Prokaryotic Cells – bacteria, belonging to the domain Eubacteria(2nd in existence) and Archea (1st in existence) . They have no organelles separated by membrane

Prokaryotic structure

• Relatively small size

Plasma membrane

• Cell wall

• Cytoplasm

• Ribosomes

• Bacterial flagellum

Eukaryotic Cells – everything other than bacteria, belonging to the domain Eukarya (3rd in existence) Plant Cell Properties

Eukaryotic Structure

• Relatively large size

• Membranous organelles

• Plasma membrane

• Cell wall

• Cytoplasm

• Ribosomes

• Nucleus

• Rough ER

• Smooth ER

• Golgi apparatus

• Peroxisome

• Mitochondrion

• Chloroplast

• Central Vacuole

• Cytoskeleton

Animal Cell Properties

• Eukaryotic structure

• Relatively large size

• Membranous organelles

• Plasma membrane

• Cytoplasm

• Ribosomes

• Nucleus

• Rough ER

• Smooth ER

• Golgi apparatuse

• Lysosome

• Perozisome

• Mitochondrion

• Cytoskeleton

• Flagellum

• Centriole

Why study cells? Cells -> Tissue -> Organs -> Bodies Cell theory – cells are the basic unit of structure & function

Cell’s 3 main jobs –

• Make energy

o Need energy for all activities

o Need to clean up waste produced while making energy

o To fuel daily life & growth, the cell must

Take food in & digest it

Take in O2 Make ATP (energy for cell)

Remove waste

o Organelles that do this work

Cell membrane

Lysosomes

Vacuoles & vesicles

Mitochondria

• Make proteins

o Info about cell is in a protein

o Proteins do all the work in a cell, so we need lots of them

• Make more cells o For growth, to replace damaged or diseased cells, and differentiation

Organelle – small things inside cell that does a job, each structure has a job to do Cell membrane –   
 • Function

o Separates cell from outside

o Controls what enters or leaves cell

o Recognizes signals from other cells

o Allows communication btwn cells o Maintains homeostasis

• Structure

o Phospholipid bilayer

o Channels (tunnels)

o Receptor molcules

o Carbohydrates

o Cholesterol

Vacuoles & Vesicles

• Function

o Moving material around cell

o Storage

• Structure

o Membrane sac

Lysosomes

• Function

o Digest food Used to make energy

o Cleaning up & recycling

Digest broken organelles

Sculpt embryos

• Structure

o Membrane sax of digestive enzymes AKA hydrolyte

Cytoplasm – jelly-like material holding organelles in place

Cell membrane –

• Cell boundary

• Controls movement of materials in and out

• Recognizes signals Mitochondria (in both animal and plant cells)

• Function

o Make ATP energy from cellular respiration

Sugar + O2 -> ATP Fuels the work of life

• Structure o Double membrane o Fluid = matrix

o Membrane = cristae Plants make energy in two ways!

• Mitochondria

o Make energy from sugar + O2 Cellular respiration Sugar + O2 -> ATP

• Chloroplasts o Make energy + sugar from sunlight H2O + Co2 -> ATP(some) + sugar

• ATP = active energy

• Sugar = stored energy Making proteins (cell’s 3 main jobs) –

• The cell must

o Read genes (DNA)

o Build proteins Structural proteins (muscle fibers, hair, skin, claws)

Enzymes (speed up chem reactions) Signals (hormones) & receptors

• Organelles that do this work

o Nucleus

o Ribosomes – churns out protein o Endoplasmic reticulum – packages and transports protein

o Golgi apparatus – final touches