

2012 PSTA WINNER CITATIONS

PRESIDENT'S SCIENCE AWARD 2012



Professor Wang Yue
Institute of Molecular and Cell Biology
Agency for Science, Technology and Research

“For his ground-breaking discoveries in the biology and virulence of the fungus *Candida albicans*, a leading cause of serious hospital-acquired infections”

Over the past 15 years, Professor Wang Yue’s research has significantly advanced the understanding of the mechanisms underlying the human fungal pathogen, *Candida albicans*. *Candida albicans* is the most prevalent fungal pathogen in humans, ranking among the top four microbial pathogens in hospital-acquired infections of the blood that has a mortality rate of as high as 45%. Choice of drugs for treating *Candida albicans* infection is limited, and drug-resistance has emerged worldwide, posing a great challenge to medicine. To effectively combat this pathogen, it is necessary to identify the virulence determinants in both the pathogen and the host that promote the infection. Prof Wang’s efforts led to the discovery and functional characterization of several such determinants and opened numerous opportunities for developing new therapeutic agents.

Professor Wang and his group have made many major discoveries, including the following:

- (1) Identifying a key virulence gene (FTR1) that is activated only when *Candida albicans* enter the host tissues. This gene enables *Candida albicans* to defeat the host’s defence mechanism.
- (2) Discovering a master regulator (Hgc1) that transforms *Candida albicans* from a benign to virulent form upon entering the host blood stream.
- (3) Solving the long-elusive identity of the molecules in human blood responsible for promoting *Candida albicans*’ virulence. Unexpectedly, these molecules were found to be a universal component of bacterial cell wall (peptidoglycan). Prof Wang further discovered the mechanism of how these molecules enter the *Candida albicans* cells to activate genes that are responsible for virulence.

Professor Wang’s achievement also includes novel discoveries in fundamental biology associated with the transformation of *Candida albicans* from the benign to virulent form, such as the establishment and maintenance of cell polarity, cell cycle control, and mechanisms of signal sensing, processing and integration. He is a leading authority in this field and his studies have led to dozens of

publications in prestigious international journals. Prof Wang has received international recognition in and beyond the *Candida albicans* field.

For his ground-breaking discoveries in the biology and virulence of the fungus *Candida albicans*, a leading cause of serious hospital-acquired infections, Prof Wang Yue is awarded the 2012 President's Science Award.