

## Crime Scene Investigation

When blood is found at a crime scene, where did it come from? Who did it come from? Was poison involved? Which poison? Who was present at the scene? Who committed the crime, and why did they do it?

In this camp, students take the analysis into their own hands to investigate a mock crime scene and solve a murder! Monday through Wednesday, students learn the theory and practice of variety of scientific techniques, including DNA fingerprinting, ELISAs (enzyme-linked immunosorbent assays), blood typing, heart dissection, blood spatter analysis, and crime scene investigation basics. On Thursday, campers walk in to find that a (mock) murder has been committed! They are presented with a list of suspects and the backstory of the murder victim, and they then use the techniques they've learned to solve the mystery on their own!

In this camp, students will learn the fundamentals of DNA gel electrophoresis and restriction digests and how these techniques can be used in a variety of situations, from DNA fingerprinting in crimes to performing paternity tests to creating genetically modified organisms. Students will learn about heart physiology, including how and why blood flows, how ions/electrical signals control the beating of the heart, how to analyze an EKG for heart murmurs, how heart valves work, and how various poisons can affect these processes. Students will perform pig heart dissections to truly understand heart anatomy and physiology and get an idea of how a medical examiner would look for clues to cause of death in tissue samples. Students will also study the analysis of blood, from using the physics of blood spatter to identify where the blood came from to determining the blood types found at the crime scene. We will also learn what substances can be poisons, how they can work, where they can come from (synthetic poisons, plants, animals, bacteria, etc.), and how to detect them using enzyme-linked immunosorbent assays. We will discuss how to enter a crime scene, collect evidence, and analyze the evidence collected. Finally, students will solve the puzzle of the murder using problem-solving skills and the scientific techniques they have learned thus far. On Friday, students will present at the symposium and try to use their scientific findings to convince the audience which suspect is the guilty party!