

Evil-doers everywhere: Get a whiff of this

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This is Dr. Michael Gozin of Tel Aviv University. Credit: AFTAU

The food you eat, the drugs you take, your state of mind, and your gender -- all these make your sweat unique. Tel Aviv University chemists may turn this fact into a new crime-fighting tool that would make Sherlock Holmes blink in amazement.

Dr. Michael Gozin of Tel Aviv University's School of Chemistry is trying to revolutionize the field of "sweat science" by embarking on new research that criminals and terrorists will find downright repugnant. He and his team are looking at the biochemical components of human sweat as a new kind of ID, suspecting that each person has his or her very own

chemical fingerprint.

"Dogs and other animals can differentiate between people easily, defining each person by his or her smell. Some animals can track us wherever we go," says Dr. Gozin, whose lab is preparing to work on this project with the U.S. Air Force. "All people sweat, so we thought: Why not try and track it?" Now working on isolating various biochemical components of sweat, Dr. Gozin hopes to present the first paper of the findings in this unique field of research later this year.

If the scientists' thesis proves true, sweat could be used to track terrorists and criminals when fingerprints are partially damaged or do not exist. Collected from a T-shirt, sock, or even a hand sliding across a table, sweat can hold a lot of secrets. And by analyzing the chemical composition of this sweat, notorious suspects evading investigators could be traced and found.

Sweat is a complex mixture of proteins and byproducts of our metabolism emitted from our pores. It also contains volatile compounds, only some of which our noses pick up. Dr. Gozin is investigating those compounds with heavy molecular weights, like proteins and peptides, which stick around long after a person and his smell have vanished.

"These heavier molecules will stay on the skin or the surface of a table if you touch it. We are figuring out in what proportions these compounds are found in sweat of individuals," says Dr. Gozin. He surmises that there are thousands of different chemical compounds in our sweat, some in only very minute trace amounts.

Some compounds, Dr. Gozin expects, will be found in comparable proportions among all humans, but like a fingerprint, or DNA, the ratio among other compounds in any given individual may be unique.

Besides crime fighting, defense and security applications, the chemical ID could be used to track and trace missing children, or by doctors to help understand human maladies.

Using a high-end mass spectrophotometer provided by the U.S. Department of Defense and Israeli Ministry of Defense, Dr. Gozin expects that results from sweat tests can be produced in real-time, much more quickly than today's or even tomorrow's DNA tests. In theory, sweat ID could be used in conjunction with a "bionic nose," to sniff people at airports as they pass through security checks.

Stressing that this basic research is in its early stages, Dr. Gozin said that the first indication of success will be the ability of his system to distinguish between male and female sweat.

Source: American Friends of Tel Aviv University

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