Pre-Lab, Skills, and Standards Alignments

FINGERPRINT ANALYSIS: LOOPS, WHORLS, AND ARCHES

In the late 1800s, anthropologist Francis Galton established that the microscopic ridges and valleys on the pads of our fingers make uniquely identifiable patterns. In the early 1900s, scientists and criminologists began to realize that fingerprints could be used in criminal investigation, linking evidence to suspects. Students will study their own fingerprints and learn about differentiation and analysis.

Lab Length: 1 hour

Suggested Pre-Lab Teaching

- Difference between genetic and acquired traits
- Variation of traits in humans (all humans are unique)

Lab Skills

- Develop fingerprints on an identification card.
- Analyze fingerprints and identify class characteristics.
- Classify minutiae of fingerprints.

Conceptual Knowledge/Skills

- Explain how fingerprints are useful for identification.
- Describe class characteristics and minutiae of fingerprint patterns.
- Predict the occurrence of loops, whorls, and arches in a population.

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 meets the goal of the investigation. Analyzing and Interpreting Data Analyze and interpret data to provide evidence for phenomena.	LS3.B: Variation of Traits Different organisms vary in how they look and function because they have different inherited information. (3-LS3-1) The environment also affects the traits that an organism develops. (3-LS3-2)	Patterns Macroscopic patterns are related to the nature of microscopic and atomic-level structure. Scale, Proportion, and Quantity Phenomena that can be observed at one scale may not be observable at another scale.