NANYANG TECHNOLOGICAL UNIVERSITY

School of Biological Sciences

Reg. No. 200604393R

Research Theme: Structural Biology and Drug Discovery in Infectious Disease

MSc Research Project Title: Understanding the *Mycobacterium abscessus* energy converter F-ATP synthase to discover novel compound targets

Principal Investigator/Supervisor: Professor Dr Gerhard Grüber

Co-supervisor/ Collaborator(s) (if any): -

Project Description

a) Background

Infections caused by non-tuberculous mycobacteria (NTM) are increasing globally, including *Mycobacterium abscessus* (Mab), which comprises three subspecies. This rapidly growing mycobacterium is one of the most commonly identified NTM species responsible for severe respiratory, skin and mucosal infections in humans. It is often regarded as one of the most antibiotic-resistant mycobacteria, leaving us with few therapeutic options. In Singapore, *Mab subsp. abscessus* is the most common subspecies, causing mostly pulmonary disease in patients with structural lung disorders like cystic fibrosis and bronchiectasis, cutaneous infections leading to abscesses or inflamed cysts, and increasing numbers of peritonitis- and catheter-related infections. The Mab disease area is underserved, and drug discovery efforts are limited.

b) Proposed work:

New antibiotics to fight drug resistant Mab are needed. This project aims to target Mab's energy of life, adenosine triphosphate (ATP), formed in the process of oxidative phosphorylation by the F_1F_O-ATP synthase, and to archive new structural-, mechanistic-, regulative- and genetic insights into this enzyme, to pave the way for deciphering novel drug targets inside the catalyst. Our team has longstanding expertise in mycobacterial bioenergetics, -structural biology, -genetics and -drug discovery.

c) Preferred skills:

Have fun with science, be open for new approaches and enjoy working together in a lovely team.
Find more about us under: http://labs.sbs.ntu.edu.sg/ggrueber/

Supervisor contact:

If you have questions regarding this project, please email the Principal Investigator:

Email: GGrueber@ntu.edu.sg

SBS contact and how to apply:

Associate Chair-Biological Sciences (Graduate Studies): AC-SBS-GS@ntu.edu.sg

Please apply at the following:

Application portal:

https://venus.wis.ntu.edu.sg/GOAL/OnlineApplicationModule/frmOnlineApplication.ASPX