

The key to survival and virulence for a fungal pathogen is autophagy

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Autophagy is a process whereby cells recycle material during stress situations, such as when nutrients are scarce. Some cells also use this process as an immune defense mechanism to eliminate pathogens. However, new data, generated in mice by Peter Williamson and colleagues, at the University of Illinois at Chicago, has identified autophagy as a new virulence-associated trait and survival mechanism for *Cryptococcus neoformans* — a fungal pathogen that commonly infects immunocompromised individuals, such as those with HIV.

In the study, a mutant form of *C. neoformans* that lacked the protein Vps34 PI3K (known as the vps34D mutant) was found to be less able to form autophagy-related 8-labeled (Atg8-labeled) vesicles than normal *C. neoformans*.

Furthermore, the vps34D mutant was less virulent in mice than normal *C. neoformans*. Consistent with a crucial role for autophagy in determining the extent of the disease caused by infection with *C. neoformans*, a strain of *C. neoformans* in which Atg8 expression was knocked down showed reduced virulence in mice. The authors therefore suggested that more detailed understanding of this virulence pathway might lead to new drugs for treating individuals who become infected with *C. neoformans*.

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