

UNIT OF STUDY

Title: Cell structure and Function	Subject/Course: Biology	Length: 2 Weeks
Topic: Molecules and Cells 2	Grade: 10 th grade	Designer: Woods
UNIT GOALS AND EXPECTATIONS		
<p>IMPORTANT CONCEPTS/UNDERSTANDINGS: All living organisms are composed of cells which have specific functions such as energy production, transport of molecules, waste disposal, synthesis of new molecules, and the storage of genetic material. Cells are also responsible for forming complex multicellular organisms made up of a highly organized arrangement of differentiated cells. Cells have particular structures that underlie their functions. Every cell is surrounded by a membrane that separates it from the outside world. Inside the cell is a concentrated mixture of thousands of different molecules which form a variety of specialized structures that carry out such cell functions as energy production, transport of molecules, waste disposal, synthesis of new molecules, and the storage of genetic material. Cells can differentiate, and complex multicellular organisms are formed as a highly organized arrangement of differentiated cells. In the development of the multicellular organisms, the progeny from a single cell form an embryo in which the cells multiply and differentiate to form the many specialized cells, tissues and organs that comprise the final organism. This differentiation is regulated through the expression of different genes.</p>	<p>ESSENTIAL QUESTIONS: Why are cells the basic unit of living organisms? What are the 4 parts of the cell theory? How are eukaryotic and prokaryotic cells similar and different? What processes are controlled by phospholipid bilayer of the cell membrane? How are cells organized to perform specific functions within an organism?</p>	
<p>STUDENT LEARNING EXPECTATIONS: MC.2.B.1 Construct a hierarchy of life from cells to organisms to biosphere MC.2.B.2 Compare and contrast prokaryotes and eukaryotes MC.2.B.3 Describe the role and connections between sub-cellular structures in the life of a cell:</p> <ul style="list-style-type: none"> ▪ Golgi apparatus ▪ ribosomes ▪ cytoskeleton ▪ endoplasmic reticulum ▪ lysosomes ▪ vacuoles ▪ nucleolus ▪ nucleus ▪ nuclear membrane 	<p>MC.2.B.4 Relate the function of the plasma (cell) membrane to its structure (phospholipid bilayer).</p> <ul style="list-style-type: none"> ▪ Compare and contrast active transport and passive transport mechanisms by investigating diffusion, osmosis, endocytosis, exocytosis, including the use of transport proteins. (MC.2.B.7 & MC.3.B.1) 	
<p>SPECIFIC DECLARATIVE KNOWLEDGE –know Explain what the cell theory is. Describe how researches explore the living cell. Distinguish between prokaryotes and eukaryotes. Describe the function of the cell nucleus. Describe the functions of the major cell organelles.</p>	<p>SPECIFIC PROCEDURAL KNOWLEDGE –do Model cell organelle structure.</p>	

<p>Identify the main roles of the cytoskeleton. Identify the main functions of the cell membrane and the cell wall. Describe what happens during diffusion. Explain the processes of osmosis, facilitated diffusion, and active transport. Identify the organizational levels in multicellular organisms.</p>	
UNIT ASSESSMENTS (Include tasks related to Dimensions 3 and 4 and Bloom's Taxonomy)	
Predict what affect different solutions will have on the membrane of an egg. (The Egg Lab-Lab Report) Identify the processes that occur across the cell membrane.(Plasmolysis Lab Report) "The Bigger, The Better?"- Cooperative Group Work using the TI-83	
Traditional Assessments: Written Test Chapter 7 Section Assessments Sections Quizzes	Other Evidence of Learning: Edible Cell- Model Building in Pairs Current Event Open Response- The Biology of ...Cryogenics Bellringers

ACTIVITIES AND LEARNING EXPERIENCES	Resources
Plasmolysis Demonstration with Celery Explore interactive websites: http://www.johnkyrk.com/ http://www.tvdsb.on.ca/westmin/science/sbi3a1/Cells/Osmosis.htm Edible Cell- Model Building in Pairs Establish Habits of Mind for Science in Critical Thinking, Creative thinking, and Self Regulated Thinking Vocabulary Strategy Daily Notebook Entries Note-taking Powerpoints	Prentice Hall Textbook: Biology TI-83's Internet Powerpoint Lab Equipment
Career Connections	
Histotechnologist	