



Biotech CAT

Help for Entrepreneurs Is Available

The Grant Resource Center for Entrepreneurs is open for business at the NYS Center for Advanced Technology in Biotechnology. The Center's mission is to assist Cornell faculty, staff, and student entrepreneurs, and companies using Cornell technologies, to apply for Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) grants. Competition for SBIR/STTR grants is stiff, and the assistance provided by the staff in the Grant Resource Center will help ensure a solid application. Funds are used to help small businesses in startup and development stages and the programs encourage commercialization of technologies, products, and services. Contact Donna K. Chaudhuri, Associate Director, Business Development; dtk3@cornell.edu; (607) 254-4877.

CAM

NSF Renews IGERT Program

The Center for Applied Mathematics (CAM) announced that the IGERT Program in Nonlinear Systems has received renewed funding from the National Science Foundation. Two-year fellowships for 8 to 12 graduate students will begin in fall 2004. The Nonlinear Systems Program is designed to foster research broadly on nonlinear systems that combines theory, computation, and empirical data. Four thematic areas will be emphasized: complex networks, machines and organisms, biological pattern formation, and gene regulation and systems biology. Participants take two courses in nonlinear dynamics and computational methods, participate in an IGERT seminar, and undertake a yearlong interdisciplinary project and a summer internship. For more information: <http://www.chaos.cornell.edu/>

CCMR

CCMR Hails New Staff and New Institute

The Cornell Center for Materials Research (CCMR) welcomed Patrick Govang as Industrial Partnerships Director in August 2003. Govang will continue building the center's industrial outreach programs. He draws from his experience with the Alliance for Manufacturing and Technology, a NYSTAR-funded Regional Technology Development Center, and several executive positions in the automotive industry.

In November 2003, the Department of Energy awarded \$2.25 million over three years to establish the Cornell Fuel Cell Institute. The new organization will utilize shared experimental facilities that are managed by CCMR to research new materials used in fuel cells. Principal investigators Frank DiSalvo and Héctor Abruña will lead research on materials that are efficient and cost effective.

CHESS

MacKinnon Shares Nobel Prize in Chemistry

The CHESS and MacCHESS staffs are proud that one of our most productive collaborators and users, Rod MacKinnon (Rockefeller), will share the 2003 Nobel Prize in Chemistry for determining the beautiful structure and function of ion channels. MacKinnon's group got started in synchrotron x-ray measurements at the Cornell High Energy Synchrotron Source in 1997. Over the course of 6 years, 30 visits, and 1,500 hours of "x-ray beamtime," they collected enough data to build atomic resolution pictures of how ion channel proteins form tiny pores in the surface of cells. These channels are highly selective for potassium, calcium, sodium, and chlorine atoms and produce the electrical signals that comprise nerve impulses.

Donna Sue Durcan



Donna K. Chaudhuri (l.) consults with John P. Reilly, (r.) President and CEO of Gendyne Therapeutics. Reilly holds an MPS degree from Cornell and is currently an MS candidate in soil microbiology.



Graduate student Leah Chock's Markov-chain model for the translation of RNA into proteins.

G. Hodges
www.prlis.com Photo © 2003



Patrick Govang

Arnold Adler



Rod MacKinnon

For more information:

Contact individual faculty members using the Cornell Electronic Directory at <http://cuinfo.cornell.edu> or (607) 255-2000; or find directory information for specific centers at <http://www.research.cornell.edu/vpr/CentersIndex.html>

CNF**Facility Moves to Duffield Hall**

Cornell NanoScale Facility (CNF) is the first occupant of Duffield Hall, having moved during the August-October, 2003 period from its former location next door. A significant expansion in space allowed CNF to install new tools for the advancement of research, including the nation's most advanced electron-beam lithography system, more versatile patterning, dry and wet etching systems, and new characterization tools. Together with an expanded group of growth and deposition tools, CNF is now positioned as the nation's foremost facility for nano- and microscale research across science and engineering disciplines.

Our new address: Cornell NanoScale Facility, 250 Duffield Hall, Cornell University, Ithaca, NY 14853-2000.

CTC**SciFair Program Serves Diverse Students**

In 2003–4, participation in the Cornell Theory Center's (CTC) SciFair program has grown from one school to five, and now serves more than 50 students across the country. Students from the Quinault Indian Reservation in Washington, the Manhattan Center for Science and Mathematics, and three other rural and inner city schools are enthusiastically learning about science by creating virtual science fair exhibits. The exhibits are part of SciFair, a unique, after-school, science-based program that features research conducted at Cornell and computed with CTC's high-performance computing resources. Exhibits will feature tsunamis, chemistry of candy, physics of flight, and the biology of dinosaurs. The program enjoys support from corporate, federal, and university partners.

LEPP**High School Interns Explore Particle Physics**

The Laboratory for Elementary-Particle Physics (LEPP) has developed a high school internship program to provide local students with opportunities to explore careers involving particle physics. LEPP is utilizing The Learning Web agency, which houses an established apprenticeship program, as a mechanism through which to launch the internship program. The apprenticeship program offers career exploration activities including tours, job shadowing, and unpaid internships under the one-to-one guidance of an adult mentor. Student interns and mentors negotiate a project topic and timeline and agree on mutual expectations and responsibilities. Since the inception of the internship program in spring 2003, six high school students have conducted internships at LEPP.

NBTC**Exploring Biology at the Nanoscale**

Researchers at the Nanobiotechnology Center (NBTC) continue to explore biological systems at the nano- and microscale. In collaboration with researchers outside the center, biological imaging has been advanced using water-soluble quantum dots of cadmium selenide-zinc sulfide. These particles, together with multiphoton microscopy, enable visualization hundreds of microns below tissue surfaces *in vivo*. Questions of toxicity have raised concerns about long-term utilization of quantum dots in living systems. Fluorescent silica nanoparticles are being developed as an alternative, with initial results showing promising levels of fluorescence and photostability. Our upcoming move to Duffield Hall will enhance interdisciplinary research in shared facilities that integrate biochemical processing, nanofabrication, and cutting-edge analytical tools.

CNF Staff



CNF users in the etching section of the new Duffield Hall cleanroom



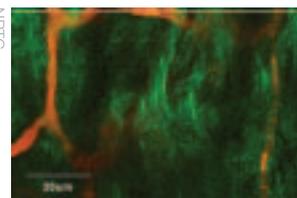
Middle school teens in Richmond, Virginia, have recently come online. They are in the homesteading stage with support from two Cornell undergraduates.

Lora Hine/LEPP



Yulin Li works with intern Brian Kardon on a 3-D model of a coating system using AutoCAD.

NBTC



Blood flow in mouse capillaries at a depth of 150mm, just below the dermis. Scale bar = 20mm. Green = second harmonic image of collagen. Red = quantum dots in capillaries. *Science* 300, 1434 (2003).