



## University of Rochester Medical Center

### HOW IT ALL COMES TOGETHER

#### Trans-Atlantic Collaborations— A London Visit

The University of Rochester Medical Center (URMC) is an increasingly appealing academic partner for industry sponsored research, not only in the U.S. but also overseas. The URMC Office of Corporate Alliances (OCA), URMC Office of Technology Transfer (OTT), and the UR Office of Research and Project Administration (ORPA), worked together to schedule a productive visit with London Technology Network (LTN), several universities, and Cancer Research Technology, Ltd. (CRT).

“None of us had any idea what to anticipate with this new venture in collaboration, so we were impressed with the level of reciprocity and engagement,” said Howard Federoff, M.D., Ph.D., URMC Senior Associate Dean for Research. “There is mutual commitment to support mechanisms to further the academic and commercialization aspects of our discussions.”

Ongoing exploration is fueling tangible outcomes of the visit, including:

**Cancer Research Technology, Ltd. (CRT)** reviewed approximately 20 URMC technologies and after studying half of them in depth, is continuing to evaluate four.

**Unipath, Ltd. (a division of Inverness Medical Innovations)** has come to Rochester twice since the URMC summer visit to London to discuss areas of mutual interest with OCA and OTT.

**The University of London's William Harvey Institute**, which does cardiovascular basic and clinical research, is planning a trip to Rochester to continue discussing mutual interests and the enlistment of a corporate partner for the two academic institutions.

**A U.K./U.S. Post-Doctoral Exchange** is being explored, including the identification of grants to underwrite international initiatives.

**Imperial Innovations** is a foundation that has a technology pipeline agreement with Imperial College of London. They take a fully integrated approach to technology identification, development, incubation, and commercialization. They have started 60 companies and have offered to introduce URMC technologies to their portfolio companies.



#### Participants URMC:

Bradford Berk, M.D., Ph.D.  
Peter Robinson,  
Howard Federoff, M.D., Ph.D.  
Mark Noble, Ph.D.  
Mark Taubman, M.D.  
Marjorie Hunter, Esq.  
Claudia Stewart, Ph.D.

#### International and corporate:

UK Department of Trade and Industry,  
Imperial College,  
University College London,  
University of London,  
The Universities of Southampton,  
Surrey, and Brighton,  
J&J's Corporate Office of Science  
and Technology (COSAT),  
Pfizer, Eisai, Unipath, and the  
London office of New York State's  
Department of Economic Development

### A Message from the CEO



A few years ago as Chair of Medicine, I had an experience that caused me to rethink what constitutes an academic career. I questioned a bright, young junior scientist in the Heart Research and Followup

Program, Jean Philippe Couderc, about his career aspirations, and he gave an atypical response. Rather than devote his career to writing and publishing scientific research papers, Jean Philippe told me that he was interested in founding a company.

A decade ago, this response would have been met with skepticism at most U.S. universities. The concern was that entrepreneurial activities would distract faculty

from academic pursuits, compromising both productivity and the integrity of university research. Today, most major research universities—including the University of Rochester—have begun to change that view. Many are contributing substantial resources for concept and prototype development, business plan assistance, support staff and other resources to help faculty launch start-ups or license technology.

Meanwhile, studies have demonstrated that academic productivity has not suffered as commercialization activities have grown on university campuses. In fact, faculty entrepreneurs are often the most highly funded and prolific publishers.

Universities and their faculties must adopt a broader definition of what constitutes an academic career—and

develop ways to nurture faculty who aspire to be both entrepreneurs and academicians. If we fail to do this, we risk losing some of our most inspired and motivated scientists and teachers.

As for Jean Philippe, you may have read about his success in the last issue of this newsletter. His new company, iCardiac Technologies, Inc., is built around the software he developed here at the Medical Center that provides more precise and consistent cardiac safety profiles of in-development and on-market drugs. He's realizing his ambition of establishing a company—and he remains an active and contributing member of the URMC faculty.

Bradford C. Berk, M.D., Ph.D.



## Visionary Collaboration: Bausch & Lomb and UR

A thriving partnership brought about by technology developed at the University of Rochester and licensed by Bausch & Lomb, Inc. took a major step forward this year, with the two institutions agreeing on an \$11 million pact to work together to evaluate treatments for eye disease and to undertake basic research focused on glaucoma, diabetic retinopathy, and other leading causes of blindness.

The latest agreements extend a successful, long-term collaboration. The partnership has helped move very basic research from the laboratory to the offices of ophthalmologists around the world, where it has helped improve the vision of hundreds of thousands of patients to unprecedented levels.

“The relationship we have with Bausch & Lomb is absolutely unique,” says Steven Feldon, M.D., director of the University of Rochester Eye Institute. “Our relationship isn’t based just on one or two projects, but rather mutual interest at a fundamental level.”

The partnership dates back to the mid-1990s, when a team of scientists led by David Williams, Ph.D., at the Center for Visual Science developed a system using a laser beam and a deformable mirror to map and correct the subtle defects of the eye’s cornea and lens in unprecedented detail. A visit to B&L by a graduate student searching for a job quickly led to a collaborative pilot study, which proved fruitful.

That project led to a licensing agreement and eventually to much closer collaboration, as B&L explored the potential of a system that had never been used in the eye research community. The instrumentation relied on adaptive optics, the same technology that allows astronomers to take crisp images of the heavens through the atmosphere. When scientists aimed the technology inward, into the human eye, they were able to detect and correct a flurry of flaws that most people never even knew existed. B&L researchers such as Ian Cox, Ph.D., and chief medical officer Brian Levy, O.D., M.S. Sc. played key roles in developing the technology for the company’s needs.

B&L used the technology to create the Zyoptix system to map the eye in greater detail than ever before and to dramatically improve



Steven Feldon, M.D.



David Williams, Ph.D.

the vision of people having corrective refractive surgery done by physicians using the company’s laser system. As a result, thousands of patients have had their vision corrected to not only 20/20 but even 20/16 or better, with specially enhanced vision under low-light conditions.

As Rochester’s reputation grew, the URMC attracted Scott MacRae, M.D., a world-leading refractive surgeon who founded the Strong Vision Refractive Center. MacRae led large clinical trials conducted by B&L to document the success of the company’s customized vision correction system.

In 2001, the collaboration enabled URMC to appoint Feldon, recruited from the Doheny Eye Institute at the University of Southern California, to chair the Department of Ophthalmology and establish the Eye Institute. Research and clinical care have risen dramatically since. Twice as many patients seek care at the Institute now than did five years ago, and the number of doctors who treat complex eye diseases has more than doubled.

National Institutes of Health (NIH) funding to the Department of Ophthalmology has shot up seven-fold since 2002, and the number of scientists doing basic eye-related research has more than doubled. The amount of space devoted to the Institute’s research is more than tripling; clinical space has tripled as well. The expanded clinical research program also offers B&L a convenient, nearby source of talent to offer advice or to test out new products or instrumentation.

Thanks to the collaboration, through which B&L has agreed to provide UR researchers with up to \$19 million from about 1996 to 2011, other researchers are looking for a greater understanding of glaucoma, macular degeneration, and dry eye.

### LONG-TERM RELATIONSHIP SEES RESULTS

#### 1992

David Williams experiments with wavefront technology to map optical defects.

#### 1993

Williams turns to adaptive optics technology to manipulate the light coming out of the eye.

#### 1994

The Williams team makes visible for the first time individual cones in the back of the eye.

#### 1996

UR and B&L agree to work together to build a wavefront sensor.

#### 1997

UR and B&L sign a licensing agreement for the Williams technology.

#### 1999

The team publishes results showing that the arrangement of three kinds of cones in the back of the eye varies dramatically from person to person.

#### 2000

Refractive surgery pioneer Scott MacRae joins URMC. UR and B&L create the Alliance for Vision Excellence. The B&L Zyoptix Personalized Laser Vision Correction System is unveiled and becomes available abroad.

#### 2001

UR and B&L broaden their collaboration with a new five-year agreement covering research, patient care, and educational activities. Steven Feldon arrives to head the Department of Ophthalmology. MacRae heads a national study showing that the B&L Zyoptix system provides best results to date for patients undergoing refractive surgery. B&L receives FDA approval for its Zywave aberrometer.

#### 2002

The University of Rochester Eye Institute is created.

#### 2003

Investigators begin study of custom contact lenses. B&L Zyoptix Personalized Laser Vision Correction System approved by FDA.

#### 2005

B&L and UR ink a new five-year agreement involving pre-clinical testing of new treatments for glaucoma, macular degeneration, and dry eye. B&L and UR sign an additional five-year agreement to explore the basic science behind several eye diseases, including glaucoma, diabetic retinopathy, and dry eye.

**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.



## SUCCESS STORY

### Biosensor Technology Is Good for Health, Good for Business

Physiologic Communications, LLC (PhysioComm) is an early stage biotech company, created in 2004 by URMIC cardiologist Spencer Rosero, M.D. The start-up focuses on designing and developing implantable biosensors—integrating living cells with electronics—to create “biological chips.” The aim is to advance and transform medical monitoring technology and device therapy for patients with disorders such as congestive heart failure, life threatening heart rhythms, and epilepsy.

“We recognize that individual patients respond differently to diagnostic and therapeutic interventions,” Rosero said.

“The key to personalizing care is to improve the manner in which one can detect abnormalities in chemical signals or physiologic activity in real-time using technology that is minimally invasive.”

What makes these tiny devices so exciting is that they can be implanted in patients to monitor and detect abnormalities earlier than current diagnostic tests, and could then relay data to physicians, or provide therapy on the spot. When implanted, this chip can detect physiologic and chemical changes with faster, improved accuracy. These more accurate results, retrieved without invasive testing, allow for better and timely responses and, the hope is, a healthier patient.

Although human testing may still be a decade away, PhysioComm is making strides. Initial application is expected to involve pharmaceutical companies, which could use the biological chips to test potential drugs in the lab more quickly, cost-effectively, and accurately. In later generations, the chip could command implanted devices—for example, a wireless defibrillator/pacemaker or an insulin pump—to take action to correct a detected abnormality. The device would communicate with the living chip in real time, making adjustments as a direct result of the chip’s ability to detect changes.

“The quick growth of PhysioComm from concept inception to successful business launch shows the strength of collaboration with the right partners,” Rosero said. “We don’t have to venture farther than our own back yard to find what we need to make this chip a reality.”

The company utilizes scientific experts in the fields of molecular biology, clinical cardiology, and electrical engineering. Bradford C. Berk, M.D., Ph.D., an internationally known scientist and URMIC CEO, is leading PhysioComm’s molecular biology team. Both Berk’s laboratory and that of researcher Keigi Fujiwara, Ph.D., will collaborate with PhysioComm on the technology.

Excell Partners, Inc. is the key source of funding that enabled Rosero’s team to build a prototype device. Excell is a non-profit corporation formed in coordination with URMIC to help upstate NY researchers start businesses by providing funding and access to investment capital. A Rochester-based consortium, Excell assists young companies with funding from New York state, Cornell University, and the University of Rochester. The funding has also led to the hiring of two full-time employees to complement an existing multidisciplinary team of scientific, engineering, and business experts.

The concept has seen strong support from individuals such as Terry Gronwall, an entrepreneur-in-residence at the High Tech Rochester Incubator, who took an early lead in assessing Physiologic Communication’s success potential and mentoring the researchers in the complicated art of business.

“The potential of PhysioComm’s core technology is significant in its potential for better patient outcomes,” said Gronwall. “Its impact on the market may be more revolutionary than evolutionary.”

To learn more about Physiologic Communications, visit its new Web site at: [www.physiocomm.com](http://www.physiocomm.com).



Mina Chung, M.D.



Geunyoung Yoon, Ph.D.

### Focus on Today

Currently, Geunyoung Yoon, Ph.D., is working with B&L to create and test custom contact lenses to bring vision to people with disorders that so far have been largely untreatable. Ophthalmologist Mina Chung, M.D., is using the system to take the best images ever of the eye cells involved in diseases like macular degeneration. Other efforts include studying how glaucoma actually kills nerve cells and damages vision; looking at the earliest changes in patients with diabetic retinopathy; treating presbyopia, which results in the need for reading glasses; and developing new tools to diagnose and monitor dry eye.

### UPCOMING EVENTS

**February 7, 2007** - Rochester, NY  
University Technology Showcase  
(UR, RIT, Cornell)

**March 7-10, 2007** - San Francisco, CA  
The 2007 Association of University  
Technology Managers Annual Meeting  
[www.autm.net/events/File/  
AnnualMeeting2007/AUTM07EA.pdf](http://www.autm.net/events/File/AnnualMeeting2007/AUTM07EA.pdf)

**May 6-9, 2007** - Boston, MA  
BIO 2007: The Biotechnology Industry  
Organization Annual Conference  
[www.bio2007.org](http://www.bio2007.org)



## Co-Discoverer of Lipitor® Visits URMC

Roger Newton, Ph.D., Senior Vice President of Pfizer Global Research and Development and Director of its Esperion Therapeutics division, was the first invited speaker on October 3 for the “Translating Medical Breakthroughs: The Business of Science” seminar series. Newton visited with URMC scientists and delivered a lecture describing Esperion’s development of “good cholesterol” therapies. He shared personal career highlights, relating his experiences as co-discoverer of atorvastatin (Lipitor®) and as a biotech entrepreneur. After the Warner-Lambert launch of atorvastatin, Newton started his own biotech venture, Esperion Therapeutics. It was acquired by Pfizer in 2003 for \$1.3 billion.

*The Business of Science Seminar is a quarterly URMC series co-sponsored by OCA and the Senior Associate Deans for Clinical and Basic Research. It features biotech and pharma executives and connects URMC scientists and leadership with key industry decision makers. Look for the second installment of the series in early 2007.*

## OCA Sponsors Leadership Luncheon at Western NY Biosciences Summit

In conjunction with the Western NY Biosciences Summit on October 5 and 6, hosted by the Biocluster of the Rochester High Tech Business Council, OCA sponsored a leadership luncheon which included local and state government representatives and academic and industry scientists. Rochester Mayor Robert Duffy, Maurice Zauderer, Ph.D. (Vaccinex, Inc.), Howard Federoff, M.D., Ph.D. (URMC), Theresa Mazzullo (Excell Partners), and Srin Venkatesh (Bausch & Lomb) addressed key issues facing the developing Rochester biotech community and how academic institutions and industry must work together to foster its growth.

## NIH CHOOSES ROCHESTER FOR TWO MAJOR TRANSLATIONAL INITIATIVES

### New Clinical and Translational Science Institute Announced

The NIH selected URMC as one of 12 institutions to be part of a national consortium to lead the emerging field of clinical and translational research by producing innovative technology and methods that more efficiently and quickly advance treatments to patients. NIH Director Elias A. Zerhouni, M.D., has said the consortium “represents the first systematic change in our approach to clinical research in 50 years.” The School of Medicine will receive \$40 million from NIH over five years and establish a Clinical and Translational Science Institute. The Institute will organize, streamline and expand translational research in Rochester while also influencing the national approach to clinical and translational science and contributing to the development of research methods and infrastructure. The award is the largest grant ever from NIH to UR.

### Researchers in Orthopaedics Awarded New Center of Research Translation Grant

URMC researchers received a \$7.8 million grant from the National Institute of Arthritis and Musculoskeletal and Skin Diseases, one of only four institutions to be awarded its new Center of Research Translation (CORT) grant. It is part of the broader NIH effort to fast-track basic science findings into meaningful patient treatments. This CORT grant supports the conversion of basic bone science into new treatments to prevent arthritis, improve fracture healing, and save limbs. With this grant the URMC Department of Orthopaedics and Rehabilitation becomes the highest NIH-funded department of its kind in the nation.

## Researcher Wins 2006 Thomas R. Lee Award from ADA

Zheng-Gen Jin, Ph.D., assistant professor in the Department of Medicine and the Cardiovascular Research Institute, won the 2006 Thomas R. Lee Career Development Award from the American Diabetes Association (ADA). The award recognizes Jin’s excellence in diabetes-related research and includes an \$842,400 grant to study how diabetes dramatically increases the risk for cardiovascular disease. Jin won the award for his study titled Molecular Basis for Diabetes-Associated Endothelial Dysfunction, which focuses on how high blood sugar (blood glucose) in diabetes patients contributes to narrowed blood vessels, creating risk for heart attack and stroke.

## New Non-Hormonal Menopause Drug Closer to Market

Gabapentin, the URMC-developed and U.S. patented drug, took another step toward treatment for hot flashes and menopause symptoms when Rochester-based PharmaNova, Inc. exclusively licensed certain patent rights to the specialty pharmaceutical company Depomed, Inc. Depomed will commercialize an extended release form of gabapentin as a non-hormonal alternative for menopausal women. Because of the huge numbers of women this drug could help, it is estimated that within five years retail sales could approach \$1 billion. Gabapentin was originally used for the treatment of seizures and migraine headaches.

## ALUMNI LEND THEIR EXPERTISE

The Commercial Link program connects alumni with technology commercialization activities at URMC, allowing them to contribute their industry-relevant experience to the tech commercialization process. Several members have contributed helpful advice and perspective on market opportunities for emerging URMC technologies as well as patenting. Commercial Link also provides alumni with a chance to learn about new business opportunities in their respective industries. If you are a URMC alumnus interested in joining the Commercial Link program, please contact James Roussie, Office of Corporate Alliances, at james\_roussie@urmc.rochester.edu.

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