

Turns out Some Germs are Quite Beneficial to Your Health

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UPCOMING LECTURE: Dr. Donata Vercelli, professor of cellular and molecular medicine and associate director of the Asthma and Airway Disease Research Center at the UA Health Sciences, will present a lecture, "The Microbes Shaping Our Lives," at the UA Science Lecture Series, **Tuesday, Feb. 12, 7 p.m., Centennial Hall, 1020 E. University Blvd**, UA campus. Parking is available for a fee in the Tyndall Avenue Garage, 880 E. Fourth St.

For more than a century, germs – or microbes – were seen as "invariably bad and something to be fought and eliminated from the environment and ourselves," a physician-scientist at the University of Arizona points out.

"Today, however, evidence strongly suggests certain microbes can be very beneficial to human health in many ways," says Donata Vercelli, MD, UA professor of cellular and molecular medicine and associate director of the Asthma and Airway Disease Research Center at the UA Health Sciences.

Microbes live in complex ecosystems highly responsive to environmental signals, outnumber the cells of our body by 10-fold and are vital to the development of our immune system. By releasing small metabolites into our blood, microbes influence blood pressure, digestion and weight, cognition and possibly even our mood, she says.

"Our bodies have trillions of microbes," says Dr. Vercelli, also a member of the UA BIO5 Institute. "They create communities, they interact with one another, they create ecological niches for one another – and in the end it is the sum of all these activities that impacts our health."

Therefore, good health relies on exposure to microbes "from the get-go," she says. "We humans, over time immemorial, have developed in an environment very different from the one in which we live now. We were programmed to be in constant contact with microbes."

As an example, she points to the landmark study she co-authored, published in the New England Journal of Medicine, which showed children growing up on Amish farms were protected from asthma, compared with children who grew up in Hutterite farms. What was different? Dust collected from Amish farms was much richer in microbial products than dust collected from Hutterite farms.

But many nations have become obsessed with germs – and, conversely, have seen an increase in inflammatory diseases, many of which are associated with alterations of the body's microbes, she notes.

However, Dr. Vercelli cautions that some microbes cause serious infectious diseases and she strongly endorses the use of vaccinations to protect against potential deadly diseases, such as measles.

Thanks to the development of next-generation sequencing technologies (the same as used to sequence the human genome), scientists now are able to sequence microbes.

"In the past, we didn't have the tools to sequence microbes; we only were able to culture about 1 percent of what is there. We were missing essentially everything," Dr. Vercelli says.

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