Centre for Computational Biology
Post-Doc Candidate Seminar

Title : "Deciphering cancer mechanisms by integrative network analysis"

Date:	Time :	Venue :
3 June 2014 (Wednesday)	12:00 pm – 1:00 pm	**Meeting Room 7C** (Level 7) Duke-NUS Graduate Medical School 8 College Road, S169857 (Opposite Singapore General Hospital, Block 6/7)

Speaker :

Dr. Sriganesh Srihari

Post-doctoral Fellow
Institute for Molecular
Bioscience, The University of
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Australia

Host :

Prof Steve Rozen

Associate Professor,
Program in Cancer & Stem
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Director, Centre for
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No registration is required.
All are welcome.
Any enquiry, please contact :
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Abstract :

Deciphering the *modus operandi* of cellular mechanisms in cancer is critical to implicate novel cancer genes and to develop effective anti-cancer therapies. Fundamental to this is the effective integration of multi-omics datasets that enables computational prediction and analysis.

We performed a systematic comparison of protein *complexes* between pancreatic normal and tumour tissue conditions by integrating protein-interaction (PPI), gene-expression and genomic datasets. Our analysis revealed interesting *change-patterns* in protein composition and expression particularly affecting complexes involved in genome stability and cell-cycle control processes. Although in most cases these changes indicated impairment of essential functions (*e.g.* of DNA-damage repair), in several others we noticed strengthening of complexes possibly abetting cancer. Some of these *compensatory complexes* showed switches in transcriptional regulation through PPI rewiring. Extension of this assessment to familial *BRCA1* and *BRCA2* breast tumours revealed striking differences between the two sub-types. Such an analysis enables a more mechanistic understanding of how cells respond to therapies and suggests molecules that can be explored as targets. One such avenue is *via* the exploitation of *synthetic lethality* (SL) relationships, for which the BRCA1-PARP1 relationship is particularly notable. We identified a few other SL relationships, which are now being validated in several breast cancer cell lines.

About the Speaker :

Dr Sriganesh Srihari is a post-doctoral research fellow at the Institute for Molecular Bioscience, The University of Queensland Australia. His research interests include cancer systems biology, cancer genomics, computational biology and data mining. He holds a PhD in computer Science from the National University of Singapore.