

Unit 1 The organisation of the human body



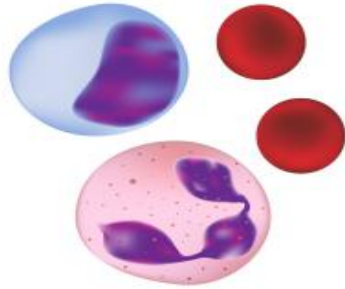
Biology and Geology 3

Do now: (answer)

1. Are humans multicellular?
2. What is the smallest unit (structural and functional) of our body?



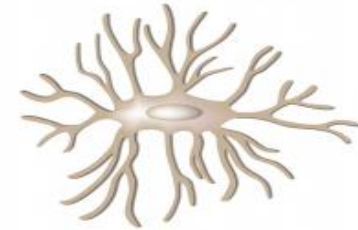
Different human cells (OPTIC MICROSCOPE X100)



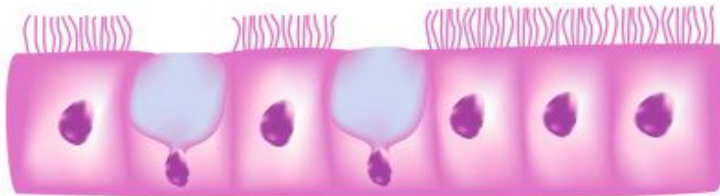
Blood cells



Surface skin cells



Bone cell



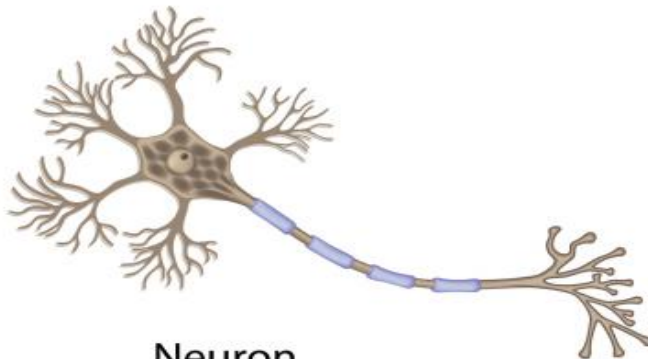
Columnar epithelial and Goblet cells



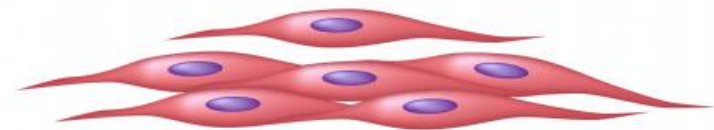
Cardiac muscle cell



Skeletal muscle cells



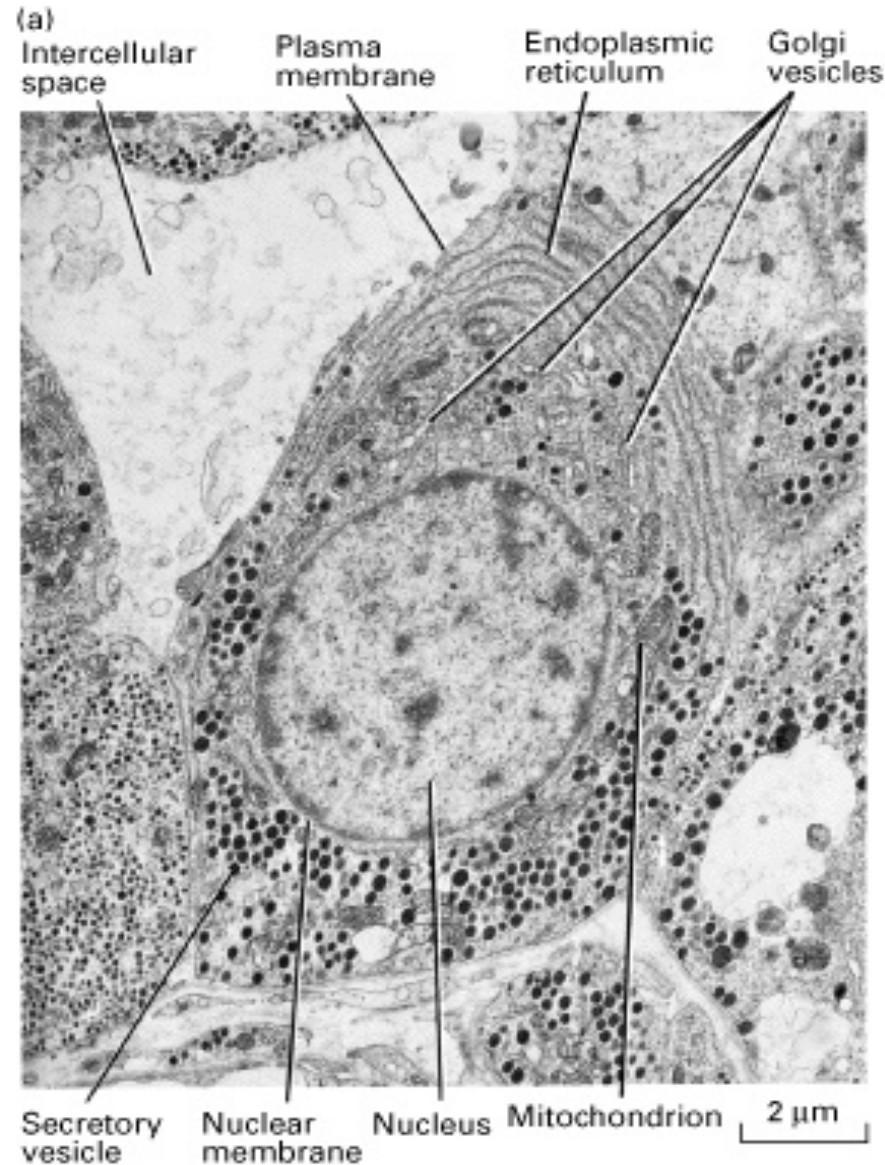
Neuron



Smooth muscle cells

A cell under electron microscope

(X100 000)



We need units much smaller than
mm: μ (micron)



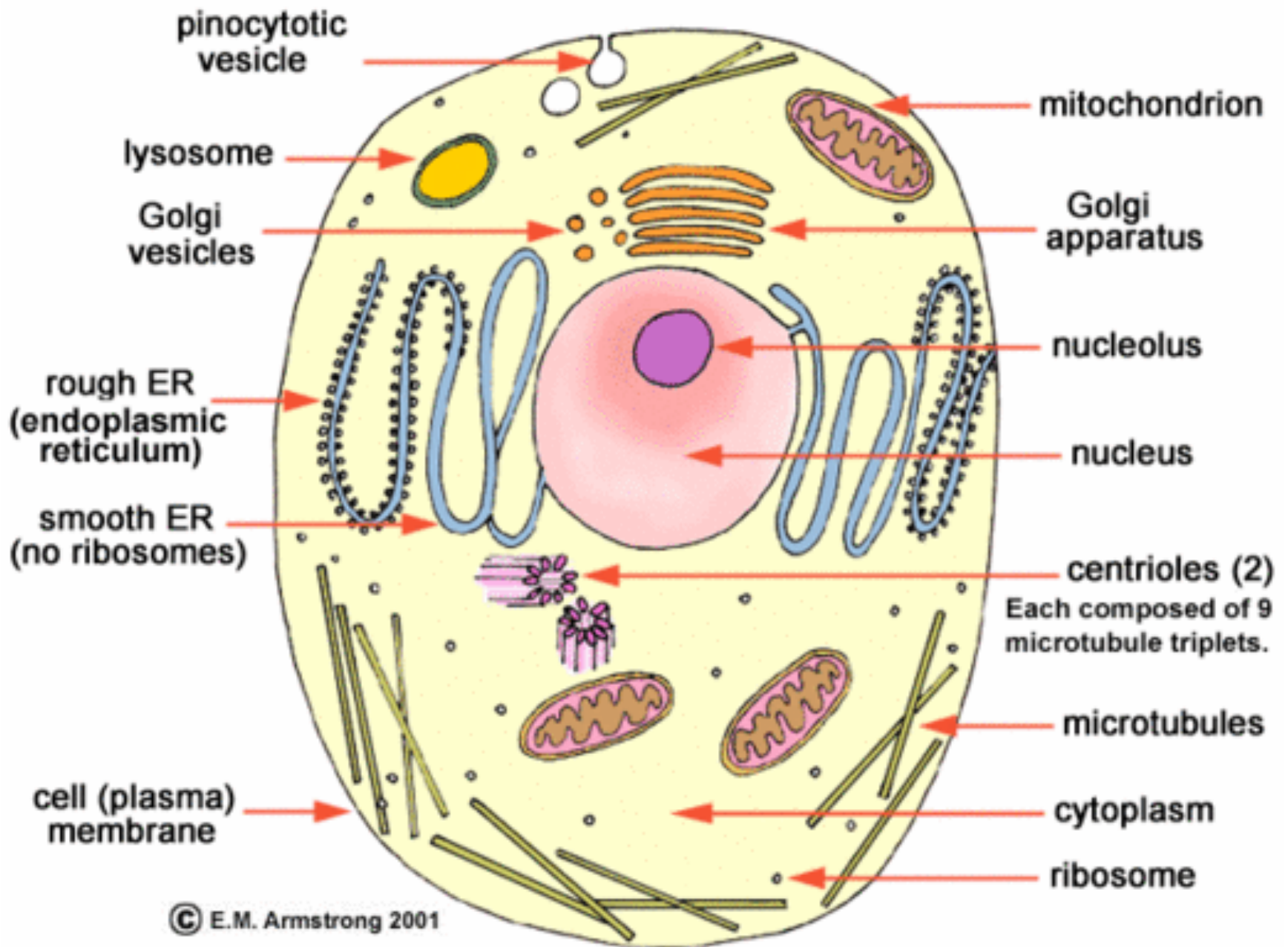
1 mm =
1000 microns

From cells to organisms

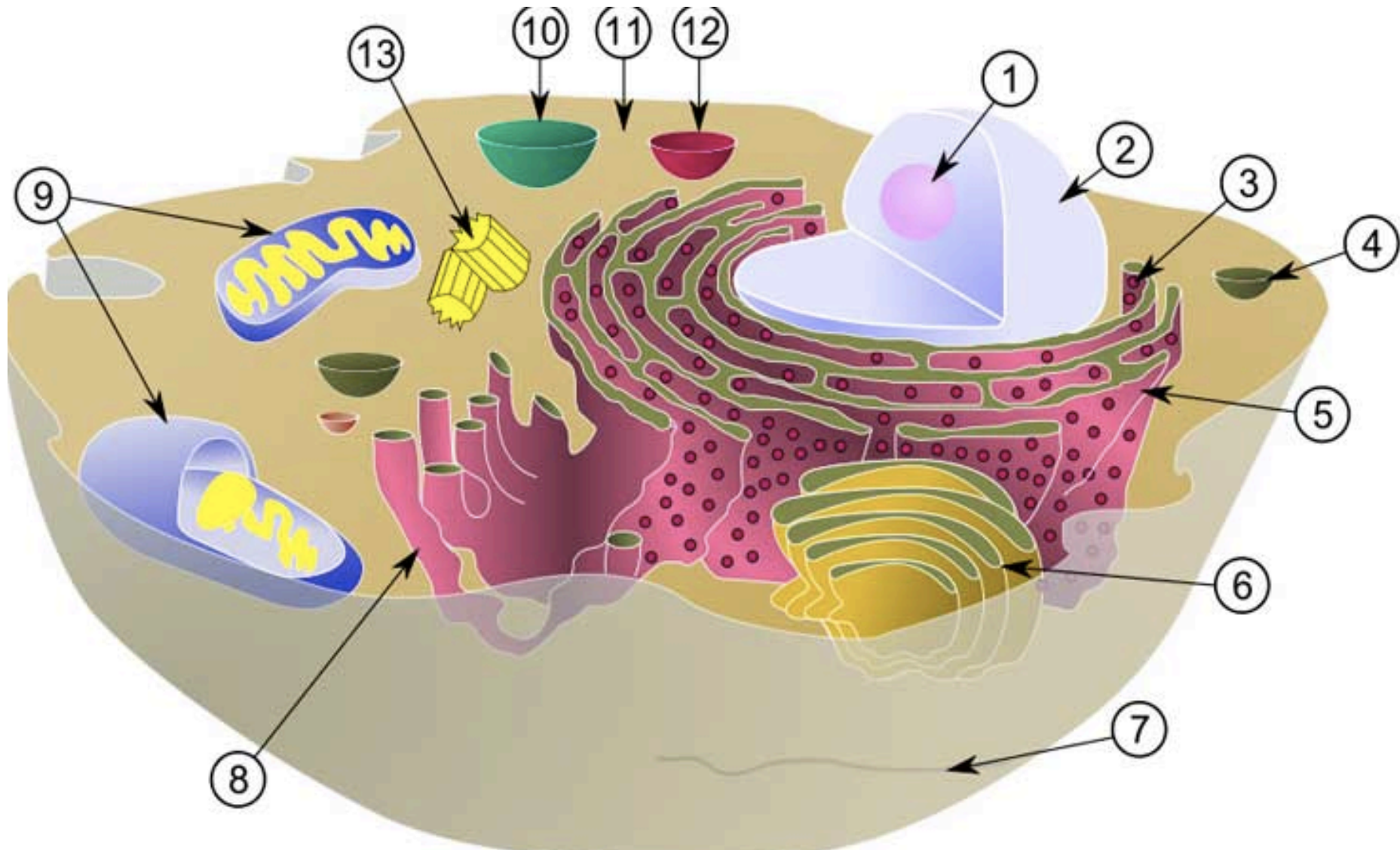


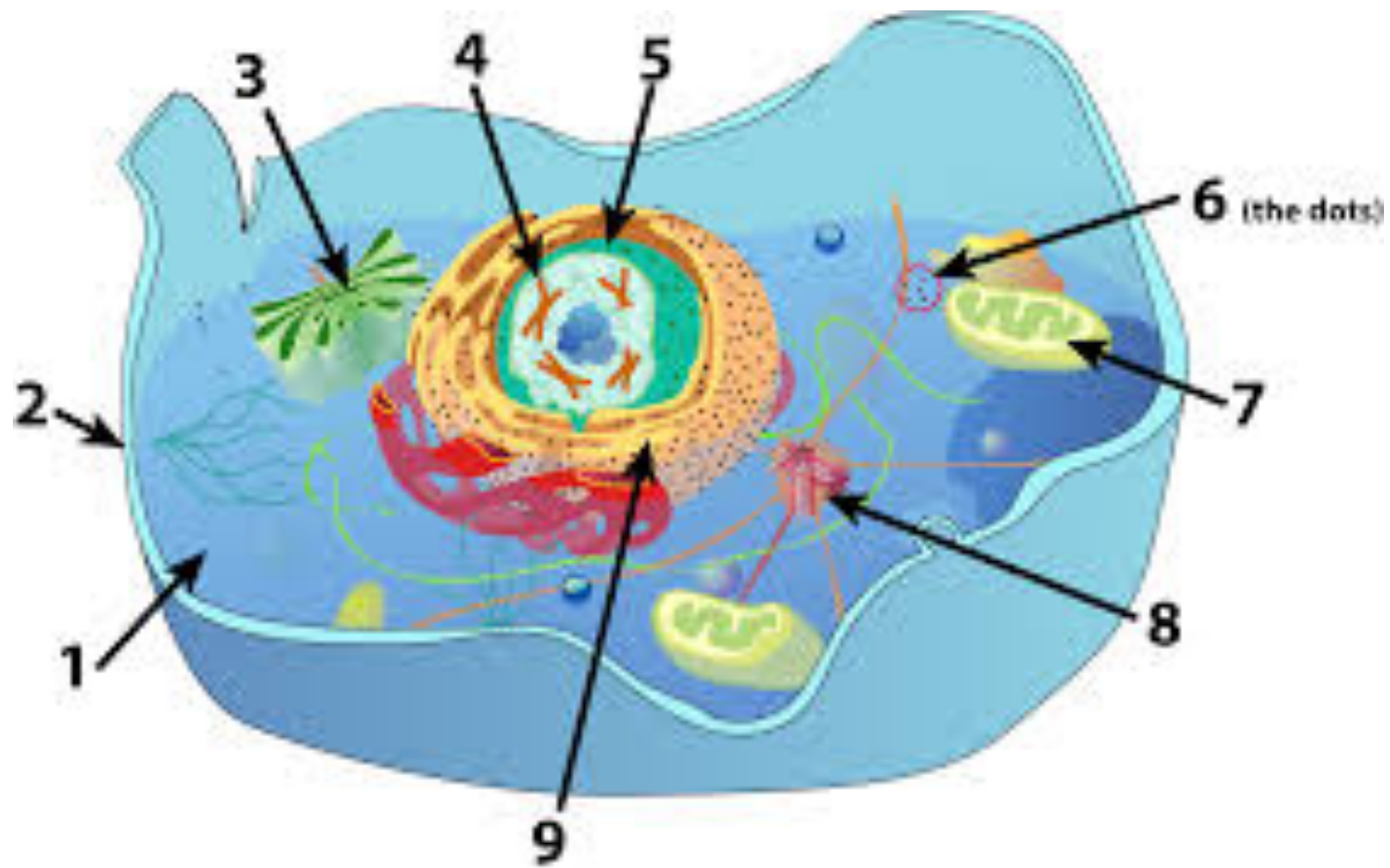
What type of cell is this?

What are the names of the organelles shown in the illustration? What do they do?

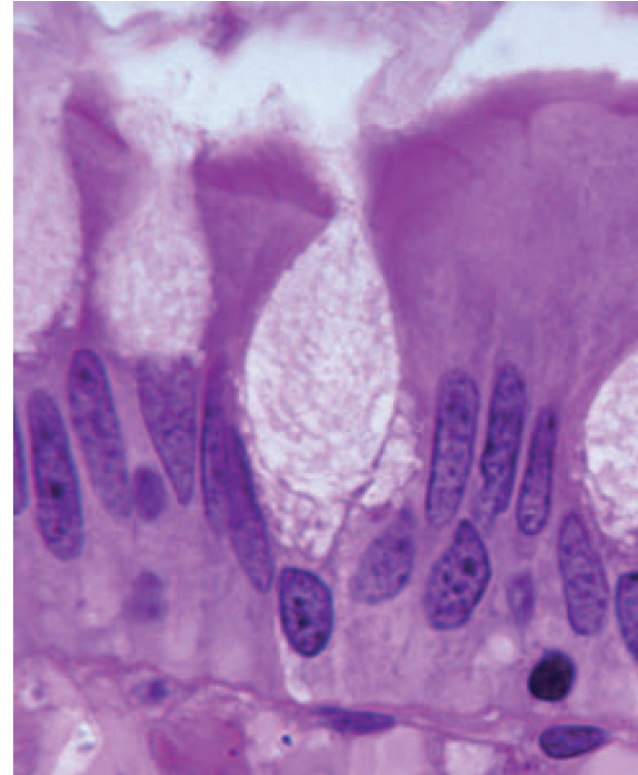
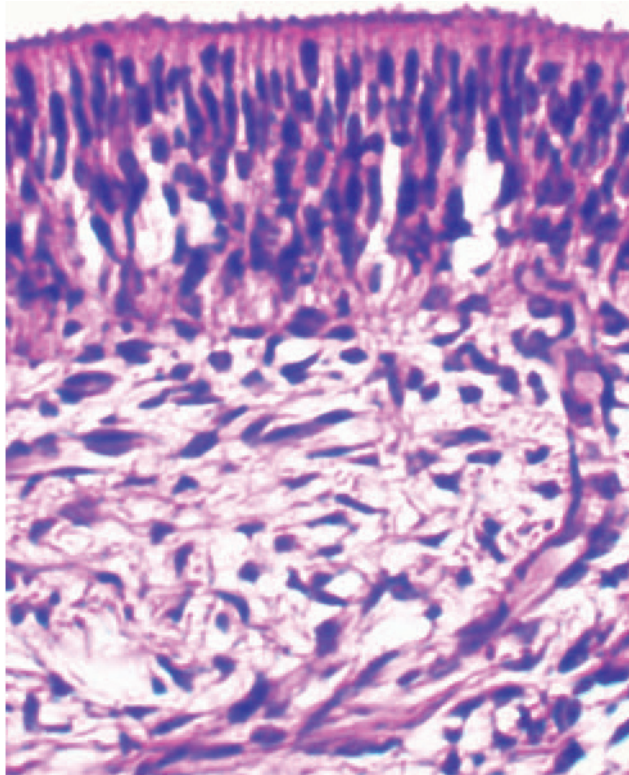


Try to name these organelles:





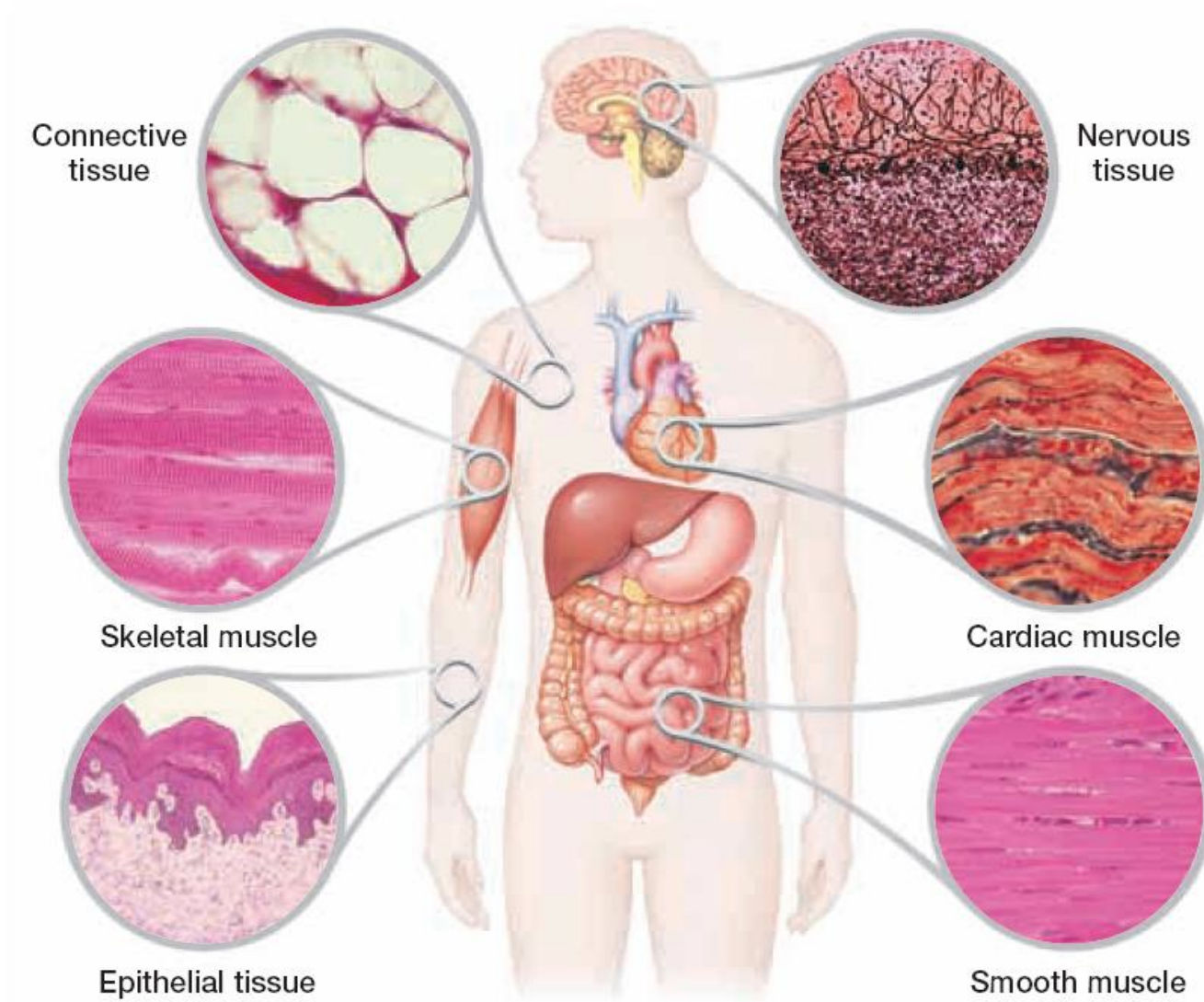
Tissues and organs



What are the two types of tissues shown in the photos?

What are their functions?

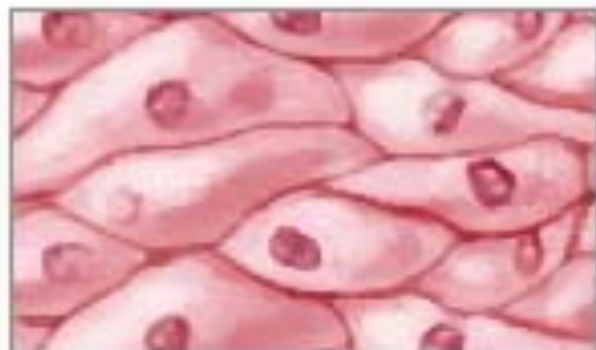
Human Body Tissues



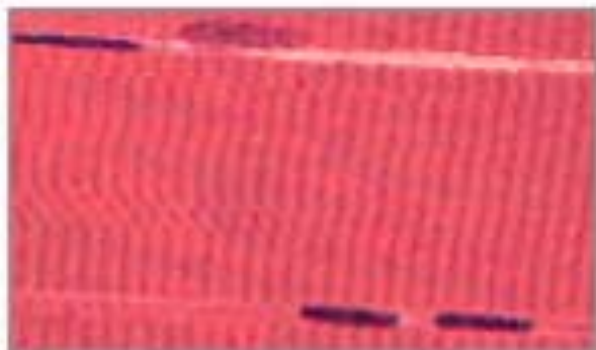
Four types of tissue



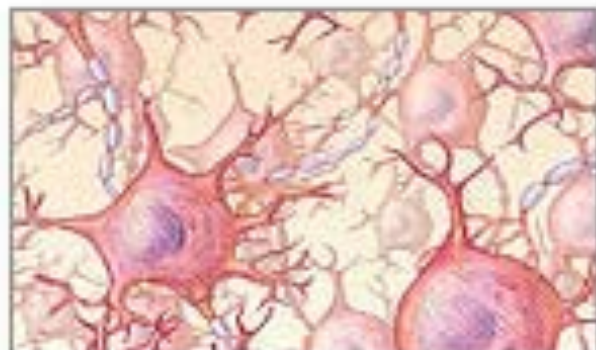
Connective tissue



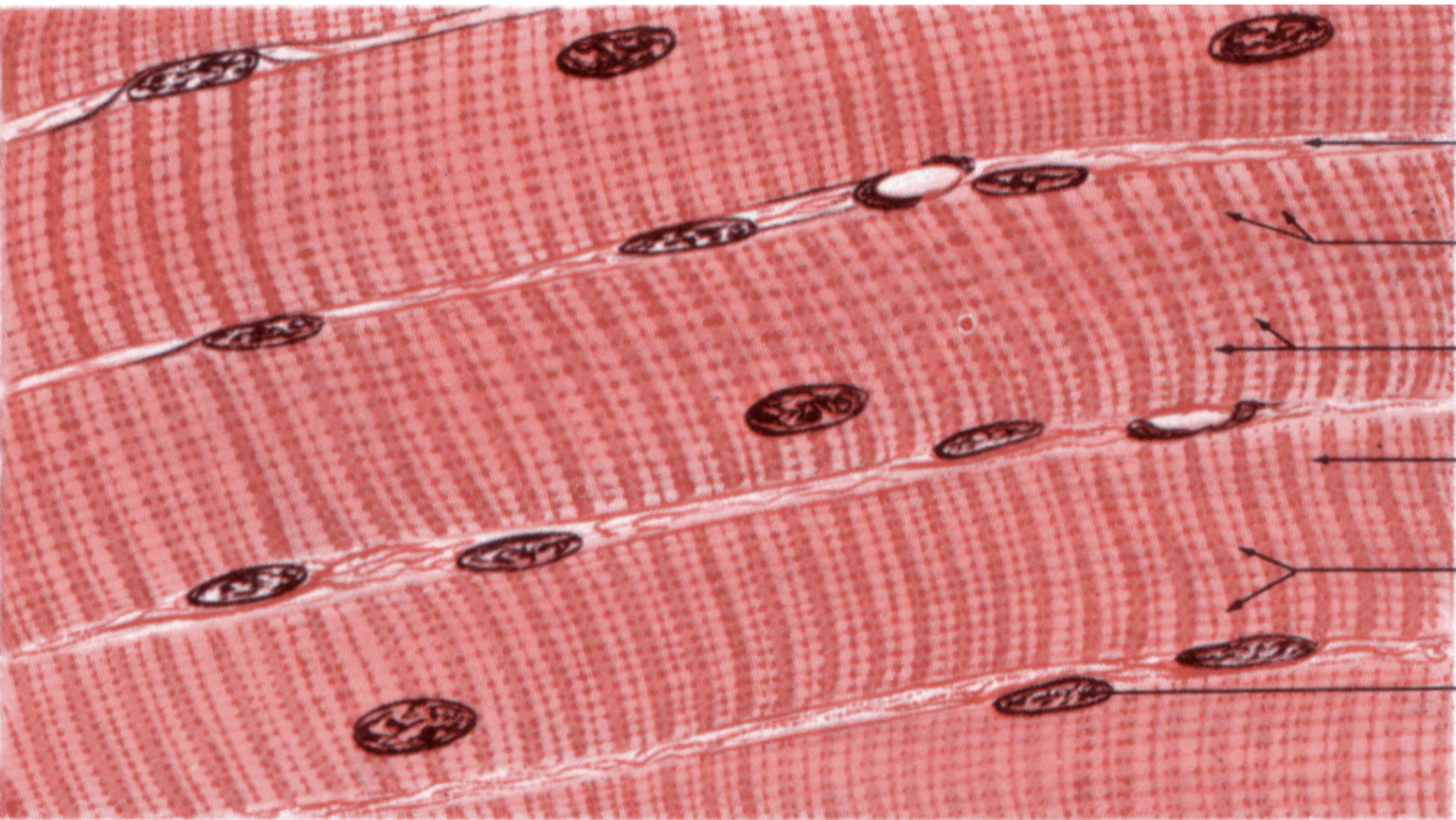
Epithelial tissue



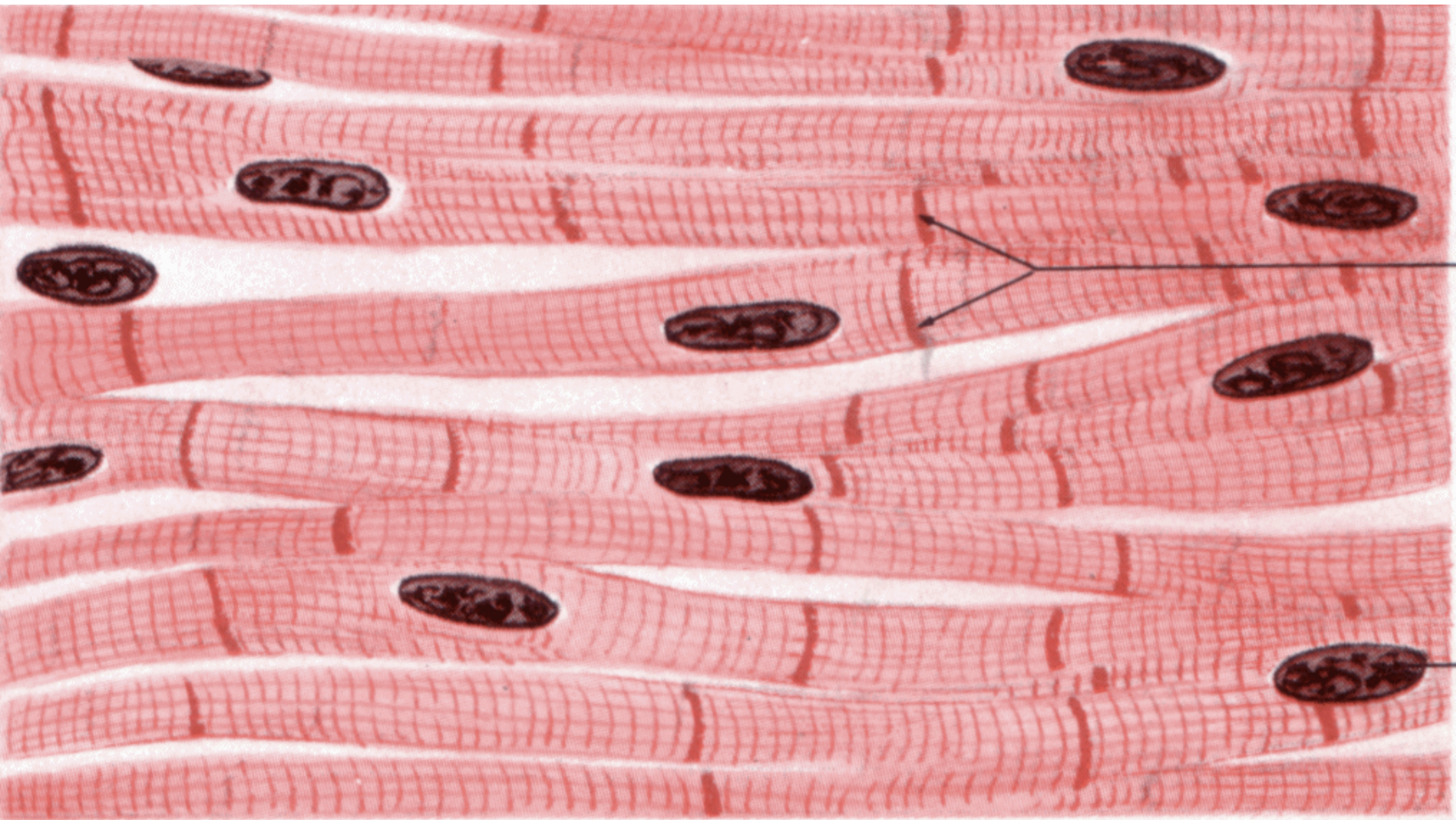
Muscle tissue



Nervous tissue



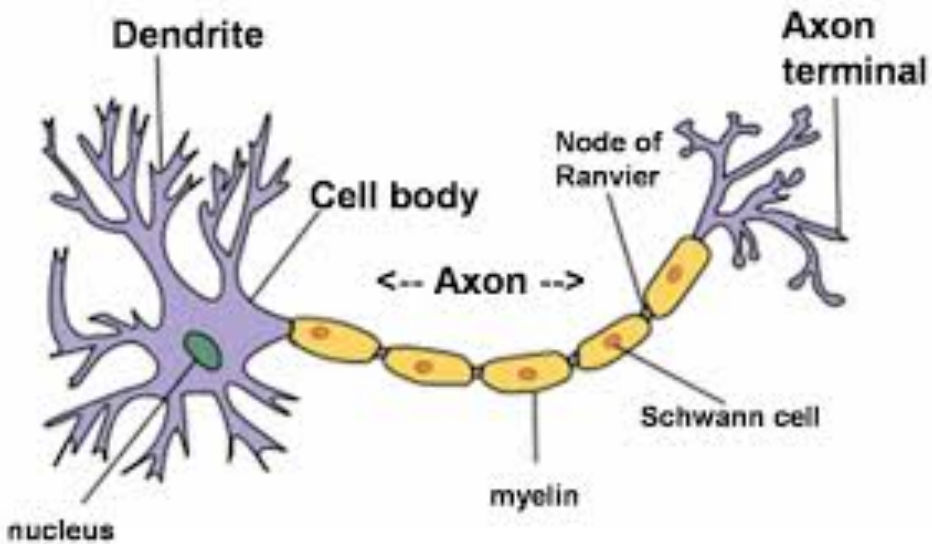
Skeletal or striated voluntary muscle tissue.



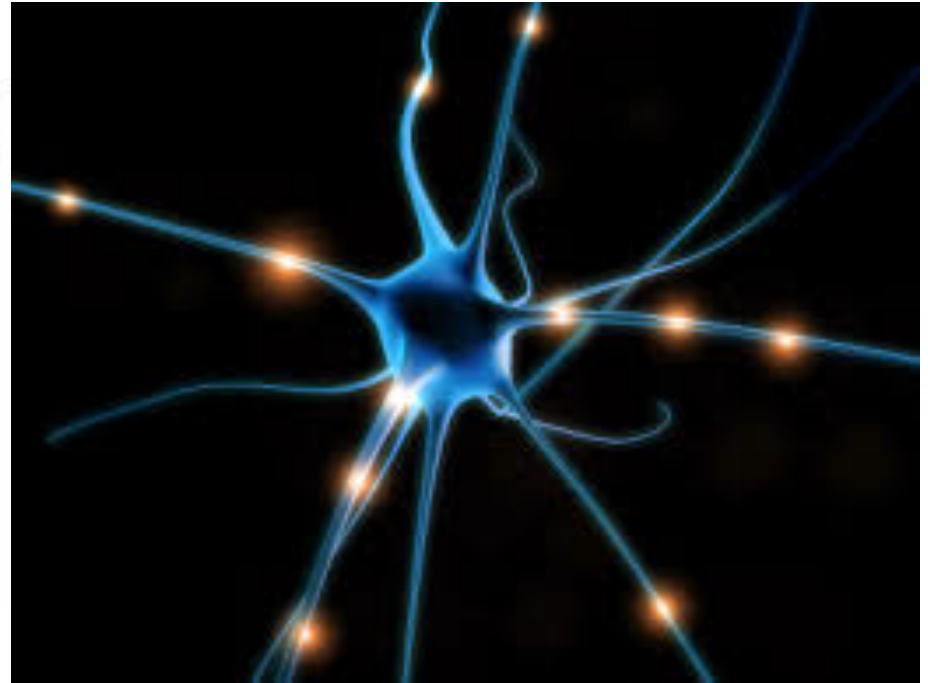
Cardiac or striated involuntary muscle tissue.

Neurons

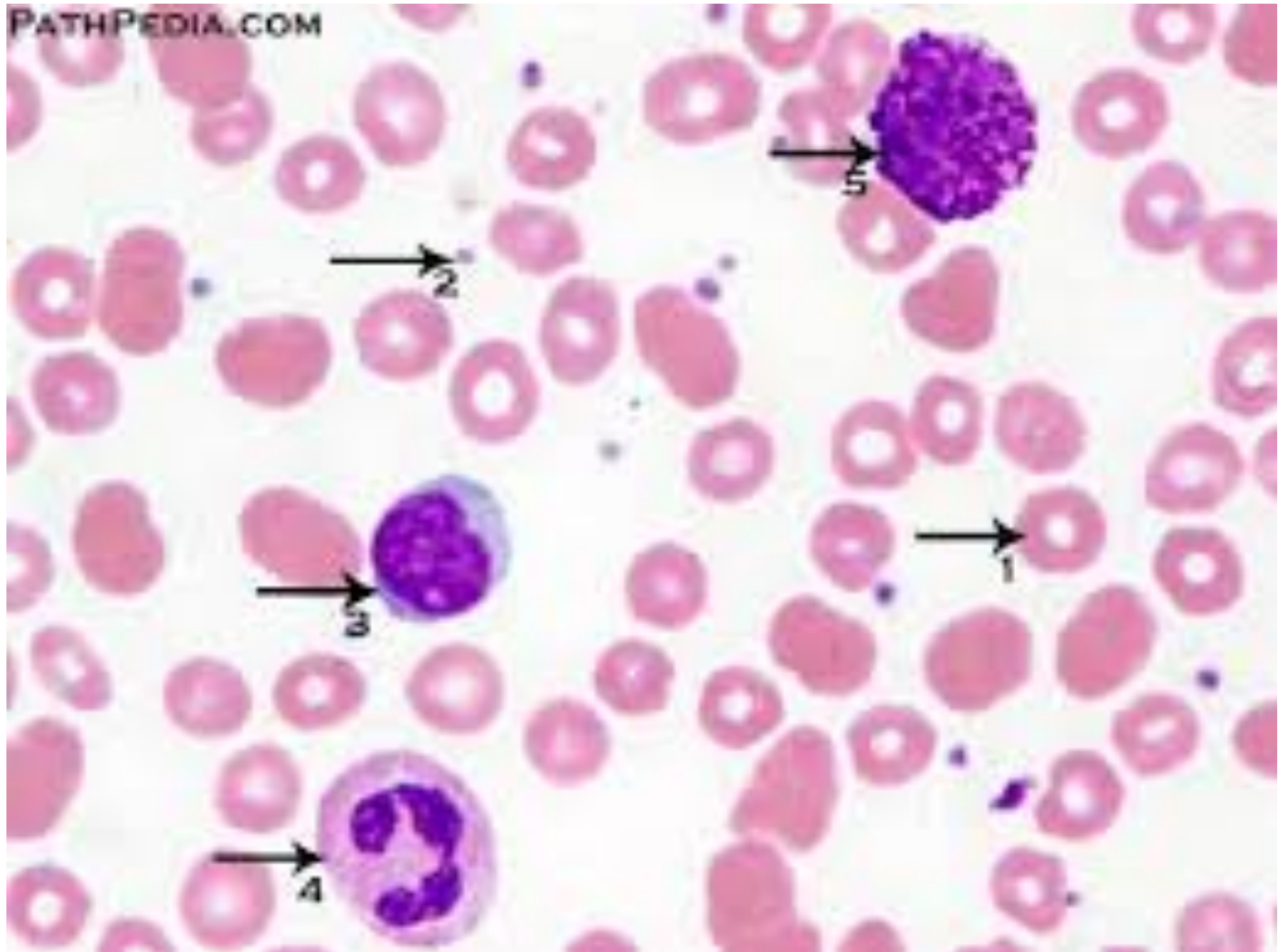
- A picture



- Under an optic microscope

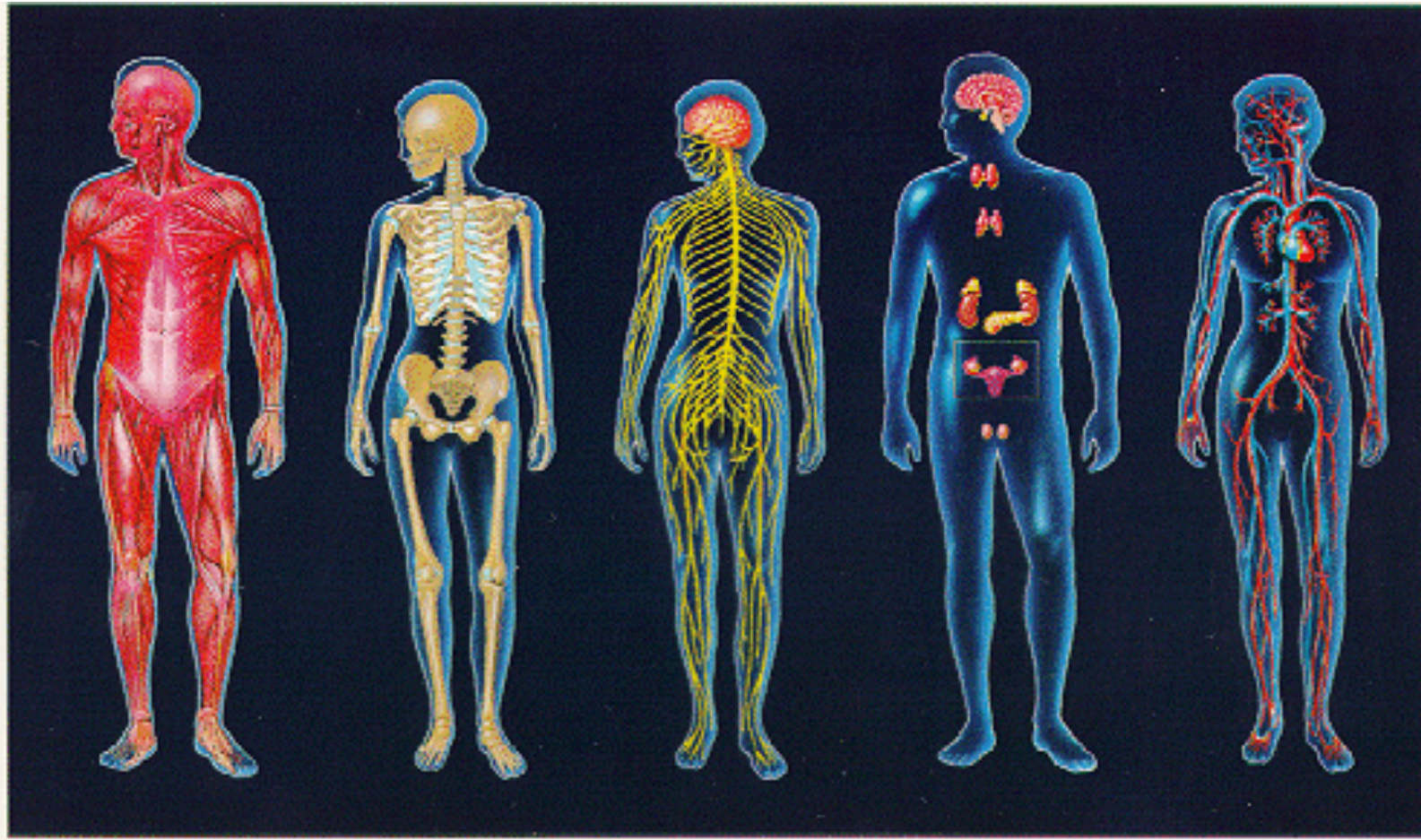


Blood cells





**Integu-
mentary
System**



**Muscular
System**

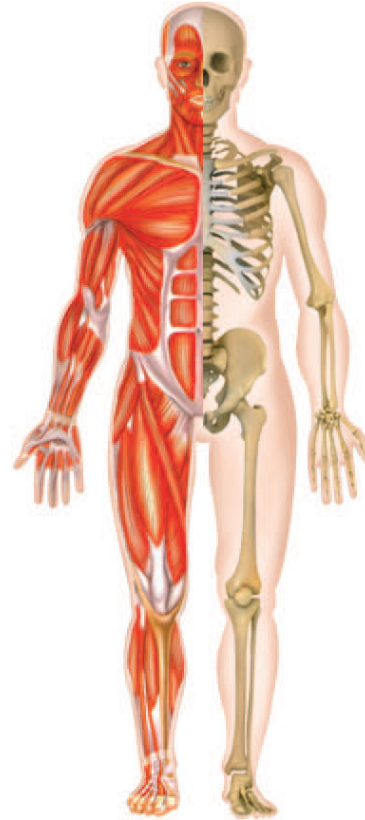
**Skeletal
System**

**Nervous
System**

**Endocrine
System**

**Circulatory
System**

The skeletal and muscular systems

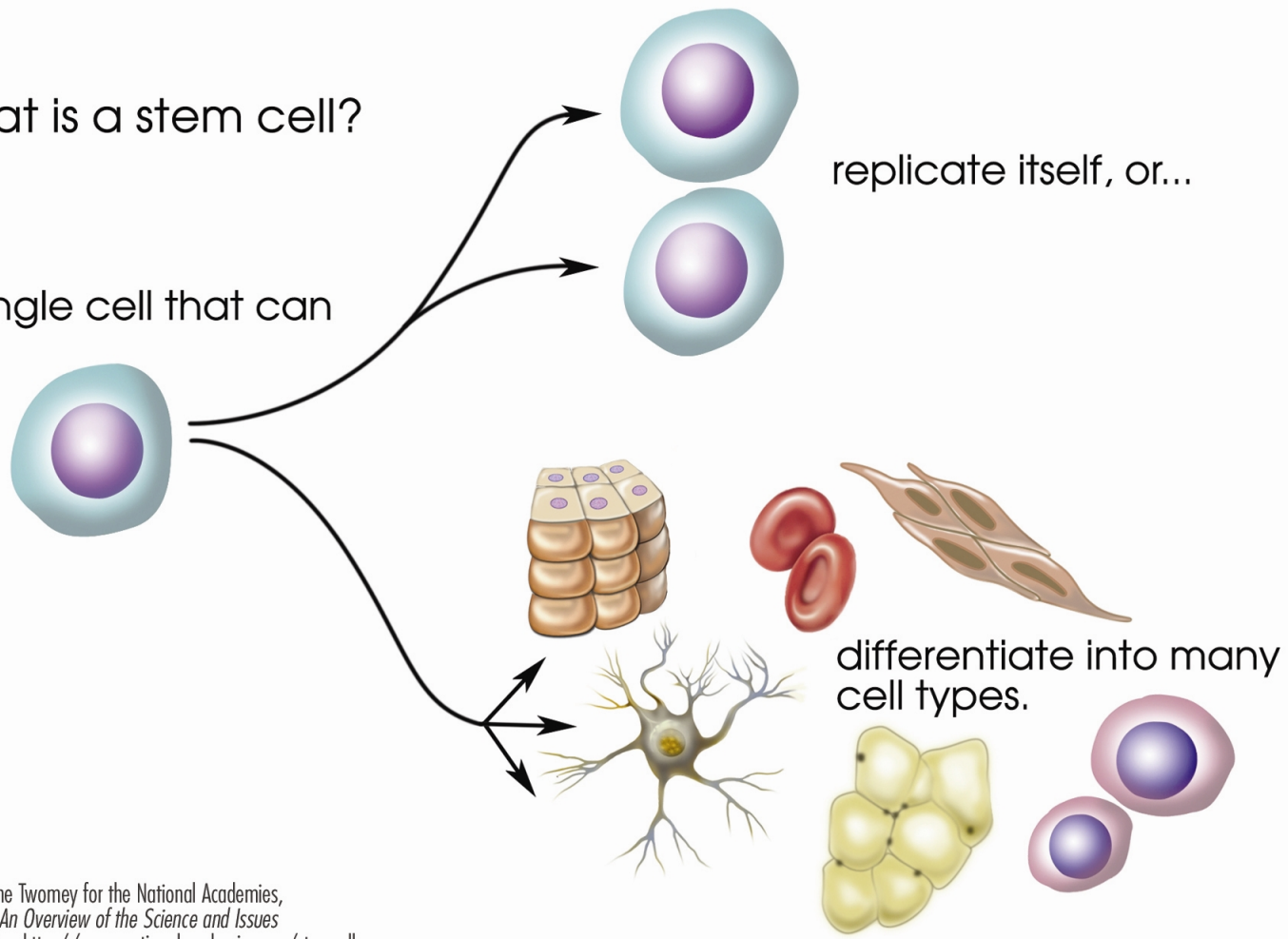


What two systems are shown in the illustration?

What is the relationship between their functions?

What is a stem cell?

A single cell that can



replicate itself, or...

differentiate into many cell types.

Image prepared by Catherine Twomey for the National Academies, *Understanding Stem Cells: An Overview of the Science and Issues* from the National Academies, <http://www.nationalacademies.org/stemcells>. Academic noncommercial use is permitted.

What have we learned?

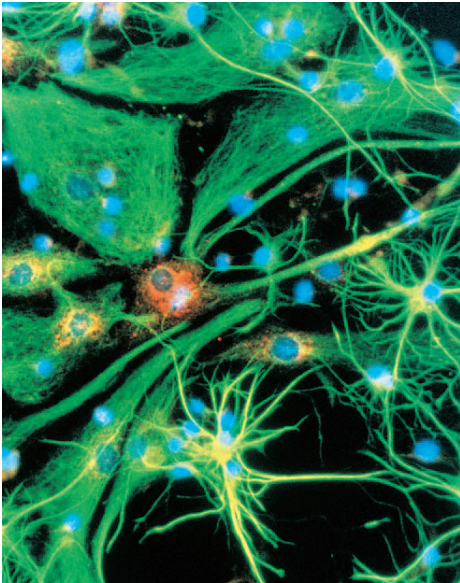


Image 1

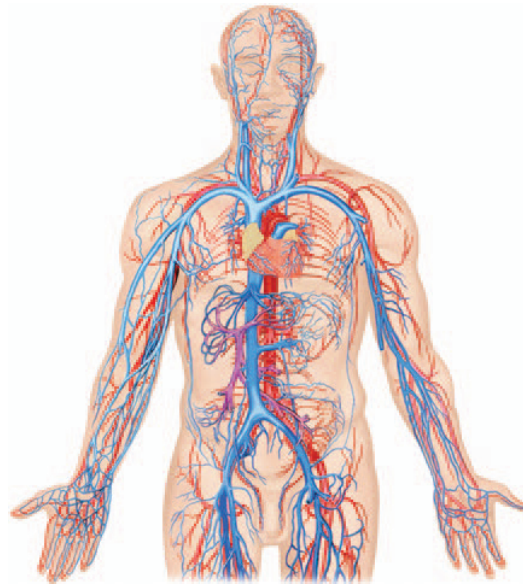


Image 2

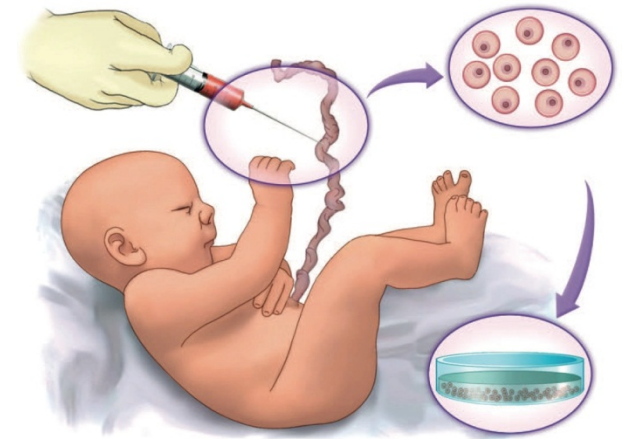
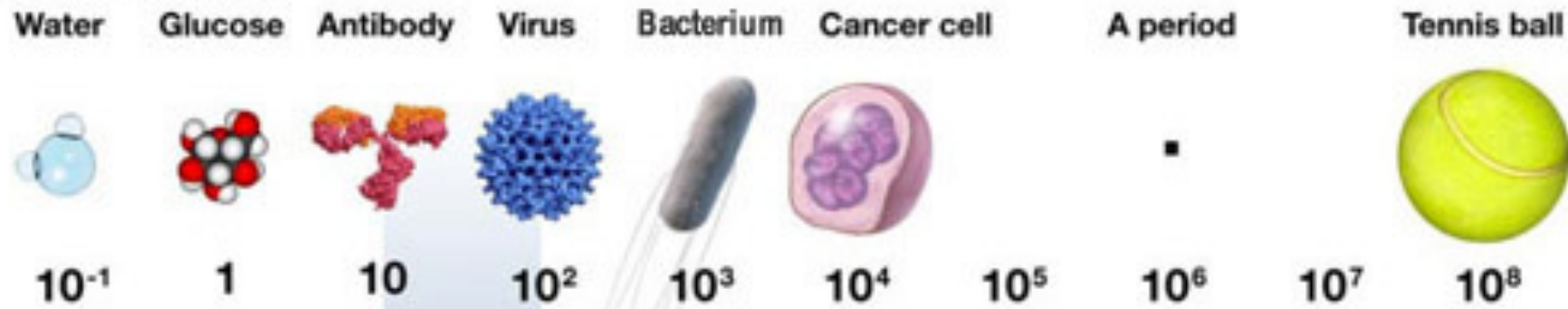


Image 3

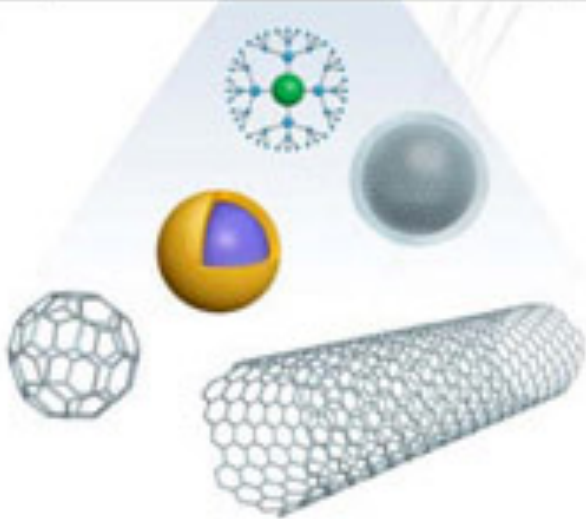
What is the relationship between image 1 and 2?

What kind of cells are being extracted in image 3? Why are these cells used in gene therapy techniques?

How Small Is Small?



Nanometers



- Nanodevices**
Nanopores
Dendrimers
Nanotubes
Quantum dots
Nanoshells

Other living thins

- Bacterias: procaryotes
- Virus: they are not cells