



## Neuroscience data talk

# Cryptococcal wars: battles of the brain with killer fungi

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Host: Tim Vogels

Fungi have been allies to humanity since the beginning of our existence, aiding in the production of food, beverages, and even treatments for human ailments. However, in recent times, invasive fungal infections have emerged as a significant threat to human health, an adversary for which we currently lack adequate defences. We study the pathobiology of cryptococcal meningitis; a highly invasive and deadly fungal infection of the central nervous system (CNS) caused by the ubiquitous fungus *Cryptococcus neoformans*. *C. neoformans* is a neuroinvasive and neurotropic yeast that is associated with a lethal form of meningoencephalitis (inflammation of the meninges and neural tissue). Patients with CM develop severe neurological damage but the mechanisms driving brain injury in this fatal disease remain poorly described. Using both mouse and human brain tissue models, we have characterized host-fungus interactions at cellular and molecular levels. Our findings reveal that fungi can evade immune destruction in the peripheral system, penetrate the brain via its extensive vascular network, and disrupt neuroimmune balance, resulting in both hypo- and hyperinflammatory responses. This dysregulation leads to injury and neurological damage. We further demonstrate how fungal invasion impairs fluid and waste homeostasis in the brain, exacerbating inflammation and tissue damage.

**Monday, November 18, 2024 12:45pm - 01:45pm**

Office Bldg West / Ground floor / Heinzl Seminar Room (I21.EG.101)



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