Super-sized effect on tumors

Nano-sized technology has positive effect on cancer treatment in rabbits using drug-coated nanoparticles. The team found that a drug dose 1,000 times lower than used previously for the purpose markedly slowed tumor growth.

Many chemotherapy drugs have unwanted side effects, and it has been shown that our nanoparticle technology has the potential to increase drug effectiveness and decrease drug dose to alleviate harmful side effects," said lead researcher Patrick M. Winter, Ph.D., research assistant professor of medicine and of biomedical engineering. "The nanoparticles are extremely tiny beads of a material that can be coated with a wide variety of active substances. In an article published online in The FASEB Journal, the researchers report a dramatic reduction of tumor growth in rabbits treated with nanoparticles coated with a fungal toxin called fumagillin. Human clinical trials have shown that fumagillin can be an effective cancer treatment in combination with other anti-cancer drugs.

In addition to fumagillin, the nanoparticles' surfaces held molecules designed to stick to proteins found primarily on the cells of growing blood vessels. So the nanoparticles latched onto blood vessel proliferation and released their fumagillin load into blood vessel cells. Fumagillin blocks multiplication of blood vessel cells, so it inhibited tumors from expanding their blood supply and slowed their growth. Human trials also have shown that fumagillin can have neuroprotective side effects at high doses required when given by standard methods. But the fumagillin nanoparticles were effective in very low doses because they concentrate where tumors create new blood vessels. The rabbits that received fumagillin nanoparticles showed no adverse side effects.

Senior author Gregory M. Lanza, M.D., Ph.D., associate professor of medicine and of biomedical engineering, is co-inventor of the nanoparticle technology. The nanoparticles measure only about 200 nanometers across, or 500 times smaller than the width of a human hair. Their cores are composed mostly of perfluorocarbon, a safe compound used in artificial blood.

The nanoparticles can be adapted to a myriad of different medical applications. In addition to carrying drugs to targeted locations, they can also be manufactured to highlight specific areas in MRI, nuclear and ultrasound imaging and CT scanning.

"We can look at many different hybrid populations with this algorithm and use it on a diversity of diseases," said Sivan Bercovici, Ph.D., professor of biomedical engineering and primary author of a new algorithm for the technique that helps researchers to analyze which regions of the genome are associated with end-stage, progressive renal failure. "This technique will allow researchers to analyze which regions of the genome are associated with end-stage, progressive renal failure," said Alan R. Templeton, Ph.D., the Charles Bresheath Professor of Biology in Arts & Sciences and professor of biomedical engineering.

"Once the regions are identified, then you look at the individual genes and ask: Are there genetic factors of disease by detecting from which continent the recurrent disease genes originated. A current research goal is to treat or even prevent kidney disease with gene or drug therapies. "This technique will allow researchers to analyze which regions of the genome are associated with end-stage, progressive renal failure," said Alan R. Templeton, Ph.D., the Charles Bresheath Professor of Biology in Arts & Sciences and associate professor of biomedical engineering.

"We can look at many different hybrid human populations with this algorithm and use it on a diversity of diseases," said Templeton. "Our novel approach extends previous methods by incorporating knowledge on population admixture, drawing a more precise picture of the mosaic of ancestries along an individual's genome," said Sivan Bercovici, Templeton's colleague at Technion and primary author of a research paper about this study published in the current issue of Genome Research. The researchers analyzed DNA from 375 cases of African-Americans with end-stage progressive renal failure and compared it to controls who did not have the disease. They came up with a panel of approximately 2,000 genetic markers. "Templeton said, "to cover the whole genome. To tease out the origins of disease-causing genes, researchers use a technique called admixture linkage disequilibrium (MALD), a powerful approach to identify regions of the genome that have genes associated with disease. MALD takes advantage of differences in disease prevalence between populations to look for variations in patterns that are over-represented in groups with high susceptibility to a certain disease. Both EMI and the algorithm make MALD more accurate and efficient.
First Olin Award for research given to Nickerson, Zenger

BY SUELA NEUMAN

Two professors at the Olin Business School are the winners of the inaugural Olin Award. Recognizing Research That Transforms Business, Jackson Nickerson, Ph.D., the Frank Family Professor of Organization and Strategy, and Todd Zenger, Ph.D., the Robert and Barbara Erickson Professor of Business Strategy, will share the $10,000 honorarium in recognition of their research that examined the negative impact that social comparison, or envy, causes in the workplace.

The award was initiated by Richard J. Mahoney, former chairman and CEO of Monsanto Co. and a current executive-in-residence at Olin. Mahoney said creating an award that recognizes the link between academic research and business practice was motivated by his exposure to the variety and quality of work the Olin Business School was doing.

In addition to showcasing Olin’s excellent research, the award is designed to remind researchers that the ultimate purpose of all business research is to improve results.

"The applied portion of research builds on highly theoretical basic research models. Both kinds of research — theoretical and applied — are highly valued and receive equal consideration for the Olin Award," Mahoney said.

Olin professors have been recognized internationally for their prolific research. The Financial Times, for example, ranked the school 14th worldwide for research productivity.

"The Olin Award is designed to encourage the continuation of that great strength," Mahoney said.

The competition's winners, Nickerson and Zenger, succeeded in doing just that, according to the remarks made by members of the panel of 10 judges.

For example, James H. Quigley, Global CEO, Deloitte Touche Tohmatsu, said of the winning paper, "With respect to my first choice I appreciated the discussion of "social comparison" and agree that they should play a critical role in shaping the design of the work, employee rewards and the organization itself. The supporting examples are strong, and the arguments are financially significant to most businesses across all industries."

Nickerson and Zenger's research examined how firms design and structure their organizations to minimize what the researchers call "comparison costs," the costs brought on when individuals feel left behind in their rewards.

"Comparison costs are incurred when people within a firm have the perception of being treated unfairly," Zenger said.

"Workers begin to reduce their efforts or lobby management to change the distribution of rewards. They might actually try to sabotage the firm. Any of these actions becomes costly to the firm; these are comparison costs," he said.

The professors contend that managers constantly underestimate and misunderstand comparison costs. Consequently, they sometimes make poorly informed decisions about such things as adopting incentive programs, acquiring another company and even outsourcing.

"Social comparison costs can cause all kinds of problems for organizations," Nickerson said. "Despite sophisticated financial analyses, three-quarters of all mergers and acquisitions fail, and we believe social comparison is a prime culprit."

"Our theory helps managers figure out when and what to outsource, how to compensate employees and even where to locate them. This new theory improves our understanding of how social phenomena shape organizational choices," Nickerson said.

Nickerson and Zenger foresee future applications of their research to predict when and how to make acquisitions successful.

"Be suspicious of claims an acquisition will be unproblematic because workers from the acquiring company may become dissatisfied," Zenger said.

Nickerson and Zenger will be honored at the 2008 Distinguished Alumni Awards presentation on April 24 at The Ritz-Carlton, St. Louis.

In addition to Quigley, the panel of judges included:

• Robert Dilenschneider, principal and founder, The Dilenschneider Group Inc.;
• Michael Hein, president, Systematics Inc.;
• Hugh Grant, CEO, chair and president, Monsanto Co.;
• Jean PL. Montpetit, executive vice president and general manager, Boeing Co.;
• John Fauchald, senior vice president and general manager, Deloitte Touche Tohmatsu;
• James Weddle, managing director, Edward Mellinck and Distinguished Professor of Arts & Sciences and chairman of the Weinreb Foundation Center on the Economy, Government and Public Policy;
• Virginia Weldon, M.D., chairman of the board, Saint Louis Symphony, and former director of the board of Saint Louis University Business.

MetLife to give workshops on special-needs dependents

The Office of Human Resources cordially invites all employees and staff to an annual workshop on "Planning for the Welfare of a Child or Other Dependents With Special Needs." A representative from MetLife's Division of Estate Planning for Special Kids will contact the workshop and cover a service called MetDesk, a MetLife underwriter of WUSTL's Life-insurance coverage. The topics that will be addressed are eligibility for government benefits, guardianship, conservatorship, and financial security and funding options.

Parents of children with special needs, no matter what the child's age or disability, may have many serious questions about how best to provide for their child's future," said Tom Lauman, director of benefits.

"We realize that some employees face unusually difficult circumstances," Lauman said. "We want to make sure we have the information you need to make key decisions regarding the welfare of your child, and we believe social comparison is a prime culprit."

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New genetic links to psoriasis uncovered

BY CAROLINE ABANAS

In the first comprehensive study of the genetic roots of psoriasis, School of Medicine researchers have discovered seven new sites of common DNA variation that increase the risk of the troublesome immune disease that occurs when the body's immune cells mistakenly attack the skin. The condition is characterized by scaly patches that can be itchy, painful or both. Some 10 percent to 30 percent of patients with psoriasis develop painful and deforming psoriatic arthritis.

The researchers focused on pathways in people with psoriasis and in people without the disease to find out differences in gene expression. They compared the DNA variations in people with psoriasis to those found in healthy control patients, looking for specific differences that may be linked to the disease. They then replicated their findings in a large set of patients and healthy controls.

Cardiologist Reiss appointed Fox

BY GWIN ERICKSON

Craig K. Reiss, M.D., has been named Sam and Marilyn Fox Distinguished Professor in Medicine at Washington University. He succeeds John F. Young, M.D., as chairman of the Department of Medicine, which he has headed for 12 years.

The professorship is second named for Sam and Marilyn Fox and named after two such remarkable and humbling honor," Reiss said. "I have great esteem for Sam and Marilyn Fox and all they have given of themselves, both financially and personally, to care for patients as my medical students, residents and patients. It is very gratifying to be recognized in this way.

"It has been a wonderful experience in general cardiology, Reiss has had special interest in vascular disease, congestive heart failure, cardiomyopathy, arrhythmia, coronary artery disease and preventive cardiology. Both Sam and Marilyn Fox have played an important role in the continued growth of Washington University Medical Center and the outstanding success of the School of Medicine. Under the leadership of Executive Vice Chancellor for Medical Affairs C. Michael Thomas, M.D., Ph.D., Department of Medicine, said Reiss "has the privilege of learning from and teaching medical students, residents and fellows at an institution of this high caliber, it is very gratifying to be recognized in this way.

"I have great esteem for Dr. Reiss as the recipient of this professorship, their newest gift will support the work of Dr. Reiss and other talented and admired cardiologist and administrator who helped champion the continued success of the Cardiovascular Institute," Siegel said. "A St. Louis native, Reiss earned a combined bachelor's and medical degree from the University of Missouri-Kansas City. He pursued his internship and residency in internal medicine at Brigham and Women's Hospital in Boston and completed a cardiology fellowship and a clinical research fellowship in internal medicine at the same institution.

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"The Lion and the Jewel" is directed by Ron Himes, the Henry E. Hampton Jr. Artist-in-Residence and founder and producing director of the Philadelphia African American Repertory Theater. Himes is led by seniors Jimmy Brooks as Lakunle, Revo Cat Murayi as Baroka and Erin Vaughn as Sidi.

Sidi, a resourceful young woman, is their deceptively lighthearted carnival of dance and politics. Confined to a rural settlement between the old and the new, Sidi simply wishes Sidi to join his already large collection of wives and concubines. When Sidi's prospects appear in a magazine, her newfound celebrity turns the men's competition inside out. What follows is a maze of confusion, deception, manipulation and misunderstanding—just the twists and turns needed to chart her own destiny somewhere between the old and the new.

"The Lion and the Jewel" is an engaging play which explores the rivalry between Lakunle, a progressive but self-improving westernized schoolteacher, and Baroka, the valiant between Lakunle, a progressive but self-improving westernized schoolteacher, and Baroka, the}

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Fair housing to be subject of School of Law's colloquium

Civil rights attorney Bradley Blower, J.D., will be the keynote speaker for the School of Law's colloquium on "America's Fair Housing and Immigration Challenges" 8:45 a.m.-5 p.m., Thursday, April 27, in the Bavy Gave Moore Courtroom of Anheuser-Busch Hall. The colloquium is free to attend and open to the public.

Blower, who has successfully represented scores of plaintiffs and public interest organizations in individual and class action discrimination cases for almost 20 years, will speak on "Using Fair Housing Laws to Combat Racial Segregation."

The colloquium is sponsored by the law School's Clinical Education Program and the Metropolitan St. Louis Equal Housing Opportunity Council. The colloquium commemorates Fair Housing Month and the 40th anniversary of the Fair Housing Act. In addition, 2008 marks the 60th anniversary of Shelley v. Kraemer and the 40th anniversary of Jones v. Mayer, both landmark fair housing cases.

"We also are celebrating the 50th anniversary of the Civil Rights Act," said Karen Tokarz, J.D., the Charles Nagel Professor of Public Interest Law and Public Service.

Among the conference presenters is Ruth Yasgur for more than 25 years, a member of the St. Louis Jewish Community Relations Council, the colloquium commemorates Fair Housing Month and the 40th anniversary of the Fair Housing Act. In addition, 2008 marks the 60th anniversary of Shelley v. Kraemer and the 40th anniversary of Jones v. Mayer, both landmark fair housing cases.

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DePauw scored its first five innings of play in Game 1 but gave up four runs in the bottom of the sixth. WUSTL took a 1-0 lead in the top of the first inning of the second contest, but the Tigers scored a pair of runs in the second and third innings to go ahead, 4-1, and the Bears never regained the lead.

Edwards earns more coaching honors

Head men's basketball coach Mark Edwards has been named the UPS Store/NABC Division III Coach of the Year. Edwards was also honored to the D3hoops.com All- American Third Team and the Molten/DIII News National Coach of the Year. Edwards was also honored to the D3hoops.com All- American Third Team and the Molten/DIII News National Coach of the Year.

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Three doctoral students named Bouchet Fellows

By Cynthia Georges

Three doctoral students were inducted into the Edward G. Bouchet Graduate Society at the annual Bouchet Conference on Diversity in Graduate Education March 29 at Tate University. The 2008 Bouchet Fellows are Kosovo Erva from the Department of Biology in Arts & Sciences, Henrika McCoy from the George Washington School of Social Work and Tracy Nicholson from the Molecular Microbiology and Microbial Pathogenesis Program in the Division of Biology and Biomedical Sciences. The Bouchet Society recognizes outstanding scholarly achievement and promotes diversity and excellence in doctoral education and the profession.

From its network of prominent scholars in the academic, professional, and personal excellence, character, service to the community and students who have been traditionally underrepresented in the academy. Sherr product of the Bouchet chapter at the graduate school of Arts & Sciences, coordinating with the WUSTL chapter of the Bouchet Society. "It is a privilege to participate in the recognition of the talented Washington University students who are selected as members of the Bouchet Honor Society and notated," said their Scholarship, activation, and selection to highlight the individuals proving the lives of others is truly succeed.

Ervin's research interests include African-American women's roles in innovation, criminal justice, human rights movement and the intersections of class, gender and sexuality in African-American social movements.

Social Change Grants awarded to five undergraduate students

By Cynthia Georges

The Community Service Office of Washington University in St. Louis has announced five 2008 Social Change Grants, awarded annually to students pursuing innovative ideas that advance diversity and the spirit of social entrepreneurship.

The three grants have a total value of $18,000.

Sisters Thatha Phoung Nguyen, a senior and double major in international relations and political science, and They-Linh Nguyen, a sophomore biology major in Arts & Sciences, were awarded the $5,000 Stern Social Change Grant to raise awareness of family planning, women's health and infant health programs. Established in 2000, the Stern Social Change Grant provides Arts & Sciences undergraduates with the means to pursue creative and meaningful activities aimed at finding solutions to society's needs.

With a $10,000 award from 100 Projects for Peace, seniors Priya Sury and Claire A. Wolff, a student in the George Washington School of Social Work’s 3-2 program, Gallato a coffee shop — the Urban Arts Cafe — designed to foster community building in the urban neighborhood Old North St. Louis. In addition to serving coffee, the cafe will host art exhibits, musical performances, book clubs, neighborhood political diners and film programs.

The cafe’s grant was established at Washington University for students who create and implement ideas that will build world peace throughout the 21st century.

Senior Clare A. Wolff, a psychology major in Arts & Sciences with a minor in photography, received the Kalid’s Social Change Grant. The $5,000 award will help Wolff, a student in the George Washington School of Social Work’s 3-2 program, establish a coffee shop — the Urban Arts Cafe — designed to foster community building in the urban neighborhood Old North St. Louis. In addition to serving coffee, the cafe will host art exhibits, musical performances, book clubs, neighborhood political diners and film programs.

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Washington People

Richard K. Wilson, Ph.D. (left), and George Weinstock, Ph.D., professor of genetics, in the Genome Sequencing Center (GSC). “Rick has two special gifts: patience and diplomacy,” says GSC Co-Director Elaine Mardis, Ph.D. “He has a unique ability to bring people together and navigate rocky pathways and clashes of opinion and ego. He also has a great grasp of the big picture and a gift for getting others to recognize what it is and focus on it.”

By Caroline Arrinlas

Standing at the forefront

Wilson leads quest to reveal the genome’s secrets

“Ultimately, we want to know how a person’s genes give rise to the diseases they get,” Wilson says. “The answers will inevitably lead to more accurate, earlier diagnoses of disease and personalized treatments based on a patient’s genetic makeup.

Wilson came to Washington University in 1990 after a post-doctoral fellowship at the California Institute of Technology and was named the GSC’s director in 2002. He is highly regarded by his colleagues both for his depth of knowledge and for his vision.

“Rick is a consummate expert in genomics, capturing, sequencing and technology, and he has shown increasing leadership in the application of these approaches to medical problems,” says Francis Collins, M.D., Ph.D., director of the National Genome Research Institute (NGRI). “Rick is the ultimate team player — he is unfappable, unselfish, disciplined and hard-working. More than any other sequencing center director, Rick is willing to take on important but mundane tasks for the good of the scientifi c community.”

With Wilson at the helm, the GSC has been awarded more than one-third of a billion dollars in federal research grants. With that funding, he has led the GSC into a new era in which genome sequencing occurs at a dizzying pace.

The $3 billion Human Genome Project took 10 years to complete. Today, GSC scientists can assemble a human genome as it is produced, an increase from one to four days at a fraction of the cost, greatly increasing the prospect for using genomic information as a basis for medical treatment decisions.

Carving out a niche

Wilson’s foray into science began as a young boy. Once a year, he helped his father make batches of homemade agar on the kitchen stove and sterilize glass petri dishes for his mother’s pneumonia cooks. All of Mr. Wilson’s high-school students could have a hands-on microbiology lesson.

“He showed me how to pour the plates and streak bacteria onto the agar, and we would watch it grow,” Wilson says.

That experience paid off in fifth grade. Wilson used his newly honed microbiology skills to win first place in the school science fair. His project: determining whether two algae laden lakes in his hometown of Kent, Ohio, were polluted, as many residents believed. He found the lakes, while leaming with microscopic plant life, had normal bacteria.

Later, as a college student majoring in microbiology, Wilson took a course in microbial genetics, with the required text being “The Gene.”

“That was fascinat1ng,” he notes. “There’s a relative simple molecule that stores and transmits information that is fundamental to life. I knew that’s what I wanted to work on.”

Throughout his career, leaders in the field have sought advice from Wilson for his expertise. In the early 1980s, his proficiency in microbiology caught the eye of Bruce Roe, Ph.D., one of the first U.S. scientists to sequence DNA.

Roe had just learned the technique of Fred Sanger, who developed the method at the University of Cambridge. Roe offered Wilson a spot in the doctoral program at the University of Oklahoma and the opportunity to work with DNA firsthand.

“It was really amazing because there were a few other labs that were just picking up the technique, but we were one of the only labs in the country that could do it,” Wilson says.

Several years later, Caltech molecular microbiologist Leroy Hood, Ph.D., met with Wilson and offered him a postdoctoral fellowship if he would lend his expertise in DNA sequencing to help develop a new automated device. The process was laborious and exceedingly slow. Wilson jumped at the chance, and Hood’s team pio- neered the DNA sequencer, the machine that later made large- scale sequencing possible.

While Wilson was at Caltech, a group of prominent scientists, including Watson, were making plans to sequence the human genome, a project considered highly controversial for its high cost and questionable merits.

The head of the newly created NHGRI came to Cal tech to discuss the project with Wilson, Hood and others.

“I had the opportunity to sit in a room with Jim and two other guys and talk about what it was going to take to develop the technology and the infrastructure for sequencing the human genome,” Wilson says of his first of many meetings with Watson over the years. “That experience was absolutely intoxicating.”

Looking to the future

Wilson was hired to Washington University to help sequence the genome of the C. elegans roundworm, a pilot project for the human genome.

He helped make major contributions to the human genome sequencing effort and research on the fruit fly Drosophila, which led to the discovery that “you can’t inherit a pure phenotype,” Wilson says. “I was a huge accomplishment by many, many scientists.”

Since then, the GSC has continued to refine the human sequence and has spearheaded projects to sequence the genomes of the mouse, platypus, chimp, human and chicken.

These efforts have allowed scientists to get a clearer picture of the evolutionary tree and begin to find genes that distinguish humans from other animals.

The GSC recently began work on a project to find the myriad genetic alterations in cancer. The research initially focuses on ovarian and lung cancer and glioblastoma, an aggressive brain tumor. The GSC plays a leading role in an international collaboration to sequence the genomes of 1,000 individuals. The project aims to create the most detailed picture to date of human genetic variation and likely will identify many genetic factors underlying common diseases.

Wilson has maintained the GSC’s reputation as a DNA powerhouse by focusing on sequence making new technology and building a top-notch staff. The GSC, the Broad Institute in Massachusetts and Baylor Univer-

stiy in Texas are the nation’s main academic sequencing centers. The GSC has collaboratively and independently collaborated on projects, the competition among them for funding and recognition is fierce.

“Rick has two special gifts: patience and diplomacy,” says GSC Co-Director Elaine Mardis, Ph.D. “He has a unique ability to bring people together and navigate rocky pathways and clashes of opinion and ego. He also has a great grasp of the big picture and a gift for getting others to recognize what it is and focus on it.”

As the GSC adds next-generation DNA sequencers to its array of technology, the center increases the amount of data it generates by several thousand times each day.

A new 16,000-foot data center is being constructed to store all that information and help the GSC meet its massive computing needs.

Faster, more efficient DNA sequencing also is making it possible for the GSC to provide its expertise to University faculty for their own sequencing endeavors.

The GSC recently became the first academic sequencing center to sequence a patient with acute myelogenous leukemia, a project with Tim Ley, M.D., Ph.D., and the Allan A. and2P. Lambe Professor of Medicine, who described this type of cancer.

“I think of Rick as a bold adventurer,” Ley says. “To do ‘discovery genomics,’ you cannot be daunted by the scope of the projects or the degree of difficulty or the technology requirements. You just have to decide that something is important and worth doing and then figure out how to do it the right way. Rick has an amazing ability to do this.”

Richard K. Wilson

Position: Director of the Genome Sequencing Center and professor of genetics and of molecular biology

Education: Bachelor of arts, microbiology, University of Minnesota, doctorate, University of Oklahoma

Family: Wife, Alison, a high-school biology and chemistry teacher; twin sons, Tyler and Evan

Sport: Tennis

Dr. Wilson holds a fifth-degree black belt.