



2012. 8. 29 (水)

12:50-17:10

場 所： 京都大学 アイセムス本館 2階 (東一条北西角)
セミナーホール (A207)

13:00-13:45

Kai Johnsson 博士

Institute of Chemical Sciences and Engineering
École Polytechnique Fédérale de Lausanne

Visualizing biochemical activities in living cells

13:45-14:30

Scott C. Blanchard 博士

Weill Medical College of Cornell University

Understanding regulation in biological systems through
single-molecule imaging

14:50-15:35

Elina Ikonen 博士

Institute of Biomedicine, Faculty of Medicine
University of Helsinki

Cellular trafficking of low-density lipoprotein derived lipids: insights
from imaging

15:35-16:20

Derek Toomre 博士

Department of Cell Biology
Yale University School of Medicine

Spatial Control of Exocytosis: New nanoscopes and analysis to
'connect the dots'

16:20-17:10

ポスターセッション&レセプション (軽食あり) - 詳細 2 頁目

*ポスター展示ご希望の方は kusumi-g@icems.kyoto-u.ac.jp までご連絡をお願いします。

Kai Johnsson 博士 〈13 : 00-13 : 45〉

The visualization and characterization of biologically relevant molecules and activities inside living cells continues to transform cell biology into a truly quantitative science. However, despite the spectacular achievements in some areas of cell biology, the majority of cellular processes still operate invisibly, not illuminated by even our brightest laser beams. Further progress will therefore not only depend on improvements in instrumentation but increasingly on the development of new (fluorescent) sensors and other synthetic probes to target and characterize these activities. The research conducted by Dr. Johnsson addresses these needs by developing and applying chemical approaches to observe and manipulate protein function in living cells. In this talk, Dr. Johnsson will discuss (i) the design of new fluorescent probes and their applications in biology, (ii) chemical tools to study centrosome biology, as well as (iii) semisynthetic fluorescent sensor proteins.

Scott C. Blanchard 博士 〈13 : 45-14 : 30〉

Dr. Blanchard has employed a battery of biophysical tools, including single-molecule fluorescence and fluorescence resonance energy transfer imaging, in order to gain new insights into the fundamentally dynamic nature of biological systems. Two, highly conserved biological processes remain the principle model systems investigated by his lab: ribosome-catalyzed protein synthesis and neurotransmitter-sodium symporter transport proteins that facilitate the movement of solute molecules across cellular envelope. Progress towards Dr. Blanchard's long-term goals of obtaining a deeper, quantitative understanding of how biological systems are regulated in the cell and directly imaging single-molecules in real time within living cells will be discussed.

Elina Ikonen 博士 〈14 : 50-15 : 35〉

Dr. Ikonen will discuss cholesterol and sphingolipid trafficking upon entry into the endocytic route via LDL-receptor mediated uptake. These include aspects of 1) lipid flow for recycling vs. degradation, 2) post-degradative exit of endo-lysosomal cholesterol and sphingolipids, and 3) delivery of degradation products to the plasma membrane.

Derek Toomre 博士 〈15 : 35-16 : 20〉

A main focus of Dr. Toomre's talk will be the application on state of the art super-resolution microscopes (TIRFM, PALM, STED, SIM) to see cellular processes (e.g. cytoskeleton, membrane traffic) at an unprecedented resolution. A challenge, however, is to know how to connect the dots when analyzing spatial point processes so as to tell in an unbiased manner if they are 'linked' (same object) or correlated (same region). Herein, Dr. Toomre will discuss methods to see and control the dots (exo/endocytic events) and novel spatial statistics methods to quantify them. This reveals surprising spatial 'hotspots' and 'zones of exclusion' in cells and their potential significance will be discussed.

ポスターセッション&レセプション 〈16:20 - 17:10〉

Poster Session in the Exhibit hall next to the seminar hall: Bring your posters. If you are interested in showing your poster, particularly to speakers, please contact Prof. Kusumi at kusumi-g@icems.kyoto-u.ac.jp by August 20. Drinks and light snacks will be served.

After the poster session, an informal meet-the-speaker reception will take place at the Lounge, next to the seminar hall. Please join us for more personal discussions.