

DNA

In *R v Karger* ([2002](#)) [83 SASR 135](#) there was considerable discussion on the directions appropriate to warn a jury against misusing statistical evidence in DNA cases. Reference was made to *R v Doheny and Adams* ([1997](#)) [1 Cr App R 369](#) and *R v GK* ([2001](#)) [53 NSWLR 317](#), particularly at 328 – 329 per Mason P. At 83 SASR 174 – 75, Gray J with whom Prior J agreed, approved at [155] the following procedures suggested in *R v Doheny and Adams*, describing those as a useful benchmark against which to measure the way in which DNA evidence was addressed in a case. Those suggested procedures, adapted to reflect the way in which DNA evidence is now presented, are:

- The scientist should adduce the evidence of the DNA comparison between the crime scene sample and the defendant's reference sample, together with the scientist's calculations of the likelihood of the DNA profile obtained from the crime scene sample occurring had there been, or not been, a contribution from the reference sample.
- Where DNA evidence is to be adduced the Crown should serve on the defence details as to how the calculations have been carried out which are sufficient to enable the defence to scrutinise the basis of the calculations.
- The Crown should make available to a defence expert, if requested, the statistical basis upon which the calculations have been based.
- Any issue of expert evidence should be identified and, if possible, resolved before trial. This area should be explored by the court in the pre-trial review.
- In giving evidence the expert will explain to the jury the nature of DNA, its characteristics and how they are used to provide a basis for determining the likelihood that a DNA profile obtained from a crime scene sample occurred with, or without, a contribution from the reference sample.

The expert will, on the basis of empirical statistical data give the jury his or her estimate of the likelihood of the DNA profile obtained from the crime scene sample occurring had there been, or not been, a contribution from the reference. Such an expression of opinion is usually expressed in one of the two following ways: "It is estimated that the DNA profile obtained is greater than [xxx] times more likely to have occurred if there had been a contribution of DNA from the defendant rather than if there had not"; or

"It is estimated that the DNA profile obtained is greater than [xxx] times more likely to have occurred if there had not been a contribution of DNA from the defendant rather than if there had".

- In the summing up careful directions are required in respect of any issues of expert evidence, and guidance should be given to avoid confusion caused by areas of expert evidence where no real issue exists.
- The judge should explain to the jury the relevance of the DNA evidence in arriving at their verdict and draw attention to the extraneous evidence which provides the context which gives the likelihood estimate (or estimates) significance, and to that which conflicts with the conclusion that the DNA profile obtained from the defendant contributed to the crime scene sample.

The process of identification by DNA profiling is based on the testing of DNA molecules in bodily tissues and bodily fluids such as blood, saliva, and semen. From measurements taken at selected locations, a DNA profile for a sample of bodily tissue or fluid of unknown origin may be obtained and compared with the DNA profile obtained from a sample of bodily tissue or fluid of known origin.

If the profiling tests are done correctly it may be possible to provide an estimate of the likelihood that DNA from a person such as the defendant contributed to the DNA found in a crime scene sample. Thus, in this case, you have heard evidence from Dr [xxx] who expressed estimated that the DNA profile obtained from one of the samples taken from the crime scene, that is to say, the [identify the particular sample by location and forensic number] is greater than [xxx] times more likely to have occurred if there had been a contribution of DNA from the defendant rather than if there had not.

This evidence does not prove that DNA from the defendant actually contributed to the crime scene sample; rather, it is evidence as to the likelihood that this occurred. It is not absolute proof.

Furthermore, the reliability of this evidence depends on the accuracy and reliability of the profiling tests carried out with respect to both the sample obtained from the defendant and the crime scene sample. The results of that testing will not be reliable where there has, for example, been contamination of one or both of the samples to which I have just referred.¹

[If there is any suggestion on the evidence of object to object transference,² refer to the evidence raising that possibility.]

¹ If there is any question as to possible contamination at collection, in handling or in analysis, the jury should be directed as to the weaknesses and the impact of possible contamination. For a discussion on DNA evidence see: Judicial Officers Bulletin No 23 published by the Judicial Commission of NSW August 2011.

² Object to object transference might provide an explanation for why a defendant's DNA is found at a crime scene when, in truth, the defendant was never present.