Does a new genetic analysis finally reveal the identity of Jack the Ripper?

By David Adam

Forensic scientists say they have finally fingered the identity of Jack the Ripper, the notorious serial killer who terrorized the streets of London more than a century ago. Genetic tests published this week point to Aaron Kosminski, a 23-year-old Polish barber and a prime police suspect at the time. But critics say the evidence isn’t strong enough to declare this case closed.

The results come from a forensic examination of a stained silk shawl that investigators said was found next to the mutilated body of Catherine Eddowes, the killer’s fourth victim, in 1888. The shawl is speckled with what is claimed to be blood and semen, the latter believed to be from the killer. Four other women in London were also murdered in a 3-month spree and the culprit has never been confirmed.

This isn’t the first time Kosminski has been linked to the crimes. But it is the first time the supporting DNA evidence has been published in a peer-reviewed journal. The first genetic tests on shawl samples were conducted several years ago by Jari Louhelainen, a biochemist at Liverpool John Moores University in the United Kingdom, but he said he wanted to wait for the fuss to die down before he submitted the results. Author Russell Edwards, who bought the shawl in 2007 and gave it to Louhelainen, used the unpublished results of the tests to identify Kosminski as the murderer in a 2014 book called Naming Jack the Ripper. But geneticists complained at the time that it was impossible to assess the claims because few technical details about the analysis of genetic samples from the shawl were available.

The new paper lays those out, up to a point. In what Louhelainen and his colleague David Miller, a reproduction and sperm expert at the University of Leeds in the United Kingdom, claim is “the most systematic and most advanced genetic analysis to date regarding the Jack the Ripper murders,” they describe extracting and amplifying the DNA from the shawl. The tests compared fragments of mitochondrial DNA—the portion of DNA inherited only from one’s mother—retrieved from the shawl with samples taken from living descendants of Eddowes and Kosminski. The DNA matches that of a living relative of Kosminski, they conclude in the Journal of Forensic Sciences.

The analysis also suggests the killer had brown hair and brown eyes, which agrees with the evidence from an eyewitness. “These characteristics are surely not unique,” the authors admit in their paper. But blue eyes are now more common than brown in England, the researchers note.

The results are unlikely to satisfy critics. Key details on the specific genetic variants identified and compared between DNA samples are not included in the paper. Instead,
the authors represent them in a graphic with a series of colored boxes. Where the boxes overlap, they say, the shawl and modern DNA sequences matched.

The authors say in their paper that the Data Protection Act, a U.K. law designed to protect the privacy of individuals, stops them from publishing the genetic sequences of the living relatives of Eddowes and Kosminski. The graphic in the paper, they say, is easier for nonscientists to understand, especially “those interested in true crime.”

Walther Parson, a forensic scientist at the Institute of Legal Medicine at Innsbruck Medical University in Austria, says mitochondrial DNA sequences pose no risk to privacy and the authors should have included them in the paper. “Otherwise the reader cannot judge the result. I wonder where science and research are going when we start to avoid showing results but instead present colored boxes.”

Hansi Weissensteiner, an expert in mitochondrial DNA also at Innsbruck, also takes issue with the mitochondrial DNA analysis, which he says can only reliably show that people—or two DNA samples—are not related. “Based on mitochondrial DNA one can only exclude a suspect.” In other words, the mitochondrial DNA from the shawl could be from Kosminski, but it could probably also have come from thousands who lived in London at the time.

Other critics of the Kosminski theory have pointed out that there’s no evidence the shawl was ever at the crime scene. It also could have become contaminated over the years, they say.

The new tests are not the first attempt to identify Jack the Ripper from DNA. Several years ago, U.S. crime author Patricia Cornwell asked other scientists to analyze any DNA in samples taken from letters supposedly sent by the serial killer to police. Based on that DNA analysis and other clues she said the killer was the painter Walter Sickert, though many experts believe those letters to be fake. Another genetic analysis of the letters claimed the murderer could have been a woman.