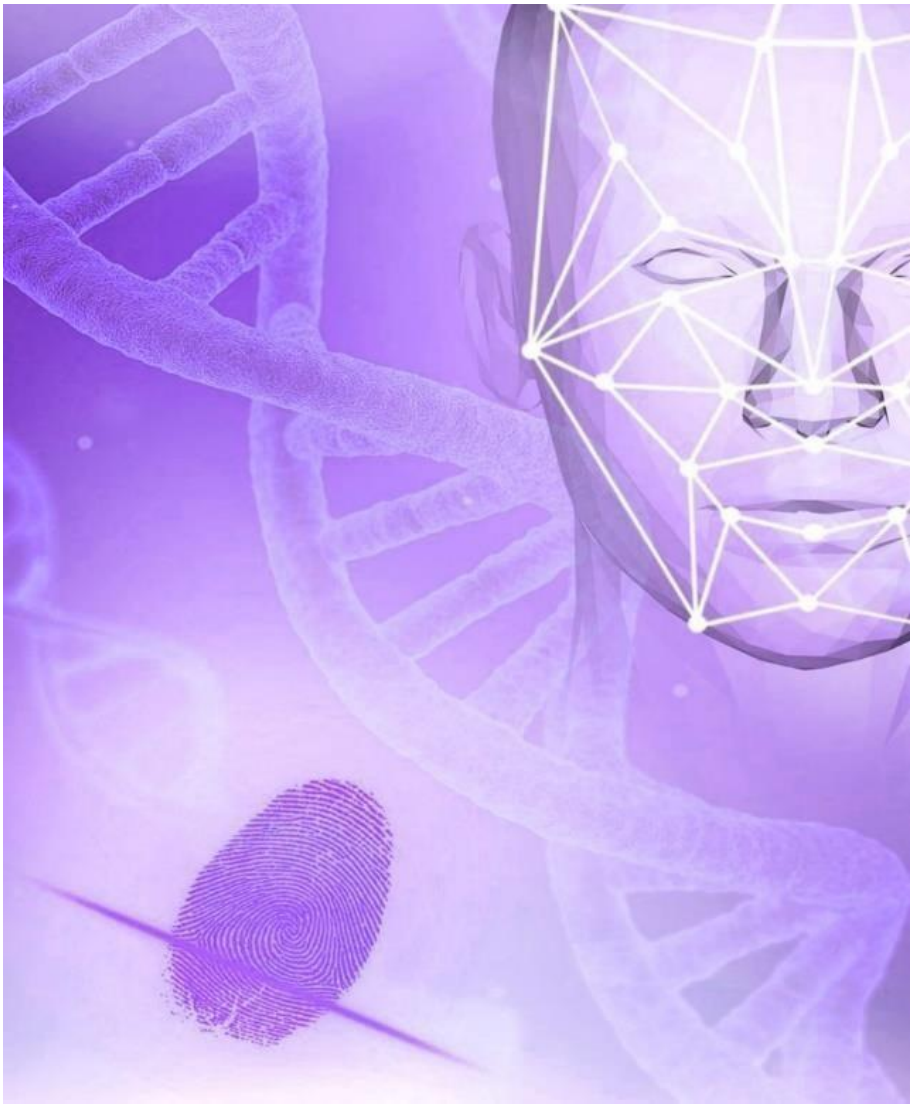
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THE SCOTTISH BIOMETRICS COMMISSIONER

Biometrics and Identical Twins: An Easy Guide

How the police can use fingerprints and/or DNA to distinguish between identical twins, including from materials retrieved from crime scenes

October 2026



Safeguarding our biometric future

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Introduction

The purpose of this short guide is to explain that no two people, including genetic twins are ever 100% 'identical' and to explain how easy, or difficult, it is for forensic science to tell them apart.

What are identical twins?

Identical twins (monozygotic twins) happen when one fertilised egg splits into two separate embryos soon after conception. Because both come from the same egg and sperm, both commence with the same genetic code. This is why identical twins 'look' identical and are almost always of the same sex.

By contrast, non-identical twins (dizygotic twins) happen when two different eggs are fertilised by two different sperm. Non-identical twins are commonly of a different sex from each other and like normal siblings share 50% of their DNA. This explains why non identical twins are 'visibly' different.

How common are identical twins?

In an average year in Scotland, less than two hundred sets of identical twins will be born. Globally, only 0.3% of all deliveries result in the birth of identical twins making them exceptionally rare.

Do identical twins have identical fingerprints?

No, identical twins have quite different fingerprints from each other. While genetics set general fingerprint patterns like loops or whorls, the unique fine ridge details are shaped by environmental factors impacting on the embryo in the womb as the growing baby touches different things. This results in quite different fingerprints and makes it easy for a trained fingerprint examiner to tell (so called) identical twins apart. For further information on fingerprints, please see our 2026 Fingerprint Assurance Review.

Do identical twins have identical DNA?

The conventional answer to this question is often yes, but in fact the answer is **no,** however the explanation is a bit more complicated.

Whilst identical twins start as two identical embryos with identical DNA, it is now known that tiny genetic mutations happen within the DNA as each embryo continues to grow. This results in small but detectable differences in the genetic code of each. Then, as the twins grow into adulthood, they are exposed to different environmental and lifestyle conditions that can result in gene switches which turn genes on and off over time. Lifestyle factors could include smoking, diet, or alcohol consumption and environmental factors could include things such as exposure to ultraviolet or pollution. This makes it possible for specialist forensic science techniques to tell the twins apart.

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Do these differences show up in routine DNA analysis if someone is arrested?

No, these subtle differences are not distinguishable by routine DNA profiling in UK policing. This is because traditional DNA tests done for policing in the UK (and elsewhere) examine only a limited number of the noncoding sections of DNA. This typically involves 16 to 23 short tandem repeat (STR) markers, and this type of analysis cannot distinguish between identical twins. This means that if identical twins are arrested in the UK and have DNA taken, they will have identical profiles on the UK DNA Database. For further information on routine DNA interpretation and analysis, please see our 2025 DNA Assurance Review.

Can forensic science help?

Yes, in rare cases where it is unknown which identical twin left DNA at a crime scene, or when it is necessary for paternity testing, forensic science can deploy special advanced techniques to tell the identical twins apart by the tiny DNA mutations previously referenced. This is done by analysing and contrasting hundreds of thousands of genetic markers. This can be done through SNP testing (Single Nucleotide Polymorphism testing) which detects single-letter variations over the entire human genome, of which there will be millions of variations.

Is there a practical example of DNA solving a crime with identical twin suspects?

Not in Scotland or the UK, as identical twins are rare and in serious cases there will almost always be other evidence linking the culprit to the crime such as fingerprints or a digital footprint. However, there have been successful prosecutions of an identical twin where DNA mutations were crucial, such as the case of the Marubbio brothers in 2025 in the USA. At the time of writing (August 2026) there is also an ongoing case in France where prosecutors are relying on advanced DNA to establish which identical twin suspect fired a fatal shot.

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