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| **Research Theme: Cancer Biology** |
| **PhD Research Project Title: Investigating R-Loop Biology for Therapeutic Applications in Cancer** |
| **Scholarship category (Please indicate the source of funding for this project):**   1. **SBS Research Student Scholarship (for SBS faculty only)** 2. **Grant Scholarship (NMRC, MOE Tier 2, NRF, NTU Central RSS etc)** 3. **Others** |
| **Principal Investigator/Supervisor: Li Hoi Yeung** |
| **Co-supervisor/ Collaborator(s) (if any):** |
| **Project Description**  **a) Background: Our lab focuses on R-loops—three-stranded nucleic acid structures consisting of an RNA–DNA hybrid and a displaced single-stranded DNA strand. Dysregulation of R-loops is associated with genomic instability, a key feature in the development and progression of cancer. By understanding how R-loops contribute to oncogenesis, we aim to identify novel therapeutic targets to combat cancer more effectively.**  **b) Proposed work: We plan to elucidate the mechanisms by which R-loops influence cancer cell biology. This involves identifying and characterizing proteins involved in R-loop formation and resolution within cancer cells. We will explore therapeutic strategies to modulate R-loop levels, potentially inhibiting cancer cell growth. Our methodologies include CRISPR-Cas9 gene editing, RNA/DNA immunoprecipitation, high-throughput sequencing, and bioinformatics analysis to uncover how targeting R-loops can lead to new cancer treatments.**  **c) Preferred skills: We are seeking candidates with a strong background in molecular biology or cancer biology. Proficiency in techniques such as gene editing (CRISPR-Cas9), nucleic acid immunoprecipitation, next-generation sequencing, and bioinformatics analysis is highly desirable. Experience with therapeutic development or drug screening would be an added advantage.** |
| **Supervisor contact:**  **If you have questions regarding this project, please email the Principal Investigator:** |
| **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> |