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| **Research Theme: Structural biology; Biophysics; Virology** |
| **MSc Research Project Title:**  Mechanistic understanding on pre-hairpin intermediate of SARS-CoV-2 Spike |
| **Principal Investigator/Supervisor: Xiao Tianshu** |
| **Co-supervisor/ Collaborator(s) (if any):** |
| **Project Description**  **a) Background: Spike protein of SARS-CoV-2 plays critical role in viral entry and infection, which mediates membrane fusion between virus and host cell. Structural studies on the conformations prior to and post fusion have provided significant insights into the mechanism behind the process of viral entry. However, the pre-hairpin intermediate that is present during the conversion from prefusion to post-fusion state remains unclear.**  **b) Proposed work: We have produced an engineered protein to represent the native pre-hairpin intermediate Spike. In this project, we will express and purify this protein for structural characterization by EM, to understand the process of prefusion to post-fusion transition. Meanwhile, we will characterize the antigenic function of this protein to analyze on the epitope exposed in the pre-hairpin intermediate.**  **c) Preferred skills: computation work on data analysis would be a big plus, but not indispensable** |
| **Supervisor contact:**  **If you have questions regarding this project, please email the Principal Investigator:**  **Xiao Tianshu, tianshu.xiao@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> |