

## DEPARTMENT OF MICROBIOLOGY AND PLANT PATHOLOGY FACULTY RECRUITMENT CANDIDATE SEMINARS:

### Assistant Professor in Fungal Biology

**In-Person Seminar Location:**  
Genomics Auditorium 1102A



**ZOOM Link for Seminar:**  
<https://ucr.zoom.us/j/94726000628>  
**Meeting ID:** 947 2600 0628

**Vikas Yadav, Senior Research Associate, Duke University Medical Center**

**Research Seminar:**  
Thursday, February 29, 2024 | 12:00 p.m. – 1:00 p.m.

### **Seminar Title: “Stress-adaptation strategies in a human fungal pathogen: Resolving genomic conflicts during sex and tolerating heat”**

**Abstract:** Eukaryotic pathogens such as fungi pose an increasing global threat to human health causing thousands of deaths annually, aided by growing incidences of drug resistance. Among a few million estimated fungal species, only a limited number cause human infections with their ability to grow and propagate under myriad stress conditions, including host-specific and environmental settings. *Cryptococcus neoformans* is one of the deadliest global fungal pathogens accounting for >110,000 deaths and ~20% of HIV/AIDS-related deaths annually and was recently placed in the critical group of fungal pathogens by the World Health Organization. My research explores key stress adaptation strategies in this fungus with a focus on genome integrity and conflicts during sexual reproduction, and heat tolerance required to cause infection. In my talk, I will first present our discovery of a novel mode of reproduction, pseudosexual reproduction, which this fungus employs when faced with genomic conflicts upon mating to ensure the production of infectious spores. I will delineate my plans for dissecting molecular details of pseudosexual reproduction and its impact on the ecology of *C. neoformans*. In the second part, I will describe novel functional interactions of the calcium-calcineurin signaling network that is essential for *C. neoformans* to survive at the human body temperature and its possible long-term implications. The overall goal of my research is to explore and study the basic cell biology, genetics, and signaling involved in stress adaptation in *C. neoformans* and subsequently broaden this knowledge to better understand the pathogenicity, drug resistance, and ecology of this important human fungal pathogen and related species.

**Seminar Host: Dr. Hailing Jin**