



FOCUS ON FORENSIC SCIENCE SUPPORTING JUSTICE

The next three years will be a time of significant change for Forensic Science Ireland (FSI), and Chris Enright, FSI Director General, says that they are firmly focused on providing the Irish justice system with a high quality integrated forensic service through independent, expert scientific analysis and advice to best international standards.

Forensic Science Ireland (FSI) is an associated office of the Department of Justice and Equality. We work together to deliver, to best international standards, comprehensive scientific analysis, independent expert opinion, advice and training to support the Irish justice system.

Originally known as the Forensic Science Laboratory, FSI was established in 1975 to provide a scientific service to the Criminal Justice System by analysing samples submitted from crime scenes and providing expert evidence in criminal trials. In June 2014, President Michael D. Higgins extended our scope when he signed into law the Criminal Justice (Forensic Evidence and DNA Database System) Act 2014.

Under this act, FSI is named as the custodian of the DNA database and our name was changed from the Forensic Science Laboratory to Forensic Science Ireland to recognise this broader remit.

In December 2019, responsibility for the Fingerprints, Documents and Handwriting services transferred from

the Garda National Technical Bureau to Forensic Science Ireland. This consolidates most laboratory-based forensic work in the State under Forensic Science Ireland.

FSI currently has 190 staff, including seconded Garda members, scientists and analysts trained in forensic testing and reporting techniques, supported by administration professionals. FSI is accredited to the ISO17025 (2017) standard and holds a Gold Excellence Through People (ETP) certification. FSI is also a founding member of the European Network of Forensic Science Institutes (ENFSI), and the Association of Forensic Service Providers (AFSP).

These organisations are focused on developing and sharing best international forensic practices and research within its members. Our staff are active on all the relevant ENFSI and AFSP working groups to ensure that expert evidence that we present is grounded in the most recent scientific research and best international practice.

FROM CRIME SCENE TO COURT

Although much of FSI's work happens in the laboratory, we play an important role through the criminal investigative and judicial process from crime scene to court. In broad terms, forensic investigations involve the examination of items recovered from crime scenes and the use of various techniques to investigate links between suspects and complainants, and between suspects and scenes.

This is underpinned by an objective evaluation of context and scientific facts, which can lead to the exoneration of suspects. This evidence is available for review by experts acting on behalf of the defence and is subject to cross-examination by defence counsel at trial. There are few major criminal trials that do not feature



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some contribution from FSI.

We work on cases that range from murders, shootings, serious assaults, sexual assaults, drug seizures, burglaries, explosive finds and reported on over 16,000 cases in 2019 alone. FSI also supports the delivery of training programmes within the justice sector, including crime

scene investigation and evaluation, evidence recovery for Sexual Assault Treatment Units (SATUs) and presumptive drug testing.

The analysis of materials thought to contravene the Misuse of Drugs Acts constitute the highest number of submissions to FSI and are supported by the Chemical Analysis Department. Case submissions vary widely in size, drug mix and complexity. These cases can involve new psychoactive substances that pose particular analytical challenges.

The drugs team have influenced legislation through the identification and characterisation of drugs in the marketplace. In addition to drugs submissions, debris samples from suspicious fires are analysed for accelerants (e.g. petrol), offensive sprays (such as pepper spray) are evaluated and toxicology samples associated with sexual assault cases are analysed and evaluated.

RECOVERY OF TRACE EVIDENCE

The Physical Analysis area, the most recently formed department in FSI, was set up to take advantage of the overlaps between disciplines moving from the Garda National Technical Bureau (Fingerprints, Documents and Handwriting) and disciplines already supported within FSI.

This department supports a diverse range of examinations where trace evidence recovered from scenes or suspects (such as glass, paint, fibres or firearm residue) is compared to reference samples.

Items recovered from crime scenes are examined to enhance any marks or impressions present, such as the digital capture of finger marks using various light sources, footwear or tyre impressions or manufacturing marks on plastic bags. Suspect materials are also analysed for explosives and unknown chemicals within this department.

NEW PURPOSE-BUILT FACILITY

As in other jurisdictions, the demand for forensic services has more than doubled over the past five years and is



Currently located at Garda HQ in the Phoenix Park, Forensic Science Ireland will move to Co. Kildare once construction of the new €65m forensics lab in Celbridge is complete. The new purpose-built facility is set to bring DNA analysis in line with international standards.

expected to grow even further over the next three years. FSI has developed a strategic plan that maps out how we would like to improve and grow our services over this period.

These plans are enabled by the construction of a new purpose-built FSI facility at the Backweston Science Campus in Celbridge, Co. Kildare. The design of this new facility will support the analysis and evaluation of trace evidence to the most exacting international standards, as well as providing significant additional space and capacity for submissions, case work and the introduction of new forensic services.

FSI is proud to have very capable and talented forensic practitioners, analytical staff and administrative professionals in our organisation – they are highly regarded for the services that we deliver today within the forensic networks that we co-operate with.

The additional capacity enabled by our new facility will allow us to develop and introduce new techniques that can support criminal investigations more efficiently and effectively, with a positive impact on the justice system.

MAJOR IMPACT OF DNA DATABASE

The area of most sustained growth is DNA – the discipline of greatest recent developments. In the DNA area, DNA profiles are generated from submitted items and compared with DNA profiles obtained from suspects to assist the investigation of crimes ranging from burglaries to sexual assaults and murder. Blood Pattern Analysis (BPA) and the examination of damage to clothing are also carried out.

FSI has focused on extending its intelligence services over the past five years, in addition to its well-established evidential services. The objective of these services is to provide relevant and timely information that can help An Garda Síochána and other police forces throughout

investigations.

For example, in addition to providing evidential information on specific drugs cases, FSI also provides intelligence information on drug purity and adulterants that is useful in understanding drug supply chain trends. FSI manages the National DNA Database and its use and impact have grown considerably since its launch in 2015.

Since the database was launched, it has assisted in over 3,500 investigations by matching individuals to evidence recovered from crime scenes (called crime stains) or connecting crime-stains into clusters from the same unknown individual. FSI provides two biometric services – DNA and fingerprints – that offer compelling intelligence and evidential information when comparing an individual to a stain or mark recovered from a crime scene.

INTERNATIONAL INTELLIGENCE SERVICE

The international dimension of this intelligence service has grown over the past year. Since 2019, FSI is exchanging DNA profiles and fingerprint records with other European countries through the Prüm Treaty. This treaty allows for the automated anonymous comparison of profiles or records among participating countries and enables fast information exchange for intelligence purposes.

This is already having an impact – for example, two sexual assaults in Ireland were linked to an individual on the Austrian database within days of connecting the databases. In addition, fingerprint records will be exchanged soon through the Schengen Information System (SISII) – this is the most widely used and largest information sharing system for security, law enforcement and border management in Europe.

FSI has been able to grow our contribution to Missing Persons investigations due to advances made in the extraction of DNA from bones, improved DNA profiling as well as the DNA Database system and relationship



Justice Minister Helen McEntee pictured with Chris Enright, FSI Director General, at the launch of the FSI's 2019 Annual Report in September 2020. A section contained in the report on the reference index of the DNA Database shows an increase of close to 10,000 profiles and up to 1,500 crime scene samples. Significantly, 43 out of every 100 crime stain samples uploaded onto the DNA database will now be linked to a person.



In 2018, Dr Sheila Willis, then FSI Director General, said that the State's new forensic science laboratory, earmarked for Backweston in Co. Kildare, would "enable more efficient practices". (Pic: Alan Betson, Irish Times)

matching software. We maintain a database of family members (currently with over 470 profiles) that are compared with human remains discovered.

The improvements made in technology and systems, coupled with effective co-operation with the Garda Missing Persons Bureau, allowed us to identify the remains of eight missing people in 2019 and five people in 2020. FSI is very committed to advancing our technology, our systems, and processes to continuously develop this service.

BIOMETRIC INFORMATION EXCHANGE

We will expand the range of countries we exchange biometric information with and will work on maximising the investigative and intelligence potential from the combination of these services. We plan to expand our drugs intelligences services also by providing scientific and analytical insights on synthesis, manufacturing, content and distribution.

We plan to improve and develop our ICT systems, so that we are consistent with the latest international

standards for biometric databases and analysis tools.

A sustained investment in Forensic Science Ireland (FSI) over the coming years, with effective partnership and integration across the justice sector, will have a profound impact on a safe, fair and inclusive society.

'Emergency Services Ireland' would like to thank FSI Director General Chris Enright for his permission to use his article, first published in Eolas Magazine online in November 2020.

FACTFILE – CHRIS ENRIGHT, FSI DIRECTOR GENERAL

Dublin native Chris Enright joined Forensic Science Ireland in January 2018. He has spent most of his professional career in the private sector, having worked for over 21 years in a variety of technology, engineering and leadership roles in the US, Spain and Ireland.

Chris was the R&D Director for HP's Inkjet Business in Leixlip. Prior to joining HP, he worked in the pharmaceutical industry in Cork. He holds a BSc in Chemistry and Physics, in addition to Masters' Degrees in Engineering Management and Business Studies.

He holds of post-graduate diplomas in strategy, innovation, marketing and organisation development and is a Chartered Engineer within Engineers Ireland and a PMP (Project Management Professional) member.

Having succeeded Dr Sheila Willis who retired as FSI Director in 2018, his main focus is to build on the progress made in recent years towards a best-in-class forensic organisation.

**Forensic Science Ireland, Garda HQ, Phoenix Park, Dublin 8;
P: 01-6662910; E: info@fsi.gov.ie; W: <https://forensicscience.ie/>**

