

Flipped Classroom Lesson Plan

Teacher: Cory Ethan Williamson

Lesson Title: Into The Cell! An Introduction to Intracellular Organization

Subject Area(s): Biology I

Grade Level: 9th Grade

Time Needed: Five 45 minutes classes

State or Common Core Standards

BIO.1C- Students will relate the diversity of organelles to a variety of specialized cellular functions

BIO.1D- Students will describe the structure of the cell membrane and analyze how the structure is related to its primary function of regulating transport in and out of cells to maintain homeostasis.

Learning Objectives (including cognitive and behavioral objectives)

1. Differentiate between prokaryotic and eukaryotic cells.
2. Discuss the function of eukaryotic cells.
3. Compare and Contrast plant and animal cells.
4. Identify intracellular structures based on shape
5. Compare and contrast the structure of the cell wall in bacterial, fungal, and plant cells.
6. Discuss the role of ribosomes in protein synthesis.
7. Differentiate between plant cell vacuoles and animal cell vacuoles.
8. Identify cilia and flagella based on shape and function.
9. Describe the role of the cytoskeleton's role in cell division.

10. Describe the nucleus' role in DNA replication.
11. Identify the nucleolus as the source of rRNA.
12. List the components of the central dogma (DNA to RNA to Protein).
13. Successfully identify the parts of a monocular microscope.
14. Determine cell type through the use of microscopy.

Student Learning Resources at Home

- Teacher Created PowerPoints
- Textbook: Eldra Pearl Solomon, Martin, C. E., Martin, D. W., Berg, L. R., & Claude Alvin Villee. (2019). Biology. Cengage.
- Microscope Activity: [Virtual Microscope | NCBioNetwork.org](#)
- Youtube video: [Introduction to Cells: The Grand Cell Tour - YouTube](#)

Student Learning Activities at Home

- Read assigned textbook chapters.
- Review assigned presentations
- Watch the introduction to cells video
- Complete the virtual microscope activity
- Prepare questions for the teacher **Classroom Activities**
- Lecture
- Group based microscope activities
- Teacher facilitated discussion
- Cell illustration project
- Review of at home activities
- Address common problems

- Facilitate whole group discussion
- Differentiation/Individualization

Assessment

- Daily Quizzes
- Prokaryote vs Eukaryote class debate
- Illustration project
- Summative Sketch-Up assignment.

Tentative Schedule

Day	Topic	Activities	Reading Assignments
Monday	Introduction to intracellular structure (Obj. 1-5)	Quiz 1 Prokaryote vs Eukaryote Class Debate	Chapter 3.1
Tuesday	Organelles part 1 (Obj. 6-8)	Quiz 2 Formative Discussion	Chapter 3.2
Wednesday	Organelles part 2 (Obj. 9-11)	Quiz 3 Cell Illustration	Chapter 3.3
Thursday	Organelles part 3 (Obj. 11-14)	Quiz 4 Begin Sketch-Up Model	Chapter 3.4
Friday	Looking at the big picture: model cell creation (All Objectives)	Complete Sketch-Up Model	(Students may review previous chapters as needed)

