How Many Bacteria Species Can Coexist on a Single Hand? (And do girls really have cooties?)

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Sounds like a riddle, but it’s not trivial. We’ll get back to that in a minute. First consider the scenario: The class arrives from physical education. Today’s activity was mat ball, a variation of dodge ball involving lots of kids and lots of contact with balls and mats. They’re pumped, a little sweaty and out of breath, and one or two are a few seconds late—probably not because they were washing their hands! Would you have students wash their hands in this scenario? Not likely. It’s just not part of the lesson plan.

We accept a certain lack of sanitation mostly because it’s not feasible to allow 26-30 kids to wash their hands several times a day. We try to take solace in the hand sanitizers, though rumor has it there’s no substitute for warm water, soap and a minute of scrubbing.

![Low-temperature electron micrograph of a cluster of E. coli bacteria, magnified 10,000 times. Each individual bacterium is oblong shaped. Photo by Eric Erbe, digital colorization by Christopher Pooley, both of USDA, ARS, EMU. Wikimedia Commons.](image)

So what’s the big deal? Most bacteria on our skin are harmless or beneficial, right? How many could there be anyway? Well, CBCnews.ca recently published a story, ‘Women lead men in bacteria hands down, that might surprise you. Researchers were surprised to find the incredible number of different bacteria species found among 51 college students’ hands and the very low number of species shared
by all students. Further, there was a difference between left and right hands. And finally, there was a significant difference between men and women. According to the news article,

_They [researchers] identified 4,742 species of bacteria overall, only five of which were on every hand . . . The average hand harboured 150 species of bacteria. Not only did individuals have few types of bacteria in common, the left and right hands of the same individual shared only about 17 per cent of the same bacteria types . . ._

Researchers suspect differences between left-and right-hand bacteria diversity have to do with each hand’s interactions with environment that can alter the hand’s conditions in terms of oil or salinity, for example. Differences between men and women might have to do with hormone production or slight variations in pH. Researchers commented that, for the subjects involved in this study, hand washing did not appear to remove the bacteria. It is important to note the study did not measure mass of bacteria present or population sizes for each species, only the diversity of species present.