

Review: Parts of a Eukaryotic Cell

1- Cell Membrane: flexible outer boundary, regulates what goes in & out

2- Nucleus: control center, contains DNA, has nucleoli, filled with nucleoplasm

3- Cytoplasm & Cytoskeleton: living soup of the cell

cytosol: liquid component, mostly water, but also filled with carbs, lipids, proteins, & cellular organelles

cytoskeleton: protein fibers help maintain shape, can allow movement, give organization & support to cell

4- Cellular Organelles: little organs within cell
mitochondria, ER, ribosomes, GA, lysosomes, vacuoles, centrioles, chloroplasts

Cellular Organelles: "little organs" w/in cell,
each w/ specific job

1-mitochondria: the "powerhouse of the
cell"

makes E for the cell by cellular respiration
rod or sausage-shaped organelle
surrounded by double membrane that
folds inside

2-endoplasmic reticulum (ER)

w/in cytoplasm network

network of membranes folded back & forth
this network can connect to nucleus and/or
to cell membrane

2 types: smooth ER w/no ribosomes or
rough ER w/ribosomes

smooth ER helps transport substances
within cell

rough ER helps make proteins

3-ribosomes: small round bodies made of
RNA, smallest of all organelles
found attached to ER or free-floating in cell
work w/ER to make proteins

Cellular Organelles cont.

4-Golgi apparatus (GA): "factory" or "post office"

series of flat, membrane bound sacs

looks like stack of pancakes

these package and secrete products for export

put products into vesicles & move out cell transport

5-lysosomes: "suicide sacs"

in animal cells only

membrane-bound vesicles that contain digestive enzymes

can break down food particles, cellular wastes, worn out cell parts, or cell itself

can fuse with other vesicles & digest things inside

can release contents into cell & begin digesting cell itself

6-vacuoles: membrane-bound sacs or vesicles that can contain H₂O, organic compounds, salts, pigments
they are storage areas
potatoes store starch in vacuoles

Cellular Organelles cont.

7-centrioles: function in cell reproduction
found in animal cells, fungi, algae, not
plants

pair of cylinder-like structures made of
protein tubules
only noticeable in dividing cell

8-chloroplasts: roundish or oval membrane-
bound sacs that contain chlorophyll,
green pigment
photosynthesis occurs here
found in any photoautotrophic organisms:
all plants, some protists
photosynthetic bacteria have chlorophyll,
but not chloroplasts, their chlorophyll
is free-floating in the cell

Special Features of cells

flagella: long, whiplike tail for locomotion
sperm cells, many microorganisms

cilia: tiny hairlike structures on surface of
cell

also for movement

in microorg, locomotion: paramecium

in multicellular organisms, they move
substances, not cells

found in respiratory tract, move mucous
to clean tract

in female reproductive tract, moves egg
from ovary to oviducts to uterus

Cell Specialization

multicellular organisms begin life as a fertilized egg or one cell
this cell divides: 2->4->8->16->ball of cells
cells initially are **stem cells**: have the potential to become any kind of cell
due to chemical cues, cells begin migrating to areas and then become specialized as a certain type of cell--->tissue

specialization means specific changes in structure, # of cellular organelles, etc
these changes allow cells to do particular jobs

muscle cells: specialize in contraction
need lots of E for contraction
what organelle should be present in greater than norm #s?

WBC's specialize in eating & destroying bacteria
what organelle should be present in greater #s?

cells that make up glands specialize in making and secreting hormones or other products
what organelle should be present in greater numbers?

RBC's specialize in carrying O₂ & food
they have no nucleus, what does this allow?