

DNA Lab Report Red Flag Checklist

Three things to look for on a DNA lab report before assuming the evidence is airtight.

1 The report identifies more than one DNA contributor

Single source profiles are hard to challenge. The moment a second person's DNA enters the sample, the interpretation becomes subjective and the reported statistics can be dramatically wrong.

WHAT TO LOOK FOR

- The word "mixture," "mixed," or "mixed profile"
- "Major contributor" or "minor contributor"
- More than two alleles at multiple loci (look for labels like D3S1358, vWA, TH01)
- A stated "number of contributors" of 2 or more
- Any mention of STRmix, TrueAllele, or probabilistic genotyping

In NIST's MIX13 interlaboratory study, more than 100 laboratories interpreting the same DNA mixtures reached different conclusions and reported statistics spanning many orders of magnitude.

2 A statistic is reported for anything other than a clean, single source profile

A "1 in 6.2 quadrillion" figure is appropriate for a full single source profile. When the same type of statistic appears for a mixture, partial, or degraded sample, the number rests on assumptions that may not hold up.

WHAT TO LOOK FOR

- A "1 in X" figure or likelihood ratio (LR) on a mixture or partial profile
- A match statistic paired with words like "partial," "degraded," or "low level"
- A likelihood ratio where the prosecution and defense hypotheses are not clearly stated

In a published case study (Thompson, Journal of Forensic Sciences, 2023), STRmix and TrueAllele produced "strikingly different" results on the same evidence. The LR depends on lab set parameters: analytical thresholds, stutter ratios, drop-in rates, and assumed contributor count.

3 The report involves touch DNA, low template DNA, or very small quantities

Touch DNA and low template samples (below about 200 picograms) are inherently less reliable. Random allele dropout, contamination, and secondary transfer all become real possibilities.

WHAT TO LOOK FOR

- "Touch DNA," "trace DNA," or "low template"
- Quantitation values under about 200 pg
- Items like gun grips, knife handles, steering wheels, doorknobs, or clothing
- Terms like "allelic dropout," "stochastic effects," or "below stochastic threshold"

Touch DNA can transfer through secondary contact. A defendant's DNA can appear on an item they never touched. Partial profiles at these levels are highly sensitive to lab specific protocols.

If you see any of these red flags, send the lab report for a free assessment.

No cost. No obligation. No pressure to engage further.

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Independent review of DNA lab reports, STRmix analysis, mixture interpretation, and expert witness testimony. Red Flag Checklist • Rev. 09-2026