

The CSI effect; myths versus truths – **REVISED 12/12/2011**

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Every evening millions of people watch the latest drama unfold on their favorite crime show. These shows often use DNA forensics to **determine and prosecute** the guilty. The use of DNA forensics in prime television shows generates interest in forensic science but also **creates unrealistic expectations of** forensics. **Tim Kupferschmid calls this double vision the ‘CSI Effect’.**

Kupferschmid, **executive director of Sorenson Forensics**, is a scientist, having worked in DNA forensics for 20 years. Recently he **compiled** a list of the top 10 TV crime lab myths. “The list was a fun, informative thing to come up with,” Kupferschmid says. “I’m often questioned by people who are not in forensics. People always say, ‘you’re a forensic scientist just like on TV’.”

One **forensic science myth is** that the crime scene investigator, or CSI, and the lab scientist are one and the same. The truth is that these are two separate professions. **Crime scene investigators often do not need a bachelor’s degree to be an investigator.** Forensic scientists **must** have a minimum of a Bachelor of Science degree in subjects such as biology, chemistry, **and/or** forensic science. Kupferschmid says many forensic scientists hold masters degrees and even PhDs.

“The crime scene investigator collects the evidence at the scene and the forensic scientist works in the lab. The vast majority of crime scene investigators are not law enforcement officers. Most crime lab staff never goes to the crime scene and would never have access to **suspects. They** are not trained to conduct interviews. In Utah, forensic scientists are called to major crime scenes, but they are trained on how to collect evidence.”

Crime scene investigators look for evidence of DNA at the crime scene. However, unlike **your** favorite crime show, DNA evidence cannot be recovered from every object the perpetrator touches. Kupferschmid says: “You have to physically touch something for a period of time and some surfaces don’t capture DNA regularly. We can get a guy’s DNA if he steals a car and drives it for hours but not

just from him brushing an object with his hand. Most objects contain the owner's DNA so it's hard to capture the perpetrator's DNA."

Evidence of a person's DNA at the crime scene does not prove **guilt**. Kupferschmid **provides an example**. "A few years ago, my grandfather hosted a political party at his home that was catered. Two weeks later, the house was burglarized. The suspicion was that one of the caterers had cased the home but DNA does not show when it was left and so there was no way of knowing whether he left it during the party or during the burglary. It takes old-fashioned gumshoe detective work to determine guilt."

Television shows depict scientists determining if DNA came from saliva, tears, cremated remains, or sweat. In fact, DNA is just DNA. There is **also** no scientific process **that determines** the DNA's source. **Moreover, scientists cannot** draw DNA from cremated remains. **Cremation heats the body at temperatures that reach 1,800 degrees Fahrenheit or above, destroying all sources of DNA.** "In cremation all that is left is bone powder, which is a mineral deposit," Kupferschmid says. "In a house fire, the fire could burn away the extremities but there would still be DNA in the core."

When DNA evidence is found at a crime scene it is not always sent to the lab immediately. Kupferschmid says: "Crimes against people are always processed before crimes against property. The evidence can actually sit for a while, be delivered to the lab in a few days, or be rushed to the lab. There is a huge DNA-testing backlog crisis nationwide with delays ranging from several weeks to years. The technology you see on TV just isn't out there. Our laboratory takes about five days to test DNA."

In Sorenson Forensics' lab, DNA is run through the testing process in batches containing no more than 25 samples. The samples might be **from one or multiple cases**. Great care is taken to **prevent cross-contamination**. While a TV crime lab is filled with conversation, a real DNA lab is quiet. Kupferschmid says: "In a DNA laboratory, we are gowned up in lab coats and tie backs, gloves, and face shields. There is no talking in the lab unless it is case specific. Simply talking over the evidence can contaminate the DNA. There is also no eating or drinking while conducting tests."

Some crime fans think that real crime labs **are high** tech **versions like on** TV. Kupferschmid says: “What you see on TV is Hollywood. We have expensive equipment in the lab but it isn’t very exciting to look **at.**” One thing that TV labs show is that the CSI uses the same equipment to **do all kinds** of testing, but that is **impossible.**

Another misconception is that DNA results fed into a computer will instantaneously produce a **name and a** copy of their driver’s **license.** The truth is far less **glamorous. The** real crime lab’s computer issues a simple number code. Kupferschmid says: “After you generate the DNA profile in the laboratory, and it meets the criteria, you can input it into CODIS, which is maintained by the FBI. There are only 10 million DNA profiles in the U.S. database compared to 300 million plus Americans. The profile will match to a number and then the number is searched in an inmate database or sent to another state to get them to look at it.”

Government CODIS guidelines stipulate that a lab’s server can conduct a search only once a week. This means that many lab results sit for days before they are entered into CODIS. If the results from CODIS must be sent to another state, several weeks can pass before the lab receives a response.

Other myths on Kupferschmid’s list include: the idea that CSIs follow a case from start to finish, that CSI’s are directly involved with a case’s investigation, raids, and arrests, that everyone is in the DNA database, and that the suspect will be sitting in the interrogation room wearing the same clothing he/she wore during the crime when conclusive DNA results arrive.