

OBJECTIVE#5 Describe the organelles of a typical cell and indicate their specific functions.

C. Structure of Cytoplasm

1. Definition: the material between the plasma membrane and the nuclear membrane

2. _____

a. Definition: the fluid portion of the cytoplasm, _____ fluid

b. Contents

1) higher _____ concentration, lower _____, more dissolved proteins, less carbs, some amino acids and lipids

2) insoluble material : _____ including stored nutrients and lipid droplets

3. Organelles (" _____ ")

a. Definition: an intracellular structure that performs a specific function or group of functions

b. _____ (Figure 3.12 page 73)

1) Definition: a protein framework of microtubules and microfilaments

2) Functions: _____

3) Types

- a) _____ : _____
composed of protein, actin; attach the plasma membrane to underlying cytoplasm
- b) intermediate filaments: intermediate in size; protein composition varies, for strengthening and stabilizing ; some specialized like keratin fibers in superficial layers of skin for strength
- c) _____ : microscopic _____
tubules of globular protein, tubulin; for strength and rigidity, found in cilia, flagella, centrioles, and spindle fibers

d) _____ : small finger-like extensions of the exposed plasma membrane of an epithelial cell function to increase surface area

e) _____ : aka: _____ a cylindrical intracellular organelle composed of 9 groups of microtubules(3 in each group); functions in mitosis/meiosis by organizing the microtubules of the spindle apparatus; some cells lack these, hence no _____

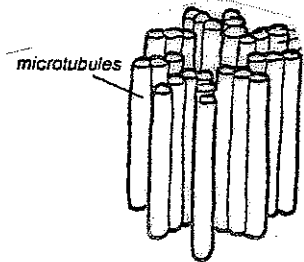
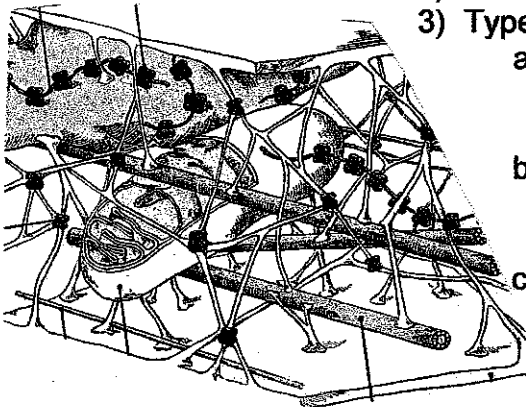
f) _____ : (_____ s) a slender organelle that extends above the free surface of an epithelial cell (anchored by basal bodies); usually undergoes _____ ; composed of a cylindrical array of microtubules

g) _____ : (_____ s) an organelle structurally similar to a cilium but used to _____ a cell _____

h) _____ : an organelle containing rRNA and proteins essential to mRNA translation and _____

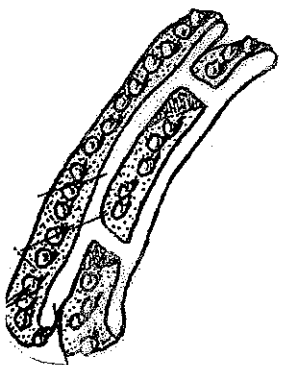


CYTOPLASM
(CYTOSOL)

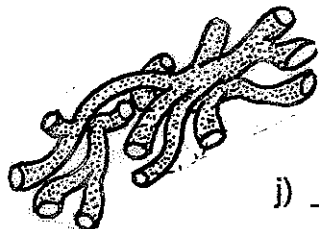


CENTRIOLE

- (1) _____ ribosomes : _____ throughout cytoplasm;
manufactured proteins that enter cytosol
- (2) _____ ribosomes: _____ to ER proteins; enter the
ER for modification and packaging for export



**ROUGH
ENDOPLASMIC
RETICULUM**



**SMOOTH
ENDOPLASMIC
RETICULUM**

- h) _____ : hollow cylindrical containing assortment of _____
(proteolytic enzymes, or proteases):
function in _____ damaged or denatured proteins
and breaking down abnormal proteins such as those produced w/ in cells
infected by viruses

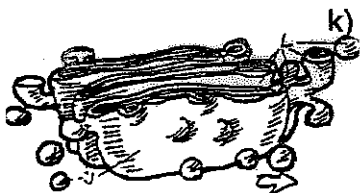
- i) _____ [ER] (Figure 3.13 page 75)

(1) Definition: network of membranous _____ that function in
intracellular _____, synthesis, storage, packaging
and secretion ; connected to nuclear envelope

(2) Types

- (a) _____ ER [SER] _____; lipids &
carbs produced and detoxification of chemicals w/i cell
- (b) _____ ER [RER] _____; rough
appearance

- j) _____ : (Figure 3.13 page 75)
cellular organelle consisting of a series of membranous plates (_____
_____) that give rise to lysosomes and secretory vesicles ;
functions in _____ of
secretions; renewal or modification of plasma membrane; and packaging of
special enzymes for cytosol



**GOLGI
APPARATUS**



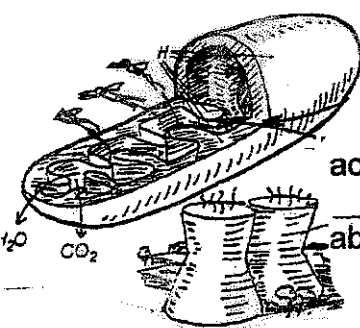
Intracellular digestion

**LYSOSOME
HYDROLYTIC
ENZYME**

- k) _____ : intracellular vesicle containing digestive
enzymes; known as _____ →
when cell is damaged or dead, lysosomal membranes disintegrate & release
enzymes into cytosol to destroy cell; Process is _____ ;
functional example(s): _____

- l) _____ : smaller than lysosomes; carry a different
group of enzymes; arise from growth and subdivision of existing
peroxisomes; absorb and break down fatty acids and other organic
compounds _____, a potentially dangerous
_____ : ions or molecules that contain unpaired e-
may enter reactions that can be destructive

- m) _____ : (_____ s) : intracellular
organelle responsible for generating most of the _____ required for
cellular operations; _____ in cells _____
_____ ; production → reaction sequence is
_____ where a 6 C glucose molecule is broken to 3C pyruvic
acid then absorbed by mitochondria; with oxygen available called _____
_____ or _____ ; produces
about _____ of cell's energy needs



ATP production