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Taiwan researchers solve aging mystery

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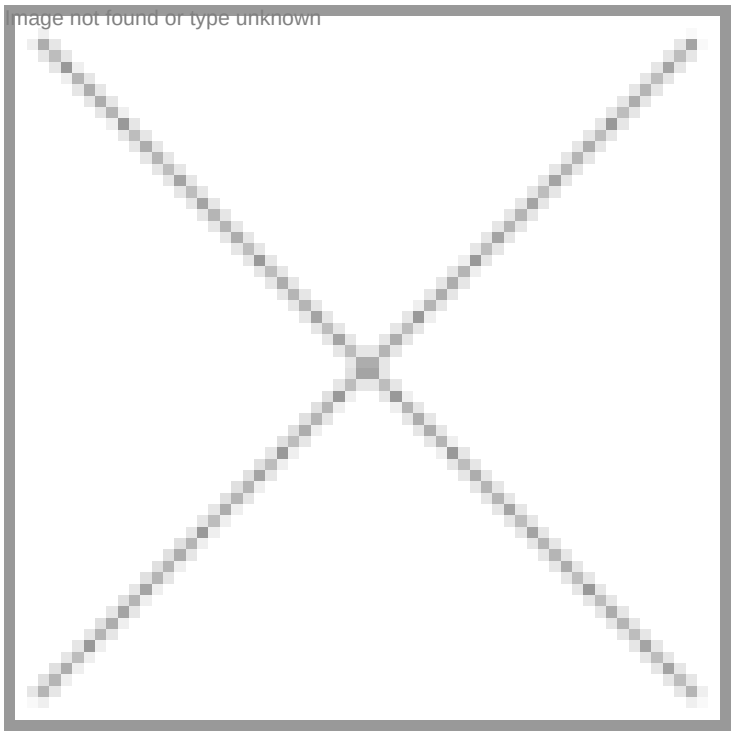

Singapore: A study conducted by a transnational research team at the National Cheng Kung University (NCKU), Taiwan, has found the mechanisms of aging that are associated with nuclear pore complexes (NPCs). The groundbreaking study was carried out by NCKU together with University of Alberta, Canada; and Institute for Systems Biology (ISB), US, and has been published in the February 28, 2013, issue of the journal, *Cell*.

The team, which was led by Dr Jung-Hsien Chiang from the Department of Computer Science and Information Engineering, found that NPCs are an active participant in gene silencing and the formation of peripheral heterochromatin, which is one of the factors that lead to aging.

The paper titled, 'A role for the nucleoporin Nup170p in chromatin structure and gene silencing', draws a clear picture that the role of yeast NPC protein Nup170p in subtelomeric gene silencing is linked to its association with the chromatin-remodeling complex. The team also successfully illustrated that the Nup170p with regions of the genome that contain ribosomal protein and subtelomeric genes, functioned as a repressor of transcription.

In the study, University of Alberta was responsible for cell biology; ISB took care of the gene expression profiling; and NCKU focused on bioinformatics computing. Dr Chiang's team in NCKU handled data retrieving from the research and systematical computation provided by NCKU, which helped in deciphering the mystery of aging.

Dr Chiang said, "Our team has uncovered that the binding of Nup170p to subtelomeric chromatin is cooperative and necessary for the association of telomeres with the nuclear envelope, which is a comprehensive roadmap to explain that

Nup170p plays a physiological role at telomeres. This is the first time that we unveil functional interactions between Nup170p and chromatin domains that generally reside adjacent to the nuclear envelope, including subtelomeric and telomeric regions."