

Eli Ruckenstein Lecture Series

Monday, May 4, 2009

Enter at 10:45 a.m.

Lecture to commence at 11 a.m.

Screening Room

First Floor, Center for the Arts

UB Amherst Campus

Reception to Follow

“Normalizing tumor microenvironment to treat cancer:
From mathematical model to mouse to man”

Rakesh K. Jain, Ph.D.

**Andrew Werk Cook Professor of Tumor Biology, Harvard Medical School
Director, Edwin L. Steele Laboratory of Tumor Biology, Department of Radiation Oncology,
Massachusetts General Hospital**

Abstract:

Cancerous tumors require blood vessels to grow and spread to other organs. Dr. Jain demonstrated that the blood vessels of tumors are abnormal - not only in their structure, but also in their function. Using a mathematical model, he showed consequences of this abnormality - specifically, how this abnormality contributes directly to malignant properties of a cancer as well as prevents treatments from reaching and attacking tumor cells. Dr. Jain proposed a novel concept that “normalizing” tumor vessels would allow cancer therapies to penetrate the mass and to function more effectively. He then went on to show first in mice and then in cancer patients that drugs originally designed to destroy tumor vessels can, paradoxically, also repair them, creating a window of opportunity to attack the cancer most effectively. This concept is also opening doors to treating other vascular disorders, such as macular degeneration, a leading cause of blindness in the U.S.

Eli Ruckenstein Lecture Series

About Rakesh K. Jain

Jain is a pioneer in the fields of tumor biology, drug delivery, in vivo imaging and bioengineering. Trained as a chemical engineer, he has developed the world's leading laboratory for the quantitative study of tumor physiology. He is known for discovering the physiological barriers to delivery and efficacy of anticancer drugs, for proposing strategies to overcome these barriers and for translating these strategies from bench to bedside. His work has fundamentally changed thinking about how molecularly targeted therapeutics, especially antiangiogenic agents, actually work in animal models and cancer patients, and how to combine them optimally with cytotoxic therapies to improve survival rates in cancer patients.

A mentor to more than 100 doctoral and post doctoral students from multiple disciplines, and a collaborator of over 100 clinicians and scientists worldwide, Dr. Jain's findings are summarized in over 460 publications, including three in *Scientific American*. He serves on advisory panels to government, industry and academia, and is a member of ten journal editorial boards, including *Nature Reviews Cancer* and *Nature Reviews Clinical Oncology*. He has received over 30 major awards and lectureships, including a Guggenheim Fellowship, an NCI-Research Career Development Award and an NCI-Outstanding Investigator Grant. He is a member of the Institute of Medicine, the National Academy of Engineering, and the American Academy of Arts and Sciences.

