

ANALYSIS OF LOW-TEMPLATE DNA PROFILES IN THE KERCHER CASE

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Low template DNA profiling has been a subject of controversy over many years, and this controversy reached a large international audience through the widespread publicity generated by the series of trials in Italy arising from the murder of British student Meredith Kercher in Perugia in 2007. Low template DNA evidence from a knife and a bra clasp were central to the trial in 2009 that led to the convictions of Amanda Knox and Raffaele Sollecito for the murder. The DNA evidence also played a major role in the appeal that overturned these convictions in 2011, and again in the subsequent hearings that reinstated the guilty verdicts in 2014. In particular, a report by two experts appointed by the 2011 appeal court, Professors Conti and Vecchiotti from the Sapienza University of Rome, was highly critical of many aspects of the DNA evidence in the original trial, and was influential in the subsequent hearings.

I will review issues surrounding the evaluation of weight of evidence when a DNA sample is subject to stochastic effects due to low DNA template and/or degradation. A feature of the sensitive profiling techniques used for such samples is that they often detect small amounts of “environmental” DNA, from the crime scene or possibly from the lab. This extraneous DNA is often referred to as “contamination”, and confusion can arise due to different meanings of this term.

I will perform my own reanalyses of evidential weight from the knife and the bra clasp, using the likeLTD software developed by myself and colleagues at University College London, and compare my conclusions with those of the Italian courts. This analysis only addresses questions of whose DNA is in the sample, and not how the DNA came to be there or what was the source tissue, both of which are controversial for these samples. I will critically assess the Conti and Vecchiotti report, agreeing with some of their conclusions but not others.