At Saint Louis University, we take great pride in the fact that our mission is “the pursuit of truth for the greater glory of God and for the service of humanity.”

At Saint Louis University, research is a tool used to assist in our students’ educational experiences. Students are a main priority when it comes to every aspect of the “pursuit of truth.” This means that students join premier faculty in labs, libraries and out in the community and engage in studies that will change their disciplines as well as the lives that their research may one day touch.

In this issue of Knowledge, you will read about members of the University community “pursuing truth.” You will meet three award-winning graduate students who are enriching their education with research on issues such as bioterrorism vaccines, ethics and the obesity epidemic. You will also read about one Saint Louis University professor/geologist whose research traces life back billions of years and has taken him and his students to countries all around the world. We also are pleased to present the research of several Saint Louis University faculty and students from the departments of geriatric medicine and geriatric psychiatry who are studying the aging process and how we may prevent the elderly from losing their mental abilities. Finally, we have included a story on a bio-battery project and the work of one undergraduate that was presented before members of Congress.

Research at Saint Louis University is helping to make the world we live in a better place. Another sign of the University’s dedication to the pursuit of excellence in research is our recent groundbreaking on the largest-ever building project in the history of the University: the Health Sciences Center Research Building. This state-of-the-art medical research building is being constructed on nine acres and will feature more than $80 million in new and enhanced facilities – quite an investment in the future of research at Saint Louis University.

At Saint Louis University, we will continue to pursue excellence in research and forever be the place where knowledge touches lives.
Good Medicine, Good Economics: All Racial and Socioeconomic Groups Need Equal Treatment for Pain

As if doing the right thing is not enough, Saint Louis University researchers have found another reason that all populations should receive equal medical treatment and compensation for occupational back pain: It is actually cheaper in the long run.

Research by John T. Chibnall, Ph.D., associate professor of psychiatry at Saint Louis University’s School of Medicine, and Raymond C. Tait, Ph.D., professor of psychiatry at Saint Louis’s School of Medicine, published in Pain Medicine finds that the cheaper treatment and smaller settlements typically given to African-Americans and to the poor lead to greater dissatisfaction with the Workers’ Compensation system, which in turn creates more long-term disability and costs.

“Some level of the system will bear the cost,” Chibnall said. “If treatment and compensation for work-related back pain injuries were more equitable, particularly among racial and socioeconomic lines, claimants would be more satisfied with their experience and better off in the long run. The point of the system is to return people to work and to give them a fresh start after their injury, not to encourage costly legal wrangling and disability applications.”

The study is a companion to recent work by the authors, published in Pain Medicine, that found that both African-Americans and poor people with work-related back injuries receive less medical care and cheaper treatment and smaller settlements typically given to African-Americans and to the poor lead to greater dissatisfaction with the Workers’ Compensation system, which in turn creates more long-term disability and costs.

Missouri House Committee Approves Revenue Measure Proposed by Saint Louis University Law Student

The Missouri House Ways and Means Committee approved a bill proposed by a recent Saint Louis University School of Law alumnus that would raise $11 million in new revenue for the state.

Christin Stephens, who received her J.D. from SLU in May, was instrumental in introducing House Bill 967, which would eliminate the tax deduction nonresidents can take for property taxes they pay in another state.

Currently, people who live in neighboring states but work in Missouri are allowed to take their federal property tax deductions and carry them over to their Missouri tax returns, regardless of where their property is located. One such deduction is for property taxes paid on real estate, regardless of where it is located. Stephens’ proposal eliminates this deduction by requiring nonresidents to add back the amount of the federal deduction on their Missouri tax returns.

“There’s no reason Missouri should be giving up tax revenue through a deduction for property that’s not even located in the state,” Stephens said.

Stephens provided legal research and logistical support to legislators for the proposal. She also met with state senators and a representative of the governor’s office to lobby for her proposal.

John Ammann, director of the Legal Clinic in SLU’s law school, praised Stephens’ work in getting the bill introduced this year.

“It’s a common-sense way to raise some revenue, which could allow some of the planned state budget cuts to be avoided,” Ammann said.

At the April 18 executive session held to discuss House Bill 967, the members present unanimously voted “do pass.” Unfortunately, the bill never made it to the floor of the House due to session time constraints. Missouri State Representative Rachel Storch, however, plans to file the same bill when the House reconvenes for the next session.

Won’t Hurt a Bit: Saint Louis University Investigates a Needle-Free Approach to Deliver Flu Vaccinations

For those squeamish about needles, here’s some potentially good news: Researchers at the Saint Louis University School of Medicine are investigating the use of sound waves rather than syringes to administer the flu vaccine.

In the first study of its kind in the nation, researchers at the Saint Louis University Center for Vaccine Development are using an investigational device that applies ultrasonic waves to a small area of the skin to create microscopic openings in the pores. Once the pores are opened, a nickel-sized patch containing a licensed flu vaccine is placed over the area, allowing the medication to pass into a patient’s bloodstream.

“The painless pulse of sound waves takes about 15 seconds, and the skin returns to its normal state within 24 hours,” said Robert Belshe, M.D., lead investigator for the study and director of the Center for Vaccine Development.

The flu vaccine usually is administered by shots. The drawbacks to vaccinating with needles are pain, cost and possible infection when used in underdeveloped countries.

For those squeamish about needles, here’s some potentially good news: Researchers at the Saint Louis University School of Medicine are investigating the use of sound waves rather than syringes to administer the flu vaccine.

A student advertising team from Saint Louis University’s College of Arts and Sciences placed first at district competition and fifth at nationals at the annual American Advertising Federation (AAF) National Student Advertising Competition (NSAC).

Known as the “College World Series of Advertising,” the NSAC is the most prestigious competition for students aspiring to careers in advertising. Eleven universities from Iowa, Kansas, Nebraska and Missouri took part in the ninth district competition, and the national competition included the 16 district winners from across the United States.

Each year, a different national organization sponsors the competition. This year’s case study was for Yahoo!, The Life Engine, and the target audience was the complex, techsavvy teenage market.

The SLU team’s campaign, “Yahoo! Get Curious,” consisted of an innovative integrated marketing communications plan, a thorough plans book and an interactive live presentation. Judges from Yahoo! expressed interest in developing some of the “guerilla” marketing tactics from the SLU students’ plan.

After winning awards seven out of the last 10 years, this is the first time SLU has received first place and advanced to the national competition.

SLU offers the AAF competition as a communication course that is organized like an advertising agency.
In Brief

**John Cook School of Business Opens Economic Forecasting Center**

Saint Louis University’s John Cook School of Business recently announced the opening of the region’s first center for economic forecasting. In January, Jack Strauss, Ph.D., department of economics, was installed as the John E. Simon Chair in Economics and named the director of the Simon Center for Regional Economic Forecasting. The Simon Center provides publicly available forecasts in areas such as employment, revenue, income and housing prices for both the St. Louis metropolitan area and the state of Missouri.

Strauss and his colleagues use sophisticated econometric models to produce forecasts. A key area of focus for the Simon Center is employment growth, and the center is using a combined method to forecast variables such as employment growth for St. Louis city and county as well as the state of Missouri. The method uses statistics to optimally combine the forecasts of different economic variables. In the past, this method has been used to forecast U.S. gross domestic product and inflation, but not employment growth. Strauss and his colleague, David Rapach, Ph.D., will show that the combined forecast approach can help forecast U.S. employment growth during recessions and be fruitfully applied to predict other employment growth, and the center is using a combined method to forecast variables such as employment growth for St. Louis metropolitan area and the state of Missouri.

**“Lazy Eye” Treatable in Some Teens**

Results of a nationwide clinical trial show that amblyopia — or “lazy eye” — can be treated in some teenagers and older children.

The findings, published in the *Archives of Ophthalmology*, contradict conventional medical wisdom that amblyopia must be treated in early childhood.

“This shows that the human visual system is much more adaptable than we’d previously thought,” said Oscar A. Cruz, M.D., chairman of the department of ophthalmology at Saint Louis University’s School of Medicine and a researcher in the trial.

Amblyopia occurs when the brain favors one eye over the other. The condition can be corrected by temporarily impairing vision in the “strong” eye, forcing the weak eye to compensate. This traditionally has been accomplished when a child wears an eye patch over the strong eye or uses special drops to blur vision in the strong eye.

Researchers found that 25 percent of children ages 13 to 17 who received treatment met the standard, compared to 23 percent in the group who received only glasses. In teenagers who had received no prior treatment for amblyopia, 47 percent showed at least two lines of improvement, compared to 20 percent who were treated with glasses alone.

The clinical trial — which was sponsored by the National Eye Institute, part of the National Institutes of Health — included 507 children at 49 eye centers nationwide.

**Jeans Too Tight? 50 Percent of Adults Can Blame Genes**

If you are a middle-aged guy who has packed on the pounds and now is battling to take them off, there is a 50-50 chance that your jeans are fitting tighter because of your genes, according to a Saint Louis University School of Public Health study.

“About 50 percent of adult onset weight change remains genetic,” said James C. Romeis, Ph.D., professor of health services research in the School of Public Health and the principal investigator of the study, which was published in a recent issue of *Twin Research*.

Romeis studied nearly 8,000 male twins who served in the military during the Vietnam War and found that genes account for more than 50 percent of the change in Body Mass Index. How we deal with our environment — what we eat, the amount we eat and how much we exercise — accounts for the other 50 percent.

Romeis speculates that our increasingly sedentary, “super-size-it” lifestyle is particularly problematic for those who are at genetic risk of becoming fat.

“While genetic vulnerability has probably not changed during the past few years, environments have, thus allowing us to eat, the amount we eat and how much we exercise — accounts for the other 50 percent.”

Romeis said. “Treatments and public health interventions need to recognize the magnitude of genetic factors if short-term and long-term interventions are to be effective.”

**University Plays Host to Families of Children with Rare Genetic Disorder**

Families from around the world, whose lives have been changed by a rare genetic disorder that affects less than one in 30 million children, gathered at Saint Louis University in June for the “Fourth International Costello Syndrome Conference.” At the conference, families shared their stories, collaborated with medical professionals and academic scholars, and looked for answers to better understand this rare disease.

Costello Syndrome is a rare inherited disorder first reported in 1987 by a pediatrician in New Zealand. Typical features, which become more obvious as the child grows, include: short stature; redundant skin around the neck, palms, soles and fingers; curly hair; papillomata (small fleshy growths) around the mouth and nose; a characteristic facial appearance (epicanthal folds, depressed nasal bridge, large earlobes); pigmented skin; cataracts; and premature graying of hair.

SLU’s department of communication sciences and disorders and the department of educational studies in the University’s College of Public Service hosted the conference and offered speech/language, hearing and educational evaluations, as well as seminars.
Three University graduate students immerse themselves in their research and make real-world contributions in the process.

Enriching their education with research

Ranked as one of the nation’s leading comprehensive research universities, Saint Louis University has a long tradition of providing research opportunities that allow students to enrich their education. Whether in the lab or the field, students gain invaluable academic experiences through the research process and its outcomes. As they work to expand their own education, students also broaden the common base of knowledge.

The University is committed to the enhancement of students’ overall educational experiences, and students are encouraged to be fully involved and participate in a wide variety of research opportunities covering many different disciplines. At SLU, nationally and internationally known faculty members fully engage and involve students in their research and push them to explore their own ideas as well. Students develop practical, active and hands-on skills that can be used to shape their educational experience and may be applied to the rest of their lives. When these students take their place in the world, they are ready to influence others in deep and profound ways.

Here, three graduate students share their research projects and experiences, including how to create a more effective smallpox vaccine and determining why unethical business decisions are made. These students’ projects won awards at the University’s Graduate Research Symposium in April.
Since Sept. 11, 2001, the threat of bioterrorism has caused widespread concern, forcing many researchers to seek answers to questions that were never before acknowledged as foreseeable problems. It just so happened that at the height of the bioterrorism scare, Lauren Handley joined Saint Louis University as a doctoral student of immunology and virology in the department of molecular microbiology and immunology. The University is a leader in vaccine research, including vaccines that could lessen the threat of a bioterrorist attack. This opportunity gave Handley the chance to work with specific viruses in the University labs of Mark Buller, Ph.D., and Cliff Bellone, Ph.D.

Handley’s research focuses on the identification of the specific parts of the smallpox virus, otherwise known as epitopes, which are recognized by immune memory cells called CD4+ T-cells in humans.” Handley also received a travel award to present her data at the International Poxvirus and Irdiovirus Workshop in Oxford, England. While attending this workshop, Handley visited the small straw hut that Edward Jenner used to perform smallpox vaccinations in the late 18th and early 19th centuries. Jenner is often referred to as the pioneer of the smallpox vaccine and father of immunology.

Handley’s interest in virology, the study of viruses, began in high school and continued on into her undergraduate education at the University of Missouri-Columbia, where she received her bachelor of science in biochemistry. Handley anticipates graduating from Saint Louis University with a Ph.D. in May 2007.

Not only does Handley believe that her research is shaping her education, she would be the first to tell you that her research is her education: “In the design, implementation and analysis of every experiment that I do, I am learning about scientific research, techniques and experimental design,” she said.

When Handley first arrived at Saint Louis University, she was unsure which facet of microbiology she wanted to pursue, but she was impressed with the versatility of SLU’s program. Handley’s favorite class at SLU was the immunology course offered through the department of molecular microbiology and immunology.

“Since my research project is largely focused on immunology, that class was essential for the development of my general knowledge and understanding of the subject,” she said. Handley found great support from her professors at SLU. A major benefit to her project was the Buller lab’s collaboration with Robert Belshe, M.D., and Sharon Frey, M.D., who study the immune system’s response to the smallpox vaccine. Belshe and Frey have led a large clinical trial with the smallpox vaccine and have already published several papers on their discoveries.

Upon completion of her doctoral work, Handley would like to pursue a career that puts her education to work for both clinical research and her community. “One of the things I appreciate most about the Catholic Church is its desire to encourage and support progress regarding scientific research while maintaining a reverence for the dignity of the human lives that that very research serves,” she said. “I would like to use my training in scientific research to assist the Church by educating both the clergy and the lay people about the concepts and techniques involved in current and developing science.”

Through her research, Handley hopes to contribute to the eventual development of smallpox vaccines that do not use the live replicating virus “so immune-suppressed people could receive a smallpox vaccination without being at increased risk.”}

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**Lauren Handley, a doctoral student in the department of molecular microbiology and immunology at SLU School of Medicine, is searching for a more effective smallpox vaccine. Her research has taken her overseas and brought her international recognition.**
Many business professionals have found themselves challenged by ethical decision-making. For Kevin Kelley, what started as a mere curiosity of this topic soon became an intense interest in how people come to make ethical decisions. By the time he graduates, Kelley, a doctoral student of organizational psychology, will have spent close to a decade researching various aspects of organizational psychology.

Kelley’s research focuses on whistle-blowing. The goal of his research is to “understand what situational changes could be made to an organization’s culture to elicit more ethical than unethical decisions,” Kelley said.

In his study, “The Impact of Moral Intensity on Whistle-Blowing Intentions,” Kelley examined what aspects in a situation cause people to blow the whistle, which he defined as the “disclosure by an employee of illegal or immoral practices by an organization to an authority.” Using whistle-blowing as an outcome for ethical decision-making, he figured such research was more than just appropriate – it could help people understand why unethical business decisions are made.

“I was interested in what causes people to make bad decisions, and the literature surrounding moral intensity was ripe for continuing research,” Kelley said.

In his examination of moral intensity, which consists of six measurable aspects of a situation that theoretically have been linked to positive and negative ethical decision-making, Kelley was able to link the aspects of moral intensity with whistle-blowing. The six measurable aspects are: magnitude of consequences, social consensus, probability of effect, temporal immediacy, proximity and concentration of effect. By linking four of these six factors of moral intensity, Kelley hopes to help businesses organize their environments to increase their ethical decision-making, thereby reducing the need for whistle-blowing.

With the help of fellow student, Meredith Brimstin, Kelley received first place in the poster presentation for social sciences at SLU’s Graduate Research Symposium.

Ed Sabin, Ph.D., of SLU’s department of psychology, was also vital to Kelley’s research. Sabin was Kelley’s thesis chair and provided much needed feedback through editing and coaching. “Dr. Sabin was very exacting in his standards, and this helped me understand the rigor needed to play in the research field,” Kelley said.

Kelley also received great support from the SLU organizational psychology department faculty, who taught him “not only how to learn, but how to think and critically evaluate simple and complex constructs.”

Kelley anticipates receiving his doctoral degree in May 2007. He earned his bachelor of arts and master of science degrees in psychology from Saint Louis University.

As for Kelley’s future plans, he has ambitions to teach and consult small- and medium-sized businesses. “Teaching, consulting and research go hand-in-hand,” he said. “Without the advances in research and knowledge, consultants would have less empirical evidence to draw on when advising an organization. Similarly, teachers draw on business examples to help educate students as well as develop lines of research. I hope to use all three to develop a successful career educating students and making organizations more effective.”
When it came to researching obesity, Tegan Boehmer and her fellow graduate students took to the streets. As a doctoral student in the Saint Louis University School of Public Health, Boehmer has studied the recent trends in obesity and has become increasingly alarmed.

“The obesity epidemic occurring across the United States places an extreme health burden upon society,” Boehmer said. “The rapid increase in obesity over the past 20 years is most likely explained by changes in our physical and social environments.”

Boehmer first became interested in health at Bradley University, where she earned a bachelor of science in biology with a minor in psychology. She has continued her studies at SLU, concentrating in epidemiology.

A summer class sparked her interest in public health research. The intense 10-week course, “Advanced Epidemiology Methods,” involved partnering with another student to design, analyze and write-up an original epidemiologic study under the guidance of a faculty and clinical advisor.

“The research project I completed during this unique, hands-on course resulted in publication in the American Journal of Obstetrics and Gynecology,” Boehmer said.

While obtaining her master’s of public health, Boehmer interned at the Missouri Department of Health and Senior Services. There, she created the idea for her dissertation research plan, a third of which she presented at SLU’s Graduate Research Symposium, where she received second place in the poster presentation for social sciences.

Boehmer’s dissertation, a three-paper format, is titled, “Obesity and the Neighborhood Environment: Examination of Perceived and Observed Indicators in Rural and Urban Settings.” Her dissertation focuses on the effects of one’s residential environment on obesity.

Her research is important “because it identifies potential targets for public health interventions that aim to reduce the prevalence of obesity through environmental and policy approaches to encourage physical activity.”

The purpose of Boehmer’s research project was to determine whether specific characteristics of the neighborhood environment are associated with obesity among adults residing in urban areas. Obese persons, as Boehmer’s results indicated, were slightly more likely than normal weight persons to report a lack of recreational facilities and other non-residential destinations within close walking distance from their homes. Observations of poor sidewalk quality and the absence of bike lanes were associated with higher odds of being obese. Boehmer’s results also indicated that obesity was more common in areas with greater levels of physical disorder (likely an indicator of a high poverty neighborhood) and fewer non-residential destinations or less variety of land uses.

For this project, Boehmer used previously gathered data from an ongoing research study funded by the Robert Wood Johnson Foundation. Ross Brownson, Ph.D., the principal investigator on this research project and member of the recent Institute of Medicine committee on childhood obesity, “is well known nationally for his efforts to better understand the relationships between environmental and policy factors and physical activity,” Boehmer said.

Brownson and his fellow faculty members at SLU’s School of Public Health Prevention Research Center are leaders in the field of physical activity research. Several faculty members and other graduate students participated in this research study.

Boehmer worked collaboratively on this research project with Christine Hoehner, Ph.D., who was a doctoral candidate in Public Health Studies and is now an assistant professor in the School of Public Health. “Christy served as an advisor to me while I was designing, analyzing and writing up this research project,” Boehmer said.

Boehmer will enter a post-doctoral research position at SLU after completing her doctorate. In the future she plans to seek employment at the Centers for Disease Control and Prevention or at a state or local health department.

As for her attachment to SLU, she finds it to be “a very nurturing, student-centered environment with excellent opportunities for faculty-student collaboration.”

Thanks to Elizabeth Boteler and Amy Garland for their contributions to this article.

Tegan Boehmer, a doctoral student at SLU’s School of Public Health, studied the effects of one’s residential environment on obesity. The purpose of her research project was to determine whether specific characteristics of the urban neighborhood environment are associated with obesity among adult residents.

Her research is important “because it identifies potential targets for public health interventions that aim to reduce the prevalence of obesity through environmental and policy approaches to encourage physical activity.”
Saint Louis University was founded in 1818, but there are some pieces of history at SLU that go back much further. In fact, they go back billions of years.

While one might expect to find the oldest materials on Saint Louis University’s campus in the Pius XII Memorial Library or perhaps a dorm room refrigerator, that’s not the case at all. In a corner office on the second floor of Maclewan Hall, sits the office and lab space of Timothy Kusky, Ph.D. It’s here that the University professor is doing groundbreaking work based on trips around the planet and changing the debate over where life began.

Kusky is an associate professor and the Paul C. Reinert Chair of Natural Sciences in the department of Earth and atmospheric sciences. He joined Saint Louis University in 2000 after visiting a friend in the area and liking what he saw in St. Louis. The University happened to have an opening, and he decided to apply. The rest is history... literally. Kusky is regarded as one of the world’s leading experts in geology and has written nine books and several hundred journal articles on the topic. He’s on the U.S. Geological Survey (USGS) and many other countries’ speed dial when they have a project.

In 2001, Kusky changed the evolutionary timeline with a discovery near the Great Wall of China, and he’s not stopping there. Currently, he’s working on projects on four of the Earth’s seven continents.

David Crossley, Ph.D., who was chairman of the Earth and atmospheric sciences department in 2000 when Kusky was hired, calls him one of the most productive researchers he has ever met.

“We are fortunate he chose this department in which to flourish,” Crossley said.
In Madagascar, Project Chief Kusky and his team conduct a mineral resource assessment. The teams combine science and helping people, working at Saint Louis University is that he has the opportunity to work on projects that combine science and helping people. The teams of researchers he’ll work with include scientists, economists, planners, biologists and conservationists. It takes a lot of science to map a country this big, and you have to understand the geology,” Kusky explained. With one main road in the entire country, Kusky and his colleagues have their work cut out for them. The group will use the other forms of transportation available to them such as whitewater rafting over class-five rapids on the Shire River (above-left). The teams will help the residents of Madagascar learn what kinds of resources exist on the world's fourth largest island and encourage ecotourism instead of logging. They also will interview natives of the island to find out what their needs and expectations for Madagascar are. Currently, more than 50 percent of the residents of Madagascar live in poverty. The infant mortality rate is five times that of the United States. “It’s a different kind of project because it has both scientific goals and the goal of trying to help a country that really needs to pull itself out of a severe economic depression,” Kusky said. “It’s a real benefit to society, this project.” Kusky said one of the benefits of working at Saint Louis University is that he has the opportunity to work on projects that combine science and helping people. The teams of researchers he’ll work with include scientists, economists, planners, biologists and conservationists. It takes a lot of science to map a country this big, and you have to understand the geology,” Kusky explained. With one main road in the entire country, Kusky and his colleagues have their work cut out for them. The group will use the other forms of transportation available to them such as whitewater rafting over class-five rapids. A rafting trip from the country’s plateau region to the coast takes two weeks. The group will make stops along the way to analyze the area and take samples, Kusky said. "The discovery actually happened during my first trip to China," said Kusky, a professor of geology in his time. "We were supposed to be doing initial reconnaissance work, and it really wasn’t going that well. Then we found the section of old ocean crust, and I thought, OK this is good." For his work, Kusky earned a place on National Geographic's top 10 list for 2001. "Tim is a world-renowned expert in Precambrian geology," said Earth and atmospheric sciences chairman Bill Dannevik, Ph.D. "He is a wonderful complement to the team of talented research scientists in the department, is energetic, imaginative and highly productive." The teams conducted a mineral resource assessment for the heavily deforested and poor nation $38 million to make improvements, its top 10 list for 2001. “It’s a different kind of project because it has both scientific goals and the goal of trying to help a country that really needs to pull itself out of a severe economic depression. It’s a real benefit to society, this project.” – Timothy Kusky, Ph.D.
During the next 30 years, a quarter of all Americans will turn 65 — living longer than any generation before them. While living to a ripe old age may sound appealing, many wonder whether they will have the physical or mental health to ensure that those added years are worth it.

Losing some of your mental ability is a natural part of the aging process. But how we lose it and whether we can thwart that process are keen areas of study for researchers in Saint Louis University’s departments of geriatric medicine and geriatric psychiatry — consistently listed among the best geriatric programs in the nation. Saint Louis University has identified research into the neurosciences and aging process as a priority during the next decade. Breakthroughs by the University’s nationally recognized scientists could have profound effects on preventing and curing diseases such as stroke, Alzheimer’s disease and Parkinson’s.

Here are some of the frontiers on which they are working.
patients with Alzheimer’s disease and medications commonly are given to patients with Alzheimer’s. Anti-psychotic trials to evaluate the effect of Risperdal toward a preventative approach.” It could move us away from neurons in replicating and multiplying,” said the study may help determine whether Risperdal affects platelet aggregation or whether some other mechanism is at work. Perhaps our most important Alzheimer’s disease trials are helping to develop anti-glutamate drugs, the newest class of agents for the disease,” Grossberg said. “The first is memantine, recently approved by the FDA for moderate to severe Alzheimer’s disease. Memantine purportedly counteracts the destructive or excitotoxic effects of glutamate, working at the NMDA receptor. Glutamate may cause cell death in numerous brain disorders. Grossberg’s clinical trials demonstrated improved memory in patients with Alzheimer’s disease who take memantine. Grossberg and his team were among the first groups in the United States to work with the next generation anti-glutamate drug, Neramexane, which is in early Phase II trials. “I still believe, however, the future for Alzheimer’s treatment is a focus on prevention,” said Grossberg, who has developed a recipe for brain health to limit the risk of Alzheimer’s disease. “Gene therapy, a vaccine and a group of drugs not yet in clinical trials, called senescent inhibitors are promising possibilities to prevent or halt Alzheimer’s disease if given early enough.”

SECRETS FROM A MOUSE

John E. Morley, M.D., director of the division of geriatric medicine, and his team of researchers are using an extremely rare mouse model — one of eight in the world — to test how Alzheimer’s disease develops. The senescence-accelerated mouse (SAMP8) is a spontaneous animal model of Alzheimer’s disease that overproduces amyloid beta protein. The SAMP8 model also produces free radicals that destroy cells — another characteristic of Alzheimer’s disease. Morley has been working with the mouse model for the past 10 years and it is one of the most promising developments in the fight against Alzheimer’s disease. “Risperdal helps the mouse develop severe deficits in learning and memory,” Morley said. “The model is incredibly suitable for research. It now allows us to look at how the mouse not only develops the disease but how the disease compounds that memory deficit.” Morley and his team originated the idea of using antisense RNA to block production of the protein and the free radicals. “We found we can actually cure these animals of their learning and memory disturbances and alter problems that occur because of free radical overproduction,” Morley said. Morley said they also are using so-called free radical scavengers, such as Vitamin E, to block production of free radicals. This treatment approach has been patented, and the team looks forward to testing antisense RNA in clinical trials. Because the transport defect causes the amyloid beta protein to accumulate, Bank spoke of future treatments that will find ways to destroy the protein with enzymes or ways to push the protein across the blood brain barrier. Banks said fixing the transportation system is a viable therapeutic target. “We need to find therapies to bring the transportation system back on line,” Banks said. “And I’m optimistic we will.” Banks and his colleagues also are exploring the role triglycerides play in memory function and obesity in the young and old. Triglycerides are a type of fat in the bloodstream. A hallmark of aging is having a high level of this fat. Triglycerides can affect how signals get from the bloodstream into the brain and may affect the ability of the brain to function. Memory loss may be aggravated by these actions of triglycerides.

One particular substance high triglycerides block from getting into the brain is leptin, a hormone produced by fat cells that tells us to stop eating. “If leptin can’t get into the brain, it can’t tell you to stop eating, which is most likely a leading cause of the obesity problem often seen in what we describe as our young elderly population,” said Alan B. Coon, M.D, who worked in Banks’ lab while Coon was a medical student at SLU. Coon said researchers are completing a transitional year at McGeorge Hospital near Chicago. “Obesity is linked to the loss of chronic, diseases, including diabetes, heart problems and several kinds of cancer. If we can reduce triglycerides and thereby allow leptin to do its job of decreasing appetite and enhancing weight loss, then we have gone a long way toward preventing a major American health concern.”

“I CAN SEE CLEARLY NOW.”

Justin Coomes is not spending his summer vacation poolside. He’s spending it in a nursing home. Coomes, who is entering his second year of medical school this fall, is helping conduct one of the first studies of its kind on the visual needs of patients with Alzheimer’s disease (AD). The purpose of the study is to determine whether visual disturbances of home patients with AD improve their cognitive and behavioral function. “I thought it was something that was going to be a good use of my time and would continue my learning throughout the summer,” Coomes said. “I’ve also had three family members diagnosed with Alzheimer’s disease, so the project had personal significance.” Coomes will work with an ophthalmologist to study patients in two nursing homes with extended-wear contact lenses. Then, through interviews, Coomes will determine whether there is an increase in orientation and/or a decrease in problem behaviors. Coomes also gains some valuable experience through a Loew-Glassberg Research Fellowship. The fellowship encourages medical students between their first and second year to conduct research in geriatric medicine or geriatric psychiatry under the supervision of a faculty member. Six fellowships are awarded each summer.

“I think it’s something every medical student should attempt to do, regardless of their plans for specialization,” Coomes said. “Even if you want to be a family practitioner and not a researcher, you still need to read and evaluate the journals and research presented at conferences. Conducting research gives you a much better foundation in a field that never sits still.”
Some Saint Louis University researchers are hoping to make the biobattery idea a reality within the next decade.

Thanks to the biobattery project and the work of one undergraduate, some senators and representatives in Washington, D.C., are taking notice of the research going on at Saint Louis University.

SLU student Anna Kinsella, a senior chemistry major, traveled to the nation’s capitol for “Undergraduate Research Posters on the Hill” in April to share her work on the biobattery project with members of Congress. “Posters on the Hill” is put together by the Council on Undergraduate Research (CUR), which supports and promotes high-quality undergraduate student-faculty collaborative research and scholarship. Kinsella is one of 60 undergraduates from around the nation who participated in the science-fair type event. Her application was chosen from several hundred submitted by college students nationwide. Kinsella is the first SLU student to be accepted to the annual program.

Kinsella and her faculty sponsor, Shelley Minteer, Ph.D., assistant professor of chemistry, got the chance to meet and share her research with Missouri Senator Jim Talent, Dick Durbin and Barack Obama and aides for Rep. William “Lacy” Clay Jr.

“It was surprising to me how easy it was to actually reach the offices on Capitol Hill,” said Kinsella, who plans to pursue her doctorate in chemistry after graduation. “You can call them and make an appointment, and they will listen. The members of Congress are not as distant as they seem, and they really are interested in the research at Saint Louis University.”

Kinsella’s poster focused on her research on the biobattery that can run on alcohol and natural enzymes. The project is led by Minteer. Kinsella, Minteer and other faculty, graduate and undergraduate researchers are working to find a way to power portable electronic devices with bio-batteries that would run on just a few drops of alcohol.

The researchers are branching-out and experimenting with soybean oil and cholesterol as possible fuel sources, while weighing the advantages and disadvantages of each.

Part of the process also is finding a way to make lots of the little biofuel cells cheaply. R. Scott Martin, Ph.D., assistant professor of chemistry at Saint Louis University, is heading-up the mass production end of the biobattery project.

“It will take a lot to get this project to the next level,” Martin explained. “We can only take it so far as chemists, and then there are engineers who will have to take it to the next level and prove that it works.”

Akermin Inc., a start-up company formed by Minteer and former graduate student Nick Akers, is developing prototypes for application of the biobattery in cosmetic and portable power devices, such as PDAs or cell phones.

“Because the project is far from commercialization, Akermin has applications that are very short term and much closer to market in the two-year time frame, but other things are much more complex,” Minteer said. “We’re really looking at a five-10 year timeline.”

For the next year, Kinsella will continue her work on the biobattery under Minteer and Martin’s direction.

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Assistant Professor of Chemistry, Shelley Minteer, Ph.D., has been recognized for her groundbreaking research. Minteer was honored by the Academy of Science of St. Louis during their annual Outstanding St. Louis Scientists Awards. She is the 2005 recipient of the academy’s Innovation Award for her inventive research on the biobattery project.

The award recognizes Minteer’s current research in biofuel cells. She has invented a biobattery that can run on alcohol and natural enzymes. Minteer is developing a biobattery that could eventually power electronic devices such as cell phones, laptops and PDAs for up to a month without needing to be recharged.

Minteer and a former graduate student also have formed a start-up company, Akermin Inc., to find commercial applications of the project. Dozens of undergraduate and graduate chemistry students aided in the development of the biobattery.

According to Minteer, the long-term goal of the project is to create a rechargeable battery that not only lasts longer but is also friendly to the environment.
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.

Raul Artal, M.D. (OB-GYN) was quoted in the Washington Post about his research involving exercise and pregnancy.

Robert Bolchin, M.D. (internal medicine and infectious diseases) was quoted in the Wall Street Journal about his research with needle-free vaccinations, which also was featured in USA Today and on the Associated Press national wire. He was quoted in U.S. News & World Report about flu vaccine development.

Ross Brownson, Ph.D. (public health) was quoted in U.S. News & World Report about his research into how the environment influences exercise.

R. Mark Buller, Ph.D. (molecular microbiology and immunology) was quoted about smallpox science on National Public Radio and about his monkeypox research on the Associated Press national wire.

John Chibnall, Ph.D. (psychiatry) was quoted in the Los Angeles Times about his research into spirituality, prayer and healing.

Jerome Cohen, M.D. (cardiology) was quoted on National Public Radio about cardiovascular disease.

Research by Oscar Cruz, M.D. (ophthalmology) about lazy eye was covered by the Associated Press and USA Today.

Paul Cryaz (aerospace and mechanical engineering) was interviewed by ABC’s World News Tonight with Peter Jennings, USA Today and the Washington Post about the space shuttle program.

Jim Fisher (marketing) was interviewed by NBC’s Today Show about business ethics. A leading researcher in the field, Fisher is the director of the University’s Emerson Center for Business Ethics.

Dee Anna Glaser, M.D. (dermatology) was quoted in the New York Times about various aspects of cosmetic dermatology, including her Botox research. She also was quoted in People magazine.

Sandra Johnson, J.D., LL.M. (health law) was quoted about pain management and medical marijuana in USA Today.

Tim Kusky, Ph.D. (earth and atmospheric sciences) was featured on the front page of the St. Louis Post-Dispatch for his geological research in China. Kusky’s groundbreaking discoveries have been recognized and reported on nationally and internationally.

Thomas Madden, Ph.D. (history) was interviewed by the History Channel and A&E Television for separate documentaries about the Crusades. A noted researcher on the period, Madden is author of The New Concise History of the Crusades (2005).

John Morley, M.D. (geriatrics) and Mary Margaret Wilson, M.D. (geriatrics) were quoted in dozens of newspapers from a national Associated Press article on their research regarding malnutrition in the elderly.

John Weaver, Ph.D. (psychology) was quoted in an Associated Press article about one of her key research areas, post-traumatic stress disorder. The article was picked up by more than 50 news outlets around the nation.

July 2004 – June 2005 Top 100-Newspaper Placements

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Saint Louis University Breaks Ground on Research Building

On June 2, after two years of planning, Saint Louis University broke ground on its new Research Building. The new biomedical building will make it possible for Saint Louis University scientists and students to make research discoveries in five key areas: cancer, liver disease, heart/lung disease, aging and brain disease, and biodefense/vaccine development.

The $67 million state-of-the-art research facility is part of an overall $80.7 million project that includes construction of the new 10-story tower and renovation of existing laboratory space at the Health Sciences Center. This is the largest building project in the history of the University, and construction is expected to take 24 to 27 months.

The biomedical building was specifically designed to centralize key research activities that are now scattered in five separate locations at SLU’s Health Sciences Center. The Research Building will foster an environment more conducive to collaboration among scientists from different disciplines working to solve similar problems.

On hand to commemorate this historic event were U.S. Senator Christopher “Kit” Bond, St. Louis Mayor Francis Slay, University President Lawrence Biondi, S.J., and other St. Louis and Saint Louis University dignitaries.

Learn more about the Research Building at researchbuilding.slu.edu.