Developing Designer Antibodies

Research Theme: **Protein degradation/Cancer Biology**

PhD Research Project Title: **Understanding the mechanisms of frameshift for translation control in cancer development**

Scholarship category (Please indicate the source of funding for this project):

(a) SBS Research Student Scholarship (for SBS faculty only)

Principal Investigator/Supervisor: **Kanaga Sabapathy**

Co-supervisor/ Collaborator(s) (if any): **NA**

Project Description

a) Background:
The ubiquitin-proteasome system represents the well-studied, major mode of regulated proteolysis. However, other less explored proteolytic pathways exist, which are involved in diseases such as cancer. One such under-appreciated pathway involves Antizyme-1 (Az1), a 26kDa protein that was initially shown to bind to and lead to the degradation of ornithine-decarboxylase (ODC), through the proteasome in a ubiquitin-independent manner.
Az1 expression is uniquely regulated by +1 frameshift mechanism that is more common in viruses and bacteria. However, the mechanistic basis of ribosome shifting to generate a functional Az1 is unclear.

b) Proposed work:
The project will focus:
- uncovering novel regulators of Az1 frameshift;
- exploring the mechanistic basis of Az1 frameshift by these regulators, to determine if there is a common mode of action (on all the regulators);
- understanding if such mechanism are conserved across evolution.
This project involves molecular and cellular biology techniques, biochemistry, genome editing, mouse biology, etc. Candidates keen on exploring novel frontiers in protein quality controls and its impact on diseases such as cancers are welcomed to apply. indispensable

c) Preferred skills:
Cell culture, biochemistry techniques, molecular cloning, mouse handling (though not all are indispensable).

Supervisor contact:

If you have questions regarding this project, please email the Principal Investigator:

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SBS contact and how to apply:

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Please apply at the following:

Application portal:

https://venus.wis.ntu.edu.sg/GOAL/OnlineApplicationModule/frmOnlineApplication.ASPX