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the **POWER** of  
**COMMUNITY**

## The Power of Community at Virginia Tech



### President's Message: **Charles W. Steger**

"**Hokie Spirit: The Power of Community**" is a fitting theme for the 2006-07 Annual Report for it brings to mind the resilience and fortitude of the Virginia Tech community—a community that extends far beyond the faculty, staff, students, and alumni of this institution—after the horrendous loss of lives on April 16.

The events of April 16 are forever seared in my memory and the collective memory of the Hokie Nation. We shall never forget the 32 bright students and talented faculty members who died that day. Tragically, most were killed in the traditional sanctuary of the classroom, a location revered in education to seek discovery of new worlds and gain knowledge that would enrich their lives. Madness prevailed that day, but our determination for a better future will prevail in the days and years to come.

We continue to grieve with and support their families and friends. We have developed an entire unit, the Office of Recovery and Support, to address their needs. We devoted the university's Hokie Spirit Memorial Fund to help the injured survivors and the families of the deceased and distributed more than \$8 million to them in October 2007.

We continue to address issues of campus safety and plan to make significant investments in people and infrastructure to ensure our university campus remains a sanctuary of discovery and knowledge.

We seek a return to normal, but we know it will be a "new normal," not quite like before. Still, we must move—and are moving—forward; we must continue—and are continuing—the business of educating the young men and women who will lead us into the future.

Following April 16, such groups as Hokies United made it their mission to comfort and remember, as they did after hurricanes and tsunamis. But it does not take a tragedy alone to tap the power of community. Students went to the Dominican Republic to build a school and made The Big Event right here in the New River Valley a success by completing 265 service projects in one day.

This year's theme, Hokie Spirit, also recognizes the backbone of the university's accomplishments in teaching and learning, research and discovery, and outreach and engagement throughout the fiscal year. Hokie Spirit permeates our interactions as we engage others in projects that will make our communities, from local to global, stronger. When university researchers and experts attack complicated problems, such as partnering with Carilion Health System to build a new medical school or establishing a task force on energy, they are serving communities worldwide.

It takes collaborative research and discovery to develop solutions to difficult problems. The Institute for Critical Technology and Applied Science (ICTAS), for example, is just one of the groups on campus that uses talent from across numerous disciplines to advance knowledge. In 2006-07, ICTAS officials announced that they had joined the Virginia-Maryland Regional College of Veterinary Medicine, the Wake Forest-Virginia Tech School of Biomedical Engineering and Science, the biomedical research programs at the Edward Via Virginia College of Osteopathic Medicine, and others in focusing on innovative programs connecting nanotechnology and healthcare.

Other projects among the thousands under way at Virginia Tech in 2006-07 included a step forward in designing drugs for type 2 diabetes, a new membrane that can be used to

Virginia Tech is a great university with a special role to play. While we will never forget, we will call on our spirit and community to move forward and to renew our commitment to growing and learning.



separate salt from water, and a new way to make optical fibers. Research numbers keep rising—to \$321.7 million in the year ending June 30, 2006 (the most recent figures available), an 11 percent increase over the previous year. You can read about several of our research projects in this report.

Many of Virginia Tech's world-class researchers are also world-class educators who are helping to shape the next generation of community leaders. The university recognized three of these educators by elevating them to distinguished professorships—University Distinguished Professor or Alumni Distinguished Professor—during the fiscal year.

Off campus, professional organizations recognized the university's scholars by naming several as Fellows, and the Commonwealth of Virginia honored two others with the Virginia Outstanding Faculty Award. On the national stage, one researcher received the Presidential Early Career Award for Scientists and Engineers, the highest national honor for researchers in the early stages of their careers.

With a faculty of top educators, Virginia Tech works hard to create an environment that produces rigorous academics. In the College of Liberal Arts and Human Sciences, scholars are now getting a head start through the Undergraduate Research Institute, which refines their inquiry skills and enhances their résumés. Virginia Tech also recognized two outstanding departments by presenting them with the University Exemplary Department Award.

Our rigorous academics produce students who excel. In 2006-07, those students included a Barry M. Goldwater scholar, a Fulbright scholar, and a White House Fellow.

In today's world, most communities rely on technologi-

cal innovation. For instance, the College of Engineering, building on its success with the System X supercomputer, established the Center for High-End Computing Systems to build a world-class computer systems research group. That sort of innovation is also helping other communities, such as Danville, Va., where the Institute for Advanced Learning and Research earned a Governor's Technology Award.

The university also improved its internal technology by debuting a more effective website and by introducing Virginia Tech Mobile, a system that delivers Virginia Tech news and information to cell phones and personal digital assistants.

As has been evident for a number of years, private philanthropy plays a vital role in the operation of even a public university. Virginia Tech has been blessed with a strong and spirited community of benefactors, and the 2006-07 fiscal year was no exception. In a remarkable show of strength and support in a year when Virginia Tech needed it most, private giving to the university reached \$83.8 million, an 11 percent increase over 2005-06 and a record for any year.

As I said at Commencement in May, at its core, Virginia Tech is a great university with a special role to play. While we can never forget the tragedy of April 16, we will continue to rely on our Hokie Spirit and our worldwide community of support as we renew our commitment to growing and learning—and to inventing the future.

## April 16 and the Hokie Spirit



### Ribbonlogos

Memorial ribbons paid tribute to the victims of April 16.

**E**ven before the morning had ended, Monday, April 16, 2007, had become the

**darkest day in Virginia Tech history.** In two separate shootings, an emotionally disturbed student ended the lives of two students in Ambler Johnston Residence Hall and, more than two hours later, 30 students and faculty members in Norris Hall before killing himself as police closed in.

Law enforcement officers and first responders rushed to the university, helping campus police and the campus rescue squad at the crime scenes and providing aid to 26 survivors—six of whom were injured in jumping from a classroom window—and transporting them to area hospitals.

Following the Norris tragedy, the campus began closing at noon and remained closed for the remainder of the week. Students were given the choice of returning to classes the following Monday, April 23, or skipping the remainder of the semester and taking the grades they had at that point. Those who returned—and the numbers were high at the beginning of the week—were given the choice of completing the semester and taking final exams or taking the grade they had at the end of the semester and skipping exams. No one was dismissed from school for poor grades.

Hundreds of media poured onto campus, interviewing anyone who would talk about the tragedy. The students who spoke to them—and those who didn't—displayed dignity and character and showed the world the high caliber of students who study and learn at Virginia Tech. Administrators answered questions calmly and professionally during a number of news conferences to update the media and during one-on-one interviews.

### Memorial services and memorials

The day of the tragedy, President Charles W. Steger scheduled a convocation in Cassell Coliseum for the next day to memorialize the victims and to bring the campus community together in a time of shared grief. Virginia Gov. Tim Kaine and U.S. President George Bush joined a number of speakers from the university and the community in addressing the pain and suffering of the Hokie Nation and in offering words of encouragement and support, but none so eloquently as University Distinguished Professor Nikki Giovanni, whose words, "We will prevail. We are Virginia Tech," became

the mantra of a Virginia Tech family that expanded to the far reaches of the globe as shocked people the world over learned about the tragic events.

The night of April 17, thousands of people packed the Drillfield for a candlelight memorial, and the Drillfield became the site for several other memorial ceremonies in the days that followed. Gov. Kaine declared Friday, April 20, a state-wide day of mourning, and Hokies United, a student-led organization that had provided support for disaster areas in other parts of the world, called for everyone to wear orange and maroon on that day. The response was overwhelming.

Shortly after the shootings, Hokies United placed 32 Hokie Stones on the Drillfield, one stone for each student and faculty member whose life was taken that day. The semi-circle of stones at the base of the viewing stand became a place to gather, to mourn, and to reflect, and it inspired a more enduring memorial that was erected later in the summer. Tens of thousands of sympathy, support, and memorial messages and items ensured the campus that it was not alone. So many people, organizations, and businesses wanted to contribute money to honor the victims that a special fund was established: the Hokie Spirit Memorial Fund. By summer's close, the fund exceeded \$7 million, and Kenneth Feinberg, who had managed distribution of the 9/11 compensation fund, volunteered his services and was appointed by the president to administer distribution of the new fund at Virginia Tech. While the needs of the community were great, President Steger determined that the best use of the funds would be direct contributions to those who suffered the most: injured students and families of those who were slain.

### The aftermath

The days, weeks, and months that followed demonstrated the viability and power of Hokie Spirit as people from throughout the world joined with our faculty, staff, students, and alumni to grieve for the students and faculty members who died that day, to offer sympathy to the victims' families and friends, and to provide support for the university to begin healing and moving forward. Relief workers assisted campus counselors with grief counseling, provided food to volunteer workers and various departments and offices, erected tents to cover the massive number of sympathy and support items, and gave whatever other assistance they felt was needed.

# *In Memoriam*

At Steger's request, the governor appointed a Virginia Tech Review Panel, which became known as the Massengill panel, named after its chair, Gerald Massengill. The panel issued its report in late August 2007. Steger also initiated an internal review and appointed three review committees to examine campus security, communications infrastructure, and the interface and exchange of information across departments, particularly the intersections between academics, counseling, the disciplinary system, the legal system, and police. The Massengill panel and the three internal review committees developed 380 recommendations that would make not just Virginia Tech safer, but would provide a safety blueprint for all colleges and universities.

Carrying out the recommendations, however, cannot overcome everything associated with April 16. The innocence of an idyllic campus community was shattered that day, and we lost the sense of peace that comes with learning. The tragedy will long be remembered and will always be associated with the university's name. But it will also spur memories of the Hokie Spirit, that resilience and fortitude exhibited by the campus and its extended community. As the university moves forward—and moving forward is essential for any university—it will never forget the precious lives taken from us.



Ross A. Alameddine  
Christopher James Bishop  
Brian Roy Bluhm  
Ryan Christopher Clark  
Austin Michelle Cloyd  
Jocelyne Couture-Nowak  
Kevin P. Granata  
Matthew Gregory Gwaltney  
Caitlin Millar Hammaren  
Jeremy Michael Herbstritt  
Rachael Elizabeth Hill  
Emily Jane Hilscher  
Jarrett Lee Lane  
Matthew Joseph La Porte  
Henry J. Lee  
Liviu Librescu  
G.V. Loganathan  
Partahi Mamora Halomoan  
Lumbantoruan  
Lauren Ashley McCain  
Daniel Patrick O'Neil  
Juan Ramón Ortiz-Ortiz  
Minal Hiralal Panchal  
Daniel Alejandro Perez  
Erin Nicole Peterson  
Michael Steven Pohle Jr.  
Julia Kathleen Pryde  
Mary Karen Read  
Reema Joseph Samaha  
Waleed Mohamed Shaalan  
Leslie Geraldine Sherman  
Maxine Shelly Turner  
Nicole Regina White

# Research, Scholarship

## help mold better communities

Research produces the means to improve communities and enrich lives, and one goal of Virginia Tech is to disseminate the knowledge learned through research to benefit society. During 2006-07 university researchers launched or advanced numerous projects that will help create a better future. A few examples follow.

### Nanotechnology and healthcare

Virginia Tech's Institute for Critical Technology and Applied Science (ICTAS) turned its focus to innovative interdisciplinary programs connecting nanotechnology and healthcare. A "tremendous potential for major discoveries in healthcare exists," said Judy Riffle, professor of chemistry and leader of the effort.

With that in mind and with support from the Commonwealth Research Initiative, ICTAS announced that it would fund efforts in four related areas: targeting drug delivery to treat diseases caused by intracellular bacterial pathogens and cancer; creating cellulose nanocrystals linked to antibodies for immuno-targeting; performing micro-injection of nanoparticles and using real-time spectroscopy in biological systems; and engineering nanoconstructs for targeted regulation of intracellular free radical concentration.

Virginia Tech's nationally ranked macromolecular program, the Virginia-Maryland College of Veterinary Medicine, the Wake Forest-Virginia Tech School of Biomedical Engineering and Science, the biomedical research programs at the Edward Via Virginia College of Osteopathic Medicine, and others on the Virginia Tech campus are combining their efforts under the ICTAS umbrella to work in this interdisciplinary thrust.

Approximately 7,000 square feet of interdisciplinary space housing three laboratories (nano-biomaterials synthesis, nano-biomaterials characterization of morphology and structure, and nano-medical research) will be dedicated to this effort in the ICTAS I building, scheduled for completion in 2008.

### VBI health-related projects

In a step forward in genome sequencing, an international team of researchers that includes Brett Tyler, a professor in the Virginia Bioinformatics Institute (VBI) at Virginia Tech, published the draft genome sequences of two deadly plant pathogens, *Phytophthora ramorum* and *Phytophthora sojae*. *P. sojae* causes severe damage in soybean crops and

*P. ramorum* is responsible for sudden oak death. The sequences of both genomes revealed a remarkable increase during evolution of the number of *Phytophthora* genes involved in infection and the ultimate death of their plant hosts. The work, which was published in the Sept. 1, 2006, issue of *Science*, will enable scientists to look more closely for possible interventions against these burdensome plant infections.

Work in the laboratory of VBI Assistant Professor Biswarup Mukhopadhyay led to important findings for researchers designing drugs for type 2 diabetics. The study investigated ways to control the activity of phosphoenolpyruvate carboxykinase, a key enzyme involved in the metabolic pathway used by the human body to produce glucose. In time, the project should help researchers to identify potential drug targets and develop new therapeutics that will slow down, but not fully eliminate, the body's overproduction of glucose.

In May, the Core Laboratory Facility at VBI announced that it had completed the largest ever Affymetrix GeneChip microarray study for a plant experimental system in an academic research setting. The project was designed to look for ways to promote long-term disease resistance in plants. The researchers are now probing the massive data sets generated in the experiments in search of crucial information that will help to protect soybeans from infection and disease.

### Sugar-to-hydrogen technology

Using synthetic biology approaches, Y.H. Percival Zhang, assistant professor of biological systems engineering at Virginia Tech, and colleagues Barbara R. Evans and Jonathan R. Mielenz of Oak Ridge National Laboratory (ORNL) and Robert C. Hopkins and Michael W.W. Adams of the University of Georgia, are using a combination of 13 enzymes never found together in nature to completely convert polysaccharides, or sugary carbohydrates, and water into hydrogen when and where that form of energy is needed.

Polysaccharides, such as starch and cellulose, are used by plants for energy storage and building blocks and are very stable until exposed to enzymes. When enzymes are added to a mixture of this starch and water, "the enzymes use the energy in the starch to break up water into only carbon dioxide and hydrogen," Zhang said.

A membrane bleeds off the carbon dioxide, and the hydrogen is used by the fuel cell to create electricity. Water, a



## DNA strands

Researchers are using National Institutes of Health funding to simulate biological processes and explore DNA flexibility.

product of that fuel cell process, will be recycled for the starch-water reactor. Laboratory tests confirm that it all takes place at low temperature—about 86 degrees F—and atmospheric pressure.

The vision is for the ingredients to be mixed in the fuel tank of automobiles, for instance. A car with an approximately 12-gallon tank could hold 27 kilograms (kg) of starch, which is the equivalent of 4 kg of hydrogen, which, Zhang estimates, would allow the car to travel more than 300 miles. One kg of starch will produce the same energy output as 1.12 kg (0.38 gallons) of gasoline.

The energy conversion efficiency from the sugar-hydrogen-fuel cell system is extremely high, and it is safer and cheaper than storing, transporting, and dispensing hydrogen gas.

### Students and cell phones

Cell phones have changed the way communities communicate, so a team of Kappa Omicron Nu Honor Society undergraduate and graduate students under Peggy S. Meszaros, professor of human development and director of the Center for Information Technology Impacts on Children, Youth, and Families, took a look at how university students use their phones. The research drew national attention.

The results from the large study of college cell phone users suggested that parents, who represent 80 percent of the cell phone bill payers, want their students to have and use their phones. Similarly, the students placed a strong value on the safety and security of having a cell phone. The report indicates that students are in regular communication through their cell phones, participating in an average of 11 calls per day. Eighty percent of the participants used their phones most often between the hours of 6 p.m. and midnight, seemingly taking advantage of the lower evening rates.

Female students differed from male students by using their cell phones for communication with immediate family members, including parents; speaking more often; and talking for longer times. There also was a clear trend toward having phones that combine multiple functions and are an accessory as well as a functional appliance.

### Optical fibers

Optical fibers are also important in our everyday lives. Nitin Goel, a graduate of the College of Engineering, along with a team of researchers discovered a new way to make optical

fibers with compound glass cores that is simpler and more cost-effective than the old way. Called “core-suction,” the method is ideal for producing the non-linear fibers required for fiber lasers, Raman amplifiers, and continuum generation.

“We are hoping that this technique can be used to manufacture specialty fibers with very unique characteristics, which are otherwise too difficult or too expensive to manufacture. These fibers can then be used for medical applications, sensors, or in telecommunications,” said Goel.

### Motions of a DNA strand

Virginia Tech researchers Jory Zmuda Ruscio, a Ph.D. student in genetics, bioinformatics, and computational biology, and Alexey Onufriev, assistant professor of



# Nanotechnology & healthcare

Tremendous potential for major discoveries in healthcare exists through Virginia Tech's innovative interdisciplinary research in the field of nanotechnology.

computer sciences and physics, used novel methodology and the university's System X supercomputer to carry out what is probably the first simulation that explores full range of motions of a DNA strand of 147 base pairs, the length that is required to form the fundamental unit of DNA packing in living cells. Contrary to a long-held belief that DNA is hard to bend, the simulation shows that DNA is considerably more flexible than commonly thought.

Onufriev and his group of biochemistry, physics, biology, and other computer science researchers received a \$1.1 million grant from the National Institutes of Health to develop the methodology for computer simulations of complex biological processes and to address the question of the atomic mechanism of DNA flexibility. The research might provide fundamental insights into how life works at the molecular level and might also have applications in drug discovery and rational drug design.

## Improved reverse osmosis process

Around the world, a number of communities depend on a process called reverse osmosis (RO) to separate salt from water. This process forces saltwater through a polyamide membrane, but the water cannot be disinfected with chlorine, which degrades the polyamide material. Now, researchers at Virginia Tech have created a new polymer membrane for RO that resists degradation.

The new material evolved from research into proton exchange membrane materials used in fuel cells, according to James McGrath, University Distinguished Professor of chemistry. McGrath's group received funding from the Office of Naval Research (ONR) to develop the RO material. ONR expanded the project to add Don Baird, professor of chemical engineering, to fabricate the membrane, which now must be made thinner to be competitive in the marketplace.

## Equine herpesvirus type-1

Sometimes, knowledge and experience from research is used to benefit the university community itself. Such was the case when the Virginia State Veterinarian's Office quarantined Marion duPont Scott Equine Medical Center on Feb. 20 in response to the suspected infection of two horses with equine herpesvirus type-1 (EHV-1), a major cause worldwide of epidemic abortion, perinatal mortality, respiratory disease, and neurological disorders in horses. Although the quaran-

tine lasted for more than a month, no horses died.

Dr. Martin Furr, the Adelaide C. Riggs Chair in Equine Medicine, noted that the university teaching hospital environment proved integral in containing this infection. "Because our faculty members conduct cutting-edge research into equine disease, we were prepared to handle this type of an outbreak," said Furr. "Although additional research into the prevention and treatment of EHV-1 is needed, our experience has taught us that the immediate implementation of emergency management procedures is the best way to stop the spread of this type of contagion."

According to Furr, new criteria were added to the center's biosecurity guidelines as a result of the infection, including the mandatory use of hand disinfectants and restrictions on visitor access to hospital facilities.

## Research rankings

Research numbers at a university like Virginia Tech add up quickly, and in 2006-07, Virginia Tech reported research expenditures of \$321.7 million for fiscal year 2006 (year ending June 30, 2006, the most recent available), an 11 percent increase over 2005.

At the same time, Virginia Tech's rank for agricultural and natural resources research jumped three places to 11th nationally, according to the National Science Foundation (NSF). While Virginia Tech's expenditures in this area increased by more than \$3.8 million in 2005 (the most recent report) to more than \$68 million, expenditures among the top 100 institutions decreased 1.4 percent overall.

The NSF defines agricultural science to include such disciplines as agricultural production, aquaculture, soil science, animal science, plant science, agronomy, forestry, fish and wildlife, international agriculture, and much more.





# HOKIE SPIRIT IN OUTER SPACE

Shuttle launch: NASA-MSFC

Virginia Tech's Hokie Spirit is alive in the nation's space program and has extended beyond the confines of Planet Earth.

## Christopher Kraft

On Sept. 30, 2007, Christopher C. Kraft Jr., a 1944 aerospace engineering graduate of Virginia Tech, was honored on campus by the National Aeronautics and Space Administration (NASA) for directing America's space program.



Capt. John Young, a former astronaut, presented Kraft with NASA's Ambassador of Exploration Award in a gathering of more than 100 of Kraft's prominent fellow alumni of the College of Engineering. In turn, Kraft presented the award—a small sample of lunar material encased in Lucite—to Richard Benson, dean of engineering, for permanent display in the college.

The moon rock awarded to Kraft is part of the 842 pounds of samples brought back to Earth during six Apollo lunar expeditions from 1969 to 1972.

"We are deeply honored by Dr. Kraft's decision to present his award to Virginia Tech's College of Engineering for permanent display," said Benson. "There is a generation of engineers, of which I am a part, who came of age during the Mercury, Gemini, and Apollo space missions. Dr. Kraft was the face of those missions—engineering at its daring best. Dr. Kraft's extraordinary contributions to NASA are just the measurable part of his legacy.... We'll never know the whole of his legacy, but we can safely say that few Americans have ever done so much to advance the engineering and scientific prowess of this great nation."

The Ambassador of Exploration Award will also go to the 38 astronauts and other key individuals who participated in the Mer-

cury, Gemini, and Apollo space programs for realizing America's vision of space exploration from 1961 to 1972.

A native Virginian, Kraft joined the Langley Aeronautical Laboratory of the National Advisory Committee for Aeronautics (NACA), the precursor of NASA, after graduating from Virginia Tech.

He had a phenomenal career. In 1958, he was selected as one of the original members of the Space Task Group, the organization established to manage Project Mercury. As NASA's director of flight operations in the 1960s, he was instrumental in the decision to land an astronaut on the moon. It was 1961 and the Russians had just sent Yuri Gagarin into space. Several weeks later, U.S. astronaut Alan Shepard completed a successful mission, spending 15 minutes in a suborbital flight directed by Kraft. Following that flight, President Kennedy challenged the country to land a man on the moon within the decade and return him safely to earth.

After Neil Armstrong set foot on the moon, Kraft went on to lead the planning and operational control of the two sub-orbital Mercury missions through Gemini, Apollo, Skylab, and the Apollo Soyuz test project.

He was deeply involved in the development of the Space Shuttle, playing a vital role in the decision-making process that created the Space Shuttle program, and he determined the initial configuration of the Space Shuttle system, a new concept in space transportation. Kraft was the director of NASA's Lyndon B. Johnson Space Center in Houston, Texas, from 1972 until his retirement in 1982.

## Virginia Tech flags, ribbon carried into space

In late spring, the space shuttle Atlantis and its seven astronauts carried a special, custom-designed Virginia Tech flag on a mission to the International Space Station as a tribute to and symbol of the resilient spirit of the Virginia Tech community following the April 16 tragedy.

"We are honored to be recognized by NASA in this way," said Virginia Tech President Charles W. Steger. "The relationship between Virginia Tech and NASA is long and deep with many hundreds of Virginia Tech alumni working in NASA today and many other Hokies who have contributed to its rich history and accomplishments.

"Our spirit of recovery is strong at Virginia Tech, and we share in the pride of being a part of Atlantis's mission," Steger added.

Astronaut and Virginia Tech alumnus Charlie Camarda (aerospace engineering Ph.D. '90) had carried a smaller Virginia Tech flag aboard the space shuttle Discovery during the July 26- August 9, 2005, mission. In May 2007, Camarda, who during his NASA career won more than 21 NASA awards for technical innovations and accomplishments, received the Virginia Tech Outstanding Graduate Alumni Achievement Award.

On April 25 a Pegasus rocket was launched that sported a Virginia Tech memorial ribbon logo in memory of the students and faculty members who died on April 16. The Aeronomy of Ice in the Mesosphere spacecraft is on a two-year mission to study noctilucent clouds, which shine brightly at night and are typically concentrated around the poles, to discover what makes them appear more frequently and at lower latitudes.

# Rigorous Academics

help produce community leaders

**Institutions of higher learning exist for a variety of reasons, but none is more important than producing learned citizens and leaders who are the glue of any community. At Virginia Tech, that process starts the moment a student arrives on campus.**

## Undergraduate Research Institute

In the College of Liberal Arts and Human Sciences, the recently established Undergraduate Research Institute provides scholars with a head start. While the primary benefits for undergraduates are refined inquiry skills and an enhanced résumé, the institute will also help students understand how research differs across disciplines. It plans to hold workshops in quantitative, qualitative, combined, and creative approaches to research.

“It has been documented that undergraduate research increases students’ ability to think, learn, and work independently,” said Diana Ridgwell, director of student development for the college. “Research also strengthens oral and written communication skills and sharpens critical thinking. In addition, students gain confidence and often find a faculty mentor.”

Arguably one of the most comprehensive undergraduate research programs at the university, the new institute offers small grants (\$300-\$1,000) for undergraduates and their mentors to obtain books or computer programs they need for their research projects or to travel to conferences to present their work. It is this kind of innovation that has led to an increase in doctoral and graduate enrollments during each of the past three years, with a sizeable jump expected in fall 2007.

## Exemplary Department Awards

Individual departments also work hard to help student scholars reach their potential, and since 1994 the University Exemplary Department Award has recognized the work of departments or programs that maintain a first-class teaching and learning environment for students and faculty.

In 2006-07, Virginia Tech recognized the Department of Communication in the College of Liberal Arts and Human Sciences and the Department of Engineering Education in the College of Engineering for developing and sustaining innovative and effective approaches to introductory courses.





## Undergraduate Research Institute

The Undergraduate Research Institute gives students a head start—in education and in life after college.

# EXEMPLARY

One approach was piloted in 1997 and expanded to a course sequence in 1998: Communication Skills I and II are broad-based foundational communication courses and learning communities. They integrate multiple forms of communication in a series of increasingly complex assignments over a year-long experience. Course assignments encourage students to develop research skills and to become skilled interpersonal and public communicators using written, oral, and visual forms. The sequence serves approximately 550 students per semester from a large variety of majors.

The groundwork for another approach came in 2004. In a move that was recognized by the National Academy of Engineering for its leadership, the College of Engineering transformed the Division of Engineering Fundamentals into the Department of Engineering Education. The change included a new graduate program in engineering education and a redesigned undergraduate course sequence that trains more than 1,200 first-year students each year. While the college's first-year curriculum has long been a national leader in providing hands-on laboratory instruction, engineering education has also developed a number of innovative approaches, such as the Earth Sustainability Project.

## Facilities to enhance teaching/learning

To guarantee that students are getting the most from innovative professors and programs, facilities must be up-to-date and have adequate space. To achieve that objective, the university is erecting or renovating numerous buildings.

Familiar buildings being modernized to meet today's demands include Cowgill, Burruss, Henderson, and the Art Armory. A number of existing classrooms across campus are also getting major renovations, including new ceilings, lighting, flooring, walls, and technology installations and upgrades.

The Institute for Critical Technology and Applied Sciences (ICTAS), which engages in path-finding and interdisciplinary research at the intersection of engineering, science, biology, and the humanities, will soon operate in three buildings on campus. The ICTAS Nanoscale Characterization and Fabrication Lab is already housed in the Corporate

Research Center. Construction commenced on ICTAS I, a 98,000-square-foot building on Stanger Street, with completion scheduled in 2008. ICTAS II is in the design phase.

Work also began on Bishop-Favrao Hall, which will house the Department of Building Construction and the new Myers-Lawson School of Construction, and is expected to be completed in fall 2008.

Additionally, construction of the Life Sciences I Building on Washington Street adjacent to Litton-Reaves Hall is under way and has a projected completion date of late 2007.

## Student achievements

Innovations and facilities like the ones found at Virginia Tech help lead to student achievement. A few examples of these achievements follow.

**Rebecca Sinnott**, a junior honors student in the College of Science, was awarded a Barry M. Goldwater scholarship for the 2007-08 academic year. Sinnott, a biochemistry major and psychology minor, is one of only 317 recipients nationwide of the prestigious scholarship.

Senior **Amanda Davis**, an international studies and human development double major, received a Fulbright Scholarship to study in Mexico at The Instituto Tecnológico y de Estudios Superiores de Monterrey. Davis will pursue a master's degree in public policy.

Honors student **Brian Skinner** is the recipient of a prestigious Graduate Research Fellowship from the National Science Foundation. Skinner, who double majored in physics and mechanical engineering, will use the \$90,000 award to research complex systems and emergent behavior in theoretical physics at the University of Minnesota.

**Jeffrey Daniel Stern**, a public administration doctoral student in the School of Public and International Affairs in the College of Architecture and Urban Studies, was one of 14 individuals from across the country appointed a White House Fellow by President George Bush,

**Tonya Sparks**, a doctor of veterinary medicine student from the Virginia-Maryland Regional College of Veterinary Medicine, was elected president-elect of the Veterinary Business Management Association, a national organization of veterinary students focused on the business side of the profession.



## Academic prowess

National rankings reflect Tech's focus on learning, discovery, and engagement.



## NATIONAL RANKINGS

Challenging academics also help lead to national rankings.

### Undergraduate

*U.S. News & World Report* undergraduate rankings included the following:

- Virginia Tech was 34th among national public universities. Among all national universities, including such private institutions as Harvard and Yale, Tech ranked 77th.
- The College of Engineering undergraduate program was ranked 17th in the nation among all accredited engineering schools that offer doctorates. It was ninth among engineering schools at public universities.
- The Pamplin College of Business undergraduate program was ranked 37th among the nation's undergraduate business programs and 22nd among public institutions. Pamplin's overall ranking places it in the top 10 percent of the approximately 460 U.S. undergraduate programs accredited by the Association to Advance Collegiate Schools of Business International.
- Seven different undergraduate programs in the College of Engineering were ranked in the top 25 among peer programs nationally: the industrial engineering program ranked seventh; civil engineering, 11th; environmental engineering, 11th; mechanical engineering, 15th; aerospace engineering, 16th; electrical engineering, 20th; and chemical engineering, 23rd.

### Other Rankings

- Virginia Tech ranks in the top 20

public colleges and universities nationally among colleges that offer a first-class educational experience at a bargain price, according to *Kiplinger's Personal Finance* magazine.

- The College of Architecture and Urban Studies' undergraduate architecture program ranked fourth nationally and first among public universities, and the interior design program ranked seventh, according to *DesignIntelligence*, the only national college ranking survey focused exclusively on design.

### Graduate

*U.S. News & World Report* graduate rankings included the following:

- The College of Engineering's graduate program ranked 33rd nationally. For the second year, the industrial engineering graduate program in the Grado Department of Industrial and Systems Engineering was ranked eighth among peer programs nationally, and the civil engineering program in the Via Department of Civil and Environmental Engineering was ranked 10th.
- The career and technical education program in the College of Liberal Arts and Human Sciences' School of Education ranked sixth in the nation.

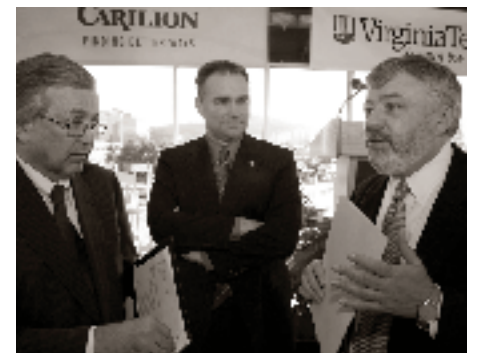
### Other Rankings

- DesignIntelligence* ranked Tech's graduate architecture program 10th in the nation and its graduate interior design program fifth.
- The College of Natural Resources' forestry program was top-ranked in North America in a study conducted by Auburn University.

## Bolstering Communities

An integral part of community, service to others was so important to the founders of Virginia Tech that *Ut Prosim* (That I May Serve) became the university's motto before the school had even reached its 25<sup>th</sup> year. Across the campus, from the beginning until now, the actions of students, researchers, faculty, and staff reflect that creed.

Service comes in many forms. For instance, the university as a whole serves the local, national, and global communities when it focuses its resources and knowledge on important and vexing problems, such as energy and health.



Tech President Charles W. Steger, Virginia Gov. Tim Kaine, and Carilion CEO Dr. Ed Murphy announce plans for a new medical school in Roanoke, Va.



Virginia Tech students complete dozens of community service projects through the university's Service-Learning Center.

## Through Service

### Addressing energy needs

In the area of energy, the university created the Deans' Task Force on Energy Security and Sustainability to play a key role in implementing Tech's strategic plan initiative dealing with energy, materials, and the environment, one of four broad areas of discovery recognizing Tech's strengths and its ability to use those strengths to address important societal needs.

The task force sponsored a year-long series of events highlighting Virginia Tech's energy research capacity and its potential contributions to the state—and beyond. The events included a Deans' Forum on Energy and Sustainability, which highlighted work already being performed by university faculty members and students and included several speakers.

"We want to engage people from on and off campus to stimulate new research and interdisciplinary collaboration and form partnerships," said Jack Lesko, professor of engineering science and mechanics and faculty administrative Fellow in the Office of the Vice President for Research.

### Alleviating physician shortages

In the health field, Virginia Tech assumed a new role in helping alleviate a projected shortage of doctors. The university and Carilion Health System formally agreed to create a jointly operated private medical school that will be located near downtown Roanoke and adjacent to Carilion Roanoke Memorial Hospital.

"I am very pleased to support this important initiative to help meet the health workforce and medical research needs of our state, as well as to strengthen the economy of the region," said Gov. Tim Kaine.

According to the Association of American Medical Colleges, 30 million people are currently affected by physician shortages, including many communities across Virginia. Critical shortages are expected by 2020 unless medical school enrollment increases by 30 percent.

Patterned after Harvard Medical School's Health Sciences and Technology program and Cleveland Clinic's Lerner College of Medicine, the new school will have a small class size of 40 students per year and will be dedicated to training physician researchers. In addition to a traditional medical school curriculum, all students will receive training in research methods, conduct original research, and write a thesis as a condition of graduation.



Virginia Tech interior design students are switching 25,000 light bulbs on campus and in Blacksburg from incandescent to compact fluorescent. Each switch saves 60 pounds of coal from being burned.



ENGAGEMENT

## Developing economies

Virginia Tech has long been involved in helping improve the economic prospects of area communities, and 2006-07 was no exception. The Office of Economic Development and the Department of Urban Affairs and Planning in the College of Architecture and Urban Studies partnered with state and local governments to study “farmshoring” possibilities for rural areas in Virginia.

Farmshoring is the outsourcing of jobs or contracts to areas of the country with a lower cost of doing business, and examples include the decision in 2006 by two firms to locate 750 high-paying information and communications technology jobs in Lebanon, deep in rural Southwest Virginia.

In addition to possibly helping rural communities secure jobs and build tax bases, farmshoring may provide urban communities with a new tool for addressing congestion and growth-management issues. At the same time, this deconcentration can actually benefit firms, increasing the ability of companies to focus on their core competencies.

Plans were announced in 2006-07 for the Economic Development Studio @ Virginia Tech to provide the first comprehensive analysis in Virginia of the opportunities and barriers regarding the farmshoring phenomenon.

## Enhancing international education

In the global arena, Tech created the new position of senior fellow for international advancement and appointed Paul L. Knox to fill the role. Knox is working to enhance international education at Virginia Tech.

Virginia Tech is dedicated to expanding its 30-plus-year commitment to education abroad. Annually, more than 800 Virginia Tech students participate in about 30 faculty-led education-abroad programs. The university also has more than 60 bilateral exchange agreements with other colleges and universities on six continents.

In June 2006 Knox concluded eight successful years as dean of Virginia Tech’s College of Architecture and Urban Studies. Throughout that tenure, he demonstrated a special interest in international education. He and his wife established undergraduate study-abroad scholarships, and Knox initiated strategic partnerships with the Academy of Architecture of the Università Svizzera Italiana, the University of Stuttgart, and the Politecnico di Milano. He also started a cross-college program to help faculty develop international collaborative relationships with their peers at universities abroad.

## Students in service

Virginia Tech students also compiled an impressive service record during the fiscal year.

For the sixth straight year, some 2,500 Virginia Tech students dedicated a Saturday to serving residents of the New River Valley. Hosted by the Student Government Association, The Big Event—“One Big Day. One Big Thanks”—completed more than 265 service projects across the area. In 2007, students participating in The Big Event worked with Habitat for Humanity, Hearts & Hammers, RAFT Crisis Hotline,

Ramps and Roads, and various other community organizations.

The Big Event also helped Hollins University start its own similar program. Big Event organizers taught the Hollins group how to plan and execute the event and also supplied them with tools and the services of several volunteers.

Each semester more than 1,000 students participate in regular community service through the university’s Service-Learning Center. The center’s Hometown Industries program mobilizes student volunteers to help with regional community needs and to enhance community assets. In September 2006, the Second Harvest Food Bank of Southwest Virginia in Salem recognized these students as the outstanding volunteer group of the year for their weekly work every Friday morning assisting with processing and managing food to be distributed to over 350 food banks across Southwest Virginia.

Eleven students enrolled in a special spring semester course of study in 2007 at the university’s center in Punta Cana, Dominican Republic, assisted in local schools by teaching English. Tech students, in groups of three to four each, helped Dominican students with pronunciation exercises, oral listening activities, conversation, and cultural activities. Future plans include participation in monthly community beautification activities and educational efforts to assist local neighborhoods and governments, as well as schools and community groups.

Students representing the YMCA at Virginia Tech spent their break time doing something more than eating turkey or sunning on the beach. One group of 18 went to



Students in the School of Education/ Department of Foreign Languages and Literatures course “Crossing the Border through Service-Learning” help immigrant families with skills they need to adjust to life in the United States.



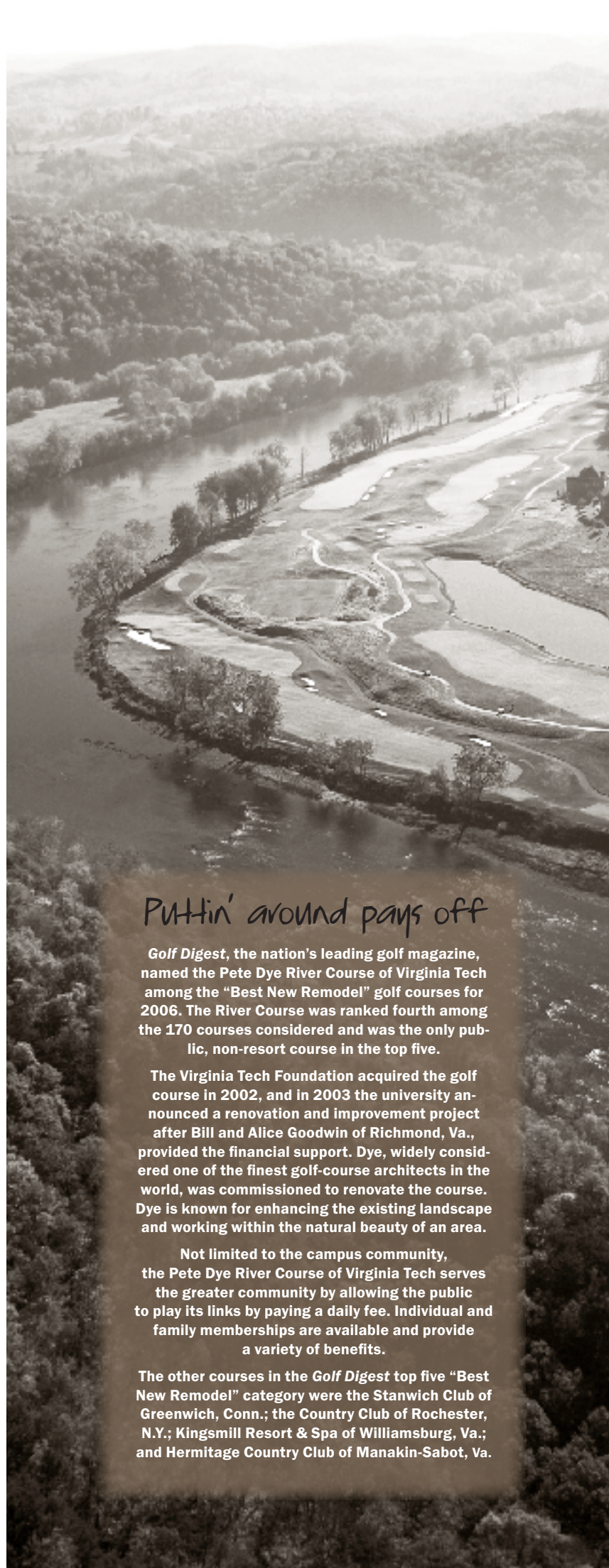
New Orleans to assist ongoing relief efforts in addressing the devastation from hurricanes Katrina and Rita. The students helped with clean up and served meals to the homeless and displaced. A second team of 10 students traveled to the Dominican Republic to work with community members of Punta Garza, Hato Mayor, to construct a school.

Another group of students garnered recognition for their service. Hokies United was presented with the inaugural Virginia Tech Principles of Community Award for their efforts in helping to bring the community together in the wake of the tragic events of April 16.

“The student leaders who comprise this amazing organization have an undying commitment to service,” said Kevin McDonald, vice president for multicultural affairs and equity, “and have had a positive impact on communities, both locally and nationally, in ways that will never be forgotten.”

During times of crisis, Hokies United has been at the forefront of response efforts addressing local, national, and international crisis situations. They played an integral role in providing support during Sept. 11, 2001, relief efforts; Sumatran Tsunami relief (2004); and Hurricane Katrina relief (2005). In 2006-07, Hokies United responded to two tragedies that profoundly impacted the campus, providing support for the families of law enforcement officers in the wake of the William Morva incident and then to the entire university community during the aftermath of the tragic events of April 16.

In a letter to award recipients, university President Charles Steger acknowledged the burden Hokies United assumed immediately after the events of April 16: “We realize . . . that it has been a difficult time for you as students in terms of managing your academics, dealing with your own personal grief, and assuming leadership responsibilities within Hokies United. The university does indeed recognize and value all of your hard work and effort during this tragic time. Your commitment to Virginia Tech has been extraordinary.”



## Puttin' around pays off

**Golf Digest**, the nation's leading golf magazine, named the Pete Dye River Course of Virginia Tech among the “Best New Remodel” golf courses for 2006. The River Course was ranked fourth among the 170 courses considered and was the only public, non-resort course in the top five.

The Virginia Tech Foundation acquired the golf course in 2002, and in 2003 the university announced a renovation and improvement project after Bill and Alice Goodwin of Richmond, Va., provided the financial support. Dye, widely considered one of the finest golf-course architects in the world, was commissioned to renovate the course. Dye is known for enhancing the existing landscape and working within the natural beauty of an area.

Not limited to the campus community, the Pete Dye River Course of Virginia Tech serves the greater community by allowing the public to play its links by paying a daily fee. Individual and family memberships are available and provide a variety of benefits.

The other courses in the **Golf Digest** top five “Best New Remodel” category were the Stanwich Club of Greenwich, Conn.; the Country Club of Rochester, N.Y.; Kingsmill Resort & Spa of Williamsburg, Va.; and Hermitage Country Club of Manakin-Sabot, Va.

# Enhancing communities through technology



As long ago as the early 1990s, Virginia Tech realized that rapidly changing technology could be utilized in ways that would enhance whole communities. One result of that realization was the Blacksburg Electronic Village, an Internet presence that linked practically all of Blacksburg.

That seemingly radical idea is now more commonplace, but technology at Tech has spread to other areas.

## Site for unique equipment

In October 2006 the university unveiled two pieces of one-of-a-kind scientific equipment: a Gemini Diffractometer and a PX Protein Scanner, both of which utilize the latest capabilities in X-ray and diffraction technology. The equipment is housed in the university's Crystallography Laboratory in Derring Hall.

The diffractometer provides diffraction from two X-ray sources at the same time, offering more versatility and efficiency in the lab, while the scanner is primarily used in pharmaceutical research to scan proteins quickly and to allow inspection of selected protein crystals with both optical microscopes and X-rays. The scanner makes it possible for pharmaceutical researchers to quickly and easily discriminate protein crystals from other matter at a very early stage, enhancing the development of new drugs.

The acquisition of this equipment, which should attract researchers from throughout North America to take advantage of their capabilities, was made possible by Virginia's Commonwealth Research Initiative (CRI) and a partnership with the Oxford, England-based Oxford Diffraction Ltd., a global manufacturer and distributor of specialized diffraction equipment. The university provided \$250,000 in CRI funds and received the equivalent of \$1.65 million in equipment, upgrades to existing equipment, and service contracts from Oxford Diffraction, which also announced the opening of a new office in the Corporate Research Center to serve as its North American headquarters.

Tech officials predicted that the highly specialized equipment would bring national attention to the research conducted in the region and would enhance economic development in the area.

"This partnership with Oxford Diffraction is an excellent example of the type of relationship we hoped the CRI funding would encourage," said Del. Harvey Morgan, chair of the House Appropriations Higher Education Subcommittee in the Virginia General Assembly. "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."

## Leaps in technology

Distance learning took a technological leap when the College of Engineering cut the ribbon on its new Randolph 100L interactive video-conference room that was converted from ATM video conferencing to H.323, the standard for interactive videoconferencing. The system provides enhanced instructional delivery by adding a data channel, which allows for the presentation of high-resolution computer output and digital document cameras along with simultaneous viewing of the instructor.

To complete the transformation, upgrades to the classroom include the installation of three VGA projectors and screens so students can easily view local and remote video as well as the detailed data and digital document camera.

University Libraries also took a technological leap, reflected by the recognition of two Virginia Tech innovators who improved online access to library-owned resources. Annette Bailey, digital assets librarian, and Godmar Back, assistant professor of computer science in the College of Engineering, earned the national LITA/Brett Butler Entrepreneurship Award from the Library and Information Technology Association for creating and developing LibX, an open-source Firefox browser extension that delivers library resources to users by seamlessly integrating them into the browser.

"LibX is a creative use of browser extension technology for library applications, which enhances the delivery of library resources to end users," said Janet Lee-Smeltzer, chair of the award committee.

Bailey and Back also received a 2006 Institute of Museum and Library Services National Leadership Grant of \$165,364 to support the ongoing development of LibX.



# Crystallography

laboratory

The lab's protein scanner discriminates protein crystals from other matter at a very early stage, enhancing the development of new drugs.

## Center for High-End Computing Systems

In a major initiative important to Tech's computing community, the College of Engineering established the Center for High-End Computing Systems (CHECS). The effort is being led by Srinidhi Varadarajan, associate professor of computer science (CS) and the primary architect of System X, the 2200 processor Apple G5 cluster that debuted in November 2003 as the third most powerful supercomputer in the world and the fastest academic supercomputer at the time.

Since its construction, System X has been the workhorse of the high-end computing facilities maintained by Virginia Tech Advanced Research Computing, but some of the key contributors to the System X project are now moving back to their day jobs: research and education in high-end computing systems.

"Our aim is to build a world-class computer systems research group in the service of high-end computing," Varadarajan said. "CHECS members will investigate a broad array of problems and design a wide range of technologies with the goal of developing the next generation of powerful and usable high-end computing resources."

### New website/Virginia Tech Mobile

Early in 2006-07, the university unveiled a new electronic front door—[www.vt.edu](http://www.vt.edu)—which improved website usability and functionality, developed a stronger visual and technological foundation, and more effectively communicated Virginia Tech's story and opportunities. The university also made its website easier to use and more informative.

The redesign incorporated many technological enhancements and new features, including an expanded and more comprehensive Virginia Tech news site; a "blended" search engine; a new "where we are" section; and a new homepage "spotlight" feature, which highlights various subjects that illustrate Tech's innovation, achievement, and impact and is the visual centerpiece of the redesigned homepage.

Shortly after going live with the new website, the university responded to other technology demands by introducing Virginia Tech Mobile, a service that delivers the latest Virginia Tech news and information to cellular phones and personal digital assistants.

# EDU



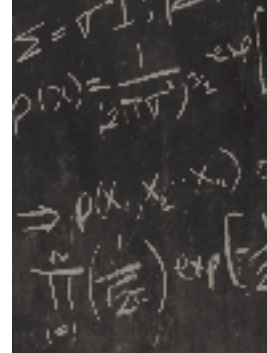
## IALR and innovation

Virginia Tech has not limited its innovation in technology to the Blacksburg community, a fact recognized during 2006 when the Institute for Advanced Learning and Research (IALR) in Danville received a Governor's Technology Award.

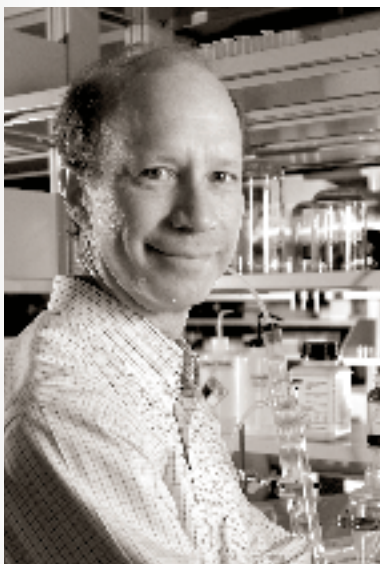
IALR is an academic and economic partnership involving Virginia Tech, Averett University, Danville Community College, and regional public and private entities. Research at the institute focuses on the fields of polymers, unmanned systems, high-value horticulture and forestry, and motorsports engineering.

IALR was a winner in the "Innovation in Higher Education" category that recognizes the innovative use of technology to support the unique missions of Virginia's colleges and universities. The institute was recognized for delivering graduate-level courses online and by distance-learning methods that allow maximum flexibility for student access. Class sessions are recorded using "MediaSite" technology, which allows all courses to be captured with slide presentation content embedded in the recording. The courses can be streamed live to a website, streamed at a later time, or reproduced on a CD or DVD.

"The IALR is committed to developing seamless academic pathways, from high school through the doctorate level, that offer the people of Southside increased access to higher education and a direct link to IALR's strategic research disciplines," said Timothy Franklin, then the IALR executive director. "The Governor's Technology Award recognizes how the institute is using innovative methods to provide Southside with access to degree programs. Access to degree-granting universities is integral to the economic transformation efforts of Southside Virginia."



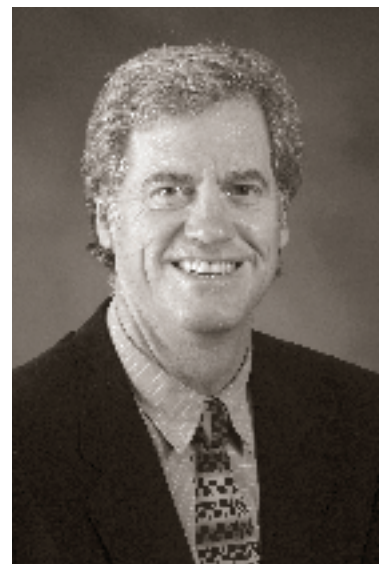
## World-class educators recognized for contributions to the global community



Michael Hochella Jr.



Hanif Sherali



Gary Downey

Many university educators infuse their classrooms and laboratories with the kind of passion for learning and discovery that produces the next generation of leaders and scholars. But the exceptional teacher also contributes to the well-being of the both the local and global communities.

Virginia Tech regularly recognizes the cream of the crop among these educators. Among the university's top awards to faculty members for professionalism and contributions to community are the titles of University Distinguished Professor and Alumni Distinguished Professor. In 2006-07, three of our best were elevated to that level.

**Michael F. Hochella Jr.**, professor of geosciences, and **Hanif Sherali**, professor of industrial and systems engineering and the W. Thomas Rice Chair of Engineering, were elevated to the rank of University Distinguished Professors. **Gary Downey**, professor of science and technology in society and an affiliated faculty member of the Department of Engineering Education, was named an Alumni Distinguished Professor.

An extraordinary teacher and scholar, Hochella has gained the respect and admiration of students, colleagues, and scientists around the world. He is a pioneer in the emergent field of nano-bio-geochemistry, an area believed by many to be a critical part of studies of the global environment.

Hochella's sponsored research programs to date total more than \$12 million. He is a prolific author with more than 120 scientific publications in internationally recognized journals and books, including the prestigious journal *Science*.

Hochella consistently receives an average student evaluation rating of 3.9 out of a possible 4.0. In addition, he has been heavily involved in education and outreach activities, spearheading an introduction of nanoscience and nanotechnology to Virginia high schools. He has received dozens of professional accolades, including the Geochemical Society's Distinguished Service Medal, induction as a Fellow in the American Geophysical Union, Virginia Scientist of the Year, and the Alexander von Humboldt Research Award.

Sherali's accomplishments in the classroom and contributions to the field of industrial engineering since he joined the Virginia Tech faculty in 1979 have been acclaimed at the university, state, national, and international levels. He has received the university's Alumni Award for Excellence in Teaching, two College of Engineering Dean's Awards for Excellence in Teaching, and four college certificates of teaching excellence. Sherali is the only member of the engineering faculty to have received the Dean's Award of Excellence in three categories: teaching, research, and service.

Sherali has also earned the State Council of Higher Educa-



Mark Edwards



Doris Zallen

tion for Virginia's Outstanding Faculty Award, the Dan H. Pletta Award for Engineering Educator of the Year, and the Institute of Industrial Engineers' (IIE) Albert G. Holzman Distinguished Educator Award. In addition, he co-founded the Grado Department of Industrial and Systems Engineering's Faculty Mentoring Program, co-founded and co-directs two of Virginia Tech's premier research groups, and has served on the editorial boards of eight top-tier journals. In recognition of this remarkable career, Sherali has been elected a Fellow in two different organizations and to membership in the National Academy of Engineering.

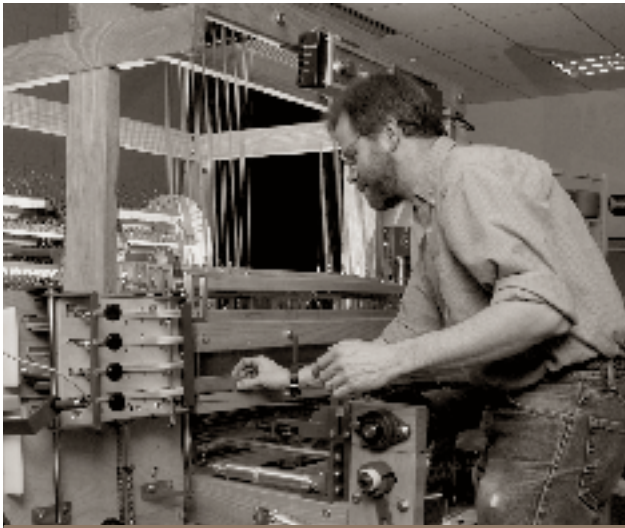
During his 24 years at Virginia Tech, Downey has earned international recognition for his pioneering approach to engineering education. Since 1983, he has designed 15 new courses in science and technology in society (STS), served on 72 graduate committees (chairing 34), and mentored 16 STS graduate students to teach Engineering Cultures.

Downey's teaching abilities have been recognized with the 2004 William E. Wine Award for career excellence in teaching and the 2003 XCaliber Award for high-quality instructional technology. He is the recipient of the 1997 Diggs Teaching Scholar Award for original scholarship in teaching and three Certificates of Teaching Excellence. Downey serves as Senior Fellow at the U.S. National Academy of Engineering and is co-founder of the International Network for Engineering Studies. He has been principal investigator on 13 NSF projects totaling \$1.1 million.

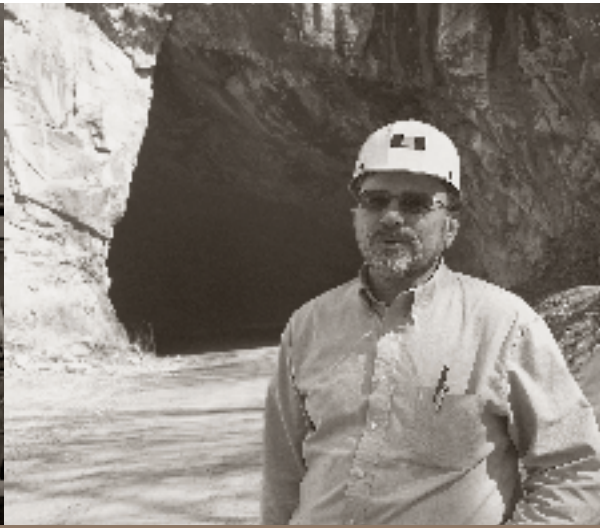
Also in 2006-07, President **Charles W. Steger** carried the Tech tradition of excellence to the international stage when Cisco Systems and the City of Stockholm, Sweden, invited him to speak at the Public Services Summit@Nobel Week 2006. This invitation-only summit of senior policy advisors and key decision-makers in the public sector focused on how the Internet and networking technologies are used to empower and transform citizens and organizations. Steger spoke to the group about "Transforming Education to Meet Global Challenges," in which he explained advances and applications of information technology at Virginia Tech.

Many more Tech faculty members were recognized for their professionalism and contributions. A small sample includes the following:

The Richard Stockton College of New Jersey received a \$250,000



Thomas Martin



Robert Budnar

donation from The Azeez Foundation of Egg Harbor Township, N.J., to name a room in the college's Holocaust Resource Center in honor of Virginia Tech Professor **Liviu Librescu**. Librescu, 76, was a Holocaust survivor who sacrificed his life to save his students during the April 16 shootings on campus. Librescu blocked the door of his classroom while students escaped through the windows.

**Marc A. Edwards**, the Charles P. Lunsford Professor in the College of Engineering's Via Department of Civil and Environmental Engineering, and **Doris T. Zallen**, a professor in the College of Liberal Arts and Human Sciences' Department of Science and Technology in Society, were among 12 college and university faculty members selected from a statewide pool of 95 nominees to receive the Virginia Outstanding Faculty Award, the commonwealth's highest honor for faculty.

**Stefan Duma**, a professor of mechanical engineering in the College of Engineering and founding director of the Virginia Tech-Wake Forest Center for Injury Biomechanics, was named by *Technology Review* to the 2006 "TR35" roster of the nation's top 35 innovators under the age of 35. His innovations range from a computer model of a pregnant driver to a head injury monitoring system for the Hokie football team.

For his research in the emerging field of electronic textiles, **Thomas L. Martin**, an associate professor in the Bradley Department of Electrical and Computer Engineering, received the Presidential Early Career Award for Scientists and Engineers (PECASE). Martin was one of 20 researchers, whose work is supported by the National Science Foundation, to receive the PECASE, the highest national honor for researchers in the early stages of their careers.

Two Virginia-Maryland Regional College of Veterinary Medicine faculty members were honored for excellence in teaching in veterinary medicine. Dr. **Marion Ehrich**, professor of biomedical sciences and pathobiology, was presented the 2006 Student American Veterinary Medical Association Teaching Excellence Award in Basic Science, and Dr. **Kevin Pelzer**, associate professor and section chief of the Production Management Medicine Field Services Unit, received

the 2006 Student American Veterinary Medical Association Teaching Excellence Award in Clinical Science.

**Roop Mahajan**, the James S. Tucker Professor of Engineering and director of the university's Institute for Critical Technology and Applied Science, received the 2007 Ralph Coats Roe Medal for his contributions to a better understanding and appreciation of the engineer's value to contemporary society. Mahajan is an internationally known researcher with expertise in a number of fields, including heat transfer, artificial neural networks, bio-micro-electromechanical systems, and nanotechnology.

Virginia Tech researchers **Michael Garvin** and **Pavlos Vlachos** were among 81 of the nation's outstanding young engineers invited by the National Academy of Engineering to participate in the 12th annual Frontiers of Engineering symposium. Attendees—engineers 30 to 45 years old—were selected in recognition of their contributions to the advancement of engineering and their potential as future leaders in their fields.

**Roger Ekirch**, professor of early American history, was selected as this year's winner of the Charles Smith Award for his highly acclaimed book, *At Day's Close: Night in Times Past*, which examines the history of nocturnal activity before the dawn of the Industrial Revolution and electrical lighting. The Smith Award is presented in even-numbered years by the European History Section of the Southern Historical Association for the best book on European history published during the past two years. The Library of Virginia also honored Ekirch for writing the best work of nonfiction in 2006.

Several faculty members were named Fellows in various professional organizations. **Patricia Hyer**, associate provost for academic administration, was named a Fellow of the Association for Women in Science. **Robert J. Bodnar**, University Distinguished Professor of geosciences, became a Fellow in the American Association for the Advancement of Science. Physics Professor **Royce K.P. Zia** was named a Fellow of the American Physical Society.



## Private Philanthropy

This year private giving to the university reached \$83.8 million, an 11 percent increase over last fiscal year.

## Hokie Spirit Spurs Support

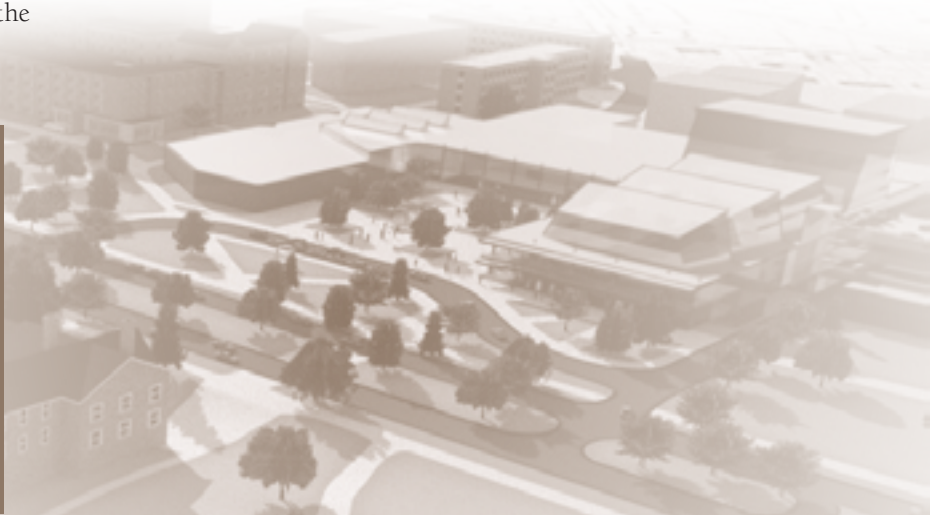
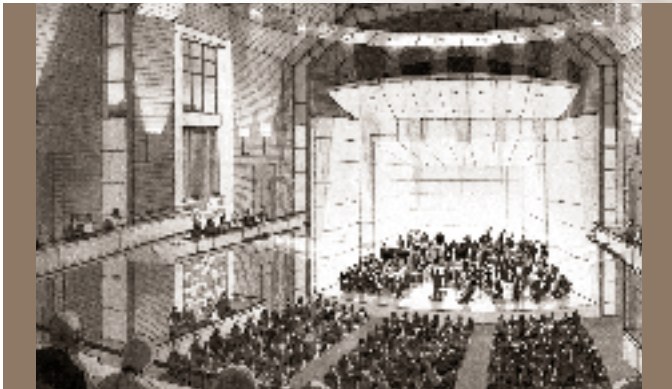
**For a number of years, Virginia Tech has been reminding alumni, friends, and supporters that the landscape of higher education today is markedly different than it was even a decade ago. Perhaps the most crucial difference is the role that private philanthropy plays in providing modern comprehensive research universities with the funding needed to pursue the ever-expanding boundaries of knowledge.** For years, Tech alumni, friends, and supporters have heeded this call, boosting private funding to record levels. In fact, gifts to the Virginia Tech Foundation have increased more than 50 percent over the past five years alone. This year, in a remarkable show of strength and support, private giving to the university reached \$83.8 million, an 11 percent increase over 2005-06.

It is especially encouraging to note that this unprecedented support bolsters a number of the university's key funding priorities. Giving to financial aid incentives more than doubled, as did private funding for the university's fine arts initiatives. Traditions were strengthened, in part, because financial support for the corps of cadets nearly doubled in the past year. And as evidence of our supporters' deep commitment to propel Tech forward to make new discoveries, giving to the

university's independent centers and laboratories—the vanguard of our research initiatives—increased more than eight-fold.

These gifts come at a particularly auspicious time. Events in our recent past gave us all reason to turn to one another for strength and support, and this generosity is a clear manifestation of our community's shared belief in one another and in Hokie Spirit. What's more, these impressive and record-breaking levels of giving served as an appropriate preamble to the launch of the public phase of The Campaign for Virginia Tech: Invent the Future. What can be accomplished through the campaign is nothing short of transformational, and this year's giving clearly indicates that donors understand that and that they are prepared to work alongside us as we invent the future.

Fiscal year 2006-07 brought challenges that we never imagined we would have to face—along with the challenges we sought in our drive to become one of the nation's pre-eminent comprehensive universities. Through it all, we have been buoyed by the pride and confidence that Virginia Tech's family and friends have continued to show in this great university.



# ARTS INITIATIVE



ADD CALDWELL BRONZE STATUE IS DEDICATED



VT AUTONOMOUS VEHICLE SWEEPS INTERNATIONAL COMPETITION



POLYMERS ARE A MAJOR RESEARCH FOCUS AT THE INSTITUTE FOR ADVANCED LEARNING AND RESEARCH



VBI'S NEXT-GENERATION GENOME SEQUENCING SYSTEM ACCELERATES RESEARCH

## July

### Team dominates competition

For the third year in a row, the Virginia Tech College of Engineering's Autonomous Vehicle Team sweeps the international Intelligent Ground Vehicle Competition, winning best and second best overall and placing first in the three top event categories. The team of mechanical engineering students receives \$15,000 in prize money.

### Dairy students garner national awards

Virginia Tech's Dairy Challenge Team wins platinum first place honors at the North American Intercollegiate Dairy Challenge contest; the Dairy Judging Team wins the Intercollegiate Dairy Cattle Judging Contest with one of the highest total scores in the history of the prestigious contest; and the Dairy Club is recognized as the 2006 Outstanding Chapter in the Student Affiliate Division. The club has received the award 14 times since 1980.

## August

### New members join BOV

Gov. Tim Kaine appoints two new members and reappoints two current members to the Virginia Tech Board of Visitors. James R. Smith of Roanoke, Va., chief executive officer of Smith/Packet MedCom, and Lori L. Wagner of Richmond, Va., manager of Spectra Technology for Honeywell International in Colonial Heights, Va., are first-time appointees. Ben J. Davenport of Chatham, Va., chairman of First Piedmont Corporation, and John R. Lawson II of Newport News, Va., president and chief executive officer of W.M. Jordan Co., are reappointed.

### First multicultural affairs vice president to retire

Benjamin Dixon, Virginia Tech's first-ever vice president for multicultural affairs, announces he will retire Dec. 31, 2006. Dixon played a central role in the development of the Virginia Tech Principles of Community, a statement that affirms the university's commitment to a diverse and inclusive community. He was also pivotal in the creation of the Commission on Equal Opportunity and Diversity and the week-long Martin Luther King Jr. Celebration.

### Staff representative joins BOV

The Virginia Tech Board of Visitors amends its bylaws to allow the president of the university's Staff Senate to join the board in equal standing with the president of the Faculty Senate. Tech is the first university in the commonwealth to have a staff representative on its board.

### Murder suspect shakes up campus

The university cancels classes and sends employees home following a reported sighting of a fugitive murder suspect in Squires Student Center. Police apprehend William Charles Morva, suspected of the fatal shooting of a hospital security guard and a sheriff's deputy and the wounding of another deputy, on the edge of campus. Police determine that the Squires sighting is a false alarm.

## September

### Latham Hall is dedicated

The university celebrates the opening of Latham Hall, a new 84,000-square-foot, state-of-the-art agriculture and natural resources research facility named after benefactors William and Elizabeth Latham. The \$28.5 million complex houses research areas that include biodesign; bioprocessing; forestry, wildlife, and geography; forestry and water; infectious diseases; plant-pathogen-environment interactions; and soils.

### VBI unveils new facility in National Capital Region

The Virginia Bioinformatics Institute opens an office complex in the National Capital Region. The new facility is the first step in building a larger presence in the greater Washington area. The offices and resources will expand the research, development, and outreach activities of the institute.

### Race taskforce examines diversity

To help Virginia Tech focus attention on issues of race without diminishing the university's broader commitment to diversity, Provost Mark McNamee announces creation of the Taskforce on Race and the Institution: a team of students, faculty, and staff who will identify key issues and propose specific actions that will lead to progress toward the university's commitment to a diverse and inclusive community.

### Sequences reveal origin of deadly plant pathogens

An international team of researchers led by Professor Brett Tyler of the Virginia Bioinformatics Institute publishes the draft genome sequences of two deadly plant pathogens, *Phytophthora ramorum* and *Phytophthora sojae*. *Phytophthora sojae* causes severe damage to soybeans, and *Phytophthora ramorum* causes sudden oak death. The sequences are published in *Science*.

### Governor recognizes IALR innovation

The Institute for Advanced Learning and Research (IALR) receives a Governor's Technology Award in the "Innovation in Higher Education" category, which recognizes the innovative use of technology to support the unique missions of Virginia's colleges and universities. A partnership involving Virginia Tech, Averett University, Danville Community College, and Danville and Pittsylvania County organizations and governments, IALR focuses its research on the fields of polymers, unmanned systems, high-value horticulture and forestry, and motorsports engineering.

## October

### Krause departs for conference center

Kurt Krause, vice president for business affairs, leaves the university to become general manager of The National Conference Center near Leesburg, the nation's largest conference facility. Krause, a 1980 Virginia Tech graduate with a degree in marketing, came to Virginia Tech in 2003 after a long career with Marriott International.

### College becomes demonstration site for world-class scientific equipment

The College of Science unveils several pieces of one-of-a-kind scientific equipment that will attract university, government, and industry researchers from across North America. Acquisition is made possible through Virginia's Commonwealth Research Initiative and a partnership with Oxford Diffraction Ltd., which also relocates its North American headquarters to the Corporate Research Center.

### Tech adds new residential community

The university announces a new residential learning program that will emphasize diversity and inclusiveness starting in fall 2007. MOSAIC, which stands for the Multicultural Opportunity Social Awareness Interest Community, will be an intercultural living environment that embraces all forms of diversity. It will house both first-year and returning students to encourage collaboration and a broad range of perspectives. The community is located in Slusher Tower.

## November

### Likeness of Add Caldwell strides onto campus

The Class of 1956 donates a life-size statue of William Addison Caldwell, Virginia Tech's first student. Created by Larry Bechtel, Tech's recycling coordinator and a practitioner of sculpting, the statue sits on a landscaped plot behind Brodie Hall. Bechtel spent months researching his subject and the attire of the period; creating the basic form in clay; modeling a life-size figure based on a likeness of a great-great-nephew of Caldwell; and having the model, once it was approved by the Class of 1956 committee, cast in bronze.

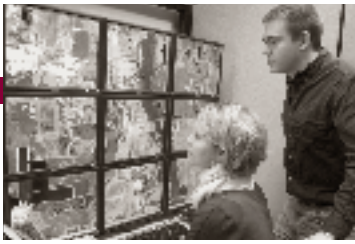
### Pete Dye course draws attention

*Golf Digest*, the nation's leading golf magazine, names the Pete Dye River Course of Virginia Tech among the "Best New Remodel" golf courses for 2006. The river course ranks fourth among the 170 courses considered and is the only public, non-resort course in the top five.

## December

### Bohland elevated to VP level

President Charles W. Steger makes James Bohland, executive director for the university's National Capital Region (NCR), a university vice president. Bohland has served as executive director of NCR operations since 2002. In this position, he works with the NCR senior management team to develop and implement new strategic directions and to help coordinate services and program initiatives for the university's six sites in the region. A full professor in the



FORESTRY, GEOSPATIAL INFORMATION TECHNOLOGY CREATE DIGITAL REPOSITORY OF BICYCLE, PEDESTRIAN INFRASTRUCTURE



PAMPLIN'S BUSINESS DIVERSITY CENTER EMPHASIZES TEACHING AND RESEARCH ON DIVERSITY ISSUES

Urban Affairs and Planning Program, he is also director of the Institute for Community Health, a position he has held since 2000.

**New chief comes from within**  
Capt. Wendell Flinchum, a 21-year veteran of the Virginia Tech Police Department who had been serving as interim chief of police, is named the university's chief of police and director of campus security. Flinchum joined the Virginia Tech Police Department as a part-time employee in 1983 and became a full-time officer in 1985. Since 2001, Flinchum had served as a department commander.

## January

**Tech, Carilion plan medical school**  
Virginia Gov. Timothy M. Kaine, Virginia Tech President Charles W. Steger, and Carilion CEO Dr. Edward G. Murphy announce that Tech and Carilion are creating a new private medical school near downtown Roanoke and adjacent to Carilion Roanoke Memorial Hospital. Patterned after Harvard Medical School's Health Sciences and Technology program and Cleveland Clinic's Lerner College of Medicine, the new school will have small class sizes and be dedicated to training physician researchers.

**Genome research takes the next step**  
The Virginia Bioinformatics Institute installs the first Roche GS-FLX, a next-generation genome sequencing system that allows researchers to go from genome to sequence in record time.

## February

**Research expenditures soar**  
Virginia Tech reports research expenditures of \$321.7 million to the National Science Foundation for fiscal year 2006, an 11 percent increase over the \$290 million expended in 2005.

**Extension joins state disaster response team**  
Virginia Cooperative Extension and the Virginia Department of Emergency Management form a disaster response partnership that will mobilize Extension agents in the event of an actual or anticipated federally declared disaster in Virginia. Agents will serve as liaisons between federal officials in the field and state and local officials during disaster relief and recovery activities and keep state and local officials informed of the status,

progress, needs, and any problems related to disaster recovery.

**Researchers collaborate on digital repository**  
The forestry department and Virginia Tech's Center for Geospatial Information Technology work together to create a statewide Internet-based digital repository of existing and planned bicycle and pedestrian infrastructure, including bike lanes, hiking, and horseback riding trails.

## March

**CLAHS to welcome new dean**  
Sue Ott Rowlands, professor of theatre and interim dean of the College of Arts and Sciences at the University of Toledo, is named dean of Virginia Tech's College of Liberal Arts and Human Sciences. She replaces Jerry Niles, who retired at the end of the school year. Ott Rowlands' career spans higher education administration, university teaching, arts administration, and professional theatre. She continues to work actively as a theatre professional.

**Drug discovery partnership forms**  
Virginia Tech and Georgetown University Medical Center form a new, complementary joint program for drug discovery and development, bringing together experts from both universities in disciplines ranging from medicine to chemistry to technology. Initially, the two universities will collaborate on studies of the effectiveness of natural products against malaria, the use of fatty acids to fight microorganisms, and the use of enzymes to prevent Alzheimer's disease.

**Davis takes CAUS dean post**  
A.J. Jack Davis is named dean of the College of Architecture and Urban Studies. Davis, the Reynolds Metals Endowed Professor of Architecture, had been interim dean and was previously the associate dean for academic affairs. Since 1984, Davis has been principal and co-principal investigator on research grants totaling more than \$2.5 million and a professor in the professional program in architecture.

**BOV approves new graduate degree program**  
The university approves a joint master of science in biomedical technology development and management in conjunction with Georgetown

University. The first class is expected to begin degree work in winter 2008.

## April

**Student kills 32**  
A deranged student shoots and kills two residents of Ambler Johnston Hall and later goes on a rampage in Norris Hall, slaying 30 students and teachers. Another 26 are hurt. The student kills himself as police arrive. The tragedy spurs an international outpouring of sympathy and support for the families and friends of victims and for the university, which establishes the Hokie Spirit Memorial Fund to accept the millions of dollars that pour in. The student-run Hokies United organization establishes a memorial on the Drillfield and works with the university as it holds several memorial services.

**Pamplin center, program to focus on diversity**  
To better prepare students for a multicultural workplace, the Pamplin College of Business establishes a center and undergraduate studies program focusing on business diversity. The Business Diversity Center, directed by associate professor of management Mary Connerley, will emphasize teaching and research on diversity issues. It will coordinate the business diversity minor, an 18-credit program for juniors and seniors that will be launched in fall 2008.

**Student financial planners cash in**  
Three Virginia Tech seniors studying financial planning win the 2007 Ameriprise Financial Planning Invitational, bringing home \$10,000 in scholarship money to support the financial planning program in the College of Agriculture and Life Sciences.

## May

**VBI, Mayo Clinic, professor team up**  
The Virginia Bioinformatics Institute and Department of Biological Sciences Associate Professor Chris Lawrence team up with the Mayo Clinic on a \$2.4 million research project funded by the National Institute of Allergy and Infectious Diseases to help researchers develop treatments, diagnostic tools, and preventative measures for patients suffering from chronic rhinosinusitis, a debilitating airway disease that results in up to 18-22 million clinical cases per year.

**Tech announces new VP**  
Sherwood G. Wilson is named vice president for administrative services. Wilson is responsible for providing creative vision, leadership, and management for the university's facilities operations, which include capital design and construction, physical plant and utilities, transportation services and parking, university architect, real estate management, human resources, campus police, and environmental health and safety.

**Sugar-to-hydrogen technology promises transportation fuel independence**  
Researchers at Virginia Tech, Oak Ridge National Laboratory, and the University of Georgia propose using polysaccharides, or sugary carbohydrates, from biomass to directly produce low-cost hydrogen for the new hydrogen economy, a goal of the U.S. Department of Energy's 2006 Advanced Energy Initiative, by 2020.

**Brown named dean of students**  
James Thomas "Tom" Brown, former senior associate dean of the Dean of Students Office, is appointed dean of students. The Dean of Students Office is responsible for the coordination of student advocacy, new student orientation and parent programs, and responding to student emergencies in collaboration with other university entities.

## June

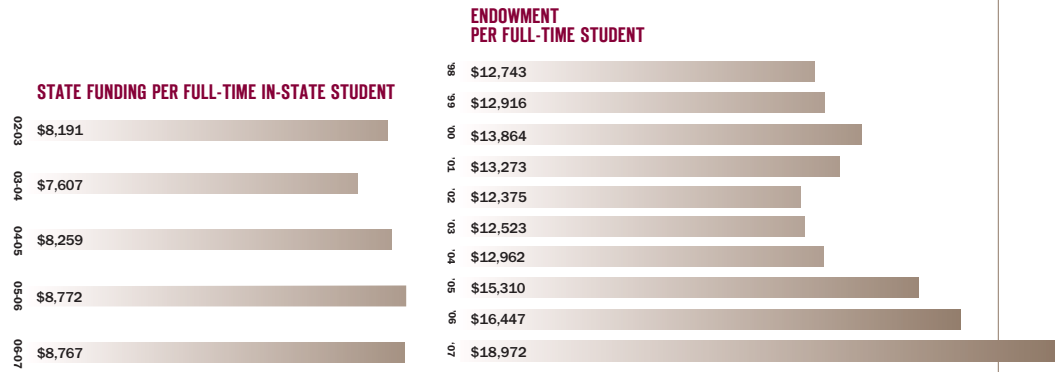
**McDonald is named vice president for multicultural affairs and equity**  
Kevin G. McDonald, director of Virginia Tech's Office for Equal Opportunity since 2005, is named the university's vice president for multicultural affairs and equity. He succeeds Benjamin Dixon, who served as vice president for multicultural affairs from 1998 until his retirement on Dec. 31, 2006. Prior to coming to Tech, McDonald had served as associate director for compliance and conflict resolution at Johns Hopkins University.

**Expanded emergency system in place**  
Tech reaches an agreement with 3n (National Notification Network) to significantly expand the university's ability to send critical news and information to the university community during campus emergencies. The new emergency notification system, along with existing communications vehicles long used by the university, will form the basis of VT Alerts. 3n's technology enables the university to send messages to students, faculty, and staff using methods and media not maintained by the university, such as text messages to personal cell phones; instant messages via systems maintained by America Online (AOL), Yahoo, or MSN; and phone calls and e-mails to numbers and mailboxes outside the university's network.

**NSF funds project to improve computing education**  
Three Pamplin faculty members are part of an interdisciplinary, multi-university research project that wins a National Science Foundation grant to deliver new pedagogies in computing education; integrate computing concepts into non-computing disciplines; develop principles, guidelines, and techniques to integrate computing and non-computing curricula; and form new communities to enhance that integration.



Virginia Tech is the commonwealth's leading research institution. Research expenditures were more than \$321 million in 2006.



### Student admissions

	2002-03	2003-04	2004-05	2005-06	2006-07
TOTAL APPLICATIONS RECEIVED (includes transfers)					
Undergraduate	20,593	21,026	20,453	20,281	21,570
Graduate and first professional	9,062	8,591	6,953	6,503	6,878
OFFERS AS A PERCENTAGE OF APPLICATIONS					
Undergraduate	63.8	66.4	67.4	68.2	65.6
Graduate	36.4	33.6	35.9	37.8	40.6
NEW ENROLLMENT AS A PERCENTAGE OF OFFERS					
Undergraduate	40.7	40.3	40.7	41.7	41.8
Graduate	55.1	58.3	64.7	65.3	65.2

### Total student enrollment (head count)

	2002-03	2003-04	2004-05	2005-06	2006-07
ENROLLMENT BY CLASSIFICATION					
Undergraduate	21,473	21,348	21,330	21,627	21,997
Graduate and first professional	6,554	6,407	6,289	6,352	6,473
ENROLLMENT BY CAMPUS					
Blacksburg campus	25,819	25,737	25,629	25,915	26,371
Northern Virginia Center	1,204	1,114	1,041	1,030	1,013
Other off-campus locations	1,004	904	949	1,034	1,086
ENROLLMENT BY RESIDENCE					
Virginia	19,388	18,970	18,839	19,246	19,817
Other states	6,487	6,541	6,639	6,707	6,654
Other countries	2,202	2,244	2,141	2,026	1,999
DEGREES CONFERRED					
Undergraduate	4,742	4,876	4,835	4,913	4,887
Graduate and first professional	1,831	1,827	1,869	1,908	1,807

### Faculty and staff

	2002-03	2003-04	2004-05	2005-06	2006-07
Full-time instructional faculty	1,301	1,251	1,265	1,304	1,340
Other faculty and research associates	1,451	1,375	1,463	1,568	1,649
Temporary faculty	215	235	224	211	233
Support staff	3,561	3,418	3,515	3,606	3,698
Total faculty and support staff	6,528	6,279	6,467	6,689	6,920
Percent of instructional faculty tenured	66.9	67.0	67.0	66.0	65.3

# University

## financial highlights

For the years ended  
June 30, 2003 - 2007

(all dollars are in millions; square feet in thousands)

	2002-03	2003-04	2004-05	2005-06	2006-07
<b>REVENUES, EXPENSES, AND CHANGES IN NET ASSETS (1)</b>					
Operating revenues	\$442.1	\$459.0	\$500.9	\$543.8	\$595.9
Operating expenses	<u>685.2</u>	<u>697.5</u>	<u>741.9</u>	<u>815.3</u>	<u>883.1</u>
Operating loss (2)	\$(243.1)	\$(238.5)	\$(241.0)	\$(271.4)	\$(287.2)
Non-operating revenues and expenses (2)	243.5	239.4	264.4	284.7	313.8
Other revenues, expenses, gains, or losses (3)	<u>56.8</u>	<u>60.3</u>	<u>35.5</u>	<u>26.1</u>	<u>122.3</u>
Increase in net assets	\$57.2	\$61.2	\$58.8	\$39.4	\$148.9
<b>UNIVERSITY NET ASSETS (1)</b>					
Invested in capital assets, net of related debt	\$388.1	\$418.7	\$465.1	\$496.8	\$569.7
Restricted (3)	\$80.2	\$100.6	\$106.4	\$100.0	\$159.4
Unrestricted	\$39.2	\$49.4	\$58.2	\$72.3	\$88.8
<b>ASSETS AND FACILITIES</b>					
Total university assets (1, 3)	\$863.0	\$982.6	\$1,046.9	\$1,078.1	\$1,296.7
Capital assets, net of accumulated depreciation (1)	559.6	\$624.6	\$698.9	\$733.2	\$813.5
Facilities-owned gross square feet	7,940	8,001	8,147	8,454	8,498
Facilities-leased square feet	551	609	599	604	682
<b>SPONSORED PROGRAMS</b>					
Number of awards received	2,111	2,148	2,086	2,122	2,131
Value of awards received	\$159.1	\$147.8	\$189.5	\$195.9	\$203.1
Research expenditures reported to NSF (4)	\$247.8	\$268.8	\$290.0	\$321.7	N/A
<b>VIRGINIA TECH FOUNDATION</b>					
Gifts and bequests received	\$47.3	\$53.9	\$71.6	\$81.8	\$78.5
Expended in support of the university	\$95.1	\$86.6	\$97.8	\$102.4	\$107.3
Total assets and managed funds	\$613.5	\$670.4	\$728.0	\$808.9	\$940.9
<b>ENDOWMENTS (AT MARKET VALUE)</b>					
Owned by Virginia Tech Foundation (VTF)	\$289.8	\$325.5	\$361.7	\$398.3	\$469.4
Owned by Virginia Tech	36.3	39.5	40.8	42.6	47.8
Managed by VTF under agency agreements	<u>5.6</u>	<u>6.2</u>	<u>6.4</u>	<u>6.9</u>	<u>7.9</u>
Total endowments supporting the university	\$331.7	\$371.2	\$408.9	\$447.8	\$525.1
<b>STUDENT FINANCIAL AID</b>					
Number of students receiving selected types of financial aid					
Loans	10,945	11,055	10,962	11,140	11,067
Grants, scholarships, and waivers	14,291	14,140	14,088	14,481	15,600
Employment opportunities	8,005	7,792	7,923	8,067	8,101
Total amounts by major category					
Loans	\$81.4	\$90.7	\$93.6	\$101.0	\$102.2
Grants, scholarships, and waivers (5)	75.0	85.4	94.8	104.1	119.8
Employment opportunities	<u>44.5</u>	<u>45.7</u>	<u>48.7</u>	<u>50.5</u>	<u>53.4</u>
Total financial aid	\$200.9	\$221.8	\$237.1	\$255.6	\$275.4

(1) The university adopted the new Governmental Accounting Standard Board (GASB) reporting model in fiscal year 2002 as required by GASB Statement Number 35, Basic Financial Statement—and Management's Discussion and Analysis—for Public Colleges and Universities.

(2) The university will always be expected to show an operating loss since significant recurring revenues are shown as non-operating. Major revenue sources reported as non-operating include state appropriations, gifts, and investment income. These revenue sources are used for general operations in support of the learning, discovery, and engagement missions of the university.

(3) Totals for 2006 have been restated to reflect the change in reporting guidelines for appropriations received from the Commonwealth of Virginia.

(4) Total research expenditures for NSF report were not available at publication date.

(5) Amounts for fiscal year 2003, 2004, 2005, and 2006 reflect any applicable restatements.

# Virginia Tech

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Dean, College of Architecture and Urban Studies: **A. J. Jack Davis**

Dean, College of Engineering: **Richard Benson**

Dean, College of Liberal Arts and Human Sciences: **Sue Ott Rowlands**

Dean, College of Natural Resources: **J. Michael Kelly**

Dean, Pamplin College of Business: **Richard E. Sorensen**

Dean, College of Science: **Lay Nam Chang**

Dean, Virginia-Maryland Regional College of Veterinary Medicine: **Gerhardt Schurig**

Dean of University Libraries: **Eileen Hitchingham**

Dean of Students: **J. Thomas Brown Jr.**

University Legal Counsel: **Kay Heidbreder**

July 1, 2006 - June 30, 2007

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**John R. Lawson II | Vice Rector**

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**Beverley Dalton**  
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Prepared by the Office of  
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