DukeNUS Medical School

CSCB Cancer and Stem Cell Biology **Seminar Series**

Epigenetic control of gene expression and proliferation by lipid metabolism.

Abstract:

Cells integrate nutrient sensing and metabolism to coordinate cellular growth. For example, glucose drives a gene expression program characterized by activating genes involved in its metabolism, in part, by increasing glucose-derived histone acetylation. Here, we show that lipid-derived acetyl-CoA is also a major source of carbon for histone acetylation. Fatty acid oxidation leads to global cellular metabolic reprogramming and represses glucose and glutamine metabolism, thereby increasing intracellular lipid-derived acetyl-CoA. We traced 13C-carbon from lipid onto histones, demonstrating that up to 90% of histone acetylation can be derived from fatty acid carbon. Gene expression profiling of octanoate-treated hepatocytes identified genes involved in lipid metabolic processes are positively correlated. Conversely, cell cycle processes are negatively correlated, consistent with a suppression of proliferation upon lipid treatment. These studies uncover how fatty acid sensing and metabolism are integrated by epigenetic events that control gene expression, together ensuring proper cellular response to metabolites for growth.

Date:

1 Aug 2018 (Wednesday)

Venue:

Amphitheatre, Level 2
Duke-NUS Medical School
8, College Road,
Singapore 169857

Time:

12:00 - 1:00 p.m.



Speaker:

Matthew Hirschey, Ph.D.
Associate Professor

Duke Molecular Physiology Institute
Duke University Medical Center

Host:

David Virshup
Professor & Director
Programme in Cancer & Stem Cell Biology
Duke-NUS Medical School
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Matthew Hirschey is an Associate Professor in the Department of Medicine at Duke University, and is a faculty member of the Duke Molecular Physiology Institute where his lab is located. He earned a Ph.D. in Chemistry and Biochemistry at the University of California, Santa Barbara and was a post-doctoral fellow with Eric Verdin at UCSF. His lab now studies nutrient sensing and metabolism and is particularly interested in how metabolites and chemical modifications control metabolic pathways.

No registration is required. All are welcome.
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