Stem Cell Research

**What are Stem Cells?**

Stem cells have the remarkable potential to develop into many different cell types in the body during early life and growth; they serve as internal repair system

**What are two important characteristics of stem cells?**

* + They are unspecialized cells that are capable of renewing themselves through cell division.
  + Under physiological/experimental conditions, they can be induced to become tissues, organs, or specific cells.

**What are the two kinds of stem cells?**

* + Embryonic Stem Cells:
    - Embryos
    - Able to divide without a prolonged period of time
  + Adult (Somatic) Stem Cells:
    - Non-embryonic
    - Found in organs
    - Have a specific division period

**Why do scientists want to study stem cells in the laboratory?**

* + They offer new potential for treating diabetes and heart disease.
  + They can learn more about cells, the essential properties, and the difference between specialized and unspecialized cells.

**What are some unique properties of stem cells?**

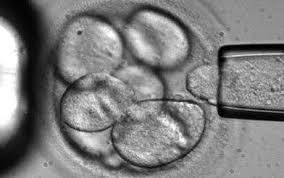
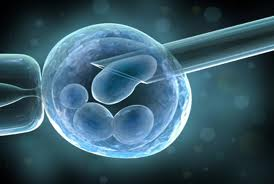
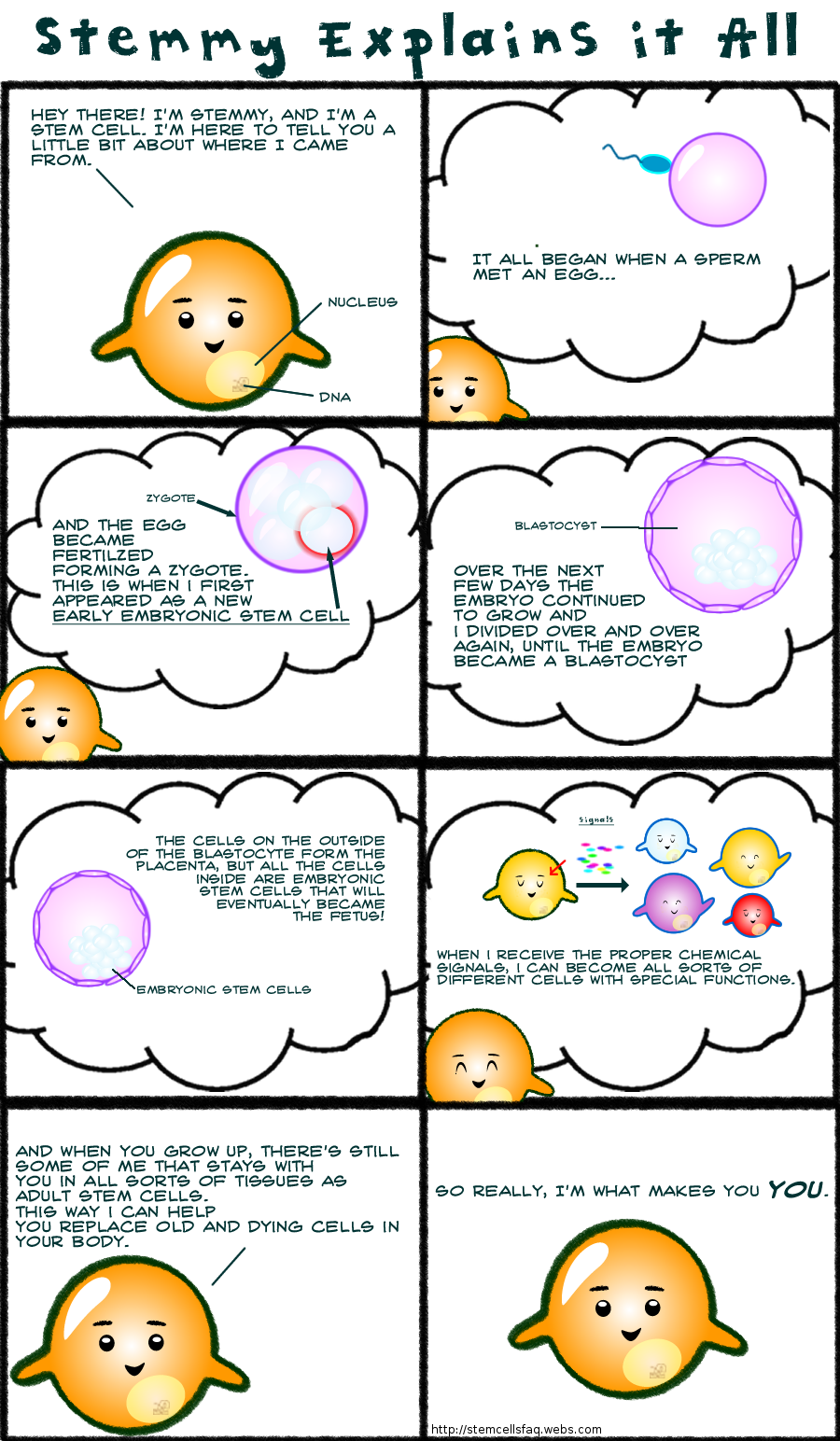
* + They are capable of dividing and renewing themselves for long periods of time
  + They are unspecialized
  + They can give rise [become] to specialized cell types

**What are some advantages and disadvantages regarding potential use of embryonic and adult stem cells?**

* + Advantages:
    - Embryonic stem cells are pluripotent (able to rise  to all cells)
    - Adult stem cells do not have a transplant rejection
  + Disadvantages:
    - Adult stem cells limited to differentiating into different cell types
    - Adult stem cells are rare
    - Embryonic stem cells may cause for transplant rejection

**What are potential uses of human stem cells?**

* + To identify how undifferentiated stem cells become differentiated cells that come from tissues and organs
  + Treat cancer and birth defects
  + Test new drugs
  + Generation of cells and tissues that could be used for cell-based therapies

  
  
  
  
STEM CELLS