

VT EPSCoR Staff

Christopher W. Allen, Ph.D.
Director

Judith Van Houten, Ph.D.
Associate Director

Lillian Gamache
Project Coordinator

Peggy Burbank
Project Business Manager

Marion Green
Project Secretary

Travis Delaney
Information Technologist

VT EPSCoR Board (Vermont Technology Council)

William Shouldice IV
Chairman

Frank Cioffi
Richard Schneider
Vice Chairmen

Paul Hale, Ph.D.
Executive Director

The Department of Energy (DOE) EPSCoR Program – Renewed Success

The Department of Energy (DOE) recently announced that the current Vermont DOE EPSCoR program has been awarded a second three-year grant. The basis for the success of the grant application includes the productive outcomes of the first three years of funding and a strong vision for the next three years. Both of these were components of the proposal and of a retreat involving Vermont DOE EPSCoR participants and Dr. Mat Varma, DOE EPSCoR Program Manager along with other DOE officials held in April 2003. The project is directed by Dr. Susan Wallace, Professor and Chair of the Department of Microbiology and Molecular Genetics (MMG) at the University of Vermont (UVM). The foci of the Vermont DOE EPSCoR project are structural and computational biology and encompasses faculty from several UVM departments as well as Saint Michael's College.



The 2003 DOE EPSCoR Retreat and Site Visit was held on April 15-16, at the Bishop Booth Conference Center in Burlington. Seventy-six people attended, including faculty, postdoctoral fellows, technicians and graduate students. Thirty-six posters were presented from each of the research projects, the core facilities, and graduate students separately supported by the grant. Site visitors were Michael J. Eck, M.D., Ph.D., Department of Cancer Biology, Dana-Farber Cancer Institute; John M. Flanagan, Ph.D., Biology Department, Brookhaven National Laboratory; Cynthia B. Peterson, Ph.D., Department of Biochemistry and Cellular and Molecular Biology; Marvin Stodolsky, Ph.D., from the DOE Headquarters, and Matesh Varma, Ph.D., Program Manager, Department of Energy.

CURRENT DOE LAB PARTNERSHIP AWARDS

David Y. Smith, Physics
*Electromagnetic Properties of
Matter at X-Ray Wavelength*

Byung Lee, Computer Science
*Generating Cost Models of
User-defined Functions*

Randall Headrick, Physics
*Fundamental Mechanisms of
Interface Roughness*

Inside this Issue:

Outreach	2
Recent Activities	3
SBIR News	3
Deadlines	4

Structural Biology

The structural biology group, lead by UVM MMG faculty member, Dr. Sylvie Doublie, works on determination of the exact structure of important biological molecules, such as enzymes, using a variety of sophisticated techniques such as nuclear magnetic resonance spectroscopy, x-ray diffraction and cryo-electron microscopy. Research of this nature is essential in the understanding of biological process and allows, for example, for rational design of new drugs. The DOE EPSCoR grant has contributed to the purchase of the necessary instrumentation, supported technical staff and funded specific research projects in structural biology. The resources of the program has also been effectively utilized to recruit talented new faculty in the structural biology area to Vermont. Ten pilot research structural biology projects were funded which resulted in 20 publications (6 more under review) and 12 funded external grants (7 more under review).

Computational Biology

The computational biology group, lead by UVM MMG faculty member, Dr. Jeffrey Bond, is a

true multidisciplinary effort directed at bringing the tools of modern computational and computer science to biological problems. With the explosion of knowledge areas such as structural biology and the analysis of the human genome, biological scientists are faced with massive amounts of data. In order to extract useful information from the data, sophisticated mathematic and computational tools are required. The Vermont DOE EPSCoR computational biology group is composed of faculty in the biological sciences and in computer science. The program contributed to the recruitment of two new faculty members in computer science and was an important component in the development of a Ph.D program in computer science at UVM. The computer science advanced degree program has an identified track in computational biology. The program has also been involved in building structural/computational biology computing resources including servers, a secure network and a class room. Additionally, the program supports computing clusters, web servers, visualization stations and the UVM biodesktop for handling and presenting biological data models. Eight pilot computation-

continued, next page

DOE – Renewed Success *continued from page 1*

al biology research projects were funded resulting in 11 publications (2 more under review) and one external grant (3 more under review).

Broad Program

As is the case for virtually all Vermont EPSCoR programs, the DOE EPSCoR program has a broad impact encompassing education and outreach in addition to research and physical infrastructure development. The educational activities included an external seminar speaker series in structural biology and workshops in bioinformatics and evolutionary computing. The latter workshop featured talks from UVM and IBM. Attendees included representatives from UVM (12 different divisions) Saint Michael's College, IBM and Neurell, Inc. In addition, thirty six graduate students, twelve undergraduate scholars from UVM and other Vermont colleges were supported. The impact of the program has also involved both undergraduate research and curricular contributions in structural biology. Engagement with the private sector is a hallmark of Vermont EPSCoR programs and the DOE program carries on this tradition. The private sector involvement in the evolutionary computing workshop was significant. Small business develop-

ment grants were awarded to three companies involved in research in DOE related areas.

Next Phase

In the next phase of the program, the successful initiatives in place will be further enhanced. A senior structural biology faculty member and a statistics faculty member with expertise in analysis of biological data will be recruited to UVM. Additionally, a bioinformatics program at Saint Michael's College will be developed.

State EPSCoR Director, Chris Allen, indicated that "the impressive success of the DOE EPSCoR program is a dramatic example of the program and infrastructure building impact that EPSCoR programs have in Vermont. This success is a testament to the vision and hard work of Susan Wallace and her team. The infrastructure which is put in place by the DOE EPSCoR program will have a lasting

impact on research and graduate/undergraduate education at UVM. Furthermore, these resources will make Vermont more appealing as a place to develop biomedical and biotechnology based small business."

Director Susan Wallace remarked: "It's been a terrific group of young people to work with." ■



Project Leader Sylvie Doublie, Structural Biology.

VT EPSCoR Outreach

"The Vermont Experimental Program to Stimulate Competitive Research (EPSCoR) contributes to building an infrastructure which will improve the research competitiveness of Vermont scientists and engineers as well as bring NSF resources to the service of the broader community"

Careers Day 2003

The EPSCoR 12th Annual Careers Day welcomed students from over 22 high schools to the University of Vermont campus on May 20th, 2003. The full day event provided a venue through poster and scientific demonstrations to help spread the outreach message of rewarding, interactive collaboration between college faculty in the sciences and the state-wide high school community.



2003 Outreach Winners - Essex High School "Using Molecular Ecology to Study Bear Populations" (From left) Dr. C. William Kilpatrick, Julia Torti, Elise Vincelette, Barbara Jane McDaniel, and Mark Paul

develop a research project and are loaned a footlocker with the equipment and supplies necessary to continue their project over the following academic

This program is administered through the UVM Hughes Endeavor for Life Science Excellence (HELIX) Program and places a high school teacher and students in a research laboratory at the University of Vermont or a Vermont baccalaureate institution for one week each summer. The scientist, teacher, and students

V T E P S C O R

year at the student's high school is provided. The 2003 areas of collaboration included a variety of projects in Chemistry, Botany, Physics, Engineering, Cell and Molecular Biology, Population Genetics, Nutrition and Food Science, Entomology and Environmental Science.

The results of the research of the outreach teams culminated in Careers Day, where they presented their research findings to hundreds of their high school peers in the Patrick Gymnasium at the University of Vermont. UVM faculty scientists judge the year's most meritorious offering. Over two hundred students gathered from New York and Vermont to attend this year's presentation, and to tour the UVM campus, viewing cutting edge science and engineering research, as well as learning about various career paths in the sciences.

Students were encouraged to attend demonstrations in Allied Health, Biomedical Research, Natural and Environmental Science, Physical Science, and Applied Science. From interactive, hands on glassblowing techniques, to tours of the Greenhouse, to cutting edge DNA research, the high school students were afforded the occasion to sample the opportunities and challenges of a life in the sciences.

Baccalaureate College Development Program (BCD)

A successful spring competition was held to determine the recipients of the 2003 VT EPSCoR Baccalaureate College Development Awards. A review panel of baccalaureate college faculty, chaired by Dr. Joseph Byrne of Norwich University, selected eight awardees representing five different colleges across Vermont. Award amounts of up to \$10,000 each were distributed for summer research support. Funds could be used for salary, support of summer undergraduate research students, supplies, equipment or travel. It is anticipated that a similar number of awards will be made in 2004. Please see the EPSCoR web site for further information at www.uvm.edu/EPSCoR.

Recent VT EPSCoR Activities

Graduate Research Assistantship Awards (GRA)

The 2003 round of Graduate Research Assistantship Awards were presented after a competitive review process for research groups in Advanced Materials (AM), Biotechnology (BT), Environmental Science and Engineering (ESE) and Information Technology/Computational Science (IT/CS) this past spring. Twenty graduate students were funded from various disciplines.

Assistantships were available for graduate students with an early career faculty member or graduate students with joint advisors in two specific VT EPSCoR focus areas – Research on Water in the Environment (RWE) and Materials Science of Polymers and Composites and Pre-GOALI awards (Grant Opportunities for Academic Liaison with Industry).

A strong emphasis was placed on early career faculty who had not reached a level of significant external funding. Awards

were offered for either a nine or twelve month period of support. In order to qualify for a second year of funding, faculty must have submitted an NSF grant proposal during the first year of the award.

Renovations

EPSCoR supported renovation and modernization of antiquated laboratory facilities for new faculty in NSF EPSCoR research focus areas in **Biology and Chemistry** are underway. Similar support in the Biology, Botany and Psychology Departments has been provided by VGN.

Current Department of Defense DEPSCoR FY03 Awards

Christopher L. Landry (P.I. Chemistry),

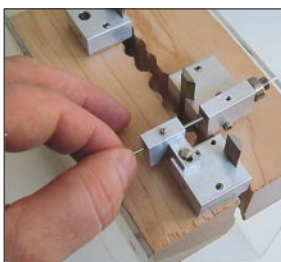
Christopher W. Allen (Co-P.I.)

“Detection and Contamination of Chemical Warfare agents Using Porous Inorganic Supports.”

continued, next page

SBIR Phase (0) News

The VT EPSCoR 2003 SBIR Phase (0) program received 36 proposals in this year's competition. After a competitive review process, fifteen awards were made to various businesses across the state. This represents an increase of four new awards than were made in 2002. The VT Department of Energy (DOE) and VT NASA programs provided additional funding for small business development in addition to increased funding from the VT EPSCoR program. In 2002, 77% of the businesses that received



SBIR Phase I and II funding had received prior Phase (0) support.

The maximum amount of each Phase (0) award is \$10,000. A full list of awardees will appear in the Winter EPSCoR newsletter. For additional information, please visit the EPSCoR web site at www.uvm.edu/EPSCoR.

Ms. Janice St. Onge, Technology Business Development Director for the VT Department of Economic Development, will serve as a panelist at the NSF EPSCoR National Conference in Las Vegas, NV on September 7 – 9, 2003. ■

O u t r e a c h

2003 BCD Awardees

John Bullock, *Chemistry*
Bennington College

Noah Graham, *Physics*
Middlebury College

Jeffrey Byers, *Chemistry & Bio Chemistry*
Middlebury College

Barbara Hofer, *Psychology*
Middlebury College

Natalie Coe, *Biology (Math & Science)*
Green Mountain College

Jonathon Isham, *Economics & Program in Environmental Studies*
Middlebury College

Bret Findley, *Chemistry*
St. Michael's College

Gregory Wight, *Mechanical Engineering*
Middlebury College

Grant Writing Workshop

The Vermont EPSCoR and VGN (Vermont Genetics Network) programs held a very productive grant writing workshop was hosted at Middlebury College on June 5th, 2003.

Recipients and submitters of the Baccalaureate College Development Program were in attendance. The format was structured to allow for a panel presentation from experienced faculty grant writers followed by helpful instructions and discussion about the grant writing process and available resources by University



Grant Writing Panelists from left to right – Richard Bunt, Peter Nelson, Sallie Sheldon, Grace Spatafora, Susan Watson (all Middlebury College faculty).

of Vermont and Middlebury College Sponsored Programs Officers, Ruth Farrell (UVM), Hilda Ajajian (UVM) and Franci Farnsworth (Middlebury College).

Faculty attending represented seven colleges across Vermont. The purpose was to help increase the success rate of grant submissions to federal agencies from EPSCoR awardees. Attendees remarks included: “It was very helpful to be able to link up with a faculty member in related fields.” And, “The most useful thing I learned was get used to rejection!”

Governor's Institute of Vermont (GIV)

VT EPSCoR provided a second year of scholarship support to needy VT students interested in attending the Governor's Institute of Vermont focusing in various science and technology segments. GIV Executive Director, Jean Olson, reported that approximately one-third of the students attending require scholarship help to attend and thanked VT EPSCoR for its “commitment and dedication to our students, Vermont's future, and for your help in making this extraordinary experience possible” in a recent letter to VT EPSCoR. GIV celebrated its 20th anniversary in August, 2003.



Vermont High School Mentoring Partnership

A newly formed partnership between VT EPSCoR and the Vermont Department of Employment and Training (DET) has launched the “Vermont High School Mentoring Partnership” in Franklin, Orleans, Essex and Caledonia Counties. This innovative partnership strives to connect eligible, interested high school students with local businesses committed to the training and development of Vermont students who may or may not otherwise consider higher education and careers in science and technology. If your business is interested in hosting a future EPSCoR internship, please contact the DET office closest to you in Newport, St. Albans or St. Johnsbury or email epscor@uvm.edu for further information.

Recent Activities continued from page 3

Paul Bierman (PI. Geology), Guiseppe Petrucci (Co-PI.)
 “Quantifying Erosion and Sedimentation in Extreme Environments:
 Refining and applying the cosmogenic method for Army-relevant 1.”

NSF EPSCoR Workshop – Jackson Hole, WY



VT Project Director, **Christopher W. Allen**, developed and served as Co-Chair of a “Successful Management Strategies” workshop for all 24 EPSCoR states in Jackson Hole Wyoming, June 8 – 10, 2003. The workshop was designed to respond to changing needs in the NSF EPSCoR program marked by increased complexity of the research infrastructure improvement awards. The goal was to capture new and refined management strategies appropriate to the new EPSCoR realities during the workshop and to produce a publication that would serve as a “resource manual” of best ideas. Dr. Allen presented a workshop session on VT EPSCoR’s role in economic development in addition to his coordinating role. A resource entitled “NSF EPSCoR Successful Management Strategies” is available at www.uvm.edu/EPSCOR. ■

The Vermont-NSF Partnership

The Vermont Experimental Program to Stimulate Competitive Research (EPSCoR) contributes to building an infrastructure which will improve the research competitiveness of Vermont scientists and engineers as well as bring NSF resources to the service of the broader community.

The fundamental goals of the Vermont EPSCoR program naturally parallel the two National Science Foundation (NSF) review criteria (intellectual merit and broader impact). The explicit recognition of the importance of the broader impact of science on society has been a fundamental hallmark of the Vermont EPSCoR program since its inception in 1985. The close relation to state needs is reflected in Vermont EPSCoR’s governing board, the Vermont Technology Council, a privately organized non-profit group devoted to joining academic research and Vermont economic development. The state’s S&T plan, developed by the Council with active EPSCoR leadership, has defined the areas of S&T emphasis which are critical to the state’s economy and, therefore, are the areas where the Vermont EPSCoR program makes its infrastructure investments. (Advanced Materials, Biotechnology, Environmental Science/Engineering and Information Technology).



Experimental Program to Stimulate Competitive Research

University of Vermont
 Cook Building, 82 University Place • Burlington, VT 05405
 802-656-7969 • Fax 802-656-2950 • epscor@uvm.edu

Upcoming Events & Deadlines

NSF EPSCoR National Conference	September 7-9, 2003
DEPSCoR Preproposals	September 2, 2003
DEPSCoR Full Proposals	October 31, 2003
Please check www.uvm.edu/EPSCOR for the following deadlines:	
Small Equipment RFP	TBD
Mini-Grants RFP	TBD
Post Doc RFP	TBD

TO:

Return Service Requested
 University of Vermont
 Cook Building, 82 University Place
 Burlington, VT 05405

Experimental Program to Stimulate Competitive Research



Non-Profit Org.
 U.S. Postage
 PAID
 Permit No. 143
 Burlington, VT