



# QBIC SEMINAR

Speaker

**Matthias Heinemann, Ph.D.**

*Groningen Biomolecular Sciences and Biotechnology Institute*

Date &  
Location

**Thursday, March 20, 2014  
14:00 - 15:00**

OLABB 1F Lounge

(6-2-3, Furuedai, Suita, Osaka)

\*There will be a video broadcast in CDB Bldg.D, E-206

Title

**Towards unraveling the design principles of microbial metabolism using systems biology and single cell analyses**

Abstract

Microorganisms constantly need to adapt to changing nutrient conditions and it is still elusive how different molecular mechanisms work together to accomplish complex metabolic adjustments. Here, I will report on a combined modeling and experimental work in which we unraveled how *E. coli* adapts between two carbon sources. Specifically, *E. coli* is sensing the rate of metabolic fluxes and uses this information to adjust its gene and protein expression, forming global feedback loops. Zooming in on the single cell level, we further show that stochasticity in such feedback loops can even lead to responsive diversification during such nutrient shifts, which can lead to the medically important phenotype of persister cells.

Host

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