

Topic 01

FAST REVIEW

Biology 1

Learning Objectives

At the end of this module, students will be able to:

- Recall major themes and concepts from biology I
- Anticipate substantive upcoming content
- Confirm readiness for dissection activity

Overview of Biology 2

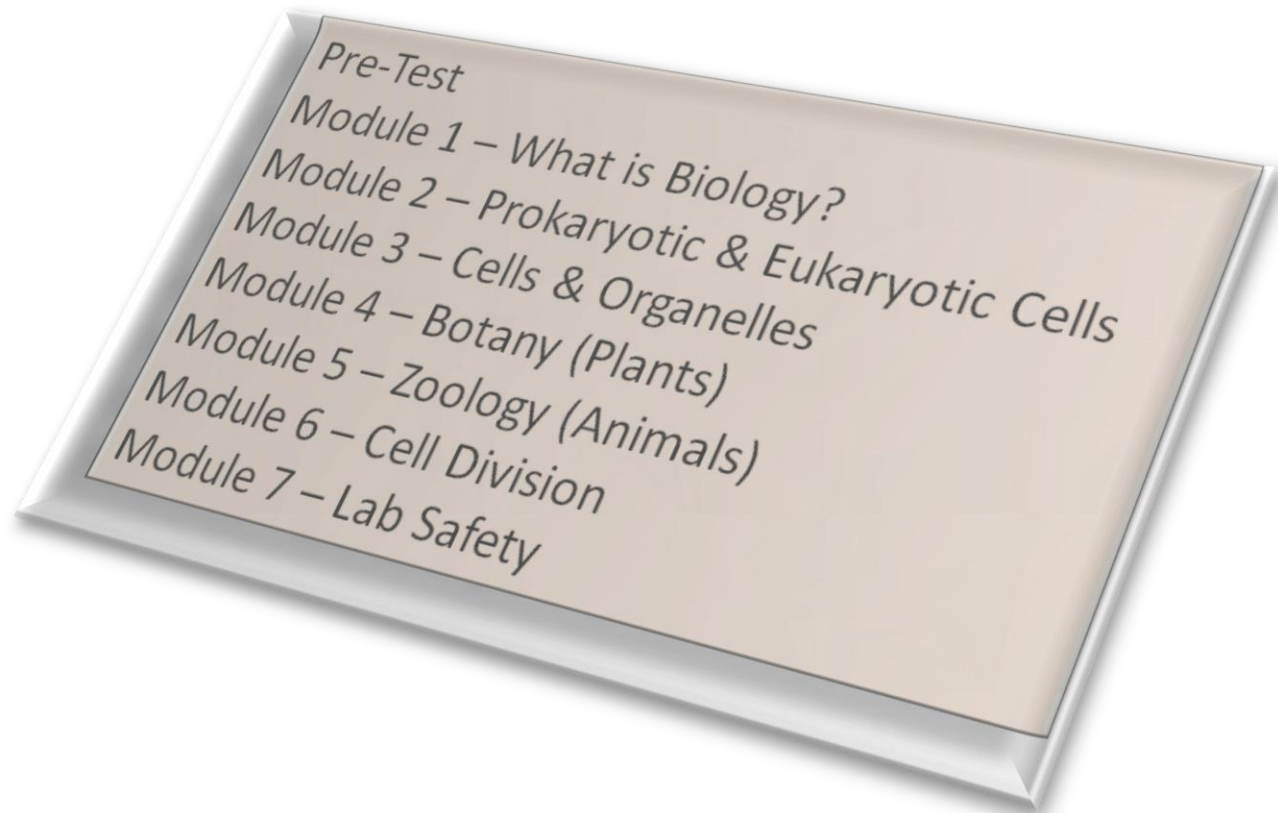
- Module 1 – Fast review basic biology (**today**)
- Module 2 – Human body physiology
- Module 3 – Cell differentiation and reproduction
- Module 4 – Cell respiration and the Krebs cycle

- Module 5 – Lab safety and dissection overview
- Module 6 – Shark dissection
- Module 7 – Shark dissection
- Module 8 – Class wrap up

01.00

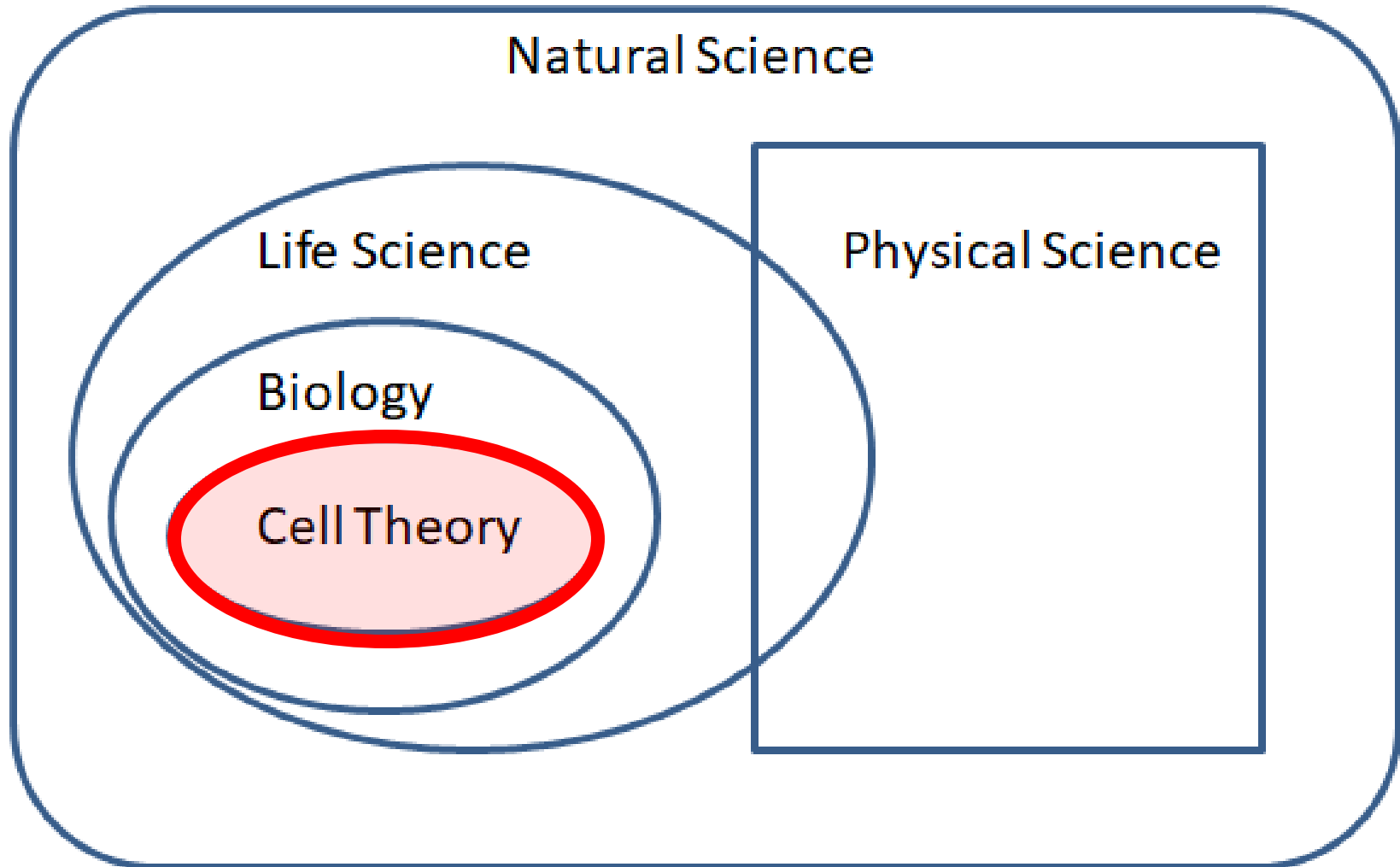
Fast review biology 1

Today ... this is what we will SPEED through.



01.01

What is biology?



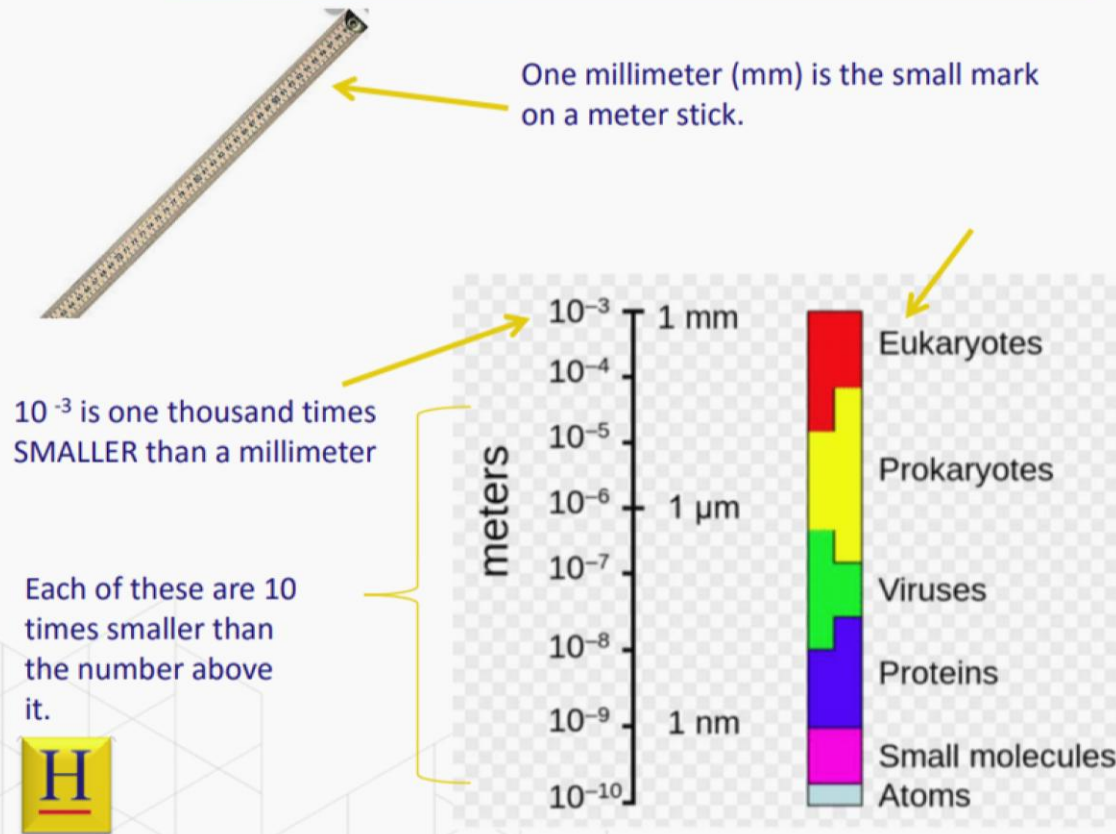
01.02

Prokaryotic & Eukaryotic Cells

- **All living things are composed of cells.**
- **Cells are the basic units of structure and function in living things.**
- **All cells are produced from other cells.**

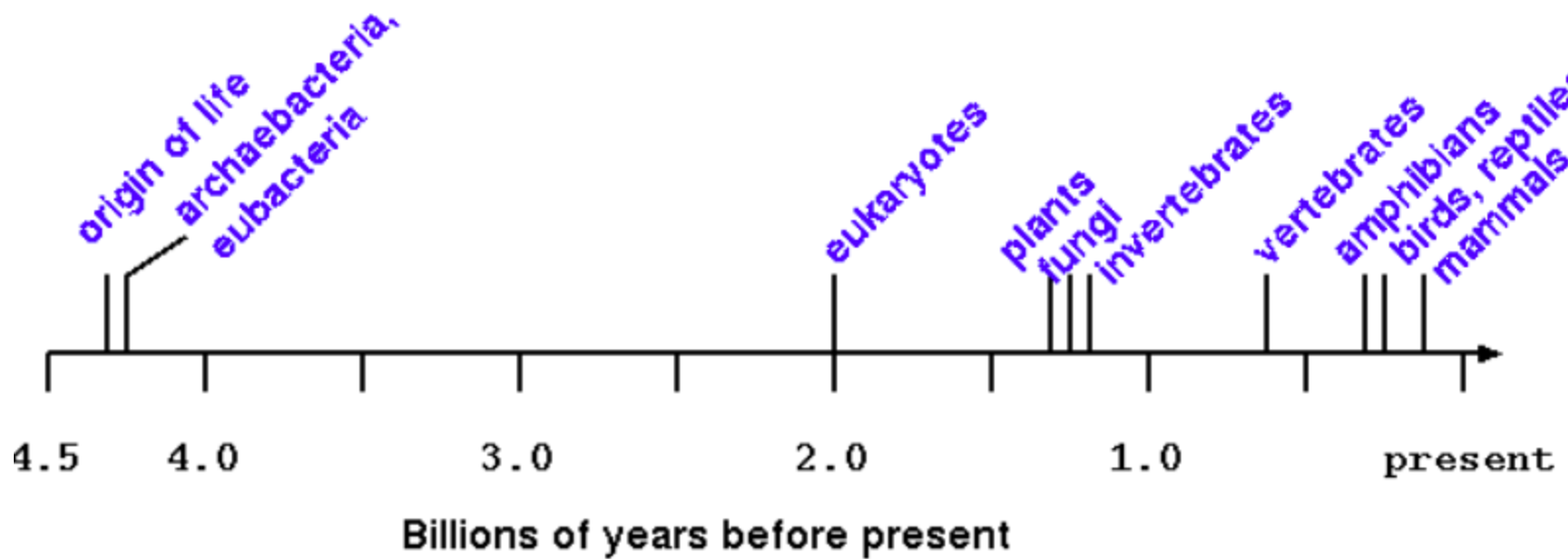
Prokaryotic & Eukaryotic Cells

Size Comparisons



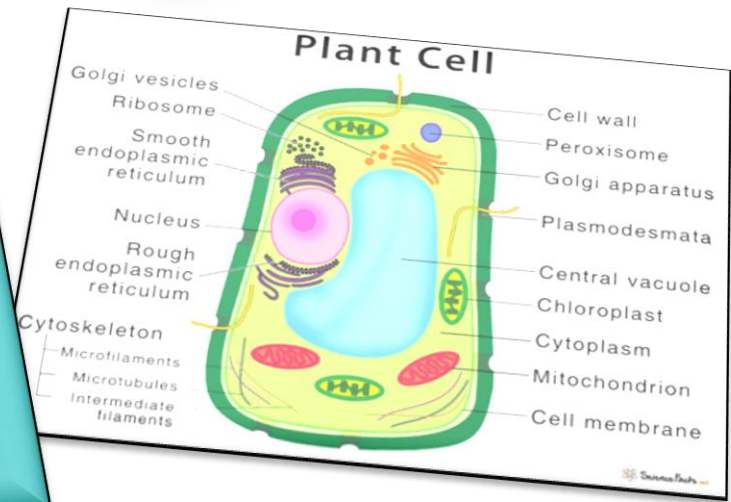
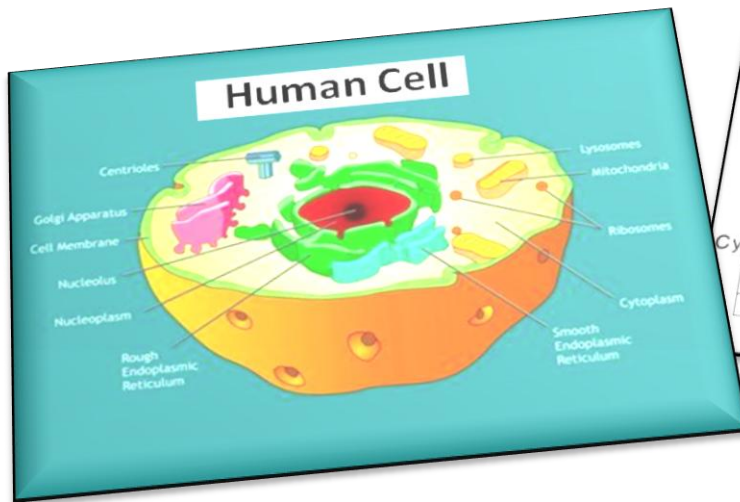
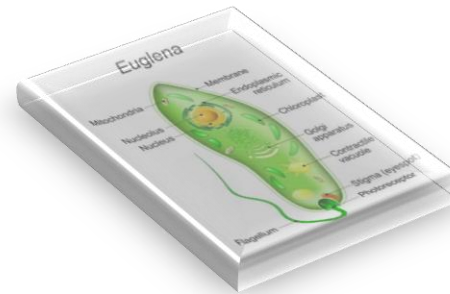
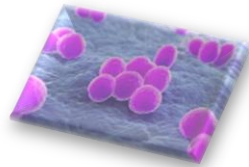
01.02

Prokaryotic & Eukaryotic Cells



01.03

Cells & Organelles



01.03

Cells & Organelles

Chloroplast

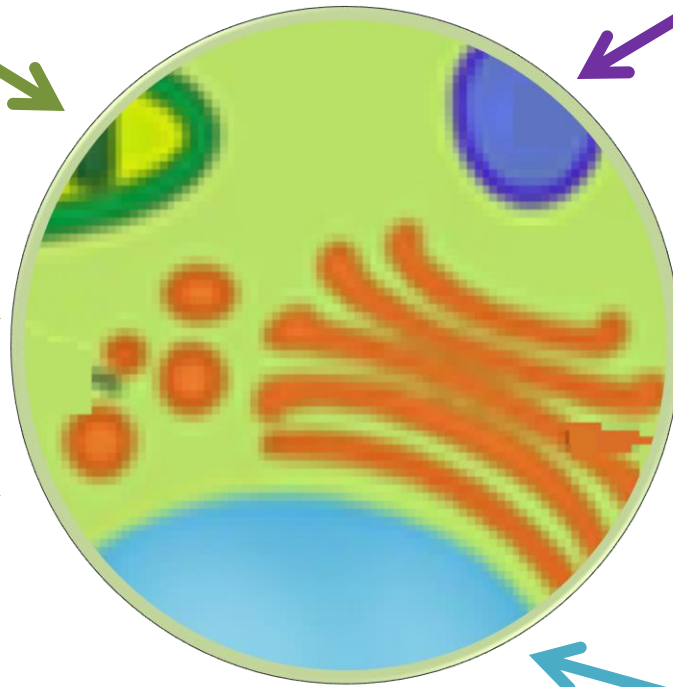
Peroxisome

Cytoplasm

Golgi apparatus

Golgi vesicles

Central vacuole



01.03

Cells & Organelles

Kitchen

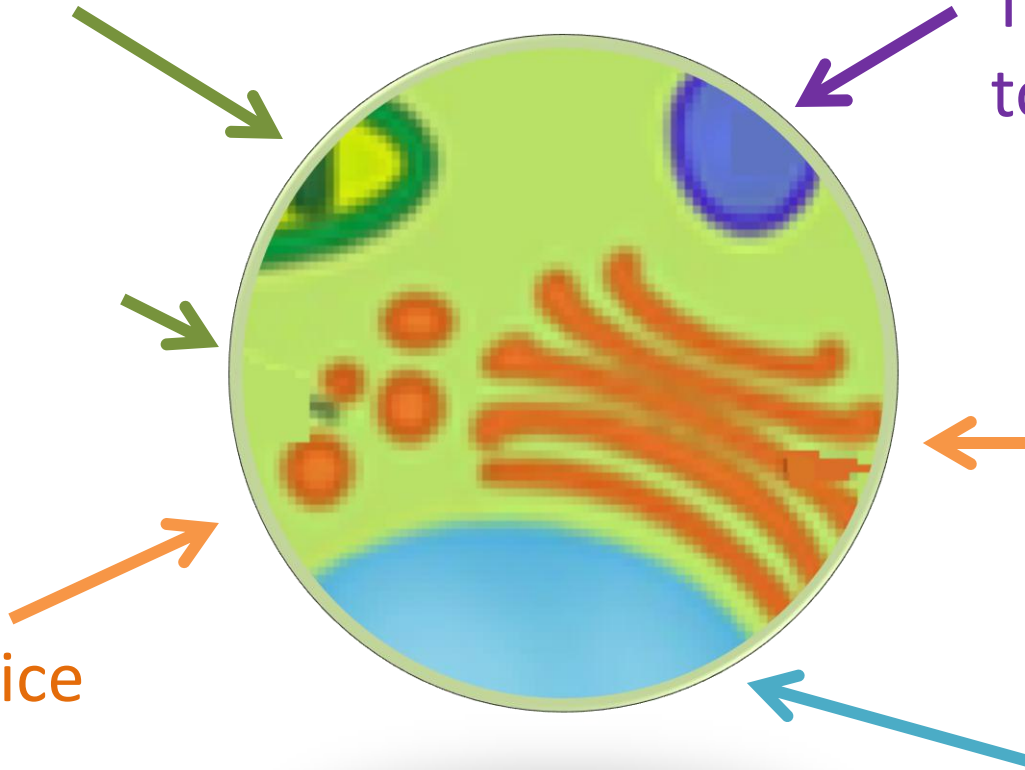
Jello

Post office

Trash can for
toxic waste

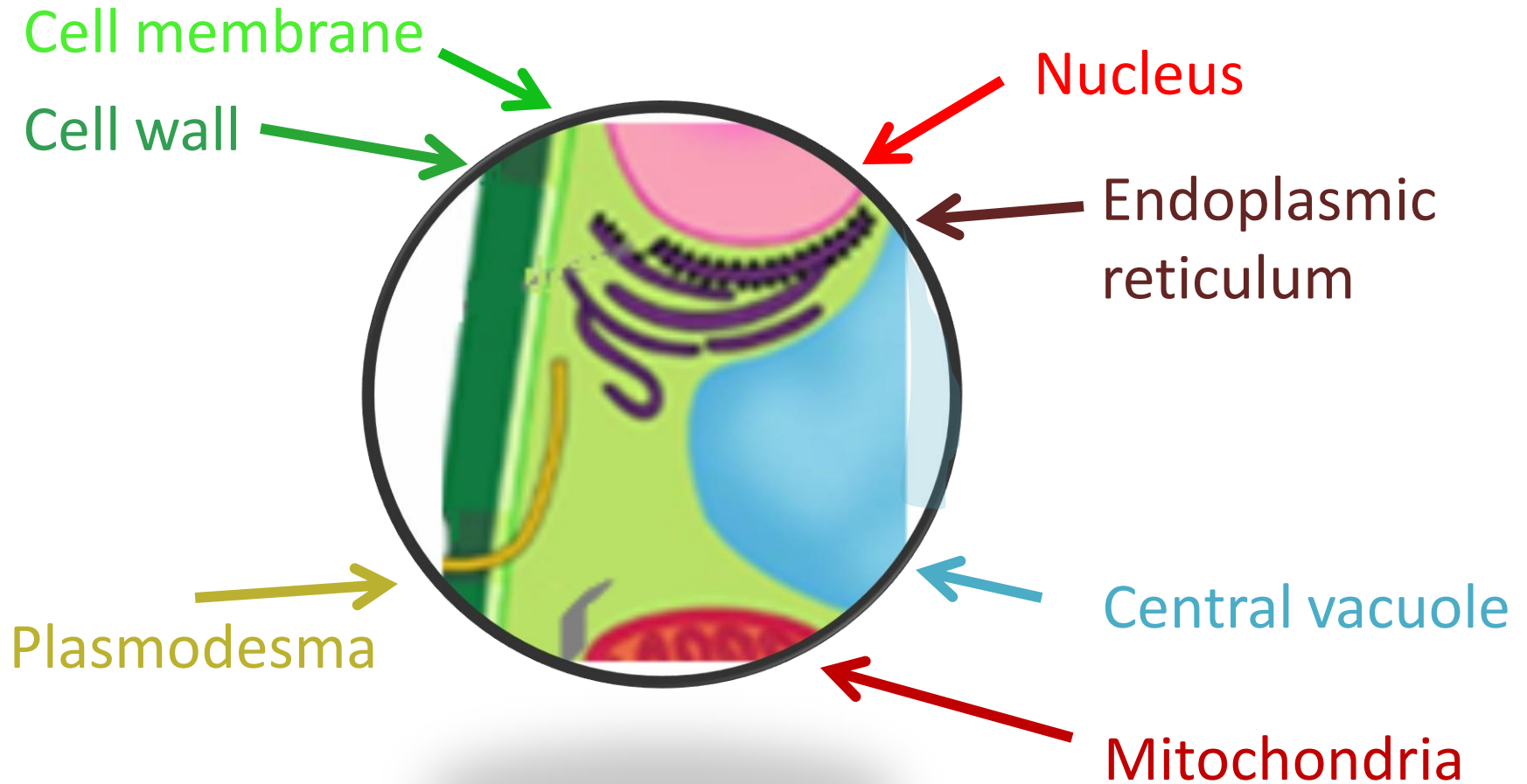
Post office

Water tower



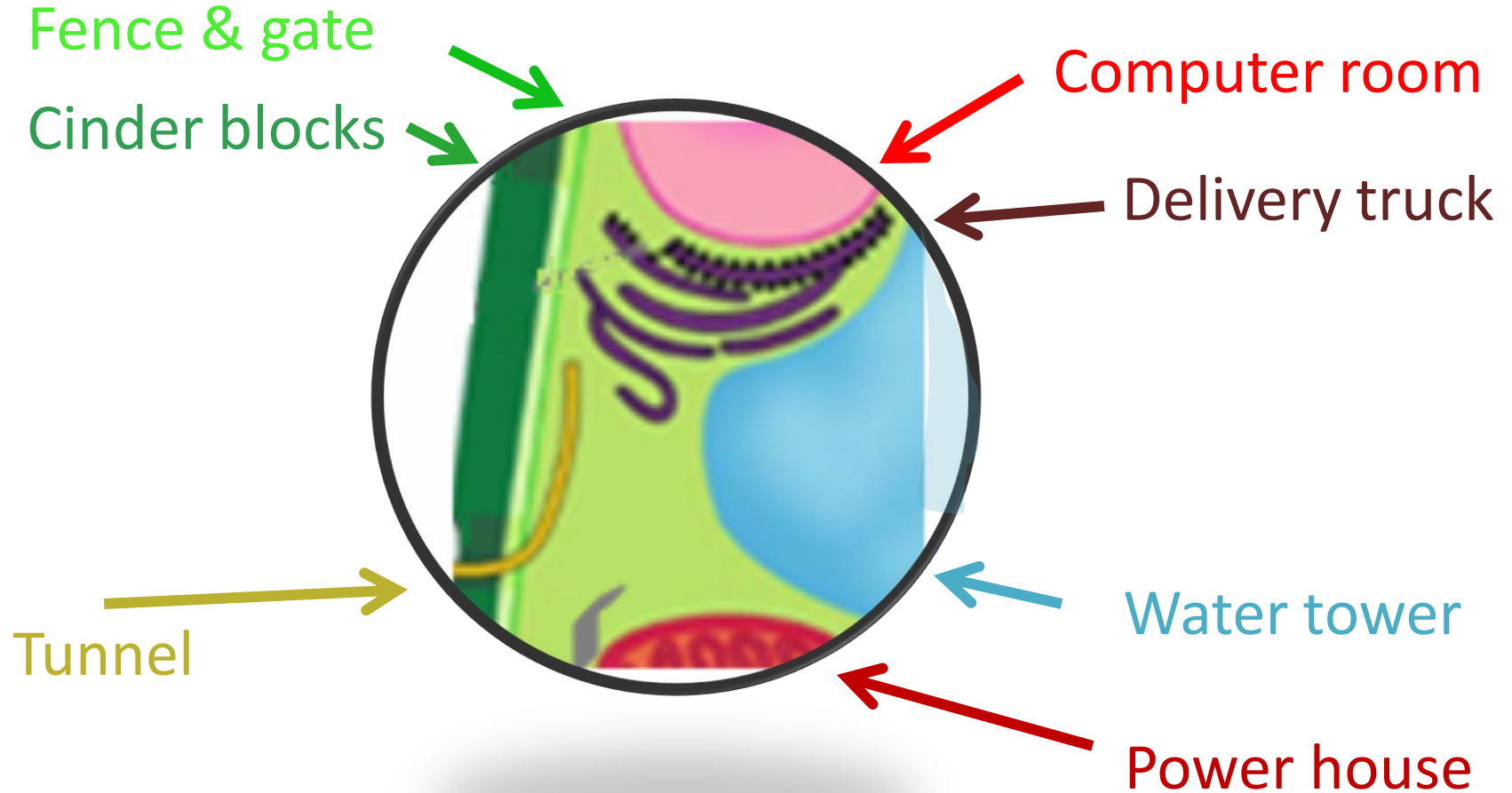
01.03

Cells & Organelles



01.03

Cells & Organelles



01.04

Plants

Botany overview

Plants



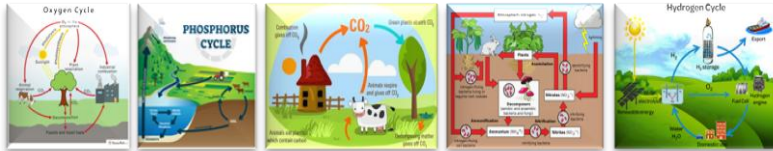
Fungus



Algae



Cycles

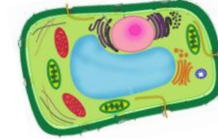


Expertise and Global Issues



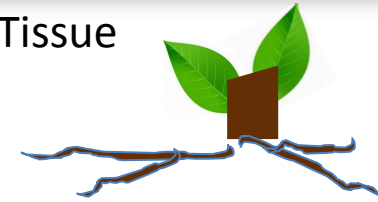
Plant cell organelles

Photosynthesis

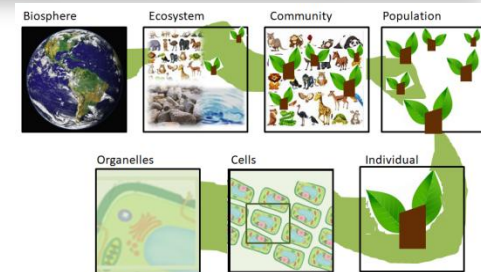


Shoots & roots

Tissue



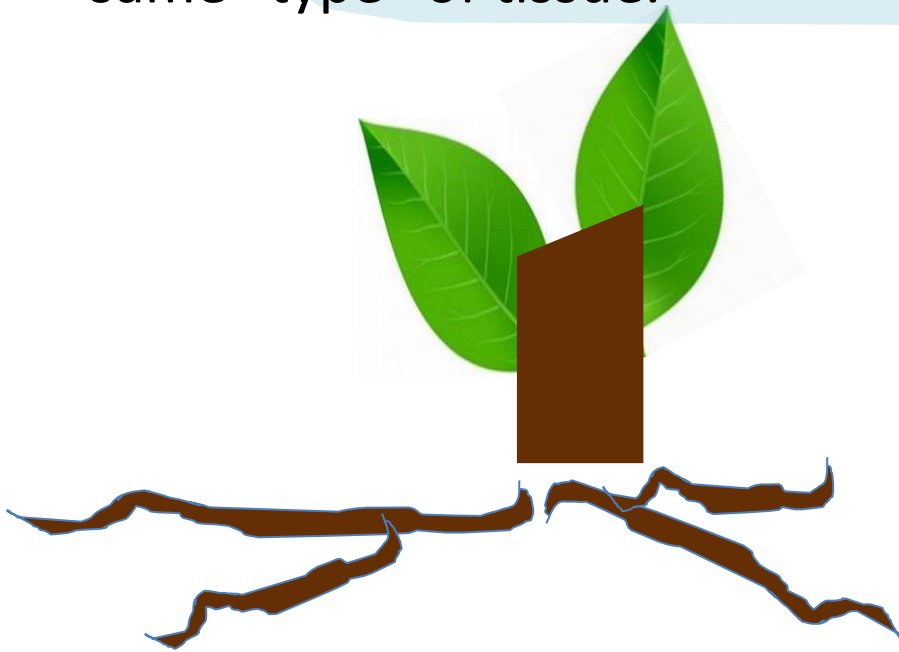
Biosphere hierarchy



01.04

Plants

Roots and shoots have the same “type” of tissue.



They have continuous growth and permanent growth tissue.

Meristematic

Continuous growth tissue is called “meristematic” tissue.

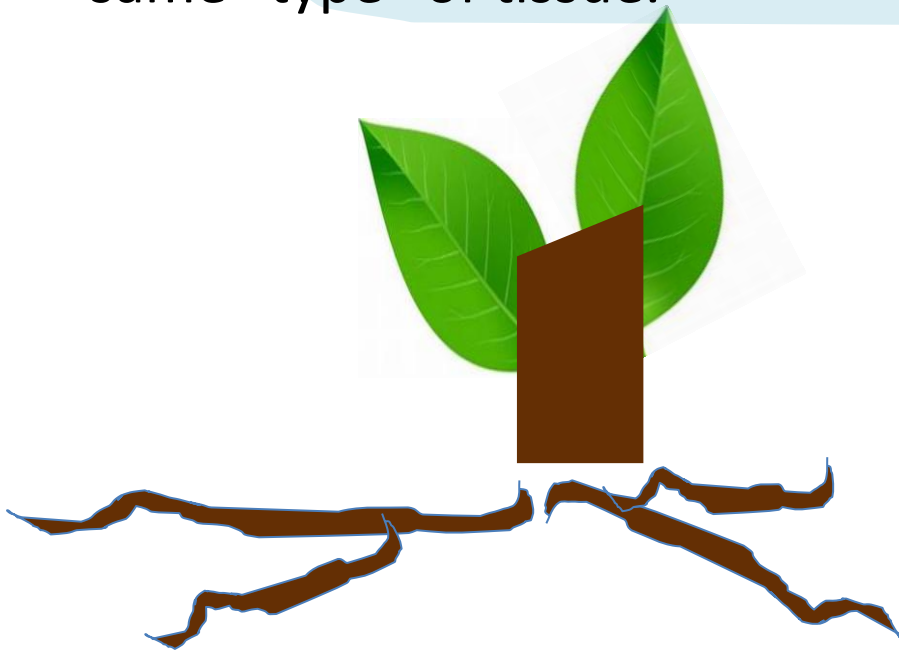
This type of tissue increases the length, breadth and connections.

These are called the cortex, endodermis, & xylem/phloem.

01.04

Plants

Roots and shoots have the same “type” of tissue.



They have continuous growth and permanent growth tissue.

Permanent

Permanent tissue is derived from meristem tissue.

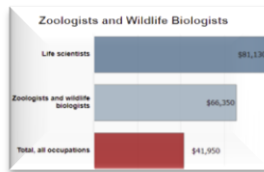
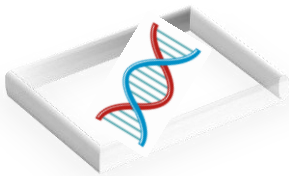
This tissue takes on specific roles – cells in this tissue lose their ability to divide further.

Main types are dermal, vascular, and ground tissue.

01.05

Animals

Zoology overview



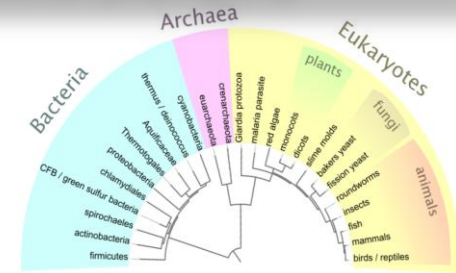
Animal characteristics

Characteristics of animals:

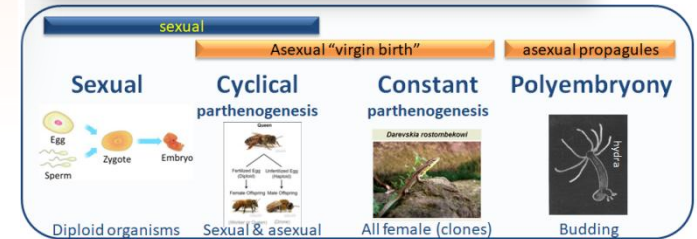
1. all animals eat other organisms
2. all animals move
3. all animals are multicellular

Kingdom
Phylum
Class
Order
Family
Genus
Species

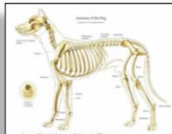
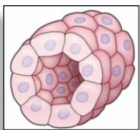
Animal phylogeny



Animal reproduction



Tissue Symmetry Blastopore Growth



Animal trophic levels



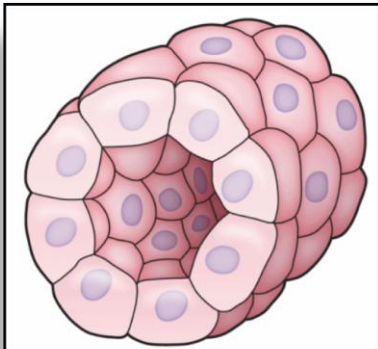
01.05

Animals

Distinctions of animals:

1. defined tissues vs. undefined tissues
2. radial symmetry vs. bilateral symmetry
3. protostomes vs. deuterostomes
4. molting vs. growth of skeletal elements

Tissue



Symmetry



Blastopore



Growth

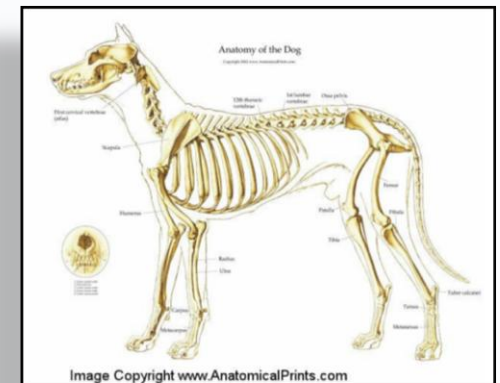


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01.05

Animals

Reproduction

Sexual a haploid gamete combines with another resulting in a diploid organism.

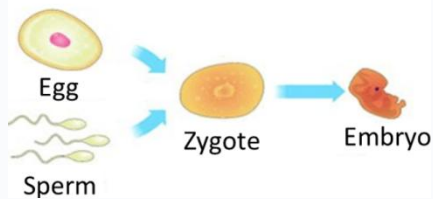
Asexual reproduction not involving the fusion of gametes.

sexual

Asexual "virgin birth"

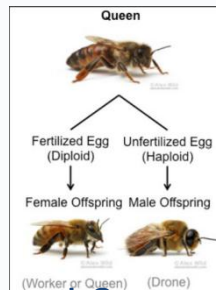
asexual propagules

Sexual



Diploid organisms

Cyclical parthenogenesis



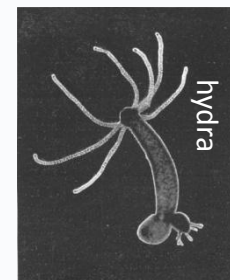
Sexual & asexual

Constant parthenogenesis



All female (clones)

Polyembryony

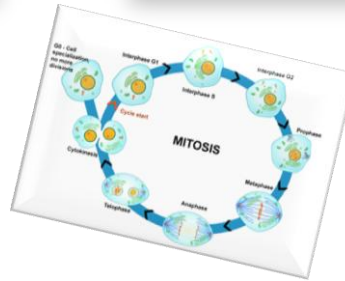
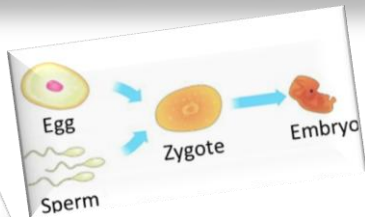
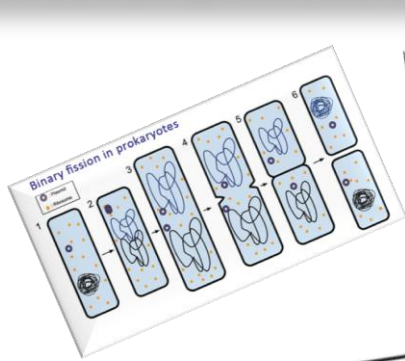


Budding

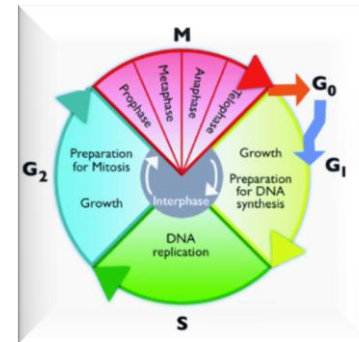
01.06

Cell division

Fission, meiosis & mitosis

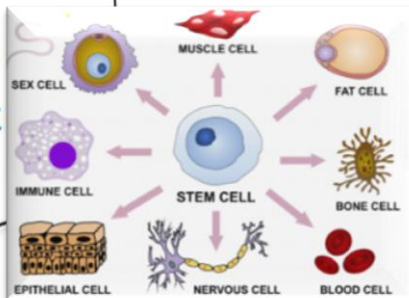


Mitosis cycle

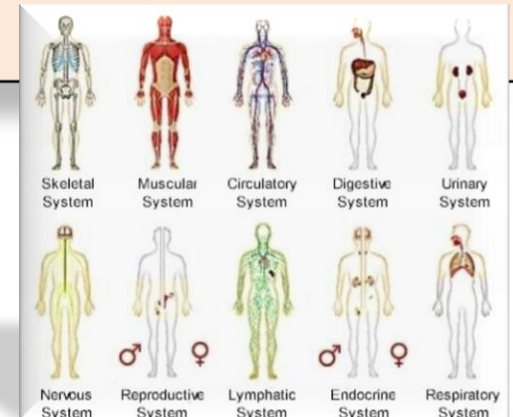


Types of Stem Cells

- Embryonic
- Totipotent
- Pluripotent
- Multipotent
- Oligopotent
- Unipotent



Cellular differentiation

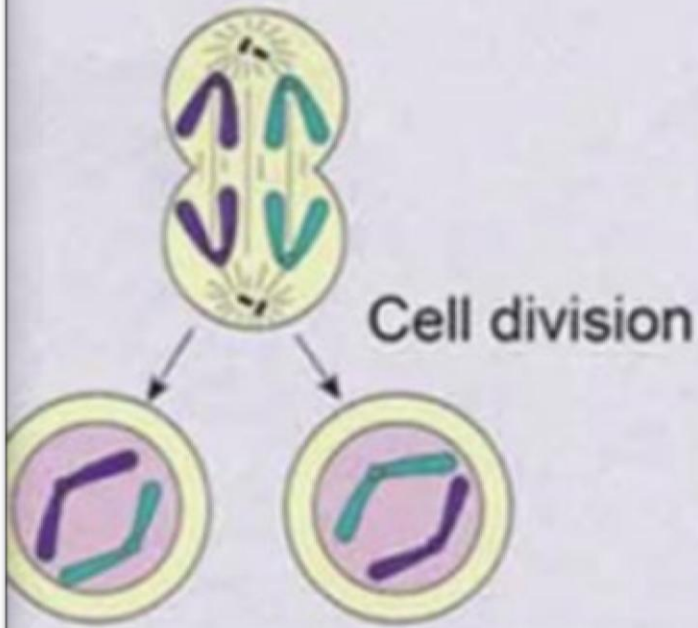


01.06

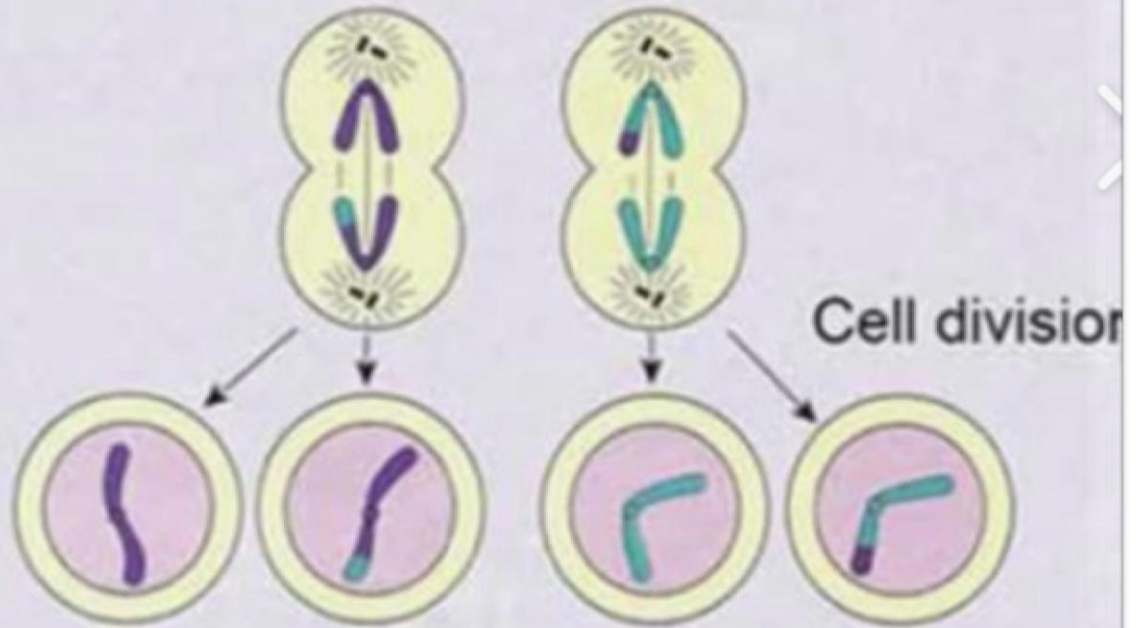
Cell division

Differences Between Mitosis and Meiosis

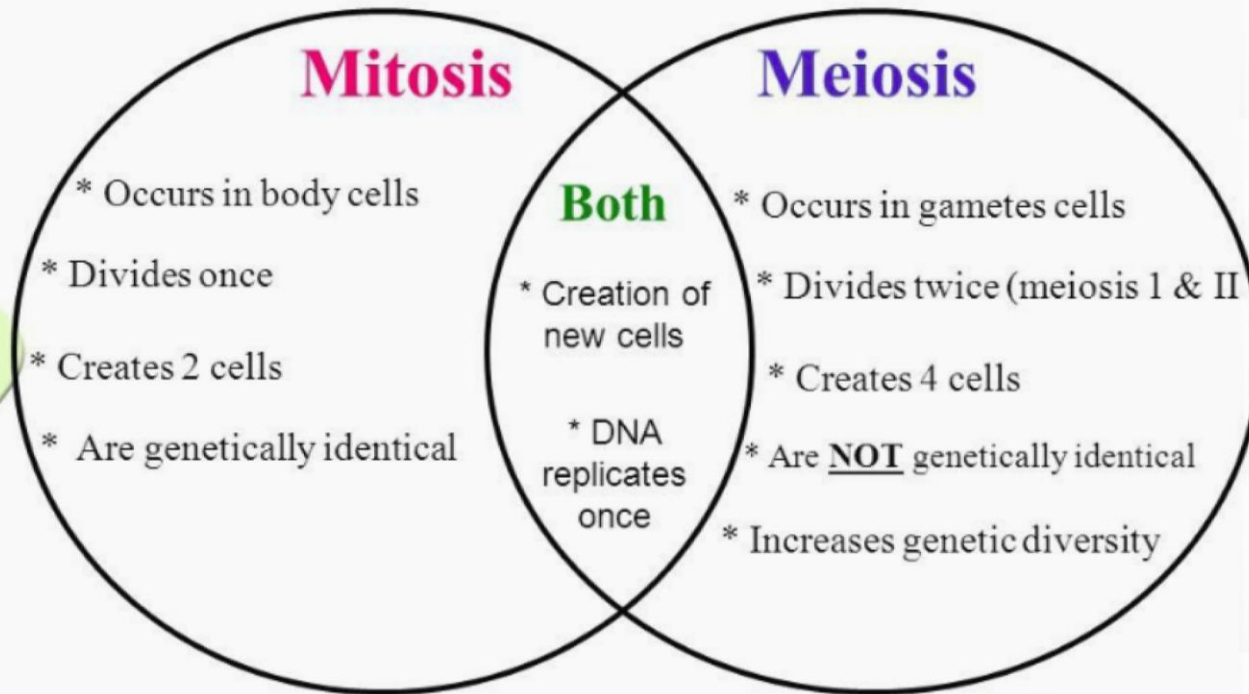
MITOSIS



MEIOSIS



Compare & Contrast Mitosis & Meiosis



01.07

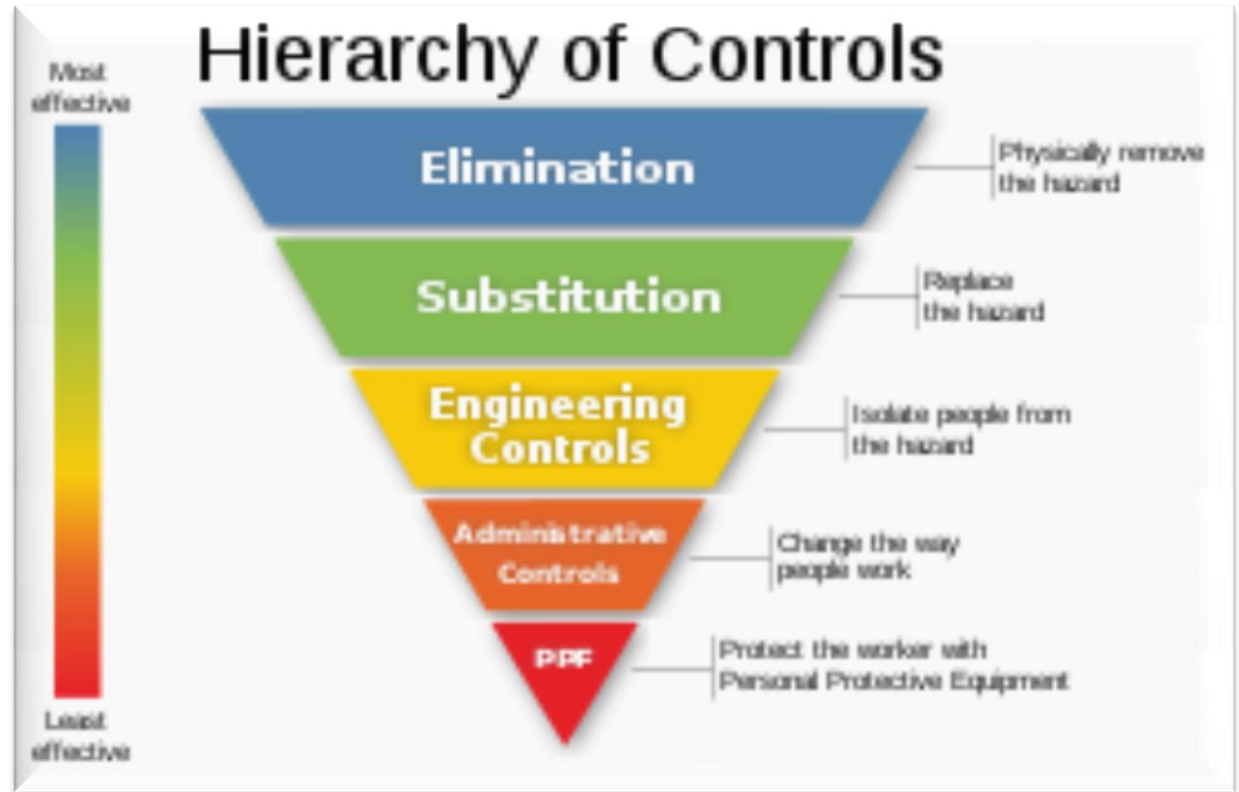
Lab safety

Prevention

Processes

SDS / MSDS

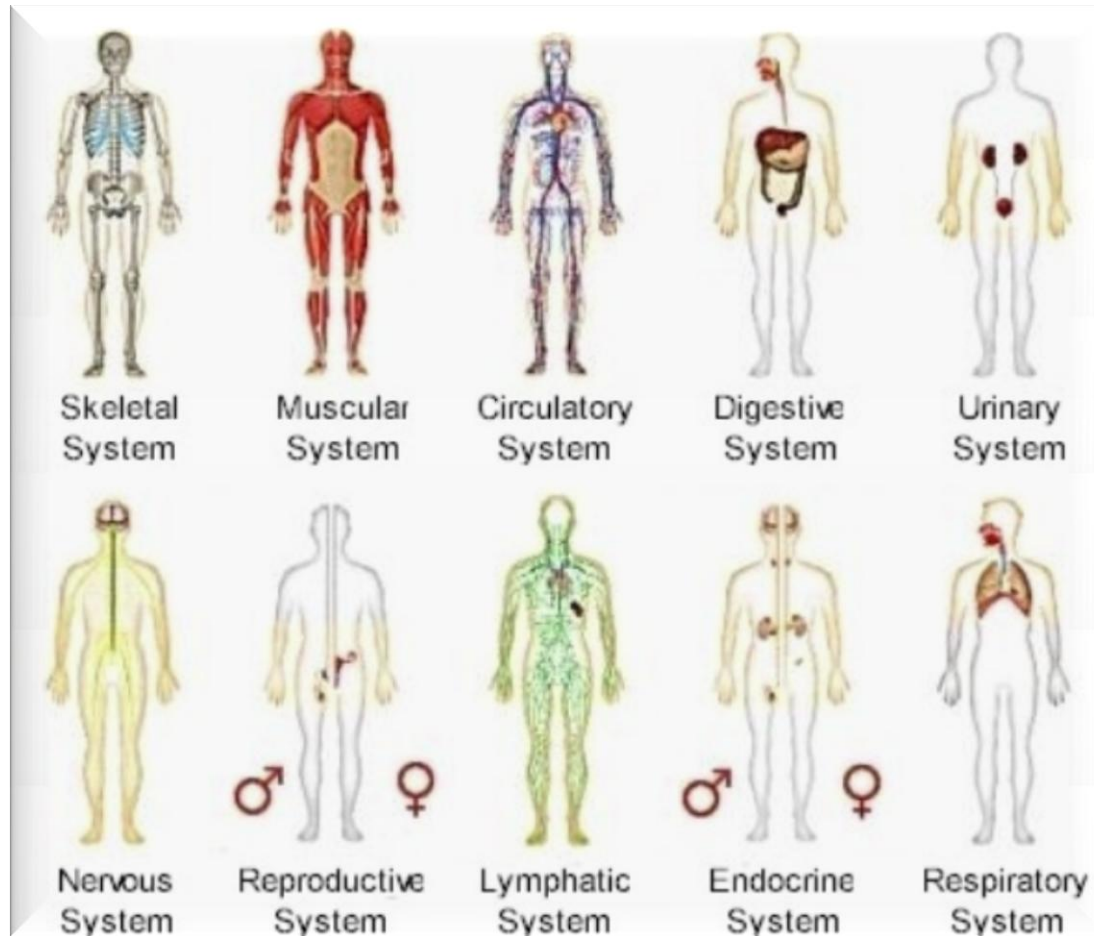
PPE



01.08

Upcoming topics

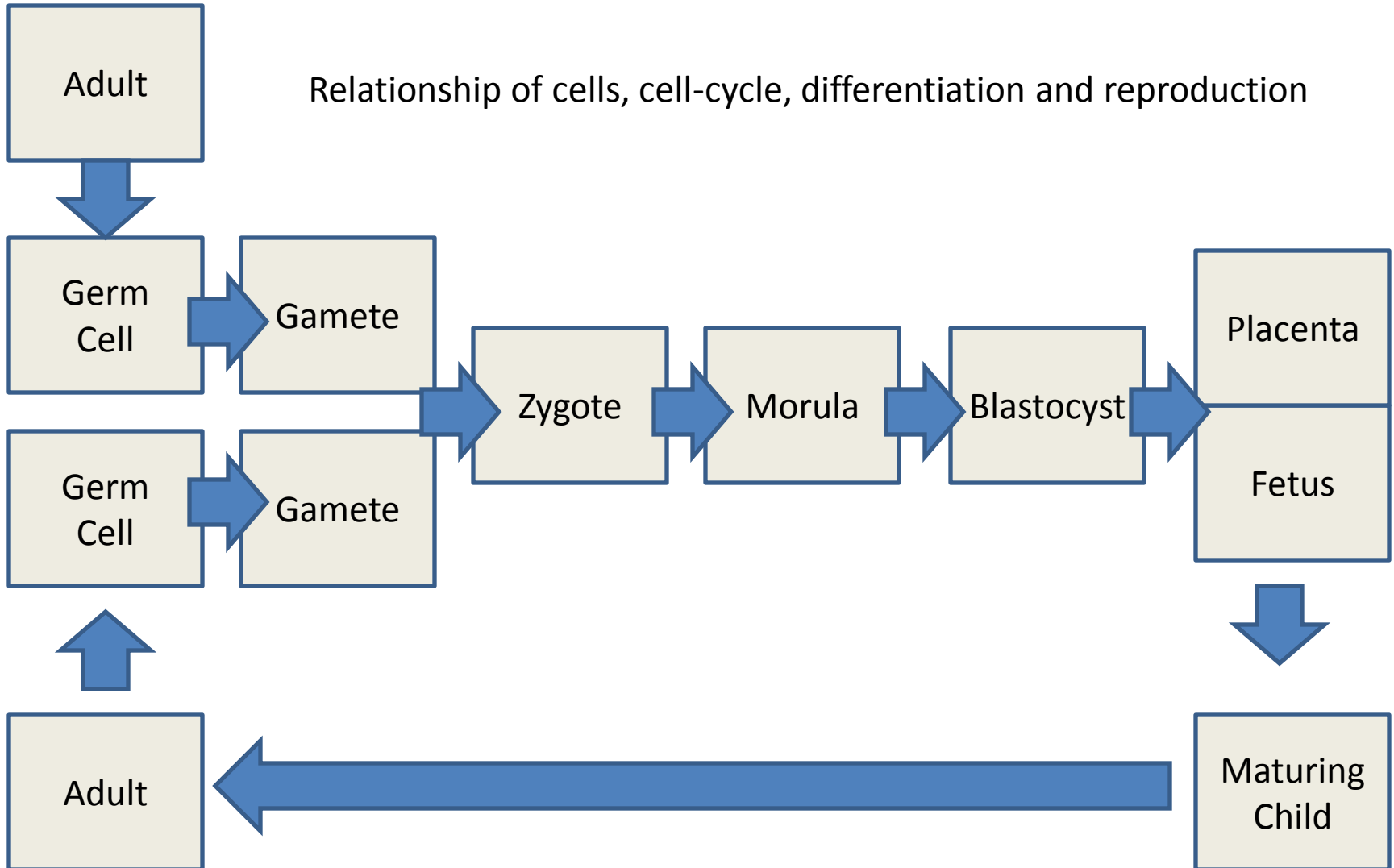
Anatomy / Physiology – High Level Overview



01.08

Upcoming topics

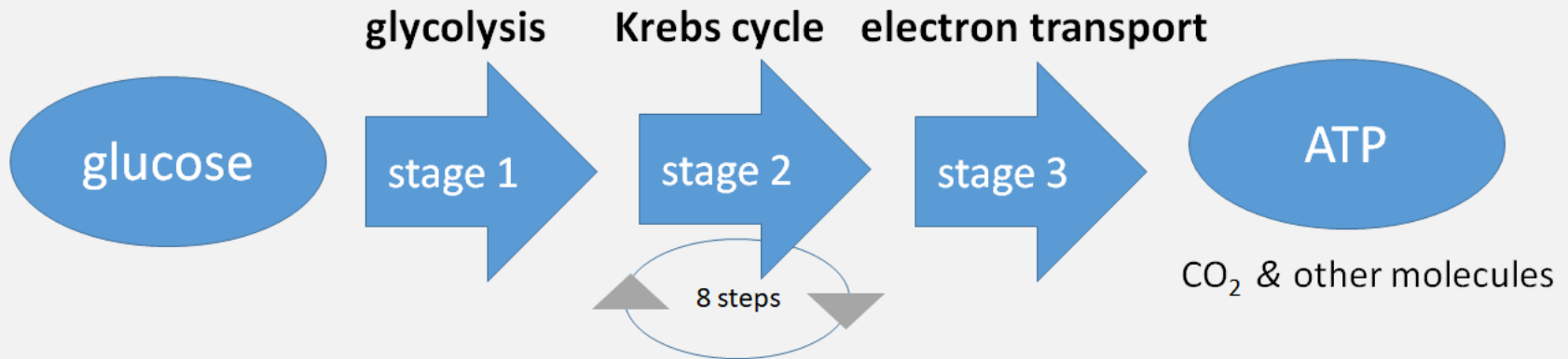
Relationship of cells, cell-cycle, differentiation and reproduction



01.08

Upcoming topics

Cellular respiration



01.08

Upcoming topics

dissection

