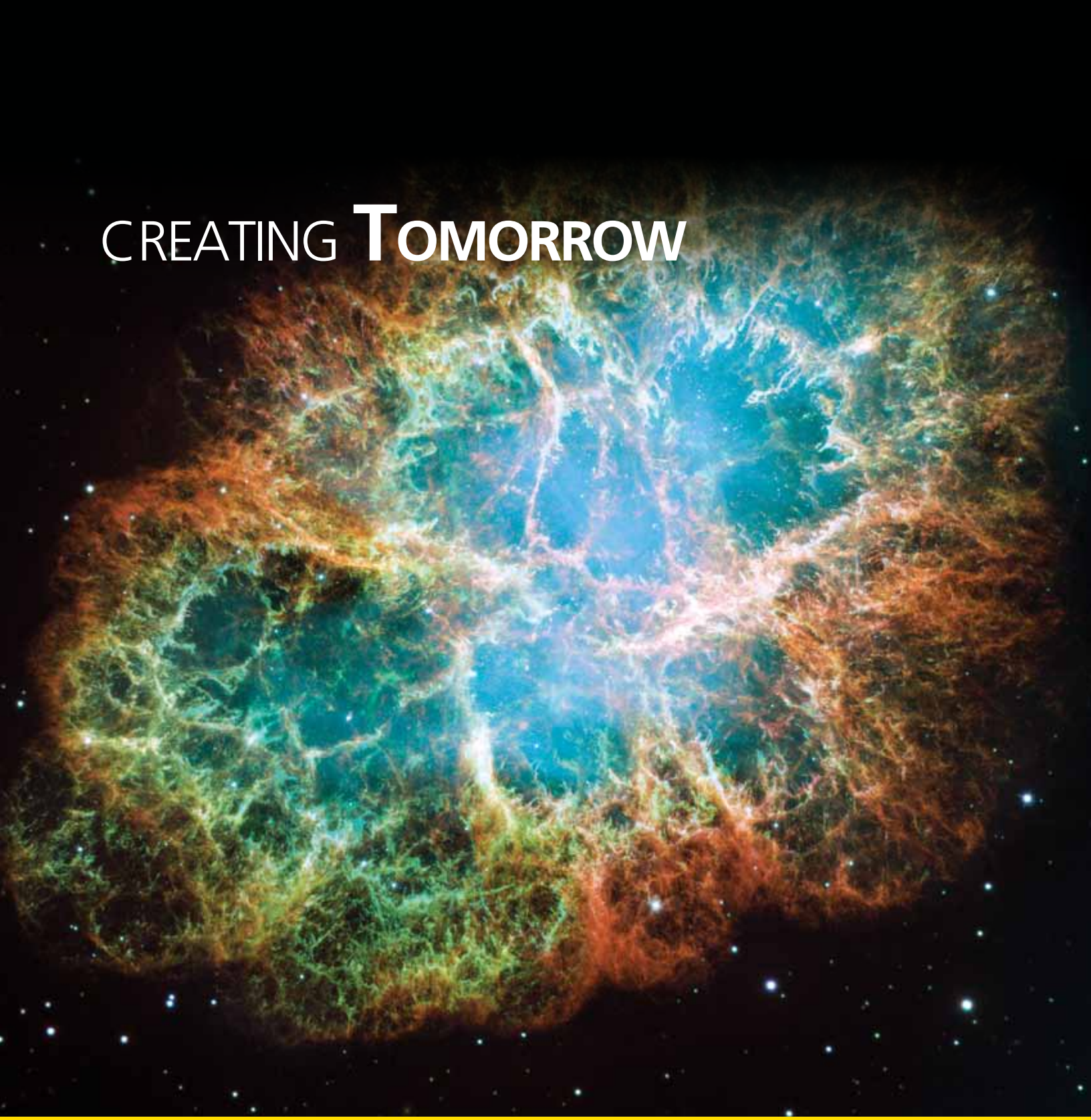
CREATING **TOMORROW**



UNIVERSITY of ROCHESTER

Annual Report
Fiscal Year 2010 (1 July 2009 - 30 June 2010)

Technology Commercialization

Contents

Creating **Tomorrow**

The beginning of our Fiscal Year 2010 occurred as New York and the entire United States were in the midst of economic upheaval. But in any time of turbulence, along with uncertainty comes opportunity. The Upstate New York community has a wealth of assets that can be used to generate economic growth. The University of Rochester is playing an important role in facilitating this growth.

With this in mind, our theme for this Annual Report is "Creating Tomorrow." The University is committed to leveraging our new technologies to propel the economic development of our community toward a new tomorrow. Technology commercialization at the University of Rochester is already impacting our local, state, and national economies, and we have the potential to do far more.

For example, in 2010 the University received three grants from the Empire State Stem Cell Board (NYSTEM). The first grant, for $3.3 million, is for the construction of a new facility that will enable scientists to produce human stem cells suitable for testing new therapies. The second grant funds eight research projects in neurological disease, cancer, cardiovascular disease, and bone repair. Lastly, the University received one of five NYSTEM grants in order to develop an undergraduate course that will provide students with an overview of existing stem cell science, as well as an opportunity to explore related ethical, legal, and societal implications surrounding this research. These grants will create jobs for the community and benefit society as a whole.

In addition, recognizing the need to translate scientific research into commercial opportunities, the University finalized the framework for the Technology Development Fund. The Fund hopes eventually to allocate $500,000 per year to support our researchers who wish to develop their discoveries further toward commercialization, but lack the capital to do so.

We know we can make a difference in New York State and our nation well into the future by what we begin to create today. Indeed, technologies invented right here at the University have virtually eliminated the major cause of bacterial meningitis in early childhood and have played an essential role in the development of the first-ever vaccine for cancer.

When we work collaboratively to marshal the wealth of talent and assets we have in this community, something special can happen.

Creating **New Modes of Thought**

The lifeblood of any research enterprise is funding. In FY 2010, regular research funding at the University of Rochester surged to historic levels of $418 million. This represents an increase of $63 million, or 18%, from FY 2009, and is double the funding received in FY 1999.

In FY 2010, the University was awarded an additional $42.6 million in research funding under the American Recovery and Reinvestment Act (ARRA). These funds were intended to provide an important but temporary boost in academic research and development activity and are set to expire in 2011.

As University of Rochester President Joel Seligman has stated, this growth in research funding is extraordinary, particularly given the economic climate in which it occurred. It is a testament not only to the talent and commitment of the University's research community, but it also represents an affirmation of the strategic investments in research infrastructure made by our institution with public and private support.

The University witnessed increased funding from all federal sources and across nearly all divisions. Excluding ARRA, FY 2010 funding from major sources such as the National Institutes of Health (NIH), the National Science Foundation (NSF), and the Department of Energy grew by 18%, 53%, and 29%, respectively.

Over the last several years, the University has made significant new investments in research facilities including the Goergen Hall for Biomedical Engineering and Optics, the Aab Cardiovascular Research Institute, the Sproull Center for Ultra High Intensity Laser Research, and the James P. Wilmot Cancer Center. Next year, the University will open the doors on the new Clinical and Translational Science Building. This steady growth is the result of a commitment to bring together the brightest scientific minds and to provide them with the resources, collaborative environment, and state-of-the-art facilities necessary to produce the best science.

Award Sponsors by Agency Type — Including ARRA
(dollars in thousands)

Agency Type	FY 2010	FY 2009	Increase/ Decrease
Federal	$375,105	$274,222	+36.8%
Corporate	$27,207	$29,652	-8.2%
State & Local Government	$18,083	$13,668	+32.3%
Foundations & Voluntary Health Organizations	$13,118	$13,556	-3.3%
Other Sponsors	$27,009	$25,390	+6.4%
Total	$460,522	$356,488	+29.2%

Creating **Paradigms**

The mission of the research enterprise at the University of Rochester is to optimize the use of new knowledge generated within its walls for the public good. Despite the simplicity of this statement, the framework necessary to fulfill our mission is incredibly complex. It requires the active participation of a diverse group of collaborators from both within the University and from the community. Like a recipe, if any one of these collaborator-ingredients is missing, the end result will not be its best.

The first component in creating a technology commercialization framework is a strong research funding base. Federal funding for innovative science research continues to be a critical element in our ability to create new ideas that can be used in society. New York State and our industry partners also contribute important funds for new knowledge generation. This sponsored research enriches the University community by providing revenue to establish new programs, conduct faculty research, and provide instructional and other services. In addition, sponsored funds support professional growth for faculty, postdoctoral fellows, students, staff, and University labs and facilities. Without the vision and financial support of these sponsors, we cannot explore new limits to scientific ideas and applications, and none of our paradigms would work; there would be no further creation.

The second component is a community of researchers who invent novel technologies and who are committed to transferring the results of their research efforts to the larger community. At the University of Rochester, we are fortunate to have a corps of incredibly talented and dedicated researchers who generate more than one hundred new inventions each year and who publish many more articles that share information on their work with the global research community. Our solid research base feeds our pipeline for commercialization.

The third component for the creation of a technology commercialization paradigm is a community of industry champions to catalyze our discoveries. Our industry partners provide funding for our research ideas, they license our technologies, and they provide valuable feedback to our research community about the business needs in the marketplace. We will continue to focus on ways we can create collaborative exchanges between the companies that can tell us what the world needs and the researchers who can tell companies whether science can take us there.

The fourth ingredient is an entrepreneurial community. Many of our novel research ideas still have too much technical and business risk to be a good bet for an established company. Start-up enterprises are important resources to take some of these early ideas and transform them into something that has a stronger commercial value proposition. The entrepreneurial community is comprised of versatile business people who have a healthy appetite for high risk and high return and an investment community of funders. The investment community must include angels that fund early-stage business operations, and more conventional capital sources that fund business operations once the prospects for revenue generation in the new business are fleshed out.

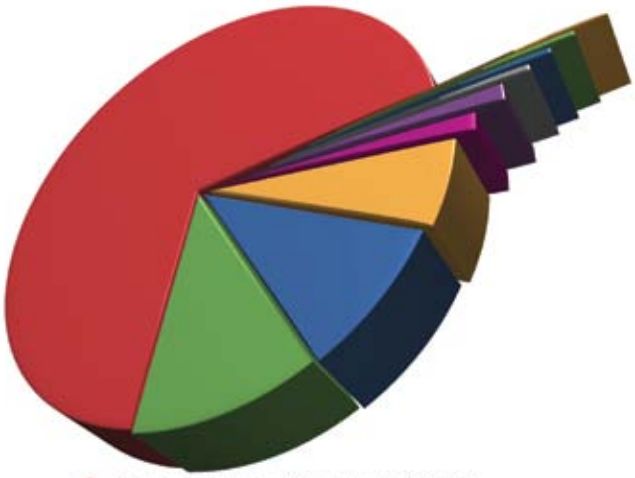
The University of Rochester is at the center of an innovation paradigm that creates the pipeline for new business opportunities and for economic development in New York. This Annual Report will highlight the key results in all parts of this process for Fiscal Year 2010.

Funding Proposals Submitted

By providing the scientific roadmap, the research proposal is often the first step to discovery, collaboration, and the creation of intellectual property. The University of Rochester, though small compared to many research-intensive universities, has extremely productive faculty, and the rate of proposal submission is impressive. In FY 2009, 443 proposals were submitted for a total of $221 million under the ARRA opportunities alone. In FY 2010, although there were very few new program opportunities under ARRA, proposal activity remained high. On an overall University basis, 2,232 proposals were submitted via all the available vehicles of sponsored programs funding.

The vast majority of the University's research applications are submitted to federal government agencies. Excluding ARRA, federal budgets have remained relatively flat, and paylines are low and intensely competitive. Within the constraints of federal funding, new programs to foster innovation and cross collaboration are emphasized. In addition to these initiatives, many federal agencies now require that applications address the broader impact of the science for societal benefit.

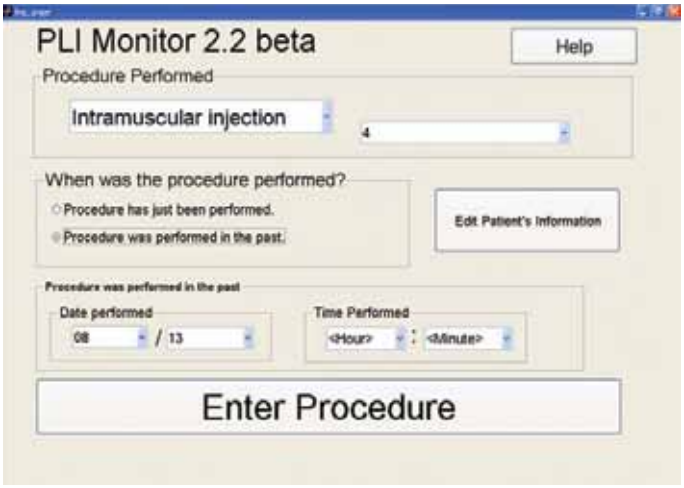
Funding Proposals Submitted by Division
(in thousands)



- School of Medicine & Dentistry $1,090,576
- Arts & Sciences $176,082
- Laboratory for Laser Energetics $136,395
- Hajim School of Engineering & Applied Sciences $89,137
- School of Nursing $20,586
- Medical Center Administration $19,560
- Warner School of Education $7,643
- University Other $6,422
- Memorial Art Gallery $5,503
- Hospitals and Clinics $1,545

In Aid of Our Most Vulnerable Population

The rate of premature births in the United States continues to rise, with profound human and social consequences. Many life-sustaining interventions are performed on premature infants on a daily basis. Unfortunately, the distress associated with the invasive nature and frequent timing of these interventions carries its own burden on infant neurodevelopment. Presently, there is no method or tool to account for that burden in order to gauge more appropriate times for interventions. A proposed study, submitted by Martin Schiavenato, Ph.D., R.N., an Assistant Professor in the University of Rochester's School of Nursing, and Laurel Carney, Ph.D., a Professor in the Department of Biomedical Engineering seeks to address this gap by developing and testing a computerized system that will record procedures and calculate and display in real time a "procedure load index" for the infant. Knowledge of this procedural load will be used to help determine the best timing for clinical interventions so as to minimize negative health outcomes.

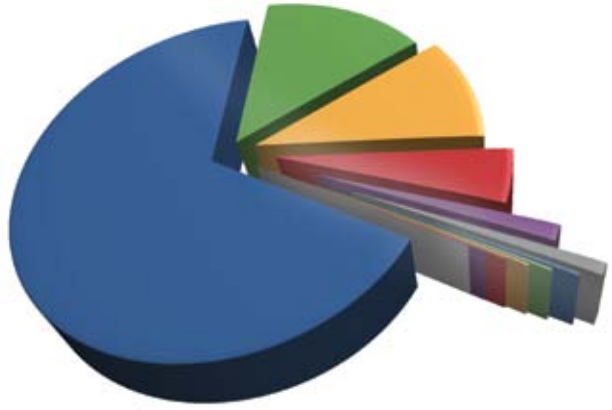


Martin Schiavenato, Ph.D., R.N., and beta of the "procedure load index" tool.

Awards Received

As mentioned earlier in this report, the University of Rochester received a record $418 million in research funding in FY 2010, in addition to $42.6 million in ARRA money. The awards fund 2,142 projects in fields as diverse as chemistry, engineering, and education. The biggest portion of this funding went to our Medical Center to fund major studies in biodefense preparedness, AIDS prevention and treatment, neuromuscular diseases, Alzheimer's disease, cancer, and clinical and translational research. Notably, research funding at the Hajim School of Engineering and Applied Sciences, inclusive of ARRA, increased by 50 percent to $21 million in FY 2010.

Funding Awards Received by Division
(in thousands)



- School of Medicine & Dentistry $312,928
- Laboratory for Laser Energetics $66,939
- Arts & Sciences $46,681
- Hajim School of Engineering & Applied Sciences $20,841
- School of Nursing $5,631
- Medical Center Administration $3,993
- Hospitals and Clinics $909
- Warner School of Education $881
- University Other $514
- Memorial Art Gallery $450
- Eastman School of Music $44
- Simon School of Business $38

Addressing More than Science

NYSTEM Grant Awarded for Development of Undergraduate Education on Stem Cell Science

The University of Rochester received a NYSTEM grant targeted toward the development of stem cell curricula for undergraduates. The goal of this project is to create an undergraduate stem cell course that will provide students with an overview of stem cell science and an opportunity to explore related ethical, legal, and social implications using a case-study learning format. This project will provide other undergraduate faculty with models for presenting information on the science and societal issues of stem cell biology that also will help develop students' skills for decision-making. Teachers at other colleges will be able to adopt these curriculum modules and adapt them for use in their own courses.

The principal investigator on this application is Dina Markowitz, Ph.D., Professor of Environmental Medicine and Director of the University Center for Science Education and Outreach. Co-principal investigator is Richard Dees, Ph.D., Associate Professor of Philosophy and Medical Humanities at the University of Rochester. Other University researchers named on this grant are Shaw-Ree Chen, Ph.D., Assistant Director of the Life Science Learning Center; Cheeptip Benyajati, Ph.D., Associate Professor of Biology; and Mark Noble, Ph.D., Director of the Stem Cell and Regenerative Medicine Institute. In addition, this award will bridge curriculum development in stem cell sciences at the University of Rochester with Monroe Community College (in collaboration with Judy Kaufman, Ph.D., Professor of Biology at MCC).

Richard Dees, Ph.D., Judy Kaufman, Ph.D., Dina Markowitz, Ph.D., and Shaw-Ree Chen, Ph.D.

Research Expenditures

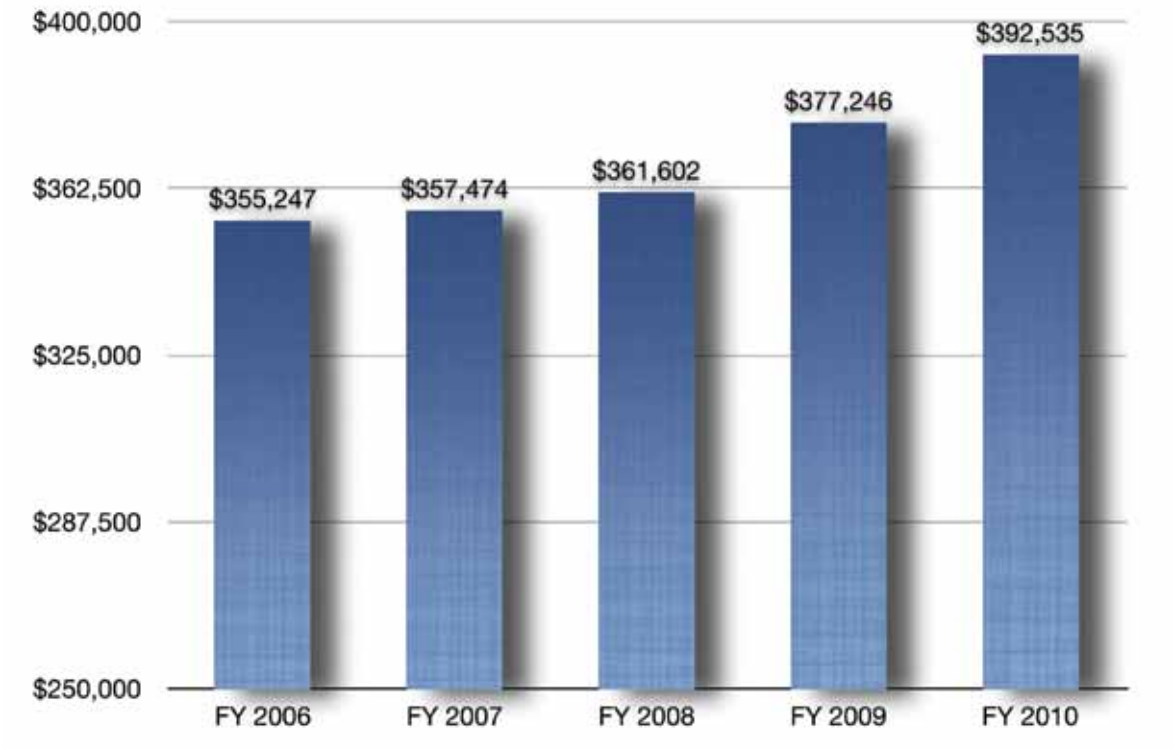
Sponsored program expenditures are widely used by the university community for benchmarking purposes. At the University of Rochester, sponsored program expenditures continued to rise by more than 4 percent in FY 2010. Given the increase in awards for FY 2010, we can predict that expenditures will continue their upward trend in FY 2011, when most of the ARRA projects will be in full operation.

Federal expenditures, inclusive of ARRA awards, increased by about 6%. NIH project expenditures alone increased 12%. We expect to see an increased expenditure rate again next year. However, out-year projections are risky, given a midterm election political sea change.

In terms of rankings compiled by the National Science Foundation, the University of Rochester was 32nd in FY 2009 in federally financed research and development expenditures at universities and colleges and 17th in R&D expenditures from all funding sources among private universities. Utilizing the NSF survey of research expenditures for FY 2008, and normalized against other universities for faculty size, the University of Rochester placed 8th among all institutions (private and public).

Our research programs receive significant support from federal agencies such as the National Institutes of Health and the National Science Foundation. The political environment suggests that current funding levels will be difficult to sustain over the next several years. Consequently, it will be very difficult for the University to sustain the rate of growth in funding support we have seen over the past decade.

Research Expenditures by Fiscal Year
(dollars in thousands)



Research in Virtual Worlds Yields Real-World Results

Action Video Games Improve Vision

The ability to discern slight differences in shades of gray has long been thought to be an attribute of the human visual system that cannot be improved. But Daphne Bavelier, Ph.D., Professor of Brain and Cognitive Sciences at the University of Rochester, has discovered that very practiced action gamers become 58 percent better at perceiving fine differences in contrast.

This discovery builds on Dr. Bavelier's past work that has shown that action video games increase visual attention. She says that the findings show that action video game training may be a useful complement to eye-correction techniques, since game training may teach the visual cortex to make better use of the information it receives.

Dr. Bavelier's research suggests that despite the many concerns about the effects of action video games and the time spent in front of a computer screen, that time may not necessarily be harmful, at least for vision. She is now taking what she has learned with her video game research and collaborating with a consortium of researchers to look into treatments for amblyopia, a problem caused by poor transmission of the visual image to the brain.

This research was funded by the National Eye Institute and the Office of Naval Research.

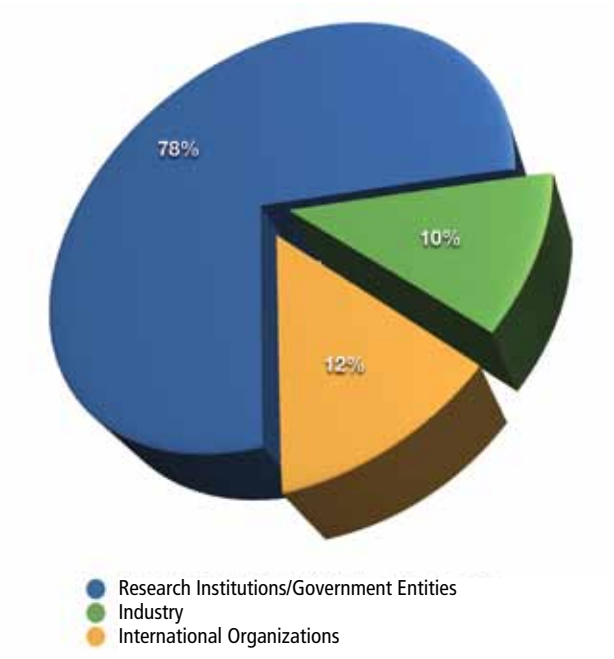
A test subject participates in Dr. Daphne Bavelier's video game research.

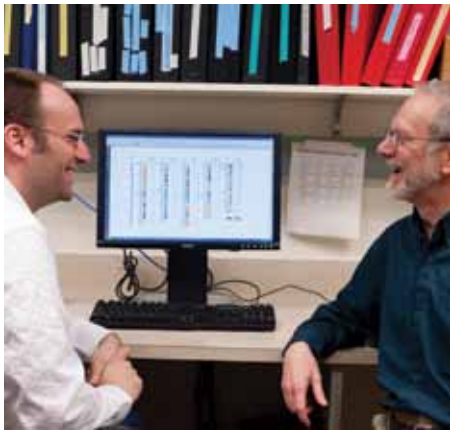
Creating **Collaboration**

Scientists support and create research advances by sharing research materials with the scientific community for further development in specific fields of interest. Some examples of shared biological materials are reagents, cell lines, and antibodies. Institutions have an obligation to share materials obtained or developed by federal funding. This sharing is done through the use of a Material Transfer Agreement (MTA).

In FY 2010, the University of Rochester's Office of Research and Project Administration received a total of 457 MTA requests from its faculty. Of these requests, 344 were for incoming materials requested by University researchers, and 113 requests were for University materials requested by other institutions. The University of Rochester signed a total of 413 agreements in FY 2010. This also included agreements pending from the previous fiscal year. The University experienced an increase of 23% in MTAs received for FY 2010 compared to those received in FY 2009. This increase is attributed to the increase in research funding provided by the ARRA. Increased sponsored research activity would naturally promote the sharing of research materials, particularly in an era when interdisciplinary and inter-institutional research collaborations are increasing.

FY 2010 Material Transfer Agreements
(by sector of collaborator)



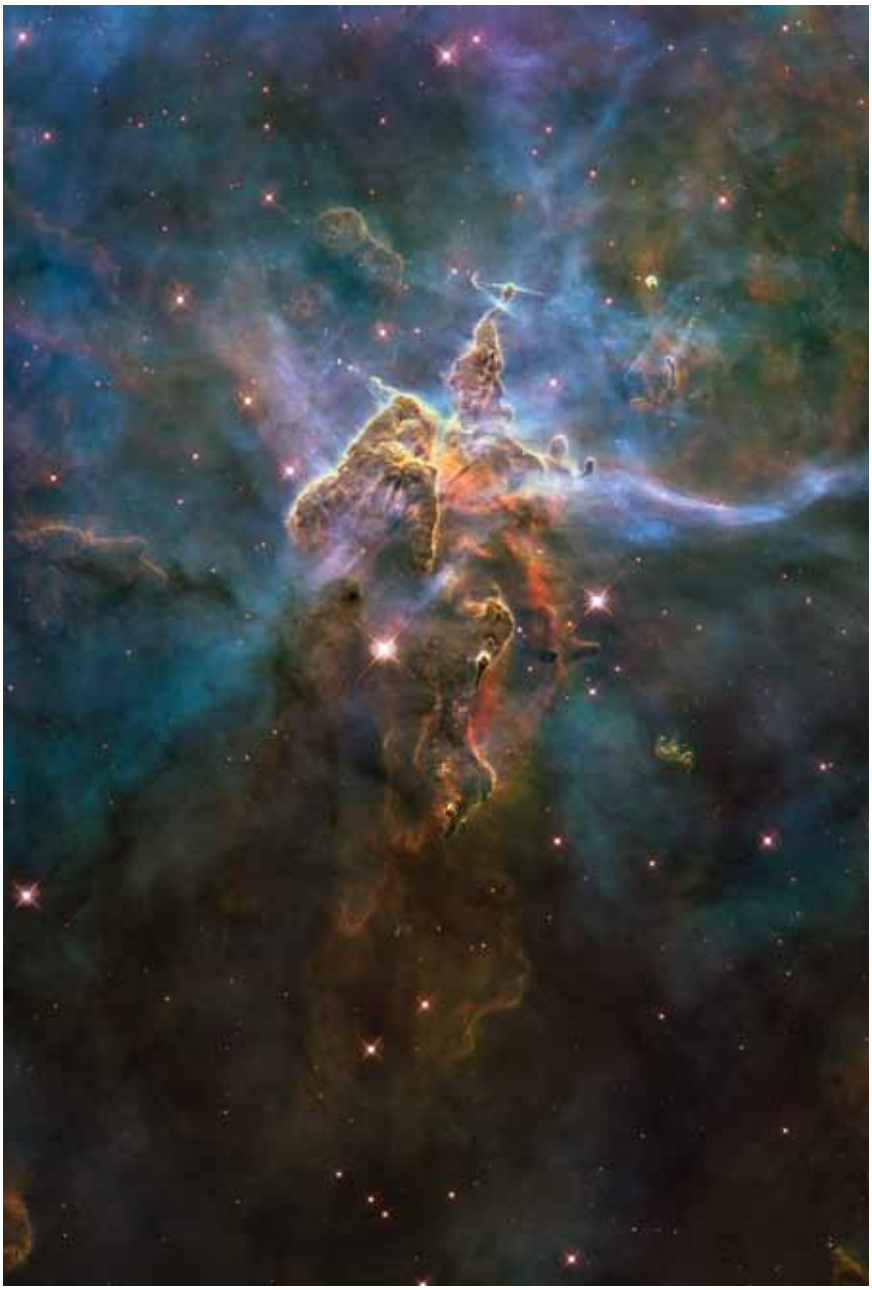


Creating **A Brighter Future**

The foundation of any institution is the people who work and innovate within its walls. Once the hard-won research funding is acquired, our outstanding faculty get to work discovering, creating, and innovating — while teaching the next generation of researchers, creators, and innovators.

Innovators

The University of Rochester has long had a tradition of being at the forefront of scientific research. Many of our most innovative researchers are "game-changers" whose discoveries have dramatically altered our world. Fiscal Year 2010 has been no exception. We are justly proud of our researchers, of the quality of work being disclosed to the Offices of Technology Transfer, and of the international press coverage being generated in recognition of the importance of their work.



Our Innovators Have Changed the World . . . and Continue to Shape the Future

Kevin J. Parker, Ph.D.

Kevin Parker is the William F. May Professor of Electrical and Computer Engineering, with secondary appointments in Radiology and Biomedical Engineering. He has served as Department Chair in ECE, Director of the Rochester Center for Biomedical Ultrasound, and Dean of the School of Engineering and Applied Sciences. He earned his graduate degrees at MIT.

Dr. Parker's research focus is in image processing and medical imaging. He is a pioneer in elastography and a founder of the annual international conference in that field. He has authored over 150 journal publications and holds dozens of U.S. and international patents, including the "Blue Noise Mask" patent, which has been broadly licensed in the digital printing industry, and a portfolio of patents that were the core of the local startup company, VirtualScopics, which provides quantitative imaging services for clinical trials.

Vera Gorbunova, Ph.D.

Vera Gorbunova, a Professor in the Department of Biology, recently earned global recognition for her work with the long-lived and curiously cancer-resistant naked mole-rat. She received her graduate degrees from the Weizmann Institute of Science in Israel.

Dr. Gorbunova's research focus is on aging, DNA repair, and cancer. As organisms age, there is an accumulation of mutations and genomic instability. Dr. Gorbunova's team studies these age-related changes in the repair of DNA using human cells and transgenic mice. The team also uses the comparative approach to study anti-cancer mechanisms in short- and long-lived rodents. Most notably, they study the naked mole-rat, which can live up to 30 years. She and her colleague, Andrei Seluanov, Ph.D., were awarded the 2009 Cozzarelli Prize for their pioneering work on cancer resistance in naked mole-rats. The award recognizes papers of "outstanding scientific excellence and originality" and is presented by the editorial board of the National Academy of Sciences.

Philip J. Fay, Ph.D.

Philip Fay is a Professor in the Department of Biochemistry and Biophysics. He received a Ph.D. in Biochemistry from the University of Rochester School of Medicine and Dentistry.

Dr. Fay's research focus is the blood coagulation protein Factor VIII, which plays a critical role in the regulation of blood clotting and the control of bleeding. Deficiency in Factor VIII is the most common cause of hemophilia. Dr. Fay, along with his colleague Hironao Wakabayashi, Ph.D., has developed several recombinant Factor VIII proteins.

These proteins are more beneficial than current recombinant proteins used to treat hemophilia because they are more stable and have longer physiological half-lives. This makes them easier to manufacture, ship, and store, and reduces the amount of protein required by each patient.

Innovation

Invention disclosures in FY 2010 covered a broad range of scientific innovation. Examples of this diversity include:

- a method for measuring acoustics during a concert that analyzes an ongoing performance and generates inaudible test signals to determine the acoustic qualities of the venue;
- a method to restore low vision or otherwise enhance visual sensitivity using video games;
- several novel diagnostic and therapeutic uses of ultrasound;
- new devices, techniques, and therapies to treat or diagnose asthma, lupus, concussions, autism spectrum disorders, and osteoporosis; and
- new devices, techniques, and therapies to prevent or reduce the risk of burns, strokes, or sudden cardiac death.

In FY 2010, 123 invention disclosures were received by the Offices of Technology Transfer. Those disclosures named 222 inventors from 77 University departments and units, 14 collaborators from 13 other universities and research hospitals, and 4 collaborators from 4 different for-profit companies.

In order to move some of our technologies forward on the path of commercialization, the University has completed the design and structure of the Technology Development Fund — a fund designed for the express purpose of accelerating the translation of scientific and engineering research into commercial opportunities. Qualified applicants include any University faculty member, post-doctoral fellow, graduate student, or staff member who has disclosed or is disclosing a technology to the University's Offices of Technology Transfer. Awards can range from $40,000 to $100,000, and will be available in the first half of FY 2011.

One Elegant Solution Saves Thousands of Lives . . .

Immunogenic Conjugates

One day, nearly thirty years ago, a Professor in the Department of Microbiology and Immunology submitted an invention disclosure for a new method of introducing a vaccinating agent into a subject. Using these immunogenic conjugate techniques imagined in the laboratory of David Smith, M.D., Porter Anderson, Ph.D., developed a vaccine that safely prompted an immune response to *Haemophilus influenzae* Type b (Hib) in very young children. Prior to FDA approval of this vaccine in 1990, approximately 20,000 children in the United States contracted severe Hib disease each year, with about 1,000 of them dying. This equated to a disease incidence of 40 – 60 per 100,000 each year. Within two years after the introduction of the vaccine, that rate dropped to 1.3 per 100,000 per year. This reduction has been so dramatic that Hib is no longer considered a threat in most of the developed world.

Using the same immunogenic conjugate concepts, scientists then developed a highly effective and safe vaccine against *Streptococcus pneumoniae*. According to the Centers for Disease Control, before 2000, *S. pneumoniae* was responsible for 160,000 – 195,000 hospitalizations (roughly 21 – 33 per 100,000) each year. Death occurred in 14% of adults hospitalized for these infections. The mortality rate for children was higher. By 2002, the CDC estimated that the annual incidence of these infections had declined to 13 per 100,000 annually.

. . . while Others Hold the Potential to Improve Tomorrow

Automated Device for Asthma Monitoring (ADAM)

Submitted by Hyekyun Rhee, Ph.D., an Assistant Professor in the School of Nursing, and Mark Bocko, Ph.D., a Professor in the Department of Electrical & Computer Engineering, this innovative device system facilitates non-intrusive, continuous, valid, and reliable monitoring of asthma symptoms in an individual.

Asthma afflicts nearly 24 million people in the United States, causing 3,613 deaths per 100,000/year. Worldwide, there are 300 million asthmatics, and that number continues to climb. Healthcare costs for asthma in the U.S. alone are around $11.5 billion per year. Current treatments depend on the patient accurately monitoring and reporting symptoms, as well as faithfully and properly adhering to treatment regimens.

ADAM removes many uncertainties. Continuous automatic symptom monitoring — in real-life environments — with selective capturing of identified parameters, as well as physical activity levels, provides more accurate treatment and management of asthma.

CdS/CdTe Photovoltaic Cells with Improved Electrode Contacts

This invention disclosure came from the laboratory of Ching Tang, Ph.D., a Professor in the Department of Chemical Engineering. It names graduate students Hao Lin, Wei Xia, and Hsiang Wu as co-inventors. The disclosure covers a new material for the back electrode contact in CdS/CdTe photovoltaic cells to enable a continuous in-line physical vapor deposition process for all cell layers.

This is an improved structure for the CdS/CdTe class of thin-film semiconductor solar cell, which is used in rooftop and ground-mounted solar electrical power arrays for residential and small commercial applications and for grid-connected utility systems.

The improved CdS/CdTe photovoltaic cells have the following advantages:

- The novel back electrode interface material enables more cost-effective manufacturing;
- A low resistance contact is provided for the p-CdTe layer, which enables a module efficiency of 9% to 12% — as good as results obtained by current commercial CdTe photovoltaic cells from vendors;
- This back electrode contact layer is compatible with both conventional glass and flexible substrates and is robust to flexing.

Intellectual Property Protection

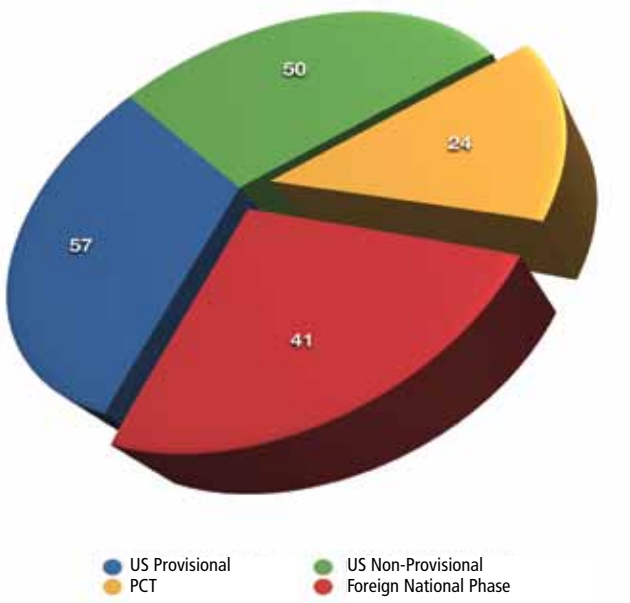
In order to commercialize new technologies, universities often seek to patent their discoveries. To appreciate any discussion of intellectual property protection, it is important to understand the following types of patent applications:

- U.S. Provisional—filed within the United States, a provisional application can be relatively inexpensive to file and may lack many of the formal requirements of a standard patent application. It will never issue as a patent, it is not made public, and it will never be examined unless future litigation arises over issues of patentability. The provisional application automatically expires after twelve months. At that time, the applicant must file a formal (non-provisional) application or forfeit exclusive rights to the invention.
- U.S. non-Provisional—filed within the United States, this is what most people think of when they think of a patent application. This type of application will be made public, it will be examined on its merits and its distinction from prior art, and it may issue as a patent after an examination period lasting anywhere from several months to several years.
- PCT—A large majority of nations have joined together in the Patent Cooperation Treaty (PCT). This treaty established a process by which an applicant interested in pursuing international, or multi-national, patent protection could file a single application. Like a U.S. provisional application, a PCT application will never issue as a formal patent. It will expire after a set term of eighteen months, when the applicant must file formal applications with the patent offices of selected individual countries. A PCT application will be reviewed for patentability. It is also made public, and anyone with a valid cause to object to a patent or patents being granted to the applicant may come forward. If an international patent office receives no objections and finds no cause to deny the application, the applicant may continue to file formal applications in individual countries with greater confidence in the eventual positive outcome.
- Foreign National Phase — in order to receive a patent in a foreign country, a formal application must be filed. The national phase filing will be made public, will be examined on its merits in light of each country's patent laws, and it may issue on a claim-by-claim basis.

Applications Filed

In FY 2010, after careful evaluation for potential patentability, enforceability, and marketability, 55 new inventions were the subject of first-time patent filings. While the proportion of provisional patent applications being converted into follow-on PCT or non-provisional applications remained at about 70%, the University's more conservative approach led to fewer total patent filings and a shift in the proportion of U.S. patent filings compared to foreign filings. Decisions were made at an earlier point in the patenting process not to pursue foreign protection for some technologies, resulting in fewer PCT and foreign equivalents being pursued. This resulted in a drop of the relative proportion of PCT and foreign applications in our total patent portfolio. Greater selectivity is aimed at maximizing revenue and reducing costs.

Patent Applications Filed in FY 2010
(by type)



Intellectual Property Protection cont.

Patents Issued

Developing a strong intellectual property position is an iterative process spanning, on average, more than three years from the filing of the first application to the issuance of a patent. In general, patents in the physical sciences take less time to issue, while patents in the life sciences and engineering fields take longer. In FY 2010, the University of Rochester was granted 19 U.S. patents. Nearly three-quarters of the patents were related to heath care, covering new therapeutics, diagnostics, and devices. Five patents issued in the fields of engineering, optics, and computer science. Twenty foreign patents were granted on 17 separate matters in FY 2010.

Seven U.S. copyrights were registered in FY 2010; the majority of these were licensed. The subject matter ranged from educational and instructional materials for home laboratory tests to unique data collection forms and diagnostic tools.

Patented Materials and Methods May One Day Lead to Longer Life

Materials and Methods for Identifying Genes and/or Agents that Alter Replicative Lifespan

Patent No.: 7,618,774
Application Filed: 1 March 2004
Patent Issued: 17 November 2009
Inventors: David S. Goldfarb, Ph.D. and Michael Breitenbach, Ph.D.

Using genetically engineered strains of brewer's yeast, Professor Goldfarb of the Department of Biology and his colleagues have formulated various methods, materials, and lab kits that may be used to identify genes and small compounds that increase the lifespan of organisms.

This innovation might also be used to screen large chemical libraries quickly to determine their effects on longevity in brewer's yeast. The advantage of this patented technology is that it may allow companies to perform large-scale screening of compounds that affect aging by measuring a simple read-out, such as optical density.

Previous research has shown that key genetic mechanisms that control the aging and lifespan of yeasts are reasonably well conserved in humans. Dr. Goldfarb's technology seeks to identify genes that normally function to control lifespan in yeast, and that might have analogous effects in more complicated plants and animals. Researchers emphasize that anti-aging technologies not only have the potential to keep people alive for longer periods of time, but also may help prevent age-related diseases like cancer, diabetes, and heart disease.

This patent and other technologies in Dr. Goldfarb's portfolio form the platform of a new start-up company currently seeking capital.

U.S. Patents Issued in FY 2010

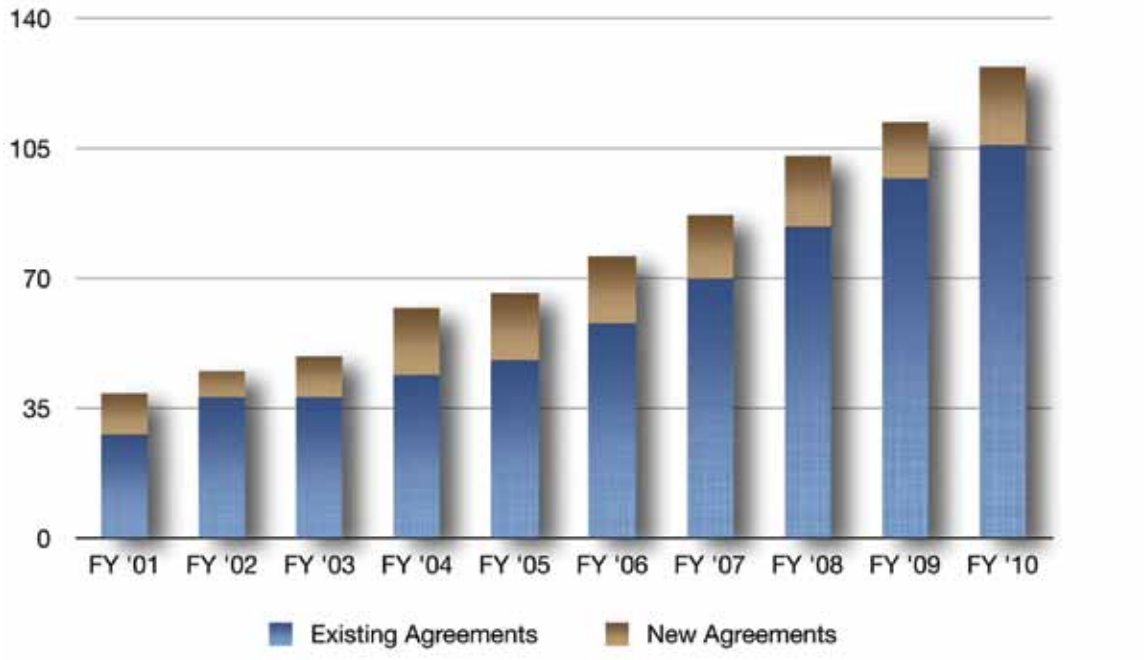
Patent No.	Issue Date	Inventor(s)	Title
Life Sciences			
7,556,925	07/07/2009	Shohei Koide, Stephen Dewhurst, Akiko Koide, Julie Richards, Michelle Miller	αvβ3 Integrin-Binding Polypeptide Monobodies and Their Use
7,563,882	07/21/2009	Maurice Zauderer, Elizabeth Evans	Polynucleotides Encoding Antibodies that Bind to the C35 Polypeptide
7,585,846	09/08/2009	Shey-Shing Sheu, Marion Anders, Lin Xu, Virendra Sharma	Compounds for Delivering Amino Acids or Peptides with Antioxidant Activity into Mitochondria and Use Thereof
7,598,352	10/06/2009	Shohei Koide	Method of Identifying Polypeptide Monobodies which Bind to Target Proteins and Uses Thereof
7,608,586	10/27/2009	Berislav Zlokovic, Rashid Deane	Soluble Low-Density Lipoprotein Receptor Related Protein Binds Directly to Alzheimer's Amyloid-beta Peptide
7,618,774	11/17/2009	David Goldfarb, Michael Breitenbach	Materials and Methods for Identifying Genes and/or Agents that Alter Replicative Lifespan
7,704,272	04/27/2010	Paul Rubery, Edward Schwarz	Method for Introducing an Ultraviolet Light Activated Viral Vector into the Spinal Column
7,709,535	05/04/2010	Kuo-Hsiung Lee, Li Lin, Charles C.Y. Shih, Ching-Yuan Su, Junko Ishida, Hironori Ohtsu, Hui-Kang Wang, Hideji Itokawa, Chawnshang Chang	Curcumin Analogues and Uses Thereof
Physical Sciences			
7,557,664	07/07/2009	Hui Wu	Injection-Locked Frequency Divider
7,576,353	08/18/2009	Quentin Diduck, Martin Margala	Ballistic Deflection Transistor and Logic Circuits Based on Same
7,587,259	09/08/2009	Michel Berg	Items Dispenser
7,595,679	09/29/2009	Mikhail Popovich, Eby Friedman, Radu Secareanu, Olin Hartin	Method and Apparatus to Reduce Noise Fluctuation in On-Chip Power Distribution Networks
7,598,034	10/06/2009	Benjamin Miller, Christopher Strohsahl	Method of Identifying Hairpin DNA Probes by Partial Fold Analysis
7,623,910	11/24/2009	Jean-Philippe Couderc, Martino Vaglio	ECG-based Differentiation of LQT1 and LQT2 Mutation
7,643,605	01/05/2010	Ruola Ning, Dong Yang	Method and Apparatus for Cone Beam CT Dynamic Imaging
7,645,140	01/12/2010	Charles Duffy, Laura Cushman, Mark Mapstone	Method for Assessing Navigational Capacity
7,649,481	01/19/2010	Zeljko Ignjatovic	Blue-Noise-Modulated Sigma-Delta Analog-to-Digital Converter
7,684,708	03/23/2010	Drew Maywar, Govind Agrawal	All-Optical Flip-Flop and Control Methods Thereof
7,697,660	04/13/2010	Ruola Ning	Apparatus and Method for Cone Beam Computed Tomography Breast Imaging

Technology Licensing

Among other technology transfer activities, the University successfully completed 21 licensing agreements in FY 2010. These included 9 exclusive licenses, 5 non-exclusive licenses, 4 exclusive options, 2 biological material and research use licenses, and 1 copyright license. This is an increase over the 15 agreements of the previous year. The modest increase in licensing activity may be credited to several sources. Activity had dropped off after the economic stresses of 2008, but companies appear now to be recovering. Many industries decreased internal research activities in an attempt to control costs. As they begin to recover, companies are seeking new technologies to fuel product pipelines and increase their competitive edge.

Of the 21 agreements, 7 of the licensees were existing pharmaceutical, biotechnology or medical device companies, 7 were start-ups, and the remaining 7 were other existing research or development concerns.

Technology Licensing



Licensing Royalties

Royalty revenue generated from licensing is not the only metric of the success of a technology transfer function, but it is one indication of the public utilization of technologies discovered at the University. Licensees of University technologies are required to advance the development of new products and services. Examples of advancement achieved in FY 2010 include Cervarix®, the human papillomavirus (HPV) vaccine produced by licensee GlaxoSmithKline, being approved by the Food and Drug Administration (FDA) for sale in the United States. Merck & Co., Inc., also a licensee of the HPV vaccine technology, received approval for use of its Gardasil® vaccine in the vaccination of boys and young men. DepoMed Inc., a sublicensee of a non-hormonal treatment for hot flashes, entered new Phase III clinical trials. Several start-ups also filed for approval of new medical devices with the FDA.

Royalty revenue exceeded $40.5 million for FY 2010 — a decline of 12% from $46.0 million in FY 2009. We attribute this decrease primarily to the expiration of some of the patents protecting the royalty stream of one of our successful vaccine technologies licensed to Pfizer, as well as the fact that sales of HPV vaccines have declined as the market reaches saturation. In contrast, the revenue from other licensing efforts continues to grow and diversify as technologies in smaller markets are adopted. This steady increase is expected to continue over the next several years as more licenses begin to generate revenue from sales.

The Association of University Technology Managers (AUTM) recently released the results of their annual survey of technology transfer activities for the previous fiscal year. After spending the past eight years ranked in the top ten national universities in revenue generation, the University slipped slightly in FY 2009 into fourteenth position as a result of the aforementioned decline in royalty revenue. Among the institutions on the following chart, when normalized based on research expenditures to reflect the size of the research endeavor, the productivity of the University's faculty rises to the top.

Licensing Royalty Revenue
Based on the AUTM 2009* Annual Survey of University Technology Transfer Offices
(in Millions)

Ranking	Institution	Revenue
1	Northwestern University	$161.6
2	Columbia University	$154.3
3	New York University	$113.1
4	University of California System	$103.1
5	Wake Forest University	$95.6
6	University of Minnesota	$95.2
7	University of Washington/Washington Research Foundation	$87.3
8	University of Massachusetts	$70.6
9	Massachusetts Institute of Technology	$66.5
10	Stanford University	$65.1
11	University of Wisconsin at Madison	$56.7
12	University of Florida	$53.9
13	California Institute of Technology	$47.7
14	University of Rochester	$46.0
15	University of Iowa Research Foundation	$42.9

* 2009 AUTM Annual Report represents the most recent data available

Creating **Opportunities**

Economic Development

In President Barack Obama's first Economic Policy speech after his election, he reminded the American public that "[w]e should never forget that our workers are still more productive than any on earth. Our universities are still the envy of the world. We are still home to the most brilliant minds, the most creative entrepreneurs and the most advanced technology and innovation that history has ever known." [Economic Policy Speech, 8 January 2009].

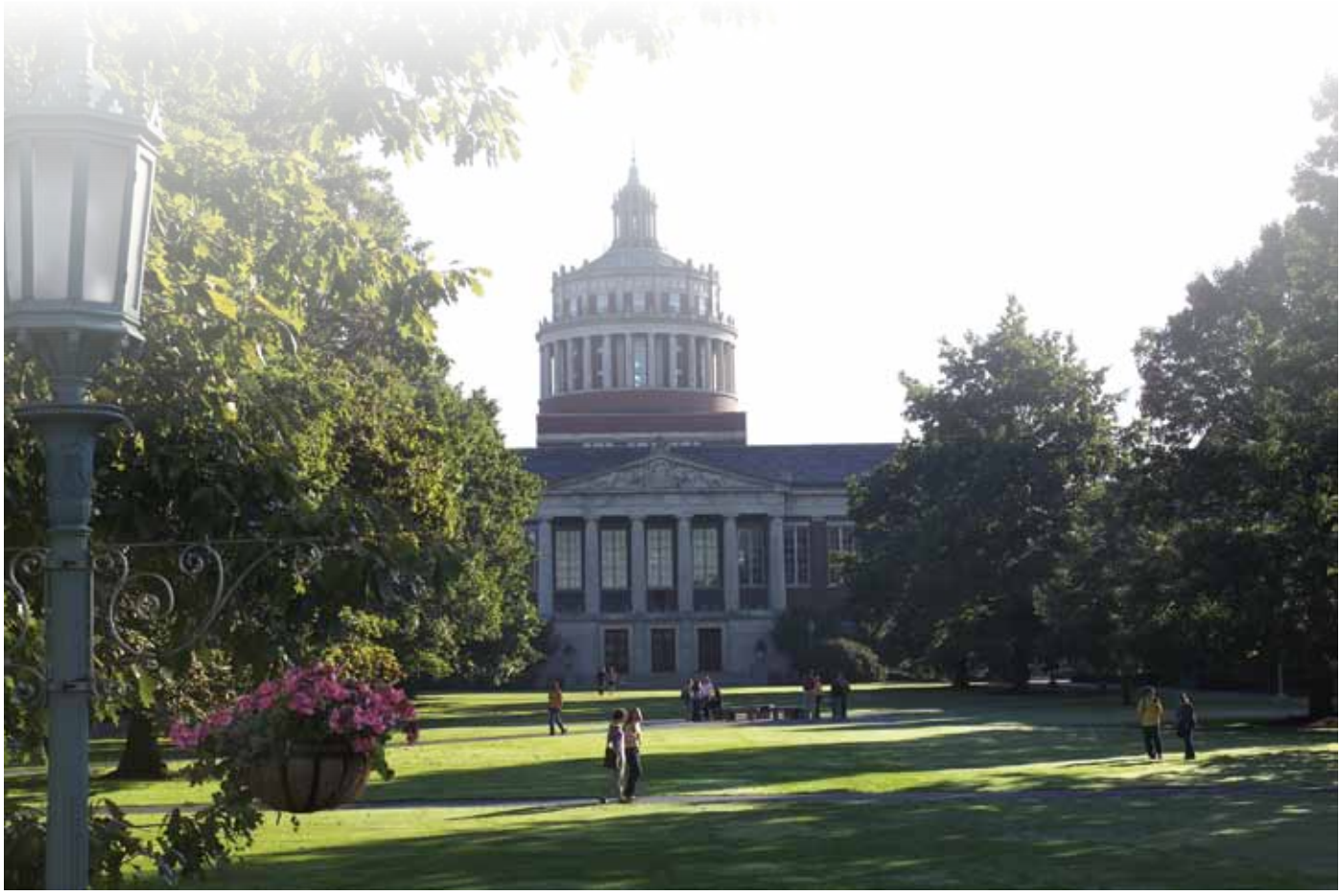
The beginning of this process of innovation is federal funding of our university laboratories. When grants are given for university-based basic research, there is an economic ripple effect and a tremendous return on investment. Research universities create jobs for the research team and the human resource infrastructure that supports them. Universities create innovations that lead to new technologies, new industries, and new companies. Universities also train the next generation of scientists, doctors, teachers, and entrepreneurs. Strong and sustained funding for basic research is essential to the United States' global competitiveness and economic stability.

The University

The economic impact of the University of Rochester is felt immediately and directly in the Rochester community. As the Center for Governmental Research (CGR) reported in April of 2010, "even during the most painful recession since the Great Depression, the University of Rochester has continued to expand its economic impact in the area, creating more jobs and generating more labor income than it did just two years ago." The medical services provided by Strong Memorial Hospital and Highland Hospital, the cultural contributions of the Eastman Theater and the Memorial Art Gallery, and neighborhood development projects such as the Brooks Landing offices are just a few examples of the University of Rochester's contributions to our local economy.

The 2010 CGR report indicated that in calendar year 2009, the University added 167 full-time equivalent (FTE) positions, bringing total employment to 19,610 FTEs. Not only does this maintain the University's distinction as the region's top employer, it places the University of Rochester as the sixth largest private employer in New York State.

In addition, in 2009, the University of Rochester paid $1.25 billion in wages to employees, spent $184 million on local goods and services, and invested $214 million in capital improvements. All of this spending generated approximately $141 million in state and local taxes, and supported a total of 47,000 jobs in the region.



Start-Ups

The University of Rochester plays an important role in facilitating the transfer of University research results and innovative ideas to the commercial marketplace. Sometimes, this occurs by fostering the incubation of a new business that can take a concept and make it a reality. The University of Rochester's technologies were the basis for five new businesses begun in FY 2010, about the same rate of new business generation in past years. These companies almost always stay in the Rochester community, creating jobs and stimulating the growth of supporting industries. This year's start ups are listed, below.

Calorics, LLC

Calorics is a drug discovery platform company based on a high throughput life-span screening technology developed in the laboratory of David S. Goldfarb, Ph.D. This cell-based, phenotypic assay affords a significant advantage over other approaches in drug discovery. It is automated, quantitative, and compatible with industry standard high throughput screening techniques, unlike previous tedious microscopic techniques; this, in turn leads to faster drug discovery and development for age-related diseases. This platform has broad applications in the discovery of new therapeutics for the treatment of cancer, diabetes, arthritis, Alzheimer's and Parkinson's diseases, and heart disease.

enVision, LLC

Based on discoveries arising in the laboratory of Krystel Huxlin, Ph.D., enVision plans to develop and commercialize software-based systems and methods for vision retention and improvement. Dr. Huxlin's research has shown that rigorous visual retraining is highly effective in restoring vision lost due to stroke or other injury to the primary visual cortex. This software and methods retrain the patient's brain to interpret signals from the eyes and enhance the patient's visual perception.

Meliora Devices, LLC

Meliora Devices was formed to develop, manufacture, and market intubation devices, catheters, and other invasive medical devices that become visible from outside of the patient's body when illuminated with specific wavelengths of light. This will potentially eliminate the misplacement of these devices, thereby avoiding medical disasters, such as the placement of nasogastric tubes in airways. Although other products of this nature exist, they employ radiologic elements that can cause issues of their own. Meliora's proposed product line avoids this complication and would be safe and practical for use in the smallest of patients.

PharmAdva, LLC

PharmAdva has been created to develop and commercialize automated medication dispensing devices and software invented by Michel Berg, M.D. These devices and systems will improve patient compliance with medication regimens and will help eliminate patient errors that currently cost the American healthcare budget billions of dollars a year.

TET Solutions, LLC

TET Solutions was created to develop, manufacture, and commercialize an innovative method of transmitting energy through the skin to power implanted medical devices, such as pacemakers. This eliminates the need for wires passing into the skin, which can make the body prone to infection.

Start-Up companies formed in previous fiscal years also continue to thrive in the Rochester Region, supporting existing jobs and adding new ones. One such company is discussed, on the next page:

science take·out®

...just add students™

University Start-Up Answering Unmet Needs in Secondary Education

Science Take-Out
Recognizing a need for accessible and affordable science materials for secondary students and schools, Dina Markowitz, Ph.D., imagined and then realized the Science Take-Out kit — a laboratory in a bag. This elegant solution makes it possible for students to complete science experiments on their own or in small groups without the need for teacher preparation or lab equipment. The kits are especially useful for homeschooled students and students in alternative education programs who do not have access to a science lab.

These kits were so well received that Dr. Markowitz started a company to accept and fulfill all of the requests for materials. Science Take-Out develops, manufactures, and commercializes innovative, engaging, and easy-to-use science activity kits. Each kit is pre-packaged for student use and is completely self-contained. No additional equipment, teacher preparation, or lab space is required. Kits are appropriate, versatile, convenient, and student-friendly.

In 2010, nearly two dozen different varieties of kits were available, including lessons on photosynthesis, kidney dialysis, genetics, and digestive enzymes. Science Take-Out kits are being used in 35 states, Puerto Rico, Canada, England, Australia, and Egypt.

Creating **Success**

The University of Rochester is firmly committed to translating the results of our research into products that benefit society. In the medical world, this is known as the "bench-to-bedside" paradigm. The non-medical world will recognize this as the "lab-to-market" approach. We embrace our role as the bridge from science to success and apply it across the spectrum of our research efforts. However, we realize that the University can only take projects so far. Therefore, we work closely with entrepreneurs, investors, and community resources to achieve the best possible outcomes.

Growth in any research and development pursuit depends on testing new ideas. Although piloting requires a relatively small amount of money, it nevertheless can yield a very large return on the investment. This principle is at the core of the research infrastructure at the University of Rochester. Indeed, the University has developed its own internal proposal opportunities to foster multidisciplinary research, such as the Provost's Multidisciplinary Awards. In the past two years, the University has invested $520,000 in such pilot projects. Most Schools in the University, and especially the School of Medicine and Dentistry, have also leveraged pilot funds and bridge funding into 8-10 fold returns on investment. Two notable programs illustrate this.

The Clinical Translational Science Institute (CTSI) has a formal program that receives and evaluates ideas from all members of the University community as well as our partners in Upstate New York. Over the past few years the CTSI has made available approximately $2 million dollars in programs for i) novel technology development, ii) laboratory support centers, iii) pilot projects, and iv) collaborative studies. Ending with the 2010 fiscal year, the programs have returned approximately $18 million in new grant support. Additionally, a new Incubator Program sponsored by the CTSI has been established to provide larger awards for pilot projects grouped by scientific or clinical themes and conducted by collaborating investigators.

Another program demonstrating the success of research investment is the "Interim Funding Program." This program accepts applications from investigators whose latest grant efforts achieved a meritorious scientific rating but did not cross the "pay line." The message most frequently heard from the funding agency is that strengthening the application with new data and supportive research results would greatly enhance the chance of it being funded upon resubmission. In order to support this bridge funding, a program was established in which senior scientists from across the institution evaluate and select the most promising ideas and invest up to $50,000 per project in interim funding to generate the needed data. This program spent $250,000 in funding in the past fiscal year, returning almost $2 million in successful resubmissions. Historically, the Interim Funding Program has had an 8:1 return on investment.

It is a simple yet powerful concept that small investments in the best and brightest young investigators will eventually reap substantial benefits. The benefits range from an immediate return for directly funding the research to the long lasting discoveries that create the fundamental knowledge base of human biomedical sciences.

Clinical and Translational Science Institute

The University of Rochester CTSI was among the first institutions to receive the NIH Clinical and Translational Science Award, and is now a leader in the national consortium of 55 eminent CTSA universities. Building on the initial $40 million award from the NIH, the Rochester CTSI serves as an exemplar in the expanding field of clinical and translational research. The CTSI supports a range of initiatives to enhance research, education, community engagement, and other programs — all designed to speed development of technologies and interventions to improve health. It also serves as the hub of a network of Upstate New York hospitals and research institutions.

Clinical and Translational Science Building

As part of the University of Rochester's institutional support of the CTSI, a commitment was made to create an academic home for clinical and translational research. The Center for Governmental Research estimates that the project will have an economic impact of $30 million per year and create hundreds of new jobs. The construction of the CTSB is expected to support 820 jobs and pump $76 million into the regional economy during the multi-year construction phase. The CTSB project has already received $50 million in support from New York State.

The construction is scheduled for completion in April, 2011. Once completed, the 200,000-square-foot building will contain state-of-the-art facilities for several major research units, education, and CTSI administration. The CTSB will be LEED certified at the silver or gold level of environmental sustainability — the University's first such building.

High Tech Rochester

High Tech Rochester (HTR), an affiliate of the University of Rochester, is a non-profit economic development organization driving growth in the Rochester/Finger Lakes region through the creation, mentoring, and the incubation of high-tech start-up businesses. HTR receives significant financial support from the New York State Foundation for Science, Technology and Innovation (NYSTAR) — the State's high-technology economic development agency — and the National Institute of Standards and Technology Manufacturing Extension Partnership.

Through its NYSTAR — funded Regional Technology Development Center, HTR provides advanced consulting services to small manufacturing firms.

Rochester BioVenture Center

The Rochester BioVenture Center is the first technology incubator in the region with the wet lab facilities required by biotechnology companies and serves as an important link in the chain of resources necessary to promote and foster the growth of early-stage life science companies on a regional scale. The facility is managed by HTR, which has extended its business support services — business and marketing plan development, entrepreneurs-in-residence, and networking with potential clients and investors — to BioVenture Center clients.

Excell Partners, Inc.

Excell Partners is a unique regional economic development partnership established in cooperation with the University of Rochester and the State of New York to manage a state-supported fund which provides pre-seed and seed-stage financing to high-tech start-up companies in the Upstate New York region. The fund aims to become self-sustaining over time.

Creating **Excellence**

The Office of Research and Project Administration (ORPA)

ORPA provides support to the faculty for obtaining sponsored research funds and managing sponsored program activity. The Office of Research and Project Administration serves and guides the University of Rochester community on all aspects of sponsored programs administration by:

- providing pre- and post-award services;
- giving stewardship of external sponsored funding;
- offering training and education; and
- maintaining information systems pertinent to research administration and funding.

ORPA is staffed by a group of twenty professionals with a wealth of experience. They keep up to date with the ever-changing rules and requirements in grant administration, federal contracting, export control, material transfer agreements, clinical trials, and other research regulations. ORPA staff have an average of thirteen years of research administration experience. They provide the backbone of the University's research administration enterprise.

The Offices of Technology Transfer (OTTs)

The offices provide services that facilitate the movement of technologies from the University to the marketplace. Their goal is always to increase the quality and quantity of technologies transferred to industry. Their objectives are:

- to increase the effective participation of university faculty in the technology transfer process;
- to promote and facilitate University start-up companies;
- to optimize the University of Rochester's intellectual property portfolio; and
- to expand and advance external relationships with industry, academia, and the local community.

The OTTs are staffed by a group of seventeen professionals who bring a diverse set of skills to the University. The OTT staff collectively hold five master's degrees, three Ph.D.s, two J.D.s, four MBAs, and a D.V.M. Just as importantly, the group brings experience from a broad variety of industry and research backgrounds. The staff have worked for companies of all sizes and in industries of all sorts. This diversity is a critical factor in the ability to listen to, and understand the needs of, researcher clients and industry customers.

The OTTs encourage invention disclosures, protect the University's intellectual property, obtain, monitor, and manage patents and copyrights, educate the internal research community about technology commercialization and intellectual property, market and license University intellectual property, and help create new business ventures.

Office of Research Alliances (ORA)

ORA, officially established earlier this year, has a University-wide role in helping to identify and enhance strategic research partnerships between the University's research community and industry, government agencies and laboratories, and other academic institutions. The office is focusing on multi-disciplinary science and technology themes, including biomedical research, translational medicine, imaging and optics, energy research, nanotechnology, health sciences computing, and other areas that represent research priorities for the University.

Creating **Community**

Education and Outreach

The Offices of Technology Transfer, Research and Project Administration, and Research Alliances continuously strive for transparency and accessibility. We are constantly reaching out to the research community, the University community, the Rochester community, and our colleagues across the nation and around the world. Our goal is simple: to increase awareness — awareness of the services and resources our offices provide to the University and awareness of the great work being done by our world-class researchers. Within the University of Rochester community, OTT/ORPA/ORA professionals are involved in a variety of efforts to increase the understanding of the research enterprise and intellectual property at the University. Highlights of the past fiscal year include:

The F.I.R.E. Series

The F.I.R.E. (For Inventors, Researchers, and Entrepreneurs) Series is a regular lecture series designed to educate the community about the many aspects of Technology Transfer — what it means to be an inventor, what every researcher should know in order to protect potential intellectual property rights, and the complexities of starting a business. Through our partnership with the Center for Entrepreneurship, we have been able to bring together diverse members of our community who might otherwise never have met. Presenters came from across New York State and from as far away as Atlanta, GA, to discuss topics as wide-ranging as CleanTech Innovation, Material Transfer Agreements, Capital Structure, Technology Commercialization, and Employment Law. In FY 2010, the F.I.R.E. Series completed its fifty-second installment and its seventh season of interesting, educational content.

Speakers and Special Events

In collaboration with Greater Rochester Enterprise, High Tech Rochester, and the Jewish Federation of Greater Rochester, our offices sponsored a visit by Dan Senor, author of "Start-Up Nation," an analysis of the factors leading to the success of technology entrepreneurship in Israel.

Venture Capitalist-in-Residence

Bela Musits, Founding Managing Director of High Peaks Venture Partners, offers counseling and advice for the Rochester community during regular office hours at the University. Mr. Musits has been very well received by local entrepreneurs and quickly integrated as an invaluable resource for those seeking advice, opinions, or professional funding.

Senior Design Classes

The OTTs work closely with the faculty of the Biomedical Engineering Senior Design Class to introduce students to the importance of considering intellectual property concepts while developing their designs. Students are encouraged to disclose potential inventions to the OTTs. One of these inventions, disclosed in FY 2009, continues on the path of commercialization by currently seeking Small Business Innovation Research funding.

Intern Programs

The Offices of Technology Transfer offer both paid and unpaid internship opportunities for undergraduate and graduate students, as well as for post-doctoral candidates who have an interest in exploring the field of Technology Transfer. Former interns have accepted positions at the U.S. Patent and Trademark Office, in licensing and business development in the for-profit sector, and in the practice of patent law.

Marketing Efforts

An important aspect of our outreach efforts is the marketing of the technologies in our portfolio. The Offices of Technology Transfer have continued to market our technologies through traditional methods, such as printed material, telephone calls, and existing social networks.

In FY 2010, the Offices of Technology Transfer expanded our presence in the virtual world even further. We revamped the technology search functions of our web site (urmc.rochester.edu/technology-transfer) and continued marketing our available technologies on Kauffmann's iBridge Network (http://www.ibridgenetwork.org). Additionally, as part of the National CTSA Consortium, the University of Rochester hosts and participates in the CTSA Intellectual Property (CTSA-IP) Portal (http://www.ctsaip.org). This is an easily searchable web site that lists licensing and technology transfer information from nineteen CTSA institutions and the NIH.

Providing a central site for the CTSA Consortium to market technologies, the site continues to evolve as a broader platform to foster research collaborations. We are strongly committed to exploring new and imaginative methods to get our technologies in front of potential licensees.

Social Media

In FY 2010, UROTT@Twitter made its inaugural tweet. The YouTube channel URTechnologyTransfer posted its first clip to market Mitchell Anthamatten's Shape Memory Polymer technology. This year also saw the reawakening of the University's Commercial Link community of alumni and supporters on LinkedIn.

Professional Affiliations and Networking

Our ORPA, OTT, and ORA professionals are active in their respective professional societies and relevant organizations. The regional and annual meetings of the Association of University Technology Managers, the University Industry Demonstration Partnership, the National Council of University Research Administrators, and the Licensing Executive Society provide ongoing professional development opportunities for our staff. Other national meetings hosted by the Biotechnology Industry Organization, the Personalized Medicine Coalition, the NIH CSTA Consortium, and smaller scale local meetings, such as UNYTECH and MedTech, provide venues to market our emerging technologies and start-up companies.

Creating **Vision**

In keeping with the theme chosen for this annual report, it features images of creation on a truly grand scale. The cover displays a detailed photograph of the Crab Nebula, the rapidly expanding remnant of a gigantic explosion, light from which first reached Earth on July 4, 1054. Witnesses at the time, and there were many, interpreted this event as the creation of a new star, while we now know that what they were observing was the explosive end of a giant star that had exhausted its nuclear fuel. But, in an important way they were right — the death of this star represented the initial step in the creation of many others. As the rapidly expanding shock wave from the explosion sweeps through the galaxy it will encounter many formerly quiescent clouds of gas and excite them into a frenzy of star formation. Three such stellar nurseries, roused into action by more ancient stellar explosions, are the Eagle (p. 7), Orion (back cover), and Carina Nebulae (pp. 2, 5, 12, 27, and 29), the latter, a prominent feature of the southern sky. An analogy with the "creative destruction" characteristic of entrepreneurial capitalism is apt and unmistakable. The University of Rochester is committed to nurturing the startup companies that will employ the technologies invented by our faculty to create the economic engines of the region's future prosperity, following in the tradition of the great corporations that empowered this region in the past.

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Acknowledgments

2010 Annual Report Team:
David Englert, Diane Frank, Harrison Simon, and Shirley ZimmerKidd

Office of Research and Project Administration
University of Rochester
518 Hylan Building
PO Box 270140
Rochester, NY 14627-0140

585.275.4021

River Campus
University of Rochester
Office of Technology Transfer
611 Hylan Building, Box 270142
Rochester, NY 14627-0142

585.275.3998

Medical Center
University of Rochester
Office of Technology Transfer
30 Corporate Woods, Suite 310
Rochester, NY 14623-1454

585.784.8850

UNIVERSITY of ROCHESTER