



## Special Channing Microbiome Seminar

September 13 (Friday), 2024, 9AM (ET)

MCP 5<sup>th</sup>-floor large conference room & Zoom:

<https://us02web.zoom.us/j/81070959105?pwd=RFJNd3dSZmR6dXJZNjJiYVVVzQ3NEQT09>

Meeting ID: 810 7095 9105; Passcode: 984617



### Bing Zhai

Shenzhen Institute of Advanced Technology  
Chinese Academy of Sciences

### Gut mycobiome in transplantation: from dysbiosis to systemic fungal infections

**Abstract:** Fungi are frequently isolated from the human intestinal tract. These organisms interact closely with host and bacterial community and impact human health in turn. In some extreme scenarios, such as bone marrow transplantation, patients are under prolonged antibiotic and antifungal treatment due to severe immunocompromised condition. These medications drastically shape the structure of intestinal microbiome. By studying the gut microbiome of these patients longitudinally, we have discovered that intestinal fungal dysbiosis and domination by a single *Candida* species precedes invasive infections (i.e., systemic candidiasis), such dysbiosis is also linked to a worse overall survival following transplantation and is correlated with the loss of anaerobic bacteria in the same niche. We further investigated the antifungal prophylaxis failure caused by the intestinal colonized *Candida parapsilosis* in these patients and found that heteroresistance, a non-classical form of antimicrobial resistance, lead to the breakthrough fungal infections. Taken together, these studies highlight the role of intestinal fungal dysbiosis in the development of life-threatening systemic candidiasis.

*Bio:* Bing Zhai is a principal investigator at Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences. She received her PhD degree under the supervision of Dr. Xiaorong Lin at Texas A&M University, where she studied the human fungal pathogen *Cryptococcus neoformans* and novel anti-cryptococcal drug development. She then moved to New York City for postdoctoral training on antifungal immunity in Tobias Hohl's lab and initiated the mycobiome project at Memorial Sloan Kettering Cancer Center. Current research in the Zhai Lab focuses on the dynamics of the fungal compartment in human microbiome at various mucosal surfaces and the mechanisms underlying fungal colonization resistance.

Hosted by Yang-Yu Liu