



Forensic scientists with the West Midlands Police search for evidence such as footwear markings, fingerprints, blood, DNA and other materials. Photo: Flickr.

Dream Jobs: Forensic scientist

Leo Benedictus, The Guardian, adapted by Newsela staff
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"So this is where I tend to do most of my work," says Catherine Thacker, speaking from Queen Mary College's magnificent Blizzard Building, a colorful, modern research center in the East End of London. Thacker is a forensic scientist. It is her job to carefully examine evidence that may prove someone's involvement in a crime. Her lab is a place where guilt or innocence are established.

Thacker specializes in DNA identification, also known as DNA fingerprinting or DNA profiling. DNA identification is a method for identifying whether a person is the source of the genetic material — the DNA — found in a sample of blood, hair or other matter. It is commonly used to link a suspect to a crime. It is also used to show a family relationship, like whether someone is really a child's father, because close relatives share a good deal of the same DNA.

Particularly in criminal cases, the amount of DNA Thacker has to work with can be extremely small. Sometimes she has only "one strand of cotton with a piece of blood on it," Thacker explains.

Still, the field of DNA identification is progressing very quickly, Thacker says. Every year forensic scientists like her are able to find out more using less.

Genetic Fingerprints

"Our powers to detect DNA are becoming better and better, and with the levels of DNA that we can detect, we're dropping the bar all the time. You just need one cell to produce a profile," she says. A genetic profile, sometimes called a genetic fingerprint, is a set of information about the genes in a sample. If it is complete enough, it can be matched to a particular person, because everyone's genetic makeup is different.

Establishing a person's identity from a small, damaged or mixed-up sample of their DNA isn't easy, though. Nailing down just who a particular sample came from is very demanding work.

It is also very important to avoid connecting an innocent person to a crime, as their DNA can also show up at a crime scene. For example, this can happen even if a person just shakes hands with someone who commits a crime shortly afterward.

Samples Can Be Old And Smelly

Forensic science can be hard on the nose too. Thacker has gotten used to examining some pretty nasty samples. "They're often quite old — and they're often quite smelly," she says.

"It's the smell that affects me most," she says. "I've always had quite a strong stomach in terms of blood and gore, but it's the smell that can really turn it."

A childhood interest in medicine led Thacker to choose forensics as a career. She chose science subjects at school, and followed this with a degree in human biology and a master's in forensic science.

Thacker enjoys the challenge and variety of forensics. "Every sample is different and every case is different," she says.

Thacker also enjoys being involved with cases from near the beginning all the way through to their conclusion in court.

It's Important To Get The Right Person

"I really like doing work for the defense," she says, "because I think it's really important to make sure you've got the right person. If they're not the right person, they're actually a victim as well."

Thacker says she can get very involved in the cases, maybe even too involved sometimes.

"You start to piece things together," she says, "and you think about what might have happened. So I can get a bloodstained football shirt ... when someone got hit over the head

with a bottle during a violent incident following a football match ... And you want to know, is it just the blood of the victim or is there blood of the assailant as well? Do the witness statements tie up that it was a 50-50 type of fight, or was it just an unprovoked attack? So you want to cut out a piece of the shirt, and test it to see whose blood it is. But then you start to think: This is a Chelsea shirt, so the person that was wearing this was supporting Chelsea. And you think: I wonder if he left his wife to go off to a football match and then this happened?"

At other times, the burden of responsibility can be even greater. Thacker may find herself dealing with scrapings from beneath the fingernails of a victim, hoping to find enough cells to identify the attacker — or to clear an innocent man. Or she might be asked to examine a blood sample from a man's dead son, in the hope of finding proof that the father still has a grandchild to take care of.

Job Stats

Pay: £28,000–£30,000 (\$36,500–\$39,100) a year for a full-time position

Hours: "I work three days a week, on very flexible hours, but you have to be prepared to work long hours if you have a case."

Work-life balance: Good. "There have been times when I've had to drop people in the middle of dinner or I can't get home to read my little girl a bedtime story. But, I think any difficulty I have with work-life balance comes down to me, because I get very involved in my job."

Best thing: "Getting a result. Whether you managed to prove that the deceased man did have a child, or that a DNA profile that you produced from working really hard meant that someone has been found innocent."

Worst thing: "Not being able to get a result when you know how important it is to someone. Or becoming so involved that I can't get home in time."