“Getting a Grip on Finger Wrinkles” *Transcript with vocabulary*

Based on “[Getting a Grip on Finger Wrinkles](http://www.sciencefriday.com/video/01/11/2013/getting-a-grip-on-finger-wrinkles.html)” produced by Flora Lichtman, January 11th, 2013

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| 1 | Some digital research is getting a handle on the phenomenon of wrinkled fingers. If you thought finger wrinkling was related to osmosis—that water enters the finger, swelling up a layer of skin—and that’s what’s causing the wrinkles, Mark Changizi says, “It’s totally false.” These three wrinkle experts are trying to get a grip on finger wrinkling in humans:* Einar Wilder-Smith, Neurologist, National University of Singapore
* Tom Smulders, Senior Lecturer and Biopsychologist, Newcastle University
* Mark Changizi, Theoretical Neurobiologist, 2AI Labs

They are among a handful of scientists ever to have investigated the finger-wrinkling phenomenon. | **phenomenon:** an observed situation or fact with an unknown cause**osmosis:** passing of water through a membrane down a concentration gradient |
| 2 | Finger wrinkling is actually controlled by your sympathetic nervous system, the same part of the nervous system that controls your heart rate and blood pressure. In the hands, the sympathetic nervous system mainly controls blood vessel size—after you soak in water for a long time, the blood vessels in your hand change size. When you immerse the hands into hot water, your vessels are constricted. Constricting the vessels means less volume inside of your fingertip. Scientists think the decreased volume results in a negative pressure and therefore literally pulls the skin above it down. That’s why Wilder-Smith is interested in pruney fingers as a possible test for nerve function. But then the question is: Why do we wrinkle?  | **sympathetic nervous system:** the part of the nervous system responsible for quick, automatic bodily responses to external changes**blood vessel:** the part of the circulatory system that transports blood throughout the body**immerse:** dip or cover with liquid**constrict:** to make narrow by squeezing**volume:** the amount of space that a substance or object takes up **negative pressure:** less pressure than normal; a partial vacuum **pruney:** wrinkled like a dried plum or raisin |
| 3 | Changizi said that his student, Roman Weber, thought about it for a while and said, “Well, maybe they’re rain treads.” The idea is that water is evacuated by these tiny finger channels, allowing us to grip things better. “That’s the hypothesis,” [says Weber]. There are a few lines of evidence for this. One, you only get wrinkles on your feet and hands, where gripping is important. Another piece of evidence has to do with the pattern of the wrinkles. According to Changizi, “You could have infinitely many kinds of wrinkle patterns—all types. Of all the infinite kinds of wrinkle patterns that could occur, you in fact find the one predicted by the rain tread hypothesis.”  | **rain treads:** the rubbergrooves on a tire that allow the tire to grip the road surface in the rain**evacuated:** emptied**channels:** grooves or spaces  **infinite:** limitless**occur:** to happen or take place |
| 4 | Changizi and his team compare the wrinkles on your finger to the river drainage on a mountain—which has a similar topography to your finger, they argue—and they find that the channels on the mountain and the channels on your finger are structured in just the same way. At the tip of your finger you have the trunk, and as you go down it splits, and [the channels] split again as you move away, providing evidence for the “wrinkles as drainage channels” hypothesis. | **drainage:** the process or pattern of water flowing out of an area**topography:** the spacing and position of things in an area**trunk:** the base of a tree or other branching object |
| 5 | Smulders followed Changizi’s research with another study. “I thought that was just a really clever hypothesis, so we went off and tested it,” [says Sumlders]. In the latest contribution to this body of research, Smulders published in *Biology Letters* that people with wrinkly fingers can move wet objects from one bin to another more quickly than people without wrinkly fingers—“about 12 percent faster, which is not insignificant,” says Smulders, lending a hand to the rain tread hypothesis. But whether the wrinkles are the cause of the better handling? “I’m not sure whether one can say that” Wilder-Smith says. So in other words, scientists have yet to put a finger on the definitive reason for wrinkles. | **insignificant:** not significant; unremarkable**handling:** grip on a surface**definitive:** decided; concluded with authority or certainty  |