



SEMINAR ANNOUNCEMENT

We would like to invite you to attend this seminar hosted by Prof. Song Hai Wei:

Date: 1 March 2019, Friday

Time: 10:00AM – 11:00AM

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

Speaker: Prof. Luca Jovine, Professor of Structural Biology, Karolinska Institutet, Department of Biosciences and Nutrition & Center for Innovative Medicine, Sweden

Title : Molecular Sex: How Sperm Binds to the Egg at the Atomic Level

Egg-sperm interaction at fertilization marks the beginning of a new individual and allows the transmission of the genetic information to the next generation. Studied by scientists since the 17th century, this fundamental process has also long captured the attention of the public because of its direct relevance to reproductive medicine. However, how the female and male gametes recognize each other at the molecular level has until recently remained unknown. Using structural biology, we have found that - despite insignificant sequence identity - a common egg coat protein architecture mediates the initial interaction with sperm in mollusk and human, two organisms separated by 600 million years of evolution. Building upon this discovery, which revealed an expected link between invertebrate and vertebrate fertilization, we have determined the first three-dimensional structure of an egg coat-sperm protein complex. By visualizing the molecular details of the initial contact between gametes, this has both revealed how this interaction is made species-restricted and suggested a mechanism for sperm penetration through the egg coat. Together with recent data on a subsequent recognition step that ultimately triggers gamete plasma membrane fusion, these studies started to unveil one of the most crucial moments of life at unprecedented detail.

Background:

Our group uses mammalian cell expression to overproduce in recombinant form the highly posttranslationally modified molecules that are involved in gamete interaction, for both biochemical and X-ray diffraction studies. During the last few years, we determined crystallographic structures of ZP3, a major glycoprotein component of the specialized extracellular coat of the egg that first contacts sperm at conception. This gave insights into the evolution of egg coat architecture from invertebrates to human, and suggested that a glycan conserved from birds to mammals plays an important role in sperm binding. Ongoing projects aim at characterizing complexes between gamete recognition proteins, with possible future application to the understanding of human infertility and the design of targeted non-hormonal contraceptives.

ALL ARE WELCOME (No registration required)

We appreciate if you could disseminate this email to your staff.

For upcoming seminars in IMCB, please visit our website at <https://www.a-star.edu.sg/imcb>

Thank you.

Note: This message may contain confidential information. If this Email/Fax has been sent to you by mistake, please notify the sender and delete it immediately. Thank you.