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| **Research Theme: Enzymology; Biotechnology** |
| **PhD Research Project Title: Structure, function, engineering and applications of peptide asparaginyl ligases** |
| **Principal Investigator/Supervisor: Liu Chuan Fa** |
| **Co-supervisor/ Collaborator(s) (if any):** |
| **Project Description**  **a) Background: Peptide asparaginyl ligases (PALs) are plant-derived enzymes capable of catalyzing peptide ligation reactions at asparaginyl peptide bonds. Structurally, they are members of a family of cysteine proteases known as legumains or asparaginyl endopeptidases (C13 enzymes) found in many organisms. These enzymes contain a catalytic triad (Cys, His, Asn) and process their substrates by cutting and reforming P1(Asn)-P1’(Xaa) peptide bonds.**  **b) Proposed work: This project aims to study and structure-function relationship of PALs and to engineer new PALs with higher catalytic efficiencies and new substrate specificities. The engineered new PALs will be used for biotechnological applications, such as the preparation of protein conjugates, peptide macrocyclization and cell surface modification.**  **c) Preferred skills: molecular biology, structural biology and protein engineering. Some knowledge and experience in drug discovery would be a big plus.** |
| **Supervisor contact:**  **If you have questions regarding this project, please email the Principal Investigator:** [**cfliu@ntu.edu.sg**](mailto:cfliu@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> |