

<b>Research Theme: Protein chemistry and structural function</b>
<b>Research Project Title: Structure and function of ribosome and drug design; Glycobiology towards Biofuel; Pathogen virulence</b>
<b>Principal Investigator/Supervisor: A/Prof Gao Yonggui</b>
<b>Co-supervisor/ Collaborator(s) (if any): NA</b>
<b>Project Description</b>
<b>a) Background</b>
<p>How the DNA code becomes life has been a long-standing mystery. Today, we know many of the most important processes function relevant to this basic issue, all the way down to atomic level. Ribosome, a huge protein-synthesizing complex, has been an interesting field for decades, given its central basis on underlying how the DNA code becomes life. Ribosome can be in diverse functional states involving many factors, understanding the detailed mechanism of ribosome function is important not only as a fundamental issue in life science, but also because many clinically relevant antibiotics target the ribosome. With the recently advanced techniques, such as free-electron laser (FEL) (including X-ray), and Cryo-electron microscopy (Cryo-EM), we are trying to unravel how ribosome is crucial for life, as well as develop a rich platform for antibacterial drug discovery targeting ribosome. Meanwhile, the structural and functional protein complex associated with disease and industrial application, e.g. host-pathogen interaction, cellulose synthesizing complex, and CO<sub>2</sub>-fixation relevant protein and its complex, will be also targeted.</p>
<b>b) Proposed work</b>
<p>Our lab is fully equipped for all aspects of molecular biology, protein chemistry, and structural-functional analysis. In addition to host institution (SBS-NTU), the leading PI has a joint position in Institute of molecular and cell Biology (IMCB), Agency for Science, Technology and Research (A* STAR), all core facilities in both institutions are open for us. We are able to accept PhD scholarship supported by NTU or A*STAR. PhD students will be trained with molecular cloning, protein/DNA/RNA design, protein preparation &amp; characterization, protein chemistry, nucleic acid analysis, structure-function analysis and computational program, etc., involving multidisciplinary approaches.</p>

**Supervisor contact:**

**If you have questions regarding this project, please email the Principal Investigator:**  
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**SBS contact and how to apply:**

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Please apply at the following: <http://admissions.ntu.edu.sg/graduate/R-Programs/R-WhenYouApply/Pages/R-ApplyOnline.aspx>