

Immune system may be pathway between nature and good health

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Credit: George Hodan/public domain

Research has found evidence that spending time in nature provides protections against a startling range of diseases, including depression, diabetes, obesity, ADHD, cardiovascular disease, cancer, and many more. How this exposure to green space leads to better health has remained a mystery. After reviewing hundreds of studies examining nature's effects on health, University of Illinois environment and

behavior researcher Ming Kuo believes the answer lies in nature's ability to enhance the functioning of the body's immune system.

"I pulled every bit of the research in this area together that I could find, and was surprised to realize I could trace as many as 21 possible pathways between nature and good [health](#)—and even more surprised to realize that all but two of the pathways shared a single common denominator," Kuo said. She said it was remarkable to see how important a role the immune system plays in every one of the diseases that nature protects against.

"The realization that there are so many pathways helps explain not only how nature promotes health, but also why nature has such huge, broad effects on health," she said. "Nature doesn't just have one or two [active ingredients](#). It's more like a multivitamin that provides us with all sorts of the nutrients we need. That's how nature can protect us from all these different kinds of diseases—cardiovascular, respiratory, mental health, musculoskeletal, etc.—simultaneously."

One way to understand this relationship between nature, health, and the immune system, Kuo explains, is that exposure to nature switches the body into "rest and digest" mode, which is the opposite of the "fight or flight" mode. When the body is in "fight or flight" mode, it shuts down everything that is immediately nonessential, including the immune system.

"When we feel completely safe, our body devotes resources to long-term investments that lead to good health outcomes—growing, reproducing, and building the immune system," Kuo said. "When we are in nature in that relaxed state, and our body knows that it's safe, it invests resources toward the immune system."

For those who prefer playing a board game or visiting an art gallery to

taking a walk in the park, Kuo says some of the same restorative benefits can be obtained. "if you are absorbed and relaxed, chances are your parasympathetic system is happy and your immune system is going to get a boost. That said, these enjoyable indoor activities don't provide the phytoncides, mycobacterium vaccae, negative air ions, vitamin D-producing sunlight, and other active ingredients found outdoors. So we'd expect a smaller boost than you'd get from being in nature."

Kuo is the director of the Landscape and Human Health Laboratory at the U of I and has conducted numerous studies of her own linking [green space](#) and health. Kuo hopes her exhaustive compilation of studies will provide a map for what researchers in this field might study next.

"Finding that the [immune system](#) is a primary pathway provides an answer to the question of 'how' nature and the body work in concert to fight disease," Kuo said.

"How might contact with nature promote [human health](#)? Exploring promising mechanisms and a possible central pathway" is published in *Frontiers in Psychology* and available online.

Provided by University of Illinois at Urbana-Champaign

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