

Cells

Course of Study

(Please note: This timetable is flexible and subject to change)

PART 1 - Big Ideas: Cells are the basis of life. *(Overall expectations 2 and 3)*

Overall Expectation(s): Cells Play a Vital Role - Cells - Basic Structure and Function - Demonstrate an understanding of the basic structure and function of plant and animal cells *and cell processes* (8s3).

Learning Objectives: Writing Focus: Explanatory Writing

1. Introduction to Intermediate Science – Rules and Routines, notebooks and expectations, format of lessons, Review of Scientific Method (Lab #1)
2. What are Cells? Students demonstrate an understanding of cells and demonstrate an understanding of the postulates of the cell theory (8s12).
3. Cell Parts and Their Functions - Students identify structures and organelles in cells, including the nucleus, cell membrane, cell wall, chloroplasts, vacuole, mitochondria, and cytoplasm, and explain the basic functions of each (8s13). Students compare the structure and function of plant and animal cells (8s14).
4. Microscopes - Students use a microscope correctly and safely to find and observe components of plant and animal cells (8s7) and prepare dry- and wet-mount slides of a variety of objects for use with a microscope (8s8)
5. Unicellular and Multicellular - Students demonstrate an understanding of unicellular organisms and multicellular organisms and compare ways in which they meet their basic needs (8s16).
6. Summative Activity #1 - **Model Cell Project** – Students make a model cell and include an Explanatory Writing piece to demonstrate an understanding of the basic structure and function of plant and animal cells. It must include a legend that explains the basic function of each part of the cell (8s3).
 - Part A – The Incredible Cell
 - Students create a model cell (and legend) to illustrate structures and function of organelles
 - Part B – Explanation Writing
 - Students compose an Explanatory piece to describe the functions of the cell structures & organelles

PART 2 - Big Ideas: Cells are the basis of life. *(Overall expectations 2 and 3)* Healthy cells contribute to healthy organisms. *(Overall expectations 1 and 2)*

Overall Expectation(s): Cells Play a Vital Role & Cells - Basic Functions and Processes - Demonstrate an understanding of the basic structure and function of plant and animal cells and cell processes (8s3); Investigate functions and processes of plant and animal cells (7s2).

Learning Objectives: Writing Focus: Report Writing

1. Osmosis and Diffusion - A cell membrane allows some substances to enter or leave the cell, while stopping other substances. Substances move in and out of cells by Diffusion & Osmosis (8s9, 8s15)
2. Summative Activity #2 – **Processes in the Cell** – Using the model cell already created, you will investigate the processes of plant and animal cells (8s2, 8s3) and create a concept Map to demonstrate an understanding of the basic structure and function of plant and animal cells and cell processes. Include an oral/written component (form of Report Writing)
 - Part A – Cell Processes
 - Students create a concept map to compare and contrast osmosis and diffusion
 - Part B – Report Writing - Students compose an Report writing piece to describe the functions and processes of a cell

PART 3 - Big Ideas: Cells are the basis of life. (*Overall expectations 2 and 3*). Cells organize into tissues, tissues into organs, organs into organ systems, and organ systems into organisms. (*Overall expectations 2 and 3*)

Systems are interdependent. (*Overall expectations 1 and 3*)

Overall Expectation(s): - Healthy Bodies - Demonstrate an understanding of the basic structure & function of plant and animal cells and cell processes (8s3); Investigate functions and processes of plant and animal cells (7s3).

Learning Objectives:

1. Body Systems - Students demonstrate an understanding of organization of cells into tissues, organs, and systems (8s17)

PART 4- Big Ideas: Systems are interdependent. (*Overall expectations 1 and 3*)

Overall Expectation(s): 1. Assess the impact of cell biology on individuals, society, and the environment;

Learning Objectives: Writing Focus: Expository Writing

1. Impacts of Cell Biology - Students assess the role of selected technologies in enhancing our understanding of cells and cellular processes (8s4) and assess the potential that our understanding of cells and cell processes has for both beneficial and harmful effects on human health and the environment, taking different perspectives into account (8s5).
2. Summative Activity #2 – **Impact of Cell Biology** - Students will Assess the impact of cell biology on individuals, society, and the environment and presume a stance on the use of scientifically modified organisms and write an expository writing piece to defend their views (8s1).

Part A – Expository Writing Piece

- Students compose an Expository piece explains assess the impacts of cell biology

Ongoing Specific Expectation(s):

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| 8s6 | 2.1 follow established safety procedures for handling apparatus and materials (e.g., wash hands after preparing materials for slides) and use microscopes correctly and safely (e.g., carry the microscope with both hands, place it near the centre of the desk, ensure that the sun cannot be directly focused through the instrument when sunlight is used for illumination, keep both eyes open when viewing to avoid eye strain) |
| 8s10 | 2.5 use appropriate science and technology vocabulary, including organelle, diffusion, osmosis, cell theory, selective permeability, membrane, stage, and eyepiece, in oral and written communication |
| 8s11 | 2.6 use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., using the conventions of science, make a labelled drawing of a cell; create a slide show to explain the results of investigations into the processes of osmosis and diffusion) |