

Research discovers potentially deadly fungus senses body's defenses to evade them

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Glen Palmer, PhD, Assistant Professor of Microbiology, Immunology & Parasitology at LSU Health Sciences Center New Orleans, was part of an international research team led by Luigina Romani, MD, at the University of Perugia, that discovered opportunistic fungi like *Candida albicans* can sense the immune status of host cells and adapt, evading immune system defenses. Unlike previous studies, this research investigated both sides of the infection equation as well as the interaction between the fungi and the cells they will invade. The findings are published online in *Nature Communications* in the most recent articles section (February 21, 2012).

This study demonstrates that this process is much more elaborate and complex than previously understood. The researchers determined that *C. albicans* binds to the host immune signaling molecule, Interleukin (IL) 17A, which permits the [fungus](#) to navigate and tolerate the active immune environment of healthy host tissue, mounting effective countermeasures. IL-17A may also contribute to disease susceptibility by modifying the intrinsic virulence of the fungus. This study provides molecular evidence that by exploiting IL-17A, the fungus not only survives, but can cause disease to develop.

"It's a bit like the fungus is listening in to the conversations our immune system is having so it can best determine how to react and survive in our tissues. This may also be a crucial step in determining when this opportunist decides to invade host tissue and cause life-threatening disease in an immunosuppressed patient," notes Dr. Palmer.

According to the Centers for Disease Control and Prevention, there are more than 20 species of [Candida](#) yeasts that can cause infection in humans, the most common of which is *Candida albicans*. *Candida* yeasts normally live on the skin and mucous membranes without causing infection; however, overgrowth of these organisms can cause symptoms to develop. Symptoms of candidiasis vary depending on the area of the body that is infected. Candidiasis that develops in the mouth or throat is called "thrush" or oropharyngeal candidiasis. Candidiasis in the vagina is commonly referred to as a "yeast infection." Invasive candidiasis occurs when *Candida* species enter the bloodstream and spread throughout the body. Candidemia (a bloodstream infection with *Candida*), is extremely rare in people without risk factors, but it is the fourth most common bloodstream infection among hospitalized patients in the United States.

"Disrupting or manipulating the fungal sensing of these host molecules could trick the fungus, essentially suppressing an [infection](#), or enabling us to eliminate this potentially dangerous fungus before it causes problems," concludes Dr. Palmer.

Provided by Louisiana State University

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