

# Glossary of terms used in kidney cell passaging video

## Centrifuge

A centrifuge is used to separate solid cells from liquid media before feeding the cells with fresh media and passaging them. The centrifuge spins the cells at 1,000 rotations per minute, pushing the cells to the bottom of the test tube, where they form a dense cell pellet.

## Enzyme

Enzymes are proteins that build some substances and break down others in the body. Enzymes or other chemicals are used to dissociate (break up) cell pellets during passaging in the lab.

## Incubator

An incubator is where growing cells are stored when not in use. An incubator mimics the human body by keeping a constant body temperature of 37 degrees Celsius (98.6 degrees Fahrenheit), 5% CO<sub>2</sub> (carbon dioxide), complete darkness and 100% humidity.

## Media

Cell media is a highly purified, nutrient-rich liquid used to rinse and feed cells in the lab. Media also contains other growth factors to maintain healthy and proliferating cells. Proliferation is the expansion of cells by mitosis, or the continuous division of cells.

## Passaging

Passaging is the process of promoting healthy cell colony growth and proliferation in the lab. When passaging, researchers use an enzyme to remove cells attached to the surface of a culture flask or dish. They then remove old, used up media and replace it with fresh media to help cell colonies continue to expand when returned to culture and placed in an incubator.

The cells used in this video were grown from human embryonic stem cells (hESCs). hESCs are derived from the inner cell mass of a developing blastocyst, a very early embryo consisting of approximately 150 cells. hESCs are self-renewing (can replicate themselves) and pluripotent (can form all cell types in the body). hESCs for research come from lab-fertilized, frozen, patient-donated blastocysts from in-vitro fertilization (IVF) clinics. Stem cells grow in clusters called colonies since they are unable to survive as single cells. When passaging stem cells — or other cells grown from them — researchers must break up the cells for them to continue to properly grow in the lab.

*Right: Placing test tubes into a centrifuge.  
(Photo by J. Lenon, UW-Madison)*

