

SingaRNA SYMPOSIUM – Speakers

Yue Wan

Junior Principal Investigator, GIS, A*STAR, Singapore

Title: *In vivo* mapping of eukaryotic RNA interactomes genome-wide using psoralen crosslinking

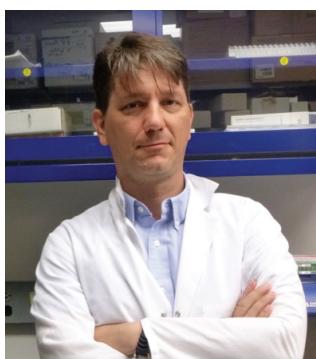


Yue Wan received her B.Sc. in Cell Biology and Biochemistry from the University of California, San Diego. She obtained her PhD in Cancer Biology from Stanford University, California, USA, under the mentorship of Howard Y. Chang. During her PhD, she developed the first high-throughput method for probing RNA structures genome-wide. Yue is a recipient of the NSS-PhD scholarship from Agency for Science, Technology and Research (A*STAR) in Singapore. She is currently a Junior Principal Investigator in the Genome Institute of Singapore and a Society in Science-Branco Weiss Fellow. Yue is a recipient of the Young Scientist Award and a TR35 Asia Finalist. She is interested in studying functional RNA structures and understanding their roles in regulating cellular biology.

Luca Cartegni

Assistant Professor, Rutgers University, USA

Title: Therapeutic manipulation of RNA processing in cancer by antisense compounds



The focus of our research is the understanding of the role of deregulated pre-mRNA splicing in cancer events, and the development of novel approaches to harness RNA processing to induce the expression of natural dominant-negative variants of active oncogenes in cancer, especially in the context of relapsing tumors which have become resistant to traditional therapies. In particular, we use antisense compounds to modulate alternative splicing and/or to activate intronic polyadenylation, in order to promote the expression of natural antagonists. Some of the targets we are focusing on include the induction of soluble decoy variants from VEGFR, EGFR, MET and other Receptor Tyrosine Kinases, as well as oncogenic transcription factors such as STAT3 and others.

Marlene Oeffinger

Assistant Professor, Institut de recherches cliniques de Montréal, Canada

Title: Investigating dynamic interactomes and variances along gene expression pathways using proteomic approaches



Dr. Oeffinger has been interested in RNA ever since her undergraduate days in Vienna. Her particular curiosity for ribosomes, however, developed during her PhD in the Tollervey lab, and to dissect ribosome and other RNA maturation pathways in more detail, she established novel affinity purification mass spectrometry approaches as part of her post-doctoral work in Mike Rout's group at Rockefeller University. In her own lab, she keeps pursuing RNP dynamics and biogenesis with the development of an ever-expanding repertoire of new proteomic tools. And if she's not chasing RNPs along different pathways, she teaches yoga or writes poetry and prose.

Huili Guo

Junior Investigator, Institute for Molecular and Cellular Biology, A*STAR, Singapore

Title: Ribosome heterogeneity and translational control



Huili Guo obtained her B.A. in Natural Sciences (2005) from Cambridge University and her PhD in Biology (2011) from MIT. At MIT, she trained at the Whitehead Institute for Biomedical Research, in the laboratory of Prof. David Bartel, where she was the first to perform ribosome profiling in mammalian cells to uncover the characteristics of microRNA-mediated repression. In 2012, she joined IMCB as an Independent Fellow. Huili continues to use genome-wide techniques to probe RNA biology, with particular focus on how the control of protein synthesis impacts human health. Outside of lab, she enjoys singing and mothering her two kids.

Leah Vardy

Principal Investigator, Institute of Medical Biology, A*STAR, Singapore

Title: Polyamine mediated gene expression control in the epidermis

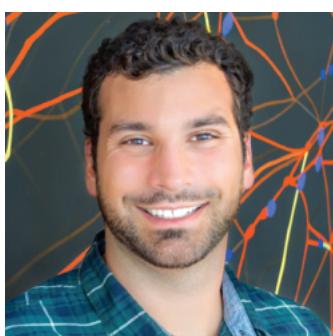


Leah Vardy received her Ph.D. from the Imperial Cancer Research Fund in London and went on to do post-doctoral work with Terry Orr-Weaver at the Whitehead Institute in Cambridge, in the US. Leah moved to the IMB in Singapore in 2008 to head a group focused on understanding gene expression control in embryonic stem cells and in the epidermis. More recently her focus has been on understanding how the polyamines help to regulate cellular function in these systems.

Gabriel Pratt

NSF Graduate Fellow, University of California San Diego, USA

Title: Systematic discovery of RNA binding proteins that regulate alternative splicing in response to cellular stress



Gabriel Pratt received his B.S in Computer Science from the University of Washington in 2011. He is now in the Bioinformatics and Systems Biology graduate program at the University of California San Diego studying with Gene Yeo. Gabriel's work in the Yeo lab focuses on the characterization of RNA binding protein function and the design of large scale computational tools and pipelines to integrate many disparate types of data to achieve that goal.

Eric Van Nostrand

Merck Fellow, Damon Runyon Cancer Research Foundation, USA

Title: Integrated analysis of RNA binding protein binding sites identified by enhanced CLIP enables RNA-centric views of RNA binding and reveals splicing dynamics



Eric Van Nostrand received his S.B. in Biology from MIT in 2005, with research experience in Dr. Chris Burge's lab on computational and experimental analysis of alternative splicing regulation. After spending a year with Dr. Fred Gage & Dr. Gene Yeo at the Salk Institute for Biological Studies, Eric attended Stanford University for graduate school, joining Dr. Stuart Kim's lab. Eric's thesis work focused on genomic, genetic, and molecular analysis of aging in *C. elegans*, identifying novel regulators of transcriptional changes with age that revealed links between developmental regulators and aging. As a part of this work, Eric identified transcription factor complexity (defined as the number of factors that bind to the same genomic loci) as a significant feature for biological interpretation of ChIP-seq data.

Low-complexity binding sites tended to correlate with factor-responsive target expression, whereas analysis of HOT (highly occupied target regions) bound by 65% or more of factors revealed a potential novel regulatory mechanism for highly expressed, essential, ubiquitous genes. In 2013, Eric joined the Yeo lab to perform postdoctoral research on general RNA binding protein regulatory networks as well as identification and characterization of critical RNA binding proteins in neuronal stem cell maintenance and differentiation.

Dan Zenklusen

Assistant Professor, Université de Montréal, Canada

Title: Dissecting RNA metabolism using single molecule resolution microscopy



Dr. Zenklusen has a longstanding interest in RNA biology. He did his PhD at the University of Lausanne in Switzerland studying mRNA export in yeast, before carrying out a postdoc in laboratory of Robert H Singer at the Einstein College of Medicine, where he developed single RNA resolution microscopy techniques to study transcription at the single cell level. In this laboratory at the Université de Montréal, he continues to use single molecule and super-resolution microscopy tools to study different aspects of mRNA metabolism, including the role of noncoding RNAs in transcription regulation, mRNP organization and localization.

Eric Lecuyer

Associate Professor, Institut de recherches cliniques de Montréal, Canada

Title: Studying the highways and byways of subcellular RNA regulation



Our laboratory seeks to understand the biological functions and regulatory mechanisms of RNA intracellular localization. Our projects aim to elucidate the normal functions of RNA trafficking in the maintenance of genome stability and cell polarity, and how disruption of these pathways can contribute to the aetiology of diseases such as cancer and neuromuscular disorders. For this work, we combine the versatility of *Drosophila* genetics with high-throughput molecular imaging and functional genomics approaches in fly and human cellular models.

Yvonne Tay

Principal Investigator, Cancer Science Institute of Singapore, NUS

President Assistant Professor, Department of Biochemistry, NUS

Title: MicroRNA-638 regulates iron storage in prostate cancer via a gene:pseudogene network



Yvonne began her research career in Bing Lim's lab at the Genome Institute of Singapore, supported by an A*STAR Graduate Scholarship, and her PhD work led to key insights into the scope and mechanisms of microRNA activity (Miranda et al, Cell 2006; Tay et al, Nature 2008). Subsequently, she pursued her postdoctoral training in Pier Paolo Pandolfi's lab at Harvard Medical School and Beth Israel Deaconess Medical Center under a Special Fellow award from the Leukemia & Lymphoma Society, and this research led to the discovery that protein-coding transcripts can co-regulate the tumor suppressor PTEN by competing for shared microRNAs (Tay et al, Cell 2011; Karreth et al, Cell 2011). Yvonne has recently returned to Singapore to begin her independent research career,

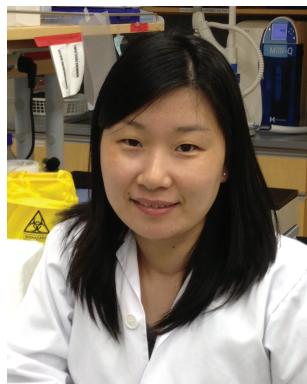
and has been awarded the Singapore National Research Foundation Fellowship and NUS President's Assistant Professorship to continue her research into this previously uncharacterized layer of gene regulation.

Polly Chen

Principal Investigator, Cancer Science Institute of Singapore, NUS

Assistant Professor, Department of Anatomy, NUS

Title: Understanding RNA Editing in human cancer: Causes and Functional consequences



Dr. Chen's research has centered on transcriptome instability of human cancers and in particular on understanding how RNA editing contributes to cancer initiation and progression. Her scientific achievements include being the first group to describe RNA editing imbalance in human liver cancer and esophageal carcinoma and deciphering a "driver" RNA editing event in liver cancer in which increased RNA editing activity of the anti-zyme inhibitor 1 (AZIN1) gene confers a gain-of-function phenotype that is manifested by augmented tumor-initiating potential and more aggressive behaviour.

Meng How Tan

Assistant Professor, Nanyang Technological University, Singapore

Title: Sculpting the A-to-I RNA editing landscape in mammals by non-ADAR regulators



Meng How Tan is an Assistant Professor at the School of Chemical and Biomedical Engineering in the Nanyang Technological University, with a joint appointment at the Genome Institute of Singapore. He obtained his Ph.D. in developmental biology from Stanford University and undertook his postdoctoral training with Jin Billy Li, Wing Hung Wong, and Mylene Yao, also at Stanford University before returning to Singapore to start his own laboratory. His research interests are in DNA and RNA editing, particularly in the context of cell identity. His laboratory studies the functions and regulation of A-to-I RNA editing in human development and diseases.

Yoseph Barash

Assistant Professor, University of Pennsylvania, USA

Title: Predictive models for RNA splicing regulation – the next generation



Yoseph has a B.Sc. in Physics and Computer Science, and a PhD in Machine learning and computational biology from the Hebrew University. Yoseph's work involves solving problems from the biomedical field using machine learning. His lab focuses on understanding RNA biogenesis, its regulation, and its role in human disease and in phenotypic diversity. The lab combines computational modeling, experimental validations, and software development.

Kristen Lynch

Professor, University of Pennsylvania, USA

Title: Environmental induced splicing regulation in the human immune system

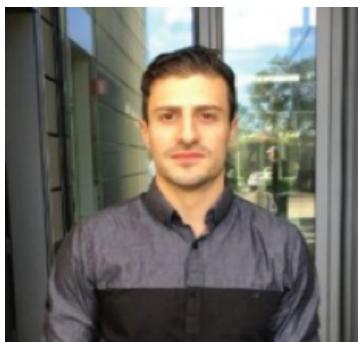


My research focuses on pre-mRNA splicing in the human immune system. As a biochemist I am particularly interested in the mechanisms by which RNA binding proteins direct the activity of the spliceosome and how signaling pathways alter the expression and/or function of these RNA binding proteins. My lab also studies the genome-wide activity of RNA binding proteins in lymphocytes and the physiologic impact of splicing on the function of the immune system. When not in the lab I can be found in the yoga studio or enjoying outside activities with my kids.

David Nelles

CTO, Locana, USA

Title: Programmable RNA recognition and tracking with CRISPR/Cas9 in live cells



David Nelles received his B.S. in Engineering Physics from the University of Pittsburgh in 2009 and now studies at the University of California, San Diego in the Materials Science and Engineering Ph.D. program. David is an NSF Graduate Research Fellow, ARCS Fellow, and Powell-Focht graduate fellow. David's graduate work in the Yeo lab focuses on applying principles in synthetic biology and polymer chemistry to persistent problems in RNA biology and neurodegeneration.

John Conboy

Principal Investigator, Lawrence Berkeley National Laboratory, USA

Title: Dynamic intron retention in differentiating human erythroblasts



With assistance from many wonderful collaborators, my lab has studied regulatory motifs and splicing factors that control splicing programs in several systems. Currently we focus on the robust and dynamic alternative splicing program that is executed during terminal erythropoiesis. Another recurring interest is control of splicing by distant regulatory elements, such as the two-step intrasplicing mechanism that couples promoter choice with alternative 3'ss choice in the protein 4.1R and 4.1B genes, and the distal RBFOX2 splicing enhancer ~1.9kb downstream of ENAH alternative exon 11a that is recruited close to the regulated via an 'RNA bridge'.

Xavier Roca

Assistant Professor, Nanyang Technological University Singapore

Title: Splicing mechanisms and regulation: the problem of too many choices



We are using single-gene and transcriptome-wide approaches to study mechanisms of pre-messenger RNA splicing in human cells and their implications in genetic diseases. We are following up my post-doctoral work by demonstrating new mechanisms for 5' splice-site recognition by diverse base-pairing registers with U1 small nuclear RNA. We are also studying two alternative-splicing events in CD46 and BIM, with consequences in immunity and drug resistance in tyrosine kinase-driven cancers, respectively. Finally, we are characterizing the global alternative-splicing changes during differentiation and activation of human monocytes to macrophages. At the symposium I will present our data on some of these projects.