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Remote Lie Detector Reads Your Skin's 'Antennas'

Your skin may act as a helical antenna

The human skin contains millions of sweat glands, connected to the pores at the surface through tiny sweat ducts, which could reveal the emotional state of a person without making physical contact by bouncing electromagnetic waves off them. While most people believe that these tiny ducts are straight tubes, a study conducted by Israeli researchers reveal that they are actually helical. "When you look at this through the eyes of an electrical engineer, it is very familiar. It immediately ignited the thinking that perhaps they also behave as helical antenna," says Aharon Agranat of the Hebrew University of Jerusalem. However, in order to do so these ducts must conduct electricity. Because they are filled with sweat, it might be possible to induce electrical current into them with the help of medium-frequency electromagnetic waves. At high frequencies, electrical current is conducted through the ducts through a process called 'proton hopping', as protons oscillate rapidly through the hydrogen bonds near the surface of the cells. If one considers the human skin as a helical antenna, then physiological measurements can be conducted from a distance, says Yuri Feldman, initiator of the study. During experiments, the researching team used electromagnetic frequencies with a range of 100 gigahertz, in order to measure the frequency of the electromagnetic wave reflected off the skin of subjects, before and after exercise, as perspiration is directly linked to physiological parameters, such as blood pressure and pulse rate. **Lie detector** The measurements revealed that the modeled skin containing helical antennas were in concordance with the received signals. To be certain that the theory is correct, the team first made measurements in contact with the skin of the subjects. However, even when the detector was located 22 centimeters way from the subject, it was still able to make accurate readings. "You could make a lie detector that does not require any connections to the person being tested," said Agranat. "It's a really interesting idea. People are made of squishy wet stuff, and any resonance will be very damped out. This sort of sharp resonance at this frequency has never been observed before," said Philip Chadwick, director and researcher at MCL, revealing his concern that the response could be non-biological. Agranat on the other hand argues that the phenomenon is in concordance with the shape of the skin ducts, thus "The response is governed, not by the chemical composition of the tissue, but by the morphology - because it looks like a coil, it behaves the way it behaves."