

FOR IMMEDIATE RELEASE
March 31, 2008

Media Advisory

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Garrett Odell simulates cellular activity with computer animations generated by crunching hundreds of thousands of equations through computer modeling

MSRI presents researcher whose insights from mathematics drive discoveries about the life of the cell

■ **WHAT** – “How, *in silico*, the sea urchin embryo gets its furrow in the right place.”

MSRI presents a public talk by distinguished mathematical biologist Garrett Odell, Director of the Center for Cell Dynamics at the University of Washington (www.celldynamics.org). Prof. Odell applies the rigor of computer modeling to experimental data and keen observation to explain the dynamic interactions involved in cellular cleavage during mitosis, where a contracting furrow pinches apart the parent cell into two identical daughter cells. In his talk, Odell will simulate cellular cleavage through computer animation, demonstrating how a fundamental process in the life of a cell operates. This animation is the result of solving hundreds of thousands of differential equations through computation using an individual agent-based scheme. This choreography of a myriad of small parts—a colliding array of cytoskeletal proteins and microtubules that come into position for cytokinesis—can be characterized from knowledge about each part, which in mathematical terms is a small system of differential equations that represents how it interacts with other parts. These small players are collectively used to generate the higher level behavior under study through the computer solution of an entire system of such individual agents playing their roles in relation to one another.

■ **WHEN** – Monday, May 5, 2008 at 8:00 pm to 9:00 pm.

■ **WHERE** – At MSRI, 17 Gauss Way (near the intersection of Centennial Dr. and Grizzly Peak Blvd.), in Berkeley; main ph., 510.642.0143. Directions & parking: www.msri.org/about/directions/index.html

■ **WHY** – Dr. Odell’s talk, which is intended for a lay audience, is a featured special event of the **MSRI BIOLOGY COLLOQUIUM**. Odell is participating in a week-long visit to the **Mathematical Sciences Research Institute (MSRI, www.msri.org)** in Berkeley. He will give two additional lectures of a more technical nature, at the Institute on Tuesday, May 6th at 4 pm and Wednesday, May 7th at 5 pm. See abstracts of all three talks at: www.msri.org/calendar/specialevents/SpecialEventInfo/344/show_specialevent

■ **WHO** – **Dr. Garrett M. Odell**, is an applied mathematician and theoretical biologist who makes and tests mathematical models of living systems. With his longtime collaborator Dr. Victoria Foe, Dr. Odell has created powerful cell biology research tools that harness the power of computers. He models in multiple dimensions the interactions among molecules and between cells that are critical for cellular activities such as growth and movement. Because these complicated interactions overwhelm traditional “reductionist” research approaches, computer modeling is used as a more powerful way for scientists to understand these complex systems and learn how to predict them. Dr. Odell’s models have been working toward marrying biology’s “parts list” with what scientists know about how cells work.

In 1986 Garrett Odell became a professor at the University of Washington in Seattle, where he currently serves on the faculty of the department of Biology. He co-founded the Center for Cell Dynamics in 2002 at UW’s Friday Harbor Laboratories on San Juan Island, Washington. He received a B.A. in engineering science in 1965 and a Ph.D. in theoretical fluid dynamics in 1972, both from The Johns Hopkins University. Dr. Odell’s honors include a Guggenheim fellowship.

For more about Dr. Odell’s work, see <http://raven.zoology.washington.edu/celldynamics/about/index.html>.

■ **HOW** – **FREE!**

■ **DETAILS – THE MSRI BIOLOGY COLLOQUIUM** is sponsored by The Simons Foundation. Financier, mathematician and philanthropist, Dr. James Simons is a Trustee of MSRI. The Colloquium presents issues in contemporary biological research that are intended to engage and encourage mathematicians to probe topics in biology. By learning about new fields and problems from prominent biologists, which mathematics could address, a rich interaction between these fields of research may serve to enrich both the biological and mathematical sciences.

List of invited Colloquium speakers:

Richard Axel (Columbia University), Cornelia Bargmann (Rockefeller University), Sydney Brenner (Salk Institute), Mimi Koehl (UC Berkeley), Stanislas Leibler (Rockefeller University), Simon A. Levin (Princeton University), Arnold J. Levine (Institute for Advanced Study), **Garrett Odell (University of Washington)**, Alan Perelson (Los Alamos National Lab), Robert F. Schleif (Johns Hopkins University).

For a complete Colloquium Schedule of talks, please see: <http://www.msri.org/specials/sbc>

The Mathematical Sciences Research Institute (MSRI, www.msri.org) is one of the world's premiere centers for research in the mathematical sciences, and has been advancing mathematical research through workshops and conferences since its founding as an independent institute in 1982. More than 1,700 mathematical scientists visit MSRI each year in Berkeley, CA, many for stays of up to one academic year. The Institute has been funded primarily by the National Science Foundation with additional support from other government agencies, private foundations, academic and corporate sponsors, and individual donors.