

The 3rd CDB Student Organized SEMINAR

Bruno Lemaitre Ph.D.

Global Health Institute, Ecole Polytechnique Fédérale of Lausanne.
Email: Bruno.lemaitre@epfl.ch

Wednesday, September 24, 2014

16:30 ~ 17:30 C1F Auditorium

The *Drosophila* antimicrobial response at the time of the Cas9/CRISPR gene targeting revolution

Summary

Animals possess efficient mechanisms for detecting and neutralizing infection. The application of *Drosophila* genetics to these mechanisms has generated insights into insect immunity and uncovered general principles of animal host defense. These studies have shown that *Drosophila* has multiple defense “modules” that can be deployed in a coordinated response against distinct pathogens. These include barrier epithelia, production of reactive oxygen species, antimicrobial factors, blood clotting, the melanization reaction and complex cellular responses. Today, *Drosophila* can be considered as having one of the best-characterized host defense systems among the metazoan. Until recently, a detailed understanding of the fly immune response was hampered by the difficulty of generating loss-of-function mutations as well as the technological limits of the RNAi approach. The Cas9/CRISPR revolution offers new opportunities to revisit in a systematic manner *Drosophila* immunity. At the interface between large-scale genomic studies that lack resolution and individual gene analysis that lack breadth, our laboratory has undertaken a meso-scale ‘skilled’ analysis of immune modules, notably by addressing the individual and overlapping function of large immune gene family. In this talk, I will summarize our current knowledge of the field and provide new insights recently gained in the laboratory.



Dr. Bruno Lemaitre has an international reputation for his work in innate immune system of *Drosophila*. His principal research interests are in pathogen recognition, evasion of immune system by microbial, endosymbiosis and gut regeneration after infection. He revealed Toll pathway and IMD pathway, that corresponding to pathogen-selective anti-microbial peptides production.

Host students:

Yuka Hayashi (Histogenetic Dynamics)
Yuhei Kawamoto (Histogenetic Dynamics)
Hiroshi Shirai (Retinal Regeneration)

Satoshi Iraha (Retinal Regeneration)
Yuko Iwasaki (Retinal Regeneration)



RIKEN CENTER for DEVELOPMENTAL BIOLOGY (CDB)

CDB Students Association