



1 μm



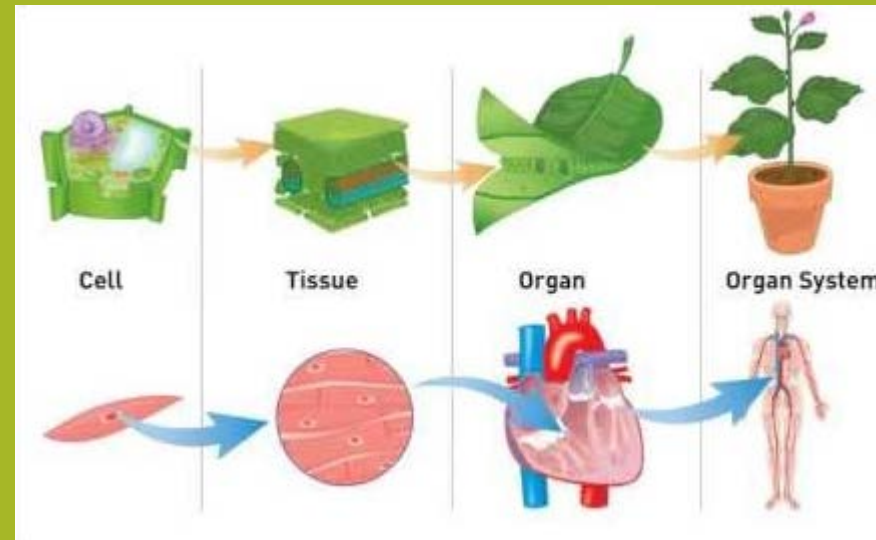
2 μm



5 μm

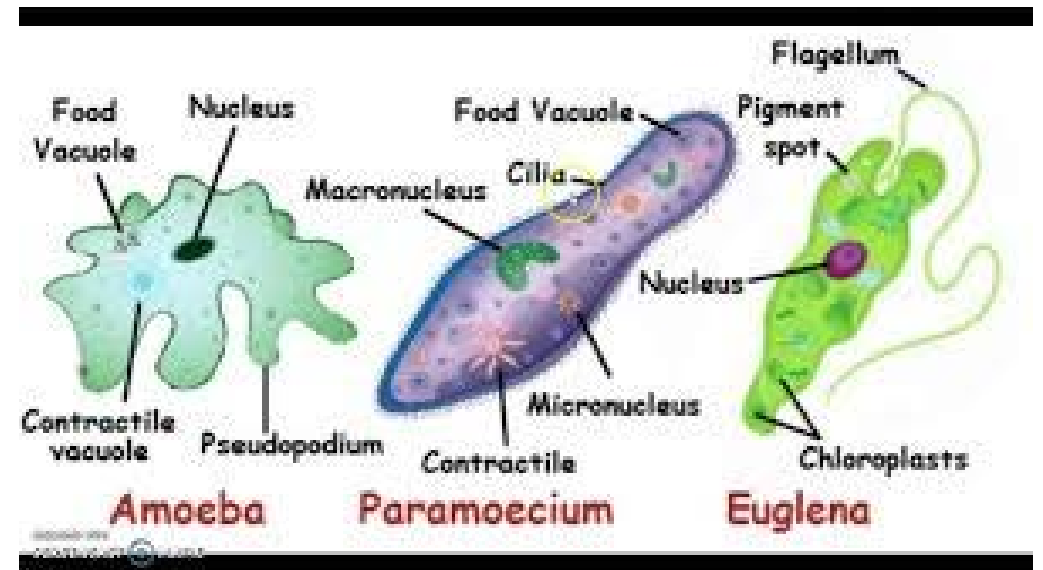
# ORGANIZATION OF CELLS AND SPECIALIZATION

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# Cells are the basic unit of life

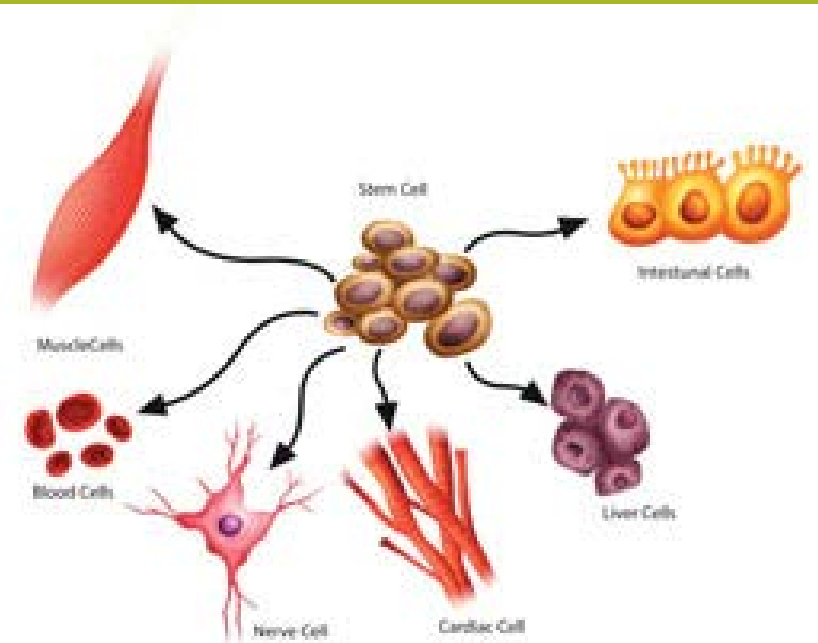
- Sometimes a cell is an organism
  - Unicellular
- Unicellular organisms are living as they
  - Respond to environment
  - Grow
  - Transform energy
  - Reproduce



- In terms of numbers, unicellular organisms dominate life on earth
  - I.e. there are LOTS of them

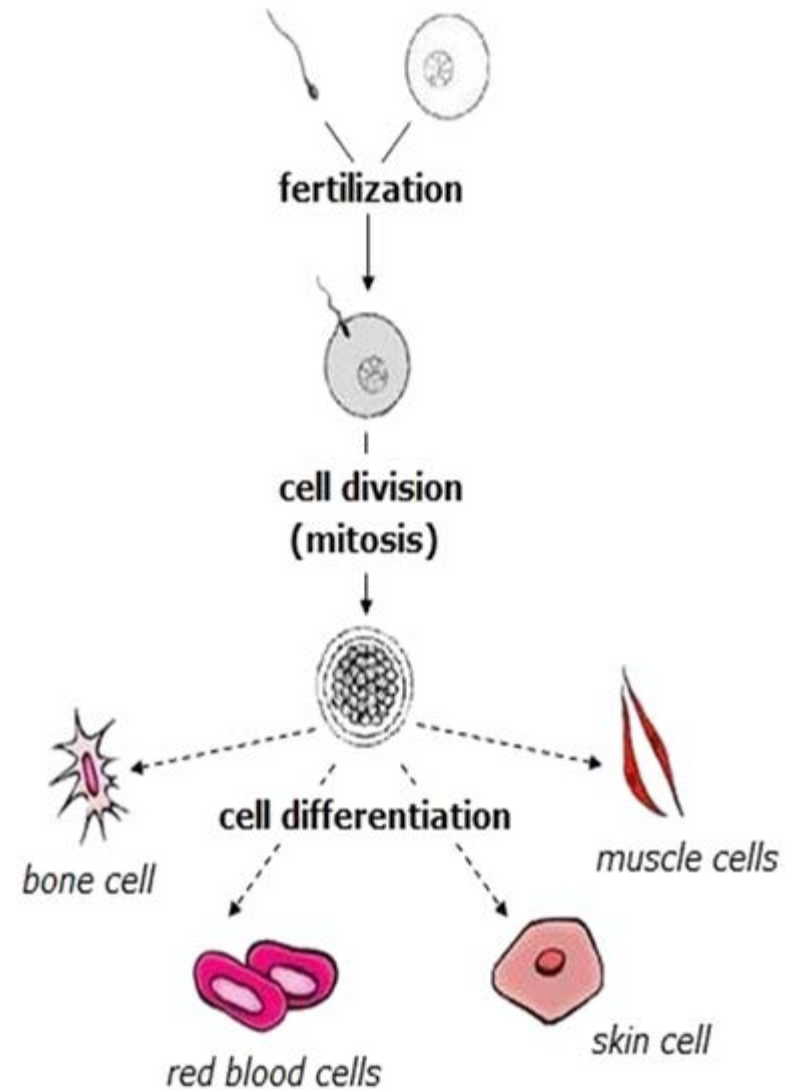
# Multicellular organisms

- Organisms that are made up of many cells
  - Animal/plants
- There is great variety among multicellular organisms
  - Depend on communication and cooperation between specialized cells
- Cells throughout an organism can develop in different ways to perform different tasks (Cell specialization)



# Examples

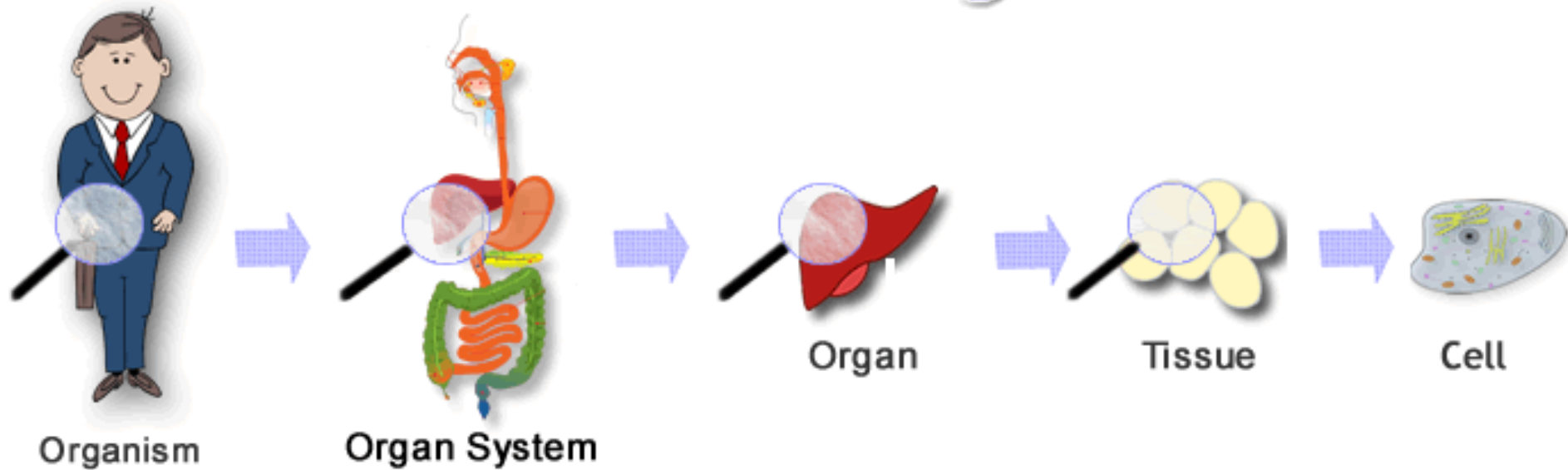
- Cells in our body
  - Red blood cells transport oxygen
  - Pancreatic cells produce insulin
  - Muscle cells contract and relax to move the body



# Levels of Organization

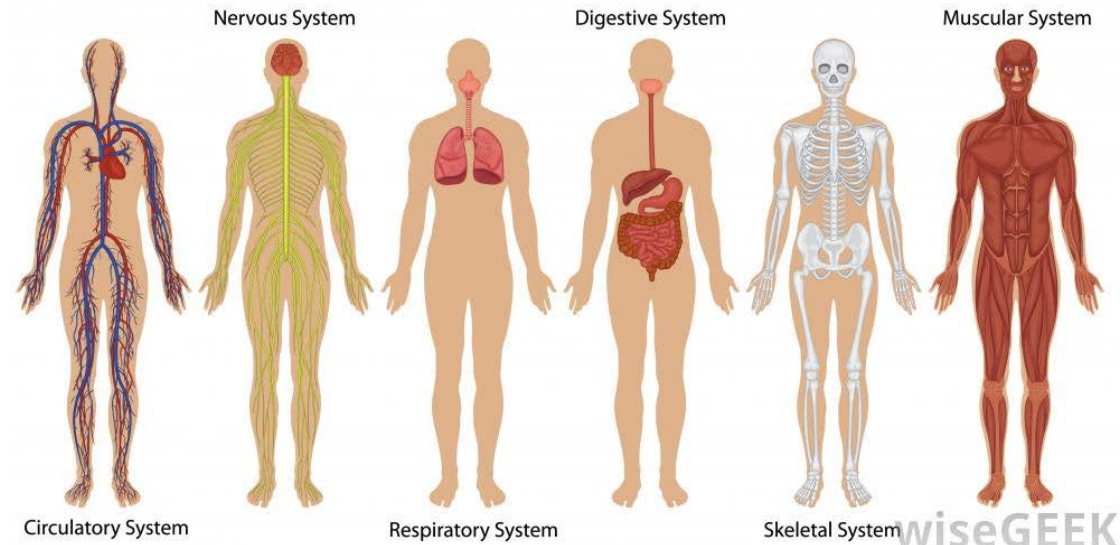
- Ways to describe cells within a multicellular organism

## Levels of Cellular Organization



# Organization

- Cells-Basic unit of structure and function
- Tissue- group of similar cells that perform a particular function
- Organ- groups of tissues working together to perform tasks
- Organ system- a group of organs working together to perform a specific function





- Muscle cells make up smooth muscle tissue, which along with other tissues make up the stomach (organ) and the stomach is part of the digestive system (organ system)

