

DNA17: Key Points



- DNA 17 methods (NGNSelect, ESSplex, Powerplex ESI, Powerplex ESX) replaced the previous 10 locus method in July 2014, and are now used for all routine DNA profiling in criminal cases in England/Wales.
- The results allow searching across European intelligence DNA databases.
- They provide better discrimination, greater sensitivity, are more resistant to inhibitors and obtain profiles from degraded and low level samples that previously would have failed.
- The increased sensitivity results in many more mixed and complex low level profiles.
- These methods obtain profiles from much less DNA than previously, which often compromises the evidential value of the results.
- Contamination events are now much more common and much more difficult to avoid.
- The prospect of results being explained by indirect or secondary transfer is increased.
- The 'Quant' value, which is a measure of the concentration of DNA in a sample, is now critical in assessing whether results fit with an indirect transfer suggestion.
- Good quality and full profiles are routinely obtained from swab samples. One in a billion remains the default figure quoted, but there is much less chance of relatives sharing the same DNA 17 profile.
- Complex mixed profiles can be given an expert subjective value as evidence, but there are also new highly sophisticated statistical programs to attach significance to these.
- There is no scientific means of testing the age of DNA in a sample, or how long it might have persisted on a surface, however experts can assess the likelihood of the results against suggested circumstances.
- There are presumptive tests for blood, saliva and semen, but it is never possible to be certain exactly what type(s) of cell/DNA might be in a sample, and it can be uncertain what a DNA profile was derived from. There is however, a method to extract sperm heads and profile them separately from other material.
- Disclosure of a DNA profile match is not the same as disclosure of DNA profile evidence.
- Expert evidential evaluation works back from the DNA profile result to conclude what it means in the case context, including its strengths and weaknesses.
- Streamlined Forensic Reporting (SFR1) is not a summary of DNA evidence; it is a simplistic summary of a test result. On occasions they misrepresent the results by indicating a match that in fact is not suitable for stats.
- SFR 2 reports are, in our experience, frequently incomplete and/or inaccurate. This is increasing the circumstances in which it is left to the defence to determine the significance of the results, and increasingly to commission the DNA testing.
- DNA 17 is not junk science. The science is better than ever but, in my experience, the results are increasingly misunderstood, misrepresented, and inaccurate assumptions are being made within the CJS that converts the results into junk evidence.

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DNA17: Case Studies

Case 1 – Swab samples taken from the handles of a baker's tray left at the site of an arson were submitted directly for DNA profiling and produced a mixed profile. The high level profile matched the householder's grandson, who said he had used it to transport stuff to a car boot sale a year earlier, then left it in the garden. The intermediate level profile matched the defendant. Low level components were present from others. The defendant was asked at interview to account for his DNA on the exhibit and said he might have used it for sledging about a week or two earlier. Told at interview that his DNA would not have lasted that long on an item outside, could only have been on the tray a matter of hours, implying it must have got there around the time of the fire. Case proceeded on the basis of this inference. That assertion was wrong even if the grandson's DNA had not been detected.

Case 2 - Police hear a female screaming from an alleyway and apprehend a male a few meters away and cuff him. Female says they went into ally where he grabbed her throat and put hands inside her top and lower clothing. He says they agreed a price and went into the alley and started having sex, she screamed and he ran. His clothing and a condom on his penis were packaged. He had no opportunity to touch or remove the condom since the incident. Police and a prosecution expert agreed not to test the condom as the results could only benefit the defence, but eventually commissioned DNA profiling when asked to release it to the defence for testing. A high level two person profile was obtained from the outside, which could be an equal mix of DNA from the defendant and complainant. The prosecution expert concluded, based on incomplete information that, in addition to the suggested sexual intercourse, these results could simply be her DNA transferred on his hands, despite the case circumstances suggesting there was no opportunity for this. However, the quantity of DNA in the sample was very high making indirect transfer by hand very unlikely and therefore providing very strong support for the defendant's account of sexual intercourse. A clear

misrepresentation of the significance by not weighting the possibilities.

Case 3 - Two couples become friends on holiday and get together after they get back at a house. Lots of drink is consumed and the female from one couple goes upstairs to bed naked. She has no recollection what happened, but the male from the other couple was at some point in room, and the suggestion is made something sexual happened, possibly penetration. He leaves and is detained later. No semen was found on her samples. His penis was swabbed. Only his DNA was detected on the end, but the penis shaft swab provided a mixed profile that could be fully accounted for by DNA from him and the complainant. The mixed profile was clearly two people but the quantity was low. The test result was reported in an abbreviated form with no conclusion. It was suggested at interview and by prosecution that her DNA on his penis could only be from sexual contact and suggestions of indirect transfer were unrealistic. Informal email from a forensic expert indicated that they sought advice and his evaluation would be that social contact could explain the results so they did not support sexual activity. As this did not suit the prosecution, a formal evaluation statement on this was not commissioned; the inference attached by the prosecutors being preferred to the evaluation by a forensic expert. A clear attempt to censor the meaning of the DNA profile results and/or shift the responsibility to the defence to properly assess the evidence.

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