May 13th, Wednesday, 2026
4:00 - 5:00 p.m.
Skye Hall 284

UC RIVERSIDE
Mathematics

Mathematics Colloquium
Held with support from the UCR Department of Mathematics and the Interdisciplinary Center for Data-Driven Modeling in Biology

Alex Mogilner

Professor of Mathematics & Biology
Courant Institute &
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Alex Mogilner is Professor of Mathematics and Biology at New York University, with appointments in the Courant Institute of Mathematical Sciences and the Department of Biology. His research lies at the interface of applied mathematics, biophysics, and cell biology, with current interests including cell motility, mitosis, actin dynamics, and galvanotaxis. He develops mathematical and computational models to understand how cells move, divide, and organize their internal structures, working closely with experimental cell biologists. Before joining NYU, he was Professor of Mathematics and Neurobiology at the University of California, Davis, and earlier held a Research Fellowship in the Program in Mathematics and Molecular Biology at the University of California, Berkeley. He has also served on the editorial boards of numerous journals, including Journal of Cell Biology, Molecular Biology of the Cell, Current Biology, Cell, Biophysical Journal, and Bulletin of Mathematical Biology.

Deciphering self-assembly of mitotic spindle

Mitotic spindle, a remarkable molecular machine, self-assembles to segregate chromosomes at the onset of cell division. Spindle assembles in phase, one of the earliest and least understood stages of mitosis. We used high-resolution 3D measurements of movements and deformations of chromosomes and spindle in prometaphase coupled with computational modeling to decipher force balances and speed and accuracy of integration of chromosomes into the spindle. I will describe how mathematical models are built from microscopy data and demonstrate that rapid stochastic interactions within the spindle leads to rapid, precise and robust self-assembly of the spindle.