan, W.: Comparative Endocrinology- Paracrinology-Autocrinology of Human Adult Large Vessel Endothelial and Smooth Muscle Cells, *In Vitro Cell Dev Biol 24 (4)*, 309, 1988 (*937*)
	Human	Endothelial Saphenous vein	Collagenase Type 2: 0.1%	PBS, CMF	Sharefkin, J.B., Fairchild, K.D., Albus, R.A., Cruess, D.F., and Rich, N.M.: The Cytoxic Effect of Surgical Glove Powder Particles on Adult Human Vascular Endothelial Cell Cultures: Implications for Clinical Uses of Tissue Culture Techniques, *J Surg Res 41*, 463, 1986 (*725*)
	Human	Endothelial	Collagenase: 0.1%	HEPES	Hoshi, H., and McKeehan, W.: Isolation, Growth Requirements, Cloning, Prostacylclin Production and Life-Span of Human Adult Endothelial Cells in Low Serum Culture Medium, *In Vitro Cell Dev Biol 22 (1)*, 51, 1986 (*883*)
	Human	Endothelial Dermal	Trypsin: 0.3%	PBS	Marks, R.M., Czerniecki, M., and Penny, R.: Human Dermal Microvascular Endothelial Cells: An Improved Method for Tissue Culture and Description of Some Singular Properties in Culture, *In Vitro Cell Dev Biol 21*, 627, 1985 (*415*)
	Human	Fibroblasts, Foreskin	Hyaluronidase: 0.10%	DMEM	Gordon, P., Sussman, I., and Hatcher, V.: Long-Term Culture of Human Endothelial Cells, *In Vitro 19*, 661, 1983 (*530*)
	Human	Iliac arteries	Collagenase: 0.25%	PBS w/Ca^{++}, Mg^{++}, & BSA (see reference)	Glassberg, M., Bern, M., Coughlin, S., Haudenschild, C., Hoyer, L., and Antoniades, H.: Cultured Endothelial Cells Derived from the Human Iliac Arteries, *In Vitro 18*, 859, 1982 (*524*)
	Human, adult	Peripheral blood mononuclear Monocytes, T cells, Endothelial	Collagenase: 0.25%	RPMI 1640	Ashida, E., Johnson, A., and Lipsky, P.: Human Endothelial Cell-lymphocyte Interaction. Endothelial Cells Function as Accessory Cells Necessary for Mitogen-induced Human T Lymphocyte Activation In Vitro, *J Clin Invest 67*, 1490, 1981 (*939*)
	Human	Microvascular endothelial Neonatal foreskins	Neutral Protease: at 1000 u/ml	Konigsberg's modification of HBSS (See Reference)	Sherer, G., Fitzharris, T., Faulk, W., and LeRoy, E.: Cultivation of Microvascular Endothelial Cells from Human Preputial Skin, *In Vitro 16*, 675, 1980 (*509*)
	Human (adult and child)	Foreskin	Collagenase: 0.5%	Dulbecco's MEM w/10% calf serum	Folkman, J., Haudenschild, C. C., and Zetter, B. R.: Long-term Culture of Capillary Endothlial Cells, *Proc Natl Acad Sci U S A 76*, 5217, 1979 (*653*)
	Human	Umbilical vein	Trypsin: 100 µg/ml	Tris-HCl,0.2 M	Jaffe, E.A., Minick, C.R., Adelman, B., Becker, C.G., and Nachman, R.: Synthesis of Basement Membrane Collagen By Cultured Human Endothelial Cells, *J Exp Med 144*, 209, 1976 (*602*)
	Human	Umbilical vein	Collagenase Type 1: 125 u/ml	Dulbecco's PBS	Gimbrone Jr., M.A.: Culture of Vascular Endothelium, *Prog Hemost Thromb 3*, 1, 1976 (*709*)
	Human	Umbilical cord	Collagenase: 0.1%	Dulbecco's PBS	Gimbrone, M.A., Cotran, R.S., and Folkman, J.: Human Vascular Endothelial Cells in Culture: Growth and DNA Synthesis, *J Cell Biol 60*, 673, 1974 (*589*)

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Human	Human	Umbilical cord	Collagenase: 0.2%	Cord buffer (See Reference)	Jaffe, E., Nachman, R., Becker, C., and Minick, C.: Culture of Human Endothelial Cells Derived from Umbilical Veins. Identification by Morphologic and Immunologic Criteria, *J Clin Invest 52*, 2745, 1973 (*598*)
	Human	Umbilical cord	Trypsin NF 1:250: 0.125%	Saline, normal	Lewis, L.J., Haok, J.C., Maca, R.D., and Fry, G.L.: Replication of Human Endothelial Cells in Culture, *Science 181*, 452, 1973 (*666*)
	Human	Umbilical cord	Trypsin NF 1:250: 0.25%	CMF solution	Fryer, D.G., Birnbaum, G., and Luttrell, C.N.: Human Endothelium in Cell Culture, *J Atheroscler Res 6*, 151, 1966 (*547*)
Mouse	Mouse	Coronary endothelial	Collagenase Type 2: 0.1% Neutral Protease: 0.6 u/ml	Kreb's	Luo, S., Truong, A. and Makino, A.: Isolation of Mouse Coronary Endothelial Cells., *J Vis Exp,* 2016 (*11497*)
	Mouse	Endothelial lung	Collagenase Type 1: 0.2%	DMEM	Wang, J., Sun, C., Gerdes, N., Liu, C., Liao, M., Liu, J., Shi, M., He, A., Zhou, Y., Sukhova, G., Chen, H., Cheng, X., Kuzuya, M., Murohara, T., Zhang, J., Cheng, X., Jiang, M., Shull, G. and Rogers, S.: Interleukin 18 Function in Atherosclerosis is Mediated by the Interleukin 18 Receptor and the Na-Cl Co- Transporter., *Nat Med 21*, 820-6, 2015 (*11425*)
	Mouse	Endothelial	Collagenase Type 2: 0.1% Neutral Protease: 0.25 u/ml Deoxyribonuclease I: 0.0075%	DMEM	Xiao, L., McCann, J. and Dudley, A.: Isolation and Culture Expansion of Tumor- specific Endothelial Cells., *J Vis Exp* , e53072, 2015 (*11553*)
	Mouse	Cerebral artery endothelial	Neutral Protease: 4 u/ml Elastase: 1 u/ml Collagenase Type 1: 120 u/ml	DMEM	Kochukov, M., Balasubramanian, A., Abramowitz, J., Birnbaumer,L. and Marrelli, S.: Activation of Endothelial Transient Receptor Potential C3 Channel is Required for Small Conductance Calcium- Activated Potassium Channel Activation and Sustained Endothelial Hyperpolarization and Vasodilation of Cerebral Artery., *J Am Heart Assoc 3*, , 2014 (*11522*)
	Mouse	Tumor endothelial	Collagenase Type 1: 0.2%	HBSS	Kazerounian, S., Gerald, D., Huang, M., Chin, R, Udayakumar, D, Zheng, N., O'Donnell, R., Perruzzi, C., Mangiante, L., Pourat, J., Phung, T., Bravo-Nuevo, A., Shechter, S., McNamara, S. and Duhadaway, K.: RhoB Differentially Controls Akt Function in Tumor Cells and Stromal Endothelial Cells During Breast Tumorigenesis., *Cancer Res 73*, 50, 2013 (*11064*)
	Mouse, 8-14 week	Endothelial	Collagenase Type 4: 0.2%	HBSS	Imoukhuede, P. and Popel, A.: Expression of VEGF Receptors on Endothelial Cells in Mouse Skeletal Muscle., *PLoS ONE 7*, e44791, 2012 (*10956*)
	Mouse	Endothelial	Papain: 40 u/ml Deoxyribonuclease I: 125 u/ml	DPBS	Daneman, R., Zhou, L., Agalliu, D., Cahoy, J., Kaushal, A. and Barres, B.: The Mouse Blood-Brain Barrier Transcriptome: a New Resource for Understanding the Development and Function of Brain Endothelial Cells.,*PLoS ONE 5*, e13741, 2010 (*11485*)
	Mouse, 7-10 week	Liver endothelial	Collagenase: 0.03%	DMEM	Follenzi, A., Benten, D., Novikoff, P., Faulkner, L., Raut, S. and Gupta, S.: Transplanted Endothelial Cells Repopulate the Liver Endothelium and Correct the Phenotype of Hemophilia A Mice., *J Clin Invest 118*, 935, 2008 (*10632*)
	Mouse, 4 week	Endothelial kidney	Collagenase Type 1: 0.1%	DMEM	Kondo, S., Scheef, E., Sheibani, N. and Sorenson, C.: PECAM-1 Isoform- Specific Regulation of Kidney Endothelial Cell Migration and Capillary Morphogenesis., *Am J Physiol Cell Physiol 292*, C2070, 2007 (*10549*)
	Mouse, embryonic or yolk sac	Endothelial	Collagenase Type 3: 200 u/ml Deoxyribonuclease I: 0.001%	PBS	Braren, R., Hu, H., Kim, Y., Beggs, H., Reichardt, L., Wang, R.: Endothelial FAK is Essential for Vascular Network Stability, Cell Survival, and Lamellipodial Formation, *J Cell Biol 172*, 151-62, 2006 (*10103*)
	Mouse, neonatal	Microvascular endothelial	Neutral Protease: 0.005% Collagenase Type 1: 4%	DMEM	Cha, S., Talavera, D., Demir, E., Nath, A. and Sierra- Honigmann, M.: A Method of Isolation and Culture of Microvascular Endothelial Cells from Mouse Skin., *Microvasc Res 70*, 198, 2005 (*10635*)
	Mouse, 4 week	Retinal endothelial cells	Collagenase Type 1: 0.1%	DMEM	Su, X., Sorenson, C., and Sheibani, N.: Isolation and Characterization of Murine Retinal Endothelial Cells, *Mol Vis 9*, 171, 2003 (*9821*)
	Mouse, male	Endothelial cells from lymph node	Collagenase Type 1: 0.1%	PBS	Izawa, D., Tanaka, T., Saito, K., Ogihara, H., Usui, T., Kawamoto, S., Matsubara, K., Okubo, K., and Miyasaka, M.: Expression Profile of Active Genes in Mouse Lymph Node High Endothelial Cells, *Int Immunol 11(12)*, 1989, 1999 (*9822*)
	Mouse, 2-4 week	Cerebrovascular Endothelial	Collagenase/Dispase: 0.1%	PBS	Sapatino, B., Welsh, C., Smith, C., Bebo, B., and Linticum, D.: Cloned Mouse Cerebrovascular Endothelial Cells That Maintain Their Differentiation Markers for Factor VIII, Low Density Lipoprotein, and Angiotensin-Converting Enzyme, *In Vitro Cell Dev Biol 29A*, 923, 1993 (*952*)
Porcine	Porcine, 6 month	Valvular endothelial	Neutral Protease: 2 u/ml Collagenase Type 2: 60 u/ml	PBS	Balaoing, L., Post, A., Lin, A., Tseng, H., Moake, J. and Grande-Allen, K.: Laminin Peptide-Immobilized Hydrogels Modulate Valve Endothelial Cell Hemostatic Regulation., *PLoS ONE 10*, e0130749, 2015 (*11409*)
	Porcine	Valvular endothelial	Collagenase Type 2: 300-600 u/ml	DMEM	Gould, R. and Butcher, J.: Isolation of Valvular Endothelial Cells., *J Vis Exp 46*, e2158, 2010 (*10900*)
	Porcine (also bovine)	Endothelial	Collagenase Type 1:	DMEM w/ 10% calf serum	Nugent, H., and Edelman, E.: Endothelial Implants Provide Long-Term Control of Vascular Repair in a Porcine Model of Arterial Injury, *J Surg Res 99*, 228, 2001 (*1078*)
	Porcine	HUVEC, porcine pulmonary arterial endothelial cells	Collagenase Type 2: 0.2%	DMEM	Kwak HJ, Lee SJ, Lee YH, Ryu CH, Koh KN, Choi HY, and Koh GY.: Angiopoietin-1 inhibits irradiation- and mannitol-induced apoptosis in endothelial cells, *Circulation 101(19)*, 2317, 2000 (*9818*)
	Porcine, 6-7 month	Porcine pulmonary endothelial	Collagenase Type 1: 0.3%	RPMI 1640	Hill-Kapturczak N, Kapturczak MH, Block ER, Patel JM, Malinski T, Madsen KM, and Tisher CC.: Angiotensin II-stimulated nitric oxide release from porcine pulmonary endothelium is mediated by angiotensin IV, *J Am Soc Nephrol 10(3)*, 481, 1999 (*9881*)
	Porcine	Endothelial	Trypsin: 0.25%	Medium 199	Shasby, S.: Endothelial Cells Grown On Permeable Membrane Supports, *J Tiss Cul Meth 14*, 247, 1992 (*941*)
	Porcine	Endothelial	Trypsin: 0.05%	DMEM	Vischer, P., and Buddecke, E.: Alteration of Glycosytransferase Activities during Proliferation of Cultivated Arterial Endothelial Cells and Smooth Muscle Cells, *Exp Cell Res 158*, 15, 1985(*1056*)

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Endothelial

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Porcine	Porcine	Endothelial Aortic	Collagenase Type 2: 0.1%	Dulbecco-Vogt MEM w/o serum	Dickinson, E. and Slakey, L.: Plasma-derived Serum as a Selective Agent to Obtain Endothelial Cultures from Swine Aorta, *In Vitro 18*, 63, 1982 (*523*)
	Porcine, 30-40 kg	Endothelial Aortic	Collagenase Type 4: 0.025%	Medium 199	Merrilees, M.J., and Scott, L.: Interaction of Aortic Endothelial and Smooth Muscle Cells in Culture, *Atherosclerosis 39*, 147, 1981 (*307*)
	Porcine, 20-30 week	Endothelial, Aortic Veins	Collagenase: 0.1%	Medium 199 w/BSS and HEPES or $NaHCO_3$	Slater, D.N., and Sloan, J.M.: The Porcine Endothelial Cell in Tissue Culture, *Atherosclerosis 21*, 259, 1975 (*305*)
	Porcine, 60-100 days	Aorta	Trypsin: 0.1%	Phosphate buffer (see reference)	Coulson, W.F.: The Effect Of Proteolytic Enzymes on the Tensile Strength of Whole Aorta and Isolated Aortic Elastin, *Biochim Biophys Acta 237*, 378, 1971 (*319*)
Rabbit	Rabbit	Corneal endothelial cells (CEC)	Hyaluronidase: 0.05%	DMEM	Choi, J., Ko, M., and Kay, E.: Subcellular Localization of the Expressed 18 kDa FGF-2 Isoform in Corneal Endothelial Cells, *Mol Vis 6*, 222, 2000 (*1077*)
	Rabbit, 2-3Kg	Endothelial, aortic	Elastase: 0.2%	Hanks solution	Haley, N., Shio, H., Fowler, S.: Characterization of Lipid- laden Aortic Cells from Cholesterol-fed Rabbits. I. Resolution of Aortic Cell Populations by Metrizamide Density Gradient Centrifugation, *Lab Invest 37*, 287, 1977 (*624*)
Rat	Rat, SD, male, 250- 300 g	Smooth muscle, aorta	Soybean Trypsin Inhibitor: 0.25%	HBSS with 0.2 mM Ca++	Schwertschlag, U.S., and Whorton, A.R.: Platelet- Activating Factor-Induced Homologous and Heterologous Desensitization In Cultured Vascular Smooth Muscle Cells, *J Biol Chem 263*, 13791, 1988 (*560*)
	Rat, SD, male, 350 - 450 g	Lipocytes, Kupffer Sinusoidal endothelial	Collagenase: 0.015%	DMEM/Ham's F-12	Friedman, S. and Roll, F.: Isolation and Culture of Hepatic Lipocytes,Kupffer Cells, and Sinusoidal Endothelial Cells by Density Gradient Centrifugation with Stractan, *Anal Biochem 161*, 207, 1987 (*301*)
	Rat, Wistar, male, 3 mo	Endothelial, Kupffer Parenchymal	Pronase: 0.25%	HBSS	Nagelkenke, J., Barto, K., and VanBerkel, T.: In Vivo and In Vitro Uptake and Degradation of Acetylated Low Density Lipoprotein by Rat Liver Endothelial, Kupffer, and Parenchymal Cells, *J Biol Chem 258*, 12221, 1983 (*557*)
	Rat, Wistar-Kyoto, male, 100 - 200 g	Endothelial Cerebral	Collagenase Type 2: 0.05%	HBSS	Diglio, C.A., Grammas, P., Filiberto Giacomelli, M.S., and Wiener, J.: Primary Culture of Rat Cerebral Microvascular Endothelial Cells, *Lab Invest 46*, 554, 1982 (*626*)
	Rat, 300 G, and pig, 30-40 Kg	Endothelial Thoracic aorta	Trypsin: 0.05%	Medium 199 and 0.01M EDTA	Merrilees, M.J., and Scott, L.: Interaction of Aortic Endothelial and Smooth Muscle Cells in Culture. Effect on Glycosaminoglycan Levels, *Atherosclerosis 39*, 147, 1981 (*306*)
	Rat	Foreskin	Collagenase: 0.5%	Dulbecco's MEM w/10% calf serum	Folkman, J., Haudenschild, C. C., and Zetter, B. R.: Long-term Culture of Capillary Endothlial Cells, *Proc Natl Acad Sci U S A 76*, 5217, 1979 (*653*)
	Rat, Wistar, adult, 170 g	Endothelial	Trypsin: 0.5%	BSS	Phillips, P., Kumar, P., Kumar, S., and Waghe, M.: Isolation And Characterization of Endothelial Cells From Rat And Cow Brain White Matter, *J Anat 129*, 261, 1979 (*708*)

Epithelial

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Bovine	Bovine, fetal	Epithelial Tracheal	Neutral Protease: 2%	Dissociation medium, CMF	Schumann, B.L., Cody, T.E., Miller, M.L., Leikauf, G.D.: Isolation, Characterization, and Long-Term Culture of Fetal Bovine Tracheal Epithelial Cells, *In Vitro Cell Dev Biol 24*, 211, 1988 (*422*)
Canine	Dog	Tracheal	Pronase: 0.1%	DMEM	Virmani, A., Naziruddin, B., Desai, V., Lowry, J., Graves, D., and Sachdev, G.: Evidence for Secretion of High Molecular Weight Mucins by Canine Tracheal Epithelial Cells in Primary Culture: Effects of Select Secretagogues on Mucin Secretion, *In Vitro Cell Dev Biol 28A*, 120, 1992 (*1194*)
Chicken	Chick, 5 day old	Intestinal mesenchymal and epithelial	Collagenase: 0.03%	DMEM	Simon-Assmann, P and Kedinger, M: Embryonic Gut-Dissagregated Culture, *Cell & Tissue Culture: Laboratory Procedures Vol. 1*, Doyle, A., Griffiths, J., and Newell, D., John Wiley and Sons, Ltd., 12A:3.1, 1995 (*1271*)
Fish	Shark (*Squalus acanthias*)	Rectal gland	Collagenase: 0.2%	Ringer's solution	Karnaky, Jr., K.J., Valentich, J.D., Currie, M.G., Oehlenschlager, W.F., and Kennedy, M.P.: Atriopeptin Stimulates Chloride Secretion in Cultured Shark Rectal Gland Cells, *Am J Physiol 260*, 1125, 1991 (*287*)
	Shark (*Squalus acanthias*)	Rectal gland	Collagenase: 0.2%	Ringer's solution	Valentich, J.: Primary Cultures of Shark Rectal Gland Epithelial Cells: A Model for Hormone-Sensitive Chloride Transport , *J Tiss Cul Meth 13*, 149, 1991 (*1265*)
	Winter flounder, 200-500 g (*Pseudopleuronectes americanus*)	Renal tubule	Trypsin: 0.2%	CMF solution	Dickman, K.G., and Renfro, J.: Primary Culture of Flounder Renal Tubule Cells: Transepithelial Transport, *Am J Physiol 251*, 424, 1986 (*295*)
Frog	Frog, *Xenopus laevis*, adult, female	Colonic epithelial	Collagenase Type 4: 0.1%	Kreb's	Heinke, B, and Clauss, W.: Potassium Conductances in Isolated Single Cells from *Xenopus Laevis* Colonic Epithelium, *J Comp Physiol [B] 169*, 148, 1999 (*1120*)
Guinea-Pig	Guinea-pig, Hartley, female, 200 g	Epithelial	Collagenase Type 1: 0.1%	DMEM	Rutten, M.: Use of Commerically Available Cell Culture Inserts for Primary Culture and Electrophysiologic Studies of Guinea Pig Gastric Mucous Epithelial Cells, *J Tiss Cul Meth 14*, 235, 1992 (*897*)
	Guinea-pig, Hartley albino, 500-600 g	Endometrial	Collagenase: 0.25%	HBSS	Chaminadas, G., Alkhalaf, M., Remy-Martin, J.P., Propper, A.Y., and Adessi, G.L.: Specific Effect of Oestrone Sulphate on Protein Synthesis and Secretion by Cultured Epithelial Cells from Guinea-pig Endometrium, *J Endocrinol 123*, 233, 1989 (*600*)
Hamster	Hamster, Syrian gold, male, 100-120 g	Tracheal	Pronase: 0.1%	MEM with Hepes, CMF	Niles,R., Kim, K.C., Hyman, B., Christensen, T., Wasano, K., Brody, J.: Characterization Of Extended Primary And Secondary Cultures Of HamsterTracheal Epithelial Cells, *In Vitro Cell Dev Biol 24*, 457, 1988 (*423*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Hamster	Hamster, Syrian golden (strain CR:RGH)	Tracheal	Trypsin: 0.1%	Ham's F-12	McDowell, E., et al.: Differentiation of Tracheal Mucociliary Epithelium in Primary Cell Culture Recapitulates Normal Fetal Development and Regeneration Following Injury in Hamsters, *Am J Pathol 129*, 511, 1987 (*283*)
	Hamster (strain 1516 EHS and Lakeview), 8-12 weeks	Tracheal	Trypsin: 0.05%	Medium 199	Lee, T., Wu, R., Brody, A., Barrett, J., and Nettesheim, P.: Growth and Differentiation of Hamster Tracheal Epithelial Cells in Culture, *Exp Lung Res 6*, 27, 1984 (*406*)
	Hamster, Syrian gold, male, 6 weeks- 4 months	Tracheal	Trypsin: 0.25%	PBS with EDTA	Goldman, W.E., Baseman, J.B.: Selective Isolation and Culture of a Proliferating Epithelial Cell Population from the Hamster Trachea, *In Vitro 16*, 313, 1980 (*506*)
Human	Human	Epithelial	Collagenase Type 4: 0.1% Neutral Protease: 0.1%	PBS	Gottipamula, S., Saraswat, S. and Sridhar, K.: Comparative Study of Isolation, Expansion and Characterization of Epithelial Cells., *Cytotherapy 19*, 263-271, 2017 (*11567*)
	Human	Oral mucosal epithelial	Collagenase Type 1: 0.05%	DMEM/F12	Hsueh, Y., Huang, S., Lai, J., Ma, S., Chen, H., Wu, S., Wang, T., Sun, C., Ma, K., Chen, J., Lai, C. and Ma, D.: Preservation of Epithelial Progenitor Cells from Collagenase-Digested Oral Mucosa During Ex Vivo Cultivation., *Sci Rep 6*, 36266, 2016 (*11543*)
	Human	Gastrointestinal epithelial	Collagenase Type 1: 0.2%	DMEM/F12	VanDussen, K., Marinshaw, J., Shaikh, N., Miyoshi, H., Moon, C., Tarr, P., Ciorba, M. and Stappenbeck, T.: Development of an Enhanced Human Gastrointestinal Epithelial Culture System to Facilitate Patient-Based Assays., *Gut 64*, 911-20, 2015 (*11610*)
	Human	Human tracheal epithelium	Protease Type XIV: 0.04%	DMEM/F12	Widdicombe, J., Sachs, L., Morrow, J., and Finkbeiner, W.: Expansion of Cultures of Human Tracheal Epithelium with Maintenance of Differentiated Structure and Function, *Biotechniques 39(2)*, 249, 2005 (*9824*)
	Human	Colonic epithelial	Collagenase: Neutral Protease: 0.3% Deoxyribonuclease I: 0.05%	RPMI 1640	Fukushima, K. and Fiocchi, C.: Paradoxical Decrease of Mitochondrial DNA Deletions in Epithelial Cells of Active Ulcerative Colitis Patients., *Am J Physiol Gastrointest Liver Physiol 286*, G804-13, 2004 (*10355*)
	Human	Corneal limbal epithelial sheet	Neutral Protease: 5%	see reference	Espana, E., Romano, A., Kawakita, T., Di Pascuale, M., Smiddy, R., and Tseng, S.: Novel Enzymatic Isolation of an Entire Viable Human Limbal Epithelial Sheet, *Inv Ophthal Visual Sci 44(10)*, 4275, 2003 (*9830*)
	Human	Intestinal epithelial	Collagenase Type 4: 72.5 u/ml	HBSS	Fahlgren, A., Hammarstrom, S., Danielsson, A. and Hammarstrom, M.: Increased Expression of Antimicrobial Peptides and Lysozyme in Colonic Epithelial Cells of Patients with Ulcerative Colitis., *Clin Exp Immunol 131*, 90, 2003 (*10358*)
	Human	Gastric epithelial cells	Collagenase Type 2: 200 u/ml Neutral Protease: 1.2 u/ml Soybean Trypsin Inhibitor: 0.125%	L-15	Smoot, D., Sewchand, J., Young, K., Desbrodes, B., Allen, C. and Naab, T.: A Method for Establishing Primary Cultures of Human Gastric Epithelial Cells, *Meth Cell Sci 22*, 133, 2000 (*10720*)
	Human	Gastric	Collagenase Type 4: 0.01%	F-12 medium	Sarosiek, J., Marshall, B., Peura, D., Guerrant, L., McCallum, R. and Little, C.: The Isolation and Maintenance of Human Gastric Epithelial Cells in Primary Culture, *Cell & Tissue Culture: Laboratory Procedures Vol. 1*,Doyle, A., Griffiths, J., and Newell, D., John Wiley and Sons, Ltd., 12B:10.1, 1995 (*1273*)
	Human	Nasal polyp epithelial	Neutral Protease: .004% Trypsin: 0.1%	see reference	Halbert, C., Alexander, I., Wolgamot, G., Miller, A.: Adeno-Associated Virus Vectors Transduce Primary Cells Much Less Efficiently Than Immortalized Cells, *J Virol 69*, 1473-9, 1995 (*10215*)
	Human	Epithelial	Trypsin: 0.05%	DMEM	Sabatini, L., Allen-Hoffmann, B, Warner, T., and Azen, E.: Serial Cultivation of Epithelial Cells from Human and Macaque Salivary Glands, *In Vitro Cell Dev Biol 27A*, 939, 1991 (*1191*)
	Human	Epithelial	Trypsin: 0.2%	MEM, PBS	Robinson, C., and Wu, R.: Culture of Conducting Airway Epithelial Cells in Serum-Free Medium, *J Tiss Cul Meth 13*, 95, 1991 (*1239*)
	Human	Epithelial	Collagenase: 2.0%	DMEM/Ham's F-12	Emerman, J. and Wilkinson, D.: Routine Culturing of Normal, Dysplastic and Malignant Human Mammary Epithelial Cells from Small Tissue Samples, *In Vitro Cell Dev Biol 26*, 1186, 1990 (*429*)
	Human	Epithelial	Pronase: 0.1%	PBS	Gruenert, D.C., Basbaum, C.B., and Widdicombe, J.H.: Long-Term Culture of Normal and Cystic Fibrosis Epithelial Cells Grown Under Serum-Free Conditions, *In Vitro Cell Dev Biol 26*, 411, 1990 (*440*)
	Human	Epithelial Sweat gland	Collagenase Type 2: 0.2%	(see reference)	Wood, L. and Neufeld, E.: A Cystic Fibrosis Phenotype in Cells Cultured from Sweat Gland Secretory Coil. Altered Kinetics of 36Cl Efflux, *J Biol Chem 265*, 12796, 1990 (*568*)
	Human (also bovine)	Endometrial epithelial	Trypsin:	DMEM/Ham's F-12	Munson, L., Chandler, S., and Schlafer, D.: Cultivation of Bovine Fetal and Adult Endometrial Epithelial Cells, *J Tiss Cul Meth 11 (3)*, 129, 1988 (*913*)
	Human	Epithelial	Deoxyribonuclease I: 0.01%	HEPES with 5.9mM Glucose,5mM DTT	Widdicombe, J.H., Coleman, D.L., Finkbeiner, W.E., and Tuet, I.K.: Electrical Properties of Monolayers Cultured From Cells of Human Tracheal Mucosa, *J Appl Physiol 58*, 1729, 1985 (*545*)
	Human	Epithelial	Protease Type XIV: 0.1%	Eagle's MEM	Yankaskas, J., Cotton, C., Knowles, M., Gatzy, J., and Boucher, R.: Culture of Human Nasal Epithelial Cells on Collagen Matrix Supports, *Am Rev Respir Dis 132*, 1281, 1985 (*909*)
	Human, women, 27-49 years	Epithelial Ovary	Trypsin: 0.125%	HBSS, CMF	Auersperg, N., Siemens, C.H., and Myrdal, S.E.: Human Ovarian Surface Epithelium In Primary Culture, *In Vitro 20*, 743, 1984 (*535*)
	Human, infant and neonate	Epithelial Prostate	Trypsin: 0.1%	HBSS	Lechner, J., Babcock, M., Marnell, M., Narayan, K., and Kaighn, M.: Normal Human Prostate Epithelial Cell Cultures, *Methods Cell Biol 21*, 195, 1980 (*631*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse	Alveolar epithelial	Neutral Protease: 0.1% Deoxyribonuclease I: 0.01%	DMEM	Sun, F., Xiao, G. and Qu, Z.: Isolation of Murine Alveolar Type II Epithelial Cells., *Bio- protocol 7*, 2017 (*11524*)
	Mouse	Tracheal epithelial	Papain: 50 u/ml	See reference	Pardo-Saganta, A., Tata, P., Law, B., Saez, B., Chow, R., Prabhu, M., Gridley, T. and Rajagopal, J.: Parent Stem Cells Can Serve as Niches for Their Daughter Cells., *Nature 523*, 597-601, 2015 (*11556*)
	Mouse, adult	Cilary epithelial	PDS kit: per instructions	EBSS	Gualdoni, S., Baron, M., Lakowski, J., Decembrini, S., Pearson, R., Ali, R. and Sowden, J.: Isolation and Culture of Adult Ciliary Epithelial Cells, Previously Identified as Retinal Stem Cells, and Retinal Progenitor Cells., *Curr Protoc Stem Cell Biol Chapter 1*, Unit 1H.4, 2011 (*10694*)
	Mouse, male, 8-16 week	Renal tubular epithelial	Collagenase: 200 u/ml Soybean Trypsin Inhibitor: see reference	HBSS	Breggia, A. and Himmelfarb, J.: Primary Mouse Renal Tubular Epithelial Cells have Variable Injury Tolerance to Ischemic and Chemical Mediators of Oxidative Stress., *Oxid Med Cell Longev 1*, 33, 2008 (*10554*)
	Mouse	Epithelial	Collagenase: 0.025% Neutral Protease: 0.25%	DMEM	Mathew, R., Degenhard,t K., Haramaty, L., Karp, C. and White, E.: Immortalized Mouse Epithelial Cell Models to Study the Role of Apoptosis in Cancer., *Methods Enzymol 446*, 77-106, 2008 (*11599*)
	Mouse, 6-8 week	Lamina propria mononuclear cells	Collagenase Type 2: 0.015% Deoxyribonuclease I: 0.01%	RPMI	Wirtz S., Becker C., Blumberg R., Galle P., and Neurath M.: Treatment of T cell-dependent experimental colitis in SCID mice by local administration of an adenovirus expressing IL-18 antisense mRNA, *J Immunol 168(1)*, 411, 2002 (*9826*)
	Mouse, 11 week	Epithelial	Collagenase Type 3:25 u/ml Hyaluronidase: 0.1% Protease XIV: 0.05% Deoxyribonuclease I: 0.04%	DMEM/F12	Mueller, S., Clark, J., Myers, P. and Korach, K.: Mammary Gland Development in Adult Mice Requires Epithelial and Stromal Estrogen Receptor Alpha., *Endocrinology 143*, 2357, 2002 (*10369*)
	Mouse, female	Salivary gland epithelial	Collagenase Type 1: 750 u/ml Hyaluronidase: 500 u/ml	DMEM/F12	Ishimaru N, Saegusa K, Yanagi K, Haneji N, Saito I, Hayashi Y: Estrogen deficiency accelerates autoimmune exocrinopathy in murine Sjogren's syndrome through fas- mediated apoptosis, *Am J Pathol 155*, 173-81, 1999 (*10269*)
	Mouse, fetal 12-13 day	Intestinal mesenchymal and epithelial	Collagenase: 0.03%	DMEM	Simon-Assmann, P and Kedinger, M: Embryonic Gut-Dissagregated Culture, *Cell & Tissue Culture: Laboratory Procedures Vol. 1*,Doyle, A., Griffiths, J., and Newell, D., John Wiley and Sons, Ltd., 12A:3.1, 1995 (*1271*)
	Mouse	Submandibular salivary	Collagenase Type 2 or 3: 0.16%	DMEM	Durban, E: Submandibular Salivary Epithelial Cells, *Cell & Tissue Culture: Laboratory Procedures Vol. 1*,Doyle, A., Griffiths, J., and Newell, D., John Wiley and Sons, Ltd., 12B:2.1, 1995 (*1272*)
	Mouse	Esophageal	Trypsin: 0.25%	PBS, CMF	Katayama, M., Kan, M.: Heparin-Binding (Fibroblast) Growth Factors re Potential Autocrine Regulators of Esophageal Epithelial Cell Proliferation, *In Vitro Cell Dev Biol 27*, 533, 1991 (*467*)
	Mouse, mature, female, 6-8-wk-old	Uterine	Trypsin: 0.2%	HBSS	Ghosh, D., Danielson, K., Alston, J., and Heyner, S.: Functional Differentiation of Mouse Uterine Epithelial Cells Grown on Collagen Gels or Reconstituted Basement Membranes, *In Vitro Cell Dev Biol 27A*, 713, 1991 (*1195*)
	Mouse, female, 18 - 20 days (also 20 - 22 days)	Uterine	Trypsin: 0.25%	HBSS	Fukamachi, H., and McLachlan, J.: Proliferation and Differentiation of Mouse Uterine Epithelial Cells in Primary Serum-Free Culture: Estradiol-17*B* Suppresses Uterine Epithelial Proliferation Cultured on a Basement Membrane-Like Substratum, *In Vitro Cell Dev Biol 27A*, 907, 1991 (*1196*)
	Mouse, (BALB/c), male, 3-5 months	Epithelial, Submandibular salivary gland	Collagenase Type 3: 0.16% , 1:1 v/v	DMEM with 15 mM HEPES	Durban, E.M.: Mouse Submandibular Salivary Epithelial Cell Growth and Differentiation in Long-Term Culture:Influence of the Extracellular Matrix, *In Vitro Cell Dev Biol 26*, 33, 1990 (*437*)
	Mouse, female	Epithelial	Pepsin: 0.1%	HBSS	Reiser, M., Huff, B., and Medina, D.: Pepsin Can be Used to Subculture Viable Mammary Epithelial Cells, *In Vitro 19 (9)*, 730, 1983 (*1192*)
	Mouse, (BALB/cfC3H or BALB/c) 8-12 day mid pregnant	Epithelial Submandibular gland	Collagenase Type 3: 0.1%	HBSS	Yang, J., Flynn, D., Larson, L., and Hamamoto, S.: Growth in Primary Culture of Mouse Submandibular Epithelial Cells, *In Vitro 18*, 435, 1982 (*520*)
	Mouse (BALB/cfC3H)	Mammary tumors Epithelial	Collagenase: 1.0%	HBSS	Yang, J., Guzman, R., Richards, J., and Nandi, S.: Primary Cultures of Mouse Mammary Tumor Epithelial Cells Embedded in Collagen Gels, *In Vitro 16*, 502, 1980 (*507*)
	Mouse, C3H, 6-8 weeks	Epithelial	Collagenase: 0.10%	DMEM	Lillehaug, J., Mondal, S., and Heidelberger, C.: Establishment of Epithelial Cell Lines from Mouse Regenerating Liver, *In Vitro 15*, 910, 1979 (*504*)
Porcine	Porcine, 5-60 kg	Retinal pigment epithelial cells	Collagenase: 2%	DMEM	Wiencke, A., Kiilgaard, J., Nicolini, J., Bundgaard, M., Ropke, C., and La Cour, M.: Growth of Cultured Porcine Retinal Pigment Epithelial Cells, *Acta Opthalmol Scand 81(2)*, 170, 2003 (*9825*)
	Porcine	Trachea	Neutral Protease: 0.2%	HBSS	De Buysscher, E., Kennedy, J., and Mendicino, J.: Synthesis of Mucin Glycoproteins by Epithelial Cells Isolated from Swine Trachea by Specific Proteolysis, *In Vitro 20*, 433, 1984 (*534*)
Rabbit	Rabbit, New Zealand white, adult	Colon	Neutral Protease: 0.3%	PBS	Vidrich, A., Racindranath, R., Farsi, K., and Targan, S.: A Method for the Rapid Establishment of Normal Adult Mammalian Colonic Epithelial Cell Cultures, *In Vitro Cell Dev Biol 24 (3)*, 188, 1988 (*918*)
	Rabbit, New Zealand white, male, 4-5lb.	Gastric Parietal and chief	Collagenase Type 2: 0.08%	Sodium phosphate buffer	Chew, C.S., Brown,M.R.: Release of Intracellular Ca^{2+} and Elevation of Inositol Triphosphate by Secretagogues in Parietal and Chief Cells Isolated from Rabbit Gastric Mucosa, *Biochim Biophys Acta 888*, 116, 1986 (*326*)
	Rabbit, New Zealand white estrous, female, 4-5 months	Mesothelial and surface epithelial Ovaries	Trypsin: 0.125%-0.5%	Medium 199	Nicosia, S., Johnson, J., and Streibel, E.: Isolation and Ultrastructure of Rabbit Ovarian Mesothelium(Surface Epithelium), *Int J Gynecol Pathol 3*, 348, 1984 (*542*)

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TISSUE TABLES

Epithelial

Epithelial

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rabbit	Rabbit, fetal	Epithelial Gastric	Collagenase Type 3: 0.10%	HBSS	Logsdon, C.D., Bisbee, C.A., Rutten, M.J. and Machen, T.E.: Fetal Rabbit Gastric Epithelial Cells Cultured on Floating Collagen Gel, *In Vitro 18*, 233, 1981 (*517*)
Rat	Rat	Mammary epithelial	Collagenase Type 3: 0.35%	HBSS	Mei, N., McDaniel, L., Dobrovolsky, V., Guo, X., Shaddock, J., Mittelstaedt, R., Azuma, M., Shelton, S., McGarrity, L., Doerge, D. and Heflich, R.: The Genotoxicity of Acrylamide and Glycidamide in Big Blue Rats., *Toxicol Sci 115*, 412, 2010 (*10638*)
	Rat, SD, adult, male, 8-10 weeks old	Seminiferous tubules	Trypsin: 0.05%	Krebs-Ringer bicarbonate buffer (see reference)	Abou-Haila, A., and Tulsiani, D.: Acid Glycohydrolases in Rat Spermatocytes, Spermatids and Spermatozoa: Enzyme Activities, Biosynthesis and Immunolocalization, *Biol Proced Online 3 (1)*, 35, 2001 (*1074*)
	Rat, male	Alveolar epithelial	Elastase: 40 u/ml	DMEM	Planus, E., Galiacy, S., Matthay, M., Laurent, V., Gavrilovic, J., Murphy, G., Clerici, C., Isabey, D., Lafuma, C., and d'Ortho, M.: Role of Collagenase in Mediating in Vitro Alveolar Epithelial Wound Repair, *J Cell Sci 112*, 243, 1999 (*9828*)
	Rat, embryonic	Tracheal epithelial	Collagenase Type 4: 0.05% Neutral Protease: Deoxyribonuclease I:	DMEM/F12	Shannon, J., Gebb, S., and Nielsen, L.: Induction of Alveolar Type II Cell Differentiation in Embryonic Tracheal Epithelium in Mesenchyme-Free Culture, *Development 126*, 1675, 1999 (*10012*)
	Rat, fetal, 14-15 day	Intestinal mesenchymal and epithelial	Collagenase: 0.03%	DMEM	Simon-Assmann, P and Kedinger, M: Embryonic Gut-Dissagregated Culture, *Cell & Tissue Culture: Laboratory Procedures Vol. 1*,Doyle, A., Griffiths, J., and Newell, D., John Wiley and Sons, Ltd., 12A:3.1, 1995 (*1271*)
	Rat, 4-14 week	Retinal pigment epithelial cells	Collagenase Type 1: 65 u/ml Hyaluronidase: 220 u/ml	CF Hanks with EDTA	Wang, N., Koutz, C., and Anderson, R.: A Method for the Isolation of Retinal Pigment Epithelial Cells from Adult Rats, *Inv Ophthal Visual Sci 34(1)*, 101, 1993 (*9827*)
	Rat, SD, adult, 90- 120 day old, 350-450 g	Epididymal epithelial	Collagenase Type 2: 0.1%	HBSS	Klinefelter, G.: A Novel System for the Co-Culture of Epididymal Epithelial Cells and Sperm From Adult Rats, *J Tiss Cul Meth 14*, 195, 1992 (*898*)
	Rat, 6 day old	Rat intestinal epithelial	Neutral Protease: 0.01% Collagenase: 300 u/ml	DMEM	Evans, G., Flint, N., Somers, A., Eyden, B., and Potten, C.: The Development of a Method for the Preparation of Rat Intestinal Epithelial Cell Primary Cultures, *J Cell Sci 101*, 219, 1992 (*9829*)
	Rat, SD, male, 150 - 250 g	Epithelial Stomach	Pronase: 0.15%	Medium 199	Dial, E., Kao, Y., and Lichtenberger, L.: Effects of 16,16-Dimethyl Prostaglandin E2 On Glycoprotein And Lipid Synthesis of Gastric Epithelial Cells Grown in a Primary Culture, *In Vitro Cell Dev Biol 27*, 39, 1991 (*464*)
	Rat, adult (also hamster)	Interlobular duct fragments	Papain:	DMEM/Ham's F-12	Heimann, T., and Githens, S.: Rat Pancreatic Duct Epithelium Cultured on a Porous Support Coated with Extracellular Matrix, *Pancreas 6 (5)*, 514, 1991 (*803*)
	Rat, SD, 200 g	Colon	Deoxyribonuclease I: 10 µg/ml	(see reference)	Yassin, R., Clearfield, H., Katz, S., and Murthy, S.: Gastrin Induction of mRNA Expression in Rat Colonic Epithelium In Vitro, *Peptides 12*, 63, 1991 (*933*)
	Rat, Wistar, neonatal	Epithelial	Trypsin: 0.1%	HBSS	Jassal, D., Han, R., Caniggia, I., Post, M., and Tanswell, A.: Growth of Distal Fetal Rat Lung Epithelial Cells in a Defined Serum-Free Medium, *In Vitro Cell Dev Biol 27A*, 625, 1991 (*471*)
	Rodent, various (see reference)	Epithelial	Trypsin: 0.2%	MEM, PBS	Robinson, C., and Wu, R.: Culture of Conducting Airway Epithelial Cells in Serum-Free Medium, *J Tiss Cul Meth 13*, 95, 1991 (*1239*)
	Rat, 6-8 day	Retinal pigment epithelial	Neutral Protease: 2%	DMEM	Chang, C., Roque, R., Defoe, D., and Caldwell, R.: An Improved Method for Isolation and Culture of Pigment Epithelial Cells from Rat Retina, *Curr Eye Res 10(11)*, 1081, 1991 (*9831*)
	Rat (ACI/NMs X BUF/Mna) F1, male, 28 months Rat (ACI/MNs) male, 8 weeks	Epthelial	Collagenase Type 3: 0.1%	Eagle's MEM Serum-free	Masuda, A., Ohtsuka, K., and Matsuyama, M.: Establishment of Functional Epithelial Cell Lines from a Rat Thyoma and a Rat Thymus, *In Vitro Cell Dev Biol 26*, 713, 1990 (*448*)
	Rat, Fisher 344, male, 8 wks old, 250-300 g	Tracheal epithelial	Pronase: 0.5%	DMEM	Chang, L., Wu, R., and Nettesheim, P.: Morphological Changes in Rat Tracheal Cells During The Adaptive and Early Growth Phase in Primary Cell Culture, *J Cell Sci 74*, 283, 1985 (*911*)
	Rat, Fischer, male, 4-6 weeks	Epithelial Esophagus	Hyaluronidase: 0.1%	HEPES BSS	Babcock, M., Marino, M., Gunning, W., and Stoner, G.: Clonal Growth and Serial Propagation of Rat Esophageal Epithelial Cells, *In Vitro 19*, 403, 1983 (*526*)
	Rat, Fischer, Lewis and SD, male, 10-18 months	Epithelial	Trypsin: 0.05%	HBSS CMF	Herring, A., Raychaudhuri, R., Kelley, S., and Iybe, P.: Repeated Establishment of Diploid Epithelial Cell Cultures from Normal and Partially Hepatectomized Rats, *In Vitro 19*, 576, 1983 (*528*)
	Rat, SD, female	Epithelial, cancer and tumor	Collagenase: 0.1%	Eagles's MEM	Cohen, L.: Isolation and Characterization of a Serially Cultivated, Neoplastic, Epithelial Cell Line from the N-nitrosomethylurea Induced Rat Mammary Adenocarcinoma, *In Vitro 18*, 565, 1982 (*522*)
	Rat, Wistar, 12 day	Epithelial	Trypsin: 0.05%	HBSS, CMF	Malan-Shibley, L., and Iype, P.: Influence of Cultures on Cell Morphology/Tyrosine Aminotransferase Levels, *Exp Cell Res 131*, 363, 1981 (*391*)
	Rat, Fischer, adult, 200-250 g	Epithelial	Hyaluronidase: 0.0075%	KCl-NaCl HEPES Buffer	Williams, G., and Gunn, J.: Long-Term Culture of Adult Rat Liver Epithelial Cells, *Exp Cell Res 89*, 139, 1974 (*405*)
	Rat, Fischer, 10 day	Epithelial-like	Trypsin: 0.25%	PBS	Williams, G., Weisburger, E., and Weisburger, J.: Isolation and Long-Term Cell Culture of Epithelial-Like Cells from Rat Liver, *Exp Cell Res 69*, 106, 1971 (*402*)

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Eye					
Species	**Species Detail**	**Cell(s)**	**Enzyme(s)**	**Medium**	**Reference**
Bovine	Bovine	Retinal endothelial	Collagenase Type 4:0.05% Deoxyribonuclease I: 0.02% Pronase: 0.02%	DMEM	Terlizzi, V., Kolibabka, M., Burgess, J., Hammes, H. and Harmsen, M.: The Pericytic Phenotype of Adipose Tissue-Derived Stromal Cells Is Promoted by NOTCH2., *Stem Cells 36*, 240-251, 2018 (*11647*)
	Bovine	Pericyte	Collagenase: 0.2%	DMEM	Bryan, B. and D'Amore, P.: Pericyte Isolation and USe is Endothelial/Pericyte Coculture Models, *Meth Enzymol 443*, 315, 2008 (*10682*)
	Bovine	Microvascular endothelial	Collagenase/Dispase: 0.1%	MEM	Bowman, P., Betz, A., and Goldstein, G.: Primary Culture of Microvascular Endothelial Cells From Bovine Retina, *In Vitro 18 (7)*, 626, 1982 (*945*)
Chicken	Chick, embryo, 6 day	Retinal cells	Trypsin: 0.005% Deoxyribonuclease I: 0.005%	DMEM/F12	Jacob, V., Rothermel, A., Wolf, P., Layer, P.: Rhodopsin, Violet and Blue Opsin Expressions in the Chick are Highly Dependent on Tissue and Serum Conditions, *Cell Death Differ 180*, 159-68, 2005 (*10110*)
	Chick embryo	Corneal epithelial	Collagenase: 0.08% Trypsin: 0.08%	HBSS	Reenstra, W., Orlow, D., Svoboda, K.: ECM-Stimulated Signaling and Actin Reorganization in Embryonic Corneal Epithelia are Rho Dependent, *Inv Ophthal Visual Sci 43*, 3181-9, 2002 (*10294*)
	Chick embryo (also rat)	Retinal	Trypsin: 0.6%	DMEM	Seigel, G.: The Golden Age of Retinal Cell Culture, *Mol Vis 5*, 4, 1999 (*1085*)
	Chick, embryo, 10-14 day	Flat, retina	Trypsin: 0.1%	Tyrode's solution, CMF	Moyer, M., Bullrich, F., and Sheffield, J.: Emergence of Flat Cells From Glia in Stationary Cultures of Embryonic Chick Neural Retina, *In Vitro Cell Dev Biol 26*, 1073, 1990 (*427*)
Fish	Fish, zebrafish	Retinal	Papain: 10 u/ml	L-15	Diekmann, H., Kalbhen, P. and Fischer, D.: Characterization of Optic Nerve Regeneration using Transgenic Zebrafish., *Front Cell Neurosci 9*, 118, 2015 (*11386*)
	Goldfish	Retinal Bipolar	Papain: 30 u/ml	HEPES	Graffe, M., Zenisek, D. and Taraska, J.: A Marginal Band of Microtubules Transports and Organizes Mitochondria in Retinal Bipolar Synaptic Terminals., *J Gen Physiol 146*, 109-17, 2015 (*11558*)
Human	Human	Muller glia	PDS kit: per instructions	DMEM	Xu, N., Chen, Y., Dean, K., Lu, X., Liu, X., Wang, W., Dean, D., Kaplan, H., Gao,L., Dong, F. and Liu, Y.: Sphere-Induced Rejuvenation of Swine and Human Muller Glia Is Primarily Caused by Telomere Elongation., *Stem Cells 35*, 1579-1591, 2017 (*11639*)
	Human	Corneal stroma stem	Collagenase Type 1: 0.1%	DMEM	Sidney, L., Branch, M., Dua, H. and Hopkinson, A.: Effect of Culture Medium on Propagation and Phenotype of Corneal Stroma-Derived Stem Cells., *Cytotherapy 17*, 1706-22, 2015 (*11561*)
	Human	Corneal stromal stem	Neutral Protease: 1.2 u/ml Collagenase: 0.1%	DMEM	Du, Y., Roh, D., Funderburgh, M., Mann, M., Marra, K., Rubin, J., Li, X. and Funderburgh, J.: Adipose-Derived Stem Cells Differentiate to Keratocytes In Vitro., *Mol Vis 16*, 2680, 2010 (*10602*)
	Human, 18-68 yr	Corneal endothelial	Collagenase: 0.2% Neutral Protease: 1.0%	DMEM/F12	Li, W., Sabater, Alfonso, L., Chen, Y., Hayashida, Y., Chen, S., He, H., Scheffer, C.: A Novel Method of Isolation, Preservation, and Expansion of Human Corneal Endothelial Cells, *Inv Ophthal Visual Sci 48*, 614-20, 2007 (*10306*)
	Human	Corneal limbal epithelial sheet	Neutral Protease: 5%	see reference	Espana, E., Romano, A., Kawakita, T., Di Pascuale, M., Smiddy, R., and Tseng, S.: Novel Enzymatic Isolation of an Entire Viable Human Limbal Epithelial Sheet, *Inv Ophthal Visual Sci 44(10)*, 4275, 2003 (*9830*)
	Human, 5-65 years	Retinal pigment epithelial (RPE)	Trypsin: 0.25%	HBSS	Von Recum, H., Okano, T., Kim, S, and Bernstein, P.: Maintenance of Retinoid Metabolism in Human Retinal Pigment Epithelium Cell Culture, *Exp Eye Res 69*, 97, 1999 (*1185*)
Monkey	Macaques and baboon	Retinal	Papain: 20-40 u/ml Deoxyribonuclease I: 400 u/ml	Ames' solution	Han ,Y., Jacoby, R. and Wu, S.: Morphological and Electrophysiological Properties of Dissociated Primate Retinal Cells., *Brain Res 875*, 175, 2000 (*10573*)
	Monkey, *cynomolgus*, young adult	Conjunctival lymphocytes	Collagenase Type 1: 0.02%	RPMI 1640	Whittum-Hudson, J., Taylor, H.: Antichlamydial Specificity of Conjunctival Lymphocytes During Experimental Ocular Infection, *Infect Immun 57*, 2977, 1989 (*10035*)
Mouse	Mouse, 2-4 week	Muller	PDS kit: per instructions	DMEM	Liu, X., Tang, L. and Liu Y.: Mouse Muller Cell Isolation and Culture., *Bio-protocol 7*, 2017 (*11523*)
	Mouse	Retinal	Papain: 20 u/ml Deoxyribonuclease I: 0.005%	PBS	Ortin-Martinez, A., Tsai, E., Nickerson, P., Bergeret, M., Lu, Y., Smiley, S., Comanita, L. and Wallace, V.: A Reinterpretation of Cell Transplantation: GFP Transfer From Donor to Host Photoreceptors., *Stem Cells 35*, 932-939, 2017 (*11643*)
	Mouse	Retinal	Papain: 20 u/ml Deoxyribonuclease I: 0.005%	HBSS	Wohl, S., Jorstad, N., Levine, E. and Reh, T.: Muller Glial microRNAs are Required for the Maintenance of Glial Homeostasis and Retinal Architecture., *Nat Commun 8*, 1603, 2017 (*11689*)
	Mouse, C57BL/6	Retinal astrocytes	Papain: 16.5 u/ml Deoxyribonuclease I: 0.004%	HBSS	Blandford, S. and Baldridge, W.: The Effect of Glutamate Receptor Agonists on Mouse Retinal Astrocyte [Ca(2+)]i., *Biomed Res Int 2016*, 8178162, 2016 (*11502*)
	Mouse, adult	Retinal photoreceptor	PDS kit: with modifications	EBSS	Feodorova, Y., Koch, M., Bultman, S., Michalakis, S. and Solovei, I.: Quick and Reliable Method for Retina Dissociation and Separation of Rod Photoreceptor Perikarya from Adult Mice., *MethodsX 2*, 39, 2015 (*11384*)
	Mouse, 4-8 day	Photoreceptors	PDS kit: per instructions	Neurobasal	Balmer, J., Zulliger, R., Roberti, S. and Enzmann, V.: Retinal Cell Death Caused by Sodium Iodate Involves Multiple Caspase-Dependent and Caspase-Independent Cell-Death Pathways., *Int J Mol Sci 16*, 15086-103, 2015 (*11410*)
	Mouse, embryonic and P0	Retinal	Papain: 8 u/ml Deoxyribonuclease I: 124 u/ml	DPBS	Dvoriantchikova, G., Perea- Martinez, I., Pappas, S., Barry, A., Danek, D., Dvoriantchikova, X., Pelaez, D. and Ivanov, D.: Molecular Characterization of Notch1 Positive Progenitor Cells in the Developing Retina., *PLoS ONE 10*, e0131054, 2015 (*11443*)
	Mouse	Vitreous cells	Collagenase: 0.1% Hyaluronidase: 0.03%	DMEM	Iqbal, N., Xu, L., Devitt, C. and Skapek, S.: Isolation and Characterization of Mammalian Cells Expressing the Arf Promoter During Eye Development., *Biotechniques 56*, 239-49, 2014 (*11461*)

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Eye					
Species	**Species Detail**	**Cell(s)**	**Enzyme(s)**	**Medium**	**Reference**
Mouse	Mouse, 6 week	Retinal	PDS kit: per instructions	DMEM	Singh, M., Issa, P, Butler, R., Martin, C., Lipinski, D., Sekaran, S., Barnard, A. and Maclaren, R.: Reversal of End-Stage Retinal Degeneration and Restoration of Visual Bunction by Photoreceptor Transplantation., *Proc Natl Acad Sci U S A* , 2013 (*10831*)
	Mouse	Retinal ganglion	CLSPA: 240 u/ml Hyaluronidase: 0.2%	Ames	Schmidt, T. and Kofuji, P.: An Isolated Retinal Preparation to Record Light Response from Genetically Labeled Retinal Ganglion Cells., *J Vis Exp 47*, 2367, 2011 (*10659*)
	Mouse, adult	Cilary epithelial	PDS kit: per instructions	EBSS	Gualdoni, S., Baron, M., Lakowski, J., Decembrini, S., Pearson, R., Ali, R. and Sowden, J.: Isolation and Culture of Adult Ciliary Epithelial Cells, Previously Identified as Retinal Stem Cells, and Retinal Progenitor Cells., *Curr Protoc Stem Cell Biol Chapter 1*, Unit 1H.4, 2011 (*10694*)
	Mouse, 4-5 week	Lens Fiber	Collagenase Type 4: 0.125% Protease: 0.5%	PBS	Ebihara, L., Tong, J., Vertel, B., White, T. and Chen, T.: Properties of Connexin 46 Hemichannels in Dissociated Lens Fiber Cells., *Inv Ophthal Visual Sci 52*, 882-9, 2011 (*11503*)
	Mouse, postnatal day 1	Retinal progenitor	Collagenase: 0.1%	HBSS	Jiang, C. Klassen, H., Zhang, X. and Young, M.: Laser Injury Promotes Migration and Integration of Retinal Progenitor Cells into Host Retina., *Mol Vis 16*, 983, 2010 (*10612*)
	Mouse, 4-8 week	Corneal epithelial	Neutral Protease: 1.5% Trypsin: 0.25%	DMEM/F12	Kobayashi, T., Yoshioka, R., Shiraishi, A. and Ohashi, Y.: New Technique for Culturing Corneal Epithelial Cells of Normal Mice., *Mol Vis 15*, 1589-93, 2009 (*11583*)
	Mouse	Retinal	Collagenase: 0.1% Deoxyribonuclease I: 0.001%	RPMI	Amadi-Obi, A., Yu, C., Liu, X., Mahdi, R., Clarke, G., Nussenblatt, R, Gery, I., Lee, Y. and Egwuagu, C.: TH17 Cells Contribute to Uveitis and Scleritis and are Expanded by IL-2 and Inhibited by IL-27/STAT1., *Nat Med 13*, 711, 2007 (*10684*)
	Mouse, adult	Retinal	Papain: 50 u/ml	DMEM/F-12	Jadhav, A., Cho, S., and Cepko, C.: Notch Activity Permits Retinal Cells to Progress Through Multiple Progenitor States and Acquire a Stem Cell Property, *Proc Natl Acad Sci U S A 103*, 18998, 2006 (*612*)
	Mouse, adult	Stromal	Trypsin: 0.05% Collagenase: 78 u/ml Hyaluronidase: 38u/ml	DMEM/F-12	Yoshida, S., Shimmura, S., Nagoshi, N., Fukuda, K., Matsuzaki, Y., Okano, H. and Tsubota, K.: Isolation of Multipotent Neural Crest- Derived Stem Cells from the Adult Mouse Cornea., *Stem Cells 24*, 2714-22, 2006 (*11582*)
	Mouse, 2-5 month	Mouse retinal and bipolar	Papain: 20 u/ml Deoxyribonuclease I: 200 u/ml	HBSS	Maxeiner, S., Dedek, K., Janssen-Bienhold, U., Ammermuller, J., Brune, H., Kirsch, T., Pieper, M., Degen, J., Kruger, O., Willecke, K., Weiler, R.: Deletion of Connexin45 in Mouse Retinal Neurons Disrupts the Rod/Cone Signaling Pathway Between AII Amacrine and ON Cone Bipolar Cells and Leads to Impaired Visual Transmission, *J Neurosci 25*, 566-76, 2005 (*10100*)
	Mouse, 4 week	Retinal endothelial cells	Collagenase Type 1: 0.1%	DMEM	Su, X., Sorenson, C., and Sheibani, N.: Isolation and Characterization of Murine Retinal Endothelial Cells, *Mol Vis 9*, 171, 2003 (*9821*)
Porcine	Porcine, adult	Muller glia	PDS kit: per instructions	DMEM	Xu, N., Chen, Y., Dean, K., Lu, X., Liu, X., Wang, W., Dean, D., Kaplan, H., Gao, L., Dong, F. and Liu, Y.: Sphere-Induced Rejuvenation of Swine and Human Muller Glia Is Primarily Caused by Telomere Elongation., *Stem Cells 35*, 1579-1591, 2017 (*11639*)
	Porcine, 5-60 kg	Retinal pigment epithelial cells	Collagenase: 2%	DMEM	Wiencke, A., Kiilgaard, J., Nicolini, J., Bundgaard, M., Ropke, C., and La Cour, M.: Growth of Cultured Porcine Retinal Pigment Epithelial Cells, *Acta Opthalmol Scand 81(2)*, 170, 2003 (*9825*)
Rabbit	Rabbit, New Zealand, Adult	Corneal endothelial	Collagenase Type 2: 0.2%	HBSS	Lai, J., Cheng, H. and Ma, D.: Investigation of Overrun- Processed Porous Hyaluronic Acid Carriers in Corneal Endothelial Tissue Engineering, *PLoS ONE 10*, 1371, 2015 (*11442*)
	Rabbit	Corneal keratocytes	Hyaluronidase: 0.05% Collagenase: 0.2%	DMEM	Hao, M., Flynn, K., Nien- Shy, C., Jester, B., Winkler, M., Brown, D., La Schiazza, O., Bille, J., Jester, J.: In Vivo Non Linear Optical (NLO) Imaging in Live Rabbit Eyes Using the Heidelbert Two-Photon Laser Opthalmoscope, *Exp Eye Res 91*, 308, 2010 (*11027*)
	Rabbit, New Zealand	Corneal keratocytes	Trypsin: 0.25% Collagenase: 0.5%	PBS	Stramer, B., Kwok, M., Farthing- Nayak, P., Jung, J., Fini, M., Nayak, R.: Monoclonal Antibody (3G5)- Defined Ganglioside: Cell Surface Marker of Corneal Keratocytes, *Inv Ophthal Visual Sci 45*, 807-12, 2004 (*10242*)
	Rabbit, adult	Retinal neurons	Papain: 26 u/ml	DMEM	Brockway, L., Zhou, Z., Bubien, J., Jovov, B., Benos, D., Keyser, K.: Rabbit Retinal Neurons and Glia Express a Variety of ENaC/DEG Subunits, *Am J Physiol Cell Physiol 283*, C126-34, 2002 (*10228*)
	Rabbit, New Zealand, adult, male, albino, 2 kg	Epithelial	Trypsin: 0.25%	HBSS/DMEM	Johnson-Muller, B., and Gross, J.: Regulation of Corneal Collagenase Production: Epithelial- Stromal Cell Interactions, *Proc Natl Acad Sci U S A 75 (9)*, 4417, 1978 (*908*)
Rat	Adult, female, 170-200 g	Retinal	PDS kit: with modifications	EBSS	Mead, B. and Tomarev, S.: Bone Marrow-Derived Mesenchymal Stem Cells- Derived Exosomes Promote Survival of Retinal Ganglion Cells Through miRNA- Dependent Mechanisms., *Stem Cells Transl Med 6*, 1273-1285, 2017 (*11534*)
	Rat, Wister, 3-30 wk	Retinal	Deoxyribonuclease I: 0.005% Papain: 30 u/ml	EBSS	Cameron, M., Kekesi, O., Morley, J., Tapson, J., Breen, P., Van Schaik, A and Buskila, Y.: Calcium Imaging of AM Dyes Following Prolonged Incubation in Acute Neuronal Tissue., *PLoS ONE 11*, e0155468, 2016 (*11501*)
	Rat, SD, 6-8 week	Retinal	PDS kit: per instructions	EBSS	Vigneswara, V., Esmaeili, M., Deer, L., Berry, M., Logan, A. and Ahmed, Z.: Eye Drop Delivery of Pigment Epithelium-Derived Factor-34 Promotes Retinal Ganglion Cell Neuroprotection and Axon Regeneration., *Mol Cell Neurosci 68*, 212-21, 2015 (*11449*)
	Rat, SD	Retinal ganglion	PDS kit: with modifications	Neurobasal	Tan, C., Andrews, M., Kwok, J., Heintz, T., Gumy, L., Fassler, R. and Fawcett, J.: Kindlin-1 Enhances Axon Growth on Inhibitory Chondroitin Sulfate Proteoglycans and Promotes Sensory Axon Regeneration., *J Neurosci 32*, 7325, 2012 (*10928*)
	Rat, SD, 180-220g	Retinal ganglion	Papain: 0.2%	Neurobasal	Ma, J., Yu, W., Wang, Y., Cao, G., Cai, S., Chen, X., Yan, N., Yuan, Y., Zeng, H., Fleenor, D., Liu, X. and Pang, I.: Neuroprotective Effects of C-type Natriuretic Peptide on Rat Retinal Ganglion Cells., *Inv Ophthal Visual Sci 51*, 3544-53, 2010 (*10695*)
	Rat, Fisher, adult	Retinal	PDS kit: per instructions	MEM	Suzuki, T., Mandai, M., Akimoto, M., Yoshimura, N. and Takahashi, M.: The Simultaneous Treatment of MMP-2 Stimulants in Retinal Transplantation Enhances Grafted Cell Migration into the Host Retina., *Stem Cells 24*, 2406, 2006 (*10515*)

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Species	**Species Detail**	**Cell(s)**	**Enzyme(s)**	**Medium**	**Reference**
Rat	Rat, Dark Agouti, 3- 4 week	Ciliary-derived eye	PDS kit: with modifications	DMEM/F12	Akagi, T., Mandai, M., Ooto, S., Hirami, Y., Osakada, F., Kageyama, R., Yoshimura, N., Takahashi, M.: Otx2 Homeobox Gene Induces Photoreceptor-Specific Phenotypes in Cells Derived from Adult Iris and Ciliary Tissue, *Inv Ophthal Visual Sci 45*, 4570, 2004 (*10024*)
	Rat, embryonic 17 day	Retinal	Trypsin: 0.6%	DMEM	Seigel, G.: The Golden Age of Retinal Cell Culture, *Mol Vis 5*, 4, 1999 (*1085*)
	Rat, SD	Retina	Papain: 120 U	HBSS, PBS	Jing, S., Wen, D., Yu, Y., Holst, P., Luo, Y., Fang, M., Tamir, R., Antonio, L., Hu, Z., et al.: GDNF-Induced Activation of the Ret Protein Tyrosine Kinase is Mediated by GDNFR-*a*, a Novel Receptor for GDNF, *Cell 85*, 1113, 1996 (*1122*)
	Rat, 4-14 week	Retinal pigment epithelial cells	Collagenase Type 1: 65 u/ml Hyaluronidase: 220 u/ml	CF Hanks with EDTA	Wang, N., Koutz, C., and Anderson, R.: A Method for the Isolation of Retinal Pigment Epithelial Cells from Adult Rats, *Inv Ophthal Visual Sci 34(1)*, 101, 1993 (*9827*)
	Rat, 6-8 day	Retinal pigment epithelial	Neutral Protease: 2%	DMEM	Chang, C., Roque, R., Defoe, D., and Caldwell, R.: An Improved Method for Isolation and Culture of Pigment Epithelial Cells from Rat Retina, *Curr Eye Res 10(11)*, 1081, 1991 (*9831*)
	Rat, Long Evans, 1- 15 days	Neurons, visual cortex	Papain: 20 u/ml	BSS (see reference)	Huettner, J., and Baughman, R.: Primary Culture of Identified Neurons From the Visual Cortex of Postnatal Rats, *J Neurosci 6*, 3044, 1986 (*617*)
	Rat, SD, pups	Retina	Trypsin: 0.25%	Ham's F-12	Sarthy PV, Curtis BM, and Catterall WA.: Retrograde Labeling, Enrichment, and Characerization of Retinal Ganglion Cells from the Neonatal Rat, *J Neurosci 3 (12)*, 2532, 1983 (*1199*)
Salamander	Salamander	Neurons	Papain: 14 u/ml	Ringers	Clarke, R, Wang, J. and Townes-Anderson, E.: Using Laser Tweezers For Manipulating Isolated Neurons In Vitro., *J Vis Exp 19*, 911, 2008 (*10688*)
	Salamander, 18-25 cm	Retina	Papain: 14 u/ml	Saline	Townes-Anderson, E., MacLeish, P., and Raviola, E.: Rod Cells Dissociated from Mature Salamander Retina: Ultrastruture and Uptake of Horse-radish Peroxidase, *J Cell Biol 100*, 175, 1985 (*1200*)
	Salamander (*A. tigrinum*)	Photoreceptors, retina	Papain: 0.05%	(see reference)	Bader, C., MacLeish, P., and Schwartz, E.: Responses to Light of Solitary Rod Photoreceptors Isolated From Tiger Salamander Retina, *Proc Natl Acad Sci U S A 75*, 3507, 1978 (*652*)
Turtle	Turtle (*Pseudemys scripta elegans*)	Retinal	Papain: 0.1% (13.5 u/mg)	Kreb's Ringer	Lam, D.: Biosynthesis of Acetylcholine in Turtle Photoreceptors, *Proc Natl Acad Sci U S A 69*, 1987, 1972 (*649*)
Heart					**Heart**
Bovine	Bovine (also rat)	Heart, Adrenal chromaffin Paraneurons	Trypsin: 0.06%	25mM HEPES buffered Locke's solution, CMF	Trifaro, J., Tang, R., and Novas, M.: Monolayer Co- Culture of Rat Heart Cells and Bovine Adrenal Chromaffin Paraneurons, *In Vitro Cell Dev Biol 26*, 335, 1990 (*438*)
Canine	Canine	Cardiomyocytes	Collagenase Type 2: 150 u/ml	Tyrode's solution	Zhang,D., Wu, C., Qi, X., Meijering, R., Hoogstra- Berends, F., Tadevosyan, A., Cubukcuoglu, et al: Activation of Histone Deacetylase-6 Induces Contractile Dysfunction Through Derailment of alpha-tubulin Proteostasis in Experimental and Human Atrial Fibrillation., *Circulation 129*, 346-58, 2014 (*11395*)
	Canine, adult	Atrial and ventricular myocytes	Collagenase Type 2: 0.065%	See reference	Bonilla, I., Sridhar, A., Nishijima, Y., Gyorke, S., Cardounel, A. and Carnes, C.: Differential Effects of the Peroxynitrite Donor, SIN-1, on Atrial and Ventricular Myocyte Electrophysiology., *J Cardiovasc Pharmacol 61*, 401-7, 2013 (*11393*)
	Canine	Cardiomyocytes	Collagenase Type 2: 300 u/ml Protease: 0.03%	Tyrode's solution	Xi, Y., Wu, G., Ai, T., Cheng, N., Kalisnik, J., Sun, J., Abbasi, S., Yang, D., Fan, C., Yuan, X., Wang, S. et al: Ionic Mechanisms Underlying the Effects of Vasoactive Intestinal Polypeptide on Canine Atrial Myocardium., *Circ Arrhythm Electrophysiol 6*, 976-83, 2013 (*11396*)
	Canine	Atrial myocytes	Collagenase Type 2: 0.03%	Tyrode's solution	Gan, T., Qiao, W., Xu, G., Zhou, X., Tang, B., Song, J., Li, Y., Zhang, J., Li, F., Mao, T. and Jiang, T.: Aging- Associated Changes in L- type Calcium Channels in the Left Atria of Dogs., *Exp Ther Med 6*, 919-924, 2013 (*11399*)
	Canine	Cardiomyocytes	Collagenase Type 2: 60 u/ml Protease XIV: 0.5 u/ml	See reference	Harleton, E., Besana, A., Comas, G., Danilo, P., Rosen, T., Argenziano, M., Rosen, M., Robinson, R. and Feinmark, S.: Ability to Induce Atrial Fibrillation in the Peri-Operative Period is Associated with Phosphorylation-Dependent Inhibition of TWIK Protein- Related Acid-Sensitive Potassium Channel 1 (TASK- 1)., *J Biol Chem 288*, 2829- 38, 2013 (*11400*)
	Canine	Atrial and ventricular myocytes	Collagenase Type 2: 0.05-0.08%	See reference	Zhang, H., Silva, J., Lin, Y., Verbsky, J., Lee, U., Kanter, E., Yamada, K., Schuessler, R. and Nichols, C.: Heterogeneity and Function of K(ATP) Channels in Canine Hearts., *Heart Rhythm 10*, 1576-83, 2013 (*11404*)
	Canine, adult	Cardiomyocytes	Collagenase Type 2: 0.05% Protease Type XIV: 0.01%	HEPES	Calloe, K., Nof, E., Jespersen, T., Di Diego, J., Chlus, N., Olesen, S., Antzelevitch, C. and Cordeiro, J.: Comparison of the Effects of a Transient Outward Potassium Channel Activator on Currents Recorded from Atrial and Ventricular Cardiomyocytes., *J Cardiovasc Electrophysiol 22*, 1057-66, 2011 (*11391*)
	Canine, 20-25 kg	Cardiomyocytes	Collagenase Type 2: 0.05%	Tyrode's solution	Burashnikov, A., Zygmunt, A., Di Diego, J., Linhardt, G., Carlsson, L. and Antzelevitch, C.: AZD1305 Exerts Atrial Predominant Electrophysiological Actions and is Effective in Suppressing Atrial Fibrillation and Preventing its Reinduction in the Dog., *J Cardiovasc Pharmacol 56*, 80-90, 2010 (*11394*)
	Canine, adult	Cardiomyocytes	Collagenase Type 2: 0.05% Protease: 0.008%	M199	Gavi, S., Yin, D., Shumay, E., Wang, H. and Malbon, C.: Insulin-Like Growth Factor-I Provokes Functional Antagonism and Internalization of Beta1- Adrenergic Receptors., *Endocrinology 148*, 2653-62, 2007 (*10505*)
	Canine	Atrial and ventricular myocytes	Collagenase Type 2: 0.065%	Tyrode's solution	Schotten, U., de Haan, S., Verheule, S., Harks, E., Frechen, D., Bodewig, E., Greiser, M., Ram, R., Maessen, J., Kelm, M., Allessie, M. and Van Wagoner, D.: Blockade of Atrial-Specific K+-currents Increases Atrial but not Ventricular Contractility by Enhancing Reverse Mode Na^+/Ca^{2+}-Exchange., *Cardiovasc Res 73*, 37-47, 2007 (*11401*)
	Canine	Atrial myocytes	Collagenase Type 2: 0.013%	HEPES	Baba, S., Dun, W., Hirose, M. and Boyden, P.: Sodium Current Function in Adult and Aged Canine Atrial Cells., *Am J Physiol Heart Circ Physiol 291*, H756-61, 2006 (*11392*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Canine	Canine, 20-30 kg	Cardiomyocytes	Collagenase Type 2: 110 u/ml	Tyrode's solution	Sun, H., Chartier, D., Leblanc, N. and Nattel, S.: Intracellular Calcium Changes and Tachycardia- Induced Contractile Dysfunction in Canine Atrial Myocytes., *Cardiovasc Res 49*, 751-61, 2001 (*11402*)
	Canine	Ventricular and atrial myocytes	Collagenase Type 4: 0.04% Collagenase Type 2: 125 u/ml	HEPES/Tyrode's	Gintant, G.: Two Components of Delayed Rectifier Current in Canine Atrium and Ventricle. Does IKs Play a Role in the Reverse Rate Dependence of Class III Agents?, *Circ Res 78*, 26-37, 1996 (*11390*)
	Dog, mongrel, adult	Myocytes	Hyaluronidase: 0.1%	Joklik's MEM	Spanier, A. and Weglicki, W.: Ca^{2+}-Tolerant Adult Canine Myocytes: Preparation and Response to Anoxia/Acidosis, *Am J Physiol 243*, H448, 1982 (*291*)
Chicken	Chicken, embryonic	Cardiomyocytes	Trypsin: 0.13% Collagenase Type 2: 0.13% Deoxyribonuclease I: 0.033%	HBSS	Blech-Hermoni, Y. and Ladd, A.: Identification of Transcripts Regulated by CUG-BP, Elav-like Family Member 1 (CELF1) in Primary Embryonic Cardiomyocytes by RNA- seq., *Genom Data 6*, 74-76, 2015 (*11429*)
	Chicken embryos, 9-11 day incubated	Cardiomyocytes	Trypsin: 0.25%	PBS	Eschenhagen, T., Fink, C., Remmers, U., Scholz, H., Wattchow, J., Weil, J., et al.: Three-Dimensional Reconstitution of Embryonic Cardiomyocytes in a Collagen Matrix: A New Heart Muscle Model System, *FASEB J 11*, 683, 1997 (*1110*)
	Chick, embryos, 10-11 day	Cardiomyocytes	Trypsin: 0.17%	HBSS, CMF	Wang, S., Greaser, M.L., Schultz, E., Bulinski, J.C., Lin, J.J., and Lessard, J.L.: Studies on Cardiac Myofibrillogenesis With Antibodies to Titin, Actin, Tropomyosin, and Myosin, *J Cell Biol 107*, 1075, 1988 (*577*)
	Chick, 10 day	Ventricular	Trypsin: 0.025%	HBSS, CMF	Kim, D., Okada, A., and Smith, T.W.: Control of Cytosolic Calcium Activity During Low Sodium Exposure in Cultured Chick Heart Cells, *Circ Res 61*, 29, 1987 (*365*)
	Chick, embryo, 11 day	Cardiomyocytes	Trypsin: 0.05%	HBSS, CMF	Jacob, R., Lieberman, M., Murphy, E., and Piwnica- Worms, D.: Effect of Sodium-Potassium Pump Inhibition and Low Sodium on Membrane Potential in Cultured Embryonic Chick Heart Cells, *J Physiol 387*, 549, 1987 (*723*)
	Chick, embryonic, 11-12-day-old	Myocytes	Trypsin: 0.025%	CMF solution	Murphy, E., Aiton, J., Russell, C., and Lieberman, M.: Calcium Elevation in Cultured Heart Cells: Its Role in Cell Injury, *Am J Physiol Cell Physiol 245 (14)*, C316, 1983 (*1188*)
	Chick, 8 day embryo (also rat, neonate and mouse)	Myocytes	Trypsin NF 1:250: 0.25%	Rinaldini's buffer solution, CF	Gross, W., Schopf-Ebner, E., and Bucher, O.: Technique for the Preparation of Homogeneous Cultures of Isolated Heart Muscle Cells, *Exp Cell Res 53*, 1, 1968 (*397*)
	Hen, White Leghorn	Heart	Trypsin: 0.025%	Medium 199	Dehann, R.: Regulation of Spontaneous Activity and Growth of Embryonic Chick Heart Cells in Tissue Culture, *Dev Biol 16*, 216, 1967 (*848*)
	Chick embryos, 5 day	Heart, Liver	Trypsin: 3.0%	Tyrode's solution, CMF	Steinberg, M.: "ECM": Its Nature, Origin, And Function in Cell Aggregation, *Exp Cell Res 30*, 257, 1963 (*396*)
Feline	Cat, mongrel, adult, 1.8-2.8 Kg	Myocytes Ventricular	Collagenase Type 2: 0.12%	Kreb's Henseleit, CF	Silver, L., Hemwall, E., Marino, T., and Houser, S.: Isolation and Morphology of Calcium-Tolerant Feline Ventricular Myocytes, *Am J Physiol 245*, H891, 1983 (*293*)
Fish	Fish, *Danio rerio*	Cardiomyocytes	Collagenase Type 2: 0.5% Collagenase Type 4: 0.5%	MEM	Sander, V., Sune, G., Jopling, C., Morera, C. and Belmonte J.: Isolation and In Vitro Culture of Primary Cardiomyocytes from Adult Zebrafish Hearts., *Nat Protoc 8*, 800-9, 2013 (*11079*)
Frog	Frog (*Rana esculenta*)	Myocytes	Trypsin: 0.04%	CF Ringer	Arrio-Dupont, M., and de Nay, D.: High Yield Preparation of Calcium- Tolerant Myocytes From Frog Ventricles, *Biol Cell 54*, 164, 1985 (*339*)
Guinea-Pig	Guinea pig, adult	Cardiomyocytes	Collagenase Type 2: 100 u/ml	M-199	Zorn-Pauly, K., Schaffer, P., Pelzmann, B., Bernhart, E., Lang, P., and Koidl, B.: L-Type and T-Type Ca^{2+} Current in Cultured Ventricular Guinea Pig Myocytes, *Physiol Res 53(4)*, 369, 2004 (*9865*)
	Guinea-Pig	Cardiomyocytes	Collagenase Type 2: 100-200 u/ml	See reference	Dhamoon, A, Pandit, S., Sarmast, F., Parisian, K., Guha, P., Li, Y., Bagwe, S., Taffet, S. and Anumonwo, J.: Unique Kir2.x Properties Determine Regional and Species Differences in the Cardiac Inward Rectifier K+ Current., *Circ Res 94*, 1332- 9, 2004 (*11398*)
	Guinea pig, female, 300-350g	Coronary endothelial	Collagenase Type 2: 0.1%	see reference	Buxton, I., Kaise, R., Oxhorn, B., Cheek, D.: Evidence Supporting the Nucleotide Axis Hypothesis: ATP Release and Metabolism by Coronary Endothelium, *Am J Physiol Heart Circ Physiol 281*, H1657-66, 2001 (*10171*)
	Guinea pig, 250-450 g	Endothelial	Collagenase Type 2: 0.15%	Perfusing solution (see reference)	Preisig-Muller, R., Mederos Y Schnitzler, M., Derst, C., and Daut J.: Separation of Cardiomyocytes and Coronary Endothelial Cells for Cell-Specific RT-PCR, *Am J Physiol 277*, H413, 1999 (*1079*)
	Guinea-pig, male, 450-600 g	Myocytes	Hyaluronidase: 0.02%	Krebs Henseleit bicarbonate buffer	Stemmer, P., Akera,T., Brody, T., Rardon, D., and Watanabe, A.: Isolation and Enrichment of Ca^{2+}-Tolerant Myocytes for Biochemical Experiments from Guinea- Pig Heart, *Life Sci 44*, 1231, 1989 (*628*)
	Guinea-pig	Cardiomyocytes	Collagenase: 0.04%	Tyrode solution, CF	Ishihara, K., Mitsuiye, T., Noma, A., and Takano, M.: The Mg2+ Block and Intrinsic Gating Underlying Inward Rectification of the K+ Current in Guinea-Pig Cardiac Myocytes, *J Physiol 419*, 297, 1989 (*721*)
	Guinea-pig	Myocytes	Hyaluronidase: 0.10%	Bicarbonate buffer, CF	Bridge, J., Spitzer, K., and Ershler, P.: Relaxation of Isolated Ventricular Cardiomyocytes by a Voltage-Dependent, *Science 241*, 823, 1988 (*668*)
Human	Human	Cardiac	Collagenase: 0.045% Pancreatin: 0.1%	DPBS	Holt-Casper, D., Theisen, J., Moreno, A., Warren, M., Silva, F., Grainger, D., Bull, D. and Patel, A.: Novel Xeno-free Human Heart Matrix-Derived Three- Dimensional Scaffolds., *J Transl Med 13*, 194, 2015 (*11414*)
	Human	Cardiospheres	Collagenase Type 2: 0.1% Neutral Protease: 0.08% Trypsin: 0.05%	Iscove modified DMEM	Sharma, S., Mishra, R., Simpson, D., Wehman, B., Colletti, E., Deshmukh, S., Datla, S., Balachandran, K., Guo, Y., Chen, L., Siddiqui, O., Kaushal, S. and Kaushal, S.: Cardiosphere-Derived Cells From Pediatric End- Stage Heart Failure Patients Have Enhanced Functional Activity Due to the Heat Shock Response Regulating the Secretome., *Stem Cells 33*, 1213-29, 2015 (*11652*)
	Human	Cardiac stem	Collagenase Type 2: 0.25%	Joklik modified Eagle's	Avolio, E., Gianfranceschi, G., Cesselli, D., Caragnano, A., Athanasakis, E., Katare, R., Meloni, M., Palma, A., Barchiesi, A., Vascotto, C., Toffoletto, B., Mazzega, E., Finato, N., Aresu, G. and Livi, U.: Ex vivo Molecular Rejuvenation Improves the Therapeutic Activity of Senescent Human Cardiac Stem Cells in a Mouse Model of Myocardial Infarction., *Stem Cells 32*, 2373, 2014 (*11468*)

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Heart

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human	Atrial myocytes	Collagenase Type 1: 286 u/ml Protease: 5 u/ml	see references	Voigt, N., Zhou, X. and Dobrev, D.: Isolation of Human Atrial Myocytes for Simultaneous Measurements of Ca^{2+} Transients and Membrane Currents., *J Vis Exp* , e50235, 2013 (*10977*)
	Human	Cardiac	Collagenase Type 2: 0.08%	DMEM	Vukusic, K., Jonsson, M., Brantsing, C., Dellgren, G., Jeppsson, A., Lindahl, A. and Asp, J.: High Density Sphere Culture of Adult Cardiac Cells Increases the Levels of Cardiac and Progenitor Markers and Shows Signs of Vasculogenesis., *Biomed Res Int 2013*, , 2013 (*11620*)
	Human	Myofibers	Collagenase Type 1: 0.3%	see reference	Anderson, E., Rodriguez, E., Anderson, C., Thayne, K., Chitwood, W. and Kypson, A.: Increased Propensity for Cell Death in Diabetic Human Heart is Mediated by Mitochondrial-Dependent Pathways., *Am J Physiol Heart Circ Physiol 300*, H118, 2011 (*10915*)
	Human	Atrial cardiomyocytes	Collagenase Type 1: 286 u/ml Protease: 5 u/ml	see reference	Voigt, N., Makary, S., Nattel, S. and Dobrev, D.: Voltage- Clamp-Based Methods for the Detection of Constitutively Active Acetylcholine-Gated I(K,ACh) Channels in the Diseased Heart., *Methods Enzymol 484*, 653, 2010 (*10806*)
	Human	Coronary artery smooth muscle	Collagenase Type 2: 0.1% Elastase: 0.05%	DMEM	Jensen, B., Swigart, P., Laden, M., DeMarco, T., Hoopes, C. and Simpson, P.: The Alpha-1D Is the Predominant Alpha-1- Adrenergic Receptor Subtype in Human Epicardial Coronary Arteries., *J Am Coll Cardiol 54*, 1137, 2009 (*10580*)
	Human	Smooth muscle aortic	Collagenase Type 1: 0.2% Collagenase Type 2: 0.1% Elastase: 0.025%	DMEM	Mathew, S., Tustison, K., Sugatani, T., Chaudhary, L., Rifas, L. and Hruska, K.: The Mechanism of Phosphorus as a Cardiovascular Risk Factor in CKD., *J Am Soc Nephrol 19*, 1092, 2008 (*10805*)
	Human (n=16, age: 60 & plus min; 3 years)	Myocardial	Hyaluronidase: 0.05%	Medium 199	Mukerjee, R., Multani, M., Sample, J., Dowdy, K., Zellner, J., Hoover, D., and Spinale, F.: Effects of Adrenomedullin on Human Myocyte Contractile Function and Beta-Adrenergic Response, *J Cardiovasc Pharmacol 7 (4)*, 235, 2002 (*1290*)
	Human	Cardiomyocytes	Collagenase Type 2: 0.05% Collagenase Type 1: 0.025% Protease XIV: 0.013%	HEPES solution	Todor, A., Sharov, V., Tanhehco, E., Silverman, N., Bernabei, A., Sabbah, H.: Hypoxia-Induced Cleavage of Caspase-3 and DFF45/ICAD in Human Failed Cardiomyocytes, *Am J Physiol Heart Circ Physiol 283*, H990-5, 2002 (*10283*)
	Human	Heart Myocytes	Collagenase Type 2: 200 u/ml	Tyrode's solution	Hoppe, U., Jansen, E., Sudkamp, M., and Beukelmann, D.: Hyperpolarization-Activated Inward Current in Ventricular Myocytes From Normal and Failing Human Hearts, *Circulation 97*, 55, 1998 (*745*)
	Human	Cardiomyocytes and endothelial	Trypsin: 0.2% Collagenase: 0.1%	PBS	Shirai, T., Rao, V., Weisel, R., Ikonomidis, J., Li, R., Tumiati, L., Merante, F. and Mickle, D.: Preconditioning Human Cardiomyocytes and Endothelial Cells., *J Thorac Cardiovasc Surg 115*, 210-9, 1998 (*11621*)
	Human	Atrial myocytes	Collagenase Type 2: 0.1% Protease Type XIV: 0.04%	see reference	Van Wagoner, D., Pond, A., McCarthy, P., Trimmer, J. and Nerbonne, J.: Outward K+ Current Densities and Kv1.5 Expression are Reduced in Chronic Human Atrial Fibrillation., *Circ Res 80*, 772-81, 1997 (*11403*)
	Human, fetal, 14.5 week gestation	Myocytes	Hyaluronidase: 0.1%	HBSS with Calcium	Goldman, B., and Wurzel, J.: Effects of Subcultivation and Culture Medium on Differentiation of Human Fetal Cardiac Myocytes, *In Vitro Cell Dev Biol 28*, 109, 1992 (*480*)
	Human, both sexes, 18-81 years	Myocardial Atrial	Collagenase: 0.14%	HBSS, CMF	Smith, D., Glover, J., Townsend, L., and Maupin, E.: A Method for the Harvest, Culture, and Characterization of Human Adult Atrial Myocardial Cells: Correlation with Age of Donor, *In Vitro Cell Dev Biol 27*, 914, 1991 (*478*)
	Human, adult	Myocytes	Trypsin: 0.25%	Joklik's MEM	Bugaisky, L.B.: Biology of Isolated Adult Cardiac Myocytes, *Isolation and Culture of Human Adult Cardiac Myocytes*, (Clark,Decker,Borg,eds), Elsevier Science Publishing Co., Inc., , 1988 (*679*)
	Human	Thoracic aorta	Collagenase: 0.2%	Phosphate buffer w/NaCl	Hassler, O., Wiren, M., and Herbertsson, S.: The Elastic Coat of the Arterial Wall Studied with the Aid of Collagenase, *Acta Pathol Microbiol Scand 57*, 15, 1963 (*695*)
Invertebrate	Octopus, *E. cirhosa*, 260-352 g	Systemic heart cardiomyocytes	Collagenase: 0.025% Trypsin: 0.02%	see reference	Altimiras J., Hove-Madsen L., and Gesser H.: Ca(2+) Uptake in the Sarcoplasmic Reticulum from the Systemic Heart of Octopod Cephalopods, *J Exp Biol 202*, 2531, 1999 (*9834*)
Mouse	Mouse, male, 12-18 week	Cardiomyocytes	Collagenase Type 2: 300 u/ml Protease XIV: 0.004%	Perfusion solution (see reference)	Jian, Z, Chen, Y, Shimkunas, R, Jian, Y, Jaradeh, M, Chavez, K, Chiamvimonvat, N, Tardiff, J, Izu, L, Ross, R and Chen-Izu, Y: In Vivo Cannulation Methods for Cardiomyocytes Isolation from Heart Disease Models., *PLoS ONE 11*, e0160605, 2016 (*11516*)
	Mouse	Aortic	Collagenase Type 1: 400 u/ml Collagenase: 120 u/ml Hyaluronidase: 60 u/ml Deoxyribonuclease I: 60 u/ml	DPBS	Hu, D., Yin, C., Mohanta, S., Weber, C. and Habenicht, A.: Prepartaion of Single Cell Suspensions from Mouse Aorta, *Bio Protoc 6*, 11, 2016 (*11600*)
	Mouse, 4-6 week	Cardiospheres	Collagenase Type 2: 0.4% Neutral Protease: 0.4%	PBS	Xu, J., Lee, Y., Ran, X., Liao, S., Yang, J., Au, K., Lai, W., Esteban, M., Tse, H.: Generation of Induced Cardiospheres via Reprogramming of Skin Fibroblasts for Myocardial Regeneration., *Stem Cells 34*, 2693-2706, 2016 (*11648*)
	Mouse, 15-30 gm	Ventricular myocytes	Collagenase Type 2: 0.12%	see reference	Henn, M., Janjua, M., Kanter, E., Makepeace, C., Schuessler, R., Nichols, C. and Lawton, J.: Adenosine Triphosphate-Sensitive Potassium Channel Kir Subunits Implicated in Cardioprotection by Diazoxide., *J Am Heart Assoc 4*, , 2015 (*11434*)
	Mouse, 3-4 week	Cardiac progenitor	Collagenase Type 1: 0.1%	DMEM	Wang, H., Chen, H., Feng, B., Wang, X., He, X., Hu, R., Yin, M., Wang, W., Fu, W. and Xu, Z.: Isolation and Characterization of a Sca- 1+/CD31- Progenitor Cell Lineage Derived From Mouse Heart Tissue., *BMC Biotechnol 14*, 75, 2014 (*11074*)
	Mouse, adult	Cardiac Progenitor	Collagenase Type 2: 600 u/ml Deoxyribonuclease I: 60 u/ml	MEM	Santos, N., Mosqueira, D., Sousa, L., Teixeira, M., Filipe, M., Resende, T., Araujo, A., Valente, M., Almeida, J., Martins, J., Santos, J., Barcia, R., Cruz, P., Cruz, H. and Pinto-d-O, .P: Human Umbilical Cord Tissue- Derived Mesenchymal Stromal Cells Attenuate Remodeling after Myocardial Infarction by Proangiogenic, Antiapoptotic, and Endogenous Cell-Activation Mechanisms., *Stem Cell Res Ther 5*, 5, 2014 (*11092*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse	Cardiac progenitor	Collagenase Type 2: 0.1% Neutral Protease: 2.4 u/ml	HBSS	Zafiriou, M., Noack, C., Unsold, B., Didie, M., Pavlova, E., Fischer, H., Reichardt, H., Bergmann, M., El-Armouche, A., Zimmermann, W., Zelarayan, L.: Erythropoietin Responsive Cardiomyogenic Cells Contribute to Heart Repair Post Myocardial Infarction., *Stem Cells 32*, 2480, 2014 (*11469*)
	Mouse, adult	Cardiomyocytes	Collagenase Type 2: 0.08%	see reference	Kohncke, C. Lisewski, U., Schleussner, L., Gaertner, C., Reichert, S. and Roepke, T.: Isolation and Kv Channel Recordings in Murine Atrial and Ventricular Cardiomyocytes., *J Vis Exp 73*, e50145, 2013 (*10983*)
	Mouse	Cardiomyocytes	Collagenase Type 2: 150 u/ml	MEM	Hennessey, J., Wei, E. and Pitt, G.: Fibroblast Growth Factor Homologous Factors Modulate Cardiac Calcium Channels., *Circ Res 113*, 381- 8, 2013 (*11017*)
	Mouse	Cardiomyocytes	Collagenase Type 2: 360 u/ml Papain: 0.4 u/ml Deoxyribonuclease I: 40 u/ml	L-15	Touchberry, C., Green, T., Tchikrizov, V., Mannix, J., Mao, T., Carney, B., Girgis, M., Vincent, R., Wetmore, L., Dawn, B., Bonewald, L., Stubbs, J. and Wacker, M.: FGF23 is a Novel Regulator of Intracellular Calcium and Cardiac Contractility in Addition to Cardiac Hypertrophy., *Am J Physiol Endocrinol Metab 304*, E863, 2013 (*11088*)
	Mouse	Cardiac endothelial	Collagenase Type 4: 0.2% Neutral Protease: 1.2 u/ml	PBS	Pratumvinit, B., Reesukumal, K., Janebodin, K., Ieronimakis, N. and Reyes, M.: Isolation, Characterization, and Transplantation of Cardiac Endothelial Cells., *Biomed Res Int 2013*, 359412, 2013 (*11624*)
	Mouse, 2-6 month	Sinoatrial node	Collagenase Type 2: 229 u/ml Elastase: 1.9 u/ml Protease Type XIV: 0.9 u/ml	Tyrode's solution	Christel, C., Cardona, N., Mesirca, P., Herrmann, S., Hofmann, F., Striessnig, J., Ludwig, A., Mangoni, M. and Lee, A.: Distinct Localization and Modulation of Cav1.2 and Cav1.3 L-type Ca^{2+} Channels in Mouse Sinoatrial Node., *J Physiol 590*, 6327, 2012 (*11042*)
	Mouse, male, 8-25 week	Cardiomyocytes	Collagenase Type 2: 59 u/ml	MEM	Carley, A. and Kleinfeld, A.: Fatty Acid (FFA) Transport in Cardiomyocytes Revealed by Imaging Unbound FFA is Mediated by an FFA Pump Modulated by the CD36 Protein., *J Biol Chem 286*, 4589-97, 2011 (*10794*)
	Mouse	Aortic adventitial leukocytes	Collagenase Type 2: 300 u/ml Elastase: 5.6 u/ml	PBS	Butcher, M., Herre, M., Ley, K. and Galkina, E.: Flow Cytometry Analysis of Immune Cells Within Murine Aortas., *J Vis Exp 53*, e2828, 2011 (*10894*)
	Mouse, adult	Cardiomyocytes	Collagenase Type 1: 0.1-0.4% Protease Type XIV: 0.004-.02%	see reference	Flynn, J., Santana, L. and Melov, S.: Single Cell Transcriptional Profiling of Adult Mouse Cardiomyocytes., *J Vis Exp 58*, e3302, 2011 (*10895*)
	Mouse, male, 6 week	Coronary endothelial	Collagenase Type 2: 0.1% Neutral Protease: 0.6 u/ml	M199	Makino, A., Suarez, J., Wang, H., Belke, D., Scott, B. and Dillmann, W.: Thyroid Hormone Receptor- beta is Associated With Coronary Angiogenesis During Pathological Cardiac Hypertrophy., *Endocrinology 150*, 2008, 2009 (*10645*)
	Mouse, adult	Ventricular myoctes	Collagenase: 0.1%	M199	Zhang, Y, Kanter, E., Laing, J., Aprhys, C., Johns, D., Kardami, E. and Yamada, K.: Connexin43 Expression Levels Influence Intercellular Coupling and Cell Proliferation of Native Murine Cardiac Fibroblasts., *Cell Commun Adhes 15*, 289, 2008 (*10577*)
	Mouse, adult, 9-13 week	Cardiomyocytes	Collagenase Type 2: 620 u/ml Protease XIV: 0.104 u/ml Deoxyribonuclease I: 0.0015%	Myocyte buffer see reference	Kabaeva, Z., Zhao, M. and Michele, D.: Blebbistatin Extends Culture Life of Adult Mouse Cardiac Myocytes and Allows Efficient and Stable Transgene Expression., *Am J Physiol Heart Circ Physiol 294*, H1667-74, 2008 (*11038*)
	Mouse, adult	Cardiomyocytes	Collagenase: see reference	HBSS	O'Connell, T., Rodrigo, M., Simpson, P.: Isolation and Culture of Adult Mouse Cardiac Myocytes, *Methods Mol Biol 357*, 271-96, 2007 (*10314*)
	Mouse	Smooth muscle cells	Collagenase Type 2: 300 u/ml Elastase: 5 u/ml	F10 Ham	Verheye, S., Martinet, W., Kockx, M., Knaapen, M., Salu, K., Timmermans, J., Ellis, J., Kilpatrick, D., DeMayer, G.: Selective Clearance of Macrophages in Atherosclerotic Plaques by Autophagy, *J Am Coll Cardiol 49*, 706, 2007 (*10335*)
	Mouse, adult, 6-12 week	Cardiomyocytes	Collagenase Type 2: 0.1% Trypsin: 0.006% Protease XIV: 0.006%	see reference	Shioya, T: A Simple Technique for Isolating Healthy Heart Cells from Mouse Models., *J Physiol Sci 57*, 327-35, 2007 (*11037*)
	Mouse	Ventricular myocytes and mesenteric arterial SMC	Collagenase Type 2: 0.06% Papain: 0.175%	Krebs-Ringer	Lu, T., Ye, D., Wang, X., Seubert, J., Graves, J., Bradbury, J., Zeldin, D., Lee, H.: Cardiac and Vascular KATP Channels in Rats are Activated by Endogenous Epoxyeicosatrienoic Acids Through Different Mechanisms, *J Physiol 575*, 627-44, 2006 (*10293*)
	Mouse	Cardiomyocytes	Collagenase Type 1:0.17%	PBS	Chen, H., Yong, W., Ren, S., Shen, W., He, Y., Cox, K., Zhu, W., Li, W., Soonpaa, M., Payne, RM, Franco, D., Field, L., Rosen, V., Wang, Y. and Shou, W.: Overexpression of Bone Morphogenetic Protein 10 in Myocardium Disrupts Cardiac Postnatal Hypertrophic Growth., *J Biol Chem 281*, 27481, 2006 (*10354*)
	Mouse, neonatal	Cardiomyoctes	Collagenase Type 1: 150 u/ml Trypsin: 0.01%	M199	Takahashi, N., Wang, X., Tanabe, S., Uramoto, H., Jishage, K., Uchida, S., Sasaki, S., Okada, Y.: ClC-3-Independent Sensitivity of Apoptosis to Cl- Channel Blockers in Mouse Cardiomyocytes, *Cell Physiol Biochem 15*, 263, 2005 (*10033*)
	Mouse, 1 day	Cardiomyoctes	NCIS kit: per instructions	EBSS	Potts, M., Vaughn, A., McDonough, H., Patterson, C., and Deshmukh, M.: Reduced Apaf-1 Levels in Cardiomyocytes Engage Strict Regulation of Apoptosis by Endogenous XIAP, *J Cell Biol 171*, 925, 2005 (*10206*)
	Mouse	Aortic endothelial	Collagenase Type 2: 0.2%	DMEM	Kobayashi, M., Inoue, K., Warabi, E., Minami, T. and Kodama, T.: A Simple Method of Isolating Mouse Aortic Endothelial Cells., *J Atheroscler Thromb 12*, 138, 2005 (*11067*)
	Mouse	Smooth muscle cells	Collagenase Type 1: 0.1% Elastase: 0.0125%	DMEM	Fukumoto, Y., Deguchi, J., Libby, P., Rabkin-Aikawa, E., Sakata, Y., Chin, M., Hill, C., Lawler, P., Varo, N., Schoen, F., Krane, S., Aikawa, M.: Genetically Determined Resistance to Collagenase Action Augments Interstitial Collagen Accumulation in Atherosclerotic Plaques, *Circulation 110*, 1953-9, 2004 (*10115*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse, female, 14-18 g	Cardiomyocytes	Collagenase Type 2: 0.02% Elastase: 0.03% Pancreatin: 0.06%	see reference	Zhang, S., Wang, D., Estrov, Z., Raj, S., Willerson, J., Yeh, E.: Both Cell Fusion and Transdifferentiation account for the Transformation of Human Peripheral Blood CD34- Positive Cells into Cardiomyocytes In Vivo, *Circulation 110*, 3803-7, 2004 (*10261*)
	Mouse, 6-8 week	Vascular smooth muscle	Papain: 10 u/ml Elastase: .005% Collagenase: 0.05% Deoxyribonuclease I: 1000 u/ml PDS kit: with modifications	EBSS	Qian, Q., Hunter, L., Li, M., Marin-Padilla, M., Prakash, Y., Somlo, S., Harris, P., Torres, V., and Sieck, G.: Pkd2 Haploinsufficiency Alters Intracellular Calcium Regulation in Vascular Smooth Muscle Cells, *Hum Mol Genet 12(15)*, 1875, 2003 (*9846*)
	Mouse	Cardiomyocytes	Collagenase Type 2: 0.2% Pancreatin: 0.06%	DMEM/F-12	Rybkin, I., Markham, D., Yan, Z., Bassel-Duby, R., Williams, R., and Olson, E.: Conditional Expression of SV40 T-antigen in Mouse Cardiomyocytes Facilitates an Inducible Switch from Proliferation to Differentiation, *J Biol Chem 278(18)*, 15927, 2003 (*9854*)
	Mouse, neonatal 2-4 day	Atrial myocytes	NCIS kit: with modifications see reference	L-15	Bettahi, I,, Marker, C., Roman, M., and Wickman, K.: Contribution of the Kir3.1 Subunit to the Muscarinic-gated Atrial Potassium Channel IKACh, *J Biol Chem 277*, 48282, 2002 (*9987*)
	Mouse, neonatal and adult	Cardiomyocytes	Collagenase Type 2: 0.03-0.2%	Joklik's MEM	Schreiber, K., Paquet, L., Allen, B., and Rindt, H.: Protein Kinase C Isoform Expression and Activity in the Mouse Heart, *Am J Physiol Heart Circ Physiol 281(5)*, H2062, 2001 (*9856*)
	Mouse, NTg and Tg, 8 - 12 week	Myocytes	Collagenase Type 2: 150 u/ml	Joklik's MEM	Nelson, D., Setser, E., Hall, D., Schwartz, S., Hewitt, T., Klevitsky, R., Osinska, H., Bellgrau, D., Duke, R., and Robbins, J.: Proinflammatory Consequences of Transgenic Fas Ligand Expression in the Heart, *J Clin Invest 105 (9)*, 1199, 2000 (*1067*)
	Mouse, 1-6 day	Cardiomyocytes	Collagenase Type 2: 0.1% Deoxyribonuclease I: 0.002%	PBS	Watzka, S., Lucien, J., Shimada, M., Edwards, V., Yeger, H., Hannigan, G., and Coles J.: Selection of Viable Cardiomyocytes for Cell Transplantation Using Three-Dimensional Tissue Culture, *Transplantation 70*, 1310, 2000 (*10063*)
	Mouse, 2-4 mo	Ventricular myocytes	Collagenase Type 2: 0.05% Collagenase Type 4: 0.05% Protease XIV: 0.002%	MEM	Zhou, Y., Wang, S., Zhu, W., Chruscinski, A., Kobilka, B., Ziman, B., Wang, S., Lakatta, E., Cheng, H., Xiao, R.: Culture and Adenoviral Infection of Adult Mouse Cardiac Myocytes: Methods for Cellular Genetic Physiology, *Am J Physiol Heart Circ Physiol 279*, H429-36, 2000 (*10117*)
	Mouse	Cardiomyocytes	Collagenase Type 2: 150 u/ml	Joklik's MEM	Christensen, G., Minamisawa, S., Gruber, P., Wang, Y., Chien, K.: High-Efficiency, Long-Term Cardiac Expression of Foreign Genes in Living Mouse Embryos and Neonates, *Circulation 101*, 178-84, 2000 (*10257*)
	Mouse, 1-3 day	Cardiomyocytes	Trypsin: 0.25%	FBS-MEM	Wang, G., and Kang, Y.: Inhibition of Doxorubicin Toxicity in Cultured Neonatal Mouse Cardiomyocytes with Elevated Metallothionein Levels, *J Pharmacol Exp Ther 288(3)*, 938, 1999(*9864*)
	Mouse, 1 day	Cardiomyocytes	NCIS kit: with modifications see reference	L-15	Lader, A., Kwiatkowski, D., and Cantiello, H.: Role of Gelsolin in the Actin Filament Regulation of Cardiac L-type Calcium Channels, *Am J Physiol 277*, C1277, 1999 (*9988*)
	Mouse, 3-7 month	Fibroblasts, mesangial, smooth muscle	Trypsin: 0.25% Collagenase: see reference Soybean Trypsin Inhibitor: .05%	DMEM	Bradshaw, A., Francki, A., Motamed, K., Howe, C., Sage, E.: Primary Mesenchymal Cells Isolated from SPARC- Null Mice Exhibit Altered Morphology and Rates of Proliferation, *Mol Biol Cell 10*, 1569-79, 1999 (*10136*)
	Mouse (BALB/c), adult	Myocytes	Collagenase Type 2: 0.04%	Tyrode's solution	Felzen, B., Shilkrut, M., Less, H., Sarapov, I., Maor, G., Coleman, R., Robinson, R., et al.: Fas (CD95/Apo-1)- Mediated Damage to Ventricular Myocytes Induced by Cytotoxic T Lymphocytes from Perforin- Deficient Mice, *Circ Res 82*, 438, 1998 (*1134*)
	Mouse, 1 day	Cardiomyocytes	NCIS kit: with modifications see reference	L-15	Lader, A., Xiao, Y., Ishikawa, Y., Cui, Y., Vatner, D., Vatner, S., Homcy, C., Cantiello, H.: Cardiac Gsalpha Overexpression Enhances L-type Calcium Channels Through an Adenylyl Cyclase Independent Pathway, *Proc Natl Acad Sci U S A 95*, 9669, 1998 (*9989*)
	Mouse, adult	Cardiomyocytes	Collagenase Type 1: 75 u/ml Collagenase Type 2: 75 u/ml	Joklik's MEM	Grupp, I., Lorenz, J., Walsh, R., Boivin, G. and Rindt, H.: Overexpression of Alpha1B- Adrenergic Receptor Induces Left Ventricular Dysfunction in the Absence of Hypertrophy., *Am J Physiol 275*, H1338-50, 1998 (*11629*)
	Mouse, P0-P1	Cardiomyocytes	Collagenase: 0.045%	DMEM, Medium 199	Arber, S., Hunter, J., Ross, J., Hongo, M., Sansig, G., Borg, J., Perriard, J., Chien, K., and Caroni, P.: MLP-Deficient Mice Exhibit a Disruption of Cardiac Cytoarchitectural Organization, Dilated Cadiomyopathy, and Heart Failure, *Cell 88*, 393, 1997 (*1108*)
	Mouse, 6-9 or 21-41 day	Ventricular and atrial myocytes	Collagenase Type 2: 95 u/ml Hyaluronidase: 172.5 u/ml Trypsin: 0.002% Deoxyribonuclease I: 60u/ml	DMEM/Tyrodes	Valenzuela, D., Han, X., Mende, U., Fankhauser, C., Mashimo, H., Huang, P., Pfeffer, J., Neer, E., and Fishman, M.: G alpha(o) is Necessary for Muscarinic Regulation of Ca^{2+} Channels in Mouse Heart, *Proc Natl Acad Sci U S A 94(5)*, 1727, 1997 (*9863*)
	Mouse	Cardiomyocyte	Collagenase: 0.17 %	PBS	Soonpaa, M., Kim, K., Pajak, aL., Franklin, M., and Field, L.: Cardiomyocyte DNA Synthesis and Binucleation During Murine Development, *Am J Physiol 271*, H2183, 1996 (*1238*)
	Mouse embryos	Myocytes	Collagenase Type 1: 0.1%	DMEM	Wobus, A., Kleppisch, T., Maltsev, V., and Hescheler, J.: Cardiomyocyte-Like Cells Differentiated *In Vitro* From Embryonic Carcinoma Cells P19 are Characterized by Functional Expression of Adrenoceptors and Ca^{2+} Channels, *In Vitro Cell Dev Biol 30A*, 425, 1994 (*786*)
	Mouse (also rat, neonate and chick, 8 day embryo)	Myocytes	Trypsin NF 1:250: 0.25%	Rinaldini's buffer solution, CF	Gross, W., Schopf-Ebner, E., and Bucher, O.: Technique for the Preparation of Homogeneous Cultures of Isolated Heart Muscle Cells, *Exp Cell Res 53*, 1, 1968 (*397*)
Ovine	Ovine	Atrial myocytes	Collagenase Type 2: 0.055% Protease XIV: 0.006%	Tyrode's solution	Voigt, N., Pearman, C., Dobrev, D. and Dibb, K.: Methods for Isolating Atrial Cells from Large Mammals and Humans., *J Mol Cell Cardiol 86*, 187-98, 2015 (*11451*)

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Ovine	Ovine	Cardiomyocytes	Collagenase Type 2: 0.055% Protease Type XIV: 0.006%	See reference	Dibb, K., Clarke, J., Horn, M., Richards, M., Graham, H., Eisner, D. and Trafford, A.: Characterization of an Extensive Transverse Tubular Network in Sheep Atrial Myocytes and its Depletion in Heart Failure., *Circ Heart Fail 2*, 482-9, 2009 (*11397*)
	Ovine	Cardiomyocytes	Collagenase Type 2: 100-200 u/ml	See reference	Dhamoon, A, Pandit, S., Sarmast, F., Parisian, K., Guha, P., Li, Y., Bagwe, S., Taffet, S. and Anumonwo, J.: Unique Kir2.x Properties Determine Regional and Species Differences in the Cardiac Inward Rectifier K+ Current., *Circ Res 94*, 1332- 9, 2004 (*11398*)
Porcine	Porcine	Aortic smooth muscle and intersitial cells	Collagenase: 600 u/ml	PBS	Butcher, J. and Nerem, R.: Porcine Aortic Valve Interstitial Cells in Three- Dimensional Culture: Comparison of Phenotype with Aortic Smooth Muscle Cells., *J Heart Valve Dis 13*, 478, 2004 (*10804*)
	Porcine	Coronary vascular smooth muscle (PCVSMCs)	Trypsin: 0.037%	HEPES	Christ, M., Gunther, A., Heck, M., Schmidt, B., Falkenstein, E., and Wehling, M.: Aldosterone, Not Estradiol, Is the Physiological Agonist for Rapid Increases in cAMP in Vascular Smooth Muscle Cells, *Circulation 99*, 1485, 1999 (*1068*)
	Miniature swine, adult, female, 25-40 kg, familiarized with treadmill exercise	Coronary smooth muscle	Trypsin: 0.1%	Krebs bicarbonate solution	Bowles, D., Hu, Q., Laughlin, M., and Sturek, M.: Exercise Training Increases L-type Calcium Current Density in Coronary Smooth Muscle, *Am J Physiol 275 (44)*, H2159, 1998 (*1069*)
Rabbit	Rabbit, New Zealand, 2.3-2.9 kg	Cardiomyocytes	Collagenase Type 1: 0.05% Hyaluronidase: see reference Protease: see reference	Krebs-Henseleit	Farkas, A., Acsai, K., Nagy, N., Toth, A., Fulop, F., Seprenyi, G., Birinyi, P., Nanasi, P., Forster, T., Csanady, M., Papp, J., Varrro, A. and Farkas, A.: Na(+)/Ca(2+) Exchanger Inhibition Exerts a Positive Inotropic Effect in the Rat Heart, but Fails to Influence the Contractility of the Rabbit Heart., *Br J Pharmacol 154*, 93, 2008 (*10509*)
	Rabbit	Smooth muscle cells	Collagenase Type 2: 300 u/ml Elastase: 5 u/ml	F10 Ham	Verheye, S., Martinet, W., Kockx, M., Knaapen, M., Salu, K., Timmermans, J., Ellis, J., Kilpatrick, D., DeMayer, G.: Selective Clearance of Macrophages in Atherosclerotic Plaques by Autophagy, *J Am Coll Cardiol 49*, 706, 2007 (*10335*)
	Rabbit, New Zealand, 2 kg	Cardiomyocytes and fibroblasts	Collagenase: 0.06%	Medium 199	Driesen, R., Dispersyn, G., Verheyen, F., van den Eijnde, S., Hofstra, L., Thone, F., Dijkstra, P., Debie, W., Borgers, M., Ramaekers, F.: Partial Cell Fusion: A Newly Recognized Type of Communication Between Differentiating Cardiomyocytes and Fibroblasts, *Cardiovasc Res 68*, 37-46, 2005 (*10344*)
	Rabbit, New Zealand White, 2-3 kg	Myocytes	Collagenase Type 2: 0.1%	HEPES	Spitzer, K., Ershler, P., Skolnick, R., and Vaughan- Jones, R.: Generation of Intracellular pH Gradients in Single Cardiac Myocytes with a Microperfusion System, *Am J Physiol 278*, H1371, 2000 (*746*)
	Rabbit, New Zealand, white, either sex	Myocytes	Collagenase Type 2: 0.05%	EGTA-KB	Sedarat, F., Xu, L., Moore, E., and Tibbits, G.: Colocalization of Dihydropyridine and Ryanodine Receptors in Neonate Rabbit Heart Using Confocal Microscopy, *Am J Physiol Heart Circ Physiol 279*, H202, 2000 (*748*)
	Rabbit, adult 1.5-2.5 kg	Tricuspid valve cells	Collagenase: 0.8 mg/ml	HEPES Tyrode solution	Anumonwo, J., Delmar, M., and Jalife, J.: Electrophysiology of Single Heart Cells from the Rabbit Tricuspid Valve, *J Physiol 425*, 145, 1990 (*10066*)
	Rabbit, New Zealand, white, male, 2-3 kg	Cardiomyocytes	Hyaluronidase: 0.5%	Eagle's MEM	Buxton, I., and Brunton, L.: Compartments of Cyclic AMP and Protein Kinase in Mammalian Cardiomyocytes, *J Biol Chem 258 (17)*, 10233, 1983 (*847*)
	Rabbit, adult, 2 kg	Myocytes	Hyaluronidase: 0.007%	Kreb's Ringer	Dani, A., Cittadini, A., Flamini, G., Festuccia, G., and Terranova, T.: Preparation and Some Properties of Isolated Beating Myocytes from Adult Rabbit Heart, *J Mol Cell Cardiol 9*, 777, 1977 (*846*)
Rat	Rat, adult	Cardiomyocytes	Collagenase Type 2: 0.1% Protease Type XIV: 0.01%	Tyrode solution	Savi, M., Bocchi, L., Mena, P., Dall'Asta, M., Crozier, A., Brighenti, F., Stilli, D. and Del Rio, D.: In vivo Administration of Urolithin A and B Prevents the Occurrence of Cardiac Dysfunction in Streptozotocin-induced Diabetic Rats., *Cardiovasc Diabetol 16*, 80, 2017 (*11530*)
	Rat, SD, 2 day	Cardiomyocytes	Collagenase Type 2: 200 u/ml	DMEM	Abdul-Ghani, M., Suen, C., Jiang, B., Deng, Y., Weldrick, J., Putinski, C., Brunette, S., Fernando, P., Lee, T., Flynn, P., Leenen, F., Burgon, P. Stewart, D. and Megeney, L.: Cardiotrophin 1 Stimulates Beneficial Myogenic and Vascular Remodeling of the Heart., *Cell Res 27*, 1195-1215, 2017 (*11666*)
	Rat, 1-2 day	Cardiomyocytes	NCIS kit: per instructions	MEM	Xie, L., Pi, X., Townley-Tilson, WH., Li, N., Wehrens, X., Entman, M., Taffet, G., Mishra, A., Peng, J., Schisler, J., Meissner, G. and Patterson, C.: PHD2/3- dependent Hydroxylation Tunes Cardiac Response to Î²-adrenergic Stress via Phospholamban., *J Clin Invest 125*, 2759-71, 2015 (*11405*)
	Rat, Wistar, 250- 350g	Ventricular myocytes	Collagenase Type 2: 251 u/ml	Tyrode solution	Calderon-Sachez, E., Domi- nguez-Rodriguez, A., Lopez- Haldon, J., Jimenez-Navarro, M., Gomez, A., Smani, T. and Ordonez, A.: Cardioprotective Effect of Ranolazine in the Process of Ischemia-reperfusion in Adult Rat Cardiomyocytes., *Rev Esp Cardiol (Engl Ed)*, 2015 (*11411*)
	Rat, SD, 8-10 week	Ventricular myocytes	Collagenase: 0.08% Pronase: 0.004%	Tyrode's Solution	Lee, J., Ha, J. and Leem, C.: A Novel Nicotinamide Adenine Dinucleotide Correction Method for Mitochondrial Ca(2+) Measurement with FURA-2- FF in Single Permeabilized Ventricular Myocytes of Rat., *Korean J Physiol Pharmacol 19*, 373-82, 2015 (*11415*)
	Rat, SD, 1 day	Cardiomyocytes	Trypsin: 0.025% Collagenase Type 2: 1.0%	HBSS	Clark, A. and Naya, F.: MicroRNAs in the Myocyte Enhancer Factor 2 (MEF2)- regulated Gtl2-Dio3 Noncoding RNA Locus Promote Cardiomyocyte Proliferation by Targeting the Transcriptional Coactivator Cited2., *J Biol Chem 290*, 23162-72, 2015 (*11432*)
	Rat, SD, 2-3 day	Cardiomyocytes	Collagenase Type 2: 0.05%	DMEM	Fang, R, Qiao, S., Liu, Y., Meng, Q., Chen, X., Song, B., Hou, X. and Tian, W.: Sustained Co-Delivery of BIO and IGF-1 by a Novel Hybrid Hydrogel System to Stimulate Endogenous Cardiac Repair in Myocardial Infarcted Rat Hearts., *Int J Nanomedicine 10*, 4691-703, 2015 (*11433*)
	Rat, SD	Valve interstitial cells	Collagenase Type 2: 600 u/ml	DMEM	Horne, T., VandeKopple, M., Sauls, K., Koenig, S., Anstine, L., Garg, V., Norris, R. and Lincoln, J.: Dynamic Heterogeneity of the Heart Valve Interstitial Cell Population in Mitral Valve Health and Disease, *J Cardiovasc Dev Dis 2*, 214, 2015 (*11435*)

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Rat	Rat, SD, 3-4 month	Cardiomyocytes	Collagenase Type 2: 0.1%	DMEM	Liu, L., Wang, Y., Cao, Z., Wang, M., Liu, X., Gao, T., Hu, Q., Yuan, W. and Lin, L.: Up-regulated TLR4 in Cardiomyocytes Exacerbates Heart Failure after Long- Term Myocardial Infarction., *J Cell Mol Med 19*, 2728, 2015 (*11444*)
	Rat, neonatal	Cardiomyocytes	NCIS kit: per instructions	HBSS	Song, D., Lee, K., Ryu, J., Jeon, H. and Kim, D.: The Molecular Interaction of Heart LIM Protein (HLP) with RyR2 and Caveolin-3 is Essential for Ca(2+)-Induced Ca(2+) Release in the Heart., *Biochem Biophys Res Commun 463*, 975-81, 2015 (*11447*)
	Rat, neonatal	Cardiomyocytes	Trypsin: 0.06% Collagenase Type 2: 220 u/ml	HBSS	Zhang, B., Montgomery, M., Davenport-Huyer, L., Korolj, A. and Radisic, M.: Platform Technology for Scalable Assembly of Instantaneously Functional Mosaic Tissues., *Sci. Adv. 1*, e1500423, 2015 (*11465*)
	Rat, Wistar, 200g	Ventricular myocytes	Collagenase Type 2: 95 u/ml Protease: 0.1 u/ml	HEPES	Miller, L., Greensmith, D., Sankaranarayanan, R., O'Neill, S. and Eisner D.: The Effect of 2,5-di-(tert- butyl)-1,4- benzohydroquinone (TBQ) on Intracellular Ca^{2+} Handling in Rat Ventricular Myocytes., *Cell Calcium 58*, 208-14, 2015 (*11437*)
	Rat, SD, 1-2 day	Cardiomyocytes	Collagenase Type 2: 0.12%	DMEM/F-12	Rutering, J., Ilmer, M., Recio, A., Coleman, M., Vykoukal, J. and Alt, E.: Improved Method for Isolation of Neonatal Rat Cardiomyocytes with Increased Yield of C-Kit+ Cardiac Progenitor Cells., *J Stem Cell Res Ther 5*, 1-8, 2015 (*11555*)
	Rat, neonatal	Cardiomyocytes	NCIS kit: per instructions	L-15	Sakurai, T., Lanahan, A., Woolls, M., Li, N., Tirziu, D. and Murakami, M.: Live Cell Imaging of Primary Rat Neonatal Cardiomyocytes Following Adenoviral and Lentiviral Transduction using Confocal Spinning Disk Microscopy., *J Vis Exp* , e51666, 2014 (*11590*)
	Rat, adult, 300-370 g	Cardiomyocytes	Collagenase Type 2: 0.05%	KH buffer	Chouchani, E., Pell, V., Gaude, E., Aksentijevic, D., Sundier, S., Robb, E., Logan, A., Nadtochiy, S., Ord, E., Smith, A., Eyassu, F., Shirley, R., Hu, C., Dare, A., James, A. and Rogatti, S.: Ischaemic Accumulation of Succinate Controls Reperfusion Injury Through Mitochondrial ROS., *Nature 515*, 431-435, 2014 (*11676*)
	Rat	Cardiomyocytes	Collagenase Type 2: 150 u/ml	MEM	Hennessey, J., Wei, E. and Pitt, G.: Fibroblast Growth Factor Homologous Factors Modulate Cardiac Calcium Channels., *Circ Res 113*, 381- 8, 2013 (*11017*)
	Rat, Wistar, 175- 200g	Cardiomyocytes	Collagenase Type 2: 150 u/ml	see reference	Eckerle, L., Felix, S. and Herda, L.: Measurement of Antibody Effects on Cellular Function of Isolated Cardiomyocytes., *J Vis Exp 73*, e4237, 2013 (*11035*)
	Rat, SD, 1-2 day	Cardiomyocytes	Trypsin: 0.06% Collagenase Type 2: 220 u/ml	DMEM	Zhang, B., Green, J., Murthy, S. and Radisic, M.: Label- Free Enrichment of Functional Cardiomyocytes using Microfluidic Deterministic Lateral Flow Displacement., *PLoS ONE 7*, e37619, 2012 (*10796*)
	Rat, adult	Ventricular myocytes	Collagenase Type 2: 0.2%	Medium 199	Karakikes, I., Hadri, L., Rapti, K., Ladage, D., Ishikawa, K., Tilemann, L., Yi, G., Morel, C., Gwathmey, J., Zsebo, K., Weber, T., Kawase, Y. and Hajjar, R.: Concomitant Intravenous Nitroglycerin with Intracoronary Delivery of AAV1.SERCA2a Enhances Gene Transfer in Porcine Hearts., *Mol Ther 20*, 565, 2012 (*11063*)
	Rat, 3 day	Cardiomyocytes	Collagenase Type 2: 300 u/ml	PBS	Ye, K., Sullivan, K. and Black, L.: Encapsulation of Cardiomyocytes in a Fibrin Hydrogel for Cardiac Tissue Engineering., *J Vis Exp 55*, 3251, 2011 (*10657*)
	Rat, SD, male	Cardiomyocytes	Collagenase Type 2: 0.056%	Krebs	Mellor, K., Bell, J., Wendt, I., Davidoff, A., Ritchie, R. and Delbridge, L.: Fructose Modulates Cardiomyocyte Excitation-Contraction Coupling and Ca Handling In Vitro., *PLoS ONE 6*, e25204, 2011 (*10666*)
	Rat, neonatal	Cardiomyocytes	NCIS kit: per instructions	L-15	Dittami, G., Rajguru, S., Lasher, R., Hitchcock, R. and Rabbitt, R.: Intracellular Calcium Transients Evoked by Pulsed Infrared Radiation in Neonatal Cardiomyocytes., *J Physiol 589*, 1295-306, 2011 (*10878*)
	Rat, neonatal	Cardiomyocytes	Trypsin: 0.07% Collagenase Type 2: 0.1%	DMEM/M199	Guan, X., Delo, D., Atala, A. and Soker, S.: In Vitro Cardiomyogenic Potential of Human Amniotic Fluid Stem Cells., *J Tissue Eng Regen Med 5*, 220, 2011 (*10932*)
	Rat, adult	Cardiomyocytes	Collagenase Type 2: 0.025%	see reference	Louch, W., Sheehan, K. and Wolska, B.: Methods in Cardiomyocyte Isolation, Culture, and Gene Transfer., *J Mol Cell Cardiol 51*, 288- 98, 2011 (*11014*)
	Rat, Wistar, male	Cardiomyocytes	NCIS kit: per instructions	L-15	Brinckmann, M., Kaschina, E., Altarche-Xifro, W., Curato, C., Timm, M., Grzesiak, A., Dong, J., Kappert, K., Kintscher, U., Unger, T. and Li, J.: Estrogen Receptor Alpha Supports Cardiomyocytes Indirectly Through Post-Infarct Cardiac c-kit+ Cells., *J Mol Cell Cardiol 47*, 66, 2009 (*10538*)
	Rat, neonatal	Cardiomyocytes	NCIS kit: per instructions	L-15	Smith, M., Huang, Y. and Deshmukh, M.: Skeletal Muscle Differentiation Evokes Endogenous XIAP to Restrict the Apoptotic Pathway., *PLoS ONE 4*, e5097, 2009 (*10539*)
	Rat, adult	Myocytes	Collagenase Type 2: 0.05% Protease XIV: 0.02%	Media 199	Xu, X. and Colecraft, H.: Primary Culture of Adult Rat Heart Myocytes., *J Vis Exp 28*, 1308, 2009 (*10689*)
	Rat, SD, 200-250 g	Cardiomyocytes	Collagenase Type 1: 0.05% Hyaluronidase: see reference Protease: see reference	Krebs-Henseleit	Farkas, A., Acsai, K., Nagy, N., Toth, A., Fulop, F., Seprenyi, G., Birinyi, P., Nanasi, P., Forster, T., Csanady, M., Papp, J., Varrro, A. and Farkas, A.: Na(+)/Ca(2+) Exchanger Inhibition Exerts a Positive Inotropic Effect in the Rat Heart, but Fails to Influence the Contractility of the Rabbit Heart., *Br J Pharmacol 154*, 93, 2008 (*10509*)
	Rat, SD, 1-2 day	Cardiomyocytes	NCIS kit: per instructions	L-15	Kim, M., Oh, J., Sakata, S., Liang, I., Park, W., Hajjar, R. and Lebeche, D.: Role of Resistin in Cardiac Contractility and Hypertrophy., *J Mol Cell Cardiol 45*, 270, 2008 (*10540*)
	Rat, SD, 2 day	Cardiomyocytes	Collagenase Type 2: 0.1%	DMEM/F-12	Jang, J., Ku, S., Kim, J., Choi, K., Kim, Y., Kim, H., Oh, S., Lee, E., Cho, H., Song, Y., Lee, S., Lee, S., Suh, C., Kim, S., Moon, S. and Choi, Y.: Notch Inhibition Promotes Human Embryonic Stem Cell- Derived Cardiac Mesoderm Differentiation., *Stem Cells 26*, 2782, 2008 (*10546*)
	Rat, SD, male, 225- 250g	Cardiomyocytes	Collagenase Type 2: 0.1%	J-MEM	Kubli, D., Quinsay, M., Huang, C., Lee, Y., Gustafsson, A.: Bnip3 Functions as a Mitochondrial Sensor of Oxidative Stress During Myocardial Ischemia and Reperfusion., *Am J Physiol Heart Circ Physiol 295*, H2025, 2008 (*10596*)
	Rat, 2-3 day	Cardiomyocytes	Collagenase Type 2: 0.05% Pancreatin: 0.1%	DMEM	LaFramboise, W., Scalise, D., Stoodley, P., Graner, S., Guthrie, R., Magovern, J and Becich, M.: Cardiac Fibroblasts Influence Cardiomyocyte Phenotype in Vitro., *Am J Physiol Cell Physiol 292*, C1799-808, 2007 (*10506*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat, neonatal	Cardiomyocytes	NCIS kit: per instructions	L-15	Robinet, A., Millart, H., Oszust, F., Hornebeck, W. and Bellon, G.: Binding of Elastin Peptides to S-Gal Protects the Heart Against Ischemia/Reperfusion Injury by Triggering the RISK Pathway., *FASEB J 21*, 1968, 2007 (*10537*)
	Rat	Ventricular fibroblasts	Trypsin: 0.06% Collagenase: 100 u/ml	ADS Buffer: see reference	Jenkins, C., Milsted, A., Doane, K., Meszaros, G., Toot, J. and Ely, D.: A Cell Culture Model using Rat Coronary Artery Adventitial Fibroblasts to Measure Collagen Production., *BMC Cardiovasc Disord 7*, 13, 2007 (*11619*)
	Rat, SD, 300-350 g	Cardiomyocytes	Collagenase Type 2: 0.05% Hyaluronidase: 0.02%	DMEM	Niederbichler, A., Hoesel, L., Westfall, M., Gao, H., Ipaktchi, K., Sun, L., Zetoune, F., Su, G., Arbabi, S., Sarma, J., Wang, S., Hemmila, M., Ward, P.: An Essential Role for Complement C5a in the Pathogenesis of Septic Cardiac Dysfunction, *J Exp Med 203*, 53-61, 2006 (*10159*)
	Rat, SD, male	Ventricular myocytes	Collagenase: 0.13% Hyaluronidase: 0.06%	DMEM	Stagg, M., Coppen, S., Suzuki, K., Varela-Carver, A., Lee, J., Brand, N., Fukushima, S., Yacoub, M., Terracciano, C.: Evaluation of Frequency, Type, and Function of Gap Junctions Between Skeletal Myoblasts Overexpressing Connexin43 and Cardiomyocytes: Relevance to Cell Transplantation, *FASEB J 20*, 744-6, 2006 (*10275*)
	Rat, SD, 200-250 g	Ventricular myocytes and mesenteric arterial SMC	Collagenase Type 2: 0.06% Papain: 0.175%	Krebs-Ringer	Lu, T., Ye, D., Wang, X., Seubert, J., Graves, J., Bradbury, J., Zeldin, D., Lee, H.: Cardiac and Vascular KATP Channels in Rats are Activated by Endogenous Epoxyeicosatrienoic Acids Through Different Mechanisms, *J Physiol 575*, 627-44, 2006 (*10293*)
	Rat, Wistar, neonatal	Cardiomyocytes	NCIS kit: per instructions	L-15	Butler, T., Au, C., Yang, B., Egan, J., Tan, Y., Hardeman, E., North, K., Verkman, A. and Winlaw, D.: Cardiac Aquaporin Expression in Humans, Rats, and Mice., *Am J Physiol Heart Circ Physiol 291*, H705, 2006 (*10541*)
	Rat, 1-2 day	Cardiomyocytes	NCIS kit: per instructions	DMEM/F-12	Pedram, A., Razandi, M., Aitkenhead, M., and Levin, E: Estrogen Inhibits Cardiomyocyte Hypertrophy in vitro. Antagonism of Calcineurin-related Hypertrophy through Induction of MCIP1, *J Biol Chem 280*, 26339, 2005 (*9993*)
	Rat, SD, male, 250- 300 g	Cardiomyocytes	Collagenase Type 2: 250 u/ml	Cardioplegic solution	Head, B., Patel, H., Roth, D., Lai, N., Niesman, I., Farquhar, M. and Insel, P.: G- Protein-Coupled Receptor Signaling Components Localize in Both Sarcolemmal and Intracellular Caveolin-3- Associated Microdomains in Adult Cardiac Myocytes., *J Biol Chem 280*, 31036-44, 2005 (*10372*)
	Rat, Wistar, 1-3 day	Cardiomyocytes	NCIS kit: per instructions	L-15	Castillo, A., Ruzmetov, N., Harvey, K., Stillwell, W., Zaloga, G. and Siddiqui, R.: Docosahexaenoic Acid Inhibits Protein Kinase C Translocation/Activation and Cardiac Hypertrophy in Rat Cardiomyocytes., *J Mol Genet Med 1*, 18, 2005 (*10642*)
	Rat, SD, 2-4 day	Cardiomyocytes, fibroblasts	Trypsin: 0.1% Collagenase: 0.1%	Medium 199	Entcheva, E., Bien, H, Yin L., Chung, C., Farrell, M., and Kostov, Y.: Functional Cardiac Cell Constructs on Cellulose-based Scaffolding, *Biomaterials 25(26)*, 5753, 2004 (*9840*)
	Rat, SD, 1-2 day	Cardiomyocytes	NCIS kit: per instructions	L-15	Muller-Bore, B., Cascio, W., Anderson, P., Snowwaert, J., Frye, J., Desai, N., Esch, G., Brackham, J., Bagnell, C., Coleman, W., Grisham, J., and Malouf, N.: Adult- derived Liver Stem Cells Acquire a Cardiomyocyte Structural and Functional Phenotype ex vivo, *Am J Pathol 165*, 135, 2004 (*9991*)
	Rat,1-2 day	Cardiomyocytes	NCIS kit: per instructions	DMEM	Natarajan, A., Rong, Q., Katchman, A., and Ebert, S.: Intrinsic Cardiac Catecholamines Help Maintain Beating Activity in Neonatal Rat Cardiomyocyte Cultures, *Pediatr Res 56*, 411, 2004 (*9992*)
	Rat, 1 day	Cardiomyocytes	NCIS kit: per instructions	F-10	Chen, Z., Ge, Y., and Kang J.: Down-regulation of the M6P/IGF-II Receptor Increases Cell Proliferation and Reduces Apoptosis in Neonatal Rat Cardiac Myocytes, *BMC Cell Biol 5*, 15, 2004 (*9995*)
	Rat, neonatal	Cardiac myocytes	Collagenase Type 2: 0.5%	HBSS	Chen, H., Mullett, S., Stewart, A.: Vgl-4, A Novel Member of the Vestigial-Like Family of Transcription Cofactors, Regulates Alpha1-Adrenergic Activation of Gene Expression in Cardiac Myocytes, *J Biol Chem 279*, 30800-6, 2004 (*10138*)
	Rat, male, 250-300 g	Cardiomyocytes	Collagenase Type 1: 0.03% Protease: 0.01%	HBSS	Hunton, D., Zou, L., Pang, Y., Marchase, R.: Adult Rat Cardiomyocytes Exhibit Capacitative Calcium Entry, *Am J Physiol Heart Circ Physiol 286*, H1124-32, 2004 (*10155*)
	Rat, neonatal	Cardiomyocytes	Collagenase Type 2: 0.1%	DMEM	Tamamori-Adachi, M., Hayashida, K., Nobori, K., Omizu, C., Yamada, K., Sakamoto, N., Kamura, T., Fukuda, K., Ogawa, S., Nakayama, K. and Kitajima, S.: Down-Regulation of p27 Promotes Cell Proliferation of Rat Neonatal Cardiomyocytes Induced by Nuclear Expression of Cyclin D1 and CDK4, *J Biol Chem 2279*, 50429, 2004 (*10497*)
	Rat, fetal or 3-day	Cardiomyocytes	Collagenase Type 2: 0.1%	HEPES	Tamamori-Adachi, M., Ito, H., Sumrejkanchanakij, P., Adachi, S., Hiroe, M., Shimizu, M., Kawauchi, J., Sunamori, M., Marumo, F., Kitajima, S., Ikeda, M.: Critical Role of Cyclin D1 Nuclear Import in Cardiomyocyte Proliferation, *Circ Res 92*, e12-9, 2003 (*10104*)
	Rat, adult, 220-280g	Cardiomyocytes	Collagenase Type 2: 178 u/ml Hyaluronidase: 0.01%	Krebs- Henseleit, CF	Gordon, J., Dusting, G., Woodman, O., Ritchie, R.: Cardioprotective Action of CRF Peptide Urocortin Against Simulated Ischemia in Adult Rat Cardiomyocytes, *Am J Physiol Heart Circ Physiol 284*, H330-6, 2003 (*10101*)
	Rat, 50 g	Ventricular myocytes	Collagenase: 223 u/ml Hyaluronidase: 0.01% Trypsin: 0.002%	Medium 199	Aberle II NS, and Ren J.: Experimental Assessment of the Role of Acetaldehyde in Alcoholic Cardiomyopathy, *Biol Proced Online 5*, 1, 2003 (*9835*)
	Rat, neonatal	Cardiomyocytes	NCIS kit: per instructions	L-15	Li, T., Ito, H., Kajiwara, K., and Hamano, K.: Long-Term Survival of Xenografted Neonatal Cardiomyocytes by Adenovirus-Mediated CTLA4-Ig Expression and CD40 Blockade, *Circulation 108*, 1760, 2003 (*9990*)
	Rat, SD, 200-300 g	Cardiomyocytes	Collagenase Type 2: 0.05-0.1%	Joklik's MEM	Swift, L., McHowat, J., Sarvazyan, N.: Inhibition of Membrane-Associated Calcium-Independent Phospholipase A2 as a Potential Culprit of Anthracycline Cardiotoxicity, *Cancer Res 63*, 5992-8, 2003 (*10280*)
	Rat, SD, 175-200g	Cardiomyocytes	Collagenase Type 2: 0.05% Deoxyribonuclease I: 0.02%	Krebs-Ringer	Tardif, A., Julien, N., Chiasson, J., Coderre, L.: Stimulation of Glucose Uptake by Chronic Vanadate Pretreatment in Cardiomyocytes Requires PI 3-kinase and p38 MAPK Activation, *Am J Physiol/Endo 284*, E1055-64, 2003 (*10282*)
	Rat, SD, pregnant female	Peritoneal mast	Hyaluronidase: 100 u/ml	DMEM (see reference)	DeAlmeida, A., Mustin, D., Forman, M., Brower, G., Janicki, J., and Carver, W.: Effects of Mast Cells on the Behavior of Isolated Heart Fibroblasts: Modulation of Collagen Remodeling and Gene Expression, *J Cell Physiol 191*, 51, 2002 (*1296*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat, neonatal, adult, 17 day	Ventricular cardiomyocytes	Collagenase Type 2: 0.7-1%	DMEM	Lam, M., Bartoli, M., and Claycomb, W.: The 21-day Postnatal Rat Ventricular Cardiac Muscle Cell in Culture as an Experimental Model to Study Adult Cardiomyocyte Gene Expression, *Mol Cell Biochem 229*, 51, 2002 (*9842*)
	Rat, 1 day	Cardiomyocytes	NCIS kit: per instructions	L-15	Yang, Y., Liao, H., Ke, Q., Cai, J., Xiao, Y., and Morgan, J.: Enhancement of Nitric Oxide Production by Methylecgonidine in Cultured Neonatal Rat Cardiomyocytes, *Br J Pharmacol 135*, 188, 2002 (*9994*)
	Rat, female, 250-300 g	Ventricular myocytes	Collagenase Type 2: 0.1%	Ringer solution	Liu, Q., Hofmann, P.: Antiadrenergic Effects of Adenosine A(1) Receptor-Mediated Protein Phosphatase 2a Activation in the Heart, *Am J Physiol Heart Circ Physiol 283*, H1314-21, 2002 (*10175*)
	Rat, Wistar, 1 day	Cardiomyocytes	Collagenase Type 2: 80u/ml	M199	Shimizu, T., Yamato, M., Isoi, Y., Akutsu, T., Setomaru, T., Abe, K., Kikuchi, A., Umezu, M., Okano, T.: Fabrication of Pulsatile Cardiac Tissue Grafts Using a Novel 3-Dimensional Cell Sheet Manipulation Technique and Temperature-Responsive Cell Culture Surfaces, *Circ Res 90*, e40, 2002 (*10212*)
	Rat, male, 6-12 months old	Cardiac myocytes	Protease: 0.55 u/ml	Tyrode's solution	Kitta, K., Day, R., Ikeda, T., and Suzuki, Y.: Hepatocyte Growth Factor Protects Cardiac Myocytes Against Oxidative Stress-Induced Apoptosis, *Free Radic Biol Med 31 (7)*, 902, 2001 (*1061*)
	Rat, Harlan SD, pup	Cardiomyocytes	Trypsin:	DMEM/Ham's F-12	Schwartzbauer, G., and Robbins, J.: The Tumor Suppressor Gene PTEN Can Regulate Cardiac Hypertrophy and Survival, *J Biol Chem 276*, 35786, 2001 (*1140*)
	Rat, SD, newborn	Cardiac myocytes	NCIS kit: per instructions	L-15	Rahman A, Alam M, Rao S, Cai L, Clark LT, Shafiq S, and Siddiqui MA: Differential effects of doxorubicin on atrial natriuretic peptide expression in vivo and in vitro, *Biol Res 34(3-4)*, 195, 2001 (*9849*)
	Rat, adult	Ventricular myocytes	Collagenase: 223 u/ml Hyaluronidase: 0.01% Trypsin: 0.002%	Tyrode solution	Ren J, and Wold LE.: Measurement of Cardiac Mechanical Function in Isolated Ventricular Myocytes from Rats and Mice by Computerized Video-Based Imaging, *Biol Proced Online 3*, 43, 2001 (*9852*)
	Rat, SD, male	Cardiomyocytes	Collagenase Type 2: 140 u/ml	Krebs-Henseleit	Dai, L., Brookes, P., Darley- Usmar, V., and Anderson P.: Bioenergetics in Cardiac Hypertrophy: Mitochondrial Respiration as a Pathological Target of NO, *Am J Physiol/Heart 281*, H2261-H2269, 2001 (*10065*)
	Rat, neonatal	Cardiomyocytes	NCIS kit: per instructions	DMEM/M199	Guo, K., Searfoss, G., Krolikowski, D., Pagnoni, M., Franks, C., Clark, K., Yu, K., Jaye, M., Ivashchenko, Y.: Hypoxia Induces the Expression of the Pro-Apoptotic Gene BNIP3, *Cell Death Differ 8*, 367-76, 2001(*10153*)
	Rat, Wistar, female	Ventricular myocytes	Collagenase Type 2: 0.1%	Ringer solution	Pyle, W, Lester, J, and Hofmann, P.: Effects of Kappa-opioid receptor activation of myocardium, *Am J Physiol Heart Circ Physiol 281*, H669, 2001 (*10176*)
	Rat, SD, 1-2 day	Cardiomyocytes	Trypsin: 0.01% Collagenase Type 2: 0.08%	HBSS	Arutunyan, A., Webster, D., Swift, L., Sarvazyan, N.: Localized Injury in Cardiomyocyte Network: A New Experimental Model of Ischemia-Reperfusion Arrhythmias, *Am J Physiol Heart Circ Physiol 280*, H1905-15, 2001 (*10315*)
	Rat, newborn	Atrial	Trypsin: 0.06%	DMEM	Kim, D., and Pleumsamran, A.: Cytoplasmic Unsaturated Free Fatty Acids Inhibit ATP- Dependent Gating of the G Protein-gated K^+ Channel, *J Gen Physiol 115*, 287, 2000 (*1137*)
	Rat, 1-2 day	Cardiomyocytes	Collagenase Type 1: 84 u/ml Pancreatin: 0.05%	M199 medium	Bueno, O., De Windt, L., Tymitz, K., Witt, S., Kimball, T., Klevitsky, R., Hewett, T., Jones, S., Lefer, D., Peng, C., Kitsis, R., and Molkentin, J.: The MEK1- ERK1/2 Signaling Pathway Promotes Compensated Cardiac Hypertrophy in Transgenic Mice, *EMBO J 19(23)*, 6341, 2000 (*9836*)
	Rat, Winstar, 1-2 day	Ventricular myocytes	Collagenase Type 2: 0.08%	DMEM	Maki, T., Horio, T., Yoshihara, F., Suga, S., Takeo, S., Matsuo, H., and Kangawa, K.: Effect of Neutral Endopeptidase Inhibitor on Endogenous Atrial Natriuretic Peptide as a Paracrine Factor in Cultured Cardiac Fibroblasts, *Br J Pharmacol 131(6)*, 1204, 2000 (*9844*)
	Rat, SD, adult female	Heart microvascular cells	CLSPA: 250u/ml Papain: 5 u/ml Elastase: 0.8 u/ml	L-15	Puri S, Bansal DD, Uskokovic MR, and MacGregor RR.: Induction of tissue plasminogen activator secretion from rat heart microvascular cells by fM 1,25(OH)(2)D(3), *Am J Physiol/Endo 278(2)*, E293, 2000 (*9845*)
	Rat, SD, male, 250- 300g	Cardiomyocytes	Collagenase Type 2: 0.06%	M199	Sun, L., Chang, J., Kirchhoff, SR., and Knowlton, A.: Activation of HSF and Selective Increase in Heat-Shock Proteins by Acute Dexamethasone Treatment, *Am J Physiol Heart Circ Physiol 278(4)*, H1091, 2000 (*9861*)
	Rat, Wistar, 2 day	Cardiomyocytes	NCIS kit: per instructions	DMEM-F12	Cowan, D., Poutias, D., Del Nido, P., and McGowan, F. Jr.: CD14-Independent Activation of Cardiomyocyte Signal Transduction by Bacterial Endotoxin, *Am J Physiol Heart Circ Physiol 279*, H619, 2000 (*9996*)
	Rat, neonatal	Cardiomyocytes	NCIS kit: per instructions	L-15	Webster, D., and Patrick, D.: Beating Rate of Isolated Neonatal Cardiomyocytes is Regulated by the Stable Microtubule Subset, *Am J Physiol Heart Circ Physiol 278*, H1653, 2000 (*9997*)
	Rat, Lewis, adult male, 300-350-g	Aorta, smooth muscle	Trypsin: 0.025%	Medium 199 with 20% FBS medium	Kim, B., Nikolovski, J., Bonadio, J., Smiley, E., and Mooney, D.: Engineered Smooth Muscle Tissues: Regulating Cell Phenotype with the Scaffold, *Exp Cell Res 251*, 318, 1999 (*1063*)
	Rat, 10-15 newborn, 1-2 days old	Atrial	Trypsin: 0.03%	HBSS or EBSS	Nemec, J., Wickman, K., and Clapham, D.: G*By* Binding Increases the Open Time of I_{KACh}: Kinetic Evidence for Multiple G*By* Binding Sites, *Biophys J 76*, 246, 1999 (*1066*)
	Rat, 1-3 day	Cardiomyocytes	Collagenase Type 2: 80u/ml Pancreatin: 0.06%	DMEM/F12	Adderley, S., and Fitzgerald, D.: Oxidative Damage of Cardiomyocytes is Limited by Extracellular Regulated Kinases 1/2-Mediated Induction of Cyclooxygenase- 2, *J Biol Chem 274*, 5038, 1999 (*9833*)
	Rat, 1-2 day	Cardiomyocytes	Pancreatin: 0.06% Collagenase Type 2: 95 u/ml	DMEM	Reinecke, H., Zhang, M., Bartosek, T., and Murry, C.: Survival, Integration, and Differentiation of Cardiomyocyte Grafts: A Study in Normal and Injured Rat Hearts, *Circulation 100(2)*, 193, 1999 (*9851*)
	Rat, adult and neonatal	Cardiomyocytes	Collagenase Type 4: 0.12%-adult Collagenase Type 2: 0.05%-neonatal	DMEM/medium 199	Richards, S., Jaconi, M., Vassort, G., and Puceat, M.: A Spliced Variant of AE1 Gene Encodes a Truncated Form of Band 3 in Heart: The Predominant Anion Exchanger in Ventricular Myocytes, *J Cell Sci 112*, 1519, 1999 (*9853*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat, Wistar, male	Cardiomyocytes	Collagenase Type 2: 228 u/ml	Joklik MEM	Sambandam, N., Abrahani, M., St Pierre, E., Al-Atar, O., Cam, M., and Rodrigues, B.: Localization of Lipoprotein Lipase in the Diabetic Heart: Regulation by Acute Changes in Insulin, *Arterioscler Thromb Vasc Biol 19(6)*, 1526, 1999 (*9855*)
	Rat, 1-2 day	Cardiomyocytes	NCIS kit: per instructions	RPMI	Matsui, T., Li, Ling, Del Monte, F., Fukui, Y., Franke, T., Hajjar, R., Rosenzweig, A.: Adenoviral Gene Transfer of Activated Phosphatidylinositol 3'-Kinase and Akt Inhibits Apoptosis of Hypoxic Cardiomyocytes In Vitro, *Circulation 100*, 2373-9, 1999 (*10121*)
	Rat	Thoracic aorta, smooth muscle	Elastase: 0.02%	(see reference)	Zilberman, A., Dave, V., Miano, J., Olson, E., and Periasamy, M.: Evolutionary Conserved Promoter Region Containing CArg-Like Elements is Crucial for Smooth Muscle Myosin Heavy Chain Gene Expression, *Circ Res 82*, 566, 1998 (*1064*)
	Rat, SD, 1 day	Cardiomyocytes	NCIS kit: per instructions	DMEM/F-12	Wagner, D., Combes, A., McTiernan, C., Sanders, V., Lemster, B., Feldman, A.: Adenosine Inhibits Lipopolysaccharide-Induced Cardiac Expression of Tumor Necrosis Factor-Alpha, *Circ Res 82*, 47-56, 1998 (*10213*)
	Rat, SD, 300-350 g	Cardiomyocytes	Collagenase Type 2: 0.04%	see reference	Yu, L., Netticadan, T., Xu, Y., Panagia, V., Dhalla, N.: Mechanisms of Lysophosphatidylcholine- Induced Increase in Intracellular Calcium in Rat Cardiomyocytes, *J Pharmacol Exp Ther 286*, 1-8, 1998 (*10289*)
	Rat, SD, female, 200g	Ventricular cardiac myocytes	Collagenase Type 2: 0.5% Hyaluronidase: 0.2%	Krebs-Henseleit buffer	Westfall, M., Rust, E., Metzger, J.: Slow Skeletal Troponin I Gene Transfer, Expression, and Myofilament Incorporation Enhances Adult Cardiac Myocyte Contractile Function, *Proc Natl Acad Sci U S A 94*, 5444-9, 1997 (*10178*)
	Rat, Wistar, 1 day	Cardiomyoctes	Collagenase Type 2: 80 u/ml	HBSS	Kinugawa, K., Kohmoto, O., Yao, A., Serizawa, T., and Takahashki, T.: Cardiac Inducible Nitric Oxide Synthase Negatively Modulates Myocardial Function in Cultured Rat Myocytes, *Am J Physiol 272*, H35-47, 1997 (*10209*)
	Rat, neonatal, 5-day	Cardiomyocytes	Trypsin: 0.05%	DMEM	Vanwinkle, W., Snuggs, M., and Buja, L.: Cardiogel: A Biosynthetic Extracellular Matrix for Cardiomyocyte Culture, *In Vitro Cell Dev Biol Anim 32*, 478, 1996 (*1172*)
	Rat, SD, 250-300 g	Cardiomyocytes	Collagenase Type 2: 0.05%	Joklik's	Sharma, V., Colecraft, H., Wang, D., Levey, A., Grigorenko, E., Yeh, H., and Sheu, S.: Molecular and Functional Identification of M1 Muscarinic Acetylcholine Receptors in Rat Ventricular Myocytes, *Circ Res 79(1)*, 86, 1996 (*9857*)
	Rat, SD, fetal and neonatal	Cardiomyocytes	Collagenase: 0.1% Trypsin: 0.2%	PBS	Li, R., Mickle, D., Weisel, R., Zhang, J., Mohabeer, M.: In Vivo Survival and Function of Transplanted Rat Cardiomyocytes, *Circ Res 78*, 283-8, 1996 (*10304*)
	SD, SHR or WKY	Cardiomyocytes	NCIS kit: per instructions	HBSS	MacGregor, R., Klein, R., and Bansal, D.: Secretion of Plasminogen Activator Activity from Neonatal Rat Heart Cells is Regulated by Hormones and Growth Factors, *Ann N Y Acad Sci 752*, 331, 1995 (*13*)
	Rat, SD, male, 200- 250 g	Myocytes Ventricles	Collagenase: 0.07%	Joklik's MEM	Laughlin, M., Schaeffer, M., and Sturek, M.: Effect of Exercise Training on Intracellular Free Ca^{2+} Transients in Ventricular Myocytes of Rats, *Am J Physiol 73*, 1141, 1992 (*773*)
	Rat, SD, female, 60- 90 days	Myocardial	Collagenase Type 2: 0.1%	Joklik's MEM, Kreb's-Henseleit buffer, CF	Welder, A.A., Grant, R., Bradlaw, J., and Acosta, D.: A Primary Culture System of Adult Rat Heart Cells for the Study of Toxicologic Agents, *In Vitro Cell Dev Biol 27*, 921, 1991 (*479*)
	Rat, SD, adult, female, 180-220 g	Cardiomyocytes	Collagenase: 0.11%	(see reference)	Fischer, Y., Rose, H., and Kammermeier. H.: Highly Insulin-Responsive Isolated Rat Heart Muscle Cells Yielded By a Modified Isolation Method, *Life Sci 49*, 1679, 1991 (*1173*)
	Rat, neonatal, 1-4 days	Cardiomyocytes	Collagenase Type 2: 0.12%	Krebs-Henseleit Buffer, CF	Marino, T.A., Walter, R.,Cobb, E., Palasiuk, M., Parsons, T., and Mercer, W.E.: Effects of Norepinephrine on Neonatal Rat Cardiocyte Growth and Differentiation, *In Vitro Cell Dev Biol 26*, 229, 1990 (*433*)
	Rat (also bovine)	Heart Adrenal chromaffin Paraneurons	Trypsin: 0.06%	25mM HEPES buffered Locke's solution, CMF	Trifaro, J., Tang, R., and Novas, M.: Monolayer Co- Culture of Rat Heart Cells and Bovine Adrenal Chromaffin Paraneurons, *In Vitro Cell Dev Biol 26*, 335, 1990 (*438*)
	Rat, adult, female	Myocytes	Collagenase Type 2: 0.05%	Joklik's MEM	Nag, A.C., Lee, M., and Kosiur, J.R.: Adult Cardiac Muscle Cells in Long-Term Serum-Free Culture:Myofibrillar Organization and Expression of Myosin Heavy Chain Isoforms, *In Vitro Cell Dev Biol 26*, 464, 1990 (*442*)
	Rats	Ventricular Cardiomyocytes	Collagenase Type 2: 0.05 - 0.08%	See reference	Engelmann, G., McTiernan, C., Gerrity, R., and Samarel, A.: Serum-Free Primary Cultures of Neonatal Rat Cardiomyocytes and Molecular Applications, *Technique 2 (6)*, 279, 1990 (*1292*)
	Rat,SD, albino, 10-14 weeks	Myocytes	Collagenase Type 1: 100 u/ml and 150 u/ml	Krebs Ringer bicarbonate buffer	Berg, I., Guse, A.H., and Gercken, G.: Carbamoylcholine-Induced Accumulation of Inositol Mono-,Bis-,Tris-, And Tetrakisphosphates In Isolated Cardiac Myocytes From Adult Rats, *Biochim Biophys Acta 1010*, 100, 1989 (*315*)
	Rat, SD, adult, female, 175 - 225 g	Myocytes	Collagenase: 0.1%	Joklik's medium	Bugaisky, L.B. and Zak, R.: Differentiation of Adult Rat Cardiac Myocytes in Cell Culture, *Circ Res 64*, 493, 1989 (*367*)
	Rat, SD, male, 250 - 350 g	Myocytes, ventricular	Collagenase Type 1: 90 and 100 u/ml	Joklik's solution with and without calcium	De Young, M., Giannattasio, B., and Scarpa, A.: Isolation of Calcium-Tolerant Atrial And Ventricular Myocytes From Adult Rat Heart, *Methods Enzymology Vol. 173*,, , 662, 1989 (*634*)
	Rat, SD, 2-4 day old	Cardiomyocytes Fibroblasts	Trypsin: 0.1%	HBSS	Toraason, M., Luken, M., Breitenstein, M., Krueger, J., and Biagini, R.: Comparative Toxicity of Allylamine and Acrolein in Cultured Myocytes and Fibroblasts from Neonatal Rat Heart, *Toxicology 56*, 107, 1989 (*672*)
	Rat, SD, male	Aortic smooth muscle	Trypsin: 0.05%	DMEM	Cornwell, T., and Lincoln, T.: Regulation of Intracellular Ca^{2+} Levels in Cultured Vascular Smooth Muscle Cells, *J Biol Chem 264 (2)*, 1146, 1989 (*867*)
	Rat, adult, 150-200 g	Myocytes, atria	Collagenase Type 1: 100 u/ml	Kreb's Ringer bicarbonate - HEPES buffer	McMahon, K.K.: A Study of Adult Rat Atrial Myocyte Attachment to Extricellular Matrix Components and Long Term Culture, *Biology of Isolated Adult Cardiac Myocytes*,(Clark, Decker, Borg, Eds), Elsevier Science Publishing Co. Inc., 318, 1988 (*680*)

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TISSUE TABLES

Heart

Heart

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat, SD	Myocytes	Collagenase Type 2: 0.1%	Kreb's Ringer w/ calcium	Buxton, I.L.O. and Doggwiler, K.O.: Alpha1- Adrenergic Receptor Signal Transduction in the Adult Rat Cardiac Myocyte, *Biology of Isolated Adult Cardiac Myocytes*,(Clark, Decker, Borg, eds), , 298, 1988 (*712*)
	Rat, SD, male, 250- 350 g	Myocytes, heart	Hyaluronidase: 0.03%	Bicarbonate-buffered medium	Kim, D. and Smith, T.W.: Temporal Variation in Contractile State And [Ca++] in Isolated Adult Rat And Guinea Pig Cardiac Myocytes, *Biology of Isolated Adult Cardiac Myocytes*,(Clark, Decker, Borg, eds), Elsevier Science Publishing Co. Inc., 370, 1988 (*728*)
	Rat, Wistar, 2-4 day neonates	Myoblast, cardiac	Trypsin: 0.1%	Standardized Medium (see reference)	Grynberg, A., Degois, M., Guenot, L., and Athias, P.: Primary Rat Cardiac Cell Culture: Diet of the Mother Rats as a Determinant Parameter of Cardiomyoblast Production from Neonates, *Biol Cell 57*, 89, 1986 (*340*)
	Rat, SD	Myocytes	Trypsin: 2.4 u/ml	DMEM	Freerksen, D., Schroedl, N., and Hartzell, C.: Control of Enzyme Activity Levels by Serum and Hydrocortisone in Neonatal Rat Heart Cells Cultured in Serum-Free Medium, *J Cell Physiol 120*, 126, 1984 (*1230*)
	Rat, SD, female, 12 weeks	Myocytes	Collagenase Type 1: 0.06%	Krebs Ringer bicarbonate buffer	Piper, H.M., Probst, I., Schwartz, P., Hutter, F.J., and Spieckermann, P.G.: Culturing of Calcium Stable Adult Cardiac Myocytes, *J Mol Cell Cardiol 14*, 397, 1982 (*718*)
	Rat, male/female, 200-250 g	Muscle	Hyaluronidase: 0.1%	Krebs Ringer phosphate buffer, CMF	Nag, A. and Cheng, M.: Adult Mammalian Cardiac Muscle Cells in Culture, *Tissue Cell 13*, 515, 1981 (*671*)
	Rat, female, adult, 200 - 300 g	Myocytes	Collagenase Type 2: 0.1%	Joklik's MEM	Claycomb, W.C., and Palazzo, M.C.: Culture of The Terminally Differentiated Adult Cardiac Muscle Cell: A Light and Scanning Electron Microscope Study, *Dev Biol 80*, 466, 1980 (*370*)
	Rat, SD, adult, male, 200-250 g	Myocytes	Hyaluronidase: 0.10%	Joklik MEM, CF	Frangakis, C., Bahl, J., McDaniel, H., and Bressler, R.: Tolerance to Physiological Calcium by Isolated Mycocytes from the Adult Rat Heart; An Improved Cellular Preparation, *Life Sci 27*, 815,1980 (*627*)
	Rat, SD, female, 12 wks, 250 g	Myocytes Ventricular myocardium	Collagenase Type 1: 0.20%	Kreb's Ringer bicarbonate buffer	Powell, T., Terrar, D.A., and Twist, V.W.: Electrical Properties of Individual Cells Isolated From Adult Rat Ventricular Myocardium, *J Physiol 302*, 131, 1980 (*719*)
	Rat, 10 wk	Myocytes	Collagenase Type 1: 0.1%	Saline	Bishop, S., Oparil, S., Reynolds, R., and Drummond, J.: Regional Myocyte Size in Normotensive and Spontaneously Hypertensive Rats, *Hypertension 1 (4)*, 378, 1979 (*1190*)
	Rat, male, 200-300 g	Myocytes	Hyaluronidase: 82 u/ml	Kreb's Henseleit buffer	Farmer, B., Harris, R., Jolly, W., Hathaway, D., Katzberg, A., Watanabe, A., Whitlow, A., and Besch, H.: Isolation and Characterization of Adult Rat Heart Cells, *Arch Biochem Biophys 179*, 545, 1977 (*851*)
	Rat, female, albino, 200-250 g	Myocytes	Hyaluronidase: 0.1%	Kreb's Ringers phosphate	Nag, A., Fischman, D., Aumont, M., and Zak, R.: Studies of Isolated Adult Rat Heart Cells: The Surface Morphology and the Influence of Extracellular Calcium Ion Concentration on Cellular Viability, *Tissue Cell 9 (3)*, 419, 1977 (*854*)
	Rat, adult, male, 150-200g	Myocytes	Collagenase: 0.1% Hyaluronidase: 0.1%	MEM CF	Grosso, D., Frangakis, C., Carlson, E., and Bressler, R.: Isolation and Characterization of Myocytes From the Adult Rat Heart, *Prep Biochem 7 (5)*, 383, 1977 (*849*)
	Rat, adult	Myocytes	Collagenase: 0.1%	Perfusing solution	Moustafa, E., Skomedal, T., Osnes, J., and Oye, I.: Cyclic Amp Formation and Morphology of Myocardial Cells Isolated from Adult Heart: Effect of Ca^{2+} and Mg2+, *Biochim Biophys Acta 421*, 411, 1976 (*1171*)
	Rat, SD, albino, male, 180-230 g	Heart ventricles, beating	Collagenase: 0.05-0.2%	Phosphate buffer	Glick, M., Burns, A., and Reddy, W.: Dispersion and Isolation of Beating Cells from Adult Rat Heart, *Anal Biochem 61*, 32, 1974 (*302*)
	Rat, Hebrew Un strain, 3 & 17 months, 150-210 g	Myocytes	Trypsin: 0.05%	Versene buffer	Bierman, E.L., Stein, O., and Stein, Y.: Lipoprotein Uptake and Metabolism by Rat Aortic Smooth Muscle Cells in Tissue Culture, *Circ Res 35*, 136, 1974 (*363*)
	Rat, 2-5 day	Myocytes	Trypsin: 0.01%	Saline A	Speicher, D., and McCarl, R.: Pancreatic Enzyme Requirements for the Dissociation of Rat Hearts for Culture, *In Vitro 10*, 30, 1974 (*494*)
	Rat, SD, male, 150- 200 g	Myocytes	Hyaluronidase: 0.05%	(see reference)	Pretlow II, T., Glick, M., and Reddy, W.: Separation of Beating Cardiac Myocytes from Suspensions of Heart Cells, *Am J Pathol 67 (2)*, 215, 1972 (*1175*)
	Rat, albino, male, 250 g	Myocytes	Hyaluronidase: 0.20%	Hank's solution, CF	Berry, M., Friend, D., and Scheuer, J.: Morphology and Metabolism of Intact Muscle Cells Isolated from Adult Rat Heart, *Circ Res 26*, 679, 1970 (*362*)
	Rat, adult, male, 250 g	Myocytes	Trypsin: 0.1%	Saline A	Vahouny, G.V., Wei, R., Starkweather, R., and Davis, C.: Preparation of Beating Heart Cells From Adult Rats, *Science 167*, 1616, 1970 (*664*)
	Rat, Wistar, 1-4 day old	Myocytes	Trypsin: 0.125%	Gey's BSS	Mark, G., and Strasser, F.: Pacemaker Activity and Mitosis in Cultures of Newborn Rat Heart Ventricle Cells, *Exp Cell Res 44*, 217, 1966 (*853*)
Shellfish	Pacific Oysters	Haemocytes	Trypsin:	L15 medium	Le Duff, R., Lipart, C., and Renault, T.: Primary Culture of Pacific Oyster, Crassostreagigas, heart cells, *J Tiss Cul Meth 16*, 67, 1994 (*752*)
	Clams, 3.0 to 4.5 cm	Myocytes Fibroblasts	Collagenase Type 1: 2%	L15 medium	Wen, C., Kou, G., and Chen, S.: Cultivation of Cells From the Heart of the Hard Clam, *Merretrix lusoria* (Roding), *J Tiss Cul Meth 15*, 123, 1993 (*751*)

Intestine

Intestine

Canine	Dog, adult	Intestinal L-cells	Collagenase Type 1: 75 u/ml	HBSS	Damholt, A., Buchan, A., Kofod, H.: Glucagon-Like Peptide-1 Secretion from Canine L-Cells is Increased by Glucose-Dependent-Insulinotropic Peptide but Unaffected by Glucose, *Endocrinology 139*, 2085-91, 1998 (*10141*)
Human	Human	Lymphocytes	CLSPA: 0.05% Deoxyribonuclease I: 0.00075%	RPMI-1640	Trapecar, M., Khan, S., Roan, N., Chen, T., Telwatte, S., Deswal, M., Pao, M., Somsouk, M., Deeks, S., Hunt, P., Yukl, S. and Sanjabi, S.: An Optimized and Validated Method for Isolation and Characterization of Lymphocytes from HIV+ Human Gut Biopsies., *AIDS Res Hum Retroviruses 33*, S31-S39, 2017 (*11667*)

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TISSUE TABLES

Intestine

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human	Microvessel endothelial	Collagenase Type 2: 0.2%	HBSS	Kessler, S., Rho, H., West, G., Fiocchi, C., Drazba, J. and de la Motte, C.: Hyaluronan (HA) Deposition Precedes and Promotes Leukocyte Recruitment in Intestinal Inflammation., *Clin Transl Sci 1*, 57-61, 2008 (*11545*)
	Human	Lamina propria lymphocytes	Collagenase: 20 u/ml	Medium	Ebert, Ellen.: CD2 Activation of Human Lamina Propria Lymphocytes Reduces CD3 Responsiveness., *Immunology 117*, 71-7, 2006 (*10994*)
	Human	Lamina propria mononuclear cells	Collagenase: 0.02%	HBSS	Kanai, T., Totsuka, T., Uraushihara, K., Makita, S., Nakamura, T., Koganei, K., Fukushima,T., Akiba, H., Yagita, H., Okumura, K., Machida, U., Iwai, H., Azuma, M., Chen, L., Watanabe, M.: Blockade of B7-H1 Suppresses the Development of Chronic Intestinal Inflammation, *J Immunol 171*, 4156-63, 2003 (*10232*)
	Human	Intestinal epithelial	Collagenase Type 4: 72.5 u/ml	HBSS	Fahlgren, A., Hammarstrom, S., Danielsson, A. and Hammarstrom, M.: Increased Expression of Antimicrobial Peptides and Lysozyme in Colonic Epithelial Cells of Patients with Ulcerative Colitis., *Clin Exp Immunol 131*, 90, 2003 (*10358*)
	Human	Mucosal mononuclear cells	Collagenase Type 3: 0.01% Deoxyribonuclease I: 0.01% Soybean Trypsin Inhibitor: 0.01%	RPMI	Stallmach, A., Schaffer, F., Hoffmann, S., Weber, S., Muller-Molaian, I., Schneider, T., Kohne, G., Ecker, K., Feifel, G., Zeitz, M.: Increased State of Activation of CD4 Positive T Cells and Elevated Interferon Gamma Production in Pouchitis, *Gut 43*, 499-505, 1998 (*10240*)
Mouse	Mouse	Lamina propria lymphocytes	Collagenase Type 4: 0.02% Deoxyribonuclease I: 0.01%	HBSS	Emgard, J., Kammoun, H., Garcia-Cassani, B., Chesne, J., Parigi, S., Jacob, J., Cheng, H, Evren, E., Das, S., Czarnewski, P., Sleiers, N. Melo-Gonzalez, F., Kvedaraite, E. Svensson, M. and Scandella, E.: Oxysterol Sensing through the Receptor GPR183 Promotes the Lymphoid-Tissue-Inducing Function of Innate Lymphoid Cells and Colonic Inflammation., *Immunity 48*, 120-132.e8, 2018 (*11678*)
	Mouse, embryonic	Crypt	Collagenase Type 1: 200 u/ml HIS kit: 100 u/ml	DMEM	Ren HJ, Zhang CL, Liu RD, Li N, Li XG, Xue HK, Guo Y, Wang ZQ, Cui J and Ming L: Primary Cultures of Mouse Small Intestinal Epithelial Cells using the Dissociating Enzyme Type I Collagenase and Hyaluronidase., *Braz J Med Biol Res 50*, e5831, 2017 (*11521*)
	Mouse	Intestinal organoids	Collagenase Type 4: 500 u/ml Deoxyribonuclease I: 15 u/ml	Basal Medium	O'Rourke, K., Ackerman, S., Dow, L. and Lowe, S.: Isolation, Culture, and Maintenance of Mouse Intestinal Stem Cells., *Bio Protoc 6*, , 2016 (*11657*)
	Mouse	Lamina propria mononuclear cells	Collagenase Type 3: 400 u/ml Deoxyribonuclease I: 0.001%	HBSS	Seo, S., Kuffa, P., Kitamoto, S., Nagao-Kitamoto, H., Rousseau, J., Kim, Y., Nunez, G. and Kamada, N.: Intestinal Macrophages Arising from CCR2(+) Monocytes Control Pathogen Infection by Activating Innate Lymphoid Cells., *Nat Commun 6*, 8010, 2015 (*11446*)
	Mouse	Lymphocytes	Collagenase Type 1: 100 u/ml	RPMI-1640	Beura, L., Anderson, K., Schenkel, J., Locquiao, J., Fraser, K., Vezys, V., Pepper, M. and Masopust, D.: Lymphocytic Choriomeningitis Virus Persistence Promotes Effector-Like Memory Differentiation and Enhances Mucosal T cell Distribution., *J Leukoc Biol 97*, 217, 2015 (*11459*)
	Mouse, P4	Enteric neural crest progenitors	Neutral Protease: 0.5% Collagenase animal free: 0.05%	DMEM/F12	Hotta, R., Stamp, L., Foong, J., McConnell, S., Bergner, A., Anderson, R., Enomoto, H., Newgreen, D., Obermayr, F., Furness, J. and Young, H.: Transplanted Progenitors Generate Functional Enteric Neurons in the Postnatal Colon., *J Clin Invest 123*, 1182, 2013 (*10914*)
	Mouse	Colon tumor organoids	Collagenase Type 4: 200 u/ml Neutral Protease: 0.01%	DMEM	Xue, X. and Shah, Y.: In Vitro Organoid Culture of Primary Mouse Colon Tumors., *J Vis Exp* , e50210, 2013 (*11254*)
	Mouse	Enteric neurons	Collagenase Type 4: 0.1% Trypsin: 0.05% Deoxyribonuclease I: 400 u/ml	DMEM/F12	Zhang, Y. and Hu, W.: Mouse Enteric Neuronal Cell Culture., *Methods Mol Biol 1078*, 55-63, 2013 (*11597*)
	Mouse	Intestinal organoids	Collagenase Type 1: 800 u/ml Neutral Protease: 0.013%	DMEM	Barthel, E., Speer, A., Levin, D., Sala, F., Hou, X., Torashima, Y., Wigfall, C. and Grikscheit, T.: Tissue Engineering of the Intestine in a Murine Model., *J Vis Exp 70*, e4279, 2012 (*10893*)
	Mouse	Dendritic, macrophages	Collagenase: 0.15% Deoxyribonuclease I: 0.004%	HBSS	Geem, D., Medina-Contreras, O., Kim, W., Huang, C. and Denning T.: Isolation and Characterization of Dendritic Cells and Macrophages from the Mouse Intestine., *J Vis Exp 63*, e4040, 2012 (*10984*)
	Mouse	Lyphocytes	Collagenase Type 4: 0.05% Neutral Protease: 0.1% Deoxyribonuclease I: 200 ug/ml	RPMI 1640	Ruiz, V., Sachdev, M., Zhang, S., Wen, S. and Moss, S.: Isolating, Immunophenotyping and Ex vivo Stimulation of CD4+ and CD8+ Gastric Lymphocytes During Murine Helicobacter Pylori Infection., *J Immunol Methods 384*, 157-63, 2012 (*11531*)
	Mouse, 2-3 month	Enteric neural stem cells	Collagenase: 0.11% Neutral Protease: 0.1% Deoxyribonuclease I: 50 u/ml	M199	Becker, L., Kulkarni, S., Tiwari, G., Micci, M. and Pasricha, P.: Divergent Fate and Origin of Neurosphere- Like Bodies from Different Layers of the Gut., *Am J Physiol Gastrointest Liver Physiol 302*, G958-65, 2012 (*11591*)
	Mouse, neonatal and adult	Myenteric plexus	Collagenase Type 4: 0.025-0.1% Papain: 10 u/ml Deoxyribonuclease I: 100 u/ml	HBSS	Joseph, N., He, S., Quintana, E., Kim, Y., Nunez, G. and Morrison, S.: Enteric Glia are Multipotent in Culture but Primarily Form Glia in the Adult Rodent Gut., *J Clin Invest 121*, 3398, 2011 (*10953*)
	Mouse	Lamina propria lymphocytes	Collagenase Type 1: 0.3% Deoxyribonuclease I: 0.01%	RPMI 1640	Ito, Y., Kanai, T., Totsuka, T., Okamoto, R., Tsuchiya, K., Nemoto, Y., Yoshioka, A., Tomita, T., Nagaishi, T., Sakamoto, N., Sakanishi, T., Okumura, K., Yagita, H. and Watanabe, M.: Blockade of NKG2D Signaling Prevents the Development of Murine CD4+ T Cell-Mediated Colitis., *Am J Physiol Gastrointest Liver Physiol 294*, G199, 2008 (*10947*)
	Mouse	Intestinal mononuclear	Collagenase Type 4: 0.1%	RPMI 1640	Forbes, E., Groschwitz, K., Abonia, J.P., Brandt, E., Cohen, E., Blanchard, C., Ahrens, R., Seidu, L., McKenzie, A., Strait, R., Finkelman, F., Foster, P., Matthaei, K., Rothenberg, M. and Hogan, S.: IL-9- and Mast Cell-Mediated Intestinal Permeability Predisposes to Oral Antigen Hypersensitivity., *J Exp Med 205*, 897, 2008 (*10948*)
	Mouse, *Mastomys natalensis*	Enterochromaffin cells	Collagenase: 0.025% Pronase E: 0.07%	HBSS	Kidd, M., Modlin, I., Eick, G. and Champaneria, M.: Isolation, Functional Characterization, and Transcriptome of Mastomys Ileal Enterochromaffin Cells., *Am J Physiol Gastrointest Liver Physiol 291*, G778-91, 2006 (*11065*)

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TISSUE TABLES

Intestine

Intestine

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse, 7 week	Interstitial cells	Collagenase: 0.04% Trypsin: 0.02%	see reference	Goto, K., Matsuoka, S., Noma, A.: Two Types of Spontaneous Depolarizations in the Interstitial Cells Freshly Prepared from the Murine Small Intestine, *J Physiol 559*, 411-22, 2004 (*10145*)
	Mouse, 9-13 day	Interstitial cells of Cajal	Collagenase Type 2: 0.13%	HBSS	Ordag, T., Redelman, D., Miller, L., Horvath, V., Zhong, Q., Almeida-Porada, G., Zanjani, E., Horowitz, B., Sanders, K.: Purification of Interstitial Cells of Cajal by Fluorescence-Activated Cell Sorting, *Am J Physiol Cell Physiol 286*, C448-56, 2004 (*10236*)
	Mouse, 0-15 day	Interstitial cells of Cajal	Collagenase Type 2: 0.13%	Hanks	Lee, Y., Kim, B., Kim, H., Yang, D., Zhu, M., Lee, K., So, I., Kim, K.: TRPC5 as a Candidate for the Nonselective Cation Channel Activated by Muscarinic Stimulation in Murine Stomach, *Am J Physiol/Gastro 284*, G604- 16, 2003 (*10233*)
	Mouse	Lamina propria lymphocytes	Collagenase Type 4: 300 u/ml	PBS	Wu Y, Wang X, Csencsits KL, Haddad A, Walters N, Pascual DW: M cell-targeted DNA vaccination, *Proc Natl Acad Sci U S A 98*, 9318-23, 2001 (*10271*)
	Mouse, F14	Intestinal mesenchymal	Collagenase Type 2: 0.03%	HBSS	Sakagami Y, Inaguma Y, Sakakura T, Nishizuka Y: Intestine-like remodeling of adult mouse glandular stomach by implanting of fetal intestinal mesenchyme, *Cancer Res 44*, 5845-9, 1984 (*10146*)
Rat	Rat, postnatal, adult	Gut neural crest stem	Collagenase Type 4: 0.1% Trypsin: 0.025%	HBSS	Kruger, G., Mosher, J., Bixby, S., Joseph, N., Iwashita, T. and Morrison, S.: Neural Crest Stem Cells Persist in the Adult Gut but Undergo Changes in Self- Renewal, Neuronal Subtype Potential, and Factor Responsiveness., *Neuron 35*, 657, 2002 (*10866*)
	Rat, SD, embryonic	Sciatic nerve and gut neural crest stem	Collagenase Type 4: 0.025% Trypsin: 0.005% Deoxyribonuclease I: 0.05%	HBSS	Bixby, S., Kruger, G., Mosher, J., Joseph, N. and Morrison, S.: Cell-Intrinsic Differences Between Stem Cells from Different Regions of the Peripheral Nervous System Regulate the Generation of Neural Diversity., *Neuron 35*, 643, 2002 (*10890*)
	Rat, male, 18-24 day	Intestinal epithelial	Collagenase Type 1: 0.1%	DMEM	Quaroni, A., Wands, J., Trelstad, R., Isselbacher, K.: Epithelioid Cell Cultures from Rat Small Intestine. Characterization by Morphologic and Immunologic Criteria, *J Cell Biol 80*, 248-65, 1979 (*10144*)

Kidney

Kidney

Avian	Avian, house sparrows	Tubule segments	Collagenase Type 2: 0.1%	HBSS	Goldstein D., Reddy V., and Plaga K.: Second Messenger Production in Avian Medullary Nephron Segments in Response to Peptide Hormones, *Am J Physiol 276*, R847, 1999 (*9873*)
	Avian, chicken	Tubule and glomeruli	Collagenase Type 1: 0.1%	RPMI 1640	Reich, C. and Bonar, R.: Separation of Avian Kidney Tubules and Glomeruli for In Vitro Culture, *Meth Cell Sci 7*, 97, 1982 (*10676*)
Bovine	Bovine	Papillary duct	Hyaluronidase: 0.2%	Keri's buffer HEPES buffered saline	Husted, R., Hayashi, M., and Stokes, J.: Characteristics of Papillary Collecting Duct Cells in Primary Culture, *Am J Physiol 255*, F1160, 1988 (*298*)
Canine	Canine	Renal adipose derived cells	Collagenase Type 1: 0.3%	DMEM	Basu, J., Genheimer, C., Sangha, N., Quinlan, S., Guthrie, K., Kelley, R., Ilagan, R., Jain, D., Bertram, T. and Ludlow, J.: Organ Specific Regenerative Markers in Peri-Organ Adipose: Kidney., *Lipids Health Dis 10*, 171, 2011 (*10665*)
	Dog, 1-5 months	Proximal tubules	Collagenase Type 1: 0.15%	Krebs Ringer bicarbonate buffer	States, B., Reynolds, R., Lee, J., and Segal, S.: Cystine Uptake By Cultured Cells Originating From Dog Proximal Tubule Segments, *In Vitro Cell Dev Biol 26*, 105, 1990 (*426*)
	Dog, mongrel, 20 Kg	Proximal tubular	Deoxyribonuclease I: 0.0125%	(see reference)	Yau, C., Rao, L., and Silverman, M.: Sugar Uptake Into a Primary Culture of Dog Kidney Proximal Tubular Cells, *Can J Physiol Pharmacol 63*, 417, 1985 (*707*)
Fish	Winter flounder (*Pseudopleuronectes americanus*) 200 - 500 g	Renal tubule	Trypsin: 0.2%	CMF solution (see reference)	Dickman, K. and Renfro, J.: Primary Culture of Flounder Renal Tubule Cells:Transepithelial Transport, *Am J Physiol 251*, 424, 1986 (*297*)
Guinea-Pig	Guinea-pig, male, 100 g	Single cells	Trypsin: 0.25%	CF salt solution	Phillips, H.: Dissociation of Single Cells from Lung or Kidney Tissue with Elastase, *In Vitro 8*, 101, 1972 (*538*)
Hamster	Hamster (also rat, SD and Wistar, 150-225 g, rabbit, bovine)	Papillary duct	Hyaluronidase: 0.2%	Keri's buffer HEPES buffered saline	Husted, R., Hayashi, M., and Stokes, J.: Characteristics of Papillary Collecting Duct Cells in Primary Culture, *Am J Physiol 255*, F1160, 1988 (*298*)
Human	Human	Renal adipose derived cells	Collagenase Type 1: 0.3%	DMEM	Basu, J., Genheimer, C., Sangha, N., Quinlan, S., Guthrie, K., Kelley, R., Ilagan, R., Jain, D., Bertram, T. and Ludlow, J.: Organ Specific Regenerative Markers in Peri-Organ Adipose: Kidney., *Lipids Health Dis 10*, 171, 2011 (*10665*)
	Human, adult	Renal tumor cells and proximal tubular epithelial	Collagenase Type 2: 0.1%	DMEM/F12	Valente, M., Henrique, R., Costa, V., Jeronimo, C., Carvalho, F., Bastos, M., Guedes de Pinho, P. and Carvalho, M.: A Rapid and Simple Procedure for the Establishment of Human Normal and Cancer Renal Primary Cell Cultures from Surgical Specimens., *PLoS ONE 6*, e19337, 2011 (*10802*)
	Human	Renal cells	Collagenase Type 4: 300 u/ml Neutral Protease: see reference	HBSS	Presnell, S., Bruce, A., Wallace, S., Choudhury, S., Genheimer, C., Cox, B., Guthrie, K., Werdin, E., Tatsumi-Ficht, P., Ilagan, R., Kelley, R., Rivera, E., Ludlow, J., Wagner, B., Jayo, M. and Bertram, T.: Isolation, Characterization, and Expansion Methods for Defined Primary Renal Cell Populations from Rodent, Canine, and Human Normal and Diseased Kidneys., *Tiss Eng 17*, 261, 2011 (*10882*)
	Human, adult	Renal proximal tubule and cortical fibroblasts	Collagenase Type 2: 383 u/ml	DMEM/F-12	Johnson, D., Saunders, H., Johnson, F., Huq, S., Field, M., and Pollock, C.: Cyclosporin Exerts a Direct Fibrogenic Effect on Human Tubulointerstitial Cells: Roles of Insulin-Like Growth Factor I, Transforming Growth Factor Beta1, and Platelet-Derived Growth Factor, *J Pharmacol Exp Ther 289*, 535-42, 1999 (*10158*)
	Human	Renal cortex	Trypsin: 0.1%	Tissue Culture Grade Water	McAteer, J, Kempson, S., and Evan, A: Culture of Human Renal Cortex Epithelial Cells, *J Tiss Cul Meth 13*, 143, 1991 (*1266*)
	Human	Papillary duct	Collagenase: 400 u/ml	Eagle's MEM- HEPES buffer w/L-glutamine	Trifillis, A. and Kahng, M.: Characterization of an In Vitro System of Human Renal Papillary Collecting Duct Cells, *In Vitro Cell Dev Biol 26*, 441, 1990 (*441*)

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Kidney

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human	Mesangial	Trypsin: 0.25%	DMEM/Ham's F-12	Heieren, M., van der Woude, F., and Balfour Jr., H.: Cytomegalovirus Replicates Efficiently in Human Kidney Mesangial Cells, *Proc Natl Acad Sci U S A 85*, 1642, 1988 (*657*)
	Human, adult	Tubular	Collagenase: 250 u/ml	PBS	Yang, A., Gould-Kostka, J., and Oberley, T.: In Vitro Growth and Differentiation of Human Kidney Tubular Cells on a Basement Membrane Substrate, *In Vitro Cell Dev Biol 23 (1)*, 34, 1987 (*972*)
	Human, adult, 14-66 years	Tubular	Collagenase: 100 u/ml	Joklik's MEM	Trifillis, A., Regec, A., and Trump, B.: Isolation, Culture, and Charaterization of Human Renal Tubular Cells, *J Urol 133*, 324, 1985 (*622*)
	Human	Malignant Stromal	Papain: 0.009%	Sacks solution	Hemstreet, G., Enoch, P., and Pretlow, T.: Tissue Disaggregation of Human Renal Cell Carcinoma with Further Isopyknic and Isokinetic Gradient Purification, *Cancer Res 40*, 1043, 1980 (*973*)
	Human, 24 newborn and stillborn (also rabbit)	Renal	Trypsin: 0.25%	See reference	De Oca, H., and Malinin, T.: Dispersion and Cultivation of Renal Cells After Short-Term Storage of Kidneys, *J Clin Microbiol 2*, 243, 1975 (*986*)
Monkey	Monkey	Kidney	Trypsin: 0.01% - 0.00001%	Eagle's MEM	Melnick, J., and Wallis, C.: Problems Related to the Use of Serum and Trypsin in the Growth of Monkey Kidney Cells, *Dev Biol 37*, 77, 1976 (*706*)
Mouse	Mouse	Kidney	Deoxyribonuclease I: 125 u/ml Protease, *Bacillus Licheniformis*:1%	DPBS	Adam, M., Potter, A. and Potter, S.: Psychrophilic Proteases Dramatically Reduce Single-Cell RNA- Seq Artifacts: A Molecular Atlas of Kidney Development., *Development 144*, 3625-3632, 2017 (*11698*)
	Mouse	Collecting duct epithelial	Collagenase Type 2: 0.1%	DMEM	DiRocco, D., Kobayashi, A., Taketo, M., McMahon, A. and Humphreys, B.: Wnt4/Î²- catenin Signaling in Medullary Kidney Myofibroblasts., *J Am Soc Nephrol 24*, 1399, 2013 (*11059*)
	Mouse	Glomeruli	Collagenase Type 4: 0.1%	RPMI 1640	Kabgani, N., Grigoleit, T., Schulte, K., Sechi, A., Sauer- Lehnen, S., Tag, C., Boor, P., Kuppe, C., Warsow, G., Schordan, S., Mostertz, J., Chilukoti, R., Homuth, G., Endlich, N., Tacke, F. and Weiskirchen, R.: Primary Cultures of Glomerular Parietal Epithelial Cells or Podocytes with Proven Origin., *PLoS ONE 7*, e34907, 2012 (*10871*)
	Mouse	Glomeruli	Collagenase Type 1: 0.1% Deoxyribonuclease I: 100 u/ml	DMEM	Sedrakyan, S., Da Sacco, S., Milanesi, A., Shiri, L., Petrosyan, A., Varimezova, R., Warburton, D., Lemley, K., De Filippo, R. and Perin, L.: Injection of Amniotic Fluid Stem Cells Delays Progression of Renal Fibrosis., *J Am Soc Nephrol 23*, 661-73, 2012 (*11576*)
	Mouse, 10-14 week	Proximal tubule	Collagenase Type 1: 0.1%	See reference	Park, J., Pasupulati, R., Feldkamp, T., Roeser, N. and Weinberg, J.: Cyclophilin D and the Mitochondrial Permeability Transition in Kidney Proximal Tubules after Hypoxic and Ischemic Injury., *Am J Physiol/Renal 301*, F134, 2011 (*10884*)
	Mouse, embryonic	Kidney	Collagenase Type 1: 0.25% Pancreatin: 1.0% Deoxyribonuclease I: 1 u/ml	HBSS	Brown, A., Blank, U., Adams, D., Karolak, M., Fetting, J., Hill, B. and Oxburgh, L.: Isolation and Culture of Cells from the Nephrogenic Zone of the Embryonic Mouse Kidney., *J Vis Exp 50*, e2555, 2011 (*10986*)
	Mouse, adult	Kidney sphere- derived	Collagenase Type 4: 0.1%	Iscove's Modified Dulbecco's	Huang, Y., Johnston, P., Zhang, B., Zakari, A., Chowdhry, T., Smith, R., Marban, E., Rabb, H. and Womer, K.: Kidney-Derived Stromal Cells Modulate Dendritic and T Cell Responses., *J Am Soc Nephrol 20*, 831-41, 2009 (*11466*)
	Mouse, male, 8-16 week	Renal tubular epithelial	Collagenase: 200 u/ml Soybean Trypsin Inhibitor: see reference	HBSS	Breggia, A. and Himmelfarb, J.: Primary Mouse Renal Tubular Epithelial Cells have Variable Injury Tolerance to Ischemic and Chemical Mediators of Oxidative Stress., *Oxid Med Cell Longev 1*, 33, 2008 (*10554*)
	Mouse	Proximal tubule	Collagenase Type 2: 0.013%	see reference	Wright, J., Morales, M., Sousa-Menzes, J., Ornellas, D., Sipes, J., Cui, Y., Cui, I., Hulamm, P., Cebotaru, V., Cebotaru, L., Guggino, W. and Guggino, S.: Transcriptional Adaptation to Clcn5 Knockout in Proximal Tubules of Mouse Kidney., *Physiol Genomics 33*, 341, 2008 (*10589*)
	Mouse, 4 week	Endothelial kidney	Collagenase Type 1: 0.1%	DMEM	Kondo, S., Scheef, E., Sheibani, N. and Sorenson, C.: PECAM-1 Isoform- Specific Regulation of Kidney Endothelial Cell Migration and Capillary Morphogenesis., *Am J Physiol Cell Physiol 292*, C2070, 2007 (*10549*)
	Mouse, adult	Cortex, proximal tubule	Collagenase: 0.15%	DMEM	Syal, A., Schiavi, S., Chakravarty, S., Dwarakanath, V., Quigley, R., Baum, M.: Fibroblast Growth Factor-23 Increases Mouse PGE2 Production In Vivo and In Vitro, *Am J Physiol/Renal 290*, F450-5, 2006 (*10281*)
	Mouse	Kidney mesenchymal	Collagenase: 250 u/ml Neutral Protease: 33.3 u/ml	DMEM/F12	Plotkin, M. and Goligorsky, M.: Mesenchymal Cells from Adult Kidney Support Angiogenesis and Differentiate into Multiple Interstitial Cell Types including Erythropoietin- Producing Fibroblasts., *Am J Physiol Renal Physiol 291*, F902-12, 2006 (*11464*)
	Mouse, 10-12 week	Kidney	Collagenase Type 4: 0.075%	DMEM	Dekel, B., Zangi, L., Shezen, E., Reich-Zeliger, S., Eventov-Friedman, S., Katchman, H., Jacob-Hirsch, J., Amariglio, N., Rechavi, G., Margalit, R. and Reisner, Y.: Isolation and Characterization of Nontubular sca-1+lin- Multipotent Stem/Progenitor Cells from Adult Mouse Kidney., *J Am Soc Nephrol 17*, 3300, 2006 (*11467*)
	Mouse, male, 12-16 week	Renal proximal tubule cells	Collagenase Type 2: 0.1% Soybean Trypsin Inhibitor: 0.25%	DMEM/F-12	Cunningham, R., Xiaofei, E., Steplock, D., Shenolikar, S. and Weinman, E.: Defective PTH Regulation of Sodium- Dependent Phosphate Transport in NHERF-1-/- Renal Proximal Tubule Cells and Wild-Type Cells Adapted to Low-Phosphate Media., *Am J Physiol Renal Physiol 289*, F933, 2005 (*10626*)
	Mouse, male, 2 month	Cortical collecting duct	Collagenase: 54-178 u/ml Protease: see reference	MEM	Sindic, A., Velic, A., Basoglu, C., Hirsch, J., Edemir, B., Kuhn, M. and Schlatter, E.: Uroguanylin and Guanylin Regulate Transport of Mouse Cortical Collecting Duct Independent of Guanylate Cyclase C., *Kidney Int 68*, 1008, 2005 (*10627*)
	Mouse, 6 week	Glomerular mesangial cells	Collagenase Type 4: 0.1%	RPMI 1640	Radeke, H. Janssen-Graalfs, I., Sowa, E., Chouchakova, N., Skokowa, J., Loscher, F., Schmidt, R., Heeringa, P., Gessner, J.: Opposite Regulation of Type II and III Receptors for Immunoglobulin G in Mouse Glomerular Mesangial Cells and in the Induction of Anti-Glomerular Basement Membrane (GBM) Nephritis, *J Biol Chem 277(30)*, 27535, 2002 (*9874*)
	Mouse, 3-7 month	Fibroblasts, mesangial, smooth muscle	Trypsin: 0.25% Collagenase: see reference Soybean Trypsin Inhibitor: 0.05%	DMEM	Bradshaw, A., Francki, A., Motamed, K., Howe, C., Sage, E.: Primary Mesenchymal Cells Isolated From SPARC-Null Mice Exhibit Altered Morphology and Rates of Proliferation, *Mol Biol Cell 10*, 1569-79, 1999 (*10136*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse	Epithelial	Collagenase Type 4: 1%	DMEM /F-12	Taub, M.: Renal Tubule Cells, *Cell & Tissue Culture: Laboratory Procedures Vol. 2*,Doyle, A., Griffiths, J., and Newell, D., John Wiley & Sons, Ltd., 14B:6.1, 1995 (*1279*)
	Mouse, naive SJL (H-2S)	Proximal tubular epithelial	Deoxyribonuclease I: 15 µg/ml	RPMI 1640	Haverty, T., Kelly, C., Hines, W., Amenta, P., Watanabe, M., Harper, R., Kefalides, N., and Neilson, E.: Characterization of a Renal Tubular Epithelial Cell Line Which Secretes the Autologous Target Antigen of Autoimmune Experimental Interstitial Nephritis, *J Cell Biol 107*, 1359, 1988 (*578*)
Porcine	Porcine, hybrid	Kidney	Collagenase Type 1: 0.1%	HBSS	Heussner, A. and Dietrich, D.: Primary Porcine Proximal Tubular Cells as an Alternative to Human Primary Renal Cells in Vitro: an Initial Characterization., *BMC Cell Biol 14*, 55, 2013 (*11090*)
Rabbit	Rabbit	Renal proximal tubular	Collagenase Type 1: 60 u/ml	DMEM/F12	Nowak, G. and Bakajsova, D.: Assessment of Mitochondrial Functions and Cell Viability in Renal Cells Overexpressing Protein Kinase C Isozymes., *J Vis Exp 71*, e4301, 2013 (*10905*)
	Rabbit, New Zealand	Proximal tubule cells	Collagenase Type 4: 0.005% Soybean Trypsin Inhibitor: 0.00025%	DMEM/F-12	Taub, M.: Primary Kidney Proximal Tubule Cells., *Methods Mol Biol 290*, 231, 2005 (*10628*)
	Rabbit, New Zealand White, female	Nephron segments	Collagenase Type 2: 0.05% Deoxyribonuclease I: 50 u/ml	Eagle's MEM	Schafer, J., Watkins, M., Li, L., Herter, P., Haxelmans, S., and Schlatter, E.: A Simplified Method for Isolation of Large Numbers of Defined Nephron Segments, *Am J Physiol 273*, F650, 1997 (*9871*)
	Rabbit, New Zealand white, male, 1.5 - 2.0 Kg	Duct	Soybean Trypsin Inhibitor: 0.025%	Hank's Solution with calcium and HEPES	Naray-Fejes-Toth, A., and Fejes-Toth, G.: Immunoelection and Culture of Cortical Collecting Duct Cells, *J Tiss Cul Meth 13*, 179, 1991 (*1267*)
	Rabbit, New Zealand white, female, 2-3 Kg	Renal proximal tubules	Deoxyribonuclease I: 70 u/ml	Modified DME- F12	Rodeheaver, D., Aleo, M., and Schnellmann, R.: Differences in Enzymatic and Mechanical Isolated Rabbit Renal Proximal Tubules: Comparison in Long-Term Incubation, *In Vitro Cell Dev Biol 26*, 898, 1990 (*454*)
	Rabbit (also rat, SD and Wistar, 150-225 g, hamster, bovine)	Papillary duct	Hyaluronidase: 0.2%	Keri's buffer HEPES buffered saline	Husted, R., Hayashi, M., and Stokes, J.: Characteristics of Papillary Collecting Duct Cells in Primary Culture, *Am J Physiol 255*, F1160, 1988 (*298*)
	Rabbit, New Zealand, white, 2-3 kg	MTALH cells RCCT cells	Collagenase: 0.1%	DMEM	Allen, M., Nakao, A., Sonnenburg, W., Burnatowska-Hledin, M., Speilman, W., and Smith, W.: Immunodissection of Cortical and Medullary Thick Ascending Limb Cells From Rabbit Kidney, *Am J Physiol 255*, F704, 1988 (*971*)
	Rabbit, New Zealand, white	Collecting tubule	Trypsin: 0.05%	Kreb's Ringer buffer	Grenier, F., and Smith, W.: Formation of 6-keto-PGF-$_{1a}$by Collecting Tubule Cells Isolated from Rabbit Renal Papillae, *Prostaglandins 16*, 759, 1978 (*705*)
	Rabbit, New Zealand, white, female, 2.5 Kg	Papillary collecting duct	Collagenase: 0.2%	(see reference)	Dworzack, D., and Grantham, J.: Preparation of Renal Papillary Collecting Duct Cells for Study, *Nat Neurosci 8*, 191, 1975 (*704*)
Rat	Rat, SD, fetal	Fetal kidney	Collagenase Type 4: 0.1%	MEM	Gupta, A., Jadhav, S., Tripathy, N. and Nityanand, S.: Fetal Kidney Cells Can Ameliorate Ischemic Acute Renal Failure in Rats through Their Anti-Inflammatory, Anti-Apoptotic and Anti- Oxidative Effects., *PLoS ONE 10*, e0131057, 2015 (*11413*)
	Rat, Lewis, male	Renal adipose derived cells	Collagenase Type 1: 0.3%	DMEM	Basu, J., Genheimer, C., Sangha, N., Quinlan, S., Guthrie, K., Kelley, R., Ilagan, R., Jain, D., Bertram, T. and Ludlow, J.: Organ Specific Regenerative Markers in Peri-Organ Adipose: Kidney., *Lipids Health Dis 10*, 171, 2011 (*10665*)
	Rat	Proximal tubule	Collagenase Type 2: 0.1%	see reference	Panico, C., Luo, Z., Damiano, S., Artigiano, F., Gill, P. and Welch, W.: Renal Proximal Tubular Reabsorption is Reduced in Adult Spontaneously Hypertensive Rats: Roles of Superoxide and Na+/H+ Exchanger 3., *Hypertension 54*, 1291, 2009 (*10590*)
	Rat, SD, male, 200- 250g	Medullary thick a scending limb	Collagenase: 0.1%	HEPES-saline	Silva, G., Beierwaltes, W., and Garvin, J.: Extracellular ATP stimulates NO production in rat thick ascending limb, *Hypertension 47*, 563-7, 2006 (*10177*)
	Rat, Wistar, 300g	Renal proximal tubules	Collagenase Type 2: 0.2%	DMEM/F12	Deng, A., Miracle, C., Lortie, M., Satriano, J., Gabbai, F., Munger, K., Thomson, S., Blantz, R.: Kidney Oxygen Consumption, Carbonic Anhydrase, and Proton Secretion, *Am J Physiol/Renal 290*, F1009- 15, 2006 (*10305*)
	Rat, Wistar, male, 300-350 g	Renal proximal tubules	Collagenase Type 2: 0.2%	DMEM/F-12	Deng, A., Miracle, C., Suarez, J., Lortie, M., Satriano, J., Thomson, S., Munger, K. and Blantz, R.: Oxygen Consumption in the Kidney: Effects of Nitric Oxide Synthase Isoforms and Angiotensin II., *Kidney Int 68*, 723, 2005 (*10578*)
	Rat	Cortical tubule cells	Collagenase: 0.6%	DMEM	Arystarkhova, E., Wetzel R., and Sweadner K.: Distribution and Oligomeric Association of Splice Forms of Na(+)-K(+)-ATPase Regulatory Gamma-subunit in Rat Kidney, *Am J Physiol/Renal 282(3)*, F393, 2002 (*9872*)
	Rat, SD, male 275- 300 g	Glomerular mesangial cells	Collagenase Type 1: 250 u/ml	DMEM	Amiri, F., Shaw, S., Wang, X., Tang, J., Waller, J., Eaton, D., Marrero, M.: Angiotensin II Activation of the JAK/STAT Pathway in Mesangial Cells is Altered by High Glucose, *Kidney Int Suppl 61*, 1605-16, 2002 (*10250*)
	Rat, SD, 1 week	Cortical collection duct	Collagenase Type 2: 0.15%	DMEM/Ham's F12	Valencia L., Bidet M., Martial S., Sanchez E., Melendez E., Tauc M., Poujeol C., Martin D., Namorado M., Reyes J., and Poujeol P.: Nifedipine- activated Ca(2+) Permeability in Newborn Rat Cortical Collecting Duct Cells in Primary Culture, *Am J Physiol Cell Physiol 280(5)*, C1193, 2001 (*9875*)
	Rat, SD, 250-300 g	Microvessels	Collagenase Type 2: 0.1%	PSS	Li, N., Teggatz, E., Li, P., Allaire, R., and Zou, A.: Formation and Actions of Cyclic ADP-Ribose in Renal Microvessels, *Microvasc Res 60*, 149, 2000 (*1083*)
	Rat, SD, 250-300 g	Renal	Collagenase Type 2: 0.2%	see reference	Mattson D., and Wu F.: Nitric Oxide Synthase Activity and Isoforms in Rat Renal Vasculature, *Hypertension 35*, 337, 2000 (*9877*)
	Rat, SD, male, 5-6 week	Renal tubules	Collagenase: 0.1%	see reference	Miyata, N., Park, F., Li, X., and Cowley, A.: Distribution of Angiotensin AT1 and AT2 Receptor Subtypes in the Rat Kidney, *Am J Physiol 277*, F437, 1999 (*9876*)
	Rat, SD, 225-250 g	Glomerular mesangial cells	Collagenase Type 1: 250 u/ml	DMEM	Amiri, F., Garcia, R.: Regulation of Angiotensin II Receptors and PKC Isoforms by Glucose in Rat Mesangial Cells, *Am J Physiol 276*, F691-9, 1999 (*10251*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat, SD, male	Proximal tubule suspensions	Collagenase Type 4: 0.1% Pronase E: 2 u/ml	HEPES buffer	Eitle, E., Hiranyachattada, S., Wang, H., Harris, P.: Inhibition of Proximal Tubular Fluid Absorption by Nitric Oxide and Atrial Natriuretic Peptide in Rat Kidney, *Am J Physiol 274*, C1075-80, 1998 (*10254*)
	Rat, SD, male	Nephron segments	Collagenase Type 2: 0.05% Deoxyribonuclease I: 50 u/ml	Eagle's MEM	Schafer, J., Watkins, M., Li, L., Herter, P., Haxelmans, S., and Schlatter, E.: A Simplified Method for Isolation of Large\ Numbers of Defined Nephron Segments, *Am J Physiol 273*, F650, 1997 (9871)
	Rat, 12-weeks-old	Renal	Collagenase: 0.1%	DMEM	Segments, *Am J Physiol 273*, F650, 1997 (*9871*) Ishikawa, S., Kusaka, I., Higashiyama, M., Nagasaka, S., Saito, T., Honda, K., and Saito, T.: Cellular Signaling and Proliferative Action of AVP in Mesangium of SHR: Effect of Low Density Lipoprotein, *Nat Neurosci 50*, 1506, 1996 (*1187*)
	Rat, male, 150-200 g	Epithelial Proximal tubule	Protease: 0.1%	HBSS/CMF	Elliget, K., and Trump, B.: Primary Cultures of Normal Rat Kidney Proximal Tubule Epithelial Cells for Studies of Renal Cell Injury, *In Vitro Cell Dev Biol 27*, 739, 1991 (*476*)
	Rat, adult	Inner medullary collecting duct Papillae	Collagenase Type 2: 0.1%	PBS	Brion, L., Schwartz, J., Lachman, H., Zavilowitz, B., and Schwartz, G.: Development of H+ Secretion by Cultured Renal Inner Medullary Collecting Duct Cells, *Am J Physiol 257*, F486, 1989 (*300*)
	Rat, Wistar, female, 100-150 g	Glomerular mesangial	Collagenase: 0.025%	RPMI 1640	Wang, J., Kester, M., and Dunn, M.: The Effects of Endotoxin on Platelet- Activating Factor Synthesis in Cultured Rat Glomerular Mesangila Cells, *Biochim Biophys Acta 969*, 217, 1988 (*338*)
	Rat, Wistar, male, 150 - 200 g	Renal target	Collagenase: 1.0% (also 0.7%)	Eagle's MEM	Barlet-Bas, C., Khadouri, C., Marsey, S., and Doucet, A.: Sodium-Independent *In Vitro* Induction of Na+,K+-ATPase by Aldosterone in Renal Target Cells: Permissive Effect of Triiodothyronine, *Proc Natl Acad Sci U S A 85*, 1707, 1988 (*658*)
	Rat, Wistar, male, adult	Proximal tubules	Collagenase: 0.2%	Krebs-Henseleit buffer	Gesek, F., Wolff, D., and Strandhov, J.: Improved Separation Method for Rat Proximal and Distal Renal Tubules, *Am J Physiol 253*, F358, 1987 (*969*)
	Rat,Wistar, 300-400 gm	Proximal tubules	Collagenase: 0.15 %	Krebs Henseleit solution	Vinay, P., Gougoux, A., and Lemieux, G.: Isolation of a Pure Suspension of Rat Proximal Tubules, *Am J Physiol 241*, F403, 1981 (*289*)
	Rat	Fibroblasts Kidney	Trypsin: up to 0.25%	Dulbecco-Vogt MEM	Wallach, D., Anderson, W., and Pastan, I.: Activation of Adenylate Cyclase in Cultured Fibroblasts by Trypsin, *J Biol Chem 253*, 24, 1978 (*553*)
Liver					
Avian	Avian, various	Hepatocytes	Collagenase Type 1: 0.1%	see reference	Else, P., Brand, M., Turner, N. and Hulbert, A: Respiration Rate of Hepatocytes Varies With Body Mass in Birds, *J Exp Biol 207*, 2305, 2004 (*11026*)
	Ducklings, 7 day	Hepatocytes	Collagenase: 0.05% Hyaluronidase: 0.05%	DMEM/ F12	Lee J., Culvenor J., Angus P., Smallwood R., Nicoll A., and Locarnini S.: Duck Hepatitis B Virus Replication in Primary Bile Duct Epithelial Cells, *J Virol 75(16)*, 7651, 2001 (*9883*)
Canine	Dog, 13 years old (also rat, guinea-pig, rabbit, human)	Hepatocytes	Collagenase: 90 u/ml	CF EGTA perfusate	Reese, J. and Byard, J.: Isolation And Culture of Adult Hepatocytes from Liver Biopsies, *In Vitro 17*, 935, 1981 (*412*)
	Dog, adult	Hepatocytes	Trypsin: 0.1%	HBSS, CMF	Vickrey, H., Ramon, J., and McCann, D.: Continuous Culture of Normal Adult Mammalian Hepatocytes Exhibiting Parenchymal Functions, *In Vitro 15*, 120, 1979 (*502*)
Chicken	Chicken, adult	Hepatocytes	Collagenase: 0.02%	HEPES, CF	Fraslin, J., Touquette, L., Douaire, M., Menezo, Y., Guillemot, J., and Mallard, J.: Isolation and Long Term Maintenance of Differentiated Adult Chicken Hepatocytes in Primary Culture, *In Vitro Cell Dev Biol 28*, 615, 1992 (*486*)
	Chicken (also rat, SD, 150- 250 g)	Hepatocytes	Collagenase Type 4: 6000 units	Medium A	Roseman, S., Weigel, P., Schnaar, R., Kuhlenschmidt, M., Schmell, E., Lee, R., and Lee, Y.: Adhesion of Hepatocytes to Immobilized Sugars. A Threshold Phenomenon, *J Cell Biol 254*, 10830, 1979 (*582*)
	Chicken, Leghorn, white, 10-15 day	Hepatocytes	Deoxyribonuclease I: 0.00125%	PBS	Tarlow, D., Watkins, P., Reed, R., Miller, R., Zwergel, E., and Lane, M.: Lipogenesis and the Synthesis and Secretion of Very Low Density Lipoprotein by Avian Liver Cells in Nonproliferating Monolayer Culture, *J Cell Biol 73*, 332, 1974 (*590*)
	Chick embryos, 5 day	Heart Liver	Trypsin: 3.0%	Tyrode's solution, CMF	Steinberg, M.: "ECM": Its Nature, Origin, And Function in Cell Aggregation, *Exp Cell Res 30*, 257, 1963 (*396*)
	Chick embryonic	Various tissues (heart, liver, skeletal, cardiac)	Trypsin: various grades	CMF Tyrode's solution	Rinaldini, L.: An Improved Method for the Isolation and Quantitative Cultivation of Embryonic Cells, *Exp Cell Res 16*, 477, 1959 (*394*)
Equine	Equine, 4-13 yr	Hepatocytes	Collagenase Type 4: 0.1%	HBSS	Bakala A., Karlik W., and Wiechetek M.: Preparation of Equine Isolated Hepatocytes, *Toxicol In Vitro 17(5-6)*, 615, 2003 (*9880*)
Fish	Rainbow trout (*Oncorhynchus mykiss*), male & female, 120-600 g	Hepatocytes	Collagenase Type 2: 0.045%	Kreb's-Ringer bicarbonate buffer, CF	Blair, J.B., Miller, M.R., Pack, D., Barnes, R., Teh, S.J. and Hinton, D.E.: Isolated Trout Liver Cells:Establishing Short- Term Primary Cultures Exhibiting Cell-to-Cell Interactions, *In Vitro Cell Dev Biol 26*, 237, 1990 (*434*)
	Trout, male, 100 - 200 g	Hepatocytes	Collagenase Type 2: 0.045%	HBSS with 0.05M HEPES	Lipsky, M., Sheridan, T., Bennett, R., and May, E.: Comparison of Trout Hepatocyte Culture on Different Substrates, *In Vitro Cell Dev Biol 22*, 360, 1986 (*418*)
	Rainbow trout, (*Salmo gairdneri*), male, 150-200 g	Hepatocytes	Collagenase: 100 u/ml	HBSS/CMF	Klaunig, J., Ruch, R., and Goldblah, P.: Trout Hepatocyte Culture: Isolation and Primary Culture, *In Vitro Cell Dev Biol 21*, 221, 1985 (*414*)
	Trout 100g - 5kg	Hepatocytes	Hyaluronidase: 0.08%	See reference	Bailey, G., Taylor, M., and Selivonchick, D.: Aflatoxin B1 Metabolism and DNA Binding in Isolated Hepatocytes From Rainbow Trout *Salmo gairdner*, *Carcinogenesis 3*, 511, 1982 (*1264*)
	Trout (*Salmo gairdneri*), male, 150-200 g Catfish (*Ictalurus punctatus*), male, 100 - 150 g	Hepatocytes	Collagenase: 100u/ml	HBSS	Klaunig, J.: Establishment of Fish Hepatocyte Cultures For Use in *In Vitro* Carcinogenicity Studies, *Natl Cancer Inst Monogr 65*, 163, 1981 (*703*)

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TISSUE TABLES

Liver

Liver

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Guinea-Pig	Guinea-pig, Hartley, male, 250-300 g	Hepatocytes	Collagenase Type 2:	Kreb's Ringer bicarbonate buffer	Arinze, I. and Kawai, Y.: Adrenergic Regulation of Glycogenolysis in Isolated Guinea-Pig Hepatocytes: Evidence that B_2-Receptors Mediate Catecholamine Stimulation of Glycogenolysis, *Arch Biochem Biophys 225*, 196, 1983 (*304*)
	Guinea-pig, young	Hepatocytes	Collagenase: 90 u/ml	CF EGTA perfusate	Reese, J. and Byard, J.: Isolation And Culture of Adult Hepatocytes from Liver Biopsies, *In Vitro 17*, 935, 1981 (*412*)
Human	Human	Hepatocytes	Collagenase Type 4: 0.06%	DMEM	Werner, M., Driftmann, S., Kleinehr, K., Kaiser, G., Mathe, Z., Treckmann, J., Paul, A., Skibbe, K., Timm, J., Canbay, A., Gerken, G., Schlaak, J. and Broering, R.: All-In-One: Advanced Preparation of Human Parenchymal and Non- Parenchymal Liver Cells., *PLoS ONE 10*, e0138655, 2015 (*11581*)
	Human	Hepatocytes and non-parenchymal cells	Collagenase Type 1: 0.1%	HBSS	Pfeiffer, E., Kegel, V., Zeilinger, K., Hengstler, J., Nussler, A., Seehofer, D. and Damm, G.: Featured Article: Isolation, Characterization, and Cultivation of Human Hepatocytes and Non-Parenchymal Liver Cells., *Exp Biol Med (Maywood) 240*, 645-56, 2015 (*11694*)
	Human	Hepatocytes	Collagenase: 0.1- 0.15%	HEPES	Lee, S., Schelcher, C., Demmel, M., Hauner, M. and Thasler, W.: Isolation of Human Hepatocytes by a Two-Step Collagenase Perfusion Procedure., *J Vis Exp* , , 2013 (*11664*)
	Human, fetal	Liver hematopoietic	Collagenase Type 4: 0.1% Hyaluronidase: 0.1% Deoxyribonuclease I: 2 u/ml	RPMI	Vatakis, D., Bristol, G., Kim, S., Levin, B., Liu, W., Radu, C., Kitchen, S. and Zack, J.: Using the BLT Humanized Mouse as a Stem Cell Based Gene Therapy Tumor Model., *J Vis Exp 70*, e4181, 2012 (*11031*)
	Human	Hepatocytes	Collagenase Type 1: 0.05%	Williams E	Torok, E., Lutgehetmann, M., Bierwolf, J., Melbeck, S., Dullmann, J., Nashan, B., Ma, P. and Pollok, J.: Primary Human Hepatocytes on Biodegradable Poly(l- lactic acid) Matrices: A Promising Model for Improving Transplantation Efficiency with Tissue Engineering., *Liver Transpl 17*, 104, 2011 (*10918*)
	Human	Hepatic stem cells and heptoblasts	Collagenase Type 4: 0.014-0.06%	various	Wauthier, E., Schmelzer, E., Turner, W., Zhang, L., LeCluyse, E., Ruiz, J., Turner, R., Furth, M., Kubota, H., Lozoya, O., Barbier, C., McClelland, R., Yao, H., Moss, N., Bruce, A., Ludlow, J. and Reid, L.: Hepatic Stem Cells and Hepatoblasts: Identification, Isolation, and Ex Vivo Maintenance., *Methods Cell Biol 86*, 137, 2008 (*10557*)
	Human	Hepatocytes	Collagenase: 0.05%	HEPES	Pichard L, Raulet E, Fabre G, Ferrini JB, Ourlin JC, and Maurel P: Human hepatocyte culture, *Methods Mol Biol 320*, 283, 2006 (*10056*)
	Human	Hepatocytes	Collagenase: 0.05%	EBSS	Hughes, R., Mitry, R. Dhawan, A., Lehec, S., Girlanda, R., Rela, M., Heaton, N., and Muiesan, P.: Isolation of Hepatocytes from Livers from Non-Heart- Beating Donors for Cell Transplantation, *Liver Transpl 12*, 713, 2006 (*10205*)
	Human	Hepatic side population	Collagenase: 0.02-0.05%	HBSS	Hussain, S., Strom, S., Kirby, M., Burns, S., Langemeijer, S., Ueda, T., Hsieh, M. and Tisdale, J.: Side Population Cells Derived from Adult Human Liver Generate Hepatocyte-Like Cells In Vitro., *Dig Dis Sci 50*, 1755, 2005 (*10608*)
	Human, adult	Hepatocytes	Collagenase: 0.6%	RPMI 1640	Cho, J., Joseph, B., Sappal, B., Giri, R., Wang, R., Ludlow, J., Furth, M., Susick, R., and Gupta, S.: Analysis of the Functional Integrity of Cryopreserved Human Liver Cells Including Xenografting in Immunodeficient Mice to Address Suitability for Clinical Applications, *Liver Int 24*, 361, 2004 (*10055*)
	Human	Hepatocytes	Collagenase Type 4: 0.05%	Williams E	Duanmu Z., Locke D., Smigelski J., Wu W., Dahn M., Falany C., Kocarek T., and Runge-Morris M.: Effects of Dexamethasone on Aryl (SULT1A1)- and Hydroxysteroid (SULT2A1)- Sulfotransferase Gene Expression in Primary Cultured Human Hepatocytes, *Drug Metab Dispos 30(9)*, 997, 2002 (*9879*)
	Human, fetal	Epithelial progenitor	Collagenase: 0.03%	DMEM	Malhi, H., Irani, A., Gagandeep, S. and Gupta, S.: Isolation of Human Progenitor Liver Epithelial Cells with Extensive Replication Capacity and Differentiation into Mature Hepatocytes., *J Cell Sci 115*, 2679, 2002 (*10368*)
	Human (also rat)	Hepatocytes	Collagenase Type 1: 0.05%	Leffert's buffer	Dandri, M., Burda, M., Torok, E., Pollok, J., Iwanska, A., Sommer, G., et al.: Repopulation of Mouse Liver with Human Hepatocytes and *In Vivo* Infection with Hepatitis B Virus, *Hepatol 33*, 981, 2001 (*1102*)
	Human	Hepatocytes	Collagenase: 0.05%	Williams E	Donato, M., Viitala, P., Rodriguez-Antona, C., Lindfors, A., Castell, J., Raunio, H., Gomez-Lechon, M., Pelkonen, O.: CYP2A5/CYP2A6 Expression in Mouse and Human Hepatocytes Treated with Various In Vivo Inducers, *Drug Metab Dispos 28*, 1321-6, 2000 (*10267*)
	Human	Hepatocytes	Collagenase Type 1: 0.025%	Williams E	Parzefall, W., Erber, E., Sedivy, R., and Schulte- Hermann, R.: Testing for Induction of DNA Synthesis in Human Hepatocyte Primary Cultures by Rat Liver Tumor Promoters, *Cancer Res 51*, 1143, 1991 (*818*)
	Human	Hepatocytes	Collagenase: 0.05%	HEPES buffer (see reference)	Gomez-Lechon, M., Lopez, P., Donato, T., Montoya, A., Larrauri, A., Gimenez, P., Trullenque, R., Fabra, R., and Castell, J.: Culture of Human Hepatocytes From Small Surgical Liver Biopsies: Biochemical Characterization And Comparison With *in vivo*, *In Vitro Cell Dev Biol 26*, 67, 1990 (*445*)
	Human, male, 17-40 yrs.	Hepatocytes	Collagenase: 0.05%	HEPES buffer	Begue, J., Baffet, G., Campion, J., and Guillouzo, A.: Differential Response of Primary Cultures of Human and Rat Hepatocytes to Aflatoxin B1-Induced Cytotoxicity and Protection by the Hepatoprotective agent(+)-Cyanidanol-3, *Biol Cell 63*, 327, 1988 (*341*)
	Human, 4 male kidney donors, age between 17 and 31 (also adult rats, male, SD, 180-200g)	Hepatocytes	Collagenase: 0.05% & 0.025%	HEPES (see reference)	LeBot, M., Begue, J., Kernaleguen, D., Robert, J., Ratanasavanh, D., Airiau, J., Riche, C., and Guillouzo, A.: Different Cytotoxicity and Metabolism of Doxorubicin, Daunorubicin, Epirubicin, Esorubicin, and Idarubicin in Cultured Human and Rat Hepatocytes, *Biochem Pharmacol 37 (20)*, 3877, 1988 (*823*)
	Human, 3 human kidney donors, age 20, 23, 25	Hepatocytes	Collagenase: 0.05%	HEPES	Gugen-Guillouzo, C., Campion, J., Brissot, P., Glaise, D., Launois, B., Bourel, M., and Guillouzo, A.: High Yield Preparation of Isolated Human Adult Hepatocytes by Enzymatic Perfusion of the Liver, *Cell Biol Int Rep 6 (6)*, 625, 1982 (*819*)
	Human, 51-75 years old (also rat, guinea-pig, rabbit, dog)	Hepatocytes	Collagenase: 90 u/ml	CF EGTA perfusate	Reese, J. and Byard, J.: Isolation And Culture of Adult Hepatocytes from Liver Biopsies, *In Vitro 17*, 935, 1981 (*412*)
	Human	Hepatocytes	Trypsin: 0.1%	HBSS, CMF	Kaighn, M.: Human Liver Cells, *Tissue Culture Methods / Applications*, (Kruse, P., Patterson, M. eds), , 54, 1973 (*702*)

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Liver

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Monkey	Monkey, *Macaca mulatta*, 3-5.5 kg	Hepatocytes	Collagenase Type 1: 129 u/ml	DMEM/F12	Weber, A., Groyer-Picard, M.and Dagher, I.: Hepatocyte Transplantation Techniques: Large Animal Models., *Methods Mol Biol 481*, 83, 2009 (*10496*)
	Monkey (*Macaca fascicularis*), adult, 5-6 Kg	Hepatocytes	Trypsin: 160 u/ml	HEPES buffer	Ulrich, R., Aspar, D., Cramer, C., Kletzien, R., and Ginsberg, L.: Isolation and Culture of Hepatocytes from the Cynogmolgus Monkey (*Macaca fascicularis*), *In Vitro Cell Dev Biol 26*, 815, 1990 (*452*)
Mouse	Mouse	Hepatocytes	Collagenase Type 4: 0.05%	DMEM	Cabral, F., Miller, C., Kudrna, K., Hass, B., Daubendiek, J., Kellar, B. and Harris, E.: Purification of Hepatocytes and Sinusoidal Endothelial Cells from Mouse Liver Perfusion., *J Vis Exp* , , 2018 (*11659*)
	Mouse, 10-13 week	Hepatocytes	Collagenase Type 2: 0.2 u/ml	William's Medium E	Sewing, S., Boess, F., Moisan, A., Bertinetti- Lapatki, C., Minz, T., Hedtjaern, M., Tessier, Y., Schuler, F., Singer, T. and Roth, A.: Establishment of a Predictive In Vitro Assay for Assessment of the Hepatotoxic Potential of Oligonucleotide Drugs., *PLoS ONE 11*, e0159431, 2016 (*11509*)
	Mouse	Hepatocytes	Collagenase Type 2: 150 u/ml	PBS	Weerasinghe, S., Park, M., Portney, D. and Omary, M.: Mouse Genetic Background Contributes to Hepatocyte Susceptibility to Fas- mediated Apoptosis., *Mol Biol Cell 27*, 3005-3012, 2016 (*11578*)
	Mouse	Hepatic	Collagenase Type 4: 0.05%	HBSS	Bigorgne, A., John, B., Ebrahimkhani, M., Shimizu- Albergine, M., Campbell, J. and Crispe, I.: TLR4- Dependent Secretion by Hepatic Stellate Cells of the Neutrophil-Chemoattractant CXCL1 Mediates Liver Response to Gut Microbiota., *PLoS ONE 11*, e0151063, 2016 (*11589*)
	Mouse, 12 week	Hepatic stellate	Collagenase Type 4: 0.05% Pronase: 0.04%	DMEM	Mederacke, I., Dapito, D., Affo, S., Uchinami, H. and Schwabe, R.: High-Yield and High-Purity Isolation of Hepatic Stellate Cells from Normal and Fibrotic Mouse Livers., *Nat Protoc 10*, 305-15, 2015 (*11593*)
	Mouse	Hepatocytes	Collagenase Type 3: 100 u/ml Collagenase Type 4: 100 u/ml	DMEM	Guenthner, C., Luitje, M., Pyle, L., Molyneux, P., Yu, J., Li, A., Leise, T. and Harrington, M.: Circadian Rhythms of Per2::Luc in Individual Primary Mouse Hepatocytes and Cultures., *PLoS ONE 9*, e87573, 2014 (*11062*)
	Mouse	Hepatocytes and sinusoidal endothelial	Collagenase Type 4: 0.05% Deoxyribonuclease I: 0.003%	HBSS	Perepelyuk, M., Terajima, M., Wang, A., Georges, P., Janmey, P., Yamauchi, M. and Wells, R.: Hepatic Stellate Cells and Portal Fibroblasts are the Major Cellular Sources of Collagens and Lysyl Oxidases in Normal Liver and Early After Injury., *Am J Physiol Gastrointest Liver Physiol 304*, G605, 2013 (*11051*)
	Mouse	Hepatocytes	Collagenase Type 4: 100 u/ml	DMEM	Sin, Y., Ballantyne, L., Mukherjee, K., St Amand, T., Kyriakopoulou, L., Schulze, A. and Funk, C.: Inducible Arginase 1 Deficiency in Mice Leads to Hyperargininemia and Altered Amino Acid Metabolism., *PLoS ONE 8*, e80001, 2013 (*11009*)
	Mouse, female, 8-10 week	Hepatocytes	Collagenase Type 1: 0.08%	DMEM	Severgnini, M., Sherman, J., Sehgal, A., Jayaprakash, N., Aubin, J., Wang, G., Zhang, L., Peng, C., Yucius, K., Butler, J. and Fitzgerald, K.: A Rapid Two-Step Method for Isolation of Functional Primary Mouse Hepatocytes: Cell Characterization and Asialoglycoprotein Receptor Based Assay Development., *Cytotechnology 64*, 187-95, 2012 (*11577*)
	Mouse	Hepatocytes & non-parenchymal liver cells	Collagenase: 0.03- 0.05%	DMEM	Brundert, M., Heeren, J., Merkel, M., Carambia, A., Herkel, J., Groitl, P., Dobner, T., Ramakrishnan, R., Moore, K. and Rinninger, F.: Scavenger Receptor CD36 Mediates Uptake of High Density Lipoproteins in Mice and by Cultured Cells., *J Lipid Res 52*, 745, 2011 (*10670*)
	Mouse	Hepatocytes	HIS kit: with modifications	DMEM	Kang, H., Okamoto, K., Kim, Y., Takeda, Y., Bortner, C., Dang, H., Wada, T., Xie, W., Yang, X., Liao, G. and Jetten, A.: Nuclear Orphan Receptor TAK1/TR4-Deficient Mice are Protected Against Obesity-Linked Inflammation, Hepatic Steatosis, and Insulin Resistance., *Diabetes 60*, 177, 2011 (*10673*)
	Mouse	Hepatacytes	Collagenase Type 1: 0.05%	Williams E	Holl, D., Kuckenberg, P., Woynecki, T., Egert, A., Becker, A., Huss, S., Stabenow, D., Zimmer, A., Knolle, P., Tolba, R., Fischer, H. and Schorle, H.: Transgenic Overexpression of Tcfap2c/AP-2gamma Results in Liver Failure and Intestinal Dysplasia., *PLoS ONE 6*, e22034, 2011 (*10681*)
	Mouse	CD133+ stem	Collagenase Type 4: 0.05% Pronase: 0.05% Deoxyribonuclease I: 0.01%	DMEM/F12	Rountree, C., Ding, W., Dang, H., Vankirk, C. and Crooks, G.: Isolation of CD133+ Liver Stem Cells for Clonal Expansion., *J Vis Exp 56*, e3183, 2011 (*10988*)
	Mouse, male, 12-14 week	Hepatocytes	Collagenase Type 1: 0.03%	Williams E	Chung, S., Timmins, J., Duong, M., Degirolamo, C., Rong, S., Sawyer, J., Singaraja, R., Hayden, M., Maeda, N., Rudel, L., Shelness, G. and Parks, J.: Targeted Deletion of Hepatocyte ABCA1 Leads to VLDL Triglyceride Over-Production and LDL Hypercatabolism, *J Biol Chem 285*, 12197, 2010 (*10616*)
	Mouse	Liver non- parenchymal	Collagenase Type 3: 100 u/ml	HBSS	Bosschaerts, T., Guilliams, M., Stijlemans, B., Morias, Y., Engel, D., Tacke, F., Herin, M., De Baetselier, P. and Beschin, A.: Tip-DC Development During Parasitic Infection is Regulated by IL-10 and Requires CCL2/CCR2, IFN- gamma and MyD88 Signaling., *PLoS Pathog 6*, e1001045, 2010 (*10671*)
	Mouse	Hepatocytes	Collagenase Type 1: 0.075%	HBSS	Shmarakov, I., Fleshman, M., D'Ambrosio, D., Piantedosi, R., Riedl, K., Schwartz, S., Curley, R., von Lintig, J., Rubin, L., Harrison, E. and Blaner, W.: Hepatic Stellate Cells are an Important Cellular Site for Ï²-Carotene Conversion to Retinoid., *Arch Biochem Biophys 504*, 3-10, 2010 (*11592*)
	Mouse, male, adult	Hepatocytes	Collagenase Type 4: 0.05%	HBSS	Mathijs, K., Kienhuis, A.,Brauers, K. J, Jennen, D. , Lahoz, A., Kleinjans, J. and van Delft, J.: Assessing the Metabolic Competence of Sandwich-Cultured Mouse Primary Hepatocytes., *Drug Metab Dispos 37*, 1305, 2009 (*10620*)
	Mouse, male	Hepatocytes	Collagenase Type 1: 100 u/ml Elastase: 0.1 u/ml	Williams E	Oliva, J., Bardag-Gorce, F., French, B., Li, J., McPhaul, L., Amidi, F., Dedes, J., Habibi, A., Nguyen, S. and French, S.: Fat10 is an Epigenetic Marker for Liver Preneoplasia in a Drug- Primed Mouse Model of Tumorigenesis., *Exp Mol Pathol 84*, 102, 2008 (*10553*)
	Mouse, 7-10 week	Liver endothelial	Collagenase: 0.03%	DMEM	Follenzi, A., Benten, D., Novikoff, P., Faulkner, L., Raut, S. and Gupta, S.: Transplanted Endothelial Cells Repopulate the Liver Endothelium and Correct the Phenotype of Hemophilia A Mice., *J Clin Invest 118*, 935, 2008 (*10632*)
	Mouse, 10-12 week	Liver sinusoidal endothelial cells	Collagenase Type 1: 0.05% Neutral Protease: 0.025%	HEPES	Beldi, G., Wu, Y., Sun, X., Imai, M., Enjyoji, K., Csizmadia, E., Candinas, D., Erb, L. and Robson, S.: Regulated Catalysis of Extracellular Nucleotides by Vascular CD39/ENTPD1 is Required for Liver Regeneration., *Gastroenterol 135*, 1751, 2008 (*10664*)
	Mouse	Liver epithelial progenitor cells	Collagenase Type 4: 0.1% Deoxyribonuclease I: 0.05%	DMEM	Li, W., Su, J., Yao, Y., Tao, X., Yan, Y., Yu, H., Wang, X., Li, J., Yang, Y., Lau, J., Hu, Y.: Isolation and Characterization of Bipotent Liver Progenitor Cells from Adult Mouse, *Stem Cells 24*, 322-32, 2006 (*10248*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse	Liver sinusodial endothelial	Collagenase: 0.03%	DMEM	Benten, D., Follenzi, A., Bhargava, K., Kumaran, V., Palestro, C., Gupta, S.: Hepatic Targeting of Transplanted Liver Sinusoidal Endothelial Cells in Intact Mice, *Hepatol 42*, 140-8, 2005 (*10259*)
	Mouse	Hepatocytes	Collagenase Type 1: 0.033%	Leffert's buffer	Jiang, G., Li, Z., Liu, F., Ellsworth, K., Dallas-Yang, Q., Wu, M., Ronan, J., Esau, C., Murphy, C., Szalkowski, D., Bergeron, R., Doebber, T., Zhang, B.: Prevention of Obesity in Mice by Antisense Oligonucleotide Inhibitors of Stearoyl-CoA Desaturase-1, *J Clin Invest 115*, 1030-8, 2005 (*10266*)
	Mouse, 8-10 week	Liver derived stem cells	Collagenase Type 1: 0.1% Neutral Protease: 2.4 u/ml	HBSS	Kotton, D., Fabian, A. and Mulligan, R.: A Novel Stem- Cell Population in Adult Liver with Potent Hematopoietic-Reconstitution Activity., *Blood 106*, 1574, 2005 (*10523*)
	Mouse	Hepatocytes	Collagenase Type 1: 0.053%	DMEM/ F-12	Sazani P., Gemignani F., Kang S., Maier M., Manoharan M., Persmark M., Bortner D., and Kole R.: Systemically Delivered Antisense Oligomers Up- regulate Gene Expression in Mouse Tissues, *Nat Biotechnol 20*, 1228, 2002 (*9884*)
	Mouse, male, 4-10 week	Hepatocytes	Collagenase Type 2: 100 u/ml	HBSS	Lingohr, M., Bull, R., Kato-Weinstein, J., Thrall, B.: Dichloroacetate Stimulates Glycogen Accumulation in Primary Hepatocytes Through an Insulin Independent Mechanism, *Toxicol Sci 68*, 508-15, 2002 (*10264*)
	Mouse, male, 8 week	Hepatocytes	Collagenase Type 1: 0.04%	Wamouth's medium	Hatano, E., Brenner, D.: Akt Protects Mouse Hepatocytes from TNF-Alpha-and Fas-Mediated Apoptosis Through NK-Kappa B Activation., *Am J Physiol/Gastro 282*, G1357, 2002 (*546*)
	Mouse	Hepatocytes	Collagenase: 0.05%	Williams E	Donato, M., Viitala, P., Rodriguez-Antona, C., Lindfors, A., Castell, J., Raunio, H., Gomez-Lechon, M., Pelkonen, O.: CYP2A5/ CYP2A6 Expression in Mouse and Human HepatocytesTreated with Various In Vivo Inducers, *Drug Metab Dispos 28*, 1321-6, 2000 (*10267*)
	Mouse, 7 week	Kupffer cells	Collagenase Type 4: 0.05%	HBSS	Angele, M., Knoferl, M., Schwacha, M., Ayala, A., Cioffi, W., Bland, K., and Chaudry, I.: Sex Steroids Regulate Pro- and Anti-Inflammatory Cytokine Release by Macrophages after Trauma-Hemorrhage, *Am J Physiol 277*, C35, 1999 (*9878*)
	Mouse	Nonparenchymal liver	Collagenase Type 1:0.05%	Hanks	Ling, W., Lougheed, M., Suzuki, H., Buchan, A., Kodama, T., Steinbrecher, U.: Oxidized or Acetylated Low Density Lipoproteins are rapidly Cleared by the Liver in Mice with Disruption of the Scavenger Receptor Class A Type I/II Gene, *J Clin Invest 100*, 244-52, 1997 (*10258*)
	Mouse, C3H, 6-8 weeks	Epithelial	Collagenase: 0.10%	DMEM	Lillehaug, J., Mondal, S., and Heidelberger, C.: Establishment of Epithelial Cell Lines from Mouse Regenerating Liver, *In Vitro 15*, 910, 1979 (*504*)
	Mouse, 20-30 g	Parenchymal and non-parenchymal	Hyaluronidase: 0.1%	Hank's w/ Insulin, CMF	Crisp, D., and Pogson, C.: Glycolytic and Gluconeogenic Enzyme Activities in Parenchymal and Non-parenchymal Cells from Mouse Liver, *Biochem J 126*, 1009, 1972 (*309*)
Porcine	Porcine, mini-pig, 13 kg	Hepatocytes	Collagenase Type 4: 0.05% Neutral Protease: 0.84% Deoxyribonuclease I: see reference	Williams E	Meng, F., Chen, Z., Han, M., Hu, X., He, X., Liu, Y., He, W., Huang, W., Guo, H. and Zhou, P.: Porcine Hepatocyte Isolation and Reversible Immortalization Mediated by Retroviral Transfer and Site- Specific Recombination., *World J Gastroenterol 16*, 1660, 2010 (*10558*)
	Porcine, Yorkshire, male, 21 day	Hepatocytes	Collagenase Type 1: 0.07%	Williams E	Terner, M., Gilmore, W.J., Lou, Y. and Squires, E.J.: The Role of CYP2A and CYP2E1 in the Metabolism of 3-Methylindole in Primary Cultured Porcine Hepatocytes., *Drug Metab Dispos 34*, 848, 2006 (*10559*)
	Porcine, Chinese mini pig, 6-10 kg	Hepatocytes	Collagenase Type 4: 125 u/ml	Williams E	Li, J, Li, L., Chao, H., Yang, Q., Liu, X., Sheng, J., Yu, H. and Huang, J: Isolation and Short Term Cultivation of Swine Hepatocytes for Bioartificial Liver Support System., *Hepatobiliary Pancreat Dis Int 4*, 249, 2005 (*10504*)
	Porcine, one week	Hepatocytes	Collagenase Type 4: 0.05%	RPMI 1640	Wang Y., Liu H., Guo H., Wen H., and Liu J.: Primary Hepatocyte Culture in Collagen Gel Mixture and Collagen Sandwich, *World J Gastroenterol 10*, 699, 2004 (*9885*)
	Porcine, male, 2-3 week	Hepatocytes	Collagenase: 0.05%	DMEM	Raman, P., Donkin, S., Spurlock, M.: Regulation of Hepatic Glucose Metabolism by Leptin in Pig and Rat Primary Hepatocyte Cultures, *Am J Physiol Regul Integr Comp Physiol 286*, R206-16, 2004 (*10268*)
	Porcine, adult	Hepatocytes	Collagenase: 0.05% Neutral Protease:	MEM	Zhou X, Liu L, Kano J, Mukaiyama T, and Tokiwa T.: Isolation and Cultivation of Porcine Hepatocytes for Extracorporeal Artificial Liver Support System, *Chin Med J 114*, 946, 2001 (*9886*)
	Porcine, male, 6-40 kg	Hepatocytes	Collagenase: 0.8%	PBS	Gerlach, J., Brombacher, J., Smith, M., Neuhaus, P.: High Yield Hepatocyte Isolation from Pig Livers for Investigation of Hybrid Liver Support Systems: Influence of Collagenase Concentration and Body Weight, *J Surg Res 62 (1)*, 85, 1996 (*1166*)
Rabbit	Rabbit, New Zealand white	Hepatocytes	Collagenase: 90 u/ml	CF EGTA perfusate	Reese, J. and Byard, J.: Isolation And Culture of Adult Hepatocytes from Liver Biopsies, *In Vitro 17*, 935, 1981 (*412*)
Rat	Rat, SD, 500-700g	Hepatocytes and sinusoidal endothelial	Collagenase Type 4: 0.05% Deoxyribonuclease I: 0.003%	HBSS	Perepelyuk, M., Terajima, M., Wang, A., Georges, P., Janmey, P., Yamauchi, M. and Wells, R.: Hepatic Stellate Cells and Portal Fibroblasts are the Major Cellular Sources of Collagens and Lysyl Oxidases in Normal Liver and Early After Injury., *Am J Physiol Gastrointest Liver Physiol 304*, G605, 2013 (*11051*)
	Rat, adult	Hepatocytes	Collagenase Type 2:1000 U	William's	Shen, L., Hillebrand, A., Wang, D. and Liu, M.: Isolation and Primary Culture of Rat Hepatic Cells., *J Vis Exp 64*, e3917, 2012 (*10911*)
	Rat, adult	Portal fibroblasts	Collagenase Type 2: 0.3%	DMEM/F-12	Wen, J., Olsen, A., Perepelyuk, M. and Wells, R.: Isolation of Rat Portal Fibroblasts by In Situ Liver Perfusion., *J Vis Exp 64*, e3669, 2012 (*10912*)
	Rat	Hepatocytes	Collagenase Type 2: 0.05%	DMEM	Budick-Harmelin, N., Anavi, S., Madar, Z. and Tirosh, O.: Fatty Acids-Stress Attenuates Gluconeogenesis Induction and Glucose Production in Primary Hepatocytes., *Lipids Health Dis 11*, 66, 2012 (*10919*)
	Rat, SD, 240-320g	Hepatocytes	HIS kit: per instructions	Waymouth's MB	Pillai, V., and Mehvar, R.: Inhibition of NADPH- Cytochrome P450 Reductase by Tannic Acid in Rat Liver Microsomes and Primary Hepatocytes: Methodological Artifacts and Application to Ischemia-Reperfusion Injury, *J Pharm Sci 100*, 3495, 2011 (*10672*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat	Hepatocytes and SEC's	Collagenase Type 1: 0.1-0.2%	RPMI	Gopalakrishnan, S. and Harris, E.: In Vivo Liver Endocytosis Followed by Purification of Liver Cells by Liver Perfusion., *J Vis Exp 57*, e3138, 2011 (*10899*)
	Rat, Wistar, female	Hepatic stellate cells	Collagenase Type 1: 0.025-0.1% Pronase: 0.025-0.13%	DMEM	Zvibel, I., Atias, D., Phillips, A., Halpern, Z. and Oren, R.: Thyroid Hormones Induce Activation of Rat Hepatic Stellate Cells Through Increased Expression of p75 Neurotrophin Receptor and Direct Activation of Rho., *Lab Invest 90*, 674, 2010 (*10544*)
	Rat, SD	Hepatic stellate cells	Pronase: 0.02% Collagenase: see reference	Medium 199	Handy, J., Saxena, N., Fu, P., Lin, S., Mells, J., Gupta, N. and Anania, F.: Adiponectin Activation of AMPK Disrupts Leptin-Mediated Hepatic Fibrosis via Suppressors of Cytokine Signaling (SOCS-3)., *J Cell Biochem 110*, 1195, 2010 (*10622*)
	Rat, SD, 250-300g	Hepatocytes	HIS kit: per instructions	Krebs-Henseleit	Parasrampuria, R. and Mehvar, R.: Dose-Dependent Inhibition of Transporter- Mediated Hepatic Uptake and Biliary Excretion of Methotrexate by Cyclosporine A in an Isolated Perfused Rat Liver Model., *J Pharm Sci 99*, 5060, 2010 (*10674*)
	Rat, SD	Hepatocytes	Collagenase: 0.05%	HBSS	Chung, C., Shugrue, C., Nagar, A., Doll, J., Cornwell, M., Gattu, A., Kolodecik, T., Pandol, S. and Gorelick, F.: Ethanol Exposure Depletes Hepatic Pigment Epithelium- Derived Factor, a Novel Lipid Regulator., *Gastroenterol 136*, 331, 2009 (*10609*)
	Rat, Lewis, male	Hepatocytes	Collagenase Type 2: 0.1%	DPBS	Bettinger, C., Kulig, K., Vacanti, J., Langer, R. and Borenstein, J.: Nanofabricated Collagen- Inspired Synthetic Elastomers for Primary Rat Hepatocyte Culture., *Tissue Eng Part A 15*, 1321, 2009(*10668*)
	Rat, 200-300 g	Hepatocytes	Collagenase Type 1: 0.067%	HBSS	Mula, N., Cubero, F., Codesal, J., de Andres, S., Escudero, C., Garcia- Barrutia, S., Millan, I., Arahuetes, R. and Maganto, P.: Survival of Allogeneic Hepatocytes Transplanted into the Thymus., *Cells Tissues Organs 188*, 270, 2008 (*10371*)
	Rat, SD, male, 230- 250g	Hepatocytes	Collagenase Type 2: 0.1%	HEPES	Doleh, L. and Romani, A.: Biphasic Effect of Extra- Reticular Mg2+ on Hepatic G6P Transport and Hydrolysis., *Arch Biochem Biophys 467*, 283, 2007 (*10351*)
	Rat, Lewis, 150- 200g	Hepatocytes	Collagenase Type 2: 0.05%	Williams E	Smith, M. and Mooney, D.: Hypoxia Leads to Necrotic Hepatocyte Death., *J Biomed Mater Res A 80*, 520, 2007 (*10543*)
	Rat, SD, 180-200g	Hepatocytes	Collagenase Type 1: 0.1%	see reference	Charbonneau, A., Unson, C. and Lavoie, J.: High-Fat Diet-Induced Hepatic Steatosis Reduces Glucagon Receptor Content in Rat Hepatocytes: Potential Interaction with Acute Exercise., *J Physiol 579*, 255, 2007 (*10582*)
	Rat, Wistar, 270- 330g	Hepatocytes	Collagenase Type 2: 0.033%	Williams E	Li, W., Ralphs, K., Slack, J. and Tosh, D.: Keratinocyte Serum-Free Medium Maintains Long-Term Liver Gene Expression and Function in Cultured Rat Hepatocytes by Preventing the Loss of Liver-Enriched Transcription Factors., *Int J Biochem Cell Biol 39*, 541- 54, 2007 (*10946*)
	Rat, SD, 500-750 g	Portal fibroblasts	Collagenase: 0.03% Pronase: 0.033% Hyaluronidase: 0.036%	DMEM/F-12	Li, Z., Dranoff, J., Chan, E., Uemura, M., Sevigny, J.and Wells, R.: Transforming Growth Factor-beta and Substrate Stiffness Regulate Portal Fibroblast Activation in Culture., *Hepatol 46*, 1246-56, 2007 (*11262*)
	Rat, Fisher, E14	Hepatocytes	Collagenase Type 1: 0.22%	HBSS	Zvibel, I., Bronstein, M., Hubel, E., Bar-Lev, E., Halpern, Z., Oren, R.: Isolation, Characterization and Culture of Thy1-Positive Cells from Fetal Rat Livers, *World J Gastroenterol 12*, 3841-7, 2006 (*10303*)
	Rat, Lewis, female, 150-200 g	Hepatocytes	Collagenase: see references	DMEM	Sosef, M., Baust, J., Sugimachi, K., Fowler, A., Tompkins, R., and Toner, M.: Cryopreservation of Isolated Primary Rat Hepatocytes: Enhanced Survival and Long-Term Hepatospecific Function, *Ann Surg 241*, 125, 2005 (*10054*)
	Rat	Liver sinusodial endothelial	Collagenase: 0.03%	DMEM	Benten, D., Follenzi, A., Bhargava, K., Kumaran, V., Palestro, C., Gupta, S.: Hepatic Targeting of Transplanted Liver Sinusoidal Endothelial Cells in Intact Mice, *Hepatol 42*, 140-8, 2005 (*10259*)
	Rat, Wistar, 200-300 g	Hepatocytes	Collagenase Type 2: 0.05%	Williams E	Putz, G., Schmider, W., Nitschke, R., Kurz, G., Blum, H.: Synthesis of Phospholipid-Conjugated Bile Salts and Interaction of Bile Salt-Coated Liposomes with Cultured Hepatocytes, *J Lipid Res 46*, 2325-38, 2005 (*10263*)
	Rat, adult	Hepatocytes	Collagenase Type 1: 0.1% Pronase: 1% Deoxyribonuclease I: 0.007%	Williams E	Jensen C., Jauho E., Santoni- Rugiu E., Holmskov U., Teisner B., Tygstrup N., and Bisgaard H.: Transit-amplifying Ductular (oval) Cells and Their Hepatocytic Progeny are Characterized by a Novel and Distinctive Expression of Delta-like Protein/preadipocyte Factor 1/fetal Antigen 1, *Am J Pathol 164(4)*, 1347, 2004 (*9882*)
	Rat, SD, male, 200- 250 g	Hepatocytes	Collagenase: 0.05%	DMEM	Raman, P., Donkin, S., Spurlock, M.: Regulation of Hepatic Glucose Metabolism by Leptin in Pig and Rat Primary Hepatocyte Cultures, *Am J Physiol Regul Integr Comp Physiol 286*, R206-16, 2004 (*10268*)
	Rat, Wistar	Hepatocytes	Collagenase Type 4: 0.05%	RPMI 1640	Wang Y., Liu H., Guo H., Wen H., and Liu J.: Primary Hepatocyte Culture in Collagen Gel Mixture and Collagen Sandwich, *World J Gastroenterol 10*, 699, 2004 (*9885*)
	Rat, Wistar, 220- 270g	Hepatocytes	Collagenase Type 1: 200 u/ml	DMEM	Annaert, P., Turncliff, R., Booth, C., Thakker, D. and Brouwer, K.: P- Glycoprotein-Mediated In Vitro Biliary Excretion in Sandwich-Cultured Rat Hepatocytes., *Drug Metab Dispos 29*, 1277-83, 2001(*10677*)
	Rat, SD, male	Hepatocytes	Collagenase Type 2: 0.025%	Williams E	Burczynski, M., McMillian, M., Parker, J., Bryant, S., Leone, A., Grant, E., Thorne, J., Zhong, Z., Zivin, R. and Johnson, M.: Cytochrome P450 Induction in Rat Hepatocytes Assessed by Quantitative Real-Time Reverse-Transcription Polymerase Chain Reaction and the RNA Invasive Cleavage Assay., *Drug Metab Dispos 29*, 1243, 2001 (*10951*)
	Rat, SD, male, 230- 250 g	Hepatocytes	Collagenase Type 1: 0.1%	HBSS	Kuddus, R., Nalesnik, M., Subbotin, V., Rao, A., and Gandhi, C.: Enhanced Sythesis and Reduced Metabolism of Endothelin-1 (ET-1) by Hepatocytes - An Important Mechanism of Increased Endogenous Levels of ET-1 in Liver Cirrhosis, *J Hepatol 33*, 725, 2000 (*1115*)
	Rat, male, 3 week	Hepatocytes	Collagenase Type 4: 0.02%	Williams E	Low-Baselli A., Hufnagl K., Parzefall W., Schulte- Hermann R., and Grasl- Kraupp B.: Initiated Rat Hepatocytes in Primary Culture: A Novel Tool to Study Alterations in Growth Control During the First Stage of Carcinogenesis, *Carcinogenesis 21*, 79, 2000 (*10004*)
	Rat, SD, male, 450- 500 g	Stellate	Protease: 0.02%	HBSS	Gabriel, A., Kuddus, R., Rao, A., and Gandhi, C.: Down- Regulation of Endothelin Receptors by Transforming Growth Factor *B*1 in Hepatic Stellate Cells, *J Hepatol 30*, 440, 1999 (*1101*)

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TISSUE TABLES

Liver

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat, Wistar, male	Hepatocytes	Collagenase Type 2: 120 u/ml	HBSS	Wolz, E., Liechti, H., Notter, B., Oesterhelt, G., Kistler, A.: Characterization of Metabolites of Astaxanthin in Primary Cultures of Rat Hepatocytes, *Drug Metab Dispos 27*, 456-62, 1999 (*10265*)
	Rat, Lewis, adult	Hepatocytes	Collagenase: 60 u/ml	HEPES	Matsuura, T., Gad, M., Harrison, E., and Ross, A.: Lecithin:Retinol Acyltransferase and Retinyl Ester Hydrolase Activities are Differentially Regulated by Retinoids and Have Distinct Distributions Between Hepatocyte and Nonparenchymal Cell Fractions of Rat Liver, *J Nutr 127*, 218, 1997 (*10057*)
	Rat	Hepatocytes	Collagenase: 0.04% -0.06%	PBS	Alston-Smith, J and Pertoft, H: Isolation of Liver Cells: a System for Obtaining Pure Cells in Monolayer Cultures from a Single Rat Liver, *Cell & Tissue Culture: Laboratory Procedures Vol. 1*,Doyle, A., Griffiths, J., and Newell, D., John Wiley and Sons, Ltd., 12B:14.1, 1995 (*1275*)
	Rat	Hepatocytes	Collagenase: 0.05%	DMEM	Matsumoto, K and Nakamura, T: Techniques for the Isolation and Cultivation of Hepatocytes using Collagenase, *Cell & Tissue Culture: Laboratory Procedures Vol. 1*,Doyle, A., Griffiths, J., and Newell, D., John Wiley and Sons, Ltd., 12B:16.1, 1995 (*1276*)
	Rat, SD, male, 200 g	Hepatocytes	Collagenase: 0.05%	Medium 199	Rana, B., Mischoulon, D., Xie, Y., Bucher, N., and Farmer, S.: Cell-Extracellular Matrix Interactions Can Regulate the Switch between Growth and Differentiation in Rat Hepatocytes: Reciprocal Expression of C/EBP*a* and Immediate- Early Growth Response Transcription Factors, *Mol Cell Biol 14 (9)*, 5858, 1994 (*1210*)
	Rat, Wistar, adult, male, 100-125 g	Hepatocytes	Collagenase Type 2: 0.05%	Serum-free medium	Liu, J., McKim, J., Liu, Y., and Klaassen, C.: Effects of Butyrate Homologes on Metallothionein Induction in Rat Primary Hepatocyte Cultures, *In Vitro Cell Dev Biol 28*, 320, 1992 (*483*)
	Rat, SD, male, 250- 350 g	Hepatocytes	Collagenase Type 4: 200 u/ml	RPMI 1640	Dixit, V., Arthur, M., and Gitnick, G.: Repeated Transplantation of Microencapsulated Hepatocytes for Sustained Correction of Hyperbilirubinemia in Gunn Rats, *Cell Transplant 1*, 275,1992 (*681*)
	Rat, Fisher	Epithelial	Collagenase: 0.05% Neutral Protease: 0.48% Hyaluronidase: 0.075%	Eagles's MEM	Blouin, M., and Marceau, N.: Primary Culture of Fetal Rat Liver Bipotential Progenitor Cells, *J Tiss Cul Meth 13*, 117, 1991 (*839*)
	Rat, SD, 8 - 12 day	Parenchymal hepatocytes	Collagenase Type 4: 80 u/ml	HBSS	Davila, J., Reddy, C., Davis, P. and Acosta, D.: Toxicity Assessment of Papaverine Hydrochloride and Papaverine-Derived Metabolites in Primary Cultures of Rat Hepatocytes, *In Vitro Cell Dev Biol 26*, 515, 1990 (*444*)
	Rat, SD, male, 250- 350 g	Hepatocytes	Collagenase Type 2: 0.05%	HBSS, CMF	Liu, J., Kershaw, W., and Klaassen, C.: Rat Primary Hepatocyte Cultures are a Good Model for Examining Metallothionein-Induced Tolerance to Cadmium Toxicity, *In Vitro Cell Dev Biol 26*, 75, 1990 (*450*)
	Rat, Wistar, male, 200 g	Parenchymal	Collagenase Type 1:	HEPES, modified	Kindberg, G., Gudmundsen, O., and Berg, T.: The Effect of Vandate on Receptor- mediated Endocytosis of Asialoorosomucoid in Rat Liver Parenchymal Cells, *J Biol Chem 265*, 8999, 1990(*572*)
	Rat, SD, male, 175- 225 g	Hepatocytes	Collagenase:	Kreb's Ringer bicarbonate buffer	Reddy, S., Amick, G., Cooper, R., and Damun, Z.: Insulin Stimulates the Activity of a Protamine in Isolated Rat Hepatocytes, *J Biol Chem 265*, 7748, 1990 (*570*)
	Rat, SD, neonatal, 8- 10 days	Hepatocytes	Collagenase Type 4: 0.05%	Hanks' BSS, CF	Davila, J., Lenherr, A., and Acosta, D.: Protective Effect of Flavonoids on Drug- Induced Hepatotoxicity *In Vitro*, *Toxicology 57*, 267, 1989 (*673*)
	Rat, Fisher, male, 125-250 g	Hepatocytes	Collagenase Type 1: 0.5%	RPMI 1640	Chan, K., Kost, D., and Michalopoulos, G.: Multiple Sequential Periods of DNA Synthesis and Quiescence in Primary Hepatocyte Cultures Maintained on the DMSO- EGF On/Off Protocol, *J Cell Physiol 141*, 584, 1989 (*825*)
	Rat, Fischer 344, male, 14 months	Hepatocytes	Collagenase: 0.05%	Ringer's biocarbonate buffer	Nagy, I., Ohno-Iwashita, Y., Ohta, M., Nagy, V., Kitani, K., Ando, S., and Imahori, K.: Effect of Perfringolysin O on the Lateral Diffusion Constant of Membrane Proteins of Hepatocytes as Revealed by Fluorescence Recovery After Photobleaching, *Biochim Biophys Acta 939*, 551, 1988 (*327*)
	Rat, SD, male, 200- 300 g	Hepatocytes	Collagenase: 0.05%	HEPES	Voss, A. and Sprecher, H.: Metabolism of 6,9,12- Octadecatetraenoic and 6,9,12,15-Octadecatetraenoic Acid, *Biochim Biophys Acta 958*, 153, 1988 (*328*)
	Rat, Wistar, male, 3 month, 200 g	Parenchymal Endothelial Kupffer	Collagenase Type 1: 0.05%	Krebs Henseleit	Kuiper, J., Zijlstra, F., Kamps, J, and vanBerkel, T.: Identification of Prostaglandin D2 as the Major Eiconsanoid from Liver Endothelial and Kupffer Cells, *Biochim Biophys Acta 959*, 143, 1988 (*329*)
	Rat, Wistar, male, 200 - 300 g	Parenchymal Kupffer	Collagenase Type 2: 0.05%	HBSS with $CaCl_2$	Cai, H., He, Z., and Ding, Y.: Effects of Monocyte Macrophages Stimulation on Hepatic Lipoprotein Receptors, *Biochim Biophys Acta 958*, 334, 1988 (*331*)
	Rat, Wistar, female, 17 days	Hepatocytes	Collagenase: 0.05%	HBSS	Cotariu, D., Barr-Nea, L., Papo, N., and Zaidman, J.: Induction of gamma- Glutamyl Transferase by Dexamethasone in Cultured Rat Hepatocytes, *Enzyme 40*, 212, 1988 (*386*)
	Rat, CD strain, albino, male, 140 -180 g	Hepatocytes and Nonparenchymal	Pronase: 0.1%	HEPES buffer with calcium	Braun, L., Mead, J., Panzica, M., Mikumo, R., Bell, G., and Fausto, N.: Transforming Growth Factor B mRNA Increases During Liver Regeneration:A Possible Paracrine Mechanism Of Growth Regulation, *Proc Natl Acad Sci U S A 85*, 1539, 1988 (*656*)
	Rat, 250-350 g (also guinea-pig & rabbit)	Hepatocytes	Collagenase Type 2: 166 u/ml	DMEM	Chang, T., and Chang, C.: Hepatic Uptake of Asialoglycoprotein is Different Among Mammalian Species Due to Different Receptor Distribution, *Biochim Biophys Acta 942*, 57, 1988 (*832*)
	Rat, SD, male, 180- 200 g	Hepatocytes	Collagenase: 0.05%	MEM	Gupta, C., Hattori, A., Betschart, J., Virji, M., and Shinozuka, H.: Modulation of Epidermal Growth Factor Receptors in Rat Hepatocytes by Two Liver-Promoting Regimens, a Choline- Deficient and a Phenobarbital Diet, *Cancer Res 48*, 1162, 1988 (*833*)
	Rat, Fisher 344, 150-200 g	Bile ductular epithelial	Collagenase Type 1: 220 u/ml	L-15	Mathis, G., Walls, S., and Sirica, A.: Biochemical Characteristics of Hyperplastic Rat Bile Ductular Epithelial Cells Cultured "on Top" and "Inside" Different Extracellular Matrix Substitutes, *Cancer Res 48*, 6145, 1988 (*922*)
	Rat, Wistar, male, 260-310 g	Hepatocytes	Collagenase Type 1: 0.05%	HEPES	McAbee, D. and Weigel, P.: ATP-Dependent Inactivation and Reactivation of Constitutively Recycling Galactosyl Receptors in Isolated Rat Hepatocytes, *Biochemistry 27*, 2061, 1988 (*1165*)

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TISSUE TABLES

Liver

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat, SD, male, 350- 400 g	Hepatocytes	Collagenase Type 2:	HBSS	Rodriguez de Turco, E., and Spitzer, J.: Kinetics of Diacylglycerol Accumulation in Response to Vasopressin Stimulation in Hepatocytes of Continuously Endotoxaemic Rats, *Biochem J 253*, 73, 1988 (*1216*)
	Rat, SD, male, 350 - 450 g	Lipocytes, Kupffer Sinusoidal endothelial	Collagenase: 0.015%	DMEM/Ham's F-12	Friedman, S. and Roll, F.: Isolation and Culture of Hepatic Lipocytes,Kupffer Cells, and Sinusoidal Endothelial Cells by Density Gradient Centrifugation with Stractan, *Anal Biochem 161*, 207, 1987 (*301*)
	Rat, SD, male	Hepatocytes	Collagenase: 100 -200 µg/g body weight	Eagle's Eagle's w/HEPES HBSS	Oka, J. and Weigel, P.: Monensin Inhibits Ligand Dissociation Only Transiently and Partially and Distinguishes Two Galactosyl Receptor Pathways in Isolated Rat Hepatocytes, *J Cell Physiol 133*, 243, 1987 (*595*)
	Rat, Fischer, male, 150-250 g	Hepatocytes	Collagenase Type 1:125 - 250 u/ml	MEM (see reference)	Francavilla, A., Ove, P., Polimeno, L., Sciascia, C., Coetzee, M., and Starzi, T.: Epidermal Growth Factor and Proliferation in Rat Hepatocytes in Primary Culture Isolation at Different Times after Partial Hepatectomy, *Cancer Res 46*, 1318, 1986 (*824*)
	Rat, SD, male, 200- 250 g	Hepatocytes	Collagenase: 0.05%	HBSS	Kreamer, B., Staecker, J., Sawada, N., Sattler, G., Hsia, M., and Pitot, H.: Use of Low-Speed, Iso-Density Percoll Centrifugation Method to Increase the Viability of Isolated Rat Hepatocyte Preparations, *In Vitro Cell Dev Biol 22 (4)*, 201, 1986 (*830*)
	Rat, SD, female, 100-180 g	Hepatocytes	Collagenase: 0.5%	Krebs Ringer bicarbonate buffer	Schwarz, K., Lanier, S., Carter, E., Homcy, C., and Graham, R.: Rapid Reciprocal Changes in Adrenergic Receptors in Intact Isolated Hepatocytes During Primary Cell Culture, *Mol Pharmacol 27*, 200, 1985 (*639*)
	Rat, Lewis, female, 200-250 g	Hepatocytes, Kupffer, endothelial	Collagenase: 0.05%	Gey's BSS	Holstege, A., Leser, H., Pausch, J., Gerok, W.: Uridine Catabolism in Kupffer Cells, Endothelial Cells, and Hepatocytes, *Eur J Biochem 149*, 169-73, 1985 (*10260*)
	Rat, SD, male, 270 - 320 g	Hepatocytes	Collagenase: 0.04%	Bicarbonate buffer with calcium added	Brass, E., Garrity, M., and Robertson, R.: Inhibition of Glucagon-Stimulated Hepatic Glycogenolysis by E-Series Prostaglandins, *F.E.B.S. Lett. 169*, 293, 1984 (*410*)
	Rat, Wistar, adult, male, 150-200 g	Hepatocytes	Trypsin: 0.005%	Williams E	Okumura, T. and Saito, K.: Degradation of Prostaglandin E2 in a Primary Culture of Adult Rat Hepatocytes, *J. Biochem. 96*, 429, 1984 (*701*)
	Rat, Fischer, Lewis and SD, male 10-18 months	Epithelial	Trypsin: 0.05%	HBSS CMF	Herring, A., Raychaudhuri, R., Kelley, S., and Iybe, P.: Repeated Establishment of Diploid Epithelial Cell Cultures from Normal and Partially Hepatectomized Rats, *In Vitro 19*, 576, 1983 (*528*)
	Rat, Wistar, male, 3 month old	Endothelial, Kupffer Parenchymal	Collagenase: 0.05%	HBSS	Nagelkenke, J., Barto, K., and Berkel, T.: In Vivo and in Vitro Uptake and Degradation of Acetylated Low Density Lipoprotein by Rat Liver Endothelial, Kupffer, and Parenchymal Cells, *J Biol Chem 258 (20)*, 12221, 1983 (*940*)
	Rat, SD, male/female, 250-300 g	Hepatocytes	Collagenase: 100 u/ml	Krebs Henseleit bicarbonate buffer	Studer, R. and Borle, A.: Differences between Male and Female Rats in the Regulation of Hepatic Glycogenolysis. The Relative Role of Calcium and cAMP in Phosphorylase Activation by Catecholamines, *J Biol Chem 257*, 7987, 1982 (*556*)
	Rat, Wistar, 12 day	Epithelial	Trypsin: 0.05%	HBSS, CMF	Malan-Shibley, L., and Iype, P.: Influence of Cultures on Cell Morphology/Tyrosine Aminotransferase Levels, *Exp Cell Res 131*, 363, 1981 (*391*)
	Rat, Zucker, obese	Hepatocytes	Collagenase Type 2: 0.30%	Dulbecco-Vogt arginine free Eagle's	Goldstein, A., Palmer, J., and Johnson, P.: Primary Cultures of Fetal Hepatocytes from the Genetically Obese Zucker Rat: Protein Synthesis, *In Vitro 17*, 651, 1981 (*515*)
	Rat, SD	Hepatocytes	Collagenase: 90 u/ml	CF EGTA perfusate	Reese, J. and Byard, J.: Isolation And Culture of Adult Hepatocytes from Liver Biopsies, *In Vitro 17*, 935, 1981 (*412*)
	Rat, Wistar, female, fetus	Hepatocytes	Collagenase: 0.025%	HEPES buffer	Gugen-Guillouzo, C., Tichonicky, L., Szajnert, M., and Kruh, J.: Changes in Some Chromatin and Cytoplastic Enzymes of Perinatal Rat Hepatocytes, *In Vitro 16*, 1, 1980 (*505*)
	Rat, SD, male, 250- 300 g	Parenchymal	Collagenase Type 2: 0.05%	Kreb's Henseleit bicarbonate buffer	Yamada, S., Otto, P., Kennedy, D., and Whayne, T.: The Effects of Dexamethasone on Metabolic Activity of Hepatocytes in Primary Monolayer Culture, *In Vitro 16*, 559, 1980 (*508*)
	Rat, Wistar, male, 180-210 g	Hepatocytes	Hyaluronidase: 0.02%	Kreb's buffer	De Gerlache, J., Lans, M., Taper, H., and Roberfroid, M.: Separate Isolation of Cells from Nodules and Surrounding Parenchyma of the Same Precancerous Rat Liver: Biochemical and Cytochemical Characterization, *Toxicology 18*, 225, 1980 (*843*)
	Rat, SD, 7-10 day	Liver	Collagenase: 0.05%	HBSS modified (see reference)	Acosta, D., Anuforo, D., and Smith, R,: Preparation of Primaty Monolayer Cultures of Postnatal Rat Liver Cells, *J Tiss Cul Meth 6*, 35, 1980 (*1268*)
	Rat, Wistar, male, 200-250 g	Hepatocytes	Hyaluronidase: 460 u/ml	Saline	Poli, G., Gravela, E., Albano, E., and Dianzani, M.: Studies on Fatty Liver with Isolated Hepatocytes: II., The Action of Carbon Tetrachloride on Lipid Peroxidation, Protein and Triglyceride Synthesis and Secretion, *Exp Mol Pathol 30*, 116, 1979 (*408*)
	Rat, SD, female, 100-150 g	Hepatocytes	Collagenase Type 1:0.065%	DMEM (see reference)	Davis, R., Engelhorn, S., Pangburn, S., Weinstein, D., and Steinberg, D.: Very Low Density Lipoprotein Synthesis and Secretion by Cultured Rat Hepatocytes, *J Biol Chem 254 (6)*, 2010, 1979 (*820*)
	Rat (also chicken)	Hepatocytes	Collagenase Type 3 & 4:	HEPES	Weigel, P., Schnaar, R., Kuhlenschmidt, M., Schmell, E., Lee, R., Lee, Y., and Roseman, S.: Adhesion of Hepatocytes to Immobilized Sugars, *J Biol Chem 254 (21)*, 10830, 1979 (*1032*)
	Rat, SD, male, 200 g	Hepatocytes	Collagenase Type 1:100 u/ml	Buffers 1 & 2 (see reference)	Rubin, K., Kjellen, L., and Oslashbrink, B.: Intercellular Adhesion between Juvenile Liver Cells.. A Method to Measure the Formation of Stable Lateral Contacts Between Cells Attached to a Collagen Gel, *Exp Cell Res 109*, 413, 1977 (*387*)
	Rat (WAG/RIJ), female, 24, 30, and 37 months	Parenchymal	Collagenase Type 1: 0.05% - 0.06%	HEPES buffer	VanBezodijen, C., Grell, T., and Knook, D.: Effect of Age on Protein Synthesis by Isolated Liver Parenchymal Cells, *Mech Ageing Dev 6*, 293, 1977 (*630*)
	Rat, Fisher, adult, male	Hepatocytes	Collagenase Type 1:100 u/ml	HBSS (see reference)	Williams, G., Bermudez, E., and Scaramuzzino, D.: Rat Hepatocytes Primary Cell Cultures III. Improved Dissociation and Attachment Techniques and the Enchancement of Survival by Culture Medium, *In Vitro 13 (12)*, 809, 1977 (*826*)
	Rat , Wistar, male, 250-300 g	Hepatocytes	Collagenase: 0.05%	Hank's solution, CF	Gravela, E., Poli, G., Albano, E., and Dianzani, M.: Studies of Fatty Liver with Isolated Hepatocytes, *Exp Mol Pathol 27*, 339, 1977 (*1209*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat, Fischer, male, adult, 170-265 g	Hepatocytes	Collagenase: 0.05%-0.10%	Williams E	Laishes, B., and Williams, G.: Conditions Affecting Primary Cell Cultures of Functional Adult Rat Hepatocytes. I.. The Effect of Insulin, *In Vitro 12*, 521, 1976 (*496*)
	Rat, SD, male, 200- 250 g	Hepatocytes	Collagenase Type 1: 0.05%	MEM	Witters, L., Alberico, L., and Acruch, J.: Insulin Regulation of Glycogen Synthase in the Isolated Rat Hepatocyte, *Biochem Biophys Res Commun 69 (4)*, 997, 1976 (*821*)
	Rat, Fischer, adult, 200-250 g	Epithelial	Hyaluronidase: 0.0075%	KCl-NaCl HEPES Buffer	Williams, G., and Gunn, J.: Long-Term Culture of Adult Rat Liver Epithelial Cells, *Exp Cell Res 89*, 139, 1974 (*405*)
	Rat, neonate, 3 day	Hepatocytes	Trypsin: 0.25%	PBS, CMF	Bausher, J., and Schaeffer, W.: A Diploid Rat Liver Cell Culture. 1. Characterization and Sensitivity to Aflatoxin B1, *In Vitro 9*, 286, 1974 (*540*)
	Rat, SD, albino, male	Parenchymal	Hyaluronidase: 0.1%	Hank's solution, CMF	Bonney, R., Becker, J., Walker, P., and Potter, V.: Primary Monolayer Cultures of Adult Rat Liver Parenchymal Cells Suitable for Study of the Regulation of Enzyme Synthesis, *In Vitro 9*, 399, 1974 (*541*)
	Rat, embryos, 1-3 days	Hepatocytes	Hyaluronidase: 0.10%	HBSS	Gerschenson, L., Berliner, J., and Davidson, M.: The Isolation and Culture of Liver Cells, *Vol. 32*, 733, 1974 (*635*)
	Rat, SD, adult, male, 200-250 g	Parenchymal	Hyaluronidase: 0.10%	HBSS, CF	Howard, R., Lee, J., and Pesch, L.: The Fine Structure, Potassium Content, and Respiratory Activity of Isolated Rat Liver Parenchymal Cells Prepared by Improved Enzymatic Techniques, *J Cell Biol 57*, 642, 1973 (*586*)
	Rat, SD, adult, male, 180-300 g	Parenchymal	Collagenase Type 1: 0.05%	Hank's solution, CF	Bissell, D., Hammaker, L., and Meyer, U.: Parenchymal Cells from Adult Rat Liver in Nonproliferating Monolayer Culture. I. Functional Studies, *J Cell Biol 59*, 722, 1973 (*588*)
	Rat, Wistar, 200-250 g	Hepatocytes	Hyaluronidase: 0.10%	HBSS, CF	Berg, T., Boman, D., and Seglen, P.O.: Induction of Tryptophan Oxygenase in Primary Rat Liver Cell Suspensions by Glucocorticoid Hormone, *Exp Cell Res 72*, 571, 1972 (*404*)
	Rat, SD, female, 130-160 g	Hepatocytes	Hyaluronidase: 0.08%	HBSS, CF	Johnson, M., Das, N., Butcher, F., and Fain, J.: The Regulation of Gluconeogenesis in Isolated Rat Liver Cells by Glucagon, Insulin, Dibutyryl Cyclic Adenosine Monophosphate, and Fatty Acids, *J Biol Chem 247*, 3229, 1972 (*550*)
	Rat, Fisher 344, pregnant (19-21 days gestation), 200-250 g	Hepatocytes	Collagenase: 0.3%	Modified Eagle's w/ Serum	Leffert, H., and Paul, D.: Studies on Primary Cultures of Differentiated Fetal Liver Cells, *J Cell Biol 52*, 559, 1972 (*585*)
	Rat, Wistar, male, 260-310 g	Hepatocytes	Collagenase: 0.01 - 0.08%	HEPES	Seglen, P.: Preparation of Rat Liver Cells, *Exp Cell Res 74*, 450, 1972 (*840*)
	Rat, Fisher, 10 day	Epithelial-like	Trypsin: 0.25%	PBS	Williams, G., Weisburger, E., and Weisburger, J.: Isolation and Long-Term Cell Culture of Epithelial-Like Cells from Rat Liver, *Exp Cell Res 69*, 106, 1971 (*402*)
	Rat, Wistar, male, 6- 8 weeks, 80-160 G	Hepatocytes	Hyaluronidase: 1.0%	HBSS, CMF	Iype, P.: Cultures from Adult Rat Liver Cells. 1.Establishment of Monolayer Cell-Cultures from Normal Lver, *J Cell Physiol 78*, 281, 1971 (*596*)
	Rat, 100-200 g	Hepatocytes	Hyaluronidase: 0.10%	HBSS, CF	Haung, Y., and Ebner, K.: Induction of Tyrosine Aminotransferase in Isolated Liver Cells, *Biochim Biophys Acta 191*, 161, 1969 (*318*)
	Rat, SD, adult, 200- 300 g	Parenchymal	Hyaluronidase: 0.10% Collagenase Type 1: 0.05%	HBSS, CF	Berry, M., and Friend, D.: High Yield Preparation of Isolated Rat Liver Parenchymal Cells, *J Cell Biol 43*, 506, 1969 (*583*)

Lung

Bovine	Bovine	Pulmonary microvessel endothelial	Collagenase Type 2: 1000 u/ml	PBS	Del Vecchio, P., Siflinger- Birnboim, A., Belloni, P., Holleran, L., Lum, H., and Malik, A.: Culture and Characterization of Pulmonary Microvascular Endothelial Cells, *In Vitro Cell Dev Biol 28A*, 711, 1992 (*947*)
Guinea-Pig	Guinea-pig, male, 250-300 g	Alveolar type II	Elastase: 40 u/ml	PBS (see reference)	Sikpi, M., Nair, C., Johns, A., and Das, S.: Metabolic and Ultrastructural Characterizationof Guinea- Pig Alveolar Type II Cells Isolated by Centrifugal Elutriation, *Biochim Biophys Acta 877*, 20, 1986 (*324*)
	Guinea-pig, male, 100 g	Single cells	Trypsin: 0.25%	CF salt solution	Phillips, H.: Dissociation of Single Cells from Lung or Kidney Tissue with Elastase, *In Vitro 8*, 101, 1972 (*538*)
Human	Human	Lung tumor	Collagenase Type 1: 45-60 u/ml Collagenase Type 2: 15-20 u/ml Collagenase Type 4: 45-60 u/ml Elastase: 0.002% Deoxyribonuclease I: 0.002%	DMEM/F12	Quatromoni, J., Singhal, S., Bhojnagarwala, P., Hancock, W., Albelda, S. and Eruslanov, E.: An Optimized Dissagregation Method for Human Lung Tumors That Perserves the Phenotype and Function of the Immune Cells, *J Leukoc Biol 97*, 201, 2015 (*11458*)
	Human	Alveolar epithelial	Neutral Protease: 2 u/ml Trypsin: 0.25% Elastase: 10 u/ml	Bronchial Epithelial Growth Medium	Barkauskas, C., Cronce, M., Rackley, C., Bowie, E., Keene, D., Stripp, B., Randell, S., Noble, P. and Hogan, B.: Type 2 Alveolar Cells are Stem Cells in Adult Lung, *J Clin Invest 123*, 3025, 2013 (*11040*)
	Human	Pulmonary endothelial	Collagenase Type 2: 0.2%	RPMI	Mackay, L., Dodd, S., Dougall, I., Tomlinson, W., Lordan, J., Fisher, A. and Corris, P.: Isolation and Characterisation of Human Pulmonary Microvascular Endothelial Cells from Patients with Severe Emphysema., *Respir Res 14*, 23, 2013 (*11486*)
	Human	Lung endothelial	Collagenase Type 2: 0.2%	PBS	Comhair, S., Xu, W., Mavrakis, L., Aldred, M., Asosingh, K. and Erzurum, S.: Human Primary Lung Endothelial Cells in Culture., *Am J Respir Cell Mol Biol 46*, 723-30, 2012 (*11431*)
	Human	Lung	Neutral Protease: 2 u/ml Collagenase/Dispase: 0.1% Deoxyribonuclease I: 0.01%	DMEM	Fujino, N., Kubo, H., Suzuki, T., Ota, C., Hegab, A., He, M., Suzuki, S., Suzuki, T., Yamada, M., Kondo, T., Kato, H. and Yamaya, M.: Isolation of Alveolar Epithelial Type II Progenitor Cells from Adult Human Lungs., *Lab Invest 91*, 363, 2011 (*10936*)

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TISSUE TABLES

Lung

Lung

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human	Lung Fibroblasts	Trypsin: 0.05%	DMEM	Zhu, Y., Skold, C., Liu, X., Wang, H., Kohyama., T., Wen, F., Ertl, R., and Rennard, S.: Fibroblasts and Monocyte Macrophages Contract and Degrade Three- Dimensional Collagen Gels in Extended Co-Culture, *Respir Res 2 (5)*, 295, 2001 (*1132*)
	Human, 16-24 week	Alveolar type II Fetal	Trypsin: 50 ug/ml	Ham's F-12, Eagle's MEM	Liley, H., Ertsey, R., Gonzales, L., Odom, M., Hawgood, S., Dobbs, L., and Ballard, P.: Synthesis of Surfactant Components by Cultured Type II Cells From Human Lung, *Biochim Biophys Acta 961*, 86, 1988 (*877*)
	Human	Epithelial	Trypsin: 0.02%	Medium 199	Lechner, J., Haugen, A., McClendon, I., and Pettis, E.: Clonal Growth of Normal Adult Human Bronchial Epithelial Cells in a Serum- Free Medium, *In Vitro 18 (7)*, 633, 1982 (*919*)
	Human, 12-16 wk old embryo	Fibroblasts	Trypsin: 0.01%	Eagle's MEM	Kan, M., and Yamane, I.: In Vitro Proliferation and Lifespan of Human Diploid Fibroblasts in Serum-Free BSA-Containing Medium, *J Cell Physiol 111*, 155, 1982 (*975*)
	Human fetuses, 80 day (also swine fetuses, 70 day, adult Amer Dutch, 250 day)	Lung	Collagenase: 0.01%	HBSS	Hinz, R., and Syverton, J.: Mammalian Cell Cultures for Study of Influenza Virus. I. Preparation of Monolayer Cultures with Collagenase, *Proc Soc Exp Biol Med 101*, 19, 1959 (*662*)
Mouse	Mouse	Alveolar epithelial	Neutral Protease: 0.1% Deoxyribonuclease I: 0.01%	DMEM	Sun, F., Xiao, G. and Qu, Z.: Isolation of Murine Alveolar Type II Epithelial Cells., *Bio- protocol 7*, 2017 (*11524*)
	Mouse	Lung	Collagenase Type 1: 0.15% Deoxyribonuclease I: 0.04%	PBS	Yu, Y., O'Koren, E., Holten, D., Kan, M., Kojin, D., Nelson, E., Que, L. and Gunn, M.: A Protocol for the Comprehensive Flow Cytometric Analysis of Immune Cells in Normal and Inflammed Murine Non- Lymphoid Tissues, *PLoS ONE 10*, 1371, 2016 (*11617*)
	Mouse	Lung	Collagenase Type 2: 0.3% Deoxyribonuclease I: 0.3%	PBS	Braza, F., Dirou, S., Forest, V., Sauzeau, V., Hassoun, D., Chesne, J., Cheminant- Muller, M., Sagan, C., Magnan, A. and Lemarchand, P.: Mesenchymal Stem Cells Induce Suppressive Macrophages Through Phagocytosis in a Mouse Model of Asthma., *Stem Cells 34*, 1836-45, 2016 (*11644*)
	Mouse	Alveolar	Collagenase Type 1: 300 u/ml Elastase: 4 u/ml Neutral Protease: 5 u/ml Deoxyribonuclease I: 200 u/ml	HBSS	Mohapatra, A., Van Dyken, S., Schneider, C., Nussbaum, J., Liang, H. and Locksley, R.: Group 2 Innate Lymphoid Cells Utilize the IRF4-IL-9 Module to Coordinate Epithelial Cell Maintenance of Lung Homeostasis., *Mucosal Immunol*, 2015 (*11420*)
	Mouse	Pulmonary	Collagenase Type 4: 0.16% Deoxyribonuclease I: 0.1%	see reference	Kim, H., Lee, H., Chang, Y., Pichavant, M., Shore, S., Fitzgerald, K., Ikawura, Y., Israel, E., Bolger, K., Faul, J., DeKruyff, R. and Umetsu, D.: IL-17 Producing Innate Lymphoid Cells and the NLRP3 Inflammasone Facilitate Obescity- associated Airway Hyperractivity, *Nat Med 20*, 54, 2014 (*11043*)
	Mouse	Lung	Collagenase Type 4: 0.3%	PBS	Guimond, D., Cam, N., Hirve, N., Duan, W., Lambris, J., Croft, M. and Tsoukas, C.: Regulation of Immune Responsiveness In Vivo by Disrupting an Early T-Cell Signaling Event Using a Cell-Permeable Peptide., *PLoS ONE 8*, e63645, 2013 (*10957*)
	Mouse	Lung	Collagenase Type 4: 0.1% Deoxyribonuclease I: 0.01%	HBSS	Misharin, A., Morales- Nebreda, L., Mutlu, G., Budinger, G. and Perlman, H.: Flow Cytometric Analysis of Macrophages and Dendritic Cell Subsets in the Mouse Lung., *Am J Respir Cell Mol Biol 49*, 503-10, 2013 (*11616*)
	Mouse, 8-12 week	Lung progenitor	Collagenase/Dispase: 0.2% Neutral Protease: 5 u/ml Deoxyribonuclease I: 0.0025%	DMEM	Driscoll, B., Kikuchi, A., Lau, A., Lee, J., Reddy, R., Jesudason, E., Kim, C. and Warburton, D.: Isolation and Characterization of Distal Lung Progenitor Cells., *Methods Mol Biol 879*, 109, 2012 (*11060*)
	Mouse	Lung tumor	Neutral Protease: 50 u/ml Collagenase: 400 u/ml Deoxyribonuclease I: 50 u/ml	DMEM	Vaughan, A., Halbert, C., Wootton, S. and Miller, A.: Lung Cancer in Mice Induced by the Jaagsiekte Sheep Retrovirus Envelope Protein is not Maintained by Rare Cancer Stem Cells, but Tumorigenicity does Correlate with Wnt Pathway Activation., *Mol Cancer Res 10*, 86, 2012 (*11083*)
	Mouse	Lung	Collagenase Type 3: 0.1% Deoxyribonuclease I: 0.0025%	RPMI 1640	Hardy, C., LeMasurier, J., Belz, G., Scalzo-Inguanti, K., Yao, J., Xiang, S., Kanellakis, P., Bobik, A., Strickland, D., Rolland, J., O'Hehir, R. and Plebanski, M.: Inert 50-nm Polystyrene Nanoparticles That Modify Pulmonary Dendritic Cell Function and Inhibit Allergic Airway Inflammation., *J Immunol 188*, 1431, 2012 (*11086*)
	Mouse	Lung draining	Collagenase Type 4: 0.1-0.125%	HBSS	Rayamajhi, M., Redente, E., Condon, T., Gonzalez- Juarrero, M., Riches, D. and Lenz, L.: Non-Surgical Intratracheal Instillation of Mice with Analysis of Lungs and Lung Draining Lymph Nodes by Flow Cytometry., *J Vis Exp 51*, 2702, 2011 (*10661*)
	Mouse, 8-10 week	Lung Mesenchymal stem	Collagenase Type 2: 0.2%	HBSS	Chow, K., Jun, D., Helm, K., Wagner, D. and Majka, S.: Isolation & Characterization of Hoechst(low) CD45(negative) Mouse Lung Mesenchymal Stem Cells., *J Vis Exp 56*, e3159, 2011 (*10793*)
	Mouse	Dendritic	Collagenase Type 1: 0.05% Deoxyribonuclease I: 0.002%	HBSS	Lancelin, W. and Guerrero- Plata, A.: Isolation of Mouse Lung Dendritic Cells., *J Vis Exp 57*, e3563, 2011 (*10981*)
	Mouse	Lung	Collagenase Type 1: 450 u/ml Elastase: 4 u/ml Neutral Protease: 5 u/ml Deoxyribonuclease I: 0.33 u/ml	DMEM/F12	Rock, J, Barkauskas, C, Cronc, M, Xue, Y, Harris, J, Liang, J, Noble, P and Hogan, B.: Multiple Stromal Populations Contribute to Pulmonary Fibrosis Without Evidence for Epithelial to Mesenchymal Transition., *Proc Natl Acad Sci U S A 108*, E1475, 2011 (*11087*)
	Mouse, female, 6-12 week	Lung mononuclear	Collagenase Type 4: 500 u/ml Deoxyribonuclease I: 0.002%	HBSS	Breslow, R., Rao, J., Xing, W., Hong, D., Barrett, N. and Katz, H.: Inhibition of Th2 Adaptive Immune Responses and Pulmonary Inflammation by Leukocyte Ig-Like Receptor B4 on Dendritic Cells., *J Immunol 184*, 1003, 2010 (*10606*)
	Mouse	Lung	Collagenase Type 2: 300 u/ml Deoxyribonuclease I: 0.015%	RPMI 1640	Ferreira, C., Antunes, F., Leonard, V., Welstead, G., Richardson, C. and Cattaneo, R.: Measles Virus Infection of Alveolar Macrophages and Dendritic Cells Precedes Spread to Lymphatic Organs in Transgenic Mice Expressing Human Signaling Lymphocytic Activation Molecule (SLAM, CD150)., *J Virol 84*, 3033, 2010 (*10646*)

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TISSUE TABLES

Lung

Lung

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse, embryo, day 18	Alveolar and fibroblast	Trypsin: 2.5% Deoxyribonuclease I: 0.2% Collagenase Type 1: 1250 u/ml	MEM	Trotter, A., Kipp, M., Schrader, R. and Beyer, C.: Combined Application of 17Beta-Estradiol and Progesterone Enhance Vascular Endothelial Growth Factor and Surfactant Protein Expression in Cultured Embryonic Lung Cells of Mice., *Int J Pediatr 2009*, 170491, 2009 (*10584*)
	Mouse	Lung	Collagenase Type 4: 0.1% Deoxyribonuclease I: 0.01%	HBSS	Zhao, J., Zhao, J., Van Rooijen, N. and Perlman, S.: Evasion by Stealth: Inefficient Immune Activation Underlies Poor T Cell Response and Severe Disease in SARS-CoV- Infected Mice., *PLoS Pathog 5*, e1000636, 2009 (*10647*)
	Mouse	Dendritic	Collagenase Type 1: 0.5%	HBSS	Flano, E., Jewell, N., Durbin, R. and Durbin, J.: Methods Used to Study Respiratory Virus Infection., *Curr Protoc Cell Biol Vol. Chapter 26*,, , Unit 26.3, 2009 (*10648*)
	Mouse, 6-7 week	Leukocytes and endothelial	Collagenase: 0.2% Deoxyribonuclease I: 40-80 u/ml	PBS	Jungblut, M., Oeltze, K., Zehnter, I., Hasselmann, D. and Bosio, A.: Standardized Preparation of Single-Cell Suspensions from Mouse Lung Tissue Using the GentleMACS Dissociator., *J Vis Exp 29*, , 2009 (*11028*)
	Mouse	Lung	Collagenase Type 2: 0.2%	PBS	Jones, R., Capen, D., Cohen, K., Munn, L., Jain, R. and Duda, D.: A Protocol for Phenotypic Detection and Characterization of Vascular Cells of Different Origins in a Lung Neovascularization Model in Rodents., *Nat Protoc 3*, 388-97, 2008 (*10722*)
	Mouse, 18-20 g	Lung	Collagenase Type 3: 0.17%	HBSS	Ebeling, C., Lam, T., Gordon, J., Hollenberg, M. and Vliagoftis, H.: Proteinase-Activated Receptor-2 Promotes Allergic Sensitization to an Inhaled Antigen through a TNF-Mediated Pathway., *J Immunol 179*, 2910, 2007 (*10492*)
	Mouse	Lung	Collagenase Type 2: 300 u/ml Deoxyribonuclease I: 0.001%	Dulbecco's PBS	Finotto, S., Eigenbrod, T., Karwot, R., Boross, I., Doganci, A., Ito, H., Nishimoto, N., Yoshizaki, K., Kishimoto, T., Rose-John, S., Galle, P. and Neurath, M.: Local Blockade of IL-6R Signaling Induces Lung CD4+ T Cell Apoptosis in a Murine Model of Asthma Via Regulatory T Cells., *Int Immunol 19*, 685, 2007 (*10605*)
	Mouse, 6-16 week	Mononuclear	Collagenase Type 4: 0.1%	RPMI 1640	Abonia, J., Hallgren, J., Jones, T., Shi, T., Xu, Y., Koni, P., Flavell, R., Boyce, J., Austen, F. and Gurish, M.: Alpha-4 Integrins and VCAM-1, but not MAdCAM-1, are Essential for Recruitment of Mast Cell Progenitors to the Inflamed Lung., *Blood 108*, 1588-94, 2006 (*10864*)
	Mouse, 8-12 week	Mononuclear	Collagenase Type 1: 300 u/ml Deoxyribonuclease I: 50 u/ml	RPMI 1640 medium	Woolard, M., Hodge, L., Jones, H., Schoeb, T., and Simecka, J.: The Upper and Lower Respiratory Tracts Differ in Their Requirement of IFN-Gamma and IL-4 in Controlling Respiratory Mycoplasma Infection and Disease, *J Immunol 172*, 6875, 2004 (*10014*)
	Mouse	Alveolar epithelial cells	Neutral Protease: Deoxyribonuclease I: 0.01%	DMEM	Paine, R. 3rd, Wilcoxen, S., Morris, S., Sartori, C., Baleeiro, C., Matthay, M., and Christensen, P.: Transgenic Overexpression of Granulocyte Macrophage-Colony Stimulating Factor in the Lung Prevents Hyperoxic Lung Injury, *Am J Pathol 163*, 2397, 2003 (*10011*)
	Mouse, 6-8 week	Lung and lymph node cells	Collagenase Type 2: 0.1% Deoxyribonuclease I: 0.002%	RPMI 1640	Vermaelen, K., Carro-Muino, I., Lambrecht, B., and Pauwels, R.: Specific Migratory Dendritic Cells Rapidly Transport Antigen from the Airways to the Thoracic Lymph Nodes, *J Exp Med 193*, 51, 2001 (*10015*)
	Mouse	Lung	Collagenase: 100 u/ml Deoxyribonuclease I: 200 u/ml	Krebs-Henseleit Buffer	Freedman, S., Katz, M., Parker, E., Laposata, M., Urman, M., and Alvarez, J.: A Membrane Lipid Imbalance Plays a Role in the Phenotypic Expression of Cystic Fibrosis in cftr(-/-) Mice, *Proc Natl Acad Sci U S A 96*, 13995, 1999 (*10017*)
	Mouse, 6-8 wk	Lung	Collagenase Type 3: 150 u/ml	HBSS	Stampfli, M., Wiley, R., Neigh, G., Gajewska, B., Lei, X., Snider, D., Xing, Z., Jordana, M.: GM-CSF Transgene Expression in the Airway Allows Aerosolized Ovalbumin to Induce Allergic Sensitization in Mice, *J Clin Invest 102*, 1704-14, 1998 (*10214*)
	Mouse, female, 18-20 g	Murine endothelial cells	Collagenase Type 1: 1 mg/ml	DMEM	Dong, Q., Bernasconi, S., Lostaglio, S., De Calmanovici, R., Martin-Padura, I., Breviario, F., Garlanda, C., Ramponi, S., Mantovani, A.,and Vecchi, A.: A General Strategy for Isolation of Endothelial Cells from Murine Tissues. Characterization of Two Endothelial Cell Lines from the Murine Lung and Subcutaneous Sponge Implants, *Arterioscler Thromb Vasc Biol 17*, 1599, 1997 (*10018*)
	Mouse, female	Antigen presenting cells	Collagenase: 150 u/ml Deoxyribonuclease I: 30 u/ml	RPMI 1640	Hamilton-Easton, A., and Eichelberger, M.: Virus-Specific Antigen Presentation by Different Subsets of Cells from Lung and Mediastinal Lymph Node Tissues of Influenza Virus-Infected Mice, *J Virol 69*, 6359, 1995 (*10016*)
Porcine	Swine fetuses (70 day), adult Amer Dutch 250 day (also human fetuses, 80 day)	Lung	Collagenase: 0.01%	HBSS	Hinz, R., and Syverton, J.: Mammalian Cell Cultures for Study of Influenza Virus. I. Preparation of Monolayer Cultures with Collagenase, *Proc Soc Exp Biol Med 101*, 19, 1959 (*662*)
Rabbit	Rabbit, New Zealand, white	Alveolar type II	Trypsin: 0.05%	HBSS	Scott, J.: The Role of Sera, Growth Factors, and Hormones in the *In Vitro* Production of Disaturated Phosphatidylcholine and Propagation of Undifferentiated Type II Alveolar Cells from the Fetal Rabbit Lung, *Exp Lung Res 12*, 181, 1987 (*879*)
	Rabbit, New Zealand white, adult, male	Alveolar type II	Trypsin: 0.0025%	Joklik's MEM	Finkelstein, J., Maniscalco, W., and Shapiro, D.: Properties of Freshly Isolated Type II Alveolar Epithelial Cells, *Biochim Biophys Acta 762*, 398, 1983 (*323*)
	Rabbit, New Zealand, male, 2-3 kg	Clara cells	Protease: 0.1%	HEPES	Devereux, T., and Fouts, J.: Isolation and Identification of Clara Cells From Rabbit Lung, *In Vitro 16 (11)*, 958, 1980 (*878*)
	Rabbit, New Zealand, white, male, 1.7 Kg	Lung	Pronase: 0.2%	Kreb's serum substitute solution, CMF	Gould, M., Clements, J., Jones, A., and Felts, J.: Dispersal of Rabbit Lung into Individual Viable Cells: A New Model for the Study of Lung Metabolism, *Science 178*, 1209, 1972 (*665*)
Rat	Rat	Lung	Collagenase Type 2: 0.2%	PBS	Jones, R., Capen, D., Cohen, K., Munn, L., Jain, R. and Duda, D.: A Protocol for Phenotypic Detection and Characterization of Vascular Cells of Different Origins in a Lung Neovascularization Model in Rodents., *Nat Protoc 3*, 388-97, 2008 (*10722*)
	Rat, SD, 250-300g	Alveolar epithelial	Elastase: 3-4.5 u/ml	RPMI 1640	Chen J., Chen Z., Narasaraju T., Jin N., and Liu L.: Isolation of Highly Pure Alveolar Epithelial Type I and Type II Cells from Rat Lungs, *Lab Invest 84*, 727, 2004 (*10006*)
	Rat, SD, 300-400 g	Pulmonary endothelial	Collagenase Type 2: 1000 u/ml	DMEM/F-12	King, J., Hamil, T., Creighton, J., Wu, S., Bhat, P., McDonald, F., and Stevens, T.: Structural and Functional Characteristics of Lung Macro- and Microvascular Endothelial Cell Phenotypes, *Microvasc Res 67*, 139, 2004 (*10010*)
	Rat, SD, 125-150 g	Alveolar type I & II	Elastase: 2.5-8 u/ml Collagenase Type 1: 1.0%	DMEM/F12	Liebler, J., Borok, Z., Li, X., Zhou, B., Sandoval, A., Kim, K.and Crandall, E.: Alveolar Epithelial Type I Cells Express Beta 2-Adrenergic Receptors and G-protein Receptor Kinase 2., *J Histochem Cytochem 52*, 759, 2004 (*10495*)

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Lung

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat, SD, 200-225 g	Type II alveolar epithelial cells	Elastase: 4.2 u/ml Deoxyribonuclease I: 0.0001%	DMEM	Sunil, V., Connor, A., Guo, Y., Laskin, J., and Laskin, D.: Activation of Type II Alveolar Epithelial Cells During Acute Endotoxemia, *Am J Physiol Lung Cell Mol Physiol 282*, L872, 2002 (*10013*)
	Rat, SD, male, adult	Alveolar	Elastase: 2.0 - 2.5 u/ml	DMEM/Ham's F-12 (see reference)	Kemp, P., Kim, K., Borok., Z., and Crandall, E.: Re- evaluating the Na^+ Conductance of Adult Rat Alveolar Type II Pneumocytes: Evidence for the Involvement of cGMP- Activated Cation Channels, *J Physiol 536 (3)*, 693, 2001 (*1060*)
	Rat, Lewis, male, 200-250g	Interstitial lung macrophages	Collagenase Type 1: 100 u/ml Deoxyribonuclease I: 50 u/ml	RPMI-1640	Steinmuller, C., Franke- Ullmann, G., Lohmann- Matthes, M., Emmendorffer, A.: Local Activation of Nonspecific Defense Against a Respiratory Model Infection by Application of Interferon-Gamma: Comparison Between Rat Alveolar and Interstitial Lung Macrophages, *Am J Respir Cell Mol Biol 22*, 481- 90, 2000 (*10220*)
	Rat, male	Alveolar epithelial	Elastase: 40 u/ml	DMEM	Planus, E., Galiacy, S., Matthay, M., Laurent, V., Gavrilovic, J., Murphy, G., Clerici, C., Isabey, D., Lafuma, C., and d'Ortho, M.: Role of Collagenase in Mediating in Vitro Alveolar Epithelial Wound Repair, *J Cell Sci 112*, 243, 1999 (*9828*)
	Rat, male, 200-250g	Pulmonary arterial myocytes	Collagenase: 0.15% Papain: 0.15% Elastase: 0.05%	PBS	Bakhramov, A., Evans, M. and Kozlowski, R.: Differential Effects of Hypoxia on the Intracellular Ca^{2+} Concentration of Myocytes Isolated from Different Regions of the Rat Pulmonary Arterial Tree, *Exp Physiol 83*, 337-47, 1998 (*10102*)
	Rat, embryonic day 15	Fetal alveolar epithelial type II	Trypsin: 0.1%	DMEM	Fraslon-Vanhulle, C, Bourbon, J and Batenburg, J: Culture of Fetal Alveolar Epithelial Type II Cells, *Cell & Tissue Culture: Laboratory Procedures Vol. 2*,Doyle, A., Griffiths, J., and Newell, D., John Wiley and Sons, Ltd., 13A:2.1, 1995 (*1278*)
	Rat, SD, male, 125-175 g	Alveolar epithelial	Elastase: 2 u/ml	EBSS	Kim, K., Suh, D., Lubman, R., Danto, S., Borok, Z., and Crandall, E.: Studies on the Mechanisms of Active Ion Fluxes Across Alveolar Epithelial Cell Monolayers, *J Tiss Cul Meth 14*, 187, 1992 (*896*)
	Rat, Wistar	Epithelial	Trypsin: 0.1%	HBSS	Jassal, D., Han, R., Caniggia, I., Post, M., and Tanswell, A.: Growth of Distal Fetal Rat Lung Epithelial Cells in a Defined Serum-Free Medium, *In Vitro Cell Dev Biol 27A*, 625, 1991 (*471*)
	Rat, SD, 8 day	Interstitial	Trypsin: 1.125%	HEPES buffer	Berk, J., Franzblau, C., and Goldstein, R.: Recombinant Interleukin-1beta Inhibits Elastin Formation by a Neonatal Rat Lung Fibroblast Subtype, *J Biol Chem 266*, 3192, 1991 (*574*)
	Rat, Wistar, female, virgin	Alveolar epithelial type II	Trypsin: 1%	Eagle's MEM	Fraslon, C., Rolland, G., Bourbon, J., Rieutort, M., and Valenza, C.: Culture of Fetal Alveolar Epithelial Type II Cells in Serum-Free Medium, *In Vitro Cell Dev Biol 27A*, 843, 1991 (*927*)
	Rat, Fischer 344, male	Alveolar type II pneumocytes	Elastase: 40 u/ml	HEPES buffer (see reference)	Mangum, J., Everitt, J., Bonner, J., Moore, L., and Brody, A.: Co-Culture of Primary Pulmonary Cells to Model Alveolar Injury and Translocation of Proteins, *In Vitro Cell Dev Biol 26*, 1135, 1990 (*428*)
	Rat, SD, male, 250- 400 g	Alveolar type II	Elastase: 40 u/ml	Phosphate- buffered medium (see reference)	Ma, J., LaCagnin, L., Bowman, L., and Miles, P.: Carbon Tetrachloride Inhibits Synthesis of Pulmonary Surfactant Disaturated Phosphatidylcholines and ATP Production in Alveolar Type II Cells, *Biochim Biophys Acta 1003*, 136, 1989 (*314*)
	Rat, Wistar, adult, male and pregnant female (known gestation)	Alveolar type II	Trypsin: 0.1%	RPMI 1640	Batenburg, J., Otto-Verberne, C., Have-Opbroek, A., and Klazinga, W.: Isolation of Alveolar Type II Cells from Fetal Rat Lung by Differential Adherence in Monolayer Culture, *Biochim Biophys Acta 960*, 441, 1988 (*332*)
	Rat, SD, male, 150 - 200 g	Pneumocytes type II	Trypsin: 0.30%	BSS	Brown, L. and Longmore, W.: Altered Phospholipid Secretion in Type II Pneumocytes Isolated from Streptozotocin-diabetic Rats, *Biochim Biophys Acta 878*, 258, 1986 (*325*)
	Rat, SD, male, 180- 200 g	Alveolar type II	Elastase: 4.3 u/ml	HEPES (see reference)	Dobbs, L., Gonzalez R., and Williams, M.: An Improved Method for Isolating Type II Cells in High Yield and Purity, *Am Rev Respir Dis 134*, 141, 1986 (*700*)
	Rat, SD, male	Alveolar type I	Trypsin: 0.05%	DMEM	Weller, N., and Karnovksy, M.: Isolation of Pulmonary Alveolar Type I Cells From Adult Rats, *Am J Pathol 124*, 448, 1986 (*990*)
	Rat, fetus, 19 day	Fibroblasts & type II	Trypsin: 0.05%	HBSS: serum free MEM, CMF	Post, M., Torday, J., and Smith, B.: Alveolar Type II Cells Isolated from Fetal Rat Lung Organotypic Cultures Synthesize and Secrete Surfactant-Associated Phospholipids and Respond to Fibroblast-Pneumonocyte Factor, *Exp Lung Res 7*, 53, 1984 (*407*)
	Rat, SD, male, 150- 400 g	Alveolar type II	Elastase: 4 u/ml	Auto-Pow Eagle's modified MEM	Goodman, B., Fleischer, R., and Crandall, E.: Evidence for Active Na+ Transport by Cultured Monolayers of Pulmonary Alveolar Epithelial Cells, *Am J Physiol 245*, C78, 1983 (*292*)
	Rat, SD, male/female, 180- 250 g	Alveolar type II	Trypsin: 0.30%	BSS	Mason, R., Williams, M., Greenleaf, R., and Clements, J.: Isolation and Properties of Type II Alveolar Cells from Rat Lung, *Am Rev Respir Dis 115*, 1015, 1977 (*697*)
	Rat, Wistar, pathogen free	Alveolar type II	Trypsin: 0.50%	Earle's MEM	King, R.: Metabolic Fate of the Apoproteins of Pulmonary Surfactant, *Am Rev Respir Dis 115*, 73, 1977 (*699*)
	Rat, fetus, 19 days	Alveolar pneumonocytes, type II	Trypsin: 0.1 %	HBSS, CMF	Douglas, W., and Teel, R.: An Organotypic in Vitro Model System for Studying Pulmonary Surfactant Production by Type II Alveolar Pneumonocytes, *Am Rev Respir Dis 113*, 17, 1976 (*698*)
	Rat, adult	Lung	Collagenase: 0.1%	Moscona saline, CMF	Douglas, W., and Kaighn, M.: Clonal Isolation of Differentiated Rat Lung Cells, *In Vitro 10*, 230, 1974 (*493*)
	Rat, SD, male, 100 g	Alveolar type II	Trypsin: 1.0%	Joklik's medium	Kikkawa, Y., and Yoneda, K.: Type II Epithelial Cell of the Lung. I. Method of Isolation, *Lab Invest 30*, 76, 1974 (*623*)

Lymph Nodes

Mouse	Mouse	Dendritic	Collagenase Type 4: 0.1% Deoxyribonuclease I: 0.1%	RPMI 1640	Terhorst, D., Chelbi, R., Wohn, C., Malosse, C., Tamoutounour, S., Jorquera, A., Bajenoff, M., Dalod, M., Malissen, B. and Henri, S.: Dynamics and Transcriptomics of Skin Dendritic Cells and Macrophages in an Imiquimod-Induced, Biphasic Mouse Model of Psoriasis., *J Immunol 195*, 4953-61, 2015 (*11630*)

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Lymph Nodes

Lymph Nodes

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse	Stromal	Collagenase Type 4: 0.1% Deoxyribonuclease I: 0.004%	RPMI	Dubrot, J., Duraes, F., Potin, L., Capotosti, F., Brighouse, D., Suter, T., LeibundGut- Landmann, S., Garbi, N., Reith, W., Swartz, M. and Hugues, S.: Lymph Node Stromal Cells Acquire Peptide-MHCII Complexes from Dendritic Cells and Induce Antigen-Specific CD4+T Cell Tolerance, *J Exp Med 211*, 1153, 2014 (*11539*)
	Mouse	Lung draining	Collagenase Type 4: 0.1-0.125%	HBSS	Rayamajhi, M., Redente, E., Condon, T., Gonzalez- Juarrero, M., Riches, D. and Lenz, L.: Non-Surgical Intratracheal Instillation of Mice with Analysis of Lungs and Lung Draining Lymph Nodes by Flow Cytometry., *J Vis Exp 51*, 2702, 2011 (*10661*)
	Mouse	Follicular dentritic	Collagenase Type 4: 0.25% Deoxyribonuclease I: 0.5%	HBSS	Kapasi ZF, Qin D, Kerr WG, Kosco-Vilbois MH, Shultz LD, Tew JG, Szakal AK: Follicular dendritic cell (FDC) precursors in primary lymphoid tissues, *J Immunol 160*, 1078-84, 1998 (*10270*)

Mammary

Mammary

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Bovine	Bovine, lactating Holstein	Mammary epithelial	Collagenase Type 3: 400 u/ml Hyaluronidase: 100 u/ml Deoxyribonuclease I: 2 u/ml	HBSS	Miranda, S., Wang, Y., Purdie, N., Osborne, V., Coomber, B. and Cant, J.: Selenomethionine Stimulates Expression of Glutathione Peroxidase 1 and 3 and Growth of Bovine Mammary Epithelial Cells in Primary Culture., *J Dairy Sci 92*, 2670, 2009 (*10795*)
	Bovine, heifer, 200kg	Mammary epithelial	Collagenase Type 2: 1% Hyaluronidase: 1% Deoxyribonuclease I: 0.03%	M-199	Weber M., Purup S., Vestergaard M., Ellis S., Scndergard-Andersen J., Akers R., and Sejrsen K.: Contribution of Insulin-like Growth Factor (IGF)-I and IGF-binding Protein-3 to Mitogenic Activity in Bovine Mammary Extracts and Serum, *J Endocrinol 161*, 365, 1999 (*10000*)
	Bovine	Epithelial	Hyaluronidase: 0.005%	HBSS	Gibson, C., Vega, J., Baumrucker, C., Oakley, C., and Welsch, C.: Establishment And Characterization Of Bovine Mammary Epithelial Cell Lines, *In Vitro Cell Dev Biol 27*, 585, 1991 (*469*)
	Bovine	Epithelial	Deoxyribonuclease I: 0.04%	HBSS/Medium 199	Baumrucker, C., Deemer, K., Walsh, R., Riss, T., and Akers, R.: Primary Culture of Bovine Mammary Acini on a Collagen Matrix, *Tissue Cell 20 (4)*, 541, 1988 (*874*)
	Bovine, young, lactating, female	Mammary	Collagenase: 0.30 %	HBSS or EBSS	Anderson, C., and Larson, B.: Comparative Maintenance of Function in Dispersed Cell and Organ Cultures, *Exp Cell Res 61*, 24, 1970 (*399*)
	Bovine, dairy, purebred, (also rat, Holtzmann, albino, white)	Secretory Mammary gland	Collagenase: 0.02 -0.03%	HBSS or EBSS	Schingoethe, D., Hageman, E., and Larson, B.: Essential Amino Acids for Milk Protein Synthesis in the *In Vitro* Secretory Cell and Stimulation by Elevated Levels, *Biochim Biophys Acta 148*, 469, 1967 (*316*)
Goat	Goat, lactating, 1 month	Mammary gland	Collagenase: 0.02 -0.03%	HBSS or EBSS	Blanco, A., Rife, U., and Larson, B.: Lactate Dehydrogenase Isozymes during Dedifferentiation in Cultures of Mammary Secretory Cells, *Nature 214*, 1331, 1967 (*640*)
Guinea-Pig	Guinea-pig, pregnant, 4-10 day	Mammary gland	Trypsin NF 1:250:0.25%	Dulbecco phosphate	Turba, F., and Hilpert, N.: Secretion and Resorption of Proteins by Isolated Mammary Gland Cells. German, *Biochem Z 334*, 501, 1961 (*1282*)
Human	Human	Mammary epithelial	Collagenase: 200 u/ml Hyaluronidase: 100 u/ml	DMEM/F-12	Labarge, M., Garbe, J. and Stampfer, M.: Processing of Human Reduction Mammoplasty and Mastectomy Tissues for Cell Culture., *J Vis Exp 71*, , 2013 (*11030*)
	Human, normal biopsy	Fibroblasts	Collagenase Type 3: 900 u/ml	DMEM/F-12	Ronnov-Jessen L., Villadsen R., Edwards J., and Petersen O.: Differential Expression of a Chloride Intracellular Channel Gene, CLIC4, in Transforming Growth Factor- beta1-mediated Conversion of Fibroblasts to Myofibroblasts, *Am J Pathol 161*, 471, 2002 (*9998*)
	Human	Mammary epithelial	Collagenase Type 1: 0.1%	DMEM	Huss, F. and Kratz, G.: Mammary Epithelial Cell and Adipocyte Co-Culture in a 3- D Matrix: The First Step Towards Tissue-Engineered Human Breast Tissue., *Cells Tissues Organs 169*, 361-7, 2001 (*10690*)
	Human	Epithelial Fibroblasts	Collagenase Type 1: 450 IU/ml	DMEM/Ham's F-12	Ogmundsdottir, H., Petursdottir, I., Gudmundsdottir, I., Amundadottir, L., Ronnov- Jessen, L., and Petersen, O.: Effects of Lymphocytes and Fibroblasts on the Growth of Human Mammary Carcinoma Cells Studied in Short-Term Primary Cultures, *In Vitro Cell Dev Biol 29A*, 936, 1993 (*871*)
	Human	Myofibroblasts	Collagenase: 900 IU/ml	DME - F12	Ronnov-Jessen, L., VanDeurs, B., Nielsen, M., and Petersen, O.W.: Identification, Paracrine Generation, and Possible Function of Human Breast Carcinoma Myofibroblasts in Culture, *In Vitro Cell Dev Biol 28*, 273, 1992 (*482*)
	Human, female, 15- 61 yrs old	Epithelial	Hyaluronidase: 150 IU/ml	DMEM	Berthon, P., Pancino, G., Cremoux, P., Roseto, A., Gespach, C., and Calvo, F.: Characterization of Normal Breast Epithelial Cells in Primary Cultures: Differentiation and Growth Factor Receptors Studies, *J Tiss Cul Meth 28A*, 716, 1992 (*904*)
	Human	Epithelial	Collagenase: 2.0%	DMEM/Ham's F-12	Emerman, J. and Wilkinson, D.: Routine Culturing of Normal, Dysplastic and Malignant Human Mammary Epithelial Cells from Small Tissue Samples, *In Vitro Cell Dev Biol 26*, 1186, 1990 (*429*)
	Human	Tumor, breast	Neuraminidase: 0.8 u/ml	HBSS	Leung, C., and Shiu, R.: Morphological and Proliferative Characteristics of Human Breast Tumor Cells Cultured on Plastic and in Collagen Matrix, *In Vitro 18*, 476, 1981 (*521*)
	Human	Epithelial	Hyaluronidase: 100 u/ml	DMEM/Ham's F-12	Stampfer, M., Hallowes, R., and Hackett, A.: Growth of Normal Human Mammary Cells in Culture, *In Vitro 16 (5)*, 415, 1980 (*856*)
Mouse	Mouse	Mammary tumor	Collagenase: 0.15% Hyaluronidase: 0.020%	DMEM/F12	Liu, X., Johnson, S., Liu, S., Kanojia, D., Yue, W., Singh, U., Wang, Q, Wang Qi, Nie, Q. and Chen H.: Nonlinear Growth Kinetics of Breast Cancer Stem Cells: Implications for Cancer Stem Cell Targeted Therapy., *Sci Rep 3*, 2473, 2013 (*11015*)
	Mouse, 10 week	Fibroblasts, carcinoma	Collagenase Type 4: 0.5% Trypsin: 0.2% Deoxyribonuclease I: 0.004 Hyaluronidase: 1,000 u/ml	DMEM	Cheng, N. and Lambert, D.: Mammary Transplantation of Stromal Cells and Carcinoma Cells in C57BL/6J Mice., *J Vis Exp 54*, e2716, 2011 (*10985*)
	Mouse, 12 week	Mammary epithelial	Collagenase: 0.3% Hyaluronidase: 100 u/ml Trypsin: 0.25% Neutral Protease: 0.5% Deoxyribonuclease I: 0.01%	see reference	Taddei, I., Deugnier, M., Faraldo, M., Petit, V., Bouvard, D., Medina, D., Fessler, R., Thiery, J., Glukhova, M.: Beta1 Integrin Deletion from the Basal Compartment of the Mammary Epithelium Affects Stem Cells, *Nat Cell Biol 10*, 716-22, 2008 (*10320*)

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Mammary

Mammary

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse, 11 week	Epithelial	Collagenase Type 3: 25 u/ml Hyaluronidase: 0.1% Protease XIV: 0.05% Deoxyribonuclease I: 0.04%	DMEM/F12	Mueller, S., Clark, J., Myers, P. and Korach, K.: Mammary Gland Development in Adult Mice Requires Epithelial and Stromal Estrogen Receptor Alpha., *Endocrinology 143*, 2357, 2002 (*10369*)
	Mouse	Mammary epithelial stem	Collagenase Type 3: 0.1% Hyaluronidase: 0.1% Pronase: 1.25% Deoxyribonuclease I: 0.2%	DMEM	Boulanger, C., Smith, G.: Reducing Mammary Cancer Risk Through Premature Stem Cell Senescence, *Oncogene 20*, 2264-72, 2001 (*10225*)
	Mouse, BALB/C	Epithelium	Collagenase: 250 u/ml	HBSS	Kanazawa, T., and Hosick, H.: Transformed Growth Phenotype of Mouse Mammary Epithelium in Primary Culture Induced by Specific Fetal Mesenchymes, *J Cell Physiol 153*, 381, 1992 (*961*)
	Mouse, BALB/c, virgin, female, 4 month	Adipocytes	Trypsin: 50 µg/ml	DMEM	Beck, J., Hosick, H., and Watkins, B.: Growth of Epithelium From a Preneoplastic Mammary Outgrowth on Response to Mammary Adipose Tissue, *In Vitro Cell Dev Biol 25 (5)*, 409, 1989 (*964*)
	Mouse (BALB/cCrgl), mature	Epithelial	Pronase: 0.01%	Hepes buffered medium 199	Bandyopadhyay, G., Imagawa, W., Wallace, D., and Nandi, S.: Proliferative Effects of Insulin and Epidermal Growth Factor on Mouse Mammary Epithelial Cells in Primary Culture, *J Biol Chem 263*, 7567, 1988 (*563*)
	Mouse, BALB/c, female, 6-8 week	Epithelial	Collagenase Type 3: 0.1%	DMEM	Ehmann, U., Peterson, W., and Misfeldt, D.: To Grow Mouse Mammary Epithelial Cells in Culture, *J Cell Biol 98*, 1026, 1984 (*926*)
	Mouse (C3H/HeN), female	Epithelial	Deoxyribonuclease I: 0.0001%	Medium 199	Taketani, Y., and Oka, T.: EGF Stimulates Cell Proliferation and Inhibits Functional Differentiation of Mouse Mammalian Dipithelial Cells in Culture, *Endocrinology 113*, 871, 1983 (*380*)
	Mouse, (BALB/c/Crgl Me), female, pregnant	Epithelial	Pepsin: 0.1% and 0.05%	HBSS with 0.2% EDTA, CMF	Riser, M., Huff, B., and Medina, D.: Pepsin Can Be Used To Subculture Viable Mammary Epithelial Cells, *In Vitro 19*, 730, 1983 (*532*)
	Mouse, female	Epithelial	Deoxyribonuclease I: 0.1%	DMEM	Jones, W., and Hallowes, R.: Isolation of the Epithelial Subcomponents of the Mouse Mammary Gland for Tissue- Level Culture Studies, *J Tiss Cul Meth 8 (1)*, 17, 1983 (*873*)
	Mouse (NMuMG), female, 2 months	Epithelial	Collagenase Type 3: 0.1%	DMEM	Ehmann, U., and Misfeldt, D.: Mouse Mammary Cells in D-Valine Medium, *In Vitro 18*, 407, 1982 (*519*)
	Mouse, BALB/cCr1, female	Epithelial	Collagenase Type 2: 0.2%	HBSS/DMEM	Asch, B., Burstein, N., Vidrich, A., and Sun, T.: Identification of Mouse Mammary Epithelial Cells by Immunofluorescence With Rabbit and Guinea-Pig Antikeratin Antisera, *Proc Natl Acad Sci U S A 78*, 5643, 1981 (*892*)
	Mouse (BALB/cfC3H)	Mammary tumors Epithelial	Collagenase: 1.0%	HBSS	Yang, J., Guzman, R., Richards, J., and Nandi, S.: Primary Cultures of Mouse Mammary Tumor Epithelial Cells Embedded in Collagen Gels, *In Vitro 16*, 502, 1980 (*507*)
	Mouse, pregnant 8- 12 day	Mammary	(see reference):	HBSS	Yang, J., Richards, J., Guzman, R., Imagawa, W., and Nandi, S.: Sustained Growth in Primary Culture of Normal Mammary Epithelial Cells Embedded in Collagen Gels, *Proc Natl Acad Sci U S A 77*, 2088, 1980 (*10019*)
	Mouse (BALB/cCrgl), virgin, female, 4-8 month	Epithelial Mammary gland	Collagenase Type 3: 0.1%	HBSS	White, M., Hu, A., Hamamoto, S. and Nandi: In Vitro Analysis of Proliferating Epithelial Cell Populations from the Mouse Mammary Gland: Fibroblast-Free Growth and Serial Passage, *In Vitro 14*, 271, 1978 (*498*)
	Mouse (BALB/c), pregnant, 60-80 days	Mammary	Hyaluronidase: 0.1%	CMF medium	Ceriani, R., Peterson, J., and Abraham, S.: Removal of Cell Surface Material by Enzymes Used to Dissociate Mammary Gland Cells, *In Vitro 14*, 887, 1978 (*499*)
	Mouse, BALB/cfC3H/Crgl, virgin, female	Nodule-transformed	Hyaluronidase: 0.1%	Medium 199	DeOme, K., Miyamoto, M., Osborn, R., Guzman, R., and Lum, K.: Detection of Inaparent Nodule- transformed Cells in the Mammary Gland Tissues of Virgn Female BALB/cfC3H Mice, *Cancer Res 38*, 2103, 1978 (*872*)
	Mouse, BALB/cCrgl, female (also guinea-pig)	Epithelial	Collagenase Type 3: 0.2%	PBS CMF	Asch, B., and Medina, D.: Concanavalin A-Induced Agglutinability of Normal, Preneoplastic, and Neoplastic Mouse Mammary Cells, *J Natl Cancer Inst 61 (6)*, 1423, 1978 (*1012*)
	Mouse, (C3H/Crgl or BALB/cCrgl), 8-10 day pregnant	Epithelial	Collagenase Type 3: 0.12%	HBSS	Emerman, J., Enami, J., Pitelka, D., and Nandi, S.: Hormonal Effects on Intracellular and Secreted Casein in Cultures of Mouse Mammary Epithelial Cells on Floating Collagen Membranes, *Proc Natl Acad Sci U S A 74 (10)*, 4466, 1977 (*930*)
	Mouse, lactating	Parenchymal	Collagenase Type 1:0.3%	Kreb's Ringer bicarbonate buffer	Kerkof, P., and Abraham, S.: Preparation of Adipose Cell- Free Suspensions of Mammary Gland Parenchymal Cells from Lactating Mice, *Methods Enzymol 69*, 693, 1976 (*696*)
	Mouse, female, early pregnancy <10 days	Epithelial	Collagenase: 0.1%	Eagle's MEM	Moore, D., and Lasfargues, E.: Method for the Continuous Cultivation of Mammary Epithelium, *In Vitro 7*, 21, 1971 (*537*)
	Mouse, CBA, virgin, 9/10 wk	Mammary	Hyaluronidase: 0.1%	BSS, CMF	Prop, F., and Wiepjes, G.: Improved Method for Preparation of Single-Cell Suspensions from Mammary Glands of Adult Virgin Mouse, *Exp Cell Res 61*, 451, 1970 (*400*)
	Mouse, lactating, 14-18 day	Parenchymal	Collagenase: 0.33%	Kreb's buffer	Pitelka, D., Kerkof, P., Gagne, H., Smith, S., and Abraham, S.: Characteristics of Cells Dissociated from Mouse Mammary Glands. I. Method of Separation and Morphology of Parenchymal Cells from Lactating Glands, *Exp Cell Res 57*, 43, 1969 (*398*)
	Mouse, lactating, 14 day	Mammary	Trypsin NF 1:250: 0.25%	HBSS	Kopelovich, L., Abraham, S., McGrath, H., DeOme, K., Chaikoff, I.: Metabolic Characteristics of a Naturally Ocurring Preneoplastic Tissue. I. Glycolytic Enzyme Activators of Hyperplastic Alveolar Nodule Outgrowths and Adenocarcinomas of Mouse Mammary Gland, *Cancer Res 26*, 1534, 1966 (*352*)

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Mammary

Mammary

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse, pregnant, 14-17 day	Mammary	Collagenase: 0.05% -0.1%	HBSS	Daniel, C., and DeOme, K.: Growth of Mouse Mammary Glands *In Vivo* After Monolayer Culture, *Science 149*, 634, 1965 (*663*)
	Mouse, adult, 1-10 days pregnant	Epithelial Mammary	Collagenase: 0.02%	Simm's	Lasfargues, E.: Cultivation and Behavior *In Vitro* of the Normal Mammary Epithelium of the Adult Mouse. II. Observations on the Secretory Activity, *Exp Cell Res 13*, 553, 1957 (*390*)
Rat	Rat	Mammary epithelial	Collagenase Type 3: 0.35%	HBSS	Mei, N., McDaniel, L., Dobrovolsky, V., Guo, X., Shaddock, J., Mittelstaedt, R., Azuma, M., Shelton, S., McGarrity, L., Doerge, D. and Heflich, R.: The Genotoxicity of Acrylamide and Glycidamide in Big Blue Rats., *Toxicol Sci 115*, 412, 2010 (*10638*)
	Rat, female, 50 day	Mammary epithelial	Collagenase Type 3: 0.15%	DMEM/F12	Maffini M., Soto A., Calabro J., Ucci A., and Sonnenschein C.: The Stroma as a Crucial Target in Rat Mammary Gland Carcinogenesis, *J Cell Sci 117*, 1495, 2004 (*10001*)
	Rat, female	Mammary gland epithelial	Collagenase Type 3: 0.35%	see reference	Djuric Z., Lewis S., Lu M., Mayhugh M., Naegeli L., Tang N., and Hart R.: Effect of Varying Caloric Restriction Levels on Female Rat Growth and 5- hydroxymethyl-2'- deoxyuridine in DNA, *Toxicol Sci 66*, 125, 2002 (*9957*)
	Rat, SD	Mammary fibroblasts	Collagenase Type 3: 0.2% Neutral Protease: 0.2% Deoxyribonuclease I: 0.01%	DMEM/F-12	Brake P., Zhang L., and Jefcoate C.: Aryl Hydrocarbon Receptor Regulation of Cytochrome P4501B1 in Rat Mammary Fibroblasts: Evidence for Transcriptional Repression by Glucocorticoids, *Mol Pharmacol 54*, 825, 1998 (*9999*)
	Rat, SD, 50 day	Mammary epithelial	Collagenase Type 3: 0.2% Neutral Protease: 0.2%	DMEM/F12	Varela L., Darcy K., and Ip M.: The Epidermal Growth Factor Receptor is not Required for Tumor Necrosis Factor-alpha Action in Normal Mammary Epithelial Cells, *Endocrinology 138*, 3891, 1997 (*10002*)
	Rat (also human)	Epithelial	Collagenase Type 1: 0.4%	DMEM	Soriano, J., Pepper, M., Nakamura, T., Orci, L., and Montesano, R.: Hepatocyte Growth Factor Stimulates Extensive Development of Branching Duct-like Structures by Cloned Mammary Gland Epithelial Cells, *J Cell Sci 108*, 413- 430, 1995 (*740*)
	Rat, SD, female, 60- 90 day	Epithelial	Collagenase Type 3: 0.5%	EBSS	Laduca, J., and Sinha, D.: In Vitro Carcinogenesis of Mammary Epithelial Cells by N-Nitroso-N-Methylurea Using a Collagen Gel Matrix Culture, *In Vitro Cell Dev Biol 29A*, 789, 1993 (*895*)
	Rat, Lewis, female, 90 days	Epithelial Mammary	Collagenase: 0.05%	Medium 199	Lin, T., Hom, Y.K., Richards, J. and Nandi, S.: Effects of Antioxidants and Reduced Oxygen Tension on Rat Mammary Epithelial Cells in Culture, *In Vitro Cell Dev Biol 27A*, 191, 1991 (*458*)
	Rat, SD, female, 55 day	Epithelial	Neutral Protease: 3 u/ml	Medium 199	Ehmann, U., Osborn, R., Guzman, R., and Fajardo, L.: Cultured Proliferating Rat Mammary Epithelial Cells, *In Vitro Cell Dev Biol 27*, 749, 1991 (*477*)
	Rat, 50-60 days	Epithelial	Neutral Protease: 0.2%	EBSS	Hahm, H.A., Ip, M.M.: Primary Culture of Normal Rat Mammary Epithelial Cells Within a Basement Matrix. 1. Regulation of Proliferation by Hormones and Growth Factors, *In Vitro Cell Dev Biol 26*, 791, 1990 (*451*)
	Rat, Fisher 344, virgin, 80-100 day	Epithelial	Hyaluronidase: 0.1%	Medium 199	McGrath, M., Palmer, S., and Nandi, S.: Differential Response of Normal Rat Mammary Epithelial Cells to Mammogenic Hormones and EGF, *J Cell Physiol 125*, 182, 1985 (*924*)
	Rat, LEW, virgin, female, 45-50 day	Epithelial	Collagenase: 0.1%	Medium 199	Ethler, S.: Primary Culture and Serial Passage of Normal and Carcinogen-Treated Rat Mammary Epithelial Cells In Vitro, *J Natl Cancer Inst 74 (6)*, 1307, 1985 (*1017*)
	Rat, SD, female	Epithelial, cancer and tumor	Collagenase: 0.1%	Eagles's MEM	Cohen, L.: Isolation and Characterization of a Serially Cultivated, Neoplastic, Epithelial Cell Line from the N-nitrosomethylurea Induced Rat Mammary Adenocarcinoma, *In Vitro 18*, 565, 1982 (*522*)
	Rat, inbred LEW, female, 50-60 day old	Epithelial	Collagenase Type 3: 0.1%	Medium 199	Richards, J., and Nandi, S.: Primary Culture of Rat Mammary Epithelial Cells. I. Effect of Plating Density, Horomones, and Serum on DNA Synthesis, *J Natl Cancer Inst 61 (3)*, 765, 1978 (*1018*)
	Rat, Wistar, 13-18 day postpartum	Acini	Collagenase: 0.05%	HBSS	Katz, J., Wals, P. and Van de Velde, R: Lipogenesis by Acini from Mammary Gland of Lactating Rats, *J Biol Chem 249*, 7348, 1974 (*551*)
	Rat, SD, 15-20 day postpartum	Mammary	Collagenase: 0.2%	Kreb's Ringer bicarbonate buffer	Martin, R., and Baldwin, R.: Effects of Insulin on Isolated Rat Mammary Cell Metabolism: Glucose Utilization and Metabolite Patterns, *Endocrinology 89*, 1263, 1971 (*384*)
	Rat, virgin	Mammary	Collagenase: 0.35%	Medium 199	Moon, R., Janns, D., and Young, S.: Preparation of Fat Cell-"Free" Rat Mammary Gland, *J Histochem Cytochem 17 (3)*, 182, 1969 (*1177*)

Miscellaneous

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Bovine	Bovine	Nucleus pulposus	Collagenase Type 2: 0.2%	DMEM	Lee, J., Cheung, K. and Leung, V.: Systematic Study of Cell Isolation from Bovine Nucleus Pulposus: Improving Cell Yield and Experiment Reliability., *J Orthop Res 33*, 1743-55, 2015 (*11670*)
Equine	Equine	Tendon Cells	Collagenase Type 1: 0.1%	DMEM	Nemoto, M., Kizaki, K., Yamamoto, Y., Oonuma, T. and Hashizume, K.: Tenascin-C Expression in Equine Tendon-derived Cells During Proliferation and Migration., *J Equine Sci 24*, 17-24, 2013 (*11259*)
Goat	Goat	Infrapatellar fat pad mesenchymal stromal	Collagenase: 0.15%	DMEM	Arora, A., Sriram, M., Kothari, A. and Katti, D.: Co-culture of Infrapatellar Fat Pad-Derived Mesenchymal Stromal Cells and Articular Chondrocytes in Plasma Clot for Cartilage Tissue Engineering., *Cytotherapy 19*, 881-894, 2017 (*11573*)
Human	Human	Nucleus pulposus	Pronase: 0.25% Collagenase Type 2: 600 u/ml	DMEM	Sun, Y., Lv, M., Zhou, L., Tam, V., Lv, F., Chan, D., Wang, H., Zheng, Z., Cheung, K. and Leung, V.: Enrichment of Committed Human Nucleus Pulposus Cells Expressing Chondroiti Sulfate Proteoglycans under Alginate Encapsulation., *Osteoarthritis Cartilage 23*, 1194-203, 2015 (*11674*)
	Human, 3-7 year	Dental pulp stem cells	Collagenase Type 1: 0.3% Neutral Protease: 0.4%	DMEM	Salmon, B., Bardet, C, Khaddam, M. Naji, J., Coyac, B., Baroukh, B., Letourneur, F., Lesieur, J., Decup, F., Le Denmat, D., Nicoletti, A., Poliard, A, Rowe, P., Huet, E., Vital, S. and Linglart, A.: MEPE-Derived ASARM Peptide Inhibits Odontogenic Differentiation of Dental Pulp Stem Cells and Impairs Mineralization in Tooth Models of X-linked Hypophosphatemia., *PLoS ONE 8*, e56749, 2013 (*11002*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human	Dental pulp stem	Collagenase Type 1: 0.3% Neutral Protease: 0.4%	DMEM/F12	Bonnamain, V., Thinard, R., Sergent-Tanguy, S., Huet, P., Bienvenu, G., Naveilhan, P., Farges, J. and Alliot-Licht, B.: Human Dental Pulp Stem Cells Cultured in Serum-Free Supplemented Medium., *Front Physiol 4*, 357, 2013 (*11025*)
	Human	Mesenchymal stromal	Collagenase Type 1: 0.075%	PBS	Lee, Y., Lee, J., Park, H., Lim, Y., Lee, J., Wang, S. and Lee, B.: Isolation of Mesenchymal Stromal Cells (MSCs) from Human Adenoid Tissue., *Cell Physiol Biochem 31*, 513-24, 2013 (*11665*)
	Human	Fungiform taste papillae	Collagenase Type 1: 550 u/ml Elastase: 10 u/ml Soybean Trypsin Inhibitor: 0.09%	see reference	Ozdener, H., Spielman, A. and Rawson, N.: Isolation and Culture of Human Fungiform Taste Papillae Cells, *J Vis Exp 63*, e3730, 2012 (*10906*)
	Human	Tendon cells	Collagenase Type 2: 0,3%	DMEM/Hams F12	Pauly, S., Klatte, F., Strobel, C., Schmidmaier, G., Greiner, S. and Scheibel, M. Wildemann B: Characterization of Tendon Cell Cultures of the Human Rotator Cuff., *Eur Cell Mater 20*, 84-97, 2010 (*11526*)
	Human	Adipose derived stromal	Collagenase Type 2: 0.075%	DMEM	Panetta, N., Gupta, D., Kwan, M., Wan, D., Commons, G. and Longaker, M.: Tissue Harvest by Means of Suction-Assisted or Third-Generation Ultrasound-Assisted Lipoaspiration Has No Effect on Osteogenic Potential of Human Adipose- Derived Stromal Cells., *Plast Reconstr Surg 124*, 65, 2009 (*10927*)
	Human	Oral epithelial	Neutral Protease: 1.2 u/ml Trypsin: 0.05%	PBS	Nakamura, T., Endo, K. and Kinoshita, S.: Identification of Human Oral Keratinocyte Stem/Progenitor Cells by Neurotrophin Receptor p75 and the Role of Neurotrophin/p75 Signaling., *Stem Cells 25*, 628-38, 2007 (*11487*)
	Human	Carotid artery plaque macrophage	Collagenase Type 4: 450 u/ml Deoxyribonuclease I: 500 u/ml Soybean Trypsin Inhibitor: 0.1%	HBSS	Patino, W., Kang, J., Matoba, S., Mian, O., Gochuico, B., Hwang, P.: Atherosclerotic Plaque Macrophage Transcriptional Regulators are Expressed in Blood and Modulated by Tristetraprolin, *Circ Res 98*, 1282-9, 2006 (*10336*)
	Human	Esophageal microvascular endothelial	Collagenase Type 2: 0.2%	MCDB-131	Rafiee, P., Ogawa, H., Heidemann, J., Li, M., Aslam, M., Lamirand, T., Fisher, P., Graewin, S., Dwinell, M., Johnson, C., Shaker, R. and Binion, D.: Isolation and Characterization of Human Esophageal Microvascular Endothelial Cells: Mechanisms of Inflammatory Activation., *Am J Physiol Gastrointest Liver Physiol 285*, G1277, 2003 (*10726*)
	Human	Gastric epithelial cells	Collagenase Type 2: 200 u/ml Neutral Protease: 1.2 u/ml Soybean Trypsin Inhibitor: 0.125%	L-15	Smoot, D., Sewchand, J., Young, K., Desbrodes, B., Allen, C. and Naab, T.: A Method for Establishing Primary Cultures of Human Gastric Epithelial Cells, *Meth Cell Sci 22*, 133, 2000 (*10720*)
	Human	Synoviocytes	Collagenase: 0.2%	DMEM/F12	Chen V, Croft D, Purkis P, Kramer IM: Co-culture of synovial fibroblasts and differentiated U937 cells is sufficient for high interleukin-6 but not interleukin-1beta or tumour necrosis factor-alpha release., *Br J Rheumatol 37*, 148-56, 1998 (*10360*)
	Human	Peptic cells	Collagenase Type 4: 0.1% Soybean Trypsin Inhibitor: 0.2%	Ringer solution	Lanas. A., Nerin, J., Esteva, F. and Sainz, R.: Non- Steroidal Anti-Inflammatory Drugs and Prostaglandin Effects on Pepsinogen Secretion by Dispersed Human Peptic Cells., *Gut 36*, 657-63, 1995 (*10725*)
	Human	Periapical granuloma	CLSPA: 0.25%	RPMI-1640	Stern, M., Dreizen, S., Mackler, B., Levy, B.: Isolation and Characterization of Inflammatory Cells from the Human Periapical Granuloma, *J Dent Res 61*, 1408-12, 1982 (*10292*)
Insect	Insect, Lepidoptera	Lepitopteran	Collagenase Type 3: 0.35% Hyaluronidase: 0.01%	Dulbecco PBS	Goodwin, R. and McCawley, P.: Initiating Attached Cell Lines From the Lepidoptera (Insecta), *Meth Cell Sci 3*, 567, 1977 (*10675*)
Invertebrate	Squid	Mantle	Collagenase: see reference Papain: see reference	Phosphate buffer	Raman, M. and Mathew, S.: Study of Chemical Properties and Evaluation of Collagen in Mantle, Epidermal Connective Tissue and Tentacle of Indian Squid, Loligo duvauceli Orbigny., *J Food Sci Technol 51*, 1509- 16, 2014 (*11596*)
Mouse	Mouse	Urothelial	Collagenase Type 1: 0.5%	PBS	Huang, C., Chen, C. and Shyr, C.: The Anti-Tumor Effect of Intravesical Administration of Normal Urothelial Cells on Bladder Cancer., *Cytotherapy 19*, 1233-1245, 2017 (*11548*)
	Mouse	Bone marrow stromal	Collagenase Type 1: 0.2%	PBS	Ishida, T., Suzuki, S., Lai, C., Yamazaki, S., Kakuta, S., Iwakura, Y., Nojima, M., Takeuchi, Y., Higashihara, M., Nakauchi, H. and Otsu, M.: Pre-Transplantation Blockade of TNF-Î±- Mediated Oxygen Species Accumulation Protects Hematopoietic Stem Cells., *Stem Cells 35*, 989-1002, 2017 (*11642*)
	Mouse	Cochlear	Papain: 20 u/ml Trypsin: 0.05%	DMEM	Kim, Y., Wang, S., Tymanskyj, S., Ma, L., Tao, H. and Zhang, L.: Dcc Mediates Functional Assembly of Peripheral Auditory Circuits., *Sci Rep 6*, 23799, 2016 (*11550*)
	Mouse	Epithelial stem	Collagenase: 2%	DMEM/F12	Chavez, M., Hu, J., Seidel, K., Li, C., Jheon, A., Naveau, A., Horst, O. and Klein, O.: Isolation and Culture of Dental Epithelial Stem Cells from the Adult Mouse Incisor., *J Vis Exp* , , 2014 (*11536*)
	Mouse, 26-30 g	Myenteric plexus	Collagenase Type 2: 0.13%	Neurobasal A	Smith, T., Grider, J., Dewey, W. and Akbarali, H.: Morphine Decreases Enteric Neuron Excitability via Inhibition of Sodium Channels., *PLoS ONE 7*, e45251, 2012 (*10941*)
	Mouse, 10 week	Synovial mesenchymal	Collagenase: 0.1% Deoxyribonuclease I: 0.005%	DMEM	Futami, I., Ishijima, M., Kaneko, H., Tsuji, K., Ichikawa-Tomikawa, N., Sadatsuki, R., Muneta, T., Arikawa-Hirasawa, E., Sekiya, I. and Kaneko, K.: Isolation and Characterization of Multipotential Mesenchymal Cells from the Mouse Synovium., *PLoS ONE 7*, e45517, 2012 (*10944*)
	Mouse	Spleen, bone marrow endothelial	Collagenase Type 4: 0.3-1.0% Deoxyribonuclease I: 20 u/ml	PBS	Shi, C., Jia, T., Mendez- Ferrer, S., Hohl, T., Serbina, N., Lipuma, L., Leiner, I., Li, M., Frenette, P. and Pamer, E.: Bone Marrow Mesenchymal Stem and Progenitor Cells Induce Monocyte Emigration in Response to Circulating Toll- Like Receptor Ligands., *Immunity 34*, 590, 2011 (*10641*)
	Mouse	Dentritic	Collagenase Type 2: 0.1% Deoxyribonuclease I: 0.001%	DME	Stock, A., Booth, S. and Cerundolo, V.: Prostaglandin E2 Suppresses the Differentiation of Retinoic Acid-Producing Dendritic Cells in Mice and Humans., *J Exp Med 208*, 761, 2011 (*10727*)
	Mouse	Cochleaer	Trypsin: 0.125%	DMEM/F-12	Jan, T., Chai, R., Sayyid, Z. and Cheng, A.: Isolating LacZ-Expressing Cells from Mouse Inner Ear Tissues Using Flow Cytometry., *J Vis Exp 58*, e3432, 2011 (*10901*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse, 6-8 week	Bone marrow mesenchymal stem	Collagenase Type 1: 0.25%	RPMI 1640	Xu, S., De Becker, A., Van Camp, B., Vanderkerken, K. and Van Riet, I.: An Improved Harvest and In Vitro Expansion Protocol for Murine Bone Marrow- Derived Mesenchymal Stem Cells., *J Biomed Biotechnol 2010*, 105940, 2010 (*10617*)
	Mouse, 3-6 week	Ear mesenchymal stem	Collagenase Type 1: 0.2%	DMEM/F12	Staszkiewicz, J., Gimble, J., Manuel, J. and Gawronska- Kozak, B.: IFATS Collection: Stem Cell Antigen-1-Positive Ear Mesenchymal Stem Cells Display Enhanced Adipogenic Potential., *Stem Cells 26*, 2666, 2008 (*10926*)
	Mouse, 6-10 week	Salivary gland and stomach	Collagenase Type 4: 0.8% Deoxyribonuclease I: 1.0%	RPMI-1640	Ji, H., Rintelen, F., Waltzinger, C., Meier, D, Bilancio, A., Pearce, W., Hirsch, E., Wymann, M., Ruckle, T., Camps, M., Vanhaesebroeck, B., Okkenhaug, K. and Rommel, C.: Inactivation of PI3Kgamma and PI3Kdelta Distorts T-cell Development and Causes Multiple Organ Inflammation., *Blood 110*, 2940, 2007 (*10868*)
	Mouse	Bone marrow	Collagenase Type 1: 0.15% Neutral Protease: 0.15%	PBS	Bertoncello, I. and Williams, B.: Hematopoietic Stem Cell Characterization by Hoechst 33342 and Rhodamine 123 Staining., *Methods Mol Biol 263*, 181, 2004 (*10528*)
	Mouse, 25-30 g	Tracheal inflammatory cells	Collagenase Type 4: 0.1% Deoxyribonuclease I: 50 u/ml Soybean Trypsin Inhibitor: 0.1%	RPMI 1640	Minamoto Kanji, Pinsky DavidJ: Recipient iNOS but not eNOS deficiency reduces luminal narrowing in tracheal allografts, *J Exp Med 196*, 1321-33, 2002 (*10299*)
Porcine	Porcine, 6 month	Synoviocytes	Hyaluronidase: 660 u/ml Trypsin: 0.25% Collagenase Type 2: 583 u/ml	DMEM	Kean, T and Dennis, J.: Synoviocyte Derived- Extracellular Matrix Enhances Human Articular Chondrocyte Proliferation and Maintains Re- Differentiation Capacity at Both Low and Atmospheric Oxygen Tensions., *PLoS ONE 10*, e0129961, 2015 (*11418*)
	Porcine, <10 week	Nucleus pulposus	Collagenase: 0.05% Pronase: 0.3%	DMEM	Potier, E. and Ito. K.: Can Notochordal Cells Promote Bone Marrow Stromal Cell Potential for Nucleus Pulposus Enrichment? A Simplified in Vitro System., *Tissue Eng Part A 20*, 3241-51, 2014 (*11672*)
	Porcine, various ages	Nucleous pulposus and AF	Pronase: 0.05% Collagenase: 0.2%	Modified F-12K	Cho, H., Park, S., Lee, S., Kang, M., Hasty, K. and Kim, S.: Snapshot of Degenerative Aging of Porcine Intervertebral Disc: A Model to Unravel the Molecular Mechanisms., *Exp Mol Med 43*, 334-40, 2011 (*11668*)
Rabbit	Rabbit, New Zealand, 8-10 week	Tenocytes and tendon stem cells	Collagenase Type 1: 0.3% Neutral Protease: 0.4%	DMEM	Zhang, J. and Wang, J.: Characterization of Differential Properties of Rabbit Tendon Stem Cells and Tenocytes., *BMC Musculoskelet Disord 11*, 10, 2010 (*10639*)

Muscle

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Bovine	Bovine	Muscle satellite cells	Collagenase Type 2: 300 u/ml	Krebs-Ringer Bicarbonate	Lee, E., Choi, J., Hyun, J., Cho, K., Hwang, I., Lee, H., Chang, J. and Choi, I.: Steroid Effects on Cell Proliferation, Differentiation and Steroid Receptor Gene Expression in Adult Bovine Satellite Cells., *AJAS 20*, 501, 2007 (*10724*)
	Bovine	Pulmonary artery endothelial and smooth muscle cells	Collagenase: 0.04- 0.05% Soybean Trypsin Inhibitor: 0.04%	RPMI-1640	Yu, M., McAndrew, R., Al- Saghir, R., Maier, K., Medhora, M., Roman, R. and Jacobs, E.: Nitric Oxide Contributes to 20-HETE- Induced Relaxation of Pulmonary Arteries., *J Appl Physiol 93*, 1391, 2002 (*10723*)
	Bovine	Smooth muscle	Trypsin: 0.25%	DMEM	Absher, M., Woodcock- Mitchell, J., Mitchell, J., Baldor, L., Low, R., and Warshaw, D.: Characterization of Vascular Smooth Muscle Cell Phenotype in Long-Term Culture, *In Vitro Cell Dev Biol 25 (2)*, 183, 1989 (*862*)
	Bovine	Vascular smooth muscle	Elastase Type 3: 50 u/ml	PSS	Warshaw, D., Szarek, J., Hubbard, M., and Evans, J.: Pharmacology and Force Development of Single Freshly Isolated Bovine Cartoid Artery Smooth Muscle Cells, *Circ Res 58*, 399, 1986 (*865*)
	Bovine	Smooth muscle, fibroblasts	Trypsin: 0.055%	DMEM	Davies, P. and Kerr, C.: Modification of LDL Metabolism by Growth Factors in Cultured Vascular Cells and Human Skin Fibroblasts, *Biochim Biophys Acta 712*, 26, 1982 (*322*)
Canine	Canine	Skeletal muscle	Collagenase Type 4: 200 u/ml Neutral Protease: 1 u/ml	DMEM	Parker, M., Loretz, C., Tyler, A., Snider, L., Storb. R. and Tapscott, S.: Inhibition of CD26/DPP-IV Enhances Donor Muscle Cell Engraftment and Stimulates Sustained Donor Cell Proliferation., *Skelet Muscle 2*, 4, 2012 (*10719*)
	Dog	Smooth muscle	Elastase: 50 u/ml	PSS	Subramanian, M., Madden, J., and Harder, D.: A Method for the Isolation of Cells from Arteries of Various Sizes, *J Tiss Cul Meth 13*, 13, 1991 (*1240*)
	Dog, beagle, adult	Smooth muscle Vascular	Elastase: 34 u/ml	Tyrode's solution w/ calcium	Wilde, D., and Lee, K.: Outward Potassium Currents in Freshly Isolated Smooth Muscle Cell of Dog Coronary Arteries, *Circ Res 65*, 1718, 1989 (*368*)
	Dog	Artery Carotid	Elastase: 80 u/ml	PSS	Dobrin, P., and Canfield, T.: Elastase, Collagenase, and the Biaxial Elastic Properties of Dog Carotid Artery, *Am J Physiol Heart Circ Physiol 247 (16)*, H124, 1984 (*1236*)
Chicken	Chicken, 1-2 day	Gizzard and aorta smooth muscle	Collagenase Type 1: 0.15%	HBSS	Dirksen W., Vladic F., and Fisher S.: A Myosin Phosphatase Targeting Subunit Isoform Transition Defines a Smooth Muscle Developmental Phenotypic Switch, *Am J Physiol/Cell 278(3)*, C589, 2000 (*9837*)
	Chick	Smooth muscle	Trypsin: 0.05% -0.1%	HBSS	Chamley-Campbell, J., Campbell, G., and Ross, R.: The Smooth Muscle in Cell Culture, *Physiol Res 59*, 1, 1979 (*648*)
	Chick, white leghorn, 12 day	Muscle	Trypsin: 0.25%	Puck's saline A	Bullaro, J., and Brookman, D.: Comparison of Skeletal Muscle Monolayer Cultures Initiated With Cells Dissociated by the Vortex and Trypsin Methods, *In Vitro 12*, 564, 1976 (*497*)
	Chick, white leghorn, embryos, 11 day	Muscle	Trypsin: 0.05%	Saline G	Tepperman, K., Morris, G., Essien, F., and Heywood, S.M.: A Mechanical Dissociation Method For Preparation of Muscle Cell Cultures, *J Cell Physiol 86*, 561, 1975 (*597*)
	Chick embryo	Thyroid Muscle Heart	Collagenase: 0.25%	Tyrode's saline, potassium free	Hilfer, S., and Brown, J.: Collagenase. Its Effectiveness as a Dispersing Agent for Embryonic Chick Thyroid and Heart, *Exp Cell Res 65*, 246, 1971 (*401*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Chicken	Chick, embryonic	Muscle	Trypsin: 0.1%	CMF HBSS	Hilfer, S.: Collagenase Treatment of Chick Heart and Thyroid, *Tissue Cult Methods & Applications*,Kruse, P., and Patterson, M., , 246, 1971 (*1283*)
	Chick embryonic	Various tissues (heart, liver, skeletal, cardiac)	Trypsin: various grades	CMF Tyrode's solution	Rinaldini, L.: An Improved Method for the Isolation and Quantitative Cultivation of Embryonic Cells, *Exp Cell Res 16*, 477, 1959 (*394*)
Feline	Cat, adult mongrel, either sex, 2.5-4.0 kg	Cerebral arteries	Elastase: 50 u/ml	Puck's solution	Madden, J., Vadula, M., and Kurup, V.: Effects of Hypoxia and Other Vasoactive Agents on Pulmonary and Cerebral Artery Smooth Muscle Cells, *Am J Physiol 263*, L384, 1992 (*778*)
	Cat, mongrel, adult, 2-4 kg	Myocytes	Collagenase: 0.12%	Kreb's Henseleit, CF	Follmer, C.H., Ten Eick, R.E., and Yeh, J.Z.: Sodium Current Kinetics in Cat Atrial Myocytes, *J Physiol 384*, 169, 1987 (*724*)
Guinea-Pig	Guinea-pig	Bladder smooth muscle	Collagenase Type 2: 0.1-0.2%	Krebs-Ringer bicarbonate	Shieh, C., Feng, J., Buckner, S., Brioni, J., Coghlan, M., Sullivan, J., Gopalakrishnan, M.: Functional Implication of Spare ATP-Sensitive K(+) Channels in Bladder Smooth Muscle Cells, *J Pharmacol Exp Ther 296*, 669-75, 2001 (*10238*)
	Guinea-pig, 200-380 g	Capillaries Myocytes	Collagenase Type 2: 0.15%	CF solution	Schnitzler, M., Derst, C., Daut, J., and Preisig-Muller, R.: ATP-Sensitive Potassium Channels in Capillaries Isolated From Guinea-Pig Heart, *J Physiol 525 (2)*, 307, 2000 (*744*)
	Guinea pig, 2-4 wk old, male, female	Smooth muscle Gallbladder	Papain: 0.1%	Krebs solution	Firth, T., Mawe, G., and Nelson, M.: Pharmacology and Modulation of K_{ATP} Channels by Protein Kinase C and Phosphatates in Gallbladder Smooth Muscle, *Am J Physiol Cell Physiol 278*, C1031, 2000 (*1131*)
	Guinea-pig, adult, 250-350 g	Smooth muscle Gallbladder	Papain: 0.1%	NaCl, sodium glutamate, MgCl, KCl, glucose, Kreb's, & HEPES	Jennings, L., Xu, Q., Firth, T., Nelson, M., and Mawe, G.: Cholesterol Inhibits Spontaneous Action Potentials and Calcium Currents in Guinea Pig Gallbladder Smooth Muscle, *Am J Physiol 277*, G1017, 1999 (*1114*)
	Guinea-pig, Dunkin- Hartley, female	Myocytes	Protease:	DMEM	Ryder, K., Bryant, S., and Hart, G.: Membrane Current Changes in Left Ventricular Myocytes Isolated From Guinea-Pigs After Abdominal Aortic Coarctation, *Cardiovasc Res 27*, 1278, 1993 (*970*)
	Guinea-pig (also rat, rabbit)	Smooth muscle	Trypsin: 0.1%	Potassium buffer solution	Hu, S., and Kim, H.: Activation of K+ Channel in Vascular Smooth Muscle by Cytochrome P-450 Metabolites of Arachidonic Acid, *FASEB J 6*, A383, 1992 (*409*)
	Guinea-pig, 200-300 g	Smooth muscle Mesenteric artery	Collagenase: 0.3%	CF solution	Ohya, Y. and Sperelakis, N.: ATP Regulation of the Slow Calcium Channels in Vascular Smooth Muscle Cells, *Circ Res 64*, 145, 1989 (*366*)
	Guinea-pig, 200-400 g (also rabbit, frog, dogfish)	Myocytes, heart and stomach	Protease XIV: 0.028%	Solution C (see reference)	Mitra, R. and Morad, M.: A Uniform Enzymatic Method for Dissociation of Myocytes from Hearts and Stomachs of Vertebrates, *Am J Physiol 249*, H1056, 1985 (*294*)
	Guinea-pig, prepubertal	Smooth muscle Aortic	Trypsin: 0.05%	Dulbecco-Vogt modification of Eagle's	Ross, R.: The Smooth Muscle Cell . II. Growth of Smooth Muscle in Culture and Formation of Elastic Fibers, *J Cell Biol 50*, 172, 1971 (*584*)
Hamster	Hamster, male, 60-70 day	Satellite	Trypsin: 0.25%	DMEM	Nakamura, T., Iwata, Y., Sampaolesi, M., Hanada, H., Saito, N., Artman, M., Coetzee, W., and Shigekawa, M.: Stretch-Activated Cation Channels in Skeletal Muscle Myotubes From Sarcoglycan- Deficient Hamsters, *Am J Physiol Cell Physiol 281*, C690, 2001 (*747*)
Human	Human	Muscle satellite	Collagenase: 0.1% Trypsin: 0.25%	DMEM	Garcia, S., Tamaki, S., Lee, S., Wong, A., Jose, A., Dreux, J., Kouklis, G., Sbitany, H., Seth, R., Knott, P., Heaton, C., Ryan, W., Kim, E., Hansen, S., Hoffman, W. and Pomerantz, J.: High-Yield Purification, Preservation, and Serial Transplantation of Human Satellite Cells., *Stem Cell Reports 10*, 1160-1174, 2018 (*11609*)
	Human	Skeletal muscle stem	Collagenase Type 2: 750 u/ml Neutral Protease: 2 u/ml	Ham's F10	Charville, G., Cheung, T., Yoo, B., Santos, P., Lee, G., Shrager, J. and Rando, T.: Ex Vivo Expansion and In Vivo Self-Renewal of Human Muscle Stem Cells., *Stem Cell Reports 5*, 621, 2015 (*11440*)
	Human	Smooth muscle	Collagenase Type 1: 0.1%	DMEM	Lu, S., Sun, X., Hong, T., Song, K., Yang, S. and Wang, C.: Isolation and Culture of Smooth Muscle Cells from Human Acute Type A Aortic Dissection., *J Cardiothorac Surg 8*, 83, 2013 (*10920*)
	Human, male	Myogenic	Collagenase Type 4: 0.1% Neutral Protease: 2.4 u/ml	HBSS	Stadler, G., Chen, J., Wagner, K., Robin, J., Shay, J., Emerson, C. and Wright, W.: Establishment of Clonal Myogenic Cell Lines from Severely Affected Dystrophic Muscles - CDK4 Maintains the Myogenic Population., *Skelet Muscle 1*, 12, 2011 (*10667*)
	Human	Muscle derived multiprogenitor cells	Collagenase Type 2: 0.05%	DMEM	Nesti, L., Jackson, W., Shanti, R., Koehler, S., Aragon, A., Bailey, J., Sracic, M., Freedman, B., Giuliani, J. and Tuan, R.: Differentiation Potential of Multipotent Progenitor Cells Derived from War- Traumatized Muscle Tissue., *J Bone Joint Surg Am 90*, 2390, 2008 (*10490*)
	Human	Endothelial and vascular smooth muscle	Collagenase Type 1: 0.2%	HBSS	Moss, S., Bates, M., Parrino, P. and Woods, TC.: Isolation of Endothelial Cells and Vascular Smooth Muscle Cells from Internal Mammary Artery Tissue., *Ochsner J 7*, 133, 2007 (*10636*)
	Human	Urinary tract smooth muscle	Collagenase Type 4: 100 u/ml	DMEM	Kimuli, M., Eardley, I. and Southgate, J.: In Vitro Assessment of Decellularized Porcine Dermis as a Matrix for Urinary Tract Reconstruction., *BJU Int 94*, 859, 2004 (*10570*)
	Human, female	Smooth muscle Myometrial	Deoxyribonuclease I: 0.015% and 0.007%	HBSS	Richardson, M., Taylor, D., Casey, M., MacDonald, P., and Stull, J.: Biochemical Markers of Contraction in Human Myometrial Smooth Muscle Cells in Culture, *In Vitro Cell Dev Biol 23*, 21, 1987 (*420*)
	Human, female	Smooth muscle Myometrial	Deoxyribonuclease I: 0.12%	HBSS	Casey, M., MacDonald, P., Mitchell, M., and Snyder, J.: Maintenance and Characterization of Human Myometrial Smooth Muscle Cells in Monolayer Culture, *In Vitro 20*, 396, 1984 (*533*)
	Human, fetal (also bovine)	Smooth muscle, Fibroblasts	Trypsin: 0.055%	DMEM	Davies, P. and Kerr, C.: Modification of LDL Metabolism by Growth Factors in Cultured Vascular Cells and Human Skin Fibroblasts, *Biochim Biophys Acta 712*, 26, 1982 (*322*)
	Human	Smooth muscle	Trypsin: 0.25%	DMEM	Eskin, S., Sybers, H., Lester, J., Navarro, L., Gotto, A., and DeBakey, M.: Human Smooth Muscle Cells Cultured From Atherosclerotic Plaques and Uninvolved Vessel Wall, *In Vitro 17 (8)*, 713, 1981 (*864*)

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Muscle

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human (also rat, guinea-pig, chick, monkey)	Smooth muscle	Trypsin: 0.05% -0.1%	HBSS	Chamley-Campbell, J., Campbell, G., and Ross, R.: The Smooth Muscle in Cell Culture, *Physiol Res 59*, 1, 1979 (*648*)
Lizard	Lizard (*Anolis carolinensis*)	Myoblasts, tail	Collagenase: 0.2%	GM III (see reference)	Cox, P., and Simpson, Jr., S.: A Microphotometric STudy of Myogenic Lizard Cells Grown in Vitro, *Dev Biol 23*, 433, 1970 (*369*)
Monkey	Monkey (*Macaca nemestrina*)	Smooth muscle	Trypsin: 0.05%	Dulbecco-Vogt	Chait, A., Ross, R., Albers, J., and Bierman, E.: Platelet- Derived Growth Factor Stimulates Activity of LDL Receptors, *Proc Natl Acad Sci U S A 77*, 4084, 1980 (*654*)
	Rhesus monkey, 1 year (also human, rabbits)	Smooth muscle, saphenous vein	Elastase: 0.05%	BSS	Chamley, J., Campbell, G., McConnell, J., and Groschel- Stewart, U.: Comparison of Vascular Smooth Muscle Cells from Adult Human, Monkey and Rabbit in Primary Culture and in Subculture, *Cell Tissue Res 177*, 503, 1977 (*354*)
Mouse	Mouse, GFP transgenic	Muscle derived NLSC	Collagenase Type 2: 0.2%	DMEM	Birbrair, A, Sattiraju, A, Zhu, D, Zulato, G, Batista, I, Nguyen, V, Messi M, Solingapuram Sai, K, Marini, F, Delbono, O and Mintz, A.: Novel Peripherally Derived Neural-Like Stem Cells as Therapeutic Carriers for Treating Glioblastomas., *Stem Cells Transl Med*, 2016 (*11498*)
	Mouse, 2-4 month	Pharyngeal myofiber	Collagenase Type 1: 400-800 u/ml	DMEM	Randolph, M., Phillips, B.,Choo, H., Vest, K., Vera, Y. and Pavlath, G.: Pharyngeal Satellite Cells Undergo Myogenesis Under Basal Conditions and Are Required for Pharyngeal Muscle Maintenance., *Stem Cells 33*, 3581-95, 2015 (*11584*)
	Mouse, 2 month	Myoblasts	Collagenase Type 2:400 u/ml Neutral Protease: 0.5 u/ml	Hams F-10	Abou-Khalil, R., Yang, F., Lieu, S., Julien, A., Perry, J., Pereira, C., Relaix, F., Miclau, T., Marcucio, R. and Colnot, C.: Role of Muscle Stem Cells During Skeletal Regeneration., *Stem Cells 33*, 1501-11, 2015 (*11650*)
	Mouse, 6-8 week	Myofibers	Collagenase Type 1: 0.2%	DMEM	Pasut, A., Jones, A. and Rudnicki, M.: Isolation and Culture of Individual Myofibers and their Satellite Cells from Adult Skeletal Muscle., *J Vis Exp 73*, e50074, 2013 (*10979*)
	Mouse	Vascular smooth muscle	Collagenase Type 2: 0.14%	Basal Culture	Metz, R., Patterson, J. and Wilson, E.: Vascular Smooth Muscle Cells: Isolation, Culture, and Characterization., *Methods Mol Biol 843*, 169, 2012 (*10949*)
	Mouse, 10 week	Diaphragm cells	Collagenase Type 2: 100 u/ml Pronase: 0.125%	PBS	Rezk, B., Yoshida, T., Semprun-Prieto, L., Higashi, Y., Sukhanov, S. and Delafontaine, P.: Angiotensin II Infusion Induces Marked Diaphragmatic Skeletal Muscle Atrophy., *PLoS ONE 7*, e30276, 2012 (*11078*)
	Mouse	Skeletal muscle fiber	Collagenase Type 1: 0.2%	Tyrode	Weisleder, N., Zhou, J. and Ma, J.: Detection of Calcium Sparks in Intact and Permeabilized Skeletal Muscle Fibers., *Methods Mol Biol 798*, 395, 2012 (*11084*)
	Mouse	Myoblast	Collagenase Type 2: 0.2%	DMEM	Shi, H., Boadu, E., Mercan, F., Le, A., Roth Flach, R., Zhang, L., Tyner, K., Olwin, B. and Bennett, A.: MAP Kinase Phosphatase-1 Deficiency Impairs Skeletal Muscle Regeneration and Exacerbates Muscular Dystrophy., *FASEB J 24*, 2985, 2010 (*10662*)
	Mouse, 1-25 month	Myocytes, endothelial	Neutral Protease: 1.2 u/ml Collagenase Type 4: 0.2%	PBS	Ieronimakis, N., Balasundaram, G., Reyes, M.: Direct Isolation, Culture and Transplant of Mouse Skeletal Muscle Derived Endothelial Cells with Angiogenic Potential, *PLoS ONE 3*, e0001753, 2008 (*10313*)
	Mouse, 15-20 day	Intersitial cells of Cajal	Collagenase Type 2: 0.13%	M199	Li, C., Liu, B., Tong, W., Zhang, L., and Jiang, Y.: Dissociation, Culture and Morphologic Changes of Interstitial Cells of Cajal In Vitro, *World J Gastroenterol 11*, 2838, 2005 (*10007*)
	Mouse, neonatal	Skeletal muscle myotubes	NCIS kit: per instructions	L-15	Johnson, B., Scheuer, T. and Catterall, W.: Convergent Regulation of Skeletal Muscle Ca^{2+} Channels by Dystrophin, the Actin Cytoskeleton, and cAMP- Dependent Protein Kinase., *Proc Natl Acad Sci U S A 102*, 4191, 2005 (*10542*)
	Mouse, male, 6-14 week	Precursor cells	Collagenase Type 2: 0.5%	DMEM/F12	Winitsky, S., Gopal, T., Hassanzadeh, S., Takahashi, H., Gryder, D., Rogawski, M., Takeda, K., Yu, Z., Xu, Y. and Epstein, N.: Adult Murine Skeletal Muscle Contains Cells That Can Differentiate into Beating Cardiomyocytes In Vitro., *PLoS Biol 3*, e87, 2005 (*10613*)
	Mouse, 6-8 week	Skeletal muscle progenitor	Collagenase Type 2: 0.2%	DMEM	Majka S., Jackson K., Kienstra K., Majesky M., Goodell M., and Hirschi K.: Distinct Progenitor Populations in Skeletal Muscle Are Bone Marrow Derived and Exhibit Different Cell Fates During Vascular Regeneration, *J Clin Invest 111*, 71, 2003 (*9843*)
	Mouse, neonatal	Myocytes	Collagenase Type 1: 0.5%	DMEM	Fukada S., Miyagoe-Suzuki Y., Tsukihara H., Yuasa K., Higuchi S., Ono S., Tsujikawa K., Takeda S., and Yamamoto H.: Muscle Regeneration by Reconstitution with Bone Marrow or Fetal Liver Cells from Green Fluorescent Protein-gene Transgenic Mice, *J Cell Sci 115*, 1285, 2002 (*9866*)
	Mouse, 6-8 week	Myocytes	Collagenase Type 2: 0.2% Trypsin: 0.25%	HBSS	McKinney-Freeman SL, Jackson KA, Camargo FD, Ferrari G, Mavilio F, Goodell MA.: Muscle-derived hematopoietic stem cells are hematopoietic in origin, *Proc Natl Acad Sci U S A 99*, 1341, 2002 (*10032*)
Ovine	Sheep, adult and neonatal	Tracheal smooth muscle cells	Papain: 0.2% Deoxyribonuclease I: 0.1%	MOPS-PSS	Driska S., Laudadio R., Wolfson M., and Shaffer T.: A Method for Isolating Adult and Neonatal Airway Smooth Muscle Cells and Measuring Shortening Velocity, *J Appl Physiol 86(1)*, 427, 1999 (*9841*)
Porcine	Porcine, postnatal	Muscle satellite	Trypsin: 0.25% Collagenase Type 1: 0.2% Deoxyribonuclease I: 0.01%	Eagle MEM	Miersch, C., Stange, K. and Rontgen, M.: Effects of Trypsinization and of a Combined Trypsin, Collagenase, and DNase Digestion on Liberation and in Vitro Function of Satellite Cells Isolated from Juvenile Porcine Muscles., *In Vitro Cell Dev Biol Anim 54*, 406- 412, 2018 (*11699*)
	Porcine, 2 month	Skeletal muscle	Collagenase: 10% Neutral Protease: 0.3%	HBSS	Lewis, F., Henning, B., Marazzi, G., Sassoon, D., Ellison, G. and Nadal- Ginard, B.: Porcine Skeletal Muscle-Derived Multipotent PW1pos/Pax7neg Interstitial Cells: Isolation, Characterization, and Long- Term Culture., *Stem Cells Transl Med 3*, 702-12, 2014 (*11045*)
	Porcine, male, 25-40 kg	Coronary myocytes	Collagenase Type 2: 294 u/ml Elastase: 6.5 u/ml Deoxyribonuclease I: 0.04% Soybean Trypsin Inhibitor: 0.1%	low calcium physiological saline	Korzick, D., Laughlin, M., and Bowles, D.: Alterations in PKC Signaling Underlie Enhanced Myogenic Tone in Exercise-Trained Porcine Coronary Resistance Arteries, *J Appl Physiol 96*, 1425-32, 2004 (*10127*)
	Porcine, adult, 35-45 kg	Arterial smooth muscle	Collagenase Type 2: 294 u/ml Elastase: 6.5 u/ml Deoxyribonuclease I: 0.4 mg/ml Soybean Trypsin Inhibitor: 1 mg/ml	MEM	Wamhoff, B., Dixon, J., Sturek, M.: Atorvastatin Treatment Prevents Alterations in Coronary Smooth Muscle Nuclear Ca^{2+} Signaling in Diabetic Dyslipidemia, *J Vasc Res 39*, 208, 2002 (*10030*)

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TISSUE TABLES

Muscle

Muscle

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Porcine	Porcine, Yorkshire, 30kg	Coronary smooth muscle	Collagenase Type 2: 150 u/ml Elastase: 0.05%	HBSS	Sirous, Z., Fleming, J., Khalil, R.: Endothelin-1 Enhances Eicosanoids-Induced Coronary Smooth Muscle Contraction by Activating Specific Protein Kinase C Isoforms, *Hypertension 37*, 497-504, 2001 (*10119*)
	Porcine	Bladder smooth muscle	Collagenase Type 2: 0.1-0.2%	Krebs-Ringer bicarbonate	Shieh, C., Feng, J., Buckner, S., Brioni, J., Coghlan, M., Sullivan, J., Gopalakrishnan, M.: Functional Implication of Spare ATP-Sensitive K(+) Channels in Bladder Smooth Muscle Cells, *J Pharmacol Exp Ther 296*, 669-75, 2001 (*10238*)
	Porcine, juvenile, 30kg	Coronary smooth muscle cells	Collagenase: 0.3% Elastase: 0.05%	HBSS	Huckle, W., Drag, M., Acker, W., Powers, M., McFall, R., Holder, D., Fujita, T., Stabilito, I., Kim, D., Ondeyka, D., Mantlo, N., Chang, R., Reilly, C., Schwartz, R., Greenlee, W., Johnson, R.: Effects of Subtype-Selective and Balanced Angiotensin II Receptor Antagonists in a Porcine Coronary Artery Model of Vascular Restenosis, *Circulation 93*, 1009-19, 1996 (*10131*)
	Porcine	Smooth muscle, aorta	Collagenase: 0.3%	DMEM	Xiong, Y., Xu, S., and Slakey, L.: Modulation of Response to Adenosine in Vascular Smooth Muscle Cells Cultured in Defined Medium, *In Vitro Cell Dev Biol 27*, 355, 1991 (*463*)
	Porcine	Smooth muscle Aorta	Trypsin: 0.05%	EDTA 0.02%	Breton, M., Berrou, E., Deudon, E. and Picard, J.: Changes in Proteoglycans of Cultured Pig Aortic Smooth Muscle Cells During Subculture, *In Vitro Cell Dev Biol 26*, 157, 1990 (*431*)
	Porcine	Smooth muscle Aortic medial tissue	Collagenase: 0.30%	DMEM	Fehr, T., Dickinson, E., Goldman, S. and Slakey, L.: Cyclic AMP Efflux is Regulated by Occupancy of The Adenosine Receptor in Pig Aortic Smooth Muscle Cells, *J Biol Chem 265*, 10974, 1990 (*566*)
Quail	Quail, embryo, 10 day	Myoblasts	Collagenase Type 2: 0.1%	Puck's solution	Konigsberg, I.: Skeletal Myoblasts in Culture, *Methods Enzymol LVIII*, 511, 1979 (*638*)
Rabbit	Rabbit, New Zealand	Gastric smooth muscle	Collagenase Type 2: 0.1% Soybean Trypsin Inhibitor: 0.01%	DMEM	Al-Shboul, O., Mahavadi, S., Sriwai, W., Grider, J. and Murthy, K.: Differential Expression of Multidrug Resistance Protein 5 and Phosphodiesterase 5 and Regulation of cGMP Levels in Phasic and Tonic Smooth Muscle., *Am J Physiol Gastrointest Liver Physiol 305*, G314-24, 2013 (*11500*)
	Rabbit, New Zealand White	Aortic smooth muscle	Collagenase Type 2: 300 u/ml Elastase: 5 u/ml	F10 Ham's	Croons, V., Martinet, W., Herman, A., Timmermans, J., De, M., Guido, R.: Selective Clearance of Macrophages in Atherosclerotic Plaques by the Protein Synthesis Inhibitor Cycloheximide, *J Pharmacol Exp Ther 320*, 986-93, 2007 (*10348*)
	Rabbit, New Zealand, male, 2.5- 3.5 Kg	Enterocytes	Trypsin: 0.1%	RPMI 1640 w/1% fetal bovine serum PBS	Santos, M., Nguyen, B.., Thompson, J.: Factors Affecting in Vitro Growth of Harvested Enterocytes, *Cell Transplant 1*, 299, 1992 (*358*)
	Rabbit (also rat, guinea- pig)	Smooth muscle	Trypsin: 0.1%	Potassium buffer solution	Hu, S., and Kim, H.: Activation of K+ Channel in Vascular Smooth Muscle by Cytochrome P-450 Metabolites of Arachidonic Acid, *FASEB J 6*, A383, 1992 (*409*)
	Rabbit, adult, 1-2 kg	Smooth muscle	Elastase: 0.17 - 0.25%	Saline	Benham, C., Bolton, T., Byrne, N., and Large, W.: Action of Extremely Applied Adenosine Triphosphate O Single Smooth Muscle Cells Dispersed From Rabbit Ear Artery, *J Physiol 387*, 473, 1987 (*863*)
	Rabbit, New Zealand white, 1500 g	Smooth muscle, aortic	Trypsin: 0.038%	MEM	Knodle, S., Anderson, S., and Papaioannou, S.: Large Scale Preparation of Rabbit Aortic Smooth Muscle Cells For Use in Calcium Uptake Studies, *In Vitro Cell Dev Biol 22*, 23, 1986 (*416*)
	Rabbit, adult, 1-2 Kg	Smooth muscle, ear artery	Trypsin: 0.1%	CF solution (see reference)	Benham, C.D., Bolton, T.B.: Spontaneous Transient Outward Currents in Single Visceral and Vascular Smooth Muscle Cells of the Rabbit, *J Physiol 381*, 385, 1986 (*720*)
	Rabbit, 0.5-1 Kg (also guinea-pig, frog, dogfish)	Myocytes, heart and stomach	Protease XIV: 0.028%	Solution C (see reference)	Mitra, R. and Morad, M.: A Uniform Enzymatic Method for Dissociation of Myocytes from Hearts and Stomachs of Vertebrates, *Am J Physiol 249*, H1056, 1985 (*294*)
	Rabbit, white New Zealand, adult, male, 2 Kg	Smooth muscle, aorta	Trypsin: 0.1%	Krebs Ringer HEPES solution	Ives, H., Schultz, G., Galardy, R., and Jamieson, J.: Preparation of Functional Smooth Muscle Cells from the Rabbit Aorta, *J Exp Med 148*, 1400, 1978 (*603*)
	Rabbits, New Zealand white albino, 5-6 months (also human, Rhesus monkey, rabbit)	Smooth muscle, saphenous vein	Elastase: 0.05%	BSS	Chamley, J., Campbell, G., McConnell, J., and Groschel- Stewart, U.: Comparison of Vascular Smooth Muscle Cells from Adult Human, Monkey and Rabbit in Primary Culture and in Subculture, *Cell Tissue Res 177*, 503, 1977 (*354*)
	Rabbit, chinchilla, 5-8 month, virgin, female, 2-3 kg	Smooth muscle, aorta	Hyaluronidase: 800 u/ml	HBSS	Peters, T., Muller, M., and deDuve, C.: Lysosomes of the Arterial Wall. I. Isolation and Subcellular Fractionation of Cells from Normal Rabbit Aorta, *J Exp Med 136*, 1117, 1972 (*601*)
	Rabbit, New England, albino	Thoracic aorta	Elastase: 0.008%	Kreb's Ringer	Day, A., Phil, D., and Newman, H.: Synthesis of Phospholipid by Foam Cells Isolated from Rabbit Atherosclerotic Lesions, *Circ Res XIX*, 122, 1966 (*777*)
Rat	Rat, day 7	Skeletal muscle	Collagenase: 0.05% Neutral Protease: 0.35%	DMEM	Vilmont, V., Cadot, B., Ouanoumou, G. and Gomes, E.: A System for Studying Mechanisms of Neuromuscular Junction Development and Maintence, *Development 143*, 2464, 2016 (*11520*)
	Rat, SD	Pulmonary arterial smooth muscle	Collagenase Type 2: 0.1% Elastase: 0.05%	Buffer	Zeng, Y., Liu, H., Kang, K., Wang, Z., Hui, G., Zhang, X., Zhong, J., Peng, W., Ramchandran, R., Raj, J. and Gou, D.: Hypoxia Inducible Factor-1 Mediates Expression of miR-322: Potential Role in Proliferation and Migration of Pulmonary Arterial Smooth Muscle Cells., *Sci Rep 5*, 12098, 2015 (*11427*)
	Rat	Skeletal muscle fiber	Collagenase Type 1: 0.2%	Tyrode	Weisleder, N., Zhou, J. and Ma, J.: Detection of Calcium Sparks in Intact and Permeabilized Skeletal Muscle Fibers., *Methods Mol Biol 798*, 395, 2012 (*11084*)
	Rat	Vascular smooth muscle	Collagenase Type 2: 0.1% Elastase: 0.02% Soybean Trypsin Inhibitor: 0.05% Deoxyribonuclease I: 0.01%	DMEM	Weber, S., Gratopp, A., Akanbi, S., Rheinlaender, C., Sallmon, H., Barikbin, P. and Koehne, P.: Isolation and Culture of Fibroblasts, Vascular Smooth Muscle, and Endothelial Cells From the Fetal Rat Ductus Arteriosus, *Pediatr Res 70*, 236, 2011 (*11618*)

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TISSUE TABLES

Muscle

Muscle

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat, fetal 17-18 day	Myotubes	Trypsin: 0.05%	see reference	Das, M., Rumsey, J., Bhargava, N., Stancescu, M. and Hickman, J.: Skeletal Muscle Tissue Engineering: A Maturation Model Promoting Long-Term Survival of Myotubes, Structural Development of the Excitation-Contraction Coupling Apparatus and Neonatal Myosin Heavy Chain Expression., *Biomaterials 30*, 5392, 2009 (*10654*)
	Rat	Myogenic	Collagenase Type 2: 1.0% Neutral Protease: 2.4 u/ml	Ham's F-10	Pacak, C. and Cowan, D.: Fabrication of Myogenic Engineered Tissue Constructs., *J Vis Exp 27*, e1137, 2009 (*10907*)
	Rat	Myogenic	Neutral Protease: 8 u/ml Collagenase Type 4: 200 u/ml	DMEM	Larkin, L., Calve, S., Kostrominova, T. and Arruda, E.: Structure and Functional Evaluation of Tendon-Skeletal Muscle Constructs Engineered In Vitro., *Tiss Eng 12*, 3149-58, 2006 (*11601*)
	Rat, Lewis, neonatal	Myoblasts	Collagenase Type 2: 1.0% Neutral Protease: 2.4 u/ml	Ham's F-10	Kim, J., Hadlock, T., Cheney, M., Varvares, M. and Marler, J.: Muscle Tissue Engineering for Partial Glossectomy Defects., *Arch Facial Plast Surg 5*, 403, 2003 (*10637*)
	Rat, SD, adult and neonatal w/in 1 day of birth	Myooids	Neutral Protease: 4 u/ml	Ham's F-12	Dennis, R., Kosnik II, P., Gilbert, M., and Faulkner, J.: Excitability and Contractility of Skeletal Muscle Engineered from Primary Cultures and Cell Lines, *Am J Physiol Cell Physiol 280*, C288, 2001 (*1111*)
	Rat, SD, 3 month	Smooth muscle cells	Collagenase Type 2: 0.2% Elastase: 0.04% Soybean Trypsin Inhibitor: 0.1%	M-199	Su E., Stevenson S., Rollence M., Marshall-Neff J., and Liau G.: A Genetically Modified Adenoviral Vector Exhibits Enhanced Gene Transfer of Human Smooth Muscle Cells, *J Vasc Res 38(5)*, 471, 2001 (*9860*)
	Rat, SD, 250 g	Arterial smooth muscle	Papain: 0.03% Collagenase: 0.1%	see reference	Jaggar, J.: Intravascular Pressure Regulates Local and Global Ca(2+) Signaling in Cerebral Artery Smooth Muscle Cells, *Am J Physiol Cell Physiol 281*, C439-48, 2001 (*10325*)
	Rat, Wistar, adult, male	Smooth & skeletal muscle Cardiac myocytes	Protease: 0.01%	PSS	Wellman, G., Barrett-Jolley, R., Koppel, H. Everitt, D., and Quayle, J.: Inhibition of Vascular K_{ATP} Channels by U-37883A: A Comparison with Cardiac and Skeletal Muscle, *Br J Pharmacol 128*, 909, 1999 (*1065*)
	Rat, SD, male, 250- 350 g	Vascular smooth muscle	Collagenase Type 2: 0.1% Elastase: 0.0125%	DMEM	Hrometz, S., Edelmann, S., McCune, D., Olges, J., Hadley, R., Perez ,D., and Piascik, M.: Expression of Multiple Alpha1- Adrenoceptors on Vascular Smooth Muscle: Correlation with the Regulation of Contraction, *J Pharmacol Exp Ther 290(1)*, 452, 1999 (*9867*)
	Rat, SD, male, 150- 175 g	Smooth muscle, Endothelial	Trypsin: 0.04%	MEM	Redmond, E., Cahill, P., and Sitzmann, J.: Perfused Transcapillary Smooth Muscle and Endothelial Cell Co-Culture-A Novel *In Vitro* Model, *In Vitro Cell Dev Biol Anim 31*, 601, 1995 (*1234*)
	Rat, Wistar Kyoto, 10-15 weeks	Smooth muscle, mesenteric artery	Trypsin: 0.05%	MEM	McGuire, P., Walker- Caprioglio, H., Little, S., and McGuffee, L.: Isolation and Culture of Rat Superior Mesenteric Artery Smooth Muscle Cells, *In Vitro Cell Dev Biol 29*, 135, 1993 (*491*)
	Rat (also rabbit, guinea- pig)	Smooth muscle	Trypsin: 0.1%	Potassium buffer solution	Hu, S., and Kim, H.: Activation of K+ Channel in Vascular Smooth Muscle by Cytochrome P-450 Metabolites of Arachidonic Acid, *FASEB J 6*, A383, 1992 (*409*)
	Rat, SD, 19 days	Smooth muscle, myometrial	Trypsin: 150 µg/ml	HBSS or PSS, CMF	Loch-Caruso, R., Pahl, M., and Juberg, D.: Rat Myometrial Smooth Muscle Cells Show High Levels of Gap Junctional Communication Under a Variety of Culture Conditions, *In Vitro Cell Dev Biol 28*, 97, 1992 (*489*)
	Rat, SHRs and WKY, male, 10 - 14 weeks	Smooth muscle, tail arteries	Papain: 0.1%	HEPES buffer (see reference)	Bolzon, B. and Cheung, D.: Isolation and Characterization of Single Vascular Smooth Muscle Cells From Spontaneously Hypertensive Rats, *Hypertension 14*, 137, 1989 (*694*)
	Rat, 1-3 day	Smooth muscle, aortic	Elastase: 0.0125%	DMEM	Barone, L., Wolfe, L., Faris, B., and Franzblau, C.: Elastin mRNA Levels and Insoluble Elastin Accumulation in Neonatal Rat, *Biochemistry 27*, 3175, 1988 (*313*)
	Rat	Muscle, mesenteric arteries	Trypsin: 0.05%	HEPES KG solution (see reference)	Bean, B., Sturek, M., Puga, A., and Hermsmeyer, K.: Calcium Channels in Muscle Cells Isolated From Rat Mesenteric Arteries: Modulation by Dihydropyridine Drugs, *Circ Res 59*, 229, 1986 (*364*)
	Rat, SHR, WKY. either sex, 12-19 day, 3 month, and retired breeders	Endothelial, aortic	Elastase: 0.05%	Waymouth's culture medium	Gordon, D., Mohai, L., and Schwartz, S.: Induction of Polyploidy in Cultures of Neonatal Rat Aortic Smooth Muscle Cells, *Circ Res 59*, 633, 1986 (*866*)
	Rat, male, 150-250 g	Endothelial, aortic	Trypsin:	RPMI 1640	Cole, O., Fan, T., and Lewis, G.: Isolation, Characterization, Growth and Culture of Endothelial Cells From the Rat Aorta, *Cell Biol Int Rep 10 (6)*, 399, 1986 (*884*)
	Rat, Wistar, female, 10 weeks	Myocytes	Collagenase: 0.1%	HBSS	Boulanger-Saunier, C., Kattenburg, D., and Stoclet, J.: Cyclic AMP-dependent Phosphorylation of a 16kDa Protein in a Plasma Membrane-enriched Fraction of Rat Aortic Myocytes, *F.E.B.S. Lett. 193*, 283, 1985 (*411*)
	Rat, SD, male, 200 - 250 g	Smooth muscle, thoracic aorta	Trypsin: 0.0375%	Eagle's MEM with calcium	Brock, T., Alexander, R., Ekstein, L., Atkinson, W., and Gimbrone, M.: Angiotensin Increases Cytosolic Free Calcium in Cultured Vascular Smooth Muscle Cells, *Hypertension 7*, 105, 1985 (*693*)
	Rat, SD, 225-250g	Mesenteric artery smooth muscle cells	Elastase: .0125% Soybean Trypsin Inhibitor: 0.025% Collagenase Type 1: 0.1%	HBSS	Gunther S, Alexander RW, Atkinson WJ, and Gimbrone MA Jr.: Functional angiotensin II receptors in cultured vascular smooth muscle cells, *J Cell Biol 92*, 289, 1982 (*10058*)
	Rat, 3-4 day	Myocardial	Trypsin NF 1:250: 0.125%	HBSS CMF	Kasten, F.: Rat Myocardial Cells *In Vitro*: Mitosis and Differentiated Properties, *In Vitro 8*, 128, 1972 (*539*)
	Rat, 200 g	Muscle	Trypsin: 0.05%	Kreb's Henseleit bicarbonate buffer	Kono, T.: Roles of Collagenases and Other Proteolytic Enzymes in the Dispersal of Animal Tissues, *Biochim Biophys Acta 178*, 397, 1969 (*317*)
	Rat, Wistar, 3-10 day	Heart	Trypsin NF 1:250: 250: 0.1%	Saline A (see reference)	Harary, I., and Farley, B.: *In Vitro* Studies on Single Beating Rat Heart Cells, *Exp Cell Res 29*, 451, 1963 (*395*)

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TISSUE TABLES

Neural

Neural

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Avian	Quail and Chicken, embryonic	Midgut DRG	Collagenase animal free: 0.05% Neutral Protease: 0.5%	Ham's F12	Rollo, B., Zhang, D., Simkin, J., Menheniott, T. and Newgreen, D.: Why are Enteric Ganglia so Small? Role of Differential Adhesion of Enteric Neurons and Enteric Neural Crest Cells., *F1000Res 4*, 113, 2015 (*11495*)
	Chick, White Leghorn, embryos	Cilary ganglion neurons	Collagenase Type 1: 0.1%	PBS	Temburni, M., Rosenberg, M., Pathak, N., McConnell, R. and Jacob, M.: Neuronal Nicotinic Synapse Assembly Requires the Adenomatous Polyposis Coli Tumor Suppressor Protein., *J Neurosci 24*, 6776, 2004 (*11008*)
Bovine	Bovine (also rat)	Heart Adrenal chromaffin Paraneurons	Trypsin: 0.06%	25mM HEPES buffered Locke's solution, CMF	Trifaro, J., Tang, R., and Novas, M.: Monolayer Co- Culture of Rat Heart Cells and Bovine Adrenal Chromaffin Paraneurons, *In Vitro Cell Dev Biol 26*, 335, 1990 (*438*)
	Bovine	Microvascular endothelial	Collagenase/Dispase: 0.1%	MEM	Bowman, P., Betz, A., and Goldstein, G.: Primary Culture of Microvascular Endothelial Cells From Bovine Retina, *In Vitro 18 (7)*, 626, 1982 (*945*)
	Calf (also lamb)	Oligodendroglia Neural	Trypsin: 0.1%	(see reference)	Poduslo, S., Miller, K., and McKhann, G.: Metabolic Properties of Maintained Oligodendroglia Purified from Brain, *J Biol Chem 253*, 1592, 1978 (*552*)
Canine	Canine	Satellite glial	Hyaluronidase: 0.2% Collagenase Type 4: 0.2% Collagenase: 0.2%	HBSS	Tongtako, W., Lehmbecker, A., Wang, Y., Hahn, K., Baumgartner, W. and Gerhauser, I.: Canine Dorsal Root Ganglia Satellite Glial Cells Represent an Exceptional Cell Population with Astrocytic and Oligodendrocytic Properties., *Sci Rep 7*, 13915, 2017 (*11636*)
Chicken	Chicken, White Leghorn, embryos, 17-21 day	Neurons	Papain: 40 u/ml	HEPES	Raman, I., and Trussell, L.: The Kinetics of the Response to Glutamate and Kainte in Neurons of the Avian and Cochlear Nucleus, *Neuron 9*, 173, 1992 (*692*)
	Chick, embryo, 10-14 day	Flat, retina	Trypsin: 0.1%	Tyrode's solution, CMF	Moyer, M., Bullrich, F., and Sheffield, J.: Emergence of Flat Cells From Glia in Stationary Cultures of Embryonic Chick Neural Retina, *In Vitro Cell Dev Biol 26*, 1073, 1990 (*427*)
	Chick, White Leghorn, embryos	Cerebral neurons	Trypsin: 0.125-0.25%	DMEM	Coates, P., and Nathan, R.: Feasibility of Electrical Recordings From Unconnected Vertebrate CNS Neurons Cultured in a Three- Dimensional Extracellular Matrix, *J Neurosci Methods 20*, 203, 1987 (*997*)
	Chick, White Leghorn, embryo (also rat, SD, embryo)	Spinal cord	Trypsin: 0.05%	Phosphate buffer (see reference)	Schnaar, R., and Schaffner, A.: Separation of Cell Types from Embryonic Chicken and Rat Spinal Cord: Characterization of Motoneuron-Enriched Fractions, *J Neurosci 1*, 204, 1981 (*610*)
	Chick	Dorsal root ganglion neurons Spinal cord	Trypsin: 0.1%	Puck's saline, CMF	Choi, D., and Fiscbach, G.: GABA Conductance of Chick Spinal Cord and Dorsal Root Ganglion Neurons in Cell Culture, *J Neurophysiol 45*, 605, 1981 (*717*)
	Chick, White Leghorn embryo, 8 day	Neurons, ganglia	Trypsin: 0.25%	HBSS, CMF	Bottenstein, J., Skaper, S., Varon, S., and Sato, G.: Selective Survival of Neurons from Chick Embryo Sensory Ganglionic Dissociates Utilizing Serum- Free Supplemented Medium, *Exp Cell Res 125*, 183, 1980 (*388*)
	Chicken, White Leghorn, fertile eggs	Ciliary ganglion neurons	Trypsin: 0.25%	Eagle's MEM	Tuttle, J., Suszkiw, J., and Ard, M.: Long-Term Survival and Development of Dissociated Parasympathetic Neurons in Culture, *Brain Res 183*, 161, 1980 (*994*)
	Chicken, embryos, 9-10 days old	Dorsal root ganglia neurons	Collagenase: 0.01%	Eagle's MEM	Mudge, A., Leeman, S., and Fischbach, G.: Enkephalin Inhibits Release of Substance P From Sensory Neurons in Culture and Decreases Action Potential Duration, *Proc Natl Acad Sci U S A 76 (1)*, 526, 1979 (*995*)
	Chick embryos	Ganglion chains, sympathetic ganglia	Trypsin: 0.25%	Krebs Phosphosaline	McCarthy, K., and Partlow, L.: Preparation of Pure Neuronal and Non-Neuronal Cultures From Embryonic Chick Sympathetic Ganglia: A New Method Based on Both Differential Cell Adhesiveness and the Formation of Homotypic Neuronal Aggregates, *Brain Res 114*, 391, 1976 (*345*)
	Chick, White Leghorn, embryos, 7 day	Neural retina	Collagenase: 0.25% Elastase: 0.2% Hyaluronidase: 1.0% Papain: 1.0% Protease: 0.1% Trypsin: 0.05%	HBSS	Wiseman, L., and Hammond, W.: The Reacquisition of Cell Adhesiveness Following Tissue Disaggregation by Eleven Different Agents, *J Exp Zool 197*, 429, 1976 (*996*)
Fish	Zebrafish, embryonic	Motorneurons	PDS kit: per instructions	L-15	Spiro, Z., Koh, A., Tay, S., See, K. and Winkler, C.: Transcriptional Enhancement of Smn Levels in Motoneurons is Crucial for Proper Axon Morphology in Zebrafish., *Sci Rep 6*, 27470, 2016 (*11508*)
	Zebrafish	Motor neurons	Collagenase Type 2: 0.1%	See reference	Sakowski, S., Lunn, J., Busta, A., Palmer, M., Dowling, J. and Feldman, E.: A Novel Approach to Study Motor Neurons from Zebrafish Embryos and Larvae in Culture., *J Neurosci Methods 205*, 277-82, 2012 (*11406*)
	Zebrafish, *Dania rerio*, embryo	Rohon-Beard neurons	Trypsin: 0.2%	L-15/Hepes	Won, Y., Ono, F. and Ikeda, S.: Identification and Modulation of Voltage-Gated Ca^{2+} Currents in Zebrafish Rohon-Beard Neurons., *J Neurophysiol 105*, 442-53, 2011 (*10798*)
	Zebrafish, *Danio rerio*, embryo	Neurons	PDS kit: with modifications	EBSS	Cerda, G., Hargrave, M. and Lewis, K.: RNA Profiling of FAC-sorted Neurons from the Developing Zebrafish Spinal Cord., *Dev Dyn 238*, 150-61, 2009 (*10799*)
	Black ghose knige fish, adult (*Apteronotus albifrons*)	Neurons, spinal cord	Trypsin: 0.4%	PBS, CMF	Anderson, M.J.: Differences in Growth of Neurons from Normal and Regenerated Teleost Spinal Cord in vitro, *In Vitro Cell Dev Biol 29A*, 145, 1993 (*492*)
Frog	*Xenopus*, embryonic	Neuron	Collagenase Type 1: 0.1%	Steinberg's solution	Takahashi, T., Nakajima, Y., Hirosawa, K., Nakajima, S., and Onodera, K.: Structure and Physiology of Developing Neuromuscular Synapses in Culture, *J Neurosci 7*, 473, 1987 (*619*)
Guinea-Pig	Guinea-pig, newborn	Neuron, enteric	Trypsin: 0.125%	Medium 199	Jessen, K, McConnell, J., Purves, R., Burnstock, G., and Chamley-Campbell, J.: Tissue Culture of Mammalian Enteric Neurons, *Brain Res 152*, 573, 1978 (*347*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Hamster	Hamster, male	Vomeronasal organ neurons	Collagenase Type 1: 0.02% Trypsin: 0.02%	PBS	Liman, E.: Regulation by Voltage and Adenine Nucleotides of a Ca^{2+}- Activated Cation Channel from Hamster Vomeronasal Sensory Neurons, *J Physiol 548*, 777, 2003 (*10044*)
Human	Human	Spinal cord neural progenitor	PDS kit: with modifications	EBSS	Mothe, A. and Tator, C.: Isolation of Neural Stem/Progenitor Cells from the Periventricular Region of the Adult Rat and Human Spinal Cord., *J Vis Exp* , e52732, 2015 (*11551*)
	Human	Neural, various	Papain: 12 u/ml Trypsin: see reference Collagenase/Dispase: see reference	see reference	Panchision David M, Chen Hui-Ling, Pistollato Francesca, Papini Daniela, Ni Hsiao-Tzu, Hawley Teresa S: Optimized flow cytometric analysis of central nervous system tissue reveals novel functional relationships among cells expressing CD133, CD15, and CD24, *Stem Cells 25*, 1560-70, 2007 (*10297*)
	Human, 9 month	Neurons	Collagenase Type 4: 1.33% Papain: 0.07 u/ml Neutral Protease: 1 mg/ml	DMEM/F12	Dietrich, J., Lacagnina, M., Gass, D., Richfield, E., Mayer- Proschel, M., Noble, M., Torres, C., Proschel, C.: EIF2B5 Mutations Compromise GFAP+ Astrocyte Generation in Vanishing White Matter Leukodystrophy, *Nat Med 11*, 277, 2005 (*10046*)
	Human, 26 week	Neural progenitor cells	Papain: 2.5 u/ml Deoxyribonuclease I: 250 u/ml Neutral Protease: 1 u/ml	DMEM/F-12	Fuja, T., Schwartz, P., Darcy, D., Bryant, P.: Asymmetric Localization of LGN but not AGS3, Two Homologs of Drosophila Pins, in Dividing Human Neural Progenitor Cells, *J Neurosci Res 75*, 782, 2004 (*10045*)
	Human, adult	Ventricular epithelial	Papain: 11.4 u/ml Deoxyribonuclease I: 10 u/ml	DMEM/F12	Roy, N., Benraiss, A., Wang, S., Fraser, R., Goodman, R., Couldwell, W., Nedergaard, M., Kawaguchi, A., Okano, H., Goldman, S.: Promoter-Targeted Selection and Isolation of Neural Progenitor Cells from the Adult Human Ventricular Zone, *J Neurosci Res 59*, 321, 2000 (*10038*)
	Human, 5-65 years	Retinal pigment epithelial (RPE)	Trypsin: 0.25%	HBSS	Von Recum, H., Okano, T., Kim, S, and Bernstein, P.: Maintenance of Retinoid Metabolism in Human Retinal Pigment Epithelium Cell Culture, *Exp Eye Res 69*, 97, 1999 (*1185*)
	Human	Dorsal root ganglion neurons	Collagenase Type 1: 0.2% Neutral Protease: 0.5%	DMEM/F-12	Dib-Hajj, S., Tyrrell, L., Cummins, T., Black, J., Wood, P., Waxman, S.: Two Tetrodotoxin-Resistant Sodium Channels in Human Dorsal Root Ganglion Neurons, *F.E.B.S. Lett. 462*, 117, 1999 (*10042*)
Insect	Drosophila, larval	Neuroblasts	Collagenase Type 1: 0.1% Papain: 0.1%	Rinaldini solution	Berger, C., Harzer, H., Burkard, T., Steinmann, J., van der Horst, S., Laurenson, A., Novatchkova, M., Reichert, H. and Knoblich, J.: FACS Purification and Transcriptome Analysis of Drosophila Neural Stem Cells Reveals a Role for Klumpfuss in Self-Renewal., *Cell Rep 2*, 407, 2012 (*11089*)
	Drosophila	Dendrites	Collagenase: 0.05% Neutral Protease: 0.2%	HBSS	Sanchez-Soriano, N., Bottenberg, W., Fiala, A., Haessler, U., Kerassoviti, A., Knust, E., Lohr, R. and Prokop, A.: Are Dendrites in Drosophila Homologous to Vertebrate Dendrites?, *Dev Biol 288*, 126, 2005 (*10367*)
	Gryllus Bimaculatus	Giant interneurons	Collagenase: 0.05% Neutral Protease: 0.2%	Leibovitz's L15	Kloppenburg, P. and Horner, M.: Voltage-Activated Currents in Identified Giant Interneurons Isolated from Adult Crickets Gryllus Bimaculatus, *J Exp Biol 201 (Pt 17)*, 2529, 1998 (*10366*)
Mouse	Mouse, embryonic 12.5	Schwann cell precursors	Collagenase Type 2: 0.2% Hyaluronidase: 0.12% Soybean Trypsin Inhibitor: 0.03%	DMEM/ Ham's F-12	Mirsky, R. and Jessen, K.: Isolation of Schwann Cell Precursors from Rodents., *Methods Mol Biol 1739*, 3- 15, 2018 (*11611*)
	Mouse, embryonic	Cortical neurons	PDS kit: per instructions	Neurobasal	Kramer, N., Haney, M., Morgens, D., Jovicic, A., Couthouis, J., Li, A., Ousey, J., Ma, R., Bieri, G., Tsui, C., Shi, Y., Hertz, N., Tessier- Lavigne, M., Ichida, J., Bassik, M. and Gitler, A.: CRISPR-Cas9 Screens in Human Cells and Primary Neurons Identify Modifiers of C9ORF72 Dipeptide-Repeat-Protein Toxicity., *Nat Genet* , 2018 (*11608*)
	Mouse, P2-P12	Dorsal root ganglia neurons	Collagenase Type 2: 0.1%	MEM	Fangmann, L., Teller, S., Stupakov, P., Friess, H., Ceyhan, G. and Demir, I.: 3D Cancer Migration Assay with Schwann Cells., *Methods Mol Biol 1739*, 317-325, 2018 (*11614*)
	Mouse, 4 month	Satellite glial	Hyaluronidase: 0.2% Collagenase Type 4: 0.2% Collagenase: 0.2%	HBSS	Tongtako, W., Lehmbecker, A., Wang, Y., Hahn, K., Baumgartner, W. and Gerhauser, I.: Canine Dorsal Root Ganglia Satellite Glial Cells Represent an Exceptional Cell Population with Astrocytic and Oligodendrocytic Properties., *Sci Rep 7*, 13915, 2017 (*11636*)
	Mouse	Neurospheres	Trypsin: 0.13% Hyaluronidase: 0.08%	Neurobasal A	Xu, W., Sachewsky, N., Azimi, A., Hung, M., Gappasov, A. and Morshead, C.: Myelin Basic Protein Regulates Primitive and Definitive Neural Stem Cell Proliferation from the Adult Spinal Cord., *Stem Cells 35*, 485-496, 2017 (*11646*)
	Mouse, day 2	Schwann	Trypsin: 0.025% Collagenase Type 1: 0.1% Deoxyribonuclease I: 7 u/ml Collagenase Type 2: 0.2%	DMEM	Clements, M., Byrne, E., Camarillo Guerrero, L., Cattin, A., Zakka, L., Ashraf, A., Burden, J., Khadayate, S., Lloyd, A., Marguerat, S. and Parrinello, S.: The Wound Microenvironment Reprograms Schwann Cells to Invasive Mesenchymal- like Cells to Drive Peripheral Nerve Regeneration., *Neuron 96*, 98-114.e7, 2017 (*11677*)
	Mouse, 2-3 month	Sympathetic neurons	Papain: 10 u/ml Collagenase Type 2: 0.13% Neutral Protease: 0.22%	EBSS	Sun, H., Tsai, W., Li, B., Tao, W., Chen, P. and Rubart, M.: Voltage-Induced Calcium Release in Postganglionic Sympathetic Neurons in Adult Mice., *PLoS ONE 11*, e0148962, 2016 (*11507*)
	Mouse	Spinal motor neurons, Astrocytes, microglia	Papain: 0.2%	HBSS	Beaudet, M., Yang, Q., Cadau, S., Blais, M., Bellenfant, S., Gros-Louis, F. and Berthod, F.: High Yield Extraction of Pure Spinal Motor Neurons, Astrocytes and Microglia from Single Embryo and Adult Mouse Spinal Cord., *Sci Rep 5*, 16763, 2015 (*11574*)
	Mouse	Neurons	PDS kit: per instructions	EBSS	Ren, H., Lu, T., McGraw, T. and Accili, D.: Anorexia and Impaired Glucose Metabolism in Mice with Hypothalamic Ablation of Glut4 Neurons., *Diabetes 64*, 405-17, 2015 (*11691*)
	Mouse	DRG neurons	Collagenase Type 2: 0.1% Trypsin: 0.25%	DMEM/F-12	Lee, B., Cho, H., Jung, J., Yang, Y., Yang, D. and Oh, U.: Anoctamin 1 Contributes to Inflammatory and Nerve- Injury Induced Hypersensitivity., *Mol Pain 10*, 5, 2014 (*11068*)
	Mouse, neonatal	Schwann cells	Collagenase: 0.05-0.1% Trypsin: 0.125-0.25%	DMEM	Stettner, M., Lohmann, B., Wolffram, K., Weinberger, J., Dehmel, T., Hartung, H., Mausberg, A. and Kieseier, B.: Interleukin-17 Impedes Schwann Cell-Mediated Myelination., *J Neuroinflammation 11*, 63, 2014 (*11081*)

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Mouse	Mouse	Oligodendrocytes	Papain: 0.1% Deoxyribonuclease I: 0.0002%	HBSS	Harris, M., Hulseberg, P., Ling, C., Karman, J., Clarkson, B., Harding, J., Zhang, M., Sandor, A., Christensen, K., Nagy, A., Sandor, Matyas,S. and Fabry, Z.: Immune Privilege of the CNS is not the Consequence of Limited Antigen Sampling., *Sci Rep 4*, 4422, 2014 (*11255*)
	Mouse	Hippocampal neurons	PDS kit: per instructions	DMEM	Williams, E., Zhong, X., Mohamed, A., Li, R., Liu, Y., Dong, Q., Ananiev, G., Mok, J., Lin, B., Lu, J., Chiao, C., Cherney, R., Li, H., Zhang, S. and Chang, Q: Mutant Astrocytes Differentiated from Rett Syndrome Patients-Specific iPSCs Have Adverse Effects on Wild- Type Neurons., *Hum Mol Genet 23*, 2968-80, 2014 (*11256*)
	Mouse	Neurosperes	Papain: 0.1% Deoxyribonuclease I: 0.1%	NeuroCult NSC	Stuart, M., Corrigan, F. and Baune, B.: Knockout of CXCR5 Increases the Population of Immature Neural Cells and Decreases Proliferation in the Hippocampal Dentate Gyrus., *J Neuroinflammation 11*, 31, 2014 (*11383*)
	Mouse, 2 month	Fibroblasts	Papain: 0.2%	Hibernate	Liu, G., Rustom, N., Litteljohn, D., Bobyn, J., Rudyk, C., Anisman, H. and Hayley, S.: Use of Induced Pluripotent Stem Cell Derived Neurons Engineered to Express BDNF for Modulation of Stressor Related Pathology., *Front Cell Neurosci 8*, 316, 2014 (*11693*)
	Mouse, 4-6 week	Schwann	Collagenase Type 1: 0.01% Trypsin: 0.125%	DMEM	Masaki, T., Qu, J., Cholewa- Waclaw, J., Burr, K., Raaum, R. and Rambukkana, A.: Reprogramming Adult Schwann Cells to Stem Cell- Like Cells by Leprosy Bacilli Promotes Dissemination of Infection., *Cell 152*, 51, 2013 (*11070*)
	Mouse	Oligodendrocyte precursor cells	Papain: 0.09%	DMEM	Medina-Rodriguez, E., Arenzana, F., Bribian, A. and de Castro, F.: Protocol to Isolate a Large Amount of Functional Oligodendrocyte Precursor Cells from the Cerebral Cortex of Adult Mice and Humans., *PLoS ONE 8*, e81620, 2013 (*11071*)
	Mouse	Enteric neurons	Collagenase Type 4: 0.1% Trypsin: 0.05% Deoxyribonuclease I: 400 u/ml	DMEM/F12	Zhang, Y. and Hu, W.: Mouse Enteric Neuronal Cell Culture., *Methods Mol Biol 1078*, 55-63, 2013 (*11597*)
	Mouse, 6-8 week	Neural precursors	Trypsin: 0.13% Hyaluronidase: 0.08%	see reference	Babona-Pilipos, R., Popovic, M. and Morshead, C.: A Galvanotaxis Assay for Analysis of Neural Precursor Cell Migration Kinetics in an Externally Applied Direct Current Electric Field., *J Vis Exp 68*, e4193, 2012 (*10892*)
	Mouse, adult	Retinal neurons	Papain: 10-20 ul	HBSS	Goetz, J. and Trimarchi, J.: Single-Cell Profiling of Developing and Mature Retinal Neurons., *J Vis Exp 62*, e3824, 2012 (*10898*)
	Mouse	Neurons	Papain: 100 ul	DMEM	Li, Y., Roy, B., Wang, W., Zhang, L., Sampson, S. and Lin, D.: Imaging pHluorin- Tagged Receptor Insertion to the Plasma Membrane in Primary Cultured Mouse Neurons., *J Vis Exp 69*, e4450, 2012 (*10902*)
	Mouse, P4-5	Neuroshere	Trypsin: 0.25% Papain: 100 u Deoxyribonuclease I: 0.025%	Pro-N	Ziegler, A., Schneider, J., Qin, M., Tyler, W., Pintar, J., Fraidenraich, D., Wood, T and Levison, S.: IGF-II Promotes Stemness of Neural Restricted Precursors., *Stem Cells 30*, 1265, 2012 (*10933*)
	Mouse, 6-8 week	Neural stem cells	Papain: 0.01% Neutral Protease: 0.1% Deoxyribonuclease I: 0.01%	DMEM/F12	Bracko, O., Singer, T., Aigner, S., Knobloch, M., Winner, B., Ray, J., Clemenson, G., Suh, H., Couillard-Despres, S., Aigner, L., Gage, F. and Jessberger, S.: Gene Expression Profiling of Neural Stem Cells and their Neuronal Progeny Reveals IGF2 as a Regulator of Adult Hippocampal Neurogenesis., *J Neurosci 32*, 3376-87, 2012 (*11387*)
	Mouse	Nerve progenitors	Collagenase Type 4: 0.025% Trypsin NF 1:250: .025%	HBSS	Salisbury, E., Lazard, Z., Ubogu, E., Davis, A. and Olmsted-Davis, E.: Transient Brown Adipocyte-Like Cells Derive from Peripheral Nerve Progenitors in Response to Bone Morphogenetic Protein 2., *Stem Cells Transl Med 1*, 874-85, 2012 (*11554*)
	Mouse, embryonic	Neural crest	Collagenase/Dispase: 0.1%	DMEM	Pfaltzgraff, E., Mundell, N. and Labosky, P.: Isolation and Culture of Neural Crest Cells from Embryonic Murine Neural Tube., *J Vis Exp* , e4134, 2012 (*11585*)
	Mouse, embryo, 14 day	Spinal cord neurons	Papain: 0.05% Deoxyribonuclease I: 0.004%	PBS/DMEM	Pollari, E., Savchenko, E., Jaronen, M., Kanninen, K., Malm, T., Wojciechowski, S., Ahtoniemi, T., Goldsteins, G., Giniatullina, R., Giniatullin, R., Koistinaho, J. and Magga, J.: Granulocyte Colony Stimulating Factor Attenuates Inflammation in a Mouse Model of Amyotrophic Lateral Sclerosis., *J Neuroinflammation 8*, 74, 2011 (*10576*)
	Mouse, 1-2 day	Oligodendrocytes, Dorsal root ganglia	Papain: 0.15% Deoxyribonuclease I: 0.006%	DMEM	O'Meara, R., Ryan, S., Colognato, H. and Kothary, R.: Derivation of Enriched Oligodendrocyte Cultures and Oligodendrocyte/Neuron Myelinating Co-Cultures from Post-Natal Murine Tissues., *J Vis Exp 54*, 3324, 2011 (*10650*)
	Mouse, embryonic	Motorneurons	Trypsin: 0.025%	HBSS	Conrad, R., Jablonka, S., Sczepan, T., Sendtner, M., Wiese, S. and Klausmeyer, A.: Lectin-Based Isolation and Culture of Mouse Embryonic Motoneurons., *J Vis Exp 55*, e3200, 2011 (*10896*)
	Mouse, 4-8 week	Olfactory ensheathing	Collagenase: 0.15% Papain: 12 u/ml	DMEM	Radtke, C., Sasaki, M., Lankford, K., Gallo, V. and Kocsis, J.: CNPase Expression in Olfactory Ensheathing Cells., *J Biomed Biotechnol 2011*, 608496, 2011 (*11016*)
	Mouse	Dentate gyrus neural precursor	Papain: 2.5 u/ml Neutral Protease: 1.0 u/ml Deoxyribonuclease I: 250 u/ml	Neurobasal A	Babu, H., Claasen, J., Kannan, S., Runker, A., Palmer, T. and Kempermann, G.: A Protocol for Isolation and Enriched Monolayer Cultivation of Neural Precursor Cells from Mouse Dentate Gyrus., *Front Neurosci 5*, 89, 2011 (*11454*)
	Mouse, 30 day	Motoneurons	Papain: 0.2%	Hibernate A	Milligan, C. and Gifondorwa, D.: Isolation and Culture of Postnatal Spinal Motoneurons., *Methods Mol Biol 793*, 77, 2011 (*11519*)
	Mouse	Hippocampal and retinal neurons	Papain: 1% Deoxyribonuclease I: 5 u/ml	HBSS	Brown, J., Gianino, S. and Gutmann, D.: Defective cAMP Generation Underlies the Sensitivity of CNS Neurons to Neurofibromatosis-1 Heterozygosity, *J Neurosci 30*, 5579, 2010 (*10545*)
	Mouse	CNS leukocytes	Collagenase Type 4: 300 u/ml	HBSS	Sayed, B., Christy, A., Walker, M. and Brown, M.: Meningeal Mast Cells Affect Early T Cell Central Nervous System Infiltration and Blood-Brain Barrier Integrity Through TNF: a Role for Neutrophil Recruitment?, *J Immunol 184*, 6891-900, 2010 (*10885*)
	Mouse, adult	Spinal microganglia	Papain: 0.2%	Hibernate A	Yip, P., Kaan, T., Fenesan, D. and Malcangio, M.: Rapid Isolation and Culture of Primary Microglia from Adult Mouse Spinal Cord., *J Neurosci Methods 183*, 223- 37, 2009 (*10574*)
	Mouse, embryonic	Dopaminergic neurons	Trypsin: 0.1% Deoxyribonuclease I: 0.02%	DMEM	Radad, K., Gille, G., Rausch, W.: Dopaminergic Neurons are Preferentially Sensitive to Long-Term Rotenone Toxicity in Primary Cell Culture, *Toxicol In Vitro 22*, 68-74, 2008 (*10347*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse, neonatal	DRG neurons	Collagenase: 0.2% Trypsin: 0.05%	Ham's F12	Pedrola, L., Espert, A., Valdes-Sanchez, T., Sanchez- Piris, M., Sirkowski, E., Scherer, S., Farinas, I., and Palau, F.: Cell Expression of GDAP1 in the Nervous System and Pathogenesis of Charcot-Marie-Tooth Type 4A Disease., *J Cell Mol Med 12*, 679, 2008 (*10508*)
	Mouse, 6 mo	Neurons, neurospheres	Papain: 0.2%	Hibernate	Brewer, G., Torricelli, J.: Isolation and Culture of Adult Neurons and Neurospheres, *Nat Protoc 2*, 1490-8, 2007 (*10095*)
	Mouse	Neural, various	Papain: 12 u/ml Trypsin: see reference Collagenase/Dispase: see reference	see reference	Panchision, D., Chen, H., Pistollato, F., Papini, D., Ni, H., Hawley, T.: Optimized Flow Cytometric Analysis of Central Nervous System Tissue Reveals Novel Functional Relationships Among Cells Expressing CD133, CD15, and CD24, *Stem Cells 25*, 1560-70, 2007 (*10297*)
	Mouse, 6-8 week	Sensory neurons, DRG	Papain: 20 u/ml Collagenase Type 2: 0.4% Neutral Protease: 0.46%	HBSS	Malin, S., Davis, B. and Molliver, D.: Production of Dissociated Sensory Neuron Cultures and Considerations for their use in Studying Neuronal Function and Plasticity, *Nat Protoc 2*, 152, 2007 (*10623*)
	Mouse, C57BL/6, 1 year	Neurons	Papain: 0.2%	DMEM	Eide, L, and McMurray, C: Culture of Adult Mouse Neurons, *Biotechniques 38(1)*, 99-104, 2005 (*9787*)
	Mouse, adult	Brain and spinal cord cells	Trypsin: 0.25%	PBS	Gonzalez, J., Bergmann, C., Fuss, B., Hinton, D., Kangas, C., Macklin, W., Stohlman, S.: Expression of a Dominant Negative IFN-Gammarecep-tor on Mouse Oligodendrocytes, *Glia 51*, 22-34, 2005 (*10111*)
	Mouse, neonatal	Neurons	PDS kit: per instructions	EBSS	Gill, J., Moenter, S., Tsai, P.: Developmental Regulation of Gonadotropin- Releasing Hormone Neurons by Fibroblast Growth Factor Signaling, *Endocrinology 145*, 3830, 2004 (*10021*)
	Mouse, C57BL	Cerebellar granule cell precursors	Papain: 16.5 u/ml Deoxyribonuclease I: 0.008%	Dulbecco's PBS	Okano-Uchida, T., Himi, T., Komiya, Y., and Ishizaki, Y.: Cerebellar Granule Cell Precursors can Differentiate into Astroglial Cells, *Proc Natl Acad Sci U S A 101*, 1211, 2004 (*10061*)
	Mouse, 1-3 day	Neurons, ganglia	Papain: 20 u/ml Deoxyribonuclease I: 100 u/ml Collagenase: 0.3% Trypsin: 0.05%	HBSS	Savchenko, V., Sung, U., Blakely, R.: Cell Surface Trafficking of the Antidepressant-Sensitive Norepinephrine Transporter Revealed with an Ectodomain Antibody, *Mol Cell Neurosci 24*, 1131, 2003 (*10040*)
	Mouse, male	Trigeminal senesory neurons	Papain: 20 u/ml	HEPES buffered saline	Roberts, L., MacDonald, C.and Mark, C.: Anandamide is a Partial Agonist at Native Vanilloid Receptors in Acutely Isolated Mouse Trigeminal Sensory Neurons., *Br J Pharmacol 137*, 421, 2002 (*10625*)
	Mouse, postnatal- day-1-old (P1)	Neurons	Trypsin: 0.25%	NGF-containing medium	Deshmukh, M., Kuida, K., and Johnson Jr., E.: Caspase Inhibition Extends the Commitment to Neuronal Death Beyond Cytochrome C Release to the Point of Mitochondrial Depolarization, *J Cell Biol 150 (1)*, 131, 2000 (*1121*)
	Mouse embryos	Neurons, DRG and SCG	Trypsin: 0.25%	L-15 medium	Lee, K., Davies, A., and Jaenisch, R.: P75-Eficient Embryonic Dorsal Root Sensory and Neonatal Sympathetic Neurons Display a Decreased Sensitivity to NGF, *Development 120*, 1027, 1994 (*1084*)
	mouse, 65 days	Neurons, neuronal precursors	Trypsin: 0.1% Deoxyribonuclease I: 0.001%	DMEM	Richards L., Kilpatrick T., and Bartlett P.: De Novo Generation of Neuronal Cells from the Adult Mouse Brain, *Proc Natl Acad Sci U S A 89*, 8591, 1992 (*9807*)
	Mouse, CD-1, neonate	Neurons, dorsal root ganglion	Trypsin: 0.25%	HBSS	Quinn, S. and De Boni, U.: Enhanced Neuronal Regeneration by Retinoic Acid of Murine Dorsal Root Ganglia and of Fetal Murine and human Spinal Cord in vitro, *In Vitro Cell Dev Biol 27*, 55, 1991 (*468*)
	Mouse, fetal	Precursor	Trypsin: 0.5%	PBS	Kitani, H., Shiurba, R., Sakakura, T., Tomooka, Y.: Isolation and Characterization Of Mouse Neural Precursor Cells in Primary Culture, *In Vitro Cell Dev Biol 27*, 615, 1991 (*470*)
	Mouse (SWR or CF1), 1-3 months	Papillae, taste receptor	Pronase E: 0.15%	Carbonate- Phosphate buffer (see reference)	Spielman, A., Mody, I., Brand, J., Whitney, G., MacDonald, J., and Salter, M.: A Method for Isolating and Patch-Clamping Single Mammalian Taste Receptor Cells, *Brain Res 503*, 326, 1989 (*350*)
	Mouse, neonatal (also chick)	PNS test neurons	Trypsin: 0.08%	Eagle's Basal Medium (see reference)	Varon, S., Skaper, S., Barbin, G., Selak, I., and Manthorpe, M.: Low Molecular Weight Agents Support Survival of Cultured Neurons From the Central Nervous System, *J Neurosci 4 (3)*, 654, 1984 (*1000*)
	Mouse (BALB/c), adult	Neurons, spinal cord	Collagenase Type 3: 0.25%	Hank's BSS, CMF	Eagleson, K. and Bennett, M.: Survival of Purified Motor Neurons *In Vitro*: Effects of Skeletal Muscle- Conditioned Medium, *Neurosci Lett 38*, 187, 1983 (*645*)
	Mouse, 0-30 day	Neural	Trypsin NF 1:250: 0.25%	BSS	Shrier, B., Wilson, S., and Nirenberg, M.: Cultured Cell Systems and Methods for Neurobiology, *Vol. 32*,, , 765, 1974 (*637*)
Ovine	Lamb (also calf)	Oligodendroglia Neural	Trypsin: 0.1%	(see reference)	Poduslo, S., Miller, K., and McKhann, G.: Metabolic Properties of Maintained Oligodendroglia Purified from Brain, *J Biol Chem 253*, 1592, 1978 (*552*)
Porcine	Porcine, adult, 60-100 kg	Superior cervical ganglia	Papain: 2 u/ml Collagenase: 0.12% Neutral Protease: 0.48%	HBSS	Si, M., Lee, T.: Presynaptic Alpha7-Nicotinic Acetylcholine Receptors Mediate Nicotine-Induced Nitric Oxidergic Neurogenic Vasodilation in Porcine Basilar Arteries, *J Pharmacol Exp Ther 298*, 122, 2001 (*10052*)
Quail	Quail	Neural crest	Trypsin: 0.05%	MEM, HBSS	Sieber-Blum, M., and Cohen, A.: Clonal Analysis of Quail Neural Crest Cells: They are Pluripotent and Differentiate in Vitro in the Absence of Noncrest Cells, *Dev Biol 80*, 96, 1980 (*371*)
Rat	Rat, embryonic 14.5 day	Schwann cell precursors	Collagenase Type 2: 0.2% Hyaluronidase: 0.12% Soybean Trypsin Inhibitor: 0.03%	DMEM/ Ham's F-12	Mirsky, R. and Jessen, K.: Isolation of Schwann Cell Precursors from Rodents., *Methods Mol Biol 1739*, 3- 15, 2018 (*11611*)
	Rat, SD, 3 month	Schwann	Neutral Protease: 0.25% Collagenase Type 1: 0.05%	DMEM	Andersen, N. and Monje, P.: Isolation, Culture, and Cryopreservation of Adult Rodent Schwann Cells Derived from Immediately Dissociated Teased Fibers., *Methods Mol Biol 1739*, 49-66, 2018 (*11612*)

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Neural

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat, Wistar, 3 day	Dorsal root ganglia neurons	Collagenase Type 2: 0.1%	MEM	Fangmann, L., Teller, S., Stupakov, P., Friess, H., Ceyhan, G. and Demir, I.: 3D Cancer Migration Assay with Schwann Cells., *Methods Mol Biol 1739*, 317-325, 2018 (*11614*)
	Rat, SD, day 2	Schwann	Collagenase Type 1: 0.1% Trypsin: 0.25%	DMEM	Maurel, P.: Preparation of Neonatal Rat Schwann Cells and Embryonic Dorsal Root Ganglia Neurons for In Vitro Myelination Studies., *Methods Mol Biol 1739*, 17- 37, 2018 (*11615*)
	Rat, adult	Schwann	Stemxyme: 0.05%	DMEM	George, D., Ahrens, P. and Lambert, S.: Satellite Glial Cells Represent a Population of Developmentally Arrested Schwann Cells., *Glia,* 2018 (*11631*)
	Rat, SD, p7	Schwann	Trypsin: 0.025% Collagenase Type 1: 0.1% Deoxyribonuclease I: 7 u/ml Collagenase Type 2: 0.2%	DMEM	Clements, M., Byrne, E., Camarillo Guerrero, L., Cattin, A., Zakka, L., Ashraf, A., Burden, J., Khadayate, S., Lloyd, A., Marguerat, S. and Parrinello, S.: The Wound Microenvironment Reprograms Schwann Cells to Invasive Mesenchymal- like Cells to Drive Peripheral Nerve Regeneration., *Neuron 96*, 98-114.e7, 2017 (*11677*)
	Rat, SD	Schwann	Collagenase Type 1: 0.05%	DMEM	Schuh, C., Hercher, D., Stainer, M., Hopf, R., Teuschl, A., Schmidhammer, R. and Redl, H.: Extracorporeal Shockwave Treatment: A Novel Tool to Improve Schwann Cell Isolation and Culture., *Cytotherapy 18*, 760-70, 2016 (*11564*)
	Rat, E17	Neurons	PDS kit: per instructions	DMEM	Hayakawa, K., Esposito, E., Wang, X., Terasaki, Y., Liu, Y., Xing, C., Ji. X. and Lo, E.: Transfer of Mitochondria from Astrocytes to Neurons after Stroke., *Nature 535*, 551-5, 2016 (*11680*)
	Rat, SD	Schwann	Neutral Protease: 0.25% Collagenase Type 1: 0.05% Trypsin: 0.25%	DMEM	Andersen, N., Srinivas, S., Pinero, G. and Monje, P.: A Rapid and Versatile Method for the Isolation, Purification and Cryogenic Storage of Schwann Cells from Adult Rodent Nerves., *Sci Rep 6*, 31781, 2016 (*11697*)
	Rat, embryonic and neonatal	Cortical neurons, DRG	PDS kit: per instructions Collagenase Type 1: 0.17%	Neurobasal	Rheaume, C., Cai, B., Wang, J., Fernandez-Salas, E., Aoki, K., Francis, J. and Broide, R.: A Highly Specific Monoclonal Antibody for Botulinum Neurotoxin Type A-Cleaved SNAP25., *Toxins 7*, 2354-70, 2015 (*11421*)
	Rat, SD, 6-9 week	Dorsal root ganglia	Collagenase Type 3: 0.2%	HBSS	Murayama, C., Watanabe, S., Nakamura, M. and, Norimoto, H.: Inhibitory Activity of Yokukansankachimpihange against Nerve Growth Factor-Induced Neurite Growth in Cultured Rat Dorsal Root Ganglion Neurons., *Molecules 20*, 14959-69, 2015 (*11445*)
	Rat	Dorsal root ganglion neurons	Collagenase Type 2: 0.15%	HBSS	Yu, R., Seymour, V., Berecki, G., Jia, X., Akca, M., Adams, D., Kaas, Q. and Craik, D.: Less is More: Design of a Highly Stable Disulfide- Deleted Mutant of Analgesic Cyclic Î±-Conotoxin Vc1.1., *Sci Rep 5*, 13264, 2015 (*11450*)
	Rat, 6-8 week	Spinal cord neural progenitor	PDS kit: with modifications	EBSS	Mothe, A. and Tator, C.: Isolation of Neural Stem/Progenitor Cells from the Periventricular Region of the Adult Rat and Human Spinal Cord., *J Vis Exp* , e52732, 2015 (*11551*)
	Rat, SD	Trigeminal ganglion	Collagenase Type 2: 0.1% Papain: 20 u/ml	DMEM/F12	Wei, X., Yan, J., Tillu, D., Asiedu, M., Weinstein, N., Melemedjian, O., Price, T. and Dussor, G.: Meningeal Norepinephrine Produces Headache Behaviors in Rats via Actions Both on Dural Afferents and Fibroblasts., *Cephalalgia 35*, 1054-64, 2015 (*11606*)
	Rat, embryonic	Cerebral neurons	Papain: 2 u/ml Deoxyribonuclease I: 0.01%	DMEM-PBS	Oyanagi, K., Tashiro, T. and Negishi, T.: Cell-Type- Specific and Differentiation- Status-Dependent Variations in Cytotoxicity of Tributyltin in Cultured Rat Cerebral Neurons and Astrocytes., *J Toxicol Sci 40*, 459-68, 2015 (*11424*)
	Rat, neonatal	Schwann cells	Collagenase: 0.05-0.1% Trypsin: 0.125-0.25%	DMEM	Stettner, M., Lohmann, B., Wolffram, K., Weinberger, J., Dehmel, T., Hartung, H., Mausberg, A. and Kieseier, B.: Interleukin-17 Impedes Schwann Cell-Mediated Myelination., *J Neuroinflammation 11*, 63, 2014 (*11081*)
	Rat, 1-3 day	Hippocampal neurons	Papain: 25 u/ml	L-15	Thurner, P., Gsandtner, I., Kudlacek, O., Choquet, D., Nanoff, C., Freissmuth, M. and Zezula, J.: A Two-State Model for the Diffusion of the A2A Adenosine Receptor in Hippocampal Neurons: Agonist-Induced Switch to Slow Mobility is Modified by Synapse-Associated Protein 102 (SAP102)., *J Biol Chem 289*, 9263-74, 2014 (*11260*)
	Rat, SD, embryonic	Hypothalamic neuronal	PDS kit: per instructions	Neurobasal A	Loktev, A. and Jackson, P.: Neuropeptide Y Family Receptors Traffic via the Bardet-Biedl Syndrome Pathway to Signal in Neuronal Primary Cilia., *Cell Rep 5*, 1316-29, 2013 (*11020*)
	Rat, E18	Hippocampal neurons	Papain: 0.2%	Hibernate	Todd, G., Boosalis, C., Burzycki, A., Steinman, M., Hester, L., Shuster, P. and Patterson, R.: Towards Neuronal Organoids: A Method for Long-Term Culturing of High-Density Hippocampal Neurons., *PLoS ONE 8*, e58996, 2013 (*11552*)
	Rat, SD, 175-200 g	Trigeminal ganglia	Papain: 20 u/ml Collagenase Type 2: 0.3%	HBSS	Yan, J., Melemedjian, O., Price, T. and Dussor, G.: Sensitization of Dural Afferents Underlies Migraine-Related Behavior Following Meningeal Application of Interleukin-6 (IL-6)., *Mol Pain 8*, 6, 2012 (*10881*)
	Rat, E19-21 and P1- 3	Sympathetic neurons	Collagenase Type 2: 0.1% Neutral Protease: 0.5%	DMEM/F-12	Ghogha, A., Bruun, D. and Lein, P.: Inducing Dendritic Growth in Cultured Sympathetic Neurons., *J Vis Exp 61*, e3546, 2012 (*10909*)
	Rat, 20-30 day	Dorsal root ganglion	Papain: 20 u/ml Collagenase Type 1: 0.3% Neutral Protease: 0.4%	L-15	Bosmans, F., Puopolo, M., Martin-Eauclaire, M., Bean, B., Swartz, K.: Functional Properties and Toxin Pharmacology of a Dorsal Root Ganglion Sodium Channel Viewed through its Voltage Sensors., *J Gen Physiol 138*, 59, 2011 (*10869*)
	Rat, Wistar, E18	Neurons	Papain: 0.05%	Neurobasal	Giacomello, M., Girardi, S., Scorzeto, M., Peruffo, A., Maschietto, M., Cozzi, B. and Vassanelli, S.: Stimulation of Ca^{2+} Signals in Neurons by Electrically Coupled Electrolyte-Oxide- Semiconductor Capacitors., *J Neurosci Methods 198*, 1, 2011 (*10943*)
	Rat, SD, 200-300 g	Dorsal root ganglia, fibroblast	Collagenase: 0.125%	DMEM	East, E., de Oliveira, D., Golding, J. and Phillips, J.: Alignment of Astrocytes Increases Neuronal Growth in Three-Dimensional Collagen Gels and is Maintained Following Plastic Compression to Form a Spinal Cord Repair Conduit., *Tissue Eng Part A 16*, 3173, 2010 (*10634*)
	Rat, Fisher, 7-21 month	Hippocampal neurons	Papain: 0.2%	Hibernate A	Chen, N., Newcomb, J., Garbuzova-Davis, S., Davis Sanberg, C., Sanberg, P. and Willing, A.: Human Umbilical Cord Blood Cells Have Trophic Effects on Young and Aging Hippocampal Neurons in Vitro., *Aging Dis 1*, 173, 2010 (*10663*)
	Rat, SD, E18	Neuronal	Papain: 0.2%	Neurobasal E	Peltier, D., Simms, A., Farmer, J and Miller, D.: Human Neuronal Cells Possess Functional Cytoplasmic and TLR- Mediated Innate Immune Pathways Influenced by Phosphatidylinositol-3- Kinase Signaling, *J Immunol 184*, 7010, 2010 (*10696*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat, SD, 7 day	Cerebellar granule neurons	PDS kit: per instructions	PBS	Tanaka, S., Shaikh, I., Chiocca, E. and Saeki, Y.: The Gs-Linked Receptor GPR3 Inhibits the Proliferation of Cerebellar Granule Cells During Postnatal Development., *PLoS ONE 4*, e5922, 2009 (*10487*)
	Rat, SD, embryonic day 18	Hippocampal neurons	Papain: 20 u/ml	Neurobasal/B27	Liu, Y., Yohrling, G., Wang, Y., Hutchinson, T., Brenneman, D., Flores, C., Zhao, B.: Carisbamate, a Novel Neuromodulator, Inhibits Voltage-Gated Sodium Channels and Action Potential Firing of Rat Hippocampal Neurons., *Epilepsy Res 83*, 66, 2009 (*10550*)
	Rat, embryonic	Hypothalamic neurons and glias	Papain: 0.5 u/ml	DMEM	Yokosuka, M., Ohtani- Kaneko, R., Yamashita, K., Muraoka, D., Kuroda, Y., Watanabe, C.: Estrogen and Environmental Estrogenic Chemicals Exert Developmental Effects on Rat Hypothalamic Neurons and Glias, *Toxicol In Vitro 22*, 1-9, 2008 (*10346*)
	Rat, Wistar, 7 day	Superior cervical ganglion	Collagenase: 0.05%	L-15	Sakisaka, T., Yamamoto, Y., Mochida, S., Nakamura, M., Nishikawa, K., Ishizaki, H., Okamoto-Tanaka, M., Miyoshi, J., Fujiyoshi, Y., Manabe, T. and Takai, Y.: Dual Inhibition of SNARE Complex Formation by Tomosyn Ensures Controlled Neurotransmitter Release., *J Cell Biol 183*, 323, 2008 (*10547*)
	Rat, neonatal	Dopamine neurons	Papain: 20 u/ml	PBS	Frank, L., Caldera-Siu, A. and Pothos, E.: Primary Dissociated Midbrain Dopamine Cell Cultures from Rodent Neonates., *J Vis Exp 21*, 820, 2008 (*11034*)
	Rat, Wistar, 4 day	Hippocampal neurons	PDS kit: per instructions	Neurobasal A	Obradovic, D., Gronemeyer, H., Lutz, B., Rein, T.: Cross-Talk of Vitamin D and Glucocorticoids in Hippocampal cells, *J Neurochem 96*, 500-9, 2006 (*10108*)
	Rat, SD, neonatal	Astrocytes	PDS kit: per instructions	DMEM	Lacroix-Fralish, M., Tawfik, V., Nutile-McMenemy, N., Harris, B. and Deleo, J.: Differential Regulation of Neuregulin 1 Expression by Progesterone in Astrocytes and Neurons., *Neuron Glia Biol 2*, 227, 2006 (*10679*)
	Rat, 2 month	Spinal cord progenitor cells	PDS kit: see reference	Neurobasal A	Mothe, A., Kulbatski, I., Van Bendegem, R., Lee, L., Kobayashi, E., Keating, A., and Tator, C.: Analysis of Green Fluorescent Protein Expression in Transgenic Rats for Tracking Transplanted Neural Stem/Progenitor Cells, *J Histochem Cytochem 53(10)*, 1215, 2005 (*1031*)
	Rat, SD, E19	Dorsal root ganglia	PDS kit: per instructions	MEM/Ham's F12	Gavva, N., Tamir, R., Qu, Y., Klionsky, L., Zhang, T., Immke, D., Wang, J., Zhu, D., Vanderah, T., Porreca, F., Doherty, E., Norman, M., Wild, K., Bannon, A., Louis, J., Treanor, J.: AMG 9810 [(E)-3-(4-t-butylphenyl)-N-(2,3-dihydrobenzo[b][1,4] dioxin-6-yl)acrylamide], A Novel Vanilloid Receptor 1 (TRPV1) Antagonist with Antihyperalgesic Properties, *J Pharmacol Exp Ther 313*, 474, 2005 (*10025*)
	Rat, Wistar, E15	Vomeronasal receptor neurons	Collagenase/Dispase: 0.1% Papain: 0.5 u/ml	DMEM/F12	Moriya-Ito, K., Osada, T., Ishimatsu, Y., Muramoto, K., Kobayashi, T., Ichikawa, M.: Maturation of Vomeronasal Receptor Neurons In Vitro by Coculture with Accessory Olfactory Bulb Neurons, *Chem Senses 30*, 111, 2005 (*10036*)
	Rat, SD, 1-2 day	Cortical astrocytes	Papain: see reference	DMEM	Floyd, C., Gorin, F., Lyeth, B.: Mechanical Strain Injury Increases Intracellular Sodium and Reverses Na+/Ca2+ Exchange in Cortical Astrocytes, *Glia 51*, 35-46, 2005 (*10113*)
	Rat, SD, 0-2 day	Superior cervical ganglion	Collagenase Type 4: 20 u/ml Trypsin: 0.25%	DMEM	Pedraza, C., Podlesniy, P., Vidal, N., Arevalo, J., Lee, R., Hempstead, B., Ferrer, I., Iglesias, M., Espinet, C.: Pro-NGF Isolated from the Human Brain Affected by Alzheimer's Disease Induces Neuronal Apoptosis Mediated by p75NTR, *Am J Pathol 166*, 533-43, 2005 (*10296*)
	Rat, SD, male, 5-8 week	Trigeminal neurons	Papain: 20 u/ml Collagenase: 0.3%	CMF Hanks	Connor, M., Naves, L. and McCleskey, E.: Contrasting Phenotypes of Putative Proprioceptive and Nociceptive Trigeminal Neurons Innervating Jaw Muscle in Rat., *Mol Pain 1*, 31, 2005 (*10624*)
	Rat, fetal	Brainstem and cortical neurons	PDS kit: per instructions	DMEM	Lovshin, J., Huang, Q., Seaberg, R., Brubaker, P., Drucker, D.: Extrahypothalamic Expression of the Glucagon-Like Peptide-2 Receptor is Coupled to Reduction of Glutamate-Induced Cell Death in Cultured Hippocampal Cells, *Endocrinology 145*, 3495, 2004 (*10037*)
	Rat, SD, male 150- 220 g	Dorsal root ganglion neurons	Collagenase Type 4: 0.125% Trypsin: 0.05%	DMEM/Ham's F12	Hu, H., Gu, Q., Wang, C., Colton, C., Tang, J., Kinoshita- Kawada, M., Lee, L., Wood, J., Zhu, M.: 2- Aminoethoxydiphenyl Borate is a Common Activator of TRPV1, TRPV2, and TRPV3, *J Biol Chem 279*, 35741-8, 2004 (*10255*)
	Rat, 15 week	Neurons	Papain: 0.2%	Hibernate A	Evans, J., Sumners, C., Moore, J., Huentelman, M., Deng, J., Gelband, C., and Shaw, G.: Characterization of Mitotic Neurons Derived from Adult Rat Hypothalamus and Brain Stem, *J Neurophysiol 87*, 1076, 2002 (*10059*)
	Rat, SD, male, 270- 330 g	Spinal progenitor cells	PDS kit: with modifications	Neurobasal medium	Lin, C., Wu, P., Shih, H., Cheng, J., Lu, C., Chou, A., Yang, L.: Intrathecal Spinal Progenitor Cell Transplantation for the Treatment of Neuropathic Pain, *Cell Transplant 11*, 17, 2002 (*10027*)
	Rat, Fisher, 8-9 week	Adult progenitor	Papain: 2.5 u/ml Deoxyribonuclease I: 250 u/ml Neutral Protease: 1 u/ml	DMEM/F-12	Lie, D., Dziewczapolski, G., Willhoite, A., Kaspar, B., Shults, C., Gage, F.: The Adult Substantia Nigra Contains Progenitor Cells with Neurogenic Potential, *J Neurosci 22*, 6639, 2002 (*10039*)
	Rat, SD, embryonic	Sciatic nerve and gut neural crest stem	Collagenase Type 4: 0.025% Trypsin: 0.005% Deoxyribonuclease I: 0.05%	HBSS	Bixby, S., Kruger, G., Mosher, J., Joseph, N. and Morrison, S.: Cell-Intrinsic Differences Between Stem Cells from Different Regions of the Peripheral Nervous System Regulate the Generation of Neural Diversity., *Neuron 35*, 643, 2002 (*10890*)
	Rat	Neurons, hippocampal	Papain: 15 - 20 u/ml	Eagle's MEM (see reference)	Liu, Q., Kawai, H., and Berg, D.: *B*-Amyloid Peptide Blocks the Response of *a*7- Containing Nicotinic Receptors on Hippocampal Neurons, *PNAS 98 (8)*, 4734, 2001 (*1094*)
	Rat, newborn, 7 days old	Neurons	Trypsin: 0.25%	MEM10	Acosta, C., Fabrega, A., Masco, D., and Lopez, H.: A Sensory Neuron Subpopulation with Unique Sequential Survival Dependence on Nerve Growth Factor and Basic Fibroblast Growth Factor during Development, *J Neurosci 21 (22)*, 8873, 2001 (*1136*)
	Rat, embryonic 18-19 day	Hippocampal neurons	PDS kit: see reference	DMEM	Mabuchi, T., Kitagawa, K., Kuwabara, K., Takasawa, K., Ohtsuki, T., Xia, Z., Storm, D., Yanagihara, T., Hori, M., Matsumoto, M.: Phosphorylation of cAMP Response Element-Binding Protein in Hippocampal Neurons as a Protective Response after Exposure to Glutamate In Vitro and Ischemia In Vivo, *J Neurosci 21*, 9204-13, 2001 (*10122*)
	Rat, embryonic, day 18	Cortical	Papain:	Neurobasal medium and DMEM	O'Connor, S., Andreadis, J., Shaffer, K., Ma, W., Pancrazio, J., and Stenger, D.: Immobilization of Neural Cells in Three-Dimensional Matrices for Biosensor Applications, *Biosensors & Bioelectronics 14*, 871, 2000 (*1091*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat, Wister, postnatal, P1-3 days	Neurons, hippocampal	Papain: 20 u/ml	EBSS	Neuhoff, H., Roeper, J., Schweizer, M.: Activity- Dependent Formation of Perforated Synapses in Cultured Hippocampal Neurons, *Eur J Neurosci 11*, 4241, 1999 (*1096*)
	Rat, SD, female, pregnant	Sciatic nerves	Trypsin: 0.025% Collagenase Type 3: 0.1%	L-15 medium (see reference)	Morrison, S., White, P., Zock, C., and Anderson, D.: Prospective Identification, Isolation by Flow Cytometry, and *In Vivo* Self-Renewal of Multipotent Mammalian Neural Crest Stem Cells, *Cell 96*, 737, 1999 (*1099*)
	Rat (also mice)	Spinal cord	Trypsin: 0.133%	HBSS and PIPES	Johansson, C., Momma, S., Clarke, D., Risling, M., Lendahl, U., and Frisen, J: Identification of a Neural Stem Cell in the Adult Mammalian Central Nervous System, *Cell 96*, 25, 1999 (*1100*)
	Rat, SD, embryonic	Sciatic nerves	Trypsin: 0.025% Collagenase Type 3: 0.1%	L-15 medium (see reference)	Morrison, S., White, P., Zock, C., and Anderson, D.: Prospective Identification, Isolation by Flow Cytometry, and *In Vivo* Self-Renewal of Multipotent Mammalian Neural Crest Stem Cells, *Cell 96*, 737, 1999 (*1099*)
	Rat, (Long Evans), 2-5 day old	Neurons, hippocampal	Papain: 20 u/ml	EBSS	Wilding, T., and Huettner, J.: Activation and Desensitization of Hippocampal Kainate Receptors, *J Neurosci 17 (8)*, 2713, 1997 (*1092*)
	Rat, Wister and SD, newborn, 0-21 days, either sex	Myenteric ganglia	Trypsin: 0.05%	MEM-HEPES	Schafer, K., Saffrey, M., Burnstock, G., and Mastres- Ventura, P.: A New Method for the Isolation of Myenteric Plexus from the Newborn Rat Gastrointestinal Tract, *Brain Res Proto 1*, 109, 1997 (*1093*)
	Rat, pups, 24-48 h old	Neurons, hippocampal	Papain: 20 u/ml	Harvest buffer	Hall, R., and Soderling, T.: Differential Surface Expression and Phosphorylation of the *N*- Methyl-D-Aspartate Receptor NR1 and NR2 in Cultured Hippocampal Neurons, *J Biol Chem 272 (7)*, 4135, 1997 (*1095*)
	Rat, SD, adult, 250- 300g, P8	Neurons, DRG	Neutral Protease: 0.5%	L-15 w/ CO_2	Davies, S., Fitch, M., Memberg, S., Hall, A, Raisman, G., and Silver, J.: Regeneration of Adult Axons in White Matter Tracts of the Central Nervous System, *Nature 390*, 680, 1997 (*1098*)
	Rat, 1-4 day old	Neurons, hippocampal	Papain: 20 u/ml	MEM	Twitchell, W., Brown, S., and Mackie, K.: Cannabinoids Inhibit N- and P/Q-Type Calcium Channels in Cultured Rat Hippocampal Neurons, *J Neurophysiol 78*, 43, 1997 (*1127*)
	Rat, SD, Fisher	Hippocampal neurons	Papain: 0.2%	HibernateA/B27	Brewer, G.J.: Isolation and Culture of Adult Rat Hippocampal Neurons of Any Age, *J Neurosci Methods 71*, 143, 1997 (*10067*)
	Rat, E18	Hippocampal neurons	Papain: 20 u/ml Deoxyribonuclease I: 0.01%	MEM	Liu QY, Schaffner AE, Li YX, Dunlap V, Barker JL: Upregulation of GABAA current by astrocytes in cultured embryonic rat hippocampal neurons, *J Neurosci 16*, 2912-23, 1996 (*10123*)
	Rat, 1-6 day	DRG neurons	Papain: 20 u/ml Collagenase Type 1: 150 u/ml Neutral Protease: 0.8%	HBSS	Robertson, S., Rae, M., Rowan, E. and Kennedy, C.: Characterization of a P2X- Purinoceptor in Cultured Neurones of the Rat Dorsal Root Ganglia., *Br J Pharmacol 118*, 951, 1996 (*10618*)
	Rat, pups, 14 day old	Neurons, sympathetic	Neutral Protease: 0.24%	HBSS	McFarlane, S., and Cooper, E.: Extrinsic Factors Influence the Expression of Voltage-Gated K Currents on Neonatal Rat Sympathetic Neurons, *J Neurosci 13 (6)*, 2591, 1993 (*774*)
	Rats, SD, 11-14 day old, 29-32 g	Basal forebrain neurons	Trypsin: 0.125%	Gey's BSS	Allen, T., Sim, J., and Brown, D.: The Whole-Cell Calcium Current in Acutely Dissociated Magnocellular Cholinergic Basal Forebrain Neurones of the Rat, *J Physiol 460*, 91, 1993 (*999*)
	Rat, Wistar- Hanover, 7-12 day	Postnatal dopamine neurons	Trypsin: 0.035%	(see reference)	Rayport, S., Sulzer, D., Shi, W., Sawasdikosol, S., Monaco, J., Batson, D., and Rajendran, G.: Identified Postnatal Mesolimbic Dopamine Neurons in Culture: Morphology and Electrophysiology, *J Neurosci 12 (11)*, 4264, 1992 (*1002*)
	Rat, SD, 18-day-old, fetus	Hippocampal	Trypsin: 0.2%	HBSS	Cheng, B., and Mattson, M.: IGF-I and IGF-II Protect Cultured Hippocampal and Septal Neurons Against Calcium-Mediated Hypoglycemic Damage, *J Neurosci 12 (4)*, 1558, 1992 (*1201*)
	Rat	Stem, neural crest	Collagenase: 0.075%	Ringer's solution	Stemple, D., and Anderson, D.: Isolation of a Stem Cell for Neurons and Glia from the Mammalian Neural Crest, *Cell 71*, 973, 1992 (*1297*)
	Rat, SD, pregnant, Charles River	Pyramidal neurons Nonpyramidal neurons	Trypsin: 0.027%	HEPES	Buchhalter, J., and Dichter, M.: Electrophysiological Comparison of Pyramidal and Stellate Nonpyramidal Neurons in Dissociated Cell Culture of Rat Hippocampus, *Brain Res Bull 26*, 333, 1991 (*1005*)
	Rat, SD, embryos, 19-21 days gestation	Schwann, dorsal root ganglia	Trypsin: 0.25%	HBSS, CMF	Mithen, F., Reiker, M., and Birchem, R.: Effects of Ethanol on Rat Schwann Cell Proliferation and Myelination in Culture, *In Vitro Cell Dev Biol 26*, 129, 1990 (*430*)
	Rat (also bovine)	Heart Adrenal chromaffin Paraneurons	Trypsin: 0.06%	25mM HEPES buffered Locke's solution, CMF	Trifaro, J., Tang, R., and Novas, M.: Monolayer Co- Culture of Rat Heart Cells and Bovine Adrenal Chromaffin Paraneurons, *In Vitro Cell Dev Biol 26*, 335, 1990 (*438*)
	Rat, SD, 8 day old pups	Cerebellar neurons	Trypsin: 0.025%	Eagle's MEM	Novelli, A., Reilly, J., Lysko, P., and Henneberry, R.: Glutamate Becomes Neurotoxic Via the N- methyl-D-aspartate Receptor When Intracellular Energy Levels are Reduced, *Brain Res 451*, 205, 1988 (*859*)
	Rat, fetuses, 18 day old	Hippocampal neurons	Trypsin: 0.2%	Eagle's MEM	Mattson, M., and Kater, S.: Isolated Hippocampal Neurons in Cryopreserved Long-Term Cultures: Development of Neuroarchitecture and Sensitivity to Nmda, *Int J Dev Neurosci 6 (5)*, 439,1988 (*998*)
	Rat, postnatal	Septal neurons	Papain: 0.05%	PBS, CMF	Hatanaka,H., Tsukui, H., Nihonmatsu, I.: Septal Cholinergic Neurons From Postnatal Rat Can Survive In The Dissociate Culture Conditions In The Presence Of Nerve Growth Factor, *Neurosci Lett 79*, 85, 1987 (*646*)
	Rat, Long Evans, 1- 15 days	Neurons, visual cortex	Papain: 20 u/ml	BSS (see reference)	Huettner, J., and Baughman, R.: Primary Culture of Identified Neurons From the Visual Cortex of Postnatal Rats, *J Neurosci 6*, 3044, 1986 (*617*)
	Rat, SD, female, 4 month old	CNS cells	Trypsin: 0.25%	EBSS	Wood, P., and Bunge, R.: Evidence That Axons are Mitogenic for Oligodendrocytes Isolated From Adult Animals, *Nature 320*, 756, 1986 (*781*)
	Rat, embryo, 15 day	Dorsal horn neurons Spinal	Trypsin: 0.025%	Ham's F-12	Jahr, C. and Jessell, T.: Synaptic Transmission between Dorsal Root Ganglion and Dorsal Horn Neurons in Culture: Antagonism of Monosynaptic Excitatory Postsynaptic Potentials and Glutamate Excitation by Kynurenate, *J Neurosci 5*, 2281, 1985 (*614*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat, fetus, 18-20 day	Hippocampal neurons	Trypsin: 0.25%	HBSS, CMF	Bartlett, W. and Banker, G.: An Electron Microscopic Study of the Development of Axons and Dendrites by Hippocampal Neurons in Culture. I. Cells Which Develop Without Intercellular Contacts, *J Neurosci 4*, 1944, 1984 (*613*)
	Rat, postnatal	Ganglion, retina	Papain: 12.5 u/ml	HBSS w/5 mM HEPES	Leifer, D., Lipton, S., Barnstable, C., and Masland, R.: Monoclonal Antibody to Thy-1 Enhances Regeneration of Processes by Rat Retinal Ganglion Cells in Culture, *Science 224*, 303, 1984 (*667*)
	Rat, SD, pups	Retina	Trypsin: 0.25%	Ham's F-12	Sarthy PV, Curtis BM, and Catterall WA.: Retrograde Labeling, Enrichment, and Characerization of Retinal Ganglion Cells from the Neonatal Rat, *J Neurosci 3 (12)*, 2532, 1983 (*1199*)
	Rat, W/FU, 5-8 day	Neurons and glial	Trypsin: 0.25%	MEM (see reference)	Raff, M., Fields, K., Hakomori, S., Mirsky, R., Pruss, R., and Winter, J.: Cell-Type-Specific Markers for Distinguishing and Studying Neurons And the Major Classes of Glial Cells in Culture, *Brain Res 174*, 283, 1979 (*348*)
	Rat, fetus	Neurons, sympathetic	Trypsin: 0.25%	L-15 or HBSS, CMF	Wakshull, E., Johnson, M., Burton, H.: Postnatal Rat Sympathetic Neurons In Culture. 1. A Comparison With Embryonic Neurons, *J Neurophysiol 42*, 1410, 1979 (*716*)
	Rat, Wistar/Furth, newborn (also bovine)	Schwann	Trypsin: 0.25%	DMEM	Brockes, J., Fields, K., and Raff, M.: Studies on Cultured Rat Schwann Cells. I. Establishment of Purified Populations From Cultures of Peripheral Nerve, *Brain Res 165*, 105, 1979 (*991*)
	Rat, embryo	Neurons, cortical	Trypsin: 0.027%	MEM	Dichter, M.: Rat Cortical Neurons in Cell Culture: Culture Methods, Cell Morphology, Electrophysiology, and Synapse Formation, *Brain Res 149*, 279, 1978 (*346*)
	Rat, newborn	Neurons, sympathetic	Collagenase Type 1: 0.01%	Hank's solution, CF	Reichardt, L., Patterson, P.: Neurotransmitter Synthesis and Uptake by Isolated Sympathetic Neurones in Microcultures, *Nature 270*, 147, 1977 (*642*)
	Rat, neonatal	Neurons, superior cervical ganglia	Trypsin: 0.1%	Basal L-15 medium	Mains, R., and Patterson, P.: Primary Cultures of Dissociated Sympathetic Neurons I. Establishment of Long-Term Growth in Culture and Studies of Differentiated Properties, *J Cell Biol 59*, 329, 1973 (*587*)
Salamander	Salamander, 18-25 cm	Retina	Papain: 14 u/ml	Saline	Townes-Anderson, E., MacLeish, P., and Raviola, E.: Rod Cells Dissociated from Mature Salamander Retina: Ultrastruture and Uptake of Horseradish Peroxidase, *J Cell Biol 100*, 175, 1985 (*1200*)
	Salamander (*A.tigrinum*)	Photoreceptors, retina	Papain: 0.05%	(see reference)	Bader, C., MacLeish, P., and Schwartz, E.: Responses to Light of Solitary Rod Photoreceptors Isolated From Tiger Salamander Retina, *Proc Natl Acad Sci U S A 75*, 3507, 1978 (*652*)
Shellfish	Aplysia californica	Neurons	Neutral Protease: 1.0%	L-15-ASW	Lee, A., Decourt, B. and Suter, D.: Neuronal Cell Cultures from Aplysia for High-Resolution Imaging of Growth Cones., *J Vis Exp 12*, 662, 2008 (*10491*)
	Snails (*Helisoma trivolis*), albino, adult	Buccal ganglia; SLT muscle	Trypsin: 0.2%	DMEM	Zoran, M., Doyle, R. and Haydon, P.: Target Contact Regulates the Calcium Responsiveness of the Secretory Machinery During Synaptogenesis, *Neuron 6*, 145, 1991 (*691*)
	Pond snail (*Helisoma*) albino, adult	Somata, buccal ganglia	Trypsin: 0.2%	Antibiotic saline, Leibowitz 50%	Haydon, P.: The Formation of Chemical Synapses Between Cell-Cultured Neuronal Somata, *J Neurosci 8*, 1032, 1988 (*620*)
	Helisoma trivovlis	Buccal ganglia	Trypsin: 0.2%	L-15 medium	Cohan, C., Haydon, P., and Kater, S.: Single Channel Activity Differs in Growing and Nongrowing Growth Cones of Isolated Identified Neurons of Helisoma, *J Neurosci Res 13*, 285, 1985 (*609*)
	Mollusc, juvenile 1-2 gm or adult 50-100 gm	Neurons LUQ cells	Protease: 1%	L15 medium	Schacher, S., and Proshanksy, E.: Neurite Regeneration by Aplysia Neurons in Dissociated Cell Culture: Modulation by Aplysia Hemolymph and the Presence of the Initial Axonal Segment, *J Neurosci 3 (12)*, 2403, 1983 (*980*)
	Aplysia californica	LUQ cells RUQ cells	Protease: 1%	L15 medium	Camardo, J., Proshansky, E., and Schacher, S.: Identified Aplysia Neurons Form Specific Chemical Synapses in Culture, *J Neurosci 3 (12)*, 2614, 1983 (*1044*)
Turtle	Turtle (*Pseudemys scripta elegans*)	Retinal	Papain: 0.1% (13.5 u/mg)	Kreb's Ringer	Lam, D.: Biosynthesis of Acetylcholine in Turtle Photoreceptors, *Proc Natl Acad Sci U S A 69*, 1987, 1972 (*649*)

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Bovine	Bovine	Duct epithelial	Collagenase: 0.1%	HEPES	Cotton, C., and Al-Nakkash, L.: Isolation and Culture of Bovine Pancreatic Duct Epithelial cells, *Am J Physiol 272*, G1328, 1997 (*1184*)
	Bovine (*Bos taurus*)	Ductal	Neutral Protease: 0.05%	EBSS	Sato, T., Sato, M., Hudson, E., and Jones, R.: Characterization of Bovine Pancreatic Ductal Cells Isolated by a Perfusion- Digestion Technique, *In Vitro 19*, 651, 1983 (*529*)
	Bovine	Platelets	Trypsin:	(see reference)	Stiles, G., and Lefkowitz, R.: Hormone-Sensitive Adneylate Cyclase, *J Biol Chem 257 (11)*, 6287, 1982 (*1053*)
Canine	Canine	Buccal ganglia; SLT muscle	Trypsin: 0.2%	DMEM	Zoran, M., Doyle, R. and Haydon, P.: Target Contact Regulates the Calcium Responsiveness of the Secretory Machinery During Synaptogenesis, *Neuron 6*, 145, 1991 (*691*)
	Canine, adult mongrel, 15-25 kg	Islets	Collagenase Type 4: 600-1100 u/ml Deoxyribonuclease I: 10 ug/ml	RPMI 1640	Noel, J., Rabinovitch, A., Olson, L., Kyriakides, G., Miller, J., and Mintz, D.: A Method for Large-Scale, High-Yield Isolation of Canine Pancreatic Islets of Langerhans, *Metabolism 31 (2)*, 184, 1982 (*809*)
Fish	Fish, *Osphronemus gourami*, 3-month- old, 0.5 mg	Islets	Collagenase: 0.12 -0.46 u/ml	RPMI 1640	Schrezenmeir, J., Laue, C., Sternheim,E., Wolbert, K., Darquy, S., Chicheportiche, D., Kirchgessner, J., and Reach, G.: Long-Term Function of Single-Cell Preparations of Piscine Principal Islets in Hollow Fibers, *Transplant Proc 24 (6)*, 2941, 1992 (*1221*)
Guinea-Pig	Guinea-pig	Acinar	Collagenase Type 3: 60 u/ml	Kreb's Ringer	Schultz, G., Sarras, Jr, M., Gunther, G., Hull, B., Alicea, H., Gorelick, F., and Jamieson, J.: Guinea Pig Pancreatic Acini Prepared with Purified collagenase, *Exp Cell Res 130*, 49, 1980 (*1152*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Guinea-Pig	Guinea-pig, Hartley, albino, male, 350-400 g	Acinar	Soybean Trypsin Inhibitor: 0.01%	Kreb's Ringer	Gardner, J., Conlon, T., Klaeveman, H., Adams, T., and Ondetti, M.: Action of Cholecystokinin and Cholinergic Agents on Calcium Transport in Isolated Pancreatic Acinar Cells, *J Clin Invest 56*, 366, 1975 (*599*)
	Guinea-pig	Exocrine	Hyaluronidase: 0.15% - 0.2%	Kreb's Ringer	Amsterdam, J., and Jamieson, J.: Structural and Functional Characterization of Isolated Pancreatic Exocrine Cells, *Proc Natl Acad Sci U S A 69 (10)*, 3028, 1972 (*1151*)
Hamster	Hamster	Islets	Collagenase Type 4: 1.3% - 2.0%	HBSS	Feldman, J., and Chapman, B.: Preparation of Islets of Langerhans from Rabbits and Hamsters by the Collagenase Digestion Technique, *Acta Diabetol 12*, 208, 1975 (*686*)
Human	Human	Islets	Collagenase Type 1: 1,600u/isolation Neutral Protease: 200 u/isolation Deoxyribonuclease I: 12,000 u/isolation	RPMI	Brissova, M., Haliyur, R., Saunders, D., Shrestha, S., Dai, C., Blodgett, D., Bottino, R., Campbell- Thompson, M., Aramandla, R., Poffenberger, G., Lindner, J., Pan, F., von Herrath, M., Greiner, D. and Shultz, L.: Î± Cell Function and Gene Expression Are Compromised in Type 1 Diabetes., *Cell Rep 22*, 2667- 2676, 2018 (*11700*)
	Human	Acinar	CLSPA: 200 u/ml Soybean Trypsin Inhibitor: 0.01%	See Reference	Cane, M., Sutton, R. and Criddle, D.: Isolation of Human Pancreatic Acinar Cells From Rat and Human Pancreas, *Pancreapedia 20*, 1, 2011 (*10888*)
	Human	Pancreatic cancer stem cells	Collagenase Type 4: 200 u/ml	medium 199	Li, C., Heidt, D., Dalerba, P., Burant, C., Zhang, L., Adsay, V., Wicha, M., Clarke, M. and Simeone, D.: Identification of Pancreatic Cancer Stem Cells., *Cancer Res 67*, 1030, 2007 (*10514*)
	Human, 25-55 yrs old (also porcine)	Islets	Collagenase: 0.4%	HBSS	Contractor, H., Johnson, P., Chadwick, D., Robertson, G., and London, N.: The Effect of UW Solution and Its Components on the Collagenase Digestion of Human and Porcine Pancreas, *Cell Transplant 4 (6)*, 615, 1995 (*762*)
	Human	Islets	Collagenase: 0.2% Deoxyribonuclease I: 200 u/ml	Eurocollins solution	Watt, P., Mullen, Y., Benhamou, P., Hober, C., Nomura, Y., Watanabe, Y., Passaro, E., Zinner, M., and Brunicardi, F.: Simplified Semiautomated Method For Isolating Islets From the Human Pancreas, *Transplant Proc 26 (2)*, 582, 1994 (*807*)
	Human, adult organ donors	Islets	Collagenase: 0.6%	Eurocollins solution	Warnock, G., Rajotte, R., Evans, M., Ellis, D., DeGroot, T., and Dawidson, I.: Isolation of Islets of Langerhans Following Cold Storage of Human Pancreas, *Transplant Proc XIX (4)*, 3466, 1987 (*797*)
	Human	Islets	Collagenase Type 4: 0.8%	HBSS	Izumi, R., Konishi, K., Ueno, K., Shimizu, K., Hirosawa, H., Takahashi, N., and Miyazaki, I.: Isolation of Human Pancreatic Islets from Cryopreserved Pancreas, *Transplant Proc XVII*, 383, 1985 (*689*)
	Human	Islets	Collagenase (1 or 4): 0.60%	HBSS	Gray, D., McShane, P., Grant, A., and Morris, P.: A Method for Isolation of Islets of Langerhans from the Human Pancreas, *Diabetes 33*, 1055, 1984 (*690*)
	Human, infant, age 1 day-1 year	Islets	Collagenase: 170-210 u/ml	HBSS	Sutherland, D., Matas, A., Steffes, M., and Najarian, J.: Infant Human Pancreas: A Potential Source of Islet Tissue for Transplantation, *Diabetes 25 (12)*, 1123, 1976 (*810*)
Monkey	Monkey, 3-5 Kg	Islets	Hyaluronidase: 0.05%	HBSS	Scharp, D., Murphy, J., Newton, W., Ballinger, W., and Lacy, P.: Application of an Improved Isolation Technique for Islet Transplantation in Primates and Rats, *Transplant Proc 7*, 739, 1975 (*688*)
Mouse	Mouse	Islets	Collagenase Type 4: 0.1%	HBSS	Low, L., Zavortink, M., Mitchell, J., Gan, W., Do, O., Schwiening, C., Gaisano, H. and Thorn, P.: Insulin Secretion from Beta Cells in Intact Mouse Islets is Targeted Towards the Vasculature, *Diabetologia 57*, 1655, 2014 (*11622*)
	Mouse	Islets	Collagenase: 0.1- 0.25%	HBSS	Koh, D., Moody, M. and Jo, J.: Collection of Islets of Langerhans using an Equilibrium Method., *Biotechniques 55*, 34-7, 2013 (*11010*)
	Mouse, 8-12 week	Pancreas organoid	Collagenase: 0.012% Neutral Protease: 0.012%	DMEM	Huch, M., Bonfanti, P., Boj, S., Sato, T., Loomans, C., Van de Wetering, M., Sojoodi, M., Li, V., Schuijers, J., Gracanin, A., Ringnalda, F., Begthel, H., Hamer, K., Mulder, J., Van Es, J. and De Koning, E.: Unlimited In Vitro Expansion of Adult Bi-Potent Pancreas Progenitors Through the Lgr5/R-Spondin Axis., *EMBO J 32*, 2708-21, 2013 (*11021*)
	Mouse, embryonic	Pancreatic progenitor	Neutral Protease: 0.125%	DMEM	Greggio, C., De Franceschi, F., Figueiredo-Larsen, M., Gobaa, S., Ranga, A., Semb, H., Lutolf, M. and Grapin- Botton, A.: Artificial Three- Dimensional Niches Deconstruct Pancreas Development In Vitro., *Development 140*, 4452-62, 2013 (*11023*)
	Mouse	Islets	Collagenase: 0.2%	RPMI 1640	Bertera, S., Balamurugan, A., Bottino, R., He, J. and Trucco, M.: Increased Yield and Improved Transplantation Outcome of Mouse Islets with Bovine Serum Albumin., *J Transplant 2012*, 856386, 2012 (*11055*)
	Mouse	Islet	Collagenase Type 4: 0.2%	RPMI-1640	Ding, G., Wang, F., Shu, J., Tian, S., Jiang, Y., Zhang, D., Wang, N., Luo, Q., Zhang, Y., Jin, F., Leung, P., Sheng, J. and Huang, H.: Transgenerational Glucose Intolerance with Igf2/H19 Epigenetic Alterations in Mouse Islet Induced by Intrauterine Hyperglycemia., *Diabetes 61*, 1133-42, 2012 (*11623*)
	Mouse, 10 week	Islets	Collagenase: 0.2%	RPMI 1640	Kobayashi, T., Yamaguchi, T., Hamanaka, S., Kato-Itoh, M., Yamazaki, Y., Ibata, M.,Sato, H., Lee, Y., Usui, J., Knisely, A., Hirabayashi, M. and Nakauchi, H.: Generation of Rat Pancreas in Mouse by Interspecific Blastocyst Injection of Pluripotent Stem Cells., *Cell 142*, 787, 2010 (*10591*)
	Mouse, 6-8 month	Islets	Collagenase Type 4: 0.1%	HBSS	Taguchi, Y., Tasaki, Y., Terakado, K., Kobayashi, K., Machida, T. and Kobayashi, T.: Impaired Insulin Secretion from the Pancreatic Islets of Hypothyroidal Growth-Retarded Mice., *J Endocrinol 206*, 195-204, 2010 (*11004*)
	Mouse, adult, male	Ancinar	CLSPA: see reference Soybean Trypsin Inhibitor: 0.001%	DMEM	Ji, B., Gaiser, S., Chen, X., Ernst, S. and Logsdon, C.: Intracellular Trypsin Induces Pancreatic Acinar Cell Death but not NF-KappaB Activation., *J Biol Chem 284*, 17488, 2009 (*10510*)
	Mouse, 3-4 week, 20-24 g	Islets	Collagenase Type 4: 0.2%	RPMI 1540	Huang, H., Xie, Q., Kang, M., Zhang, B., Zhang, H., Chen, J., Zhai, C., Yang, D., Jiang, B. and Wu, Y.: Labeling Transplanted Mice Islet with Polyvinylpyrrolidone Coated Superparamagnetic Iron Oxide Nanoparticles for In Vivo Detection By Magnetic Resonance Imaging., *Nanotechnology 20*, 365101, 2009 (*10513*)
	Mouse	Islets	Collagenase: 1,000 u/ml	RPMI 1640	Li, D., Yuan, Y., Tu, H., Liang, Q. and Dai, L.: A Protocol for Islet Isolation from Mouse Pancreas., *Nat Protoc 4*, 1649, 2009 (*10643*)

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Mouse	Mouse	Islets	Collagenase: 0.14%	RPMI 1640	Carter, J., Dula, S., Corbin, K., Wu, R. and Nunemaker, C.: A Practical Guide to Rodent Islet Isolation and Assessment., *Biol Proced Online 11*, 3, 2009 (*11054*)
	Mouse	Islets	Collagenase: 0.03- 0.08%	RPMI 1640	Szot, G., Koudria, P. and Bluestone, J.: Murine Pancreatic Islet Isolation., *J Vis Exp 7*, 255, 2007 (*10649*)
	Mouse, 6-10 month	Pancreatic ductal	CLSPA: 50 u/ml Hyaluronidase: 400 u/ml Soybean Trypsin Inhibitor: 0.02%	DMEM	Wang, Y., Soyombo, A., Shcheynikov, N., Zeng, W., Dorwart, M., Marino, C., Thomas, P. and Muallem, S.: Slc26a6 Regulates CFTR Activity In Vivo to Determine Pancreatic Duct HCO3- Secretion: Relevance to Cystic Fibrosis., *EMBO J 25*, 5049, 2006 (*10607*)
	Mouse, adult	Acinar	CLSPA: 200 u/ml	see reference	Voronina, S., Barrow, S., Gerasimenko, O., Petersen, O. and Tepikin, A.: Effects of Secretagogues and Bile Acids on Mitochondrial Membrane Potential of Pancreatic Acinar Cells: Comparison of Different Modes of Evaluating Delta Psi., *J Biol Chem 279*, 27327, 2004 (*10568*)
	Mouse, 11-12 week	Islets	Collagenase Type 4: 0.2%	RPMI	Astrof, S., Crowley, D., George, E., Fukuda, T., Sekiguchi, K., Hanahan, D. and Hynes, R.: Direct Test of Potential Roles of EIIIA and EIIIB Alternatively Spliced Segments of Fibronectin in Physiological and Tumor Angiogenesis., *Mol Cell Biol 24*, 8662-70, 2004 (*10996*)
	Mouse	Pancreatic islet	Collagenase Type 4: 0.2%	HBSS	Haefliger, J., Tawadros, T., Meylan, L., Gurun, S., Roehrich, M., Martin, D., Thorens, B., Waeber, G.: The Scaffold Protein IB1/JIP-1 is a Critical Mediator of Cytokine-Induced Apoptosis in Pancreatic Beta Cells, *J Cell Sci 116*, 1463-9, 2003 (*10151*)
	Mouse	Islets	Collagenase Type 4: 0.2%	HBSS	Wu, Y., Han, B., Luo, H., Roduit, R., Salcedo, T., Moore, P., Zhang, J., Wu, J.: DcR3/TR6 Effectively Prevents Islet Primary Nonfunction After Transplantation, *Diabetes 52*, 2279-86, 2003 (*10288*)
	Mouse, BALB/c, 6-8 week-old, either sex	Acinar	Collagenase: 0.1%	Waymouth's MB	Kurup, S., and Bhonde, R.: Analysis and Optimization of Nutritional Set-up for Murine Pancreatic Acinar Cells, *JOP 3 (1)*, 8, 2002 (*1070*)
	Mouse	Islets	Collagenase Type 2: 0.2%	CF Medium	Koster, J., Marshall, B., Ensor, N., Corbett, J., and Nichols, C.: Targeted Overativity of Cell K_{ATP} Channels Induces Profound Neonatal Diabetes, *Cell 100*, 645, 2000 (*1126*)
	Mouse	Pancreatic islets	Collagenase Type 4: 0.4%	Gey's BSS	Strowski, M., Parmar, R., Blake, A., Schaeffer, J.: Somatostatin Inhibits Insulin and Glucagon Secretion Via Two Receptors Subtypes: An In Vitro Study of Pancreatic Islets from Somatostatin Receptor 2 Knockout Mice, *Endocrinology 141*, 111-7, 2000 (*10276*)
	Mouse	Acinar cells and acini	Collagenase Type 1: see reference CLSPA: see reference	see reference	Toivola, D., Ku, N., Ghori, N., Lowe, A., Michie, S. and Omary, M.: Effects of Keratin Filament Disruption on Exocrine Pancreas- Stimulated Secretion and Susceptibility to Injury., *Exp Cell Res 255*, 156, 2000 (*10569*)
	Mouse, albino, 25 g	Acinar	CLSPA: see reference	see reference	Fogarty, K., Kidd, J., Tuft, R. and Thorn, P.: A Bimodal Pattern of InsP(3)-Evoked Elementary Ca(2+) Signals in Pancreatic Acinar Cells., *Biophys J 78*, 2298, 2000 (*10630*)
	Mouse	Duct	Papain: 25 u/ml	DMEM /F-12	Githens, S: Pancreatic Duct Epithelial Cells, *Cell & Tissue Culture: Laboratory Procedures Vol. 1*,Doyle, A., Griffiths, J., and Newell, D., John Wiley and Sons, Ltd., 12B:12.1, 1995 (*1274*)
	Mouse	Acinar	Collagenase: 100 u/ml	HEPES	Jauch, P., Peterson, O., and Lauger, P.: Electrogenic Properties of the Na-Alanine Cotransporter in Acinar Cells, *J Membr Biol 94*, 99, 1986 (*605*)
	Mouse (C57BL/6J- ob/ob), 9-12 wks, male	Islets	Hyaluronidase: 0.5%	Kreb's Ringer bicarbonate buffer	Dalpe-Scott, M., Heick, H., and Begin-Heick, N.: Secretion in the Obese (ob/ob) Mouse. The Effect of Oxytetracycline on Insulin Release, *Diabetes 32*, 932, 1983 (*687*)
	Mouse, male, 18-24 g	Acinar	CLSPA: 70-90 u/ml Soybean Trypsin Inhibitor: 0.01%	Krebs-Henseleit	Burnham, D., Williams, J.: Effects of Carbachol, Cholecystokinin, and Insulin on Protein Phosphorylation in Isolated Pancreatic Acini, *J Biol Chem 257*, 10523-8, 1982 (*10135*)
	Mouse, 7-10 week	Islets	Collagenase: see reference	DMEM	Yesil, P, Michel, M., Chwalek, K., Pedack, S., Jany, C., Ludwig, B., Bornstein, S. and Lammert, E.: A New Collagenase Blend Increases the Number of Islets Isolated from Mouse Pancreas., *Islets 1*, 185, (*10614*)
Porcine	Porcine, juvenile	Islets	Collagenase: see reference	Univ of Wisconsin solution	Van der Burg, M., Graham, J.: Iodixanol Density Gradient Preparation in University of Wisconsin Solution for Porcine Islet Purification, *ScientificWorldJournal 3*, 1154-9, 2003 (*10286*)
	Porcine, 3 month,15-20 kg	Acinar	Collagenase Type 3: 200 u/ml	RPMI 1640	Zhao, X., Han, J., and Tang, C.: Primary Culture of Porcine Pancreatic Acinar Cells, *JOP 2 (2)*, 78, 2001 (*768*)
	Porcine, 1-3 year, 1.5-2.0 kg, either sex	Islets	Collagenase: 0.25%	HBSS	Korbutt, G., Elliott, J., Ao, Z., Smith, D., Warnock, G., and Rajotte, R.: Large Scale Isolation, Growth, and Function of Porcine Neonatal Islet Cells, *J Clin Invest 97 (9)*, 2119, 1996 (*761*)
	Porcine, female	Islets	Collagenase: 0.1%	HBSS	Brandhorst, D., Brandhorst, H., Hering, B., Federlin, K., and Bretzel, R.: Islet Isolation from the Pancreas of Large Mammals and Humans: 10 Years of Experience, *Exp Clin Endocrinol 103*, 3, 1995 (*760*)
	Porcine	Islets	Collagenase: 0.1%-0.2%	HBSS	Johnson, P., van Suylichem, P., Roberts, D., Vos-Scheperkeuter, G., White, S., van Schlifgaarde, R., London, N.: Design of a Simple, *in vitro* Method for Evaluation of the Efficiency of Crude *Clostridium histolyticum* Collagenase and its Components for Porcine Islet Isolation, *Xenotransplantation 2*, 165, 1995 (*729*)
	Porcine, <2 year, 200-250 kg	Islets	Collagenase: 0.1%	HBSS	Heiser, A., Ulrichs, K., and Muller-Ruchholtz, W.: Isolation of Porcine Pancreatic Islets: Low Trypsin Activity During the Isolation Procedure Guarantees Reproducible High Islet Yields, *J Clin Lab Anal 8*, 407, 1994 (*754*)
	Porcine, 10-36 months, 200-300 kg	Islets	Collagenase: 0.2%	HBSS	Ricordi, C., Socci, C., Davalli, A., Staudacher, C., Baro, P., Vertova, A., Sassi, I., Gavazzi, F., Pozza, G., and Di Carlo, V.: Isolation of the Elusive Pig Islet, *Surgery 107 (6)*, 688, 1990 (*806*)
	Porcine	Acinar	Collagenase: 100 u/ml	Saline	Iwatsuki, N., and Peterson, O.: Action of Tetraethylammonium on Calcium-Activated Potassim Channels in Pig Pancreatic Acinar Cells Studied by Patch-Clamp Single-Channel and Whole-Cell Current Recording, *J Membr Biol 86*, 139, 1985 (*604*)

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Rabbit	Rabbit, New Zealand white, Male/Female, 2-3 Kg	Acinar	Hyaluronidase: 0.2%	Kreb's Ringer bicarbonate buffer	Renckens, B., Schrijen, J., Swarts, H., DePont, J., and Bonting, S.: Role of Calcium in Exocrine Pancreatic Secretion. IV. Calcium Movements in Isolated Acinar Cells of Rabbit Pancreas, *Biochim Biophys Acta 544*, 338, 1978 (*321*)
	Rabbit, also hamster	Islets	Collagenase Type 4: 1.3% - 2.0%	HBSS	Feldman, J., and Chapman, B.: Preparation of Islets of Langerhans from Rabbits and Hamsters by the Collagenase Digestion Technique, *Acta Diabetol 12*, 208, 1975 (*686*)
Rat	Rat, SD, adult	Acinar	Collagenase: 0.01% Soybean Trypsin Inhibitor: 0.001%	Culture media	Li, J., Zhou, R., Bie, B., Huang, N., Guo, Y., Chen, H., Shi, M., Yang, J., Zhang, J. and Li, Z.: Emodin and Baicalein Inhibit Sodium Taurocholate-Induced Vacuole Formation in Pancreatic Acinar Cells., *World J Gastroenterol 24*, 35-45, 2018 (*11575*)
	Rat, Wistar, 300g	Islets	Collagenase Type 4: 0.2%	CMRL 1066	Verga Falzacappa, C., Mangialardo, C., Raffa, S., Mancuso, A., Piergrossi, P., Moriggi, G., Piro, S., Stigliano, A., Torrisi, M., Brunetti, E., Toscano, V. and Misiti, S.: The Thyroid Hormone T3 Improves Function and Survival of Rat Pancreatic Islets During In Vitro Culture., *Islets 2*, 96, 2010 (*10615*)
	Rat	Acinar	CLSPA: 100 u/ml	DMEM	Williams, J.: Isolation of Rodent Pancreatic Acinar Cells and Acini by Collagenase Digestion, *Pancreapedia*, 2010 (*10889*)
	Rat, adult	Islets	Collagenase Type 1: 450 u/ml	Leibowitz L-15	Williams, J., Huang, H., Kover, K., Moore, W., Berkland, C., Singh, M., Smirnova, I., MacGregor, R. and Stehno-Bittel, L.: Reduction of Diffusion Barriers in Isolated Rat Islets Improves Survival, but not Insulin Secretion or Transplantation Outcome., *Organogenesis 6*, 115, 2010 (*10958*)
	Rat, male, 7-11 week	Islets	Collagenase Type 4: see reference	RPMI 1640	Getty-Kaushik, L., Richard, A., Deeney, J., Shirihai, O. and Corkey, B.: The CB1 Antagonist Rimonabant Decreases Insulin Hypersecretion in Rat Pancreatic Islets, *Obesity 17*, 1856, 2009 (*10531*)
	Rat	Islets	Collagenase Type 1: 450 u/ml	RPMI 1640	MacGregor, R., Williams, S., Tong, P., Kover, K., Moore, W. and Stehno-Bittel, L.: Small Rat Islets are Superior to Large Islets in In Vitro Function and in Transplantation Outcomes., *Am J Physiol/Endo 290*, E771, 2006 (*10940*)
	Rat, Wistar, male, 250-400g	Pancreatic islets	Collagenase: 0.75%	RPMI 1640	Tian, X., Xue, W., Ding, X., Pang, X., Teng, Y., Tian, P., and Feng, X.: Small Intestinal Submucosa Improves Islet Survival and Function During In Vitro Culture, *World J Gastroenterol 11*, 7378, 2005 (*10008*)
	Rat, 250-350 g	Pancreatic islet	Collagenase Type 4: 0.2%	HBSS	Haefliger, J., Tawadros, T., Meylan, L., Gurun, S., Roehrich, M., Martin, D., Thorens, B., Waeber, G.: The Scaffold Protein IB1/JIP-1 is a Critical Mediator of Cytokine-Induced Apoptosis in Pancreatic Beta Cells, *J Cell Sci 116*, 1463-9, 2003 (*10151*)
	Rat	Pancreatic acini	CLSPA: 30 u/ml Collagenase Type 4: 30 u/ml Soybean Trypsin Inhibitor: 0.01%	M199	Blinman, T., Gukovsky, I., Mouria, M., Zaninovic, V., Livingston, E., Pandol, S., Gukovskaya, A.: Activation of Pancreatic Acinar Cells on Isolation from Tissue: Cytokine Upregulation Via p38 MAP Kinase, *Am J Physiol Cell Physiol 279*, C1993-2003, 2000 (*10133*)
	Rat, SD, male	Ancinar	CLSPA: see reference Soybean Trypsin Inhibitor: 0.01%	DMEM	Ji, B., Kopin, A., Logsdon, C.: Species Differences Between Rat and Mouse CCKA Receptors Determine the Divergent Acinar Cell Response to the Cholecystokinin Analog JMV- 180, *J Biol Chem 275*, 19115-20, 2000 (*10157*)
	Rat	Islets	Collagenase: 126 - 196 u/ml	HBSS	Verspohl, E., and Wienecke, A.: The Role of Protein Kinase C in the Desensitization of Rat Pancreatic Islets to Chrolinergic stimulation, *J Endocrinol 159*, 287, 1998 (*1073*)
	Rat	Islets	Collagenase: 0.5 - 0.9%	HBSS	Takaki, R and Ono J: Culture of Pancreatic Islet Cells, *Cell & Tissue Culture: Laboratory Procedures Vol. 1*,Doyle, A., Griffiths, J., and Newell, D., John Wiley and Sons, Ltd., 12B:11.1, 1995 (*1112*)
	Rat	Duct	Papain: 25 u/ml	DMEM /F-12	Githens, S: Pancreatic Duct Epithelial Cells, *Cell & Tissue Culture: Laboratory Procedures Vol. 1*,Doyle, A., Griffiths, J., and Newell, D., John Wiley and Sons, Ltd., 12B:12.1, 1995 (*1274*)
	Rat, SD, male, 40 - 100 g	Acinar	Hyaluronidase: 462 u/ml	Ham's F12	Hirschi, K., Kenny, S., Justice, J., Brannon, P.: Effects of Secretin And Caerulein On Enzymes Of Cultured Pancreatic Acinar Cells, *In Vitro Cell Dev Biol 27*, 660, 1991 (*472*)
	Rat, SD, male, 100 - 150 g	Parotid acinar	Trypsin: 0.001%	F12 medium	Yeh, C., Mertz, P., Oliver, C., Baum, B., and Kousvelari, E.: Cellular Characteristics of Long-Term Cultured Rat Parotid Acinar Cells, *In Vitro Cell Dev Biol 27*, 707, 1991 (*473*)
	Rat, Wistar, male	Parotid acinar	Trypsin: 0.02%	Solution B (see reference)	Foskett, J., Roifman, C. and Wong, D.: Activation of Calcium Oscillations by Thapsigargin in Parotid Acinar Cells, *J Biol Chem 266*, 2778, 1991 (*573*)
	Rat, S-Wistar, male, 230 - 270 g (also mouse, 6 - 8 wk old)	Islets	Collagenase: 0.1% - 0.2%	HBSS	Ohzato, H., Gotoh, M., Monden, M., Dono, K., Kanai, T., and Mori, T.: Improvement in the Islet Yield From a Cold-Preserved Pancreas by Pancreatic Ductal Collagenase Distention at the Time of Harvesting, *Transplantation 51*, 566, 1991 (*798*)
	Rat, SD, both sexes, 6-20 wks old	Interlobular ducts	Papain: 25 u/ml	DMEM/Ham's F-12	Githens, S., Schexnayder, J., Desai, K., and Patke, C.: Rat Pancreatic Interlobular Duct Epithelium: Isolation and Culture in Collagen Gel, *In Vitro Cell Dev Biol 25 (8)*, 679, 1989 (*790*)
	Rat, SD, male, 150 - 200 g	Acinar	Soybean Trypsin Inhibitor: 0.01%	HEPES	Menozzi, D., Sato, S., Jensen, R., and Gardner, J.: Cyclic GMP Does Not Inhibit Protein Kinase C- Mediated Enzyme Secretion in Rat Pancreatic Acini, *J Biol Chem 264*, 995, 1989 (*565*)
	Rat, Wistar, male, 250 - 350 g	Acinar, parotid	Hyaluronidase: 0.015%	Earle's MEM	Melvin, J., Kawaguchi, M., Baum, B., and Turner, R.: A Muscarinic Agonist- Stimulated Chloride Efflux Pathway is Associated With Fluid Secretion in Rat Parotid Acinar Cells, *Biochem Biophys Res Commun 145*, 754, 1987 (*308*)
	Rat, SD, male, 50 - 125 g	Acinar Exorbital lacrimal, parotid, pancreas	Trypsin: 0.01%	HBSS, CMF	Oliver, C., Waters, J., Tolbert, C., and Kleinman, H.: Growth of Exocrine Acinar Cells on a Reconstituted Basement Membrane Gel, *In Vitro Cell Dev Biol 23*, 465, 1987 (*421*)
	Rat, Fischer-344, either sex, 120-150 g	Epithelial	Trypsin: 0.1%	Ham's F- 12/HBSS (see reference)	Tsao, M., and Duguid, W.: Establishment of Propagable Epithelial Cell Lines From Normal Adult Rat Pancreas, *Exp Cell Res 168*, 365, 1987 (*793*)

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TISSUE TABLES

Pancreas

Pancreas

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat, 200-350 g	Islets	Collagenase Type 4: 0.2%	HBSS	Gotoh, M., Maki, T., Satomi, S., Porter, J., Bonner-Weir, S., O'Hara, C., and Monaco, A.: Reproducible High Yield of Rat Islets By Stationary In Vitro Digestion Following Pancreatic Ductal or Portal Venous Collagenase Injection, *Transplantation 43 (5)*, 725, 1987 (*801*)
	Rat, SD, male, 42 - 48 day, 175 - 200 g	Acinar, submandibular gland	Hyaluronidase: 0.1%	HBSS, CF	Quissell, D., Redman, R., and Mark, M.: Short-Term Primary Culture of Acinar- Intercalated Duct Complexes From Rat Submandibular Glands, *In Vitro Cell Dev Biol 22*, 469, 1986 (*419*)
	Rat, Dark Agouti and Lewis, adult	Islets	Collagenase Type 1: 0.3%	Hank's solution	Sutton, R., Peters, M., McShane, P., Gray, D., and Morris, P.: An Improved Method for the Isolation of Islets of Langerhans From the Adult Rat Pancreas, *Transplant Proc XVII (6)*, 1819, 1986 (*789*)
	Rat, SD, male, 50- 75 g	Acinar	Hyaluronidase: 0.1%	HBSS (see reference)	Brannon, P., Orrison, B., and Kretchmer, N.: Primary Cultures of Rat Pancreatic Acinar Cells in Serum-Free Medium, *In Vitro Cell Dev Biol 21 (1)*, 6, 1985 (*788*)
	Rat, SD, 125 - 350 g	Duct	Trypsin: 0.01%	HBSS	Githens, S., Holmquist, D., Whelan, J., and Ruby, J.: Ducts of the Rat Pancreas in Agarose Matrix Culture, *In Vitro 16*, 797, 1980 (*510*)
	Rat	Exocrine	Hyaluronidase: 0.9%	Kreb's Ringer	Schulz, I., Heil, K., Kribben, A., Sachs, G., and Haase, W.: Isolation and Functional Characterization of Cells From the Exocrine Pancreas, *Biology of Normal and Cancerous Exocrine Pancreatic Cells*,Ribet, A., Pradayrol, L., and Susini, C., Elsevier, , 1980 (*1155*)
	Rat, Wistar, male	Islets	Collagenase Type 4: 1%	Medium 199	Katada, T., and Ui, M.: Enhanced Insulin Secretion and Cyclic Amp Accumulation in Pancreatic Islets Due to Activation of Native Calcium Ionophores, *J Biol Chem 254 (2)*, 469, 1979 (*791*)
	Rat, SD, male, 250 - 350 g (also mouse, white, Swiss, male, 20 - 24 g)	Acinar	Hyaluronidase: 0.18%	Kreb's Henseleit bicarbonate buffer	Williams, J., Korc, M., and Dormer, R.: Action of Secretagogues on a New Preparation of Functionally Intact, Isolated Pancreatic Acini, *Am J Physiol 235*, 517, 1978 (*288*)
	Rat, Wistar, male, 300-350 g	Islets	Collagenase: 0.2%	Kreb's Ringer bicarbonate buffer	Wolters, G., Konijenendijk, W., and Bouman, P.: Effects of Fasting on Insulin Secretion, Islet Glucose Metabolism, and the Cyclic Adenosine 3'5'-Monophosphate Content of Rat Pancreatic Islets *In Vitro*, *Diabetes 26 (6)*, 530, 1977 (*804*)
	Rat, Wistar, male, 200 - 300 g	Islets	Collagenase Type 4: 0.5%	HBSS	Shibata, A., Ludvigsen, C., Naber, S., McKaneil M., and Lacy, P.: Standardization of a Digestion-Filtration Method for Isolation of Islets, *Diabetes 25*, 667, 1976 (*677*)
	Rat	Exocrine	Hyaluronidase: 0.15%	Krebs	Kondo, S., and Schulz, I.: Calcium Ion Uptake in Isolated Pancreas Cells Induced by Secretagogues, *Biochim Biophys Acta 419*, 76, 1976 (*1150*)
	Rat, Wistar-Lewis, fetal 18-20 day gestation (also neonatal 3-12 day old)	Islets	Collagenase Type 4: 0.63%	EBSS (see reference)	Braaten, J., Jarlfors, U., Smith, D., and Mintz, D.: Purification of Monolayer Cell Cultures of the Endocrine Pancreas, *Tissue Cell 7 (4)*, 747, 1975 (*792*)
	Rat, SD, albino, male, 150-200 g	Acinar, parotid	Trypsin: 0.01% Collagenase: 40-50 u/ml Hyaluronidase: 0.10%	HBSS CMF	Mangos, J., McSherry, N., Butcher, F., Irwin, K., and Barber, T.: Dispersed Rat Parotid Acinar Cells (Morphological, Functional Character), *Am J Physiol 229 (3)*, 560, 1975 (*286*)
	Rat, neonate	Islets	Trypsin: 0.05%	Puck's saline buffered w/ EDTA 0.02%	Leonard, R., Lazarow, A., and Hegre, O.: Pancreatic Islet Transplantation in the Rat, *Diabetes 22*, 413, 1973 (*684*)
	Rat, male, albino, 200-300 g	Islets	Collagenase: 0.5%	Hanks solution	Lacy, P., Walker, M., and Fink, J.: Perifusion of Isolated Rat Islets *in Vitro*, *Diabetes 21 (10)*, 987, 1972 (*1008*)
	Rat, Lewis, inbred	Islets	Collagenase: 0.5%	HBSS	Ballinger, W., and Lacy, P.: Transplantation of Intact Pancreatic Islets in Rats, *Surgery 72 (2)*, 175, 1972 (*1119*)
	Rat, Wistar, albino, male, 400 - 500 g	Islets	Collagenase Type 4: 1.0% - 1.2%	HBSS	Lacy, P., and Kostianovsky, M.: Method for the Isolation of Intact Islets of Langerhans from the Rat Pancreas, *Diabetes 16*, 35, 1967 (*685*)
	Rat	Ascites hepatoma	Trypsin: 0.1%	Phosphate buffer (see reference)	Essner, E.: Experiments on an Ascites Hepatoma. I. Enzymatic Digestion and Alkaline Degradation of the Cementing Substance and Separation of Cells, in Tumor Islands, *Exp Cell Res 7*, 430, 1954 (*403*)
Parotid					
Mouse	Mouse	Parotid and sublingual glandular	Neutral Protease: 50 u/ml Collagenase Type 1: 100 u/ml	PBS	Ogawa, M., Oshima, M., Imamura, A., Sekine, Y., Ishida, K., Yamashita, K., Nakajima, K., Hirayama, M., Tachikawa, T. and Tsuji, T.: Functional Salivary Gland Regeneration by Transplantation of a Bioengineered Organ Germ., *Nat Commun 4*, 2498, 2013 (*11022*)
Rat	Rat, Wistar, male, 130 g	Acinar	Collagenase: 75 u/ml Hyaluronidase: 153 u/ml	RPMI 1640	Looms, D., Dissing, S., Tritsaris, K., Pedersen, A. and Nauntofte, B.: Adrenoceptor-Activated Nitric Oxide Synthesis in Salivary Acinar Cells., *Adv Dent Res 14*, 62, 2000 (*10629*)
	Rat, SD, 100-120 g	Parotid acinar cells	Collagenase Type 2: 90 u/ml	Krebs-Henseleit Bicarbonate	D'Silva NJ, DiJulio DH, Belton CM, Jacobson KL, Watson EL: Immunolocalization of Rap1 in the rat parotid gland: detection on secretory granule membranes, *J Histochem Cytochem 45*, 965-73, 1997 (*10231*)
	Rat, SD, male	Epithelial	Collagenase: 50-75 u/ml Hyaluronidase: 0.1%	HBSS CF	Prasad, K.N., Edwards-Prasad, J., Carvaiho, I., LaRosa, F.G., Baibinder, E., Meyers, A., and Quissell, D.: Establishment of Primary Cultures of Rat and Human Parotid Epithelial Cells for Transfection Experiments, *In Vitro Cell Dev Biol 28*, 493, 1992 (*484*)
	Rat, SD, male, 100- 150 g	Parotid acinar	Trypsin: 0.001%	F12 medium	Yeh, C., Mertz, P., Oliver, C., Baum, B., and Kousvelari, E.: Cellular Characteristics of Long-Term Cultured Rat Parotid Acinar Cells, *In Vitro Cell Dev Biol 27*, 707, 1991 (*473*)
	Rat, Wistar, male	Parotid acinar	Trypsin: 0.02%	Solution B (see reference)	Foskett, J., Roifman, C. and Wong, D.: Activation of Calcium Oscillations by Thapsigargin in Parotid Acinar Cells, *J Biol Chem 266*, 2778, 1991 (*573*)
	Rat	Parotid	Hyaluronidase: 0.025%	HBSS with 20mM HEPES	Takuma, T. and Ichida, T.: Amylase Secretion From Saponin-Permeabilized Parotid Cells Evoked by Cyclic AMP, *J Invest Dermatol 103*, 95, 1988 (*676*)

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Parotid					
Species	**Species Detail**	**Cell(s)**	**Enzyme(s)**	**Medium**	**Reference**
Rat	Rat, Wistar, male, 250 - 350 g	Acinar, parotid	Hyaluronidase: 0.015%	Earle's MEM	Melvin, J., Kawaguchi, M., Baum, B., and Turner, R.: A Muscarinic Agonist- Stimulated Chloride Efflux Pathway is Associated With Fluid Secretion in Rat Parotid Acinar Cells, *Biochem Biophys Res Commun 145*, 754, 1987 (*308*)
	Rat, SD, male, 50 - 125 g	Acinar Exorbital lacrimal, parotid, pancreas	Trypsin: 0.01%	HBSS, CMF	Oliver, C., Waters, J., Tolbert, C., and Kleinman, H.: Growth of Exocrine Acinar Cells on a Reconstituted Basement Membrane Gel, *In Vitro Cell Dev Biol 23*, 465, 1987 (*421*)
	Rat, SD, albino, male, 150-200 g	Acinar, parotid	Trypsin: 0.01% Collagenase: 40-50 u/ml Hyaluronidase: 0.10%	HBSS CMF	Mangos, J., McSherry, N., Butcher, F., Irwin, K., and Barber, T.: Dispersed Rat Parotid Acinar Cells (Morphological, Functional Character), *Am J Physiol 229 (3)*, 560, 1975 (*286*)
Pituitary					**Pituitary**
Bovine	Calf, male, less than 6 months old	Pituitary	Collagenase: 0.3%	DMEM	Hassan, H., and Merkel, R.: Perifusion Model System to Culture Bovine Hypothalamic Slices In Series with Dispersed Anterior Pituitary Cells, *In Vitro Cell Dev Biol 30A*, 435, 1994 (*968*)
	Bovine	Pituitary	Collagenase: 0.1%	EBSS, CMF	Mason, W. and Ingram, C.: Techniques for Studying the Role of Electrical Activity in Control of Secretion by Normal Anterior Pituitary Cells, *Vol. 124*, 207, 1986 (*632*)
	Bovine	Follicular, anterior pituitary and pars tuberalis	Deoxyribonuclease I: 200 µg/ml	HBSS, CMF	Ferrara, N., Goldsmith, P., Fujii, D., and Weiner, R.: Culture and Characterization of Follicular Cells of the Bovine Anterior Pituitary and Pars Tuberalis, *Vol. 124*,, , 245, 1986 (*633*)
	Calf, male, 1-6 week old	Pitituary	Hyaluronidase: 0.1%	DMEM	Ridgway, E., Klibanski, A., Marorana, M., Milbury, P., Kieffer, J., and Chin, W.: The Effect of Somatostatin on the Release of Thyrotropin and its Subunits from Bovine Anterior Pitituary Cells *in Vitro*, *Endocrinology 112 (6)*, 1937, 1983 (*1026*)
Mouse	Mouse	Pituitary	Collagenase Type 2: 0.5% Deoxyribonuclease I: 0.005%	HBSS	Perez Millain, M., Brinkmeier, M., Mortensen, A. and Camper, S.: PROP1 Triggers Epithelial- Mesenchymal Transition- Like Process in Pituitary Stem Cells., *Elife 5*, , 2016 (*11685*)
	Mouse	Pituitary	Collagenase Type 1: 1,000 u/ml Soybean Trypsin Inhibitor: 0.01% Hyaluronidase: 0.1% Deoxyribonuclease I: 0.001%	DMEM	Pyczek, J., Buslei, R., Schult, D., Holsken, A., Buchfelder, M., Hess, I., Hahn, H. and Uhmann, A.: Hedgehog Signaling Activation Induces Stem Cell Proliferation and Hormone Release in the Adult Pituitary Gland., *Sci Rep 6*, 24928, 2016 (*11684*)
	Mouse, male	Pituitary	Collagenase: 0.4% Hyaluronidase: 0.1% Trypsin: 0.3%	DMEM/Han's F12	Steveson, T., Ciccotosto, G., Ma, X., Mueller, G., Mains, R., Eipper, B.: Menkes Protein Contributes to the Function of Peptidylglycine Alpha-amidating Monooxygenase, *Endocrinology 144*, 188-200, 2003 (*10241*)
Ovine	Ovine, adult	Somatotropes	Collagenase Type 1: 0.3% Hyaluronidase:	Medium 199	Xu, R., Wang, Q., Yan, M., Hernandez, M., Gong, C., Boon, W., Murata, Y., Ueta, Y., Chen, C.: Orexin-A Augments Voltage-Gated Ca2+ Currents and Synergistically Increases Growth Hormone (GH) Secretion with GH-Releasing Hormone in Primary Cultured Ovine Somatotropes, *Endocrinology 143*, 4609-19, 2002 (*10246*)
Rat	Rat, male, 12-15 week	Pituitary	Collagenase Type 2: 0.4% Deoxyribonuclease I: 0.04%	DMEM	Akieda-Asai, S., Zaima, N., Ikegami, K., Kahyo, T, Yao, I., Hatanaka, T., Iemura, S., Sugiyama, R., Yokozeki, T., Eishi, Y., Koike, M., Ikeda, K., Chiba, T., Yamaza, H., Shimokawa, I., Song, S., Matsuno, A., Mizutani, A., Sawabe, M. Chao, N., Tanaka, M., : SIRT1 Regulates Thyroid- Stimulating Hormone Release by Enhancing PIP5K gamma Activity through Deacetylation of Specific Lysine Residues in Mammals., *PLoS ONE 5*, e11755, 2010 (*10644*)
	Rat, Wistar, male, 2 month old	Pituitary	Trypsin: 0.1%	DMEM	Zhou, X., De Schepper, J., De Craemer, D., Delhase, M., Gys, G., Smitz, J., and Hooghe-Peters, E.: Pituitary Growth Hormone Release and Gene Expression in Cafeteria-Diet-Induced Obese Rats, *J Endocrinol 159*, 165, 1998 (*1143*)
	Rat, SD, female, 200 - 250 g	Anterior pituitary gland	Trypsin: 0.1%	EBSS, CMF	D'Emden, M. and Wark, J.: Culture Requirements for Optimal Expression of 1,25- Dihydroxyvitamin D3- Enhanced Thyrotropin Secretion, *In Vitro Cell Dev Biol 27*, 197, 1991 (*459*)
	Rat	Pituitary	Trypsin: 0.3 %	HEPES	Wilfinger, W., Larsen, W., Downs, T., and Wilbur, D.: An *In Vitro* Model for Studies of Intercellular Communication in Cultured Rat Anterior Pituitary Cells, *Tissue Cell 16 (4)*, 483, 1984 (*1224*)
	Rat, SD, male, 250- 450 g	Anterior pituitary	Trypsin: 0.25%	Krebs	Portanova, R., Smith, D., and Sayers, G.: A Trypsin for the Preparation of Isolated Rat Anterior Pituitary, *Proc Soc Exp Biol Med 133*, 573, 1970 (*1207*)
Prostate					**Prostate**
Human	Human	Prostatic cancer fibroblasts	Collagenase: 225 u/ml Hyaluronidase: 125 u/ml	RPMI 1640	Taylor, R., Toivanen, R., Frydenberg, M., Pedersen, J., Harewood, L., Collins, A., Maitland, N. and Risbridger, G.: Human Epithelial Basal Cells are Cells of Origin of Prostate Cancer, Independent of CD133 Status., *Stem Cells 30*, 1087, 2012 (*10931*)
	Human, 52-56 yr	Prostatic stromal cells	Collagenase Type 1: 0.2%	DMEM/F-12	Le Hanh, Arnold Julia T, McFann Kimberly K, Blackman Marc R: DHT and testosterone, but not DHEA or E2, differentially modulate IGF-I, IGFBP-2, and IGFBP-3 in human prostatic stromal cells, *Am J Physiol/Endo 290*, E952-60, 2006 (*10126*)
	Human	Prostate stromal cells	Collagenase Type 1: 0.1%	RPMI 1640	Nakashiro Koh-Ichi, Hara Shingo, Shinohara Yuji, Oyasu Miho, Kawamata Hitoshi, Shintani Satoru, Hamakawa Hiroyuki, Oyasu Ryoichi: Phenotypic switch from paracrine to autocrine role of hepatocyte growth factor in an androgen- independent human prostatic carcinoma cell line, CWR22R, *Am J Pathol 165*, 533-40, 2004 (*10163*)
	Human, fetal	Prostatic fibroblasts	Collagenase Type 1: 0.125%	DMEM/F12	Levine AC, Liu XH, Greenberg PD, Eliashvili M, Schiff JD, Aaronson SA, Holland JF, Kirschenbaum A: Androgens induce the expression of vascular endothelial growth factor in human fetal prostatic fibroblasts, *Endocrinology 139*, 4672-8, 1998 (*10124*)

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TISSUE TABLES

Prostate					
Species	**Species Detail**	**Cell(s)**	**Enzyme(s)**	**Medium**	**Reference**
Mouse	Mouse, 6-8 week	Prostate epithelial/stem	Collagenase Type 2: 0.5% Trypsin: 0.05%	HBSS	Burger, P., Gupta, R., Xiong, X., Ontiveros, C., Salm, S., Moscatelli, D. and Wilson, E.: High Aldehyde Dehydrogenase Activity: A Novel Functional Marker of Murine Prostate Stem/Progenitor Cells., *Stem Cells 27*, 2220-8, 2009 (*10488*)
	Mouse, 2 week	Prostatic epithelial	Collagenase Type 3: 170 u/ml	DMEM	Imamov Otabek, Morani Andrea, Shim Gil-Jin, Omoto Yoko, Thulin-Andersson Christina, Warner Margaret, Gustafsson Jan-Ake: Estrogen receptor beta regulates epithelial cellular differentiation in the mouse ventral prostate, *Proc Natl Acad Sci U S A 101*, 9375-80, 2004 (*10224*)
	Mouse, male	Prostatic stem	Collagenase Type 1: 170 u/ml	DMEM	Dubey P, Wu H, Reiter RE, Witte ON: Alternative pathways to prostate carcinoma activate prostate stem cell antigen expression, *Cancer Res 61*, 3256-61, 2001 (*10229*)
Reproductive					
Bovine	Bovine	Corpus leuteal cells	Collagenase Type 4: 420 u/ml	M-199	Levy N, Gordin M, Mamluk R, Yanagisawa M, Smith M F, Hampton J H, Meidan R: Distinct cellular localization and regulation of endothelin- 1 and endothelin-converting enzyme-1 expression in the bovine corpus luteum: implications for luteolysis, *Endocrinology 142*, 5254-60, 2001 (*10169*)
	Bovine, female	Leuteal	Collagenase Type 1: 0.2%	Ham's F-12	Tsang PC, Poff JP, Boulton EP, Condon WA: Four-day- old bovine corpus luteum: progesterone production and identification of matrix metalloproteinase activity in vitro, *Biol Reprod 53*, 1160-8, 1995 (*10284*)
	Calf, mid to late gestational	Fibroblasts	Collagenase: 0.1%	Medium 199	Coplen, D., Howard, P., Duckett, J., Snyder, H., and Macarak, E.: Characterization of a Fibroblast Cell From the Urinary Bladder Wall, *In Vitro Cell Dev Biol 30A*, 604, 1994 (*776*)
	Bovine	Epithelial Endometrial	Collagenase Type 2: 0.1%	DMEM/EBSS	Munson, L., Chandler, S., and Schlafer, D.: Long-Term Culture of Bovine Trophoblastic Cells, *J Tiss Cul Meth 11 (3)*, 123, 1988 (*868*)
	Bovine (also porcine, human)	Interna & corpus luteum, Endometrium Ovarian, Uterine	Pronase: 0.1%	Moscona's BSS	Marcus, G., Connor, L., Domingo, M., Tsang, B., Downey, B., and Ainsworth, L.: Enzymatic Dissociation of Ovarian and Uterine Tissues, *Endocr Res 10*, 151, 1984 (*372*)
Canine	Canine	Amniotic membrane MSC	Trypsin: 0.25% Collagenase Type 1: 0.2%	LG-DMEM	Park, S., Seo, M., Kim, H. and Kang, K.: Isolation and Characterization of Canine Amniotic Membrane-Derived Multipotent Stem Cells., *PLoS ONE 7*, e44693, 2012 (*10917*)
Chicken	Chicken, *Gallus Domesticus*, 20-30 week	Primary follicles	Trypsin: 0.15% Collagenase Type 1: 0.125%	Dulbecco's phosphate buffered saline	Du Meihong, Han Haitang, Jiang Bin, Zhao Chen, Qian Changsong, Shen Haiyan, Xu Yan, Li Zandong: An efficient isolation method for domestic hen (Gallus domesticus) ovarian primary follicles, *J Reprod Dev 52*, 569-76, 2006 (*10301*)
Fish	*Sebastes Schlegel*	Ovarian	Collagenase Type 1: 500 u/ml	L-15	Ryu, J., Kim, H., Bae, S., Jung, C. and Gong, S.: Isolation and in Vitro Culture of Primary Cell Populations Derived from Ovarian Tissues of the Rockfish, Sebastes schlegeli, *Fish Aquatic Sci 19*, 2016 (*11690*)
Frog	*Xenopus Laevis*, female	Oocytes	Collagenase Type 1: 0.2%	Barth's solution	Nicoll, G, Jawad, A., Weymouth, R, Zhang, H. and Beg, A.: Pharmacological characterization of the excitatory 'Cys-loop' GABA receptor family in Caenorhabditis elegans, *Br J Pharmacol 174*, 781, 2017 (*11656*)
	Xenopus laevis	Oocytes	Collagenase: 0.2%	Barth's solution	Chatzidaki, A., D'Oyley, J., Gill-Thind, J., Sheppard, T. and Millar, N.: The Influence of Allosteric Modulators and Transmembrane Mutations on Desensitisation and Activation of alpha7 Nicotinic Acetylcholine Receptors., *Neuropharmacol 97*, 75-85, 2015 (*11430*)
	Xenopus	Oocytes	Collagenase Type 2: 0.2%	see reference	O'Connell, D., Mruk, K., Rocheleau, J., Kobertz, W.: *Xenopus Laevis* Oocytes Infected with Multi-Drug-Resistant Bacteria: Implications for Electrical recordings., *J Gen Physiol 138*, 271-7, 2011 (*11586*)
	Xenopus laevis, female	Oocytes	Collagenase: 0.2%	see reference	Mruk, K. and Kobertz, W.: Discovery of a Novel Activator of KCNQ1- KCNE1 K Channel Complexes., *PLoS ONE 4*, e4236, 2009 (*10511*)
	Xenopus laevis, female	Oocytes	Collagenase: 0.5%	Barth's solution, CF	Cohen, S., Au, S. and Pante, N.: Microinjection of Xenopus Laevis Oocytes., *J Vis Exp 24*, 1106, 2009 (*11036*)
	Xenopus laevis, female	Oocytes	Collagenase Type 1: 0.2%	see reference	Pannaccione, A., Castaldo, P., Ficker, E., Annunziato, L., Taglialatela, M.: Histidines 578 and 587 in the S5-S6 Linker of the Human Ether-A-Gogo Related Gene-1 K+ Channels Confer Sensitivity to Reactive Oxygen Species, *J Biol Chem 277*, 8912-9, 2002 (*10166*)
	Xenopus laevis, female	Oocytes	Collagenase Type 1: 0.2%	CF Medium	Alagem, N., Dvir, M., and Reuveny, E.: Mechanism of Ba^{2+} Block of a Mouse Inwardly Rectifying K^+ Channel: Differential Contribution by Two Discrete Residues, *J Physiol 534 (2)*, 381, 2001 (*1148*)
	Xenopus	Oocytes	Collagenase Type 1: 1%	(see reference)	Tian, J., Kim, S., Heilig, E., and Ruderman, J.: Identification of XPR-1, A Progesterone Receptor Required for Xenopus Oocyte Activation, *Proc Natl Acad Sci U S A 97*, 14358, 2000 (*1291*)
	Xenopus laevis, female	Oocytes	Collagenase: 0.1%	Barth's solution, CF	Karkanias, N, and Papke, R.: Subtype-Specific Effects of Lithium on Glutamate Receptor Function, *J Neurophysiol 81*, 1506, 1999 (*1087*)
	Xenopus laevis, mature female	Oocytes	Collagenase: 0.2%	CF Medium	Moriarty, T., Gillo, B., Carty, D., Premont, R., Landau, E., Iyengar, R.: Beta gamma Subunits of GTP-Binding Proteins Inhibit Muscarinic Receptor Stimulation of Phospholipase C, *Proc Natl Acad Sci U S A 85*, 8865, 1988 (*661*)
Hamster	Hamster, Chinese	Ovary	Trypsin: 5%	Dialyzed fetal calf serum, 10% and 0.5M Methotrexate	Wallis, R., and Drickamer, K.: Molecular Determinants of Oligomer Formation and Complement Fixation in Mannose-Binding Proteins, *J Biol Chem 274 (6)*, 3580, 1999 (*1125*)
Human	Human	Endometrial epithelial and stromal fibroblasts	Collagenase Type 1: 0.32% Hyaluronidase: 62 u/ml	DMEM	Chen, J. and Roan, N.: Isolation and Culture of Human Endometrial Epithelial Cells and Stromal Fibroblasts., *Bio Protoc 5*, , 2015 (*11660*)
	Human	Endometrial stromal	Collagenase Type 3: 8 u/ml Deoxyribonuclease I: 0.01%	DMEM/F-12	Evans, J. and Salamonsen, L.: Decidualized Human Endometrial Stromal Cells are Sensors of Hormone Withdrawal in the Menstrual Inflammatory Cascade., *Biol Reprod 90*, 14, 2014 (*11663*)

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Human	Human	Endothelial colony forming	Collagenase Type 1: 0.1% Deoxyribonuclease I: 0.1% Neutral Protease: 0.075%	HBSS	Patel, J., Seppanen, E., Chong, M., Yeo, J., Teo, E., Chan, J., Fisk, N. and Khosrotehrani, K.: Prospective Surface Marker- Based Isolation and Expansion of Fetal Endothelial Colony-Forming Cells from Human Term Placenta., *Stem Cells Transl Med 2*, 839-47, 2013 (*11011*)
	Human	Uterine epithelial	Pancreatin: 0.34% Hyaluronidase: 0.01% Collagenase: 0.16%	HBSS	Patel, M., Ghosh, M., Fahey, J. and Wira, C.: Uterine Epithelial Cells Specifically Induce Interferon-Stimulated Genes in Response to Polyinosinic-Polycytidylic Acid Independently of Estradiol., *PLoS ONE 7*, e35654, 2012 (*10797*)
	Human	Mesenchymal stem	Collagenase Type 1: 0.4% Deoxyribonuclease I: 0.01%	DMEM/F12	Shalini, V., Pratheep, S., Muhammad, A., Sharmili, V., Elizabeth, G. and Rajesh, R.: Generation and Characterisation of Human Mesenchymal Stem Cells Derived From Umbilical Cord and Placenta, *Regenerative Research 1*, 48, 2012 (*10916*)
	Human	Mesenchymal stem	Collagenase Type 2: 10% Neutral Protease: see reference	CMF-DPBS	Steigman, S. and Fauza, D.: Isolation of Mesenchymal Stem Cells from Amniotic Fluid and Placenta., *Curr Protoc Stem Cell Biol Chapter 1*, Unit 1E.2, 2007 (*10800*)
	Human, female	Decidual	Collagenase: 0.25% Deoxyribonuclease I: 6.25 u/ml	DMEM/F12	Lockwood, C., Arcuri, F., Toti, P., Felice, C., Krikun, G., Guller, S., Buchwalder, L. and Schatz, F.: Tumor Necrosis Factor-Alpha and Interleukin-1 Beta Regulate Interleukin-8 Expression in Third Trimester Decidual Cells: Implications for the Genesis of Chorioamnionitis., *Am J Pathol 169*, 1294-302, 2006 (*10353*)
	Human	Extravillanous trophoblasts and decidual stromal	Trypsin: 0.1-0.25% Collagenase Type 1: 0.1% Deoxyribonuclease I: 0.02-0.05%	HBSS RPMI	Spessotto, P., Bulla, R., Danussi, C., Radillo, O., Cervi, M., Monami, G., Bossi, F., Tedesco, F., Doliana, R. and Colombatti, A.: EMILIN1 Represents a Major Stromal Element Determining Human Trophoblast Invasion of the Uterine Wall., *J Cell Sci 119*, 4574, 2006 (*10870*)
	Human	Sertoli cells	Trypsin: 2.5% Collagenase Type 1: 2% Hyaluronidase: 1%	DMEM/F-12	Teng, Y., Xue, W., Ding, X., Feng, X., Xiang, H., Jiang, Y., Tian, P.: Isolation and Culture of Adult Sertoli Cells and their Effects on the Function of Co-Cultured Allogeneic Islets In Vitro, *Chin Med J (Engl) 118*, 1857-62, 2005 (*10322*)
	Human, female	Uterine epithelial	Pancreatin: 0.34% Hyaluronidase: 0.01% Collagenase: 0.16%	HBSS	Meter, R., Wira, C. and Fahey, J.: Secretion of Monocyte Chemotactic Protein-1 by Human Uterine Epithelium Directs Monocyte Migration in Culture., *Fertil Steril 84*, 191, 2005 (*10583*)
	Human, female, 34-51 yr	Endometrial epithelial and stromal cells	Collagenase Type 3: 0.03% Deoxyribonuclease I: 0.004%	DMEM/F-12	Chan, R., Schwab, K., Gargett, C.: Clonogenicity of Human Endometrial Epithelial and Stromal Cells, *Biol Reprod 70*, 1738-50, 2004 (*10137*)
	Human	Endothelial placental	Collagenase Type 1: 0.2% Trypsin: 0.2% Deoxyribonuclease I: 0.1%	DMEM	Wang, X., Athayde, N., Trudinger, B.: Microvascular Endothelial Cell Activation is Present in the Umbilical Placental Microcirculation in Fetal Placental Vascular Disease, *Am J Obstet Gynecol 190*,596-601, 2004 (*10211*)
	Human	Amnion epithelial and fibroblast	Trypsin: 0.125% Collagenase: 0.1% Deoxyribonuclease I: 0.02%	PBS	Sun, K., Myatt, L.: Enhancement of Glucocorticoid-Induced 11Beta-Hydroxysteroid Dehydrogenase Type 1 Expression by Proinflammatory Cytokines in Cultured Human Amnion Fibroblasts, *Endocrinology 144*, 5568-77, 2003 (*10097*)
	Human	Uterine epithelial cells	Pancreatin: 0.34% Collagenase: 0.16% Hyaluronidase: 0.16%	HBSS	Fahey, J., Wira, C.: Effect of Menstrual Status on Antibacterial Activity and Secretory Leukocyte Protease Inhibitor Production by Human Uterine Epithelial Cells in Culture, *J Infect Dis 185*, 1606-13, 2002 (*10106*)
	Human, embryo	Endothelial Hematopoietic Stromal	Collagenase Type 1/2/4: 0.1%	DMEM	Oberlin, E., Tavian, M., Blazsek, I., and Peault, B.: Blood-Forming Potential of Vascular Endothelium in the Human Embryo, *Development 129*, 4147, 2002 (*1059*)
	Human, female	Mesothelial	Collagenase Type 1: 0.1% Deoxyribonuclease I: 0.05%	Eagle's MEM	Witz, C., Allsup, K., Montoya-Rodriguez, I., Vaughn, S., Centonze, V., Schenken, R.: Culture of Menstrual Endometrium with Peritoneal Explants and Mesothelial Monolayers Confirms Attachment to Intact Mesothelial Cells, *Hum Reprod 17*, 2832-8, 2002 (*10287*)
	Human	Stem, embryonic	Neutral Protease: 0.01% - 0.02%	DMEM	Zhang, S., Wernig, M., Duncan, I., Brustle, O., and Thomson, J.: *In Vitro* Differentiation of Transplantable Neural Precursors from Human Embryonic Stem Cells, *Nat Biotechnol 19*, 1129, 2001 (*1135*)
	Human, 20-40 yr	Endometrium epithelial and stromal cells	Collagenase Type 1: 0.2%	HBSS	Arnold, J., Kaufman, D., Seppala, M., and Lessey, B.: Endometrial Stromal Cells Regulate Epithelial Cell Grownth *In Vitro*: A New Co-Culture Model, *Hum Reprod 16*, 836, 2001 (*9820*)
	Human	Chorionic villi	Trypsin: see reference Collagenase Type 3: 100 u/ml	HBSS	Yusuf, R., Naeem, R.: Cytogenetic Studies of Spontaneous Miscarriages: A Seven Year Study to Compare Significance of Primary vs. Secondary Culture Methods for Assessment of Fetal Karyotype Yield and Maternal Cell Contamination, *Early Pregnancy 5*, 121-31, 2001 (*10290*)
	Human	Endometrial endothelial cells	Collagenase Type 1: 0.2%	McCoys medium	Nikitenko, .L, MacKenzie, I.,Rees, M., Bicknell, R.: Adrenomedullin is an Autocrine Regulator of Endothelial Growth in Human Endometrium, *Mol Hum Reprod 6*, 811, 2000 (*10029*)
	Human, female, 20-40 year	Microvascular endothelial cells	Collagenase Type 2: 0.2% Deoxyribonuclease I: 0.0015% Trypsin: 0.05%	PBS	Gargett, C., Bucak, K., Rogers, P.: Isolation, Characterization and Long-Term Culture of Human Myometrial Microvascular Endothelial cells, *Hum Reprod 15*, 293-301, 2000 (*10148*)
	Human, female	Endometrial epithelial cells	Collagenase Type 3: 45 u/ml Deoxyribonuclease I: .00035%	DMEM/F-12	Zhang, J., Lathbury, L., Salamonsen, L.: Expression of the Chemokine Eotaxin and its Receptor, CCR3, in Human Endometrium, *Biol Reprod 62*, 404-11, 2000 (*10217*)

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Human	Human	Theca cells	Collagenase Type 1: 0.3% Deoxyribonuclease I: 0.0005% Hyaluronidase: 0.1%	PBS	Runesson, E., Ivarsson, K., Janson, .P, Brannstrom, M.: Gonadotropin- and Cytokine-Regulated Expression of the Chemokine Interleukin 8 in the Human Preovulatory Follicle of the Menstrual Cycle, *J Clin Endocrinol Metab 85*, 4387-95, 2000 (*10272*)
	Human	Corpus luteum cells	Collagenase Type 2: 0.25% Deoxyribonuclease I: .005%	PBS	Friden, B., Runesson, E., Hahlin, M., Brannstrom, M.: Evidence for Nitric Oxide Acting as a Luteolytic Factor in the Human Corpus Luteum, *Mol Hum Reprod 6*, 397-403, 2000 (*10332*)
	Human, females, 25-45 yr	Luteal cells	Collagenase Type 2: 0.25% Deoxyribonuclease I: 0.005%	PBS	Friden, B., Hagstrom, H., Lindblom, B., Sjoblom, P., Wallin, A., Brannstrom, M., Hahlin, M.: Cell Characteristics and Function of Two Enriched Fraction of Human Luteal Cells Prolonged Culture, *Mol Hum Reprod 5*, 714-9, 1999 (*10147*)
	Human, female, 25-41 year	Follicles	Collagenase Type 2: 0.025-0.1%	EBSS	Hovatta, O., Wright, C., Krausz, T., Hardy, K., Winston, R.: Human Primordial, Primary and Secondary Ovarian Follicles in Long-Term Culture: Effect of Partial Isolation, *Hum Reprod 14*, 2519-24, 1999 (*10323*)
	Human	Placental	Deoxyribonuclease I: 0.04% Collagenase Type 2: 0.1%	PSS	Bradbury., R., Sunn, K., Crossley, M., Bai, M., Brown, E., Delbridge, D., and Conigrave, A.: Expression of the Parathyroid Ca 2+ - Sensing Receptor in Cytotrophoblasts From Human Term Placenta, *J Endocrinol 156*, 425-430, 1998 (*741*)
	Human, female	Endometrial stromal cells	Collagenase: 4000 u/ml	DMEM/F-12	Huang, J., Liu, D., Dawood, M.: The Expression of Vascular Endothelial Growth Factor Isoforms in Cultured Human Endometrial Stromal Cells and its Regulation by 17Beta-Oestradiol, *Mol Hum Reprod 4*, 603-7, 1998 (*10154*)
	Human	Stromal endometrial	Collagenase Type 3: 45 u/ml Deoxyribonuclease I: .00035%	DMEM/Ham's F12	Zhang, J., Nie, G., Jian, W., Woolley, D., Salamonsen, L.: Mast Cell Regulation of Human Endometrial Matrix Metalloproteinases: A Mechanism Underlying Menstruation, *Biol Reprod 59*, 693-703, 1998 (*10291*)
	Human	Epithelial, fallopian tube	Collagenase Type 1: 1%	Medium 199	Takeuchi, K., Maruyama, I., Yamamoto, S., Oki, T., Nagata, Y.: Isolation and Monolayer Culture of Human Fallopian Tube Epithelial Cells, *In Vitro Cell Dev Biol 27*, 720, 1991 (*475*)
	Human	Trophoblasts, placental	Trypsin: 0.25%	EBSS, CMF	Branchaud, C.L., Goodyer, C.G., Guyda, H.J. and Lefebvre, Y.: A Serum-Free System for Culturing Human Placental Trophoblasts, *In Vitro Cell Dev Biol 26*, 865, 1990 (*453*)
	Human	Trophoblasts, placental	Trypsin: 0.25%	PBS	Jie, Z., Fey, S., Hager, H., Hollsberg, P., Ebbesen, P., and Larsen, P.: Markers For Human Placental Trophoblasts in Two- Dimensional Gel Electrophoresis, *In Vitro Cell Dev Biol 26*, 937, 1990 (*455*)
	Human	Chorionic, placental	Deoxyribonuclease I: 0.003%	HBSS	Egan, D., Grzegorczyk, V., Tricarico, K., Rueter, A.H., Olleman, W., and Marcotte, P.: Human Placental Chorionic Renin: Production, Purification and Characterization, *Biochim Biophys Acta 965*, 68, 1988 (*335*)
	Human, female	Endometrial	Collagenase: 2%	RPMI 1640	Rinehart, C., Lyn-Cook, B., and Kaufman, D.: Gland Formation from Human Endometrial Epithelial Cells *In Vitro*, *In Vitro Cell Dev Biol 24 (10)*, 1037, 1988 (*1295*)
	Human	Placental	Trypsin: 0.25%	DMEM	Morrish, D., and Siy, O.: Critical Factors in Establishing Monolayer Cultures of Normal Human Placental Cells in Serum- Free Medium, *Endocr Res 12 (3)*, 229, 1986 (*979*)
	Human (also porcine, bovine)	Interna & corpus luteum Endometrium Ovarian, Uterine	Pronase: 0.1%	Moscona's BSS	Marcus, G., Connor, L., Domingo, M., Tsang, B., Downey, B., and Ainsworth, L.: Enzymatic Dissociation of Ovarian and Uterine Tissues, *Endocr Res 10*, 151, 1984 (*372*)
	Human, female, 27-49 years	Epithelial Ovary	Trypsin: 0.125%	HBSS, CMF	Auersperg, N., Siemens, C.H., and Myrdal, S.E.: Human Ovarian Surface Epithelium In Primary Culture, *In Vitro 20*, 743, 1984 (*535*)
	Human	Epithelial Stromal	Collagenase: 0.25%	See reference	Siegfried, J., Nelson, K., Martin, J., and Kaufman, D.: Histochemical Identification of Cultured Cells From Human Endometrium, *In Vitro 20 (1)*, 25, 1984 (*985*)
	Human, infant and neonate	Epithelial Prostate	Trypsin: 0.1%	HBSS	Lechner, J., Babcock, M., Marnell, M., Narayan, K., and Kaighn, M.: Normal Human Prostate Epithelial Cell Cultures, *Methods Cell Biol 21*, 195, 1980 (*631*)
	Human, female, 27 years	Smooth muscle, uterine	Trypsin: 0.05%	EBSS	Rifas, L., Fant, J., Makman, M., and Seifter, S.: The Characterization of Human Uterine Smooth Muscle Cells in Culture, *Cell Tissue Res 196*, 385, 1979 (*355*)
	Human	Epithelial Stromal	Collagenase Type 1: 180 u/ml	DMEM	Kirk, D., King, R., Heyes, J., Peachey, L., Hirsch, P., and Taylor, W.: Normal Human Edometrium in Cell Culture, *In Vitro 14 (8)*, 651, 1978 (*984*)
Insect	Drosophila	Ovarian	Collagenase Type 2: 0.1%	Grace's	Ma, X., Wang, S., Do, T., Song, X., Inaba, M., Nishimoto, Y., Liu, L., Gao, Y., Mao, Y., Li, H., McDowell, W., Park, J., Malanowski, K., Peak, A., Perera, A., Li, H. et al.: Piwi is Required in Multiple Cell Types to Control Germline Stem Cell Lineage Development in the Drosophila Ovary., *PLoS ONE 9*, e90267, 2014 (*11069*)
	Drosophila, embryonic	Cardiac differentiating	Collagenase Type 1: 20 u/ml Trypsin: 0.25% Deoxyribonuclease I: 4 u/ml	Schneider	Salmand, P. Iche-Torres, M. and Perrin, L.: Tissue- Specific Cell Sorting from Drosophila Embryos: Application to Gene Expression Analysis., *Fly (Austin) Vol. 5*,, , 261, (*11091*)
Monkey	Rhesus macaque	Follicle	Collagenase Type 1: 275 u/m Deoxyribonuclease I: 585 u/ml	HEPES	Xu, J, Lawson, MS, Yeoman, RR, Pau, KY, Barrett, SL, Zelinski, MB and Stouffer, RL: Secondary Follicle Growth and Oocyte Maturation During Encapsulated Three- Dimensional Culture in Rhesus Monkeys: Effects of Gonadotrophins, Oxygen and Fetuin., *Hum Reprod 26*, 1061-72, 2011 (*11688*)

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Mouse	Mouse, 1-7 day	Testicular	Collagenase Type 4: 0.1% Deoxyribonuclease I: 0.1%	HBSS	Kang, H., Chen, L., Lichti- Kaiser, K., Liao, G., Gerrish, K., Bortner, C., Yao, Hu., Eddy, E. and Jetten, A.: Transcription Factor GLIS3: A New and Critical Regulator of Postnatal Stages of Mouse Spermatogenesis., *Stem Cells 34*, 2772-2783, 2016 (*11640*)
	Mouse, adult	Spermatogonial stem	Trypsin: 0.05% Collagenase Type 1: 0.03% Deoxyribonuclease I: 80 u/ml	DMEM	Martin, L. and Seandel, M.: Serial Enrichment of Spermatogonial Stem and Progenitor Cells (SSCs) in Culture for Derivation of Long-Term Adult Mouse SSC Lines., *J Vis Exp 72*, e50017, 2013 (*10904*)
	Mouse	Ovarian	Collagenase Type 4: 800 u/ml	HBSS	White, Y., Woods, D., Takai, Y., Ishihara, O., Seki, H. and Tilly, J.: Oocyte Formation by Mitotically Active Germ Cells Purified from Ovaries of Reproductive-Age Women., *Nat Med 18*, 413, 2012 (*10865*)
	Mouse, female	Lymphocytes	Collagenase: 450 u/ml	RPMI	Jiang, J. and Kelly, K.: Isolation of Lymphocytes from Mouse Genital Tract Mucosa., *J Vis Exp 67*, e4391, 2012 (*10980*)
	Mouse	Vaginal smooth muscle	Collagenase Type 2: 175 u/ml Elastase: 0.025%	DMEM/F12	Venkataraman, L., Lenis, A., Couri, B., Damaser, M. and Ramarurthi, A: Induced Regenerative Elastic Matrix Repair in LOXL 1 Knockout Mouse Cell Cultures: Towards Potential Therapy for Pelvic Organ Prolapse, *J Tissue Sci Eng 3*, 3, 2012 (*11018*)
	Mouse, male	Testis, meiotic	Collagenase Type 1: 120 u/ml Deoxyribonuclease I: 0.001% Trypsin: 0.1%	Gey's BSS	Getun, I., Torres, B. and Bois, P.: Flow Cytometry Purification of Mouse Meiotic Cells., *J Vis Exp 50*, 2602, 2011 (*10658*)
	Mouse	Uterine stomal	Neutral Protease: 0.6% Pancreatin: 0.25% Collagenase Type 3: 0.05%	DMEM/F12	Chen, L., Belton, R. and Nowak, R.: Basigin- Mediated Gene Expression Changes in Mouse Uterine Stromal Cells During Implantation., *Endocrinology 150*, 966, 2009 (*10952*)
	Mouse	Germ cells	Collagenase Type 1: 100 u/ml	HBSS	Breault, D., Min, I., Carlone, D., Farilla, L., Ambruzs, D., Henderson, D., Algra, S., Montgomery, R., Wagers, A. and Hole, N.: Generation of mTert-GFP Mice as a Model to Identify and Study Tissue Progenitor Cells., *Proc Natl Acad Sci U S A 105*, 10420, 2008 (*10522*)
	Mouse, embryonic	Hematopoietic stem cells	Collagenase: 0.1%	PBS	Gekas, C., Rhodes, K. and Mikkola, H.: Isolation and Analysis of Hematopoietic Stem Cells from the Placenta., *J Vis Exp 16*, e742, 2008 (*10982*)
	Mouse, 6 day	Sertoli	Collagenase Type 2: 500 u/ml Hyaluronidase: 0.1% Deoxyribonuclease I: 0.0005%	DMEM	Nalbandian, A., Dettin, L., Dym, M., Ravindranath, N.: Expression of Vascular Endothelial Growth Factor Receptors During Male Germ Cell Differentiation in the Mouse, *Biol Reprod 69*, 985-94, 2003 (*10162*)
	Mouse, adult, neonatal and fetal	Testicular cells	Collagenase Type 1: 0.1%	DMEM/F-12	O'Shaughnessy, P., Fleming, L., Jackson, G., Hochgeschwender, U., Reed, P., Baker, P.: Adrenocorticotropic Hormone Directly Stimulates Testosterone Production by the Fetal and Neonatal Mouse Testis, *Endocrinology 144*, 3279-84, 2003 (*10165*)
	Mouse, male, 3.5 months old	Leydig	Collagenase: 0.06%	Medium E 199	Faldikova, L., Diblikova, I., Canderle, J., Zraly, Z., Veznik, Z., and Sulcova, A.: Effects of Nutrition, Social Factors and Chronic Stress on the Mouse Leydig Cell Testosterone Production, *Vet Med 46 (6)*, 160, 2001 (*1118*)
	Mouse, male, 12-14- week-old	Seminiferous tubules	Trypsin: 0.05%	DMEM	Lin, Q., Sirotkin, A., and Skoultchi, A.: Normal Spermatogenesis in Mice Lacking the Testis-Specific Linker Histone H1t, *Mol Cell Biol 20 (6)*, 2122, 2000 (*1147*)
	Mouse, 6-12 day	Oocyte-granulosa	Collagenase Type 1: 0.1% Deoxyribonuclease I: 0.02%	Waymouth	Eppig, J., O'Brien, M.: Development *In Vitro* of Mouse Oocytes from Primordial Follicles, *Biol Reprod 54*, 197-207, 1996 (*10256*)
	Mouse, female,6-8 weeks	Uterine	Trypsin: 0.2%	HBSS	Ghosh, D., Danielson, K., Alston, J., Heyner, S.: Functional Differentiation of Mouse Uterine Epithelial Cells Grown On Collagen Gels Or Reconstituted Basement Membranes, *In Vitro Cell Dev Biol 27*, 713, 1991 (*474*)
	Mouse, female, 21 day, 10-12 g	Vaginal epithelial	Collagenase Type 3: 38 u/ml	DMEM	Tsai, P., Uchima, F., Hamamoto, S., and Bern, H.: Proliferation and Differentiation of Prepubertal Mouse Vaginal Epithelial Cells In Vitro and the Specificity of Estrogen- Induced Growth Retardation, *In Vitro Cell Dev Biol 27A*, 461, 1991 (*917*)
	Mouse, CF1, female	Cumulus, one-cell embryos	Hyaluronidase: 0.1%	PBS, CMF	Spindle, A.: In vitro Development of One-Cell Embryos from Outbred Mice: Influence of Culture Medium Composition, *In Vitro Cell Dev Biol 26*, 151, 1990 (*424*)
	Mouse (BALB/cCRGL), male, 2-3 months	Epithelial, prostate gland	Hyaluronidase: 0.1%	Medium 199	Turner, T., Bern, H., Young,P., and Cunha, G.: Serum-Free Culture of Enriched Mouse Anterior and Ventral Prostatic Epithelial Cells in Collagen Gel, *In Vitro Cell Dev Biol 26*, 722, 1990 (*449*)
	Mouse (C57B/T), fetus, 16-17 days old	Prostate	Trypsin: 1.0%	HBSS/ DMEM	Thompson, T.C., Southgate, J., Kitchener, G., and Land, H.: Multistage Carcinogenesis Induced by ras and myc Oncogenes in a Reconstituted Organ, *Cell 56*, 917, 1989 (*360*)
	Mouse, outbred, CD-1, 21-23 days old	Epithelial	Trypsin: 0.5%	Medium 199	Tomooka, Y., DiAugustine, R., and McLachlan, J.: Proliferation of Mouse Uterine Epithelial Cells *in Vitro*, *Endocrinology 118 (3)*, 1011, 1986 (*914*)
	Mouse, BALB/c	Epithelial Mesencymal	Trypsin: 1%	DMEM	Bigsby, R., Cooke, P., and Cunha, G.: A Simple Efficient Method For Separating Murine Uterine Epithelial and Mesenchymal Cells, *Am J Physiol 251*, E630, 1986 (*915*)
	Mouse, BALB/cCrg, 40 days old	Epithelial	Trypsin: 1%	Medium 199	Cooke, P., Uchima, F., Fujii, D., Bern, H., and Cunha, G.: Restoration of Normal Morphology and Estrogen Responsiveness in Cultured Vaginal and Uterine Epithelia Transplanted with Stroma, *Proc Natl Acad Sci U S A 83*, 2109, 1986 (*931*)
	Mouse, male, 10-13 wk	Leydig Testis	Deoxyribonuclease I: 0.001%	Medium 199 w/ BSA	Stalvcey, J. and Payne, A.: Luteinizing Hormone Receptors and Testosterone Production in Whole Testes and Purified Leydig Cells from the Mouse: Differences among Inbred Strains, *Endocrinology 112*, 1696, 1983 (*376*)

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Mouse	Mouse (BALB/cCrgl), female, 50 - 60 days	Epithelial, vagina	Collagenase Type 3: 0.1%	HBSS	Iguchi, T., Uchima, F.A., Ostrander, P., and Bern, H.: Growth of Normal Mouse Vaginal Epithelial Cells in and on Collagen Gels, *Proc Natl Acad Sci U S A 80*, 3743, 1983 (*655*)
Ovine	Ovine, 3-5 year	Endometrial stromal	Collagenase Type 1: 0.5% Deoxyribonuclease I: 0.04 u/ml	DMEM/F-12	Letouzey, V., Tan, K., Deane, J., Ulrich, D., Gurung, S., Ong, Y. and Gargett, C.: Isolation and Characterisation of Mesenchymal Stem/Stromal Cells in the Ovine Endometrium., *PLoS ONE 10*, e0127531, 2015 (*11662*)
	Sheep	Epithelial	Collagenase: 125 - 190 u/ml	DMEM	Salamonsen, L., Sum O, W., Doughton, B., and Findlay, J.: The Effects of Estrogen and Progesterone *In Vivo* on Protein Synthesis and Secretion by Cultured Epithelial Cells from Sheep Endometrium, *Endocrinology 117 (5)*, 2148, 1985 (*1193*)
Porcine	Porcine, 1-4 day	Testicular	Collagenase Type 4: 0.1% Hyaluronidase: 0.1% Trypsin: 0.25%	DMEM	Park, M., Park, J., Kim, M., Lee, K., Park, H., Yun, J., Choi, J., Lee, E. and Lee, S.: Development of a High-Yield Technique to Isolate Spermatogonial Stem Cells From Porcine Testes., *J Assist Reprod Genet 31*, 983- 91, 2014 (*11484*)
	Porcine, male, 8 day	Seminiferous epithelial cells	Collagenase: 0.15% Deoxyribonuclease I: .0001% Hyaluronidase: 0.15% Trypsin: 0.05%	DMEM/F12	Dirami G, Ravindranath N, Pursel V, Dym M: Effects of stem cell factor and granulocyte macrophage- colony stimulating factor on survival of porcine type A spermatogonia cultured in KSOM, *Biol Reprod 61*, 225- 30, 1999 (*10142*)
	Porcine, female	Corpus Leuteum	Collagenase Type 4: 600 u/ml	Medium 199	Ciereszko, R., Petroff, B., Ottobre, A., Guan, Z., Stokes, B., and Ottobre, J.: Assessment of the Mechanism by Which Prolactin Stimulates Progesterone Production by Early Corpora Lutea of Pigs, *J Endocrinol 159*, 201, 1998 (*1088*)
	Porcine (also bovine, human)	Interna & corpus luteum, Endometrium Ovarian, Uterine	Pronase: 0.1%	Moscona's BSS	Marcus, G., Connor, L., Domingo, M., Tsang, B., Downey, B., and Ainsworth, L.: Enzymatic Dissociation of Ovarian and Uterine Tissues, *Endocr Res 10*, 151, 1984 (*372*)
	Porcine, 3-4 week	Leydig Testis	Trypsin: 0.0003%	Lebovitz L-15 Medium	Mather, J., Saez, J., and Haour, F.: Regulaton of Gonadotropin Receptors and Steroidogenesis in Cultured Porcine Leydig Cells, *Endocrinology 110*, 933, 1982 (*374*)
Rabbit	Rabbit, New Zealand, 3 month	Testicular germ	Collagenase Type 1: 0.1% Trypsin: 0.25% Deoxyribonuclease I: 0.7%	HBSS	Kubota, H., Wu, X., Goodyear, S., Avarbock, M. and Brinster, R.: Glial Cell Line-Derived Neurotrophic Factor and Endothelial Cells Promote Self-Renewal of Rabbit Germ Cells with Spermatogonial Stem Cell Properties., *FASEB J 25*, 2604, 2011 (*10640*)
	Rabbit, New Zealand white, 4-6 month old,	Ovarian Mesothelial	Collagenase Type 1: 300 u/ml	HBSS	Setrakian, S., Oliveros- Saunders, B., and Nicosia, S.: Growth Stimulation of Ovarian and Extraovarian Mesothelial Cells by Corpus Luteum Extract, *In Vitro Cell Dev Biol 29A*, 879, 1993 (*785*)
	Rabbit, New Zealand white, adult, female (nonpregnant), 3-4 kg	Myocytes, uterine	Deoxyribonuclease I: 200 µg/ml	HBSS-HEPES buffer	Phillippe, M., Saunders, T., and Bangalore, S.: Alpha- 1,Alpha-2,and Beta Adrenergic Signal Transduction in Cultured Uterine Myocytes, *In Vitro Cell Dev Biol 26*, 369, 1990 (*439*)
	Rabbit, New Zealand, mature, female, 4-5 Kg	Ovarian surface epithelial and peritoneal mesothelial	Collagenase Type 1: 300 IU/ml (280 IU/mg)	HBSS, CMF	Piquette, G., and Timms, B.: Isolation and Characterization of Rabbit Ovarian Surface Epithelium, Granulosa Cells, and Peritoneal Mesothelium in Primary Culture, *In Vitro Cell Dev Biol 26*, 471, 1990 (*443*)
	Rabbit, mixed breed	Endometrial epithelial	Collagenase Type 1: 0.005%	DMEM	Mulholland, J., Winterhager, E., and Beier, H.: Changes in Proteins Synthesized by Rabbit Endometrial Epithelial Cells Following Primary Culture, *Cell Tissue Res 252*, 123, 1988 (*905*)
	Rabbit, New Zealand white, mature, 3-4 Kg	Myometrial	Trypsin: 0.02%, 0.03%, 0.0375%	HBSS	Boulet, A., and Fortier, M.: Preparation and Characterization of Rabbit Myometrial Cells in Primary Culture: Influence of Estradiol and Progesterone Treatment, *In Vitro Cell Dev Biol 23*, 93, 1987 (*1286*)
	Rabbit, New Zealand white estrous, female, 4-5 months	Mesothelial and surface epithelial Ovaries	Trypsin: 0.125%-0.5%	Medium 199	Nicosia, S., Johnson, J., and Streibel, E.: Isolation and Ultrastructure of Rabbit Ovarian Mesothelium(Surface Epithelium), *Int J Gynecol Pathol 3*, 348, 1984 (*542*)
Rat	Rat	Placental mesenchymal	Collagenase Type 4: 0.1% Deoxyribonuclease I: 0.02% Neutral Protease: 0.1%	DMEM	Jiang, H., Zhang, Y., Tian, K., Wang, B. and Han, S.: Amelioration of Experimental Autoimmune Encephalomyelitis Through Transplantation of Placental Derived Mesenchymal Stem Cells., *Sci Rep 7*, 41837, 2017 (*11560*)
	Rat, SD, 350-450 g	Leydig cells	Collagenase: .05-0.1%	Medium 199	Sharma RS, Pal PC, Rajalakshmi M.: Isolation and Culture of Leydig Cells from Adult Rats, *Indian J Clinical Biochem 21*, 27, 2006 (*10026*)
	Rat, SD, adult, male, 8 - 10 week	Seminiferous tubules	Trypsin: 0.05%	Krebs-Ringer bicarbonate buffer (see reference)	Abou-Haila, A., and Tulsiani, D.: Acid Glycohydrolases in Rat Spermatocytes, Spermatids and Spermatozoa: Enzyme Activities, Biosynthesis and Immunolocalization, *Biol Proced Online 3 (1)*, 35, 2001 (*1074*)
	Rat, SD, immature	Ovary	Collagenase Type 1: 144 u/ml	McCoy's 5a	Ando, M., Kol, S., Irahara, M., Sirois, J., and Adashi, E.: Non-Steroidal Anti- Inflammatory Drugs (NSAIDS) Block the Late, Prostanoid- Dependent/Ceramide- Independent Component of Ovarian IL-1 Action: Implications for the Ovulatory Process, *Mol Cell Endocrinol 157*, 21, 1999 (*1141*)
	Rat, Han-Wistar, adult, male, 250 g	Testes	Trypsin: 0.1%	Medium 199 w/ Hank's salts	Leckie, C., Welberg, L., and Seckl, J.: 11*B*- Hydroxysteroid Dehydrogenase is a Predominant Reductase in Intact Rat Leydig Cells, *J Endocrinol 159*, 233, 1998 (*1089*)
	Rat, SD, female, immature, 26 day (also rat, pregnant and pseudopregnant)	Corpus luteum	Neutral Protease: 2.4 u/ml Deoxyribonuclease: 200u/ml	Serum-free medium (see reference)	Tellieria, C., Ou, J., Sugino, N., Ferguson, S., and Gibori, G.: The Expression of Interleukin-6 in the Pregnant Rat Corpus Luteum and Its Regulation by Progesterone and Glucocorticoid, *Endocrinology 139 (8)*, 3597, 1998 (*1090*)

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TISSUE TABLES

Reproductive

Reproductive

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat, SD, 25 day	Ovarian theca-interstitial	Collagenase Type 1: 0.5% Deoxyribonuclease I: 0.02%	Medium 199	Duleba, A., Spaczynski, R., Olive, D., Behrman, H.: Effects of Insulin and Insulin-Like Growth Factors on Proliferation of Rat Ovarian Theca-Interstitial Cells, *Biol Reprod 56*, 891-7, 1997 (*10331*)
	Rat, SD, male, 90 days	Sertoli	Hyaluronidase: 0.1%	DMEM	Onoda, M. and Djakiew, D.: Pachytene Spermatocyte Protein(s) Stimulate Sertoli Cells Grown in Bicameral Chambers: Dose-Dependent Secretion of Ceruloplasmin, Sulfated Glycoprotein-1, Sulfated Glycoprotein-2, and Transferrin, *In Vitro Cell Dev Biol 27*, 215, 1991 (*460*)
	Rat, SD, male	Leydig	Trypsin: 0.02%	DMEM	Abayasekara, D., Kurlak, L., Band, A., Sullivan, M., and Cooke, B.: Effect of Cell Purity, Cell Concentration, and Incubation Conditions on Rat Testis Leydig Cell Steroidogenesis, *In Vitro Cell Dev Biol 27*, 253, 1991 (*461*)
	Rat, neonatal	Uterine	Trypsin: 1%	HBSS	Branham, W., Lyn-Cook, B., Andrews, A., McDaniel, M., Sheehan, D.: Growth of Neonatal Rat Uterine Luminal Epithelium on Extracellular Matrix, *In Vitro Cell Dev Biol 27*, 442, 1991 (*465*)
	Rat, SD, male, 120- 160 g	Leydig Adrenal	Collagenase Type 2: 0.03%	Krebs Ringer bicarbonate buffer	Ng, T. and Liu, W.: Toxic Effect of Heavy Metals on Cells Isolated from the Rat Adrenal and Testis, *In Vitro Cell Dev Biol 26*, 24, 1990 (*435*)
	Rat, Wistar, adult	Uterine	Trypsin: 0.5%	PBS	Pampfer, S., Vanderheyden, I., Michiels, B., and DeHertogh, R.: Co-Culture of Two-Cell Rat Embryos on Cell Monolayers, *In Vitro Cell Dev Biol 26*, 944, 1990 (*456*)
	Rat, SD, 10 day	Sertoli cells	Collagenase Type 2: 500 u/ml Deoxyribonuclease I: 0.0005% Hyaluronidase: 0.1%	PBS	Hadley, M., Weeks, B., Kleinman, H., Dym, M.: Laminin Promotes Formation of Cord-Like Structures by Sertoli Cells *In Vitro*, *Dev Biol 140*, 318-27, 1990 (*10150*)
	Rat, immature	Luteal, ovaries	Collagenase: 0.3%	McCoy's	Rajan, V. and Menon, K.: Differential Uptake and Metabolism of Free and Esterified Cholesterol from High-density Lipoproteins in the Ovary, *Biochim Biophys Acta 959*, 206, 1988 (*330*)
	Rat, male, 20 day	Sertoli	Trypsin: 0.15%	(see reference)	Skinner, M., Fetterolf, P., and Anthony, C.: Purification of a Paracrine Factor, P-Mod- S,Produced by Testicular Peritubular Cells That Modulates Sertoli Cell Function, *J Biol Chem 263*, 2884, 1988 (*561*)
	Rat, SD, female	Luminal epithelial	Trypsin: 0.5%	HBSS	Glasser, S., Julian, J., Decker, G., Tang, J., and Carson, D.: Development of Morphological and Functional Polarity in Primary Cultures of Immature Rat Uterine Epithelial Cells, *J Cell Biol 107 (6)*, 2409, 1988 (*920*)
	Rat, Wistar, virgin, female, 250 g	Vaginal epithelial	Trypsin: 0.5%	PBS	Conti, C., and Tasat, D.: Regulation of Cultured Rat Vaginal Epithelial Cells By 17B-Estradiol and Progesterone, *J Steroid Biochem 24 (3)*, 747, 1986 (*921*)
	Rat, SD, female, 21 day	Luteal, ovaries	Deoxyribonuclease I: 0.0004%	McCoy's	Rajan, V. and Menon, K.: Involvement of Microtubules in Lipoprotein Degradation and Utilization for Steroidogenesis in Cultured Rat Luteal Cells, *Endocrinology 117*, 2408, 1985 (*382*)
	Rat, SD, male, 10 day	Sertoli	Trypsin: 0.025%	DMEM	Hadley, M., Byers, S., Suarez-Quian, C., Kleinman, H., and Dym, M.: Extracellular Matrix Regulates Seratoli Cell Differentiation, Testicular Cord Formation and germ cell development in vitro, *J Cell Biol 101*, 1511, 1985 (*575*)
	Rat, Holtzman, female, immature	Uterine	Deoxyribonuclease I: 0.025%	DMEM buffered with HEPES	Kassis, J., Walent, J., and Gorski, J.: Estrogen Receptors in Rat Uterine Cell Cultures: Effects of Medium on Receptor Concentration, *Endocrinology 115*, 762, 1984 (*381*)
	Rat, SD, adult,male, 50-70 days	Testicular	Deoxyribonuclease I: 10 µg/ml	HEPES	Hsueh, A., Bambino, T., Zhuang, L., Welsh, T., and Ling, N.: Mechanism of the Direct Action of Gonadotropin Releasing Hormone and Its Antagonist on Androgen Biosynthesis by Cultured Rat Testicular Cells, *Endocrinology 112*, 1653, 1983 (*375*)
	Rat, SD, female, pseudopregnant, 21 day	Luteal, ovaries	Hyaluronidase: 0.1%	EBSS	Rajendran, K., Hwang, J., and Menon, K.: Binding, Degradation an Utilization of Plasma High Density and Low Density Lipoproteins for Progesterone Production In Cultured Rat Luteal Cells, *Endocrinology 112*, 1746, 1983 (*377*)
	Rat, SD, 4-6 day, male	Sertolli, seminiforous tubules	Collagenase: 0.03%	Serum-free medium	Rich, K., Bardin, C., Gunsalus, G., and Mather, J.: Age-Dependent Pattern of Androgen-Binding Protein Secretion from Rat Sertoli Cells in Primary Culture, *Endocrinology 113*, 2284, 1983 (*379*)
	Rat, SD, female, 26 days	Luteal	Deoxyribonuclease I: 0.0004%	Medium 199	Azhar, S. and Reaven, E.: Effect of Antimicrotubule Agents on Microtubules and Steroidogenesis in Luteal Cells, *Am J Physiol 243*, E380, 1982 (*290*)
	Rat, SD, male	Leydig	Collagenase: 0.1%	Krebs Ringer bicarbonate buffer	Ramachandran, J., and Sairam, M.R.: The Effects Of Interstitial Cell-Stimulating Hormone, Its Subunits,and Recombinants on Isolated Rat Leydig Cells, *Arch Biochem Biophys 167*, 294, 1975 (*303*)
Scales					**Scales**
Fish	Goldfish (*Carassius Auratus L.*)	Pigment, xanthopores	Deoxyribonuclease I: 0.005%	Medium 199 w/BSA	Lo, S., Grabowski, S., Lynch, T., Kern, D., Taylor, J.T., and Chen, T.: Isolation of Xanthophores from the Goldfish, *In Vitro 18*, 356, 1982 (*518*)
Skin					**Skin**
Canine	Canine	Epidermal	Collagenase: 0.35% Neutral Protease: 0.1%	DMEM	Zheng, Y., Nace, A., Chen, W., Watkins, K., Sergott, L., Homan, Y., Vandeberg, J., Breen, M. and Stenn, K.: Mature Hair Follicles Generated from Dissociated Cells: A Universal Mechanism of Folliculoneogenesis., *Dev Dyn 239*, 2619-26, 2010 (*10863*)
Frog	Frog	Epidermal	Trypsin: 0.18%	Barth's solution, CMF	Nishikawa, A., Shimizu- Nishikawa, K., and Miler, L.: Isolation, Characterization, and *In Vitro* Culture of Larval and Adult Epidermal cells of the Frog *Xenopus Laevis*, *In Vitro Cell Dev Biol 26*, 1128, 1990 (*1287*)
Goat	Goat	Dermis isolated aggrecan sensitive	Neutral Protease: 0.5% Collagenase Type 2: 200 u/ml	DMEM	Deng, Y., Hu, J. and Athanasiou, K.: Isolation and Chondroinduction of a Dermis-Isolated, Aggrecan- Sensitive Subpopulation with High Chondrogenic Potential., *Arthritis Rheum 56*, 168, 2007 (*11049*)

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TISSUE TABLES

Skin

Skin

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human	Fibroblasts	Neutral Protease: 0.1% Collagenase Type 1: 0.25%	DMEM	Chen, Z., Wang, X., Jin, T., Wang, Y., Hong, C., Tan, L., Dai, T., Wu, L., Zhuang, Z. and Shi, C.: Increase in the Radioresistance of Normal Skin Fibroblasts but not Tumor Cells by Mechanical Injury., *Cell Death Dis 8*, e2573, 2017 (*11537*)
	Human	Mononuclear phagocytes	Neutral Protease: 1 u/ml Deoxyribonuclease I: 50 u/ml Collagenase: 200 u/ml Trypsin: 0.5%	RPMI-1640	Botting, R., Bertram, K., Baharlou, H., Sandgren, K., Fletcher, J., Rhodes, J., Rana, H., Plasto, T., Wang, X., Lim, J., Barnouti, L., Kohout, M., Papadopoulos, T., Merten, S., Olbourne, N. and Cunningham, A.: Phenotypic and Functional Consequences of Different Isolation Protocols on Skin Mononuclear Phagocytes., *J Leukoc Biol 101*, 1393-1403, 2017 (*11683*)
	Human	Skin	Neutral Protease: 5 u/ml Collagenase Type 3: 0.3% Deoxyribonuclease I: 0.005%	RPMI 1640	Cheuk, S., Wiken, M., Blomqvist, L., Nylen, S., Talme, T., Stahle, M.and Eidsmo, L.: Epidermal Th22 and Tc17 Cells Form a Localized Disease Memory in Clinically Healed Psoriasis., *J Immunol 192*, 3111, 2014 (*11048*)
	Human	Skin fibroblasts	Collagenase Type 1: 1000 u/ml	DMEM	Douvaras, P., Wang, J., Zimmer, M., Hanchuk, S., O'Bara, M., Sadiq, S., Sim, F., Goldman, J. and Fossati, V.: Efficient Generation of Myelinating Oligodendrocytes from Primary Progressive Multiple Sclerosis Patients by Induced Pluripotent Stem Cells., *Stem Cell Reports 3*, 250, 2014(*11453*)
	Human, adult	Epidermal stem cells	Neutral Protease: 2 u/ml Trypsin: 2.5%	DMEM	Nagel, S., Rohr, F., Weber, C., Kier, J., Siemers, F., Kruse, C., Danner, S., Brandenburger, M. and Matthiessen, A.: Multipotent Nestin-Positive Stem Cells Reside in the Stroma of Human Eccrine and Apocrine Sweat Glands and can be Propagated Robustly In Vitro., *PLoS ONE 8*, e78365, 2013 (*11024*)
	Human	Fibroblasts	Collagenase animal free: 2%	HBSS	Karumbayaram, S., Lee, P., Azghadi, S., Cooper, A., Patterson, M., Kohn, D., Pyle, A., Clark, A., Byrne, J., Zack, J., Plath, K. and Lowry, W.: From Skin Biopsy to Neurons Through a Pluripotent Intermediate Under Good Manufacturing Practice Protocols, *Stem Cells Transl Med 1*, 36, 2012 (*10728*)
	Human, female, 18-66 yr	Fibroblasts	Trypsin: 0.2%	DMEM	Huschtscha, L., Napier, C., Noble, J., Bower, K., Au, A., Campbell, H., Braithwaite, A. and Reddel, R.: Enhanced Isolation of Fibroblasts From Human Skin Explants., *Biotechniques 53*, 239, 2012 (*10935*)
	Human	Fibroblasts and keratinocytes	Neutral Protease: 0.5% Collagenase Type 1: 0.2%	DMEM	Carriel, V., Garzon, I., Jimenez, J., Oliveira, A., Arias-Santiago, S., Campos, A., Sanchez-Quevedo, M. and Alaminos, M.: Epithelial and Stromal Developmental Patterns in a Novel Substitute of the Human Skin Generated with Fibrin-Agarose Biomaterials., *Cells Tissues Organs 196*, 1-12, 2012 (*11628*)
	Human	Epidermal	Collagenase: 0.35% Neutral Protease: 0.1%	DMEM	Zheng, Y., Nace, A., Chen, W., Watkins, K., Sergott, L., Homan, Y., Vandeberg, J., Breen, M. and Stenn, K.: Mature Hair Follicles Generated from Dissociated Cells: A Universal Mechanism of Folliculoneogenesis., *Dev Dyn 239*, 2619-26, 2010 (*10863*)
	Human	Skin and keloid progenitor	Collagenase Type 1: 0.4% Neutral Protease: 0.3%	PBS	Zhang, Q., Yamaza, T., Kelly, AP, Shi, S., Wang, S., Brown, J., Wang, L., French, S., Shi, S. and Le, A.: Tumor-like Stem Cells Derived from Human Keloid are Governed by the Inflammatory Niche Driven by IL-17/IL-6 Axis., *PLoS ONE 4*, e7798, 2009 (*10991*)
	Human	Fibroblasts	Collagenase Type 1: 100-320 u/ml	DMEM	Tuan, T., Hwu, P., Ho, W., Yiu, P., Chang, R., Wysocki, A. and Benya, P.: Adenoviral Overexpression and Small Interfering RNA Suppression Demonstrate that Plasminogen Activator Inhibitor-1 Produces Elevated Collagen Accumulation in Normal and Keloid Fibroblasts., *Am J Pathol 173*, 1311-25, 2008 (*10990*)
	Human, 6-12 year	Dermal fibroblasts	Neutral Protease: 0.1% Collagenase Type 1: 0.1%	DMEM	Chen, F., Zhang, W., Bi, D., Liu, W., Wei, X., Chen, F., Zhu, L., Cui, L. and Cao, Y.: Clonal Analysis of Nestin(-) Vimentin(+) Multipotent Fibroblasts Isolated from Human Dermis., *J Cell Sci 120*, 2875, 2007 (*10548*)
	Human	Hair follicular epithelial	Neutral Protease: 1.25% Trypsin: 0.25%	DMEM/F-12	Yu, H., Fang, D., Kumar, S., Li, L., Nguyen, T., Acs, G., Herlyn, M., Xu, X.: Isolation of a Novel Population of Multipotent Adult Stem Cells from Human Hair Follicles, *Am J Pathol 168*, 1879-88, 2006 (*10334*)
	Human	Fibroblasts	Collagenase: 0.5% Trypsin: 0.25%	DMEM/F12	Clark, R., Chong, B., Mirchandani, N., Yamanaka, K., Murphy, G., Dowgiert, R. and Kupper, T.: A Novel Method for the Isolation of Skin Resident T cells from Normal and Diseased Human Skin., *J Invest Dermatol 126*, 1059, 2006 (*10678*)
	Human, neonatal	Keratinocytes	Neutral Protease: 0.4% Collagenase: 0.3%	DMEM	Li, A., Pouliot, N., Redvers, R., and Kaur, P.: Extensive Tissue-Regenerative Capacity of Neonatal Human Keratinocytes Stem Cells and their Progeny, *J Clin Invest 113*, 390-400, 2004 (*10128*)
	Human	Mast cells	Neutral Protease: 0.05% Collagenase Type 4: 1.0%	RPMI	Babina, M., Guhl, S., Starke, A., Kirchhof, L., Zuberbier, T., Henz, B.: Comparative Cytokine Profile of Human Skin Mast Cells from Two Compartments--Strong Resemblance with Monocytes at Baseline but Induction of IL-5 by IL-4 Priming, *J Leukoc Biol 75*, 244-52, 2004 (*10218*)
	Human, adult	Dermal fibroblasts	Collagenase: 0.5-1.0%	DMEM	Wang, H., Van Blitterswijk, C., Bertrand-De Haas, M., Schuurman, A. and Lamme, E.: Improved Enzymatic Isolation of Fibroblasts for the Creation of Autologous Skin Substitutes., *In Vitro Cell Dev Biol Anim 40*, 268, 2004 (*10556*)
	Human	Fibroblasts	Trypsin: 0.25%	DMEM	Tuan, T., Wu, H., Huang, E., Chong, S., Laug, W., Messadi, D., Kelly, P., Le, A.: Increased Plasminogen Activator Inhibitor-1 in Keloid Fibroblasts may Account for their Elevated Collagen Accumulation in Fibrin Gel Cultures, *Am J Pathol 162*, 1579-89, 2003 (*10279*)
	Human	Keratinocytes, fibroblasts, endothelial	Neutral Protease: see reference Collagenase: see reference	see reference	Supp, D., Wilson- Landy, K., Boyce, S.: Human Dermal Microvascular Endothelial Cells Form Vascular Analogs in Cultured Skin Substitutes After Grafting to Athymic Mice, *FASEB J 16*, 797-804, 2002 (*10277*)
	Human, adult	Keratinocytes	Neutral Protease: 0.25%	PBS	Baudoux, B., Castanares- Zapatero, D., Leclercq- Smekens, M., Berna, N., and Poumay, Y.: The Tetraspanin CD9 Associates with the Integrin *a6B4* in Cultured Human Epidermal Keratinocytes and is Involved in Cell Motility, *Eur J Cell Biol 79*, 41, 2000 (*1103*)
	Human	Keratinocytes	Neutral Protease: 0.25% Trypsin: 0.17% Thermolysin: 0.05%	see reference	Hybbinette, S., Bostrom, M., Lindberg, K.: Enzymatic Dissociation of Keratinocytes from Human Skin Biopsies for *In Vitro* Cell Propagation, *Exp Dermatol 8*, 30-8, 1999 (*10156*)

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Skin

Skin

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human	Human skin mast cells	Neutral Protease: 0.1% Collagenase Type 1: see reference	PBS	Grutzkau, A., Kruger- Krasagakes, S., Baumeister, H., Schwarz, C., Kogel, H., Welker, P., Lippert, U., Henz, B., Moller, A.: Synthesis, Storage, and Release of Vascular Endothelial Growth Factor/Vascular Permeability Factor (VEGF/VPF) by Human Mast Cells: Implications for the Biological Significance of VEGF206, *Mol Biol Cell 9*, 875-84, 1998 (*10149*)
	Human	Epidermal	Collagenase Type 2: 0.1% Neutral Protease: 0.5-1.0%	PBS	Reece, J., Handley, A., Anstee, E., Morrison, W., Crowe, S., Cameron, P.: HIV-1 Selection by Epidermal Dendritic Cells During Transmission Across Human Skin, *J Exp Med 187*, 1623- 31, 1998 (*10168*)
	Human	Keratinocytes	Trypsin: 0.05%	Dulbecco's PBS	Judd, D., Battista, P., and Behm, D.: Culture of Human Keratinocytes in Defined Serum-Free Medium, *Focus 19 (1)*, 2, 1997 (*1208*)
	Human	Epidermal Dermal	Trypsin: 0.125%	DMEM, M199	Harley, C., and Sherwood, S.: , *Methods in Molecular Biology, Basic Cell Culture Protocols, 2nd ed. Vol. 75*,Pollard, J., and Walker, J., Humana Press, 23, 1997 (*1294*)
	Human	Keratinocytes	Trypsin: 0.25%	DMEM	Regnier, M: Culture of Human Karatinocytes, *Cell & Tissue Culture: Laboratory Procedures Vol. 1*, Doyle, A., Griffiths, J., and Newell, D., John Wiley and Sons Ltd, 11B:4.1, 1995 (*1270*)
	Human, adult, female, breast skin	Keratinocytes	Trypsin: 0.25%	PBS	Hirel, B., Chesne, C., Pailgheret, J., and Guillouzo, A.: Expression of Differentiation Markers in Human Adult Keratinocytes Cultured in Submerged Conditions, *In Vitro Cell Dev Biol 30A*, 372, 1994 (*1035*)
	Human, neonatal foreskin	Fibroblasts	Trypsin: 0.25%	DMEM	Hansbrough, J., Cooper, M., Cohen, R., Spielvogel, R., Greenleaf, G., Bartel, R., and Naughton, G.: Evaluation of a Biodegradable Matrix Containing Cultured Human Fibroblasts as a Dermal Replacement Beneath Meshed Skin Grafts on Athymic Mice, *Surgery 111 (1)*, 438, 1992 (*1106*)
	Human, 18-50 years	Sweat duct	Collagenase: 0.03%	MEM	Bell, C. and Quinton, P.: Effects of Media Buffer Systems on Growth and Electrophysiologic Characteristics of Cultured Sweat Duct Cells, *In Vitro Cell Dev Biol 27*, 47, 1991 (*466*)
	Human	Fibroblasts	Trypsin: 0.25%	CMF solution	Limat, A., Hunziker, T., Boillat, C., Noser, F., and Wiesmann, U.: Postmitotic Human Dermal Fibroblasts Preserve Intact Feeder Properties for Epithelial Cell Growth After Long-Term Cryopreservation, *In Vitro Cell Dev Biol 26*, 709, 1990 (*447*)
	Human	Sweat gland	Collagenase Type 2: 0.015%	(see reference)	Krouse, M., Hagiqara, G., Chen, J., Lewiston, N., and Wine, J.: Ion Channels in Normal Human and Cystic Fibrosis Sweat Gland Cells, *Am J Physiol 257*, C129, 1989 (*299*)
	Human, ages 16-30	Human sweat duct	Collagenase Type 2: 0.2%	RPMI 1640 (see reference)	Pedersen, P.: Human Sweat Duct Cells in Primary Culture. Basic Bioelectric Properties of Cultures Derived From Normals and Patients with Cystic Fibrosis, *In Vitro Cell Dev Biol 25 (4)*, 342, 1989 (*987*)
	Human	Melanocytes, skin/ foreskin	Trypsin: 0.25%	PBS	Peacocke, M., Yaar, M., Mansur, C., Chao, M., and Gilchrest, B.: Induction of Nerve Growth Factor Receptors on Cultured Human Melanocytes, *Proc Natl Acad Sci U S A 85*, 5282, 1988 (*660*)
	Human	Human sweat glands	Collagenase: 0.2%	HBSS	Lee, C., Carpenter, F., Coaker, T., and Kealey, T.: The Primary Culture of Epithelia From the Secretory Coil and Collecting Duct of Normal Human and Cystic Fibrotic Eccrine Sweat Glands, *J Cell Sci 83*, 103, 1986 (*978*)
	Human	Keratinocytes	Trypsin: 0.25%	DMEM	Dover, R. and Potten, C.: Cell Cycle Kinetics of Cultured Human Epidermal Keratinocytes, *J Invest Dermatol 80*, 423, 1983 (*683*)
	Human, adult	Epidermal keratinocytes	Trypsin: 0.25% Collagenase: 0.2% Deoxyribonuclease I: 0.001%	Eagle's MEM	Alitalo, K., Kuismanen, E., Myllyla, R., Kiistala, U., Asko- Seljavaara, S., Vaheri, A.: Extracellular Matrix Proteins of Human Epidermal Keratinocytes and Feeder 3T3 Cells, *J Cell Biol 94*, 497-505, 1982 (*10105*)
	Human, fetal	Smooth muscle, fibroblasts	Trypsin: 0.055%	DMEM	Davies, P. and Kerr, C.: Modification of LDL Metabolism by Growth Factors in Cultured Vascular Cells and Human Skin Fibroblasts, *Biochim Biophys Acta 712*, 26, 1982 (*322*)
	Human, 18-30 years, male, female	Fibroblasts	Trypsin: 0.1%	HBSS	McCoy, B., Galdun, J., and Cohen, I.: Effects of Density and Cellular Aging On Collagen Synthesis and Growth Kinetics in Keloid and Normal Skin Fibroblasts, *In Vitro 18 (1)*, 79, 1982 (*1129*)
	Human, newborn	Keratinocytes	Trypsin: 0.3%	DMEM	Liu, S., Eaton, M., and Karasek, M.: Growth Characteristics of Human Epidermal Keratinocytes from Newborn Foreskin in Primary and Serial Cultures, *In Vitro 15 (10)*, 813, 1979 (*1206*)
	Human	Keratinocytes	Trypsin: 0.25%	(see reference)	Rheinwald, J., and Green, H.: Serial Cultivation of Strains of Human Epidermal Kerotinocytes: The Formation of Keratinizing Colonies from Single Cells, *Cell 6*, 331, 1975 (*361*)
Mouse	Mouse	Keratinocytes	Trypsin: 0.25% Collagenase Type 1: 0.12% Collagenase Type 2: 0.05% Collagenase Type 4: 0.05% Hyaluronidase: 0.1%	Low calcium containing media	Blanco, S., Bandiera, R., Popis, M., Hussain, S., Lombard, P., Aleksic, J., Sajini, A., Tanna, H., Cortes-Garrido, R., Gkatza, N., Dietmann, S. and Frye, M.: Stem Cell Function and Stress Response are Controlled by Protein Synthesis., *Nature 534*, 335- 40, 2016 (*11675*)
	Mouse	Dermal fibroblasts	Elastase: 0.012% Collagenase Type 4:0.4%	DMEM	Rinkevich, Y., Walmsley, G., Hu, M., Maan, Z., Newman, A., Drukker, M., Januszyk, M., Krampitz, G., Gurtner, G., Lorenz, H., Weissman, I. and Longaker, M.: Identification and Isolation of a Dermal Lineage with Intrinsic Fibrogenic Potential., *Science 348*, aaa2151, 2015 (*11625*)
	Mouse	Epidermal	Neutral Protease: 0.5% Collagenase Type 4: 0.1%	DMEM	Gu, D., Fan, Q and Xie, J.: Cell Population Analyses During Skin Carcinogenesis., *J Vis Exp* , e50311, 2013 (*11061*)
	Mouse	Epithelial stem	Trypsin: 0.25% Collagenase Type 1: 0.4%	HBSS	Jensen, U., Ghazizadeh, S. and Owens, D.: Isolation and Characterization of Cutaneous Epithelial Stem Cells., *Methods Mol Biol 989*, 61-9, 2013 (*11456*)
	Mouse	Mast	Collagenase Type 4: 0.2%	IMDM	Antsiferova, M., Martin, C., Huber, M., Feyerabend, T., Forster, A., Hartmann, K., Rodewald, H., Hohl, D. and Werner, S.: Mast Cells are Dispensable for Normal and Activin-Promoted Wound Healing and Skin Carcinogenesis., *J Immunol 191*, 6147-55, 2013 (*11627*)

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TISSUE TABLES

Skin

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse	Dermal fibroblasts	Collagenase: 400 u/ml	AminoMAX II	Scheibye-Knudsen, M., Ramamoorthy, M., Sykora, P., Maynard, S., Lin, P., Minor, R., Wilson, D., Cooper, M., Spencer, R., de Cabo, R., Croteau, D. and Bohr, V.: Cockayne Syndrome Group B Protein Prevents the Accumulation of Damaged Mitochondria by Promoting Mitochondrial Autophagy., *J Exp Med 209*, 855, 2012 (*10934*)
	Mouse	Epidermal and dermal	Collagenase Type 4: 0.18% Collagenase/Dispase: 0.18%	PBS	King, I., Kroenke, M. and Segal, B.: GM-CSF- Dependent, CD103+ Dermal Dendritic Cells Play a Critical Role in Th Effector Cell Differentiation After Subcutaneous Immunization., *J Exp Med 207*, 953, 2010 (*10588*)
	Mouse, 2-3 day	Dermal fibroblasts	Collagenase Type 2: 0.04% Trypsin: 0.025%	DME	Farina, G., York, M., Di Marzio, M., Collins, C., Meller, S., Homey, B., Rifkin, I., Marshak- Rothstein, A., Radstake, T. and Lafyatis, R.: Poly(I:C) Drives Type I IFN- and TGFÎ²-Mediated Inflammation and Dermal Fibrosis Simulating Altered Gene Expression in Systemic Sclerosis., *J Invest Dermatol 130*, 2583-93, 2010 (*11013*)
	Mouse	Dermal	Collagenase Type 3: 0.3% Deoxyribonuclease I: 0.0005%	HBSS	Eidsmo, L., Allan, R., Caminschi, I., Van Rooijen, N., Heath, W. and Carbone, F.: Differential Migration of Epidermal and Dermal Dendritic Cells During Skin Infection., *J Immunol 182*, 3165, 2009 (*10587*)
	Mouse, neonatal	Dermal	Collagenase: 0.35% Deoxyribonuclease I: see reference	PBS	Crigler, L., Kazhanie, A., Yoon, T., Zakhari, J., Anders, J., Taylor, B., Virador, V.: Isolation of a Mesenchymal Cell Population from Murine Dermis That Contains Progenitors of Multiple Cell Lineages, *FASEB J 21*, 2050- 63, 2007 (*10310*)
	Mouse	Dermal fibroblasts	Trypsin: 0.25% Collagenase Type 1: 0.25%	DMEM	Baxter, R., Crowell, T., McCrann, M., Frew, E., Gardner, H.: Analysis of the Tight Skin (Tsk1/+) Mouse as a Model for Testing Antifibrotic Agents, *Lab Invest 85*, 1199-209, 2005 (*10309*)
	Mouse, neonatal	Microvascular endothelial	Neutral Protease: 0.005% Collagenase Type 1: 4%	DMEM	Cha, S., Talavera, D., Demir, E., Nath, A. and Sierra- Honigmann, M.: A Method of Isolation and Culture of Microvascular Endothelial Cells from Mouse Skin., *Microvasc Res 70*, 198, 2005 (*10635*)
	Mouse, male 6-24 week	Skin side population	Collagenase Type 4: 0.2% Neutral Protease: 1.2 u/ml	PBS	Montanaro, F., Liadaki, K., Volinski, J., Flint, A., and Kunkel, L.: Skeletal Muscle Engraftment Potential of Adult Mouse Skin Side Population Cells, *Proc Natl Acad Sci U S A 100*, 9336, 2003 (*10020*)
	Mouse	Ear epidermal	Trypsin: 0.1% Collagenase: 0.2%	PBS	Takanami-Ohnishi, Y., Amano, S., Kimura, S., Asada, S., Utani, A., Maruyama, M., Osada, H., Tsunoda, H., Irukayama-Tomobe, Y, Goto, K., Karin, M., Sudo, T., Kasuya, Y.: Essential Role of P38 Mitogen-Activated Protein Kinase in Contact Hypersensitivity, *J Biol Chem 277*, 37896-903, 2002 (*10278*)
	Mouse, 3-7 month	Fibroblasts, mesangial, smooth muscle	Trypsin: 0.25% Collagenase: see reference Soybean Trypsin Inhibitor: .05%	DMEM	Bradshaw, A., Francki, A., Motamed, K., Howe, C., Sage, E.: Primary Mesenchymal Cells Isolated from SPARC- Null Mice Exhibit Altered Morphology and Rates of Proliferation, *Mol Biol Cell 10*, 1569-79, 1999 (*10136*)
Porcine	Porcine, 3-4 month	Synovial membrane and skin stem	Collagenase: 0.2%	DMEM	Ando, W., Kutcher, J., Krawetz, R., Sen, A., Nakamura, N., Frank, C. and Hart, D.: Clonal Analysis of Synovial Fluid Stem Cells to Characterize and Identify Stable Mesenchymal Stromal Cell/Mesenchymal Progenitor Cell Phenotypes in a Porcine Model: A Cell Source with Enhanced Commitment to the Chondrogenic Lineage., *Cytotherapy 16*, 776, 2014 (*11044*)
	Porcine, 2-6 month	Keratinocytes	Neutral Protease: 0.25%	Dulbecco-Vogt MEM	Regauer, S., Compton, C.: Cultured Porcine Epithelial Grafts: An Improved Method, *J Invest Dermatol 94*, 230-4, 1990 (*10179*)
Rat	Rat, Wistar, 4-8 day	Dermal fibroblasts and keratinocytes	Trypsin: 0.25%	Ham's F-12	Sugihara, H and Toda, S: Primary Tissue Intact and Dissociated Cell Culture, *Cell & Tissue Culture: Laboratory Procedures Vol. 1*,Doyle, A., Griffiths, J., and Newell, D., John Wiley and Sons, Ltd., 3A:2.1, 1995 (*1284*)
	Rat, SD, male, 40-60 days	Sebaceous	Trypsin: 0.2%	DMEM with FBS,PBS	Laurent, S., Mednieks, M., and Rosenfield, R.: Growth of Sebaceous Cells in Monolayer Culture, *In Vitro Cell Dev Biol 28*, 83, 1992 (*488*)
	Rat, neonatal, 12-24 hr post partum	Fibroblasts	Trypsin: 0.2%	HEPES buffered DMEM	Acheson, A., Barker, P., Alderson, R., Miller, F., and Murphy, R.: Detection of Brain-Derived Neurotrophic Factor-like Activity in Fibroblasts and Schwann Cells: Inhibition by Antibodies to NGF, *Neuron 7*, 265, 1991 (*675*)
	Rat, albino, one day old, CFN	Keratinocytes	Trypsin: 1%	EBSS	Vaughan, F., Gray, R., and Bernstein, I.: Growth and Differentiation of Primary Rat Keratinocytes on Synthetic Membranes, *In Vitro Cell Dev Biol 22 (3)*, 141, 1986 (*1057*)

Spleen

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse	Splenic	Collagenase Type 2: 0.1%	PBS	Klebanoff, C., Spencer, S., Torabi-Parizi, P., Grainger, J., Roychoudhuri, R., Ji, Y., Sukumar, M., Muranski, P., Scott, C., Hall, J., Ferreyra, G., Leonardi, A., Borman, Z. et al.: Retinoic Acid Controls the Homeostasis of Pre-cDC- Derived Splenic and Intestinal Dendritic Cells., *J Exp Med 210*, 1961, 201 (*11066*)
	Mouse	Splenocytes	Collagenase Type 2: 0.16% Deoxyribonuclease I: 0.002%	PBS	Yi, T. and Cyster, J.: EBI2- Mediated Bridging Channel Positioning Supports Splenic Dendritic Cell Homeostasis and Particulate Antigen Capture., *Elife 2*, e00757, 2013 (*11268*)
	Mouse	Spleen, bone marrow endothelial	Collagenase Type 4: 0.3-1.0% Deoxyribonuclease I: 20 u/ml	PBS	Shi, C., Jia, T., Mendez- Ferrer, S., Hohl, T., Serbina, N., Lipuma, L., Leiner, I., Li, M., Frenette, P. and Pamer, E.: Bone Marrow Mesenchymal Stem and Progenitor Cells Induce Monocyte Emigration in Response to Circulating Toll- Like Receptor Ligands., *Immunity 34*, 590, 2011 (*10641*)
	Mouse, female, 6-8 week	Dendritic	Collagenase Type 4: 0.05%	RPMI 1640	Abou Fakher, F., Rachinel, N., Klimczak, M., Louis, J. and Doyen, N.: TLR9- Dependent Activation of Dendritic Cells by DNA from Leishmania Major Favors Th1 Cell Development and the Resolution of Lesions., *J Immunol 182*, 1386, 2009 (*10585*)
	Mouse	Dendritic	Collagenase Type 1: 0.5%	HBSS	Flano, E., Jewell, N., Durbin, R. and Durbin, J.: Methods Used to Study Respiratory Virus Infection., *Curr Protoc Cell Biol Vol. Chapter 26*,, , Unit 26.3, 2009 (*10648*)
	Mouse	Dentritic	Collagenase: 300 u/ml Deoxyribonuclease I: 0.002%	RPMI 1640	Abe, K., Nguyen, K., Fine, S., Mo, J., Shen, C., Shenouda, S., Corr, M., Jung, S., Lee, J., Eckmann, L. and Raz, E.: Conventional Dendritic Cells Regulate the Outcome of Colonic Inflammation Independently of T Cells., *Proc Natl Acad Sci U S A 104*, 17022, 2007 (*10356*)
	Mouse	Splenic	Collagenase Type 2: 0.1% Deoxyribonuclease I: 0.1%	RPMI	Mueller, S., Matloubian, M., Clemens, D, Sharpe, A., Freeman, G., Gangappa, S., Larsen, C. and Ahmed, R.: Viral Targeting of Fibroblastic Reticular Cells Contributes to Immunosuppression and Persistence During Chronic Infection., *Proc Natl Acad Sci U S A 104*, 15430, 2007 (*11072*)

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Spleen					Spleen
Species	**Species Detail**	**Cell(s)**	**Enzyme(s)**	**Medium**	**Reference**
Mouse	Mouse	Splenic dendritic	Collagenase: 0.1% Deoxyribonuclease I: 0.005%	DMEM	Kang, H., Liu, M. and Datta, S.: Low-dose Peptide Tolerance Therapy of Lupus Generates Plasmacytoid Dendritic Cells That Cause Expansion of Autoantigen- Specific Regulatory T Cells and Contraction of Inflammatory Th17 Cells, *J Immunol 178*, 7849-58, 2007 (*11549*)
	Mouse	Splenic stromal	Collagenase Type 3:100-400 u/ml	HBSS	Benedict Chris A, De Trez Carl, Schneider Kirsten, Ha Sukwon, Patterson Ginelle, Ware Carl F: Specific remodeling of splenic architecture by cytomegalovirus, *PLoS Pathog 2*, e16, 2006 (*10226*)
	Mouse	Leukocytes	Collagenase Type 4: 43 u/ml	RPMI 1640	Siragam, V., Crow, A., Brinc, D., Song, S., Freedman, J. and Lazarus, A.: Intravenous Immunoglobulin Ameliorates ITP via Activating Fc Gamma Receptors on Dendritic Cells., *Nat Med 12*, 688, 2006 (*10686*)
	Mouse, 4-6 week	Dentritic	Collagenase Type 1: 0.1% Deoxyribonuclease I: 0.001%	RPMI-1640	McLellan, A., Kapp, M., Eggert, A., Linden, C., Bommhardt, U., Brocker, E., Kammerer, U., Kampgen, E.: Anatomic Location and T-Cell Stimulatory Functions of Mouse Dendritic Cell Subsets Defined by CD4 and CD8 Expression, *Blood 99*, 2084-93, 2002 (*10234*)
	Mouse	Dentritic	Collagenase Type 3: 0.1% Deoxyribonuclease I: 325 u/ml	RPMI 1640	Schiavoni, F, Mattei, F, Sestili, P, Borghi, P, Venditti, M, Morse, H, Belardelli, F, and Gabrieli, L: ICSBP is Essential for the Development of Mouse Type I Interferon-producing Cells and for the Generation and Activation of CD8a+ Dendritic Cells, *J Exp Med 196*, 1415, 2002 (*10235*)
	Mouse	Dentritic cells	Collagenase Type 4: 0.1% Deoxyribonuclease I: 20 ug/ml	HEPES/RPMI 1640	Stagg, A., Burke, F., Hill, S. and Knight, S.: Isolation of Mouse Spleen Dendritic Cells., *Methods Mol Med 64*, 9-22, 2001 (*11527*)
	Mouse	Dentritic	Collagenase: 100 u/ml	HBSS	Brasel, K., De Smedt, T., Smith, J., Maliszewski, C.: Generation of Murine Dendritic Cells from Flt3- Ligand-Supplemented Bone Marrow Cultures, *Blood 96*, 3029-39, 2000 (*10227*)
Stem					**Stem**
Avian	Human	Adipose derived stem cells	Collagenase Type 1: 0.1%	DMEM	Tandon, N., Goh, B., Marsano, A., Chao, P., Montouri-Sorrentino, C., Gimble, J. and Vunjak- Novakovic, G.: Alignment and Elongation of Human Adipose-Derived Stem Cells in Response to Direct- Current Electrical Stimulation., *Conf Proc IEEE Eng Med Biol Soc 2009*, 6517-21, 2009 (*10995*)
Canine	Canine	Amniotic membrane MSC	Trypsin: 0.25% Collagenase Type 1: 0.2%	LG-DMEM	Park, S., Seo, M., Kim, H. and Kang, K.: Isolation and Characterization of Canine Amniotic Membrane-Derived Multipotent Stem Cells., *PLoS ONE 7*, e44693, 2012 (*10917*)
	Canine, 20-25 kg	Adipose stem cells	Collagenase: see reference	Media-199	Fischer, L., McIlhenny, S., Tulenko, T., Golesorkhi, N., Zhang, P., Larson, R., Lombardi, J., Shapiro, I. and DiMuzio, P.: Endothelial Differentiation of Adipose- Derived Stem Cells: Effects of Endothelial Cell Growth Supplement and Shear Force., *J Surg Res 152*, 157, 2009 (*10599*)
Equine	Equine	Adipose derived stem cells	Collagenase Type 1: 0.1%	PBS	Vidal, M., Robinson, S., Lopez, M., Paulsen, D., Borkhsenious, O., Johnson, J., Moore, R. and Gimble, J.: Comparison of Chondrogenic Potential in Equine Mesenchymal Stromal Cells Derived from Adipose Tissue and Bone Marrow., *Vet Surg 37*, 713, 2008 (*10561*)
	Equine, 1-5 year	Adipose derived stem cells	Collagenase Type 1: 0.1%	PBS	Vidal, M., Kilroy, G., Lopez, M., Johnson, J., Moore, R. and Gimble, J.: Characterization of Equine Adipose Tissue-Derived Stromal Cells: Adipogenic and Osteogenic Capacity and Comparison with Bone Marrow-Derived Mesenchymal Stromal Cells., *Vet Surg 36*, 613, 2007 (*10533*)
Human	Human	Postnatal periodontal ligament	Collagenase Type 1: 0.01%	DMEM/F12	Yam, G., Teo, E., Setiawan, M., Lovatt, M., Yusoff, N., Fuest, M., Goh, B. and Mehta, J.: Postnatal Periodontal Ligament as a Novel Adult Stem Cell Source for Regenerative Corneal Cell Therapy., *J Cell Mol Med*, 2018 (*11613*)
	Human	Wharton jelly mesenchymal stromal	Collagenase Type 2: 270 u/ml	DMEM/F12	Oppliger, B., Joerger- Messerli, M., Simillion, C., Mueller, M., Surbek, D. and Schoeberlein, A.: Mesenchymal Stromal Cells from Umbilical Cord Wharton's Jelly Trigger Oligodendroglial Differentiation in Neural Progenitor Cells Through Cell-to-Cell Contact., *Cytotherapy 19*, 829-838, 2017 (*11568*)
	Human	Umbilical cord mesenchymal stromal	Collagenase Type 1: 0.2% Hyaluronidase: 0.1% Deoxyribonuclease I: 0.01%	MEM	de Witte, S., Lambert, E., Merino, A., Strini, T., Douben, H., O'Flynn, L., Elliman, S., de Klein, A., Newsome, P., Baan, C. and Hoogduijn, M.: Aging of Bone Marrow- and Umbilical Cord-Derived Mesenchymal Stromal Cells During Expansion., *Cytotherapy 19*, 798-807, 2017 (*11570*)
	Human	Synovial mesenchymal stem	Collagenase: 0.3%	MEM	Matsumura, E., Tsuji, K., Komori, K., Koga, H., Sekiya, I., Muneta, T.: Pretreatment with IL-1Î² Enhances Proliferation and Chondrogenic Potential of Synovium-Derived Mesenchymal Stem Cells., *Cytotherapy 19*, 181-193, 2017 (*11566*)
	Human	Motor neurons	Papain: 20 u/ml	EBSS	Rigamonti, A., Repetti, G., Sun, C., Price, F., Reny, D., Rapino, F., Weisinger, K., Benkler, C., Peterson, Q., Davidow, L., Hansson, E. and Rubin, L.: Large-Scale Production of Mature Neurons from Human Pluripotent Stem Cells in a Three-Dimensional Suspension Culture System., *Stem Cell Reports 6*, 993- 1008, 2016 (*11514*)
	Human	Wharton jelly mesenchymal stromal	Collagenase Type 2: 0.6%	DMEM	Lim, J., Razi, Z., Law, J., Nawi, A., Idrus, R. and Ng, M.: MSCs can be Differentially Isolated From Maternal, Middle and Fetal Segments of the Human Umbilical Cord., *Cytotherapy 18*, 1493-1502, 2016 (*11565*)
	Human	Adipose stem	Collagenase Type 1: 0.1%	DMEM/F12	Cheng, N., Hsieh, T., Lai, H. and Young, T.: High Glucose-Induced Reactive Oxygen Species Generation Promotes Stemness in Human Adipose-Derived Stem Cells, *Cytotherapy 18*, 371-83, 2016 (*11571*)
	Human	Tendon stem	Collagenase Type 1: 0.3% Neutral Protease: 0.4%	MEM	Randelli, P., Menon, A., Ragone, V., Creo P., Alfieri, M., Perucca, O., Banfi, G., Cabitza, P., Tettamanti, G.and Anastasia, L.: Effects ofthe Pulsed Electromagnetic Field PST on Human Tendon Stem Cells: a Controlled Laboratory Study., *BMC Complement Altern Med 16*, 293, 2016 (*11512*)
	Human	Mesenchymal stromal	Collagenase Type 4: 0.2%	PBS	Choudhery,M, Badowski, M, Muise, A and Harris, D: Effect of Mild Heat Stress on the Proliferative and Differentiative Ability of Human Mesenchymal Stromal Cells., *Cytotherapy 17*, 359-68, 2015 (*11265*)
	Human	Adipose derived stem cells	Collagenase Type 2: 0.1%	HBSS	Satish, L., Krill-Burger, J., Gallo, P., Etages, S., Liu, F., Philips, B., Ravuri, S., Marra, K., LaFramboise, W., Kathju, S. and Rubin, J.: Expression Analysis of Human Adipose- Derived Stem Cells During In Vitro Differentiation to an Adipocyte Lineage., *BMC Med Genomics 8*, 41, 2015 (*11422*)
	Human	Dental mesenchymal stem	Collagenase Type 1: 0.3% Neutral Protease: 0.4%	DMEM	Wu, Z., Wang, J., Dong, R., Wang, L., Fan, Z., Liu, D. and Wang, S.: Depletion of MEIS2 Inhibits Osteogenic Differentiation Potential of Human Dental Stem Cells., *Int J Clin Exp Med 8*, 7220- 30, 2015 (*11426*)

TISSUE TABLES

Stem

Stem

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human	Decidua mesenchymal stem	Trypsin: 0.25% Collagenase Type 1: 1.0% Deoxyribonuclease I: 0.005%	PBS	Kusuma, G., Menicanin, D., Gronthos, S., Manuelpillai, U., Abumaree, M., Pertile, M., Brennecke, S. and Kalionis, B.: Ectopic Bone Formation by Mesenchymal Stem Cells Derived from Human Term Placenta and the Decidua., *PLoS ONE 10*, e0141246, 2015 (*11455*)
	Human	Skeletal muscle stem	Collagenase Type 2: 750 u/ml Neutral Protease: 2 u/ml	Ham's F10	Charville, G., Cheung, T., Yoo, B., Santos, P., Lee, G., Shrager, J. and Rando, T.: Ex Vivo Expansion and In Vivo Self-Renewal of Human Muscle Stem Cells., *Stem Cell Reports 5*, 621, 2015 (*11440*)
	Human	Spinal cord neural progenitor	PDS kit: with modifications	EBSS	Mothe, A. and Tator, C.: Isolation of Neural Stem/Progenitor Cells from the Periventricular Region of the Adult Rat and Human Spinal Cord., *J Vis Exp*, e52732, 2015 (*11551*)
	Human	Wharton jelly mesenchymal stem	Collagenase Type 2: 0.1% Trypsin NF 1:250: 0.25%	PBS	Lee, S., Park, B., Kim, J., Jekarl, D., Choi, H., Lee, S., Kim, M., Kim, Y. and Park, M.: The Effect of Fibroblast Growth Factor on Distinct Differentiation Potential of Cord Blood-Derived Unrestricted Somatic stem Cells and Wharton's Jelly- Derived Mesenchymal Stem/Stromal Cells., *Cytotherapy 17*, 1723-31, 2015 (*11562*)
	Human, adult	Adipose derived mesenchymal stem	Collagenase Type 2: 0.1%	see reference	Al-Saqi, S., Saliem, M., Asikainen, S., Quezada, H., Ekblad, A., Hovatta, O., Le Blanc, K., Jonasson, A. and Gotherstrom, C.: Defined Serum-Free Media for In Vitro Expansion of Adipose- Derived Mesenchymal Stem Cells., *Cytotherapy 16*, 915, 2014 (*11046*)
	Human, adult	Adipose derived stem	Collagenase Type 1: 0.15%	DMEM	Koellensperger, E., Bollinger, N., Dexheimer, V., Gramley, F., Germann, G. and Leimer, U.: Choosing the Right Type of Serum for Different Applications of Human Adipose Tissue-Derived Stem Cells: Influence on Proliferation and Differentiation Abilities., *Cytotherapy 16*, 789, 2014 (*11057*)
	Human	Umbilical mesenchymal stem	Collagenase Type 2: 0.1% Trypsin: 0.25%	DMEM	Hang, H., Yu, Y., Wu, N., Huang, Q., Xia, Q. and Bian, J.: Induction of Highly Functional Hepatocytes from Human Umbilical Cord Mesenchymal Stem Cells by HNF4Ì± Transduction., *PLoS ONE 9*, e104133, 2014 (*11073*)
	Human	Cardiac stem	Collagenase Type 2: 0.25%	Joklik modified Eagle's	Avolio, E., Gianfranceschi, G., Cesselli, D., Caragnano, A., Athanasakis, E., Katare, R., Meloni, M., Palma, A., Barchiesi, A., Vascotto, C., Toffoletto, B., Mazzega, E., Finato, N., Aresu, G. and Livi, U.: Ex vivo Molecular Rejuvenation Improves the Therapeutic Activity of Senescent Human Cardiac Stem Cells in a Mouse Model of Myocardial Infarction., *Stem Cells 32*, 2373, 2014 (*11468*)
	Human	Mesenchymal stromal	Collagenase Type 1: 0.1%	PBS	Najar, M, Rodrigues, R, Buyl, K, Branson, S, Vanhaecke, T, Lagneaux, L, Rogiers, V and De Kock, J: Proliferative and Phenotypical Characteristics of Human Adipose Tissue- Derived Stem Cells: Comparison of Ficoll Gradient Centrifugation and Red Blood Cell Lysis Buffer Treatment Purification Methods., *Cytotherapy 16* 1220-8, 2014 (*11264*)
	Human	Skin fibroblasts	Collagenase Type 1: 1000 u/ml	DMEM	Douvaras, P., Wang, J., Zimmer, M., Hanchuk, S., O'Bara, M., Sadiq, S., Sim, F., Goldman, J. and Fossati, V.: Efficient Generation of Myelinating Oligodendrocytes from Primary Progressive Multiple Sclerosis Patients by Induced Pluripotent Stem Cells., *Stem Cell Reports 3*, 250, 2014 (*11453*)
	Human	Adipose stromal stem	Collagenase animal free: 200 u/ml	DMEM/Hams F-12	Carvalho, P., Gimble, J., Dias, I., Gomes, M. and Reis, R.: Xenofree Enzymatic Products for the Isolation of Human Adipose-Derived Stromal/Stem Cells., *Tiss Eng 19*, 473-8, 2013 (*10891*)
	Human, adult	Epidermal stem cells	Neutral Protease: 2 u/ml Trypsin: 2.5%	DMEM	Nagel, S., Rohr, F., Weber, C., Kier, J., Siemers, F., Kruse, C., Danner, S., Brandenburger, M. and Matthiessen, A.: Multipotent Nestin-Positive Stem Cells Reside in the Stroma of Human Eccrine and Apocrine Sweat Glands and can be Propagated Robustly In Vitro., *PLoS ONE 8*, e78365, 2013 (*11024*)
	Human	Dental pulp stem	Collagenase Type 1: 0.3% Neutral Protease: 0.4%	DMEM/F12	Bonnamain, V., Thinard, R., Sergent-Tanguy, S., Huet, P., Bienvenu, G., Naveilhan, P., Farges, J. and Alliot-Licht, B.: Human Dental Pulp Stem Cells Cultured in Serum-Free Supplemented Medium., *Front Physiol 4*, 357, 2013 (*11025*)
	Human	Umbilical cord mesenchymal stem	Collagenase: 0.1- 0.2% Trypsin: 0.1%	DMEM	Han, Y., Tao, R., Sun, T., Chai, J., Xu, G. and Liu, J.: Optimization of Human Umbilical Cord Mesenchymal Stem Cell Isolation and Culture Methods., *Cytotechnology 65*, 819, 2013 (*11452*)
	Human	Endothelial colony forming	Collagenase Type 1: 0.1% Deoxyribonuclease I: 0.1% Neutral Protease: 0.075%	HBSS	Patel, J., Seppanen, E., Chong, M., Yeo, J., Teo, E., Chan, J., Fisk, N. and Khosrotehrani, K.: Prospective Surface Marker- Based Isolation and Expansion of Fetal Endothelial Colony-Forming Cells from Human Term Placenta., *Stem Cells Transl Med 2*, 839-47, 2013 (*11011*)
	Human	Stromal vascular fraction	Collagenase Type 1: 0.075%	PBS	Doi, K., Tanaka, S., Iida, H., Eto, H., Kato, H., Aoi, N., Kuno, S., Hirohi, T. and Yoshimura, K.: Stromal Vascular Fraction Isolated from Lipo-Aspirates Using an Automated Processing System: Bench and Bed Analysis., *J Tissue Eng Regen Med 7*, 864, 2013 (*11052*)
	Human	Alveolar epithelial	Neutral Protease: 2 u/ml Trypsin: 0.25% Elastase: 10 u/ml	Bronchial Epithelial Growth Medium	Barkauskas, C., Cronce, M., Rackley, C., Bowie, E., Keene, D., Stripp, B., Randell, S., Noble, P. and Hogan, B.: Type 2 Alveolar Cells are Stem Cells in Adult Lung, *J Clin Invest 123*, 3025, 2013 (*11040*)
	Human	Dental pulp stem cells	Collagenase Type 1: 0.3% Neutral Protease: 0.4%	DMEM	Salmon, B., Bardet, C, Khaddam, M. Naji, J., Coyac, B., Baroukh, B., Letourneur, F., Lesieur, J., Decup, F., Le Denmat, D., Nicoletti, A., Poliard, A, Rowe, P., Huet, E., Vital, S. and Linglart, A.: MEPE-Derived ASARM Peptide Inhibits Odontogenic Differentiation of Dental Pulp Stem Cells and Impairs Mineralization in Tooth Models of X-linked Hypophosphatemia., *PLoS ONE 8*, e56749, 2013 (*11002*)
	Human	Melanoma	Collagenase Type 4: 0.1% Deoxyribonuclease I: 0.01%	PBS	Welte, Y., Davies, C., Schafer, R. and Regenbrecht, C.: Patient Derived Cell Culture and Isolation of CD133+ Putative Cancer Stem Cells from Melanoma., *J Vis Exp 73*, e50200, 2013 (*11032*)
	Human	Cancer stem	Trypsin: 0.25% Collagenase: 0.05% Hyaluronidase: 0.005%	RPMI	Dobbin, Z. and Landen, C.: Isolation and Characterization of Potential Cancer Stem Cells from Solid Human Tumors-- Potential Applications., *Curr Protoc Pharmacol 63*, Unit 14.28., 2013 (*11538*)
	Human	Dental pulp derived stem	Collagenase Type 1: 0.3% Neutral Protease: 0.4%	DMEM	Sakai, K., Yamamoto, A., Matsubara, K., Nakamura, S., Naruse, M., Yamagata, M., Sakamoto, K., Tauchi, R., Wakao, N., Imagama, S., Hibi, H., Kadomatsu, K., Ishiguro, N. and Ueda, M: Human Dental Pulp-Derived Stem Cells Promote Locomotor Recovery After Complete Transection of the Rat Spinal Cord by Multiple Neuro-Regenerative Mechanisms., *J Clin Invest 122*, 80, 2012 (*10691*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human	Adipose-derived stem	Collagenase Type 1: 0.1%	PBS	Cervelli, V., Scioli, M., Gentile, P., Doldo, E., Bonanno, E., Spagnoli, L. and Orlandi, A.: Platelet- Rich Plasma Greatly Potentiates Insulin-Induced Adipogenic Differentiation of Human Adipose-Derived Stem Cells Through a Serine/Threonine Kinase Akt-dependent Mechanism and Promotes Clinical Fat Graft Maintenance., *Stem Cells Transl Med 1*, 206-20, 2012 (*10880*)
	Human	Mesenchymal stem	Collagenase Type 1: 0.4% Deoxyribonuclease I: 0.01%	DMEM/F12	Shalini, V., Pratheep, S., Muhammad, A., Sharmili, V., Elizabeth, G. and Rajesh, R.: Generation and Characterisation of Human Mesenchymal Stem Cells Derived From Umbilical Cord and Placenta, *Regenerative Research 1*, 48, 2012 (*10916*)
	Human	Wharton jelly mesenchymal stem	Collagenase Type 2: 0.1% Trypsin: 0.25%	DMEM	Salehinejad, P., Alitheen, N., Ali, A., Omar, A., Mohit, M., Janzamin, E., Samani, F., Torshizi, Z. and Nematollahi-Mahani, S.: Comparison of Different Methods for the Isolation of Mesenchymal Stem Cells from Human Umbilical Cord Wharton's Jelly., *In Vitro Cell Dev Biol Anim 48*, 75, 2012 (*11077*)
	Human	Placental mesenchymal stem	Collagenase Type 2: 0.4% Deoxyribonuclease I: 0.01%	DMEM	Vellasamy, S., Sandrasaigaran, P., Vidyadaran, S., George, E. and Ramasamy, R.: Isolation and Characterisation of Mesenchymal Stem cells Derived from Human Placenta Tissue., *World J Stem Cells 4*, 53-61, 2012 (*11457*)
	Human	Adipose derived stromal vascular	Collagenase Type 1: 0.1%	PBS	Gentile, P., Orlandi, A., Scioli, M., Di Pasquali, C., Bocchini, I. and Cervelli, V.: Concise Review: Adipose- Derived Stromal Vascular Fraction Cells and Platelet- Rich Plasma: Basic and Clinical Implications for Tissue Engineering Therapies in Regenerative Surgery., *Stem Cells Transl Med 1*, 230-6, 2012 (*10954*)
	Human	Perivascular stem	Collagenase Type 2: 0.1%	DMEM	James, A., Zara, J., Corselli, M., Askarinam, A., Zhou, A., Hourfar, A., Nguyen, A., Megerdichian, S., Asatrian, G., Pang, S., Stoker, D., Zhang, X., Wu, B., Ting, K., Peault, B. and Soo, C.: An Abundant Perivascular Source of Stem Cells for Bone Tissue Engineering., *Stem Cells Transl Med 1*, 673, 2012 (*10939*)
	Human	Chorionic mesenchymal	Collagenase Type 1: 0.1% Neutral Protease: 2.5 u/ml Trypsin: 0.25%	MEM	Nazarov, I., Lee, J., Soupene, E., Etemad, S., Knapik, D., Green, W., Bashkirova, E., Fang, X., Matthay, M., Kuypers, F. and Serikov, V.: Multipotent Stromal Stem Cells from Human Placenta Demonstrate High Therapeutic Potential., *Stem Cells Transl Med 1*, 359-72, 2012 (*10999*)
	Human, fetal	Liver hematopoietic	Collagenase Type 4: 0.1% Hyaluronidase: 0.1% Deoxyribonuclease I: 2 u/ml	RPMI	Vatakis, D., Bristol, G., Kim, S., Levin, B., Liu, W., Radu, C., Kitchen, S. and Zack, J.: Using the BLT Humanized Mouse as a Stem Cell Based Gene Therapy Tumor Model., *J Vis Exp 70*, e4181, 2012 (*11031*)
	Human, male 40-60 years	Adipose derived stem cells	Collagenase: 0.25% Deoxyribonuclease I: 0.002%	PBS	Blasi, A., Martino, C., Balducci, L., Saldarelli, M., Soleti, A., Navone, S., Canzi, L., Cristini, S., Invernici, G., Parati, E. and Alessandri, G.: Dermal Fibroblasts Display Similar Phenotypic and Differentiation Capacity to Fat-Derived Mesenchymal Stem Cells, but Differ in Anti-Inflammatory and Angiogenic Potential, *Vasc Cell 3*, 5, 2011 (*10486*)
	Human	Umbilical cord stromal stem	Collagenase Type 4: 0.08% Neutral Protease: 0.138% Hyaluronidase: 0.02%	DMEM	Farias, V., Linares- Fernandez, J., Penalver, J., Paya Colmenero, J., Ferron, G., Duran, E., Fernandez, R., Olivares, E., O'Valle, F., Puertas, A., Oliver, F. and Ruiz de Almodovar, J.: Human Umbilical Cord Stromal Stem Cell Express CD10 and Exert Contractile Properties., *Placenta 32*, 86, 2011 (*10683*)
	Human	Vascular wall- resident multipotent stem cells	Collagenase Type 2: 0.2% Elastase: 5 u/ml	see reference	Klein, D., Weisshardt, P., Kleff, V., Jastrow, H., Jakob, H., and Ergun, S.: Vascular Wall-Resident CD44+ Multipotent Stem Cells Vive Rise to Pericytes and Smooth Muscle Cells and Contribute to New Vessel Maturation., *PLoS ONE 6*, e20540, 2011 (*10879*)
	Human	Adipose derived stem	Collagenase Type 1: 0.1%	DMEM/Ham's F-12	Yu, G. Floyd, ZE., Wu, X., Halvorsen, Y. and Gimble, J.: Isolation of Human Adipose- Derived Stem Cells from Lipoaspirates., *Methods Mol Biol 702*, 17-27, 2011 (*10955*)
	Human	Adipose derived mesenchymal	Collagenase Type 1: 0.1%	L-DMEM	Yang, X., He, X., He, J., Zhang, L., Su, X., Dong, Z., Xu, Y., Li, Y. and Li, YL.: High Efficient Isolation and Systematic Identification of Human Adipose-Derived Mesenchymal Stem Cells., *J Biomed Sci 18*, 59, 2011 (*10930*)
	Human	Brain tumor	Collagenase Type 1: 0.04% Hyaluronidase: 0.01% Deoxyribonuclease I: 0.02% Neutral Protease: 0.008%	DMEM/F12	Hussein, D., Punjaruk, W., Storer, L., Shaw, L., Othman, R., Ottoman, R., Peet, A., Miller, S., Bandopadhyay, G., Heath, R., Kumari, R., Bowman, K., Braker, P., Rahman, R., Jones, G., Watson, S. and Lowe, J.: Pediatric Brain Tumor Cancer Stem Cells: Cell Cycle Dynamics, DNA Repair, and Etoposide Extrusion., *Neuro Oncol 13*, 70-83, 2011 (*11598*)
	Human	Glioma stem cells	PDS kit: per instructions	neurobasal medium	Hjelmeland, A., Wu, Q., Wickman, S., Eyler, C., Heddleston, J., Shi, Q., Lathia, J., Macswords, J., Lee, J., McLendon, R. and Rich, J.: Targeting A20 Decreases Glioma Stem Cell Survival and Tumor Growth., *PLoS Biol 8*, e1000319, 2010 (*10536*)
	Human	Dental pulp and apical papilla stem cells	Collagenase Type 1: 0.3% Neutral Protease: 0.4%	MEM	Huang, G., Yamaza, T., Shea, L., Djouad, F., Kuhn, N., Tuan, R. and Shi, S.: Stem/Progenitor Cell- Mediated De Novo Regeneration of Dental Pulp with Newly Deposited Continuous Layer of Dentin in an In Vivo Model., *Tissue Eng Part A 16*, 605, 2010 (*10633*)
	Human	Corneal stromal stem	Neutral Protease: 1.2 u/ml Collagenase: 0.1%	DMEM	Du, Y., Roh, D., Funderburgh, M., Mann, M., Marra, K., Rubin, J., Li, X. and Funderburgh, J.: Adipose-Derived Stem Cells Differentiate to Keratocytes In Vitro., *Mol Vis 16*, 2680, 2010 (*10602*)
	Human	Adipose tissue-derived stem	Collagenase Type 2: 1.0%	DMEM/F12	Tan, H., DeFail, A., Rubin, J., Chu, C. and Marra, K.: Novel Multiarm PEG-Based Hydrogels for Tissue Engineering., *J Biomed Mater Res 92*, 979, 2010 (*10925*)
	Human	Umbilical cord mesenchymal	Hyaluronidase: 0.05% Collagenase: 0.08%	DMEM	Zeddou, M., Briquet, A., Relic, B., Josse, C., Malaise, M., Gothot, A., Lechanteur, C. and Beguin, Y.: The Umbilical Cord Matrix is a Better Source of Mesenchymal Stem Cells (MSC) Than the Umbilical Cord Blood., *Cell Biol Int 34*, 693-701, 2010 (*10929*)
	Human	Adipose stem	Collagenase Type 1: 0.1%	DMEM	Hareendran, S., Sathishkumar, S., Abbas, S., Mackay, A. and Rajan, P.: A Novel Composition for the Culture of Human Adipose Stem Cells which Includes Complement C3., *Cytotechnology 62*, 389-402, 2010 (*11001*)
	Human	Adipose stromal	Collagenase Type 1: 0.1%	DMEM/Hams F-12	Yu, G., Wu, X., Dietrich, M., Polk, P., Scott, LK, Ptitsyn, A. and Gimble, J.: Yield and Characterization of Subcutaneous Human Adipose-Derived Stem Cells by Flow Cytometric and Adipogenic mRNA Analyzes., *Cytotherapy 12*, 538, 2010 (*11463*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human	Colonic epithelial	Collagenase: 150 u/ml Neutral Protease: 0.04 mg/ml	Basal X media	Roig, A., Eskiocak, U., Hight, S., Kim, S., Delgado, O., Souza, R., Spechler, S., Wright, W. and Shay, J.: Immortalized Epithelial Cells Derived from Human Colon Biopsies Express Stem Cell Markers and Differentiate In Vitro., *Gastroenterol 138*, 1012, 2010 (*10560*)
	Human, 40-65 year	Adult human adipose stem cells	Collagenase Type 2: 0.075%	DMEM	Sun, N., Panetta, N., Gupta, D., Wilson, K., Lee, A., Jia, F., Hu, S., Cherry, A., Robbins, R., Longaker, M. and Wu, J.: Feeder-Free Derivation of Induced Pluripotent Stem Cells from Adult Human Adipose Stem Cells., *Proc Natl Acad Sci U S A 106*, 15720, 2009 (*10525*)
	Human	Filum terminale neural progenitor	Trypsin: see reference	DMEM/F-12	Varghese, M., Olstorn, H., Berg-Johnsen, J., Moe, M., Murrell, W. and Langmoen, I.: Isolation of Human Multipotent Neural Progenitors from Adult Filum Terminale., *Stem Cells Dev 18*, 603, 2009 (*10529*)
	Human	Skin and keloid progenitor	Collagenase Type 1: 0.4% Neutral Protease: 0.3%	PBS	Zhang, Q., Yamaza, T., Kelly, AP, Shi, S., Wang, S., Brown, J., Wang, L., French, S., Shi, S. and Le, A.: Tumor-like Stem Cells Derived from Human Keloid are Governed by the Inflammatory Niche Driven by IL-17/IL-6 Axis., *PLoS ONE 4*, e7798, 2009 (*10991*)
	Human	Colon cancer	Collagenase Type 1: 300 u/ml Hyaluronidase: 100 u/ml	DMEM/F12	Varnat, F., Duquet, A., Malerba, M., Zbinden, M., Mas, C., Gervaz, P. and Ruiz i Altaba, A.: Human Colon Cancer Epithelial Cells Harbour Active HEDGEHOG-GLI Signalling that is Essential for Tumour Growth, Recurrence, Metastasis and Stem Cell Survival and Expansion., *EMBO Mol Med 1*, 338-51, 2009 (*11082*)
	Human	Adipose stromal	Collagenase Type 1: 0.1%	DMEM	Cai, L., Johnstone, B., Cook, T., Tan, J., Fishbein, M., Chen, P. and March, K.: IFATS Collection: Human Adipose Tissue-Derived Stem Cells Induce Angiogenesis and Nerve Sprouting Following Myocardial Infarction, in Conjunction with Potent Preservation of Cardiac Function., *Stem Cells 27*, 230, 2009 (*10875*)
	Human	Tumor	Collagenase Type 4: 0.1% Hyaluronidase: 0.07% Deoxyribonuclease I: 0.04%	see reference	Sauvageot, C., Weatherbee, J., Kesari, S., Winters, S., Barnes, J., Dellagatta, J., Ramakrishna, N., Stiles, C., Kung, A., Kieran, M. and Wen, P.: Efficacy of the HSP90 Inhibitor 17-AAG in Human Glioma Cell Lines and Tumorigenic Glioma Stem Cells., *Neuro Oncol Vol. 11*,, , 109, 2009 (*10592*)
	Human	Colonic epithelial	Collagenase Type 4: 0.1%	not listed	Huang, E., Hynes, M., Zhang, T., Ginestier, C., Dontu, G., Appelman, H., Fields, J., Wicha, M. and Boman, B.: Aldehyde Dehydrogenase 1 is a Marker for Normal and Malignant Human Colonic Stem Cells (SC) and Tracks SC Overpopulation During Colon Tumorigenesis., *Cancer Res 69*, 3382-9, 2009 (*10489*)
	Human, male	Spermatogonial stem cells	Collagenase: 1% Deoxyribonuclease I: 0.22% Trypsin: 0.4%	DMEM	Kossack, N., Meneses, J., Shefi, S., Nguyen, H., Chavez, S., Nicholas, C., Gromoll, J., Turek, P. and Reijo-Pera, R.: Isolation and Characterization of Pluripotent Human Spermatogonial Stem Cell- Derived Cells., *Stem Cells* , , 2008 (*10352*)
	Human	Muscle derived multiprogenitor cells	Collagenase Type 2: 0.05%	DMEM	Nesti, L., Jackson, W., Shanti, R., Koehler, S., Aragon, A., Bailey, J., Sracic, M., Freedman, B., Giuliani, J. and Tuan, R.: Differentiation Potential of Multipotent Progenitor Cells Derived from War- Traumatized Muscle Tissue., *J Bone Joint Surg Am 90*, 2390, 2008 (*10490*)
	Human	Adipose derived stem cells	Collagenase Type 1: 0.075%	DMEM	Jeong, J.: Adipose Stem Cells as a Clinically Available and Effective Source of Adult Stem Cell Therapy, *Int J Stem Cells 1*, 43, 2008 (*10530*)
	Human	Hepatic stem cells and heptoblasts	Collagenase Type 4: 0.014-0.06%	various	Wauthier, E., Schmelzer, E., Turner, W., Zhang, L., LeCluyse, E., Ruiz, J., Turner, R., Furth, M., Kubota, H., Lozoya, O., Barbier, C., McClelland, R., Yao, H., Moss, N., Bruce, A., Ludlow, J. and Reid, L.: Hepatic Stem Cells and Hepatoblasts: Identification, Isolation, and Ex Vivo Maintenance., *Methods Cell Biol 86*, 137, 2008 (*10557*)
	Human	Umbilical mesenchymal stem	Collagenase: 0.1%	DMEM	Secco, M., Zucconi, E., Vieira, N., Fogaca, L.,Cerqueira, A., Carvalho, M., Jazedje, T., Okamoto, O., Muotri, A. and Zatz, M.: Multipotent Stem Cells from Umbilical Cord: Cord is Richer Than Blood!, *Stem Cells 26*, 146, 2008 (*11075*)
	Human	Stem	Collagenase: 280 u/ml	D-PBS	Pilgaard, L., Lund, P., Rasmussen, J., Fink, T. and Zachar, V.: Comparative Analysis of Highly Defined Proteases for the Isolation of Adipose Tissue-Derived Stem Cells., *Regen Med 3*, 705-15, 2008 (*11261*)
	Human	Bone marrow derived MSC	Trypsin: 0.05% Papain: 0.0025%	DMEM	Welter, J., Solchaga, L.and Penick, K.: Simplification of Aggregate Culture of Human Mesenchymal Stem Cells as a Chondrogenic Screening Assay, *Biotechniques 42*, 732, 2007 (*10317*)
	Human, 8-12 year	Tendon stem/progenitor	Collagenase Type 1: 0.3% Neutral Protease: 0.4%	DMEM	Bi, Y., Ehirchiou, D., Kilts, T., Inkson, C., Embree, M., Sonoyama, W., Li, L., Leet, A., Seo, B., Zhang, L., Shi, S., Young, M.: Identification of Tendon Stem/Progenitor Cells and the Role of the Extracellular Matrix in their Niche, *Nat Med 13*, 1219-27, 2007 (*10337*)
	Human, male	Adipose derived adult stem cells	Collagenase Type 1: 0.1%	DMEM	Lei, L., Liao, W., Sheng, P., Fu, M., He, A. and Huang, G.: Biological Character of Human Adipose-Derived Adult Stem Cells and Influence of Donor Age on Cell Replication in Culture., *Sci China C Life Sci 50*, 320, 2007 (*10517*)
	Human	Pancreatic cancer stem cells	Collagenase Type 4: 200 u/ml	medium 199	Li, C., Heidt, D., Dalerba, P., Burant, C., Zhang, L., Adsay, V., Wicha, M., Clarke, M. and Simeone, D.: Identification of Pancreatic Cancer Stem Cells., *Cancer Res 67*, 1030, 2007 (*10514*)
	Human	Adipose derived stem cells	Collagenase Type 1: 0.1%	DMEM/F12	Kilroy, G., Foster, S., Wu, X., Ruiz, J., Sherwood, S., Heifetz, A., Ludlow, J., Stricker, D., Potiny, S., Green, P., Halvorsen, Y., Cheatham, B., Storms, R. and Gimble, J.: Cytokine Profile of Human Adipose-Derived Stem Cells: Expression of Angiogenic, Hematopoietic, and Pro-Inflammatory Factors., *J Cell Physiol 212*, 702-9, 2007 (*11000*)
	Human	Oral epithelial	Neutral Protease: 1.2 u/ml Trypsin: 0.05%	PBS	Nakamura, T., Endo, K. and Kinoshita, S.: Identification of Human Oral Keratinocyte Stem/Progenitor Cells by Neurotrophin Receptor p75 and the Role of Neurotrophin/p75 Signaling., *Stem Cells 25*, 628-38, 2007 (*11487*)
	Human	Mesenchymal stem	Collagenase Type 2: 10% Neutral Protease: see reference	CMF-DPBS	Steigman, S. and Fauza, D.: Isolation of Mesenchymal Stem Cells from Amniotic Fluid and Placenta., *Curr Protoc Stem Cell Biol Chapter 1*, Unit 1E.2, 2007 (*10800*)
	Human, adult	Adipose-derived adult stem	Collagenase Type 1: 0.1%	DMEM/F-12 Ham's	Mitchell, J., McIntosh, K., Zvonic, S., Garrett, S., Floyd, Z., Kloster, A., Di Halvorsen, Y., Storms, R., Goh, B., Kilroy, G, Wu, X, Gimble, J: Immunophenotype of Human Adipose-Derived Cells: Temporal Changes in Stromal-Associated and Stem Cell-Associated Markers, *Stem Cells 24*, 376-85, 2006 (*10204*)

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human	Mesenchymal stem	Collagenase Type 1: 0.075%	DMEM	Kern, S., Eichler, H., Stoeve, J., Kluter, H., Bieback, K.: Comparative Analysis of Mesenchymal Stem Cells from Bone Marrow, Umbilical Cord Blood, or Adipose Tissue, *Stem Cells 24*, 1294-301, 2006 (*10329*)
	Human	Placental mesenchymal stem	Collagenase Type 2: 270 u/ml Neutral Protease: 2.4 u/ml	MEM	Portmann-Lanz, C., Schoeberlein, A., Hube, A., Sager, R., Malek, A., Holzgreve, W., Surbek, D.: Placental Mesenchymal Stem Cells as Potential Autologous Graft for Pre-and Perinatal Neuroregeneration, *Am J Obstet Gynecol 194*, 664-73, 2006 (*10167*)
	Human	Stromal stem cells	Collagenase Type 1: 0.2%	HBSS	Boquest, A., Shahdadfar, A., Brinchmann, J., Collas, P.: Isolation of Stromal Stem Cells from Human Adipose Tissue, *Methods Mol Biol 325*, 35-46, 2006 (*10345*)
	Human, female	Adipose derived adult stem cells	Collagenase Type 1: 0.1%	DMEM/F-12	Guilak, F., Lott, K., Awad, H., Cao, Q., Hicok, K., Fermor, B. and Gimble, J.: Clonal Analysis of the Differentiation Potential of Human Adipose-Derived Adult Stem Cells., *J Cell Physiol 206*, 229, 2006 (*10520*)
	Human	Mesenchymal stem	Collagenase Type 1: 0.1%	HBSS	Jeon, E., Song, H., Kim, M., Moon, H., Bae, Y., Jung, J., Kim, J.: Sphingosylphosphorylcholine Induces Proliferation of Human Adipose Tissue-Derived Mesenchymal Stem Cells Via Activation of JNK, *J Lipid Res 47*, 653-64, 2006 (*10328*)
	Human	Hair follicular epithelial	Neutral Protease: 1.25% Trypsin: 0.25%	DMEM/F-12	Yu, H., Fang, D., Kumar, S., Li, L., Nguyen, T., Acs, G., Herlyn, M., Xu, X.: Isolation of a Novel Population of Multipotent Adult Stem Cells from Human Hair Follicles, *Am J Pathol 168*, 1879-88, 2006 (*10334*)
	Human	Adult stem cells	Collagenase Type 1: 0.1%	PBS	Devireddy, R., Thirumala, S. and Gimble, J.: Cellular Response of Adipose Derived Passage-4 Adult Stem Cells to Freezing Stress., *J Biomech Eng 127*, 1081, 2005 (*10600*)
	Human	Adipocytes, stromal vascular	Collagenase: 0.2%	HBSS	Boquest, A., Shahdadfar, A., Fronsdal, K., Sigurjonsson, O., Tunheim, S., Collas, P., Brinchmann, J.: Isolation and Transcription Profiling of Purified Uncultured Human Stromal Stem Cells: Alteration of Gene Expression After In Vitro Cell Culture, *Mol Biol Cell 16*, 1131-41, 2005 (*10312*)
	Human, female	Adipose derived adult stem cells	Collagenase Type 1: 0.1%	DMEM-Ham's F-12	Aust, L., Devlin, B., Foster, S., Halvorsen, Y., Hicok, K., du Laney, T., Sen, A., Willingmyre, G. and Gimble, J.: Yield of Human Adipose- Derived Adult Stem Cells from Liposuction Aspirates., *Cytometry 6*, 7-14, 2004 (*10518*)
	Human	Stromal vascular, adipocytes, stem	Collagenase: 300 u/ml	PBS	Miranville, A., Heeschen, C., Sengenes, C., Curat, C., Busse, R., Bouloumie, A.: Improvement of Postnatal Neovascularization by Human Adipose Tissue-Derived Stem Cells, *Circulation 110*, 349-55, 2004 (*10300*)
	Human, neonatal	Keratinocytes	Neutral Protease: 0.4% Collagenase: 0.3%	DMEM	Li, A., Pouliot, N., Redvers, R., and Kaur, P.: Extensive Tissue-Regenerative Capacity of Neonatal Human Keratinocytes Stem Cells and Their Progeny, *J Clin Invest 113*, 390-400, 2004 (*10128*)
	Human, adult, male	Human epidermal keratinocyte stem cells	Neutral Protease: 0.5%	DMEM	Papini, S., Cecchetti, D., Campani, D., Fitzgerald, W., Grivel, J., Chen, S., Margolis, L., Revoltella, R.: Isolation and Clonal Analysis of Human Epidermal Keratinocyte Stem Cells in Long-term Culture, *Stem Cells 21*, 481, 2003 (*9804*)
	Human	Umbilical vein mesenchymal stem cells	Collagenase: 1%	PBS	Covas, D., Siufi, J., Silva, A., Orellana, M.: Isolation and Culture of Umbilical Vein Mesenchymal Stem Cells, *Braz J Med Biol Res 36*, 1179-83, 2003 (*10139*)
	Human, 7-8 yr	Stem cells Human exfoliated deciduous teeth	Collagenase Type 1: 0.3% Neutral Protease: 0.4%	see reference	Miura, M., Gronthos, S., Zhao, M., Lu, B., Fisher, L., Robey, P., and Shi, S.: SHED: Stem Cells from Human Exfoliated Deciduous Teeth, *Proc Natl Acad Sci U S A 100*, 5807, 2003 (*9800*)
	Human, fetal	Epithelial progenitor	Collagenase: 0.03%	DMEM	Malhi, H., Irani, A., Gagandeep, S. and Gupta, S.: Isolation of Human Progenitor Liver Epithelial Cells with Extensive Replication Capacity and Differentiation into Mature Hepatocytes., *J Cell Sci 115*, 2679, 2002 (*10368*)
	Human	Processed lipoaspirate cells	Collagenase Type 1: 0.075%	PBS	Zuk, P., Zhu, M., Ashjian, P., De Ugarte, D., Huang, J., Mizuno, H., Alfonso, Z., Fraser, J., Benhaim, P., Hedrick, M.: Human Adipose Tissue is a Source of Multipotent Stem Cells, *Mol Biol Cell 13*, 4279-95, 2002 (*10333*)
	Human, adult	Human skin mast cells	Collagenase Type 2: 0.15% Hyaluronidase: 0.07% Deoxyribonuclease I: 0.03%	HBSS	Kambe, N., Kambe, M., Kochan, J., and Schwartz ,L.: Human Skin-derived Mast Cells Can Proliferate While Retaining Their Characteristic Functional and Protease Phenotypes, *Blood 97*, 2045, 2001 (*9803*)
	Human	Stem, embryonic	Neutral Protease: 0.01% - 0.02%	DMEM	Zhang, S., Wernig, M., Duncan, I., Brustle, O., and Thomson, J.: *In Vitro* Differentiation of Transplantable Neural Precursors from Human Embryonic Stem Cells, *Nat Biotechnol 19*, 1129, 2001 (*1135*)
	Human	Central nervous system stem	Collagenase: 0.1% Hyaluronidase: 0.1%	HBSS	Uchida, N., Buck, D., He, D., Reitsma, M., Masek, M., Phan, T., Tsukamoto, A., Gage, F. and Weissman, I.: Direct Isolation of Human Central Nervous System Stem Cells., *Proc Natl Acad Sci U S A 97*, 14720, 2000 (*10527*)
	Human	Embryonic stem	Neutral Protease: 1% Collagenase Type 4: 0.1%	DMEM	Thomson JA, Itskovitz-Eldor J, Shapiro SS, Waknitz MA, Swiergiel JJ, Marshall VS, Jones JM: Embryonic stem cell lines derived from human blastocysts, *Science 282*, 1145-7, 1998 (*10318*)
	Human	Muscle-derived stem cells	Trypsin: 0.25%	DMEM/F12	Alessandri, G., Pagano, S., Bez, A., Benetti, A., Pozzi, S., Iannolo, G., Baronio, M., Invernici, G., Caruso, A., Muneretto, C., Bisleri, G., Parati, E.: Isolation and Culture of Human Muscle-Derived Stem Cells Able to Differentiate into Myogenic and Neurogenic Cell Lineages, *Lancet 364*, 1872-83, (*10342*)
Insect	Drosophila, larval	Neuroblasts	Collagenase Type 1: 0.1% Papain: 0.1%	Rinaldini solution	Berger, C., Harzer, H., Burkard, T., Steinmann, J., van der Horst, S., Laurenson, A., Novatchkova, M., Reichert, H. and Knoblich, J.: FACS Purification and Transcriptome Analysis of Drosophila Neural Stem Cells Reveals a Role for Klumpfuss in Self-Renewal., *Cell Rep 2*, 407, 2012 (*11089*)
Monkey	Monkey	Embryonic stem	Collagenase Type 4: 0.08%	DMEM	Chen, S., Revoltella, R., Papini, S., Michelini, M., Fitzgerald, W., Zimmerberg, J.,and Margolis, L.: Multilineage Differentiation of Rhesus Monkey Embryonic Stem cells in Three-dimensional Culture Systems, *Stem Cells 21(3)*, 281, 2003 (*9805*)
	Baboons, 1yr, 7yr, 14 yr	Primate spermatogonial	Collagenase Type 2: 0.1% Trypsin: 0.05% Deoxyribonuclease I: 0.1%	DMEM	Nagano, M., McCarrey, J., and Brinster, R.: Primate Spermatogonial Stem Cells Colonize Mouse Testes, *Biol Reprod 64*, 1409, 2001 (*9799*)

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Stem

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Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse, xenograft	Pancreatic cancer	STEMxyme®: 0.2%	HBSS	Pham, K., Delitto, D., Knowlton, A., Hartlage, E., Madhavan, R., Gonzalo, D., Thomas, R., Behrns, K., George, T., Hughes, S., Wallet, S., Liu, C., Trevino, J.: Isolation of Pancreatic Cancer Cells from a Patient- Derived Xenograft Model Allows for Practical Expansion and Preserved Heterogeneity in Culture., *Am J Pathol 186*, , 2016 (*11492*)
	Mouse, GFP transgenic	Muscle derived NLSC	Collagenase Type 2: 0.2%	DMEM	Birbrair, A, Sattiraju, A, Zhu, D, Zulato, G, Batista, I, Nguyen, V, Messi M, Solingapuram Sai, K, Marini, F, Delbono, O and Mintz, A.: Novel Peripherally Derived Neural-Like Stem Cells as Therapeutic Carriers for Treating Glioblastomas., *Stem Cells Transl Med,* 2016 (*11498*)
	Mouse	Adipose mesenchyal stromal	Collagenase Type 2: 0.2%	DMEM	Maria, O., Shalaby, M., Syme, A., Eliopoulos, N. and Muanza, T.: Adipose Mesenchymal Stromal Cells Minimize and Repair Radiation-Induced Oral Mucositis., *Cytotherapy 18*, 1129-45, 2016 (*11572*)
	Mouse, 3-4 week	Cardiac progenitor	Collagenase Type 1: 0.1%	DMEM	Wang, H., Chen, H., Feng, B., Wang, X., He, X., Hu, R., Yin, M., Wang, W., Fu, W. and Xu, Z.: Isolation and Characterization of a Sca- 1+/CD31- Progenitor Cell Lineage Derived From Mouse Heart Tissue., *BMC Biotechnol 14*, 75, 2014 (*11074*)
	Mouse	Epithelial stem	Collagenase: 2%	DMEM/F12	Chavez, M., Hu, J., Seidel, K., Li, C., Jheon, A., Naveau, A., Horst, O. and Klein, O.: Isolation and Culture of Dental Epithelial Stem Cells from the Adult Mouse Incisor., *J Vis Exp* , , 2014 (*11536*)
	Mouse, P4	Enteric neural crest progenitors	Neutral Protease: 0.5% Collagenase animal free: 0.05%	DMEM/F12	Hotta, R., Stamp, L., Foong, J., McConnell, S., Bergner, A., Anderson, R., Enomoto, H., Newgreen, D., Obermayr, F., Furness, J. and Young, H.: Transplanted Progenitors Generate Functional Enteric Neurons in the Postnatal Colon., *J Clin Invest 123*, 1182, 2013 (*10914*)
	Mouse	Epithelial stem	Trypsin: 0.25% Collagenase Type 1: 0.4%	HBSS	Jensen, U., Ghazizadeh, S. and Owens, D.: Isolation and Characterization of Cutaneous Epithelial Stem Cells., *Methods Mol Biol 989*, 61-9, 2013 (*11456*)
	Mouse	Colon tumor organoids	Collagenase Type 4: 200 u/ml Neutral Protease: 0.01%	DMEM	Xue, X. and Shah, Y.: In Vitro Organoid Culture of Primary Mouse Colon Tumors., *J Vis Exp* , e50210, 2013 (*11254*)
	Mouse, 8-12 week	Pancreas organoid	Collagenase: 0.012% Neutral Protease: 0.012%	DMEM	Huch, M., Bonfanti, P., Boj, S., Sato, T., Loomans, C., Van de Wetering, M., Sojoodi, M., Li, V., Schuijers, J., Gracanin, A., Ringnalda, F., Begthel, H., Hamer, K., Mulder, J., Van Es, J. and De Koning, E.: Unlimited In Vitro Expansion of Adult Bi-Potent Pancreas Progenitors Through the Lgr5/R-Spondin Axis., *EMBO J 32*, 2708-21, 2013 (*11021*)
	Mouse	Mammary tumor	Collagenase: 0.15% Hyaluronidase: 0.020%	DMEM/F12	Liu, X., Johnson, S., Liu, S., Kanojia, D., Yue, W., Singh, U., Wang, Q, Wang Qi, Nie, Q. and Chen H.: Nonlinear Growth Kinetics of Breast Cancer Stem Cells: Implications for Cancer Stem Cell Targeted Therapy., *Sci Rep 3*, 2473, 2013 (*11015*)
	Mouse, 4-6 week	Schwann	Collagenase Type 1: 0.01% Trypsin: 0.125%	DMEM	Masaki, T., Qu, J., Cholewa- Waclaw, J., Burr, K., Raaum, R. and Rambukkana, A.: Reprogramming Adult Schwann Cells to Stem Cell- Like Cells by Leprosy Bacilli Promotes Dissemination of Infection., *Cell 152*, 51, 2013 (*11070*)
	Mouse, adult	Spermatogonial stem	Trypsin: 0.05% Collagenase Type 1: 0.03% Deoxyribonuclease I: 80 u/ml	DMEM	Martin, L. and Seandel, M.: Serial Enrichment of Spermatogonial Stem and Progenitor Cells (SSCs) in Culture for Derivation of Long-Term Adult Mouse SSC Lines., *J Vis Exp 72*, e50017, 2013 (*10904*)
	Mouse	Prostate tumor	Collagenase Type 4: 1,600 u/ml	DMEM/F12	Mazzoleni, S., Jachetti, E., Morosini, S., Grioni, M., Piras, I., Pala, M., Bulfone, A., Freschi, M., Bellone, M. and Galli, R.: Gene Signatures Distinguish Stage- Specific Prostate Cancer Stem Cells Isolated From Transgenic Adenocarcinoma of the Mouse Prostate Lesions and Predict the Malignancy of Human Tumors., *Stem Cells Transl Med 2*, 678, 2013 (*10976*)
	Mouse, 10 week	Synovial mesenchymal	Collagenase: 0.1% Deoxyribonuclease I: 0.005%	DMEM	Futami, I., Ishijima, M., Kaneko, H., Tsuji, K., Ichikawa-Tomikawa, N., Sadatsuki, R., Muneta, T., Arikawa-Hirasawa, E., Sekiya, I. and Kaneko, K.: Isolation and Characterization of Multipotential Mesenchymal Cells from the Mouse Synovium., *PLoS ONE 7*, e45517, 2012 (*10944*)
	Mouse, 6-8 week	Neural stem cells	Papain: 0.01% Neutral Protease: 0.1% Deoxyribonuclease I: 0.01%	DMEM/F12	Bracko, O., Singer, T., Aigner, S., Knobloch, M., Winner, B., Ray, J., Clemenson, G., Suh, H., Couillard-Despres, S., Aigner, L., Gage, F. and Jessberger, S.: Gene Expression Profiling of Neural Stem Cells and their Neuronal Progeny Reveals IGF2 as a Regulator of Adult Hippocampal Neurogenesis., *J Neurosci 32*, 3376-87, 2012 (*11387*)
	Mouse	Intestinal organoids	Collagenase Type 1: 800 u/ml Neutral Protease: 0.013%	DMEM	Barthel, E., Speer, A., Levin, D., Sala, F., Hou, X., Torashima, Y., Wigfall, C. and Grikscheit, T.: Tissue Engineering of the Intestine in a Murine Model., *J Vis Exp 70*, e4279, 2012 (*10893*)
	Mouse	Adipose derived stem	Collagenase Type 2: 0.1%	DMEM	Takahashi, H., Haraguchi, N., Nishikawa, S., Miyazaki, S., Suzuki, Y., Mizushima, T., Nishimura, J., Takemasa, I., Yamamoto, H., Mimori, K., Ishii, H., Doki, Y. and Mori, M.: Biological and Clinical Availability of Adipose- Derived Stem Cells for Pelvic Dead Space Repair., *Stem Cells Transl Med 1*, 803, 2012 (*10937*)
	Mouse	Lung tumor	Neutral Protease: 50 u/ml Collagenase: 400 u/ml Deoxyribonuclease I: 50 u/ml	DMEM	Vaughan, A., Halbert, C., Wootton, S. and Miller, A.: Lung Cancer in Mice Induced by the Jaagsiekte Sheep Retrovirus Envelope Protein is not Maintained by Rare Cancer Stem Cells, but Tumorigenicity does Correlate with Wnt Pathway Activation., *Mol Cancer Res 10*, 86, 2012 (*11083*)
	Mouse, P4-5	Neuroshere	Trypsin: 0.25% Papain: 100 u Deoxyribonuclease I: 0.025%	Pro-N	Ziegler, A., Schneider, J., Qin, M., Tyler, W., Pintar, J., Fraidenraich, D., Wood, T and Levison, S.: IGF-II Promotes Stemness of Neural Restricted Precursors., *Stem Cells 30*, 1265, 2012 (*10933*)
	Mouse	Nerve progenitors	Collagenase Type 4: 0.025% Trypsin NF 1:250: .025%	HBSS	Salisbury, E., Lazard, Z., Ubogu, E., Davis, A. and Olmsted-Davis, E.: Transient Brown Adipocyte-Like Cells Derive from Peripheral Nerve Progenitors in Response to Bone Morphogenetic Protein 2., *Stem Cells Transl Med 1*, 874-85, 2012 (*11554*)
	Mouse, 8-10 week	Adipose derived stem	Collagenase Type 1: 0.025%	HBSS	Sugii, S., Kida, Y., Berggren, W. and Evans, R.: Feeder- Dependent and Feeder- Independent iPS Cell Derivation from Human and Mouse Adipose Stem Cells., *Nat Protoc 6*, 346, 2011 (*10493*)
	Mouse	Spleen, bone marrow endothelial	Collagenase Type 4: 0.3-1.0% Deoxyribonuclease I: 20 u/ml	PBS	Shi, C., Jia, T., Mendez- Ferrer, S., Hohl, T., Serbina, N., Lipuma, L., Leiner, I., Li, M., Frenette, P. and Pamer, E.: Bone Marrow Mesenchymal Stem and Progenitor Cells Induce Monocyte Emigration in Response to Circulating Toll- Like Receptor Ligands., *Immunity 34*, 590, 2011 (*10641*)
	Mouse, 8-10 week	Lung mesenchymal stem	Collagenase Type 2: 0.2%	HBSS	Chow, K., Jun, D., Helm, K., Wagner, D. and Majka, S.: Isolation & Characterization of Hoechst(low) CD45(negative) Mouse Lung Mesenchymal Stem Cells., *J Vis Exp 56*, e3159, 2011 (*10793*)

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Stem

Stem

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse, neonatal	Dental pulp stem	Collagenase Type 4: 0.2% Neutral Protease: 1.2 u/ml	PBS	Janebodin, K., Horst, O., Ieronimakis, N., Balasundaram, G., Reesukumal, K., Pratumvinit, B. and Reyes, M.: Isolation and Characterization of Neural Crest-Derived Stem Cells from Dental Pulp of Neonatal Mice., *PLoS ONE 6*, e27526, 2011 (*10867*)
	Mouse	CD133+ stem	Collagenase Type 4: 0.05% Pronase: 0.05% Deoxyribonuclease I: 0.01%	DMEM/F12	Rountree, C., Ding, W., Dang, H., Vankirk, C. and Crooks, G.: Isolation of CD133+ Liver Stem Cells for Clonal Expansion., *J Vis Exp 56*, e3183, 2011 (*10988*)
	Mouse	Stem and progenitor	Collagenase Type 2: 0.2%	HBSS	Han, J., Koh, Y., Moon, H., Ryoo, H., Cho, C., Kim, I. and Koh, G.: Adipose Tissue is an Extramedullary Reservoir for Functional Hematopoietic Stem and Progenitor Cells., *Blood 115*, 957, 2010 (*10494*)
	Mouse, 6-8 week	Bone marrow mesenchymal stem	Collagenase Type 1: 0.25%	RPMI 1640	Xu, S., De Becker, A., Van Camp, B., Vanderkerken, K. and Van Riet, I.: An Improved Harvest and In Vitro Expansion Protocol for Murine Bone Marrow- Derived Mesenchymal Stem Cells., *J Biomed Biotechnol 2010*, 105940, 2010 (*10617*)
	Mouse	Endosteal cells	Collagenase Type 1: 0.3%	DMEM	Nakamura, Y., Arai, F., Iwasaki, H., Hosokawa, K., Kobayashi, I., Gomei, Y., Matsumoto, Y., Yoshihara, H. and Suda, T.: Isolation and Characterization of Endosteal Niche Cell Populations that Regulate Hematopoietic Stem Cells., *Blood 116*, 1422, 2010 (*10621*)
	Mouse, 10 week	Islets	Collagenase: 0.2%	RPMI 1640	Kobayashi, T., Yamaguchi, T., Hamanaka, S., Kato-Itoh, M., Yamazaki, Y., Ibata, M., Sato, H., Lee, Y., Usui, J., Knisely, A., Hirabayashi, M. and Nakauchi, H.: Generation of Rat Pancreas in Mouse by Interspecific Blastocyst Injection of Pluripotent Stem Cells., *Cell 142*, 787, 2010 (*10591*)
	Mouse	Pancreatic cancer stem	Collagenase Type 4: 200 u/ml Neutral Protease: 0.6 u/ml	DMEM	Rasheed, Z., Wang, Q. and Matsui, W.: Isolation of Stem Cells from Human Pancreatic Cancer Xenografts., *J Vis Exp 43*, 2169, 2010 (*11033*)
	Mouse, adult	Adult neural stem	Trypsin: 0.05%	DMEM	Deleyrolle, L. and Reynolds, B.: Isolation, Expansion, and Differentiation of Adult Mammalian Neural Stem and Progenitor Cells using the Neurosphere Assay., *Methods Mol Biol 549*, 91, 2009 (*10521*)
	Mouse, 6-8 week	Prostate epithelial/stem	Collagenase Type 2: 0.5% Trypsin: 0.05%	HBSS	Burger, P., Gupta, R., Xiong, X., Ontiveros, C., Salm, S., Moscatelli, D. and Wilson, E.: High Aldehyde Dehydrogenase Activity: A Novel Functional Marker of Murine Prostate Stem/Progenitor Cells., *Stem Cells 27*, 2220-8, 2009 (*10488*)
	Mouse	Adipose tissue-derived stem	Collagenase Type 1: 0.075%	Modified Eagles	Cho, K., Park, H., Park, H., Jung, J., Jeon, S., Kim, Y. and Roh, H.: IFATS Collection: Immunomodulatory Effects of Adipose Tissue-Derived Stem Cells in an Allergic Rhinitis Mouse Model., *Stem Cells 27*, 259-65, 2009 (*10921*)
	Mouse	Bone marrow	Collagenase: 0.2%	DMEM	Morikawa, S., Mabuchi, Y., Kubota, Y., Nagai, Y., Niibe, K., Hiratsu, E., Suzuki, S., Miyauchi-Hara, C., Nagoshi, N., Sunabori, T., Shimmura, S., Miyawaki, A., Nakagawa, T., Suda, T., Okano, H. and Matsuzaki, Y.: Prospective Identification, Isolation, and Systemic Transplantation of Multipotent Mesenchymal Stem Cells in Murine Bone Marrow., *J Exp Med 206*, 2483-96, 2009 (*11407*)
	Mouse	Germ cells	Collagenase Type 1: 100 u/ml	HBSS	Breault, D., Min, I., Carlone, D., Farilla, L., Ambruzs, D., Henderson, D., Algra, S., Montgomery, R., Wagers, A. and Hole, N.: Generation of mTert-GFP Mice as a Model to Identify and Study Tissue Progenitor Cells., *Proc Natl Acad Sci U S A 105*, 10420, 2008 (*10522*)
	Mouse	Neural progenitor cell	Papain: 10 ul/ml	PBS	Hutton, S. and Pevny, L.: Isolation, Culture, and Differentiation of Progenitor Cells from the Central Nervous System., *Cold Spring Harb. Protoc. 11*, 5077, 2008 (*10532*)
	Mouse, 3-6 week	Ear mesenchymal stem	Collagenase Type 1: 0.2%	DMEM/F12	Staszkiewicz, J., Gimble, J., Manuel, J. and Gawronska- Kozak, B.: IFATS Collection: Stem Cell Antigen-1-Positive Ear Mesenchymal Stem Cells Display Enhanced Adipogenic Potential., *Stem Cells 26*, 2666, 2008 (*10926*)
	Mouse, postnatal	Astrocytes	Trypsin: 0.25% Deoxyribonuclease I: 1,000 u/ml	HBSS	Sher, F., Rossler, R., Brouwer, N., Balasubramaniyan, V., Boddeke, E. and Copray, S.: Differentiation of Neural Stem Cells Into Oligodendrocytes: Involvement of the Polycomb Group Protein Ezh2., *Stem Cells 26*, 2875, 2008 (*10507*)
	Mouse, 12 week	Mammary epithelial	Collagenase: 0.3% Hyaluronidase: 100 u/ml Trypsin: 0.25% Neutral Protease: 0.5% Deoxyribonuclease I: 0.01%	see reference	Taddei, I., Deugnier, M., Faraldo, M., Petit, V., Bouvard, D., Medina, D., Fassler, R., Thiery, J., Glukhova, M.: Beta1 Integrin Deletion from the Basal Compartment of the Mammary Epithelium Affects Stem Cells, *Nat Cell Biol 10*, 716-22, 2008 (*10320*)
	Mouse, embryonic	Hematopoietic stem cells	Collagenase: 0.1%	PBS	Gekas, C., Rhodes, K. and Mikkola, H.: Isolation and Analysis of Hematopoietic Stem Cells from the Placenta., *J Vis Exp 16*, e742, 2008 (*10982*)
	Mouse, embryonic	HES-BC cells	Trypsin: 0.05%	DMEM	Lu, S., Feng, Q., Caballero, S., Chen, Y., Moore, M., Grant, M., Lanza, R.: Generation of Functional Hemangioblasts from Human Embryonic Stem Cells, *Nat Methods 4*, 501-9, 2007 (*10082*)
	Mouse, 6-8 week	Tendon stem/progenitor	Collagenase Type 1: 0.3% Neutral Protease: 0.4%	DMEM	Bi, Y., Ehirchiou, D., Kilts, T., Inkson, C., Embree, M., Sonoyama, W., Li, L., Leet, A., Seo, B., Zhang, L., Shi, S., Young, M.: Identification of Tendon Stem/Progenitor Cells and the Role of the Extracellular Matrix in Their Niche, *Nat Med 13*, 1219-27, 2007 (*10337*)
	Mouse	Tumor	Collagenase Type 3: 200 u/ml	RPMI-1640	Prince, M., Sivanandan, R., Kaczorowski, A., Wolf, G., Kaplan, M., Dalerba, P., Weissman, I., Clarke, M. and Ailles, L.: Identification of a Subpopulation of Cells with Cancer Stem Cell Properties in Head and Neck Squamous Cell Carcinoma., *Proc Natl Acad Sci U S A 104*, 973, 2007 (*10526*)
	Mouse	Liver epithelial progenitor cells	Collagenase Type 4: 0.1% Deoxyribonuclease I: 0.05%	DMEM	Li, W., Sum, J., Yao, Y., Tao, X., Yan, Y., Yu, H., Wang, X., Li, J., Yang, Y., Lau, J., Hu, Y.: Isolation and Characterization of Bipotent Liver Progenitor Cells from Adult Mouse, *Stem Cells 24*, 322-32, 2006 (*10248*)
	Mouse, 6 week	Adipose mesenchymal stem	Collagenase: 0.2%	PBS	Di Rocco, G., Iachininoto, M., Tritarelli, A., Straino, S., Zacheo, A., Germani, A., Crea, F., Capogrossi, M.: Myogenic Potential of Adipose-Tissue-Derived Cells, *J Cell Sci 119*, 2945-52, 2006 (*10327*)
	Mouse	Neural stem cells	Papain: see reference	DMEM/F-12	Meletis, K., Wirta, V., Hede, S., Nister, M., Lundeberg, J. abd Frisen, J.: p53 Suppresses the Self-Renewal of Adult Neural Stem Cells., *Development 133*, 363, 2006 (*10535*)
	Mouse, 10-12 week	Kidney	Collagenase Type 4: 0.075%	DMEM	Dekel, B., Zangi, L., Shezen, E., Reich-Zeliger, S., Eventov-Friedman, S., Katchman, H., Jacob-Hirsch, J., Amariglio, N., Rechavi, G., Margalit, R. and Reisner, Y.: Isolation and Characterization of Nontubular sca-1+lin- Multipotent Stem/Progenitor Cells from Adult Mouse Kidney., *J Am Soc Nephrol 17*, 3300, 2006 (*11467*)

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Stem

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse, day 7	Cerebellar stem cells	Papain: 10u/ml Deoxyribonuclease I: 250 u/ml	Dulbecco's PBS	Lee, A., Kessler, J., Read, T., Kaiser, C., Corbeil, D., Huttner ,W., Johnson, J., Wechsler-Reya, R.: Isolation of Neural Stem Cells from the Postnatal Cerebellum, *Nat Neurosci 8*, 723, 2005 (*9801*)
	Mouse, embryonic	Embryonic fibroblast feeder cells	Collagenase Type 4: 0.1%	DMEM	Schatten, G., Smith, J., Navara, C., Park, J., Pedersen, R.: Culture of Human Embryonic Stem Cells, *Nat Methods 2*, 455-63, 2005 (*10120*)
	Mouse, 1 day	Neural progenitor	PDS kit: per instructions	see reference	Seaberg, R., Smukler, S. and Van der Kooy, D.: Intrinsic Differences Distinguish Transiently Neurogenic Progenitors from Neural Stem Cells in the Early Postnatal Brain., *Dev Biol 278*, 71, 2005 (*10363*)
	Mouse, 8-10 week	Liver derived stem cells	Collagenase Type 1: 0.1% Neutral Protease: 2.4 u/ml	HBSS	Kotton, D., Fabian, A. and Mulligan, R.: A Novel Stem- Cell Population in Adult Liver with Potent Hematopoietic-Reconstitution Activity., *Blood 106*, 1574, 2005 (*10523*)
	Mouse	Neurosperes	PDS kit: per instructions	DMEM/F12	Klein, C., Butt, S., Machold, R., Johnson, J., and Fishell, G.: Cerebellum- and Forebrain-Derived Stem Cells Possess Intrinsic Regional Character, *Development 132*, 4497, 2005 (*10062*)
	Mouse	Bone marrow	Collagenase Type 1: 0.15% Neutral Protease: 0.15%	PBS	Bertoncello, I. and Williams, B.: Hematopoietic Stem Cell Characterization by Hoechst 33342 and Rhodamine 123 Staining., *Methods Mol Biol 263*, 181, 2004 (*10528*)
	Mouse, 4-7 day	Pluripotent stem cells	Collagenase Type 1: 220 u/ml Neutral Protease: 33 u/ml	MEM	Howell, J., Lee, W., Morrison, P., Zhong, J., Yoder, M. and Srour, E.: Pluripotent Stem Cells Identified in Multiple Murine Tissues., *Ann N Y Acad Sci 996*, 158, 2003 (*10519*)
	Mouse, 15 day or 3 month	Neural stem cells	Papain: 0.1%	DMEM/F-12	Gritti, A, Bonfanti, L, Doetsch, F, Caille, I, Alvarez-Buylla, A, Lim, D, Galli, R, Verdugo J, Herrera, D, and Vescovi A.: Multipotent Neural Stem Cells Reside into the Rostral Extension and Olfactory Bulb of Adult Rodents, *J Neurosci 22(2)*, 437, 2002 (*9808*)
	Mouse, embryonic	Cortical progenitors	PDS kit: per instructions	Serum free medium	Estivill-Torrus, G., Pearson, H., Van Heyningen, V., Price, D. and Rashbass, P.: Pax6 is Required to Regulate the Cell Cycle and the Rate of Progression from Symmetrical to Asymmetrical Division in Mammalian Cortical Progenitors., *Development 129*, 455, 2002 (*10364*)
	Mouse, 6-8 week	Myocytes	Collagenase Type 2: 0.2% Trypsin: 0.25%	HBSS	McKinney-Freeman SL, Jackson KA, Camargo FD, Ferrari G, Mavilio F, Goodell MA.: Muscle-derived hematopoietic stem cells are hematopoietic in origin, *Proc Natl Acad Sci U S A 99*, 1341, 2002 (*10032*)
	Mouse	Mammary epithelial stem	Collagenase Type 3: 0.1% Hyaluronidase: 0.1% Pronase: 1.25% Deoxyribonuclease I: 0.2%	DMEM	Boulanger, C., Smith, G.: Reducing Mammary Cancer Risk Through Premature Stem Cell Senescence, *Oncogene 20*, 2264-72, 2001 (*10225*)
	Mouse, male	Prostatic stem	Collagenase Type 1: 170 u/ml	DMEM	Dubey, P., Wu, H., Reiter, R., Witte, O.: Alternative Pathways to Prostate Carcinoma Activate Prostate Stem Cell Antigen Expression, *Cancer Res 61*, 3256-61, 2001 (*10229*)
	Mouse, 4-8 month	Neural subventricular zone	Trypsin: 0.13% Hyaluronidase: 0.067%	DMEM/F12	Gritti A, Frolichsthal- Schoeller P, Galli R, Parati E, Cova L, Pagano S, Bjornson C, and Vescovi A.: Epidermal and Fibroblast Growth Factors Behave as Mitogenic Regulators for a Single Multipotent Stem Cell-like Population from the Subventricular Region of the Adult Mouse forebrain, *J Neurosci 19(9)*, 3287, 1999 (*9806*)
	Mouse, 6 week	Muscle hematopoietic stem cells	Collagenase: 0.2% Trypsin: 0.1%	DMEM	Jackson, K., and Goodell, M.: Hematopoietic Potential of Stem Cells Isolated from Murine Skeletal Muscle, *Proc Natl Acad Sci U S A 96*, 14482, 1999 (*9802*)
Ovine	Ovine, 3-5 year	Endometrial stromal	Collagenase Type 1: 0.5% Deoxyribonuclease I: 0.04 u/ml	DMEM/F-12	Letouzey, V., Tan, K., Deane, J., Ulrich, D., Gurung, S., Ong, Y. and Gargett, C.: Isolation and Characterisation of Mesenchymal Stem/Stromal Cells in the Ovine Endometrium., *PLoS ONE 10*, e0127531, 2015 (*11662*)
Porcine	Porcine, 3-4 month	Synovial membrane and skin stem	Collagenase: 0.2%	DMEM	Ando, W., Kutcher, J., Krawetz, R., Sen, A., Nakamura, N., Frank, C. and Hart, D.: Clonal Analysis of Synovial Fluid Stem Cells to Characterize and Identify Stable Mesenchymal Stromal Cell/Mesenchymal Progenitor Cell Phenotypes in a Porcine Model: A Cell Source with Enhanced Commitment to the Chondrogenic Lineage., *Cytotherapy 16*, 776, 2014 (*11044*)
	Porcine, 1-4 day	Testicular	Collagenase Type 4: 0.1% Hyaluronidase: 0.1% Trypsin: 0.25%	DMEM	Park, M., Park, J., Kim, M., Lee, K., Park, H., Yun, J., Choi, J., Lee, E. and Lee, S.: Development of a High-Yield Technique to Isolate Spermatogonial Stem Cells From Porcine Testes., *J Assist Reprod Genet 31*, 983- 91, 2014 (*11484*)
	Porcine, female, <1 year	Adipose mesenchymal stem	Collagenase Type 1: 0.1%	DMEM	Williams, K., Picou, A., Kish, S., Giraldo, A., Godke, R. and Bondioli, K: Isolation and Characterization of Porcine Adipose Tissue- Derived Adult Stem Cells., *Cells Tissues Organs 188*, 251, 2008 (*10370*)
	Porcine, male, 8 day	Seminiferous epithelial cells	Collagenase: 0.15% Deoxyribonuclease I: .0001% Hyaluronidase: 0.15% Trypsin: 0.05%	DMEM/F12	Dirami, G., Ravindranath, N., Pursel, V., Dym, M.: Effects of Stem Cell Factor and Granulocyte Macrophage-Colony Stimulating Factor on Survival of Porcine Type A Spermatogonia Cultured in KSOM, *Biol Reprod 61*, 225- 30, 1999 (*10142*)
Rabbit	Rabbit, New Zealand, 8-10 week	Tenocytes and tendon stem cells	Collagenase Type 1: 0.3% Neutral Protease: 0.4%	DMEM	Zhang, J. and Wang, J.: Characterization of Differential Properties of Rabbit Tendon Stem Cells and Tenocytes., *BMC Musculoskelet Disord 11*, 10, 2010 (*10639*)
Rat	Rat, SD, 2-3 month	Mesenchymal stromal	Collagenase Type 1: 0.1%	DMEM	Dayer, D., Tabar, M., Moghimipour, E., Tabandeh, M., Ghadiri, A., Bakhshi, E., Orazizadeh, M. and Ghafari, M.: Sonic Hedgehog Pathway Suppression and Reactivation Accelerates Differentiation of Rat Adipose-Derived Mesenchymal Stromal Cells Toward Insulin-Producing Cells, *Cytotherapy 19*, 937- 946, 2017 (*11557*)
	Rat	Placental mesenchymal	Collagenase Type 4: 0.1% Deoxyribonuclease I: 0.02% Neutral Protease: 0.1%	DMEM	Jiang, H., Zhang, Y., Tian, K., Wang, B. and Han, S.: Amelioration of Experimental Autoimmune Encephalomyelitis Through Transplantation of Placental Derived Mesenchymal Stem Cells., *Sci Rep 7*, 41837, 2017 (*11560*)

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Stem

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Rat	Rat, 9 week	Adipose stromal	Collagenase: 0.1%	DMEM	Ohta, Y., Hamaguchi, A., Ootaki, M., Watanabe, M., Takeba, Y., Iiri, T., Matsumoto, N. and Takenaga, M.: Intravenous Infusion of Adipose-Derived Stem/Stromal Cells Improves Functional Recovery of Rats with Spinal Cord Injury., *Cytotherapy 19*, 839-848, 2017 (*11569*)
	Rat	Mesenchymal stem	Collagenase Type 1: 0.075%	DMEM	Emre, E, Yuksel, N, Duruksu, G, Pirhan, D, Subasi, C, Erman, G and Karaoz, E: Neuroprotective Effects of Intravitreally Transplanted Adipose Tissue and Bone Marrow-Derived Mesenchymal Stem Cells in an Experimental Ocular Hypertension Model., *Cytotherapy 17*, 543-59, 2015 (*11263*)
	Rat. SD, 5 month	Mesenchymal stromal	Collagenase Type 2: 0.075%	DMEM	Veronesi, F, Torricelli, P, Della, B, Pagani, S and Fini, M: In Vitro Mutual Interaction Between Tenocytes and Adipose- Derived Mesenchymal Stromal Cells., *Cytotherapy 17*, 215-23, 2015 (*11266*)
	Rat, 6-8 week	Spinal cord neural progenitor	PDS kit: with modifications	EBSS	Mothe, A. and Tator, C.: Isolation of Neural Stem/Progenitor Cells from the Periventricular Region of the Adult Rat and Human Spinal Cord., *J Vis Exp* , e52732, 2015 (*11551*)
	Rat, adult	Tumor	Collagenase Type 1: 0.16% Hyaluronidase: 0.002% Deoxyribonuclease I: 0.006%	DMEM/F12	Duarte, S., Momier, D., Baque, P., Casanova, V., Loubat, A., Samson, M., Guigonis, J., Staccini, P., Saint-Paul, M., De Lima, M., Carle, G. and Pierrefite- Carle, V.: Preventive Cancer Stem Cell-Based Vaccination Reduces Liver Metastasis Development in a Rat Colon Carcinoma Syngeneic Model., *Stem Cells 31*, 423- 32, 2013 (*10886*)
	Rat, SD, neonatal	Brown adipocytes	Collagenase Type 4: 0.1% Neutral Protease: 0.1% Trypsin: 0.05%	PBS	Liu, Z., Wang, H., Zhang, Y., Zhou, J., Lin, Q., Wang, Y., Duan, C., Wu, K. and Wang, C.: Efficient Isolation of Cardiac Stem Cells from Brown Adipose., *J Biomed Biotechnol 2010*, 104296, 2010 (*10598*)
	Rat	Adipose derived stem	Collagenase Type 1: 0.1%	DMEM	Wei, X., Du, Z., Zhao, L., Feng, D., Wei, G., He, Y., Tan, J., Lee, W., Hampel, H., Dodel, R., Johnstone, B., March, K., Farlow, M. and Du, Y.: IFATS Collection: The Conditioned Media of Adipose Stromal Cells Protect Against Hypoxia- Ischemia-Induced Brain Damage In Neonatal Rats., *Stem Cells 27*, 478, 2009 (*10873*)
	Rat, SD, newborn	Neutral stem cells, Schwann cells	Trypsin: 0.25% Collagenase: 0.16%	DMEM/F12	Zeng, Y., Ding, Y., Wu, L., Guo, J., Li, H., Wong, W., Wu, W,: Co-Transplantation of Schwann Cells Promotes the Survival and Differentiation of Neural Stem Cells Transplanted Into the Injured Spinal Cord, *Dev Neurosci 27*, 20-6, 2005 (*10109*)
	Rat, 2 month	Spinal cord progenitor cells	PDS kit: see reference	Neurobasal A	Mothe, A., Kulbatski, I., Van Bendegem, R., Lee, L., Kobayashi, E., Keating, A., and Tator, C.: Analysis of Green Fluorescent Protein Expression in Transgenic Rats for Tracking Transplanted Neural Stem/Progenitor Cells, *J Histochem Cytochem 53(10)*, 1215, 2005 (*1031*)
	Rat, male, 200-250 g	Neural stem cells	Papain: 0.09% Deoxyribonuclease I: 0.1%	EBSS	Gobbel GT, Choi SJ, Beier S, Niranjan A: Long-term cultivation of multipotential neural stem cells from adult rat subependyma, *Brain Res 980*, 221, 2003 (*10051*)
	Rat, postnatal, adult	Gut neural crest stem	Collagenase Type 4: 0.1% Trypsin: 0.025%	HBSS	Kruger, G., Mosher, J., Bixby, S., Joseph, N., Iwashita, T. and Morrison, S.: Neural Crest Stem Cells Persist in the Adult Gut but Undergo Changes in Self- Renewal, Neuronal Subtype Potential, and Factor Responsiveness., *Neuron 35*, 657, 2002 (*10866*)
	Rat, SD, embyronic	Sciatic nerve and gut neural crest stem	Collagenase Type 4: 0.025% Trypsin: 0.005% Deoxyribonuclease I: 0.05%	HBSS	Bixby, S., Kruger, G., Mosher, J., Joseph, N. and Morrison, S.: Cell-Intrinsic Differences Between Stem Cells from Different Regions of the Peripheral Nervous System Regulate the Generation of Neural Diversity., *Neuron 35*, 643, 2002 (*10890*)
	Rat, adult	Neural stem cells	Papain: 2.5 u/ml Deoxyribonuclease I: 250 u/ml Neutral Protease: 1 u/ml	DMEM/F-12	Palmer, T., Markakis, E., Willhoite, A., Safar, F., and Gage, F.: Fibroblast Growth Factor-2 Activates a Latent Neurogenic Program in Neural Stem Cells from Diverse Regions of the Adult CNS, *J Neurosci 19*, 8487, 1999 (*9798*)
	Rat	Central nervous system stem cells	Papain: 0.01% Neutral Protease: 0.1%	DMEM/F-12	Ray, J. and Gage, F.: Neural Stem Cell Isolation, Characterization and Transplantation, *Modern Techniques in Neuroscience Research*, Johansson, H. and Windhorst, U., Springer- Verlag New York, 339, 1999 (*10534*)
	Rat, SD	Sciatic nerves	Trypsin: 0.025% Collagenase Type 3: 0.1%	L-15 medium (see reference)	Morrison, S., White, P., Zock, C., and Anderson, D.: Prospective Identification, Isolation by Flow Cytometry, and *In Vivo* Self-Renewal of Multipotent Mammalian Neural Crest Stem Cells, *Cell 96*, 737, 1999 (*1099*)
	Rat (also mice)	Spinal cord	Trypsin: 0.133%	HBSS and PIPES	Johansson, C., Momma, S., Clarke, D., Risling, M., Lendahl, U., and Frisen, J: Identification of a Neural Stem Cell in the Adult Mammalian Central Nervous System, *Cell 96*, 25, 1999 (*1100*)
	Rat, embryonic	Neurons and progenitor	Papain: 20 u/ml	EBSS	Maric, D., Maric, I. and Barker, J.: Buoyant Density Gradient Fractionation and Flow Cytometric Analysis of Embryonic Rat Cortical Neurons and Progenitor Cells., *Methods 16*, 247, 1998 (*10516*)
	Rat	Stem, neural crest	Collagenase: 0.075%	Ringer's solution	Stemple, D., and Anderson, D.: Isolation of a Stem Cell for Neurons and Glia from the Mammalian Neural Crest, *Cell 71*, 973, 1992 (*1297*)

Thymus

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human	Dentritic	Collagenase Type 2: 0.1% Deoxyribonuclease I: 0.002%	RPMI 1640	Vandenabeele, S., Hochrein, H., Mavaddat, N., Winkel, K., Shortman, K.: Human Thymus Contains 2 Distinct Dendritic Cell Populations, *Blood 97*, 1733-41, 2001 (*10245*)
Mouse	Mouse	Thymic stromal	Collagenase Type 4: 0.02% Neutral Protease: 0.02% Deoxyribonuclease I: 0.0025%	RPMI-1640	Rode, I. and Boehm, T.: Regenerative Capacity of Adult Cortical Thymic Epithelial Cells., *Proc Natl Acad Sci U S A 109*, 3463-8, 2012 (*11532*)
	Mouse	Stromal	Collagenase Type 3: 0.2% Hyaluronidase: 0.1%	RPMI 1640	Phillips, J., Brondstetter, T., English, C., Lee, H., Virts, E, and Thoman, M.: IL-7 Gene Therapy in Aging Restores Early Thymopoiesis without Reversing Involution, *J Immunol* , 4869, 2004 (*10237*)
	Mouse	Dentritic	Collagenase Type 3: 0.1% Deoxyribonuclease I: 325 u/ml	RPMI 1640	Schiavoni, F, Mattei, F, Sestili, P, Borghi, P, Venditti, M, Morse, H, Belardelli, F, and Gabrieli, L: ICSBP is Essential for the Development of Mouse Type I Interferon-producing Cells and for the Generation and Activation of CD8a+ Dendritic Cells, *J Exp Med 196*, 1415, 2002 (*10235*)
	Mouse, 3-6 week	Thymic	Collagenase Type 3: 100-400 u/ml	HBSS	Smith, K., Olson, D., Hirose, R., Hanahan, D.: Pancreatic Gene Expression in Rare Cells of Thymic Medulla: Evidence for Functional Contribution to T Cell Tolerance, *Int Immunol 9*, 1355-65, 1997 (*10239*)

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Thymus					
Species	**Species Detail**	**Cell(s)**	**Enzyme(s)**	**Medium**	**Reference**
Mouse	Mouse (BALB/c, C3H, C57BL/6), 1-28 day	Epithelial, thymus	Neutral Protease: 1.5 µg/ml	DMEM	Ropke, C., van Deurs, B., and Petersen, O.: Short-term Cultivation of Murine Thymic Epithelial Cells in a Serum-Free Medium, *In Vitro Cell Dev Biol 26*, 671, 1990 (*1288*)
	Mouse, C3H, 16 wk old, female	Epithelial	Collagenase Type 3: 0.1%	DMEM	Ehmann, U., Shiurba, R., and Peterson, W.: Long-Term Proliferation of Mouse Thymic Epithelial Cells in Culture, *In Vitro Cell Dev Biol 22 (12)*, 738, 1986 (*916*)
	Mouse, Swiss, 6 wk	Thymus	Collagenase Type 3: 150 u/ml	DMEM	Jones, K. and Pierre, R.: Analysis of Cellular Heterogeneity in Mouse Thymus Cultures, *In Vitro 17*, 431, 1981 (*511*)
Rat	Rat, postnatal	Thymic	Trypsin: 0.05%	HBSS	Bonfanti, P., Claudinot, S., Amici, A., Farley, A., Blackburn, C. and Barrandon, Y.: Microenvironmental Reprogramming of Thymic Epithelial Cells to Skin Multipotent Stem Cells., *Nature 466*, 978, 2010 (*10595*)
	Rat	Thymic epithelial	Collagenase Type 3: 0.1%	DMEM	Masuda, A and Matsuyama, M: Epithelial Cell Lines From Rat Thymoma and Rat Thymus, *Cell & Tissue Culture: Laboratory Procedures Vol. 2*, Doyle, A., Griffiths, J., and Newell, D., John Wiley and Sons, Ltd., 21C:4.1, 1995 (*1280*)
	Rat (ACI/NMs X BUF/Mna) F1, male, 28 months Rat, (ACI/MNs) male, 8 weeks (also bovine, adult)	Epthelial	Collagenase Type 3: 0.1%	Eagle's MEM Serum-free	Masuda, A., Ohtsuka, K., and Matsuyama, M.: Establishment of Functional Epithelial Cell Lines from a Rat Thyoma and a Rat Thymus, *In Vitro Cell Dev Biol 26*, 713, 1990 (*448*)
Thyroid/Parathyroid					
Bovine	Bovine, adult	Parathyroid	Deoxyribonuclease I: 0.005%,	HEPES Ham's F10	Nygren, P., Gylfe, E., Larsson, R., Johansson, H., Juhlin, C., Klareskoq, L., Akerstrom, G., and Rastad, J.: Modulation of the Ca2+- Sensing Function of Parathyroid Cells *In Vitro* and in Hyperparathyroidism, *Biochim Biophys Acta 968*, 253, 1988 (*337*)
	Bovine	Parathyroid glands	Deoxyribonuclease I: 0.0075%	HEPES buffer	Wallace, J., and Scarpa, A.: Regulation of Parathyroid Hormone Secretion *in Vitro* by Divalent Cations, *J Biol Chem 257*, 10613, 1982 (*555*)
	Bovine	Parathyroid	Deoxyribonuclease I: 0.004%	Eagle's #2 medium without bicarbonate	Brown, E., Hurwitz, S., and Aurbach, G.: Preparation of Viable Isolated Bovine Parathyroid Cells, *Endocrinology 99*, 1582, 1976 (*385*)
	Bovine (also porcine)	Thyroid	Trypsin: 0.004%	EBSS	Tong, W.: The Isolation and Culture of Thyroid Cells, *Meth Enzymol 32*, 745, 1974 (*636*)
Chicken	Chick embryo	Thyroid, Muscle, Heart	Collagenase: 0.25%	Tyrode's saline, potassium free	Hilfer, S., and Brown, J.: Collagenase. Its Effectiveness as a Dispersing Agent for Embryonic Chick Thyroid and Heart, *Exp Cell Res 65*, 246, 1971 (*401*)
	Chicken, Rhode Island Red, embryo	Thyroid follicular	Collagenase: 0.2%	Tyrode's solution, CMF	Spooner, B.: The Expression of Differentiation by Chick Embryo Throid in Cell Culture. I. Functional and Fine Structural Stability in Mass and Clonal Culture, *J Cell Physiol 75*, 33, 1970 (*682*)
Human	Human	Endothelial	Collagenase Type 2: 0.1%	DMEM	Patel, V., Logan, A., Watkinson, J., Uz-Zaman, S., Sheppard, M., Ramsden, J. and Eggo, M.: Isolation and Characterization of Human Thyroid Endothelial Cells., *Am J Physiol Endocrinol Metab 284*, E168, 2003 (*10586*)
	Human	Thyrocytes	Collagenase Type 1: 130 u/ml Neutral Protease: 0.5 u/ml	HBSS	Gianoukakis, A., Cao, H., Jennings, T. and Smith, T.: Prostaglandin Endoperoxide H Synthase Expression in Human Thyroid Epithelial Cells., *Am J Physiol Cell Physiol 280*, C701, 2001 (*10594*)
	Human	Thyrocytes	Neutral Protease: 0.5% Trypsin: 0.25% Collagenase: 0.1%	EBSS	Howie, A., Walker, S., Akesson, B., Arthur, J. and Beckett, G.: Thyroidal Extracellular Glutathione Peroxidase: A Potential Regulator of Thyroid-Hormone Synthesis., *Biochem J 308 (Pt 3)*, 713, 1995 (*10593*)
	Human	Thyroid	Collagenase: 300 u/ml	Ham's F- 12/MEM	Miller, R., Hiraoka, T., Nakamura, N., Tenou, H., Kopecky, K., Jones, M. and Gould, M.: In Vitro Culture of Human Thyroid Cells; Methods and Application to Radiation Biology., *J Radiat Res 26*, 269, 1985 (*10365*)
Mouse	Mouse	Thyroid tumor	Collagenase Type 1: 300 u/ml Hyaluronidase: 100 u/ml Deoxyribonuclease I: 0.01%	DMEM	Kitajima, S., Kohno, S., Kondoh, A., Sasaki, N., Nishimoto, Y., Li, F., Mohammed, M., Muranaka, H., Nagatani, N., Suzuki, M., Kido, Y. and Takahashi, C.: Undifferentiated State Induced by Rb-p53 Double Inactivation in Mouse Thyroid Neuroendocrine Cells and Embryonic Fibroblasts., *Stem Cells 33*, 1657-69, 2015 (*11653*)
	Mouse, 6 week	Thyroid	Neutral Protease: 0.0012 u/ml Collagenase Type 2: 0.25 u/ml	RPMI 1640	Martin, A., Coronel, E., Sano, G., Chen, S., Vassileva, G., Canasto-Chibuque, C., Sedgwick, J., Frenette, P., Lipp, M., Furtado, G. and Lira, S.: A Novel Model for Lymphocytic Infiltration of the Thyroid Gland Generated by Transgenic Expression of the CC Chemokine CCL21., *J Immunol 173*, 4791, 2004 (*10653*)
Ovine	Sheep	Thyroid	Collagenase: 0.2%	Puck's Saline F	Kerkof, P.: Preparation of Primary Cultures of Ovine Thyroid Gland Cells, *J Tiss Cul Meth 7*, 23, 1982 (*1289*)
Porcine	Porcine (also bovine)	Thyroid	Trypsin: 0.004%	EBSS	Tong, W.: The Isolation and Culture of Thyroid Cells, *Meth Enzymol 32*, 745, 1974 (*636*)
Rat	Rat, Lewis, male, 4 week	Thyroid	Collagenase Type 2: 0.15% Collagenase Type 4: 0.15%	DMEM	Arauchi, A., Shimizu, T., Yamato, M., Obara, T. and Okano, T.: Tissue-Engineered Thyroid Cell Sheet Rescued Hypothyroidism in Rat Models After Receiving Total Thyroidectomy Comparing with Nontransplantation Models., *Tissue Eng Part A 15*, 3943, 2009 (*10655*)
Tonsil					
Human	Human	Tonsillar	Collagenase Type 1: 0.2%	see reference	Muto, M., Manfroi, B., Suzuki, H., Joh, K., Nagai, M., Wakai, S., Righini, C. et al: Toll-Like Receptor 9 Stimulation Induces Aberrant Expression of a Proliferation- Inducing Ligand by Tonsillar Germinal Center B Cells in IgA Nephropathy., *J Am Soc Nephrol 28*, 1227-1238, 2017 (*11687*)
	Human	Tonsillar	Collagenase Type 1: 0.1%	PBS	Schmidt, S., Schenkova, K., Adam, T., Erikson, E., Lehmann-Koch, J., Sertel, S., Verhasselt, B., Fackler, O., Lasitschka, F. and Keppler, O.: SAMHD1's Protein Expression Profile in Humans., *J Leukoc Biol 98*, 5-14, 2015 (*11695*)
	Human	Tonsillar	Collagenase Type 4: 0.1%	Bambanker	Sato, D., Suzuki, Y., Kano, T., Suzuki, H., Matsuoka, J., Yokoi, H., Horikoshi, S., Ikeda, K. and Tomino, Y.: Tonsillar TLR9 Expression and Efficacy of Tonsillectomy with Steroid Pulse Therapy in IgA Nephropathy Patients., *Nephrol Dial Transplant 27*, 1090-7, 2012 (*11686*)

TISSUE TABLES

Tonsil					Tonsil
Species	**Species Detail**	**Cell(s)**	**Enzyme(s)**	**Medium**	**Reference**
Human	Human, female, 25-45 year	Tonsillar mononuclear cells	Collagenase Type 1: 210 u/ml Deoxyribonuclease I: 90 u/ml	RPMI	Grammer, A., Slota, R., Fischer, R., Gur, H., Girschick, H., Yarboro, C., Illei, G., Lipsky, P.: Abnormal Germinal Center Reactions in Systemic Lupus Erythematosus Demonstrated by Blockade of CD154-CD40 Interactions, *J Clin Invest 112*, 1506-20, 2003 (*10223*)
	Human	Tonsillar mononuclear cells	Collagenase Type 1: 210 u/ml Deoxyribonuclease I: 90 u/ml	RPMI	Grammer, A., McFarland, R., Heaney, J., Darnell, B., Lipsky, P.: Expression, Regulation, and Function of B Cell-Expressed CD154 in Germinal Centers, *J Immunol 163*, 4150-9, 1999 (*10230*)
Tumor					**Tumor**
Hamster	Hamster, 90-100 g	Tumor	Hyaluronidase: 0.1%	Waymouth's MB	Gonzalez, A., Oberley, T., Schultz, J., Ostrom, J., and Li, J.: *In Vitro* Characterization of Estrogen Induced Syrian Hamster Renal Tumors: Comparison with an Immortalized Cell Line Derived from Diethylstilbestrol-Treated Adult Hamster Kidney, *In Vitro Cell Dev Biol 29A*, 562, 1993 (*1180*)
	Hamster, 6 week old	Buccal pouch	Neutral Protease: 0.24%	CMF HBSS	Min, B., Kim, K., Cherrick, H., and Park, N.: Three Cell Lines from Hamster Buccal Pouch Tumors Induced by Topical 7,12- Dimethylbenz(a) Anthracene, Alone or in Conjunction with Herpes Simplex Virus Inoculation, *In Vitro Cell Dev Biol 27A*, 128, 1991 (*457*)
Human	Human	Ameloblastoma epithelial	Collagenase: 0.1% Neutral Protease: 50 u/ml	MEM	Jiang, C., Zhang, Q., Shanti, R., Shi, S., Chang, T., Carrasco, L., Alawi, F. and Le, A.: Mesenchymal Stromal Cell-Derived Interleukin-6 Promotes Epithelial-Mesenchymal Transition and Acquisition of Epithelial Stem-Like Cell Properties in Ameloblastoma Epithelial Cells., *Stem Cells 35*, 2083-2094, 2017 (*11559*)
	Human, 25-81 yr	Brain tumor	Neutral Protease: 0.11 u/ml Collagenase Type 4: 0.05% Hyaluronidase: 1,000 u/ml Deoxyribonuclease I: 5 u/ml	HBSS	Volovitz, I, Shapira, N., Ezer, H., Gafni, A., Lustgarten, M., Alter, T., Ben-Horin, I., Barzilai, O., Shahar, T., Kanner, A., Fried, I., Veshchev, I., Grossman, R. and Ram, Z,: A Non- Aggressive, Highly Efficient, Enzymatic Method for Dissociation of Human Brain-Tumors and Brain- Tissues to Viable Single- Cells., *BMC Neurosci 17*, 30, 2016 (*11525*)
	Human	Pancreatic cancer	Stemxyme: 0.2%	HBSS	Pham, K., Delitto, D., Knowlton, A., Hartlage, E., Madhavan, R., Gonzalo, D., Thomas, R., Behrns, K., George, T., Hughes, S., Wallet, S., Liu, C., Trevino, J.: Isolation of Pancreatic Cancer Cells from a Patient- Derived Xenograft Model Allows for Practical Expansion and Preserved Heterogeneity in Culture., *Am J Pathol 186*, , 2016 (*11492*)
	Human	Non-small cell lung tumor	Collagenase Type 1: 0.1% Collagenase Type 2: 0.25%	RPMI-1640	Liang, S., Marti, T., Dorn, P., Froment, L., Hall, S., Berezowska, S., Kocher, G., Schmid, R. and Peng, R.: Blocking the Epithelial-to- Mesenchymal Transition Pathway Abrogates Resistance to Anti-Folate Chemotherapy in Lung Cancer., *Cell Death Dis 6*, e1824, 2015 (*11419*)
	Human	Lung tumor	Collagenase Type 1: 45-60 u/ml Collagenase Type 2: 15-20 u/ml Collagenase Type 4: 45-60 u/ml Elastase: 0.002% Deoxyribonuclease I: 0.002%	DMEM/F12	Quatromoni, J., Singhal, S., Bhojnagarwala, P., Hancock, W., Albelda, S. and Eruslanov, E.: An Optimized Dissagregation Method for Human Lung Tumors That Perserves the Phenotype and Function of the Immune Cells, *J Leukoc Biol 97*, 201, 2015 (*11458*)
	Human	Tumour infiltrating lymphocytes	Collagenase: 1% Hyaluronidase: 1% Deoxyribonuclease I: 3,000 u/ml	RPMI 1640	Baldan, V., Griffiths, R., Hawkins, R. and Gilham, D: Efficient and Reproducible Generation of Tumour- Infiltrating Lymphocytes for Renal Cell Carcinoma, *Br J Cancer 112*, 1510, 2015 (*11535*)
	Human	Colon	Trypsin: 0.1% Collagenase: 0.1%	HBSS	Ali, M., Anand, S., Tangella, K., Ramkumar, D. and Saif, T.: Isolation of Primary Human Colon Tumor Cells from Surgical Tissues and Culturing Them Directly on Soft Elastic Substrates for Traction Cytometry., *J Vis Exp* , e52532, 2015 (*11633*)
	Human	Glioblastoma tumor	Trypsin: 0.025% Collagenase Type 4: 500 u/ml	HBSS	Hasselbach, L., Irtenkauf, S., Lemke, N., Nelson, K., Berezovsky, A., Carlton, E., Transou, A., Mikkelsen, T. and deCarvalho, A.: Optimization of High Grade Glioma Cell Culture from Surgical Specimens for Use in Clinically Relevant Animal Models and 3D Immunochemistry., *J Vis Exp,* e51088, 2014 (*11441*)
	Human	Glioma cancer stem	PDS kit: per instructions	Neurobasal	Yan, K., Wu, Q., Yan, D., Lee, C., Rahim, N., Tritschler, I., DeVecchio, J., Kalady, M., Hjelmeland, A. and Rich, J.: Glioma Cancer Stem Cells Secrete Gremlin1 to Promote their Maintenance Within the Tumor Hierarchy., *Genes Dev 28*, 1085-100, 2014 (*11658*)
	Human	Melanoma	Collagenase Type 4: 0.1% Deoxyribonuclease I: 0.01%	PBS	Welte, Y., Davies, C., Schafer, R. and Regenbrecht, C.: Patient Derived Cell Culture and Isolation of CD133+ Putative Cancer Stem Cells from Melanoma., *J Vis Exp 73*, e50200, 2013 (*11032*)
	Human	Tumor	Collagenase Type 1: 0.1% Hyaluronidase: 0.01% Deoxyribonuclease I: 0.01%	DMEM/F12	Chou, J., Fitzgibbon, M., Mortales, C., Towlerton, A., Upton, M., Yeung, R., McIntosh, M. and Warren, E.: Phenotypic and Transcriptional Fidelity of Patient-Derived Colon Cancer Xenografts in Immune-Deficient Mice., *PLoS ONE 8*, e79874, 2013 (*11058*)
	Human	Cancer stem	Trypsin: 0.25% Collagenase: 0.05% Hyaluronidase: 0.005%	RPMI	Dobbin, Z. and Landen, C.: Isolation and Characterization of Potential Cancer Stem Cells from Solid Human Tumors-- Potential Applications., *Curr Protoc Pharmacol 63*, Unit 14.28., 2013 (*11538*)
	Human	Colorectal cancer	Collagenase Type 4: 2% Deoxyribonuclease I: 0.1%	RPMI 1640	Zhou, J, Belov, L., Solomon, M., Chan, C., Clarke, S. and Christopherson, R.: Colorectal Cancer Cell Surface Protein Profiling Using an Antibody Microarray and Fluorescence Multiplexing., *J Vis Exp 55*, e3322, 2011 (*10913*)
	Human	Brain tumor	Collagenase Type 1: 0.04% Hyaluronidase: 0.01% Deoxyribonuclease I: 0.02% Neutral Protease: 0.008%	DMEM/F12	Hussein, D., Punjaruk, W., Storer, L., Shaw, L., Othman, R., Ottoman, R., Peet, A., Miller, S., Bandopadhyay, G., Heath, R., Kumari, R., Bowman, K., Braker, P., Rahman, R., Jones, G., Watson, S. and Lowe, J.: Pediatric Brain Tumor Cancer Stem Cells: Cell Cycle Dynamics, DNA Repair, and Etoposide Extrusion., *Neuro Oncol 13*, 70-83, 2011 (*11598*)
	Human	Tumorigenic melanoma	Collagenase Type 4: 200 u/ml Trypsin: 0.05% Deoxyribonuclease I: 50-100 u/ml	PBS	Quintana, E., Shackleton, M., Foster, H., Fullen, D., Sabel, M., Johnson, T. and Morrison, S.: Phenotypic Heterogeneity Among Tumorigenic Melanoma Cells from Patients that is Reversible and Not Hierarchically Organized., *Cancer Cell 18*, 510, 2010 (*10601*)

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Tumor **Tumor**

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Human	Human	Pancreatic tumor	Collagenase Type 4: 200 u/ml	RPMI-1640	Kim, M., Evans, D., Wang, H., Abbruzzese, J., Fleming, J. and Gallick, G.: Generation of Orthotopic and Heterotopic Human Pancreatic Cancer Xenografts in Immunodeficient Mice., *Nat Protoc 4*, 1670, 2009 (*10524*)
	Human	Tumor	Collagenase Type 4: 0.1% Hyaluronidase: 0.07% Deoxyribonuclease I: 0.04%	see reference	Sauvageot, C., Weatherbee, J., Kesari, S., Winters, S., Barnes, J., Dellagatta, J., Ramakrishna, N., Stiles, C., Kung, A., Kieran, M. and Wen, P.: Efficacy of the HSP90 Inhibitor 17-AAG in Human Glioma Cell Lines and Tumorigenic Glioma Stem Cells., *Neuro Oncol Vol. 11*, 109, 2009 (*10592*)
	Human	Colon cancer	Collagenase Type 1: 300 u/ml Hyaluronidase: 100 u/ml	DMEM/F12	Varnat, F., Duquet, A., Malerba, M., Zbinden, M., Mas, C., Gervaz, P. and Ruiz i Altaba, A.: Human Colon Cancer Epithelial Cells Harbour Active HEDGEHOG-GLI Signalling that is Essential for Tumour Growth, Recurrence, Metastasis and Stem Cell Survival and Expansion., *EMBO Mol Med 1*, 338-51, 2009 (*11082*)
	Human	Breast epithelial	Collagenase Type 3: 200 u/ml	HBSS	Liu, R., Wang, X., Chen, G., Dalerba, P., Gurney, A., Hoey, T., Sherlock, G., Lewicki, J., Shedden, K. and Clarke, M.: The Prognostic Role of a Gene Signature from Tumorigenic Breast- Cancer Cells., *N Engl J Med 356*, 217, 2007 (*10551*)
	Human	Prostate stromal cells	Collagenase Type 1: 0.1%	RPMI 1640	Nakashiro, K., Hara, S., Shinohara, Y., Oyasu, M., Kawamata, H., Shintani, S., Hamakawa, H., Oyasu, R.: Phenotypic Switch from Paracrine to Autocrine Role of Hepatocyte Growth Factor in an Androgen-Independent Human Prostatic Carcinoma Cell Line, CWR22R, *Am J Pathol 165*, 533-40, 2004 (*10163*)
	Human, adult	Human synovial sarcoma	Collagenase Type 2: 200 u/ml	DMEM/F-12	Nishio, J., Iwasaki, H., Ishiguro, M., Ohjimi, Y., Fujita, C., Isayama, T., Naito, M., Oda, Y., Kaneko, Y., Kikuchi, M.: Establishment of a New Human Synovial Sarcoma Cell Line, FU-SY-1, That Expresses c-Met Receptor and its Ligand Hepatocyte Growth Factor, *Int J Oncol 21*, 17-23, 2002 (*10164*)
	Human	Colonocytes	Collagenase:	DMEM/F12	Emenaker, N., Calaf, G., Cox, D., Basson, M. and Qureshi, N.: Short Chain Fatty Acids Differentially Modulate Cellular Phenotype and C-myc Protein Levels in Primary Human Nonmalignant and Malignant Colonocytes, *J Nutr 46*, 96-105, 2001 (*10143*)
	Human	Epithelial, fibroblasts	Trypsin: 0.25%	Ham's F-12	MacLeod, R.: Rapid Monolayer Primary Cell Culture from Tissue Biopsy, *Cell & Tissue Culture: Laboratory Procedures Vol. 1*,Doyle, A., Griffiths, J., and Newell, D., John Wiley and Sons Ltd, 3E:2.1, 1995 (*1269*)
	Human	Colon adenocarcinoma	Hyaluronidase: 100 u/ml	DMEM	Hague, A and Paraskeva, C: Colon Adenocarcinoma Cells, *Cell & Tissue Culture: Laboratory Procedures Vol. 1*,Doyle, A., Griffiths, J., and Newell, D., John Wiley and Sons, Ltd., 12C:1.1, 1995 (*1277*)
	Human	Tumor, breast	Hyaluronidase: 100 u/ml	DMEM	Beaupain, R., Mainquene, C., Brouty-Boye, D., Planchon, P., and Magniew, V.: "Normal" Breast Cells Adjacent to a Tumor Grown in Long-term Three Dimensional Culture, *In Vitro Cell Dev Biol 29*, 100, 1993 (*490*)
	Human	Glioma	Hyaluronidase: 0.01%	HBSS	Kruse, C., Mitchell, D., Kleinschmidt-DeMasteis, B., Franklin, W., Morse, H., Spector, E., and Lillehei, K.: Characterization of a Continuous Human Glioma Cell Line DBTRG-OSMG: Growth Kinetics, Karyotype, Receptor Expression and Tumor Suppressor Gene Analyses, *In Vitro Cell Dev Biol 28*, 609, 1992 (*485*)
	Human	Epithelial	Collagenase: 2.0%	DMEM/Ham's F-12	Emerman, J. and Wilkinson, D.: Routine Culturing of Normal, Dysplastic and Malignant Human Mammary Epithelial Cells from Small Tissue Samples, *In Vitro Cell Dev Biol 26*, 1186, 1990 (*429*)
	Human	Tumor	Neutral Protease: 0.24%	DMEM/Ham's F-12	Boyd, J., Rinehart Jr., C., Walton, L., Siegal, G. and Kaufman, D.: Ultrastructural Characterization of Two New Human Endometrial Carcinoma Cell Lines and Normal Human Endometrial Epithelial Cells Cultured on Extracellular Matrix, *In Vitro Cell Dev Biol 26*, 701, 1990 (*446*)
	Human, 9-74 year	Neurofibroma	Neutral Protease: 1.25 u/ml Collagenase Type 1: 0.05% Hyaluronidase: 0.1%	L-15	Sheela, S., Riccardi, V., Ratner, N.: Angiogenic and Invasive Properties of Neurofibroma Schwann Cells, *J Cell Biol 111*, 645-53, 1990 (*10295*)
	Human	Tumor	Trypsin: 0.05%	DMEM	Sacks, P., Parnes, S., Gallick, G., Mansouri, Z., Lichtner, R., Satya-Prakash, K., Pathak, S, and Parsons, D.: Establishment and Characterization of Two New Squamous Cell Carcinoma Cell Lines Derived from Tumors of the Head and Neck, *Cancer Res 48*, 2858,
	Human	Tumor, colon	Trypsin: 0.25%	McCoy's	Brattain, M., Marks, M., McCombs, J., Finely, W., and Brattain, D.: Characterization of Human Colon Carcinoma Cell Lines Isolated From a Single Primary Tumour, *Br J Cancer 47*, 373, 1983 (*1183*)
	Human	Epthelial and tumor Colon	Collagenase: 300 u/ml	PBS medium 199 or medium F 12	Friedman, E., Higgins, P., Lipkin, M., Shinya, H., and Gelb, A.: Tissue Culture of Human Epithelial Cells from Benign Colonic Tumors, *In Vitro 17*, 632, 1981 (*514*)
	Human	Tumor, breast	Neuraminidase: 0.8 u/ml	HBSS	Leung, C., and Shiu, R.: Morphological and Proliferative Characteristics of Human Breast Tumor Cells Cultured on Plastic and in Collagen Matrix, *In Vitro 18*, 476, 1981 (*521*)
	Human	Melanoma Metastatic tumors	Collagenase Type 3: 0.10%	DMEM	Creasey, A., Smith, H., Hackett, A., Fukuyama, K., Epstein, W., and Madin, S.: Biological Properties of Human Melanoma Cells in Culture, *In Vitro 15*, 342, 1979 (*503*)
	Human	Mammary tumors, hard	Collagenase: 0.10%	RPMI-1640 w/5% Fetal Calf Serum	Lasfargues, E.: Human Mammary Tumors, *Tissue Culture Methods/Applications*,Kruse, P., and Patterson, M., Academic Press, 45, 1973 (*1293*)
Mouse	Mouse	Tumor derived neutroblastoma	Papain: 10 u/ml Deoxyribonuclease I: 250 u/ml	DPBS	Erdreich-Epstein, A., Singh, A., Joshi, S., Vega, F., Guo, P., Xu, J., Groshen, S., Ye, W., Millard, M., Campan, M., Morales, G., Garlich, J., Laird, P., Seeger, R., Shimada, H. and Durden, D.: Association of High Microvessel A,B and Low PTEN with Poor Outcome in Stage 3 Neuroblastoma: Rationale for Using First in Class Dual PI3K/BRD4 Inhibitor, SF1126., *Oncotarget 8*, 52193-52210, 2017 (*11540*)
	Mouse	Glioblastoma	PDS kit: per instructions	DMEM/F12	Boyd, N., Walker, K., Fried, J., Hackney, J., McDonald, P., Benavides, G., Spina, R., Audia, A., Scott, S., Libby, C., Tran, A., Bevensee, M., Griguer, C., Nozell, S., Gillespie, G. and Nabors, B.: Addition of Carbonic Anhydrase 9 Inhibitor SLC- 0111 to Temozolomide Treatment Delays Glioblastoma Growth In Vivo., *JCI Insight 2*, , 2017 (*11579*)
	Mouse, xenograft	Pancreatic cancer	STEMxyme®: 0.2%	HBSS	Pham, K., Delitto, D., Knowlton, A., Hartlage, E., Madhavan, R., Gonzalo, D., Thomas, R., Behrns, K., George, T., Hughes, S., Wallet, S., Liu, C., Trevino, J.: Isolation of Pancreatic Cancer Cells from a Patient- Derived Xenograft Model Allows for Practical Expansion and Preserved Heterogeneity in Culture., *Am J Pathol 186*, , 2016 (*11492*)

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Tumor Tumor

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse	Tumor	Collagenase Type 4: 0.1% Neutral Protease: 0.1% Deoxyribonuclease I: 0.02%	RPMI-1640	Filtjens, J., Keirsse, J., Van Ammel, E., Taveirne, S., Van Acker, A., Kerre, T., Taghon, T., Vandekerckhove, B., Plum, J., Van Ginderachter, J. and Leclercq, G.: Expression of the Inhibitory Ly49E Receptor is Not Critically Involved in the Immune Response Against Cutaneous, Pulmonary or Liver tumours., *Sci Rep 6*, 30564, 2016 (*11504*)
	Mouse	Tumor	Collagenase: 0.1% Neutral Protease: 0.5 u/ml	F12K	Aguilera, T., Rafat, M., Castellini, L., Shehade, H., Kariolis, M., Hui, A., Stehr, H., von Eyben, R., Jiang, D., Ellies, L., Koong, A., Diehn, M., Rankin, E. Graves, E. and Giaccia, A.: Reprogramming the Immunological Microenvironment through Radiation and Targeting Axl., *Nat Commun 7*, 13898, 2016 (*11518*)
	Mouse	Tumor-infiltrating lymphocytes	Collagenase Type 4: 0.25%	DMEM	Singer, M., Wang, C., Cong, L., Marjanovic, N., Kowalczyk, Mo., Zhang, H., Nyman, J., Sakuishi, K., Kurtulus, S., Gennert, D., Xia, J., Kwon, J., Nevin, J., Herbst, R., Yanai, I., Rozenblatt-Rosen, O. and Kuchroo, V.: A Distinct Gene Module for Dysfunction Uncoupled from Activation in Tumor-Infiltrating T Cells., *Cell 166*, 1500- 1511.e9, 2016 (*11528*)
	Mouse	Glioblastoma	PDS kit: per instructions	Neurobasal	Otvos, B., Silver, D., Mulkearns-Hubert, E., Alvarado, A., Turaga, S., Sorensen, M., Rayman, P., Flavahan, W., Hale, J., Stoltz, K., Sinyuk, M., Wu, Q., Jarrar, A., Kim, S., Fox, P., Nakano, I. and Rich, J.: Cancer Stem Cell-Secreted Macrophage Migration Inhibitory Factor Stimulates Myeloid Derived Suppressor Cell Function and Facilitates Glioblastoma Immune Evasion., *Stem Cells 34*, 2026-39, 2016 (*11661*)
	Mouse	Keratinocytes	Trypsin: 0.25% Collagenase Type 1: 0.12% Collagenase Type 2: 0.05% Collagenase Type 4: 0.05% Hyaluronidase: 0.1%	Low calcium containing media	Blanco, S., Bandiera, R., Popis, M., Hussain, S., Lombard, P., Aleksic, J., Sajini, A., Tanna, H., Cortes- Garrido, R., Gkatza, N., Dietmann, S. and Frye, M.: Stem Cell Function and Stress Response are Controlled by Protein Synthesis., *Nature 534*, 335- 40, 2016 (*11675*)
	Mouse	Mammary tumor	Collagenase Type 1: 200 u/ml Hyaluronidase: 0.001%	DMEM/F12	Hosseini, H., Obradovic, M., Hoffmann, M., Harper, K., Sosa, M., Werner-Klein, M., Nanduri, L., Werno, C., Ehrl, C., Maneck, M., Patwary, N., Haunschild, G., Guzvic, M., Reimelt, C. et al.: Early Dissemination Seeds Metastasis in Breast Cancer., *Nature* , , 2016 (*11681*)
	Mouse	Endothelial	Collagenase Type 2: 0.1% Neutral Protease: 0.25 u/ml Deoxyribonuclease I: 0.0075%	DMEM	Xiao, L., McCann, J. and Dudley, A.: Isolation and Culture Expansion of Tumor- specific Endothelial Cells., *J Vis Exp* , e53072, 2015 (*11553*)
	Mouse	Thyroid tumor	Collagenase Type 1: 300 u/ml Hyaluronidase: 100 u/ml Deoxyribonuclease I: 0.01%	DMEM	Kitajima, S., Kohno, S., Kondoh, A., Sasaki, N., Nishimoto, Y., Li, F., Mohammed, M., Muranaka, H., Nagatani, N., Suzuki, M., Kido, Y. and Takahashi, C.: Undifferentiated State Induced by Rb-p53 Double Inactivation in Mouse Thyroid Neuroendocrine Cells and Embryonic Fibroblasts., *Stem Cells 33*, 1657-69, 2015 (*11653*)
	Mouse	Tumor	Collagenase Type 4: 0.1 Hyaluronidase: 0.01% Deoxyribonuclease I: 30 u/ml	PBS	Devaud, C., Westwood, J., John, L., Flynn, J., Paquet- Fifield, S., Duong, C., Yong, C., Pegram, H., Stacker, S., Achen, M. Stewart, T., Snyder, L., Teng, M., Smyth, M., Darcy, P. and Kershaw, M: Tissues in Different Anatomical Sites can Sculpt and Vary the Tumor Microenvironment to Affect Responses to Therapy., *Mol Ther 22*, 18-27, 2014 (*11489*)
	Mouse	Tumor	Collagenase Type 1: 250 u/ml	DMEM	Ali, O., Verbeke, C., Johnson, C., Sands, R., Lewin, S., White, D., Doherty, E., Dranoff, G. and Mooney, D.: Identification of Immune Factors Regulating Antitumor Immunity Using Polymeric Vaccines with Multiple Adjuvants., *Cancer Res 74*, 1670-81, 2014 (*11603*)
	Mouse	Tumor	Collagenase Type 2: 0.2% Neutral Protease: 2.5 u/ml Deoxyribonuclease I: 0.0075%	DMEM	Dunleavey, J., Xiao, L., Thompson, J., Kim, M., Shields, J., Shelton, S., Irvin, D., Brings, V., Ollila, D., Brekken, R., Dayton, P., Melero-Martin, J. and Dudley, A.: Vascular Channels Formed by Subpopulations of PECAM1+ Melanoma Cells., *Nat Commun 5*, 5200, 2014 (*11607*)
	Mouse	Fibroblasts	Collagenase Type 2: 0.25% Collagenase Type 4: 0.25% Deoxyribonuclease I: 0.05%	DMEM	Sharon, Y., Alon, L., Glanz, S., Servais, C. and Erez, N.: Isolation of Normal and Cancer-Associated Fibroblasts from Fresh Tissues by Fluorescence Activated Cell Sorting (FACS)., *J Vis Exp 71*, e4425, 2013 (*10910*)
	Mouse	Prostate tumor	Collagenase Type 4: 1,600 u/ml	DMEM/F12	Mazzoleni, S., Jachetti, E., Morosini, S., Grioni, M., Piras, I., Pala, M., Bulfone, A., Freschi, M., Bellone, M. and Galli, R.: Gene Signatures Distinguish Stage- Specific Prostate Cancer Stem Cells Isolated From Transgenic Adenocarcinoma of the Mouse Prostate Lesions and Predict the Malignancy of Human Tumors., *Stem Cells Transl Med 2*, 678, 2013 (*10976*)
	Mouse	Mammary tumor	Collagenase: 0.15% Hyaluronidase: 0.020%	DMEM/F12	Liu, X., Johnson, S., Liu, S., Kanojia, D., Yue, W., Singh, U., Wang, Q, Wang Qi, Nie, Q. and Chen H.: Nonlinear Growth Kinetics of Breast Cancer Stem Cells: Implications for Cancer Stem Cell Targeted Therapy., *Sci Rep 3*, 2473, 2013 (*11015*)
	Mouse	Rhabdomycosarcoma tumor	Trypsin: 0.012% Collagenase Type 2: 0.1%	DMEM	Chen, X., Stewart, E., Shelat, A., Qu, C., Bahrami, A., Hatley, M., Wu, G., Bradley, C., McEvoy, J., Pappo, A., Spunt, S., Valentine, M., Valentine, V., Krafcik, F., Lang, W., Wierdl, M. and Tsurkan, L.: Targeting Oxidative Stress in Embryonal Rhabdomyosarcoma., *Cancer Cell 24*, 710-24, 2013 (*11019*)
	Mouse	Tumor endothelial	Collagenase Type 1: 0.2%	HBSS	Kazerounian, S., Gerald, D., Huang, M., Chin, R, Udayakumar, D, Zheng, N., O'Donnell, R., Perruzzi, C., Mangiante, L., Pourat, J., Phung, T., Bravo-Nuevo, A., Shechter, S., McNamara, S. and Duhadaway, K.: RhoB Differentially Controls Akt Function in Tumor Cells and Stromal Endothelial Cells During Breast Tumorigenesis., *Cancer Res 73*, 50, 2013 (*11064*)
	Mouse, male	Dendritic, macrophages	Collagenase (1 or 4): 100-200 u/ml Deoxyribonuclease I: 0.01%	RPMI	Watkins, S., Zhu, Z., Watkins, K. and Hurwitz, A.: Isolation of Immune Cells from Primary Tumors., *J Vis Exp 64*, e3952, 2012 (*10987*)
	Mouse	Lung tumor	Neutral Protease: 50 u/ml Collagenase: 400 u/ml Deoxyribonuclease I: 50 u/ml	DMEM	Vaughan, A., Halbert, C., Wootton, S. and Miller, A.: Lung Cancer in Mice Induced by the Jaagsiekte Sheep Retrovirus Envelope Protein is not Maintained by Rare Cancer Stem Cells, but Tumorigenicity does Correlate with Wnt Pathway Activation., *Mol Cancer Res 10*, 86, 2012 (*11083*)
	Mouse	Macrophages	Collagenase Type 4: 0.2%	PBS	Hamzah, J., Kotamraju, V., Seo, J., Agemy, L., Fogal, V., Mahakian, L., Peters, D., Roth, L., Gagnon, M., Ferrara, K. and Ruoslahti, E.: Specific Penetration and Accumulation of a Homing Peptide Within Atherosclerotic Plaques of Apolipoprotein E-deficient Mice., *Proc Natl Acad Sci U S A 108*, 7154, 2011 (*11460*)

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TISSUE TABLES

Tumor

Tumor

Species	Species Detail	Cell(s)	Enzyme(s)	Medium	Reference
Mouse	Mouse	Pancreatic cancer stem	Collagenase Type 4: 200 u/ml Neutral Protease: 0.6 u/ml	DMEM	Rasheed, Z., Wang, Q. and Matsui, W.: Isolation of Stem Cells from Human Pancreatic Cancer Xenografts., *J Vis Exp 43*, 2169, 2010 (*11033*)
	Mouse	Tumor infiltration lymphocytes	Collagenase Type 1: 0.25% Collagenase Type 2: 0.15% Collagenase Type 4: 0.1% Hyaluronidase: 0.025%	RPMI 1640	Kwong, B., Roberts, S., Silberzahn, T., Filler, R., Neustadter, J., Galan, A., Reddy, S., Lin, W., Ellis, P., Langford, C., Hayday, A. and Girardi, M.: Molecular Analysis of Tumor- Promoting CD8+ T cells in Two-Stage Cutaneous Chemical Carcinogenesis., *J Invest Dermatol 130*, 1726, 2010 (*11053*)
	Mouse, 4-6 week	Pancreatic tumor	Collagenase Type 4: 200 u/ml	RPMI-1640	Kim, M., Evans, D., Wang, H., Abbruzzese, J., Fleming, J. and Gallick, G.: Generation of Orthotopic and Heterotopic Human Pancreatic Cancer Xenografts in Immunodeficient Mice., *Nat Protoc 4*, 1670, 2009 (*10524*)
	Mouse	Tumor	Collagenase Type 3: 200 u/ml	RPMI-1640	Prince, M., Sivanandan, R., Kaczorowski, A., Wolf, G., Kaplan, M., Dalerba, P., Weissman, I.,Clarke, M. and Ailles, L.: Identification of a Subpopulation of Cells with Cancer Stem Cell Properties in Head and Neck Squamous Cell Carcinoma., *Proc Natl Acad Sci U S A 104*, 973, 2007 (*10526*)
	Mouse, 30 week	Tumor endothelial	Collagenase Type 4: 500 u/ml Collagenase Type 2: 550 u/ml Deoxyribonuclease I: 3 u/ml	PBS	Berger, M., Bergers, G., Arnold, B., Hammerling, G. and Ganss, R.: Regulator of G-protein Signaling-5 Induction in Pericytes Coincides With Active Vessel Remodeling During Neovascularization, *Blood 105*, 1094, 2005 (*10249*)
	Mouse	Granule cell precursors, pre- neoplastic and tumor cells	Papain: 10 u/ml Deoxyribonuclease I: 250 u/ml	Neurobasal/B27	Oliver, T., Read, T., Kessler, J., Mehmeti, A., Wells, J., Huynh, T., Lin, S. and Wechsler-Reya, R.: Loss of Patched and Disruption of Granule Cell Development in a Pre-Neoplastic Stage of Medulloblastoma., *Development 132*, 2425, 2005 (*10555*)
	Mouse, 8-10 week	Tumor associated endothelial cells	Collagenase Type 2:	see reference	Hida, K., Hida, Y., Amin, D., Flint, A., Panigrahy, D., Morton, C., Klagsbrun, M.: Tumor-Associated Endothelial Cells with Cytogenetic Abnormalities, *Cancer Res 64*, 8249-55, 2004 (*10170*)
	Mouse	Pancreatic tumor	Collagenase Type 2: 0.5% Collagenase Type 4: 0.5% Deoxyribonuclease I: 0.2%	PBS	Bergers, G., Song, S., Meyer-Morse, N., Bergsland, E., Hanahan, D.: Benefits of Targeting Both Pericytes and Endothelial Cells in the Tumor Vasculature with Kinase Inhibitors, *J Clin Invest 111*, 1287-95, 2003 (*10132*)
	Mouse	Tumor-infiltrating lymphocyte	Collagenase: 200 u/ml	RPMI 1640	Uekusa, Y., Yu, W., Mukai, T., Gao, P., Yamaguchi, N., Murai, M., Matsushima, K., Obika, S., Imanishi, T., Higashibata, Y., Nomura, S., Kitamura Y., Fujiwara, H., Hamaoka, T.: A Pivotal Role for CC Chemokine Receptor 5 in T-Cell Migration to Tumor Sites Induced by Interleukin 12 Treatment in Tumor-Bearing Mice, *Cancer Res 62*, 3751-8, 2002 (*10285*)
	Mouse, male	Melanoma tumor cells	Collagenase Type 2: 0.5%	DMEM	Arbiser, J., Raab, G., Rohan, R., Paul, S., Hirschi, K., Flynn, E., Price, E., Fisher, D., Cohen, C., Klagsbrun, M.: Isolation of Mouse Stromal Cells Associated with a Human Tumor Using Differential Diphtheria Toxin Sensitivity, *Am J Pathol 155*, 723-9, 1999 (*10114*)
	Mouse (BALB/cfC3H)	Mammary tumors Epithelial	Collagenase: 1.0%	HBSS	Yang, J., Guzman, R., Richards, J., and Nandi, S.: Primary Cultures of Mouse Mammary Tumor Epithelial Cells Embedded in Collagen Gels, *In Vitro 16*, 502, 1980 (*507*)
	Mouse, BALB/cfC3H/Crgl	Neoplastic Epithelial tumor	Trypsin:	DMEM	Hosick, H.: A Note on Growth Patterns of Epithelial Tumor Cells in Primary Culture, *Cancer Res 34*, 259, 1974 (*932*)
	Mouse, lactating, 14 day	Mammary	Trypsin NF 1:250: 0.25%	HBSS	Kopelovich, L., Abraham, S., McGrath, H., DeOme, K., Chaikoff, I.: Metabolic Characteristics of a Naturally Ocurring Preneoplastic Tissue. I. Glycolytic Enzyme Activators of Hyperplastic Alveolar Nodule Outgrowths and Adenocarcinomas of Mouse Mammary Gland, *Cancer Res 26*, 1534, 1966 (*352*)
Rat	Rat, adult	Tumor	Collagenase Type 1: 0.16% Hyaluronidase: 0.002% Deoxyribonuclease I: 0.006%	DMEM/F12	Duarte, S., Momier, D., Baque, P., Casanova, V., Loubat, A., Samson, M., Guigonis, J., Staccini, P., Saint-Paul, M., De Lima, M., Carle, G. and Pierrefite- Carle, V.: Preventive Cancer Stem Cell-Based Vaccination Reduces Liver Metastasis Development in a Rat Colon Carcinoma Syngeneic Model., *Stem Cells 31*, 423- 32, 2013 (*10886*)
	Rat	Hippocampal neurons	Papain: 0.2%	Hibernate A	Mehta, N., Lopez, P., Vyas, A. and Schnaar, R.: Gangliosides and Nogo Receptors Independently Mediate Myelin-Associated Glycoprotein Inhibition of Neurite Outgrowth in Different Nerve Cells., *J Biol Chem 282*, 27875-86, 2007 (*11605*)
	Rat, male 12 week	Sponge infiltrating cells	Collagenase Type 4: 0.15% Deoxyribonuclease I: 0.02%	RPMI 1640	Sharma, N., Luo, J., Kirschmann, D., O'Malley, Y., Robbins, M., Akporiaye, E., Lubaroff, D., Heidger, P., Hendrix, M.: A Novel Immunological Model for the Study of Prostate Cancer, *Cancer Res 59*, 2271-6, 1999 (*10273*)
	Rat (ACI/NMs X BUF/Mna) F1, male, 28 months, rat, (ACI/MNs) male, 8 weeks	Epthelial	Collagenase Type 3: 0.1%	Eagle's MEM Serum-free	Masuda, A., Ohtsuka, K., and Matsuyama, M.: Establishment of Functional Epithelial Cell Lines from a Rat Thyoma and a Rat Thymus, *In Vitro Cell Dev Biol 26*, 713, 1990 (*448*)
	Rat	Yolk sac tumor	Trypsin: 0.01%	DMEM	Brennan, M., Oldberg, A., Hayman, E., and Ruoslahti, E.: Effect of a Proteoglycan Produced by Rat Tumor Cells on Their Adhesion to Fibronectin-Collagen Substrata, *Cancer Res 43*, 4302, 1983 (*353*)
	Rat, SD, female	Epithelial, cancer and tumor	Collagenase: 0.1%	Eagles's MEM	Cohen, L.: Isolation and Characterization of a Serially Cultivated, Neoplastic, Epithelial Cell Line from the N-nitrosomethylurea Induced Rat Mammary Adenocarcinoma, *In Vitro 18*, 565, 1982 (*522*)
	Rat	Tumor, islet	Trypsin: 0.05%	Medium 199	Gazdar, A., Chick, W., Oie, H., Sims, H., King, D., Weir, G., and Lauris, V.: Continuous, Clonal, Insulin- and Somatostatin-Secreting Cell Lines Established from a Transplantable Rat Islet Cell Tumor, *Proc Natl Acad Sci U S A 77 (6)*, 3519, 1980 (*1182*)
	Rat	Ascites hepatoma	Trypsin: 0.1%	Phosphate buffer (see reference)	Essner, E.: Experiments on an Ascites Hepatoma. I. Enzymatic Digestion and Alkaline Degradation of the Cementing Substance and Separation of Cells, in Tumor Islands, *Exp Cell Res 7*, 430,1954 (*403*)

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Cell Isolation Optimizing System A complete method development kit containing an assortment of enzymes most frequently used in tissue dissociation and cell isolation procedures. Includes instructions, references and strategies for the handling, use and optimization of enzymatic cell isolation methods to achieve maximum yield of viable cells. Kit includes 500 mg of each of four types of collagenase, 500 mg trypsin, 50 ku hyaluronidase, 100 mg elastase, 100 mgpapain, 25 mg DNase I, 10 mg neutral protease (Dispase) and 100 mg trypsin inhibitor. Store at 2-8°C.		LK00320	1 bx	**CIT**
Chymotrypsin, Alpha, 1X CDAG 1X crystallized as zymogen and activated. Dialyzed against 1mM HCl and lyophilized. Store at 2-8°C.	≥35 units per mg protein	LS001333 LS001334 LS001332	1 gm 10 gm Bulk	**CDAG**
Chymotrypsin, Alpha, 3X 3X crystallized alpha chymotrypsin which is an activation product of a 3X crystallized zymogen. Dialyzed against 1mM HCl and lyophilized. Store at 2-8°C.	≥45 units per mg protein	LS001448 LS001450 LS001451 LS001453	250 mg 1 gm 10 gm Bulk	**CDI**
Chymotrypsin, Alpha, Purified Chromatographically prepared by the procedure of Yapel, *et al., J. Amer. Chem. Soc., 88,* 2573 (1966). A lyophilized powder. Store at 2-8°C.	≥45 units per mg protein	LS001475 LS001479 LS001477	100 mg 1 gm Bulk	**CDS**
Chymotrypsin, Alpha, TLCK Treated 3X crystallized and treated with 1-chloro-3-tosylamido-7-amino-2-heptanone (TLCK) to inhibit trypsin activity [Shaw, *et al., Biochemistry, 4*, 2219 (1965)]. Dialyzed against 1 mM HCl to remove autolysis products and low molecular weight contaminants. Supplied as a dialyzed, lyophilized powder. Store at 2-8°C.	≥45 units per mg protein	LS001430 LS001432 LS001434 LS001438	25 mg 100 mg 1 gm Bulk	**CDTLCK**
Collagen Type I collagen prepared by the method of Einbinder and Schubert, *J. Biol. Chem., 188,* 335 (1951). Supplied as a shredded, lyophilized, insoluble preparation. Store at 2-8°C.		LS001654 LS001652 LS001656 LS001658	1 gm 5 gm 10 gm Bulk	**CL**
Celase® GMP Collagenase Blend, *Animal Free* A single, sterile, ready-to-use vial containing both collagenase and a neutral protease which can digest up to 280 gm of adipose tissue. Stable up to 72 months at -20°C. REQUIRES SPECIAL SHIPPING AND PACKAGING. DRY ICE.	Digests ≥ 280 gm of adipose tissue	1235-01	1 vi	**CLAS**
Collagen, Soluble Type I collagen supplied as a 6mg/ml liquid preparation in 75mM sodiuim citrate, pH 3.6 - 4.0, containing 0.01% merthiolate as a preservative. 2-8°C. REQUIRES SPECIAL SHIPPING: ICE PACK. Note: Contains thimerisol as a preservative; proper disposal required.	Less than 20 minutes gel time	LS001663	Bulk	**CLCS**
STEMxyme®*1, Collagenase/Neutral Protease (Dispase®), 0.22 Filtered, *Animal Free Collagenase, Animal Free which is filtered through a 0.22 micron membrane and lyophilized in vials. Store at 2-8°C.	≥250 collagenase units per mg dry weight ≥1,000 caseinase units per mg dry weight	LS004106 LS004107	50 mg 5 x 50 mg	**STZ1**

Related Worthington Products

Product	Activity	Catalog No.	Package	Code
STEMxyme®*2, Collagenase/Neutral Protease (Dispase®), 0.22 Filtered, *Animal Free A specialized combination of Animal Free *Clostridium histolyticum* collagenase and Animal Free Bacillus polymyxa neutral protease with a minumum of 250 CLS units and 2,000 casienase units per mg dry weight. Designed for stem cell and other primary cell isolations and bioprocessing applications where introduction of potential animal derived pathogens must be prevented. Store at 2-8°C.	≥250 collagenase units per mg dry weight ≥2,000 caseinase units per mg dry weight	LS004112 LS004113	50 mg 5 x 50 mg	**STZ2**
Collagenase, Type A, *Animal Free* Collagenase derived from cultures grown in animal-free medium. Suitable for applications needing to avoid introduction of anumal derived pathogens into bioprocessing procedures. Store at 2-8°C.	≥150 units per mg dry weight	LS004152 LS004154 LS004156 LS004158	100 mg 1 gm 5 gm Bulk	**CLSAFA**
Collagenase, Type A, 0.22 Filtered, *Animal Free* Collagenase, Animal Free which is filtered through a 0.22 micron membrane and lyophilized in vials. Store at 2-8°C.	≥150 units per mg dry weight	LS004118 LS004119	50 mg 5 x 50 mg	**CLSAFAS**
Collagenase, Type B, *Animal Free* Prepared from cultures grown in medium completely devoid of animal based components and designed for bioprocessing applications where introduction of animal derived pathogens must be prevented. Store at 2-8°C.	≥300 units per mg dry weight	LS004145 LS004147 LS004148 LS004150	100 mg 1 gm 5 gm Bulk	**CLSAFB**
Collagenase, Type B, 0.22 Filtered, *Animal Free* Collagenase, Animal Free which is filtered through a 0.22 micron membrane and lyophilized in vials.Store at 2-8°C.	≥300 units per mg dry weight	LS004124 LS004125	50 mg 5 x 50 mg	**CLSAFBS**
Collagenase, Type C, *Animal Free* Prepared from cultures grown in medium completely devoid of anumal based components and designed for bioprocessing applications where introduction of animal derived pathogens must be prevented.Store at 2-8°C.	≥200 units per mg dry weight	LS004138 LS004140 LS004141 LS004143	100 mg 1 gm 5 gm Bulk	**CLSAFC**
Collagenase, Type C, 0.22 Filtered, *Animal Free* Collagenase, Animal Free which is filtered through a 0.22 micron membrane and lyophilized in vials. Store at 2-8°C.	≥200 units per mg dry weight	LS004130 LS004131	50 mg 5 x 50 mg	**CLSAFCS**
Collagenase, Type 1 The original balance of enzymatic activities. Each lot assayed for collagenase, caseinase, clostripain and tryptic activities. Suggested for epithelial, liver, lung and adrenal primary cell isolations. A dialyzed, lyophilized powder. Store at 2-8°C.	≥125 units per mg dry weight	LS004194 LS004196 LS004197 LS004200	100 mg 1 gm 5 gm Bulk	**CLS-1**
Collagenase, Type 2 Prepared to contain higher clostripain activity. Suggested for bone, heart, liver, thyroid and salivary primary cell isolation. Supplied as a dialyzed, lyophilized powder. Store at 2-8°C.	≥125 units per mg dry weight	LS004174 LS004176 LS004177 LS004179	100 mg 1 gm 5 gm Bulk	**CLS-2**
Collagenase, Type 3 Lower in secondary proteolytic contaminant activities but wlth typical collagenase activity. Suggested for mammary primary cell isolation. A dialyzed, lyophilized powder. Store at 2-8°C.	≥100 units per mg dry weight	LS004180 LS004182 LS004183 LS004185	100 mg 1 gm 5 gm Bulk	**CLS-3**
Collagenase, Type 4 Prepared to contain lower tryptic activity levels to limit damage to membrane proteins and receptors but with normal to above normal collagenase activity. Suggested for pancreatic islet primaryisolation.Adialyzed,lyophilizedpowder.Storeat2-8°C.	≥160 units per mg dry weight	LS004186 LS004188 LS004189 LS004191	100 mg 1 gm 5 gm Bulk	**CLS-4**

Related Worthington Products

Product	Activity	Catalog No.	Package	Code
Collagenase, Type 5				**CLS-5**
Prepared to contain higher collagenase and caseinase activities. A dialyzed, lyophilized powder. Store at 2-8°C.	≥450 units per mg dry weight	LS005280 LS005282 LS005283 LS005284	100 mg 1 gm 5 gm Bulk	
Collagenase, Type 6				**CLS-6**
Prepared to contain high collagenase activity with a caseinase to collagenase ratio ~2:1. Designed to be enriched for Type II (*col* H) collagenase relative to Type I (*col* G). A dialyzed, lyophilized powder. Store at 2-8°C.	≥400 units per mg dry weight	LS005318 LS005319 LS005321 LS005323	100 mg 500 mg 2.5 gm Bulk	
Collagenase, Type 7				**CLS-7**
Prepared to contain collagenase and caseinase activities four-fold higher than collagenase Type 1/2. A dialyzed, lyophilized powder. Store at 2-8°C.	≥1,000 units per mg dry weight	LS005332 LS005333 LS005335 LS005337	100 mg 500 mg 2.5 gm Bulk	
Collagenase, Purified				**CLSPA**
Chromatographically purified. ≤50 caseinase units per milligram. Supplied as a lyophilized powder. Store at 2-8°C.	≥500 units per mg dry weight	LS005275 LS005273 LS005277	4 ku 10 ku Bulk	
Collagenase, Type 1, Filtered				**CLSS-1**
Collagenase, Type 1 (Code: CLS-1), which is filtered through a 0.22 micron membrane and lyophilized in vials to contain > 50 milligrams or 1 gram per vial. Store at 2-8°C.	≥125 units per mg dry weight	LS004214 LS004216 LS004217	50 mg 5x50 mg 1 gm	
Collagenase, Type 2, Filtered				**CLSS-2**
Collagenase, Type 2 (Code: CLS-2), which is filtered through a 0.22 micron membrane and lyophilized in vials to contain > 50 milligrams or 1 gram per vial. Store at 2-8°C.	≥125 units per mg dry weight	LS004202 LS004204 LS004205	50 mg 5x50 mg 1 gm	
Collagenase, Type 3, Filtered				**CLSS-3**
Collagenase, Type 3 (Code: CLS-3), which is filtered through a 0.22 micron membrane and lyophilized in vials to contain ≥ 50 milligrams per vial. Store at 2-8°C.	≥100 units per mg dry weight	LS004206 LS004208	50 mg 5x50 mg	
Collagenase, Type 4, Filtered				**CLSS-4**
Collagenase, Type 4 (Code: CLS-4), which is filtered through a 0.22 micron membrane and lyophilized in vials to contain > 50 milligrams or 1 gram per vial. Store at 2-8°C.	≥160 units per mg dry weight	LS004210 LS004212 LS004209	50 mg 5x50 mg 1 gm	
Collagenase, Type 5, 0.22µ Filtered				**CLSS-5**
Collagenase, Type 5 (Code: CLS-5), which is filtered through a 0.22 micron membrane and lyophilized in vials. Store at 2-8°C.	≥450 units per mg dry weight	LS005286 LS005287 LS005288	50 mg 5x50 mg 1 gm	
Deoxyribonuclease I, Ribonuclease & Protease Free, Solution				**DPRFS**
Molecular Biology Grade. Chromatographically purified to remove RNase and protease. Supplied as a solution at approximately 2 Kunitz units per microliter (approximately 1 mg/ml) containing 50% glycerol and 1mM calcium chloride. Store at 2-8°C or -20°C.	≥2,000 Kunitz units per ml	LS006342 LS006344 LS006348	100 un 500 un Bulk	
Deoxyribonuclease I, Ribonuclease & Protease Free				**DPRF**
Molecular Biology Grade. Chromatographically purified to remove RNase and protease. Lyophilized in vials. Each 10,000 unit vial contains 2 mg glycine, 2µmoles calcium, and ≥10,000 units of DNase I. Each 2,500 unit vial contains 0.5mg glycine, 0.5µmoles calcium, and ≥2,500 units of DNase I. Dissolving the entire 10,000 unit vial in 5 ml, or the entire 2,500 unit vial in 1.25 ml, provides the equivalent of a 1 mg/ml solution. (ku = 1000un) Store at 2-8°C. PROTECT FROM MOISTURE.	≥2,000 units per mg dry weight	LS006331 LS006333 LS006334	2500 un 10 ku Bulk	

Related Worthington Products

Product	Activity	Catalog No.	Package	Code
Deoxyribonuclease I				**DPFF**
Chromatographically purified. A lyophilized powder containing glycine as a stabilizer. Contains ≤ 0.0005% RNase. Store at 2-8°C. PROTECT FROM MOISTURE. RNase & Protease Free.	≥2,000 Kunitz units per mg dry weight	LS006330 LS006328 LS006332	25 ku 125 ku Bulk	
Deoxyribonuclease I				**D**
Chromatographically purified. A lyophilized powder with glycine as a stabilizer. Store at 2-8°C. PROTECT FROM MOISTURE.	≥2,000 Kunitz units per mg dry weight	LS002004 LS002006 LS002007 LS002009	5 mg 20 mg 100 mg Bulk	
Deoxyribonuclease I, Filtered				**DCLS**
Filtered through a 0.22 micron membrane and lyophilized in vials. Material is not tested for pyrogenicity. Store at 2-8°C. PROTECT FROM MOISTURE	≥2,000 units per mg dry weight	LS002058 LS002060	11 mg 25 mg	
Deoxyribonuclease I, Standard Vial				**DSV**
Lyophilized in vials for assay standardization. Labeled to show established activity. Not suitable for assays at neutral pH. Store at 2-8°C. PROTECT FROM MOISTURE	~2,000 Kunitz units per vial	LS002173 LS002172	2 ku 5x2 ku	
Deoxyribonuclease I				**DP**
Partially purified. Supplied as lyophilized powder. Store at 2-8°C. PROTECT FROM MOISTURE	≥2,000 Kunitz units per mg dry weight	LS002138 LS002139 LS002140 LS002141	25 mg 100 mg 1 gm Bulk	
Deoxyribonuclease I				**DPB**
Partially purified. Supplied as lyophilized powder. Store at 2-8°C. PROTECT FROM MOISTURE	≥1,250 Kunitz units per mg dry weight	LS002145 LS002147 LS002149	100 mg 1 gm Bulk	
Deoxyribonuclease I, Recombinant, *Animal Free*				**DR1**
Recombinant protein produced in *Pichia pastoris*. Free of animal derived components, RNases and proteases. Chromatographically purified. A lyophilized powder containing glycine as a stabilizer. Store at 2-8°C. PROTECT FROM MOISTURE	≥5,000 units per mg protein	LS006361 LS006362 LS006360	10 ku 50 ku Bulk	
Deoxyribonuclease I, Recombinant Solution, *Animal Free*				**DR1S**
Recombinant protein produced in *Pichia pastoris*. Free of animal derived components, RNases and proteases. Chromatographically purified. A liquid preparation in 5mM Calcium Acetate, 4mg/ml glycine, pH 5.0 and 50% glycerol. Supplied with 10x reaction buffer. Store at -20°C. REQUIRES SPECIAL SHIPPING: ICE PACK	≥2 units per microliter	LS006353 LS006355 LS006357	2 ku 5 x 2 ku Bulk	
DNase I, Recombinant, Produced in *Pichia pastoris*, Bioprocess Grade, *Animal Free*				**DR2**
Chromatographically purified AF bioprocessing grade. Supplied as a lyophilized powder containing glycine as a stabilizer. For the removal of DNA in bioprocessing and primary stem cell isolation applications. May contain protease and RNase. Store at 2-8°C. PROTECT FROM MOISTURE.	≥3 units per mg protein	LS006320 LS006322 LS006323 LS006325	25 mku 100 mku 500 ku Bulk	
Elastase, Suspension				**ES**
2X crystallized. Supplied as an aqueous suspension. This preparation must be diluted to dissolve the enzyme. The diluted enzyme should be 0.22 micron filtered before use. Suitable for the isolation of Type II lung cells. Store at 2-8°C. DO NOT FREEZE. REQUIRES SPECIAL SHIPPING: ICE PACK.	≥3 units per mg protein	LS002274 LS002279 LS002280 LS002276	25 mg 100 mg 1 gm Bulk	

Related Worthington Products

Product	Activity	Catalog No.	Package	Code
Elastase, Purified				**ESFF**
Chromatographically purified. A lyophilized powder. Store at 2-8°C. REQUIRES SPECIAL SHIPPING: ICE PACK	≥8 units per mg protein	LS006363 LS006365 LS006367	5 mg 20 mg Bulk	
Elastase, Lyophilized				**ESL**
2X Crystallized, (Code: ESL), supplied as a dialyzed, lyophilized powder. The enzyme should be 0.22 micron filtered after reconstitution and prior to use. Suitable for the isolation of Type II lung cells. Store at 2-8°C.	≥3 units per mg protein	LS002290 LS002292 LS002294 LS002298	25 mg 100 mg 1 gm Bulk	
Hepatocyte Isolation System				**HIS**
The package contains sufficient materials for five separate adult rat liver perfusions including five single use CLSH enzyme vials, Five single use DNase vials, 10X CMF-Hank's Balanced Salt Solution, L-15 Media Powder, 0.15M MOPS buffer. 7.5% Sodium Bicarbonate Solution and optimized protocol. Store at 2-8°C.		LK002060	bx	
HIS-Collagenase/Elastase				**CLSH**
Worthington collagenase (Code: CLS-1) and elastase (Code: ESL), filtered through 0.22µm pore size membrane, and lyophilized. Before use, reconstitute with the L-15/MOPS solution and swirl gently to dissolve contents as directed in the following procedure. Store unreconstituted vials at 2–8°C.		LK002066 LK002067	1 VI 5 VI	
HIS Kit, DNase Vial				**D2**
A component of the Hepatocyte Isolation kit containing 1,000 Units DNase I each, 5 Vials Worthington DNase I (Code: D), filtered through 0.22µm pore size membrane, and lyophilized. Before use, reconstitute with L-15/MOPS solution and swirl gently to dissolve contents as directed in the procedure. Store unreconstituted vials at 2–8°C.	≥1,000 units per vial	LK003170 LK003172	1 vi 5 vi	
Hank's Balanced Salt Solution (HBSS-CMF) 10X Solution				**HBSS10**
10X CMF-HBSS Concentrate, 1 bottle, 500ml Sterile calcium- and magnesium-free Hank's Balanced Salt Solution (CMF-HBSS). The solution is used for washing and perfusing the liver prior to the addition of the dissociating enzyme solution.		LK002064	1 ea	
L-15 Media Powder				**L15NK**
Leibovitz L-15 media powder, a component of the HIS kit. Reconstitute entire contents of pouch, QS to 1 liter with cell culture grade water, and 0.22 micron filter. Suitable for cell isolation and culture applications. Store at 2-8°C.		LK003250	1 ea	
0.15m, MOPS Buffer, HIS				**MOPS**
0.15M MOPS, pH 7.5, 0.22u filtered. Buffer concentrate used to buffer the constituted Leibovitz L-15 media in Hepatocyte Isolation System. Store at 2-8°C.		LK002070	1 ea	
Sodium Bicarbonate 7.5%				**NAH**
7.5% Sodium Bicarbonate ($NaHCO_3$),1 bottle, 100ml 7.5% Sodium bicarbonate concentrate, used to buffer the diluted CMF-HBSS. Store at 2-8°C.		LK002069	1 ea	
Hyaluronidase				**HSE**
A partially purified, dialyzed, lyophilized powder. Store at -20°C.	≥300 USP/NF units per mg dry weight	LS002594 LS002592 LS002591	50 ku 300 ku Bulk	

Related Worthington Products

Product	Activity	Catalog No.	Package	Code
Hyaluronidase, Purified				**HSEP**
Chromatographically purified. A dialyzed, lyophilized powder. Store at -20°C.	≥3,000 USP/NF units per mg dry weight	LS005477 LS005475 LS005474 LS005479	5 ku 15 ku 30 ku Bulk	
Lysozyme				**LY**
A lyophilized powder containing sodium chloride and acetate. Store at 2-8°C.	≥5,000 units per mg dry weight	LS002880 LS002881 LS002883	1 gm 10 gm Bulk	
Lysozyme, Purified, Salt Free				**LYSF**
A dialyzed, lyophilized powder. Store at 2-8°C.	≥8,000 units per mg dry weight	LS002931 LS002933 LS002934	1 gm 5 gm Bulk	
Neonatal Cardiomyocyte Isolation System				**NCIS**
Kit for performing five separate tissue dissociations each containing up to twelve hearts. Contains single use vials of purified collagenase and trypsin, CMF-HBSS, Leibovitz L-15 media and Falcon cell strainers along with a detailed protocol. The kit is use-tested by Worthington to assure performance. Store at 2-8°C.		LK003300 LK003303	1 ki 3 ki	
Collagenase Vial, NCIS				**CLSPANK**
A component of the NCIS kit. This material is 0.22 micron membrane filtered and lyophilized in autoclaved vials. A vial reconstituted with 5 ml of HBSS or equivalent yields a solution of 300 units/ml of collagenase, Code: CLSPA. Suitable for cell isolation and culture applications. Store at 2-8°C.	≥500 units per mg dry weight	LK003240 LK003245	1 vi 5 vi	
Trypsin Vial, NCIS				**TRLSNK**
A component of the NCIS kit. This material is 0.22 micron membrane filtered and lyophilized in autoclaved vials. A vial reconstituted with 2 ml of HBSS yields a solution of 500µg/ml of trypsin, Code: TRLS. Suitable for cell isolation and culture applications. Store at 2-8°C.		LK003220 LK003225	1 vi 5 vi	
Inhibitor Vial, NCIS				**SICNK**
A component of the NCIS kit. This material is 0.22 micron membrane filtered and lyophilized in autoclaved vials. A vial reconstituted with 1 ml of HBSS or equivalent yields a solution of 2 mg/ml of trypsin inhibitor, Code: SIC. Suitable for cell isolation and culture applications. Store at 2-8°C.	1 mg inhibits at least 0.75 mg trypsin, Code: TRL	LK003230 LK003235	1 vi 5 vi	
HBSS Solution				**HBSS**
Sterile calcium and magnesium free Hank's balanced salt solution (CMFHBSS), pH 7.4, as supplied in the NCIS kit; 1 x 500 ml. Store at 2-8°C.		LK003210	1 ea	
L-15 Media Powder				**L15NK**
Leibovitz L-15 media powder, a component of the NCIS kit. Reconstitute entire contents of pouch, QS to 1 liter with cell culture grade water, and 0.22 micron filter. Suitable for cell isolation and culture applications. Store at 2-8°C.		LK003250	1 ea	
Cell Strainers (Falcon)				**CELSTRNK**
Cell strainers (Falcon), components of the NCIS kit. Suitable for removal of tissue debris in cell isolation applications. Store at room temperature.		LK003265	5 ea	

Related Worthington Products

Product	Activity	Catalog No.	Package	Code
Neutral Protease (Dispase®), Purified, *Animal Free*				**NPRO**
Chromatographically purified. A lyophilized powder. Store at 2-8°C.	≥4 units per mg dry weight	LS02100 LS02104 LS02108	10 mg 50 mg Bulk	
Neutral Protease, Partially Purified, *Animal Free*				**NPRO2**
Partially purified. A lyophilized powder. Store at 2-8°C.	≥0.1 units per mg dry weight	LS02109 LS02111 LS02112	1 gm 5 gm Bulk	
Ovalbumin				**OA**
Major protein of egg white, with a molecular weight of 43,000. A lyophilized powder. Store at 2-8°C.		LS003049 LS003048 LS003050	1 gm 5 gm Bulk	
Ovalbumin, Purified				**OAC**
Chromatographically purified. Major protein of egg white, with a molecular weight of 43,000. A dialyzed, lyophilized powder. Store at 2-8°C.		LS003056 LS003054 LS003052	100 mg 1 gm Bulk	
LowEndo™ Ovalbumin, Purified				**OAEF**
Ovalbumin, purified to remove endotoxin. A dialyzed, lyophilized powder. Store at 2-8°C.	≥95% Purity (SDS-PAGE) ≤1 Endotoxin unit per mg	LS003059 LS003061 LS003062 LS003064	10 mg 100 mg 500 mg Bulk	
Papain, Suspension				**PAP**
Supplied as a 2X crystalline suspension in 50mM sodium acetate, pH 4.5. To insure full activity, the enzyme should be incubated in a solution containing 1.1mM EDTA, 0.067mM mercaptoethanol and 5.5mM cysteine-HCl for 30 minutes. It is recommended that the enzyme be 0.22 micron filtered after dissolution and prior to use. Store at 2-8°C. REQUIRES SPECIAL SHIPPING: ICE PACK	Activates to at least 20 units per mg protein	LS003124 LS003126 LS003127 LS003128	25 mg 100 mg 1 gm Bulk	
Papain, Lyophilized				**PAPL**
Supplied as a lyophilized powder prepared from a 2X crystalline suspension, Code: PAP. To insure full activity, the enzyme should be incubated in a solution containing 1.1mM EDTA, 0.067mM mercaptoethanol and 5.5mM cysteine-HCl for 30 minutes. It is recommended that the enzyme be 0.22 micron filtered after dissolution and prior to use. Store at 2-8°C.	Activates to at least 15 units per mg protein	LS003118 LS003119 LS003120 LS003122	25 mg 100 mg 1 gm Bulk	
PDS Kit, Papain Vial				**PAP2**
A component of the Papain Dissociation System, for use in the tissue dissociation method of Huettner, J.E., and Baughman, R.W.: *J. Neuroscience, 6,* 3044 (1986). Contains papain, L-cysteine, and EDTA. This material is 0.22 micron membrane filtered and lyophilized in autoclaved vials. A vial reconstituted with 5 ml of EBSS or equivalent yields a solution at 20 units of papain per ml in 1mM L-cysteine with 0.5mM EDTA. Store at 2-8°C.	≥100 units per vial	LK003176 LK003178	1 vi 5 vi	
Papain Dissociation System				**PDS**
Set of five single use vials of papain and five single use vials of DNase, 100 ml of Earle's balanced salt solution (EBSS), and an inhibitor vial for use in the tissue dissociation method of Huettner, J.E., and Baughman, R.W.: *J. Neuroscience, 6,* 3044 (1986). Use tested by Worthington using new-born rat pup spinal cord. The package contains sufficient materials for dissociation of five separate tissue aliquots of up to 0.3-0.4 cm^3 each. Store at 2-8°C.		LK003150 LK003153	1 bx 3 bx	

Related Worthington Products

Product	Activity	Catalog No.	Package	Code
Papain Dissociation System, Without EBSS				**PDS2**
Complete kit as described for product Code: PDS, but without the Earle's Balanced Salt Solution (EBSS). Store at 2-8°C.		LK003160 LK003163	1 bx 3 bx	
PDS Kit, DNase Vial				**D2**
A component of the Papain Dissociation System. This material is 0.22 micron membrane filtered and lyophilized in autoclaved vials. A vial reconstituted with 0.5 ml of EBSS or equivalent yields a solution of 2000 units/ml of deoxyribonuclease (1 mg/ml). Store at 2-8°C.	≥1,000 units per vial	LK003170 LK003172	1 vi 5 vi	
PDS Kit, Inhibitor Vial				**OI-BSA**
Ovomucoid protease inhibitor and bovine serum albumin which is 0.22 micron filtered and lyophilized in autoclaved vials to contain 10 mg/ml each upon reconstitution with 32 ml of EBSS. Store at 2-8°C.	≥300 mg TRL inhibited per vial	LK003182	1 vi	
PDS Kit, EBSS Vial				**EBSS**
Earle's balanced salt solution (EBSS) as supplied in the Papain Dissociation System. Store at 2-8°C.		LK003188	1 vi	
Proteinase K				**PROK**
A lyophilized powder. Purified to remove DNase and RNase. Store at 2-8°C.	≥20 units per mg dry weight	LS004220 LS004222 LS004224 LS004226	25 mg 100 mg 1 gm Bulk	
Ribonuclease T1, Chromatographically Purified, *Animal Free*				**RT1S**
Highly purified, microbial (non-mammalian) RNase prepared with non-animal components. Store at 2-8°C. SPECIAL SHIPPING. ICE PACK.	≥300,000 units per mg protein	LS01485 LS01487 LS01488	100 ku 500 ku Bulk	
Ribonuclease T1, Chromatographically Purified, Lyophilized, *Animal Free*				**RT1L**
Highly purified, microbial (non-mammalian) RNase prepared with non-animal components. Supplied as a dialyzed, lyophilized powder. Store at 2-8°C.	≥300,000 units per mg protein	LS01490 LS01492 LS01494	500 ku 2500 ku Bulk	
Ribonuclease T2, Recombinant *Aspergillus oryzae*, Produced in *Pichia pastoris*, Deoxyribonuclease and Protease Free, Lyophilized Powder, *Animal Free*				**RT2R**
Highly purified recombinant microbial (non-mammalian) RNase prepared with non-animal components. Free of DNase and protease. Supplied as a lyophilized powder. Store at 2-8°C.	≥10,000 units per mg protein	LS01501 LS01502 LS01505	50 ku 250 ku Bulk	
Trypsin 2X Lyo				**TRL**
Supplied as a chromatographically purified, diafiltered and lyophilized powder. Store at 2-8°C. PROTECT FROM MOISTURE	≥180 units per mg protein	LS003702 LS003703 LS003704 LS003706	100 mg 1 gm Bulk Bulk	
Trypsin				**TRL3**
Supplied as a chromatographically purified, diafiltered and lyophilized powder. Store at 2-8°C. PROTECT FROM MOISTURE	≥180 units per mg protein	LS003708 LS003707 LS003709	100 mg 1 gm Bulk	
Trypsin, 0.22µ Filtered				**TRLS**
Trypsin chromatographically purified, diafiltered, (Code TRL3) filtered thorugh a 0.22 micron pore size membrane and lyophilized in sterile vials. This product is not tested for pyrogenicity. Store at 2-8°C.	≥180 units per mg protein (at least 10,350 BAEE/3,450 USP/NF u/mgP)	LS003736 LS003734 LS003738	50 mg 5x50 mg Bulk	

Related Worthington Products

Product	Activity	Catalog No.	Package	Code
2X crystallized (Code: TRL), lyophilized, irradiated and tested for the absence of mycoplasma and extraneous virus according to 9 CFR113.53c. Each vial is filled to contain ≥100 mg. Store at 2-8°C.	≥180 units per mg protein (at least 10,350 BAEE/3450 USP/NF units per mg protein)	LS004454 LS004452 LS004458	100 mg 5x100 mg Bulk	
Trypsin, Purified, Sequencing Grade II				**TRSEQII**
Bovine trypsin that has been treated with L-(tosylamido-2-phenyl) ethyl chloromethyl ketone (TPCK) to inhibit contaminating chymotryptic activity and extensively purified to remove autolysis products. Supplied as a lyophilized powder. Store at -20°C. PROTECT FROM MOISTURE. REQUIRES SPECIAL SHIPPING: ICE PACK	≥150 units per mg protein (at least 8,625 BAEE/2875 USP/NF units per mg protein)	LS02115 LS02117 LS02118	4x25 µg 4x100 µg Bulk	
Trypsin, Modified, Sequencing Grade				**TRSEQZ**
Trypsin, treated with L-(tosylamido-2-phenyl) ethyl chloromethyl ketone to inhibit contaminating chymotryptic activity, chemically modified to promote stability and further purified to remove autolysis fragments, resulting in a highly stable trypsin product resistant to autolysis while retaining specificity. Store at -20°C PROTECT FROM MOISTURE. REQUIRES SPECIAL SHIPPING: ICE PACK.	≥4 units per mg protein	LS02120 LS02122 LS02124	4x25 µg 4x100 µg Bulk	
Trypsin, TPCK Treated				**TRTPCK**
A chromatographically purified, diafiltered, lyophilized powder that has been treated with L-(tosylamido-2-phenyl) ethyl chloromethyl ketone (TPCK) to inhibit contaminating chymotryptic activity [Kostka, V., and Carpenter, F.: *JBC, 239,* 1799 (1964)]. Store at 2-8°C. PROTECT FROM MOISTURE.	≥180 units per mg protein (at least 10,350 BAEE/3,450 USP/NF u/mgP)	LS003740 LS003741 LS003744 LS003742	100 mg 500 mg 1 gm Bulk	
Trypsin, TPCK-Treated, Irradiated				**TRTVMF**
Chromatographically purified trypsin treated with L-(tosylamido-2-phenyl) ethyl chloromethyl ketone (TPCK) to inhibit contaminating chymotryptic activity according to Kostka, V., and Carpenter, F.H.: *JBC, 239,* 1799 (1964), Code: TRTPCK, lyophilized, irradiated and tested for the absence of mycoplasma and extraneous virus according to 9 CFR 113.53c. Each vial is filled to contain ≥100 mg. Store at 2-8°C.	≥180 units per mg protein	LS003750 LS003752	100 mg 5x100 mg	
Trypsin Inhibitor, Lima Bean, *Animal Free*				**LBI**
Fraction III of the preparation described by Fraenkel-Conrat, *et al., Arch. Biochem. Biophys., 37,* 393 (1952). Supplied as a dialyzed, lyophilized powder. Store at 2-8°C.	1mg inhibits at least 2.2 mg trypsin, Code TRL	LS002829 LS002830 LS002831	100 mg 1 gm Bulk	
Trypsin Inhbitor, Ovomucoid				**OI**
Mucoprotein and antitryptic factor of egg white described by Lineweaver and Murray, *J. Biol. Chem., 171,* 565 (1947). A dialyzed, dried powder. Store at 2-8°C.	1 mg inhibits at least 1.2 mg trypsin, Code: TRL	LS003085 LS003087 LS003086 LS003089	500 mg 1 gm 2 gm Bulk	
Trypsin Inhibitor, Soybean, Purified, *Animal Free*				**SI**
Chromatographically purified as described by Frattali, V., and Steiner, R.: *Biochem., 7,* 521 (1968). A dialyzed, lyophilized powder. Purity checked using SDS-PAGE. Store at 2-8°C.	1 mg inhibits at least 1.2 mg trypsin, Code: TRL	LS003570 LS003571 LS003573	100 mg 1 gm Bulk	
Trypsin Inhibitor, Soybean, *Animal Free*				**SIC**
A partially purified acetone powder. Store at 2-8°C.	1 mg inhibits at least 0.75 mg trypsin, Code: TRL	LS003587 LS003590	1 gm Bulk	

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Authorization for any product returns must be obtained from Worthington Biochemical Corporation (Customer Service Department), or its authorized representative, prior to the return of the product. This authorization is required to insure the proper return of material and, if applicable, the correct issuance of credit. There is no provision for credit of outdated material. Product must be returned in the same condition as received and within 30 days of the original shipment by Worthington Biochemical Corporation.
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Worthington produces most of the products it sells and welcomes your questions and suggestions. Because we are a primary manufacturer, we have ready access to all production and quality control records of our products by lot number.

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U.S.D.A. Certified Materials

All products from animal sources are produced from starting material collected in United States Department of Agriculture (USDA) approved facilities, inspected to be free of disease, and suitable for exportation. A USDA Animal Products Export Certificate can be provided for a nominal fee.

Several Animal Free (AF) collagenases, nucleases, proteases and other products are also available to eliminate BSE/TSE and other mammalian viral risks. Please inquire.

Worthington Collagenase Products, Specifications and Applications Table

Product Code	Collagenase	Caseinase	Clostripain	Tryptic	Description/Applications*
	CDU/mgdw	u/mgdw	u/mgdw	u/mgdw	
Partially Purified					
CLS-1	≥125	≥200	≤4.0	≤0.5	Balanced activities/Adipose, Adrenal, Epithelial, Liver, Lung
CLS-2	≥125	≥200	≥3.5	≥0.1	Higher proteolytic activities/Bone, Heart, Liver, Thymus
CLS-3	≥100	≥50	≤3.0	≤0.3	Lower proteolytic activities/Mammary
CLS-4	≥160	≥100	≤3.0	≤0.1	Lower tryptic activity/Pancreatic Islets
CLS-5	≥450	≥450	≤3.0	≤0.3	Higher collagenase and caseinase activities
CLS-6	≥400	≥1,000	≤4.0	≤0.5	Higher activity with caseinase to collagenase ratio ~2:1, designated to be enriched for Type II (*col* H) collagenase relative to Type I (*col* G)
CLS-7	≥1,000	≥2,000	≤8.0	≤0.5	Contains collagenase and caeinase activities 4X higher
CLSS-1	≥125	≥200	≤4.0	≤0.5	0.22µ Filtered CLS-1 in 50mg & 1gm Vials
CLSS-2	≥125	≥200	≥3.5	≥0.1	0.22µ Filtered CLS-2 in 50mg & 1gm Vials
CLSS-3	≥100	≥50	≤3.0	≤0.3	0.22µ Filtered CLS-3 in 50mg Vials
CLSS-4	≥160	≥100	≤3.0	≤0.1	0.22µ Filtered CLS-4 in 50mg & 1gm Vials
CLSS-5	≥450	≥450	≤3.0	≤0.3	Higher collagenase and caseinase activities
CLSH	≥125	≥200	≤4.0	≤0.5	0.22µ Filtered, ≥22,500U CLS-1 & 30U ESL component of HIS kit
Animal Free					
CLSAFA	≥150	≥150	≤8.0	≥0.1	Balanced Activities/AF Stem Cell & Tissue Bioprocessing
CLSAFB	≥300	≥300	≤5.0	≤0.5	Higher Activities/AF Stem Cell & Tissue Bioprocessing
CLSAFC	≥200	≥150	≤3.0	≤0.1	Lower Protease Activities/AF Stem Cell & Tissue Bioprocessing
CLSAFAS	≥150	≥150	≤8.0	≥0.1	0.22µ Filtered AF CLSAFA in 50mg vials
CLSAFBS	≥300	≥300	≤5.0	≤0.5	0.22µ Filtered AF CLSAFB in 50mg vials
CLSAFCS	≥200	≥150	≤3.0	≤0.1	0.22µ Filtered AF CLSAFC in 50mg vials
***STEMxyme® Animal Free* Blends**					
STZ1	≥250	≥1,000	≤5.0	≤0.5	0.22µ Filtered CLSAFB & NPRO/AF Stem Cell & Tissue Bioprocessing
STZ2	≥250	≥2,000	≤5.0	≤0.5	0.22µ Filtered CLSAFB & NPRO/AF Stem Cell & Tissue Bioprocessing
Chromatographically Purified					
CLSPA	≥500	≤50	≤2.0	≤0.25	Low Protease/Collagen Studies, Tissue Digestion combined with other proteases
CLSPANK	≥500	≤50	≤2.0	≤0.25	0.22µ Filtered, ≥1,500U CLSPA component of NCIS kit

* Correlations between type and effectiveness with different tissues have been good, but not perfect, and may be dependent partly on parameters of use and objectives as well as lot-to-lot variations. For more information see the Collagenase Sampling Program information.

For Enzyme Digestion Scale information, please refer to page 10 or the ***Exploring the Depths of Cell Isolation*** poster.

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