



## DR. JIM KRONSTAD

### NUTRITIONAL ADAPTATION BY FUNGAL PATHOGENS OF PLANTS AND ANIMALS



**11/14/2023**  
**4-5 PM**  
**MARLEY 230**

*Refreshments provided in  
Marley Lobby 3:30-4pm*

Live broadcast available on Zoom:  
<https://arizona.zoom.us/j/83044711714>

Password: spls23

Host: Marc Orbach, Ph.D

**Abstract:** We are interested in defining the mechanisms by which fungal pathogens sense nutrients to support proliferation and regulate virulence factor deployment in host tissue.

The basidiomycete species *Ustilago maydis* and *Cryptococcus neoformans* serve as models for our studies because of their experimental tractability and their disease impact. *U. maydis* is a biotrophic pathogen of maize that delivers a suite of effectors to modulate host defense and induce dramatic tumors in which the fungus produces melanized spores.

Current studies focus on the discovery that mixed carbon sources trigger biotrophic phenotypes in culture including melanin formation and the expression of effectors. Accumulating evidence suggests that mitochondria play an important role in carbon source sensing to support obligate biotrophy. We are also examining the role of mitochondria in nutrient sensing by *C. neoformans*. This opportunistic pathogen causes meningoencephalitis in immunocompromised individuals including HIV/AIDS patients.

Iron sensing is a key aspect of *C. neoformans* pathogenesis, and we find that mitochondrial communication with the iron regulatory network via reactive oxygen species regulates the formation of virulence factors including melanin.