

# The forensic use of bioinformation: ethical issues

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**B**ioinformation has been a valuable tool for detecting and prosecuting offenders ever since fingerprinting was first introduced in the late 19th Century. DNA profiling came along much later, in the 1980s, but its use in the UK grew rapidly. We now have by far the largest forensic DNA database in the world, per head of population, holding 4 million samples (or 6 per cent of the population).

Many criminals have been, and will continue to be, caught and convicted through the use of forensic bioinformation. In the year 2005-2006, DNA samples from suspects or volunteers were matched with around 50,000 samples found at crime scenes. The crime detection rate increases from 26 per cent to 40 per cent when DNA evidence is available.

However, the establishment of the National DNA Database and subsequent extensions to police powers were effected without any meaningful public debate. It was for this reason that, while recognising the value of bioinformation for forensic use, the Nuffield Council on Bioethics, an independent body, decided that a critical examination of the subject was needed.

The Council appointed a Working Group in 2006, which included members with expertise in law, genetics, philosophy and social science. As part of the inquiry, the Group held a public consultation, which elicited over 135 responses. These revealed a wide range of views, from those who wholeheartedly welcomed the expansion of forensic databases, to those who viewed the increase in police powers with deep suspicion.

Although fingerprints are more commonly used by police, the taking and retention of DNA is seen as far



more sensitive because of the additional information which can be derived from a person's DNA. For this reason, particular attention is paid in the report to the forensic use of DNA.

## **Scientific reliability**

The science and technology of DNA profiling is increasingly robust and reliable. However, problems can occur with deliberate or accidental contamination of crime scene samples, misinterpretation of mixed samples (those originating from more than one person), and mistaken interpretation of partial profiles. Our recommendations regarding the use of DNA in the criminal justice system are designed to reduce the risks of mistaken identification resulting from (relatively rare) cases of flawed science.

## **Ethical values and human rights**

The protection of the public from criminal activities is a primary obligation of the state. It is also necessary to protect certain fundamental ethical values, such as liberty, autonomy, privacy, informed consent and equality. The Working Group broadly endorsed a rights-based approach, which both recognised the importance to human beings of respect for their individual liberty, autonomy and privacy, and the need, in appropriate circumstances, to restrict these rights either in the general interest or to protect the rights of others.

The principle of 'proportionality' is at the heart of the recommendations in the report. This means that any interference with legally enforceable human rights, such as the right to a

fair trial, the right to respect for private and family life, and the right to equal treatment, must be proportionate.

## The use of DNA in criminal investigation

### Collecting DNA

The powers of the police in England and Wales to take DNA are wider than those in any other country. DNA can be taken, without consent, from any person arrested for a 'recordable' offence (mostly offences that can lead to a prison sentence). The Government recently announced plans to expand these powers further, by allowing police to take DNA from those arrested for 'non-recordable' offences as well, such as littering and minor traffic offences. It is our view that this is disproportionate to the aims of identifying a person and of confirming whether or not a person was at a crime scene, and suspicion of involvement in a minor offence does not justify the taking of bioinformation without consent.

We would like to see the police instead put more resources into the collection of DNA from crime scenes. At present, fewer than 20 per cent of crime scenes are forensically examined.

### Retaining DNA

The police can permanently store DNA on the National DNA Database even if the individual is later found to be innocent. There are personal implications for these individuals, such as loss of privacy, and anxiety about being associated with a 'criminal' database. We recommend that the police should only be allowed to keep the DNA of people who are convicted of a crime, with the exception of people charged with serious violent or sexual offences. These changes would bring the law in England, Wales and Northern Ireland into line with that in Scotland.

### Volunteers

As part of a criminal investigation, victims or witnesses may be asked by the police to volunteer DNA and allow it to be added permanently to the DNA Database. There is currently no option for it to be removed at a later date. We recommend that volunteers should not be asked to

consent to the permanent storage of DNA beyond the conclusion of the relevant case. At the very least, volunteers should be able to remove their DNA at any later time without having to give a reason.

### Children

There are around 750,000 under-18s on the National DNA Database. The United Nations Convention on the Rights of the Child requires that special attention be given to children in the legal system, including opportunities for rehabilitation. We recommend that there should be a presumption in favour of removing DNA taken from children from the Database, if requested, unless there is a good reason not to, for example, if it was a very serious offence.

### DNA evidence in court

DNA evidence is very influential in court, but the statistical implications of it can be difficult to understand. We recommend that legal professionals should acquire a minimum understanding of statistics with regard to DNA evidence. Information should also be made available to jury members about the capabilities and limitations of DNA evidence.

### Other uses of the DNA Database

#### Familial searching

When DNA collected at a crime scene does not match exactly any profile on the Database, it is possible to search for relatives whose DNA would provide a partial match. Many possible relatives can be found, and the process may reveal previously unknown family relationships. We recommend that familial searching should not be used unless it is specifically justified in each case.

#### Ethnic inferencing

When DNA is collected from individuals, the arresting officers allocate them to one of seven broad ethnic groups. This information has been used in research and now forensic analysts can tell the police the likely ethnic group of a DNA sample collected from a crime scene. The police may use this to narrow down their pool of suspects. However, the practice of assigning a 'racial type' to individuals is subjective

and inconsistent, and genetic research does not support the idea that humans can be classified by appearance into a limited number of 'races'. We recommend that 'ethnic inferences' should not be routinely sought, and they should be used with great caution.

### Non-operational research

By the end of 2006, 33 requests had been made to conduct research using the DNA Database that was not directly related to particular police investigations, termed 'non-operational research'. However, the publicly available information about this research is inadequate. We recommend the regular publication of further details about, for example, the purpose of the research and whether the research has been scientifically and ethically reviewed.

### A population-wide DNA database?

Some believe that taking the DNA of everyone at birth to build a population-wide forensic database would assist the police whilst also removing problems of discrimination. However, this would be hugely expensive and would have only a small impact on public safety. The intrusion of privacy incurred would therefore be disproportionate to any possible benefits to society. For these reasons, we are against the establishment of a population-wide forensic DNA database at the current time.

### Governance and ethical oversight

The current legislative regulatory structure for the collection and retention of forensic bioinformation is piecemeal and patchy. We recommend that there should be a statutory basis for the regulation of forensic databases, which should include oversight of research and other access requests.

The Council also suggests that an independent tribunal should be set up to oversee requests by individuals to remove their DNA from the Database, and that safeguards should be put in place regarding access to the Database by international law enforcement agencies.

Further information about the report *The forensic use of bioinformation: ethical issues* is available at [www.nuffieldbioethics.org](http://www.nuffieldbioethics.org)