

The Cell Factory Answer Sheet

Name _____

Period _____ Date _____

1. Describe the differences you see in the cytoplasm of the two images.

2. Describe one advantage and one disadvantage of using each type of microscope.

Light Microscope:

TEM:

3. Record the diameter (length) of the cell in the table below.

Structure	Diameter, μm (micrometer)	Size Ratio	% size
Whole cell		1	100 %
Nucleus			

4. To get a sense of relative sizes, calculate the ratio and percent size of each structure compared to the whole cell. Record these values in the table above.

5. Are your measurements of the organelles in the high magnification images about the same as your measurement from the whole cell image?
6. Record the name and function of each of the organelles in the chart below.

Organelle	Size, μm	Function
Plasma (cell) membrane		
Nucleus		
Ribosomes		
Reticulum		
Golgi complex (apparatus)		
Mitochondria		
Lysosomes		
Vesicles		
Microtubules (and microfilaments)		

7. Why do you think this cell needs so many mitochondria?

8. How is the proportion of the various organelles related to the specialized nature of a cell?

9. For each of the following specialized cells, describe how you would modify the design of your model, i.e. describe any differences you would expect to find in the type and relative numbers of organelles in each specialized cell. Explain your answer.

A pancreatic cell that secretes a lot of insulin (a protein).

A kidney cell that pumps salts.

A skeletal muscle cell that contracts frequently.

10. Upload your cell model document to Moodle.