

VT EPSCoR Staff

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James Iatridis, Ph.D.
Associate Project Director

Lillian Gamache
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Troy Krahl
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Executive Director

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Dr. Judith Van Houten Named New State Director for Vermont EPSCoR

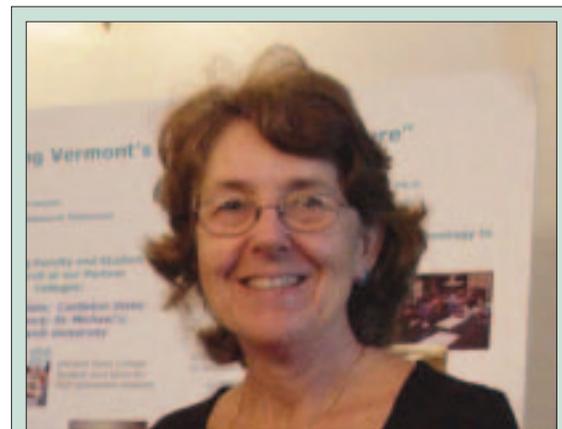
The Vermont Technology Council has appointed Dr. Judith Van Houten, George H. Perkins Professor of Biology at the University of Vermont (UVM), as the new Vermont EPSCoR State Director effective July 1, 2005. Dr. Paul Hale, Executive Director of the Vermont Technology Council, stated "The Vermont Technology Council is extremely pleased that Professor Judith Van Houten has agreed to serve as the new State Director for Vermont EPSCoR. Professor Van Houten's extensive experience with all aspects of the program and her broad knowledge of our state's research assets give us confidence that Vermont EPSCoR will continue to play a key role in the development of Vermont's research infrastructure."

Dr. Van Houten is also the Principal Investigator of the Vermont National Science Foundation (NSF)-EPSCoR grant that builds science and engineering infrastructure in Vermont. Dr. James Iatridis (ME/UVM) joins the VT EPSCoR program as a new Associate Project Director. Iatridis leads the Polymer & Composites (P&C) group and is an Associate Professor in the Department of Mechanical Engineering with a secondary appointment in the Department of Orthopaedics & Rehabilitation at UVM. His research areas include intervertebral disc bioengineering, spinal biomechanics and viscoelastic and composite materials.

"James is an integral part of the new generation of leadership for the EPSCoR program in Vermont. We are fortunate to have his expertise and vision as part of the team that will cultivate new opportunities for scientific and technological research advances across the state," acknowledged Dr. Judith Van Houten.

The Vermont EPSCoR program promotes collaborative research at UVM, most currently focusing on Research on Water in the Environment (RWE) and on Polymers and Composites. The grant also supports the development of basic research programs for early career faculty at UVM, and for faculty at Vermont's baccalaureate institutions. A special program for research and development in the private sector (SBIR Phase (0)) prepares businesses for submission of SBIR grant applications to federal agencies. Graduate, undergraduate and high school students also benefit from VT EPSCoR sponsored programs.

Additionally, Dr. Van Houten directs the Vermont Genetics Network, a recently awarded \$16.5M program



"We plan to make Vermont EPSCoR more visible and recognizable as a positive force for change in Vermont."
– State Director Dr. Judith Van Houten

funded by the National Institutes of Health (NIH). This is the largest single investigator grant ever received at UVM. The Vermont Genetics Network (VGN) is funded by a five-year award from the National Center for Research Resources, and is part of the NIH initiative called IDeA Networks of Biomedical Research (INBRE). VGN is a collaboration among the University of Vermont, and five baccalaureate colleges throughout the state of Vermont to build critical mass and infrastructure in the broad area of genetics.

Dr. Van Houten is also the Director of the HELiX (Hughes Endeavor for Life Science Excellence) Program, which supports undergraduate research at the University of Vermont. HELiX encourages students to stay in science and consider careers in the sciences by involving them in research projects and informing them about, and exposing them to, as many opportunities as possible in the sciences. Students in the sciences are assisted in identifying mentors and research projects in laboratories in the College of Arts and Sciences, the College of Agriculture and Life Science, the College of Medicine, the College of Engineering, the School of Natural Resources, and the School Nursing and Health Sciences.

Van Houten becomes one of four women Project Directors in the National Science Foundation EPSCoR program, which is comprised of twenty-six states and jurisdictions. The Experimental Program to Stimulate

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Van Houten named VT EPSCoR Director *continued from page 1*

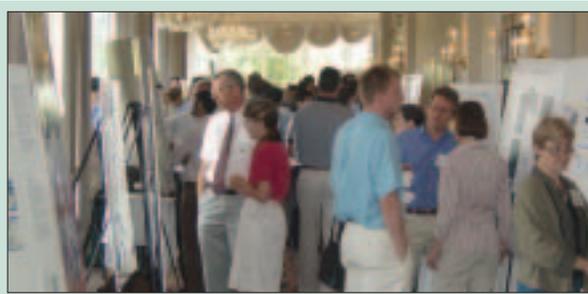
Competitive Research (EPSCoR) promotes the development of the states' science and technology (S&T) resources through partnerships involving a state's universities, industry, and government, and the Federal research and development (R&D) enterprise. "EPSCoR operates on the principle that aiding researchers and institutions in securing Federal R&D funding will develop a state's research infrastructure and advance economic growth. EPSCoR's goal is to maximize the potential inherent in a state's S&T resources and use those resources as a foundation for economic growth."

Dr. Van Houten will also serve on the National EPSCoR Foundation Board which helps craft policy concerning the National EPSCoR program by working with federal agencies on issues regarding science and engineering funding.

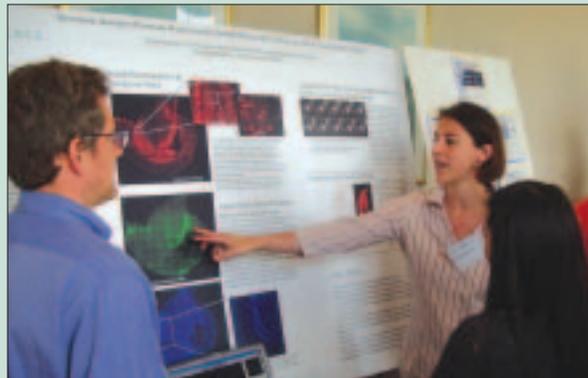
Dr. Van Houten succeeds Dr. Christopher W. Allen, Ph.D. and Research Active Emeritus Professor of Chemistry, who recently retired after ten years as State Director of Vermont's EPSCoR program. "The state of Vermont and the EPSCoR program are truly fortunate to have Judy Van Houten as the State EPSCoR Director," stated Dr. Allen. "Judy is an accomplished scientist with a national reputation in neurobiology. Her long experience with the EPSCoR program includes both leadership and being the originator of some of the Vermont EPSCoR programs such as the SBIR Phase (0) grant. She has a strong commitment to higher and secondary education community of the state. She is also widely respected by the national EPSCoR as shown by her election to the Board of Directors of the EPSCoR Foundation."

Dr. Van Houten received a BS from Pacific Lutheran University and her PhD from the University of California at Santa Barbara. Her research investigates the molecular mechanisms of how cells detect chemicals, and she uses organisms as simple as Paramecium and as complex as mice. Her work provides insights into the sense of smell. Dr. Van Houten received the Manheimer Award in 1996 for career achievements in chemosensory sciences and the University Scholar Award in 1991.

Dr. Frances Carr, Vice President for Research and Graduate Studies at the University of Vermont conveyed that "Dr. Van Houten has been affiliated with the VT EPSCoR program in increasing leadership positions since 1986. She is committed to the principles of the program and has worked diligently to enhance the impact throughout the state. She brings a wide range of expertise and knowledge to the position which will be extremely valuable in her many interactions with the National Science Foundation, state and federal officials, higher education, outreach, and industrial liaisons. We are very fortunate to have a person of her high caliber and enthusiasm in this vital role, effectively working to advance science and technology efforts for the University of Vermont and the state at large."



Researchers and guests view EPSCoR poster presentations at the Annual Meeting.



SBIR Phase (0) awardee Microbrightfield Inc. representative discusses findings.

Current Research Foci

The current EPSCoR grant has two primary focus areas – Integrated Research on Water in the Environment (iRWEE) and Polymers and Composites – and each continues to show significant progress in producing increased publications, external funding and establishing inter and intra jurisdictional collaborations.

Dr. Paul Bierman, Professor of Geology and Natural Resources (UVM) and recent recipient (2005) of the NSF Director's Distinguished Teaching Scholar Award, is leading the Integrated Research on Water in the Environment (iRWEE) group consisting of more than a dozen researchers from many campus units as well as a funded technician. He recently replaced Dr. William Cully Hession (C&EE) who is no longer at UVM. The group is submitting a proposal to NSF to fund an interdisciplinary watershed field camp and they have launched a new web site full of useful water-related information at <http://www.uvm.edu/~irwe/>.

The Polymer & Composites group recently hosted Dr. Thomas Russell, Director, Materials Research Science and Engineering Center (MRSEC) at University of Massachusetts, Amherst, to discuss future collaborative efforts between the two schools. A trip to UMASS Amherst is planned for February 2006. Dr. James Iatridis leads the Polymer & Composites Group which currently consists of nine researchers.



Shown left to right, Dr. Paul Hale, Mr. L. Fred Hackett, Dr. Christopher Allen and Dr. Richard Schneider, President VT Technology Council.

Annual Conference/Festschrift

On August 15th, 2005 Vermont EPSCoR hosted its Annual Conference at the Sheraton Conference Center in Burlington, VT. The theme focused on "People, Ideas & Tools: Three Years of Science & Technology Infrastructure Improvements in Vermont". Representatives from the offices of Senators Leahy and Jeffords attended, in addition to over ninety funded researchers who presented posters on their projects supported by Vermont EPSCoR over the past two and a half years. Faculty from the University of Vermont, Baccalaureate Institutions across the state, private industry, graduate and undergraduate students displayed a wide range of science and technology efforts.

Later in the evening a festschrift celebration honoring Dr. Christopher W. Allen, outgoing Project Director, was held where Allen was awarded the Luther F. Hackett Award. Each year, the Vermont Technology

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McNair Scholars Program - Summer 2005 Research

The McNair Scholars Program officially began in the spring of 2004 at the University of Vermont with a mission of working with students who are first generation / limited income or of an ethnicity underrepresented in doctoral programs. A critical component of the program is to provide a quality research experience to ten academically strong undergraduates each year to assist in their preparation and competitiveness for graduate study. The research internship is held each summer and its success relies upon a successful match with a faculty member on campus.



At Shelburne Farms during the summer of 2005, Natalia Fajardo (left) and Anastasia Yarbrough (right) conducted research on sparrows and bobolinks with Allan Strong, PhD (center) from the Rubenstein School of Environment and Natural Resources.

Federal funding for the McNair Scholars Program provides for an eight-week internship, offering each student scholar a stipend, full room and board, a laptop computer and technology training. With generous assistance from Vermont EPSCoR during the sum-

mer of 2005, the eight-week McNair internship was expanded to ten weeks to enhance the research experience. In August, the ten scholars presented their research findings to the university community in a symposium on the UVM campus. In attendance were faculty members, campus administrators, staff, other students, family and friends. EPSCoR support also assisted in the compilation of the ten scholars' final reports into a publication.

The McNair Scholars Program commemorates the achievements of

Ronald E. McNair, PhD. Dr. McNair was an astrophysicist and one of the astronauts who perished aboard the space shuttle Challenger in 1986. To read more about the McNair Scholars Program, please visit the web site at <http://uvm.edu/~mcnair>. ■

V T E P S C o R O u t r e a c h

EPSCoR Partners with Governor's Institutes of Vermont – Applications Increase

Again this year, EPSCoR supported many talented and motivated high school students who participated in the Governor's Institutes of Vermont (GIV). Enrollment was strong in all four GIV science and math programs, which meant a high need for scholarship support. GIV offers summer and winter Institutes for high school students. More than 450 students from 71 schools attended one of the Institutes in 2005.

As in previous years, EPSCoR funding supported boys and girls who were academically and financially qualified. New this year was EPSCoR funding for all girls in Engineering, Information Technology, and Mathematics. While GIV designed these Institutes to meet the research-based needs

of girls, historically there is difficulty in getting girls to apply. With the promise of 50% tuition support from EPSCoR, girl applications soared from 8% to 36% in Engineering and from 22% to 30% in Information Technology. The Mathematics Institute was a first year collaboration with the Vermont Math Coalition.

The UVM/GIV Engineering Summer Institute was held June 26-July 3, 2005. It was sponsored by the UVM College of Engineering And Mathematical Sciences and the Governor's Institutes of Vermont, which hosts 84 high school students yearly (in-state, out-of-state, and international) to excite students and provide them with hands-on challenges that exhibit engi-

neering technology and the power of engineering thought!

EPSCoR support is critical for students whose family incomes qualify them to receive financial aid. Again this year, GIV and EPSCoR worked together to change lives. For more information about GIV, see www.giv.org.

Scholars in the Limelight Symposium

The High School Outreach Program links high school students and their science teachers with UVM faculty in research projects of local importance. This program has expanded to include student/teachers teams from high schools with populations of students who are under-represented in science.

This year, the Outreach Program coordinated by Gayle Bress, Program Coordinator, and Leanne Saddlemire, Program Assistant, instituted a new way of highlighting high school outreach team research projects.

On Wednesday, May 18 the high school teams were in the "Limelight" to present their research to each other, the HELiX/EPSCoR office staff, their families, school principals and other significant

members of these students' lives. They were able to present their research and come together for a night of food and science with family and friends.

Each team presented a poster for competition, based on presentation of material, neatness and effort as compiled by judges, Drs. Janet and John Mitchell. An award of \$200 was presented to the most informed team.

Participating scholars represented Vermont high schools in Milton, South Royalton, Burr and Burton, Rutland, Colchester and South Burlington. Partnership schools which bring underrepresented teams to UVM included: Massena, Dewitt Clinton, Christopher Columbus and John D. O'Bryant high schools. Additionally, for the first time, a high school homeschool team of students in the area participated.



Competition winners: Sandra Person (teacher), Kim Duong and Lucas Shi from John O'Bryant High School with Lynn Fosher (teacher), Nicole Corbiere and Meredith Currie from Milton High School pose with Mike Fortney, UVM sponsor from Mechanical Engineering.

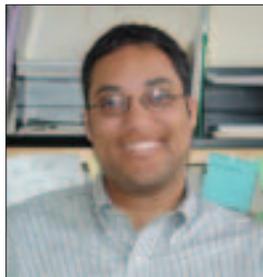


Students from "Team Awesome" (Samantha Stout, Hopewell, NJ; Meghan Veroneau, Falls Church, VA; Joey Knauer, Craftsbury, VT and Jonathan Lenz, West Orange, NJ) exhibit the robot they created as a team during the 2005 UVM/GIV Engineering Summer Institute.

Vermont EPSCoR Notables

Vermont EPSCoR Welcomes New Business Manager

Mr. Troy Krahl has joined the Vermont Experimental Program to Stimulate Competitive Research (VT EPSCoR) at the University of Vermont (UVM) as the new Business Manager. Troy worked previously as the laboratory manager for Dr. Mercedes Rincon in the Department of Medicine at UVM. He recently completed his Masters in Business Administration at UVM and prior to that, received a BS in Physics from the University of California, San Diego. To contact Troy, please email him at Troy.Krahl@uvm.edu or phone at 656-7970. The EPSCoR offices are located in the Cook Physical Science Building at UVM, Rooms 527, 528 and 529. Troy replaces Ms. Peggy Burbank who retired in February 2005.



VT EPSCoR Funded Project Featured in Student Poster "On the Hill"

Ms. Kristyn A. Dumont, (pictured far right) a Saint Michael's College senior biology major from Augusta, Maine, was one of 60 undergraduate science students from across the nation to present their research to Congress April 19, 2005. Dumont and her biology professor, Dr. Mark Lubkowitz, (shown far left) participated as part of the Council on Undergraduate Research, in a presentation of research posters to Members of Congress, federal agency funding officers, and other guests in the Rayburn House Office Building in Washington, D.C.

Dumont presented research on protein unloading during germination in plants, a project that examines how storage proteins in seeds are accessed by the developing plant. Funding for this project was provided in part through the VT EPSCoR Baccalaureate College Development program.

The student presenters to Congress were competitively chosen from several hundred applicants. The aim of "Congress by the Council on Undergraduate Research" (CUR) is to encourage student-faculty collaborative research. Students engaged in such research typically go on to graduate science education or other leadership positions in society.



Dr. Thomas Russell, UMASS Amherst, Visits VT EPSCoR Polymer & Composites Group to Discuss Collaborative Efforts

Dr. Thomas Russell, Director, Materials Research Science and Engineering Center (MRSEC) at University of Massachusetts, Amherst, met with University of Vermont faculty who comprise the Polymer & Composites group, an initiative supported by VT EPSCoR. The polymer and composites group is planning a joint symposium at UMASS with the MRSEC group in February 2006. For more information please contact Dr. Thomas Hughes at Thomas.S.Hughes@uvm.edu.



Dr. Paul Bierman receives NSF Director's Distinguished Teaching Scholars Award

Paul Bierman, Professor of Geology and Natural Resources at UVM, has been awarded the Director's Distinguished Teaching Scholars Award. He was one of seven 2005 recipients.

Bierman is currently the Program Coordinator of the VT EPSCoR iRWE program – the Integrated Research on Water in the Environment Program. The award was given to faculty who

"achieved not only groundbreaking results in research, but for their strong teaching and mentoring skills and major educational contributions." Dr. Bierman is also very active with the Governor's Institutes of Vermont (GIV) program, a high school enrichment program, that VT EPSCoR also provides funding for, to offset tuition costs for needy participants.

Bierman has been at the forefront of geomorphology research, documenting the rates of processes active at the Earth's surface. He was among the first to apply cutting-edge geochemistry processes to study Earth's bare-rock and soil-covered surfaces across widely differing climates. He has brought together many students to assist in publishing papers and to study how humans and landscapes interact. He has also mentored high school teachers and graduate teaching assistants. His new award will help extend work on a previous NSF grant that created a Web-based archive of more than 10,000 historical images. It will include a research demonstration that brings together students with science and images, as well as new Web tools that will facilitate learning and research. Bierman will also pursue a nationwide effort to disseminate this image-based approach to learning. ■



iRWE (Integrated Research on Water in the Environment) **facility** will be housed in the Department of Geology, Delehanty Hall, UVM, in January 2006.

For information please contact Dr. Paul Bierman at Paul.Bierman@uvm.edu

2005 Grant Writing Workshop Held at St. Michael's College

The EPSCoR Annual Grant Writing Workshop was held at St. Michael's College in June 2005. Dr. Mona T. Norcum, Program Director, NSF BIO/MCB was the keynote speaker. Other faculty panelists included Drs. Alain Brizard (SMC), Noah Graham (Middlebury), Mark Lubkowitz (SMC) and Grace Spatafora (Middlebury). Ruth Farrell, UVM Associate VP for Research Administration, Hilda Alajajian, UVM Funding Administrator, and Franci Farnsworth, Coordinator of Sponsored Research at Middlebury College also made presentations on major funding sources and online grant writing resources.

Over 70 participants including faculty from baccalaureate colleges, UVM, graduate students and institutional representatives attended the workshop intended to share successful practices and heighten awareness of research funding opportunities to increase the competitiveness of Vermont scientists. The next workshop is



planned for June 2006. Please check www.uvm.edu/EPSCoR for updates on date and location. Presentation slides from the 2005 workshop are available on the EPSCoR web site. ■

Award Results from 2005 EPSCoR Competitions

Equipment Acquisition for Faculty at UVM

6 awards totaling \$102,000 to faculty in Departments of Chemistry, Civil & Environmental Engineering, Biochemistry, Physics, Mechanical Engineering and Electrical Engineering.

Graduate Research Assistantships (UVM)

7 awards totaling \$175,000 to graduate students in Departments of Chemistry, Civil & Environmental Engineering, Geology, Electrical and Computer Engineering and Computer Science.

Baccalaureate College Faculty Summer Support

8 awards totaling \$80,000 to faculty at Middlebury, St. Michael's and Norwich Colleges

Baccalaureate College Equipment Acquisition

2 awards totaling \$56,000 to faculty at Lyndon and Castleton State Colleges

Minigrant (use of facilities) for faculty at UVM

7 awards totaling \$27,000 to faculty in Departments of Chemistry, Biology, Medical Lab and Radiation Sciences, Geology, Plant & Soil Sciences, Civil & Environmental Engineering,

DEPSCoR (Department of Defense)

5 preproposals selected to move forward for consideration by the Department of Defense for 2006 funding. Final award results pending from DOD.

SBIR Phase (0)

MicroStrain, Inc.

"Wireless Vibrating Wire Strain Gauge for Smart Civil Structures"

New England Research, Inc.

"Geophysical Monitoring in Heterogeneous Media: Integrated Self-Potential and Humidity Sensors"

MW NanoTek

"Super Capacitors for the Storage of Energy"

MicroBrightField, Inc.

"Software for automated high-level change detection and analysis of neurons in culture"

Research Proteins, Inc.

"Customizable Specimen Collection Tubes for Preservation of Sensitive Biological Samples"

Teralum LLC

"Field Deployable Handheld Trace Gas Spectrometer"

High Mowing Seeds

"Development of Hybrid Vegetable Varieties for Organic Production Systems"

JMAR Technologies, Inc.

"Systems Division, Oasis Scanning Boom Analytical Microscope"

iTec LLC

"Novel Method of Energy Efficient and Intense Heating"

Integrated Biomedical Systems

"Pre-impact fall detection in the elderly" ■

Van Houten *continued from page 2*

Council presents the Luther F Hackett Award to an individual or organization whose efforts have made a significant impact in fostering the growth of technology-based business in Vermont. Dr. Allen was recognized for his contributions made as State Project Director of the VT EPSCoR program. Many of Dr. Allen's friends, colleagues, family and former graduate students attended the celebration.

Future Directions

Competing for the next phase of EPSCoR support for Vermont, Dr. Van Houten states, "It is a privilege to have worked in the VT EPSCoR organization since 1986. Now as Director, I can look back at the strategic investments that VT EPSCoR has made with NSF funds in the science, engineering and technology

infrastructure of Vermont and see important changes that were catalyzed by these investments. Our small businesses, academic research, technology transfer and science teaching at the high school through college levels have all benefited enormously from VT EPSCoR. These achievements have been made through partnerships with the private sector, higher education, state and federal government agencies and we are grateful to many of you around the State for working with us."

"Our goals for the future are not only to continue to invest in Vermont scientists, teachers, entrepreneurs and facilities but also to work with our partners around the State to identify areas of excellence as well as areas in need of enhancement in order to keep Vermont EPSCoR's investments strategic and the best possible for the State of Vermont. We plan to make Vermont EPSCoR more visible and recognizable as a positive force for change in Vermont. You will be seeing much more of us in this New Year!" ■

Vermont EPSCoR Attends 18th National EPSCoR Conference

Vermont EPSCoR was pleased to attend the 18th National Conference in Rio Grande, Puerto Rico in September, 2005. Attendees included Dr. Judith Van Houten, State EPSCoR Director, Dr. Paul Hale, Executive Director, VT Technology Council, Lillian Gamache, Project Coordinator, and graduate student, Laura Hill (BIO). The focus of the conference was "Trajectory Toward Sustainable Scientific-based Success in EPSCoR Jurisdictions". Dr. Hale was an invited panelist addressing the topic of "The Importance of Competitive S&T and R&D Infrastructure to Foster Innovation and How EPSCoR Jurisdictions could attract more Entrepreneurs".

Ms. Laura Hill, a graduate student of Dr. Alison Brody, whose



research goals include the study to preserve critical habitats and prevention of the extinction of an endangered wetland species, was invited to present a poster on her work. ■

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

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Upcoming Events & Deadlines

SBR Phase (0)	Due date
Competition	March 2006
Please check www.uvm.edu for RFP guidelines after January 20, 2006.	
Congressional Visits	February 2006
VT State House Visit	March 2006
Grant Writing	June 2006
Workshop	

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