



## *Emerging Topics in Biological Networks and Systems Biology*

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*Systems Biology of Yeast Metabolism*

### **Abstract:**

Metabolism represents the core of cellular functions and all cellular processes interact with metabolism through the use of specific metabolites, free energy and/or electron flows. However, metabolism is highly complex involving a large number of chemical reactions, and it is therefore difficult to study metabolism. The many different reactions are traditionally grouped into pathways with dedicated functions, but recent analysis of metabolism has shown that there is a high degree of connectivity between these pathways due to common sharing of co-factors and key metabolites. Also regulation of metabolism is complex due to the requirements for maintaining cellular homeostasis. In this talk I will give illustrations of how different parts of cellular metabolism are connected, i.e. central carbon metabolism, lipid metabolism and protein secretion. I will illustrate how metabolism can be modelled at the genome-scale and how incorporation of protein crowding may be a key determinant for cellular function, and keep proteome homeostasis is an important driver for maintaining proper cellular function.

### **About:**

Jens Nielsen has a PhD degree (1989) in Biochemical Engineering from DTU, and was appointed full Professor there in 1998. In 2008 he was recruited as Professor to Chalmers, Sweden, where he is currently directing a research group of more than 60 people. Jens Nielsen has published so far more than 600 papers that have been cited more than 41,000 times (current H-factor 98). He is inventor of more than 50 patents and he has founded several biotech companies. He is member of the National Academy of Engineering, KVA, IVA, and the Royal Danish Academy of Science and Letters.