

**UM-St. Louis Office of Research Administration
FY2007 Update**

AREA 1: SPONSORED RESEARCH

■ Increase External Funding for Research to \$50 million: FY2007 Report

External research funding has increased 35% since FY2003 to \$31 million (Table 1) including 7% increase within the last fiscal year. The number of external funding proposal submissions increasing approximately 8% in that same period (Table 2).

Table 1: Change in External Funding and Number of Awards, FY03-FY06

	FY2003	FY2004	FY2005	FY2006	FY2007 (estimate)	Total Change
Total Awarded	\$22,985,153	\$23,581,386	\$25,555,713	\$28,864,293	\$31,000,000	\$5,879,140
No. of Awards	175	167	176	165	151	N/A ¹
Change in\$	-----	3%	7%	13%	7%	35%

Table 2: External Proposal Submissions, FY03-FY06

	FY2003	FY2004	FY2005	FY2006	FY2007 ²	Total
Awarded	106	134	129	90	105	564
Not Funded	96	87	66	27	30	306
Pending	14	16	37	123	98	289
Total	216	237	232	240	233	1,158

²Excludes Financial Aid

In FY07, the Office of Research and its reporting units were awarded a total of \$1.5 million in grants and contracts. I was the PI on \$ 1.2 million and the remaining awards were granted to the faculty and staff in three centers. In addition, we are slated to receive \$1 million in September from Missouri Technology Corporation toward building our High Performance Computing Center.

AREA 2: CENTER ACTIVITIES

Develop appropriate research infrastructure, facilities, and space. Increase multi-PI/Co-PI grant application. Increase collaborations with the industry.

■ Center for Nanoscience

We restructured the center, changed its name, and appointed a Director, an Associate Director, a Lab Manager, and a Manager for Business and Corporate Relations. Interior design elements were put in place to create common areas for scientists and graduate students to congregate and exchange ideas. The conference room was furnished with the state-of-the-art audio-visual instruments. We have already begun forming business relationships with the corporate sector (e.g., Monsanto, Pfizer, Boeing, and Solae). Professors Liu and Gokel and their colleagues have established six research platforms to pursue collaborative research programs that bring together expertise from chemistry/biochemistry, physics, and molecular/cell biology units. With the increased

¹ It is not possible to capture in a meaningful way the change in the number of awarded proposals since they often are spread over more than one fiscal year.

number of proposals, we expect to see significant expansion in funded research as well as funded contract work for the industry. In addition, we expect the center to be on the forefront of our translational research efforts producing discoveries that will feed into our expanded technology transfer activities.

■ **Center for Neurodynamics**

Under the leadership of Professor Sonya Bahar, CND continues to expand its research activities. Sonya and her graduate students and postdocs are pursuing cutting-edge research in the area of biological physics with the goal of producing solutions to human health problems. The faculty members in this center come from both physics and biology departments. There are also a group of graduate students and postdocs who conduct research under the supervision of regular faculty at the center. The initial funding figures are promising.

AREA 3: COMPLIANCE AND ANIMAL WELFARE

The Office of Research Administration oversees the Animal Welfare Unit and all research protocols related to human and animal research. The Animal Welfare Unit of the ORA works to ensure that all animals are cared for and research is conducted within the framework of the applicable regulations and accrediting agency constraints. The Animal Welfare Unit and the Institutional Animal Care and Use Committee (IACUC) align goals to make certain that research involving animal subjects is conducted ethically and that animal subjects are provided optimum facilities, environment and care.

Similarly, the ORA provides administrative support to ensure that all research involving human subjects is conducted within the framework of all applicable federal regulations. The Institutional Review Board (IRB) reviews and has approval authority for all research protocols involving human subjects. This protects the University and researchers from operating outside professional standards and makes for better science. Currently, there are 273 active human subject research protocols.

The animal facility and programs are inspected annually by the USDA, semiannually by the IACUC and every five years by the Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC). These inspections cover the physical facilities and all aspects of the animal care program including the actions and functioning of the IACUC. The last USDA inspection (April 2007) found no non-compliant items. The most recent IACUC inspection (October 2007) found no significant deficiencies. The animal care and use program at the University moved from conditional to full accreditation with AAALAC after improvements made to the Occupational Health and Safety Program.

In the area of Animal Subjects Research, the mission of the ORA is to assure that all animals are cared for and research is conducted within the framework of the applicable regulations and accrediting agency constraints. Similarly, the ORA provides administrative oversight to ensure that all Human Subject Research is conducted within the framework of all applicable federal regulations. The desired outcome is 100% compliance, and this office works toward that end.

Finally, we have taken steps to ensure up to date and full compliance with all federal agency and university policies and procedures regarding research integrity. We have drafted a version of the policy that updates university policy based on newly established guidelines from the Office of Research Integrity (ORI) at the NIH. This draft is currently under review at the System office.

AREA 4: TECHNOLOGY TRANSFER

Add two or more licensing contracts with a targeted annual income of \$500,000 by 2008.

■ FY2007 Report

Metrics for technology transfer traditionally include number of invention disclosures, patent applications/issued patents, licenses and amount of royalty revenues received by the University:

UM Technology Transfer Annual Report, FY 2007

Active Cases:	32*	
Invention Disclosures Filed:	5**	
Patent Applications Filed:	10	
Provisional:	2	
Non-provisional:	2	
Foreign:	2	
PCT:	3***	
Continuation:	1	
US Patents Issued:	1	
New Applications in Process:	3	
Licenses/Options Signed:	9 (3/6)	
Licensing Income Received:	\$91,772.14****	} \$95,522.14 (\$103,022.14)*****
Option Income Received:	\$3,750*****	

*Includes three "preliminary"

**Includes one filed by UMSL inventor, along with co-inventors at collaborating institution, to the University of Illinois-Urbana Champagne in FY05 (IIA signed with UIUC in FY07 and given UM Disclosure Number from FY07)

***One PCT was filed with the U.S. as a designated state, rather than filing separately in the U.S. immediately.

****2Q06 through 1Q07 payments received

*****Patent cost reimbursement for 05UMS031 (Three Dot Test) from Richmond Products

*****The additional \$7,500 will be booked for FY07 per license agreement signed in June 2007, but the payment has not yet been received.

■ FY2008 Projections

Based on the following, our most conservative estimate, which I use for our internal budgeting purposes, of FY2008 royalties is **\$110,000** (total received for FY07 to date is \$95,522.14, though we should receive another \$7,500 that should be booked in FY07, making that total \$103,022.14):

- A 10.65% increase, which is what FY2007, was over FY06, in Alltech royalties. Total received in FY07 was \$91,772.14.
- A \$7,500 license fee for FY2008 from Alltech for 07UMS018/07UMS044 distributed separately from the ELSD. We should also receive \$7,500 for FY2007, but won't until the license amendment is executed. If they incorporate these technologies into the instrument itself, we will receive approximately 25% more in total income to the university from Alltech on all sales after they are incorporated. However, they have not done this and do not have a schedule set to do so.
- No additional option fees from Richmond products. Total received in FY2007 was \$3,750.
- There is a slight possibility that we will begin receiving royalties for the Three Dot Test in FY2008 from Richmond Products, but it is way too early to make that determination. I have not included any estimates for this.
- There is also a slight possibility that we will begin receiving royalties for improvements on Futrex's blood tester in FY2008, but, once again, it is way too

early to know whether that will happen that quickly, not to mention what the amounts would be.

There are some exciting possibilities in the works for generating income during FY2008. Professor Zhi Xu is currently working under a collaboration agreement with Futrex, Inc., (<http://www.futrex.com/>), a small company in Gaithersburg, MD that specializes in non-invasive health & wellness screening. Futrex has a provisional patent on a non-invasive blood tester (glucose, cholesterol, etc.), but it is not sensitive enough to work well. They responded to our marketing Zhi's older ultrasensitive spectrophotometer technology very quickly. Zhi has since disclosed three technologies that are specific to the Futrex device and should be able to (in about three stages – for use in hospitals, expanded beyond hospitals to other care providers, home use by patients) make the Futrex device accurately measure blood glucose for screening diabetes and managing the disease in those already diagnosed. They also want to create the same device to measure cholesterol and hemoglobin. The blood glucose testing market is estimated at a \$1 billion market.

The research in support of this technology is moving ahead and early indications are very positive. Results indicate that this technology can increase light collection power by a factor of 5 using a detector with 3 mm x 3 mm = 9 mm² active area, or by a factor of 9 using a detector with 4 mm x 4 mm = 16 mm² active area, or by a factor of 15 using a detector with 5 mm x 5 mm = 25 mm² active area, over current filter holder configuration.

Futrex will be a prime candidate for acquisition with this device close to or on the market. This makes equity an attractive alternative to license fees. Of course, license fees are separate from royalties on sales. We are closely monitoring our work with Futrex.

AREA 5: ENTREPRENEURIAL INITIATIVES & ECONOMIC DEVELOPMENT

Obtain funding to develop an IT incubator resulting in the expansion of highly paid workforce in the region.

■ IT ENTERPRISES: Technology Innovations + High Performance Computing at UMSL

Our recent acquisition of a property near campus has added tremendous momentum to the project. The building is in good shape and our main recalibration work will entail the construction of the HPC center, a limited upgrade of the common areas and build out of the suites to tenants' specifications. We have been working with various design and architectural firms toward building the HPC center with January 1, 2008 as the target completion date. We have designed a logo for the enterprise and have engaged in limited marketing and advertising through print media as well as local IT related coalitions.

In the meantime, we have been giving tours of the facilities to potential tenants, regional political and civic leaders and campus faculty for the purpose of garnering support at various levels. I have been in contact with Dept of Mathematics and Computer Science faculty and the Dean in an effort to get them involved in the R&D aspect of the HPC. We, along with Innovate St. Louis, are slated to receive \$1 million from Missouri Technology Corporation toward the construction of the HPC center.

This project has evolved into a compelling business and research model. At its current stage, the IT Enterprises, anchored by an HPC center, is intended to accomplish the following in economic development, technology transfer and expanded research and educational opportunities. The HPC is designed to be a cross-discipline research center of excellence serving all academic and industry researchers requiring high-performance computing; a springboard for major external funding supporting research, technology transfer and economic development; and an economic development engine encouraging the

development of new start-up companies in a high-growth industry, which in turn provide high paying job opportunities for UM-St. Louis graduates and others in the field.

- House 12 start-up companies in the high growth field of information technology, providing necessary facility resources and access to UM-St. Louis faculty and graduate students in all disciplines (e.g., biology, chemistry, physics, computer sciences, business, economics, and beyond) to advance their work.
- Provide high-performance computing resources to tenant companies, academic researchers and industry through a High Performance Computing (HPC) Center staffed by Ph.D. computer scientists and mathematicians, graduate students and UM-St. Louis ITS leadership.
 - Staff will be available to tenants for consulting on technology-related research problems, helping solve fundamental R&D issues. This is a critical service to the IT Incubator concept, which is designed to go beyond the usual incubator business plan (shared conference and break room space, secretarial staff, etc.).
 - The HPC Center, developed as a research center of excellence, will serve as a springboard for major grants across many disciplines.
 - The HPC Center will support collaborative work with technology-based companies engaged in translational research in the St. Louis area.
 - The Center will provide an interdisciplinary research environment, focusing on attracting IT entrepreneurs.
- Encourage the technology transfer process of turning university research discoveries into start-up companies
- Facilitate economic development by providing space and services for IT start-up companies spun out of industry
- Facilitate collaborative, cross-discipline research in and related to information technology
 - The incubator will enhance the university's abilities to garner large federal grants in support of research, technology transfer and economic development.
 - This project will leverage campus strengths in intellectual and infrastructure resources to establish a state-of-the-art information technology incubator for start-up companies.

SITE SPECIFICATIONS

- 4633 World Parkway Circle, 2.1 miles from campus, Interstate 70 frontage
- 56,300 gross square feet
- 42,200 rentable space
- 3,000 sf for the HPC Center (data center and office)
- 256 parking spaces (6 spaces/1,000 sf)
- Launch date: Fall 2007

■ Center for Emerging Technologies

The Center has continued to flourish in its efforts to nurture viable startup companies in life sciences in general and in medical field in particular. In my role as the institutional fiduciary, I serve on the board and its executive committee in charge of overseeing new initiatives and compensation matters, among other things. I am also the contractor with the state for their support of the center. Our office provides significant back office service to the CET including processing their payroll, helping them with applications for grants, among others. The center continues to meet the

annual goals we set for them and often exceed our expectations in its performance. CET is almost full in its current space and is moving ahead with building a third facility adjacent to the current operations.

■ **CORTEX**

CORTEX continues with its expansion in mid-town St. Louis. I attend the board meetings and serve on its smaller but more active real estate committee. We have purchased about 15 new properties and move forward to develop them. In addition to the first building on 4320 Forest Park Avenue, CORTEX is building a second facility nearby for Solae. This facility will be similar in size and capacity to the first building.