

# IMCB Invited Speaker



**Speaker : Dr. Gaetano Gargiulo**  
*The Netherlands Cancer Institute,  
Amsterdam, The Netherlands*

Date : 11 Sep 2013 (Wednesday)

Time : 10:00AM - 11:00AM

Venue : IMCB Seminar Room 3-46, Level 3, Proteos, Biopolis

Host : Prof. Wang Yue

## Seminar :

### Functional Genetics, Epigenetic Control of Stem Cells Homeostasis and Transcriptional Stress Response in Gliomagenesis

Malignant gliomas are incurable brain tumors in which the Polycomb protein Bmi1 plays an oncogenic role, so far poorly understood. In mouse and human neural progenitor and glioblastoma 'stem-like' cells, we identified key Bmi1 targets combining ChIP-seq with in vivo RNAi screening. We discovered that Bmi1 is important in the cellular response to the transforming growth factor-beta/bone morphogenetic protein (TGF-beta/BMP) and endoplasmic reticulum (ER) stress pathways, in part converging on the Atf3 transcriptional repressor. We show that Atf3 is a tumor-suppressor gene inactivated in human glioblastoma multiforme together with Cbx7 and a few other candidates. Acting downstream of the ER stress and BMP pathways, ATF3 binds to cell-type-specific accessible chromatin preloaded with AP1 and participates in the inhibition of critical oncogenic networks. Our data highlight multiple p16(INK4a)/p19(ARF)-independent functions for Bmi1 in development and cancer. More broadly, our functional approach may become the gold-standard genetic dissection for transcriptional networks in cancer.

## About the Speaker :

Dr. Gaetano Gargiulo obtained his Master degree in Biotechnology/Veterinary Medicine at the University of Naples "Federico II", Italy. He did his PhD studies in the Saverio Minucci's lab of "Chromatin alteration in leukaemogenesis" (IFOM-IEO-Campus; Milan) with a fellowship of the European School of Molecular Medicine. There, he contributed the set up and development of a technology to study chromatin dynamics during biological processes genome-wide and with low cell numbers. This technology, termed NA-seq, was instrumental to demonstrate that human hematopoietic stem cells differentiate into myeloid progenitors through the progressive restriction of chromatin accessibility, with implications for gene expression. He is currently a Postdoc in the Maarten van Lohuizen lab at The Netherlands Cancer Institute (NKI, Amsterdam), with a Marie Curie fellowship. Here, he studied the role of Polycomb protein Bmi1 in neural stem cells and glioblastoma multiforme as well as the implementation of in vivo RNAi screenings in orthotopic sites. He is also a recipient of grant from the Dutch Cancer Society (KWF).



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