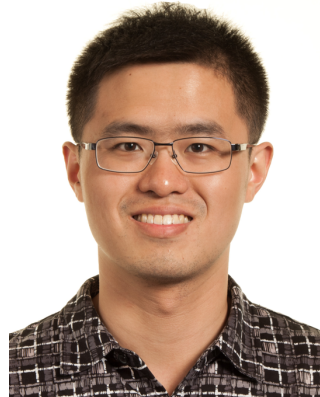




Channing Microbiome Seminar

September 15 (Friday), 2017, 11am @ 5th floor conference room



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Optimal growth of microbes in the presence of mixed carbon sources

Abstract: A classic problem in microbiology is that bacteria display two types of growth behavior when cultured on a mixture of two carbon sources: in certain mixtures the bacteria consume the two carbon sources sequentially (diauxie) and in other mixtures the bacteria consume both sources simultaneously (co-utilization). The search for the molecular mechanism of diauxie led to the discovery of the lac operon and gene regulation in general. However, why microbes would bother to have different strategies of taking up nutrients remained a mystery. Here we show that diauxie versus co-utilization can be understood from the topological features of the metabolic network. A model of optimal allocation of protein resources to achieve maximum growth quantitatively explains why and how the cell makes the choice when facing multiple carbon sources.

Bio: Dr. Xin Wang is a Research Fellow at Channing Division of Network Medicine. He received his PhD in Physics from Peking University of China. And he was a postdoc at University of Oxford, UK, before joining Channing. His research interest lies at the interface between physics and biology. He worked on systems biology problems such as cell growth and cell cycle; seed germination networks, and biophysical problems like biofilm growth. His current research focuses on human microbiome, in collaboration with Dr. Yang-Yu Liu and Dr. Scott Weiss.

Hosted by Yang-Yu Liu