

Johnson & Johnson Discovery Concept Fund Makes Two Awards: James L. McGrath, Ph.D., & Alan V. Smrcka, Ph.D., Receive Grants



James L. McGrath, Ph.D.

Alan V. Smrcka, Ph.D.

Johnson & Johnson (J&J) awarded two \$100,000 grants to University of Rochester Medical Center scientists, James L. McGrath, Ph.D., and Alan V. Smrcka, Ph.D. These are the first awards from the "Discovery Concept Fund" established in July 2005 by J&J's Corporate Office of Science and Technology and the Medical Center's Office of Corporate Alliances (OCA). A unique fund to nurture research and technologies that have the potential to lead to new health care products, the Discovery Concept Fund is designed for scientists with innovative ideas that are not yet funded.

"Alliances like the J&J Discovery Concept Fund at the Medical Center provide an innovative solution to an increasing dilemma," said Howard Federoff, M.D., Ph.D., Senior Associate Dean for Basic Science Research. "As science moves forward at unprecedented rates, national funding for research is declining. It's a win-win for a major company like J&J to fund exciting projects aimed at answering basic questions about disease and therapies—something industry is not interested in doing themselves. For our scientists, there is the opportunity for funding that they otherwise would not have for their projects, funding

that is awarded solely on the basis of scientific merit."

McGrath, Assistant Professor in Biomedical Engineering, said his team was happy to have this opportunity and that the award has catalyzed progress. McGrath hired two students and has been able to underwrite student efforts to build a prototype for the project that may be ready this spring. "We believe our project has commercial potential," he said. "It's great to have our idea endorsed."

McGrath along with Thomas R. Gaboriski, Ph.D., also in Biomedical Engineering, is looking at identifying practical uses for an ultra-thin silicon-based membrane developed by Philippe M. Fauchet, Ph.D., and Christopher C. Striemer, Ph.D., in the University's Department of Electrical and Computer Engineering.

Only 15 nm (nanometers) thick, the membrane maximizes protein transport rates while minimizing protein losses. One potential application is in kidney dialysis machines where current filters can cause proteins to accumulate in a patient's blood and joints, eventually making the joints painful. Also useful in blood analysis, McGrath said it is possible that with this technology a single prick of blood may be able to provide quick diagnoses, for example, of infectious diseases.

An Associate Professor in Pharmacology and Physiology, of Oncology and of Biochemistry and Biophysics, Smrcka has developed a new class of drug candidates that interacts with G-proteins which are molecular "switches" that control the flow of chemical messages through the body and may possibly represent a new way to treat heart failure, cancer, and addiction. Smrcka recently led a group of authors who published an article in the journal *Science* which noted that this research has the potential to change the action of 60 percent of currently available medications.

"We know we are onto a number of interesting ideas that have tremendous potential for therapeutic application," said Smrcka. "In the lab, it is difficult to take these ideas to the next level of development as therapies. Approaching industry for development funding makes a lot of sense." With the J&J funding, Smrcka's lab team is evaluating the potential of these compounds for treatment of inflammatory processes.

The McGrath and Smrcka research concept proposals were selected from among 42 applications that were reviewed by OCA staff, J&J representatives, and 25 faculty members with expertise in relevant areas. Each proposal was scored on innovation, potential significance to patients, overall scientific merit and feasibility, and research team capabilities. Projects had to be at a stage where a carefully designed study could provide preliminary results proving that the work may advance medical treatment or improve diagnosis of disease. All intellectual property rights to inventions arising from the J&J grants are retained by URMCC and its inventors.

A second round of applications is currently under review. For future application and budget forms, go to the OCA homepage at: www.urmc.rochester.edu/oca.

Partners in Innovation is produced by the University of Rochester Medical Center to communicate technology commercialization news and facilitate successful alliances between academic scientists and commercial partners.

Partners In Innovation

Technology Commercialization

Success Story

VirtualScopics' Successes in Technology Commercialization

VirtualScopics, Inc. is a shining example of the economic development that technology commercialization can bring to the University and greater Rochester communities. With \$3.5 million in 2005 sales and 58 employees, this medical image analysis provider has firmly established itself in the biomedical industry in just six years. The company provides services to 26 clients, including top pharmaceutical, biological, and medical device companies such as Pfizer, Inc., GlaxoSmithKline, Inc., Wyeth, Johnson & Johnson, and GE Healthcare.

Headquartered in the Linden Oaks Office Park in Rochester, VirtualScopics contributes to the economy through job creation. As the largest outside shareholder with a 19 percent ownership, UR stands to benefit from its investment in VirtualScopics.

The company was founded in 2000 to advance imaging science. The technology platform has its origins in research conducted by the founders. Kevin Parker, Ph.D., and José Tamez-Peña, Ph.D. of the School of Engineering and Applied Sciences and URM's Saara Totterman, M.D., Ph.D. directed early efforts primarily toward the accurate and reproducible measurement of image-based biomarkers to contribute to the evaluation of therapeutic interventions.

The economic benefit of getting a therapeutic to market faster can reach hundreds of millions of dollars per compound. VirtualScopics utilizes its image analysis algorithms to detect, measure, and analyze specific biological structures from CT, MRI, PET, and ultrasound data. The technology can assemble hundreds of separate medical images taken during an imaging session into a three-dimensional model to precisely assess



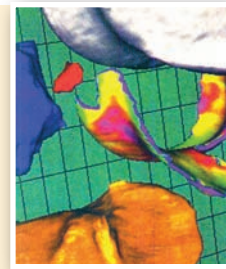
Kevin Parker, Ph.D.

disease progression before and after the intervention of a drug or device. The technology brings a new and previously unobtainable source of data to clinical trial sponsors. In addition, imaging studies are performed at lower cost and with fewer patients than conventional approaches, thus accelerating the clinical trials process. The company continues to develop image-related biomarkers in numerous therapeutic areas as well as provide innovative clinical trial imaging services for pharmaceutical development.

In March 2006, the company announced an agreement with GlaxoSmithKline that authorizes VirtualScopics to begin start-up activities for participation in GSK's osteoarthritis clinical trial. For this study, VirtualScopics will analyze MRI data on subjects with osteoarthritis and will be responsible for co-managing the collection of MRI data from sites located throughout North America, Asia, and Europe.

In November 2005, VirtualScopics announced the renewal of its strategic alliance with Pfizer. The collaboration enables Pfizer to accelerate the discovery, validation, and application of image-based biomarkers that correlate to clinical outcomes in several therapeutic areas. Validated biomarkers may then be used to assess the efficacy of new pharmaceutical compounds in clinical trials. This strategic relationship expands ongoing collaborative efforts between Pfizer and VirtualScopics begun in 2002.

As a testament to early successes and to further development, the company completed a \$7 million private placement of stock in 2005. These funds will be used to grow sales and to further research and development activities. Also, the addition of



Three-Dimensional Rendering of the Knee Joint of an Osteoarthritis Subject

From an MRI knee scan, it is possible to produce a three-dimensional reconstruction that graphically distinguishes cartilage from underlying bone, ligaments, fluid, degenerated menisci, or inflamed synovium. This capability provides a valuable assessment tool for clinical research in osteoarthritis because it allows sensitive and specific measurement of all the components of the knee joint and detects small changes over time.

staff to support expected growth is planned for 2006. VirtualScopics shares are listed on the Over-The-Counter Bulletin Board, symbol VSCP. The company plans to apply to list its shares on the NASDAQ Small Cap Market as soon as practical.

You can read more about VirtualScopics at www.VirtualScopics.com.



University of Rochester Medical Center

How It All Comes Together

University Support: Moving From Bench to Bedside

For biomedical companies looking outside for programs and projects to bolster their R&D programs, URM is a top resource with which to establish a research partnership. URM offers more than 1 million square feet of space in seven research facilities – including a \$500 million expansion that has added two new lab buildings and 80 Ph.D. researchers over the past 10 years. With \$140 million in funding from the National Institutes of Health last year, the UR School of Medicine and Dentistry ranks in the top 25 percent of medical schools in the most recent NIH rankings.

Three offices critical to the process of identifying solid matches of scientific and business interests are: URM Office of Corporate Alliances (OCA), URM Office of Technology Transfer (OTT), and UR Office of Research and Projects Administration (ORPA).

Office of Corporate Alliances: Facilitating Research Partnerships that Yield Results

OCA works with the faculty to explore projects and relationships that will advance the University’s academic mission. When a potential match exists between corporate interests and URM capabilities, OCA serves as an entry point and advocate for private-sector companies interested in pursuing a research partnership. Through analysis of corporate strategic interests and URM strengths, the OCA team identifies partnering opportunities and processes inquiries to help companies quickly assess a potential match between their needs and URM’s expertise.

By facilitating communication between corporate and University teams, OCA fosters productive relationships. Often building on existing relationships between faculty and industry colleagues, OCA works to expand and formalize these relationships into mutually fruitful collaborations.

In addition to the recently growing relationship with J&J, URM has several other long-term alliances, including the Vision Alliance, a productive ongoing partnership between URM’s Department of Ophthalmology, the University of Rochester’s Center for Visual Science and industry partner, Bausch & Lomb (B&L). This industrial, academic, and clinical research partnership is focused on developing and improving existing technologies to better diagnose and correct vision abnormalities and diseases of the eye. URM also has a long-standing partnership with Eastman Kodak Company centering on Kodak’s current and next-generation medical imaging products.

Office of Technology Transfer: The Bridge from Science to Success

The URM Office of Technology Transfer (OTT) was established in 2001. Since its inception, the office has been involved in the successful transfer of patented research into products, providing the public with the benefits of Rochester’s innovation. OTT’s licensing activities reap additional rewards by generating unrestricted funds to support



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continuing research and innovation endeavors at the Medical Center. UR has successfully remained among the top 10 universities in royalty revenue according to the Association of University Technology Managers (AUTM) annual survey. The potential for more licensing activities increases as the office continues to receive over 90 new invention disclosures annually from URM faculty.

Office of Research Project Administration: Forging Agreements

ORPA is the administrative office within the University with the authority to submit proposals to external sponsoring entities for financial support in the form of contracts, grants, and agreements, and to commit the University in the event an award is made. ORPA has the authority to sign funding proposals, receive awards and conduct any other official business with funding agencies, whether federal or private. ORPA also guides the faculty on such issues as conflict of interest.

OCA staff cooperates with ORPA and OTT to drive the creation of research agreements that meet University objectives while respecting corporate timelines and reporting needs, compliance obligations, and other requirements.

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Science Briefs

ADVANCING THE STUDY OF CARDIAC SAFETY IN CLINICAL TRIALS



Jean-Philippe Couderc, Ph.D.

URMC and iCardiac Technologies, Inc. signed an exclusive agreement to commercialize technology that will enable pharmaceutical companies to determine more effectively, and earlier in clinical trials, whether an experimental drug is toxic to the heart. iCardiac Technologies is a newly established Rochester-based company which is positioning itself as the leader in cardiac safety analytics to support pharmaceutical, biotechnology, medical device and contract research companies. The agreement pairs iCardiac with COMPAS (Comprehensive Analysis of Repolarization Signal) software developed by URMC's renowned Heart Research Follow-up Program and biomedical engineer Jean-Philippe Couderc, Ph.D. COMPAS provides a more accurate and reliable method to analyze data from electrocardiograms (ECG) and other types of heart monitors. With COMPAS, researchers can target and evaluate specific data produced by ECGs called the QT interval. "Drug-induced prolongation of the QT interval is a critical indicator of toxicity," said Couderc. "We know that individuals with an abnormally prolonged QT interval are at far greater risk for developing fatal arrhythmias and sudden cardiac death." Prolongation of the QT interval is the most common cause of drug withdrawal from the market and delays in regulatory approval.

Coming Up!

June 20-21
New York Venture Summit: Uniting Venture
Capital and Innovation
New York, N.Y.
www.vcsummit.com/

June 27-30
URMC Delegation to meet with London
Technology Network and London Universities
London, U.K.

September 20-22
13th Annual Conference of the National
Association of Seed and Venture Funds
Rochester, N.Y.
[www.nasvf.org/web/nasvfinf.nsf/
pages/schedule](http://www.nasvf.org/web/nasvfinf.nsf/pages/schedule)

October 5-6
Western NY Bio Sciences Summit
Rochester, N.Y.
www.htbc.org/biocluster.htm

BIRD-FLU VACCINE WORKS AT HIGH DOSES

An experimental vaccine against bird flu is safe and spurs the immune response considered necessary to protect against the deadly illness, at a dose several times larger than the traditional flu shot and in slightly more than half of people who received the largest dose, scientists said in *The New England Journal of Medicine*. John Treanor, M.D., professor of medicine and director of Rochester's Vaccine and Treatment Evaluation Unit, was the overall lead investigator for the study which was done at three sites - URMC, the University of Maryland, and the University of California at Los Angeles.

STUDY FIRST TO SHOW POTENTIAL OF LIGHT-ACTIVATED GENE THERAPY FOR KNEE INJURIES

Laser light can target gene therapy right up to the edge of damaged cartilage, while leaving nearby healthy tissue untouched, according to an article in the *Journal of Bone and Joint Surgery*. True repair of injuries to articular cartilage would enable millions of patients, currently consigned to worsening arthritis and joint replacement, to return to athletic exercise. Dramatic progress is being made toward a new form of light-activated gene therapy that will be safe, fast, and easy on patients. The study is led by Edward M. Schwarz, Ph.D., professor of Orthopaedics in the URMC Center for Musculoskeletal Research and president and founder of LAGeT, Inc. which focuses on musculoskeletal disease.

OSTEOPOROSIS DRUG EFFECTIVE AGAINST BREAST CANCER

Researchers and patients at the URMC's James P. Wilmot Cancer Center have helped to show that the osteoporosis drug raloxifene works as well as tamoxifen in reducing breast cancer risk for postmenopausal women who are at increased risk. The initial results come from STAR, Study of Tamoxifen and Raloxifene, one of the largest breast cancer prevention trials ever conducted, including 178 women at the Wilmot Cancer Center. This offers women a safer choice for medications to reduce their risk of breast cancer, according to Gary Morrow, the Rochester principal investigator for the STAR study and director of the Community Clinical Oncology Program.

MANY MORE PATIENTS WITH ESOPHAGEAL CANCER NOW SURVIVE, SURGEONS SAY

Nearly 50 percent of patients with esophageal cancer who undergo an advanced surgical procedure now survive for five years, not 20 percent as once thought, according to an article in the *Journal of the American College of Surgeons*. Researchers contend that earlier diagnoses, more widespread screening and individualized care have made surgery by far the best way to combat esophageal cancer as it is most often diagnosed today. The current study found that the five-year survival of patients after surgical resection for esophageal adenocarcinoma is better than that reported for any other form of therapy, according to Jeffrey H. Peters, M.D. chair of the URMC Department of Surgery and surgeon-in-chief of Strong Memorial Hospital.