NUS National University of Singapore | Department of Biological Sciences, Faculty of Science

ON-SITE BIOLOGY COLLOQUIUM

Friday, 6 Nov 2026 | 4 pm | S3 05-02 Conference Room 1

Hosted by Assist Prof Lin Zhewang

Map to Block S3

The Hidden Translatome: Shedding light on the dark matter of human disease

Sonia Chothani

Principal Investigator, Genome Institute of Singapore



RNA translation is a fundamental process in gene expression, yet its extent, role and regulation in human diseases remain unclear. In my talk, I will describe how our data-driven approaches to study RNA translation have revealed a substantial portion of gene expression activity that has been overlooked when studying diseases. This has led to 1) a paradigm shift in that human transcripts often translate multiple distinct open reading frames (ORFs), 2) a 40% increase in translated ORFs encoded in the human genome including within lncRNAs and 3) detection of widespread gene expression changes that were previously missed in traditional RNA-based target discovery screens. These findings highlight a largely untapped search-space for new biomarkers, therapeutic targets and antigens for targeted therapy. Additionally, the algorithms developed provide a powerful platform to gain insights on the translatome in any given system, as demonstrated by our work in fibrosis, inflammation, and cancer, paving the way for future breakthroughs in RNA biology.

About the Speaker

*Dr. Sonia Chothani is a Principal Investigator at the Genome Institute of Singapore, A*STAR. Her lab's research focuses on dissecting RNA translation mechanisms and novel proteoforms in human health and disease. She led the creation of the first human body map of RNA translation and has developed widely adopted computational frameworks for translational analysis, including deltaTE and Translation Signature Scores. With previous work in fibrosis, inflammatory disorders and cancer RNA translation, her laboratory is committed to transforming fundamental insights in RNA translation into innovative diagnostic and therapeutic strategies. As an active leader in the field, Dr. Chothani serves on the Executive Board of the Transcode Consortium, leading international efforts to annotate translated regions in the human genome and build community resources. She recently organized the Dark Proteome Summer School, fostering cross-disciplinary collaboration and training the next generation of dark proteome scientists.*