NANYANG TECHNOLOGICAL UNIVERSITY

School of Biological Sciences

Reg. No. 200604393R

Research Theme: **Biochemistry / Cell Biology**

Research Project Title:

Quality control of stalled proteins in human cells

Principal Investigator/Supervisor: **Asst/ Prof Choe Young-Jun**

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

Project Description

a) Background:

Ribosomes can stall during the translation for various reasons. A prominent example is translation of aberrant messenger RNAs that were truncated or chemically modified by UV or reactive oxygen species. The incomplete nascent proteins, being synthesized by stalled ribosomes, would be detrimental to cells. Eukaryotes have evolved an elaborate quality control pathway, RQC (ribosome-associated quality control), to get rid of stalled proteins by using the ubiquitin-proteasome system. The RQC complex assembles at stalled ribosomes and its E3 ligase component, Ltn1, ubiquitylates nascent proteins for subsequent degradation by proteasomes. Mutation in LTN1 causes a neurodegenerative disease in mice.

b) Proposed work:

It is unclear why a neurodegenerative disease develops in LTN1 mutant mice. It is notable that stalled proteins form detergent-insoluble aggregates in LTN1 mutant yeast. Since protein aggregates are a hallmark for various neurodegenerative diseases, stalled protein aggregates could explain the phenotype of LTN1 mutant mice. However, detergent-insoluble aggregates of stalled protein were identified only in yeast. We will study the degradation/aggregation pathway of stalled proteins in human cells.

Supervisor contact:

If you have questions regarding this project, please email the Principal Investigator: yjchoe@ntu.edu.sg

SBS contact and how to apply:

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Please apply at the following:

http://admissions.ntu.edu.sg/graduate/R-Programs/R-WhenYouApply/Pages/R-ApplyOnline.aspx

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