

NORTHWESTERN INSTITUTE ON COMPLEX SYSTEMS PRESENTS

# Wednesdays

# @NICO



## *Rapid, Heritable, and Tunable Division Control in Single Cells*

**Sean Crosson**  
**Biochemistry & Molecular Biology**  
**University of Chicago**  
**Wednesday, October 14, 2009**  
**12:00 - 1:00 PM**  
**(Refreshments served at 11:45)**  
**Chambers Hall, 600 Foster Street**  
**Lower Level Classroom**

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The robust surface adherence property of the aquatic bacterium, *Caulobacter crescentus*, permits visualization of single cells in a linear microfluidic culture chamber over an extended number of generations. Analysis of the growth and division of single, isogenic cells reveals that the cell cycle control network of this bacterium generates division oscillations with a coefficient of variation that is lower than all other bacterial species measured to date. The regulatory protein, DivJ, is necessary for maintaining low variance in the frequency of division oscillations. Interdivision time and cell division arrest are significantly correlated between mother and daughter cells, providing evidence that the division control network in *Caulobacter* has deterministic properties. Finally, we show that the relative timing of phase transitions during the cell cycle can be specifically tuned by modulating the cell environment.

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**NICO Coffee Hour will follow for questions, networking, and collaboration.**

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