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4 August 2022 (Thursday), 4pm
The Auditorium (Level 1)

Hosted by: Dr Zhang Dan

Exploiting divergent biology of two fission yeasts to understand membrane function



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Biological membranes are semi-permeable lipid barriers delimiting cells and subcellular compartments. By recruiting and scaffolding specific proteins and protein complexes, membranes also serve as platforms for cellular communication, signalling and metabolism. The specific features of the membrane depend on its lipid composition. I will present our recent work aimed at understanding how lipid metabolism impacts on membrane function and cellular physiology using comparative and synthetic approaches in two related fission yeast species with different lifestyles. Briefly, we show that a popular model system *Schizosaccharomyces pombe* and its less known relative *Schizosaccharomyces japonicus* exhibit strikingly different membrane lipid composition and provide the mechanistic explanation for this divergence. I will further argue that these differences in lipid metabolism may be at root of the profound changes to cellular physiology that occurred in the evolution of the fission yeast clade.

Snezhana (Snezhka) Oliferenko studied biochemistry and virology at the Lomonosov Moscow State University before joining Lukas Huber's group at the IMP, Vienna, for her doctoral studies in 1996. After earning her PhD degree in 2000, Snezhka moved to Singapore to work as a postdoc with Mohan Balasubramanian. Two years later, she established her group at the Temasek Life Sciences Laboratory (TLL) in Singapore. In 2013, Snezhka moved her lab to King's College London. Today, she is a group leader at The Francis Crick Institute and Professor of Evolutionary Cell Biology at King's College London. She uses related fission yeast species as a discovery tool to understand how cells organise and remodel their interior during growth and division.

Recent Publications:

1. Foo, S., Cazenave-Gassiot-A., Wenk-M. R. and **S. Oliferenko**. 2022. Diacylglycerol at the inner nuclear membrane fuels nuclear envelope expansion in closed mitosis. *bioRxiv* 2022.06.01.494365
2. Pieper, G., Sprenger, S., Teis, D. and **S. Oliferenko**. 2020. ESCRT-III/Vps4 controls heterochromatin-nuclear envelope attachments. *Developmental Cell* 53:27-41
3. Makarova, M., Peter, M., Balogh, G., Glatz, A., MacRae, J., Lopez Mora, N., Booth, P., Makeyev, E., Vigh, L. and **S. Oliferenko**. 2020. Delineating the rules for structural adaptation of membrane-associated proteins to evolutionary changes in membrane lipidome. *Current Biology*. 30:367-380