forensic science ireland

FORENSIC SCIENCE IRELAND
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General Information

2017

1975
Laboratory established with 2 staff

1978
Lab moved to Garda HQ

1982
Bomb under car of then Lab Director Dr Jim Donovan

What is Forensic Science?

Forensic science is science which is used as evidence in a court of law. It is also taken to mean scientific analysis and comparison used in the detection and investigation of crime. Forensic science has been made popular by authors like Sir Arthur Conan Doyle (Sherlock Holmes), Patricia Cornwell (Kay Scarpetta) as well as television programmes like Dexter, CSI and Bones.

Using science in the fight against crime arose originally from frequency of human poisoning across Europe during the middle ages. Poisoning was difficult to detect because the way of dying was similar to death by many of the untreatable infectious diseases of the time. At the beginning of the nineteenth century, the first steps were made to demonstrate the use of poison by analysing the corpse for toxic substances.

Police forces started using fingerprints to investigate crimes towards the end of the 19th century. Soon afterwards (1900-1904), it was discovered that people had different blood groups. This enabled fingerprints or blood stains left at a scene to be linked to a suspect.

One of the guiding principles of forensic science is attributed to Dr Edmond Locard (1877-1966) who formulated the basic principle "Every contact leaves a trace". Fibres, tiny glass fragments, paint and gunshot residue are all examples of trace evidence that forensic scientists examine.

In 1984 Professor Alec Jeffreys discovered the technique of genetic fingerprinting – now known as DNA profiling. This experimental technique (as it was at the time) was famously used in the trial of Colin Pitchfork who was found guilty of murdering two schoolgirls. DNA profiling and DNA databases are now crucial tools used in forensic science.

The analysis of drugs (both illegal and illicit – taken without a prescription for example) varies with the drug usage trends. This means that forensic drug analysis is a constantly evolving field ensuring that new drugs can be readily identified.

What FSI does

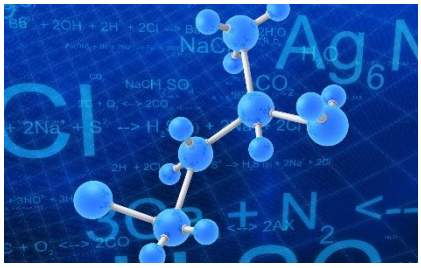
In general, forensic labs (including FSI) will spend a lot of time comparing samples from suspects to samples from victims or crime scenes. Normally this is done by the examination of materials such as glass fragments, paint flakes, fibres, hairs, and traces of soil, blood or other body fluids.

We're divided into two sections: DNA and Chemical Analysis

THE DNA Section deals largely with crimes against the person in cases such as assault, murder and sexual assault. These types of cases involve trace evidence like hairs, blood, saliva, semen and touch DNA on items such as weapons, clothes, cigarette

butts and swabs taken from scenes of crime. DNA scientists also attend crime scenes and offer advice such as what items may be useful to sample and to interpret blood patterns.

Since Ireland passed legislation for a DNA database in November 2015, the DNA section spend a lot of time developing DNA profiles from volume crimes such as burglaries where there is no suspect. The DNA database consists of DNA profiles from people who are convicted of specific crimes as well as DNA profiles from unsolved crimes. The DNA section worked on approximately 3,500 cases in 2015.



THE CHEMICAL ANALYSIS Section has two speciality areas – Drugs and Non-Drugs. The Drugs area analyse suspected drugs of abuse that Gardaí have seized. Drug paraphernalia like weighing scales are also examined for drug traces. The Non-Drugs area deals mainly with crimes against property such as armed robbery, arson, burglary and hit and run traffic accidents. These type of cases involve, examining materials such as paint, glass, fire debris, gunshot residue, shoeprints, hair, fibres, soil and explosives.

The Chemical Analysis section worked on approximately 9,000 drugs cases and 1000 non-drugs cases in 2015.

Some common misconceptions about FSI

FSI doesn't carry out post-mortems. The Office of the State Pathologist (led by Professor Marie Cassidy) carry out post-mortem examinations on behalf of the Department of Justice.

Forensic science includes the crime scene all the way to the court. FSI attend crime scenes and court, but the majority of our time is spent in the laboratory carrying out analysis. FSI attends crime scenes at the request of the investigating Garda team. Our main role here is to analyse that evidence/items that are recovered from a crime scene by Garda Scene of Crime Officers (SOCOs – the guys in the white suits!). When at scenes we offer advice on best items to sample, interpret blood patterns at the scene and use chemical techniques such as "Bluestar" (sometimes referred to as Luminol) to help search for non-obvious blood (if there has been a clean-up after an assault for example).

FSI staff are civil servants employed by the Department of Justice – we are not members of An Garda Síochána.

Different scientific techniques that FSI use

The laboratory uses light microscopy, comparison microscopy, scanning electron microscopy (SEM), electrophoresis, DNA profiling, infra-red spectroscopy (including FTIR-microscopy), thin layer chromatography (TLC), high pressure liquid chromatography (HPLC), capillary column gas chromatography (GC), GC/ITD, GC-mass spectrometry, microspectrophotometry, UV spectroscopy and x-ray fluorescence.

Common sense and attention to detail are two other tools widely used throughout the lab!

Who does FSI work for – is private testing done?

We're part of the Department of Justice and Equality. Most of our work is done on behalf of An Garda Síochána in the course of criminal investigations but we are independent body. We also do work on behalf of the Military Police, the Garda Síochána Ombudsman Commission and Customs. We do not carry out private testing.

How many people work in FSI

There are around 80 technical staff working in FSI – these staff consist of scientists (the people responsible for analysing and reporting cases, attending crime scenes and presenting evidence in court) and analysts (the people who work closely with scientists on particular cases and provide important technical support to the scientists).

How to join FSI

All the technical staff in FSI are civil servants – so all job openings will be advertised on the public appointments service website (www.publicjobs.ie).

To qualify for a Scientist role you will need an honours degree in a relevant scientific field (At least a level 8 qualification*). Typical examples would be Chemistry, Analytical Science, Biochemistry, Biology or Molecular Biology. Many staff who have joined the lab as a scientist in the recent years have also had a Masters (MSc) or Doctorate (PhD) qualification as well.

To qualify for an Analyst role you will need an NCEA Certificate in Science, in Applied Biology or Applied Chemistry from a Regional College of Technology or equivalent (At least a level 6 qualification*)

*More information on level 6 and level 8 qualifications at www.nfq-qqi.com

Job opportunities do not arise very often in FSI, and they are typically oversubscribed. Students should choose their education courses carefully to allow for a wide range of employment opportunities.

Can I get work experience in FSI – Do you take students?

Unfortunately FSI do not have the facilities to offer work experience placements for secondary school transition year students. We also cannot facilitate work placement experience/volunteering opportunities for third level students.

Forensic Science Qualifications

The most important qualification to achieve if you are interested in working in FSI is a strong **scientific** qualification. Our fundamental business is Science. FSI train all new staff in the specific forensic skills and techniques that we use.

No forensic laboratory across Europe requires a qualification in forensic science for employment. Some primary degrees and some postgraduate diplomas/Masters degrees include some aspect of forensic science.

More information

FSI	www.forensicscience.ie
FSI twitter	@ForensicSci_Ire
Public Appointments Service	www.publicjobs.ie
Garda Síochána	www.garda.ie
Forensic Science Society	http://www.csofs.org

More information on level 6 and level 8 qualifications is available at www.nfq-qqi.com