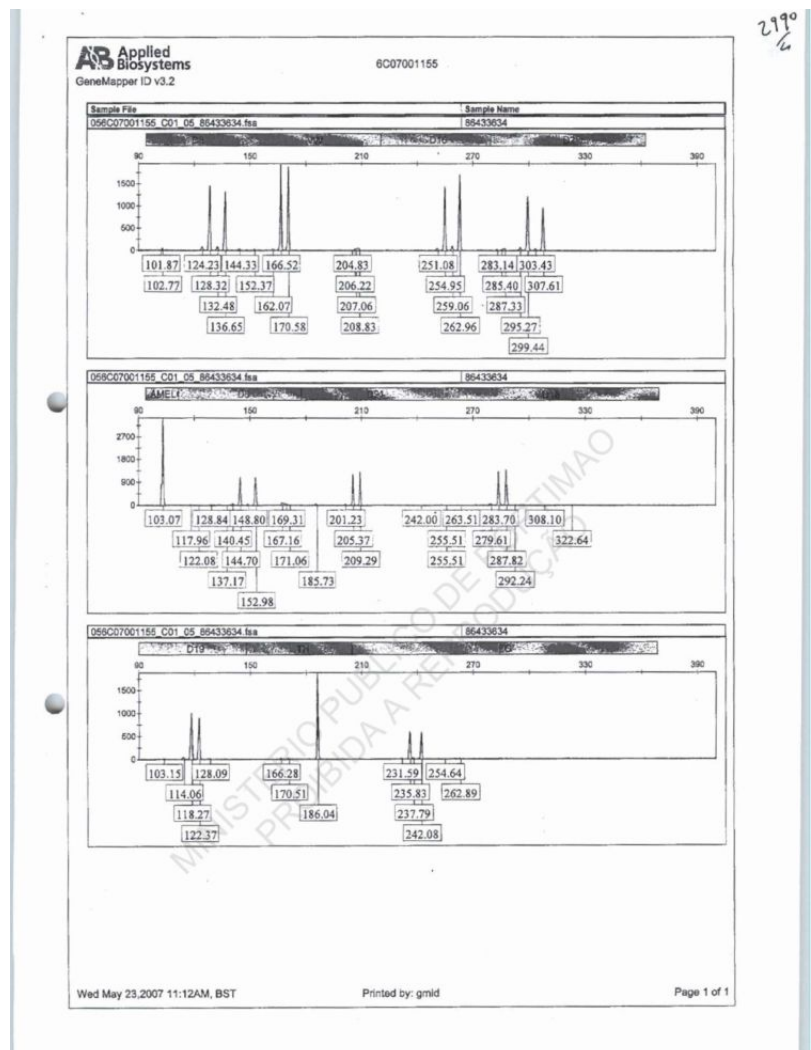


DNA Traces



- Original PJ Files on DNA Traces → [Madeleines DNA](#)
- Summary of PJ-Files critics → [PJ Files: The FSS/Lowe Report](#)
- Overview on PJ-DNA-Investigations, british critics, see → [Case Files Released: UK Reports \(1\)](#)
- For an overview of the special Low-Copy Number DNA Method see → [LCN DNA](#)

Wikipedia: → [DNA Profiling](#) in general

Wikipedia: → [Mitochondrial DNA \(mtDNA\)](#) use in Identification: “Human **mtDNA** can also be used to help identify individuals. Forensic laboratories occasionally use mtDNA comparison to identify human remains, and especially to identify older unidentified skeletal remains. Although unlike nuclear DNA, mtDNA is not specific to one individual, it can be used **in combination with other evidence** (anthropological evidence, circumstantial evidence, and the like) to establish identification. mtDNA is also used to exclude possible matches between missing persons and unidentified remains. Many researchers believe that mtDNA is better suited to identification of older skeletal remains than nuclear DNA because the greater number of copies of mtDNA per cell increases the chance of obtaining a useful sample, and because a match with a living relative is possible even if numerous maternal generations separate the two. ...”

Wikipedia: →[LCN DNA technique of FSS](#): “It **has been used in more than 21,000 serious crime cases** in the UK and internationally, particularly in “cold” cases. A **FSS** spokesman said: “*LCN DNA analysis is only carried out by the most-experienced DNA scientists, who have undergone special additional training and testing in this area of casework.*” However, the technique **came under attack from the Judge during the trial of Sean Hoey** - who was eventually cleared of involvement in the Omagh Bombing. One of the criticisms the judge leveled at LCN was that although the FSS had internally validated and published scientific papers on the technique, **there was an alleged lack of external validation** by the wider scientific community. Following the Judge's ruling, the use of the technique was suspended in the UK, pending a **review by the Crown Prosecution Service**. This review was completed and the **suspension lifted on the January 14, 2008** with the CPS stating that it **had not seen anything to suggest that any current problems exist with LCN**”“

Wikipedia: →[The short History of the FSS \(2005-2012\)](#)

→[PJ-Files 0-Processo 10 - 2615 to 2616 10VOLUME_Xa_Page_2615](#)

10VOLUME_Xa_Page_2616

Letter dated 11 September regarding FSS report received by PJ on on 4 September from Leicester Police, citing 15/19 matches of Madeleine DNA profile

This serves to add [to the case file] a laboratory examination report prepared in England, written in English and translated into Portuguese, delivered to this police force on 4 September 2007 by English police officer Stuart Prior.

This laboratory report tells about the examinations made of two trace evidence recoveries, one behind the living room sofa in apartment 5A and the other in the boot area of the vehicle used by the McCann family, hired [by them] from the end of May this year.

In some of these recoveries (samples) DNA was found whose components are also found in the profile of Madeleine McCann.

With respect to the trace evidence [recovered behind the sofa](#) all the confirmed DNA components coincide with corresponding components in the →[DNA profile of Madeleine McCann](#).

In the sample collected in the boot area of the vehicle, 15 of the identified DNA components coincide with the corresponding components in the →[DNA profile of Madeleine McCann](#), this of [having] 19 components.

Portimao, 11 September 2007 Inspector Joao Carlos

Extract →[Daily Mail](#) (5 August 2008):

“It was sent on September 3, 2007 to [Detective Superintendent Stuart Prior](#), head of the British side of the investigation, and translated into Portuguese the following day. **Mr Lowe said a sample taken from the McCanns' Renault Scenic hire car had contained 15 out of 19 of Madeleine's DNA components.** But he warned that the result-based on the controversial 'low copy'

DNA analysis technique which uses very small samples - was 'too complex for meaningful interpretation or inclusion'.

The scientist wrote: 'Let's look at the question that is being asked: "Is there DNA from Madeleine on the swab?" 'It would be very simple to say Yes simply because of the number of components within the result that are also in her reference sample. 'What we need to consider, as scientists, is whether the match is genuine - because Madeleine has deposited DNA as a result of being in the car or whether Madeleine merely appears to →[match the result](#) by chance.'....

THE Portuguese police evidence was based on the **controversial 'low copy number' DNA technique**. More established methods of DNA matching rely on the presence of bodily fluids or significant amounts of skin or hair. Forensic experts can then be sure they have a reliable DNA sample of a suspect or someone else involved in an investigation. However, low copy number profiling relies on a much smaller sample - and claims to produce an accurate 'genetic fingerprint'. A cell of sweat or skin, left by a mere touch, is all that is needed. The tiny DNA fragment is then copied many times to provide a big enough sample to match with other profiles.

The Forensic Science Service in Birmingham, which pioneered the technique, claims it is just as reliable as standard DNA testing. However, it was called into question after the collapse of the →[Omagh bombing](#) trial last year. In the trial of Sean Hoey, the prosecution used the technique to link him to some of the explosive devices in the case. **But its accuracy was brought into question** when a sample taken from a car bomb in Lisburn, Co Antrim, was wrongly linked to a 14-year-old boy in Nottingham. The judge at Belfast Crown Court pointed out that the process is only admissible as evidence in two other countries in the world - New Zealand and the Netherlands. The Crown Prosecution Service has since ordered a review into dozens of other cases that rested on the same type of DNA evidence."

Where was seemingly "Maddie"-DNA taken/found?

As a fact of the [PJ](#) investigation, the DNA traces were taken about three months after the Disappearance of Maddie. This stems from the fact that the McCann's got into the PJ focus not that early that more fresh samples could have been taken. In very dark and dry places DNA may be conserved thousands of years in reasonably quality. But especially in warm and moisture environments, DNA will decay in quality and also may disappear very fast. Thus only small samples suitable only for LCN-DNA tests were left. Such samples were found at the following places:

1. In the [Apartment 5A](#): Walls, Sofa
2. In the Renault Scenic car hired by the McCanns three weeks after Madeleine's disappearance
3. Possibly in a →[plastic bag at Faro airport](#) October 2007 (see also at →[gerrymccannsblogs](#))

How serious can we take the found DNA-Evidences?

Low-Copy number DNA tests are not that serious like DNA comparison based on fresh and large amounts of DNA probes. Indeed LCN-DNA tests thus have a small chance to fail. Despite the large bunch of scientific issues it can but be said: From a forensic viewpoint a LCN-DNA comparison which has **at least an 8 markers fit one can take as a serious prove**. This stems in principle from the

fact, that the possibility for a match by pure chance is about fifty-fifty which means $1/2$. In this case indeed there was exactly one match (marker #19) between the for other reasons also tested DNA of the genetic independent individuals Kate Healy and Gerald McCann. So an eight markers match means a possibility of a faulty comparison of about 1 to $2^8=256$. Or the other way around as a percentage: we have a proven match of 99.6% in such a case.

This number but is not 100% and **in one of about 250 cases there will be a false positive match** (if only 8 markers fit, at 10 serious fits it is only a chance of 1 to 1000). For this fact a suspect may be judged never on such an LCN-DNA match alone, but in every such case there must be more independent evidences for the suspect to be taken as guilty. This was the thing in the Case of the Omagh bombing trial in 2007, were such a very seldom mistake happened (but could be ruled out by other evidence). In the Case of Maddie now **the found DNA in the hired car of the McCann's was checked against 37 markers and had indeed 15 fits** (out of Maddies 19 markers in the 37 marker checking sample) , which is much more than the number of eight and thus usual judged as a prove for sure. Besides this facts, the LCN-DNA prove today is again a common tool also in the UK, as today more markers as in the Omagh Case are checked.

As the sample but was taken several weeks after the renting, the samples were seemingly contaminated by at least three persons, but maybe maximum five. What does that mean from the view of possibility? Well as a independent sample, we saw between Kate and Gerry, there was one fit. So one could assume always one another matching fit by every of the maximum five contaminants - **this but would leave back at least 10 matches** which is again to be taken as a prove for sure. Well to get down below the forensic eight matches, we had to mismatch at least eight markers, as $15-8=7$. Well how large is this chance, even if we assume that every contaminator of the five unknown got as much chances for a mismatch as one needs? Exactly it would be $15/37 * 14/37 * ... * 9/37 * 8/37 = 0,00738\%$ chance for a complete mismatch. But let us assume in favour of the suspect, that the chance is just a little higher, so $1/2$, which then again gives a chance for a total mismatch of maximum $1/2^8 = 1/256 = 0,4\%$.

Which means, even when contaminated in the worst case by five people, and even when computed in very favour for the suspects, the match to Maddie is sure for 99,6% at least. But the indeed existing small chance of a mismatch must be overruled in the overall view by additional independent evidences.

Remark: In the United Kingdom use of the technique was suspended **only between 21 December 2007 and 14 January 2008** while the Crown Prosecution Service conducted a review into its use - **this suspension has then been lifted.**

The Forbidden Investigation

See also from the Book → [L'Enquête Interdite - The Forbidden Investigation](#), Chapter 18

Preliminary Results/PREPARATION FOR THE INTERROGATIONS

Analyses of the residues collected following the visit by the dogs is entrusted to the English Forensic Science Service laboratory. To avoid any leaks of information, [Stuart Prior](#), a senior officer with Leicestershire police, is responsible for liaison between the laboratory and José Freitas of Scotland Yard. The latter, who is with us, in Portimão, is passing on any relevant reports. We confidently wait for the evaluation reports from FSS. A few days after the samples are sent, we are informed that the

DNA of the blood found in the boot of the McCanns' car shows a significant match - **50% - with Gerald's, which means that it is definitely the blood of one of his children.** We telephone the public minister to pass on this initial result and wait for the follow-up to the analyses and definite conclusions. But the laboratory takes its time. At the beginning of September, shortly before the McCann couple are placed under investigation, Superintendent Stuart Prior travels to Portimão to present the first of the two preliminary reports from the laboratory and to discuss the progress of the investigation. At a meeting in our office, with the Portuguese and the English investigation team, Stuart expresses his disappointment over the test results. **This is where the saga of the FSS reports begins.**

We read the part of the report dealing with the traces of blood lifted from the floor of [apartment 5A](#), from behind the sofa and in the boot of the McCanns' car and we don't agree with Stuart's disappointment. We talk about blood traces because the CSI dog is trained to find only that bodily fluid. The reports that support that decision are clear: the CSI dog was used to detect human blood. Low Copy Number, the technique used to determine the DNA of the samples, does not identify the nature of the bodily fluid they are derived from. But we know it's definitely traces of blood and not other bodily fluids since the CSI dog is trained to detect only human blood.

In the first case, the laboratory considers that the result of the analysis is inconclusive because the samples gathered provide very little information when the DNA comes from more than one person. **But all the confirmed DNA components match with the corresponding components in Madeleine's DNA profile!** As for the second case, after an explanation about the DNA components in Madeleine's genetic profile, it concludes that 15 out of 19 markers in Madeleine's profile are present in the sample examined. Only 4 short of 100% reliability. The FSS specialists qualify the results as, *"complex,"* and state that these 15 markers are not enough to conclude with certainty that it's definitely Madeleine's DNA profile, especially as Low Copy Number picked out a total of 37 in the sample. That means that at least three individuals contributed to this result.

But there was more in this first preliminary report. In the same report, the scientist went further and explained that in the profiles of many of the lab experts, elements from the DNA profile of Madeleine are present. This means that a major part of the DNA profile of any given person can be built by three donors. That is understandable. Two questions arose immediately. The first one: what good is a DNA profile in terms of criminal evidence, if it can be the combination of three or more donors? **Another question was simple: why did the DNA profile from those three donors contribute to Madeleine's DNA profile and not to that of any other person, like the scientist who carried out the test?** But the surprises from the preliminary reports were not to end there. On the very day that interrogation of the McCann couple starts, a second preliminary report reaches us. Contrary to the first report, it accords more importance to the DNA profile of the blood lifted from the floor of the apartment. In that sample, the DNA came from more than one donor, **but the confirmed DNA components match the corresponding components of Madeleine's DNA profile.** As for the samples lifted from the boot of the car, **there is no further mention of the 15 markers, as if they had never existed.** Suddenly, light was starting to be cast on the issue: either this LCN technique is not reliable or it's simply much easier to explain the presence of Madeleine's DNA in the apartment than in the boot of a car hired 24 days after her disappearance.

At our insistence, Stuart contacts the FSS and asks them if they think the Portuguese are idiots. We hear him saying: ***"With a lot less than that, we would have already arrested someone in England."*** I look at my colleagues and see that they are as stupified as I am. In fact, in Portugal, it's not so easy to arrest someone. We explain to Stuart that the McCanns interrogations would not result in detention. According to Portuguese law, the crimes of concealment of a corpse and simulating an abduction are not liable to remanding in custody.

WHAT THE LABORATORY REPORTS BRING TO LIGHT

The preliminary results from FSS were enlightening in a way, and confirmed the information given by the EVRD (Enhanced Victim Recovery Dog) and the CSI dog.

- The CSI dog, Keela, signaled the presence of human blood where Eddie, the EVRD dog, marked the presence of cadaver odour - on the floor tiles behind the sofa in the lounge, on the key and in the boot of the Renault Scenic that was used by the McCanns from May 27th onwards.

- the bodily fluids, according to the FSS, contain markers from Madeleine's DNA profile.

These elements do not constitute concrete proof but simply clues to be added to those we already possess. In itself, the definition of a DNA profile from LCN is not considered as evidence in a criminal investigation. In his report, the English scientist says that he cannot give answers to the following questions: when was the DNA deposited? In what way? What bodily fluid does the DNA come from? Has a crime been committed? The scientific evidence is not enough and it has to be accompanied by other types of material, documented and testimonial evidence. It is only in this way that the entire puzzle can be reconstructed and certainties can be achieved, for the material truth to be established.

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