The Information Science & Technology Center

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Colorado State University's
Information Science and Technology Center (ISTeC)
presents <u>two</u> lectures by

Dr. Qing Nie

Director, Center for Mathematical and Computational Biology
University of California

ISTeC Distinguished Lecture

in conjunction with the
Electrical and Computer Engineering Department and
Computer Science Department Seminar Series

"Systems Biology: A Frontier of Computational Science"

Monday, November 17, 2008
Reception: 10:30 a.m.
Lecture: 11:00 – 12:00 noon
Location: CSU Lory Student Center 203

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Mathematics Department Colloquium

sponsored by ISTeC

"Computational Analysis for Morphogens"

Monday November 17, 2008
Lecture: 4:00 – 5:00 p.m.
Location: Weber 202

ABSTRACTS

"Systems Biology: A Frontier of Computational Science"

Systems Biology, an explosively growing field, is emerging as a major approach to understand a living world built of interacting sets of complex systems crafted by natural selection to carry out defined tasks. In Systems Biology, the primary tool for translating between form and function is the quantitative modeling and computational exploration. The complexity of the living world provides many more computational challenges than those for physical and engineering systems. There is a vast opportunity to develop new system architectures and computational tools that fully exploit the biological processes and their interactions. In addition to presenting those challenges and opportunity, in this talk I shall also discuss our recent development of new computational tools for spatial dynamics in Systems Biology.

"Computational Analysis for Morphogens"

Many patterns of cell and tissue organization are specified during development by gradients of morphogens, substances that assign different cell fates at different concentrations. One of the central questions in cell and developmental biology is to identify mechanisms by which the morphogen gradient systems might achieve robustness to ensure reproducible embryonic patterns despite genetic or environmental fluctuations. In this talk, through modeling and computational analysis we will study robustness of morphogen gradients in development of Drosophila and zebrafish embryos.

SPEAKER BIOGRAPHY

Dr. Qing Nie (http://math.uci.edu/~qnie) received his B.S. degree in Computational Mathematics from Wuhan University in China (1988), and Ph.D. degree in Mathematics from The Ohio State University (1995). He has been at the University of California at Irvine (UCI) since 1999, and holds a joint appointment of Biomedical Engineering and Mathematics. Currently, he is a Chancellor's Fellow of UCI, the director for UCI Center for Mathematical and Computational Biology, an associate director for the UCI Ph.D. training program in Mathematical and Computational Biology supported by Howard Hughes Medical Institute, and a core leader for a NIH national center of excellence in systems biology at UCI. Dr. Nie also serves in the editor board of *Mathematical Biosciences and Engineering*.

To arrange a meeting with the speaker, please contact James Liu at (970) 491-3067 or liu@math.colostate.edu.

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