

# IMCB Invited Speaker



**Speaker : Prof. Howard Riezman**  
*Professor, Department of Biochemistry, NCCR in Chemical Biology,  
University of Geneva, Switzerland*

**Date : 17 March 2014, Monday**

**Time : 11:00AM - 12:00PM**

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

**Host : Prof. Wanjin Hong**

## Seminar :

### **Sterol and Sphingolipid Homeostasis and Functions in Yeast**

Previous experiments using lipidomic approaches to study sterol biosynthesis mutants in yeast have shown that changes in sterol composition provoke specific adaptations in sphingolipid profiles and imply that there is a sensor that can detect the quality of sterols in the membrane. Furthermore, genetic experiments have proven that sterols and sphingolipids work together in many biological processes. These studies and the distribution of sterols and sphingolipid species among species imply a co-evolution of these two lipid classes. Replacing ergosterol with cholesterol in yeast shows that even though cells are viable certain membrane proteins are not functional without the appropriate sterol. We have recently undertaken studies to understand the reasons behind the pleiotropic phenotypes of mutants in ergosterol biosynthesis and this has led us to investigate how sterols are detected. We will discuss our recent approaches to identify the sterol sensor and how sterol sensing causes changes in so many phenotypes and controls the transcriptional program.

Boosted by the incisive results on lipidomics of the sterol mutants we have performed lipidomics analysis now on over 600 yeast mutants covering approximately one tenth of the genome, including most of the protein kinases. These results show how the environment can influence lipid metabolism, in particular sphingolipid metabolism, but also suggested how cells can respond to disturbances in their plasma membrane. Finally, sterols and sphingolipids function together biologically, but have also been shown to interact preferentially in artificial membranes altering their physical properties. We are developing techniques to monitor the physical properties surrounding membrane proteins and will present some preliminary results.

## About the Speaker :

Howard Riezman received a Bachelors of Arts degree (1975) from Washington University in Saint Louis where he began his research career working on the lac operon from *E. coli*. He then moved to the University of Wisconsin-Madison under the supervision of Wayne M. Becker where he completed his PhD in Botany (1980) working on the biogenesis of glyoxysomal enzymes. He crossed the Atlantic to work as a postdoctoral fellow (Jane Coffin Childs Fellow) with Gottfried (Jeff) Schatz as a mentor on the biogenesis of mitochondria at the Biozentrum of the University of Basel. In 1983 he started his independent laboratory at the ISREC in Lausanne initiating studies on the endocytic pathway in yeast. He moved back to the Biozentrum as Full Professor (1988) where he continued his work on endocytosis and began studying GPI-anchored protein biosynthesis and traffic. In 2002 he moved to the Biochemistry department of the University of Geneva. He has changed the emphasis of his research to the understanding of the metabolism and function of membrane lipids.

Howard Riezman was elected member of EMBO in 1997 and has served as department chairman in both Basel and Geneva. He has served on the Research Council of the Swiss National Science Foundation (SNSF) for 8 years and is currently a member of the Foundation Council of the SNSF. His work has received generous funding from the SNSF since 1983, as well as from the HFSP, EU and ESF. He has recently been awarded the directorship of a National Center for Competence in Research (NCCR) in Chemical Biology by the Federal Department of the Interior.