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| **Research Theme:** [Interdisciplinary Biology](https://biosci.northwestern.edu/undergraduate/concentrations/interdisciplinary-biology.html) (Cell Biology, Biochemistry, Synthetic Biology, Biophysics) |
| **Research Project Title: Novel Drug Discovery of Novel Antifungal Medicine via Phase Separation** |
| **Principal Investigator/Supervisor:** Associate Professor Yansong MIAO |
| **Co-supervisor/ Collaborator(s) (if any):** |
| **Project Description**  **a) Background:**  This interdisciplinary project focuses on studying filamentous fungal growth and fungal invasion.  Filamentous fungal growth and hyphae growth-caused host invasion are emerging topics in biology because of the increasing antifungal resistance and life-threatening fungal attack on immune-compromised patients during the COVID-19 global pandemic.  We recently discovered an essential protein complex that drives filamentous fungal growth, which induces filamentous hyphae by undergoing macromolecular assembly, namely Liquid-liquid Phase Separation (LLPS). We are looking for a highly motivated PhD student to work on this novel and well-designed project, ensuring high-quality training, high-impact outcomes, and scientific publications.  We provide solid scientific training for your future career and aim to nurture the next generation of scientists. The Ph.D. candidate will use advanced super-resolution living cell imaging, cutting-edge in vitro reconstitution, which integrates biochemistry, bioengineering, biophysics, and synthetic biology systems, to study cell polarity and fungal biology.  As European Molecular Biology Organization (EMBO)-affiliated lab, Miao lab students have different high-quality scientific training opportunities, such as international conferences, workshops, exchanges.  For our recent work and publications, please see <https://personal.ntu.edu.sg/yansongm>  For more details of ongoing and new projects, feel free to contact Dr. Miao at [yansongm@ntu.edu.sg](mailto:yansongm@ntu.edu.sg).  **b) Proposed work:**  Our top-notch biotechnologies in the lab and long-term collaborations with material science, chemistry, structural biology, and modeling groups will ensure a comprehensive understanding of LLPS-mediated fungal growth and fungal infection.  **c) Preferred skills:**  Enthusiasm for science; Excellent oral and written communication skills; Good collaboration skills. |
| **Supervisor contact:**  **If you have questions regarding this project, please email the Principal Investigator:**  [yansongm@ntu.edu.sg](mailto:yansongm@ntu.edu.sg) |
| **SBS contact and how to apply:**  Associate Chair-Biological Sciences (Graduate Studies) : [AC-SBS-GS@ntu.edu.sg](mailto:AC-SBS-GS@ntu.edu.sg)  Please apply at the following:  **Application portal:** <https://venus.wis.ntu.edu.sg/GOAL/OnlineApplicationModule/frmOnlineApplication.ASPX> |