



College of Science Annual Report 2006-2007

Faculty, students, and staff members in the College of Science had a successful year, with many notable accomplishments. The College is a key contributor to Virginia Tech's move toward the top tier of research universities.

This report documents the College's accomplishments and plans for the future. The future of science at Virginia Tech is big and bold, as we strive to solve today's pressing scientific problems.

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Introduction

The College of Science celebrated its fourth birthday on July 1st with Dean Lay Nam Chang continuing to lead the College with his vision and inspiration. This annual report documents many accomplishments and contributions of our faculty, students, and staff to the university's goals. We summarize our activities by the domains of Discovery, Learning, and Engagement. Individual achievements are noted in the Spotlights section. Alumni and Development activities along with Diversity Initiatives follow, with the final section of the report focusing on the Scorecard for 2006-07.

Strategic Initiatives

Cluster Hiring

The College's cluster committee coordinated 50% of the faculty searches, with a primary focus on faculty members who will contribute to Infectious Diseases research. Other searches focused on disciplinary hires. Overall, our recruitment was highly effective. Fifteen new faculty members, two of whom are women, accepted offers to join Virginia Tech. A third woman will also join the College in August 2007 as a Research Scientist.

Institute for Advanced Study

The Institute for Advanced Study at Virginia Tech, established by the College of Science, was the site for cluster committee meetings and events to promote communication and collaboration with faculty members associated with specific clusters.

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

Focused research teams will be appointed in the coming year; these teams will use the IAS for planning and preparation of collaborative grant proposals.

Department Reviews

The Departments of Biological Sciences, Mathematics, and Statistics completed internal and external reviews during 2006-07. The internal reviews were completed during fall 2006. During spring 2007, each department invited a distinguished panel of scholars to visit campus for two intensive days of meetings and discussions. The external reviewers wrote an evaluative report for each department, which was focused on the future growth and development of discovery, learning, and engagement for the department. External reviewers will be invited back to campus in the future to assess progress of the department and college. The remaining departments in the college will complete reviews during 2007-08.

Intellectual Property Pre Law

The IP Law program, a collaboration between the College of Science at Virginia Tech and the T. C. Williams School of Law at the University of Richmond, had a successful year. "Technology, Law and Society" was taught by University of Richmond faculty members on the Virginia Tech campus. Kimbley Muller taught the capstone course on IP Law. A third course is planned for spring 2008. About 25 science and engineering students anticipate attending law school and have joined the IP Law listserv.



Dean Rod Smolla from the University of Richmond Law School will become Dean of the Washington and Lee University School of Law in fall 2007. Dean Smolla delivered the inaugural IP Law address during fall 2006 at Virginia Tech.

Leadership in the University Institutes

The College of Science is actively involved in ICTAS, IBPHS, and ISCE. The national search for the Director of IBPHS continued during 2006-07. Faculty hiring in the college included faculty members who will contribute to IBPHS initiatives (Infectious Diseases and, via the Developmental Science Initiative (DSI), Food, Nutrition, and Health). 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. Planning was implemented to develop nanoscience and technology programs that involve active collaborations with faculty members at several Virginia universities. The planning committee is exploring a full range of degree and research programs, along with administrative structures that will maximize success. ISCE, the newest institute, provided grant funding for several COS faculty members, whose research contributes to ISCE's focus on policy and research related to science and technology impacts on society.

Carilion-Virginia Tech School of Medicine

The College of Science, along with several other colleges at Virginia Tech, is collaborating with the Carilion Clinic to develop a new School of Medicine (SOM). Located in Roanoke, the SOM will feature an innovative curriculum that incorporates research training and experiences. Virginia Tech faculty members will serve as research mentors in a wide range of relevant research areas for the medical students. A curriculum committee was established, which includes four faculty members from the College.

Oxford Diffraction Collaboration

Oxford Diffraction, Inc. moved their US corporate headquarters to Blacksburg to co-locate with the Virginia Tech X-ray Crystallography Laboratory (VTX). Equipment from Oxford Diffraction, including new diffractometers and upgrades for existing equipment in VTX, resulted in a dual-source diffractometer unique to the United States. VTX will move to laboratory space in the Corporate Research Center in the coming year.



Changes 2006-07

Change is inevitable in the College, as our faculty and staff choose new directions for the coming years.

- ✦ Sheryl Ball, Associate Dean for Curriculum, Instruction, and Advising, will return fulltime as Associate Professor in the Department of Economics.
- ✦ Joe Cowles, Professor of Biological Sciences, served as Interim Department Head in the Department of Economics. He will join the College as Associate Dean for Curriculum, Instruction, and Advising in August 2007.
- ✦ Hans Haller, Professor of Economics, has been appointed Department Head for the Department of Economics.
- ✦ John Rossi, Department Head in Mathematics, will return fulltime as Professor of Mathematics after leading the department for the past seven years. Peter Haskell, Professor of Mathematics, has been appointed Interim Department Head.
- ✦ Jenny Orzolek was appointed Assistant Director of Development for the College of Science. Jenny joined the college with 10 years of experience in higher education, most recently as a Business Developer with the Corporate Center at the College of Southern Maryland.
- ✦ Kellie Morris, Administrative Assistant to the Director of Development for the College, accepted a new position with Donor Relations in University Development. Kellie had been with the College for two years.
- ✦ Wanda Sparks, Development Associate, left Virginia Tech to move to Denver, Colorado. She had worked at Virginia Tech since 1986.
- ✦ Judy Taylor joined the college in February 2007 as a Development Associate. She previously worked at Radford University.
- ✦ Mark Fortney joined the College staff as a Media Resources Technician. He works half time for the college and half time for the Department of Geosciences.



Fifteen faculty members accepted offers to join departments in the College of Science.

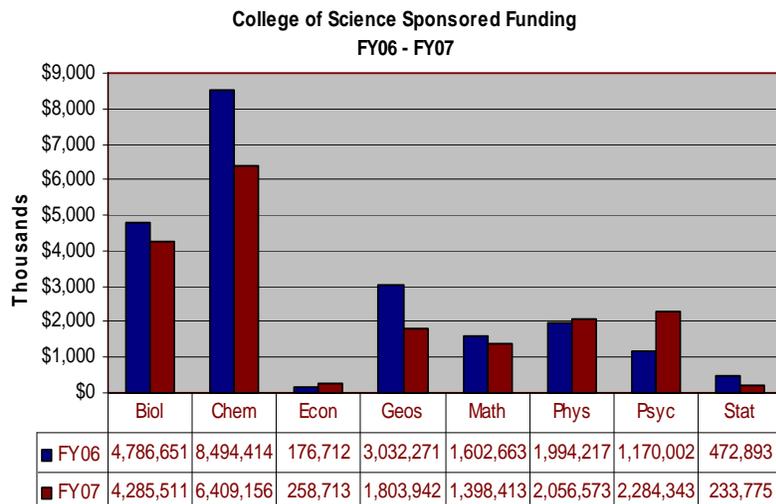
<i>Department</i>	<i>Name</i>	<i>Research Specialization</i>
New Faculty Hired in 2006-07		
Biological Sciences	Jianhua Xing	Infectious Diseases
Chemistry	Robert Moore	Polymer
Economics	Joseph Yang	Industrial-Organizational/Microeconomics
	Joao Macieira	Industrial/Applied Econometrics
Geosciences	Chet Weiss	Geophysics
Mathematics	Nicholas Loehr	Algebra
	Andrew Norton	Mathematics Education
	Alexander Elgart	Analysis
Physics	Nahum Arav	Astrophysics
	Patrick Huber	Experimental/Neutrino
Psychology	Matthew Fritz	Developmental Science
Statistics	Scotland Leman	Biostatistics
	Inyoung Kim	Biostatistics
	Feng Guo	VTTI joint position
	Dong-Yun Kim	Biostatistics
New Faculty Hired in 2005-06 (arriving August 2007)		
Geosciences	Scott King	Geophysics
Geosciences	Erin Kraal	Planetary science
Geosciences	Jacob Sewall	Paleoclimatology
Physics	Eric Sharpe	Computation Science

Discovery

The College of Science fully embraces the intrinsic value of research and creative scholarship. In the context of “discovery,” cutting-edge research and innovative and creative scholarship not only provide the domains of learning and engagement with a sense of direction, but also foster collaborative learning that motivates engagement with the broader community. The College of Science launched a set of integrative initiatives for achieving world-class excellence in discovery: nanoscience applied to materials and biological systems, computational science, infectious diseases, and developmental science across the lifespan. These initiatives provide a firm basis for innovative technologies and understanding complex systems that power the progress in all areas of discovery. Through these and emerging initiatives in energy and the environment, 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 FY07, faculty from the College of Science published over 820 books, book chapters, and articles in peer-reviewed journals, gave 528 invited seminars and over 400 presentations at professional meetings and 1 patent. 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. Robert Bodnar (Geosciences) was named a Fellow to the American Association of the Advancement of Science (AAAS). Royce Zia was elected Fellow of the American Physical Society. Shuhai Xiao (Geosciences) was the recipient of the 2006 Charles Schuchert Award of the Paleontological Society. Ezra Bud Brown (Mathematics) won the George Polya Award from the Mathematics Association of America. Bill Woodall (Statistics) received the Brumbaugh Award from the American Society for Quality. Serkan Gugercin (Mathematics) was awarded a prestigious NSF CAREER award and Diego Troya (Chemistry) was named a Cottrell Scholar.

Research funding in the College of Science totaled \$18.7M in awards in FY07, compared with \$21.7M in FY06. The Department of Psychology doubled their research funding in FY07. The total for research expenditures in FY07 was \$19.3M, compared to \$18.2M in FY06. The number of awards continues to show a steady increase, from 210 in FY06 to 232 in FY07. Notable new awards in



FY07 include a \$2.2M award from the NIH to Martha Ann Bell (Psychology), a \$1.5M award from the NIH to John Tyson (Biological Sciences), and \$1.5M and \$1M awards from the NIH to Thomas Ollendick (Psychology). In addition, a research team led by Sungsool Wi (Chemistry) was awarded \$770,000 from the highly competitive NSF Major Research Instrumentation (MRI) program to purchase a 600 MHz NMR spectrometer.

The College of Science will continue to explore and pursue new opportunities for funding, especially those involving collaborative and interdisciplinary research:

- The Army Research Office has awarded a Multi-University Research Initiative (MURI) grant, potentially worth \$7.5 million, to scientists from Virginia Tech, the University of Pennsylvania, Pennsylvania State University, and Drexel University to develop electromechanical devices and high-performance membranes using ionic liquids. Tim Long (Chemistry) is the principal investigator.
- Four innovative interdisciplinary programs which connect nanotechnology and health care are receiving initial seed funding from Virginia Tech's Institute for Critical Technology and Applied Science (ICTAS). The four areas will come under one of the designated primary research thrusts within ICTAS, "Nano-Biomaterials for the Delivery of Therapeutic and Diagnostic Agents" led by Judy Riffle (Chemistry).
- The College of Science, in conjunction with the VT National Capital Region, has formed a new, complementary partnership with Georgetown University Medical Center to establish a joint program for drug discovery and development. The program brings together experts from both universities in disciplines ranging from medicine to chemistry to technology. The first three projects selected for seed funding involve using naturally-occurring products against malaria (David Kingston, Chemistry); investigating the use of fatty acids to fight microorganisms that cause disease (Richard Gandour, Chemistry, and Joe Falkinham, Biological Sciences); and exploring causes of Alzheimer's disease (Paul Carlier, Chemistry).
- Neutrino physics dominates the research programs of faculty in the particle and astrophysics domain. Faculty members in this group (Bruce Vogelaar, Raju Raghavan, Mark Pitt, and Jonathan Link) make extensive use of large national and international experimental facilities located on three continents and are very well represented on national planning and advisory committees in this field.
- Jeff Walters (Biological Sciences) was awarded a 5-year \$1.6M proposal from the DOD to investigate ways to map habitat connectivity for multiple rare, threatened and endangered species around military installations. The proposal involves co-PIs from NC State, UNC and Duke University.



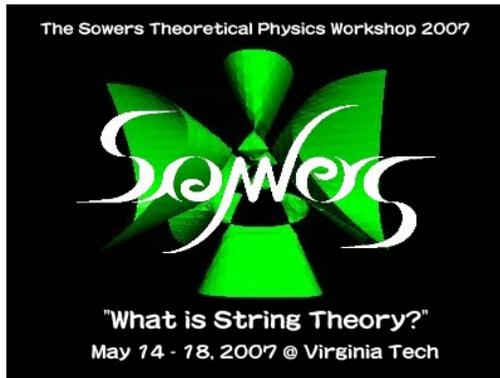
- The Department of Biological Sciences in collaboration with the Virginia Bioinformatics Institute (VBI) announced the opening of the Biological Sciences-VBI Plant Growth Facility. Erik Nilsen (Biological Sciences) is the Executive Director of the new plant research facility that will act as a focal point for promoting interdisciplinary research and interactions among faculty and students in plant sciences from across the campus and the region.



BIOL-VBI Plant Research Facility

The College of Science continues to support research conferences that attract participants from all over the world. 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.

- Faculty members from the Departments of Human Development and Psychology have set up the Developmental Science Colloquium in order to learn about each other's work and to build a partnership that will allow faculty in these areas to be competitive for post-doctoral fellowships and external grants in the area of developmental studies.
- The second annual conference on structural biology was hosted by Virginia Tech with leadership from Biological Sciences faculty (Carla Finkielstein, Florian Schubot and Nancy Vogelaar) and the VT Crystallography Lab (Ross Angel) in April 2007. More than 120 people from Virginia Tech and neighboring colleges and universities attended the symposium. The symposium was sponsored in part by Oxford Diffraction, Ltd.
- The Department of Physics hosted the Zallen Symposium in August 2006,



the LONU-LENS workshop in October 2006, and the first Sowers Workshop on Theoretical Physics in May 2007. Each event brought prominent invited speakers to campus, as well as numerous participants from Virginia Tech and elsewhere, and resulted in the dissemination of findings and programs in Physics far beyond the boundaries of Blacksburg.

- Liwu Li (Biological Sciences) co-organized a national mini-symposium: The 14th International Meeting of the Inflammation Research Association in October 2006.

- Daniel Crawford, Diego Troya and Edward Valeev (Chemistry) organized the 2007 Meeting of the Southeastern Theoretical Chemistry Association (May 18-19, 2007), the first time the meeting was held in the Commonwealth of Virginia. The meeting attracted theoretical and computational chemists from around the world.
- Aris Spanos (Economics) organized the 2006 Buchanan Colloquium in May 2006 and, working with Deborah Mayo (Philosophy), hosted a June symposium involving the interaction between Philosophy and Economics.

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 PhD students in COS by 120 in 2010.
- Enhance graduate and professional degree value through national partnerships and joint degrees.
- Enhance recruitment of top quality graduate student prospects.
- Enhance the quality of existing programs.

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 2006, there were 538 graduate students enrolled in the College of Science. Of these, 372 were Ph.D. students, a 23% increase from fall 2005.

The College of Science is striving to enhance graduate and professional degrees through national partnerships and joint degrees. The college is pleased to announce that the new interdisciplinary degree with Georgetown University, *Master of Science Degree in Biomedical Technology Development and Management*, is expected to be approved by the State Council of Higher Education for Virginia by fall 2007. This program addresses a significant shift emerging in the way pharmaceutical and biotechnology innovations evolve that emphasizes multi-disciplinary research and training. The Department of Labor projects a greater than 27% increase in biomedical industry employment opportunities between 2004 and 2014. The focus of the proposed joint degree program will be on developing a cadre of well-rounded professionals, trained in integrating science with technology, management, ethics, and public policy, and possessing a variety of analytical tools including modeling and simulation for business decision-making.

The **Master of Science Degree in Biomedical Technology Development and Management** degree program has been approved by University Council, President Steger and the Board of Visitors, and is currently awaiting approval by the State Council of Higher Education for Virginia. The first class is expected to start in Winter 2008. The creation of this proposed joint degree between Virginia Tech and Georgetown University reflects the ongoing efforts of these two universities to create a mutually beneficial partnership.

The College of Science is a leader in developing interdisciplinary graduate degree programs. Such programs span traditional departmental boundaries and allow students enrolled in a program to study with faculty from many departments and colleges. Judy Riffle is director of the Macromolecular Science and Engineering graduate degree (MACR) which is a university-based degree program spanning multiple departments and colleges to emphasize fundamental and emerging technological areas in the field of macromolecular science and engineering. 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 field of interest and research.

Faculty from the college have also been very successful in developing 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 selected from several hundred applications. Judy Riffle (Chemistry) led one of the first IGERT programs awarded in 2001 for "Macromolecular Science and Engineering" (<http://www.macro.vt.edu/IGERT/>). Tim Long (Chemistry) is co-director of an IGERT awarded in 2003 that trains students in "Macromolecular Interfaces with Life Sciences" or *MILES* (<http://www.chem.vt.edu/milesigert/>). The latest IGERT was awarded in July 2005 for "Exploring Interfaces through Graduate Education and Research," or *EIGER*. This program enables 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 by Michael Hochella (Geosciences) with participation from Biological Sciences, Physics, and Psychology. Each of the IGERT programs sponsors 40 graduate student fellowships over a five-year period.

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, Tunisia, and Algeria. Brenda Winkel (Biological Sciences) initiated a graduate recruitment weekend that takes place every November 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. The college supports fellowships such as ICTAS scholarships to recruit the best and brightest graduate students to Virginia Tech. Departmental "research days" and other such events that emphasize the quality of graduate programs are becoming increasingly important. Such events also enhance interdisciplinary thinking and result in the successful recruitment of the best students. In February, Physics held its first on-campus Preview Weekend for prospective graduate students. The date was chosen to coincide with the Graduate School Preview Weekend in order to give our visitors a full picture of graduate student life at Virginia Tech. Another important aspect of graduate training is to have students present their research results during "research days" and other such events. Biological Sciences presented their 4th Annual Research Day in March 2007. 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 12th annual Geosciences Student Research Symposium.

Connections external to academe are important in graduate training and build on successes in corporate sponsorships and internships for graduate programs. 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. There are also opportunities 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. The National Capital Region (NCR) will provide new opportunities for graduate students by accommodating 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.

Endowments provided by loyal alumni are also providing scholarships that enhance the graduate programs in the college. The College of Science's alumni advisory group, the Roundtable, established the Make-a-Difference Scholarship for Graduate Study in the College of Science. Awards ranging from \$1,000 to \$5,000 are awarded to graduate students who will make a significant difference to the College of Science and the world outside the university. Adam Wallace (Geosciences) was awarded the first 2007 Roundtable Scholarship.

The College of Science increasingly involves graduate students with undergraduate education through GTA appointments, the Graduate School's Transformative Graduate Education Program, and supervision of undergraduate research. 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, continued a project for "preparing the future professoriate," in which a number of graduate students obtain teacher pedagogical training and then teach a lecture course under the mentorship of a faculty member.

Graduate Student Awards

Richard Krause, a recent graduate from the doctoral program and currently a postdoctoral researcher in the Department of Geosciences, has received a fellowship from the Alexander von Humboldt Foundation. The fellowship commencing in June 2007 will provide Richard with two years of support to live and work in Berlin and conduct research at the world-class Museum für Naturkunde, which houses one of the largest natural history collections in Europe. Every year, the Foundation enables up to 500 young scholars from all over the world to spend time in Germany. The Foundation maintains a network of approximately 22,000 former Humboldt fellows in 130 countries worldwide - including 40 Nobel Prize winners.



More Graduate Student Awards



Lori Blanc (Biological Sciences) received the **2007 College of Science Outstanding Ph.D. Graduate Student Award**. Lori's advisor was Professor Jeff Walters.

2007 Outstanding Graduate Teaching Assistant Excellence Award



Philip Lehman
Psychology

2007 College of Science Outstanding Master's Student Award

Austin Amaya
Mathematics and Physics



Laura Hamm (Geosciences), a first-year Ph.D. student, received a fellowship from the **National Science Foundation Graduate Research Fellowship (NSF GRP) Program**. Only four NSF GRPs were awarded in Geochemistry across the nation this year. She is a student of Patricia Dove.

2007 College of Science Roundtable Make-a-Difference Scholarship for Graduate Study Scholars

Adam Wallace
Geosciences

Juliet Mammei
Physics

Michael Knepp
Psychology



Learning: Undergraduate Programs

Opportunities and participation in undergraduate research and other outside-of-the-classroom opportunities for exploration are continuing to grow. Participation in undergraduate research for credit grew to 358 from just over 325 last year and 300 two years ago.

- COS has changed the culture surrounding undergraduate research from an activity that “happens” to one where students intentionally participate. We have encouraged students to plan to participate in undergraduate research as part of their whole undergraduate plan of study and to register for undergraduate research credit before the beginning of the semester.
- COS provided support for Emily Dellala (Biological Sciences and Psychology) and Matthew Sweede (Biological Sciences and Biochemistry, minor in Chemistry) who are participating in the iGEM program. iGEM is the prestigious International Genetically Engineered Machines competition organized by the Massachusetts Institute of Technology (MIT). The objective of the competition is to design and build an engineered biological system using standard DNA parts (igem.mit.edu). iGEM Team Members are required to imagine, engineer, and assemble a biological system. The completed project will then be presented at the iGEM jamboree in Boston in November 2007.
- Dan Farkas and Peter Haskell (Mathematics) won an NSA grant to sponsor an REU for summer 2006. Seventeen students from regional universities attended.
- In Physics, well over a quarter of the undergraduate students (almost all seniors, and at least half of the juniors) are participating in faculty research projects. This participation has earned physics students substantial recognition outside of Virginia Tech. Brian Skinner is Virginia Tech's 33rd Goldwater Scholar (and the 7th from Physics) and won an NSF Graduate Research Fellowship. My Linh Pham graduated with a straight 4.0 GPA and will start graduate school at Harvard University in fall 2007. David Adams's undergraduate research will result in *five* papers, four of which are co-authored with physics faculty.
- Over 90% of graduating B.S. Chemistry majors in AY 2006-07 participated in one or more semester of undergraduate research during their residency at Virginia Tech. In addition, the chemistry department hosted 13 undergraduate researchers in an NSF-funded REU program during the summer of 2006. Research participation by undergraduates not only provides a research experience but also provides bona fide results. In the calendar year of 2006, 17 research papers were co-authored by chemistry department faculty with undergraduate students. In addition, seven research presentations were made by undergraduates at national or regional chemistry meetings.
- In psychology, more than 130 undergraduates were enrolled in field study and undergraduate research credits and participated in community and research opportunities.



- The Statistics Department is using their consulting center to engage undergraduate students in scientific projects. They are in the process of developing a SAS certification program. This will enhance chances for undergraduate students to obtain field study and internship opportunities.

Development of the IP Law program continued to progress this year along a number of dimensions:

- Coursework: For the first time, the University of Richmond offered an IP law course in fall 2006 on the Virginia Tech campus. "Technology, Law and Society" was aimed at sophomores in science and engineering majors. The course will involve weekly guest lectures from UR law school faculty. In addition, alumnus Kimbley Muller taught the capstone course in IP law for the fourth year in a row. A third course in the sequence is planned for spring 2008.
- Admissions: In fall 2006, the University of Richmond admitted the first student from this program to begin law school in fall 2007. Approximately 25 students at different points in their VT careers are currently on a listserv for students who anticipate attending law school in IP law.
- Lecture Series: In fall 2006, Rodney Smolla, Dean of the T. C. Williams School of Law at the University of Richmond, gave the inaugural lecture in a planned series of public lectures on IP law.
- Scholarships and Internships: 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 the VT Pathways model. To that end, the college participated actively in the pilot project for the "Student Defined Experience."

Other innovations in undergraduate education:

- Physics is offering new courses in nanoscience, computational physics, and biological physics, in order to expose our undergraduates to some of the focal areas of current science. Writing and presentation skills are emphasized in several courses, at different stages of the curriculum. Course work and research projects are frequently integrated into a capstone experience.
- Barbara Bekken (Geosciences) together with a team of ten diverse faculty and graduate students from four different colleges, completed the second semester of the second phase of the experimental Earth Sustainability (ES) integrated Liberal Education project begun in fall 2004. Sixty-seven students enrolled in Phase II of the ES series and will receive credit for five of the seven areas of the LibEd core in six fewer credit hours than if they had enrolled in the traditional LibEd curriculum, thus providing greater elective flexibility.
- The Biological Sciences department's one-credit-hour required freshman seminar course, plus the accompanying manual titled the Compass, was



presented as a model for success at a Department Head Breakfast Roundtable discussion which focused on the topic of first-year experiences.

- Biological Sciences continued its active role in leading the Biological and Life Sciences Learning Community (BLSC) in 2005-06. Joe Cowles and Betsey Waterman organized this residential learning community for students to develop a sense of community and a focus on academics. In academic years 2005 and 2006, the BLSC has been recognized as the "Community of the Year" by the National Residence Hall Honorary. The NRHH is an organization of the top 1% residents on campus. Their main focus is to recognize the accomplishments of students on campus.

Undergraduate Highlights

**Virginia Tech's
2007 Woman of the Year
and
2007 Outstanding Senior in
the College of Science**



Alison Smith
Biological Sciences & Chemistry

**Barry M. Goldwater
Scholarship Recipient
AY 2007-2008**



Rebecca Sinnot
Biochemistry

**Phi Kappa Phi 2007
Medallion Award Winner**

Robin Carol Lawson
Psychology

Teaching and Advising Highlights

Kurt Hoffman (Psychology) was awarded the Alumni Award for Teaching Excellence and was inducted into the University Academy of Teaching Excellence.

Daniel Crawford (Chemistry), Jeannine Eddleton (Chemistry), and Ann Stevens (Biological Sciences) received Dr. Carroll B. Shannon Certificates for Excellence in Teaching from the College of Science.



T. S. Chang (Physics) was nominated by Virginia Tech students for the University Sporn Award.

Alan Esker (Chemistry) won the Cook Award for Excellence in Teaching Chemistry.

Sheryl Ball (Economics) was recognized by the Kenneth J. Elzinga award from the Southern Economic Association for her innovative work in developing new classroom technologies, her accomplishments in the scholarship of teaching, and her years of first-rate classroom performance.

Phillip Lehman, doctoral student in the Department of Psychology, received the Graduate Teaching Assistant Excellence Award for 2006-2007.

Elizabeth Bonawitz (Mathematics) was recognized by the Panhellenic Council as one of the most valuable professors at Virginia Tech.

David Harrison and Scott Geller (Psychology) received the Alumni Students' Choice for "Favorite Professor Award" sponsored by the Student Alumni Association at Virginia Tech.

Biological Sciences Ph.D. student Brian Olsen received a Virginia Tech Graduate Teaching Special Commendation from the Virginia Tech Graduate School.



Elizabeth Waterman, academic advisor for the Department of Biological Sciences, receives from President Steger one of five President's Awards for Excellence presented in 2006.

Engagement

The College of Science is committed to engaging its intellectual assets to address economic and social needs of communities around the commonwealth, the nation, and the world. 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.

Highlights in the strategic areas of the Engagement Scholarship Domain:

I. Economic Vitality: The College of Science connects innovations in the scholarship of learning, discovery, and engagement to the economic well-being of individuals, families, businesses, and communities. Central to this goal are entrepreneurial initiatives advancing technology transfer, intellectual property, and the transfer of knowledge in domestic and international partnerships.

- A unique partnership between the Virginia Tech Crystallography Laboratory and Oxford Diffraction, Ltd. was announced in October 2006. Under the arrangement, Virginia Tech invested \$250,000 from the Commonwealth Research Initiative (CRI) fund in return for the equivalent of \$1.65 million in new equipment, upgrades to existing equipment, and service contracts from Oxford Diffraction. The company also announced the opening of a new office at the Corporate Research Center that will serve as its North American headquarters. "The partnership with Oxford Diffraction is an excellent example of the type of relationship we hoped the CRI funding would encourage," said Del. Harvey Morgan, chairman of the House Appropriations Higher Education Subcommittee. "This partnership leverages state dollars to provide increased private sector and federal funding and promises to generate intellectual property that may well result in jobs for Virginians."



L to R: Pres. Steger, Mr. Foster-Turner of Oxford Diffraction, Del. Morgan, Dean Chang

- The Department of Statistics has added two members to its Corporate Partners program, Becton Dickinson Diagnostics and Capital One. Continuing Corporate Partners include DuPont, Eli Lilly, General Electric, Kraft, Minitab, Pratt & Whitney and SAS. Secured funding for graduate student support has been obtained from Minitab and RJ Reynolds.
- Martin Chapman (Geosciences) is Director of the *Virginia Tech Seismological Observatory (VTSO)*. He provides technical guidance to utilities and their consultants on issues of earthquake engineering and seismic hazard for sites in the eastern United States. Data from the VTSO seismic network operation is compiled and distributed for hazard assessment and mitigation. During 2006-07, Chapman contributed much useful information to state and federal agencies such as MSHA, as well as to mining companies, such as Consolidated Coal, Inc.

II. International Education and Research: The College of Science is committed to fostering communities that value all cultures, languages, lands, and people. International collaborations will include the establishment of research and education centers and the expansion of study abroad.

- A memorandum of understanding (MOU) was developed between Springer-Verlag, InuTech and Icubed (a company owned by Math department member James Turner). This will provide opportunities for our students to study and intern abroad. This led to a web-based educational module in Computational Science which was used in the Graduate School's GEDI program. Two students did internships with InuTech in Summer 2006.
- Daniel Capelluto (Chemistry) and Carla Finkielstein (Biological Sciences) developed an exchange program with the Department of Human Biochemistry, University of Buenos Aires.
- An MOU between Virginia Tech and the University of Naples, Italy was signed to establish an exchange program to study the volcanoes of southern Italy. Under this agreement, one Italian student, Claudia Cannatelli, has completed the requirements for the Master's degree at Virginia Tech, and two students from the University of Naples entered the Ph.D. program at Virginia Tech in August 2006.
- The Virginia Tech Crystallography Laboratory hosted a number of research visits by faculty from across Europe, including the Bayerisches Geoinstitut, Germany, University of Opole, Poland, University of Milan, Italy, University of Padua, Italy, Universitaet Hamburg, Germany, and the University of Durham, England. In collaboration with Prof. Mihailova (Hamburg), a joint research proposal was submitted to the NSF and DFG to fund further collaboration.
- The International Travel Grant Supplement (ITGS) program helped support twenty faculty in the College of Science to travel and give presentations in Australia, China, Columbia, Denmark, France, Greece, Ireland, Italy, Japan, Mali, South Korea and the United Kingdom.
- Ignacio Moore (Biological Sciences) led a four-week study abroad program in Ecuador for the past two summers. Students are exposed to a wide diversity of ecosystems from the high Andes to lowland tropical



rainforests. The class ends with a study of the flora and fauna of the Galapagos Islands. Each year 13 undergraduate students participate.

- Jerry Via (Biological Sciences and Dean's Office) is the director of a Spring Semester Program in the Dominican Republic. The program consists of 18 hours of course work (6 courses) taught by Virginia Tech faculty. Each course is taught intensively in a two-week block. The program hosted 11 students this past spring and plans are underway for spring 2008.

III. PK-12 Education in Science, Technology, Engineering, and Mathematics (STEM): This goal is achieved through multi-disciplinary research partnerships, teacher preparation, professional development opportunities for PK-12 educators, and programs connecting PK-12 to STEM undergraduate programs.

- One of the most active K-12 programs in the college is led by Mike Rosenzweig (Biological Sciences) in collaboration with Llyn Sharp, Outreach Coordinator for Geosciences. They run a Science Outreach Program (SOuP) that focuses on K-12 teacher training, and value added to sponsored research proposals (<http://www.socm.vt.edu/>). Llyn is also a trainer for national earth and environmental science programs including GLOBE (www.globe.gov), Project WET (www.projectwet.org), and Save Our Streams (www.vasos.org).
- During 2006, Llyn Sharp and Mike Rosenzweig served as coordinators for VT-STEM, the University's K-12 Outreach Initiative in Science, Technology, Engineering, and Math. Sponsored by the Division of Outreach and International Affairs, this is a group of over 50 people and programs seeking to promote excellence in STEM education in Virginia through links to schools, teachers, and VT projects.
- The Geosciences Museum provides an additional resource for outreach with over 5400 visitors during the 2006-07 AY, including VT students, campus visitors, K-12 school groups, and 4-H groups from the local area and Southwest Virginia.
- Chemistry's outreach to K-12 reached around 8,500 students in the past seven semesters and trained over sixty teachers in workshops. A group of teachers from the Roanoke Valley Governor's School visited campus to learn how they might incorporate nanotechnology into their curriculum.
- Wayne Patty (Mathematics) runs their K-12 teacher professional development. Susan Hagen teaches an online algebra course for middle school teachers via the Highly Qualified Program in conjunction with JMU, VCU, NSU, UVA, and UMW. The department sponsors the VT regional Math contest involving 40 colleges/universities and 200 students. Mathematics ran the annual Women's Career Day at the Math Emporium with 20 regional middle schools, 200 girls and a panel of 5 alumnae. During Math Awareness Month, a poster contest was sponsored for Montgomery and Giles K-6 students.

IV. Student Engagement: Undergraduate and graduate students have opportunities to engage in service-learning and civic activities. These opportunities will amplify student learning and build professional skills to strengthen student academic careers and professional development.



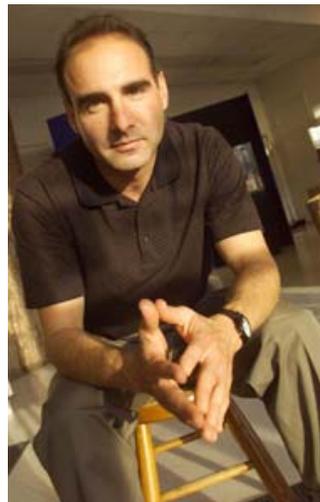
- Nine companies visited the Department of Geosciences to recruit graduate students during the fall semester: BP, Cabot Oil & Gas, Chevron Corp., Chesapeake Energy, ConocoPhillips, Hess, Iluka Resources, Marshall Miller, and Newmont Mining. Six graduate students received offers of employment as a result of these interviews.
- Ryan Clark and Kecia Foster, undergraduate psychology majors, received department awards for outstanding service for their many hours of volunteer work with various local and national agencies.
- Undergraduate physics majors took part in an outreach program, conducted by the department, visiting local and regional K-12 classes/student groups and giving informative and entertaining physics presentations and demonstrations. This program was coordinated by James Robertson, a graduating senior in Physics.
- Economics enhanced their collaboration with Sungkyunkwan University (South Korea) that enabled 24 Korean graduate students to come to Blacksburg in early 2007 for a one-month intensive course in Applied Economics taught by Aris Spanos.
- The Psychological Services Center and Child Study Center, graduate training clinics for doctoral psychology students, provided psychological assessment and treatment services to more than 100 community residents.

Links to college/departmental newsletters:

College of Science	http://www.cos.vt.edu/news/spr07mag.pdf
Biological Sciences	http://www.biol.vt.edu/alumni/newsletter.html
Chemistry	http://www.chem.vt.edu/news/ElementsSpring2006.pdf
Geosciences	http://www.geos.vt.edu/news/magazine/
Physics	http://www.phys.vt.edu/Newsletters

Outreach award

Mike Rosenzweig was awarded the **2007 College of Science Award for Outreach Excellence** for promoting the intersection between college- and community-level learning and discovery. He co-founded the nonprofit corporation known as SEEDS (Seek Education, Explore and DiScover) in 1995 which has worked with over 720 students in summer camp programs, 55 service-learning projects for college students, and countless other citizens and youth in a variety of programs. He has generated over \$320K in support for SEEDS. With Llyn Sharp (2006 COS Outreach Excellence recipient), he created a Science Outreach Program (SOuP). Mike seeks foundation and federal funds to strengthen and grow the existing program and he has obtained over \$250,000 to support outreach programs.



Spotlights

2007
*College of Science
Outstanding
Graduate Student*
Lori Blanc
Biological Sciences

*Carroll B. Shannon
Certificate of
Teaching Excellence*
Ann Stevens, Biol
Jeannine Eddleton
Daniel Crawford,
Chem

*University
Distinguished
Professor*
Michael Hochella
Geosciences

2007-08
*Barry M. Goldwater
Scholarship*
Rebecca Sinnott
Biochemistry and
Psychology

*John L. Chase
Meritorious
Service Award*
Debbie Wilson
Career Services

*George Polya Award
Mathematical Assn
of America*
**Ezra "Bud"
Brown**
Mathematics

*A Fellow in the
American Physical
Society (APS)*
Royce Zia
Physics

2006
*Cottrell Scholar
Award, Research
Corporation*
Diego Troya
Chemistry

*Southern Economic
Association Kenneth G.
Elzinga Distinguished
Teaching Award*
Sheryl Ball
Economics

2007
*College of Science
Outstanding
Master's Student*
Austin Amaya
Physics / Mathematics

*A. Alan Baird
Memorial Award*
Manisha Patel
Economics and
History

2006
*President's Award
for Excellence*
**Elizabeth
Waterman**
Biological Sciences

*VT's 2007 Undergraduate
Woman of the Year and
College of Science
Outstanding Senior*
Alison A. Smith
Biology / Chemistry

2007 *College of
Science Award for
Outreach Excellence*
**Michael
Rosenzweig**
Biological Sciences

2007-08
*AdvanceVT
Research Seed
Grant*
Lisa Belden
Biological Sciences

*COS Roundtable
Scholarship*
Michael Knepp, Psc
Juliet Mammei, Phys
Adam Wallace, Geos

*North American
Benthological Society
Award of Excellence*
Jack Webster
Biological Sciences

*A Fellow in the
American Association
for the Advancement
of Science (AAAS)*
Bob Bodnar, UDP
Geosciences

*Air Force's Young
Investigator
Research Program
Award*
Giti Khodaparast
Physics

*NSF Graduate
Research Fellowship*
Brian Skinner, Phys
Laura Hamm, Geos
Brian Lutz, Biol

2006 *Diggs Teaching
Scholar Award and
2007 College of Science
Diversity Award*
Jill Sible
Biological Sciences

*Sigma Xi
Undergraduate
Research Award*
David A. Adams
Physics

*Sigma Xi
Ph.D. Research
Award*
Sandor Benczik
Physics

2006 *Charles
Schuchert Award,
Paleontological
Society*
Shuhai Xiao
Geosciences

Alumni Relations

As Director of Alumni Relations for the College of Science, Robin H. Jackson oversees the programming and administrative functions for this office. Amy C. Self assists the Alumni Relations office in her position as Administrative and Fiscal Support Specialist for both Alumni and Development.

The mission of the alumni relations office is to serve as the primary linkage to our alumni 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 and involvement:

- COS program for Women in Leadership and Philanthropy – June 5, 2006
- Summer Around the Drillfield with focus on COS – June 22-25, 2006
- Alumni Reception featuring COS Dean and Department Head of Geosciences, Houston TX – June 26, 2006
- COS Pre-Game Hospitality Tent – September 30, 2006
- Fall Focus Career Fair COS Display and Reception – October 4-5, 2006
- COS Oxford Diffraction Press Conference – October 27, 2006
- Fall Roundtable Meeting – October 27-29, 2006
- Department of Biological Sciences Board Meeting – November 10, 2006
- Department of Geosciences Alumni/Faculty Dinner – November 10, 2006
- COS Homecoming 'AfterGate' – November 11, 2006
- Department of Physics – Ladies of Robeson Fall Alumni Career Panel – November 10-12, 2006
- COS Pre-Game Hospitality Tent – November 25, 2006
- Department of Geosciences – AGU Alumni Reception – San Francisco CA – December 14, 2006
- COS Commencement Breakfast – December 15, 2006
- Department of Biological Sciences Board Meeting – February 24, 2007
- Department of Biological Sciences Juried Art Exhibit – February 24, 2007
- Department of Physics Alumni Reception, Denver CO – March 6, 2007
- Department of Biological Sciences Gilbert Linkous Student Showcase – March 15, 2007
- College of Science Black Alumni Breakfast – March 17, 2007
- Roundtable Meeting – March 23-25, 2007
- COS Scholarship Banquet – March 24, 2007
- Directions Career Fair COS Display and Reception– March 29, 2007
- Career Services Junior Jumpstart Program - April 10, 2007



- Department of Chemistry Board Meeting – April 13, 2007
- Department of Physics Awards Luncheon and Ceremony – April 13, 2007
- COS Campaign Kickoff College Showcase - April 28, 2007
- COS Commencement Reception – May 11, 2007
- COS Departmental Commencement Ceremonies – May 12, 2007
- Old Guard COS Breakfast – May 17, 2007
- COS program for Women in Leadership and Philanthropy – June 25, 2007
- ‘A Day in the Life of College Admissions’ – June 29-30, 2007

Events in planning for 2007 – 2008

- Local, regional, and national ‘Meet the Dean’ alumni events – Dates TBD
- VaBiotechnology Association and VT Community Luncheons and Receptions – Dates TBD
- COS Pre-Game Hospitality Tent - September 1, 2007
- Fall Focus Career Fair COS Display – September 21, 2007
- Department of Geosciences 100th Anniversary Reunion – October 5-6, 2007
- Roundtable Meeting – October 19-20, 2007
- COS Pre-Game Hospitality Tent - October 25, 2007
- Nano Day, November 10, 2007
- COS Homecoming – November 10, 2007
- Department of Biological Sciences Alumni Advisory Board – November 10, 2007
- Commencement Breakfast – December 14, 2007
- COS Regional Event, New York City, January 2008
- Directions Career Fair COS Display – February 15, 2008
- Roundtable Meeting – April 4-5, 2008
- Commencement Reception – May 10, 2008
- Old Guard Breakfast – May 2008
- Department of Physics Alumni Reception, NOVA, spring 2008
- Black Alumni Reunion Breakfast – spring 2008
- ‘Group Soup’ – spring 2008
- ‘Football Physics’ – spring 2008
- Department of Biological Sciences Alumni Advisory Board – spring 2008
- Department of Chemistry Alumni Reception – fall 2008
- Women in the College of Science program – fall 2008



Development

The College of Science Alumni Relations and Development offices continue their mission of connecting alumni to the college and its departments through personal and professional involvement both on and off campus and through private and corporate giving.

Donors pledged over \$14M to the college this fiscal year, with significant gifts designated to several endowments supporting scholarships and faculty positions, as well as the college's Institute for Advanced Study. Notable leadership gifts were made to the Mathematics, Geosciences, Chemistry, and Physics departments.

The college's Campaign Steering Committee will be chaired by Mary Blackwood (Psychology '73) and will organize several important alumni and development functions for the upcoming capital and endowment campaign. Regional activities and special presentations from Dean Chang are planned for College of Science alumni for the upcoming year.

Summary of Development activities and initiatives

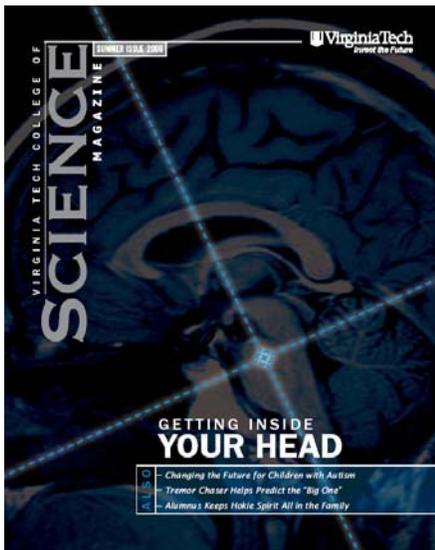
- The college secured over \$14M pledged commitments of support from generous alumni and donors.
- The development office increased the prospect pool of the college to over 500 major gift prospects.
- Jennifer Orzolek was hired in December 2006 and joined the college's development staff as an Assistant Director of Development.
- Judy Taylor was hired in February 2007 and joined the college's development staff as a Development Associate.
- Kellie Morris assumed a new position within the Office of Central Development. Kellie was a valuable team member and the office was sad to see her leave.
- We have managed the college's OSB operating and development budgets within projected costs for the fiscal year.
- The college experienced significant corporate support such as a completion of the X-ray Crystallography Laboratory upgrade, geophysics software licenses, geosciences mainframes, mass spectrometer support and continued support for several postdoctoral and graduate student fellowships.
- The college continued its focus on corporations that continued to support existing programs and align with the college's strategic plan. The college will continue working with these strategic partners, but also place an additional focus on a philanthropic project-based agenda.
- The college was happy to announce a new corporate partners program for the Department of Biological Sciences, called VT BioSPIRE. This program hopes to yield similar benefits as seen with the Department of Statistics' Corporate Partners Program, addressing several key needs of these industry segments.



Communications

Catherine Doss manages the communications function of the college. The communications goal for the 2006-07 year was to increase the awareness and understanding about the learning, discovery and engagement being carried out within the college among identified target audiences, while at the same time supporting the overall brand identity of Virginia Tech. Several activities and achievements contributed to the success of the College's communication plan.

- Two issues of the College of Science Magazine featured faculty, staff, and student accomplishments.



These magazines can be found on the College of Science website at:

<http://www.cos.vt.edu/news/>

- A fall 2006 press event announced Virginia Tech's collaboration with Oxford Diffraction. Approximately 50 people attended the event, including members of the state House Appropriations Higher Education Subcommittee, several college deans, department heads, and research faculty.
- In addition to dozens of media hits that cited one or more of the college's departments in local, state, and national news outlets, several hits that were particularly noteworthy:
 - Blooming of the corpse plant in Biological Sciences was picked up by the Associated Press, the Washington Post and the Richmond-Times Dispatch.
 - Djavad Salehi-Isfahani (Economics), Bob Stephens (Psychology), and Tom Ollendick (Psychology) were quoted in USA Today.
 - The Richmond Times-Dispatch did feature articles on research by Harry Dorn (Chemistry), Tom Ollendick (Psychology), and Russell Jones (Psychology).

- Mike Hochella (Geosciences) was featured in Science Magazine and National Public Radio's Planet Earth.
- Four faculty members from the College were featured in the Spotlight on the university's homepage:
 - Karen Brewer (Chemistry) and Brenda Winkel (Biological Sciences) and their light-activated cancer therapy research.
 - Russell Jones (Psychology) and his outreach efforts following Hurricane Katrina.
 - Beate Schmittmann (Physics) and women in science and leadership at Virginia Tech.
 - Tom Ollendick (Psychology) and his research on child phobias.
- Jeff Walters (Biological Sciences) and Martha Ann Bell (Psychology) were featured in Virginia Tech's Research magazine.

Diversity Initiatives

The College of Science Diversity Committee was chaired by Anne McNabb (Biological Sciences) and members were Mark Anderson (Chemistry), Russell Jones (Psychology), Bob Rogers (Math), Madeleine Schreiber (Geosciences), Chris Thomas (Physics and representing staff), and Jack Finney (COS and ex officio member).

The committee's overall goals are:

- To promote greater diversity among faculty, staff, 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:

- Updated the Diversity section of the COS webpage and will continue to work with the COS Web Design Committee to enhance the prominence of the pages.
- Organized the 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. The focus area groups--undergraduate pipeline activities, graduate recruitment, and faculty recruitment—were formed and several meetings occurred. Plans for new programs are being finalized for 2007-08.
- Awarded the first College of Science Diversity Award to Jill Sible, Associate Professor of Biological Sciences.



Diversity Highlights

- The College of Science will have three women join the faculty in August 2007: Dong-Yun Kim (Statistics), Inyoung Kim (Statistics), and Erin Kraal (Geosciences).
- Beate Schmittmann and Roseanne Foti served as AdvanceVT Professors and Nancy Ross and Jack Finney served on the AdvanceVT Leadership Team.
- Victoria Soghomonian led the AdvanceVT Scholars Program, designed to attract talented women faculty to VT.
- Jack Finney chaired the AdvanceVT Department Climate Committee, and Joe Merola and Carla Finkielstein served as committee members.
- Lisa Belden (Biological Sciences) received an AdvanceVT Research Seed Grant.
- Lori Blanc (Biological Sciences) received an AdvanceVT Postdoctoral Fellowship.
- Sue Hagen (Mathematics) teaches a summer course with VT-STARS, a preparatory program for minority high school students.



Dr. Jill Sible and Nassiba Adjerid, a 4th year Ph.D. student, study how fluorescently stained DNA/nuclei are progressing through the cell cycle in order to research what regulates cell division and cellular responses to DNA damage.

- Llyn Sharp (Geosciences) participated in VT-STARS in summer 2006 and introduced high school students underrepresented in Science, Technology, Engineering, and Math (STEM) to water quality field work, data collection and interpretation, and community watershed planning.
- Faculty members in Statistics participated in StatFest, a one-day conference aimed at encouraging undergraduate minority students to pursue careers in statistics and graduate studies in statistical sciences.
- Departments in the college are active participants in MEAMP, MAOP, VT PREP, and the McNair Scholars program.
- The Department of Psychology supports a chapter of the Association of Black Psychologists, which has strong undergraduate and graduate participation.
- The “Ladies of Robeson” is an active group of female students and faculty who meet for networking, organize alumni events, and invite visiting speakers. The intent is to promote the success and networking of female students in physics.

COLLEGE OF SCIENCE SCORECARD 2006-07 (Updated 8/15/07)

Measure(s)	College Data	Comments
Number of graduating undergraduates who participated in research experiences.	46.5% (341) of graduating seniors completed an undergraduate research course.	Participation in undergraduate research has been relatively stable. The College supports REU supplements for funded research and plans to encourage submission of REU supplements for research grants as a major means of promoting undergraduate research. Growth in faculty will also promote additional research opportunities for greater numbers of students.
Minority student enrollment	516 undergraduate students from minority racial and ethnic groups were enrolled during 2006.	The total number of undergraduate students from minority racial and ethnic groups increased from past years. Plans for 2007-08 include recruitment trips to high-population areas to meet with school counselors.
Minority students entering the freshman class.	102 students from the entering freshman class were from minority racial and ethnic groups in 2006.	Plans for 2007-08 include recruitment trips to high-population areas to meet with school counselors.
PhD and EdDs Awarded	67 PhDs were awarded in the college in 2005-06.	Highest number of PhD awards since 2001, and reflects departments' focus on doctoral students.

Graduate enrollment profile - masters, doctoral, and professional	166 masters students 372 doctoral students	Graduate programs have shifted enrollments from masters programs to doctoral programs. Continued focus on growing doctoral programs toward goals. Primary mechanism will be securing additional GRA positions.
Total expenditures in grants and contracts for research. (NSF Expenditures)	\$21,153,478	Steady increase over the past 4 years. Cluster-driven research proposals portend greater increases over next several years.
Count and average value of sponsored awards	220 awards in FY2007 Average amt = \$75,147	10% growth in number of awards, but decrease in average amount. Larger proposals will be facilitated by dean's office and departments, with a special focus on cluster-related proposals.
Faculty arts and humanities awards, fellowships and memberships.	Mike Hochella and Bob Bodnar, Fellows, American Geophysical Union Bob Bodnar, Fellow, American Association for the Advancement of Science Royce Zia, Fellow, American Physical Society	COS will be vigilant in nominating faculty members for appropriate national awards, as well as providing support for faculty members' involvement in national and international activities that portend invitations for awards, fellowships, and memberships.
Annual number of new licenses, start-ups and patents	COS data not available	

<p>Number of graduating undergraduates who have participated in a study abroad experience or foreign language course</p>	<p>209 students (28.5%) graduated with at least one foreign language/literatures course or studied abroad.</p>	<p>The percentage of students involved with foreign language courses or study abroad has been relatively stable.</p> <p>New initiatives with international colleagues and universities have been developed by faculty members from all departments in the College of Science.</p>
<p>Undergraduate participation in service learning and experiential programs. (Also in Learning)</p>	<p>189 COS undergraduates participated in service learning courses.</p> <p>599 COS undergraduates participated in experiential learning courses.</p>	

<p>Diversity of the faculty</p>	<p>ETHNICITY</p> <p>1 American Indian/Alaskan Native (<1%) 25 Asian/Pacific Islander (8.25%) 4 Black (1.32%) 217 Caucasian (71.6%) 1 Hispanic (<1%) 55 Non-resident alien (18%)</p> <p>GENDER</p> <p>Tenured/Tenure-Track Faculty 84% male, 16% female Non-Tenure-Track Instructional Faculty 49% male, 51% female AP Faculty 50% male, 50% female Research Faculty 74% male, 26% female Total Full-Time Faculty 77% male, 23% female</p>	<p>COS plans to meet with all search committees to discuss enhancing pools of candidates and identifying shortlists that include diverse candidates.</p> <p>The Dean will work with department chairs and heads to successfully recruit diverse faculty members.</p>
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Data tables related to each Scorecard measure are available at <http://www.irpa.vt.edu/> by clicking on Strategic Plan Shared Performance Measures (link at bottom of the webpage).