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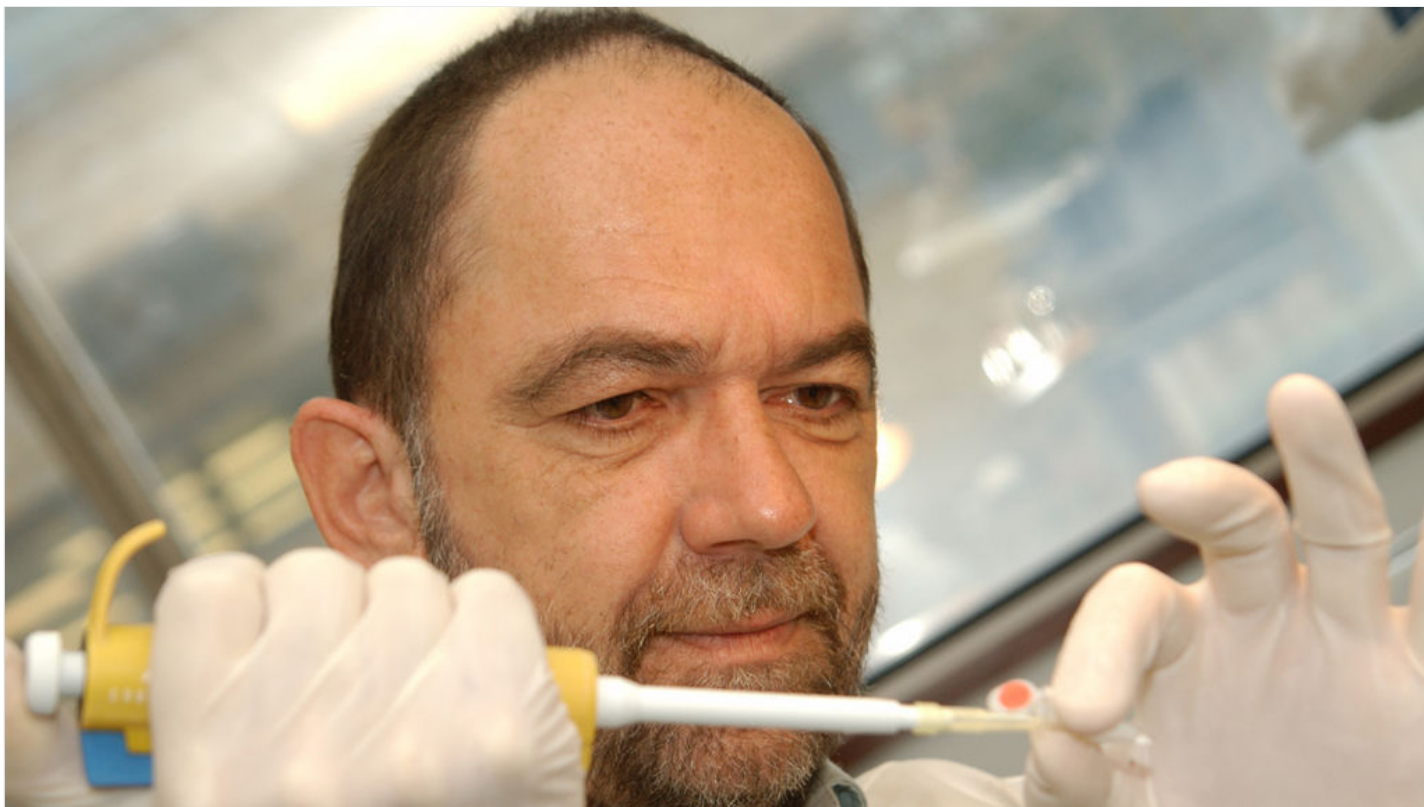
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Five things we know from 30 years of DNA fingerprinting

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From hard-to-crack crimes to conservation: the discovery of DNA fingerprinting 30 years ago had a massive impact on a range of scientific techniques. Channel 4 News brings you five of the best.



- 1984 Professor Alec Jeffreys discovers DNA fingerprinting
- 1985 DNA fingerprinting used for the first time to solve immigration and paternity cases
- 1985 first identification of identical twins using DNA fingerprinting
- 1986 first criminal investigation to implement DNA fingerprinting evidence
- 1992 DNA testing proves the innocence of Kirk Bloodworth, who had spent two years on death row after being convicted of murder
- 1992 identification of Josef Mengele by DNA analysis of skeletal remains

"My life changed on Monday morning at 9.05 am, 11 September 1984" recalls Professor Sir Alec Jeffreys, remembering the moment when he saw the world's first genetic fingerprint in his lab at Leicester University.

The accidental discovery was summed up by his grandson, who later wrote in a school project: "DNA fingerprinting was discovered by my granddad when he was messing about in the lab." "That is exactly what we were doing" said the professor.

Professor Sir Alec Jeffreys - University of Leicester



But following on from that eureka moment, the practical applications of DNA fingerprinting were quickly put to use.

Immigration

It was Professor Jeffrey's wife Sue who first spotted the implication of his discovery in immigration disputes.

Within a year his discovery provided evidence for lawyers fighting the deportation of a young boy who the Home Office said was not the son of a British woman. The child's father was abroad and uncontactable, so Professor Jeffrey took samples from the woman, her three daughters and the son.

The results were so conclusive that the Home Office, after being briefed by the professor, agreed to drop the case. Professor Jeffreys [told the Guardian newspaper](#) of the reaction of the mother: "the look on her face when I told her, the relief - it was a magical moment. I realised then we were on to something of real use."

In the next decade DNA testing of 18,000 immigrants proved that 95 per cent were blood relatives of UK citizens.

Crime scene analysis

From 1985 Sir Alec and his team developed a variation of DNA fingerprinting which they called genetic profiling for forensic use. But the first case to put it to use was to exonerate a suspect.

Leicestershire Police were investigating the rape and murder of two schoolgirls, Linda Mann in 1983 and Dawn Ashworth in 1986. They asked Professor Jeffrey to DNA test semen samples to compare them with a blood sample from Richard Buckland, a local teenager with learning difficulties who had confessed to the murder of one of the girls.

The tests showed the same man had murdered both - but it also proved that the murderer was not Richard Buckland.

Police and forensic scientists screened blood and saliva samples from 4,000 men living nearby who did not have alibis for the murders but found no match. It wasn't until a friend of Colin Pitchfork was heard admitting that he had taken the test in his place, that Pitchfork was tested and found to be the murderer.

Death row exoneration

In 1985 Kirk Bloodsworth was in a prison cell, sentenced to death for a murder he had not committed. It wasn't until 1992 that he read in a book an account of how DNA profiling had solved the killings of the Leicestershire schoolgirls. He pushed for the evidence in his case to be tested in one of only two laboratories in the USA then doing such work.

The results proved that he was innocent and his experience - including two years spent on death row - led him to campaign successfully for the introduction of a post-conviction DNA testing programme.

In the UK the police now have a [national database of 2.5m genetic profiles](#), which officers regard as one of the most powerful tools in the fight against crime.

Familial searching

Following the 2003 death of Michael Little, a lorry driver hit by a brick thrown from a motorway bridge, forensic investigators used a pioneering approach of familial searching.

Not having found a match for the traces of DNA on the brick, they found a similar profile on the police database who turned out to be the brother of the culprit. Tried and sentenced to six years, he became the first man to be convicted on evidence linking DNA found at the scene of a crime to a relative of the accused.

Nazi mystery

In 1988 Professor Jeffreys was called in by the Israeli authorities to compare blood samples from the wife and son of the notorious Nazi doctor Josef Mengele with the skeletal remains of a man buried in 1979 under the name Wolfgang Gerhard.

The results showed that it was over 99.94 per cent certain the skeleton was Mengele's, and the German and Israeli governments closed the case of the fugitive war criminal.

Endangered species

The techniques of DNA profiling are now being used by conservationists in the battle to protect rare animals.

Captive breeding programmes have [used DNA testing](#) to establish how closely related potential breeding partners might be in order to maximise the chances of successful live offspring to preserve threatened population. A technique known as conservation genetics can help biologists estimate how long a population might survive over time and assess the impact of the [fragmentation of a species caused by the loss of habitat](#).

Research by the International Fund for Animal Welfare (IFAW) campaign group published in 1995 used DNA tests to [provide evidence that Japan and Korea had engaged in the illegal killing and sale of meat from endangered whales](#). Japan later moved to legalise the sale of "incidental catch" - when a whale is caught by a Japanese fisherman in his nets.

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