

# Advanced Systems and Synthetic Biology

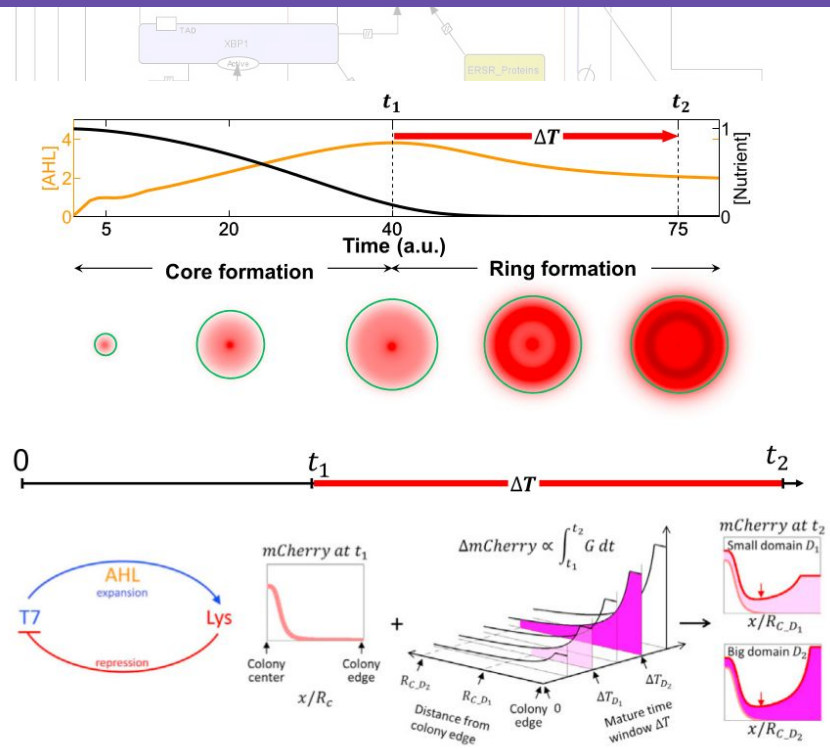
Credits: 3, Spring 2017, TTh 11:30 – 12:50 PM in DEN 213

Instructor: Prof. Hao Yuan Kueh

BIOEN 424/524, EE 424/524, CSE 487/587, CHEME 477/577

## “Principles of biological circuit design”

Living systems are exceptionally effective – they operate with a level of precision, reliability, and versatility that often far exceeds that of man-made systems. This course will cover the basic design principles that allow biological circuits to function effectively in cells. This will lay foundations for cell engineering and synthetic biology, with applications in bio-based chemical and material synthesis, cell-based diagnostics, and therapeutic cells for disease treatment.



Scale-invariant pattern formation in engineered bacteria. From Cao et al. *Cell* **165**, 2016

Prerequisites: Either BIOEN 401, CHEME 476/576, BIOEN 423/523, CSE 486/586, EE423/523, or permission of instructor.

Prerequisites by Topic: Differential equations, linear algebra and numerical analysis, basic computer programming, probability theory, and high school or basic knowledge of molecular biology

Questions: email Prof. Kueh, [kueh@uw.edu](mailto:kueh@uw.edu)

Background: ER stress resp. by Pradeep Kumar

