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| **Research Theme: Immunology** |
| **PhD Research Project Title: Investigating the effects of weaning diet on immune development and imprinting** |
| **Scholarship category (Please indicate the source of funding for this project):**  **NTU Central RSS (for SBS faculty only)** |
| **Principal Investigator/Supervisor: Asst Prof Loh Jia Tong** |
| **Co-supervisor/ Collaborator(s) (if any): NA** |
| **Project Description**  **a) Background:**  The gut microbiota plays an instrumental role in directing immune development, and perturbations in microbiome composition during early life has been associated with long-term health effects including higher risk of developing inflammatory and metabolic diseases. A window of opportunity has been proposed to exist during weaning phase, in which the expanding gut microbiota triggered by the introduction of solid food induces a strong, transient immune response termed “weaning reaction” essential for proper immune training to prevent pathologies later in life. However, the exact mechanisms underlying such immune-microbe crosstalk during weaning remains unexplored.  **b) Proposed work:**  In this project, we aim to investigate the effects of early life diet, in particular during the restricted weaning window, on immune development and susceptibility to immunopathologies later in life. Specifically, we will investigate the immune-microbial interaction at molecular level, via identification of differentially expressed microbial metabolites and their mechanistic role in guiding immune development. In addition, we will investigate the epigenetic reprogramming in immune cells in response to different dietary patterns, and whether they contribute to the long-lasting immune alterations and higher risk of immunopathologies in the long run. The knowledge generated from the study can then be used to guide microbiota-based interventions and design of tailored weaning diets to ensure proper immune development and imprinting occurs during this window of opportunity in infants. |
| **Supervisor contact:**  **If you have questions regarding this project, please email the Principal Investigator:**  Asst Prof Loh Jia Tong (jiatong.loh@ntu.edu.sg) |
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