New study finds titan cells protect Cryptococcus

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Giant cells called "titan cells" protect the fungus *Cryptococcus neoformans* during infection, according to two University of Minnesota researchers. Kirsten Nielsen, Ph.D., an assistant professor in the department of microbiology, and recent Ph.D. recipient Laura Okagaki believe their discovery could help develop new ways to fight infections caused by *Cryptococcus*.

The findings will be published in the June issue of the journal Eukaryotic Cell. The study was funded by the National Institutes of Health and the University of Minnesota's Medical School.

Cryptococcus, a fungus frequently found in dust and dirt, is responsible for the deaths of more than 650,000 AIDS patients worldwide each year. It is also a potentially deadly concern among chemotherapy and organ transplant patients. Currently, *Cryptococcus* causes more annual deaths in sub-Saharan Africa than tuberculosis.

"While most healthy individuals are resistant to *Cryptococcus* infections, the fungus can cause deadly disease for those with already weak immune systems," said Dr. Nielsen.

When inhaled, *Cryptococcus* can cause an infection in the lungs. This infection can spread to the brain and result in meningitis, an often-deadly inflammation of the brain and spine.

Nielsen and Okagaki found that titan cells, or *Cryptococcus* cells ten to

twenty times the size of a normal cell, are too large to be destroyed by the body's immune system.

Researchers also found the presence of titan cells can protect all *Cryptococcus* cells in the area, even the normal sized *Cryptococcus* cells.

"This tells us that titan cell formation is an important aspect of the interaction between the human/host and the organism that allows *Cryptococcus* to cause disease," said Nielsen. "This information will help us find new ways to treat *Cryptococcus* infections that are very difficult to treat with currently available drugs."

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