

COLLEGE OF

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SCIENCE

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VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY



Annual Report  
2005-2006

# College of Science Annual Report 2005-2006

*"Big science, big solutions" reflects the lofty goals set and achieved by the College of Science for 2005-06. Faculty, student, and staff accomplishments highlight the College as a key contributor to the fulfillment of Virginia Tech's goals.*

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# Introduction

The College of Science completed its third year with the reappointment of Dean Lay Nam Chang, whose vision and leadership have shaped the College's development. Dean Chang's reappointment resulted from a national search conducted during spring 2006.

This report is organized by the activities of our faculty and students in the domains of Discovery, Learning, and Engagement. Individual achievements are briefly described in the Spotlights section. Alumni and development activities follow, with the final section of the report focusing on diversity initiatives.

## Strategic Initiatives

### Cluster Hiring

The College's cluster committee, working closely with departmental, satellite search committees, had an active year. Dozens of applications were reviewed from the hundreds received for cluster positions advertised across the College. The department and cluster committees were successful in recruiting 14 new faculty who will join Virginia Tech in 2006-07.

### Institute for Advanced Study

The Institute for Advanced Study at Virginia Tech, established by the College of Science, was the site for regular cluster committee meetings during 2005-06.

Professor Richard Blankenbecler, Stanford University, was named the first Fellow of the Institute for Advanced Study and is working with Dean Chang and COS faculty members on the development of innovative immunological approaches to cancer treatment.

Planning was implemented for focused research teams to be appointed to the Institute for 2006-07 to develop collaborative research proposals.

### Research Conferences and Symposia to Promote Targeted Research

The College of Science sponsored two research conferences—the Virginia Tech Structural Biology symposium and the Virginia Tech Conference on Innate Immunity—on campus during 2005-06, each of which highlighted targeted areas of research that have guided cluster hiring. Such conferences are one of the college's strategies for facilitating collaboration within and across departments, as well as promoting connections to researchers from other universities. Planning for conferences in the coming year is in progress.

### Intellectual Property Pre Law

Virginia Tech and the University of Richmond announced a new joint degree program that will enable students to earn both a Bachelor of Science degree and a law degree in as little as six years' time, thus eliminating up to two years from their total time in school. The program is a partnership between the College of Science at Virginia Tech and the T.C. Williams School of Law at the

University of Richmond. With planning and careful coordination of courses, students who want to take advantage of this partnership can potentially complete their coursework at Virginia Tech in three years and move directly into law school, completing their J.D. in another three years. Students who complete the program will have a specialization in intellectual property law, currently one of the fastest growing fields in law.



Provost McNamee, Dean Smolla, Dean Chang, and President Steger approved the IP Law joint degree program with digital thumbprints using technology provided by Identification International Inc., located in Virginia Tech's Corporate Research Center.

## Leadership in the University Institutes

The College of Science is involved in the development of the three major institutes, and with the proper support, can achieve the college and university goals. The College played a significant role in the national search for a Director for the Institute for Biomedical and Public Health Sciences (IBPHS). Cluster hiring and research collaborations have focused on the identified priorities of IBPHS, including Infectious Diseases and, via the Developmental Science Initiative (DSI), the Food, Nutrition, and Health cluster. Faculty members associated with DSI have established Virginia

Tech-Community Partners, located in the Roanoke Higher Education Center. VT-CP received a grant from the Carilion Biomedical Institute to partner with the Jefferson College of Health Sciences to engage with a range of community agencies and organizations (e.g., Child Health Investment Partnership of Roanoke Valley, 4-H, Roanoke City and County Schools, Carilion Roanoke Memorial Hospital) focused on healthy families. In addition, faculty members in the College also received start up research grants funded by IBPHS, including Richard Winett with the Center for Research in Health Behavior.

The College has been equally active with the Institute for Critical Technology and Applied Science (ICTAS). The Center for Self-Assembly and Nanodevices (CSAND)—directed by Harry Dorn, Chemistry—has taken a leading role in the development of nanoscience and technology. ICTAS provided cost-sharing for proposals submitted by Tim Long, Chemistry, and Harry Dorn, Chemistry. The College is involved in the acquisition of research equipment to promote interdisciplinary research that will be located in ICTAS A, including TEM, SIMS, Laser Ablation, and the development of the NMR lab. Notably, the College played a prominent role in the decision of Oxford Diffraction, Inc. to locate its North American headquarters in the Corporate Research Center.

Dean Chang has been principally involved in the development of the third institute, which will focus on policy and research that includes science and technology impacts on society. The College envisions the establishment of research teams that will participate in the Institute's development.

## Changes 2005-06

In addition to the reappointment of Dean Chang, the College of Science had several notable changes during the past year.

- George Crofts, Senior Associate Dean, retired in January 2006. For his outstanding service to Virginia Tech since 1970, he was honored with the title "Senior Associate Dean Emeritus" by the Virginia Tech Board of Visitors.
- Jack Finney was appointed Associate Dean for Administrative and Faculty Affairs. Finney served as chair of the Department of Psychology for the past 10 years.
- Robin Jackson was appointed Director of Alumni Relations. Jackson was previously assistant director of alumni relations for the College of Architecture and Urban Studies and the Pamplin College of Business.
- Erik Kahill was appointed Assistant Director of Development for the College of Science. Prior to joining the college, he worked for Virginia Tech's development research office. Erik has recently accepted a new position at the University of Florida and will be leaving Virginia Tech.
- Wanda Sparks joined the college as a development associate in September 2005. She has been at Virginia Tech since 1986. Before joining the college, Wanda worked in Newman Library and Fleet Services.
- Amy Self worked at the Virginia Tech Foundation since 2004 and moved to the college as an administrative and fiscal support specialist in March 2006.
- Mikhelle Taylor joined the college as an executive secretary in November 2005. She previously was a staff member at the University of Arkansas.
- There were also changes in departmental leadership. Geoff Vining, Statistics, returned to the faculty after serving as department head; Eric Smith will serve as Interim Head for 2006-07. Royce Zia, Physics, also returned to the faculty after serving as department chair. Beate Schmittmann has been appointed chair of physics. Robert Stephens has been appointed chair of psychology, replacing Jack Finney.

# Discovery

The research mission of the College of Science is to conduct scientific research on the causes of natural and social phenomena that underlie problems and issues important to the people of the state, nation and world. A set of integrative initiatives has been identified and launched for achieving world-class excellence in discovery: nanoscale science applied to materials and biological systems, computational science, infectious diseases, and developmental science across the lifespan. These initiatives necessarily involve participation and input from all departments within the college and build on existing core strengths in the College of Science. Through these and emerging initiatives, the College of Science is creating an interdisciplinary research environment that is unique among top-tier research universities and establishing Virginia Tech as one of the premier universities in the country recognized for its research and scholarship.

Faculty members are the key to accomplishing this goal as the reputation and accomplishments of the college and university depend on their research and scholarly activity. In FY06, faculty from the College of Science published over 800 books, book chapters, and articles in peer-reviewed journals, gave 392 invited seminars and 359 presentations at professional meetings and were awarded nine patents. The College of Science is in a prime position to advance the university as we have established world-renowned leaders in research and we are recruiting the stars of tomorrow. Duncan Porter (Biological Sciences) was selected for a Lifetime Achievement in Science Award by the Science Museum of Virginia.

Fred Read (Geosciences) was selected by the Eastern Section of the American Association of Petroleum Geologists as the recipient of the A.I. Levorsen Award for "the best paper, with particular emphasis on creative thinking toward new ideas in exploration." Tim Long (Chemistry) was appointed a member of a National Academy of Sciences Committee assessing the status of U.S. Chemistry in the world. Michal Kowalewski (Geosciences) was awarded the 2005 Charles Schuchert Award and elected Fellow to the Paleontological Society. Nancy Lutz (Economics) received the National Science Foundation Director's Award for Collaborative Integration for her contributions to the Human and Social Dynamics Special Initiative. The Department of Geosciences was the only department in the country to have two members of its faculty elected as Fellows of the American Geophysical Union in the same year, Michael Hochella and Robert Bodnar. Ignacio Moore (Biological Sciences) and Diego Troya (Chemistry) were both awarded prestigious NSF CAREER awards.

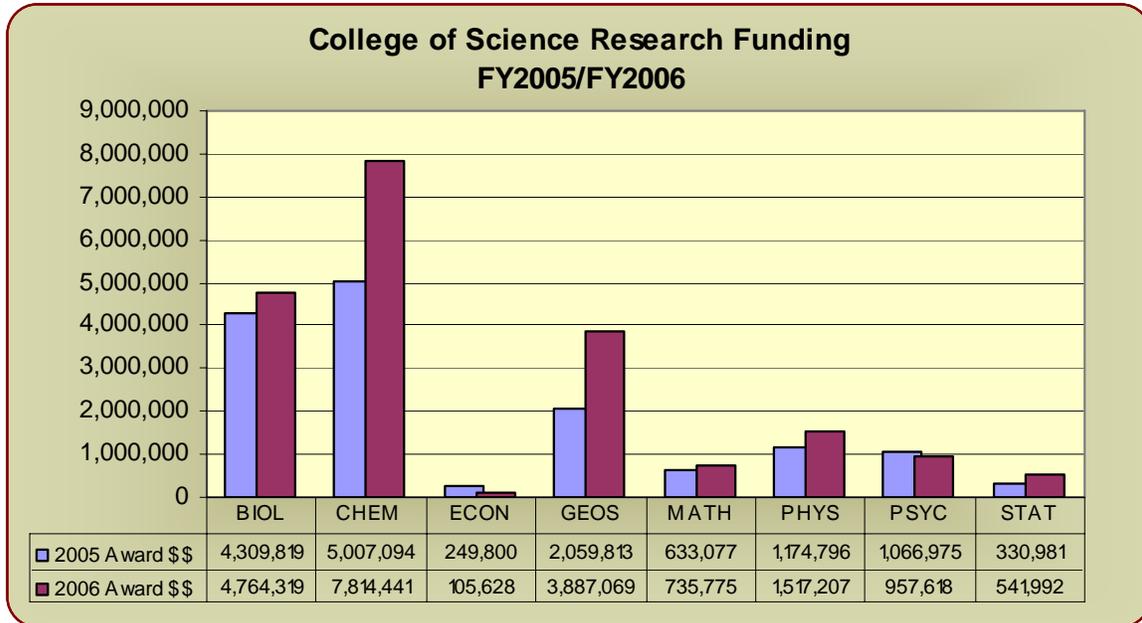
## DEPARTMENTAL SPOTLIGHTS

The Department of Chemistry ranked among the Top 30 chemistry departments nationwide in terms of academic research expenditures for the year 2003 by the National Science Foundation.

The Department of Psychology's clinical psychology Ph.D. program was ranked seventh in research productivity in a recent study of 157 such programs across the nation. Tom Ollendick, UDP, was ranked the 10<sup>th</sup> most frequently published clinical faculty member among the institutions.

Research funding in the College of Science increased significantly during FY06 with over \$20M in awards in FY06, compared with \$15M in FY05, a **37%** increase in funding. The total number of awards increased from 180 in FY05 to 199 in FY06 and there was a **24%** increase in the average size of the award. Two departments in

particular, Geosciences and Chemistry, each almost doubled their research funding. In addition, the Department of Chemistry was ranked among the top 30 chemistry departments nationwide in terms of academic research expenditures for the year 2003 by the National Science Foundation (NSF).



The College of Science will continue to explore and pursue new opportunities for funding, especially those involving interdisciplinary research. The Chemistry Department is the lead department for a Department of Defense MURI award on “Macromolecular Architecture for Performance” with Cornell and Penn State as the other institutional participants. A \$2.3M grant from DARPA was awarded to the Department of Mathematics’ ICAM team led by Terry Herdman. Harry

Dorn and Harry Gibson (Chemistry) were awarded a \$2M NSF NIRT grant to use nanotechnology in medical imaging applications. The Institute for Advanced Studies will provide a mechanism to foster preparation of further proposals of such magnitude in collaboration with ICTAS and IBPHS. In addition, the college will participate in building grant writing support teams within its staff, and departments will seek ways to provide release time for faculty willing to lead large proposals.

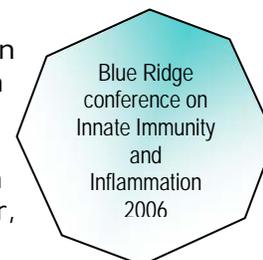
The College of Science supported three research conferences on campus during 2005-06 that attracted participants from all over the world and highlighted areas of research that have guided cluster hiring. Such conferences are one of the college's strategies for facilitating collaboration within and across departments, as well as promoting connections to researchers from other universities.

- The Department of Biological Sciences hosted the First Virginia Tech Structural Biology Symposium on March 31<sup>st</sup> and April 1<sup>st</sup>, 2006. Carla Finkelstein (Biological Sciences), a 2005 hire in the nanoscience cluster, organized the conference. More than 150 people from Virginia Tech and neighboring colleges and universities attended the symposium which



featured two internationally-known keynote speakers, Professor Andrew Bohm (Tufts University) and Professor Rolf Hilgenfeld (University of Lubeck). Professor Hilgenfeld is renowned for his work in solving the structure of the SARS virus. The symposium was sponsored in part by the College of Science, the Department of Biological Sciences, the Department of Biochemistry and Oxford Diffraction, Ltd.

- A regional conference on Innate Immunity and Inflammation was organized by Liwu Li (Biological Sciences), a 2005 hire in the cluster area of Infectious Diseases. The keynote speaker was Lewis Lanier, President of the American Association of Immunologists. The conference also received accolades from representatives of pharmaceutical industries including Pfizer, GSK and Eli Lilly.



- The Department of Economics hosted its First Symposium on Experimental Reasoning, Reliability, Objectivity and Rationality in Science, Statistics, and Modeling, *ERROR06*, on June 1-5, 2006.

The College of Science is playing the leading role in establishing a partnership on "Drug Discovery" with Georgetown University in the NCR region. Paul Carlier (Chemistry) is the chair of a task force with VT members Jill Sible (Biological Sciences), Rahul Kulkarni (Physics) and Liwu Li (Biological Sciences). The partnership will explore the identification and characterization of viable cellular drug targets designing potential drugs for treatment of diseases such as Alzheimer's, atherosclerosis, and cancer.

The College of Science supports diversity including the participation and advancement of women in academic science careers. Twenty-one female faculty within the college are tenured, and six hold tenure-track appointments. The college actively participates in AdvanceVT, a five-year \$3.5M institutional-transformation grant from the NSF to increase the participation and advancement of women in academic science careers.

# Learning: Graduate Programs

The achievements of the graduate students in the College of Science bring prestige to the departments and thus to the college and university as a whole. The goals of the graduate programs in the College of Science are to:

- Expand graduate enrollments, with the goal of increasing the number of Ph.D. students in COS by 120 in 2010.
- Enhance the quality of existing programs;
- Enhance recruitment of top quality graduate student prospects.

These goals will be achieved by:

- Increasing the quality and reputation of research programs, achieved in part by focusing research on target areas through cluster hiring and in part by themes developed within departments;
- Increasing departmental “research days” and other such events that emphasize quality of graduate programs, enhance interdisciplinary thinking, and recruit the best students;
- Increasingly lead, or participate in, interdisciplinary and cross-college graduate programs and recruitment efforts (e.g., via NSF IGERT programs within the college); build on current successes in corporate sponsorships and internships for graduate programs; and plan for some graduate students to complete parts of their training at off-campus sites such as Oak Ridge National Laboratories, Georgetown University (including the Lombardi Cancer Center), the Howard Hughes Institute, and USGS;
- Use a Northern Virginia Campus to accommodate some of the off-campus training opportunities mentioned above, as well as develop a potential initiative on Public Science Policy in partnership with the T. C. Williams School of Law at the University of Richmond;
- Conduct internal/external program reviews of all departmental graduate programs;
- Increasingly involve graduate students with undergraduate education through GTA appointments, the Graduate School’s Transformative Graduate Education Program, and supervision of undergraduate research.

## Graduate Program Highlights:

- Following university goals in graduate education as outlined in the PhD2010 initiative, all programs are working to increase the number and quality of Ph.D. students. In Fall 2005, there were 526 graduate students enrolled in the College of Science. Of these, 282 were Ph.D. students, a 5 percent increase from Fall 2004, and an 8.5 percent increase from Fall 2003. The College of Science attracts exceptional graduate students. Physics, for example, has two NSF fellows.
- The College of Science is a leader in developing interdisciplinary Ph.D. degree programs. Such programs span traditional departmental boundaries and allow students enrolled in a program to study with faculty from many departments and colleges. Tailored individually to students’ needs, it is not uncommon that a five-person student advising committee could consist of faculty from several colleges across the university. Faculty from Biological Sciences are key members of the interdisciplinary Ph.D. program in *Genetics, Bioinformatics, and Computational Biology (GBCB)*. This exciting program of study encompasses applications of



molecular biology, genomics, mathematics, statistics and computer science to all areas of the life sciences. Biological Sciences is also involved in the *Molecular Cell Biology and Biotechnology (MCBB)* option to provide training in broad fundamentals that can be then applied to particular disciplines. On successful completion of the core curriculum in *MCBB*, students will be able to apply concepts of molecular cell biology directly to their own fields of interest and research.

- Faculty in the College of Science lead novel recruitment efforts to increase the quality, diversity, and reputation of research programs. The Departments of Mathematics and Statistics are actively recruiting foreign students via pipelines to Peru and to Tunisia and Algeria. Next year there will be 6 Peruvians, 4 Tunisians and 1 Algerian student joining the Department of Mathematics. Brenda Winkel (Biological Sciences) initiated a graduate recruitment weekend in 2004 for the *Molecular Plant Biology* graduate program. Using a “Frank Beamer” model, high-quality students are recruited in the Virginia-West Virginia-Tennessee region and spend a weekend on the Virginia Tech campus. Amazingly, 100 percent of the students who attended the recruitment weekend in November 2005 applied to enter the graduate program at Virginia Tech.
- Virginia Tech joins an elite group of four universities in the United States that have four active Integrative Graduate Education and Research Training (IGERT) grants funded by the NSF. The competition for these five-year programs is intense with only a handful of programs being selected from several hundred applications. The latest IGERT was awarded in July 2005 for “Exploring Interfaces through Graduate Education and Research”, or *EIGER*. This program will enable graduate students to pursue research of the interface science and engineering in natural systems, and the behavioral interfaces within scientific and engineering teams. *EIGER* is led through Geosciences with participation from Biological Sciences, Physics, and Psychology. Two of the three IGERT grants awarded earlier to Virginia Tech are led by Chemistry. Judy Riffle leads one of the first IGERT programs awarded in 2001 for “Macromolecular Science and Engineering” (<http://www.macro.vt.edu/IGERT/>). This IGERT provides students with integrated education and research opportunities for addressing the science and engineering of polymeric adhesives and composites in our national infrastructure. The other IGERT awarded in 2003 trains students in “Macromolecular Interfaces with Life Sciences” or *MILES* (<http://www.chem.vt.edu/milesigert/>). Each of the IGERT programs sponsors 40 graduate student fellowships over a five-year period.
- Departments within the college are also striving to broaden graduate education beyond a strict focus on research. Biological Sciences, in partnership with the Graduate School, initiated a pilot project for “preparing the future professoriate,” in which a number of graduate students obtain pedagogical training and then teach a lecture course under the mentorship of a faculty member.
- An important aspect of graduate training is to have students present their research results during “research days” and other such events. Biological Sciences presented their 3rd Annual Research Day in March 2006. This program, directed by and for graduate students, is modeled after professional conferences with poster sessions, presentations, and a plenary talk. Also in March, Geosciences held its 11th annual Geosciences Student Research Symposium.



- Graduate student education was highlighted in the spring meeting of the College of Science's alumni advisory committee, the "Roundtable". Sixteen poster presentations prepared by graduate students representing all the departments in



the college gave the Roundtable members a view of the exciting range of research taking place in the College of Science. An endowment to "Make a Difference" will enhance graduate recruitment activities to increase the number and quality of graduate students in the college.

- Connections external to academe are important in graduate training. Graduate programs in Geosciences, Physics, and Statistics benefit from corporate affiliations. Statistics, through its Corporate Partners program, places interns with Eli Lilly, DuPont, Minitab, General Electric, Kraft, Pratt and Whitney, and SAS. Geosciences benefits from long-term relations with petroleum companies. It hosted several visits this year by companies interviewing graduate students for possible employment. Psychology's required internship component relies on strong and abiding relations with institutions such as the Devereux Institute in Pennsylvania. Such internships place students in competitive positions for appointments after graduation.

# Graduate Student Accolades

## 2006 COS OUTSTANDING GRADUATE STUDENTS



**Sara Chiara Haden,**  
a Ph.D. student in Psychology and recipient of the 2005 COS Graduate Student Award, received AMERICAN PSYCHOLOGICAL ASSOCIATION DIVISION 12'S STUDENT RESEARCH AWARD, and AN AMERICAN PSYCHOLOGICAL FOUNDATION COGDOP SCHOLARSHIP. She also received an ADVANCEVT PREDOCTORAL FELLOWSHIP FOR 2005-06.



**Denise R. Adkins,**  
a Ph.D. student in Psychology received THE 2006 OUTSTANDING GRADUATE TEACHING ASSISTANT EXCELLENCE AWARD presented by ALUMNI AFFAIRS.



**Jennifer Stempien**  
Geological Sciences  
*Advisor - Michal Kowalewski*



**Douglas Wiegand**  
Psychology  
*Advisor - Scott Geller*



**Brian Olsen,**  
a Ph.D. student in Biological Sciences received an OUTSTANDING GRADUATE STUDENT TEACHING COMMENDATION AWARD from the GRADUATE SCHOOL. He also received the SMITHSONIAN INSTITUTION PREDOCTORAL FELLOWSHIP AWARD, which consisted of a \$20,000 stipend awarded from May 1, 2005 until April 30, 2006.



**Nicholas S. Wigginton,**  
a Ph.D. student in Geosciences was NOMINATED BY PACIFIC NORTHWEST NATIONAL LABORATORY (PNNL) TO ATTEND A MEETING OF NOBEL LAUREATES in Lindau, Germany, in June, 2006.



**Feihe Huang,**  
a Ph.D. student in Chemistry was awarded THE 2006 OUTSTANDING DISSERTATION AWARD - SCIENCE AND ENGINEERING. Harry W. Gibson was his advisor.

# Learning: Undergraduate Studies

Opportunities, recognition and participation in undergraduate research in COS are continuing to grow. Very important part of undergraduate experience and increasingly needed for students to gain admission to competitive programs. Many models being used including research for credit, research for pay, volunteer research with students participating in projects on and off campus. Participation in undergraduate research for credit grew to 329 from just over 300 last year. Dean's office working on strategies to track activity, for example, new departmental annual review template asks departments to report activity. Plan for awarding first funding to support undergraduate research approved by COS curriculum committee this year with the first awards to be made in Fall 2006.

- Math faculty Dan Farkas and Peter Haskell won an NSA grant to sponsor an REU for summer 2006. Five of the students attending are VT students who are expected to complete a research project during the 2006-07 academic year, increasing the level of participation among math majors in undergraduate research.
- Physics has the highest level of participation in undergraduate research with the 29 students involved representing nearly half of their junior and seniors engaging in research in the 2005-06 academic year. Five students participated in NSF sponsored REU programs at other universities in addition to their work with VT faculty.
- Biological Sciences faculty Erik Nilsen, John Philips and Brenda Winkel applied for and received NSF REU program funds to support undergraduates in their labs. Overall, the department helped 140 of their students participate in undergraduate research. While 89 of these experiences were with departmental faculty, the rest worked in laboratories in other colleges including the School of Veterinary Medicine as well as the Virginia Bioinformatics Institute and Department of Athletics.
- Chemistry department held an undergraduate research symposium to showcase the efforts of their students in December. Thirteen students gave research presentations achieving a record level of participation.
- Psychology awarded five departmental awards for excellence in undergraduate research.
- Economics also had a record year for undergraduate research with 10 students participating. This is significant because a record number of faculty representing half of the senior faculty and one junior faculty member were involved in supervising student research projects.
- College Curriculum committee created an undergraduate research support funding funded by Amy Sjogren.
- College recognized research advisors of outstanding senior in COS and author of outstanding dissertation. Important to acknowledge the work that faculty do in helping students to grow into productive researchers.

In addition to the formal program announcement in May 2006, development of the IP Law program continued to progress this year along a number of dimensions:



- Coursework: Alumnus Kimbley Muller taught capstone course in IP law course for the third year in a row. He will teach this course again in spring 2007. The University of Richmond will offer a second IP law course in Fall 2006 on the Virginia Tech campus. "Technology, Law and Society" will be aimed at sophomores in science and engineering majors. The course will involve weekly guest lectures from UR law school faculty. In addition to familiarizing students with some of the legal challenges involved with technological advances, the course will give students the chance to develop legal thinking and writing skills at a level appropriate to their intellectual development.
- Advising: An advising model for students interested in IP law at VT is under development. For the time being, pre-IP Law advising for students in all colleges will be housed in the COS.
- Lecture Series: A number of COS alumni working in the field of IP law along with faculty from U of R will participate in a series of lectures designed to increase student interest in this important career opportunity.
- Scholarships and Internships: Now that the formal program announcement has been made, COS is actively engaged in trying to put together scholarship and internship opportunities for students interested in this IP law program.

The College of Science is heavily invested in developing and delivering high quality core and service teaching. Our teaching strategies are being updated to reflect the importance of VT Pathways model. COS is looking forward to conducting a pilot student defined experience program in 2006-07. The college continues to actively support and promote efforts to develop integrated core curriculum options. In 2005-06 the first "Earth Sustainability" program, led by Geosciences, had 19 of 23 students from its first cohort complete the program. Psychology was involved in creating the second series called "Mind and Body" which combined sections of existing courses to offer students a core sequence that was less pedagogically innovative than ES, but had the advantage of being a practical option for a greater fraction of the student body. We are actively involved in supporting and promoting the second phase of the ES program in which the initial model will be replicated so that seats are available for 75 students.

Other innovations in undergraduate education:

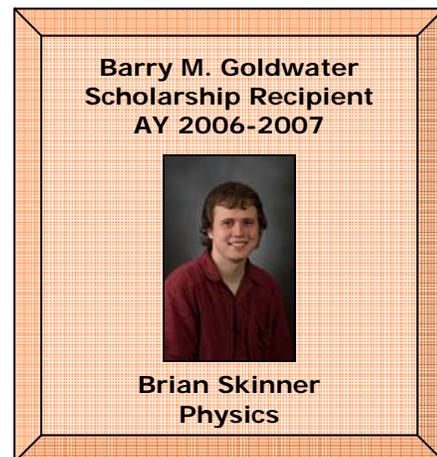
- The Dean's Office advising center has started a program to improve the consistency of advising and advisor training. As part of this program, lead advisors in the departments now meet with the Dean's Advising staff twice per semester and once in the summer for lunch, to learn about new policy changes and to problem solve. In 2006-07 an advisors manual will be completed and disseminated as an "advisor appreciation" event to include all staff and faculty doing advising at any level in the college.
- Biological Sciences' one-hour credit required freshmen seminar and accompanying manual titled "The Compass" was presented as a model for success at a Department Head Breakfast Roundtable discussion focused on the topic of first-year experiences. First year experience



models where several departments with a small number of majors combine to offer a single first year experience program are under discussion.

- Physics and biology are planning collaboration in biophysics to offer training in this emerging field to undergraduate students.
- Math is continuing to find ways to improve mathematics teaching using technology. This year the Math 1525-6 sequence (business math) was converted to an online course resembling other Math Emporium based offerings. At the same time, experimental sections of Math 1206 have been taking their tests at the Math Emporium using a test engine established and maintained by Mike Williams. A study by Frank Quinn finds that scores on final exams taken using this engine are comparable with those in traditional sections. Seven math department faculty will spend summer 2006 revising and updating course material for online courses and the test engine.

# Highlights



# Engagement

Faculty members and students in the College of Science are extensively involved in outreach and service. The involvement ranges from interactions with K-12, to short courses and workshops for students and professionals, to newsletters and media presentations, and to service in professional societies, governmental and non-governmental agencies. Faculty members in the college hold more than 100 editorships or associate editorships on professional journals and many serve on editorial boards. Faculty members also serve on numerous review panels at federal agencies and foundations for grant selection. COS faculty are involved in international outreach programs in China, Costa Rica, the Dominican Republic, Ecuador, Germany, Italy, Mexico, Peru, Poland, South Africa, Switzerland, and elsewhere.

Outreach activities during 2005-06 included:

- The Science Outreach program (SOuP) led by Mike Rosenzweig (Biological Sciences) in collaboration with Llyn Sharp, Outreach Coordinator for Geosciences. SOuP focuses on K-12 teacher training, and value added to sponsored research proposals (<http://www.socm.vt.edu/>).
- The Geosciences Museum hosted over 5,000 visitors during the 2005-06 AY, including VT students, campus visitors, K-12 school groups, and 4-H groups from the local area and Southwest Virginia.
- The Psychological Service Center and Child Study Center serve families in the New River Valley with mental health and behavioral problems. Dave Harrison provided clinical neuropsychological services through regional (Lewis Gale Medical Center, Salem VAMC) and internet-based services.
- Chemistry's outreach to K-12 reached around 8,500 students in the past seven semesters and trained over 60 teachers in workshops. A group of teachers from Roanoke Valley Governor's School visited campus to learn how they might incorporate nanotechnology into their curriculum.
- Mathematics sponsored the VT Regional Math Contest involving 64 colleges/universities and 370 students.
- Aris Spanos (Economics) taught a one-month intensive course in Applied Econometrics in January 2005 to 24 graduate students from Sungkyunkwan University, South Korea.

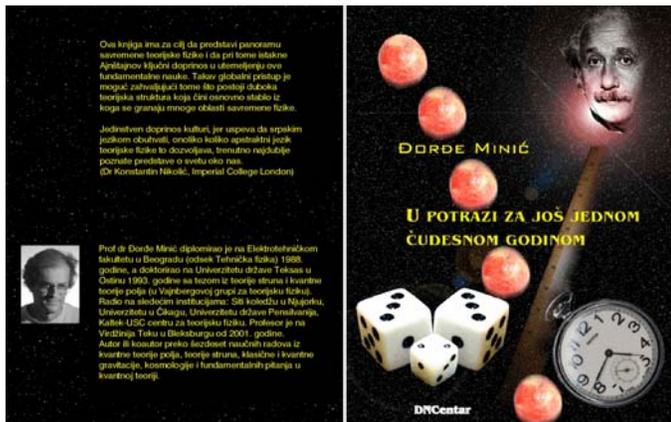
## 2006 COS Award for Outreach Excellence



Llyn Sharp  
Geosciences

- Supervises Museum of Geosciences and the Education Resources Center (ERC)
- Provides support for K-12 field science studies in VT-STEM and VT-STARRS
- Runs workshops for projects WET, GLOBE, and Save Our Streams (SOS)
- Coordinates activities with the New River Watershed Roundtable (NRWR)
- Elected to the statewide Virginia Watersheds Alliance
- Appointed to the Governor's Transition Task Force for Virginia's Natural Resources Policy

- Geoff Vining (Statistics) organized *The Fifth International Symposium on Business and Industrial Statistics* held in Lima, Peru in January 2006.
- Sheryl Ball (Economics) has continued to develop active learning exercises that illustrate Virginia middle school standards of learning in Economics. She collaborates directly with social studies teachers to teach them to conduct the exercises and get the teachers to provide her with feedback on how to refine the exercises.
- Tatsu Takeuchi (Physics) organized a series of public lectures to reach out to the community to celebrate the centennial of "Einstein's miraculous year." John Simonetti spoke on the acceleration of our expanding universe, Raju Raghavan addressed the question of how the sun shines and Djordje Minic spoke on Einstein's view of the history of physics. Dr. Takeuchi published a book, "No Equations! Relativity Illustrated" (in Japanese), and Dr. Minic published a book, "In Search for Another Miraculous Year" (in Serbian).



Departments use newsletters and websites to keep alumni informed of happenings in their departments and thus to continue reaching out to this important community, see below for some links.

**Links to departmental newsletters:**

- Biology** <http://www.biology.vt.edu/alumni/newsletters.htm>
- Chemistry** <http://www.chem.vt.edu/news/ElementsSpring2006.pdf>
- Geosciences** <http://www.geol.vt.edu/general/arc.html>
- Physics** <http://www.phys.vt.edu/Newsletters/>
- Statistics** <http://www.stat.vt.edu/newsletter/2005/newsletter.pdf>



**Russell Jones, Psychology,** winner of 2004 COS Award for Outreach Excellence, met with members of First Lady Laura Bush's Office of Special Projects. He was called upon by the White House to help prepare the first lady before she visited children who were displaced by Hurricane Katrina last fall.

Dr. Jones was nominated by U.S. Department of Education Secretary Margaret Spellings to serve on the Safe and Drug-Free Schools and Communities Advisory (SDFSCA) Committee. The committee provides advice to the Secretary on federal, state and local programs designed to create safe and drug-free schools and on issues related to crisis planning.

Jones is a member of the Terrorism and Disaster Branch of the National Child Traumatic Stress Network and recently became a member of the Hurricane Katrina Community Advisory Group administered by the Department of Health Care Policy at the Harvard Medical School.

# College Spotlights



# Alumni Relations and Development

## Alumni Relations

As of January 1, 2006, Robin H. Jackson was named the new director of alumni relations, following in the footsteps of Mara K. Barker, who took a position as director of regional programs at Carnegie Mellon University in October 2005. Amy C. Self was hired in March 2006 to offer administrative support to the alumni relations director.

The mission of the alumni relations office is to serve as the primary linkage to and to promote the welfare of the college by cultivating a mutually beneficial relationship between the college and its family of alumni.

### Summary of Alumni Relations activities

- COS alumni reception at the Gator Bowl
- Fall and Spring Roundtable Meetings
- Fall and Spring Commencement Receptions
- Scholarship Awards Banquet
- Alumni booth at spring Directions Career Fair
- COS Old Guard Breakfast
- COS Homecoming
- Tailgate Tents for home football games
- Alumni reception at the American Association of Petroleum Geologists (AAPG) in Houston TX
- Alumni reception in Houston TX featuring Dean Lay Nam Chang and Robert Tracy, Chairman of the Department of Geological Sciences
- College of Science program for the Women in Leadership and Philanthropy conference
- The Alumni Association's 'Summer Around the Drillfield' program with an academic focus featuring the College of Science
- Lecture highlighting Peter Olf from Siemens International
- Gifts to alumni returning for class reunions
- Letters of recognition sent to alumni

### 2006 College of Science Outstanding Young Alumnus



Colin Hill, '96 Physics  
CEO of Gene Network Sciences, Ithaca, NY



Roundtable members at Horton Observatory  
Spring 2006

## Development

The College of Science Alumni Relations and Development offices continue their mission of connecting alumni back to the college and its departments through personal and professional involvement both on and off campus and through private and corporate giving. Currently, there are almost 23,000 living alumni.

This year the College's advancement team recorded significant increases in all levels of giving and participation. Notably the college received its highest pledged gift commitment in its history, and has successfully managed all its activity within its fiscal year operating and development budgets.

### Summary of Development activities and initiatives

- The college received several major corporate gifts this year and has experienced greater than 90% increase in corporate donations.
- Engaging corporations that believe and are eager to support the college's initiatives has been a primary focus. The college has increased its corporate prospect base and has had substantive meetings with over 61 corporations, a 100% increase from FY05.
- The college was successful in attracting Oxford Diffraction, a leading scientific equipment manufacturer, to relocate its United States Headquarters to Blacksburg, VA from Concord, MA. The company is expected to open the new location during August 2006.
- The college hosted over 12 successful campus visits with companies such as Siemens Corporation, BD Diagnostics, Eastman Chemical, and Eli Lilly and Company to showcase research, faculty, and students.
- The college secured a \$12M pledged commitment of cash designated for use for a new Geosciences building.
- The development office increased the prospect pool of the college to over 500 major gift prospects.
- Dean Chang is now strategically engaged with the college's top 50 prospects.
- The Director of Development completed audit and analysis of the college's endowed scholarships and presented the results to the COS Roundtable at its Spring 2006 meeting.
- The Director of Development managed and directed the reassessment and realignment of the college's campaign priorities.
- Successfully managed the college's OSB operating and development budgets for the fiscal year.



UNDER THE EDITORSHIP OF CATHERINE DOSS, COLLEGE COMMUNICATIONS MANAGER, THE COLLEGE PRODUCED ITS FIRST MAGAZINE, WHICH WENT OUT IN FALL 2005 TO APPROXIMATELY 22,000 ALUMNI AND FRIENDS OF THE COLLEGE OF SCIENCE.

# Diversity Initiatives

The College of Science Diversity Committee had an active year. The committee was chaired by Anne McNabb (Biological Sciences) and members were Mark Anderson (Chemistry), Russell Jones (Psychology), Bob Rogers (Math), Madeleine Schreiber (Geosciences), and Chris Thomas (Physics and representing staff).

The committee's overall goals are:

- To promote greater diversity among faculty, staff, and graduate students, and undergraduate students in COS by promoting active recruiting strategies. This includes providing information to departments and helping develop strategies for recruitment.
- To promote a climate of openness and acceptance for all in COS.

During the past year, the Committee:

- Set up a Diversity section of the COS webpage with some of the basic information about our committee and activities. We will continue revising and enlarging the pages and will work with the COS Web Redesign Committee.
- Surveyed department heads in COS about their departmental diversity activities and committees. Some of the focus of this survey was aimed at specific initiatives our diversity committee thought might be productive for the recruitment of graduate students and faculty from underrepresented minority groups. We plan to work with departments to encourage them to display what they are doing on a diversity section of their departmental webpages. The information on grad recruiting activities is being incorporated into our general ideas about college wide grad recruiting from HBCUs.
- Organized our committee (which serves as a steering committee) into focus areas with the focus area members forming subcommittees of others across the college to form working groups (this will promote wider buy-in and much wider investment and participation). The area groups are undergraduate pipeline activities, graduate recruitment, and faculty recruitment. Several plans were generated for area group activities for the coming year.
- Established a College Diversity Award. Guidelines have been generated and an advertisement for the award written that is supported by the Dean. We anticipate the first award being made during 2006-07.

## Diversity Highlights

- Beate Schmittmann (Physics) was appointed the first female chair/head in the College of Science.
- Diane Walker-Green, the undergraduate coordinator in Physics, attended the National Black and Hispanic Conference in San José accompanied by two minority undergraduate majors.
- Beate Schmittmann and Roseanne Foti served as AdvanceVT Professors and Nancy Ross served on the AdvanceVT Leadership Team.
- AdvanceVT Leadership Development Program selected Victoria Soghomonian (Physics) and Brenda Winkel (Biological Sciences) as members.



- Dorothea Tholl (Biological Sciences) and Jennifer Ryan (Mathematics) received seed grants from AdvanceVT.
- Sara Chiara Haden (Psychology) received an AdvanceVT predoctoral fellowship.
- Jeff Birch, Statistics, presentation on "Graduate School in Statistics" at STATFEST Conference, Peal City, Hawaii, March 2005.
- Sheryl Ball and Leslie Pendleton presented "A Pipeline Model for Contemporary Pedagogical Practices in STEM" at the 2005 Center for the Integration of Research and Learning annual conference on Addressing the Student Learning Experience: Achieving Diversity in STEM Disciplines in Madison, Wisconsin, May 24-26, 2005.
- Jill Sible was appointed to the Diggs Roundtable and is conducting research on creating inclusive classrooms.
- Mid-Eastern Atlantic Minority Program (MEAMP) –14 undergraduates have participated with Biological Sciences faculty through MEAMP.
- Multicultural Academic Opportunities Program: Several departments host MAOP summer research interns. Biological Sciences, Geosciences, and Psychology each have a graduate student now enrolled who participated in MAOP.
- James Turner joined the faculty in Mathematics as tenured full professor. James is involved in the university's Africa program and plans to open a VT center in Capetown, South Africa.