

WORKSHOP on Cell Structure and Function (Organelles)

Reminder: One of the main purposes of the Workshops is to allow free exchange of information by **having each member of a Learning Community in turn answer one part** of a discussion question. As each student explains a term or gives a definition in their own words, it should allow for free verbal EXCHANGE and promote LEARNING BY INTERACTION. **Please insure that everyone does a question or two and the purpose of this exercise is to EXPLAIN THEIR ANSWERS to the rest of the community.**

1. Prokaryotes vs. Eucaryotes. Have one member of your Learning Community, each in turn, define and/or explain each of the following terms:

bacteria, procaryote, archaebacteria, eubacteria, eucaryote, and virus.

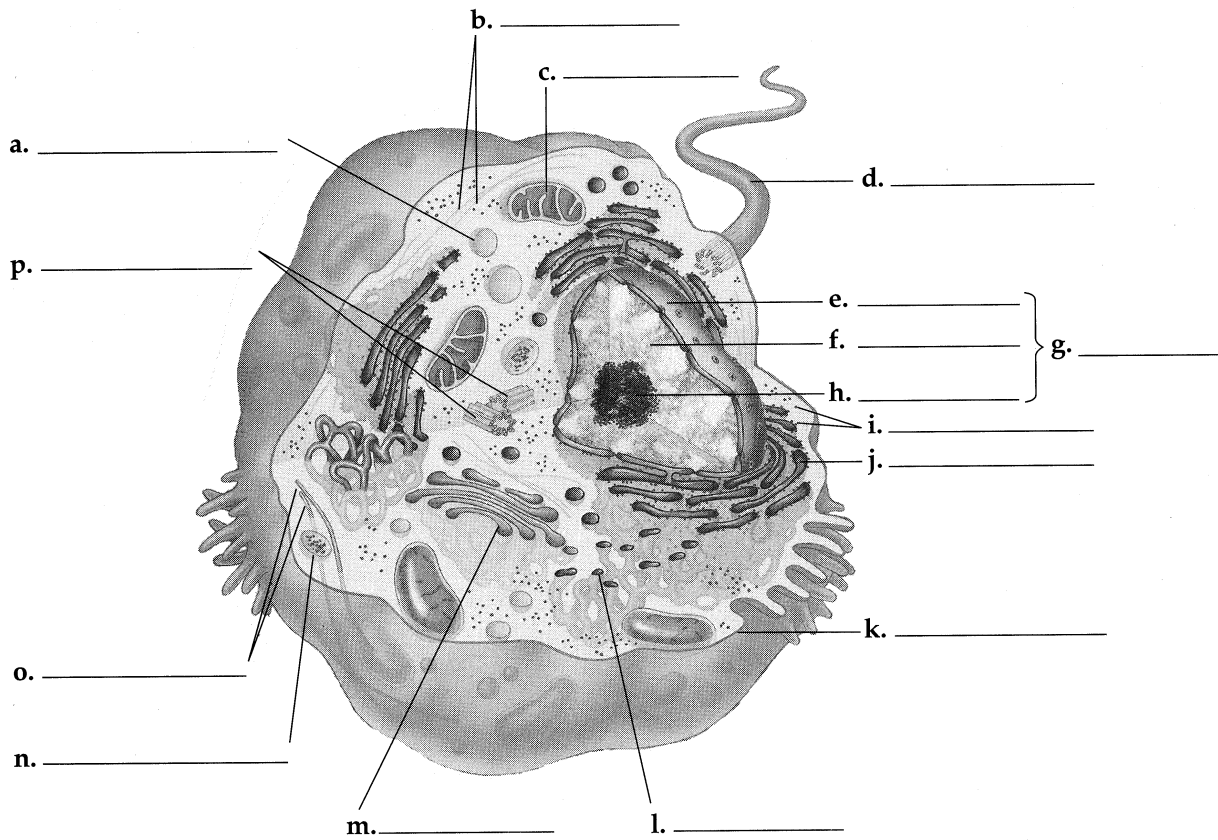
2. Each member in turn shall fill in a row in that table below:

Comparison of *prokaryote* vs. *eukaryote* Organelle Systems

Organelle-Part	Prokaryote	Eukaryote
Genome is found in?		
Its chromosome structure is?		
	4 x 10 ⁶ np about 1.36 nm	2.9 x 10 ⁹ np about 1 meter
Chromosome chemical composition?		
Type of cell division		
Where are the glycolytic enzymes?		
Where are the oxidative enzymes		
The hydrolytic enzymes occur?	on/in	on/in
Protein synthesis occurs in/on?		
Ribosome sizes		
Vacuoles are ?		
Plastids are ?		
A cell wall is made of ?		
Centrioles ?		Chm F03

Cell Structure and Function

3. In turn have each member of your learning community shall identify by name all the structures in the diagram below and their fill in respective functions on the table at the bottom of this page.



Organelle Table :

Organelle Table:	BASIC FUNCTION
a.	
b.	
c.	
d.	
e.	
f.	
g.	
h.	
i.	
j.	
k.	
l.	
m.	
n	
o.	
p.	

4. Structure and Function - A test of your knowledge:

The table below lists some general function performed by an animal and plant cells. Have one workshop member in turn list the **cellular structures or organelles** that are associated with each of these functions.

CELL FUNCTION	Associated Organelles and Structures
Cell division	
Information storage & transfer	
Energy conversion	
Manufactures membranes & products	
Lipid synthesis & drug detoxification	
Digestion & recycling	
Conversion of H ₂ O ₂ to water	
Structural integrity	
Movement	
Exchanges with the environment	
Cell to cell connection	
Plant cell : inter-cell communication	
photosynthesis	
membrane cavity of metabolic waste	

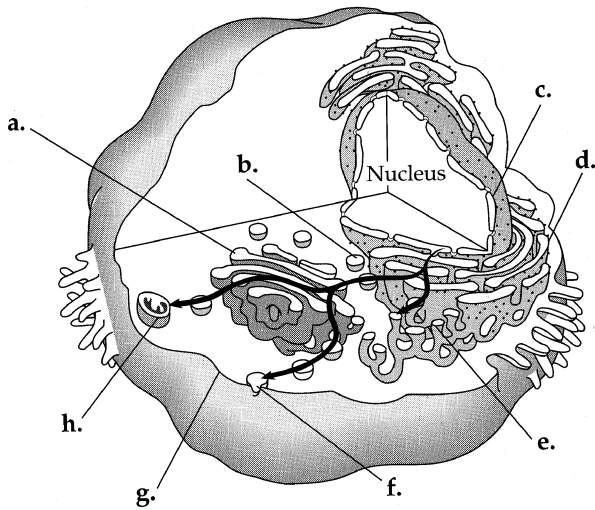
5. Cytoskeleton Organization

To help organize your knowledge of the cytoskeletal system select 3 members of your community to fill in a line of the table below. All the other may contribute additional details if necessary.

Cytoskeleton	Monomers and Structure	Functions
Microtubules		
Microfilaments (actin filaments)		
Intermediate filaments		

6. Endomembrane System

Have one member of your Learning Community, in turn, name the endomembrane system component in the diagram below and review the function of each of these components.



- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____
- g. _____
- h. _____

7. Have one member of the community, in turn, **FILL in the BLANKS** - with the appropriate cellular organelle or structure and explain their answer.

- 1. transport membranes and products to various cellular locations _____
- 2. infoldings of mitochondrial membrane with attached enzymes _____
- 3. consists of collagen, proteoglycans, and fibronectins _____
- 4. small sacs with specific enzymes for particular metabolic pathways _____
- 5. stacks of flattened sacs inside chloroplasts _____
- 6. anchoring structure for cilia or flagella _____
- 7. semi-fluid medium between nucleus and plasma membrane _____
- 8. system of fibers that maintain cell shape and anchors organelles _____
- 9. connections between animal cells that creates an impermeable layer _____
- 10. membrane surrounding central vacuole of plant cells _____