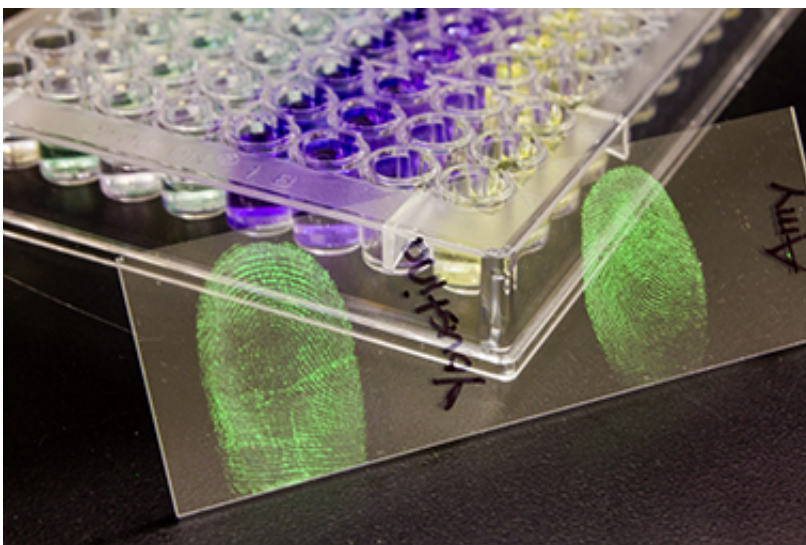


Chemist's technique can identify a fingerprint as male or female

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A team of researchers led by UAlbany chemistry professor Jan Halánek have discovered a straightforward concept for identifying whether a culprit is male or female. It's based on amino acid levels in fingerprints. Credit: Paul Miller

Culprits beware, a University at Albany research group, led by assistant chemistry professor Jan Halánek, is taking crime scene fingerprint identification to a new level.

Halánek and his team of researchers at UAlbany have discovered a straightforward concept for identifying whether a culprit is male or female. It's based on the content in fingerprints – specifically [amino acids](#).

According to known literature, amino acid levels in the sweat of females are about twice as high as in males. There's also a slightly different distribution, due mostly to hormonal differences. The same is true for amino acids left behind in fingerprints. Halánek's research team has devised a simple method to back up these claims.

As a starting point, Halánek's team extracts amino acids from a fingerprint by transferring it onto a piece of plastic wrap. A hydrochloric acid solution is then placed onto the fingerprint, followed by heating. This process allows for the water-soluble amino acids to migrate into the acidic solution. From there, the team can easily view amino acid levels, distinguishing sex.

Halánek and his colleagues first test this method on "mimicked fingerprint samples," which they found to have a 99 percent accuracy of correct sex classification. From there, they set up a real [crime scene](#) scenario. Three female volunteers placed their fingerprints on five different surfaces, including a doorknob and a computer screen. Regardless of the surface type, Halánek's team found it was possible to tell the fingerprint belonged to a woman.

"One of the main goals for this project was to move toward looking at the chemical content within the fingerprint, as opposed to relying on simply the fingerprint image," Halánek said. "We do not intend to compete with DNA analysis or the databases used for identification. Instead we are aiming at differentiating between demographic groups, and more importantly, we are aiming at making use of [fingerprints](#) that are smudged/distorted or that don't have an existing match."

According to Halánek, this is only the beginning of his research. He's currently in the process of developing additional identification methods for other forensically-relevant attributes, as well as improving on the current fingerprint concept.

Halámek's full study is published in *Analytical Chemistry*.

More information: Crystal Huynh et al. Forensic Identification of Gender from Fingerprints, *Analytical Chemistry* (2015). [DOI: 10.1021/acs.analchem.5b03323](https://doi.org/10.1021/acs.analchem.5b03323)

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