

04

Forensics and the Legal System

Roles of Forensic Scientists

Forensic scientists perform several different functions in the criminal investigation and legal systems. While the primary role of forensic scientists is to collect and analyze evidence found at a crime scene, they may also be called upon to give expert testimony or train other law enforcement professionals on how to record and collect evidence. In the following section, we will briefly examine each of these roles.

Analyzing the Evidence

Forensic scientists deal with evidence. They apply techniques from the physical sciences and use their expert knowledge of these fields to collect and analyze evidence from a crime scene. However, there's more to the work than just science: forensic scientists must also follow the rules and regulations of the judicial system. They must perform evidence collection and analysis in the correct way, so that the evidence can be admitted in a court trial. For example, forensic scientists have to make sure the evidence from one case doesn't get mixed up with the evidence for another. They must organize their work and carefully document each piece of evidence that is found.

Forensic scientists come from many scientific disciplines. They may be chemists, biologists, geneticists, anthropologists, or even medical doctors. As scientists, they must follow proper laboratory techniques and safety protocols. This includes proper handling of materials and operation of laboratory equipment. Sometimes, forensic scientists may deal with hazardous chemicals in the workplace.

The "right-to-know" law, from the Occupational Safety and Health Administration, or OSHA, ensures that forensic technicians are given material safety data sheets and all necessary information to safely handle and dispose of potentially dangerous materials, such as toxic chemicals. Each chemical is labeled, classified, and categorized in the lab inventory. Forensic scientists are trained to deal with these materials in a safe and professional way.

Like chemists and other laboratory scientists, forensic scientists follow precise and standardized procedures when handling and testing materials. Unlike other scientists, though, forensic scientists use their findings to help solve crimes.



Forensic analysis provides information that helps law enforcement officers and other officials make decisions. For example, forensic scientists may help prosecutors understand how a death took place. This information can help officials decide whether or not a given suspect should be tried for a crime. During a trial, forensic evidence can be presented to a jury to help them decide whether a crime has happened, and whether the suspect is innocent or guilty.

Regardless of whether a forensic scientist works in the lab, in the field, or in the courtroom, they aim to uncover the truth. They collect evidence from the crime scene, perform tests on the evidence, and analyze the findings. In each case, the forensic scientist must make sure that evidence is collected properly, that tests are done correctly, that standard laboratory procedures are followed, and that the data is interpreted in the right way. Findings must be presented accurately and clearly to other forensic scientists, lawyers, police officers, and juries.

At a basic level, forensic scientists analyze, evaluate, identify, and interpret the evidence of crime scenes. They seek to link that evidence to the victim and the suspect. The evidence may be so small it takes a microscope to see it, or so large it can't fit in the lab. It may be something hard to find, like a single strand of hair, or something obvious like a puddle of blood or a weapon. With all of the possible evidence at a crime scene, forensic scientists must be able to separate important evidence from other items. They must analyze the evidence using instruments and specialized chemicals. Finally, they must interpret the findings and reconstruct the crime. The job of a forensic scientist is complex and challenging. It requires technical expertise, problem-solving, communication, and persistence.

Expert Testimony

The work of a forensic scientist is an important factor in the determination of a suspect's guilt or innocence in a court trial. Forensic scientists may be called upon to serve as expert witnesses and give testimony about their findings. **Testimony** is a verbal statement given under oath. Witnesses and other individuals may also give testimony in a trial, but their testimony is limited to their personal knowledge. In contrast, forensic scientists give testimony not only from personal knowledge, but also on evidence that they have analyzed using their specialized scientific knowledge and training. This makes forensic scientists expert witnesses. An **expert witness** is someone whom the court deems has special knowledge relevant to the case—knowledge that an ordinary person would not have.

As an expert witness, the forensic scientist is ethically responsible for telling the truth, regardless of which side benefits from their testimony. In most cases, the forensic scientist won't be able to give an evaluation that is 100 percent certain. Relative scientific certainty based on the evidence and the expert's knowledge is the best that can be hoped for. While the forensic scientist should defend the evaluations and techniques used, they should also be willing to talk about evidence that may not fit the pattern or may support the other side's arguments.

Training Others

If evidence is not collected properly, even the best forensic scientist in the world will not be able to make it useful. Proper collection, recording, and testing are essential to forensic work. Because of this, it's important that forensic scientists train other professionals in how to properly collect and analyze evidence.



In an ideal world, whenever a crime was committed, a trained staff of forensic scientists would immediately collect the evidence and take it back to the lab. A growing number of agencies and police departments are recognizing the usefulness and importance of having trained forensic scientists or technicians on hand, or at least on call, to collect evidence. Unlike regular police officers, forensic scientists have specialized knowledge that allows them to precisely collect and record evidence. Their presence at the scene minimizes mistakes and problems in handling the evidence.

Unfortunately, not all police departments have dedicated forensic technicians or the money for them. In these cases, it is up to one of the police officers to collect the evidence. Training police officers to properly collect and record data helps preserve evidence integrity and decrease the chance of contamination. Police officers who have a working knowledge of forensic science make fewer mistakes and collect evidence that is more scientifically useful. While it may not be possible to train every officer, forensic scientists who work with police departments should make it a priority to provide officers with basic training in forensic principles.