Pre-Lab, Skills, and Standards Alignments

DNA EXTRACTION FROM WHEAT GERM

Students will use a simple procedure to extract DNA from wheat germ. Using soap to lyse the cells and ethanol to precipitate the DNA, they will gather a visible DNA sample that can be preserved in a small collection tube.

Lab Length: 1 hour

Suggested Pre-Lab Teaching

- Plant cell anatomy
- DNA structure and function

Lab Skills

- Use graduated tubes and transfer pipettes to measure small volumes of liquid.
- Follow a multi-step protocol.

Conceptual Knowledge/Skills

- Explain how DNA can be visible without a microscope.
- Outline the process of DNA extraction from plant cells, including the purpose of detergent and alcohol.
- Describe real-world examples of professions that use DNA extraction.

New York State Science Learning Standards/NGSS

Science and Engineering Practices	Disciplinary Core Ideas	Cross Cutting Concepts
Planning and Carrying Out Investigations Conduct an investigation to produce data to serve as the basis for evidence that meet the goals of an investigation.	LS1.A: Structure and Function All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular). (MS-LS1-1) Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell. (MS-LS1-2)	Cause and Effect Cause and effect relationships may be used to predict phenomena in natural or designed systems. Structure and Function Complex and microscopic structures and systems can be visualized, modeled, and used to describe how their function depends on shapes, composition, and relationships among its parts, therefore complex natural structures/systems can be analyzed to determine how they function. (MS-LS3-1)