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| **Research Theme: Biotechnology, Synthetic Biology, Enzyme engineering & design** |
| **PhD Research Project Title: Design of artificial biosynthetic pathways** |
| **Principal Investigator/Supervisor: Liang Zhao-Xun** |
| **Co-supervisor/ Collaborator(s) (if any): NA** |
| **Project Description**  **a) Background:** Many drugs in use today are structural derivatives of natural products generated by chemical modification approaches. Enabled by recent technological advances in DNA synthesis and genome editing, we are exploring the rewiring of microbial biosynthetic pathways to produce natural product derivatives or “artificial” chemical scaffolds that do not exist in nature. Such pathway rewiring strategy, which involves merging different pathways via the enzymatic or non-enzymatic coupling of biosynthetic intermediates or products, allows us to tap into the full potential of nature’s biosynthetic power.  **b) Proposed work:** Gene cloning, expression, purification and characterization of recombinant enzymes, genome editing of microbes, microbial fermentation, enzyme engineering and design.  **c) Preferred skills:** Basic molecular cloning experience (e.g., PCR, DNA manipulation etc); Basic understanding of biochemistry and protein chemistry. |
| **Supervisor contact:**  **If you have questions regarding this project, please email the Principal Investigator: zxliang@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> |