

Knowing changes everything.

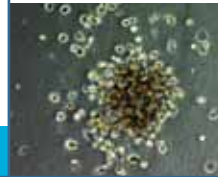
# UPSTATE

MEDICAL UNIVERSITY

SYRACUSE, NEW YORK

CLINICAL UPDATE

May 2009



## \$6.2 million for Stem Cell Research

SUNY Upstate's well-established stem cell research program receives a massive boost from NYSTEM.

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## GPS for Prostate

University Hospital's Calypso® System precisely monitors prostate location during external beam radiation.

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## Primary Care Popular for Class of 2009

Forty percent of SUNY Upstate's latest medical graduates will enter primary care specialties – and train in New York state.

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## Massive Boost for Upstate's Stem Cell Research Program

### \$6.2 million Funds Major Laboratory Expansion & Leukemia Research

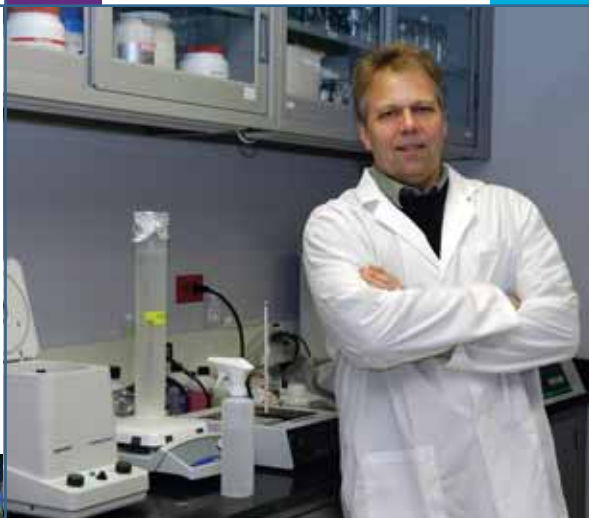
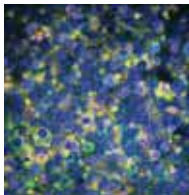
**W**ith \$6.2 million in grants from the New York Stem Cell Board (NYSTEM), SUNY Upstate Medical University will more than quadruple the size of its stem cell research laboratory – and place its stem cell research program on a par with some of the world's foremost stem cell research centers.

“Those working to find cures for many medical conditions that cause misery today understand that much hope lies with our ability to do the best stem cell research possible,” notes Steven Goodman PhD, SUNY Upstate vice president for research and dean of the College of Graduate Studies. “Upstate Medical University has demonstrated a commitment to move this research forward, and our progress is celebrated with this new funding.”

The NYSTEM grants are the largest ever awarded to Upstate's SCID Mouse Center (see sidebar A3), which was established in 1997.

#### Humanized Mouse Model

Stem cell research at SUNY Upstate is focused primarily on developing a “humanized” mouse model to study the initiation and progression of leukemia induced by human viruses, specifically Adult T cell leukemia, Burkitt's lymphoma and primary effusion lymphoma. The chicken pox virus, malaria, hemorrhagic and encephalitic viruses and Kaposi's Sarcoma herpes virus may also be studied in humanized mice.



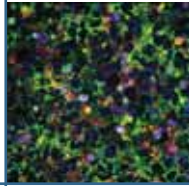
Gerold Feuer PhD, director of the SCID Mouse Center, is a professor of microbiology and immunology at Upstate.

#### Nucleus, Stimulus

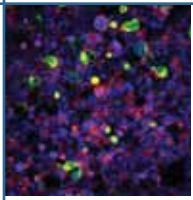
“With these grant monies, we will establish a flagship, world-class Humanized SCID Mouse Center and Stem Cell Processing Lab with state-of-the-art capabilities,” reports Upstate's Gerold Feuer PhD, professor of microbiology and immunology and director of the lab. “This unique facility will attract collaborative interests from both academic and biotech and pharmaceutical researchers worldwide.

“It will be instrumental in recruiting world-class biological scientists to Upstate Medical University and the surrounding academic communities,” he reports. “It will serve as a stimulus for creating new, high-paying positions for scientific technicians and molecular biologists.”

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## Flagship Facility



The larger of the two grants – \$5.13 million over four years – will pay for renovating, expanding and equipping the Center for Humanized SCID Mouse Center and Stem Cell

Processing Laboratory at SUNY Upstate. The increase in size, from 900 square feet to 3,500 square feet, will permit the lab to house more state-of-the-art equipment – and enable more researchers to use the lab.

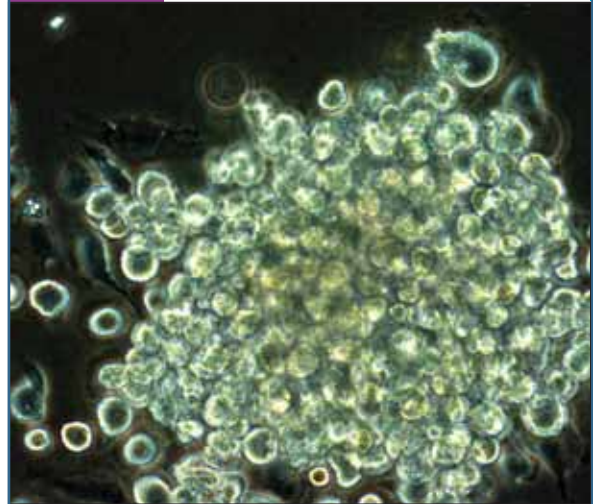
“There is a pressing need to develop new mouse models for human diseases and basic understanding of human stem cell biology,” Dr. Feuer explains. “This lab expansion will increase our current capacity to generate and study these mice, enabling SUNY Upstate to collaborate more substantially with other academic research institutions, biotech companies and pharmaceutical investigators.”

## Leukemia Research

The second NYSTEM grant – \$1.07 million over three years – was awarded to Dr. Feuer to further his research into leukemia. The grant, “HTLV Infection of Human Hematopoietic Stem Cells: Induction of Novel Lymphoma in Humanized SCID Mice,” examines how viruses target and infect stem cells to initiate leukemia development. This process can be modeled using SCID mice.

The grant from the New York Stem Cell Board is the third piece of significant funding SUNY Upstate’s stem cell research program has received in recent months. In January 2008 the university received a \$200,000 Institutional Development Grant from NYSTEM to purchase a high-end imaging system for the lab. That grant came on the heels of Upstate’s \$250,000 commitment to hire additional staff and renovate lab space for expanded stem cell research.

SUNY Upstate conducts more than \$40 million dollars in funded research.



## SCID Mice

SCID (severe combined immune deficient) mice are genetically engineered mice that lack their own immune systems. Without immune cells to reject transplanted tissues, the mice can be engrafted with adult human hematopoietic stem cells (HSCs), which can mature and develop into all components of the human immune system. These “humanized” SCID mice are vital for research into human viral infections and cancer stem cell biology. They also aid in the translational development of anti-viral drugs and therapies for treating hematological disorders.

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## GPS for the Body Real-Time Positioning During Radiation Treatment

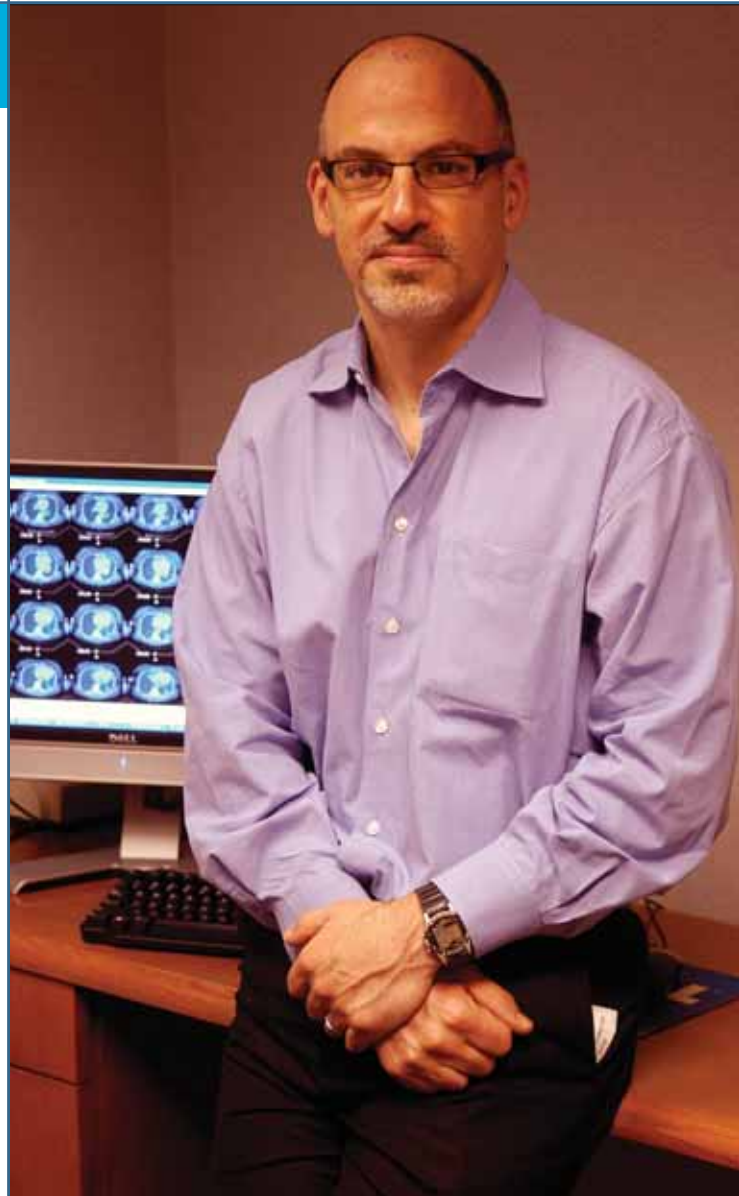
In its relentless campaign against prostate cancer, Upstate's University Hospital has added another key weapon to its high-tech arsenal.

The Calypso® System refines external beam radiation treatment by monitoring prostate placement during radiation. "This is a four-dimensional system," notes Jeffrey Bogart MD, professor and chair of radiation oncology at SUNY Upstate Medical University. "The fourth dimension is time.

"This is the first system which allows us to continually and accurately monitor the prostate during radiation treatment and make necessary adjustments. It's like GPS for the prostate. It allows us to be even more specific in our treatment."

### Moving Target

The Calypso System addresses the unpredictable, minute-to-minute movement of the prostate. "The prostate doesn't sit still," explains Dr. Bogart. Any patient movement - even the passage of gas - can change its placement, by as much as several millimeters.

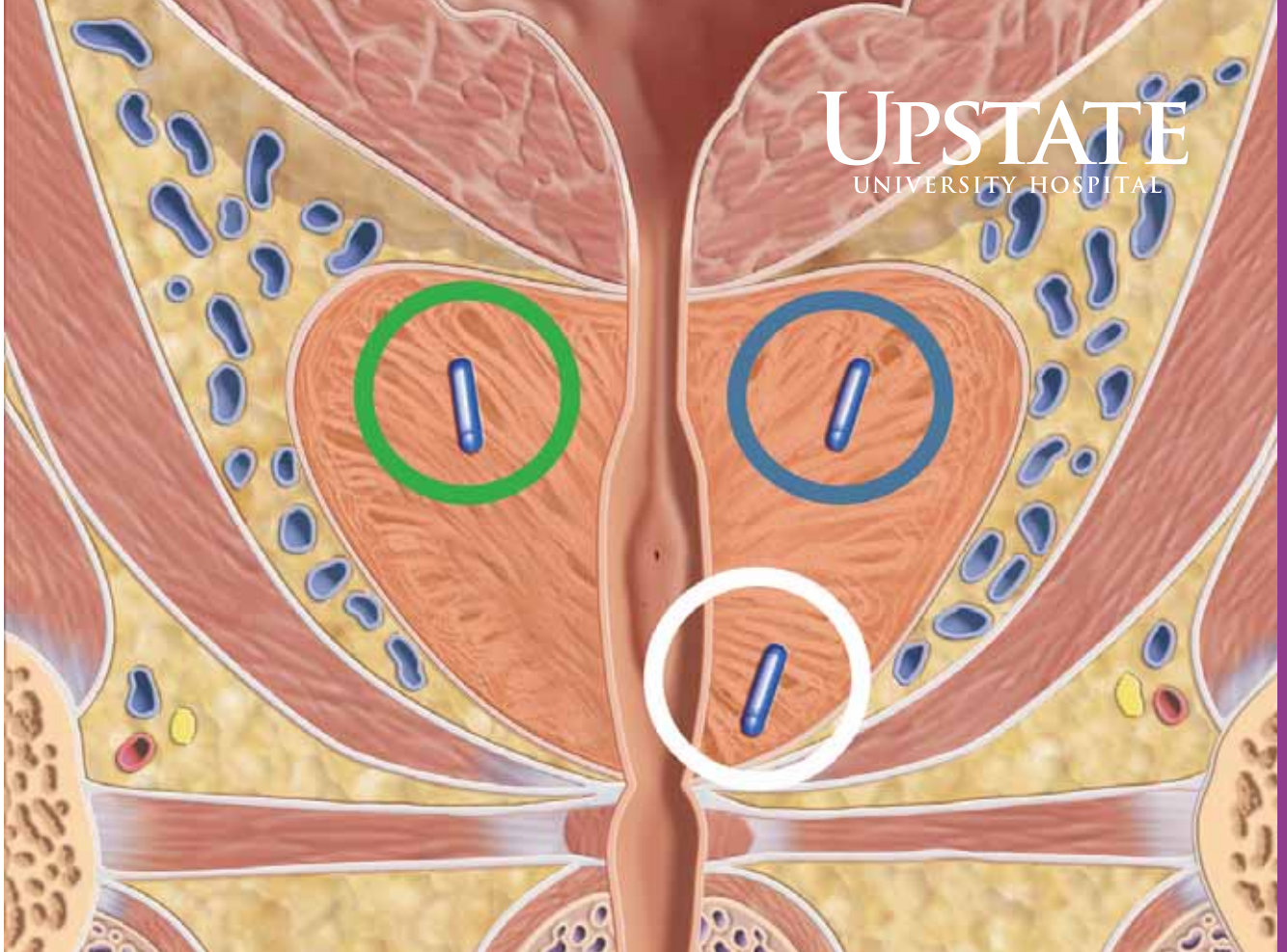


Jeffrey Bogart MD, Professor & Chair,  
Radiation Oncology, and one of the  
"Best Doctors in America"

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MD Direct: 800-544-1605 University Hospital's Physician-To-Physician Service



Upstate's Calypso System uses implanted transponders.

### Implanted Transponders

The system employs implanted transponders to monitor prostate placement. In a process similar to prostate biopsy, three electromagnetic sensors – each the size of a grain of rice – are implanted in advance. The sensors remain inactive until the patient is on the radiation treatment table.

In the treatment room, the transponders – activated by the Calypso System – send signals back to Calypso's 4D Localization System. The three-part system then monitors tumor position and motion during treatment delivery, alerting clinicians to any changes.

### Critical Adjustments

According to Dr. Bogart, "Even a slight change in prostate position could change the target of our radiation. With this information, we can adjust the trajectory and avoid radiation of healthy tissue."

### FDA-Approved

The Calypso System is approved by the Food and Drug Administration (FDA) for treatment of the prostate and prostate bed.

SUNY Upstate is participating in ongoing clinical trials to further refine its use for prostate cancer. One trial involves higher doses of radiation, and another trial is comparing the impact of 28 versus 43 treatments.

"There's a lot of other research into the use of the Calypso system for other cancers," Dr. Bogart explains. "But for now, it's just for prostate."

For more information, see  
[www.Upstate.edu/calypso](http://www.Upstate.edu/calypso)

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Two Upstate graduates who matched for internal medicine residencies: Doolyi Modjinoe, left, is headed for SUNY Stony Brook and Nelson Yang, right, will be going to University of Washington, Seattle.

## Class of 2009 Upstate's New Doctors Show Strong Interest in Primary Care

**P**rimarily care specialties – and the State of New York – are major destinations for SUNY Upstate's most recent crop of medical graduates. Of the 153 graduates in the Class of 2009, about 40 percent will enter into primary care specialties, and 40 percent will enter residency training programs in New York State.

### Close to Home

Twenty-three of the new doctors will remain in Syracuse: 21 as residents at University Hospital and two as residents at St. Joseph's Hospital Health Center. A total of 61 students will continue their training in New York state hospitals.

SUNY Upstate's University Hospital filled all of its 98 specialty and subspecialty residency positions. According to Sara Jo Grethlein MD, associate dean for graduate medical education at SUNY Upstate, "We are especially pleased to have retained so many of our own students in residency positions at Upstate."



College of Medicine graduate Christine Granato celebrates her residency match in internal medicine at SUNY Upstate with her father, Paul Granato PhD, professor of Microbiology and Immunology at SUNY Upstate.

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“This year’s incoming class of residents will be an excellent addition to our institution.”

### Primary Care

Of the 60 Upstate medical school graduates entering the primary care specialties this year, 24 will begin training in internal medicine; 24 in pediatrics; four in family medicine; three in medicine/pediatrics; and five in obstetrics and gynecology.

The three most popular specialties among Upstate’s Class of 2009 are internal medicine, pediatrics and emergency medicine.

### Rite of Passage

The students receive their medical degrees at Upstate’s commencement ceremony on May 17, but their residency plans were largely determined on March 19, at the annual rite of passage known as Match Day. Established in 1952 by the National Resident Matching Program (NRMP) of the Association of American Medical Colleges, the match system uses a computer algorithm to align the preferences of applicants with the preferences of residency programs at U.S. teaching hospitals.

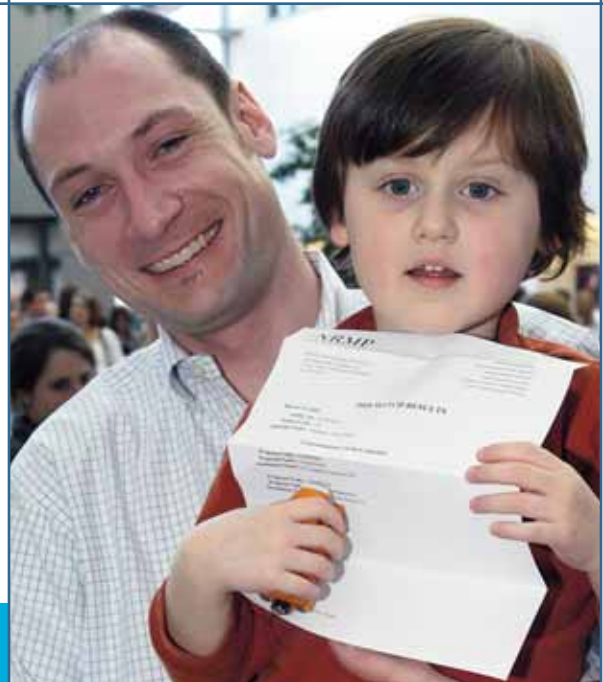
### Media Watch

The focus of much media attention, Match Day is an initial indicator of the career interests of U.S. medical school graduates and other physicians who seek training in our nation’s residency programs.

The 2009 Match Day was the largest in history, according to the NRMP. Close to 30,000 applicants participated – 400 more than in 2008.



Above: SUNY Upstate medical students Juneyoung Yi and Shiu-Chung Au embrace at Match Day 2009. Yi will begin a neurosurgery residency at SUNY Upstate, and Au was matched at Shattuck Hospital in Boston.  
Below: Graduate Matt Daily, with his son, Hunter, holding the famous residency match letter. Daily will begin a one-year residency at St. Joseph’s Hospital Health Center in Syracuse; then move to a radiology residency at the University of Vermont.



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