

# Your Witness

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## 'ear we go again!

We have dealt with ear print evidence before in the pages of *Your Witness* (e.g. see issue 37, *Taking the expert out of court*), but it continues to test the criminal court's ability to deal effectively with novel scientific evidence. In a very recent case (*R -v- Kempster* [2008] EWCA Crim 975, judgment handed down on 7 May), the Court of Appeal has once again been asked to consider the evidential admissibility and weight of this type of evidence.

We will cover the case in full in the next issue of *Your Witness*, but in brief it concerned four burglaries committed in 2000. At the first house the police recovered an ear print. At the original trial, the ear print evidence was given by Miss McGowan, an experienced fingerprint expert. She testified that the ear print found at the scene matched those taken subsequently from Mr Kempster. The defendant was found guilty of all four burglaries and sentenced to a total of 10 years' imprisonment.

Following the *Dallagher* case (*Your Witness* 37) some 2 years later, Kempster applied for leave to appeal armed with a new expert report. He argued that:

*'the ear-print evidence was inadmissible, or of no probative value, and in particular, that it was impossible to make a positive finding as to the identity of the maker of an ear-print.'*

In 2003, the Court of Appeal rejected that appeal. It confirmed that the ear print evidence was admissible and could be used by the jury to conclude that it was indeed Kempster who was the maker of the mark.

In June 2006, Kempster applied to the Criminal Cases Review Commission, an application made essentially on the strength of yet another expert report, from a Dr Ingleby. He is a mathematician who has gained experience of the ear print field from his work with the European research project FearID (Forensic Ear Identification Research Project). Having considered evidence from both Miss McGowan and Dr Ingleby, the Court of Appeal said in May 2008:

*'It is clear, particularly from the evidence of Dr Ingleby, that ear-print comparison is capable of providing information which could identify the person who has left an ear-print on a surface. That is certainly the case where minutiae can be identified and matched. Where the only information comes from the gross features, we do not understand him to say that no match can ever be made, but there is likely to be less confidence in such a match because of the flexibility of the ear*

*and the uncertainty of the pressure which will have been applied at the relevant time. Miss McGowan still remains of the view that gross features are capable of providing a reliable match.*

*'On the basis of the evidence that we have heard, we are of the view that the latter can only be the case where the gross features truly provide a precise match. We have no doubt that evidence of those experienced in comparing ear-prints is capable of being relevant and admissible. The question in each case will be whether it is probative.'*

So, once again the courts have shown that they are not going to reject ear print evidence out of hand. Indeed, the work at FearID has rather firmed up the court's view. It is now clear that the court considers such evidence as capable of providing positive identification, rather than just being capable of excluding a suspect from an investigation.

## Admissibility in criminal cases

The issues surrounding the use of novel scientific techniques in the provision of expert evidence are well known. Indeed, we have long been calling for power to be given to the courts to allow judicial discretion over the admissibility of expert evidence. We argue for a *Daubert*-style system (as used in the USA and New Zealand), but it isn't the only approach. It is, therefore, good to hear that the Law Commission is looking at this very issue.

The Law Commission, an independent statutory body, has a responsibility to keep the law under review and to recommend reform where it's needed. The Commission is split into five teams:

- Commercial and Common Law
- Criminal Law
- Property, Family and Trust Law
- Public Law
- Statute Law.

It is, naturally enough, the Criminal Law Team that is working on admissibility of expert evidence.

The status quo is that pretty much any expert evidence can be adduced by either side in a prosecution. It is assumed that the adversarial process will test the proffered evidence and thereby allow a proper determination of its evidential weight. However, as the string of convictions quashed on the basis of 'flawed' expert evidence shows, the system does not always work. It is good to know that, finally, some serious thought is being given to how the status quo might be improved.

Chris Pamplin

## Inside

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# New Family Practice Direction

With effect from 1 April 2008 there will be new practice directions relating to the use and instruction of experts in family proceedings relating to children<sup>1</sup>. The guidance contained in the practice direction will supersede that contained in Appendix C (the Code of Guidance for Expert Witnesses in Family Proceedings) to the Protocol of June 2003 and the practice direction to Part 17 (Experts) of the Family Procedure (Adoption) Rules 2005.

In the preamble to the Direction, the President of the Family Division states that the aims of the guidance are to provide the court with early information to determine whether expert evidence will assist the court to:

- identify, narrow and, where possible, agree the issues between the parties
- provide an opinion about a question that is not within the skill and experience of the court
- encourage the early identification of questions that need to be answered by an expert, and
- encourage disclosure of full and frank information between the parties, the court and any expert instructed.

The guidance does not aim to cover all possible eventualities. Thus it should be complied with 'so far as consistent in all the circumstances with the just disposal of the matter in accordance with the rules and guidance applying to the procedure in question'.

Those parts dealing with the instruction and duties of experts remain much as they were before, and it is true to say that much of what is contained in the new practice direction is similar to the guidance contained previously in Appendix C of the 2004 Protocol. However, there are a number of entirely new provisions.

## New provisions

Many of the new additions arise out of the recommendations made by Ryder J in the case of *Oldham Metropolitan Borough Council -v- GW, PW and KPW (a Child)*<sup>2</sup>. He requested that the Code of Guidance be amended to reflect his recommendations.

These included the recommendation that experts should be asked to describe:

- any ethnic, cultural or linguistic factors they have taken into account
- any research or literature considered, and
- any process of risk assessment or differential diagnosis, noting any unusual, contradictory or inconsistent features of the case and highlighting any hypotheses relied on.

This is now included at paragraph 3.3(8)(a) of the new Directions.

## RuLex – The Rules Lexicon

The full text of the new Family Practice Direction is included in our *RuLex* software, which is free to all Professional-level registrants of the *Register* (see p. 8). Alternatively, you can go to our website at [www.jspubs.com](http://www.jspubs.com) and visit our Expert Library.

The Directions also give guidance to experts on how they should deal with any question on which there is a range of scientific opinion, with reference to factors that counter or support the opinion expressed within that range. In line with Ryder J's recommendations, experts should now highlight whether a proposition is an hypothesis (in particular a controversial hypothesis), or an opinion deduced in accordance with a peer-reviewed and tested technique and/or research and experience accepted as a consensus in the scientific community. Experts should also indicate whether the opinion is provisional or qualified, stating the qualification and the reason for it. In addition, experts should identify what further information is required to give an opinion without qualification.

Where there is a range of opinion on any question to be answered by the expert, Paragraph 3.3(9) requires that the expert should:

- summarise the range of opinion
- highlight and analyse within the range of opinion an 'unknown cause', whether on the facts of the case (e.g. there is too little information to form a scientific opinion) or because of limited experience, lack of research, peer review or support in the field of expertise the expert professes
- give reasons for any opinion expressed. The use of a balance sheet approach to the factors that support or undermine an opinion can be of great assistance to the court.

## Detailed guidance on instructions to experts

So far as the instruction of experts is concerned, parties wishing to instruct experts are to submit draft directions dealing with the instruction by 11am on the business day before the relevant hearing (para 4.2). The written proposal must contain information on:

- 1) the name, discipline, qualifications and expertise of the expert (by way of a CV, where possible)
- 2) the expert's availability to undertake the work
- 3) the relevance of the expert evidence sought to be adduced to the issues in the proceedings and the specific questions upon which it is proposed that the expert should give an opinion (including the relevance of any ethnic, cultural, religious or linguistic contexts)
- 4) the timetable for the report
- 5) the responsibility for instruction
- 6) whether or not the expert evidence can properly be obtained by the joint instruction of the expert by two or more of the parties
- 7) whether the expert evidence can properly be obtained by only one party (for example, on behalf of the child)
- 8) why the expert evidence proposed cannot be given by social services undertaking a core assessment or by the children's Guardian in accordance with their statutory duties

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*Aims to give an early assessment of the value of any expert evidence*

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*Gives guidance on what should be in the instructions to experts*

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- 9) the likely cost of the report on an hourly or other charging basis; where possible, the expert's terms of instruction should be made available to the court
- 10) the proposed apportionment (at least in the first instance) of any jointly instructed expert's fee, when it is to be paid and, if applicable, whether public funding has been approved.

### Letters of instruction

The guidance further provides that it shall be standard for letters of instruction to be prepared, agreed, filed and served by the lead solicitor within 5 business days of the relevant hearing. If parties cannot agree the contents of the letter, any instructing party may submit to the court a written request, which must be copied to the other parties, that the court settle the letter of instruction.

The guidance provides an accelerated mechanism for the judge to deal with the letter, thus avoiding the need for a hearing. Para 5.2 states that this should preferably be sent directly to the judge dealing with the proceedings and be copied to the other instructing parties. The court will then settle the letter of instruction, usually without a hearing to avoid delay, and will send the settled letter to the lead solicitor for transmission forthwith to the expert, copying it to the other parties for information. This entire process should be conducted by email where possible.

If parties wish to ask further questions of the expert, this should now be done not later than 10 business days after receipt of the report (para 6.1). The court will specify the timetable, setting out the date by which the expert is to answer the written questions.

### Expert meetings

Arrangements for expert discussions or meetings are contained in paragraph 6.3 of the new practice direction. These require that the solicitor given the responsibility by the court ('the nominated professional') shall, within 15 business days after the expert reports have been filed and copied to the other parties, make arrangements for the experts to meet or communicate. Where applicable, the following matters should be considered:

- where permission has been given for the instruction of experts from different disciplines, a global discussion may be held relating to those questions that concern all or most of them
- separate discussions may have to be held among experts from the same or related disciplines, but care should be taken to ensure that the discussions complement each other so that related questions are discussed by all relevant experts
- 5 business days prior to a discussion or meeting, the nominated professional should

formulate an agenda, including a list of questions for consideration. The agenda should contain only those questions intended to clarify areas of agreement or disagreement. Questions repeating what was asked in the letter of instruction or seeking to rehearse cross-examination in advance of the hearing should be rejected as likely to defeat the purpose of the meeting. The agenda may usefully take the form of a list of questions to be circulated among the other parties in advance. It should also comprise all questions that each party wishes the experts to consider. The agenda and list of questions should be sent to each of the experts not later than 2 clear business days before the discussion.

- the nominated professional may exercise a discretion to accept further questions after the agenda with the list of questions has been circulated to the parties. Only in exceptional circumstances should questions be added to the agenda within the 2-day period before the meeting. Under no circumstances should any question received on the day of, or during, the meeting be accepted. Strictness in this regard is vital, for adequate notice of the questions enables the parties to identify and isolate the issues in the case before the meeting so that the expert discussion at the meeting can concentrate on those issues.
- the discussion should be chaired by the nominated professional. A minute must be taken of the questions answered by the experts, and a Statement of Agreement and Disagreement must be prepared which should be agreed and signed by each of the experts who participated in the discussion. The statement should be served and filed not later than 5 business days after the discussion has taken place.
- in each case, whether some or all of the experts participate by telephone conference or video link to ensure that minimum disruption is caused to professional schedules and costs are minimised.

Paragraph 7 of the practice direction introduces new provisions concerning a party's refusal to be bound by an agreement reached at an expert discussion or meeting. The guidance now requires that such a party must inform the court and the other parties in writing of his reasons for refusing to accept the agreement within 10 business days after the discussion or meeting or, where an Issues Resolution Hearing (IRH) is to be held, not less than 5 business days before the IRH.

Experts will, no doubt, welcome the fact that family law practitioners are reminded, throughout the guidance, of the need to be considerate of the expert's other professional commitments and are encouraged to make greater use of video links and telephone conferences to minimise disruption.

## Detailed guidance on practical issues for expert meetings

### References

<sup>1</sup> <http://www.hmcourts-service.gov.uk/cms/files/Experts-PD-flagB-final-version-14-01-08.pdf>

<sup>2</sup> *Oldham Metropolitan Borough Council -v- GW, PW and KPW (a Child)* [2007] EWCH 136 (Fam)

# Green light for LCN DNA profiling?

We reported in our last issue (*Your Witness 51*) on the controversy surrounding the use of Low Copy Number (LCN) DNA profiling by the Forensic Science Service (FSS) and the doubts expressed about its efficacy. We raised our concern that, apart from the internal FSS evaluation, there appeared to have been no proper peer review of the science. The criminal justice systems of other countries remain doubtful about the process. Other than New Zealand and the Netherlands, the UK is the only jurisdiction in which the technique has been applied regularly in securing convictions in criminal trials.

## A speck too far?

LCN techniques allow tiny amounts of genetic material (a few cells left from contact with a surface are sufficient) to be amplified sufficiently for DNA profiling. However, critics of the technique point to the durability of DNA and the ease with which small quantities can be transferred from one object to another. This greatly increases opportunities for error and cross-contamination.

There had been severe criticism of the technique in the judgment given in the Omagh Bombing case in December 2007. In that case, Mr Justice Weir expressed doubts about the scientific validity of LCN testing after it wrongly linked a sample taken from a car bomb in Northern Ireland to a teenage boy in Nottingham.

As a result of that criticism, the Association of Chief Police Officers (ACPO), in consultation with the Crown Prosecution Service (CPS), wrote to Chief Constables on 21 December 2007 recommending that the use of LCN DNA analysis in criminal investigations should be suspended pending further review.

The CPS carried out what they refer to as a 'precautionary internal review' of current cases involving the FSS's use of LCN DNA analysis. This took place between 21 December 2007 and 14 January 2008. The review concluded that there was nothing to suggest 'any current problems' with LCN analysis and that the technique should remain available to the FSS as potentially admissible evidence. They attached the caveat that 'the strength and weight such evidence is given in any individual case remains a matter to be considered, presented, and tested in the light of all the other evidence.'

In a press release in January 2008, the CPS announced that the Forensic Science Tsar had, in any event, already commissioned a review of the use of low template DNA analysis (including LCN DNA) by a team to be headed by Professor

Brian Caddy of Strathclyde University. Whilst the process had been validated by FSS Ltd in accordance with their own 'internal validation procedures', the CPS acknowledged that there was currently no recognised technical standard governing the validation of low template DNA analysis. Professor Caddy's work, they said, would enable the Forensic Science Regulator to prescribe standards against which all suppliers, including the FSS, would be required to validate their services.

Clearly, there were concerns about the validity of

LCN DNA analysis well before Mr Justice Weir's criticism, as Professor Caddy's review commenced in November 2007 (prior to the judgment in the Omagh case) and a report was expected to be delivered by the end of February 2008. In the event, it was not published until April. It is now before the Forensic Science

Regulator, Andrew Rennison, for consideration. But it is already clear that the Caddy Report will effectively give the 'green light' to the FSS (and other suppliers) to continue to make use of low template DNA in forensic analysis.

## Caddy Review

Professor Caddy's brief was to examine low template DNA (LTDNA) profiling techniques (including the LCN technique employed by the FSS, and analogous processes used by other providers of DNA profiling services to the UK criminal justice system) to generate DNA profiles from samples that may not yield useable results from standard DNA profiling. This was to include processes seeking to obtain profiles from DNA samples below 200 picogram (a million millionth of a gram) in size and the application of an extended cycle of DNA amplification.

He was asked to:

- advise upon the scientific validity of these techniques, having regard to any novel issues raised and the variations in approach adopted by different providers
- recommend best practice in the light of current scientific knowledge and opinion
- comment upon the interpretation of the results and how they should be presented to the customer (i.e. the CPS) and to the court in any criminal proceedings
- advise on the creation of a national minimum technical standard for low template DNA analysis, to include extraction, quantification, dilution and interpretation criteria.

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*LCN DNA was severely criticised in the Omagh Bombing case*

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*Forensic Science Regulator initiated a review*

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*LCN DNA profiles should be reported to the jury with the following caveats:*

*1) the nature of the original starting material is unknown*

*2) the time at which the DNA was transferred cannot be inferred*

*3) the risk of contamination is increased compared to standard DNA profiling.*

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## How LCN DNA analysis works

In his report, Professor Caddy explains the science behind the technique. Standard DNA profiling, which uses amplification of DNA through 28 cycles, works effectively with identifiable traces of body fluids. But there are times when no identifiable body fluid is present. The amount of DNA in these samples may be present at very low levels, perhaps just one or two human cells. These samples are sometimes referred to as 'touch DNA', and may be present at levels similar to incidental DNA or that of low level contamination not normally detected using standard DNA profiling. Modifications needed to obtain a profile from less than 200 picogram include:

- optimisation of the electrophoresis system
- increasing the number of amplification steps from 28 to 34 cycles and/or
- purification of the polymerase chain reaction (PCR) product from a standard 28 cycles process.

Any of these modifications results in an increase in the sensitivity of the test. However, they may also increase stochastic effects (i.e. effects that follow some random probability distribution or pattern, so that the behaviour may be analysed statistically but not predicted precisely) and the opportunity for detecting DNA unrelated to the alleged incident (either incidental or due to contamination). These processes confuse the outcome of such DNA profiling and are usually dealt with by repeating the process a small number of times – twice was usually considered to be sufficient.

Stochastic effects are not limited to increased cycle number, but occur even with 28 cycles when using low template DNA. With the introduction of more sensitive systems (e.g. capillary electrophoresis) it is possible to detect very low levels of DNA using 28 cycles.

Sometimes identifiable cellular material may be present, but either the DNA is degraded such that a full DNA profile cannot be obtained or the presence of inhibitors prevents further analysis. Since the aim is to generate as complete a DNA profile as possible, modifications as described above will be used. It is these ultra-sensitive techniques that, together, may be defined as LTDNA or LCN DNA analysis.

## Where is the evidence of reliability?

Mr Justice Weir's criticism of these processes centred on his doubts that there had been proper scientific evaluation. He took the view that, to do this, the scientific community would need to have the necessary information to assess the ability of the procedure to obtain reliable results, determine the conditions under which such results could be obtained and define the procedure's limitations. He did not consider that, in this case, such necessary information had been provided.

The report makes no apparent criticism of the science involved. Professor Caddy clearly

## How the PCR works

To amplify a segment of DNA using the PCR, the sample is first heated to between 94 and 96°C so that the DNA denatures, i.e. it separates into two pieces of single-stranded DNA.

The next step is that an enzyme (known as 'Taq polymerase') synthesizes – builds – two new strands of DNA, using the original strands as templates. This process results in duplication of the original DNA, with each of the new molecules containing one old and one new DNA strand.

Now each of these strands can be used to create two new copies, and so on, leading to an exponential growth in the number of (essentially) identical strands of DNA. If the cycle of denaturing and synthesizing new DNA is repeated 30 times, you end up with more than one billion copies of the original DNA segment.

The entire cycling process of PCR is automated and can be completed in just a few hours. It is directed by a machine called a thermocycler, which is programmed to alter the temperature of the reaction every few minutes to allow DNA denaturing and synthesis.

encountered some difficulty in obtaining the original validation reports produced by the FSS. He levels some criticism in relation to this, but it seems that he eventually received sufficient documentation and data from its competitors to demonstrate that the techniques were fit for purpose. The reviewers also obtained the independent report of a Dutch laboratory that supported the findings of the FSS. The report appears to conclude that the techniques used to generate profiles from LCN DNA are sound.

Whether a full profile is generated from a given sample seems to be a matter of fact. It either does or does not. Far from the panacea for the detection of all crime envisaged by some police forces, the technique only succeeds in generating a full profile in ~6% of cases. Professor Caddy acknowledges, however, that there are no definitive statistics for its success, and that this is partly due to differences of opinion as to what constitutes a 'success'.

Responding specifically to the concerns expressed by Mr Justice Weir, the Professor said that the reviewers were entirely in agreement with his statements and sought to assess how far the providers of LTDNA analyses comply with these. Because science is fundamentally an exoteric process, it is the norm in empirical science that findings and data are independently replicated prior to widespread acceptance. He agreed that lack of refutation is not sufficient of itself, regardless of the source of the original work. However, in this case, the lack of a funding mechanism to enable this type of scientific enquiry had been a barrier to the process of validation. He recommended, therefore, that the Forensic Science Regulator should seek funding

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*Science behind the technique given the all clear...*

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*... but agreed the lack of scientific evaluation needed to be addressed*

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for independent research and validation that is open to national competition.

### **Improved CSI procedures essential**

Whilst the report contains little criticism of the scientific technique itself, it does acknowledge, throughout, that the opportunity for contamination is greatly increased. Accordingly, the report focuses very strongly on the procedures currently used for the collection of samples, the identification of those suitable for LTDNA analysis, how they are stored and treated and how the results of the analysis are subsequently interpreted.

Forensic science, says Professor Caddy, has long been thought of as a process starting at the crime scene and ending in the court. However, the LTDNA process starts beyond the scene and includes the manufacture of items for use by investigators at the scene and in the laboratory. Consequently, his report recommends the setting up of national standards for training, equipment and analytical procedures.

He also stresses the need for standards and effective quality control mechanisms to monitor the use of DNA-free consumables both in the laboratory and for those working at the crime scene. A national standard of 'DNA clean' materials needs to be set. And he recommends that the training of both laboratory personnel and those involved in the recovery of DNA samples from crime scenes should be standardised. Although he compares and comments on existing procedures, he makes no suggestion as to what national standards should entail, saying that 'it is for the Forensic Science Regulator through a dialogue with all providers and ACPO to establish what those standards should be, to implement them and to monitor their application'.

One thing he does recommend is quantification of the DNA sample at the earliest stage and, indeed, for consideration properly to be given to whether LCN DNA analysis is the most appropriate technique for extraction of a profile. It appears that it was only after July 2005 that a reliable quantification method became available. Prior to this only a rough guide as to the amounts of DNA in an extract was obtained from a measurement of the intensity of a fluorescent dye binding to the DNA fragments.

Unlike all other providers, the FSS does not, even now, routinely quantify their DNA extracts. Professor Caddy recommends that the Forensic Science Regulator should insist that, as a matter of best practice, a DNA quantification step is implemented for all DNA analyses submitted to the criminal justice system and that the Regulator should monitor its implementation.

### **Problem of interpretation**

Caddy's report goes on to deal with the particular difficulties attending interpretation of the analysis of sub-optimal DNA samples.

There is the possibility that alleles (one of several alternative forms of the same gene, occupying the same relative positions in homologous chromosomes) may be missed by chance because the sample is so small and fails to be amplified (a situation known as 'drop out'), or that there is contamination and mixing of samples, whether they are those pre-existing at the scene or introduced as part of the detection process (a situation known as 'drop-in'). All providers agree that, regardless of which signal enhancement method is selected, the problems of allele drop-out due to stochastic effects in the presence of low quantities of template and that of increased interference from other substances will occur in sub-optimal DNA samples. Similarly, the higher sensitivity of the technique gives greater scope for drop-in of additional alleles and the detection of low levels of extraneous contamination.

There is also the possibility that the sample might be contaminated with inhibitors of the PCR. This was well known to occur with some dyes, e.g. from blue denim garments. But there may be other inhibitors, like heparin, that are difficult to remove.

### **Lacking legal or scientific consensus**

Referring to the scientific paper produced by the prosecution in the Omagh Bombing case, Professor Caddy said that, while this provided an insightful mathematical model, designed to predict the detection of alleles under 'normal' and low concentration conditions, this could not be regarded as definitive. The work, he said, needed to be replicated by an independent group before it could be accepted. It seems, therefore, that the current state of the art with respect to the analysis of low concentration DNA profiles is not yet represented by a legal and scientific consensus.

The lack of a clear, explicit consensus reflects the extremely challenging nature of the analysis. At the same time, it is apparent that the need to articulate such a consensus at national and ideally international levels is pressing.

The report suggests that one way of further evaluating the technique would be to take a large number of known DNA profiles and serially dilute them, submitting them to the extraction procedure at different levels of concentration. An evaluation could then be made by comparison with the known profiles of all the parameters used.

Although the report identifies the difficult areas and the problems to be resolved, it stops short of suggesting what the analytical standards should be. The report's authors simply recommend that the Forensic Science Regulator should develop a consensus from all the forensic science providers, in consultation with all stakeholders, on how profiles and mixed profiles are to be interpreted.

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*Improved CSI sample collection and handling is needed...*

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*... if CSI-induced mixing or cross-contamination is to be avoided*

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Once these criteria have been agreed, then the Regulator should monitor their implementation.

### **Caddy calls for more openness**

The report calls for greater openness in the availability of information. Professor Caddy pointed out, for example, that there used to be a caveat in the LCN DNA profiling reports by the FSS stating that any cellular material generating a result using LCN may have transferred by means unknown. This caveat no longer seemed to be stated in recent witness statements relating to touch DNA. There may, he said, be good reason for this omission arising from additional research, but any such work had not been made available to the reviewers. The Forensic Science Regulator should therefore encourage openness in the availability of information that may have an impact on the way DNA profiles are interpreted in the context of a case.

The report also indicates that, due to the complex factors dictating the rate of decay of cellular material, caution should be exercised in any statement of the length of time such material had been present.

In making a finding that the processes involved in LCN DNA profiling were fundamentally sound, the reviewers were of the opinion that any LTDNA profile should always be reported to the jury with the following caveats:

- that the nature of the original starting material is unknown
- that the time at which the DNA was transferred cannot be inferred, and
- that the opportunity for secondary transfer is increased in comparison with standard DNA profiling.

If the results were obtained from LCN, it is inappropriate to comment upon the cellular material from which the DNA arose or the activity by which the DNA was transferred. Professor Caddy also thought that juries should be given guidance on how to interpret LCN DNA evidence from a new independent expert body.

### **Reaction to the Caddy Review**

Following publication of the report there has been a mixed reaction. ACPO's Chris Sims said:

*'DNA techniques offer the police service an invaluable tool in identifying and eliminating suspects in crime investigations. Professor Caddy's review of the science of low template DNA profiling provides a helpful explanation of the science and a basis for improving the contribution of DNA profiling to crime investigations. The service wants and needs reliable and sound DNA techniques. ACPO looks forward to working with the forensic science regulator and other agencies to take these recommendations forward.'*

Dr Helen Wallace, of the genetics lobby *GeneWatch*, said that the report was a step in the right direction, but that the fundamental issues still remained:

*'The report does highlight some genuinely concerning issues, particularly around the fact that juries have not been warned about issues associated with low copy number DNA.'*

One area of concern was the increased potential for error posed by the increased sensitivity of techniques. As national and international databases grow, and more and more people's DNA profiles are recorded and stored, the higher the risk of false matches.

Professor Allan Jamieson, Director of The Forensic Institute in Glasgow, said there was no doubt that very small amounts of DNA could be amplified, but the real issue was in interpreting the results. Mixing two people's DNA was, he said, like mixing the coins in their pockets together.

*'They end up on the table and you have to say which coin came from which person. You simply can't do that.'*

### **Questions on admissibility**

It seems to us that, despite the recommendations made by the report regarding DNA clean materials, laboratory conditions and collection techniques, there are a number of fundamental questions that remain unanswered concerning the admissibility of such evidence in criminal proceedings.

There is a difference, we suggest, between a finding that a new scientific technique is basically sound and a finding that analysis resulting from that technique is sufficiently cogent to be put before a jury. Although Professor Caddy points to the use of LCN DNA profiling in other jurisdictions, it remains true that the UK is almost alone in its routine use of these techniques as leading evidence in criminal trials. The report acknowledges that there remains a need for further evaluation and that there is still no legal and scientific consensus.

In the Omagh case, Mr Justice Weir said that:

*'the absence of an agreed protocol for the validation of scientific techniques prior to them being admitted in court was entirely unsatisfactory.'*

Until there is such an agreed protocol, the continued use of these profiling techniques will still be open to doubt.

Whilst the report has been welcomed in some quarters and has undoubtedly saved the CPS the unpleasant and costly task of examining the dozens of cases where the techniques have been used since 1999, we doubt whether Professor Caddy's report should be regarded as the 'green light' that ACPO, the FSS and the Regulator were, apparently, waiting for. It remains to be seen whether the Regulator will make available the funds for the further evaluation that Professor Caddy recommends, or whether this is to be left to the FSS, the other providers and the scientific community at large. We suspect the latter.

*Philip Owen*

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*Specific caveats should always appear with LCN DNA evidence*

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*LCN DNA is another technique that would benefit from Daubert*

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Accessible freely on-line at [www.jspubs.com](http://www.jspubs.com) are details of many leading cases that touch upon expert evidence.

## LawyerLists

How would you like to have a database of 10,000+ litigation lawyers at your fingertips? Based on the litigation lawyers on the *Register's* Controlled Distribution List, *LawyerLists* enables you to purchase top-quality, recently validated mailing lists of litigators based across the UK. Now you can have fast, easy, flexible and cost-effective access to top-quality address data for litigation lawyers. Getting your own marketing material directly onto the desks of key litigators has never been this simple!

## Register logo – FREE to download

All experts vetted and currently listed may use our undated logo to advertise their inclusion. A dated version of the logo is also available bearing the year of most recent recommendation. Successful re-vetting in 2008 will enable you to download the 2008 logo.

## General helpline – FREE

We operate a general helpline for experts seeking assistance in any aspect of their work as expert witnesses. Call 01638 561590 for assistance, or e-mail [helpline@jspubs.com](mailto:helpline@jspubs.com).

## Re-vetting

You can choose to submit yourself to regular scrutiny by instructing lawyers in a number of key areas. This would both enhance your expert profile and give you access to the 2008 dated logo. The results of the re-vetting process are published in summary form in the printed *Register*, and in detail in the software and on-line versions of the *Register*.

## Profiles and CVs – FREE

As part of our service to members of the legal profession, we provide free access to more detailed information on our listed expert witnesses. At no charge, experts may submit:

- a **profile sheet** – a one-page A4 synopsis of additional information
- a **CV**.

## Extended entry

At a cost of 2p + VAT per character, an extended entry offers experts the opportunity to provide lawyers with a more detailed summary of expertise, a brief career history, training achievements, publishing record, etc.

## Photographs – FREE

Why not enhance your on-line and CD-ROM entries with a head-and-shoulders portrait photograph?

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If corporate branding is important to you, for a one-off fee you can badge your on-line and CD-ROM entries with your business logo.

## Multiple entries

As well as saving you money, multiple entries offer improved geographical and expertise coverage for multi-site firms. If your company has several offices around the UK combined with a wide range of expertise, call to discuss the options.

## Web integration – FREE

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## Surveys and consultations – FREE

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## Professional advice helpline – FREE

A valuable benefit for those experts who opt for the Professional service level is our independently operated professional advice helpline. It provides access to reliable and underwritten professional advice on matters relating to tax, VAT, employment and commercial legal issues.

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Drawing on over 20 years' experience of working with the expert witness community, we have designed a suite of task-specific software modules to help keep experts informed.

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