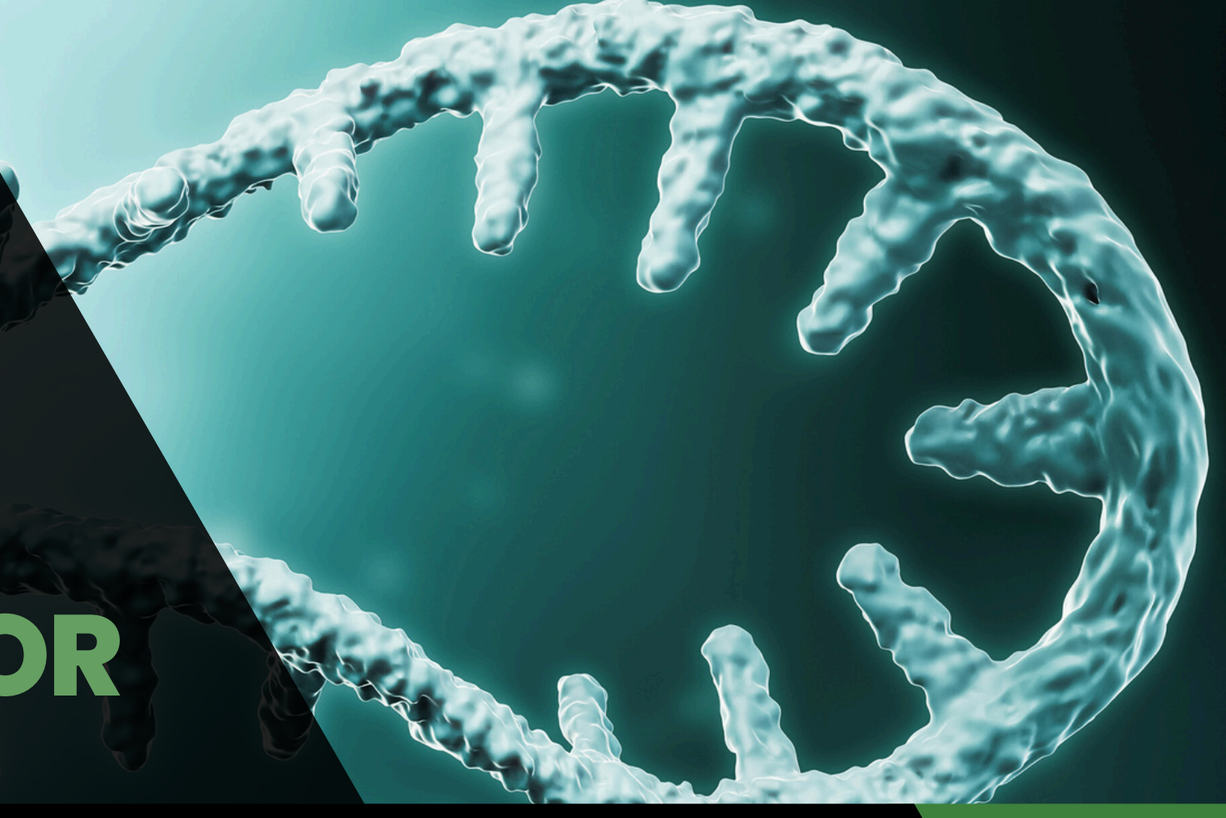
SINGAPORE RNA
SEMINAR SERIES

TARGETING POST-TRANSCRIPTIONAL MECHANISMS OF TUMOR PERSISTENCE



Tuesday 23 July 2024
9.15am (SGT , GMT+8)

Via Zoom

About the speaker

Dr. Shobha Vasudevan is Associate Professor of Medicine at the Department of Medicine, Harvard Medical School (HMS). She is also faculty at Harvard Stem Cell Institute (HSCI), Harvard Initiative for RNA Medicine (HIRM), Dana Farber/Harvard Cancer Center (DF/HCC), and Broad Institute that she joined 15 years ago. She has also recently been appointed as associate professor and Director of Technology and Innovation at the Brown RNA Center, Molecular Biology, Cell Biology, and Biochemistry (MCB) department, Brown University. Her research is focused on the role of RNA mechanisms underlying refractory cancer, as a basis for designing new therapies. Her lab uncovered that quiescent cancer cells use specialized post-transcriptional mechanisms to enable tumor persistence. These mechanisms alter the roles and expression of coding and noncoding RNAs, to express survival regulators that persist refractory AML and other tumors. She completed her doctorate in molecular genetics with Dr. S.W. Peltz at Rutgers University-UMDNJ, where she uncovered a key mRNA stability pathway upon metabolic stress, with implications in cancer. Her postdoctoral fellowship in biochemistry with Dr. J. Steitz at Yale University, uncovered a new role for microRNAs in quiescent AML, which express regulators for AML survival. Dr. Vasudevan has received several awards for her research, mentoring, and community leadership, including from the AACR, and from the RNA Society such as the Scaringe and the Excellence in Inclusive leadership awards. Her studies have been funded by the NIH, Leukemia and Lymphoma Society, CRI, AACR, Leukemia Research and V Foundations, as well as by industries and philanthropic funding agencies.

Dr. Shobha Vasudevan
Associate Professor, Harvard Medical School

About the seminar

The objective of the Vasudevan lab is to comprehensively understand the versatile roles of RNA mechanisms in refractory cancer, for early detection of resistant tumors, and for translating these findings into new, effective therapies to limit tumor persistence. Tumors demonstrate heterogeneity, harboring a small subpopulation that switch from rapid proliferation to a specialized, reversibly arrested state of quiescence. Quiescent cancer cells resist conventional therapeutics and lead to tumor persistence, resuming cancerous growth upon chemotherapy removal. Our data revealed that post-transcriptional mechanisms are altered, with modification of RNAs, associated complexes and ribosomes. These control vital genes in cancer and are important for chemo-resistance and persistence of quiescent cancer cells. Quiescence is understudied and these hidden RNA mechanism changes that are induced by tumor stress conditions, are unexplored, but are unique vulnerabilities in refractory cancer cells that they target to improve patient survival. Based on our studies, we utilized RNA mechanism inhibitors to block such unique, survival adaptations, to limit tumor persistence. In accord, pre-treatment with such inhibitors followed by clinical therapy, reduces survival of a form of refractory leukemia, with implications for improved patient outcomes in refractory cancers. The primary goal of our research is to characterize the specialized post-transcriptional gene expression and their mechanisms that underlie persistence of resistant cancer cells. A complementary focus is to develop RNA-based therapeutics against these mechanisms and their regulation in response to quiescent conditions and chemotherapy-induced signaling.

Co-organised by: Agency for Science, Technology and Research SINGAPORE; NUS National University of Singapore; NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

Supported by: RNA Society