DukeNUS Medical School

CSCB Cancer and Stem Cell Biology Seminar Series

# Epigenomic Activation and Inactivation in Gastric Epithelial Cells Induced by Pathogen


## Abstract:

Gastric cancer (GC) is stratified into several DNA methylation epigenotypes, depending on pathogens. The majority of gastric cancer is associated with H. pylori, infection of which causes DNA methylation via chronic inflammation, whereas a subset of GC is associated with Epstein-Barr virus (EBV) infection, which causes the most extensive hypermethylation phenotype. In promoters, >3,000 genes related with growth suppression or cell adhesion, acquire complete methylation of whole promoter regions, which is accelerated by repression of TET2. Another group of >3,000 genes related with cell cycle or DNA repair, acquires DNA methylation just in the surrounding regions of promoter CpG islands, keeping promoters activated. Meanwhile, EBV infection closes enhancers related with epithelial differentiation, while it opens enhancers related with proliferation or invasion, suggesting alteration of cell fate from differentiated to undifferentiated, proliferative state. EBV infection even disrupts heterochromatin by losing H3K9me3. In addition to promoter DNA methylation, dynamic chromatin reprogramming through aberrant regulation of enhancer regions is considered critical in genesis of EBV-GC.


**Date:**

**28 May 2019**

**(Tuesday)**

**Venue:**

**Meeting Room 7C**
Duke-NUS Medical School
8, College Road,
Singapore 169857

**Time:**

**12:00pm - 1:00 p.m.**




**Speaker:**

**Atsushi Kaneda MD, PhD**
Professor and Chairman
Department of Molecular Oncology
Graduate School of Medicine
Chiba University
Vice-Dean, Graduate School of Medicine, Chiba University



**Host:**

**Patrick Tan MD, PhD**
Professor
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MD degree, Univ of Tokyo, 1994. Assistant professor, Dept of Surgery, Univ of Tokyo, 1999. PhD degree, Univ of Tokyo, 2004. Atsushi Kaneda first conducted methylome analysis of gastric cancer (Ushijima Lab, NCC), and showed epigenetic alteration as tumor risk modifier (Feinberg Lab, JHU). Associate professor, Univ of Tokyo, 2006 (Aburatani Lab). Professor, Chiba University, 2013. He has conducted projects to clarify epigenomic mechanisms in gastrointestinal cancer, e.g. EBV-GC.

**No registration is required.**
**All are welcome.**
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