NCGG SEMINAR

"Genomics analysis of super longevity in *C. elegans*"

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Time and Date: at **16:00 ~ 17:00**
on **22 May, 2017 (Mon)**

Room: The 2nd floor Conference Hall Main in the 1st Research building, NCGG

The highly conserved insulin/IGF-1 and mTOR pathways play an important role in aging in many species. Previous studies have demonstrated that mutations in DAF-2, the IGF-1 receptor homolog in *C. elegans*, double adult life span via activating the downstream DAF-16 (FOXO) transcription factor. Inhibition of LET-363 (mTOR) or its downstream effector RSKS-1 (S6 kinase) mildly extends lifespan, and the mechanisms might involve translational regulation of key modulators of aging. However, it has not been clear how these two pathways interact with each other to modulate aging especially at tissue-specific levels. To address this issue, we constructed a *daf-2 rsks-1* double mutant, which showed synergistic super longevity phenotype. To gain better mechanistic insights, we performed transcriptional and translational profiling analyses. The transcriptional analysis helped to identify AMPK-mediated positive feedback regulation of DAF-16 in the *daf-2 rsks-1* mutant, and the reproductive and metabolic tissues play an important role in this process. The translational study allowed us to identify cell-non-autonomous activation of mitochondrial stress response and AMPK as the key mediator of super longevity produced by *daf-2 rsks-1*. Together, these results illustrated the mechanisms of a super longevity phenotype produced by modulating highly conserved aging pathways at the molecular level.

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