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| **Research Theme: Specific-specific functions of p53 in disease and development** |
| **PhD Research Project Title:**  **Understanding the evolution of p53** |
| **Scholarship category (Please indicate the source of funding for this project):**  **SBS Research Student Scholarship (for SBS faculty only)** |
| **Principal Investigator/Supervisor: Prof Kanaga Sabapathy** |
| **Project Description**  **a) Background:**  p53 is a tumor suppressor gene and transcription factor found in all higher animals. Mutations in p53 lead to tumor development in most animal models tested, and in humans, cementing its position as the most important tumor suppressor gene. Besides its role in tumorigenesis, p53 also exerts a role in several other physiological process, including differentiation and development.  While p53 functions are broadly similarly in all species, specie-specific differences exists. A case in point the enrichment of single nucleotide polymorphisms (SNPs) in human p53. In addition, there are key differences in the amino acid sequences between mouse and human p53 in the transactivation domain, likely affecting the types of targets gens that p53 regulates. However, a clear evaluation of these differences and the functional consequences has not been performed  **b) Proposed work:**  To start exploring these species-specific differences, we will use the human and mouse p53 as a model system. Initial analysis will focus on structural differences, along with the identification of binding partners that are species-specific. To this end, the project will involve biochemical and cell biology based approached. Identification of species-specific p53 interactors will then be validated, and the functions of these interactions will be explored using the various genetically modified mouse models available in the lab.  **b) Proposed work:**  The project will focus:  - uncovering novel human vs mouse p53 interactors, and their validation;  - exploring the mechanistic basis of such species-specific interaction.  - Exploring the functional consequences of such species-specific interactions on the various biological processes regulated by p53, including In genetically modified mouse models.  This project involves molecular and cellular biology techniques, biochemistry including mass spec analysis, genome editing, mouse biology, etc. Candidates keen on exploring novel frontiers in p53 biology and its impact on diseases and developmental process are welcomed to apply. indispensable    **c) Preferred skills:**  Preferred: Cell culture, biochemistry techniques, molecular cloning, mouse handling (though not all are indispensable).  Candidates keen on exploring novel frontiers in protein structure and function and the impact on diseases such as cancers are welcomed to apply.    **c) Preferred skills:**  Preferred: Some programming and coding experience, and exposure to computational methods are preferred, although not essential. |
| **Supervisor contact:**  **If you have questions regarding this project, please email the Principal Investigator:**  **kanaga.sabapathy@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> |