



Vermont Genetics Network Press Conference Held on March 6, 2006

On March 6, 2006 the Vermont Genetics Network (VGN) INBRE hosted a highly successful press conference at the University of Vermont where U.S. Senator Patrick Leahy formally announced the five year, \$16.5 Million grant awarded to VGN by the NCRR/NIH through the IDEA Networks of Biomedical Research Excellence (INBRE). This is the largest grant ever received by the University of Vermont. Dr. Judith Van Houten, George H. Perkins Professor of Biology, is Principal Investigator and Director of VGN.

A senior member of the Senate Appropriations Committee and longtime supporter of federal investments in medical research and public health, U.S. Senator Patrick Leahy praised the award and application, saying, "This grant illustrates the vitality of UVM's forward-thinking approach to research and development. Because the University has wisely adopted a collaborative approach to this work, Vermont's status as a leader in biomedical research will truly be a state-wide effort."

UVM President Daniel Mark Fogel added, "We have done a good deal of thinking about what it means to be a 21st century land grant institution, and VGN provides just the kind of services and outreach we feel UVM should be offering Vermont and Vermonters in the new millennium. Through the VGN's multi-faceted programs, in concert with our partner undergraduate institutions, we're having a significant impact on genetic research and science education in Vermont which, in turn, will benefit workforce development and job creation in the state." President Fogel acknowledged the other Vermont College representatives in attendance; President Dave Wolk from Castleton State College, President Barbara Murphy from Johnson State College, President Ron Liebowitz from Middlebury College, Provost Joseph Byrne from Norwich University and President Marc van der Heyden from Saint Michael's College.

Vermont Governor Jim Douglas attended the press conference and spoke about the impact VGN has made in the Vermont education system and how important it is to offer research opportunities to undergraduate students and faculty throughout the state of Vermont. Other speakers included Ms. Kevin Veller, Health and Disability Director, who spoke on behalf of U.S. Senator Jim Jeffords. Mr. Phil Fiermonte, Outreach Director, read a letter sent by U.S. Representative Bernie Sanders.

Dr. Barbara Alving, Acting Director of the National Center for Research Resources (NCRR) attended this special event. In addition, she met with VGN funded researchers from UVM as well as researchers from our Baccalaureate Partner Institutions (BPI's); Castleton State College, Johnson State College, Middlebury College, Norwich University and Saint Michael's College. It was the perfect opportunity to showcase the accomplishments made during the BRIN phase of VGN.

"Our grant benefits Vermont through its support of the baccalaureate institutions that play crucial roles in our higher education and workforce development, its creation of facilities at UVM and our partner institutions" said Dr. Judith Van Houten, "The grant also enhances

overall resources for biomedical research, which is key to many aspects of economic prosperity."

The VGN grant funding brings new resources and cutting edge technology to Vermont. Laboratory renovations, research equipment and supplies for the faculty and undergraduates at the network partner colleges are funded through the grant. In addition, the grant helps build biomedical research funding competitiveness at UVM by providing research support to early-career faculty and graduate students. This support can be instrumental in serving as a "pipeline" for young people to pursue health research careers.

New technologies that VGN is responsible for bringing to UVM and its partners include microarray and proteomics facilities and a bioinformatics core. The microarray facility provides a technology that allows researchers to look at as many as 15,000 genes simultaneously and zero in on specific ones, such as those involved in a disease process. The bioinformatics core is a constantly-evolving information network used to gather, store, analyze and integrate biological and genetic information gained from the microarray process and turn it into significant conclusions about how cells function. The proteomics facility makes mass spectrometry services available for high level protein analysis.

The technologies allow researchers at UVM and at the partner schools to do research they previously weren't able to undertake and become eligible for the increasing number of research grants that require access to these technologies.

In addition to the work undertaken at each of the partner institutions, VGN also has an active education outreach component. Once a week for eight weeks each semester, faculty and staff from UVM visit a classroom at an institution in Vermont and share the microarray and bioinformatics technologies with students and their professors. The team is currently visiting Castleton State College. To date, VGN has visited classrooms at Green Mountain College, Johnson State College, Middlebury College, Norwich University, and St. Michael's College.

"Bringing the capability of doing advanced biomedical research to undergraduates throughout the state is a key element of VGN," said Van Houten. "There's a good chance that, by exposing these young people to the challenge and excitement of this work, they'll be persuaded to continue with their studies and to become part of a highly skilled workforce in the state."



U.S. Senator
Patrick Leahy



UVM President
Daniel Fogel



NCRR Acting Director
Dr. Barbara Alving



Vermont Governor
Jim Douglas

VERMONT GENETICS NETWORK (VGN) INBRE

Director

Judith Van Houten, PhD

Outreach Core Director

Christopher Allen, PhD

Bioinformatics Core Director

Jeffrey Bond, PhD

Undergraduate Networking and Professional Development Director

Karen Lounsbury, PhD

Baccalaureate Partner Institutions & Coordinators

Castleton State College

Mark Fox, PhD

Johnson State College

Elizabeth Dolci, PhD

Middlebury College

Christopher Watters, PhD

Norwich University

Edward Carney, PhD

Saint Michael's College

John Van Houten, PhD

VGN Staff

Program Manager

Teri Hart

Business Manager

Nathan Besio

Administrative Assistant

Julie Paris

IT Specialist

Bryan Fleming

Vermont Genetics Network

University of Vermont

120A Marsh Life Science

Burlington, VT 05405

Phone (802) 656-4087

Fax (802) 656-0242

Email: Vermont.GeneticsNetwork@uvm.edu

Website: www.uvm.edu/~vgn

NCCR/NIH Grant #P20 RR16462

From the Director



Judith Van Houten, PhD

The Vermont Genetics Network (VGN) has finished its first year of funding in its INBRE phase. We are very proud of our accomplishments, which are all due to the hard work of our staff members and the faculty, whom we support. A highlight of the year was the Press Conference at which Senator Patrick Leahy announced our grant award. NCCR Acting Director Barbara Alving was present at the Press Conference, and afterwards, she visited with our faculty and staff for the entire day. It was a delight to showcase VGN talent to the Director.

We enter Year 2 of our funding in high gear. Our Microarray Facility is growing and supporting more research all the time. A Proteomics Facility focusing on Mass Spectrometry is becoming a reality, and our goal for Year 2 is to have not one but 2 new Mass Specs and a Facility Manager on hand to help you with your proteomics projects. Outreach into Vermont is a huge success, thanks to the diligence and hard work of our team. The Bioinformatics Core, which tends to work

behind the scenes, is moving along nicely with ERIS, our searchable experts list for Vermont.

Also in Year 2, we will support our Baccalaureate Partner Institution (BPI) faculty with project grants, pilot grants and renovations. We have a record number of students working at our BPIs this summer with VGN support. Year 2 is the year that will see the first plans for building and sustaining a culture of research at our BPIs. To facilitate this on-going effort of culture-building, we are featuring two experts in integration of research and teaching at our August 16 retreat.

In Year 2, we will support a record number of graduate students at UVM, and the set up funding of two new faculty members in Animal Science and in Biology.

The VGN is more than the sum of its individual parts, and we must continually thank the dedicated members of VGN's staff and faculty who make all of these parts work. We are most definitely impacting research infrastructure in our State, and we are making the University of Vermont an accessible place for all Vermonters to facilitate their research. We know that you value VGN because we have an astounding 100% compliance response rate for our surveys and reporting that are necessary for our annual progress assessment by the NIH. Thank you for that response, and thank you for your hard work on Year 1 that gives us great momentum for Year 2.

BIOGRAPHY

Dr. Judith Van Houten, George H. Perkins Professor of Biology at the University of Vermont, is the Principal Investigator of the Vermont Genetics Network (VGN), a recently awarded \$16.5 million program funded by the National Institutes of Health (NIH). This award represents the largest single investigator grant ever received at the University of Vermont. 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 collaboration among the University of Vermont, Castleton State College, Johnson State College, Middlebury College, Norwich University and Saint Michael's College to build critical mass and infrastructure in the broad area of genetics and Biomedical Science.

Dr. Van Houten is also the State Director and Principal Investigator of the Vermont National Science Foundation (NSF) EPSCoR grant that builds science and engineering infrastructure in Vermont. Dr. Van Houten serves 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.

In addition, Dr. Van Houten is the Director of the Hughes Endeavor for Life Science Excellence (HELIX) 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 exposing them to as many opportunities as possible in the sciences.

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 small 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.

Professor Van Houten's extensive experience and broad knowledge of our state's research assets give us confidence that VGN will continue to play a key role in the development of Vermont's research infrastructure.

Networking and Professional Development Update

by Karen Lounsbury, PhD

The past year included several activities to bolster networking and professional development for students within the Vermont Genetics Network (VGN). Our annual Career Day was held in April at the DoubleTree Hotel in South Burlington. Students and their advisors from Castleton State College, Johnson State College, Middlebury College, Norwich University, Saint Michael's College and the University of Vermont were invited to attend. Students that received VGN funding in year one of INBRE were required to present posters describing their research. Students Melanie Lussier from Johnson State College and Adam Swick from Middlebury College won prizes for their posters. The following panelists were invited to speak to the students about their careers and the paths that led them to their current positions

The panelists were available to speak with the students after the formal panel presentation to answer questions and give advice about career choices.

Eric Buel, PhD

Laboratory Director
Vermont Forensic Laboratory

Phelan Fretz, PhD

Executive Director
ECHO at the Leahy Center for
Lake Champlain

Gerry Herrera, PhD

VP, Research & Development
Med Associates, Inc.

Diane Jaworski, PhD

Associate Professor
Anatomy and Neurobiology
University of Vermont

A new approach to undergraduate career development was also undertaken in year one that involved career panel presentations to science undergraduates at the Baccalaureate Partner Institutions (BPIs). These panels were held in addition to the panel presented at the annual Career Day. Panelist volunteers were selected to expose students to a diverse set of career positions and paths ranging from early career students and technicians to advanced executives and professors, and, when possible, panelists also included alumni from the participating institution.

The first panel was held at Castleton State College. Thanks to the efforts of Dr. Mark Fox, the Castleton BPI Coordinator, Krystle Danforth, a recent Castleton Biology graduate now working for Green Mountain Antibodies in Burlington, was invited to speak as part of the

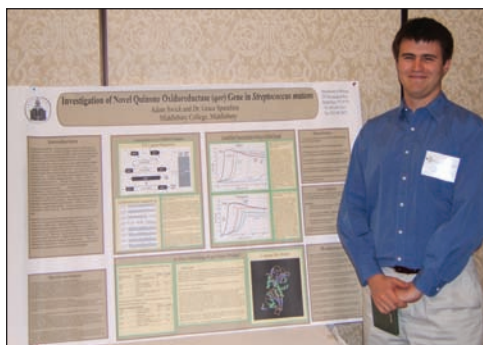
three member panel. The other panelists included Dr. Karen Lounsbury, UVM Associate Professor of Pharmacology and Scott Tighe, Senior Lab Technician for the UVM Microarray and Flow Cytometry facilities. After the panelists shared their career paths, the open discussion centered on how to best prepare for future careers, including taking standardized tests and choosing summer jobs to improve resumes. Students left with a look into future possibilities of what can be done with a science background.

An evening panel was scheduled for Norwich University and was hosted by BPI Coordinator Dr. Ed Carney and coordinated by Kathy McGuckin of the Norwich Career Development Center. The four-member panel had a variety of careers including academic and entrepreneurial interests. The panel consisted of Norwich alumni Dr. Kenneth Longo, a scientist at Elixer Pharmaceuticals in Cambridge, MA, Bill Parker, CEO of Diffraction Limited in Waitsfield, VT, Dr. Michael Sinclair, former Norwich faculty member and founder of Microcheck in Northfield, VT and Dr. Karen Lounsbury. After hearing the twists and turns the career paths of the panelists took, the students came away with a strong sense that there might not be a straight track leading to their ultimate career.

At Johnson State College, alumna Julie Nicole, now a University of Vermont medical student, served on the panel along with Dr. Dain LaRoche, Assistant Professor of Health Sciences at Johnson State College. This group of students was grateful that the panel came to speak at their institution because Johnson is located approximately one hour north of the University of Vermont and it is difficult for students to attend VGN related functions in the Burlington area.

The Saint Michael's College panelists included John Berino, Saint Michael's alumni and Manager of Occupational and Environmental Health at Fletcher Allen Healthcare, Dr. Karen Lounsbury and Scott Tighe. The students appreciated hearing from the panelists particularly at this crucial time when they are beginning to think about what direction they want to take with their own careers.

Several common threads were apparent throughout all the panels including the advice to create career paths based on personal interests and talents. Also consistent was the reassuring doctrine that there are many paths to success, and rarely are they straightforward. Overall, the site-specific career panels were a great success with lots of positive feedback. We intend to continue the panels next year with the goal of bringing the panels to other colleges throughout the state of Vermont.



Clockwise from left, Saint Michael's College student, Rebecca Drapp, describes her VGN funded research to other Career Day attendees; Middlebury College student Adam Swick, won a prize for his poster describing his VGN funded research; Panelists at the

5th Annual VGN Career Day, Dr. Karen Lounsbury, Director of the VGN Networking and Professional Development Program, Dr. Eric Buel, Laboratory Director of the VT Forensic Laboratory, Dr. Gerry Herrera, VP of Research & Development at Med Associates, Inc., Dr. Diane Jaworski, Associate Professor of Anatomy & Neurobiology at the University of Vermont, and Dr. Phelan Fretz, Executive Director of ECHO at the Leahy Center for Lake Champlain



Exchange of Regional Information for Scientists

by Jeffrey Bond, PhD

The ERIS project originated with a request, expressed by representatives of Vermont colleges, for a list of regional scientific experts. Dr. Judith Van Houten proposed development of a more general resource, one that we hope will also provide information about regional events, funding opportunities, equipment, services, research activities and infrastructure development efforts that may be of interest to Vermont scientists. The proposal included a strategy for making ERIS last beyond the funding period.

Currently ERIS consists of two services: a statewide email distribution list and a tool for managing and updating bibliographic citations. Bryan Fleming designed and implemented the ERIS software. He is working with Dr. Janet Murray, VGN Outreach Coordinator, who will interface with faculty and students at Vermont colleges to match ERIS services with their needs.

ERIS is not really a database. Information about expertise can be time consuming to collect and changes quickly since experts enter and leave the region. The goal underlying ERIS is to develop resources that integrate and facilitate exchange of information about expertise that is both already available in other databases and up to date.

The first step was to develop a statewide email distribution list. Our experience with lists of email addresses is that many of emails bounce back and many people are missing from the list. Instead of relying on the VGN to manage such a list, ERIS sees, for example,

Email Address(es): Jeffrey.Bond@uvm.edu

Title: Research Associate Prof

Department: Microbio & Molec Genetics in the UVM People Directory. ERIS email distributions specify departments, not people

(Table). ERIS is used to announce regional events and funding opportunities, announcements that are targeted based on affiliation and job title.

The second step is to increase ERIS' resolution with respect to expertise. As VGN Director Dr. Judith Van Houten points out, it is not good enough to know that experts are biologists – “we need to know he/she can tell what kind of bear it is from its scat”. This step in

development, currently in progress, relies on two ideas: experts write documents, and informatics tools allow indexing of documents based on a controlled vocabulary. The MeSH vocabulary, used to index PubMed entries, contributes to the success of PubMed because it knows about synonyms and hyponyms (for example, Hodgkins Disease is a kind of cancer).

We started with bibliographic citation databases that associate publications with people and keywords. Internet robots implemented by Dr. Rama Kocherlakota and Bryan Fleming search bibliographic citation databases with personal queries,

for example “Bond JP”[Author]. When the robot encounters a new database entry it prompts me to tell it whether the publication is really mine. If so, the publication is entered in my public publication database. I am also asked if the keywords describe my expertise (Figure). I published with Dr. Chris Francklyn but with respect to histidine-tRNA ligase I am along for the ride. We will expand ERIS to include other documents, for example, web pages and course syllabi that also reflect expertise. For more information contact: Bryan.Fleming@uvm.edu or Janet.Murray@uvm.edu



The 5th Annual VGN Retreat

DoubleTree Hotel
South Burlington, VT
August 16, 2006
8:30 a.m.–3:00 p.m.

Guest Speakers

Maria Pellegrini, PhD
Vice President for Research
Brandeis University

Donald Cronkite, PhD
Professor of Biology
Hope College

Building a Culture of Research

PowerPoint and Poster Presentations
by VGN funded Faculty and Students



Dr. Janet Murray &
Professor William Barnes

VGN Outreach Team Updates

In January 2006 Dr. Janet Murray was hired as the VGN Outreach Coordinator and Research Associate in the biology department. Dr. Murray received her BS at the University of New Hampshire in Biochemistry and her PhD at the University of Vermont in Microbiology and Molecular Genetics. Dr. Murray has research experience in many areas including yeast and human genetics and has demonstrated a passion for teaching. She has been participating in the delivery of the microarray module and focusing on the delivery of the bioinformatics associated with microarray technology. In addition, Dr. Murray will be instrumental in the development and coordination of Proteomics, Bioinformatics and other educational modules that will be customized for the receiving institutions. In talking to Dr. Murray she said “I am very excited about being a member of such a passionate and incredibly knowledgeable team of individuals. This position allows me the opportunity to interact with students and faculty from all over the state. I have met and worked with many wonderful individuals and look forward to more interactions in the future. The combination of teaching, curriculum development and professional interactions associated with being the VGN Outreach Coordinator makes this a unique and exciting position.”

The VGN Bioinformatics Core and Outreach Team have been hosting Professor William Barnes on sabbatical from Clarion College in western Pennsylvania. Dr. Barnes joined the outreach team in the spring of 2006 participating in the microarray module and learning this technology for delivery in western Pennsylvania. Dr. Barnes' major focus has been the development of the bioinformatics module resulting in an online tutorial to be beta tested at UVM in the fall of 2006. The collaboration of VGN outreach with Dr. Barnes has been more than successful. His excitement about our projects, his development of the bioinformatics module and his passion for teaching have no doubt lead to a long term relationship between VGN and Dr. Barnes with the result being the expansion of VGN outreach tools to western Pennsylvania.

Opposite Page, Timothy Hunter, Director of the UVM DNA Facility where the VGN Microarray Facility is located, and Scott Tighe, Senior Lab/Research Technician, assist researchers with their microarray experiments

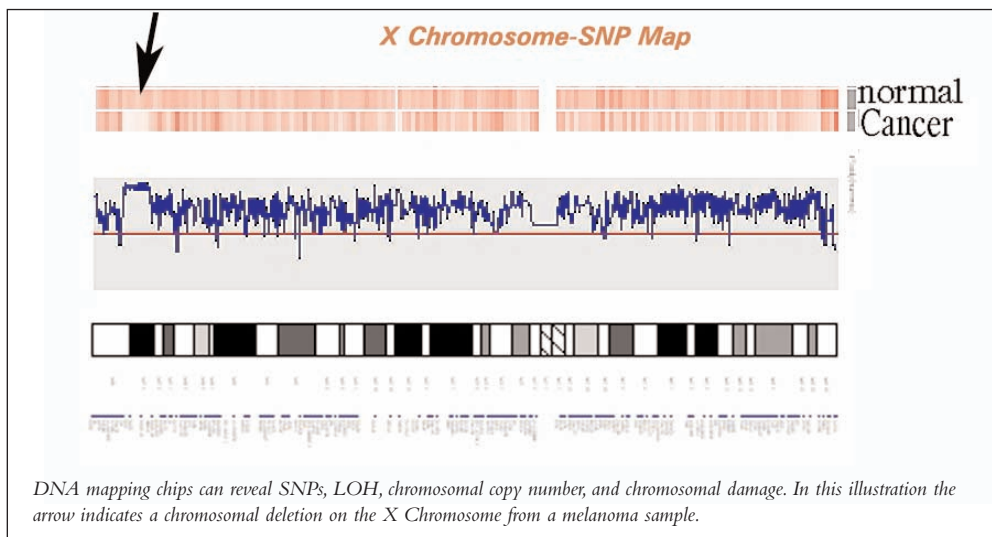
UVM/VGN Microarray Facility

by Tim Hunter and Scott Tighe

The Microarray Core Facility has become a well established laboratory with a large number of users both here at the University of Vermont (UVM) and within our Baccalaureate Partner Institutions (BPI's). The facility is located in 305 HSRF and is now in its 4th year of operation. The lab uses the Affymetrix based GeneChip system for microarray analysis, the NanoDrop Spectrophotometer for critical nucleic acid quantitation, and the Agilent 2100 Bioanalyzer for RNA, DNA, and protein quality assessment. The facility is maintained by two experienced core staff and usage has continued to grow each year along with the development and implementation of several new services. Presently, the most common requested service is still global eukaryotic gene expression profiling.

The facility can now offer expression analysis for prokaryotic organism. This service was brought online in response to the microarray needs of Dr. Grace Spatafora from Middlebury College. Dr. Spatafora studies *Streptococcus* mutants as a model organism to better understand the mechanisms of oral pathogens and their role in plaque formation and dental cavities. The facility has optimized the use of laser capture microdissection (LCM) to isolate small amounts of target RNA (≤ 20 ng) for microarray analysis. In a recent project for Dr. Hyman Muss, LCM derived cancer cells from breast cancer biopsies were compared to LCM generated stroma and breast reduction samples using Human U133A 2.0 GeneChips. This project required new protocols that enabled amplification of small target amounts of 20 ng of RNA or less (as compared to the traditional 2ug target preparation) and modifications in the LCM procedure to obtain acceptable RNA quality.

The facility has recently started to offer the use of the 500K DNA mapping chips, exon, and DNA tiling arrays. The 500K DNA map-



ping chips allow investigators to correlate expression data with chromosomal copy numbers, detect single nucleotide polymorphisms, and loss of heterozygosity. This procedure uses two GeneChips that each contain ~250,000 SNPs and when used in combination this approach will allow for the detection of 500,000 genotypes for human studies. The facility can now offer exon arrays for researchers interested in human, rat, and mouse. The exon array chip analysis allows researchers to simultaneously detect differentially expressed genes and alternatively spliced transcripts. This will likely replace the standard gene expression arrays over the next few years and the facility staff are currently investigating this utility. The Tiling arrays (or promoter arrays) are also available through the facility and are well suited for ChIP-chip analysis of chromatin structure and transcriptional regulation.

This fall marks the 4th anniversary of operation of the Microarray Facility. An open house was held on June 16th, 2006 in combination with the VCC DNA Analysis Facilities' 10th anniversary. The day was filled with seminars, tutorials, tours, and discussion with facility patrons regarding future usage and studies. The seminar entitled "A Systems Biology Discussion-Genomes to Bases" was co-presented by Jeff Fitzgerald and Dr. Rebecca Enigk from Affymetrix and gave an overview of the new applications available with the newest evolution of GeneChips. The noon seminar "Application of Current and Emerging High Throughput Genomics and Proteomics Technologies as a Shared Research Resources" was presented by George Grills, Director of Core Facilities and Technology Assessment from Cornell University. This seminar was well attended and provided insight on emerging technologies. Over one hundred people filtered through the facilities and many door prizes were awarded at the end of the day.



*VGN Microarray Outreach Team
Top – Pat Reed, PhD; Middle, Scott Tighe
and Ahmad Chaudhry, PhD; Bottom,
Janet Murray, PhD and Tim Hunter*

Microarray Outreach

by Janet Murray, PhD

The goal of the VGN Microarray Outreach project is to expose undergraduates in the state of Vermont to microarray technology using hands-on laboratory experiences. In this module, students learn how gene expression in yeast is changed after exposure of yeast to dimethyl sulfoxide (DMSO), a common environmental contaminant and solvent. The experiment and data analysis are performed in conjunction with the Microarray Core Facility and the Bioinformatics Core. Through this experience we hope to increase the skills of undergraduate science students within the state and hope that these additional skills help them in their future career development.

Delivery of the microarray module to Norwich University and Castleton State College in the 2005/2006 academic year, completed the initial dissemination of microarray

Microarray Outreach – Continued on page 6



Microarray Outreach— Continued from page 5

technology to all the Vermont Genetic Network (VGN) - Baccalaureate Partner Institutes (BPIs). These efforts were initiated in the Spring of 2004 through funding of VGN by the BRIN program of the NCRR/NIH and have continued with the 5 year grant awarded to VGN in 2005 by the INBRE program of the NCRR/NIH.

Anticipating the realization of the goal of delivery of the microarray module at all the BPIs, delivery of this technology to Green Mountain College, the first non-BPI site, was completed in the fall 2005. Currently, other non-BPI institutes are being target for delivery including Lyndon State College where we will

be introducing this module in the fall of 2006 and Marlboro College tentatively scheduled for delivery in the Spring of 2007.

In the spring of 2006 the microarray module was delivered for the second time at Johnson State College under the direction of Professor Elizabeth Dolci in collaboration with the VGN outreach team. This was the first site where the microarray laboratory module was reintroduced and where this technology is on its way to becoming a permanent part of the curriculum.

Many other institutes are interested in repeating the microarray experience including Saint Michael's College and Middlebury College slated for delivery in the Spring of 2007 as well as Norwich University and Green

Mountain College tentatively scheduled for the fall of 2007.

The dissemination of the microarray module has provided wonderful interactions with students across the state and collaborations and networks with faculty from various colleges. The success of this module is exciting and has provided us with an amazing template for the development and delivery of both bioinformatics and proteomics modules that will be offered by VGN outreach.

Left to Right, Dr. Lara Carlson works with students at Castleton State College on an outreach microarray experiment; Tim Hunter, VGN microarray Outreach team member, instructs a class at Norwich University; Students work on an outreach microarray experiment at Middlebury College



Vermont Young Investigators Honored in Washington, DC

Young investigators from around the country were honored at an annual dinner hosted by the Coalition of EPSCoR/IDeA states Washington, DC in February 2006.

Vermont's delegation included Dr. Dain LaRoche, Assistant Professor at Johnson State College, and Paula Mouser, a doctoral candidate working with Dr. Donna Rizzo in the University of Vermont (UVM) Department of Civil and Environmental Engineering. Ms. Mouser earned her Ph.D. from UVM in May 2006 and is currently doing post-doctoral research in environmental microbiology at UMASS Amherst. Dr. Judith Van Houten, State Director of the INBRE and VT EPSCoR programs, introduced both scientists at the event.

Dr. LaRoche's current research project at Johnson State College is dedicated to studying the effects of aging and physical activity on muscle strength in older women. The focus of the project is to determine how much of the decline in muscle function seen with aging is due to the aging process itself and how much is due to a decrease in physical activity. The long-term goal is to test the effectiveness of resistance training programs to enhance reac-

tion time, muscle strength, and muscle power in older adults in the hopes of improving their quality of life.

Dr. LaRoche benefited from the Vermont Genetics Network funding through the Vermont INBRE grant. He has been able to equip and supply his laboratory and carry out research with summer support and release time during the academic year. His work has attracted the interest of students, who are inspired to go on to biomedical careers.

As a graduate student at UVM, Ms. Mouser worked on an interdisciplinary project to

improve parameter estimation, site characterization, and long-term monitoring techniques for contaminated aquifers using multiple types data. She incorporated genome-based information on bacteria and traditional water chemistry data of subsurface waters, with computational methods such as geostatistics and artificial neural networks to better detect and track landfill leachate into groundwater and aquifers in New York.

Ms. Mouser benefited from Vermont EPSCoR's focus on Integrated Research on Water in the Environment (iRWE) initiative, which brought together scientists and engineers from across the campus and State in order to tackle groundwater problems of importance to the State. Ms. Mouser created a truly interdisciplinary project, and benefited from working with iRWE faculty in biology, engineering and geology. She demonstrated how powerful and innovative interdisciplinary research can be.

Over 22 young investigators from EPSCoR/IDeA states were in attendance for the dinner which also featured Kathleen Kingscott, Director of Worldwide Innovation Policy, from the IBM Corporation.

Dr. Royce Engstrom, Chair of the EPSCoR/IDeA Coalition invited young researchers who benefited from EPSCoR or IDeA support as a way "of demonstrating the new research talent and infrastructure development that policy-makers understand".



Ms. Mouser shown seated front row, second from the left and Dr. LaRoche shown standing second row, first on the left along with several other young investigators

VGN INBRE Awards Research Funding to Faculty and Students at UVM and the Baccalaureate Partner Institutions

*Castleton State College • Johnson State College • Middlebury College
Norwich University • Saint Michael's College*

FACULTY PILOT GRANTS

- In 2005 **13** awards totaling **\$736,950** were made to faculty members at all five partner institutions.
- In 2006 **11** awards totaling **\$709,450** were made to faculty members at all five partner institutions.

FACULTY PILOT PROJECT GRANTS

- In 2005 **2** awards totaling **\$24,800** were made to faculty members at Middlebury College.
- In 2006 **4** awards totaling **\$56,300** were made to faculty members at Middlebury College, Norwich University, and Saint Michael's College.

GRADUATE STUDENT ASSISTANTSHIPS

- In 2005 **6** awards totaling **\$210,000** were made to faculty members for graduate students at the University of Vermont.
- In 2006 **4** awards totaling **\$40,000** were made to faculty members for graduate students at the University of Vermont.

UNDERGRADUATE STUDENT RESEARCH GRANTS

- In 2005 **10** awards totaling **\$19,050** were made to undergraduate students at Johnson State College, Middlebury College, and Saint Michael's College.
- In 2006 **9** awards totaling **\$40,500** were made to undergraduate students at Johnson State College, Middlebury College, and Saint Michael's College.

For a detailed listing of VGN funded researchers, please visit our website at: www.uvm.edu/~vgn and click on "VGN Funded Researchers".

VGN Press Conference



Continued from Page 1

Front Row (L-R) Provost Joseph Byrne, Norwich University, VGN Director Dr. Judith Van Houten, US Senator Patrick Leahy, NCRR Acting Director Dr. Barbara Irving; Middle Row (L-R) Vermont Governor Jim Douglas, President Barbara Murphy, Johnson State College, President Daniel Fogel, University of Vermont, President Marc vanderHeyden, Saint Michael's College; Top Row (L-R) President Ron Liebowitz, Middlebury College, President Dave Wolk, Castleton State College

VGN Outreach Trip to the Darwin Exhibit in New York City

Members of the Outreach team as well as students and faculty from Norwich University and Johnson State College traveled to the Big Apple to tour the Darwin Exhibit at the American Museum of Natural History. We were given a guided tour of the exhibit and viewed the IMAX movie Galapagos.

Another highlight of the trip was a tour of the laboratories in the Institute for Comparative Genomics at the American Museum of Natural History. UVM graduate alumni and Assistant Curator Susan Perkins Ph.D. hosted our group and led the tour of the genomics laboratories and sequencing core. The Institute for Comparative Genomics is developing the world's largest species tissue repository. Julie Feinstein the Collection Manager led our tour of the Ambrose Monell Cryo Collection frozen tissue repository.

The attendees included 11 students and 2 faculty from Johnson State College, 14 students and 2 faculty from Norwich University as well as 4 outreach team members. The trip also included separately purchased tickets to the Broadway show Rent which was a great social event for the students most of whom had never been to the city of New York.

The reaction from the students was overwhelmingly positive...

"It was a great learning experience and it was wonderful to see the lab, Museum and Rent."

Breanne (Breezy) Muehler, Johnson State College

"This was such a great opportunity to see what the Bio field has to offer."

Jonathan Nieto, Norwich University

"Thank you for the trip to New York it was a great opportunity and an enlightening experience!"

Heather St. Martin, Norwich University

"Thanks a bunch for this terrific trip. I loved the lab tours, show and IMAX. What a great opportunity for us!"

Lynz Parker, Norwich University



RETURN SERVICE REQUESTED

University of Vermont
120A Marsh Life Science Building
Burlington, Vermont 05405-0086

Vermont Genetics Network



Pre-sort Std.
U.S. Postage
PAID
Permit No. 156
Burlington, VT