

NCRIS Virtual Seminar Series

Targeting epigenetic pathways to treat cancers

Abstract:

Down-regulation of tumor suppressors or the expression of oncogenes is a hallmark feature of cancers. These alterations in the transcriptome arise as a consequence of a malfunction in the chromatin organization. Chromatin remodeling complexes play an important role in maintaining this organization as they create a histone code that is read by specific readers resulting in active or repressed chromatin. My lab is interested in understanding the regulation of chromatin-remodeling complexes and their role in cancer prevention and intervention (Molecular Cell 2009, 34: 521-533). During our quest to identify epigenetic regulators downregulated in cancers, we found their stability to be compromised by viruses, such as human papillomavirus (HPV) (Molecular Cell 2010, 38: 700-711), adenovirus (AdV) (Oncogene 2013, 32: 5017-25) and hepatitis B virus (HBV) (Hora et al. 2020, manuscript submitted). By using both in vitro and in vivo model systems, we also established that these viruses target tumor suppressors to accelerate the process of oncogenesis by hijacking cellular pathways that promote growth (Oncogene 2016, 35: 2062-74 and PLoS Pathog 2017, 18;13(10): e1006681). Most importantly, we discovered cellular druggable target that viruses like HPV utilize to promote tumorigenesis (Oncogene 2016, 35: 2062-74). In addition to virus-induced cancers, these chromatin remodelers are also known to be downregulated in breast and colorectal cancers. We identified the role of epigenetic modifiers such as TIP60 in silencing the endogenous retroviral elements (ERVs) in colorectal cancers. We discovered that colorectal cancer cells with decreased levels of TIP60, are sensitive to reverse transcriptase (RT) inhibitors (Nucleic Acids Res. 2018, 46:9456-9470). Moving forward, we plan to advance the epigenetic platforms and utilize models that my group has developed to enable new therapeutics for cancers.

Speaker:



Asst. Prof Sudhakar Jha

Principal Investigator

Epigenetics and Chromatin Biology Cancer Science
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Dr. Sudhakar Jha did his Ph.D. on microbial drug resistance from Jawaharlal Nehru University in India and then moved to the Department of Biochemistry and Molecular Genetics at the University of Virginia in USA for his postdoctoral work on pathogen-induced cancers. He is currently a Principal Investigator at the Cancer Science Institute of Singapore, National University of Singapore. Dr. Jha is a cancer biologist with an interest in deciphering how epigenetics pathways are deregulated during tumorigenesis. His group has identified, purified, and characterized multiple protein complexes that are hijacked by pathogens to promote growth. His group had developed mouse models, and are interested in utilizing patient-derived xenograft (PDXs) and patient-derived organoids (PDOs) to enable new therapeutics for cancers.

Date:

6th July 2020
(Monday)

Venue:

via Zoom

For details:

Please contact

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11am-12noon

Host:

Bin Tean TEH

Deputy Director (Research),
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**No registration is
required.**

All are welcome.

Any enquiries, please contact:
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