Rise of Drug-Resistant *Candida Auris* Fungal Disease Could Be Due to Global Warming

*Candida auris* was first identified in 2009. It causes serious multidrug-resistant infections in hospitalized patients and has high mortality rates.

FOODS TO EAT FOR NATURAL DEFENSE

A new analysis warns that "global warming may have played a pivotal role" in the recent rise of a multidrug-resistant fungal superbug, sparking questions and concerns about the emerging public health threats of the human-caused climate crisis.

Reporting on the research Tuesday, CNN outlined the history of *Candida auris*:

Until recently, scientists considered it a mystery how *C. auris* popped up in more than 30 countries around the globe a decade after it was first discovered in 2009. It emerged simultaneously on three continents — in India,
Venezuela, and South Africa — between 2012 and 2015, each strain being genetically distinct.

The study — published Tuesday in mBio, an open-access journal of the American Society for Microbiology — argues that *Candida auris* "may be the first example of a new fungal disease emerging from climate change."

"The argument that we are making based on comparison to other close relative fungi is that as the climate has gotten warmer, some of these organisms, including *Candida auris*, have adapted to the higher temperature, and as they adapt, they break through human's protective temperatures," lead author Arturo Casadevall, chair of molecular microbiology and immunology at Johns Hopkins Bloomberg School of Public Health, said in a statement.

Fungal diseases are relatively uncommon in humans because of body temperature — but if they adapt to rising temperatures, and aren't easily treatable with medications, they could increasingly endanger human health on a global scale. Casadevall warned that while *C. auris* may be the first fungal disease whose emergence scientists have tied to rising temperatures, it potentially won't be the last.

"Global warming may lead to new fungal diseases that we don't even know about right now," he said. "What this study suggests is this is the beginning of fungi adapting to higher temperatures, and we are going to have more and more problems as the century goes on."

“Whether *C. auris* is the first example of new pathogenic fungi emerging from climate change ... its emanation stokes worries that humanity may face new diseases from fungal adaptation to hotter climates”

The superbug Candida auris is giving rise to warnings — and big questions

The list of what scientists say they still don't know about Candida auris, a highly unusual fungus, is long — and fascinating.

Stat News published a piece Tuesday that mentions the new study but also addresses a series of pressing questions about the emerging superbug with help from experts who include Tom Chiller, chief of mycotic diseases at the Centers for Disease Control and Prevention, and Tejas Bouklas, an assistant professor in the department of biomedical sciences at Long Island University.

Among those questions is: "Could C. auris help other fungi adapt to be bigger threats to humans?"

That's a question Bouklas is wondering about. "The more ubiquitous it becomes, the more problematic. Because now it could potentially transmit DNA to other Candida species. And maybe even bacteria," she said. That idea is not far-fetched. Fungi can mate sexually, Chiller pointed out, allowing them to swap large amounts of DNA.

In light of the potential impacts of the climate crisis on public health highlighted in the study, Casadevall charged in his statement that "we need to make investments in better surveillance of fungal diseases."

"We are pretty good at surveilling influenza and diseases that cause diarrhea or are contagious, but fungal diseases are not usually contagious and therefore nobody has really bothered to document them well," he said. "If more fungi were to cross over, you really wouldn't know until somebody started reporting them in the literature."
Chiller, in his interview with Stat News, agreed that more research on the superbug is vital to protecting the public.

Understanding *C. auris'*s backstory is crucial, Chiller said, because "these things are going to continue to emerge. And understanding how they emerge and where they emerge might lead us to prevention strategies or reactive strategies or preparation strategies for the next big thing."