

The National DNA Database annual report 03/04



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members of the board

The National DNA Database Board

Chairman



Mr David Coleman Chief Constable Derbyshire Constabulary

Members



Mr Stuart Hyde Assistant Chief Constable (Crime) West Midlands Police



Mr Ian Gordon Deputy Chief Constable Tayside Constabulary



Mr Tim Wilson Head of Home Office Science Policy Unit



Dr David Werrett Chief Executive The Forensic Science Service



Dr Steve Bain Human Genetics Commission



Dr Bob Bramley Custodian National DNA Database

strategic objectives

Demonstrate the quality and integrity of the Database

Ensure compliance with all relevant legislation

Subject ourselves to scrutiny and audit

Communicate openly and promptly

Further improve our systems for protecting the Database from loading of erroneous information

Demonstrate the benefits of DNA in preventing and detecting crime

Recognise the current major investment of public sector funds in increasing the use of DNA Demonstrate value for money from the Database, especially in crime detection and, through this, crime reduction

Demonstrate maximum cost effectiveness of the Database's activity

Continuously identify areas for improvement and an action plan to take these forward

Establish the DNA Database as a coherent and independent entity

Establish a permanent base Formulate, and communicate, our strategy and plans Assert our corporate identity Provide an even-handed service to all suppliers

Pursue activities in partnership with other agencies in the Criminal Justice System

Build long term partnerships with the key players (ACPO, police forces, Home Office, PITO) Improve the service we provide through joining up our systems with those of our CJS partners

Maximise the value from the data

Speed up delivery of the Database service Pursue opportunities to derive more intelligence from the data (for example, by more sophisticated searching of the Database) Capitalise on the potential synergy between the DNA and Fingerprints (NAFIS) Databases

Build on our position as the world-leading DNA Database

Maintain up to date knowledge of DNA technology Influence development of cross-national standards and protocols Provide our full contribution to an international service

chairman's foreword



am delighted to introduce this, the second Annual Report of The National DNA Database Board. This report is an important part of our drive to increase transparency, in order to maintain and improve public confidence in the oversight, management and operations of The National DNA Database. Although DNA technology is now maturing and, for police and forensic science personnel, almost commonplace, for the general public there is still something of a mystique surrounding it. Understandably, concerns remain in some quarters that it may result in the inappropriate use of genetic information. If DNA technology is to continue to be an important tool in the drive to reduce crime and detect offenders, it is vitally important that the public is confident that those charged with the responsibility of managing and operating the Database do so in an environment of integrity, probity and independent scrutiny.



This has been another busy and exciting year of change and development. The National DNA Database itself has grown to contain over 2.5 million individual profiles and over 228,000 scene of crime profiles. Recent new legislation will enable individuals to have their DNA taken on arrest, boosting the numbers of records on the Database by an estimated 170,000 profiles in the first year alone. The effectiveness of the Database is now such that, when a new DNA profile from a scene of crime is loaded for comparison, there is a 45% chance of a match with an individual personal profile already held on the Database. The large volume of development work involved in improving the operational effectiveness of the Database led us, during the year, to set up a separate Operations Group, under the Chairmanship of Stuart Hyde, Assistant Chief Constable with West Midlands Police. The Operations Group, comprised largely of practitioners, has considerably strengthened our capability, and now deals with the majority of detailed implementation work, reporting to the Board on progress and being tasked by it.

During the year we have also cemented our relationship with the Human Genetics Commission. When Phillip Webb, HGC's original representative, retired in the spring, we welcomed Dr Steve Bain as his replacement on the Board. Phillip proved to be an excellent source of advice and comment, and was never slow to challenge our thinking when he felt it necessary. We wish him well in his future plans. Steve has proved to be a very enthusiastic and able replacement, and is currently supporting me in exploring, on behalf of the Board, the setting up of a protocol with the Central Office for Research Ethics Committees (COREC) to obtain an independent ethical opinion on future research and policy proposals presented to the Board. HGC advice has been particularly helpful in developing some exciting and innovative new services from The National DNA Database. One such technique, familial searching, seeks to identify possible relatives of an offender where the offender's profile itself is not on the Database, thus providing additional investigative opportunities where none previously would have existed. There are, of course, a number of sensitivities and ethical considerations in using this technique. During the year, after extensive consultation, the Board developed and signed off a national protocol for the implementation of familial searching, which sets out the considerations to be applied before the use of the technique will be sanctioned. The process has recently proved its worth in identifying a man who caused the death of a lorry driver by throwing a brick through his windscreen. A further application of this technique has resulted in a conviction for the brutal murder and rape of an 86 year old lady. As Chairman of The National DNA Database Board, I am determined to ensure that

we obtain maximum value from the investment made by Government in DNA, and the Board will take every opportunity to pursue new techniques to detect crime, within a controlled and ethical environment.

Government investment is absolutely vital to the continued success story of DNA. I am pleased that funding of £58.8million has been announced for the financial year 2004/5. This will enable further improvements to be made and ensure that police forces continue to have this vital tool at their disposal. We continue to work in close partnership with colleagues in the Home Office to ensure the investment is wisely used and delivers value for money. The Bichard Inquiry has recently given added impetus to the importance of further integrating The National DNA Database with other national forensic and intelligence databases, and we will be supporting this process through the work of the Home Office Police Science and Technology Strategy Steering Group.

As a first step, we are continuing to work towards the separation of the Custodian operation from the Forensic Science Service, as the FSS moves towards its transformation into a Government Owned Company, following the recommendations of the McFarland Review. The Home Secretary has agreed with our view that control of The National DNA Database should remain in the public sector, and firm and detailed plans for achieving this will be finalised during the summer of 2004. This will undoubtedly occupy the majority of the Board's time for the next 12 months, and we remain determined to ensure that there is a seamless transition to the new governance arrangements, whatever they eventually are, with as little disruption as possible to the operational service we provide to police forces.

Finally, I must thank my colleagues on the Board for all their hard work and support during the year, and also pay tribute to Dr. Bob Bramley, the Custodian and Chief Scientist of the FSS, and his staff, for their commitment to ensuring The National DNA Database remains a world-class tool, at the cutting edge of crime investigation. Bob himself will retire in the autumn of 2004, and it is without doubt that his unstinting contribution to the UK's crime investigation effort, through the development of The National DNA Database, has been outstanding. We shall miss his knowledge and wise counsel, and we wish him well in his retirement.

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David Coleman Chief Constable Derbyshire Constabulary Chairman, National DNA Database Board

legislative developments

CRIMINAL JUSTICE AND POLICE ACT 2001

Under Section 63 of the Police and Criminal Evidence Act (PACE) 1984, as amended by the Criminal Justice and Public Order Act 1994, DNA samples could only be taken from persons charged with, about to be reported for or convicted of a recordable offence. Samples could only be retaken if the first sample proved insufficient or unsuitable for analysis and the DNA samples and profiles had to be destroyed if the individual was not subsequently prosecuted or was acquitted of the offence.

In 1999, there were two prosecutions, one for rape $(R \lor B)$ and one for murder $(R \lor Weir)$, in which convictions were overturned on appeal despite compelling DNA evidence that linked the defendants to the offence. This was because at the time the matches were made both defendants had either been acquitted or a decision made not to proceed with the previous offences for which the DNA profiles had been taken and as the law stood at the time the DNA profiles should have been removed from the Database. This caused considerable public concern and following consideration of these two cases by the House of Lords the law was changed.

On 11 May 2001, Section 64 of PACE was amended by the Criminal Justice and Police Act 2001 to remove the obligation for the police to destroy DNA samples and profiles in the event of there being no prosecution or an acquittal. This gave Chief Constables discretion to decide whether or not samples will be retained in individual cases. The matter of discretion is an operational one for the police force involved. The Act also had retrospective effect, so that any DNA samples and profiles that had not been destroyed under the previous legislation could also be retained.

On 1st January 2003, the Criminal Justice and Police Act (Commencement No. 8) Order 2002 came into force. It extended the powers of the police under the Police and Criminal Evidence Act (PACE) 1984 in relation to the re-taking of nonintimate DNA samples where the first sample proved insufficient or unsatisfactory. The term insufficient was extended to include circumstances where the first sample is lost, destroyed, contaminated or damaged, and where the analysis of the sample has produced no results or unreliable results.

In addition, the Act provided for samples that are given voluntarily for the purposes of elimination to be retained and their DNA profiles speculatively searched against records held by or on behalf of a law enforcement authority - where the individual has given written consent. Once given, the consent cannot then be withdrawn. Such samples are usually taken in relation to an intelligence-led DNA screen and under the previous provisions in PACE could not be used in the investigation of an unrelated offence. The wider use now permitted will avoid the need for some individuals to be asked for further samples if they fall in the target population of other intelligence-led screens.

CASE STUD R v B and R v Weir:

An elderly woman was raped in January 1997, a DNA profile was obtained from the rapist's semen and the DNA profile was added to The National DNA Database in April 1997. B, a juvenile, was arrested in January 1998 for burglary and a DNA sample was taken. The profile was not entered onto the Database, however, until September 1998, by which time B had been acquitted of the burglary. A match with the rapist's profile was obtained, but B's profile relating to the burglary offence should have been removed earlier from the Database as a result of his acquittal.

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In January 1998, Leonard Harris was murdered. A DNA profile from the murder scene was added to The National DNA Database in April 1998. This produced a match with a DNA profile from a sample taken from Weir in August 1997 as a result of his being charged with a drugs offence. However, Weir's DNA profile should not have been on the Database in April 1998 as the CPS had decided to discontinue the case in October 1997. The fact that it was still on the Database was due to the police not notifying the Custodian that the drugs charges had been dropped until May 1999.

In both cases, without the DNA links, there would have been insufficient other evidence to put either suspect on trial. As a result, in the one case (R v B) the judge refused to admit the evidence and the prosecution was abandoned, and in the other (R v Weir) the conviction for murder was quashed by the Court of Appeal on the grounds that the DNA evidence should not have been admitted. The House of Lords subsequently ruled that it should be left to the discretion of the trial judge as to whether or not to admit evidence in these circumstances but the convictions were not reinstated.

legislative developments

savings in police time and costs.

CRIMINAL JUSTICE ACT 2003

Police powers under PACE were further extended under the new provisions of the Criminal Justice Act 2003. These came into force on 5 April 2004 and allow a DNA sample to be taken from all persons arrested for a recordable offence and detained in a police station. This will allow offenders to be detected at an earlier stage than would previously have been possible, prior to any charges being brought, with corresponding

The provisions of Section 64 of PACE that allow DNA samples and profiles to be retained when an individual is cleared of the offence for which they were taken, or a decision is made not to prosecute, also apply to the new power. If the samples and profiles are retained, they may then only be used for the purposes of prevention and detection of crime, the investigation of an offence or the conduct of a prosecution.

R V CHIEF CONSTABLE OF SOUTH YORKSHIRE EX PARTE S AND MARPER

The provisions of PACE which permit the Chief Constable to retain the DNA samples and profiles of suspects who have not been prosecuted or have been acquitted have been challenged by way of judicial review in the case R v Chief Constable of South Yorkshire (ex parte S and Marper). The appeal was brought on the grounds that their DNA samples and profiles had been retained in circumstances where, in the one instance, the person had been found not guilty of attempted robbery, and in the other the charges had been dropped. Both appellants argued that the Chief Constable's decision breached Articles 8 and 14 of the European Convention on Human Rights. The Court of Appeal found that although there was some breach of Article 8, it was proportionate and justified. The court also found there was no breach of Article 14. The case has since been referred to the House of Lords.

R v Chief Constable of South Yorkshire ex parte S and Marper

If the House of Lords finds in favour of S & Marper, the police will no longer be able to keep the DNA samples and profiles once a person has been cleared of suspicion of the offence for which they were taken. Records show that of over 128,517 profiles that would have been

removed before the amendments to PACE in 2001, some 5,922 have subsequently been matched with crime scene sample profiles from over 6,280 offences. These include 53 murders, 33 attempted murders, 94 rapes, 38 sexual offences, 63 aggravated burglaries and 56 the supply of controlled drugs.

[The decision of the lower Court was upheld by the House of Lords in a judgement given on 22 July 2004]

oversight, development and management

OVERSIGHT, DEVELOPMENT AND MANAGEMENT OF THE NATIONAL DNA DATABASE

When The National DNA Database was first established in 1995, ACPO and FSS shared oversight of its operation through joint chairmanship of a User Board. The FSS was appointed as the Custodian of the Database for the next 5 years under a Memorandum of Understanding with ACPO. This Custodianship was extended under a revised Memorandum of Understanding in 2000 and an interim update of the Memorandum of Understanding in 2003.

The User Board evolved over time into The National DNA Database Board. This was chaired by the ACPO portfolio holder for forensic science and the Board membership included representatives of the police services in the UK, the Association of Chief Police Officers (Scotland) (ACPOS), the Home Office, the Custodian and the FSS. Importantly, since 2003, it has also included a lay representative nominated by the Human Genetics Commission to advise on ethical issues. The Board itself has a strategic role in relation to the Database. A DNA Operations Group, chaired by an Assistant Chief Constable, was established in 2003 to deal with the more detailed practical considerations on behalf of the Board

The Home Office has provided considerable funding since 2000 to make The National DNA Database more effective in the detection of crime. Most of the funding has gone to the police service to increase the rate of sampling from both individuals and crime scenes. There has also been significant investment in the IT infrastructure and applications for the Database and in ensuring that appropriate management information is available to monitor improvements in performance.

For the first few years, the FSS was the only supplier of profiles to the Database. But other organisations then sought approval as suppliers, alongside the FSS, and a competitive environment developed for the provision of DNA profiling services. The Custodian was responsible for ensuring that all suppliers could provide reliable, compatible DNA profiles for the Database, for recommending their accreditation as suppliers and for the on-going monitoring of their performance on behalf of the Board. A Suppliers Group was also established, under the chairmanship of the Custodian, as a forum for the suppliers to get involved in procedural developments.

In order to ensure a level playing field and confidentiality of any commercially sensitive information provided by suppliers to the Custodian, the role of Custodian became vested in the Chief Scientist of the FSS, and 'Chinese walls' were erected between the Custodian and the FSS as a supplier. But this did not prevent high level concern being voiced over the last couple of years about the governance of The National DNA Database and the perceived preferential position of the FSS as both Custodian and supplier. This resulted in a call for more accountability and transparency in the Custodian arrangements, and for a clearer separation of the roles of Custodian and supplier.

The House of Lords' Select Committee on Science and Technology (March 2001), in its report "Human Genetic Databases: challenges and opportunities", recommended that the Government should establish an independent body, including lay members, to oversee the workings of The National DNA Database, to put beyond doubt that individuals' data are being properly used and protected.

The Human Genetics Commission (May 2002), in its report "Inside Information: balancing interests in the use of personal genetic data", acknowledged the high level of public acceptance of the need to collect and store DNA material that would enable offenders to be identified. But it also emphasised the importance of retaining public trust and raised a number of ethical issues about the storage of samples. It identified a number of concerns about future research and made proposals for an independent body with lay membership to oversee The National DNA Database, and a separate national ethical committee to approve all research projects involving the use of DNA samples.

The National DNA Database is, in simple terms, an operational policing tool, and the Board felt it was essential to maintain police involvement in oversight and use of the Database to provide police intelligence for the detection of crime. We responded to these concerns by inviting the Human Genetics Commission to nominate one of their Commissioners to sit on the Board. The role of the Commissioner was primarily to advise on ethical issues and matters of wider public interest relating to the management and operation of the Database and and the use of the DNA samples and data for research purposes. This has proved successful and has recently led to discussions being initiated with the Central Office for Research Ethics Committees (COREC) to seek their support in ethical oversight of research proposals.

Meanwhile, in July 2002, Robert McFarland was asked by the Home Office to undertake a Review of the FSS in relation to its organisational structure and performance. In March 2003, McFarland recommended that the FSS be transformed into a private sector classified public private partnership.



Police powers under PACE were further extended under the new provisions of the Criminal Justice Act 2003. These came into force on 5 April 2004 and allow a DNA sample to be taken from all persons arrested for a recordable offence and detained in a police station. This will allow offenders to be detected at an earlier stage than would previously have been possible, prior to any charges being brought, with corresponding savings in police time and costs.



oversight, development and management

The Custodian and members of the manangement team, left to right: Kirsty Metcalfe, Emma Hicks, Surryia Kanwar, Mike Prior, Bob Bramley, June Guiness, Sue Adams and Donna Bruton. McFarland was also asked to consider, in the context of the recommendations of the reports from the House of Lords' Select Committee on Science and Technology and the Human Genetics Commission, and any future organisational changes for the FSS, the need for independent oversight of The National DNA Database and the role of the Chief Scientist of the FSS in his role as Custodian of the Database.

McFarland recommended a variety of different structures for the governance and oversight of The National DNA Database and that the Custodianship of the Database should be removed from the FSS. He also proposed that accountability for the storage and access to CJ samples, currently held on behalf of police forces by suppliers, should pass to the Custodian, and he supported the concept put forward by the Human Genetics Commission for a national ethics committee. McFarland recognised, however, that no change should jeopardise the robustness and integrity of the system developed by the FSS and ACP0.

In July 2003, the Home Secretary announced his decision to accept the recommendations of the

McFarland review that the FSS should begin the transition towards a change of status. The programme of work to give effect to this change of status is being led by the Science Policy Unit of the Home Office. One project within this programme concerns separation of control of The National DNA Database from the FSS and at present proposals for the way forward are being developed. As part of this process, the Home Secretary has agreed that the overall management and Custodianship of the Database, including the scientific advisory, accreditation and monitoring services, should be separated from the FSS and retained within the public sector, controlled by the Home Office, ACPO and the Association of Police Authorities (APA).

The National DNA Database Board has fully supported the Home Office review of alternative options for governance and service delivery to ensure the needs of the police service continue to be met. The project to take this forward to best meet the needs of the police service and wider Criminal Justice System will be agreed and developed in detail over the Summer of 2004, aiming to deliver the first stage of transition to independent status by October 2005.



SAMPLING AND ANALYSIS

The police take DNA samples from individuals under PACE using a sampling kit with a unique barcode number. The police create a record on the Police National Computer (PNC) to indicate that a sample has been taken. This record has a unique arrest summons number (ASN). There is a link between PNC and The National DNA Database through which the demographic details relating to the PACE samples are passed to the Custodian to create a stub record on the Database, identified by the kit barcode number and arrest summons number.

The police submit the PACE samples with their unique barcode number and ASN to an approved supplier laboratory for analysis. The supplier laboratory submits the DNA profiles, identified by their barcode number and ASN, to the Custodian for loading to the Database against the corresponding stub records.

Volunteers who provide DNA samples with consent for loading to The National DNA Database do not have PNC records and are identified uniquely only by the barcode number of the sampling kit used. These samples are submitted to an approved supplier laboratory for analysis and the profiles obtained are then submitted to the Custodian, with the barcode number and demographic details, for loading to the Database.

The police also take samples from crime scenes and submit these to an approved supplier laboratory for profiling. The supplier laboratory allocates a unique barcode number to each sample and submits the DNA profiles obtained, together with the allocated barcode number and other details relating to the sample, to the Custodian for loading to the Database.



ROLE AND RESPONSIBILITIES OF THE CUSTODIAN

The role and responsibilities of the Custodian and the range of services to be provided are set out in the current interim Memorandum of Understanding agreed between ACPO and the Custodian in 2003.

Standards

The Custodian sets the standards for the sampling kits; oversees development of the scientific and procedural standards for analysis of the samples, to ensure that all suppliers will consistently provide reliable profiles for the Database, compatible with those provided by other suppliers; and ensures that the business processes used by the Custodian for maintaining the integrity of the records on The National DNA Database and the provision of operational services and management information to the police, supplier laboratories and other stakeholders are fit for purpose.

The scientific and procedural standards for suppliers and the business processes for the Custodian are recorded in the Custodian's Quality Management System and the relevant documents are issued to all suppliers.

The Custodian operation is compliant with ISO 9001, ISO/IEC 17025 and ISO/IEC Guide 43 and

ILAC-G13:2000 and is subject to routine internal auditing and regular accreditation visits by both the British Standards Institute (BSI) and UKAS. Home Office Internal Auditors carry out checks on performance and other bodies such as the Human Genetics Commission (HGC) and National Audit Office (NAO) also periodically comment on The National DNA Database.

Security and access

The Forensic Science Service provides day-today IT support for The National DNA Database infrastructure and application software in compliance with the requirements of PACE (as amended) and the Data Protection Act 1998. Steps are also being taken to achieve compliance with the information security standard BS7799.

Stringent procedures are in place to control access to The National DNA Database and use of the information on the Database. A comprehensive review of the security arrangements, covering personnel, accommodation, information and business continuity plans, will take place in the next year.

Work is also underway in preparation for commencement of the Freedom of Information Act in January 2005.





CUSTODIAN SERVICES

Supplier accreditation

Prospective new suppliers to The National DNA Database must satisfy the United Kingdom Accreditation Service (UKAS) that they meet the requirements of the international quality standard for testing laboratories, ISO 17025, and the additional requirements of the Custodian set

> out in the UKAS document LAB 32. They must also satisfactorily complete proficiency tests provided by the Custodian and agree to continue to participate in the Custodian's on-going proficiency testing programme.

UKAS currently provide the Custodian with assurance of a supplier's compliance with ISO 17025/LAB 32 following on-site inspection, but consideration is being given to training Custodian staff to assist with these inspections. The Custodian assesses the performance of prospective suppliers in the proficiency tests and then, where appropriate,

recommends their accreditation to The National DNA Database Board.

There are currently 4 organisations (6 separate supplier laboratory units) accredited to supply PACE/volunteer sample profiles to The National DNA Database and 5

organisations (13 separate laboratory units) accredited to supply crime scene sample profiles.

Any existing supplier who wishes to change the scope of their accreditation or make significant changes to their accredited processes also has to satisfy the Custodian as to the validation of their changes and their ability to produce reliable profiles compatible with those on

the Database from other suppliers. As deemed appropriate by the Custodian, this may require participation of the supplier in further proficiency tests.

During 2003/2004, the Custodian carried out one new supplier accreditation exercise and three relating to extensions to scope.

Loading profiles

The Custodian is responsible for loading the PACE sample stub records from PNC and the associated DNA profiles from supplier laboratories to The National DNA Database; loading volunteer and crime scene sample records to the Database; and loading profiles from police personnel to the Police Elimination Database (PED) (see page 13).

The performance target set by The National DNA Database Board for the delivery of these services is that all DNA profiles for The National DNA Database and PED will be loaded within 24 working hours of their receipt by the Custodian.

This target was reached for 95% of all records submitted for loading over the year. The remaining 5% were unable to be loaded due either to clerical errors by the police in recording data on the kit forms, or PNC, or the analytical results submitted by suppliers not being in the required file format. The Home Office Police Standards Unit have visited forces whose performance indicates a possible underlying business process issue and the Custodian has raised the file format issue with suppliers. This is leading to an overall reduction in load errors.

Carrying out speculative searches of the Database and issuing match reports

The Custodian carries out a speculative search of The National DNA Database for each new batch of profiles loaded.

The performance target set by The National DNA Database Board for the delivery of these services is that 90% of match reports for all cases will be dispatched without validation of the match within 1 working day of loading the relevant profile to The National DNA Database and the remaining 10% will be dispatched within 3 working days; all match reports involving violent crime will be dispatched on the same day that the match is identified.

Over 98% of match reports were consistently dispatched within 1 working day. The remaining 2% were delayed because of the requirement to verify certain markers in the DNA profiles that are recorded as wild cards (rare alleles) for the speculative searches or were at one time not readily differentiated from one another and were 'binned' for addition to the Database (e.g. THO 9.3 and 10 binned as THO 9.3). All match reports identifying violent crimes were reported within the same day that the match was identified. By agreement with the Board, the requirement for

custodianship of the database

any verification prior to issue of the match report has now been rescinded. This check is still made, but as soon as possible after issue of the match report so that, if required, an elimination report can be issued.

The National DNA Database Board has set a performance target that following verification, should the profile result differ from that originally reported, the elimination report will be dispatched within 1 working day of receipt of the verification result.

Performance against this target has been mixed (86% in Q1; 66% in Q2; 90% in Q3; 34% in Q4). The process for issuing elimination reports is currently a manual one and the issue was compounded by the increased demand for provision of elimination reports arising from the Home Office funded SGM to SGM Plus upgrade project (the figures for which are not included in the reported performance) which stretched the resources available. One of the projects within the Custodian IT Development Programme will automate the elimination reporting process and together with the introduction of electronic communications with forces for match reports will greatly improve matters (see page 16 and 28).

Providing the police with rapid intelligence information is becoming ever more important, hence the need to speed up the supply chain. The following three examples illustrate the level of performance that can be achieved through close liaison between the police, the laboratory and the Custodian. In all three cases DNA profiles from the crime scenes were loaded to the Database in under 48hrs from the time of receipt of the items by the LGC Ltd. All the cases originated from Nottinghamshire police.

Case 1

- Criminal damage occurring on 19th April 2004
- 1 cigarette end submitted on 21st April
- 1 full profile loaded to Database on 22nd April Confirmation of successful load to Database received 23rd April
- → 2 days from receipt of item to confirmation of load.
- → 5 days from date of offence to confirmation of load.

Case 2

- Burglary with intent on 17th April 2004
- 1 blood swab received on 21st April
- 1 full profile loaded to Database on 22nd April Confirmation of successful load to Database received 23rd April
- → 2 days from receipt of item to confirmation of load.
- → 7 days from date of offence to confirmation of load.

Case 3

- Criminal damage occurring on 18th April 2004 1 blood swab submitted on 21st April
- 1 full profile loaded to Database on 22nd April Confirmation of successful load to Database received 23rd Apri
- $\rightarrow\,$ 2 days from receipt of item to confirmation of load.
- → 6 days from date of offence to confirmation of load.

In December 2003, two seemingly unrelated incidents occurred. The first involved a purse that had been snatched from an elderly lady and the other a T-shirt from a shopkeeper who had been held up by a robber who had threatened him with a syringe full of blood. The purse was examined and the surface of the handle was swabbed in the hope that the offender had left his DNA on it. A full male DNA profile was obtained. A full male DNA profile was also gained from samples taken from the T-shirt.

The DNA profiles were loaded to The National DNA Database and both matched with a DNA profile already held on the Database. The police used this

Database. The police used to intelligence information to arrest the suspect and take a fresh DNA sample for use in evidence.

That week, the same suspect was being questioned over the murder of a pensioner. During questioning, a DNA sample was taken from the suspect, but there was as yet no forensic evidence from the murder scene

and the suspect was denying involvement. By this time, the police were only allowed to hold the suspect for a further 36 hours. Knowing that the suspect was likely to 'disappear' if released, they needed sufficient cause to retain the suspect until the evidence from the murder could be gathered.

The investigating officers personally delivered the mouth swabs to the laboratory on a Friday morning, desperate for a result within the 36 hours. Close communication between the laboratory and the investigating officers enabled the DNA sample to be processed, the results interpreted and the matches confirmed that evening, a turn around time of nine hours. The police were then able to charge the suspect for the crimes involving the handbag snatch and the robbery, and to legally hold him and have ample time to gather the evidence from the murder scene.

custodianship of the database

One-off speculative searches

There are minimum criteria for the quality of profiles that can be loaded to and routinely speculatively searched against The National DNA Database, to prevent very large numbers of matches being identified that will usually be of little value to the police. However, in cases involving serious crime the police may be prepared to deal with such large numbers of potential suspects. Where profiles do not meet the minimum standards for loading to the Database, and if so requested by the police, the profiles are checked against the Database as a one-off exercise without being loaded.

One-off speculative searches are also carried out when the DNA profile has not been provided by an approved supplier to the Database.

In 2003/2004, 1,984 such one-off speculative searches were carried out. This compares with 1,394 in the previous year.

The results of such searches are returned to the supplier for assessment and interpretation.

International searches

Arrangements have been made through Interpol for international exchange of DNA profiles from subjects. These usually relate to persons wanted by the police in one country who are suspected to be resident elsewhere. One-off speculative searches of The National DNA Database are carried out for such profiles submitted to the UK.

Familial searches

A one-off speculative search approach is also used for conducting familial searches of the Database to identify offenders through possible relatives when the offender is not on the Database



Operation Glitter, The Murder of Michael Little

Ford lorry driver, Michael Little, was killed on 21st March 2003 whilst driving on the M3 in Surrey. A brick had been thrown from a footbridge over the motorway and this had penetrated Michael's lorry windscreen, striking him in the chest and causing a fatal injury. A DNA profile was

obtained from the brick, possibly from the person who had thrown it. Surrey Police launched a murder inquiry, very hopeful of a quick

detection as the footbridge tended to be used only by local people as a passage between the towns of Camberley and Frimley.

The investigation revealed that shortly before the motorway incident the investigation revealed that shortly before the motor way incluein there had been an unsuccessful attempt by two persons to steal a Renault Clio in Camberley. One of the offenders had left blood in this vehicle before taking two bricks from a neighbouring driveway and heading for the footbridge. The DNA profile obtained from the blood matched that

The DNA profile was loaded to The National DNA Database but no match was obtained. It was therefore decided by the police to check if there was anyone on the Database with a profile sufficiently similar to that from the brick to indicate that they might be a close relative of the offender. This 'familial searching' approach, along with other evidence, led the police to arrest 20 year-old Craig Harman on 30th October 2003. Craig Harman was subsequently charged with murder, attempting to steal a car and stealing two house bricks. He admitted manslaughter at a hearing at The Old Bailey on Monday 19th April 2004 and was sentenced to six years imprisonment.

Performance monitoring of suppliers

The Custodian monitors the on-going performance of the supplier laboratories through quality audits carried out by UKAS and the participation of the suppliers in a programme of declared and undeclared proficiency tests provided by the Custodian.

Suppliers of PACE/volunteer samples are also required to duplicate 5-10% of their analyses to demonstrate process control and to report any duplication errors to the Custodian. Hitherto, this has not been a requirement for suppliers of crime sample profiles, but comparable process control arrangements will be implemented in 2004/2005.

Managing the contamination risk

With the very high sensitivity of SGM Plus, and particularly where the amount of DNA from the offender available for analysis is very low, there is a risk that the DNA profile obtained from analysis did not originate from the offender but from some form of contamination. It is thus vitally important that the police and supplier laboratories take all the necessary precautions to minimise the risk of contamination occurring and to identify contamination when it has occurred.

Advice for police personnel on the "Avoidance of Contamination in the Recovery, Packaging and Submission of Material for DNA Analysis" has been updated during the year and included in the Best Practice Guidance issued by The National DNA Database Board. This is supported by the provision of quality-assured sampling



kits for use by the police in taking samples from suspects, victims and volunteers.

Anti-contamination measures are also an integral part of the quality standards for the supplier laboratories and the supplier laboratories have made significant improvements through automation of their processes to reduce the contamination risk.

Contamination of subject samples is readily detected as the amount of DNA present from the individual is large and only a single DNA profile is expected.

Contamination of crime scene samples is more problematic to detect, but suppliers have made significant advances over the last year in identifying such contamination so that, where appropriate, the samples can be re-analysed, or due account can be taken of it in the interpretation of results. If neither of these is possible, the result obtained is deemed invalid.

One of the major risks of contamination of crime scene samples is from the people involved in their collection and analysis. It is best detected by reference to databases containing the DNA profiles of the relevant personnel.

It has been estimated that there are about 75,000 police personnel who could be in a position through their roles inadvertently to contaminate crime scene samples. The Home Office funded the taking of samples from these individuals and the creation of the Police Elimination Database (PED) to help identify such contamination in specific cases where it is suspected by the senior investigating officer or scientific support manager to have occurred.

The provision of the samples is voluntary for those who were in employment by the police when the PED was set up in 2000. It is a condition of employment for personnel who have joined the police since.

Each supplier to the Database also maintains a Staff Elimination Database (SED) to assist in the detection of inadvertent contamination by personnel in the laboratory during examination of items and DNA analysis.

As a result of investigations of contamination incidents in a number of cases over the last year, the FSS has identified an additional contamination risk from persons involved in the production of the consumables (tubes, swabs, etc.) used in laboratory analysis. Such contamination tends to be sporadic and affects very few samples. But when it does occur it



could result in misleading information being provided to the police. With the co-operation of the consumables manufacturers, improvements are being introduced into the production processes to reduce the contamination risk. Their staff have also been encouraged to provide DNA samples for a Manufacturers Elimination Database (MED) to assist in identifying the source of such contamination. Sporadic contamination can also originate from the environment and other sources. The negative controls used during analysis can help identify these contaminants and suppliers are collaborating in the development of a log of unsourced contamination, to help identify any which warrant further investigation or may need to be accounted for in the interpretation of DNA profiling results.

In addition to contamination from police and laboratory personnel and consumable manufacturers, there is a risk of contamination between items from different sources that are subjected to DNA analysis. Suppliers have also developed processes and expert systems to check for this type of contamination.

At 31 March 2004, 82,094 police personnel had provided samples. The PED held 74,456 searchable records; 2,315 records had been removed following requests from the force and the remainder were awaiting analysis.

Since its inception, profiles from 155 crime scenes have been checked against 709 named individuals on the PED. This has resulted in full matches being identified with profiles from police personnel for 22 of the scenes and the consequent elimination of the profiles from further investigation.

Unexpected results

Where the proficiency tests or the duplication programme leads to an unexpected result in the data provided by supplier laboratories to The National DNA Database, or the potential for such an unexpected result, the supplier is required to investigate the problem, and any wider implications, and to take appropriate corrective action. The problem may be due to actions by the police in taking the samples, completing the forms supplied with the sampling kits or creating the record on PNC, or actions by the supplier in analysing the samples. The Custodian monitors the investigations and corrective actions taken until the issues have been satisfactorily addressed.

Unexpected Results for CJ Samples



- Police Clerical
- Supplier Data Recording
- Supplier Contamination
- Police ID Switch
- Supplier Data Entry
- Supplier Demographics Data Entry
- Contaminated Kit
- Supplier Non Compliance with Custodian Standard
- Supplier Other
- Supplier Sample Switch
- Supplier Mis-designation
- Supplier Erroneous Recording
- Police Sample Switch
- Supplier Sample Cross Contamination
- Police Contamination
- Supplier Mixture Analysis
- Supplier Admin Error

Unexpected Results for Crime Stains



Maintaining the integrity of The National DNA Database

The Custodian is responsible for ensuring, as far as possible, that all data for The National DNA Database are correct at the time they are added, for correcting any data that subsequently turn out to be incorrect, and for making any changes to the data when required to do so [for example, to comply with weeding rules governing the removal of records from PNC or following upgrades of DNA profiles].

The identification, investigation and correction of unexpected results, as described above, are essential for maintaining data integrity and ensuring that any matches between profiles lead to the right suspect or suspects being identified. This involves, where necessary, the suspension, reinstatement, amendment or deletion of records by the Custodian.

Issues can also arise when the Custodian adds records to the Database, or amends or deletes profiles and records on the Database, or provides the match reports and management information. These are addressed and monitored in the same way as the unexpected results from suppliers.

Certain data integrity issues or potential data integrity issues (e.g. an incompatibility between the recorded gender and the result of the Amelogenin sex test; impossible dates of birth; and profiles that would have given rise to matches but for 1 marker in the profile being different) can be identified through systematic analysis of the records on the Database. Investigation and correction of these is overseen by the Custodian.

Carl Fridye

Maintaining compatibility between The National DNA Database and PNC

It is important for the Custodian to maintain compatibility between records on The National DNA Database and records on PNC.

To assist with this, an electronic link was established in 2001 between PNC and The National DNA Database, through which demographic details relating to persons from whom samples have been taken under PACE are transferred from PNC to the Database and, once the profile has subsequently loaded to the Database, a message is sent back to update the PNC record.

Comparison of these data on PNC and The National DNA Database helps to identify possible issues relating to the integrity of data on both systems. It also helps to identify any samples that have been analysed but are not shown as such on PNC. The correct identification of samples as having been analysed is essential in minimising the occurrence of unnecessary replicate sampling (see page 19).

Funding was provided by the Home Office in 2003/04 to provide specialist staff resources to help reconcile the differences in some 100,000 records between The National DNA Database and PNC. About 22,500 of the PNC records have since been synchronised with The National DNA Database and 15,000 records on The National DNA Database have been amended to reflect the record held on PNC.

SLP to SGM Plus upgrades

In the early 1990s, a technique called 'single locus probe' (SLP) DNA profiling was used to establish a small DNA database for unsolved crimes. These SLP profiles are incompatible with those on The National DNA Database, but if any of the crime sample remains it can be reanalysed using the current approach and the profile obtained can then be added to The National DNA Database. This provides an excellent opportunity for new lines of enquiry to be opened up.

Operation Advance

Crime stain material remaining from a number of unsolved cases analysed in the late 80s and 90s using the SLP DNA profiling have been examined, profiled using SGM Plus and searched against The National DNA Database.

Samples from 154 cases have been reanalysised in this way, the oldest being from 1989, and 34 of the resulting SGM Plus profiles have matched named individuals on The National DNA Database.

National DNA Database/PNC reconciliation

As a direct result of The National DNA Database/PNC reconciliation exercise, 3 subjects were found to be shown as 'wanted' on PNC where false names have been used. The forces have been contacted and made aware of the true identity of the wanted person, and arrangements were made to arrest these at known true addresses from the original record.

CASE STUDY

Operation Sapphire

In 1989, a 77 year-old disabled female living alone in North London reported to the police that she had been sexually assaulted. The victim was too traumatised to give the police a full account of what had happened and has since died of natural causes.

Semen found on the victim's bed linen gave an SLP DNA profile, using the technology current at that time. This has more recently been upgraded using SGM Plus and loaded to The National DNA Database. It matched with an SGM profile from a sample belonging to 32 year-old Carl Fridye.

Such matches would usually be confirmed by re-analysis of the subject's sample but none of this remained. In the meantime, Fridye was arrested by West Midlands Police for an unrelated offence. The Sapphire team was informed, a sample was taken in respect of this offence, the match was confirmed and Fridye was charged with indecent assault for the 1989 offence.

On 23rd December 2003, Carl Fridye pleaded guilty to indecent assault at The Old Bailey and in January 2003 he was jailed for five and a half years. **15**

A major outcome of the Custodian's IT development programme was the introduction of an enhanced loader application for The National DNA Database in March 2004. This new loader will act as a filter to prevent unsuitable records from being loaded to the Database and will lead to more flexibility for future developments in 2004/05.

SGM to SGM Plus Upgrades

The DNA Expansion Programme provided funding during 2003/04 to upgrade from SGM to SGM Plus over 22,000 subject sample profiles that had been reported since 2001as matching crime sample profiles. The work on this is continuing. However, 6,000 of the upgraded profiles have been compared again with the crime sample profiles they originally matched. Of these, 52% confirmed the original match; 19% showed that the previously reported match (at the SGM level) was adventitious and eliminated the subject as matching the crime sample profile; and no comparison was possible for 29% as the crime sample profiles were no longer on The National DNA Database. On the assumption that the 19% that were unable to be compared with crime sample profiles would also turn out not to match following upgrade, a total of 26% of the earlier matches would have been identified as adventitious. This reinforces The National DNA Database Board's recommendation that all SGM profiles involved in matches should, wherever possible, be upgraded to SGM Plus.

Management information

The Custodian provides management information for the police and the Home Office, to assist in monitoring the performance of the police, suppliers and the Custodian, and the value of the Government's investment in the expansion of the Database. This information is invaluable in identifying best practice.

Development of Custodian IT and services

The Custodian has been heavily supported by the FSS Research and Development Group and Information Services Department in developing the IT systems associated with the Database and improving the software for the delivery of Custodian services and management information from the Database. This work has been funded in recent years through the Home Office DNA Expansion Programme, with £2.4 million being made available from 2000-2003 and a further £1.2 million in 2003-2004.

A major outcome of the Custodian's IT development programme was the introduction of an enhanced loader application for The National DNA Database in March 2004. This new loader will act as a filter to prevent unsuitable records from being loaded to the Database and will lead to more flexibility for future developments in 2004/05.

Significant advances have also been made towards delivering DNA match reports to forces electronically. This will allow forces to assimilate the match reports directly into their own intelligence systems.



suppliers group

The Suppliers Group meets twice annually and is chaired by the Custodian. It comprises representatives from the approved suppliers of profiles to The National DNA Database, prospective suppliers from Scotland and Northern Ireland, UKAS, The National DNA Database Board and other members of the Custodian's team. Its purpose is to promote communication on scientific and procedural matters related to The National DNA Database and to provide advice to the Board via the Custodian on scientific standards and scientific developments of a strategic nature. The Group also provides a forum for discussion of quality assurance issues. A summary of the Group's discussions is presented at each meeting of The National DNA Database Board.

Topics addressed by the Suppliers Group in the last year have included the establishment of databases for missing persons and disaster victims; the procedure for international exchange of DNA data; the need for improved quality assurance in the collection and analysis of crime scene samples; co-operation in the event of a mass disaster; business continuity in the event of any supplier losing capacity to carry out profiling; data security; and the requirement for suppliers to provide the Custodian with a statement of unit configuration, detailing each unit's structure and its methodology as accredited for supplying profiles to the Database.

An extra-ordinary meeting of the Group was called in July 2003 to discuss recent incidences of casework contamination. These related to two high profile murder investigations that had been initially linked through use of The National DNA Database when subsequently it turned out that the profile in question had arisen from a person employed by the supplier of tubes that are used in the DNA analysis process. Recognition of this type of contamination was a world first by the FSS and led to management of the risk of contamination of laboratory consumables becoming part of the Custodian standards to be met by Suppliers (see 'Managing the Contamination Risk', page 13).



the national dna database

Subject and crime sample profiles on The National DNA Database

At 31 March 2004, The National DNA Database held 2,527,728 subject sample records. These related to approximately 2,249,678 individuals (see reference to replication, page 19). The Database also held 228,463 records from scene of crime (SOC) samples.

During 2003/04, 433,303 new subject sample records were added (88% of the total added in 2002/03). Some 60,155 new SOC records were also added (91% of the total added in 2002/03).

Number of CJ sample DNA profiles loaded to The National DNA Database annually for all forces



Number of SOC sample DNA profiles loaded to The National DNA Database annually for all forces







the national dna database

Replication of subject sample profiles

Profiles that are wholly consistent with each other but have been obtained at different times may be the result of an adventitious match or the samples having been taken from the same individual on more than one occasion. The estimated level of replication on The National DNA Database due to repeat sampling of the same individual is estimated to be about 10%. This is due in part to the position pre-2001 when samples were obtained from the same person whenever the opportunity arose to counter the possibility of their profiles having to be removed in the event of no prosecution or an acquittal. It is also due to the police not being able readily to establish at the time of sampling whether the person's profile is already permanently on the Database

We are working hard to eliminate all replicate sampling in England and Wales, but it is inevitable that some will occur when persons arrested use an alias and it is not possible to confirm their identity immediately. The Scottish supplier laboratories continue to be a source of replicate sample profiles as a consequence of the different legislation in Scotland still requiring destruction of samples and profiles in the event of there being no prosecution or an acquittal. Nevertheless, the situation is already improving, and for SGM Plus profiles (all obtained since 1999), the replication rate on the Database for all forces is already lower at about 6%.

The Custodian has been developing a means of accurately monitoring the replication levels at force and national level. This will be introduced over the next year and will allow forces to identify best practice and hence improve their business processes to minimise replicate sampling.

DNA profiles on The National DNA Database by analysis type

The DNA profiles on The National DNA Database are not homogeneous. Profiles obtained between 1995-1999 were based on the SGM profiling system and those since 1999 have been based on SGM Plus. The change was primarily introduced to reduce the risk of an adventitious or chance match as the size of the Database increased.

All subject sample profiles are either full SGM or full SGM Plus profiles. Crime scene sample profiles can be partial ones, but must contain a minimum of 8 of the STR markers. This restriction is simply to avoid slowing down the speculative

search process and obtaining large numbers of potential matches, which would in most cases provide intelligence information of little value.

The distribution of the different types of profile on The National DNA Database at 31 March 2004 is shown below.

CJ sample profiles

564,579 (22%) SGM 1,961,831 (78%) SGM Plus All full SGM or SGM Plus

SOC sample profiles

44,247 (19%) SGM 184,216 (81%) SGM Plus 14530 (6%) partial The SGM system analysed 12 markers (short tandem repeats or STRs) and had a discriminating power of about 1 in 50 million. SGM Plus analyses the same 12 markers as SGM together with an additional 8 STR markers, and has a discriminating power of less than 1 in 1 billion. Both SGM and SGM Plus also analyse the gender marker (Amelogenin).



the national dna database

The age distribution of the population of persons represented on the Database when the sample record was loaded to the database.



The age distribution of the population of persons represented on the Database as at 31/3/04



DNA profiles on The National DNA Database by gender

98% of the subject sample profiles have been obtained from males and only 2% from females.

DNA profiles on The National DNA Database by age of subject

The age distribution of the population of persons represented on the Database is shown in the diagrams to the left.

DNA profiles on The National DNA Database by ethnic appearance classification

The distribution of persons represented on the Database by ethnic appearance (as recorded by the police) is shown in the diagrams to the right.

Removal of profiles from The National DNA Database

DNA profiles are retained on The National DNA Database in compliance with the provisions of PACE, as amended, and the Data Protection Act 1998

Prior to implementation of the Criminal Justice and Police Act 2001, the profiles had to be destroyed in the event of there being no prosecution or an acquittal. Since 2001, this obligation has been removed for samples taken from individuals in England and Wales, and once a profile is on the Database it now remains there until the death of the individual concerned. The legislation in Scotland is different and profiles from samples taken from individuals in Scotland still have to be removed if they are not prosecuted or have been acquitted.

Subject sample profiles may also be removed on the authority of the police if they are found to be replicates or in error.

SOC sample profiles should be removed from The National DNA Database following the conviction of the offender.

The number of profiles removed from The National DNA Database is shown below.

Number of records removed

Year 95/96	Subject records	Crime Scene records
to		
02/03	245,530	48,348
03/04	22,976	16,342

The ethnic breakdown of records retained on NDNAD for male individuals as at 31/03/04



The ethnic breakdown of records retained on NDNAD for female individuals as at 31/03/04



the national dna database

Intelligence matches

As each new subject sample profile is added to The National DNA Database it is checked against all crime scene sample profiles on the Database. When a new crime scene sample profile is added to the Database it is checked against all subject and other crime scene sample records. Any that are compatible are identified as a match.

Matches between a subject and a crime scene are useful in identifying possible suspects for the offence. Matches between one crime scene and another provide valuable intelligence information, which, together with other information, may also help the police identify suspects.

Since April 1995, 517,840 "pairwise" matches have been obtained between subject sample profiles and crime scene sample profiles. A further 29,263 "pairwise" matches have been obtained between one crime scene sample and another.

Since May 2001, one or more suspects have been nominated for 133,933 crime scenes

(equivalent to 480,469 "pairwise" matches) and approximately 280,000 individuals have been nominated for one or more crime scenes.

For 2003/04, one or more suspects were nominated for 41,618 crime scenes, and a breakdown by crime type is given in the graphs below. The total represents 90% of the crime scenes for which one or more suspects were nominated in the previous year. The reason for the fall is due to fewer new crime scene sample records being loaded within the period. Another 4,500 crime scenes were linked together where no subject was identified to forces. Matches were originally counted and reported to the police on the basis of pairwise comparison of profiles. This did not, however, relate in any meaningful way to the number of detections being reported by the police.

A new way of counting matches involving subject sample profiles was introduced in May 2001. This is based on the number of scenes for which one or more suspects have been nominated. This provides a much more accurate reflection of the potential number of offences that could be detected by the police. It also provides a more meaningful indicator of the effectiveness of the Database.



Number of violent/sexual offence cases linked to one or more subjects in 2003/04

The probability of identifying one or more suspects for an offence when a profile from a crime scene was loaded to The National DNA Database in 2003/04 was 45%. There was an additional 9% probability of suspects being identified for further crime scenes when new subject samples were subsequently loaded to the Database.

Number of cases linked to one or more suspects in 2003/04



the scottish DNA database

THE SCOTTISH DNA DATABASE

The bulk of DNA analysis in Scotland is provided by the Police Forensic Science Laboratories in Dundee and Glasgow. The Dundee laboratory is accredited by UKAS for profiling subject samples and provides this service for the 8 police forces in Scotland. Both Dundee and Glasgow laboratories are accredited by the UKAS to undertake crime sample profiling. They are also accredited to provide profiles for addition to The National DNA Database.

Scotland has it's own DNA Database, based at the Police Forensic Science Laboratory, Dundee. However, all Scottish subject sample profiles are exported to The National DNA Database and all Scottish crime sample profiles are loaded to The National DNA Database providing they have not already given rise to matches in Scotland. Currently, some 3,500 subject sample profiles and 300 crime scene profiles are exported to The National DNA Database every month.

The Scottish DNA Database holds 146,753 subject sample profiles and has issued in excess of 7,810 intelligence reports to date. Over the last 12 months, 71% of crime sample profiles matched existing subject sample profiles when entered onto the Database. This resulted in approximately 250 criminal intelligence matches being issued each month. Several identifications have been made during the course of the year for attempted drug smuggling into Scottish prisons whereby small quantities of drugs have been concealed in letters sent to prisoners. The concealments have either been drugs impregnated onto paper, or concealed between writing sheets and individuals have been identified from sealed stamps and envelopes, etc.

A person climbed onto the roof of an indoor market in Dundee and broke a roof window intending to gain entry. During the process his hat fell from his head and activated the alarm system. On hearing the alarm, the would-be thief made off. Police attended, recovered the hat and the laboratory established a DNA profile from the dandruff inside. The offender was subsequently identified through the DNA Database and an intelligence report was issued.

A woman was subjected to a sexual assault in Edinburgh in 1982, but her assailant was not traced at the time. A review of the case was undertaken in 1999 and articles taken possession of during the original enquiry were submitted to the laboratory. A DNA profile was obtained and loaded to the Database. No match was recorded until earlier this year when the profile from a sample taken from a male arrested for a domestic incident was added to the Database and matched the 22 year old crime. A person who had checked into a Central Scotland Travelodge vandalised the room by punching holes in the wall, damaging furniture and ripping fitments from the walls. A DNA profile was developed from a sample of blood left by one of the holes in the wall and the person who would not otherwise have been traced was identified.

A house was broken into in Aberdeen during the course of which the perpetrator had occasion to use the toilet. The police swabbed the toilet seat and a male DNA profile was developed. The DNA Database identified an individual as the source of the profile and an intelligence report was issued.

ASSOCIATION OF CHIEF POLICE OFFICERS IN SCOTLAND

home office DNA expansion programme

For serious crime scenes, the police routinely collect and use DNA evidence whenever it is available. The Home Office DNA Expansion Programme was set up in April 2000 with the principal aim of providing sufficient funding to enable the police to take a DNA sample from all known active offenders and to increase the retrieval and use of trace DNA material left by offenders at scenes of "volume property crime" (burglary and vehicle crime mainly). Between April 2000 and March 2004 it has provided £182.6m to the police forces in England and Wales for these purposes.

Having achieved its primary goals by March 2004, the programme has proven so successful that funding is being continued throughout 2004-05 and is planned to be continued thereafter, to ensure that the Database remains fully populated with the DNA profiles of all possible offenders coming to police attention.

Subject samples

Before the DNA Expansion Programme started, samples from just over 200,000 offenders were taken per year. This has now been significantly increased and samples from over 450,000 suspects were taken in 2003-2004.

The Programme's main target was to hold a DNA profile for all known active offenders (estimated at between 2.3 and 2.6 million) on The National DNA Database by March 2004. This target was reached, with the Database holding 2.5 million DNA profiles taken from suspected offenders, equivalent to profiles from to 2.3 million individuals (as some duplication occurs). The Database also held some 155,500 from persons who had provided samples under PACE but had not subsequently been prosecuted or had been acquitted, and about 9,000 records from persons who had provided samples voluntarily and consented for them to be retained on the Database.

The Criminal Justice Act 2003 allows samples to be taken and retained from suspects arrested and detained by the police. The change in legislation will help considerably in ensuring that the Database is kept updated with possible new offenders and will support the identification of offenders whom the police had previously found very difficult to apprehend.

Crime scene samples

The DNA Expansion Programme has enabled an increase in recovery and use of DNA from volume property crime scenes by supporting expansion of the scientific support services in police forces for collecting DNA samples and by providing funding for their analysis. A portion of the DNA Expansion Programme funding was specifically allocated for increasing the numbers of trained Crime Scene Investigators (also known as Scenes of Crime Officers) available to attend these crime scenes and for their equipment.

Impact of the programme

This funding to allow the police to increase their scientific support resources has improved the speed and level of service provided to victims of crime.

The DNA Expansion Programme is also clearly having a significant and increasing impact on crime detection. In 2003-04, the overall detection rate was 23%, but where DNA was successfully recovered from a crime scene and loaded to The National DNA Database the detection rate rose to 43%. The detection rates for volume crime where DNA was used show even more striking increases. For example while the overall detection rate for domestic burglary was 15%, the rate where DNA was available rose to 45% (see table below).

It is important to note that this success is currently limited however, as these uplifted

figures relate to only a small number of crimes. DNA is successfully loaded following only 5% of examined crime scenes. As scene examination follows only 17% of all recorded crime, this represents 0.8% of all crime. It is essential to increase the number of crime scenes visited and the number of crimes from which DNA is recovered, in order to maximise the potential odd DNA.

The chance of a match with a subject sample profile when a crime scene sample profile is first added to the Database is now about 45%. The match rate increases to about 54% when matches obtained later as new subject profiles are loaded are included.



The increased collection of DNA from both offenders and crime scenes is seen as a powerful tool in the detection of crime. It supports crime reduction through the increased speed and likelihood of apprehension of those committing offences.

Crime Category	National Detection Rate (overall % of crime which is detected)	DNA Detection Rate (% of crimes detected where DNA crime scene samples are loaded on the Database) 02/03	DNA Detection Rate (% of crimes detected where DNA crime scene samples are loaded on the Database) 03/04
All recorded crime	23	38	43
Domestic burglary	15	48	45
Burglary OTD	10	54	53
Theft of vehicle	14	24	26
Theft from vehicle	7	51	61
Criminal damage	13	not available	54

home office DNA expansion programme

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The monthly bulletins have covered a wider range of topics, including practical issues relating to DNA sample failures and the Criminal Justice and Police Act 2001, the Criminal Justice Bill, the on-going National DNA Database/PNC reconciliation exercises and changes to the forms within the DNA sampling kits.

DNA Liaison Panel meetings

DNA Liaison Panel meetings were started in May 2001, following the inception of the Home Office DNA Expansion Programme, to help address the considerable number of "non scientific, practical issues" that forces were experiencing in dealing with DNA samples. The problems were not always force specific, but forces were developing ad hoc solutions to deal with them, and the DNA Liaison Panel meetings provided the opportunity to identify and promulgate best practice. They also provided a forum for communication in relation to developments in DNA profiling, The National DNA Database and PNC via a monthly bulletin.

One meeting is held each month at one of the FSS regional laboratories. Front line DNA practitioners from the forces in that region, usually the Force DNA Liaison Officers and/or the Central Submissions Officers, are invited to attend, along with local military DNA/forensic personnel, Her Majesty's Customs and Excise, and representatives from the regional laboratory and other forensic science organisations.

Within the last year, the various issues addressed have included electronic match reporting, the impact and implementation of the Criminal Justice Act 2003 and the Home Office DNA Expansion programme.

DNA Awareness Training

Since November 2001, over 9,000 police officers and scientific support personnel have been provided with DNA awareness training through both classroom-based presentations and more recently an interactive CD-ROM learning package, "Dealing with DNA". Funding has also been provided to continue the training throughout 2004/2005. The main aims of the classroom-based courses are to provide a simple overview of DNA, the techniques of DNA profiling and The National DNA Database, and the roles these play in providing intelligence and corroborative evidence in crime investigation. They also helps trainees:

- to identify the potential sources, locations and limitations of DNA evidence
- to understand the importance of correct handling and packaging of samples from crime scenes, suspects and complainants
- to be aware of changes in the legislation which regulates the use of DNA as an evidential tool

"Dealing with DNA" has been specifically targeted at probationary officers and their supervisors and tutors. However, it also contains information about DNA profiling, The National DNA Database and legislation which can be of benefit to all personnel, whatever their role or rank.

A satisfaction index for the training has been determined from transactional analysis and feedback from each trainee. A score of 8.9 (out of 10) was achieved, which is 'very good' when benchmarked against other organisations.

While the DNA Expansion programme investment has focused on volume crime (91% of the crime sample profiles fall into this category), serious offenders are also often detected and brought to justice. Often this results from a match between the DNA profile relating to the serious offence and a profile provided by the offender, taken either previously or later, for a relatively minor offence.

CASE STUDY

The Murder of Richard Jones

Former Welsh guardsman Richard Jones, 47, was a lone traveller who moved around the country. He was sleeping rough when he was attacked in a seaside shelter on a promenade in South Shields, Northumbria in the early hours of the morning of January 1st 2002. He was repeatedly kicked in the head and stamped on, and died later that day from brain damage.

The murder scene was covered in snow and the temperature was -11°C whilst the scene was being examined. However, body fluids were recovered and a full DNA profile, alien to the victim's, was obtained.

When this DNA profile was loaded to The National DNA Database, it matched a profile from 18 year-old David Pallister relating to previous convictions for shoplifting and petty crime.

After initially denying the murder, David Pallister admitted to the offence in court and was sentenced to life imprisonment at Newcastle Crown Court early in 2003.

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home office DNA expansion programme



later his body was found in woodland near Leatherhead. He had been sexually assaulted and strangled. it year-ou noy ruun went missing after hitching a lift home from mussing aner micring a uit nome from school in Surrey in April 1968. 14 year-old Roy Tutill went In 1999 Brian Lunn Field from Solihull, West Midlands was stopped by police on a drink-driving offence and a routine buccal scrane ater his body was found in woodland In 1999 Brian Lunn Field from Solihull, West Midlands was stopp by police on a drink-driving offence and a routine buccal scrape taken for DNA analysis When the DNA profile was loaded to T by police on a drink-driving offence and a routine buccal scrape taken for DNA analysis. When the DNA profile was loaded to The National DNA Database it matched a profile obtained from frozen taken for DNA analysis. When the DNA profile was loaded to The National DNA Database it matched a profile obtained from frozen National DNA Database from Roy Tutill murder. Lunn-Field was semen stain samples from Roy Tutill murder. National DNA Database it matched a profile obtained from from semen stain samples from Roy Tutill murder. Lunn-Field was observed and pleaded multivat the Old Railey in November 200 semen stain samples from Roy Tutill murder. Lunn-Field was charged and pleaded guilty at the Old Bailey in November 2001.

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John Wood was arrested for stealing £10 worth of groceries in 2001. A routine DNA sample taken by Kent Constabulary matched a profile on The National DNA Database from an hour-long knife attack and sexually assault on two young girls, aged nine and 11, in their Canterbury home in 1988.

Wood pleaded guilty to rape and indecent assault and was sentenced to 15 years.

John Wood

The Murder of Nicola Dixon

Nicola, originally from Morpeth in Northumberland, was brutally murdered at the age of 17 after leaving a party on New Year's Eve 1996 in Sutton Coldfield, where she was a student at Fairfax School.

Nicola suffered serious head injuries after being attacked with a brick. She had also been raped. Her partially clothed body was discovered on the 1st January 1997 in the garden of the vicarage in Trinity Hill, less than a mile from her home.

Vaginal swabs taken from Nicola's body confirmed the presence of semen, and it was from these swabs that a full DNA profile was recovered in 1997 and subsequently loaded to The National DNA Database. This profile remained on The National DNA Database and was continually checked against all other profiles held.

Six years later, in 2003, 41 year-old Colin Waite was arrested for his involvement in a road-rage attack. He had a DNA sample taken as a result and the DNA profile was also loaded to The National DNA Database. This generated a match with the DNA profile recovered from Nicola's body.

Colin Waite was subsequently arrested and charged with Nicola's murder. At Warwick Crown Court, in the winter of 2003, Waite was sentenced to life imprisonment. The jury took just 25 minutes to reach their verdict.

Nicola Dixon

Colin Waite

police developments



Mr Stuart Hyde Assistant Chief Constable (Crime) West Midlands Police

The DNA Operations Group

The DNA Operations Group is chaired by Assistant Chief Constable Stuart Hyde of West Midlands Police. It was established in November 2003, following re-structuring of The National DNA Database Board, in recognition of the need for a group of experienced practitioners to develop the tactical application of DNA and to advise the Board on policy and procedural issues.

In its first year, one of its main achievements has been delivery of the ACPO DNA Best Practice Manual, a comprehensive operational guide on the use of DNA for police officers and forensic practitioners. It has also published the ACPO DNA Leadership Guide. This has proved to be an immensely useful aide to senior police management in ensuring they have the critical elements of business processes in place. And it has developed ACPO policy in relation to the new services from the FSS of familial searching (to identify possible relatives of offenders who are not themselves on the Database) and pendulum list searching (for the identification of the possible contributor profiles to hitherto uninterpretable two-component mixtures of DNA), ensuring that tight control and public confidence is maintained in respect of use of The National DNA Database in the fight against crime.

The Operations Group has also overseen progress with the project for electronic reporting of DNA matches from The National DNA Database to police forces, and its successful piloting with West Midlands Police and the Forensic Science Service prior to wider roll out of the development to all other police forces.

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Home Office Police Standards Unit

The Home Office Police Standards Unit (PSU) has a team dealing directly with the use of forensic science within forces. Performance data obtained from The National DNA Database are used to focus PSU activity on areas where forces appear to be having difficulty. PSU's focused approach reflects the Government's investment in DNA and the opportunities that The National DNA Database can deliver in support of both volume and major crime investigations.

A degree of variability between forces is noted in the processes and outcomes associated with DNA. PSU continue to scrutinise performance data and offer support where appropriate.

PSU have provided practical assistance to seven forces, for example, on the issue of subject sample profiles failing to load to the Database. This is a rolling programme of work specifically commissioned by the Home Secretary and a significant reduction in the level of load failures has been noted after implementation of PSU's recommendations.

During 2003, one police force showed that approximately 17% of the samples it was submitting to the laboratory for analysis were being rejected due to some administrative discrepancy. This is both wasteful of resources and in some cases allows the subject to remain at large to commit further offences when he might have been in custody had the sample been profiled and produced a Database match. PSU scrutinised the force's processes, worked with practitioners and rectified the issues very quickly. The improvements following PSU support are illustrated in the graph.

18% 17% 16% 16% 14% 12% 10% 8% 6% 4% 3% 4% 3% 3% 3% 3% 2% Benchmark September October November December January February March April period before

Showing the benefit of PSU input for one specific force DNA (CJ) mouth swab rejection rate: September 2003-April 2004

PSU analysis is shared with Her Majesty's Inspector of Constabulary (HMIC) and is a contributory factor in baseline assessment of forces' forensic processes.



project

police developments

Regional Forensic Science Groups

Eight ACPO Regional Forensic Science Groups support the ACPO Forensic Science Portfolio. The principal aim of the Regional Groups is to disseminate and implement 'best practice' in furtherance of the ACPO Forensic Science Strategy.

Each Group meets quarterly and is chaired by a member of ACPO from the region, who is usually a portfolio holder within the main structure of ACPO forensic sub-committees. Forces from the region are represented by their Scientific Support Managers (to provide the operational input) and by their ACC (Operations). ACPO participation ensures that Chief Officers remain fully briefed at force level on the national scientific agenda.

Practitioners from the forensic science laboratories, forensic pathologists and forensic medical examiners are also represented at the regional meetings, thus providing a comprehensive framework for evaluation of the provision of forensic science services.

The need for this joint commitment is well illustrated in developing the requirements for both strategic and operational commitment and has assisted in the implementation of:

- the Criminal Evidence (Amendment)Act 1997
- the Criminal Justice and Police Act 2001
- the Criminal Justice Act 2003
- 'Using Forensic Science Effectively', 1996
- 'Under the Microscope', HMIC, 2000
- 'Under the Microscope Refocused', HMIC, 2002.
- the Home Office DNA Expansion Programme
- the ACPO 'DNA Good Practice Manual'.

Operation Converter

Operation Converter was a crime reduction initiative between West Yorkshire Police and the FSS. It was aimed at reducing burglary and vehicle crime by increasing detections and the efficiency of judicial disposals, primarily through the timely provision of DNA links between suspects and crime scenes to allow early detection of the offender and by the identification of linked crime scenes.

On the 30 October 2003, West Yorkshire Police where called to the scene of a burglary at a commercial premises. A number of unknown males wearing balaclavas had broken into the property. They were disturbed by a witness who was threatened with a handgun and retreated. The offenders then stole a cash machine which they loaded into a vehicle before escaping. The vehicle was later found abandoned. A cigarette butt was recovered from the vehicle and this was submitted to the FSS London Laboratory for analysis on 31 October. A full profile was obtained and this was loaded to The National DNA Database. A match was reported to the West Yorkshire police on 3 November.

The suspect was arrested and charged on 6 November 2003. He had previously been caught for or admitted under caution over 125 recordable offences over a period of 15 years. In his worst crime period, 15 January - 5 November 1990, he was offending every three days. He had begun his crime career at the age of sixteen with mainly vehicle crime, but had progressed into commercial burglaries and become more and more violent, committing wounding, possession of an offensive weapon and threats to kill. He was subsequently tried at Leeds Crown Court on 26 March 2004 on counts of aggravated burglary and conspiracy to commit burglary and sentenced to 13 years imprisonment.

Operation Safer Homes

Operation Safer Homes was a crime reduction initiative between West Midlands Police and the FSS. It was aimed at reducing burglary through the timely provision of links between suspects and crime scenes to allow early detection of the offender and by identifying links between crime scenes with the aide of The National DNA Database. A new rapid service to provide statements confirming the intelligence matches within 24 hours for use in evidence was also introduced.

1. A burglary in a dwelling house was reported to the police on 18 May 2003. Scenes of Crime Officers examined the premises on the next day and blood staining was recovered. The bloodstains were submitted to the FSS. A full SGM Plus profile was obtained, this was loaded to The National DNA Database on 25 May and a match was obtained with a profile from David James. James already had 5 other DNA matches against him outstanding. He was arrested on 23 June and a fresh sample was taken for use in evidence. This was analysed using the agreed rapid service and a statement covering all six offences was delivered to the police on the morning of 26 June. James was charged with 8 offences in all (additional evidence being available for a further two burglary offences). He appeared at Wolverhampton Crown Court on 25 June and pleaded guilty to 5 of the offences. The CPS withdrew the other 3 charges. James received a 30 month prison sentence.

2. A match was reported to West Midlands Police on 23 June 2003 linking Shaun Whinnery to a burglary in a dwelling house in West Bromwich. Whinnery was known to be of no fixed abode and elusive to arrest. So he was arrested on the morning of 24 June, a fresh sample was taken for use in evidence, the sample was analysed by the FSS, verbal confirmation of the result was sent to the police on the morning of 25 June and Whinnery was charged with the burglary. A statement of evidence was provided via fax for the court hearing whilst Whinnery was remanded in custody. He was subsequently sentenced to two years imprisonment on June 25 on more that 20 counts of burglary. His offending history shows he committed an average of one offence every four days with an average value of property stolen and damages £1,350.





forward look



New sampling kits

The National DNA Database Board has authorised the introduction of new kits for taking samples from volunteers from January 2005 and for taking samples under PACE from April 2005. The volunteer kits will replace the current DNA3 kits for intelligence-led screens and the use of DNA2 for taking elimination samples from victims and witnesses. It will also help remove any ambiguity about the form of consent being provided by the volunteers. The PACE kits will replace the DNA1 kits for taking Criminal Justice (CJ) samples and the DNA2 kits for taking evidential samples from suspects. They will allow the police to develop new procedures in compliance with the Criminal Justice Act 2003 and delay the decision of whether to take a CJ or evidential sample until a later stage in the process.

The UK is currently the world leader in the use of DNA in law enforcement, having a database that holds the largest number of DNA profiles in absolute numbers and the largest proportion of the population. This success is a direct result of the investment in The National DNA Database through the Home Office DNA Expansion Programme.

Developments in the oversight and positioning of the Custodian

The consultants Mott MacDonald and KPMG are due to report in August to the Home Office with their recommendations on the positioning and oversight of the Custodian of The National DNA Database and the arrangements for provision of Custodian services. These will be taken into consideration in development of the Home Office forensic integration strategy and are likely to be implemented in the autumn.

Improved Custodian processes/services

A number of important projects within the Home Office funded Custodian IT development programme are due to come to fruition within the next year. These include the loading of additional types of profiles to the Database by class code and electronic delivery of match reports. The former will facilitate the more detailed and focused analysis the data on the Database and the distribution of match reports to recipients specifically identified by the class code to receive them; the latter will facilitate the more secure and timely delivery of information to the police and its direct assimilation into force intelligence systems.

The National Strategy for Police Information Systems (NSPIS) project, led by PITO, is developing new IT infrastructure for use in Police Custody suites that will enable information on individuals in custody to be fed directly into PNC. The Custodian has been collaborating with this project, to incorporate extra functionality relating to the taking of DNA samples. This would allow details of the identity of DNA samples to be loaded to both PNC and supplier laboratory IT systems via bar code scanning, thus eliminating potential data entry errors caused by mis-keying or mis-reading of hand-written data. Such errors cause delays in loading profile information to The National DNA Database while the causes are resolved and consequently potential delays in the provision of DNA intelligence information to the police.

Considerable benefit for the police is expected to accrue from the work planned for the PNC/National Automated Fingerprint Identification System (NAFIS) reconciliation team. This will not only be through the rapid identification and elimination of errors on NAFIS and The National DNA Database, but also through the identification of opportunities for improvements in force business processes. The team will also continue their work on identifying aliases and removing replicate records. An anticipated spin off from the work will be a more robust and defensible estimate of the discriminating power of SGM Plus.

Work will be started to scope the requirements for a new data structure to meet the current and anticipated use of the Database, including use of the platform to hold a wider range of databases. The means of searching the Database for matches will also need to be revised to take account of most profiles now being based on SGM Plus rather than SGM. It will need to be extended to incorporate alternative match routines such as those employed for identifying profiles that are close but not perfect matches (as per the near miss report used to identify errors) and possible familial relationships.

National DNA Database Board Website

The appointment to The National DNA Database Board of a representative from the Human Genetics Commission and the publication of the first National DNA Database Board Annual Report last year were designed to make the operation of The National DNA Database more transparent. Information about The National DNA Database can also be accessed through the FSS website where there are responses to a number of frequently asked questions, a fact sheet and a link to last year's Annual Report.

Plans are in hand to develop a separate National DNA Database website. This will provide access for the public to up to date statistics and other information of interest, either directly or via links to other relevant websites.

Developments in DNA profiling/services

Developments in DNA analysis technology have advanced apace over the last 10 years or so and there is no reason to suspect that they will slow down. The emphasis of suppliers is expected to be on increasing automation through use of robotics and expert systems; miniaturisation of the analytical processes to allow DNA testing to be carried out at the scene with remote access for interrogating The National DNA Database; improved systems for the analysis of mixtures; and novel ways of using the vast amount of data on the Database for crime pattern analysis. It may also be timely to revisit the use of ambient temperature storage media for the collection and storage of DNA samples.

custodian financial statement

CUSTODIAN FINANCIAL STATEMENT

	2003/04	2004/05
Custodian Operations Income	£915,399.00	£1,046,047.00
Custodian Operations Costs	£774,304.00	£904,385.00
Supplier Accreditation Income	£163,505.00	£202,954.00
Supplier Accreditation Costs	£320,507.00	£388,047.00

The costs of the day to day operation and development of The National DNA Database have been recovered through 3 income streams:

For Custodian Operations, the costs were recovered from police forces through a Custodian Services charge, which is a charge per profile loaded. This charge was set ahead of the financial year, based on an annual Custodian budget agreed with The National DNA Database Board and an assumption of the number of profiles to be loaded.

For Supplier Accreditation and on-going performance monitoring, the costs were recovered from suppliers to The National DNA Database.

The Custodian Quality Assurance section provides a service to the Operations and Accreditation Groups and its costs are allocated between the two groups accordingly.

Work has taken place to bring out the real costs of the business support provided by the FSS to these areas of Custodian activity. In the past, these support costs have only been drawn out in part. Thus, the Custodian Operations Costs for 2003/04 for the first time reflected the "true" cost of providing the IT service that is required to run The National DNA Database.

Even so, there was still significant FSS subsidy present in the costs of both groups. The process is continuing in the 2004/05 accounts of moving to the true, fully built-up costs, and of bringing target income into line with these costs. This is important in terms of moving towards the goal of an independent DNA Database as reccomended in the McFarland report.

For Custodian operations, the mechanism for cost recovery based on profiles loaded is not ideal because the cost per profile will increase over time as the number of profiles that are loaded to the DNA Database reduces. This mechanism is also burdensome to administer. For this reason, an alternative mechanism for direct funding of Custodian Operations has been put in place for 2004/05.

frequently asked questions

Q. How many people are there on The National DNA Database?

A. At 31 March 2004, there were 2,527,728 profiles on the Database, but these related to approximately 2,249,678 individuals. The difference is due to the police taking samples from some people on more than one occasion.

Q. Why do you keep profiles of people when they have found to be innocent?

A. Before 2001, the law required that if a person was not prosecuted or was acquitted we had to destroy their sample and remove their profile from the Database, and to comply with this over a quarter of a million profiles were taken off the Database. The law was then changed in response to the acquittal of a rapist and a murderer who had been found guilty of the crimes but had been identified through their profiles being retained on the Database for earlier offences when they should have been removed. Since the law was changed, over 128,000 profiles that would previously have been removed have been retained. Of these, some 5,922 have subsequently been matched with crime scene sample profiles from over 6,280 offences; these include 53 murders, 33 attempted murders, 94 rapes, 38 sexual offences, 63 aggravated burglaries and 56 the supply of controlled drugs. The legislation also allowed people who are not suspected of any crime to provide samples voluntarily for addition to the Database.

Q. Are there any plans for everyone to be put on The National DNA Database?

A. The Government has no plans for this and the Association of Chief Police Officers have stated that it would be too expensive and impracticable to take samples from everyone who might be in the country at any one time. However, we are aiming to put profiles from all the active criminal population on the Database. We currently stand a one in two chance of identifying a suspect for an offence when a profile from a crime scene is added to the Database. And the new legislation to allow samples to be taken from suspects on arrest will allow us to keep the Database up to date by capturing new offenders' profiles at the earliest opportunity.

Q. If you believe in the merits of a National DNA Database, why aren't you all on it?

A. The police and forensic scientists are subject to the law in the same way as the rest of the population and DNA samples will be taken from them in the same circumstances. In addition, some 75,000 front line police personnel and those forensic scientists involved in DNA work have provided samples to help identify if they are the source of any DNA found at crime scenes. DNA analysis is nowadays very sensitive and there is always the risk that such DNA can be left inadvertently by anyone involved in an investigation.

Q. How long will you keep a profile on The National DNA Database?

A. Profiles are removed from the Database only following the death of the individual.

Q. I have had a sample taken for a road traffic offence, how long will my profile be held?

A. All profiles on the Database are retained until the death of the individual, irrespective of the nature of the offence for which they were taken or whether the person was prosecuted for the offence or found not guilty by a court.

Q. Can I ask for my record to be removed under the Data Protection Act or Human Rights Act?

A. The Data Protection Act 1998 gives you the right to find out what data are held on the Database about you, and to have this corrected if it is wrong, but not to have it removed so long as it was lawfully obtained and is being used only for the purposes for which it was provided. The retention of profiles from unconvicted persons on the Database has been challenged under articles 8 and 14 of the European Convention on Human Rights, and the House of Lords has recently ruled that retention is not in contravention of the Convention.

Q. What can I do if my identity has been used by someone maliciously and entered on The National DNA Database by the police?

A. Before a DNA sample is taken by the police they should check the identity of the person. If the person has a previous record this would be by reference to their fingerprints. Otherwise it would be through local enquiries. The entry on The National DNA Database would then be made under the name provided by the police. If this were a false identity not discovered by the police at the time, the record would clearly be under the false identity. However, if a match were subsequently to be found between that profile and DNA from a scene of crime, the police would obtain a new sample from the person whose identity is shown on the Database, and if this person had not provided the DNA sample initially the profile would not match the one on the Database and the deception would be exposed.

Q. How reliable is DNA profiling; what is the error rate?

A. DNA profiling is a very reliable technique, but that does not mean that no

mistakes are ever made. So long as there is human involvement in the process there will be a risk of the profile derived from a sample being incorrect, or, although correct, not being that of the person from whom the sample originated and being wrongly attributed to someone else. But we take many precautions to minimise these risks. These range from the provision of dedicated kits for taking the samples, to rigorous application of quality control measures in their analysis and the checking of results obtained for possible contamination. A DNA match from the Database would also always be followed up by the police obtaining a new sample from the suspect and having this analysed for use in evidence. No one is ever prosecuted solely on the basis of a Database match. The DNA evidence is but one piece of the information the courts would require for a successful prosecution.

Q. Are DNA profiles as unique as fingerprints?

A. Fingerprints are unique, and the DNA of everyone other than identical twins is unique. But we do not analyse all of a person's DNA and only look at discrete parts that are known to vary greatly from one person to another. It is these that form the DNA profile. With the current technology, the probability of two full DNA profiles matching just by chance is of the order of 1 in 1 billion.

Q. What information about me can be obtained from The National DNA Database?

A. The DNA profile we produce is from those parts of the DNA that are known to vary greatly between persons but do not code for any physical characteristic or medical condition – the so-called junk DNA. The only other information stored about an individual on the Database is their name, date of birth, gender and ethnic appearance.

Q. Who has access to my records, what about Data Protection?

A. The management of The National DNA Database is carried out in compliance with the Data Protection Act 1998. Access to the records is restricted to named staff employed by the Custodian of the Database and only for the purposes specified for each individual given access.

frequently asked questions

Q. What arrangements are made to make sure that my DNA and its profile never get into the wrong hands?

A. Security of the DNA samples and the data obtained from the samples is paramount. This covers physical security of the premises in which the DNA samples are stored, the samples are analysed and the Database is housed; security clearance of all the staff involved in the process; and security of all information relating to the samples, both in hard copy and electronic. The communication of all information between the laboratories and the Custodian and between the Custodian and the police is also carried out via the police secure IT network.

Q. Do you share information with other bodies such as other Government Departments and the Child Support Agency?

A. The National DNA Database" is a police intelligence database. The legislation clearly states that the DNA samples and the information obtained from them can only be used for purposes related to the prevention and detection of crime, the investigation of an offence or the conduct of a prosecution. There is no sharing of the information on the Database with any body outside the Home Office, police service and Crown Prosecution Service. Indeed, the nature of the information held on the Database would be of no value to other organisations.

Q. Can insurance companies ask for a copy of my profile for the medical information it may contain?

A. The National DNA Database" is a police intelligence database. The legislation clearly states that the DNA samples and the information obtained from them can only be used for purposes related to the prevention and detection of crime, the investigation of an offence or the conduct of a prosecution. No information from the Database is provided to insurance companies and, in any event, the profile DNA contains nothing that would indicate a medical condition or a predisposition to such a condition.

Q. Once a profile has been made, why does my DNA have to be stored?

A. The sample taken by the police consists of two mouth swabs or 10 pulled hairs. Usually, up to half of this is used to obtain the DNA profile. The remainder is held in secure storage by the laboratory that analysed the sample. The legislation requires that the samples may only then be used for purposes related to the prevention and detection of crime, the investigation of an offence or the conduct of a prosecution. The following are examples of such uses that have been specifically endorsed by The National DNA Database Board, taking due account of the legal and ethical issues involved, if necessary in consultation with the Information Commissioner or bodies such as the Human Genetics Commission: - for re-analysis at a later date as a quality control check (between 5-10% are analysed in duplicate in this way)

- for the investigation of an unexpected result on the Database (e.g. due to samples possibly being inadvertently switched)

- for re-analysis to obtain a suspect's profile for use in evidence when it would otherwise be unavailable (e.g. where the police are precluded procedurally from taking another sample for this purpose)

- for re-analysis to obtain a higher level of discrimination (e.g. SGM profiles being upgraded to SGM Plus) or to help restrict the number of potential suspects to be investigated (e.g. by using mitochondrial DNA or Y-STRs to reduce the number of potential suspects identified by a familial search of the Database)

 for research into new techniques or patterns of criminal activity (e.g. geomapping).
 The National DNA Database Board is approaching the Central Office for Research Ethics Committees (COREC) to seek their support in ethical oversight of research proposals.

Q. Can I commission a copy of my profile?

A. Everyone has a right under the Data Protection Act 1998 to see what data are held about them on The National DNA Database. This would include their DNA profile as a series of digits and letters. There is a standard charge of £10 for this service. Some laboratories may also be prepared for a fee to provide a copy of the electropherogram on which the profile is represented as a series of peaks on a graph.

Q. Do I have to give a "Mass Screen" sample?

A. A mass screen may be carried out where the police are unable to identify the offender for a serious crime but have reason to believe that they may reside in a particular area or population. The population may be further defined in terms of other information available from witnesses, such as age or ethnic appearance. Members of the target group are then approached individually to see if they will agree to provide a DNA sample for analysis to help eliminate them from the enquiry. Provision of a sample is wholly voluntary and it will only be used for the purpose of the investigation for which it was provided. If the analysis results in the person being eliminated from further consideration the sample will then be destroyed. The only exception to this is where the person also consents in writing for the sample to be retained and the profile to be added to The National DNA Database for speculative searching against any other unsolved crimes. To date, some 8,000 people have consented for their samples to be so used. The consent form explains that once such consent is given it cannot then be withdrawn.

Q. Do you have an information pack for schools, career advisors etc?

A. The laboratories that do the DNA profiling are usually able to assist with providing general information as hard copy or on their websites. The National DNA Database" is also setting up a website to make its activities transparent.

glossary

ACPO

Association of Chief Police Officers

Adventitious match

DNA profiles from two individuals, who are not identical twins, that match by chance. The likelihood of an adventitious match is increased where partial DNA profiles are involved.

Amelogenin

The marker incorporated into DNA analysis, which indicates the gender of the individual.

ASN

Arrest Summons Number

Contamination

DNA inadvertently deposited or transferred to an item after an offence.

Custodian

The person accountable to The National DNA Database Board for maintaining the integrity of the data held on the Database and the efficient and effective provision of the Database information and services specified by the Board.

DNA

Stands for deoxyribonucleic acid. DNA is a molecule found in the cells of all people, animals, plants and other organic matter. The cells, of which the human body has countless millions, are the building blocks of any living organism. In human beings, for all forensic purposes, every cell contains DNA. Variations in the DNA code are responsible for physical differences between individuals including their sex, height and hair and eye colour. Except for identical siblings, each person's DNA is unique.

DNA profile

The pattern of DNA characteristics used to identify an individual. A DNA profile may be visualised as a pattern of bands on a computer screen, as a graphic representation known as an electropherogram (EPG) or as a numeric code on The National DNA Database.

DNA profiling

The laboratory technique used to obtain a DNA profile.

DNA sample

A sample taken from an individual, such as a mouth swab, plucked hair roots or venous blood, or from a crime scene, which contains the DNA of the individual/offender for analysis.

Mouth swab

A sample of cellular material containing DNA that has been collected on a swab by rubbing the swab on the inside of the cheek. Mouth swabs may also be referred to as a Criminal Justice (CJ) Sample, Evidential Sample, Elimination Sample or Volunteer Sample.

Criminal Justice (CJ) sample A non-intimate DNA sample (cheek scrape or hair root) taken under PACE from a suspect arrested, charged, reported or convicted for a recordable offence, primarily for intelligence purposes only, but convertible to an evidential sample if a separate evidential sample cannot be obtained. CJ sample profiles are added to The National DNA Database.

Evidential sample

An intimate or non-intimate sample taken from a suspect under PACE in relation to a recordable offence for DNA analysis and use in evidence. Evidential sample profiles may be added to The National DNA Database. *Elimination sample or Volunteer sample* A DNA sample provided with consent by an individual for elimination purposes. The sample and information derived from it are usually destroyed once they have served the purpose for which they were taken, and the DNA profile is not added to The National DNA Database unless additional irrevocable written consent for this is provided by the individual.

Crime scene sample A sample (e.g. blood, hair, semen, saliva) recovered from a scene of crime which is analysed to obtain information about the offender. Crime scene sample profiles relating to offences for which there is no immediate suspect are added to The National DNA Database.

Familial Search

Search of The National DNA Database for potential close relatives of an offender who is not on The National DNA Database.

FSS®

The Forensic Science Service®

Genetic information

Information derived from the coding part of the DNA molecule that controls all chemical processes in the body and determines our physical characteristics. The DNA profiles obtained for The National DNA Database are not derived from the coding region of the DNA molecule and do not contain such genetic information.

HGC

The Human Genetics Commission, an advisory body set up by the UK Government at the end of 1999, to consider the public interest issues in relation to developments in genetic science.

Homogeneous

Consisting of parts all of the same kind.

Intelligence

Information or knowledge that a police officer can use to progress an investigation. Matches between DNA profiles generated from The National DNA Database (between CJ/CJ sample profiles, CJ/crime scene sample profiles and different crime scene sample profiles) provide primary intelligence for use in police investigations.

Intimate and non-intimate samples

An intimate sample is a sample of blood, semen or any other tissue, fluid, urine, saliva or pubic hair, or a swab taken from a person's body orifice other than the mouth, taken under PACE with the person's consent, by a medical practitioner or registered health care professional. A non-intimate sample is a mouth swab, a sample of saliva, hair with roots (but not pubic hairs), a sample taken from a

nail or under a nail; a swab taken from a person's body other than a body orifice and other than the mouth, taken under PACE, with or without the person's consent.

LCN-DNA

Low copy number DNA analysis. A very sensitive DNA system designed to obtain a DNA profile from samples containing extremely small amounts of DNA. It is mostly used in high profile, serious crime cases where conventional DNA systems have failed to give a profiling result.

National DNA Database

An electronic collection of DNA profiles attributed to individuals or scenes of crime. The individuals are those suspected, charged, reported for or convicted of a recordable offence and from consenting volunteers.

glossary

NAFIS

National Automated Fingerprint Identification System

One-off speculative search

A single 'snapshot' search of a DNA profile against profiles held on The National DNA Database at the time of the search. This is usually carried out where the search profile does not meet the requirements for loading to The National DNA Database.

Pendulum list search

A technique for identifying individual DNA profiles that are contained within a two component mixed DNA profile and prioritising these for searching against The National DNA Database.

Police Elimination Database (PED)

A database, distinct and separate from The National DNA Database, containing DNA profiles of police officers, crime scene examiners and police ancillary personnel. It is used when requested by the senior investigating officer to help identify instances where DNA has been inadvertently left at the scene of crime during the investigation of the offence and the recovery and dispatch of crime scene samples to the laboratory for analysis. Since 1 April 2003, police regulations have required all new police recruits to the service to provide a sample for the PED.

PNC

The Police National Computer. PNC contains details of persons from whom DNA samples have been taken under PACE.A subset of these details is transferred electronically to create a stub record on The National DNA Database to which the DNA profile is subsequently attached.

PSU

The Home Office Police Standards Unit. PSU was set up by the Home Secretary in July 2001 and forms a vital part of the Government's police reform agenda. PSU measures and compares the performance of Basic Command Units (BCUs) and local partnerships, identifies the underlying causes of performance variations, and identifies and disseminates good practice and support to those who need assistance.

PITO

Police Information Technology Organisation

Recordable Offence

A recordable offence is broadly an offence that could lead to a custodial sentence. Recordable offences are set out in The National Police Records (Recordable Offences) Regulations 2000 and include a wide range of offences from homicide to minor thefts and criminal damage.

Replicates

Replicates exists on The National DNA Database where two or more DNA profiles, obtained from distinct sample material taken from known subjects, are actually from the same individual. They are thus the result of repeat sampling

Second Generation Multiplex (SGM)

A DNA profiling system in which 12 non-coding DNA markers, or loci and a gender marker are analysed to obtain a DNA profile. SGM was the original DNA system used for The National DNA Database on its introduction in 1995. The average discriminating power was about 1 in 50 million.

SGM Plus

The DNA system in current use for The National DNA Database. This system is compatible with SGM, but more discriminating as an additional 8 DNA markers are analysed to give the DNA profile. The quoted discriminating power for a full SGM Plus DNA profile is 1 in 1,000 million.

Short Tandem Repeat (STR)

A specific short length of noncoding region of the DNA that is repeated, end to end, within the DNA molecule. Different people will have different numbers of these repeats and hence different lengths of repeated DNA. The STR profiling technique examines the lengths of these repeat units and converts the lengths into a digital output.

Supplier

Any organisation, or unit of an organisation, which is authorised by ACPO to load DNA profiles to The National DNA Database.

Stub records

The demographic details relating to the PACE samples taken and recorded on PNC and transmitted to the Database. These include the kit barcode number, arrest summons number (ASN), name, sex, date of birth, ethnic appearance and sampling force details.

UKAS

United Kingdom Accreditation Service

Volunteer

An individual who provides a DNA sample and consent for its loading to The National DNA Database

Y-STR

Short tandem repeat contained in the male Y-chromosome in nuclear DNA



operations group

DNA Operations Group representatives 2003/2004

Chair - ACC, West Midlands Police Forensic Staff Officer to David COLEMAN Custodian Quality Leader Custodian – National DNA Database Manager HO DNA Expansion Programme Manager HO DNA Expansion project Manager SSM, Avon & Somerset SSM, Cambridgeshire SSM, Humberside SSM, Lancashire SSM. NCS SSM West Midlands Police Metropolitan Police Service Derbyshire Constabulary ACPO DNA Consultant PITO Forensic Science Service Forensic Science Service LGC Ltd Orchid Cellmark DNA Database, Dundee

ACC S. Hyde DCI D Moore Ms J Guiness Dr M Prior Mrs L Fereday Dr A Smith Mr H Grundy Dr H Williamson Ms J Ashworth Dr K Mashiter Mr P Merrill DSupt D Forest Mr A Chalkley Mr G Dexter Mr P Moore Supt Andy Adams Mr A Matthews Mr P Hackett Mr R Treble Mr M Greenhalgh Mr Tom Ross

suppliers group

Supplier group representatives 2003/2004

Custodian

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