Scientific Computing and Imaging Institute

Distinguished SCI Seminar

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March 8th 2:00 - 3:00pm
WEB 3780

Bistability and Trigger Waves in Mitosis

Despite the large size of the Xenopus laevis egg (~1.2 mm diameter), a fertilized egg rapidly proceeds through mitosis in a spatially-coordinated fashion. Mitosis is initiated by a bistable system of regulatory proteins centered on Cdk1, suggesting that this spatial coordination may be achieved through trigger waves of Cdk1 activity, analogous to the spreading of an action potential or a forest fire. Here we test this idea through partial differential equation modeling and experiments in cell free Xenopus egg extracts.

Bio:
Dr. James Ferrell was an undergraduate at Williams College, majoring in Physics, Mathematics, and Chemistry, and did graduate work at Stanford, receiving a Ph.D. in Chemistry and an M.D. He was a postdoctoral fellow at UC Berkeley with G. Steven Martin. He has held faculty positions at the University of Wisconsin-Madison and Stanford University, where he is now a Professor of Chemical and Systems Biology and of Biochemistry. His lab combines experimental and theoretical approaches to the study of cell cycle regulation and signal transduction.

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