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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: Two-dimentional Phase Separation Regulated Cell Signaling** |
| **Principal Investigator/Supervisor:** Associate Professor Yansong MIAO |
| **Co-supervisor/ Collaborator(s) (if any):** |
| **Project Description**  **a) Background:**  We recently discovered an essential regulatory mechanism in regulating the macromolecular assembly of immune-responsive proteins on the plasma membrane by undergoing Liquid-liquid Phase Separation (LLPS). We are looking for a highly motivated PhD student to work on this novel and well-designed project in studying biomolecular condensation/phase separation via multidisciplinary approaches. The Ph.D. candidate will use advanced super-resolution living cell imaging, and cutting-edge in vitro reconstitution, which integrates biochemistry, bioengineering, biophysics, and synthetic biology systems, to study the phase transition of disease proteins and develop therapeutical approaches. Our projects are flexible in plant, mammalian, or fungal biological systems.  We provide the top-notch interdisciplinary project with strong international collaboration.  We provide solid scientific training (multiple workshops and conferences) for your future career and aim to nurture the next generation of scientists. As European Molecular Biology Organization (EMBO)-affiliated lab, Miao lab students have different high-quality scientific training opportunities, such as international conferences, workshops, and 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 biomolecular phase separation and cellular aging.  **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> |