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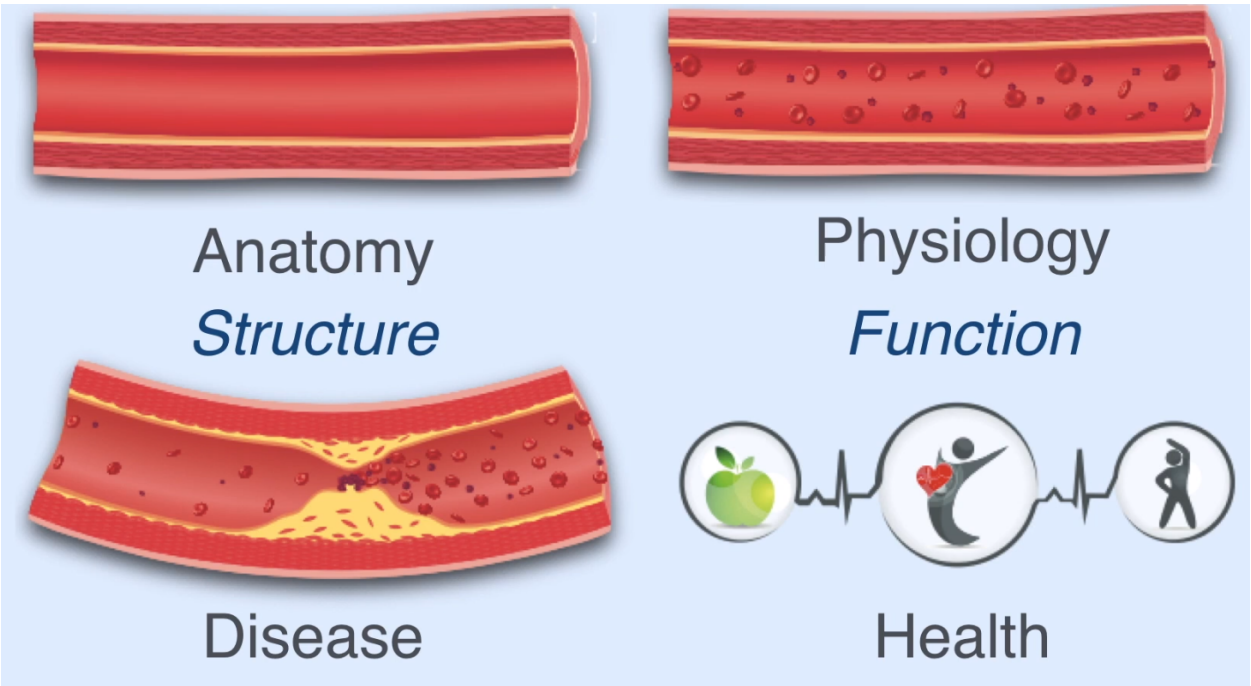
Topics:
Anatomy = Relates to Structure
Physiology = Function
Health = Maintaining Function
Disease = Altered Function




Biology You can Use:
Consumer -
What to eat, how to exercise, how to reduce levels of stress, your personal medicine
Culture -
Listening to non-infection, how covid impacts the global community
Community-
How do we balance resources, and how everyone gets assistance,
Citizen-
How governments utilize money for health care, ethical consideration, and funding medical research

Biology that underlies our behaviour
Memory = synapse = connections between neurons.
Physically making a connection between cells.
Neurotransmitters travel between neurons.
Need a balanced diet and sleep. A lot of synapses happen when we sleep.

Making memories:
Goal Insight = Identifying goals, barriers and what motivates you.
Construct a scaffold to reduce barriers and steps towards the goal.
Trial and error = You have to fail in order to succeed. Make sure you have rewards and punishments.
Repetition = Repeating what you want to accomplish. Practice what you want to accomplish.
Reduce  Interferences = Reducing interfaces can develop strong synapsis. Have strategies to refocus your attention.

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3 aspects of science discovery:
Exploration: Investigate new natural phenomena
Description: Provide accurate details about a natural phenomenon
Explanation: Explain why something happens

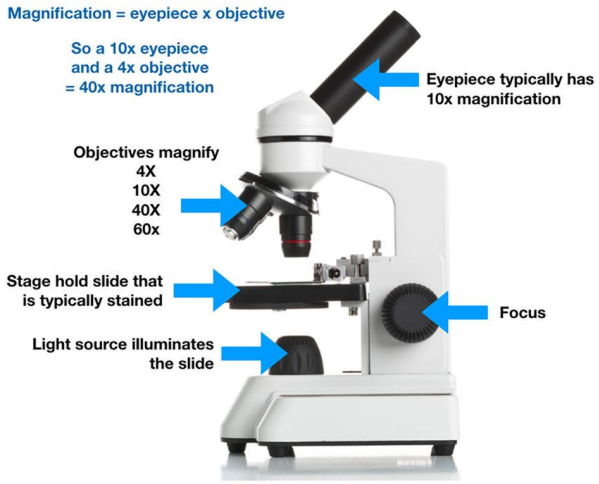
Microscopes:
(Microscopy)

The earliest optical / light microscopes date back to the seventeenth century. Magnified up to 10x the unaided eye.

Current microscopes can magnify over 1500x
Electron microscopes developed in the 20th century magnify 200,000x.

Slides contain a cut piece of a 3d object. So we aren't looking at the full picture

Most eyepieces use a 10x eyepiece and an objective.
Eyepiece x objective = total magnification



Stains highlight features and bring out features under the bright light. DIfferent colors will bring out different features.

Scientists conduct research of observable phenomena

Tissues = groups of cells
4 major types of tissues:
Epithelial tissues = lining tissues (linings)
Connective tissues = Matrix, structure
Muscle Tissues = movements
Nervous tissues = Communications

Observation = Acquiring sensory information
Inference is based on conclusion based on evidence and reasoning
Possible to develop a misconception. Incorrect opinion based on faulty information or reasoning
Adipocytes a group of fat cells

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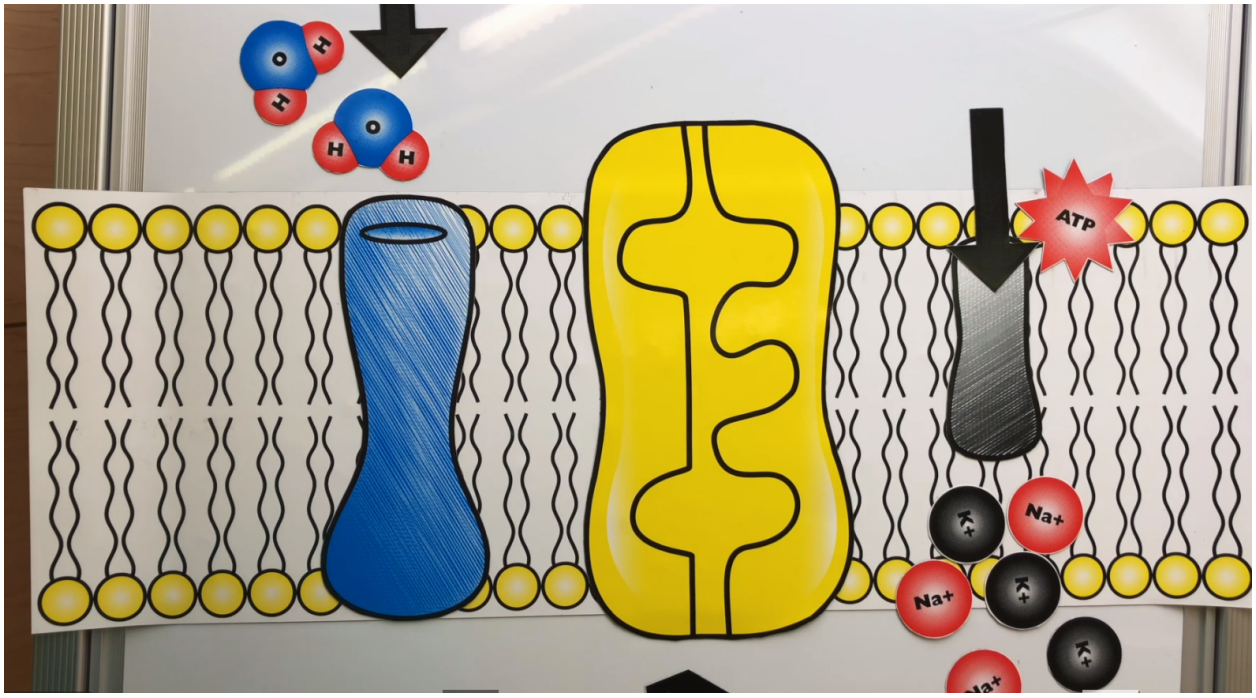
DIfference between animal and plant cell:
Plant cells have chloroplasts. Photosynthesis
Plant cells have a vaculur. Large storage area for nutrients.
Plants have a cell wall and are more angular.

Six Organelles:
Nucleus = brain of a cell, contains genetic material, skeletal cells can have multiple.
Mitochondria = powerhouse of the cell, produce energy rich atp molecules, single cell can have multiple mitochondria
Endoplasmic reticulum = rough endoplasmic reticulum produces proteins, smooth endoplasmic reticulum produces lipids.
Golgi complex = Where the amino acid chains from the endoplasmic reticulum are processed to make functioning proteins.
Lysosome = Has enzymes that break down bacteria, old organelles, and other unneeded substances.
Vesicle = Contains substances a cell produces, including hormones, and secretes them at the plasma membrane.

Identifying cellular structures:
A = nucleus
B = Rough endoplasmic reticulum
C = Smooth endoplasmic reticulum
D = Golgi complex
E = Lysosome, break down bacteria, old organelles, and other unneeded substances.
F = Mitochondria

Diffusion:
Simple: Substances move from high to low concentration. If the cell concentration is lower, they move inside.
Solicited:  No energy required from high to low
Active transplant: Energy is required to from low to high

Plasma membrane:




Plasma membrane consists of two layers
Phospholipids have a head and tail
Head = water soluble
Tails = water insoluble

Blue = Aqua Porun, where water can move into the cell
Yellow = larger protein so glucose can move into the cell
Black = uses atp to move sodium from low to high concentration.

The plasma membrane is the barrier between a cell and its environment.  It needs to allow movement of beneficial materials into the cell and harmful materials out of the cell.

Protein Assistance = Proteins assist substance movement through facilitated diffusion and the more energy-expensive active transport.

Swab your mouth
Place it on slide and cover it
Place it on the microscope

Egg Cells = Located only in females, large cell, must have nutrients to grow
Sperm Cell = Find the egg and deliver genetic information
Fat cell = nucleus is pushed off to the side, adipose cell
Red blood cell = concave and missing nucleus, large surface area
Neuron = cell of nervous system, branched, make connections
Skeletal muscle cell = long cell
Intestinal lining cell = Absorb nutrients and a lot of surface area and are thin.

4 cellular life stages:
MItosis = one cell divides and becomes two daughter cells
Hypertrophy = cell grows in size over time
Differentiation = a cell changes its structure and function over time
Apoptosis = cell is programmed to die at a certain time.