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| **Research Theme:** Structural Biology and Drug Discovery in Infectious Disease |
| **PhD Research Project Title:** Understanding the *Acinetobacter baumannii* F-ATP synthase to discover new inhibitor targets |
| **Principal Investigator/Supervisor:** Professor Dr Gerhard Grüber |
| **Co-supervisor/ Collaborator(s) (if any):** |
| **Project Description**  **a) Background:** *Acinetobacter baumannii* belongs to the class of so-called ESKAPE pathogens (*Enterococcus faecium, Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter baumannii, Pseudomonas aeruginosa*, and *Enterobacter species*) and is regarded as one of the most antibiotic-resistant bacteria. The pathogen is of high clinical significance, as it causes infections in the hospital and community, with pneumonia being mostly observed. Community-acquired infections are frequently observed in hot and humid countries like Singapore, leading to mortality rates of 64%. The number of drug resistant and even pan-drug resistant *A. baumannii* strains is arising, and with these the mortality rate. *A. baumannii* is a gram-negative bacterium, nonfermenting and strictly aerobic pathogen. Due to this metabolic restriction, the pathogen catabolises its major fuels of carbohydrates via Glycolysis, the Krebs cycle followed by the process of oxidative phosphorylation to form the currency of life adenosine triphosphate (ATP). The proton motive force generated by the electron transport chain provides the energy for the F1FO ATP synthase (F-ATP synthase) to condense adenosine diphosphate (ADP) and inorganic phosphate (Pi) to ATP.  **b) Proposed work:**  New inhibitors to fight *A. baumannii* are needed. This project aims to target the *A. baumannii*’s F1FO-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: computation work on data analysis would be a big plus, but not indispensable**  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/](https://urldefense.proofpoint.com/v2/url?u=http-3A__labs.sbs.ntu.edu.sg_ggrueber_&d=DwMGaQ&c=-35OiAkTchMrZOngvJPOeA&r=HV1fZYhfXUUwy6dDeaQAAp6RV8MkzdW4gglgDMYJPM8&m=AJ-xqFx8earTT6JIB522XZQpVBHAnkExhJUeN2XQQlE&s=V69JteuFJYWiGP_1O2vTv32cPU9HVHFU6UERkYrnwOY&e=) |
| **Supervisor contact:**  **If you have questions regarding this project, please email the Principal Investigator:**  Email: [GGrueber@ntu.edu.sg](mailto:GGrueber@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> |