The Next Generation of Nuclear Medicine Research at Saint Louis University
From the Desk of the President

During the past several months, you may have read about some of the groundbreaking research under way at Saint Louis University in The New York Times, USA Today or U.S. News & World Report. Or perhaps you saw one of our physicians talking with Katie Couric on the Today show. The world is finding out what we already know here at Saint Louis University: Research is an integral part of our mission, a strong component of our faculty endeavors and, most importantly, an unparalleled educational tool for our students.

Investment in research at Saint Louis University has reached record levels. Research dollars for grants, contracts and subcontracts for School of Medicine research alone is more than double what it was 10 years ago. We will complete our $80.5 million Research Building project in fall 2007. These factors, combined with the many research successes of our other departments and programs, allow Saint Louis University to be a top research university while continuing to maintain a strong commitment to teaching and community service.

In this issue of Knowledge, you will meet many researchers at Saint Louis University who are also dedicated teachers and mentors to their students. First, you will encounter professors in the department of earth and atmospheric sciences who are using technology to study extreme weather patterns and prepare for natural disasters. Next, you will meet incredibly motivated undergraduates who have developed original ideas and presented them at national nuclear medicine research conferences. You also will read about three extraordinary undergraduate business students who have turned their service experiences into career opportunities.

While the increased national attention and research dollars for our work here are wonderful, we are most proud to be inspiring and training the next generation of mission-driven individuals who will use their talents to make this a better world for all of us.
Whooping Cough Vaccine Not Just for Kids Anymore

In the first study of its kind, Saint Louis University researchers demonstrated that immunization with a new vaccine could potentially prevent more than a million cases of pertussis (whooping cough) each year in adolescents and adults.

Most children are protected from pertussis by a series of vaccines, but the protection wanes, leaving adolescents and adults susceptible to the disease.

“The study demonstrated that an estimat ed one in 300 adolescents and adults contracts the illness each year,” said Stephen J. Barenkamp, M.D., professor of pediatrics and director of the Pediatric Research Institute at the Saint Louis University School of Medicine, and one of the study’s clinical investigators. “The results also demonstrate that an effective vaccine is now available for this population.”

The Centers for Disease Control and Prevention’s Advisory Committee on Immunization Practices recently recommended that all 11- and 12-year-olds be given a dose of the new pertussis vaccine as a combined formulation with tetanus and diphtheria boosters.

Study results were published in the New England Journal of Medicine.

Lonely Seniors Prefer Playtime with Pooch over Human Interaction

A recent Saint Louis University study shows there is some truth in the old cliché that a dog is “man’s best friend.”

“Or at least a less aggravating friend,” said study author William A. Banks, M.D., professor of geriatrics and professor of pharmacological and physiological sciences at the School of Medicine.

Nursing home residents felt much less lonely after spending time alone with a dog than they did when they visited with a dog and other people. The research was published in the March 2006 issue of Anthrozoos.

The main way pets reduce loneliness in nursing homes is simply by being with people, not by enhancing socialization between people — for instance, giving residents something to talk about or an experience to share, Banks said.

“There is no need for a dog to be a social lubricant or icebreaker in a nursing home. Residents live with each other, eat breakfast, lunch and dinner with each other, play bingo with each other,” Banks said. “The study also found that the loneliest individuals benefited the most from visits with dogs.”

Heart Disease is the No. 1 Killer of Women, but Simple Test Could be a Lifesaver

New research from the Saint Louis University School of Medicine may give doctors a way to predict heart problems in women.

Researchers studied diabetic women between ages 40 and 75 who underwent a stress test for suspected coronary disease. Investigators concluded that the test, known as do butamine stress echoangiography, provided valuable information that could help doctors predict future fatal heart problems.

“Our research is extremely important because women in this age group are historically under-diagnosed, and by detecting problems earlier, we can help prevent heart attack or death and extend these women’s lives,” said Mel da S. Dolan, M.D., associate professor of cardiology at the School of Medicine.

Dobutamine stress echocardiography tests are ultrasound heart scans in which patients are injected with a drug that makes the heart beat faster to determine if they have abnormalities of the heart wall. Traditional echocardiography tests are performed without the aid of drugs by having patients run on a treadmill to increase their heart rate.

“Women are known to have more risk factors, such as smoking, obesity and a family history, are more likely to have heart disease or die from it,” Dolan said. “Dobutamine stress echo tests serve an important role in predicting heart attacks or cardiac death in these higher-risk women.”

Co-authors of the research are Swathy Koll, M.D., Michelle Berg, Jeanette A. St. Vrain, Bernard Chatman, M.D., and Arthur Labovitz, M.D., director of cardiology at the School of Medicine.

Hungry for Knowledge: Research Links Hormone Responsible for Appetite to Learning and Memory

The hormone produced in the stomach that tells you you’re hungry also helps you remember and learn, according to a study co-authored by Saint Louis University scientists.

While more research is needed, findings could point to a new direction for treatment of Alzheimer’s disease.

The research, published in an online edition of Nature Neuroscience, shows that high levels of ghrelin, the hormone that regulates appetite, trigger activity in the part of the brain responsible for learning and memory.

The researchers compared mice that had normal ghrelin levels with those that had the ghrelin-producing gene switched off. Those that lacked the gene did not do as well on a battery of behavioral tests. After those without the gene received ghrelin-replacement therapy, their memory improved and ability to learn was restored.

“A series of vaccines, but the protection wanes, leaving adolescents and adults susceptible to the disease.”

IN BRIEF

Researchers at the Obesity Prevention Center at the Saint Louis University School of Public Health received a five-year grant from the National Institutes of Health, to partner with the Parents as Teachers program in a nation al initiative that combines exercise and dietary change to help teenage mothers lose weight gained during pregnancy.

“It’s critical that teen moms take off the weight they gained during pregnancy, said Dr. Debra Haire-Joshu, Ph.D., director of the Obesity Prevention Center and principal investigator. “Postpartum weight retention is a predictor of developing long-term obesity,” she said.

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AWARDS

National Magazine Lists Doctor Among ‘50 Leaders of 2005’
Robert Belshe, M.D., director of the Center for Vaccine Development at the Saint Louis University School of Medicine, was listed as one of “Scientific America’s 50 for 2005: Leaders Shaping the Future of Technol-ogy.” The magazine singled out Belshe for “getting serious about flu,” citing his 2004 article in the New England Journal of Medicine on intradermal flu vaccinations.

Belshe has researched influenza for more than two decades, and he has authored dozens of papers on influenza that have been covered in various journals, including the New England Journal of Medicine, the Journal of the American Medical Association and The Lancet.

Researcher Named One of Bosnia’s 50 Most Successful Immigrants
Bosnia’s national news magazine, Slbođana Bosna, selected a researcher at the Saint Louis University School of Public Health as one of the 50 most successful Bosnian immigrants in the world.

The magazine, which is similar to U.S. News & World Report, chose Ajmina Karamazheh, Ph.D., in part for her work on a unique St. Louis campaign to educate Bosnian women about breast cancer. Funded by the St. Louis chapter of the Susan G. Komen Breast Cancer Foundation, the Bosnian Breast Cancer Educational Kiosk is believed to be the first such public health initiative aimed at Bosnian immigrants in the United States.

Public Health Researcher Receives Prestigious Award
Kanak S. Gauram, Ph.D., associate professor of health management and policy at the Saint Louis University School of Public Health, won the Dean Conley Award from the American College of Healthcare Executives (ACHE) for his article on hospital improvement.

Gauram’s article, “A Call for Board Leadership on Quality in Hospitals,” published in the January 2005 issue of Quality Management in Health Care, discusses the slow pace of quality improvement in hospitals and suggests several ways hospitals can lead efforts to improve.

Biochemist Honored For Ground-breaking Cancer Research
Ali Shillitaff, Ph.D., professor of biochemistry and molecular biology and associate director for basic sciences at Saint Louis University Cancer Center, was honored by the American Society for Biochemistry and Molecular Biology as the winner of the prestigious Amgen Award. The award is given annually for significant achievement in the application of biochemistry and molecular biology to the understanding of disease.

Shillitaff researches the molecular pathway of leukemia in the hopes of creating drugs that shut down that pathway. His research is funded by the National Institutes of Health, American Cancer Society, National Cancer Institute, and the Leukemia and Lymphoma Society.

Student Scientist Presents Award-Winning Research at Conference
Madelynn Stumpf, a pre-doctoral student in the department of pharmacological and physiological science at the Saint Louis University School of Medicine, was one of 36 scientists to earn an award for exemplary research from the American Physiological Society (APS).

Stumpf received the Caroline tum Suden/ Frances A. Hallebrandt Professional Opportunity Award. The APS Women in Physiology Committee selected the awardees, who presented their research at the Experimental Biology 2006 conference.

Stumpf is a lead author on the paper “Insulin Inhibits ATP Release from Human Erythrocytes.”

National Education Groups Tap Educator as Missouri’s ‘Professor of the Year’
Rebecca Kunz Willis, Ph.D., associate professor of biomedical engineering at Saint Louis University’s Parks College of Engineering, Aviation and Technology, was named Missouri’s “Professor of the Year” by the Carnegie Foundation for the Advancement of Teaching and the Council for Advancement and Support of Education. Willis was selected from nearly 400 top professors in the United States.

Known for integrating research into her classes, Willis has been recognized for providing opportunities for undergraduate students to gain experience by working in her lab. Five of her students have received national awards for undergraduate research at Biomedical Engineering Society conferences.

Physical Therapy Professor Receives National Award
Elaine Wilder, associate professor of physical therapy at Saint Louis University’s Doisy College of Health Sciences, was selected as a 2006 recipient of the Lucy Blair Service Award from the American Physical Therapy Association. The award acknowledges and honors members of the association whose contributions have been of exceptional value. Wilder is serving her third term as presidente of the association’s section on women’s health.

SLU Provost Ears ‘Distinguished Editor of the Year’ Award
Saint Louis University Provost Joe Weixlmann, Ph.D., was named “Distinguished Editor of the Year” by the Council of Editors of Learned Journals (CELJ). This prestigious award recognizes Weixlmann’s dedication and excellence in his work with the African American Review.

From 1976 to 2004, Weixlmann served as editor-in-chief for the African American Review, one of the nation’s top scholarly journals and the official publication of the Modern Language Association’s Division on Black American Literature and Culture.

Under his leadership, the journal received three American Literary Magazine Awards for Editorial Content and also has received grants from the National Endowment for the Arts, the Lila Wallace-Reader’s Digest Fund, the Kennedy Center for the Performing Arts, and the Council of Literary Magazines and Presses.

Nursing Professor Receives National Award
Norma A. Metheny, Ph.D., the Dorthy A. Vanner Endowed Chair in Nursing at the Saint Louis University Doisy College of Health Sciences, received a national writing award for her research on tube feedings.

Other University faculty who received the Nursing Research for Practice Award along with Metheny include Thomas E. Dahms, M.D., professor in the department of anesthesiology, and Patricia Frank, senior research associate at the School of Nursing.

Professor Named to St. Louis Radio Hall of Fame
Saint Louis University professor of meteorology Ben Abell was named to the St. Louis Radio Hall of Fame. A staple of local weather forecasting, Abell has delivered forecasts on several St. Louis stations since the 1960s.

Abell reports the weather on the local National Public Radio affiliate in St. Louis. He has provided free weather updates to the public radio station since 1972. In addition, he has provided weather updates for the Radio Information Service for the blind since 1973. An alumnus of Saint Louis University, Abell joined the faculty in 1962.
Saint Louis University Researchers Help Protect Against Natural Disasters

Did 2005 feel like the year of the natural disaster? As the world continues to deal with the aftermath of the Gulf Coast hurricanes, the Kashmir earthquake and the South Asian tsunami, many people are wondering how we should be preparing for the next catastrophe.

At Saint Louis University, several groups of researchers are leading critical efforts to do just that.

Two of these efforts — studies along the New Madrid Fault Line by Robert Herrmann, Ph.D., and work on the first-of-its-kind drilling across the San Andreas Fault by David Kirschner, Ph.D. — are in the field of seismology. In the area of severe weather forecasting, professors Charles Graves, Ph.D., and James Moore, Ph.D., are experts on flooding and rainfall patterns. Also profiled is the Norman J. Stupp Geographic Information Systems (GIS) Lab, where Saint Louis University researchers create digital maps that help communities combat everything from flooding to urban sprawl.
Monitoring Fault Lines to Improve Response Time

To a certain extent, floods, hurricanes, tornadoes and even deadly pandemic disease can be predicted. At the very least, forecasters typically can provide some type of warning of imminent danger. That’s not the case with earthquakes, apart from pointing to a region as a likely location for a major seismic event. Yet there are ways to reduce their potential destructiveness.

“One earthquake occurring in the wrong place could do a tremendous amount of damage,” said Robert Herrmann, Ph.D., the Otto Nuttli Professor of Geophysics. “The disaster could be catastrophic both in human and economic terms.”

Herrmann, who joined the University’s department of earth and atmospheric sciences in 1975, directs the University’s Earthquake Center and has served as an appointed member of the Missouri Seismic Safety Commission since 1995. His specialty is researching seismic activity and using that knowledge to protect us all.

The efforts of the Earthquake Center extend worldwide — from participating in major earthquake experiments in southwest China to developing research software and applying the methodologies in Turkey and Korea. A long list of distinguished Saint Louis University graduates hold respected positions in government and academia and perform world-class seismic hazard work in locations ranging from Italy to Taiwan.

Yet much of Herrmann’s time is focused on monitoring local seismic activity and studying the potential effects of a major earthquake on the St. Louis region. The need to significantly improve response times is driving the creation of seismic networks and academia and perform world-class seismic hazard work in locations ranging from Italy to Taiwan.

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The map will help emergency responders focus their resources and said. “That area is where we’re going to have the most damage. We need a map showing where the strongest shaking has been,” Herrmann added. “We want to know what the shaking beneath the metropolitan area will be if an earthquake of a certain size occurs at a specific location in the region. Given the answer to that question, engineers and planners can create disaster-resistant communities.”

This research and related public service fits in with the University’s Jesuit tradition and mission, said Herrmann. “We are performing an important service for both the community and the entire nation. Saint Louis University is proud of its contribution.”

Drilling to Get to the Bottom of San Andreas Earthquakes

David Kirschner, Ph.D., a structural geologist and geochemist in the department of earth and atmospheric sciences, focuses much of his research on faults that generate earthquakes. He is a member of a large research team that is drilling across the San Andreas Fault, which is one of the most famous active strike-slip faults in the world.

In a project funded by the National Science Foundation and conducted with the U.S. Geological Survey, the San Andreas Fault Observatory at Depth (SAFOD) project site is located just north of the central California town of Parkfield. This project entails drilling a borehole approximately three kilometers deep into the San Andreas Fault and placing seismometers and other instruments across the fault zone. These instruments form the first underground earthquake observatory within a seismically active fault zone in the United States.

The team decided to drill in Parkfield because it is a transition area. “Just to the south is an area where large earthquakes have occurred,” Kirschner explained. “To the north is what we call the ‘creeping section,’ where there is constant fault movement but very few damaging earthquakes.”

Kirschner is one of about 40 researchers working on the project. He is part of a four-person geology team performing some of the primary structural descriptions and geochemical documentation of the San Andreas Fault rocks. Mark Zoback from Stanford University and Steve Hickman and Bill Ellsworth from the U.S. Geological Survey conceived the project, worked nearly a dozen years to make it happen and are leading the international research group.

The main nucleation zone for large earthquakes along the San Andreas Fault is between five and 15 kilometers deep. To gain a better understanding of the physical processes that cause earthquakes, geologists need to look at rocks in that zone.

By looking at how the rocks are deformed and by studying the chemistry of the rocks, geologists should be able to determine what is happening in the fault to generate earthquakes. “We hope to learn, for example, if the fault is continuously fracturing or if it is intermittently fracturing and deforming ducibly like stretched taffy,” Kirschner said.

“Unfortunately, there are not a lot of rocks that have been brought up from those depths along the San Andreas Fault or along the ancient plate-boundary faults exposed farther south in the San Gabriel Mountains,” Kirschner said.

Last summer, Kirschner spent 10 weeks collecting rock material while living in a trailer on the football field-sized drill site. “For much of the time I was the only research geologist at the site, which meant I was right there when the rocks came up to the surface,” he said. So far the group primarily has collected “cuttings,” gravel-sized chips of rock produced by the drilling. In the summer of 2007, Kirschner and his team will drill almost one kilometer of solid rock cores. These cores should provide additional information that cannot be obtained from the cuttings. Kirschner is scheduled to work three months at the site to help in the coring operation.

After performing his fieldwork, Kirschner brings samples back to the lab where he prepares and analyzes them. The analyses provide information on fluid-rock interactions that are important in fault movement. As a fluid moves through a rock, it exchanges elements and isotopes with the rock through chemical reactions or diffusion. Kirschner can “fingerprint” those processes by analyzing the rocks.

“Within minutes of an earthquake, we want to be able to create a map showing where the strongest shaking has been.” — Robert Herrmann, Ph.D.
“I was in Switzerland doing post-doctorate work in the early-1990s when I saw an advertisement about the proposed drilling project across the San Andreas. I remember thinking how much I would love to be part of that project,” he said. “Twelve years after joining this strong seismology program at Saint Louis University, it’s a dream come true to be involved in this drilling project.”

Kirschner is already strategizing how to bring the results of the SAFOD project back to the academic world. “I’ve learned a lot from being on-site for several months,” he said. “I would like to help students learn about the drilling process. It is part of our job as SLU faculty members to generate new knowledge and share it with our students and larger academic community. This is my small contribution to that big process.”

Educating Forecasters

In a 10-hour period in May 2000, 14 inches of rain dropped on the Union, Mo., area. Catastrophic flash floods wiped out roads and homes and killed at least two people.

“Several different thunderstorms stalled and dropped torrential rain simultaneously over Franklin and Jefferson counties,” said Charles Graves, Ph.D., an associate professor of earth and atmospheric sciences at Saint Louis University. “That was one of the incidents that helped us realize we needed to develop a better understanding of these major storm events.”

Research into that case by Graves and James Moore, Ph.D., professor of earth and atmospheric sciences, has become part of the standard meteorological training for National Weather Service forecasters.

Graves, Moore and a group of dedicated graduate students study significant precipitation events — rainfall and snowfall — in the central region of the United States. By analyzing climatological data, performing numeric modeling and reviewing case studies, they learn more and more about how these storm systems work. The goal is to transfer this knowledge to forecasters in the field to boost their ability to predict serious weather events.

“The National Weather Service refers to this as situational awareness,” Graves said. “If forecasters know that, in a certain atmospheric situation with a specific mix of ingredients, there is a possibility of heavy rain or snow, they can catch it early and issue the proper warnings.”

SLU’s research team collaborates closely with National Weather Service forecasters all over the Midwest.

“We use the Internet to communicate our findings with these forecasters,” Graves said. “But we also like to meet with them face-to-face. These people are in the trenches dealing with the weather every day, so they provide a valuable reality check on our research.”

Learning from this research is critical to local forecasters, who typically haven’t experienced enough heavy rain or snow events firsthand to become experts on forecasting them.

SLU’s researchers synthesize their findings into a format that can help a forecaster quickly study a problem.

Graves said the research already is having an impact. “We have seen studies showing that the information we’re distributing is helping a forecaster quickly study a problem.”

For many Midwesterners, the images of the flooding and devastation caused by the 2005 Gulf Coast hurricanes triggered memories of the 1993 flooding from the Mississippi and Missouri Rivers. The city of Florissant, Mo., was one of the many Missouri and Illinois municipalities affected by the 1993 flood.

To make sure that piece of history never repeats itself, the city of Florissant is partnering with Saint Louis University’s Norman J. Stupp Geographic Information Systems (GIS) Lab. GIS is an organized collection of computer hardware, software and geographic data that is designed to capture, store, update, manipulate and display geographically referenced information.

“It’s digital mapping,” said Carey Bundy, lab project coordinator. “You’re taking a static map of a location and adding layers of photographs and other interactive information.”

Over the next year, the Stupp GIS Lab will finish the fourth phase of its project for Florissant, mapping the city’s location next to the Missouri River and Coldwater Creek, taking note of wetlands and other barriers from flooding.

“The parallels between Florissant and New Orleans as cities are remarkable,” said Gary Higgs, Ph.D., director of SLU’s Stupp GIS Lab. “Both cities are next to a major body of water and have significant drainage and hydrography challenges.”

Researchers at the Stupp GIS Lab will complete a survey of Florissant that includes 360-degree photographs of bridges and creeks compiled into an interactive city map. Combined with the latest integrated floodplain maps, these new surveys will help the city of Florissant continue to plan its development more responsibly.

The Stupp GIS Lab is housed in the public policy department in the Saint Louis University College of Public Service. Compared to other schools that may have a GIS lab in their geography or biology departments, SLU has public health students sitting next to law, engineering and meteorology students. This arrangement encourages cross-disciplinary problem-solving.

“With a GIS lab, we can have a wide array of people working on the project,” Higgs said. “The Stupp GIS Lab is located in the Saint Louis University College of Public Service. Compared to other schools that may have a GIS lab in their geography or biology departments, SLU has public health students sitting next to law, engineering and meteorology students. This arrangement encourages cross-disciplinary problem-solving.”
Seven years ago, William Hubble came to Saint Louis University from a job as a radiology manager at a local hospital, determined to trade in his cynicism of the bottom-line-obsessed corporate world for a renewed passion of nuclear medicine and a desire to spread that zeal to students.

Hubble, now chairman of the nuclear medicine technology (NMT) program at the Saint Louis University Doisy College of Health Sciences, soon discovered what many academics already knew: There’s never enough time or money to conduct all of the meaningful research you’re interested in.

Osman (left) and Hubble (second from right) created the Nuclear Medicine Technology Student Research Initiative to give students like (from left) Hunter, Jackson and Huston an opportunity to get research experience as undergraduates. This 16-slice PET/CT scanner is owned and operated by Saint Louis University Hospital as part of its outpatient diagnostic service.
While he was wondering how his department could fulfill its many duties - teach, advise, recruit and conduct research - Hubble heard the University-wide "battle cry" for more undergraduate research, and an intriguing idea began to form.

Hubble enlisted the help of Medhat Osman, M.D., Ph.D., a rising nuclear medicine star whom the Saint Louis University School of Medicine had recently recruited from Johns Hopkins University. As the two brainstormed research opportunities, they realized they could share their resources.

"He had a great deal of research experience, clinical data, a state-of-the-art medical imaging lab and an open mind," Hubble said. "I had many years of professional experience, a desire to get started and, most importantly, undergraduate students with a large amount of untapped potential."

Hubble began recruiting his most talented students to become involved in the project now referred to as the NMT Student Research Initiative. Their goals were simple: Pick a topic, get Institutional Review Board (IRB) approval, collect the data, analyze the results and report on the findings.

Published Authors at 21
Ryan Jackson, now a first-year student at the Saint Louis University School of Medicine, is one of the first success stories of the initiative. As an undergrad, he had a part-time job working at the hospital with Osman, who offered him the chance to conduct research. As an undergrad, Jackson eventually presented his research, entitled "Prevalence and Patterns of Physiological Markers of Breast Cancer in Newly Diagnosed Patients," at a national conference.

"It was his enthusiasm that separated him from his peers," said Osman, whose true whole-body scan research promises to revolutionize the nuclear medicine industry. "Every time he finished a project, he'd come to me and want to do another one. I couldn't ignore his enthusiasm."

One of Jackson's manuscripts was accepted for publication because he had "developed a successful technique to standardize it," Osman said. "There's no medicine that can suppress the thyroid. Keeping the baseline, and if there's a difference in radioactive uptake in the areolar tissue of cancer patients. She and Osman wanted to find out if bras really can affect the areolar tissue of cancer patients. And they found that they can."

Jackson eventually presented his research, "Huston, a nuclear medicine technologist at Saint Louis University, was turned to the field of medical physics. As an undergrad, he worked alongside Osman to research the various parameters that could make a breast cancer patient more likely to be a survivor. He also found that he was able to do research abroad."

The project truly is a labor of love for the faculty members involved. There is no compensation for time, each is somehow able to find the countless hours necessary to groom the students from their already jam-packed schedules. The students, who could always benefit from a little extra time, are not spending money, doing the research without enlightenment.

"They have classes full time. Many of them have part-time jobs as well. It takes an incredible amount of initiative on their part," Hubble said. "They're getting the opportunity to work with the same professionals they'll be working with later in their lives."

Many of the students join the program in their sophomore or junior year. To help them get started, the program provides publication training. When Huston finishes her research on the areolar tissue of cancer patients, she and the other researchers, will be encouraged to submit his work to the Society of Nuclear Medicine. If the abstracts are accepted, the students are expected to present their findings and work on submitting a manuscript for publication.

"They have to go out and collect information, and analyze it," Hubble said. "Then they become the teachers. They go in front of their peers and report their findings and answer questions. It's very intimidating, but the people in the audience think they're talking to medical residents. It gives the students professional confidence, which is something that can't be taught in a classroom."

"They also become well-versed in the language of statistics with the help of Dana Oliver, a nuclear medicine technologist at the Saint Louis University Cancer Center."

"They help them with statistical analysis and makes sure they understand how to conduct research. I think that's what student Osman said, noting that Oliver often works late into the evening to make sure the undergrads have a handle on the numbers."

Together with their newfound understanding of patient privacy laws, the students end up with a "distinct advantage" when they graduate. Osman said, "I feel like I've prepared to conduct research than med school students and even residents."

Living the Mission
The change in the students — once mere college undergrads who are now legitimate researchers and published authors — is palpable.

"At first, some undergrads think, 'I just don't see myself doing that. I don't think I could,'" Hubble said. "I've seen what happens to them after their first paper gets accepted or after they present their research. They're not as limited. They think, 'If I can do this, I can do anything.'" Not only does it prepare a new generation for research careers, the program also helps boost the University's cachet around the nation.

"When we go to these conferences and meetings and talk, undergrads are presenting research, [people from other colleges and universities] are so impressed because they haven't done that," Hubble said. "It speaks well of SLU."

Osman said funding would be more than helpful for the always-evolving initiative.

"We're going to write a grant soon; we want to be able to do this in a more systematic way, so more students can be involved and so we're able to do this on a larger scale," Osman said.

Osman, whose face lights up when he describes what it felt like when he found out that all of the abstracts his students submitted to last year's Society of Nuclear Medicine conference were accepted, said that helping them grow into better researchers, scientists and people. If I had this experience in med school or before, I'd be much better off. Part of the satisfaction of watching them grow into better researchers. In both ways, we're fulfilling those mission statements. To me, that's a perfect world."

Whole-body PET scans (A) allow researchers to look for lesions and tracer uptake throughout the entire body.
For many Saint Louis University students, volunteering is more than a way to spend free time; it’s a way of life. For 180 students in Saint Louis University’s John Cook School of Business, it also is a certificate requirement.

The students in the Cook School’s Service Leadership Certificate Program are learning firsthand that when you give back to the community, sometimes you get more than you expected in return.

Established in 1995, the Service Leadership Certificate Program is a nationally recognized program that teaches undergraduates leadership through community service. Students, also called Service Leaders, must complete 15 hours of coursework and 300 hours of community service, and attend six leadership workshops a year to receive the certificate. Business ethics are stressed throughout the curriculum.

During the 10 years since the program’s inception, students in Service Leadership have logged more than 35,000 hours of community service in the St. Louis area.

The number of students in the program has grown significantly over the years. In 2000, only 35 students were part of the program. Five years later, 180 students are participating, and the applications keep coming.
The students, who will one day be in leadership positions within their companies, learn the importance of serving the community.

― Debra Faughn
Oscar Ramirez, M.D., is an internationally acclaimed plastic surgeon known for his innovative surgical techniques in reconstructive and cosmetic surgery. The assistant professor at Johns Hopkins University School of Medicine has traveled to more than 40 countries over five continents to teach other plastic surgeons his techniques. But, he said, nothing compares to the teaching laboratory at the Practical Anatomy and Surgical Education Center of Saint Louis University School of Medicine. He recently lectured at a workshop titled, “Contemporary Surgery of the Aging Face.”

“No question about it,” said Ramirez, as he watched over the shoulder of a surgeon practicing the endoscopic midface lift he had demonstrated 10 minutes before. “There is no better facility around. The quality of the equipment and the layout of the operating stations create the absolute best environment for surgeons to learn. I never refuse an invitation to teach here.”

Few do. The continuing medical education (CME) courses for physicians have gained the reputation as the finest hands-on surgical training programs in the world. Surgeons from more than 80 countries have taught or taken courses at the lab. From the beginning, there has been no other surgical education facility of its kind.
In the early 1980s, the only way a surgeon learned new techniques was to observe them being performed in an operating room or by attending a lecture where a surgeon showed slides and described the procedure.

“There was no opportunity for surgeons to go into a lab, have access to cadavers, access to the right equipment and to practice,” said Paul H. Young, M.D., clinical professor of neurosurgery and founder of the practical anatomy program. “It seemed to us there had to be a better way.”

Young and his colleagues at the School of Medicine came up with a better way in 1983. They organized a course on operative techniques in neurosurgery a few days before the annual American Association of Neurological Surgeons (AANS) meeting in San Francisco. They rented a lab and equipment, brought in cadavers, and invited the renowned surgeons who were presenting at the meeting to demonstrate their techniques to other surgeons. Participants then practiced the techniques on the specimens.

“It was such an incredible success, we had surgeons begging to get in,” Young said. “We knew we were on to something.”

For almost five years, Young and his colleagues organized similar workshops before national meetings with equal success. The logistics, however, were exhausting. For each course they had to rent a truck, load the equipment, drive to the host city, rent a lab, arrange for specimens, set up the lab and clean it before driving back to campus in the late 1980s by a technician who went to and from campus several days setting up and tearing down because the lab had other uses. They could offer only a handful of courses a year.

An Ideal Environment

Then in 1990, Practical Anatomy and Surgical Education, formerly known as Practical Anatomy Workshop (PAWS), found a permanent home. It leased space, eventually renovated a space and moved into a sophisticated corporate showcase that allowed physicians to see exactly what the surgeon was seeing, right down to the tiniest nerve. It’s an incredible teaching tool.

Like Riding a Bike

The format of the courses has not changed much from the early days. The course lasts five sessions, all taught while the teaching team and trained faculty roam the lab. The value of the hands-on workshops is enhanced by the high-tech video production system in the world. Each station is equipped with a flat panel television on which physicians can watch the teaching surgeons perform dissections at a master station. The 3-D operating room camera at the master station and the 3-D video system in the auditorium were developed at Saint Louis University in the late 1980s by a technician who went on to develop the 3-D video system at Walt Disney World’s Epcot Center.

“It’s the difference between having someone describe to you over the phone how to ride a bike and then six months later you encounter the bike, versus watching him ride the bike and having him run alongside you when you ride,” Nayak said.

Brian Romanschi, M.D., a plastic surgeon from Lake Tahoe, Nev., attended Nayak’s workshop on facial rejuvenation this past fall.

As highly regarded as the workshops are, faculty and staff are constantly striving to improve. Practical anatomy will begin a major building renovation in 2006. Plans include transforming the second floor into a sophisticated corporate showcase where vendors can exhibit their surgical equipment and interact with surgeons in a comfortable setting. Fees paid by corporate sponsors keep the lab self-sustaining and support its programs.

In addition to the physician workshops, the Practical Anatomy and Surgical Education workshop program offers approximately 10 allied health professionals workshops each year. Topics have included Human Gross Anatomy: Review and Dissection; ER: Some Watch It — We Live It; and Complex Spine: Anatomy and Instrumentation for Nurses and Physician Assistants.

Practical anatomy also has a youth outreach program called Adventures in Medicine and Science (AIMS) that introduces middle and high school students to human anatomy and gives them a better understanding of career choices in medicine. AIMS workshops also are offered to teachers to provide them with a better understanding of human anatomy and physiology and to discover new techniques for teaching these topics. More than 8,000 students and teachers have gone through the program since it was introduced in 1991.

For a schedule of courses, go online to http://pa.slu.edu.

This article originally appeared in the Spring 2006 issue of Grand Rounds, the magazine of the Saint Louis University School of Medicine.
Saint Louis University’s researchers routinely gain national media exposure for their groundbreaking work. Often these stories reach millions of people. Here are some examples of national media coverage of University research.

Geologist Timothy Kusky, Ph.D., was interviewed by CBS 60 Minutes, CNN, Fox News Channel, CNBC, U.S. News & World Report and TIME magazine about rebuilding New Orleans after Hurricane Katrina. Kusky warned of the devastation in his 2003 book Geological Hazards. Trauma surgeon Lonnie Frei, M.D., was interviewed live in-studio by the NBC Today show’s Katie Couric about a cheerleader who was injured doing a stunt. Pediatrician and internist Marilyn Maxwell, M.D., was interviewed live in-studio by Pediatrician and internist Marilyn Maxwell, M.D., was interviewed live in-studio by the NBC Today show’s Katie Couric about a cheerleader who was injured doing a stunt. Pediatrician and internist Marilyn Maxwell, M.D., was interviewed live in-studio by the NBC Today show’s Katie Couric about a cheerleader who was injured doing a stunt.

Geriatrician David Thomas, M.D., was quoted in USA Today, discussing malnutrition and the elderly and Saint Louis University’s research in this area.卡特琳娜·库斯基警告了灾难性的破坏，他的2003年书《地质灾害》。创伤外科医生朗尼·弗莱，M.D.，被NBC今日节目主持凯蒂·考丽克采访，讨论了一个啦啦队员受伤的情况。儿科医生和内科医生玛丽莲·马克斯韦尔，M.D.，被NBC今日节目主持凯蒂·考丽克采访，讨论了一个啦啦队员受伤的情况。

Cardiothoracic surgeon Keith Naughton, M.D., was quoted in The New York Times about his research on which emphysema patients would benefit from lung volume reduction surgery. Research by pediatrician Donna Halloran, M.D., on hearing screenings was featured in the Science Times section of The New York Times. The New York Times featured an article by mathematicians Bryan Clair, Ph.D., and David Letscher, Ph.D., about their research into NCCA tournament pools. A study by Terry Leet, Ph.D., about exercise during pregnancy has been featured on television stations across the United States and in the Los Angeles Times.

Epidemiologist Greg Evans, Ph.D., has been educating the public about avian flu on many different media outlets, including live on MSNBC and CNBC.

Historian Thomas Madden, Ph.D., was quoted by USA Today, The Washington Post and National Catholic Reporter about the Crusades. Madden is author of The New Concise History of the Crusades. Author of The Modern American Vice Presidency, Joel Goldstein, J.D., was interviewed about Vice President Cheney by NPR’s All Things Considered, The Wall Street Journal, Newsday, The Dallas Morning News, McClatchy Newspapers, Cox Newspapers and Europe, a newswEEKLY in Rome.

Research by pediatrician James Kemp, M.D., on the new American Academy of Pediatrics guidelines for sudden infant death syndrome ran in the Science Times section of The New York Times and on CBS Radio Network “top of the hour” news. (The radio story aired on more than 1,000 stations across the United States.)

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The director of the University’s Center for Integrated Emergency Management, John Goglia, was quoted by the CBS Evening News and Fox News Channel about a U.S. Department of Transportation report.

David Crossley, Ph.D., professor of earth and atmospheric sciences, was interviewed on CBC Radio, Canada’s national public broadcaster, about natural disasters.

Psychiatrist Charles Conway, M.D., was quoted about vagal nerve stimulation for depression in a U.S. News & World Report cover story.

Cardiologist Art Labovitz, M.D., was quoted in an Associated Press article that ran in papers across the United States and was quoted in an edition of one of the country’s top circulation magazines, Family Circle, about heart disease.

Law professor Sidney Watson, J.D., was quoted by the Associated Press about her research that links patient medical debt to housing problems.

Pediatrician Ken Haller, M.D., was quoted in an Associated Press article about cartoon films and violence that was picked up by more than 150 media outlets.

Aerospace engineer Paul Czysz was quoted in MSNBC.com and in The Vancouver Sun about a glider his research inspired that could be used for commercial space travel.

Ana Druix, Ph.D., from the School of Public Health discussed toxic mold on National Public Radio and other major media outlets.

Virologist Mark Byrle, Ph.D., was heard on National Public Radio’s All Things Considered discussing psx virus infections.

Geriatrician John Morley, M.D., was quoted in O: The Oprah Magazine about how physical exercise stimulates your brain.