

Biometrics & Forensics Ethics Group

Notes of the 1st meeting held on 26th September 2017 at
Home Office, 2, Marsham Street, Westminster, London, SW1P 4DF

1.0 Welcome and Introductions

- 1.1. The Chair welcomed all to the 1st meeting of the Biometrics and Forensics Ethics Group (EG). Apologies had been received from Barbara Prainsack, Alan Clamp and Nina Hallowell. Paul Wiles, the Biometrics Commissioner, was also unable to attend the meeting.
- 1.2. The Chair welcomed the observers Kirsty Faulkner [Forensic Information Database Services (FINDS), Home Office (HO)], Carl Jennings and Amanda Fried (Crime, Policing and Fire Group, HO).
- 1.3. The Chair requested that members declare any conflicts of interest concerning matters to be discussed. None were reported.

2.0 Note of the final meeting of the National DNA Database Ethics Group and matters arising from this group

- 2.1 The note of the last meeting of the National DNA Database (NDNAD) Ethics Group had been approved via correspondence and published on the NDNAD EG website.
- 2.2 Matters arising were discussed:
 - 2.2.1 Actions from the NDNAD EG meeting held on 7 June 2017:

Action 2: The Secretariat to explore with the Cabinet Office (CO) whether the EG's ethical principles could be utilised alongside the CO's Data Science Ethical Framework. The Secretariat had contacted the CO and was awaiting a reply.

Action 7: The Secretariat to share the finalised DNA leaflet with Chief Constable Iain Spittal and the College of Policing to promote use of the leaflet within police forces.

Action 8: The Secretariat to contact 'Sense about Science' to help promote the DNA leaflet.

Action 9: The Secretariat to liaise with the HO Communications Directorate on the publication of the DNA leaflet in multiple languages.

Actions 7, 8 and 9 would be progressed when a finalised PDF version of the leaflet had been produced.

2.2.2 The following actions from the February 2017 meeting of the NDNAD EG were discussed:

Action 5: Kirsty Faulkner to develop a document on the Transforming Forensics Programme for the June EG meeting. The group were informed that this document was still in development and would be available at the December meeting of the EG.

Action 8: The Secretariat to set up a sub-group to be responsible for undertaking ethical reviews of research proposals. It was agreed that this actions was on hold until the completion of the EG recruitment campaign.

3.0 Prüm

3.1 The EG were provided with an update on Prüm, a European Union (EU) Directive which allowed fast and efficient exchange of DNA, fingerprints and vehicle registration data, between member states within the EU. In July 2013, the UK Government opted out of all police and criminal justice measures agreed before the Lisbon Treaty¹ came into force. Following the production of a Business and Implementation Case², including a small scale pilot of Prüm, parliament voted to rejoin Prüm, which was accepted by the EU in May 2016.

4.0 Retention of biometric data from convicted individuals

- 4.1 The EG was briefed on significant developments in relation to the retention of biometric data from convicted individuals. Currently, the police retained biometrics (DNA profiles and fingerprints) indefinitely from adults who had been cautioned or convicted of a recordable offence. The EG had previously considered whether a blanket indefinite retention policy was proportionate. The majority of the EG (with 1 dissent) had favoured a defined retention period instead.
- 4.2 Members heard that an appeal had been submitted to the European Court of Human Rights (ECtHR) by the appellant in the case of *Gaughran v Chief Constable of the Police Service of Northern Ireland*. In *Gaughran*, the appellant was convicted for driving with excess alcohol, but claimed that retention of his biometric data indefinitely was contrary to Article 8 of European Convention on Human Rights.
- 4.3 The HO had been asked by the ECtHR to make observations on the case and the policy of indefinite retention. In addition, the recent case of *Aycaguer v France* was discussed, in which the retention of a DNA profile for 40 years (the standard retention period in France), from an individual convicted of a minor assault, was found by the ECtHR to be contrary to Article 8.
- 4.4 Members highlighted a number of ethical issues associated with the retention of biometric data. Indefinite retention prevented miscarriages of justice by allowing the

¹ See: <http://www.lisbon-treaty.org/wcm/the-lisbon-treaty.html>.

² See: <https://www.gov.uk/government/publications/prum-business-and-implementation-case>.

exoneration of the innocent. It was also suggested that an arbitrary limit on biometric retention lacked a sufficient evidence base.

- 4.5 Counter to this view, other members did not favour indefinite retention. It was suggested that there was limited available evidence to support the argument of indefinite retention in order to assist with historic cases and furthermore it was questioned if data should be amassed which may decrease in utility over time (for example facial images). However, it was highlighted that there was evidence in favour of longer retention periods for certain serious crimes where re-offending was more likely.
- 4.6 The EG considered a draft letter, to send to their HO Sponsor, outlining the variety of views held by the group on the retention of biometrics.

Action 1: Secretariat to finalise a letter outlining the EG's position on the retention of biometric data from convicted individuals.

- 4.7 In light of the *Gaughran* and *Aycaguer* cases the EG decided that it would consider the retention of biometric data in more detail and therefore agreed to set up a working group to provide more considered ethical advice.

Action 2: Secretariat to set up a working group to consider the retention of biometric data from convicted individuals.

5.0 Oversight of biometric data in Scotland

- 5.1 The EG were informed that the police use of biometric data in Scotland was not overseen or regulated by an independent body and that the Scottish Government had established an advisory group to review this position. The Chair of the advisory group, John Scott QC, joined the meeting by teleconference. He informed EG members that the group was considering what lessons could be learned from the oversight regime in England and Wales, and was consulting on the formation of a Code of Practice for police use of biometrics. The EG was asked to provide its views on these issues.
- 5.2 In England and Wales independent oversight of biometrics was achieved through a combination of the Biometrics Commissioner, the Forensic Science Regulator (FSR) and ethical advisory groups such as the EG. The EG was informed that the functions of these distinct organisations may be combined in the new Scottish regime. The EG welcomed the suggestion of independent oversight of biometrics in Scotland, but cautioned that there was inherent value in establishing separate oversight organisations. It was suggested that the Biometrics Commissioner, the FSR and the EG had distinct roles in overseeing legal compliance by the police, scientific standards within forensic science providers (FSPs) and broader ethical and societal considerations, respectively.
- 5.3 EG members also cautioned against combining ethical and technical oversight in one organisation, highlighting that this had resulted in deficiencies in the time devoted to ethical considerations within existing groups that had adopted this

approach. Members emphasised that the remit of the new oversight organisation should be broad enough to encompass all current biometrics, as well as future biometric technologies, and that broad ethical principles applied across different biometric and forensic disciplines. The role of digital forensics in police investigations was cited as an example of a discipline that would need increasing ethical scrutiny in the future.

- 5.4 It was suggested that if Scotland were to establish an organisation analogous to the FSR, it should ensure this body had a statutory footing upon which to enforce compliance with quality standards.
- 5.5 The proposal for a police Code of Practice for Biometrics was supported by the EG. It was highlighted that, in the EG's experience, ethical considerations should be applied to new biometric projects at an early stage, and early consideration should be encouraged in any new regime. It was noted that the EG had drafted a set of high level ethical principles to help stakeholders with the ethical assessment of projects and the EG agreed to share this draft with the Scottish advisory group.

Action 3: Secretariat to share the EG's draft ethical principles document.

- 5.6 The Chair of the advisory group confirmed there was support from the Scottish Government to hold a public consultation on the recommendations of the advisory group, and that the EG would be asked for further feedback as the process developed. It was confirmed that a note of the EG's position would be contained within the EG's minutes and these would be shared with advisory group.

Action 4: Secretariat to share the minutes of the September EG meeting.

6.0 Chair's update

- 6.1 The chair informed members that he had held a teleconference with Professor Charles Raab from the Independent Digital Ethics Panel for Policing (IDEPP) on 9 August. The IDEPP was an independent body which provided insight and challenge to a range of areas associated with digital policing. Its formation had been encouraged by the National Police Chief's Council.
- 6.2 The EG had got in touch with the chair of the IDEPP due to the recommendation in the Custody Images review³ that the EG and the IDEPP should work together to consider the ethical issues associated with the retention of custody images. The IDEPP were unaware of this recommendation but had indicated that they would be willing to discuss how the two groups could work together to consider this issue. The EG would wait for a response from the HO to its Custody Image's letter (see Section 12.4) and then hold further discussions with the IDEPP.

³ See: <https://www.gov.uk/government/publications/custody-images-review-of-their-use-and-retention>

7.0 National Law Enforcement Data Programme

- 7.1 Kay Grubb (HO) provided a presentation on the National Law Enforcement Data Programme (NLEDP) HO. The NLEDP was a programme established to replace the Police National Computer (PNC) and the Police National Database (PND) as these two legacy systems were inflexible and expensive to change. The NLEDP sat within a wider portfolio within the HO which also included the HO Biometrics Programme (HOB) and programmes to upgrade the emergency services network and the Automatic Number Plate Recognition system. In the future there would be the possibility for these systems to interact with each other and therefore it would be necessary to explore the aggregated implication of these interactions.
- 7.2 The EG was information that the first stage of the NLEDP would be the like-for-like replacement of PNC and PND. At later stages there would be consideration of how the technologies could be enhanced, which analytical tools could be incorporated and the potential link to other datasets, both within law enforcement and wider.
- 7.3 A current failing of PNC was that it didn't hold facial images of offenders. NLEDP would allow police officers to be able to access driving licenses images, both within the police station and at crime scenes. Consideration was also being given to whether passport images could be accessed by the police in the same manner. NLEDP would also provide police officers with a tool to allow them to receive automatic alerts, for example to alert a police officer when a violent sexual offender came into contact with another police force or to provide basic intelligence information about when an individual was released from prison.
- 7.4 The EG heard that the new NLEDP would provide consistency across police forces in relation to the management of information. Inconsistencies existed between how frequently the various police forces updated the PND, with some forces updating it on a daily basis, some updating it on a yearly basis and some not updating some of the requested data on PND at all. The NLEDP would provide a system with more intuitive front end access, in order to reduce the training burden and allow police officers to focus on what to do with the data rather than how to access it.
- 7.5 In order to reduce the risk of losing data during the migration from PNC to NLEDP, for a brief period of time, users would be able to interrogate both the PNC and NLEDP interface. Negotiations were underway as to how long both interfaces would be kept in place.
- 7.6 The scope of the final stages of the NLEDP, which included the enhanced technologies to be added and the links to other datasets, still had to be defined. It was noted that the scope would be discussed with bodies such as the EG and issues such as privacy, ethics, big data and retention of data all needed to be considered.
- 7.7 A Privacy Impact Assessment (PIA) for the NLEDP had been developed and the HO would consult on the findings within that PIA. The HO would welcome feedback from the EG on the PIA. The PIA would be updated annually in order to include the capabilities which would be added to the NLEDP in the future.

- 7.8 The EG provided their views on the presentation which had been provided. The EG had learnt a number of lessons from its work with the HOB programme which could also be applied to the NLEDP work. It was important to ensure that when multiple programmes were joined together, appropriate safeguards were applicable across all the programmes. Risks of inefficiency had previously been highlighted and consideration should be given to the impact if the system broke down or was hacked. Furthermore, the EG had previously highlighted that the PIA did not adequately consider justice and injustice to both individuals and groups, and the EG had asked for this question to be added to the HOB PIAs. The EG thought that the public's views should be sought in relation to whether they consented to the images from their driving licenses and passports to be available to police officers on the street.
- 7.9 The EG noted the importance of ensuring that there was ethical scrutiny and oversight at every stage of this programme. The EG was invited to work with the NLEDP in the future and explore the privacy and ethical issues. The EG agreed and would welcome the opportunity to be involved in the formulation of principles and specific ethical issues which would be encountered as a result of the linkage of data. The EG would also welcome details in relation to the governance of this system, the data integrity and the road map. The EG noted that it was fundamentally important that the HO was clear about what it wanted to achieve with this programme and then ensured that it had the appropriate controls in place.

Action 5: Secretariat to determine how the EG will provide ethical oversight and scrutiny of the NLEDP in the future.

8.0 Y-STR database

- 8.1 The EG heard that FSPs in the UK were using a worldwide, subscription-free Y-haplotype reference database (YHRD) to facilitate Y-STR analysis. This database was populated with profiles from across the world, and although a large number of UK profiles were added recently, these still represented a relatively small proportion of the total database. Furthermore, the worldwide YHRD lacked independent validation and did not allow for the UK to validate functionality nor develop new applications, such as alternative statistical interpretation modules. Consequently, there was interest amongst FSPs for a UK-specific YHRD to be developed.
- 8.2 The EG were informed that, as a result of discussions between the Association of Forensic Science Providers (AFSP) and the HO, a proposal would be put to the Forensic Information Databases Strategy Board (SB) to endorse a project to develop a UK focused YHRD, incorporating a national criminal and reference Y-STR database, which would have oversight provided by the SB. The proposal was shared with the EG for their consideration.
- 8.3 Members sought assurance that data collected during previous and current police Y-STR pilots would not be added to new databases. Assurances were provided.
- 8.4 The scope of the proposed database was queried, including whether it would also be available to the Republic of Ireland. It was confirmed that the scope would be

further refined and clarified. It was highlighted that the scope of the SB was restricted to the UK.

- 8.5 There was caution amongst some members concerning the establishment of a new database that would allow paternal lineages (via the Y-chromosome) to be determined, and the potential for the criminal acts of male individuals to result in the disproportionate implication of their male relatives in investigations. Y-STR data had the potential to be used for intelligence purposes to predict characteristics such as presumed ethnicity, and so proper regulation and safeguarding of the data would be necessary. In addition, there was an increased probability of advantageous matches (false positives) relative to autosomal DNA profiling as result of analysing linked loci on one chromosome. Members were informed that the same safeguards applied to the NDNAD would be applied to Y-STR data if the proposed database was approved.
- 8.6 Members queried whether Y-STR DNA profiling was covered by the same legislative framework as autosomal DNA profiling i.e. the Police and Criminal Evidence Act 1984 (PACE) as amended by the Protection of Freedoms Act 2012 (PoFA). It was confirmed that this legislation would apply as it was not specifically limited to autosomal DNA profiling. It was noted that it was not currently possible to obtain both autosomal and Y-STR profiles from the same DNA samples given the legislated requirement to destroy reference samples once a DNA profile had been obtained. It was confirmed that a full review of the legal framework would be undertaken before the proposed database was operational.
- 8.7 The interaction of the proposed UK YHRD with international YHRDs was discussed, and it was confirmed that collaborations and data sharing with other countries would continue.
- 8.8 Members emphasised the importance of maintaining public confidence in the use of the NDNAD, and a public consultation was discussed. It was emphasised that governance structures specific to the oversight of Y-STR data would have to be introduced into the NDNAD. In addition, it was highlighted that the establishment of Y-STR intelligence databases, which would hold personal information, presented separate and potentially greater need for robust ethical consideration.

9.0 Advice sought from the Metropolitan Police Service – Television programme

- 9.1 The EG had been asked for advice by the Metropolitan Police Service (MPS). A television company suspected an individual who currently lived abroad of committing a murder in the UK. A representative of the television company had travelled abroad, where the UK laws on DNA theft did not apply, and obtained a drinks container used by the individual they suspected of committing the murder. A DNA profile had been generated. The MPS had been approached to compare the DNA profile with a DNA profile obtained from the murder scene. The EG had been asked whether it was ethical to make the comparison.

- 9.2 The EG held the view that, ideally if the MPS suspected this individual to be involved in a murder, they should work with officials in the country where the individual lived in order to legitimately obtain a DNA profile from the suspect. The EG considered the issue, on the basis that this option was not available to the MPS.
- 9.3 Concerns were raised by EG members regarding the legitimacy of the process by which the DNA profile had been obtained from the suspected offender. Members agreed that the DNA profile had been obtained deceitfully and voiced concerns as to whether this approach should be encouraged. The EG balanced these views against the potential to assist in a murder investigation and bring a person to trial or exonerate a suspect. Although there were two dissenting views, the EG agreed by a majority, that the balance fell in favour of undertaking the comparison. The EG made this decision on the basis that any extradition or trial would only come about on the basis of further, legitimate DNA profiles being obtained and compared with the crime scene sample and on the basis that all other proportionate, alternative means (such as obtaining the DNA sample without deceit) had been ruled out by the MPS.

Action 6: Secretariat to respond to the MPS, including all caveats, concerning the proposed comparison.

10. FIND Strategy Board Update

- 10.1 The EG heard that the SB would be meeting on 28 September. A key area of discussion would include the risk register which currently listed: strategic development; international sharing of information and security and compliance of the database. There would be other discussions on a technical roadmap, the legislative framework, a review of the Protection of Freedoms Act (2012), the Biometrics Commissioner's annual report, a Y-STR database development roadmap and updates on HOB, Prüm, Transforming Forensics and the Central Elimination Database (CED). EG members had been provided with a draft CED DNA Consent Form and were asked to provide comments.

Action 7: Secretariat to send out the Central Elimination Database DNA Consent form out to members again and members to feedback comments.

- 10.2 The SB had been requested to provide details of match reports relating to immigration enforcement criminal investigations, of which there were a small number of requests each year. The SB would discuss this at its next meeting. There would also be an update of the international data sharing policy which would include fingerprints as well as DNA, and a consultation would be held in October.

11.0 Forensic Science Regulator – consultation on DNA mixture interpretation

11.1 The FSR had published a consultation on two guidance documents which had been developed on DNA mixture interpretation. The documents were DNA Mixture Interpretation (FSR-G-222)⁴ and DNA Mixture Interpretation Software Validation (FSR-G-223)⁵. Whilst the documents were technical guidance and were primarily aimed at the scientists who worked in this area, they could be referred to in court. The EG decided that it would not comment further on these documents but welcomed them as providing a clear scientific standard across all forensic providers.

12.0 Biometrics Commissioners annual report

- 12.1 The EG was presented with the 2016 annual report of the Biometrics Commissioner, which had been published on the 13th September 2017⁶. Members were asked to note the report and highlight areas of mutual interest that they may wish to discuss further with the Commissioner.
- 12.2 The report concluded that in only 0.3% of recorded crime was DNA involved in the resulting case outcome. Members queried this statistic, and whether it included cases where DNA was used to confirm other evidence.
- 12.3 The EG was concerned by the unacceptably high error rates in DNA sampling by police forces. Final data on these error rates was not available within the report and the EG indicated it would continue to scrutinise this issue and collaborate with the Commissioner in this area. The pertinence of this issue was emphasised given that DNA evidence could be accepted in court as the sole evidence upon which a conviction could be based, such as in the case of *R v Tsekiri* (2017)⁷. Members were informed that the FSR was working on developing improved auditing of DNA samples as they pass through the criminal justice system, and this aimed to reduce error rates.
- 12.4 The report made reference to the police use of facial images, and members emphasised that the EG would continue to monitor this area. Indeed, the EG had recently published a letter to their HO sponsor on the use and retention of police custody images⁸.
- 12.5 Members were informed that the Government had recently published a response to the Commissioner's report, which would be circulated to the group after the meeting⁹.

⁴ See: <https://www.gov.uk/government/consultations/dna-mixture-interpretation-draft-guidance>

⁵ See: <https://www.gov.uk/government/consultations/dna-mixture-interpretation-software-validation-draft-guidance>

⁶ See: <https://www.gov.uk/government/publications/biometrics-commissioner-annual-report-2016>

⁷ See: <http://www.bailii.org/ew/cases/EWCA/Crim/2017/40.html>

⁸ See: <https://www.gov.uk/government/publications/bfeg-response-to-the-home-office-custody-images-review>

⁹ See: <https://www.gov.uk/government/publications/response-to-the-biometrics-commissioners-annual-report-2016>

Action 8: Secretariat to circulate the Government's response to the Biometric Commissioner's 2016 annual report to EG members.

Action 9: EG members to read the Biometric Commissioner's 2016 annual report and raise any issues which the EG should discuss with the Biometrics Commissioner.

13.0 AOB

13.1 The date of the next meeting would be 4th December 2017.

Annex A: Attendance

Attendees

Chris Hughes	Chair
Adil Akram	Member
Kit Harling	Member
Isabel Nisbet	Member
Jennifer Temkin	Member

Apologies

Alan Clamp	Member
Nina Hollowell	Member
Barbara Prainsack	Member

In attendance

Emma Burton-Graham	EG Secretary, HO
Kirsty Faulkner	Forensic Information Database Services, HO
Amanda Fried	Crime, Policing and Fire Group, HO
Carl Jennings	Crime, Policing and Fire Group, HO
Thomas Vincent	Science Secretariat, HO

Annex B: Glossary of Terms

Biometric Information	Information about an individual's physical characteristics such as fingerprints or eye colour, which are distinctive and measureable.
Biometrics Commissioner	Independently appointed post to provide oversight of the regime established by the Protection of Freedoms Act to govern the retention and use by the police in England and Wales of DNA samples, DNA profiles and fingerprints. The post has a UK-wide oversight function as regards their retention and use by the police on national security grounds.
Central Elimination DNA Database (CED)	A centrally held database of DNA profiles taken from individuals who are involved in a role where there is an increased risk that they may inadvertently contaminate a sample taken from a crime scene with their own DNA, such as manufacturing or laboratory staff, crime scene officers and police personnel.
Clear Years	The length of time since a person last came to the attention of the police as an offender or suspected offender for behaviour that can be considered a relevant risk factor.
College of Policing	The professional body for policing which operates in the public interest to find the best ways to deliver policing and support for the police service.
Counter Terrorism (CT) DNA Database	A DNA database operated by the Metropolitan Police Service which contains the DNA profiles obtained through searches, crime scenes and arrests in relation to counter terrorism.
Crime Scene Stain	Biological material recovered from the scene of a crime from which DNA may be able to be extracted.
Criminal Justice Sample	A sample of DNA obtained compulsorily from people arrested by the police for a recordable offence under the provisions of the Police and Criminal Evidence Act 1984.
Crown Prosecution Service (CPS)	Established in 1986, it prosecutes criminal cases investigated by the police in England and Wales. It advises police, reviews cases submitted by the police and prepares and presents papers for cases in court.
Custody Images Review (CIR)	Review by the Home Office to consider proportionality of the use and retention of images on a national database.
Dactyloscopy	The method of ridge analysis in human skin (typically fingers and palms). <i>[See also Fingerprints]</i>

Data Linkage	A process which brings together two or more sets of data from different databases, organisations or countries to enhance the information that can be obtained from the data (e.g. by combining different datasets, new patterns may become apparent).
Deoxyribonucleic Acid (DNA)	The chemical in the cells of an organism that carries that organism's heritable material used in the development, functioning and reproduction of all known living organisms. DNA is a nucleic acid and consists of two strands coiled around each other to form a DNA double helix. Each DNA strand is composed of smaller units called nucleotides and the sequence of these nucleotides encodes biological information.
DNA Profile	A numerical representation of the characteristics of certain sections of (typically non-coding) DNA obtained following the analysis of a DNA sample which can be uploaded to a database and compared with other DNA profiles.
DNA 17 Profile	A profile produced using the latest system of DNA profiling technology which examines 16 sections of DNA, plus a gender marker to produce a numerical DNA profile that can be loaded onto the National DNA Database. The methodology used creates greater discrimination between profiles than the previous SGM + methodology and reduces the probability of chance matches between individuals.
Elimination DNA sample	A DNA sample taken from an individual and used to create a DNA profile in order for that individual to be eliminated as the source of a sample found at a crime scene. <i>[see also Central Elimination DNA Database]</i>
Epigenetics	This is the study of (partly heritable) changes in gene expression due to external or environmental factors that affect how genes are read, rather than changes in the underlying DNA sequence.
Facial Recognition System	A computer application capable of identifying or verifying a person from a digital image or a video source by comparing selected facial features from the image with those on a facial database.
Familial Searching	Involves searching the database for DNA profiles that do not match fully to a comparison profile, but where an unusually high number of loci match. This could indicate a biological relationship such as parent, child, sibling, cousin, uncle etc.
Forensic Information Databases strategy board (FIND SB)	Formerly the National DNA Database Strategy Board (NDNAD SB). A board that provides governance and oversight for the operation of the NDNAD and criminal fingerprint databases. <i>[See also National DNA Database Strategy Board]</i> .

Fingerprints	The impression left by the epidermal ridges in a human finger. The print consists of a mixture of sweat and skin cells. <i>[See also Dactyloscopy]</i>
Forensic Science Regulator (FSR)	Ensures that the provision of forensic services across the criminal justice system is subject to an appropriate regime of scientific quality standards. The FSR works with the Home Office.
International Standards Organisation (ISO)	Is an independent, non-governmental international organisation. It brings together experts to share knowledge and develop international standards that are voluntary, consensus-based and market relevant.
Low copy number (LCN)	A modified version of DNA profiling that is performed when the amount of DNA recovered from a biological sample is very limited. The number of PCR cycles is increased compared to standard SGM plus, which enhances the sensitivity of the technique and improves the likelihood of detecting DNA.
Metagenomics	Is the study of the diversity of species in a microbial sample which has been recovered from the environment. It allows the study of all genes in all organisms which are present in a given complex sample.
Mixed DNA Profile	A profile where DNA from more than one individual is present. A mixed DNA profile is evident when more than two copies of DNA are observed at a region. <i>[See also DNA profile]</i>
National Crime Agency	Leads the UK law enforcement's fight to cut serious and organised crime. It has national and international reach and the mandate to work in partnership with other law enforcement organisations to tackle serious and organised criminals.
National DNA Database (NDNAD)	Established in 1995, it is an electronic, centralised database holding the DNA profiles taken from both individuals and crime scenes. The database can be searched to provide police with a match linking an individual to a crime scene and <i>vice versa</i> .
National DNA Database Delivery Unit (NDU)	A department within the Home Office responsible for overseeing the running of the National DNA Database.
National DNA Database Strategy Board (NDNAD SB)	A board comprising representatives from NPCC the Home Office, the DNA Ethics Group and the Forensic Science Regulator as well as representatives from other bodies that provides governance and oversight for the operation of the NDNAD.
National Police Chiefs Council (NPCC)	The NPCC bring together the 43 operationally independent and locally accountable chief constables and their chief officer teams to coordinate national operational policing. They work closely with the College of Policing.

Next Generation Sequencing (NGS) or Massive Parallel Sequencing (MPS)	Terms used to describe a number of high throughput approaches to DNA sequencing that allow the sequencing of DNA much more rapidly and cheaper than previously.
Notifiable Offence	An offence where the police must notify the Home Office by completing a crime report form for statistical purposes.
ParaDNA® Instrument	An instrument that can be used at a crime scene and is able to produce a DNA profile from a sample within 75 minutes. ParaDNA® profiles include 5 STRs and a gender test and therefore the discrimination power provided from these profiles are much less than obtained from full SGM+ and DNA17 profiles. <i>[See also Rapid DNA Technology]</i>
Partial DNA Profile	This is the term used to describe a profile when results have been obtained at some but not all of the sections of DNA which were analysed. Partial profiles are often obtained from samples recovered from crime scenes as the DNA may have been subject to conditions which have degraded it, which means that not all regions of DNA of interest are intact.
Phenotype	The physical manifestation of an individual's genotype combined with the effects of exposure to environmental factors (e.g. the hair colour, facial features, or personality traits of a person)
Phenotypic profiling	The use of DNA analysis in order to obtain information about externally visible traits, and/or the likely ethnic background, of a person. The information cannot be obtained from traditional STR profiles but requires a special type of analysis.
Privacy Impact Assessment (PIA)	A tool for identifying and reducing the risk a project poses to an individual's right to privacy.
Protection of Freedoms Act (PoFA)	An Act of Parliament of the UK which was introduced by the Home Secretary in 2011 and sponsored by the Home Office. In May 2012 the Bill completed its passage through Parliament and received Royal Assent.
Prüm Agreement/ Convention	A convention sign in May 2005 by Austria, Belgium, France, Germany, Luxemburg, the Netherlands and Spain and is open to all members of Europe and enables the signatories to be able to exchange data regarding DNA, fingerprints and vehicle registrations of persons suspected to be co-operating in terrorism, cross-border crime and illegal migration.

Random Match Probability	The probability that a DNA profile matches a randomly drawn person from the general population. If the random match probability is high, then any suspected link between the DNA and a person needs to be treated with caution.
Rapid DNA Technology	Technology which has the ability to produce a DNA profile much faster than can be done using conventional technology and is also portable.
Recordable Offence	An offence where the police must keep records of the conviction and the offender on the Police National Computer (PNC).
S and Marper	This refers to a case where S joined with Marper to bring a case to the European Court of Human Rights after their applications to the English courts had failed. They objected to the retention by the police of their DNA samples, profiles and fingerprints as they had not been convicted of any offence. The police were entitled to retain them under the law then in force. S and Marper relied principally on Section 8 of the European Convention of Human Rights which protects the right to privacy. The Court found in their favour. It held that the margin of appreciation had been exceeded and their right to privacy had been infringed. This decision led eventually to the passing of the Protection of Freedoms Act 2012 which changed the law on the retention of samples, profiles and fingerprints. This in turn led to the removal of millions of profiles from the National DNA Database.
Second generation multiplex (SGM, SGM+)	A system of DNA profiling which was used in the UK until July 2014 which examines 10 sections of DNA plus a gender marker to produce a numerical DNA profile that can be loaded onto the National DNA Database. At each of the 10 areas an individual has two copies of DNA, one inherited from each of their parents.
Short Tandem Repeat (STR)	Sections of DNA dispersed within coding and non-coding regions of the human genome that contain hundreds of repeats of a short sequence of DNA (2-6 nucleotides). Different people have different numbers of repeats and when a number of regions are analysed, the chance of two people having the same number of repeats at all loci is small. This is the underlying principle of DNA profiling.
Single Nucleotide Polymorphism (also referred to as SNPs – pronounced “snips”)	This is a variation at the level of single nucleotide bases that occurs at a specific position in a sequence of DNA.

United Kingdom Accreditation Service (UKAS)	Is the national accreditation body for the UK and is recognised by government to assess against internationally agreed standards, organisations that provide certification, testing, inspection and calibration services.
Y-STR profile	See <i>STR profile</i> but restricted to regions found only on the Y-chromosome (which is only present in males).