# The 72nd iCeMS SEMINAR

**CeMI** Seminar Series 22

## Thu 17 Mar 2011

### 10:00-11:00

## The T-cell surface: composition, organization, receptor triggering

Lecturer: **Prof. Simon Davis**
Nuffield Department of Clinical Medicine,
University of Oxford

Venue: Institute for Frontier Medical Sciences,
East Building 5F, Roof Terrace

The T cell receptor (TCR) was discovered over 25 years ago but it is still notclear how it is "triggered" i.e. it conveys information about ligand binding at the cell surface to the interior of the T cell. Prof. Davis' group proposes that conventional theories of autonomous receptor triggering are incompatible with what they know about the structure of the TCR or how it functions. Prof. Davis will present an analysis of the architecture of the triggering apparatus of the T cell based on two-colour coincidence detection (a form of single-molecule confocal microscopy). He will then propose a mechanism for TCR triggering wherein, rather than functioning autonomously, the TCR behaves as a passive structure subject to the ensemble behaviour of extrinsic tyrosine kinases and phosphatases. He will also describe how his group is trying to verify the theory using single-molecule and other imaging approaches, and will extend the concept to a consideration of the effects of superagonistic antibodies, based on the crystal structure of an antibody superagonist bound to its cellular target. Finally, Prof. Davis will discuss how, in general terms, the artificial triggering of inhibitory receptors could be employed for therapeutic ends.

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**Hosted by:** iCeMS (Institute for Integrated Cell-Material Sciences), Kyoto University