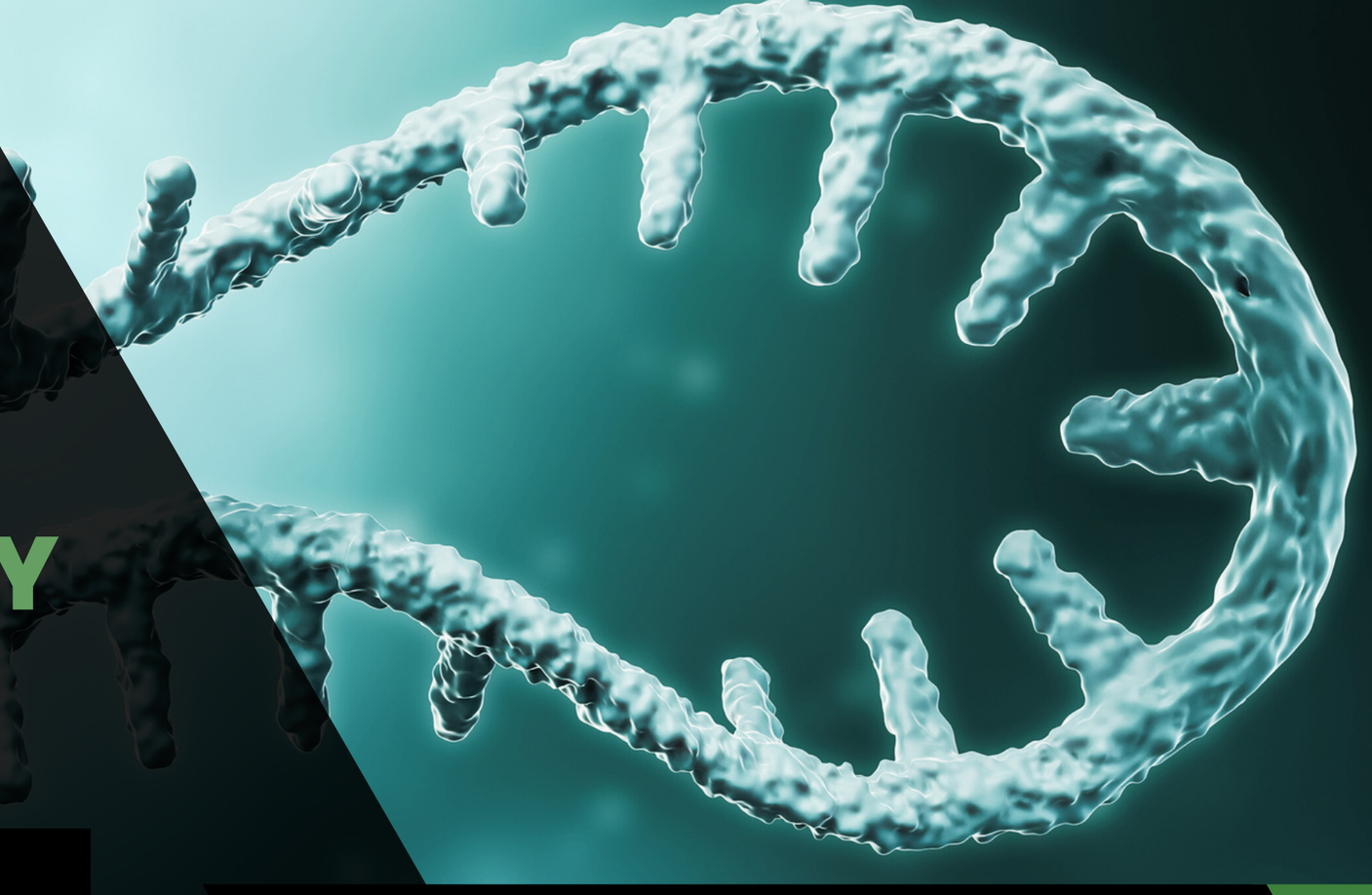
SINGAPORE RNA SEMINAR SERIES

RNA EDITING: INNATE IMMUNITY AND AUTOINFLAMMATORY DISEASE



About Speaker

Jin Billy Li, Ph.D., is Associate Professor at Stanford University Department of Genetics. He received his bachelor's and master's degrees at Tsinghua University in Beijing China and PhD degree from Washington University in St. Louis. After his postdoctoral training with Professor George Church at Harvard Medical School, he started his laboratory at Stanford in 2010. In his own lab, he has focused on studying RNA editing mediated by ADAR enzymes. His laboratory focuses on two aspects of ADAR. One is the major biological function of RNA editing to evade dsRNA-mediated autoimmunity, which has led to new approaches to treating cancer and autoimmune diseases. The other is to harness the ADAR enzyme for site-directed RNA base editing that overcomes the challenges of CRISPR/Cas-based DNA editing and holds great potential for treating rare and common diseases.

Jin Billy Li
Associate Professor,
Stanford University

21 August 2023 (Monday)
10 am (SGT, GMT+8)

Via Zoom

About Seminar

Adenosine-to-Inosine (A-to-I) RNA editing, catalyzed by ADAR enzymes, is prevalent in metazoans. Previous research, including our own, has revealed that the primary function of RNA editing by ADAR1 is to ensure sufficient editing of cellular double-stranded RNA (dsRNA), thereby preventing erroneous cytosolic MDA5-mediated dsRNA sensing. Mice lacking RNA editing by ADAR1 experience embryonic lethality but can live their full lifespan upon removal of MDA5. In humans, loss-of-function mutations in ADAR1 and gain-of-function mutations in MDA5 result in rare autoimmune diseases. Our recent work has identified key dsRNA substrates whose editing is crucial for evading MDA5 activation. Furthermore, through human genetics studies, we have discovered that RNA editing plays a central role in common autoimmune and immune-related diseases. This well-established ADAR1-dsRNA-MDA5 axis serves as the foundation for therapeutic development in the treatment of cancer and autoinflammatory diseases.

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