

presents a seminar

## Fungal spores prepare for the future according to the sporulation environment before entering into dormancy

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**Date :** 14 April 2022 (Thu)  
**Time :** 11:00am - 12:30pm (Hong Kong Time)  
**Zoom Link:** <https://cityu.zoom.us/j/97382255518>  
(Meeting ID: 973 8225 5518, Passcode: 438016)

### Abstract

Fungi produce millions of clonal asexual conidia (spores) that remain dormant until favourable conditions occur. Conidia contain abundant stable messenger RNAs but the mechanisms underlying the production of these transcripts and their composition and functions are unknown. Here, we report that the conidia of three filamentous fungal species (*Aspergillus nidulans*, *Aspergillus fumigatus*, *Talaromyces marneffeii*) are transcriptionally active and can synthesize mRNAs. We find that transcription in fully developed conidia is modulated in response to changes in the environment until conidia leave the developmental structure. Environment-specific transcriptional responses can alter conidial content (mRNAs, proteins and secondary metabolites) and change gene expression when dormancy is broken. Conidial transcription affects the fitness and capabilities of fungal cells after germination, including stress and antifungal drug (azole) resistance, mycotoxin and secondary metabolite production and virulence. The transcriptional variation that we characterize in fungal conidia explains how genetically identical conidia mature into phenotypically variable conidia. We find that fungal conidia prepare for the future by synthesizing and storing transcripts according to environmental conditions present before dormancy.

### Biography

Dr. Chris Wong received a Ph.D. degree in Genetics from the University of Melbourne in Australia and post-doctoral research training at Harvard Medical School in USA and is a recipient of the prestigious Croucher post-doctoral fellowship. In 2013, Dr. Wong established his independent lab at the University of Macau as an Assistant Professor and was promoted to Associate Professor in 2020. Dr. Wong's overall research interest is to understand gene regulation and transcription mechanisms, and his laboratory focuses on understanding the transcriptional regulation of important physiologies in a number of fungi including pathogens that can cause life-threatening diseases in humans. Dr. Wong has published in reputable journals including Nature Microbiology, Nature Methods, Nature Communications, Molecular Cell, Gene and Development, PNAS, Nucleic Acids Research, PLOS Pathogens, mBIO and eLife. His team has recently discovered a fascinating phenomenon that allows genetically identical fungal spores to acquire phenotypic heterogeneity before dormancy for better fitness, survival and capability in their future upon germination (i.e., after breaking dormancy). He will introduce this latest finding in the talk.

### Enquiries:

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**All are welcome!**