Annual Report **2024**

fsi
forensic science ireland

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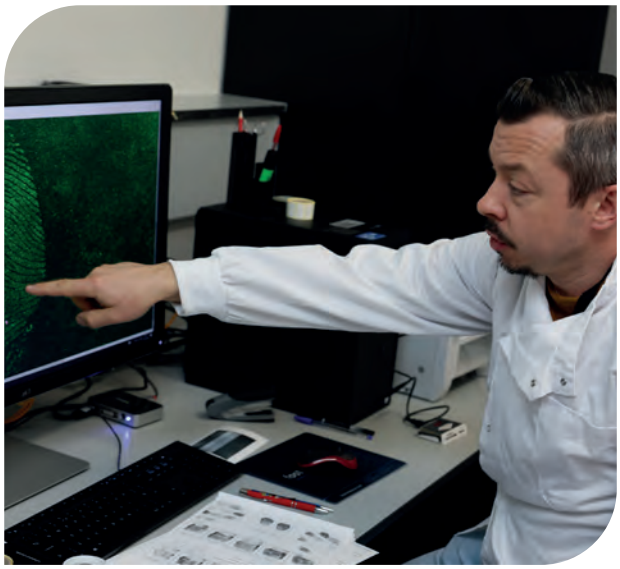
Forensic Science Ireland (FSI) is an Executive Agency of the Department of Justice. We work together to deliver a scientific service that supports the Irish criminal justice system by analysing samples that are gathered at crime scenes (e.g. DNA, Chemistry, and Drugs). Moreover, we present independent expert evidence in court, provide training, and carry out research. In order to do this effectively, scientists and analysts within FSI draw on best international standards.



Our Vision

Forensic Science Ireland's Vision is Science Supporting Justice. In 2025 we will celebrate our 50-year anniversary and we believe that this vision has endured and is heart-felt across the organisation. It represents FSI's desire for advancing forensic science and technology for the benefit of the Irish Criminal Justice System and society.

Our Core Values

FSI renewed its core values in 2024. These will underpin and support the mission and vision, shape the culture, and reflect what FSI truly respects and values.

COLLABORATION

- We actively encourage knowledge sharing both within and outside of our organisation
- We support diverse teamwork across the organisation and with external partners
- We will proactively engage in effective communication in a respectful way

WELL-BEING

- We seek, promote and provide the tools to build resilience to cope with challenges
- We strive to make people feel safe, respected, empowered, fairly treated and duly recognised
- We focus on positive engagement at individual and group level

SERVICE EXCELLENCE

- We deliver to the highest quality international standards on agreed stakeholder needs
- We strive to deliver independent expert opinion and provide robust dynamic communication
- We make optimal use of resources in our world class facility

INTEGRITY

- We respect people
- We act in an honest and transparent manner and follow procedures
- We approach our work with impartiality and without bias

INNOVATION

- We strive to be leaders in forensic science by supporting innovation for all
- We foster continuous Creative thinking, Research, Learning and Development
- We are open to change and delivering relevant solutions

PROFESSIONALISM

- We represent FSI in a respectful, competent and articulate manner at all times
- We uphold and promote FSI's quality system and standards
- We are accountable for the delivery of results to the Criminal Justice System

Foreword

This report represents progress made throughout 2024 towards a strategic plan spanning 2019 to 2024. Before reporting on our progress, I want to thank all the staff of FSI for their flexibility and support during the transition of all services to the state of the art facility in Backweston Science Campus. During this period FSI staff maintained all services to the criminal justice system whilst also making advances that will improve services going into 2025. The positive impact that FSI are making on the criminal justice system is illustrated in the narrative and case studies in this report.

Our new facility was formally opened on the 21st of March 2024 by Minister McEntee and Minister O'Donovan (this event was recorded in the 2023 Annual Report). 2024 was a year characterised by movement, accreditation of services and delivering the forensic science service against this disruptive backdrop. Alongside this began the process of decommissioning of our Garda Headquarters facility. I commenced my career as a Forensic Scientist in Garda Headquarters and experienced many happy and challenging days there. I should like to take this opportunity to express my gratitude, and that of my present and former colleagues, for the provision of the facilities which enabled FSI to carry out its work and the professionalism shown to us by all members of An Garda Síochána throughout the years. I would also like to express my gratitude to the Irish National Accreditation Board (INAB) for the collaborative approach taken to scheduling accreditation visits and the practical support given throughout the transition programme.

The nature of drugs submissions continues to change, with increased complexity in case types and variation in presentations and concealments that FSI is responding to. Section 15A cases (relating to Sale or Supply of drugs under the Misuse of Drugs Act) have increased from 45/year in 2020 to 318 in 2024 (a seven–fold increase). In February 2024, FSI were involved in the identification of methylamphetamine (commonly known as crystal meth) in the largest seizure of note to-date in the State. Alongside this the Irish illicit drug market is growing increasingly complex, with a wider array of novel substances appearing alongside traditional illicit drugs. Between 2022 and 2023, Forensic Science Ireland (FSI) identified several Nitazene (synthetic opioids) variants in small seizures of tablets and powders. However, 2024 marked a significant shift, with two of the largest Nitazene seizures recorded not only in Ireland but across Europe. In 2024, FSI detected and notified the Irish and European authorities of ten instances of new substances or unusual presentations of drugs in the Irish market.

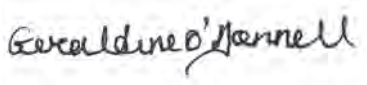
Operationally the National DNA database continues to be an invaluable intelligence tool in both national and European criminal investigations. Its success is evidenced by the reality that each time a crime stain is added to the database, there is a one in two chance that it will match with a persons profile on the database. In 2024 alone, 5,927 profiles from persons were added to the DNA database. Ongoing investments in DNA sequencing technologies are also having a growing impact. This has allowed us to assist in the identification of 32 missing persons over the course of the year, and bring much-needed closure to their family and friends. We have also been able to contribute to the identification of bodies exhumed from Mountjoy Prison and Glasnevin Cemetery.

FSI continues to support the Schengen Information System (SIS) for security and border management in Europe. FSI processed just under 30,000 SIS Fingerprint transactions last year. An upgrade of the Automated Fingerprint Identification System (AFIS) to MBIS (Multibiometric Identification System) was deployed in July 2024 following a 4 year project between An Garda Síochána, Accenture, Idemia and FSI. This upgrade will significantly enhance the matching capabilities, improve the quality of the Tenprint (fingerprint) sets submitted for the Database and solve previously unsolved cases.

With the support of the Department of Justice and the Public Appointments Service, FSI ran several recruitment campaigns in 2024. Several new staff joined FSI over the course of the year, with recruitment still ongoing. This helps address some of the gap between casework capacity and demand and positions FSI better for some of the challenges ahead. FSI's people investment practices were assessed by the National Standards Authority of Ireland and we have maintained the Gold Certificate. We will be building further on this theme in 2025 to make FSI an attractive place to work for scientific, technical and administrative professionals.

This year marks the end of the strategic planning horizon and FSI will develop a new strategic plan for 2025-2028. A core theme of this new strategic plan will be Climate and Sustainability reflecting our ambition to achieve 2050 climate targets through practical steps including Leadership in 'My Green Lab' certification.

At the time of writing, our founding Director Dr James Donovan had passed away. I had the pleasure of working with Jim. His professionalism in the face of adversity was inspiring and FSI is a lasting testament to his vision and service. It was fitting that he attended the opening of the new facility. FSI will mark his passing in a formal way in 2025.



Dr. Geraldine O'Donnell
Director General (Acting)
Forensic Science Ireland
11th September 2025

Mr. Chris Enright, Dr. Sheila Willis and Dr. James Donovan (late) at the official opening of FSI's new facility in March 2024

A Year in Numbers

17,980
Forensic Reports

29,246
Sirene Transactions for Fingerprints

7,180
Drugs & Toxicology cases reported

Under the AFIS upgrade: Migration of

1,461,912
Fingerprint sets and

602,296
unsolved Latent fingerprints to the new MBIS fingerprint database

83,489
DNA Profiles on the National DNA Database

110 Occasions as witnesses in court

997
Cases assisted by matches on the National DNA Database

21
International expert working groups contributions

Under the Prüm treaty FSI exchanging DNA data with

16 countries

6
Publications in international forensic science journals

100% Of urgent Drug A cases reported within 24hrs

Introduction

Originally known as the Forensic Science Laboratory, FSI, an Executive Agency of the Department of Justice 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 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 that database and our name was changed from Forensic Science Laboratory to Forensic Science Ireland to recognise this broader remit.

In December 2019, the responsibility for the Fingerprints and 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 205 staff, including scientists, analysts, seconded Garda members trained in forensic testing and reporting techniques, supported by administration professionals.

FSI is based in a new fit-for purpose building on the Backweston Laboratory Campus, Celbridge. The transition to this new facility commenced in 2023 and was completed by the end of 2024. FSI is proud to work in one of the most advanced forensic science facilities in Europe.

FSI is a founding member of the European Network of Forensic Science Institutes (ENFSI), as well as 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. This international engagement is important in ensuring that expert evidence presented is grounded in the most recent scientific research and best international practice.

FSI is accredited according to ISO17025 (2017) and holds a Gold Excellence through People Certification.

Who We Are and What We Do

Our Staff

Forensic Science Ireland is a knowledge-based organisation and the expertise of our staff is its most valuable attribute. FSI currently has 205 staff, including seconded Garda members and staff, and has an approved workforce plan of 248 staff.

We have recruited a number of new scientific, analytical, ICT and administrative staff over the last year to meet the demands of current and new services in Chemical, DNA & Biological Analysis and Physical Analysis. Forensic science analysis and interpretation are always evolving and consequently FSI places a significant emphasis on ongoing education and technical development. This is vital in ensuring that the Justice System has the benefit of international best practice

Our Management Team

Director General (Acting)
Director of DNA & Biological Analysis
Dr Geraldine O'Donnell

Director of Physical Analysis
Dr Dyan Daly

Director of Science & Development
Dr Edward Connolly

Director of Corporate Services
Dr Dorothy Ramsbottom

Director of Chemical Analysis
Dr Yvonne Kavanagh

Our Services

FSI contributes to both the investigation of crime and the judiciary process within the Irish Justice System. 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 victims, and between suspects and scenes. This is underpinned by an objective evaluation of context and scientific facts, frequently leading to the elimination of suspects from investigations. There are few major criminal trials that do not feature some contribution from FSI.

The area of most sustained growth is DNA, which is also the discipline of greatest recent developments. In the DNA & Biological Analysis 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), Body Fluid Analysis (BFA) and the examination of damage to clothing are also carried out by scientific experts in these disciplines. Since the establishment of the National DNA Database, the DNA & Biological Analysis Department plays a key role in managing the Database in accordance with the legislation as well as quality and security best practices. This department reports on matches between individual crime stains and suspects as well as cluster matches. This offers on-going intelligence to An Garda Síochána in the investigation of crime. In accordance with the Criminal Justice (Forensic Evidence and DNA Database System) Act 2014, FSI's policies and practices relating to the DNA Database are overseen by an independent DNA Database Oversight Committee. Since 2019, FSI has been exchanging DNA profiles with other European countries through the Prüm Treaty. This treaty allows for the automated anonymous comparison of profiles among participating countries and enables fast information exchange for intelligence purposes.

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 as well as new presentations (such as jellies) that pose particular analytical challenges. The drugs team have influenced legislation through the identification and characterisation of drugs in the market place. This team also quantifies drug purity levels in the market and provides trend information to stakeholders in An Garda Síochána as well as the Department of Health. In addition to drugs submissions, toxicology samples associated with sexual assault cases are analysed and evaluated.

The Physical Analysis area is the most recently formed department in FSI. This department was formed to take advantage of the overlaps between disciplines moving from the Garda National Technical Bureau (GNTB) and disciplines that existed previously within FSI. This department includes the Fingerprints and Documents and Handwriting disciplines that integrated into FSI over the course of 2019. It also includes a diverse range of examinations where trace evidence recovered from scenes or suspects (e.g. glass, paint, fibres, and firearm residue) is compared to reference samples. Physical or digital tachographs and marks/impressions are also examined e.g. footwear or tyre impressions left at crime scenes or manufacturing marks on plastic bags. Debris samples from suspicious fires are analysed for accelerants (e.g. petrol); offensive sprays (such as pepper spray) are evaluated and suspect materials are also analysed for explosives within this department.

The majority of cases for analysis at FSI are submitted by An Garda Síochána, but material is also received from Garda Síochána Ombudsman Commission (GSOC), Immigration Service Delivery (ISD), Customs & Excise, and Military Police. Cases are accepted by FSI reception/case intake staff who ensure that items are safely and securely stored or passed directly to a scientist depending on the situation. In either situation, the chain of custody is carefully recorded.

In addition to analysing samples in the laboratory, staff from FSI provide professional advice and training on the appropriate samples to be taken from crime scenes and individuals and, in some circumstances, attend crime scenes. We also operate an out-of-hours service for situations where investigating Gardaí need access to time-critical analysis or when it is necessary to visit crime scenes, or suspected clandestine drug laboratories.

We liaise directly with the Gardaí on investigations where we identify if there is probative evidential value rather than where scientific findings would not help progress the investigation.

Staff provide expert testimony in criminal trials. There is the potential for this to occur in all cases, but some areas of work are more likely to result in court cases than others. Attendance at court can involve robust defence of scientific findings and/or an outline of routine processes related to continuity or laboratory procedures. Staff also attend and contribute to numerous ENFSI and AFSP working groups. This ensures that FSI are contributing to and shaping the international context.

Staff in the Document Section have provided expert advice to the Passport Office, Department of Foreign Affairs on the design and security features for the new Irish passport.

Strategic Pillars

This annual report is organised under six main headings, corresponding to the strategic themes identified in FSI's Strategic Plan 2019-2024.

01 Service Development and Growth

This section focuses on how we are improving the capacity of services we are delivering today and how we are increasing the breadth of services in support of the justice system in Ireland. This section also includes a report on the DNA Database and Prüm DNA exchange.

02 Science Technology and Innovation

This section focuses on how the organisation is progressing our application of science and technology, innovating to maximise the impact of forensic science and maintaining our contribution to the international forensic community.

03 Partnership and Integration

This section focuses on how we are strengthening relationships within the criminal justice system and beyond, to maximise FSI's contribution to society.

04 Quality Systems

This section focuses on how we maintain a robust quality-focused forensic science service and operate to the very best international practices.

05 Fit-for-purpose Environment

This section outlines progress in transitioning to a new fit-for-purpose facility at the Backweston scientific campus and how we manage risk in the intervening period.

06 Excellence through People

This section focuses on how we build an inclusive and integrated team within FSI that helps us collectively achieve our mission.

01

Service Development and Growth

Service Development and Growth

Service Delivery

Case submissions into FSI are remaining in line with those for the last 2 years and are significantly in excess of 2019 figures. Of note is that the range and complexity of the submissions has continued to increase across FSI's services. An Garda Síochána are the main client of FSI and the service between FSI and AGS is based on a service level agreement signed by the Commissioner of AGS and the Director General of FSI.

Table 1 below represents the total submissions from all clients, including An Garda Síochána, Customs, GSOC, The Road Safety Authority, Passport Office, Immigration Services Delivery, the International Protection Office and The Department of Social Protection throughout 2024. The figures below represent the total submissions received by our Case Intake Service. A case prioritisation system is in operation - the cases of high public interest and where the contribution of the scientific resources is clear, receive highest priority.

Service	2019	2020	2021	2022	2023	**2024**
Drugs and Toxicology Cases	10,480	13,184	11,747	10,071	10,688	**10,595**
DNA (including Sexual Assault Cases)	7,367	8,637	8,007	7,463	7,934	**7,718**
Fingerprint Cases	416	5,742	5,275	5,442	5,552	**5,580**
Chemistry, Documents & Physical Method Cases	948	1,632	1,408	1,169	1,187	**1,277**
Biometrics - DNA	16,185	15,515	14,117	13,240	13,945	**14,739**
Biometrics – Fingerprints	-	7,928	8,177	8,894	8,511	**8,726**
Total Cases Submitted (excludes biometric samples)	19,211	29,195	26,437	24,145	25,361	**25,170**

Table 1: Case submissions into FSI (Demand)
Biometric Samples are DNA or Fingerprint samples of individuals submitted to FSI

Table 2 below represents the number of forensic science reports provided by FSI in 2024. It shows a total decrease of 21% compared to 2023. This decrease reflects the necessary resource investment in starting up a new laboratory and attaining accreditation for forensic services. FSI issued just over 17,980 forensic reports in 2024 – a reduction on the 21,703 reports issued in 2023. A key focus for FSI in 2025 is to consolidate and increase capacity for services that have transitioned to Backweston and take full advantage of the new facility.

While all cases are included in the table, the numbers alone do not reflect the range and complexity of cases reported. For example, the number and scale of drug seizures reported has changed; the range of new psychoactive substances has expanded and how those drugs are presented continues to evolve.

For example, Section 15A cases processed (relating to supply of drugs with high market value, under the Misuse of Drugs Act) have increased from 45 per year in 2020 to 318 in 2024 (a seven-fold increase).

FSI has reported on 41 suspicious death investigations in 2024 - a 17% increase on the 2023 figure of 35. These investigations are often complex and demanding in nature, with many lines of enquiry, suspects, exhibits and investigation types.

The demand for Chemistry services increased by 9% in 2024, with particularly significant increases in Suspected Fires/Arson cases and Explosives. The change in the profile of cases and the cross-training requirements across many forensic disciplines were challenging in 2024.

Service	2019	2020	2021	2022	2023	**2024**
Drugs and Toxicology Cases	9,667 (5,555 complex, 4,112 Section 3).	8,106 (5,267 Complex, 2,839 Section 3)	10,440 (5,000 Complex, 5,440 Section 3)	11,963 (6,146 Complex, 5,817 Section 3)	8,550 (4,719 Complex, 3,831 Section 3)	**7,180** (4,878 Complex, 2,302 Section 3)
DNA (including Sexual Assault Cases)	5,860	7,237	6,954	5,975	6,391	**6,262**
Fingerprint Cases	-	5,601	5,222	4,528	5,834	**3,861**
Chemistry, Documents & Physical Method Cases	555	1,095	1,238	1,076	938	**677**
Total Cases Reported (excludes biometric samples)	16,082	22,039	23,854	23,542	21,703	**17,980**

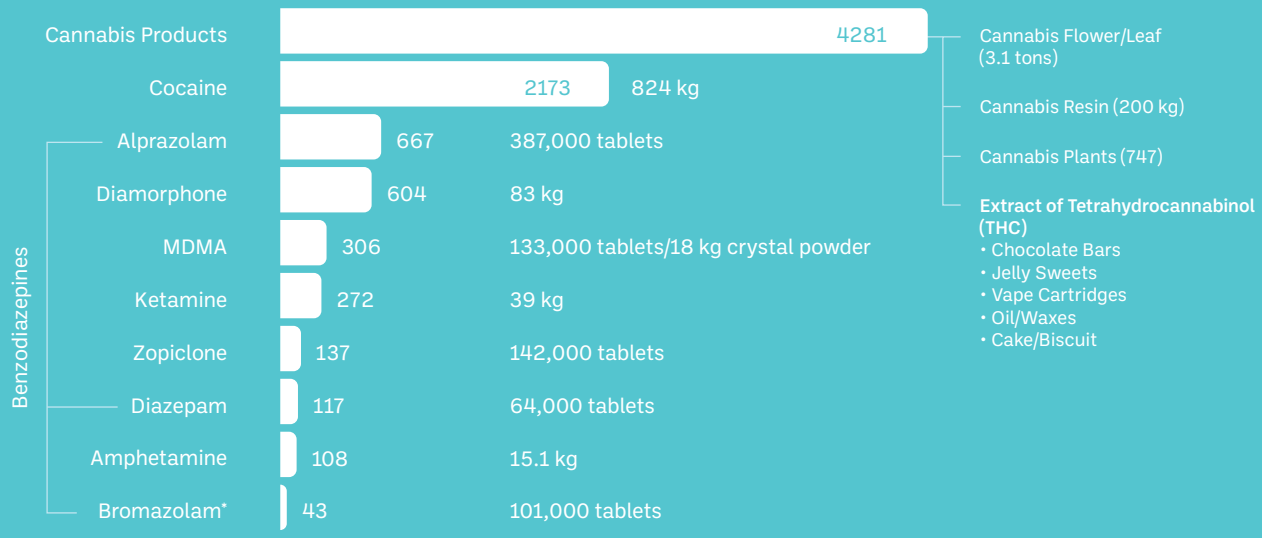
Table 2: Cases reported by FSI in 2024

Types of Drugs Analysed in 2024

44%	38%	11%	6%	1%
Cannabis & Edibles	Powder	Tablets	Heroin	Other

Figure 1: Types of Drug Analysed in 2024

Top 10 Drugs Reported



**Bromazolam is not a controlled drug*

Figure 2: Types of Drug Analysed in 2024

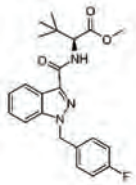
First in Ireland Drug Detections by FSI in 2024

FSI has a role in monitoring significant changes in the volume and type of drugs that are available in the Irish drugs market. As a member of Ireland's Early Warning and Emerging Trends Working Group, FSI notifies the Irish authorities and the European Union Drugs Agency (EUDA) of any new drug substances or unusual presentations detected in Ireland. The mission of the EUDA is to strengthen EU preparedness on drugs through four key interconnected service categories: anticipate, alert, respond and learn. In 2024 FSI detected and notified the Irish and European authorities of ten instances of new substances or unusual presentations of drugs in the Irish market.

01

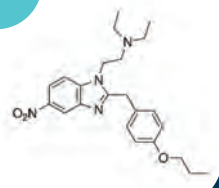
125 grams of a pink powder containing ketamine, amphetamine, MDMA and caffeine - this preparation is commonly referred to as "Tuci".

02



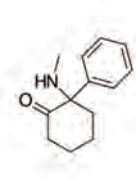
MDMB-FUBINACA was detected in a vaping product. MDMB-FUBINACA is a synthetic cannabinoid.

03



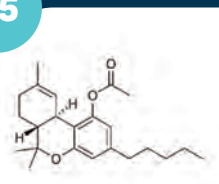
Protonitazene was detected in a brown powder. Protonitazene is a synthetic opioid that is significantly more potent than heroin.

04



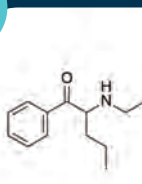
Deschloroketamine (a variant of ketamine) was discovered in a light brown powder.

05



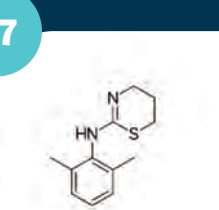
Delta-8-THC-O-Acetate is the acetate ester of THC and was detected in a yellow oil-like substance.

06



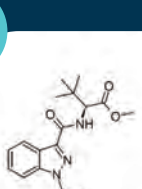
N-ethylpentedrone was detected in a yellow/white powder.
N-ethylpentedrone is a substituted cathinone and acts as a central nervous system stimulant.

07



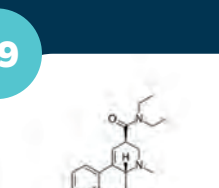
Xylazine was detected in a white powder. Xylazine is a veterinary sedative that is sometimes used as a cutting agent in heroin in the US.

08



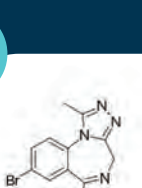
MDMB-BINACA was detected on plant material. MDMB-BINACA is a synthetic cannabinoid.

09



1T-LSD was detected on paper squares. 1T-LSD is a derivative of the hallucinogen LSD.

10



Bromazolam was detected in tablets. Bromazolam is a benzodiazepine.

Drug Quantification Trends 2016-2023

Note: quantification trends carried out in 2024 relate to 2023 submissions

Quantification data is produced for intelligence purposes for cocaine and diamorphine (heroin). In 2023 cocaine and diamorphine were the second and fourth most commonly submitted drugs, respectively. Commonly encountered adulterants are also identified. Two distinct levels of seizure are analysed for quantification of cocaine: street level and importation level. Street level samples are defined as those submitted from seizures less than 100 grams, primarily between 25-30 grams, while importation level samples are defined as those submitted from seizures over 500 grams.

Cocaine

Cocaine was the most commonly identified stimulant in Ireland across the period examined and the second most commonly identified compound after cannabis. Figure 3 illustrates the annual average cocaine content with levels remaining broadly consistent at both street and importation level over the 8 year period examined. The importation level content is consistently higher than the average at street level. Of all analytes examined, cocaine demonstrates the widest variety in adulterants. Benzocaine was the most commonly detected adulterant in 2023 followed by levamisole, caffeine and procaine. The largest cocaine seizure in 2023 was 2.25 tonnes seized by a joint task force operation (Customs, the Naval Service and An Garda Síochána) from the Panamanian cargo vessel MV Matthew off the south-east coast in September 2023.

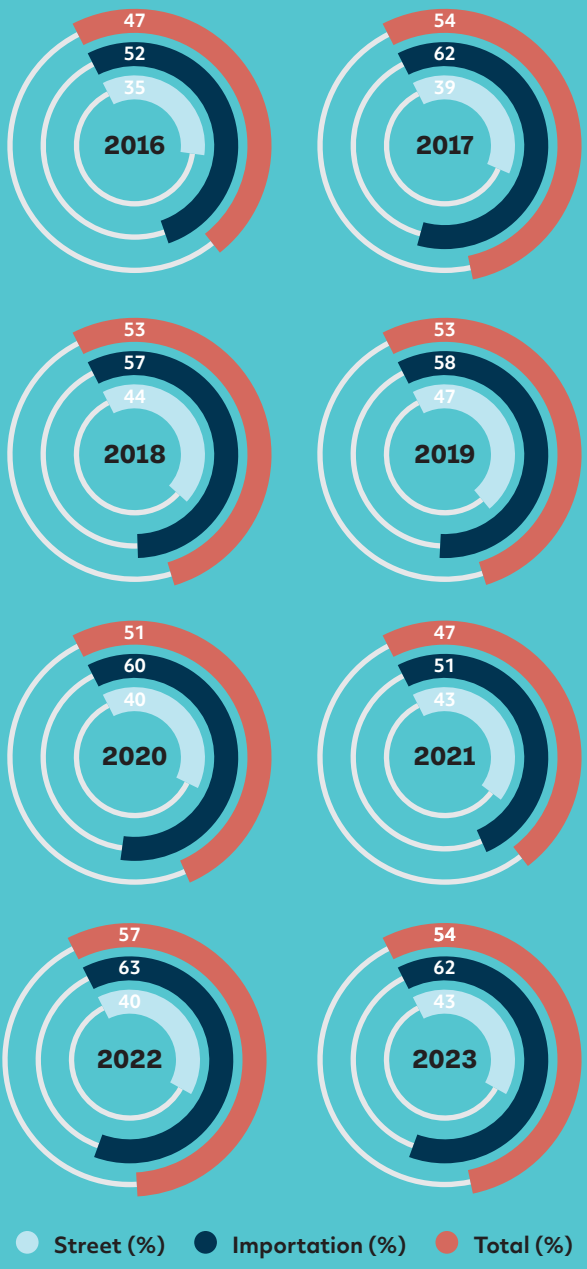
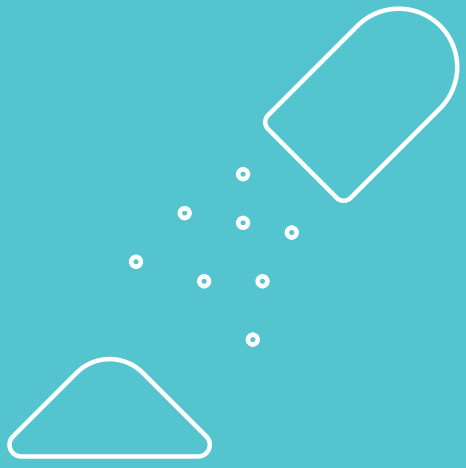


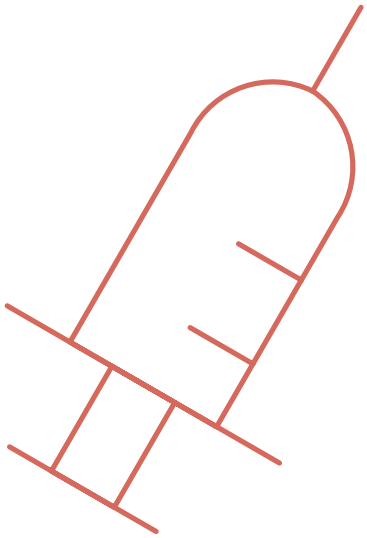
Figure 3: Average Cocaine content at street and importation level



“Cocaine levels have remained broadly consistent at both street and importation levels over the last 8 years”

Diamorphine (heroin)

Diamorphine is a semi-synthetic product produced by the acetylation of morphine, which occurs as a natural product in opium. Diamorphine is the most commonly encountered opioid in Ireland and was the fourth most commonly identified case type in FSI in 2023. 2023 saw an average diamorphine level of 40% relative to 43%, 41% and 35% in 2022, 2021 and 2020 respectively. Caffeine was the most commonly detected adulterant in 2023 followed by paracetamol. The largest diamorphine seizure in 2023 was approximately 60 kilograms seized by An Garda Síochána and Customs from a light aircraft which landed at Weston Airport, Co. Kildare in December 2023.



Toxicology in cases of alleged sexual assault

The majority of the work carried out in the Toxicology section of FSI is analysis of blood and urine samples taken from complainants of alleged sexual assault. Sexual assault carried out when an individual is not capable of informed consent due to the consumption of alcohol or drugs is commonly called “Drug Facilitated Sexual Assault (DFSA)”. DFSA can be classified as:

- Proactive (where the assault occurs following covert or forcible administration of alcohol or drugs) or:
- Opportunistic (where the assault occurs after the injured party is profoundly intoxicated through consumption of alcohol or drugs).

Many of the drugs detected in the toxicology casework of FSI can be consumed voluntarily, and toxicology findings can’t distinguish between intentional and unintentional consumption. People also vary widely in their individual tolerance to alcohol/different drugs. Therefore toxicology findings in cases of alleged sexual assault should only be considered as one part of the entire case circumstances.

In addition to alcohol the most common drugs detected in cases of alleged sexual assault are shown below:

- Cocaine (and metabolites)
- Cannabis/cannabis products (and metabolites)
- Diazepam (and metabolites)
- Alprazolam

Chemistry, Documents and Physical Methods Cases

The broad variety of Chemistry and Documents and Physical Methods cases analysed is represented in Figures 4 and 5. Each discipline represents a unique speciality and field of expertise.

Figure 4: Types of chemistry cases reported in 2024

78% Currency, Travel and Identity

14% Handwriting/signatures indented impressions

3% Fibres

3% Footwear/tyre marks

1% Plastic bags/Tapes + Adhesives

1% Other

Figure 5: Types of Documents and Physical Methods cases reported in 2024

Fingerprints

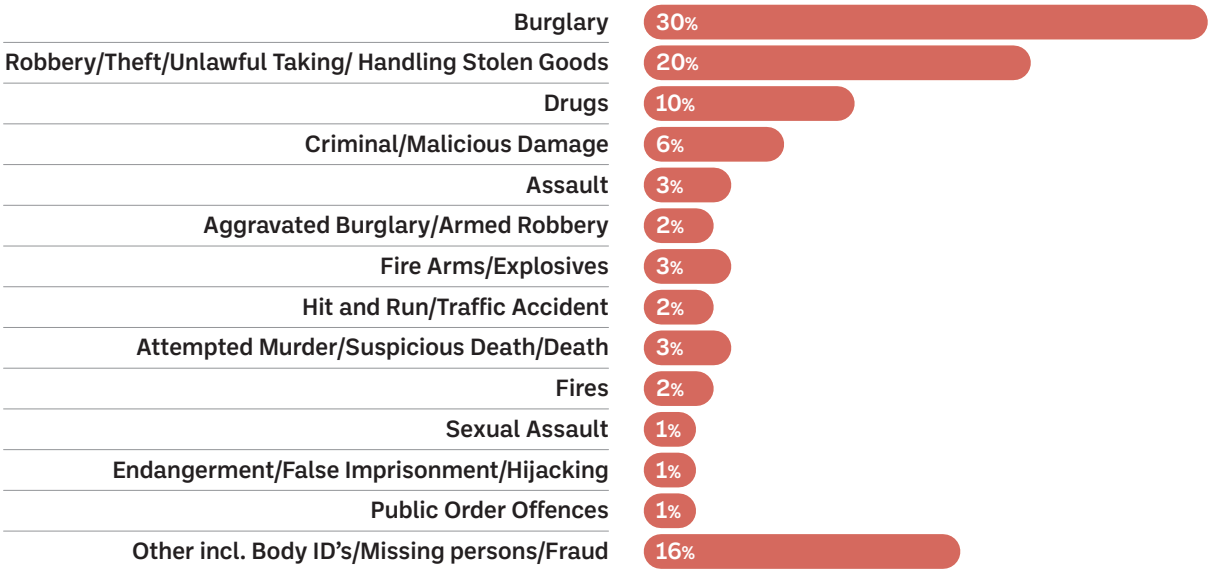


Figure 6: represents the broad range of investigations reported by the Fingerprint section over the course of 2024.

An upgrade of the legacy Automated Fingerprint Identification System (AFIS) to the Multibiometric Identification System (MBIS) was deployed in July 2024 following a 4 year project between An Garda Síochána, Accenture, Idemia and FSI. It's expected this upgrade MBIS will significantly enhance the matching capabilities, improve the quality of the Tenprint sets submitted for the Database and solve previously unsolved cases. A data migration project involved the movement of 1,461,912 Fingerprint sets and 602,296 unsolved Latent fingerprints to the new MBIS fingerprint database. FSI and An Garda Síochána plan to work closely in expanding the Serious Crime Review to Fingerprint data for the first time.

The fingerprint section has also been processing Sirene (European Supplementary Information System) requests since the system went live in 2021, with 29,246 transactions processed in 2024 – this included 18,744 requests and 10,502 searches. The daily transactions have increased year on year from 50 per day in 2021 to 80 per day in 2024. There was an expected significant increase (doubling) in the number of searches carried out in 2024 with the deployment of the new Fingerprint MBIS system. Additional functionality permitted transactions previously not compatible to be processed.

In addition, the PC65 Garda Form was amended to provide specific data entry and recording of Biometric information at the time of submission. It is anticipated this will help improve processing times ensuring Tenprints are uploaded to the database within 2 weeks of submission.

DNA & Biological Analysis Cases

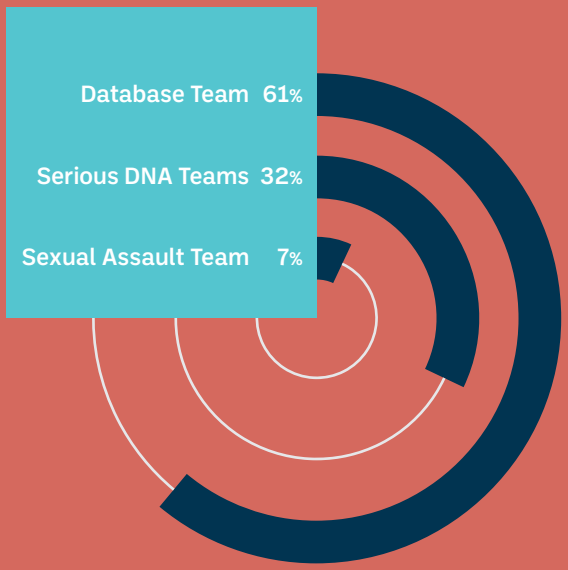
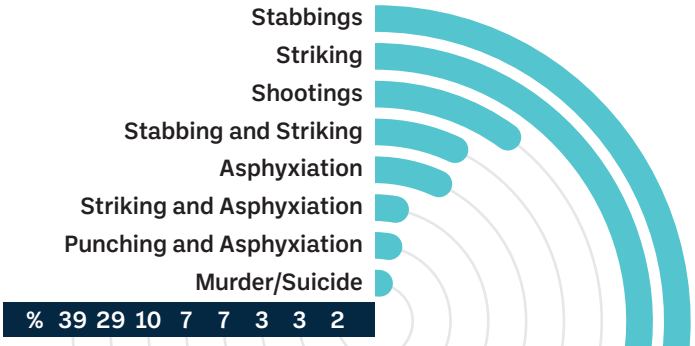
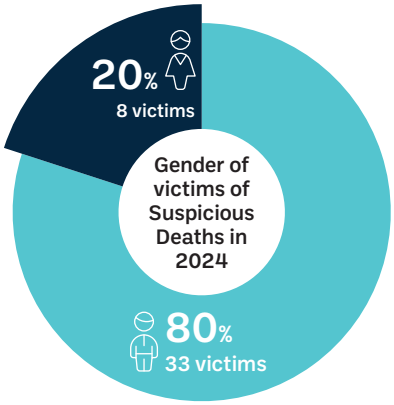


Figure 7: represents the types of DNA cases reported from FSI over the course of 2024.

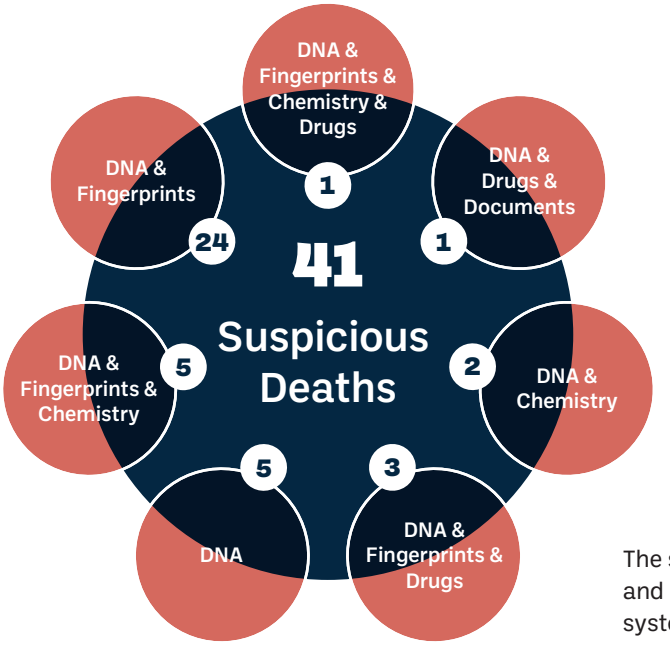
The following is a further breakdown of information relating to the 41 suspicious deaths cases received in 2024

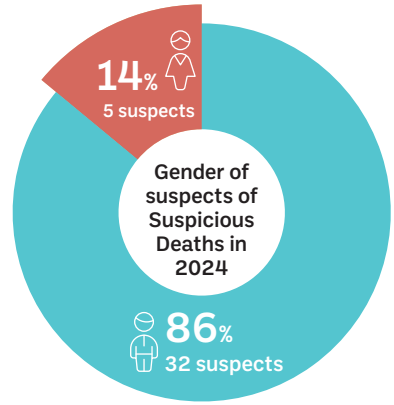
Nature of suspicious deaths 2024 (%)





The number of collaborations within FSI sections in suspicious deaths





The statistics alone cannot represent the full contribution and impact that FSI staff are having on the justice system in Ireland. DNA evidence from FSI was used extensively in Garda investigations and court cases in many murders, serious assaults, sexual assaults, drug seizures and other offences associated with gangland and organised crime throughout 2024.

Contribution to Body Identifications and Missing Persons

In 2024, DNA profiling was carried out to assist in the identification of 161 body identification investigations which consisted of 192 individuals. These cases include those where a visual identification of the person is not possible and confirmation of the person's identification is needed by the Coroner. A direct comparison can be made to DNA from a personal item such as a toothbrush or identification can also be assisted by kinship matching to biological relatives such as parents, children or siblings of the deceased.

In addition, FSI assisted in the identification of 32 missing persons in 2024. Some examples of Missing Persons cases where we assisted with identifications include:

KQ was missing for a number of months and it was thought he had been murdered. Remains were found on the 29th of January 2024 and a DNA profile generated from the body was searched on the DNA Database and a match was obtained.

MN was last seen at Courtown Pier in Wexford on the 13th of November 2023. A DNA profile was obtained from his inhaler and was forwarded to Interpol. The DNA profile from an Unidentified Human Remains found in Wales was sent to FSI via Interpol and a match was obtained when compared to the inhaler.

ST was last seen in Dublin 4 in August 2023. Reference samples from his parents and two of his brothers were submitted to FSI and forwarded to Interpol's I-Familia global database for identifying missing persons based on international DNA kinship matching. In October 2024 the DNA profile of an unidentified deceased male discovered in Cumbria in the UK was sent to FSI via Interpol Black Notice and a match was obtained.

DL was reported missing in Texas on 17/12/2021. On the 22/12/2024, the DNA profile of an unidentified deceased male found in Texas was received at FSI from Interpol. The DNA profile of the deceased was searched on the National Missing and Unknown Persons Database and a close match was found between this profile and the DNA profiles of his parents and sibling.

Contribution to Exhumations

Mountjoy Exhumations: Harry Gleeson Identification

Between 1923 and 1954, there were 35 executions within the Irish State. The majority were buried in unmarked graves in a prison yard, including Harry Gleeson, who was hanged for the 1940 murder of Moll McCarthy, but granted a posthumous pardon in 2015. In 2024, forensic archaeologists began excavations in the prison yard and 26 sets of remains were recovered. A select number of bones from each individual were sent for genetic analysis at FSI, with the aim to identify Harry Gleeson. Various DNA extraction methods were carried out on the skeletal remains and whole mitochondrial genome and Y-STR DNA profiles were generated from each of the exhumed individuals. These DNA profiles were then compared to the DNA profiles obtained from Harry Gleeson's next of kin. One of the exhumed individuals matched for both mitochondrial and Y-STR markers. The results of the genetic data, combined with other data led to a successful identification. Harry Gleeson was reburied in his home place of Holycross Co. Tipperary on the 7th of July 2024.

Other exhumations to obtain DNA samples:

Three remains were exhumed in 2024. These included two remains from Glasnevin Cemetery. On the 1st of March 2024 the remains of an unidentified female who drowned in the River Liffey in 1990 were exhumed and on the 9th of May 2024 the remains of an unidentified male found in the sea off Howth in 1980 were exhumed. In Cork on the 5th of November 2024, the remains of an unidentified male found in the River Lee, County Cork in 1999 were exhumed.

DNA profiles were generated from these remains and were uploaded and searched on the National DNA Database with no matches to date.

Contribution to Cold Cases

A number of cold cases were reviewed and worked on in 2024 including the case of the murder of Sophie Toscan Du Plantier - a new cold case review had been undertaken by the Serious Crime Review Team of An Garda Síochána. A case conference was held in October and a number of items are being re-examined to determine if newer technologies (particularly DNA) can assist in the case.

In the case of a double murder in 2006 a number of items were submitted this year to FSI for DNA sampling. In addition to this work six unknown DNA profiles generated previously in the case before the existence of the DNA Database were uploaded and searched on the DNA Database System. No matches were obtained on our National Database but one of the unknown male DNA profiles obtained from a pair of gloves matched to a person on the Spanish DNA Database following the intercountry exchange of DNA profiles under the Prüm Council Decision.

A cold case review is underway by the Clare Garda Division under the supervision of the Serious Crime Review Team into the circumstances of the death of Patrick Nugent in Bunratty, County Clare in 1984. Mr Nugent was fatally injured after being struck by a vehicle. Additional work was completed by the State Pathologists Office after exhuming Mr Nugent's body to examine the remains for injuries from the incident. To-date, FSI have carried out DNA profiling to confirm that the body was that of Patrick Nugent by comparison with the DNA of two of his siblings.

Service Flexibility

Exhibits are delivered to FSI through the Case Intake Section (CIS) and are handed over directly to laboratory personnel. There is an appointments system in place which is managed by our dedicated CIS staff. On average there were seven one-hour appointments per day and two 45 minute appointments. Urgent submissions which include body identifications, murders and sexual assault cases involving minors or vulnerable persons were prioritised by appointment. A total of 37,591 exhibits and 23,465 biometric samples were submitted in 2024.

The system to facilitate an Out of Hours service continued in 2024. Each scientist carries an on-call phone for a week at a time and a smaller group are available to attend scenes or to carry out necessary urgent laboratory work. This service is provided by a panel of 32 scientists with two scientists being called in to the laboratory per event for out of hours services, for capacity and health and safety reasons. This service was availed of on 47 occasions over the course of 2024 – covering the full range of case types. FSI attended 3 crime scenes to provide specialist knowledge, particularly for Blood Pattern Analysis (BPA) in murder investigations.

Court Cases

Each year a number of the cases examined by FSI may require the attendance of staff to give evidence in the District Court, Circuit Court, Criminal Court or the Special Criminal Court. Often, these cases relate to reports issued in earlier years. Staff from FSI attended court as witnesses on 110 occasions in 2024, a slight decrease from 2023 when there were 133 attendances. For comparison, there were 119 court attendances in 2022, 104 in 2021, and 50 in 2020 (Covid-19 restrictions in place). The number of court appearances in 2024 for each discipline is tabulated in Table 3.

14 court appearances in 2024 were virtual, a slight reduction from 2023 when there 17 occasions. This is a facility that was established during Covid-19 restrictions and we hope to see continued opportunities to provide remote court evidence in the future.

Forensic Discipline	Number of Court Appearances in 2024
Chemical Analysis	25
DNA & Biological Analysis	57
Physical Analysis	26
Case Intake	2
Total	**110**

Table 3: Evidence in Court (2024)

Visits from Defence Scientists

Scientists employed by the Defence attended FSI on 37 occasions in 2024; compared to 30 occasions in 2023, 34 occasions in 2022, 24 in 2021, and 14 in 2020 (Covid-19 restrictions in place). Of these, 20 related to Drugs cases, 10 related to DNA & Biological Analysis cases and 7 related to Physical Analysis cases.

Benchmarking

Throughout 2024, FSI engaged in informal benchmarking on several aspects of service delivery with members of the Association of Forensic Science Practitioners (AFSP). These are laboratories, public and private, providing forensic services around the UK and Ireland. This included demand trends and operational matters.

DNA Database

This section is a report on the operation of the DNA Database in 2024, in compliance with the Criminal Justice (Forensic Evidence and DNA Database System) Act 2014.

The DNA Database commenced operation on the 20th November 2015 and is one of the most important crime fighting tools within the State.

Using the database, information is supplied to the Gardaí about links between people and unsolved crimes. These crimes have ranged from burglary/criminal damage to crimes against the person, sexual assaults and suspicious deaths. The power of the database as an investigative tool is that it is providing Gardaí with investigative leads in previously unsolved serious crimes.

The database can replace more traditional and time-consuming police investigative methods and provide more focus to a criminal investigation. It is now also possible to retain samples from relatives of missing persons to aid in the investigation of unknown remains.

Overall, 2024 saw an increase in the volume of Database records, as well as an increase in the impact and effectiveness of the system.

Figure 8 displays the overall growth in the National DNA Database since 2015

Total Number of Profiles on the DNA Database System

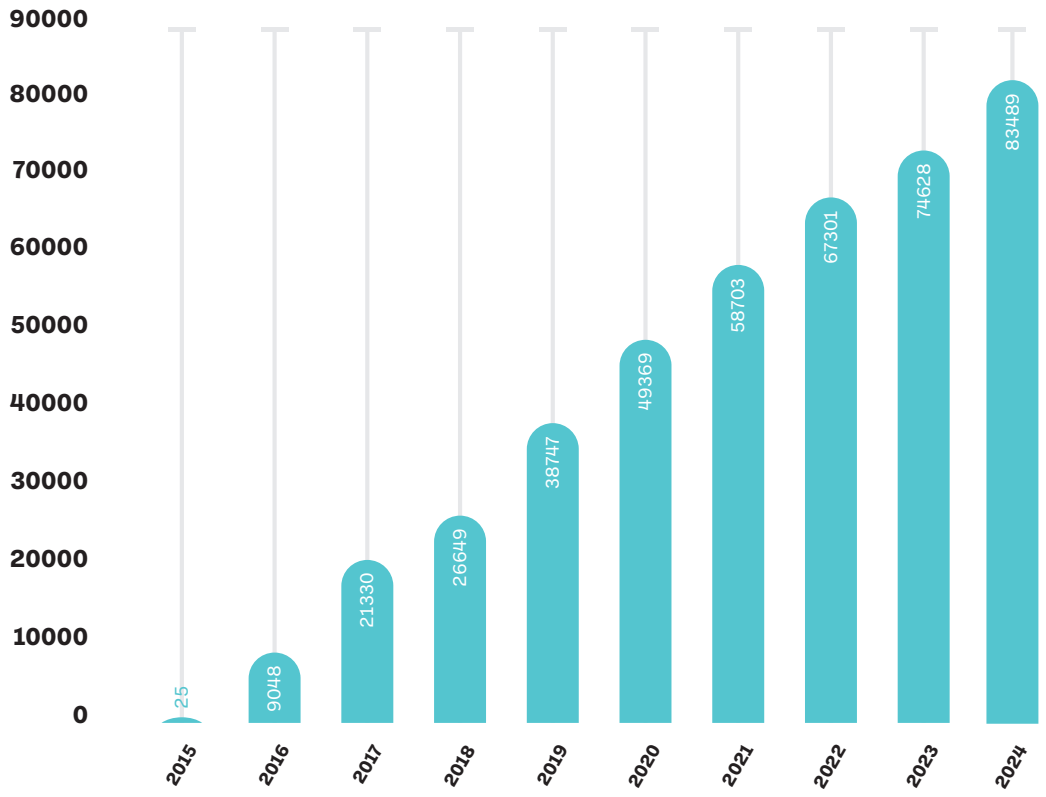


Figure 8: Total numbers of individual profiles (person or crime stain) on the database displaying overall growth since 2015. Increase of profiles in 2024: 8,861

Breakdown of profiles on the DNA database system by Index

Figure 9 shows the numbers of DNA profiles held in the four indices of the National DNA Database at the end of December 2024. Total profiles on database: 83,489

Reference Index
Includes the Suspect Known, Convicted Offender and Section 28 Volunteer specimen categories

Crime stain Index
Includes the Forensic Unknown and Forensic Mixture specimen categories

Elimination Index
Includes FSI, Garda, Garda CSI, GSOC and S44 Prescribed Person specimen categories

Identification Index
Includes profiles from missing persons, unidentified human remains and relatives

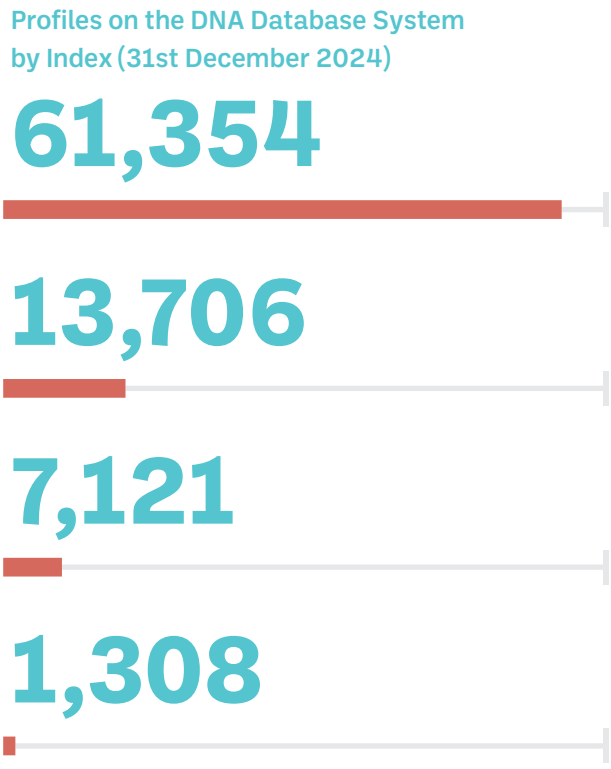


Figure 9: DNA Database System by Index

Number of persons' profiles on the DNA Database System

Figure 10 shows the number of profiles from persons on the DNA Database from the date of commencement to end of December 2024. This figure takes account of the significant numbers of DNA profiles from persons destroyed in compliance with part 10 of the Criminal Justice Act 2014 over this period (as illustrated in figure 13)

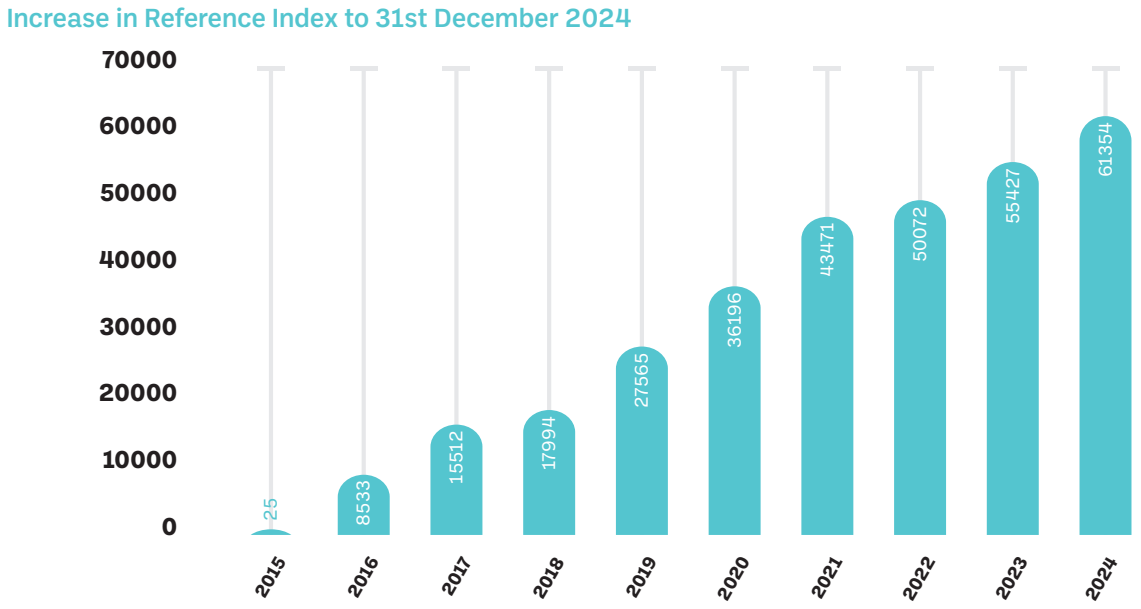


Figure 10: Increase in Profiles on Reference Index. Increase of profiles in 2024: 5,927

Number of unsolved crime stains added to the DNA Database System

As of the end of December 2024, there are 13,706 unsolved crime stains in the crime stain index, with 1,585 crime stains added in 2024 (Figure 11).

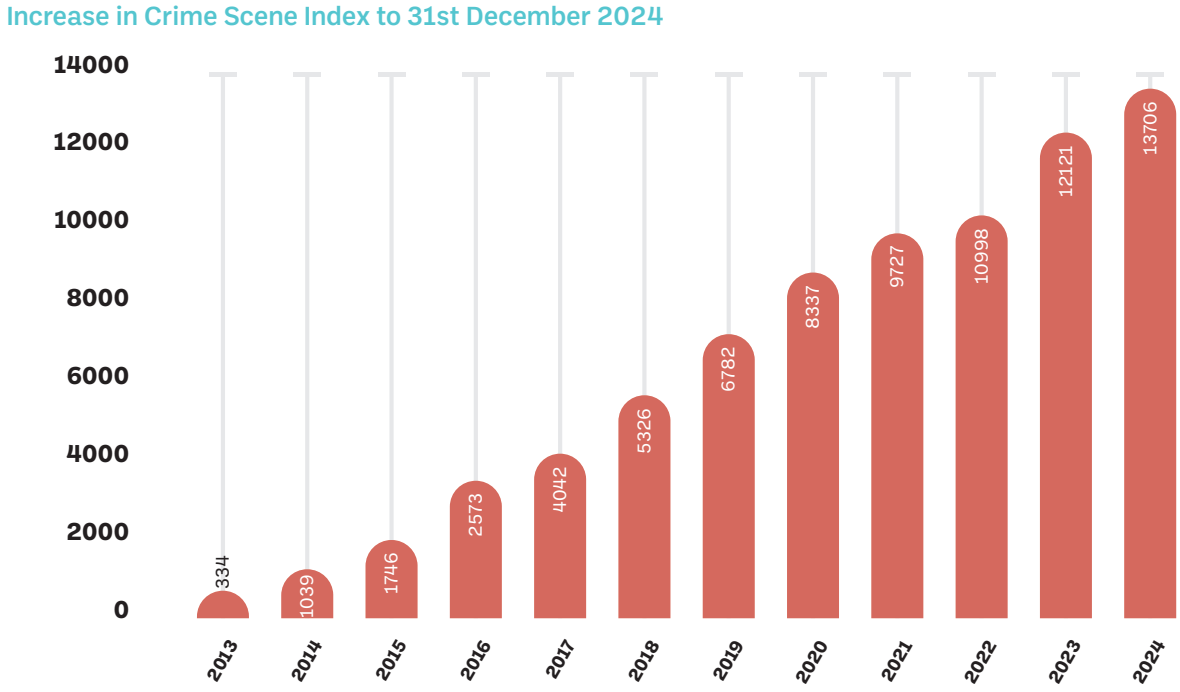


Figure 11: Cumulative number of crime stains uploaded to the Database to the end of 2024

Sample destruction and profiles removal from the DNA Database System

Figure 12 shows the number of samples destroyed since commencement of the DNA database (98,013 samples destroyed up to 31st December 2024, 10,754 samples destroyed in 2024), while Figure 13 shows the number of profiles removed since commencement of the DNA database (47,911 profiles removed up to 31st December 2024, 5,793 profiles removed in 2024).

Sample Destruction

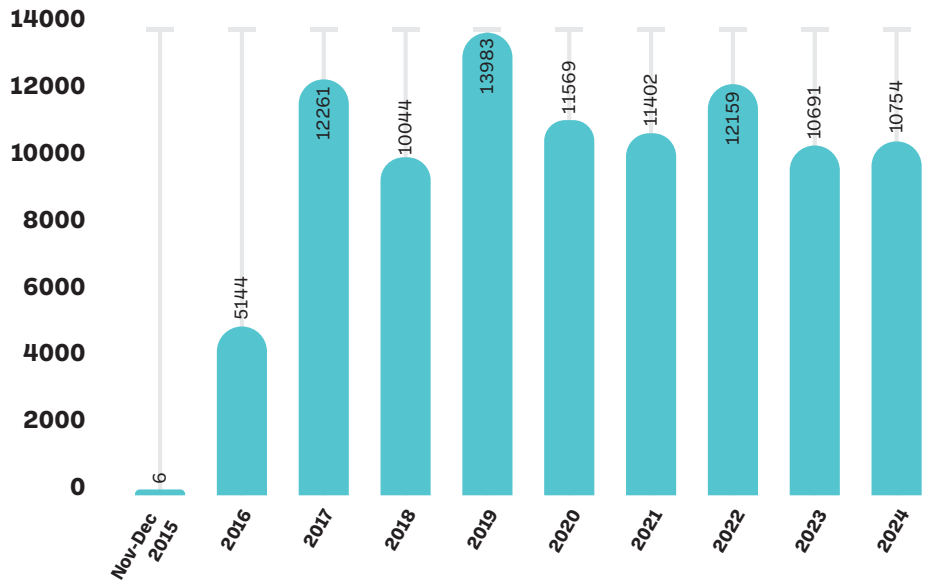


Figure 12: DNA Sample Destruction

Profiles removed from Database

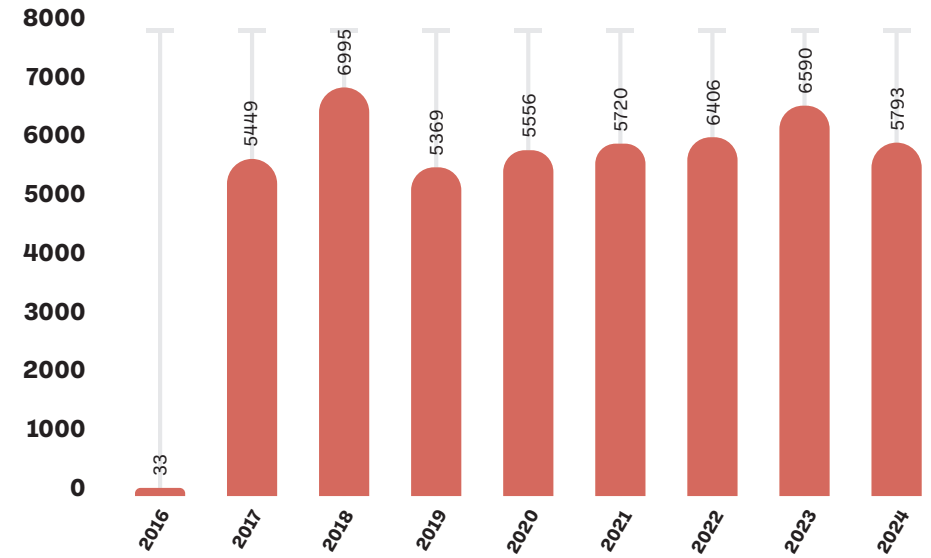


Figure 13: DNA Profile Removal

Investigative links

Two potential matches can occur when an additional profile is added to the Database – a crime stain can match another crime stain suggesting a link between crimes or the crime stain can match to a person suggesting a link between the person and the crime. Overall, the DNA Database identified 766 hits in 2024, which assisted 997 cases. The types of hits are detailed below:

(a) Persons linked to crime stains

There were 711 person-to-stain matches in 2024. 453 of these were person to single case matches providing assistance to 443 investigations while in 258 cases the person was linked to multiple case matches providing assistance to 425 investigations. In total 868 cases have been aided - Figure 14.

The details of the cases involving person to stain matches is available in Figure 15.

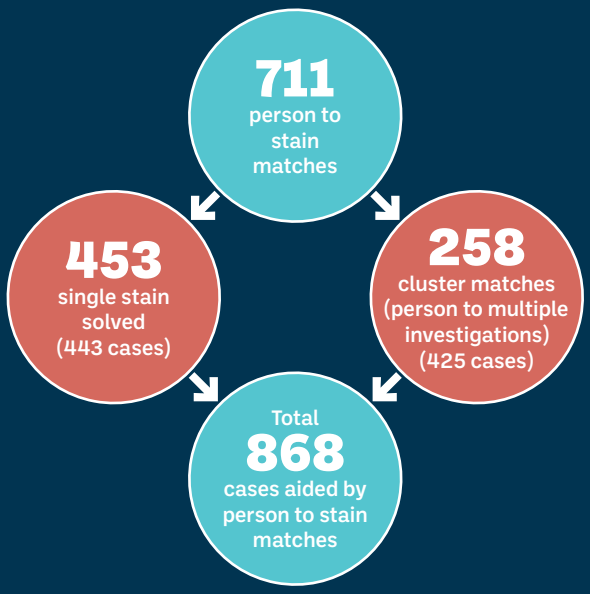


Figure 14: Person to stain matches on Database to the end of 2024

Case Type	Number
Assaults	33
Burglary	257
Criminal damage	148
Drugs	27
Firearms	11
Robbery/Theft	69
Sexual Assault	14
Unlawful Taking of Vehicle	135
Other*	174
Total	868

*Other category includes case types listed as 'other' plus a number of different less frequent case types.

Figure 15: Person to Stain matches [Types of investigations and the number of each involved in 2024]

(b) Crime scene samples linked to other crime scene samples

This type of match occurred 55 times in 2024. In 44 such cases, a case-to-case match was reported while in the other 11 cases, there were clusters of cases associated with each other. Overall, this resulted in 129 investigative links ('hits') between unsolved crime stains - see Figure 16 below

The details of the cases involving stain to stain matches is available on Figure 17.

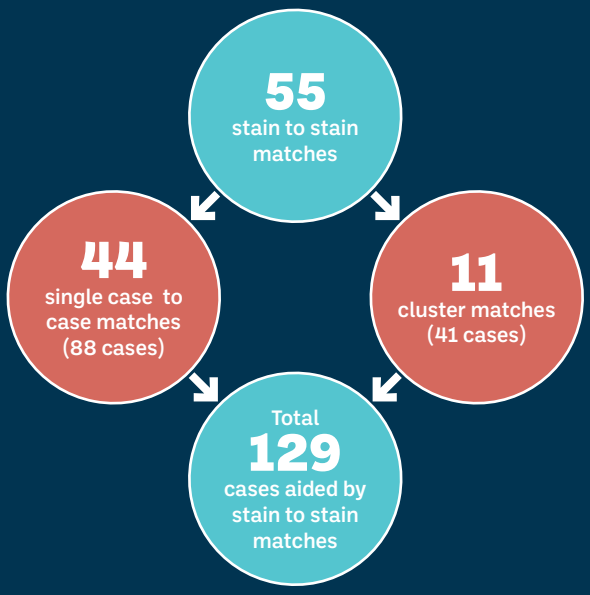


Figure 16: Stain to stain matches on Database to the end of 2024

Case Type	Number
Burglary	38
Drugs	7
Criminal damage	17
Firearms	4
Robbery/Theft	8
Unlawful Taking of Vehicle	20
Other*	35
Total	129

**Other category includes case types listed as 'other' plus a number of different less frequent case types.

Figure 17: Stain to Stain matches [Types of investigations and the number of each involved in 2024

Metrics used to assess the effectiveness of databases are available in Figures 18 and 19. These figures were as of the end of December 2024.

H/N: The Number of Person to Stain Matches Relative to the Number of Persons Included in the Database

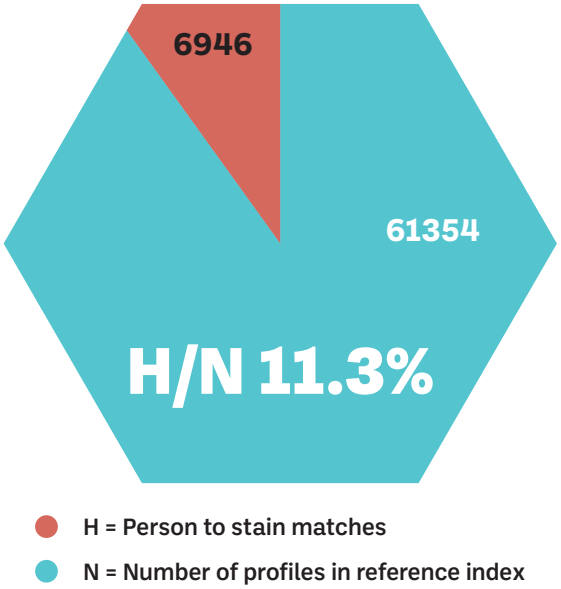


Figure 18: This figure indicates the appropriateness of the sampling policy (i.e. sampling suspected offenders and convicted offenders)

H/C: The Number of Person to Stain Matches Relative to the Number of Stains Included in the Database

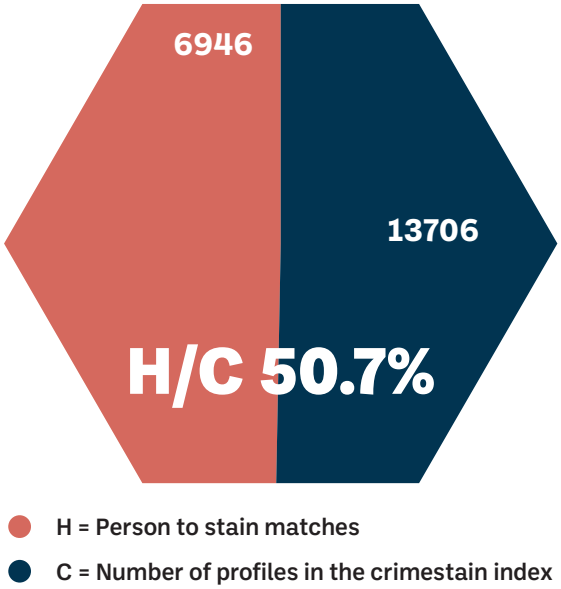


Figure 19: This measures the crime solving capacity and is expected to grow as the database grows (i.e. 50 out of every 100 crime scene samples uploaded onto the database will be linked to a person).

Prüm Treaty

The Prüm treaty includes cross-border cooperation by means of exchanging judicial and police information and by providing mutual assistance. With regards to the exchange of information, each European member state has to make its DNA database available to other Member States for automated searches on a hit/no hit basis. After a match, personal data and case information are exchanged between countries by existing mutual legal assistance procedures (police or judicial).

On the 2nd of October 2019, FSI began live exchange of DNA data and at the end of 2024 was exchanging data with sixteen Member States. Figure 20 shows the match results obtained between the Irish DNA database and the DNA databases of the sixteen Member States.

Prüm Match Statistics to 31st December 2024

	Irish Crime Stain to Prüm person	Prüm Crime Stain to Person on Irish Database	Prüm Crime Stain to Ireland Crime Stain
Austria	26	40	4
Belgium	3	13	2
Croatia	0	1	0
Estonia	1	1	0
Finland	1	8	0
France	51	121	30
Germany	29	183	19
Latvia	9	2	0
Malta	0	0	0
Netherlands	24	24	11
Poland	8	14	1
Portugal	1	1	2
Slovakia	4	2	1
Spain	6	17	2
Sweden	3	23	2
United Kingdom	712	498	49
Total	**878**	**948**	**123**

Figure 20: Prüm Match Statistics

02

Science, Technology and Innovation

Science, Technology and Innovation

FSI made strong progress in progressing forensic science technology and practice, developing new ICT systems and contributing to the international knowledge base over the course of 2024.

Over €1m worth of new instrumentation was installed and commissioned in 2023 and 2024 to ensure that the services could be accredited in a new lab while supporting services from an older laboratory. DNA and Biological services and Physical Analysis services transitioned in 2024 and this necessitated the validation of chemistries, methods and equipment - including the automated liquid handling systems for DNA processing, compact Scanning Electron Microscope for fire-arm residue characterisation and a new solid-phase microextraction (SPME) method for analysis of fire debris residue characterisation. Further work was completed last year on a forensic investigative genetic genealogy method to perform long range kinship analysis, method development and training on mitochondrial DNA profiling and evaluation using Next Generation Sequencing technology. FSI is currently using this technology in support of the identification programme for the Tuam Mother & Baby Home exhumation, as outlined in the Institutional Burials Act 2022.

A significant upgrade (MBIS) of the Automated Fingerprint Identification System (AFIS) was developed and deployed in July 2024 by the ICT team of An Garda Síochána in partnership with Accenture/Idemia and FSI. Training for staff in MBIS including advanced users took place in 2024. MBIS operates using enhanced match algorithms which are allowing for faster and more accurate searching and comparison between reference tenprint sets and latent marks recovered from crime scenes. In 2024 FSI and the Department of Justice also completed the development of a transformational new system for capturing, storing and comparing DNA data generated internally by FSI (DNA Application for Sample Handling (DASH). This software will also ensure data integrity, data security and will greatly enhance the efficiency of data processing internally within FSI. Test and validation phases will be carried out ahead of the system going live in 2025.

FSI is a founding member of both the ENFSI and AFSP networks, which are focused on developing and sharing best international forensic practices and research within its members. Our staff were active contributors to 21 working groups over the course of 2024. Last year FSI participated in two European-funded programmes to advance the European knowledge-base and competencies in forensic science disciplines. The first project ('UNLOCK') aimed to provide an opportunity for Forensic Scientists in all disciplines to improve their basic forensic knowledge. The work of the project involved putting together a syllabus covering areas considered fundamental to forensic science. This would be particularly useful for scientists who have studied the general sciences rather than forensic science and will allow them an opportunity to gain a qualification. A 'Reader' will be produced which will be sent to candidates who after a period of time will take an online exam and gain a qualification. The second project ('ReACT') focused on research on the transfer and persistence of DNA. This research enhances the understanding of key topics in the evaluation of scientific evidence and allows FSI to characterise and communicate its findings during the investigative process and in the courts.

In 2023 FSI competed with other European countries for the hosting of the prestigious European Academy of Forensic Science (EAFS). FSI were successful in their bid and this meeting will be hosted in Dublin in May 2025. EAFS is the biggest European forensic science event and occurs once every 3 years. It brings together over 1000 forensic science practitioners, stakeholders and partners from across the forensic science global community to showcase the depth and breadth of developments in forensic science. FSI will also host the Annual Meeting of the European Network of Forensic Science Institutes (ENFSI) at the same time. In 2024 FSI worked with a commercial conference organiser to secure the conference location and develop the draft scientific and social programmes.

Publications:

The following papers were authored / co-authored by staff in FSI and published in 2024.

1. **Brian Gorey, Michelle Boyle, Clíona M. O'Brien, John O'Shaughnessy, Dyan Daly, Annette Forde**. Gunshot Residue (GSR): Frequency of residue types encountered in case work and background levels on control samples" in the journal Forensic Science International, 2024. Volume 359, 112029, ISSN 0379-0738, https://doi.org/10.1016/j.forsciint.2024.112029.

2. G. Davidson, **M. Lee-Gorman**, A. Davidson. The transfer of spermatozoa onto children's underwear during normal domestic laundering activities, Forensic Science International, Volume 364, 2024, 112250. ISSN 0379-0738. https://doi.org/10.1016/j.forsciint.2024.112250.

3. Jonathan Finnis, Geraldine Davidson, Karen Alexander, Jennie Lewis, Maggie Boyce, Finlay Kennedy, David Casey, Nicola Clayson, Isla Fraser, **Charlotte Murphy**, Charlotte Hargreaves, Nighean Stevenson, Sharon Doole, Carol Rogers. Evaluation of indirect transfer mechanisms of semen under varying test conditions. Science & Justice, Volume 64, Issue 1, 2024, Pages 95-103, ISSN 1355-0306, https://doi.org/10.1016/j.scijus.2023.12.003.

4. Jones S, Logan M, Davidson G, **Murphy C**, Strahorn P. Vaginal drainage of semen in underwear: A forensic study. Sci Justice. 2024 Nov;64(6):605-613. doi: 10.1016/j.scijus.2024.09.003.

5. **Flanagan L, Murphy C, Savage P, Breathnach M, Ryan J**. The importance of male underwear in cases of alleged sexual assault. J Forensic Sci. 2024 Jul;69(4):1481-1489. doi: 10.1111/1556-4029.15539.

6. K**illoran, S.**, McNamara, S., Kavanagh, P., O'Brien, J., and **Lakes, R.** (2025). Identification of N-pyrrolidino protonitazene in powders sold as heroin and associated with overdose clusters in Dublin and Cork, Ireland. Drug Testing and Analysis, 17(3), 350-357. https://pubmed.ncbi.nlm.nih.gov/38769669/

03

Partnership and Integration

Partnership and Integration

This section focuses on how we are strengthening relationships and improving FSI's integration within the criminal justice system and beyond. This was particularly important throughout 2024, given the demands on the criminal justice system and the complex transition process underway by FSI.

An Garda Síochána accounts for the vast majority of evidential submissions into FSI. FSI is grateful for the on-going cooperation with An Garda Síochána that was particularly evident throughout 2023 and 2024 as FSI planned and implemented the transition to its new building. Several policies and practices with regards to submission of exhibits have been refined and protocols refined to account for dual locations during a transition period. FSI is also very appreciative of the expert advice and support from the various specialist units of An Garda Síochána and the Divisional teams, who have supported FSI so well over the course of the year.

The challenges of criminal justice capacity, and FSI capacity more broadly, were recurring themes during 2024. FSI worked closely with An Garda Síochána, and across the justice sector in 2024, to ensure the best use of capacity available in the laboratory and this will remain a strong area of focus for FSI in the months and years ahead. In 2024, 102 Garda members from 16 districts were trained and certified in the use of Presumptive Drugs Testing (PDT). A PDT can be done by a trained Garda member in a Garda station for some drug substances detected under Section 3 of the Misuse of Drugs Act – this can divert the lowest priority cases away from FSI, allowing focus on the most important drug cases. FSI is also working closely with the Department of Justice legislation team to develop new legislation that places PDTs on a statutory footing. Direct regular lines of communication between FSI and Court Presenters have been maintained in several court districts with 19 district courts engaging directly with FSI in 2024. This direct line of engagement ensures timely reporting of forensic casework before court hearings

FSI is a key stakeholder and active participant in both the Irish and European early warning drugs networks including the Irish Early Warning and Emerging Trends Group (EWET), the National Response and Alert Group (NRAG) and the European Early Warning System (EWS) including the recently established Laboratory Networks Group. We continue to work closely with our network colleagues to monitor emerging trends and support integrated national responses to adverse public health events. In 2024 FSI reported 10 'First in Ireland' drug detections & novel drug presentations to the EUDA.

FSI participated in a cross-sectoral research project, with An Garda Síochána, The Department of Justice and Immigration Service Delivery (ISD), focused on understanding the long-term options for replacing the Automated Fingerprint Identification System (AFIS). This project was concluded in 2023 and the significant upgrade (MBIS) of the Automated Fingerprint Identification System (AFIS) was developed and deployed in 2024.

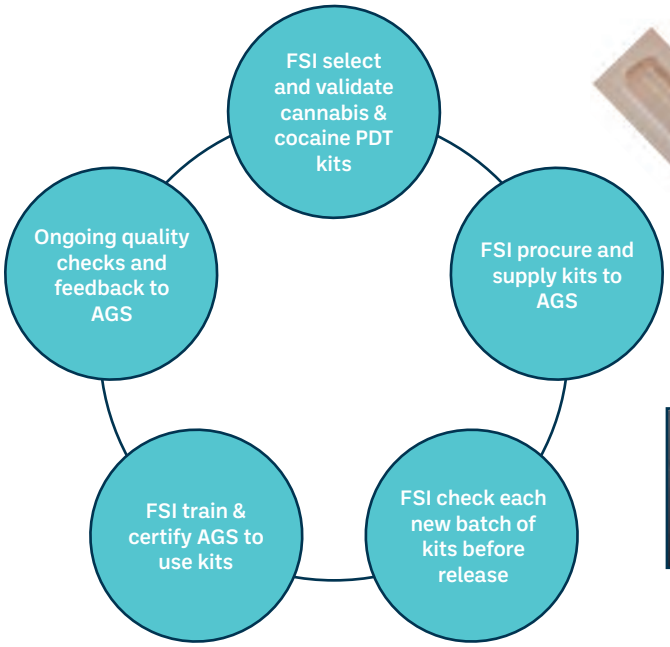
FSI continued to maintain its strong partnerships with the Missing Persons Bureau, Sexual Assaults Treatment Units (SATUs) and the new Divisional Protective Services Units (DPSU) of An Garda Síochána over the course of the year. FSI also engaged extensively with the Department of Children, Equality, Disability, Integration and Youth (DCEDIY) and the Director of the Authorised Intervention for the Tuam Mother and Babies Home, in preparation for the Identification Programme outlined in the Institutional Burials Act. This legislation confers significant responsibility on FSI for providing an Identification Programme, and associated databases, in support of Institutional Burials such as the Tuam Mother and Baby Home. The scope of ICT, operational and scientific work ahead of FSI will be very significant.

Presumptive Drug Testing (PDT)

- Screening tests for controlled substances
- Quick, cheap, accurate & straightforward
- Ideal for non-laboratory settings – widely used internationally by law enforcement agencies

GNDOCB have overall responsibility for implementing the national PDT programme in accordance with Garda HQ Circulars 23/11 and 34/15

FSI have responsibility for training and certifying AGS to carry out cannabis and cocaine PDT testing using appropriately validated kits



FSI also participated in the initial discussions on the Criminal Justice Strategic Plan (2025-2028), particularly in relation to understanding organisational blockages, improving collaboration and data integration. This work has helped identify gaps in the system that can be progressed.

Solid working partnerships have been established with partner agencies based in the Backweston Laboratory Campus, including the State Lab and the Department of Agriculture, Food and the Marine (DAFM). FSI is appreciative of the support given to-date. These relationships will help FSI solve shared problems on campus and support the long-term strategic development of the campus.

FSI continued its partnership with Forensic Science Northern Ireland (FSNI) over the course of the year. This continues to be a very supportive and productive partnership over the past year, with active knowledge sharing and support.

Staff in Documents, Chemistry, Fingerprints, Drugs and DNA, designed and delivered an Outreach and Education program to children of primary and secondary level. Students came from different backgrounds, abilities and scientific knowledge and were lead through some hands-on experiments on forensic evidence collection and crime solving in a variety of forensic disciplines to help solve a crime. So far the program has been successfully run in a variety of different settings, including a 2 hour workshop with 20 Transition Year students, three 2 hour workshops with nearly 100 Transition Year students in a Secondary School, a presentation for Science Week to Senior Cycle students, a Careers Evening for 4th and 5th Year students for a careers evening and 6 students at a TY workshop in the Department of Justice.

FSI responded to 9 Freedom of Information (FOI) requests and 16 Parliamentary Questions (PQs) over the course of the year. FSI also responded to a number of media requests, including newspaper, radio and TV to increase public awareness of FSI's new laboratory at Backweston and the work that FSI does on behalf of the criminal justice system.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04

Quality Systems

Quality Systems

It is imperative that FSI maintains a robust quality system so that all our stakeholders have confidence in our services and our findings.

FSI continues to refine its quality system while including new forensic techniques at our new laboratory in its scope of accreditation. Accreditation to international standards, and specifically compliance to the ISO-17025 (2017) standard, is an important validation of FSI's quality system.

In 2024, we continued the transfer and accreditation of all remaining services from Garda Headquarters to Backweston. We successfully added to our scope of accreditation for these services

Areas accredited in our new laboratory facilities in 2024	Date of accreditation
Footwear	2 February 2024
Fingerprints MBIS (New service)	8 May 2024
Toxicology	8 May 2024
DNA (All services)	11 -12 July 2024
Firearm residue; glass and paint evidence	19 September 2024
Accelerants; Explosives; Offensive sprays	21 – 22 November 2024
Fibres	3 December 2024

Table 4: Services accredited in our new laboratory in 2024

There was a specific ICT assessment completed this year as part of the visit to assess the IT transition to our new laboratory site. Our IT processes were noted to have good controls and infrastructure in place. Our Laboratory Information Management system (LIMS) and associated data records were found to be very robust.

In addition, our annual INAB assessment took place in November 2024. Drugs, DNA, Documents and Handwriting, Fingerprints, as well as our Quality Management System (QMS) were assessed and all were successful. In addition, there was a successful extension to scope during this assessment in new methods for fingerprint visualisation, which were Vacuum Metal Deposition, and the Fluorescent Fingerprint Powders Indanedione and Lumicyano. The validation of a new 'real-time' temperature monitoring system introduced for laboratory exhibits and samples was also assessed during his visit and successfully gained accreditation.

The final assessment in 2024 in our new laboratory took place in December for the Fibres evidence area. This marked the final accreditation of all our services in our new site and all case work analysis ceased in our Garda Headquarters facility.

Our successful accreditation and continuous extensions to the scope of our accreditation in 2024 were underpinned by a robust quality system that is supported by all our staff. Over the course of 2024, FSI participated in 53 internal audits that assessed all aspects of FSI's management systems, including Quality Management audits, vertical audits, witness audits, extension to scope audits and training audits. 59 external proficiency trials/collaborative exercises were completed in 2024. These trials are designed by European forensic laboratories and third party companies with a view to continuously assessing and calibrating proficiency levels in forensic disciplines across Europe. FSI also assisted in the design of some European trials and our proficiency is highly regarded among our European peers.


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05

Fit-for-purpose Environment

Fit-for-purpose Environment

In 2024, FSI had two primary goals with regards to our work environment – complete transition of all services to the new fit-for-purpose building at the Backweston Laboratory Campus in County Kildare, and manage the risks to our staff and services in the meantime.

Significant milestones were reached on the 3rd July 2023, with substantial completion of FSI's new building and on the 21st March 2024 with the official opening. This new laboratory, designed by the Office of Public Works (OPW), provides FSI with a functional, purpose-built facility, supporting best international practice in evidence recovery, processing and storage. It represents a significant commitment to the future of forensic services.

This year marks the end of the strategic planning horizon 2019-2024 and it also marks the milestone of the removal of the pillar of fit for purpose environment going forward into the 2025-2028 strategic plan. FSI is very appreciate of the funding and support from the Department of Justice, the commitment from the OPW and the support from many stakeholders over the last several years to enable this new building.

At the end of 2024 all services were fully operational in Backweston and all staff associated with these services have relocated to their new workplace. FSI worked closely with OPW and the contractors to address snags and any outstanding issues with the building. The Garda Headquarters facility was decommissioned.

FSI looks forward to continuing to grow its contribution to the criminal justice system from its new location.


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06

Excellence through People

Excellence through People

The goals of this strategic theme are to build an inclusive, integrated team within FSI that focuses on continuously improving our services and to promote an open, collaborative and respectful climate across the organisation.

A continued focus for FSI under this strategic theme included ongoing staff recruitment, training and development, and the transition of all remaining staff from Garda Headquarters to our new laboratory at Backweston.

Recruitment of scientific, analytical, ICT and support staff remained a significant challenge for FSI in 2024. There was continued investment in recruitment over the course of the year. FSI hired 28 new staff in total over the course of the year (including 11 scientists, 6 analysts, 10 administrative staff and 1 ICT staff). However, this was offset by 20 departures due to retirements, career breaks, resignations, and movement to other roles through the Civil Service mobility programme. Additionally, a number of seconded Gardaí in the Fingerprint area returned to An Garda Síochána. There were 21 promotional opportunities across all scientific and analytical grades in 2024. Recruitment will remain a continued area of focus for FSI and our goal is to reach a staff count of 241 in our new facility.

Flexible working arrangements including flexitime, study-leave, job-sharing, term-time, shorter working year and parental leave are available to staff, as business needs allow. Blended working has been introduced in some areas in recent years.

FSI continues to have an active and committed Staff Development Group and a social committee focused on developing our staff professionally, creating a healthy work environment and working through changes collectively. FSI emphasises continuous staff development, which ensures that employees have the necessary skills to meet the dynamic needs of the laboratory. All staff benefit from a structured training plan that addresses both technical and operational needs. This plan includes:

- Continuous learning and skill development through internal and external training opportunities
- Experienced staff members provide coaching and mentoring to newer or less experienced colleagues
- Tailored training programs that align with specific roles within the laboratory, enabling staff to contribute effectively to the achievement of laboratory goals and strategic objectives

The Staff Development Group reviews and evaluates feedback from all organised courses. This ensures that training activities are effective and aligned with both personal development and organisational goals.

FSI staff completed and gave training in a wide range of courses, both in person and through online learning platforms. These included Introduction to Climate Change; Introduction to Cyber Security Awareness; Data Protection in the Workplace; Protecting Data in a Hybrid World; Auditor Training; Scenes of Crime Officer training; Courtroom Skills; Expert Witness training; Manual Handling; CFRC – Naloxone training; First Aid Responder course.

During 2024, over 40 staff members, including administrative and scientific personnel, have attended external national and international conferences. These events are instrumental in meeting the learning and development needs of staff, keeping them updated on changes and advancements in their areas.

Staff have developed an Outreach programme, devising science experiments based on their evidence area that can be run as a workshop for students, and academics, and in the community or library events. These experiments allow participants to collect

evidence and interpret the results in an interactive setting. This workshop was held at a transition year programme on campus in October 2024 and was positively received. Staff members contribute to Careers days in universities and gave talks on Forensic Science to schools. Staff from FSI gave a workshop to transition year students who were visiting the Department of Justice. These projects have helped to satisfy demand for engagement with second level students in a systematic and inclusive manner.

In 2024, an in-depth review of FSI's values charter was conducted. There was an initial exploration of how values aligned with FSI's goals, followed by a pulse survey completed by staff. The survey data was analysed by members of the Staff Development Group and disseminated to staff. Subsequently, a 'Values Day' workshop was held at Croke Park in June, where staff provided input, insights, and feedback. The purpose was to define a refreshed set of values for FSI. Focusing on six key themes; Collaboration, Wellbeing, Integrity, Professionalism, Innovation, and Service Excellence, the results from these sessions were compiled into a new, staff led values charter. Posters displaying these values are on view throughout the laboratory encouraging staff to espouse these values daily.

FSI have a network of Peer supporters and Employee Assistance is available to all staff. A number of staff and peer supporters attended an 'Understanding Self Harm' training course held on campus. A representative from the Civil Service Employee Assistance Service (CSEAS) conducted an information session for staff, explaining the services offered and how to access them. We held a "Resilience and Self-Care" session for staff in December 2024.

FSI participates in the 'Excellence Through People' programme (managed by the National Standards Authority of Ireland) and we maintained our Gold accreditation to ETP1000:2017. The assessor noted improvements in all areas assessed in December 2024.

Corporate Governance

Corporate Governance

1 Introduction

The 'Code of Practice for the Governance of State Bodies' outlines that Corporate Governance comprises the systems and procedures by which organisations are directed, controlled and managed. State bodies should serve the interests of Government as shareholder, the taxpayer, and all other stakeholders, and pursue value for money in their endeavours, including managing risk appropriately. State bodies should act prudently, ethically and with transparency as public entities and should conduct their activities consistent with their statutory responsibilities.

As described in the document 'Corporate Governance Standard for the Civil Service', good governance is central to the effective operation of a State Body. It is vitally important in effectively discharging statutory and policy objectives. It ensures that a framework of structures, policies and processes are in place to deliver on these obligations and it allows for an objective assessment of management and corporate performance.

2 Oversight Agreement

FSI is an Executive Agency of the Dept. of Justice (DOJ). It has an oversight agreement in place from 2023-2025 inclusive with the DOJ which is published on the DOJ website. The scope of the agreement is as follows:

'This Oversight Agreement sets out the broad governance and accountability framework within which Forensic Science Ireland (FSI) operates, and defines the key roles, responsibilities and commitments that underpin its relationship with the Department of Justice ("the Department"). The Agreement has been drawn up by the Department in consultation with FSI, in accordance with the Code of Practice for the Governance of State Bodies ("the Code of Practice"). It succeeds the previous Oversight Agreement 2020-2022 between the two parties, and will, in turn, be subject to a formal review approximately midway through its operation. A separate Performance Delivery Agreement ("PDA") is agreed annually under the governance architecture provided by this Oversight Agreement.'

3 Performance Delivery Agreement

As described above and as part of our governance practice, FSI agreed a Performance Delivery Agreement (PDA) for 2024. This Agreement is also published on the Department of Justice website. A summary of how FSI performed in its PDA for 2024 is outlined below.

FSI's PDA contains quantitative targets relating to forensic services and other targets. These are represented in Figures 21 and 22 below, respectively.

Output area or initiative	Metric	Associated strategic Objective	2024 Target	Performance
Chemical analysis	Complex drugs/ toxicology cases reported	[1]1.2	6,200	4,878
DNA & Biological Analysis	DNA & Biological Analysis Cases Reported	1.2	≥5,500	6,262
Physical Analysis	Physical Analysis Cases Reported	1.2	≥ 5,569	4,538
DNA - Identifications	Missing person case investigations and body identifications	1.2	100	161
DNA – Information sharing	Member States with active Prüm connectivity & exchange	[2]1.5	17	16
Turnaround time (TAT) for urgent drugs cases	100% Verbally reported within 24h ('A' Cases)	[3]1.8	100%	100%
TAT for body identifications (DNA)	90% Reported within 10 days (excludes bones)	1.8	90%	96%
TAT for urgent fingerprint searches	100% of urgent Interpol/ Sirene match requests reported within 24 hours	1.8	100%	76 % AFIS upgrade affected service delivery
Case reports under service level agreement between FSI and An Garda Síochána	Total FSI cases reported	[4]1.3	23,000	18,356
Representation on International Working Groups	Number of working groups where FSI staff are active contributors	[5]2.8	22	21

Figure 21: Quantitative Targets

Output area or initiative	Target	Outcome
Complete transition of all FSI services to new facility at the Backweston Laboratory Campus	• Transfer of DNA & Biological Services to Backweston by end Q3. • Transfer of Chemistry Services by Q4.	**Fully achieved**
Enabling successful start-up and robust operational performance in new location	• Successfully complete and implement the following ICT projects: • Introduce AFIS Stabilisation and complete inter- and intra-agency training in Q2 • New Hamilton App (DASH): Q2	**Good Progress** A significant upgrade(MBIS) of the Automated Fingerprint Identification System (AFIS) was developed and deployed in July 2024. Further modifications ongoing Development of New Hamilton App (DASH) completed in 2024 – testing will continue in 2025
Accreditation	Maintain accreditation to ISO:2017 17025 Quality Standard for all services in the new building (Q2)	**Fully achieved** Accreditation maintained for all services

Figure 22: Other Targets

1 Strategic Plan 1.2: Increase the capacity of services offered today, through a focus on instrumentation, automation, process improvement, productivity and staffing.
2 Strategic Plan 1.5: Expand number of member states with active Prüm connectivity and exchange to all participating countries.
3 Strategic Plan 1.8: Continue to offer a responsive service for major or urgent cases through streamlined case prioritisation, at-scene attendance and out-of-hours support.
4 Strategic Goal 1.3: Maximise the impact and effectiveness of resources to the Justice System and to society.
5 Strategic Goal 2.8: Active participation in expert working groups e.g. ENFSI, UK and Ireland Association of Forensic Toxicologists (UKIAFT) and AFSP

4

Climate Action

FSI completed its Third Climate Action Roadmap in 2024.

As outlined in the roadmap and maintaining FSI's clear and consistent approach on the matter, the main priority for the FSI in 2024, was the effective and efficient transition of staff, specialised equipment, criminal exhibits, and specialised ancillaries, to the new FSI Building. Due to the complexity of the work that FSI conducts on behalf of the Irish Criminal Justice system, the transition to the new premises was phased and was finally concluded in December 2024.

The transition of staff, specialised equipment, exhibits, and specialised ancillaries, was largely achieved by the end of 2024. Meetings of the FSI Green Team in 2024 largely maintained a 'holding pattern', until the new FSI building was at full capacity.

In September 2024, FSI procured expert Climate and Sustainability Advisors to bring forward Climate and Sustainability initiatives across Energy, Water, Waste, and Green Procurement, for implementation by the FSI Green Team, commencing in January 2025. Twenty one initiatives were signed-off for implementation, by the FSI Directorate in late 2024.

In 2024, FSI drafted a new Strategy 2025-2028. Climate and Sustainability forms one of the fundamental pillars of the Strategy. In relation to this pillar, FSI has outlined that it will take practical and real steps towards FSI's 2050 climate targets, including leadership in 'My Green Lab' certification.

In terms of Strategic Objectives, the following relate to Climate and Sustainability in the new FSI Strategy:

- Commit to achieving 'Net Zero' Emissions by 2050, with clear measurable progress over the next four years.
- Strive to become an exemplar for the Irish Public Service in relation to Climate and Sustainability;
- Relentlessly pursue the efficient and effective completion of Climate and Sustainability initiatives, with the assistance of FSI's external Climate and Sustainability advisors;
- Achieve "My Green Lab" certification within FSI over the timeframe of this strategic plan; and
- Foster and encourage a culture of Climate, Sustainability, Public Awareness, and effective Governance and Accountability, throughout the organisation.

5

Other Governance Items

FSI confirms its compliance with the relevant requirements of the Code of Practice for the Governance of State Bodies. In particular, FSI confirms that:

1. The Oversight Agreement for 2024 has been reached with the Department of Justice and that, as a non- statutory body without a Board, FSI is compliant with the relevant requirements of the Code of Practice for the Governance of State Bodies.

2. There were no **Protected Disclosures** relevant to FSI in 2024.

3. **Public Sector Duty Action Plan**

   In 2024, FSI published a document in accordance with Section 42 of the Irish Human Rights and Equality Commission Act 2014. The document outlines the human rights and equality issues of relevance to the functions and policies of FSI, and outlines the actions to address these issues. A pre-existing cross-functional team within FSI, the Staff Development Group, has been tasked with implementing the actions identified for FSI

4. FSI has implemented a risk management system which identifies and reports key risks and the management actions being taken to address and, to the greatest extent possible, to mitigate those risks. A risk register is in place which identifies the key risks facing FSI and these have been identified, evaluated and graded according to their significance. The principal risks identified for FSI in 2024, and associated mitigation strategies are summarised below:

   a. Staffing plan insufficient to maintain case targets, transition work and other commitments (due to delays in recruitment and not attracting sufficient candidates). Loss of experience across disciplines (e.g. due to retirements) places additional burden on remaining staff. FSI has a workforce plan that is funded and is hopeful of recruiting more staff in 2025. This risk is also being managed through a prioritisation process agreed with An Garda Síochána and reflected in the Service Level Agreement between both organisations.

   b. Service disruptions due to BMS (Building Management System), AHU (Air Handling units) & other building issues; response times. This risk is being managed through regular engagement with OPW and the facilities management company, ensuring there is procurement of critical spares for the building by OPW/FSI, prompt response times and that there is on site expertise to deal with issues as they arise.

   c. Critical ICT Project delays impacting on transition to Backweston facility and other business plans (Prüm expansion, CIS appointments App, Automation of backups for key instrumentation, BRN expansion to DNA for Institutional Burials….). Several projects progressed well over the course of 2024 and are expected to be closed out in 2025.

5

Other Governance Items

(continued)

5. Financial Aspects

FSI forms part of the Department of Justice Vote (Vote 24). FSI is included as Number A21 under the 'Criminal Justice Pillar' of the Justice Vote. As such, FSI is subject to the Public Financial Procedures, the Public Spending Code, and the Appropriation Account process.

The Public Financial Procedures (PFP) set out the principles of Government accounting as well as the more important ways in which they are applied in the day-to-day operations of Government Departments and Offices. The Procedures also outline the essential features of financial management.

All Irish public bodies are obliged to treat public funds with care, and to ensure that the best possible value for money is obtained whenever public money is being spent or invested. The Public Spending Code is the set of rules and procedures that apply to ensure that these standards are upheld across the Irish public service. The Code brings together in one place all of the elements of the value for money framework that has been in force up to now, updated and reformed in some respects. The Code is maintained under the management of Government Accounting Unit in the Department of Public Expenditure, NDP Delivery and Reform as a resource for the entire Irish public service.

The Annual Appropriation accounts show the financial transactions of Government Departments and Offices. The accounts are prepared in accordance with the Exchequer and Audit Departments Act, 1866 (as amended by the Comptroller and Auditor General (Amendment) Act, 1993) and with accounting rules and procedures laid down by the Minister for Public Expenditure, NDP Delivery and Reform. The accounts are a cash-based record of the receipts and payments in the year compared with the amounts provided under the Appropriation Act. The accounts also show prior year figures for comparison purposes. Some information of an accruals nature is included in the notes to the accounts. The Appropriation accounts are subject to scrutiny by the Office of the Comptroller and Auditor General (OCAG).

In early 2024, FSI was subject to an Audit, including financial aspects, by the Department of Justice's Internal Control Unit, in relation to 2023.

6. Freedom of Information

PART 1 of Schedule 1 of the Freedom of Information Act 2014 provides details of Partially Included Agencies under the Act. Forensic Science Ireland does not come under the auspices of the Act insofar as it relates to records concerning, or arising from, the forensic criminal investigation functions performed by FSI, including the analysis of specimens or in connection with an investigation being undertaken by the Gardaí or the Garda Síochána Ombudsman Commission and the approval, supply, testing and maintenance of apparatus and of equipment. Dr. Dorothy Ramsbottom, the FSI Director of Corporate Services, is the FSI Freedom of Information Officer.

7. Data Protection

In relation to the vast majority of FSI's work, where personal data is processed, it is processed for the purposes of the prevention, investigation, detection or prosecution of criminal offences, or the execution of criminal penalties in the State, including the safeguarding against, and the prevention of threats to public security.

Consequently, the applicable Data Protection regime, for the majority of the work of FSI, is the Law Enforcement Directive (LED), which was transposed into Irish Law by Part 5 of the Data Protection Act 2018.

In some instances, such as for example, recruitment, internal HR and employment matters, the General Data Protection Regulation (GDPR) applies to such processing of personal data.

In the policy documents that FSI maintains and implements, it has been made clear whether the processing of certain personal data falls under the LED regime or the GDPR. The FSI Data Protection Officer is Mr. Steven Fadian.

FSI was subject to a Preliminary Data Protection Audit in 2024. The objective of the Preliminary Data Protection Audit was to assess the current state of the Data Protection and Privacy Framework in FSI. The Preliminary Audit was a high-level assessment of the current Data Protection controls and processes in FSI. Policies, procedures and guidelines were assessed to determine if the existing Privacy controls in FSI are designed in line with both the Law Enforcement Directive (LED) and the General Data Protection Regulation (GDPR). The Preliminary Audit was carried out over the course of three months, in the latter half of 2024.

The outcome of the Preliminary Data Protection Audit was reasonable/acceptable from an FSI perspective, with six recommendations brought forward for implementation by FSI. One of the six recommendations was fully dealt with in 2024. Additional recommendations form part of the current work plan to April 2025, with the FSI Data Protection expert advisors.

8. Ethics

Under the Ethics Acts, the FSI Directorate (i.e. the FSI Director General and the 5 FSI Directors) are required to complete Annual Ethics Returns.

9. FSI Quality System

Due to the nature of the work that FSI engages in on behalf of the State and on behalf of the Irish Criminal Justice system, FSI ensures that it has a Quality Procedures system to ensure that its work output is of the highest standard. FSI is accredited under the ISO 17025 (2017) standard. It is the policy of Forensic Science Ireland to achieve and maintain a high standard of quality and to carry out and report the results of its work in an objective manner using good professional practice. These Quality Procedures apply to all cases that FSI receives for analysis.

10. Audits

FSI is regularly audited to ensure that it maintains the standards required for the Irish Criminal Justice system.

6

Statement of Internal Control

Scope of Responsibility

On behalf of Forensic Science Ireland, I, as Acting Director General, acknowledge responsibility for ensuring that an effective system of internal control is maintained and operated. This responsibility takes account of the requirements of the Code of Practice for the Governance of State Bodies (2016).

Purpose of the System of Internal Control

The system of internal control is designed to manage risk to a tolerable level rather than to eliminate it. The system can therefore only provide reasonable and not absolute assurance that assets are safeguarded, transactions are authorised and properly recorded and that material errors or irregularities are either prevented or detected in a timely way. The system of internal control, which accords with guidance issued by the Department of Public Expenditure and Reform has been in place in Forensic Science Ireland for the year ended 31 December 2024.

Capacity to Handle Risk

Forensic Science Ireland reports on all audit matters to the Audit Committee in the Department of Justice. Forensic Science Ireland's senior management team acts as the Risk Committee for the body. Senior managers from Forensic Science Ireland completed a risk register in 2024 and shared the findings with the Department of Justice. The Internal Audit Unit of the Department of Justice carry out audits on financial and other controls in Forensic Science Ireland. Forensic Science Ireland's senior management team has developed a risk management policy which sets out its risk appetite, the risk management processes in place and details the roles and responsibilities of staff in relation to risk. The policy has been issued to all staff who are expected to work within Forensic Science Ireland's risk management policies, to alert management on emerging risks and control weaknesses and assume responsibility for risks and controls within their own area of work.

Risk and Control Framework

Forensic Science Ireland has implemented a risk management system which identifies and reports key risks and the management actions being taken to address and, to the extent possible, to mitigate those risks. A risk register is in place which identifies the key risks facing Forensic Science Ireland and these have been identified, evaluated and graded according to their significance. The register is reviewed and updated by the senior management team on a regular basis. The outcome of these assessments is used to plan and allocate resources to ensure risks are managed to an acceptable level. The risk register details the controls and actions needed to mitigate risks and responsibility for operation of controls assigned to specific staff.

I confirm that a control environment containing the following elements is in place:

- procedures for all key business processes have been documented;
- financial responsibilities have been assigned at management level with corresponding accountability;
- there is an appropriate budgeting system with an annual budget which is kept under review by senior management;
- there are systems aimed at ensuring the security of the information and communication technology systems, The ICT division of the Department of Justice provide Forensic Science Ireland with some ICT services. They have provided an assurance statement outlining the control processes in place;
- there are systems in place to safeguard Forensic Science Ireland's assets. Control procedures over grant funding to outside agencies ensure adequate control over approval of grants and monitoring and review of grantees to ensure grant funding has been applied for the purpose intended;

- The National Shared Services Office provide Human Resource and Payroll Shared services. The National Shared Services Office provide an annual assurance over the services provided. They are audited under the ISAE 3402 certification processes.

Ongoing Monitoring and Review

Formal procedures have been established for monitoring control processes and control deficiencies are communicated to those responsible for taking corrective action and to management, where relevant, in a timely way. I confirm that the following ongoing monitoring systems are in place:

- Key risks and related controls have been identified and processes have been put in place to monitor the operation of those key controls and report any identified deficiencies;
- An audit of financial and other controls is carried out by the Department of Justice Internal Audit Unit every 2 years;
- Reporting arrangements have been established at all levels where responsibility for financial management has been assigned; and
- There are regular reviews by senior management of periodic and annual performance and financial reports which indicate performance against budgets/forecasts.

Procurement

I confirm that Forensic Science Ireland has procedures in place to ensure compliance with current procurement rules and guidelines and that during 2024 Forensic Science Ireland complied with those procedures.

Review of Effectiveness

I confirm that Forensic Science Ireland has procedures in place to monitor the effectiveness of its risk management and control procedures. Forensic Science Ireland's monitoring and review of the effectiveness of the system of internal financial control is informed by the work of the internal and external auditors, the Audit Committee, and the senior management team. The senior management within Forensic Science Ireland is responsible for the development and maintenance of the internal financial control framework. I confirm that Forensic Science Ireland conducted an annual review of the effectiveness of the internal controls for 2024 as part of FSI's management review processes. It should be noted that this extended beyond financial controls and examined ICT controls, management practices and other governance processes.

Internal Control Issues

No weaknesses in internal control were identified in relation to 2024 that require disclosure in the financial statements.

Dr. Geraldine O'Donnell
Director General (Acting)
Forensic Science Ireland

Case Studies

1

Drugs seizure from a Dublin apartment

A search of a Dublin apartment by Gardaí recovered a significant quantity of suspected drugs and cash, along with a mechanical press and weighing scales. A backpack which contained two notebooks with tick lists was subsequently recovered on a walkway within the apartment complex and was believed to have been thrown from the apartment window as the Gardaí were forcing entry to the premises. A search of a car found a further quantity of suspected drugs and ammunition. Two persons were present in the apartment at the time of the search.

Analysis of the suspected drugs submitted to FSI in relation to this case identified both cocaine and diamorphine. Gardaí estimated the total value of the drugs seized was €597,188.

DNA analysis was carried out on both the backpack and the two notebooks recovered from the walkway. A mixed DNA profile (a DNA profile from >1 person) was generated from the zip-toggle from the backpack. This mixed DNA profile contained all of the DNA elements present in DNA reference samples taken from the 2 persons present in the apartment and they could not be excluded as being contributors to the DNA mixture.

A number of samples were taken from the notebooks for the purpose of DNA analysis. A DNA profile matching one of the males was obtained from a sample taken from one of the notebooks. The notebooks were forwarded to the Fingerprints section for further analysis, and marks developed from the notebooks were identified with a set of fingerprints from one of the individuals.

Both individuals were charged with possession of cocaine and diamorphine for sale or supply. In February 2024 one of the individuals pleaded guilty to the offences and was sentenced to seven and a half years in prison. In October 2024, following commencement of a trial, the second individual pleaded guilty to the offences and was subsequently sentenced to thirteen years in prison.

2

Tachograph Analysis assists with Guilty Plea entered in Fatal Traffic Accident

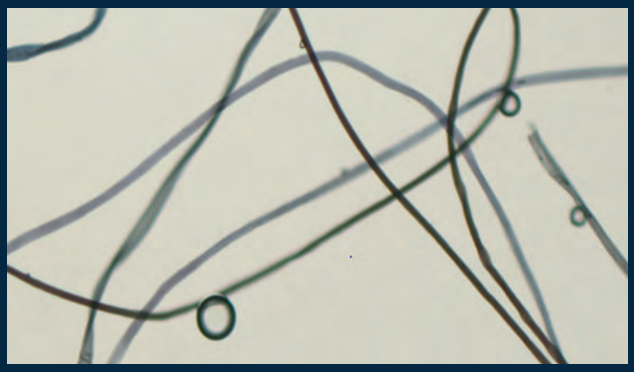
A 25-year-old young man was fatally injured following a road traffic collision between a car and a truck on the 27th of March 2024 near Newtown, Roscommon on the N61.

Following a Garda appeal and investigation a Scania articulated truck was suspected of being involved in the incident. The tachograph data from the truck was downloaded and examined by the Chemistry team in Forensic Science Ireland. The data from the tachograph correlated with a journey described by the truck driver through Donegal, Antrim, Louth, Limerick and Clonmel. However, the forensic analysis of the tachograph data showed that two cards had been used during this journey. In addition, the scientist was able to demonstrate that the card of the truck driver was not in use at the time of the incident and had been changed shortly after the collision occurred.

On foot of this evidence in February 2025, the driver of the Scania Lorry entered a guilty plea before the court, having been charged with the offence of Dangerous Driving causing death.

3

DNA and fibre evidence help to secure a conviction in a Sexual Assault



On the night of the 17th of January 2020 a woman said she heard a knock at her door. When she answered there was no one there but a car was in her driveway. She said that a man in the car pulled her into the car, drove to an isolated area where he sexually assaulted her by digitally penetrating her and licking her genitals, and physically assaulted her by choking her. She fled the car, hiding in a ditch, before making her way home to raise the alarm.

The nominated suspect in the case said he called to the woman's home and left when he was requested to. He said she was not in his car, he did not assault her and they had no sexual contact.

Scientists in the DNA and Biological Analysis section of FSI examined the female's sexual offences kit and her clothing for saliva and carried out DNA profiling. Saliva was found on some of her intimate swabs and on her underwear. Male specific DNA profiling was carried out on the saliva stain from her underwear and a DNA profile, matching the suspect's profile, was obtained. These results provided strong support that the suspect had sexual contact with the woman rather than he had no physical contact with her.

Scientists in the Physical Methods team of FSI found fibres matching the jumper of the suspect on the cardigan of the woman. This result provided strong support that they were in contact with each other rather than they had no physical contact.

This case went to trial in April 2024 and the suspect entered a not guilty plea to the five criminal offences he was charged with. The jury found him guilty on four charges, two counts of sexual assault, one count of false imprisonment and one count of assault causing harm. In June 2024 he was sentenced to seven years in jail.

4

Sexual Assault investigation of a 15 year old victim

A 15 year old waitress said that a 26 year old chef, at the hotel she worked in, had sexually assaulted her nine times over a number of days. This included him putting his hand inside her bra and underwear and touching her.

The chef said that he did not have any sexual contact with the 15 year old.

Scientists in the DNA and Biological Analysis section of FSI carried out a number of examinations, including of the females bra and panties. Male DNA found on her panties provided a DNA profile that matched the accused reference DNA profile.

In court the Forensic Scientist told the jury that the results in the case provided moderately strong support for the proposition that he had placed his hands inside her underclothing, rather than he did not but was in her company.

During his trial the accused man entered a not guilty plea. The jury found him guilty on nine counts of sexual assault. In November 2024 he was sentenced to five years in jail.

5

Documents fraudulently produced in the course of a sale of development site in 2014

In 2020, Jean Duggan made claims that documents bearing signatures in her name had been fraudulently produced during the course of a land sale between a property developer and Conor Clarkson, the accused. The documents were necessary to approve the expansion of a right of access into a development site along a laneway close to Mrs. Duggan's home and the right of access was considered to be necessary for the site to be developed for housing. In 2014, the development site at the end of the laneway was sold by Conor Clarkson to a property developer, one month after the questioned documents were produced, in October 2014. Uncertainties on the right of access only arose following a chance discussion between Mrs. Duggan's son and a neighbour regarding the responsibility for clearing a tree which fell on the laneway during a storm.

The documents bearing the questioned signatures were submitted to Forensic Science Ireland for examination and comparison to specimens/genuine samples of Jean Duggan's signature. In total, 9 specimen/genuine samples of Jean Duggan's signature across a number of years were submitted for comparison.

Following a comparison of the questioned signatures to the genuine signature samples from Jean Duggan, it was concluded that the findings provided "limited handwriting evidence" that Jean Duggan was not the author of the signatures on the questioned documents. This limited strength of evidence was as a result of a number of limitations with the genuine specimen signature samples including but not limited to a lack of specimen signatures contemporaneous with the questioned signatures from 2014.

In February 2024, Conor Clarkson was found guilty on four charges of creating and using forged documents in the course of a sale of a development site and he was sentenced to two years in prison with the last 9 months suspended.

6

Series of aggravated burglaries carried out on the elderly

A series of violent burglaries were carried out on multiple elderly victims between June and September 2023. In total 5 separate incidents were carried out. A common factor between all five incidents was the injured parties were elderly, infirmed and service users of the same care agency. In one incident in September 2023, two suspects called to the house of an elderly person who was home at the time with a live-in home help, who was also elderly. The front door had been left unlocked as the occupants were expecting a carer to call.

Suspects armed with a large kitchen knife assaulted and dragged both victims around the house demanding money. The home owner was slashed behind the ear with a blade or knife while the other victim was forcibly grabbed and choked. Cash was taken from a money bag upstairs.

After a technical examination of the scene, envelopes, paper and plastic packaging were recovered and submitted to the fingerprint section for analysis.

Many complex finger marks were developed and captured from these items and 2 were identified to one of the suspects. A finger mark matching the right fore fingerprint of Yamen Alhamada was identified on a paper note and another mark matching his left little fingerprint was identified on an envelope.

Additionally, a wig and clothing recovered from the same scene were submitted for DNA analysis. A DNA profile matching that of Precious Moyo was generated from the wig. Precious Moyo was an employee of the care agency and was familiar with the client list.

In November 2024, Precious Moyo received an 8 year sentence and her accomplice, Yamen Alhamada received a 6 year sentence for burglary and aggravated burglary offences following guilty pleas.

7

Lone Wolf Right-Wing Extremist plotting acts of terrorism

In June 2021, Counter Terrorism International were contacted by Police in the UK seeking information on an individual, Mark Peppard/Nolan, who had been charged with terrorist offences, child grooming and assaulting a police officer. Peppard/Nolan had changed his name to Mark Wolf via Deed Poll and acquired an Irish passport under the same name. Whilst on bail for these offences it was suggested that Wolf had fled England to the Republic of Ireland and was making efforts to obtain firearms. Gardaí arrested Mark Wolf at the address he was staying at on foot of an Extradition Warrant.

Following a search a tactical weapons kit featuring multiple firearm components, barrels and scopes, several passports with different aliases, a 3d printer and accessories, several mobile devices with evidence of right wing violent extremist ideology and flags relating to right wing violent extremist ideology were recovered and submitted to FSI for examination for fingerprint analysis.

The majority of the items recovered were firearms components contained in a bag with no other identifier and so it was crucial for the investigation to link the paraphernalia to the suspect.

A total of 43 finger marks were developed and captured from these items, 19 of which were identified to the suspect. Crucially, the suspect was identified 14 times on various plastic packaging containing the internal mechanical components for building semi-automatic firearms. Investigators believed Wolf was in the advanced stages of planning a Right-Wing Lone Wolf Terrorist attack.

Mark Wolf was sentenced to 10 years in prison in March 2023 following a guilty plea.

8

Largest Methylamphetamine seizure in the history of the State at Port of Cork

On the 16th February 2024, the laboratory received a request from Customs Officers at the Port of Cork to analyse a sample of a crystalline substance from a large seizure. A sample of this substance was delivered to the laboratory on the same day and an urgent analysis confirmed the substance contained methylamphetamine (also known as methamphetamine, commonly known as crystal meth). A joint operation at Port of Cork between An Garda Síochána and Revenue's Customs Service had uncovered a number of packages containing a substantial quantity of this crystalline substance in a container. It is believed that the drugs were imported from Mexico and stored at a garden centre in County Kerry, before being transported to Cork, where they were destined for export to Australia. On the 2nd April 2024, Drug Forensic Scientists attended a secure location where they met with members of An Garda Síochána and Customs to allow examination of the packages seized at the scene. The laboratory reported a total of 547 plastic packages which held an estimated 540 kilograms of crystalline substance. A number of packages were submitted to the lab for analysis and these were found to contain methylamphetamine. This is the largest seizure of methylamphetamine received by FSI to date.

9

The rising threat of novel synthetic opioids 'nitazenes'

The Irish illicit drug market is growing increasingly complex, with a wider array of novel substances appearing alongside traditional illicit drugs. In recent years, synthetic opioids known as nitazenes have made their way onto the global drug market. Nitazenes, or 2-benzyl benzimidazole opioids, were developed as analgesics in the 1950s, however these highly potent synthetic opioids were never marketed due to overdose risk.

Between 2022 and 2023, Forensic Science Ireland (FSI) identified several nitazene variants in small seizures of tablets and powders. However, 2024 marked a significant shift, with two of the largest nitazene seizures recorded not only in Ireland but across Europe.

In early 2024, FSI received an urgent out-of-hours request from An Garda Síochána (AGS) to analyse several packages of brown powder suspected to be heroin. Upon examination, FSI determined that the 1.9 kilograms of powder contained the highly potent synthetic opioid protonitazene, mixed with caffeine and paracetamol. This dangerous substance was intended for distribution in the heroin market but was fortunately intercepted by AGS.

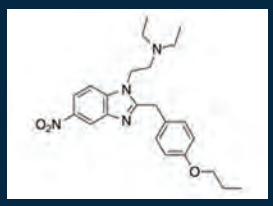


Figure 1 [T to B]: Chemical structure of protonitazene, the seized packages of suspected heroin, a sample of the brown powder seized that was found to contain protonitazene.

Later in 2024, AGS confiscated a significant quantity of 'ALKO-1' blister packs containing purple tablets initially believed to contain alprazolam. Upon examination, FSI concluded that the seizure consisted of approximately 35,000 tablets. The tablets were found to contain a mixture of the novel potent synthetic opioid metonitazene and bromazolam (a novel benzodiazepine).

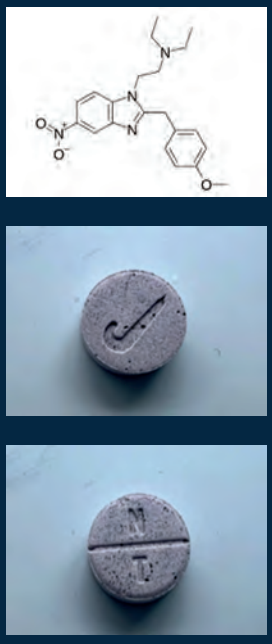


Figure 2 [T to B]: Chemical structure of metonitazene, a photo of the seized tablet (front), and a photo of the seized tablet (back).

In Ireland, only three nitazenes - clonitazene, etonitazene, and isotonitazene - are currently controlled under the Misuse of Drugs legislation, leaving substances like protonitazene and metonitazene outside its scope.

Most nitazene cases analysed by FSI involved substances initially believed to be traditional recreational drugs (e.g. heroin, cocaine, alprazolam), underscoring the risks posed by the evolving drug market. FSI actively monitors newly emerging drugs, including nitazene trends, and shares this information with stakeholders at both national and international levels.

10

Fatal assault of John O'Neill in Lisdoonvarna on the 6th of January 2022

In January 2022, John O'Neill was found dead in the kitchen of his home. He had been badly beaten and there was extensive bloodstaining in the kitchen and in an alley way to the side of the house. An FSI Bloodstain Pattern Analysis (BPA) expert attended the scene to assist the investigation. Significant Bloodstain Patterns were identified which helped reconstruct aspects of the fatal assault. In addition, bloodstaining, with a DNA profile matching that of John O'Neill, was found on a pair of boots and trousers recovered as part of the investigation. DNA profiles from inside the boots and trousers pockets matched the reference DNA profile of Thomas Lorrigan, the suspect in this case. The Physical Analysis section of FSI also carried out footwear mark and fingerprint analyses in this case. The results included footwear marks at the scene which matched the sole pattern on the boots in question. In January 2024, Thomas Lorrigan went on trial at the Dublin Central Criminal Court charged with the murder of John O'Neill. Three FSI scientists gave expert witness testimony at this trial. Thomas Lorrigan was found guilty of murder and was subsequently sentenced to life in prison.

11

Murder of Thomas Dooley and serious assault of Siobhan Dooley at Rathass Cemetery, Tralee in October 2022

Thomas Dooley was fatally stabbed, and his wife, Siobhan Dooley, was seriously injured, while attending a funeral in Rathass Cemetery, Tralee on the 5th of October 2022. This was one of the most complex cases encountered by FSI in recent times which involved five individuals bleeding and forensic examination of many different sides of the case including: samples from the deceased, samples from Siobhan Dooley, a machete and other items from the scene, clothing from six suspects and items from four vehicles. A large number of FSI staff worked on this case including staff from the DNA and Biological Analysis and Physical Analysis sections of FSI. Significant forensic findings were obtained including bloodstaining, with a DNA profile matching that of the deceased, on the clothing and/or footwear of three of the accused. In addition, a DNA profile matching one of the accused was obtained from the fingernails of Siobhan Dooley. In June 2024, six men went on trial at the Central Criminal Court, sitting in Cork, five charged with the murder of Thomas Dooley and one charged with assault causing serious harm to Siobhan Dooley. A current FSI scientist, a former FSI scientist and a seconded Garda member presented forensic evidence at the trial. Their testimony included cross examination by six defence barristers. The jury convicted five men of the murder of Thomas Dooley and one man was convicted of assault causing harm to Siobhan Dooley. The trial judge, Justice Mary Ellen Ring, praised the quality and resourcing of this investigation including the contribution of FSI.

12

A shooting and fatal assault at a Blanchardstown Restaurant on Christmas Eve 2023

Jason Hennessy was fatally wounded in a shooting incident at a Blanchardstown Restaurant on Christmas Eve 2023. The gunman, Tristan Sherry, was then fatally assaulted by some of the diners in the Restaurant. This incident occurred while families including children were dining at the Restaurant that Christmas Eve. FSI assisted with the investigation of these incidents. This included urgent Forensic DNA and Fingerprint analyses carried out between Christmas and New Year. In November 2024, six men went on trial at the Special Criminal Court in relation to this incident. An FSI scientist presented blood and DNA evidence at this trial. Three men were subsequently found guilty of the murder of Tristan Sherry and three other men were convicted of offences relating to violent disorder at the Restaurant that evening.

13

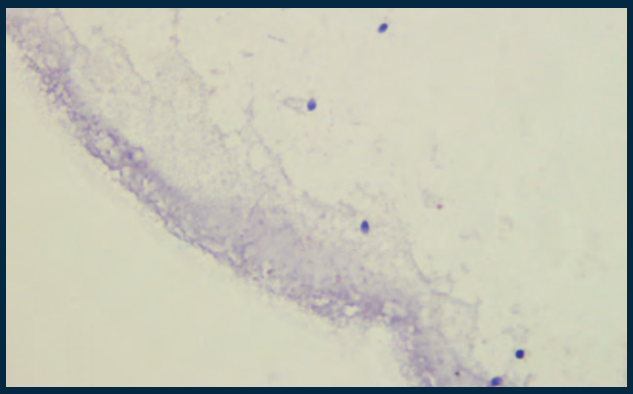
DNA cluster cases aided by the National DNA Database

Between September 2023 and May 2024, four burglaries and one criminal damage case occurred across the North East (Drogheda and Navan). In 2024 a DNA sample taken from a nominated suspect was uploaded onto the DNA database and matched to this cluster of stains.

A second cluster of stains from seven cases that occurred in Drogheda, Collon and Enfield (unauthorised taking of vehicles and criminal damage) between June 2023 and March 2024 were also solved when a DNA sample taken from another nominated suspect was uploaded onto the DNA database in 2024.

14

Prüm power across Europe

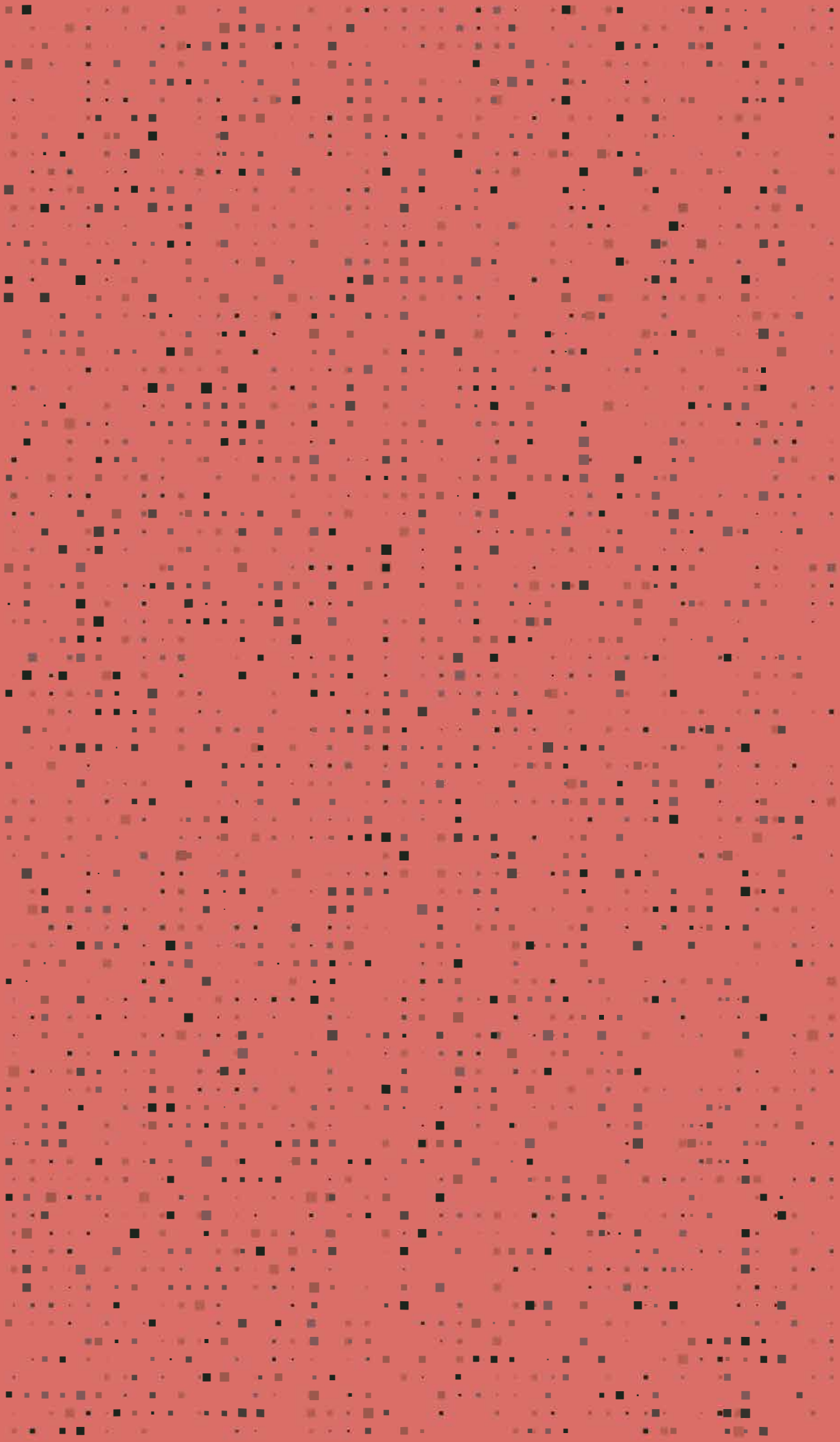


The Prüm treaty involves cross-border cooperation by means of exchanging judicial and police information and by providing mutual assistance. The following are three examples where crime stains generated in serious crime cases in Ireland matched to persons sample in other countries. FSI began sharing DNA profiles with Slovakia and Spain in 2024.

A report issued by an FSI scientist on the 26/09/2024 indicated that an unknown DNA profile was obtained from semen found on the back of the victim's tracksuit bottoms in relation to an alleged sexual assault. Following the intercountry exchange of the DNA profile from the semen stain it was found to match the DNA profile of a person on the database from Slovakia.

A report issued by an FSI scientist on the 14/08/2023 indicated that an unknown DNA profile was obtained from semen on the endocervical swabs in relation to an alleged sexual assault. Following the intercountry exchange of the DNA profile from the semen on the swabs it was found to match the DNA profile of a person on the database from Spain.

A report issued by an FSI scientist on the 27/07/2007 indicated that an unknown DNA profile was obtained from gloves in relation to a murder case. Following the intercountry exchange of the DNA profile from the gloves it was found to match the DNA profile of a person on the database from Spain.



Forensic Science Ireland
Backweston Laboratory Campus (BLC),
Stacumny Lane, Celbridge,
Co Kildare, W23 FT2X

+353 (01) 238 2500
info@fsi.gov.ie
forensicscience.ie
@ForensicSci_Ire