

Partners in Innovation

Technology Commercialization



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Offices of Technology Transfer Drive Innovation and Entrepreneurship

The Center for Governmental Research (CGR) recently referred to the University of Rochester (UR) in one of its reports on regional economic impact as “the flagship of Rochester’s knowledge economy.” Recognized nationally for its innovation, entrepreneurship, and success rate in technology commercialization, UR works collaboratively with its faculty, students, and staff to maximize the potential of its intellectual capital, seek out other private sources of research funds, and, ultimately, bring new healthcare solutions to the marketplace and patient bedside. The Office of Technology Transfer (OTT) was established to accomplish these high-priority tasks that directly benefit the health of the community.

OTT facilitates the commercialization of technologies and intellectual property developed at UR. This has led to a tremendous growth in patented intellectual property that, in the future, hopefully will lead to substantial increases in license fees and royalty payments.



Royalty income at the UR was \$38 million in 2006, which placed it ninth among U.S. universities, and was \$51 million for 2007, which will keep it in the top ten. The UR has equity in 11 spin-off companies, and holds 121 active licensing agreements, of which 26 are with New York companies.

This dynamic and growing office recruits experts in the field of technology commercialization to support UR faculty, staff and students as well as new start-up companies and industry partners who sponsor Rochester research. Turn to page 3 to meet a few of the key players in Technology Transfer.

One of the region’s largest employers and greatest economic engines:

- There are 18,700 employees (FTE) at UR, with a direct payroll of over \$1 billion;
- According to a recent Center for Governmental Research (CGR) economic impact study, UR contributes to the employment (directly or indirectly) of more than 31,000 area residents who together receive approximately \$1.4 billion in income;
- The recently announced URMIC strategic plan and \$500 million investment in research, patient care and education is projected to have an economic impact of 1,800 additional new permanent jobs (URMC and community) including \$90 million in wages;
- The URMIC capital projects alone will create 7,000 construction jobs (\$270 million in wages).

Meliora—Better Things Ahead



Meliora. This word has adorned the University of Rochester logo and appeared on the shield of the University for more than a century. Its literal translation from Latin is, “I see and appreciate better things.”

Considering the abundance of world class research, teaching and service to society reflected in the rich history of the UR, one might wonder, “What is there for a new Provost to add?”

My focus is on how I may contribute to UR being “ever better.” I have three strategic goals that over-arch everything the University is seeking to do and cut across all sectors. They include academic excellence through new approaches to leaping interdisciplinary boundaries; the multicultural experience as a driver of 21st century education; and the fostering of technology transfer.

In technology transfer, the goal is ever-better movement of the knowledge created in the University out to society for its betterment. Research which is not disseminated might as well not exist. If we do not translate our research to the marketplace we cannot help solve society's problems. Pound per pound, at the University of Rochester, we are highly productive of new ideas, which we own as intellectual property. We patent our ideas prolifically. I see opportunity for new advances in three areas:

- Moving ideas effectively through the pipeline to licensing or to start-up companies;
- Developing metrics of effectiveness and a dashboard of key indicators to follow closely as we move inventions down the pipeline to gauge our progress over time, to know whether we are “ever better,” and also to compare ourselves with peers; and

- Evaluating communication about technology transfer, within and outside the University to become ever-more efficient and ever-more accessible and user-friendly to our constituencies.

To stand shoulder to shoulder with students, faculty, staff and our partners in the community is what attracted me to Rochester. In reaffirming and advancing the University’s tradition of creating transformational change, together we will accomplish “better things.”

Ralph W. Kuncel, PhD, MD
Provost and Executive Vice President



START-UP PROFILE

Hope for Autism

The fastest growing developmental disorder in the United States is autism. According to a study by the Centers for Disease Control, there are over 300,000 children with autism in the United States, approximately 5.6 children per 1,000 births suffer from the disease. These children face very challenging lives. So do their families. Education is one of their most serious issues.

National growth rates in autism are predicted to be 10% to 17% annually. These growth rates far outpace all other disabilities, and the growth trend is expected to continue.

"Public schools simply cannot effectively accommodate the number of autistic children entering the school system, and the scope of the problem continues to intensify," said Scott Sweeney, president of the Simon Entrepreneurs Club at the University of Rochester William E. Simon School of Business and former general manager of the Terry Hills Golf Course in Batavia, NY. "Today the vast majority of private centers accept children with a multitude of developmental disabilities. Research shows

that children with autism improve the most when provided individualized treatment designed specifically to address their autism-related challenges."

The good news is that studies prove that autism-specific early intervention efforts between the ages of 3 and 7 can greatly impact quality of life for children and their families. The Hope Center for Autism Network (HCAN), developed by Sweeney and another graduate student, Eric Allen, fills the large and growing gap in the educational system for children with autism.

HCAN will be a national chain of private centers focused exclusively on early intervention autism treatment. "Each Hope Center for Autism (HCA) will be a community's source for educational excellence for children with autism, designed to maximize the development of their communication, social, and academic skills," said Allen, president of the Simon Marketing Association Club and former account supervisor at Porter Novelli, an international public relations agency based in New York City.

"Each HCA will focus on early intervention—children ages 3 to 7—with the goal of developing each child to be ready for full inclusion in a public school (or equivalent private school) and ultimately realizing a higher quality of life."

This past spring, Allen and Sweeney's HCAN business plan was catapulted by their first major award, the Mark Ain Business Model Competition at the Simon School, which calls itself the place "where business thinkers become leaders."™ This first win in Rochester positioned them this fall to win the coveted Babson 6th Annual Forum on Entrepreneurship & Innovation—"What's Your Big Idea?" contest in Boston. They beat out 50 other business plans from top business schools around the nation, including finalists from Stanford and Northwestern. The win has been a great catalyst for attracting venture capital for this winning pair of entrepreneurs who are just getting started. The real winners? Autistic children and their parents.

EVENTS

SUPPORT GROUPS The Entrepreneurs Network— Supporting Technology Innovation at UR

The Entrepreneurs Network (TEN) and University of Rochester (UR) are collaborators in the science of good business. The two were co-sponsors of the Brand You/Rainmaking event that took place on January 20, 2008 at the Memorial Art Gallery. TEN Co-Founder and Executive Director Debora K. LaBudde also recently presented to UR faculty and alumni at the Rochester Clinical & Translational Research Curriculum Seminar.

TEN is one of upstate New York's fastest growing organizations of high tech entrepreneurs. TEN provides area entrepreneurs access to national resources, offering programs that train, educate, and foster connections that are critical for building successful new ventures.

Founded in 2006, TEN has close to 70 members who are all founders or senior executives of early stage high tech companies. The organization consistently attracts leading experts in venture capital and entrepreneurship. Speakers and panelists that participated in the

program during 2007 included venture professionals and entrepreneurs from such firms as: Adams Capital Management, Atlas Ventures, Brook Ventures, IBM Ventures, Kyphon, Inc., Mobius Venture Capital/The Foundry Group, Polaris Venture Partners, Tempo Pharmaceuticals and Venture Advisors.

"We are excited by the success of many of our current members that have benefited from the programs and networking offered by TEN. We're also delighted to be adding approximately 30 new members each year into TEN, capturing the brightest entrepreneurial minds from across the state," said LaBudde. "Having good regional and academic partners, especially the University of Rochester, is critical to our success in supporting the growth of new businesses based on breakthrough technologies. The University has continuously provided a pipeline for such scientific expertise and innovation."

TEN serves a regional audience spanning Buffalo, Rochester, Syracuse and Ithaca.

Getting Smart — What TEN Offers

TEN offers Boot Camps, Workshops and private Roundtable Discussions for TEN members, as well as Panel Events that are open to the public. Program topics include: securing venture capital, forming strategic alliances, defining market strategies, sales effectiveness, leadership tactics and other practical information necessary to compete in today's competitive business environment.

Training - Interactive coaching sessions provide real-time feedback from expert coaches, as well as other TEN members, and offer a confidential atmosphere in which to discuss business issues.

Educating - National experts provide TEN members with the tools and best practices that are most relevant to early stage companies. Program topics include business planning, financing strategies, sales effectiveness, strategic partnering and leadership tactics.

Networking - Top local and national speakers take part in TEN programs providing contacts critical to an early stage company's success. Additionally, TEN members benefit from relationships formed with the growing network of other TEN members.



Your Partners in Technology Transfer

Marjorie D. Hunter **Associate Vice President**

Registered patent attorney; over 20 years experience in intellectual property matters and technology transfer; former Senior Technology Licensing Specialist at the Office of Technology Transfer, NIH, Director of the Technology Transfer Office, CDC; BS in Honors Biology, University of Illinois; Juris Doctor, Dickinson School of Law of Pennsylvania State University.



Gail Norris **Director, College**

Corporate law specialist; former partner, Nixon Peabody specializing in corporate law; member of the American Bar Association, the National Association of College and University Attorneys and the Association of University Technology Managers; Bachelor's in management, Syracuse University; law degree, Albany Law School of Union University.



Michael G. Rusnak **Associate Director, Biological Sciences**

23 years professional experience; former Venture Consultant, BCM Technologies, Inc., the venture subsidiary of Baylor College of Medicine; MS, Clinical Science, San Francisco State University; BS, Microbiology, St. Bonaventure University.



J. E. (Johnny) Fahner-Vihtelic **Deputy Director,** **Associate Director for Physical Sciences**

16 years' experience as technology manager and intellectual property professional; formerly managed the device and instrument portfolio at NIH; works with new URM start-up companies—business assessment, IP protection, fund raising and corporate management.



Corine Farewell **Deputy Director, College**

Joined UR from Cornell University Center of Technology Enterprise and Commercialization; previously performed technical services, marketing, training and development functions throughout Europe, Middle East and Africa for The Iams Company; BS, Doctor of Veterinary Medicine and MBA, Cornell University.



Harl R. Tolbert **Senior Manager, Biological Sciences**

Formerly worked sales and marketing at Abbott Laboratories; MS, Animal Sciences and MBA, University of Illinois.



David Wang **Senior Manager, Biological Sciences**

Over 10 years experience in life science industry, including medical device start-up and global technology transfer and as a drug discovery/development scientist and licensing professional. Medical degree, Hunan Medical University, China; MBA, University of Michigan.



Zubair Mirza **Senior Manager, Physical Sciences**

28 years experience in medical technology innovation, engineering, development, and management as well as business and organizational development and strategizing. Co-founded three medical start-ups, licensed technologies, and holds six patents. BS, Biology and MS, Industrial (medical product) Design, University of Illinois; holds degree in Respiratory Therapy.



Tiefei Dong **Licensing Associate, Biomedical Licensing**

Broad research experience and sales and marketing experience from his previous work at the Johnson & Johnson Beijing office. BS, Cell Biology, Peking University; MS, Pathology, UR.; PhD, Pathology, UR.



Mithun Mukherjee **Licensing Associate, Physical Sciences**

Broad research background in software programming and data analysis; MS, Electrical Engineering, RIT; candidate for MS with a concentration in Technology Transfer and Commercialization, UR Simon School of Business.



Jack Fraser **Deputy Director, College**

Former technology, engineering and business development manager at Xerox. Awarded 14 patents while at Xerox. Eight years in technology transfer at UR. Adjunct faculty at the Simon School of Business. AB from Hamilton College, PhD (Physics) from Yale University, PMD from Harvard Business School.



To learn more about working with our Technology Transfer professionals, contact Marjorie Hunter, 585-784-8850, Marjorie_Hunter@urmc.rochester.edu or Gail Norris, 585-275-2758, gnorris@admin.rochester.edu.

Partners in Innovation is produced by the University of Rochester to communicate technology commercialization news and facilitate successful alliances between academic scientists and commercial partners. For more information, contact: Office of Corporate Alliances

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FOCUS ON RESEARCH

A Small Molecule Approach to Treating Big Disease Issues

Investigators at the University of Rochester Medical Center (URMC) are taking one approach to therapeutic intervention for several major diseases to a whole new level.

G-protein coupled receptors (GPCRs) are a major class of cell signaling receptors. They are involved in a wide diversity of biological activities, including cardiovascular, immune, and nervous system functions. The central role these receptors play in many critical functions, and their accessibility, makes targeting GPCRs a logical choice for therapeutic intervention by blocking or activating signaling to produce beneficial effects. Given the above, it is not surprising that over 60% of the currently prescribed pharmaceutical agents target and effect GPCR function.

“Despite the prevalence of GPCR targeting as a therapeutic paradigm, there are few approved or in-development therapeutics targeting the downstream effectors, the G-proteins, to which GPCRs are coupled,” explains Alan Smrcka, PhD. Smrcka, along with Jean Bidlack, PhD, and Burns Blaxall, PhD, are the principal investigators in this cutting edge enterprise. Smrcka’s work has been recognized and supported with one of the first Johnson & Johnson Discovery Fund grants awarded to URMC scientists.

Two different G-proteins act as the downstream messengers of activated receptors and elicit specific biological responses. Targeting the G-protein messengers could present a tremendous therapeutic advantage by offering greater efficacy and enhancement of selectivity not possible by targeting the receptor itself.

Of greatest interest and therapeutic potential are small molecules which disrupt the activity of the G-proteins. As such, small molecule inhibition represents a significant means for the treatment of a number of GPCR-related pathological conditions. Early research has already produced discoveries in three areas of clinical interest:

- Heart Failure and Hypertension
- Inflammation
- Pain

The Technology

The URMC team has developed a platform for G-protein-targeted drug discovery. The technology permits rapid *in silico* and *in vitro* screening of small molecule libraries to identify compounds which selectively bind and functionally inhibit the proteins. The methods are both sensitive and flexible, having already led to the identification of multiple high-affinity compounds which can block distinct G-protein functions, including *in vivo* protein-protein interactions and related biological signaling responses in intact cells and animal models. This platform technology can serve as an expansive drug discovery engine, potentially yielding proprietary therapeutics with novel mechanisms of action.

Partnerships Sought

Drs. Bidlack, Blaxall, and Smrcka are collaboratively pursuing strategic relationships with venture capital and pharmaceutical industry partners to advance the therapeutic potential of their platform technology and to translate their research from the bench to the bedside through the creation of a new drug discovery and development venture. The initial investment would be utilized to scale up the patented platform to produce proprietary compounds for an IND filing. The platform technology presented is the subject of multiple patent applications, providing competitive advantages, a path to several attractive market opportunities, and a strong foundation on which the new venture can be built.

For additional information, please contact Michael Rusnak, Associate Director for Biological Sciences, Office of Technology Transfer, University of Rochester Medical Center, at 585-784-8850 or michael_rusnak@urmc.rochester.edu.

Collaborative Solutions

As in the case of Jean Bidlack, PhD, Burns Blaxall, PhD, and Alan Smrcka, PhD, history has proven that collaboration among scientists and industry is one key to the successful discovery of significant biomedical discoveries. Exchanging ideas across disciplines is a critical aspect of scientific research, a field which is dominated by complex problems, rapidly changing technology, dynamic growth of knowledge, and highly specialized areas of expertise. An individual scientist working alone in a lab—whether in academia or industry—can seldom provide all of the resources and expertise necessary to address complex research problems.

The benefits of collaboration:

- Having partners enhances the ability to shift directions swiftly to pursue promising leads;
- The advancement of educational opportunities are increased for seasoned and junior investigators as well as training for industry researchers;
- Productivity stems from shared interests and scientific missions with both sides agreeing on how the research will contribute to new knowledge and the potential for commercialization;
- Partners bring unique perspectives that complement one another, such as tacit knowledge and knowledge of technique;
- Strong channels of communication and sharing of ideas can expand horizons and lead to multiple applications of novel approaches;
- Together, collaborators can establish measurements for success and cross-check benchmarks for each other;
- Investigations can be accelerated and augmented with incremental or pooled resources.