

Contact: Ann McCarthy

**2012 ECONOMIC DEVELOPMENT AND TECHNOLOGY TRANSFER REPORT**

**Actions Requested:** Consider recommending the following to the Board:

- 1) Receive the report.
- 2) Direct that this report and copies of complete institutional reports be forwarded to the Secretary of Senate, the Chief Clerk of the House of Representatives, the Legislative Services Agency, and the Office of the Governor and the Director of the Iowa Department of Economic Development pursuant to Iowa Code Chapters 262B.3, HF 809 (2005 Session) and HF 2459 (2006 Session).

**Executive Summary:**

The Regents universities promote the economy of Iowa most notably by providing higher education to the people of the state. The universities also make a significant contribution to the Iowa economy by conducting academic research that results in intellectual property and applications available to the marketplace and by providing expertise and assistance directly to Iowa's people, industry and communities. The University of Iowa (SUI), Iowa State University (ISU) and the University of Northern Iowa (UNI) thus support the economy of Iowa primarily through their core missions, and their economic contributions to the state are fundamentally linked to their overall academic excellence.

This core mission was supported by \$841.3 million in funding sponsored by federal and corporate sources in FY 2012. This funding provided the basis on which the Regents universities conducted a wide variety of economic development programs that produced the following results in the past year:

- 213 new intellectual property disclosures
- 179 patent applications
- 77 new patents awarded
- 74 new license and option agreements on intellectual property
- 292 total license and option agreements yielding income
- \$17.2 million in royalty and fee income
- \$105.8 million in revenue generated by Iowa companies as a direct result of university technologies
- 2,933 Iowans employed at 124 companies at the SUI, ISU and UNI research parks and incubators

State funding of ongoing economic development programs at the universities has declined by 53.7% comparing FY 2002 to FY 2012. Grow Iowa Values Fund appropriations to the universities in FY 2012 were reduced to \$1.5 million are 70% lower than the original FY 2005 authorization.

**Selected FY 2012 Economic Development and Technology Transfer Highlights**

**University of Iowa:**

- The University of Iowa Research Foundation (UIRF) executed 3 option and license agreements to startups based on UI intellectual property in FY 2012. In the past 5 years, UIRF has executed a total of 22 licenses and options with 17 startups based on UI technologies. Of those 17 companies, 15 are still in operation. In FY 2012, the funding and financing of UI startups was over \$40M. In 2012, UIRF focused on increasing the disclosure rate and pipeline. Also in 2012, UIRF disclosures reached an all-time high, with a 45% increase over the 2008-2011 levels.

- The Iowa Medical Innovation Group (IMIG) is a unique student-led program that focuses on identification of solutions to clinical problems through collaborations in the Colleges of Medicine, Engineering, Business and Law. Students work on creating medical devices and/or Health IT solutions with the assistance of staff from JPEC and the UIRF. To date, over 40 interesting technologies have been identified and reviewed and 2 are currently moving forward in advanced phases of development in anticipation of forming startup companies. This program, now in only its 3rd year, has attracted more than 74 students who meet weekly with faculty, staff and external business mentors.
- The UI Research Park (UIRP) companies and affiliated labs report 1,812 employees living in 169 communities in 50 Iowa counties, a regional labor shed covering almost one-half of the state. Average individual salary of \$62,000 which translates into an annual payroll of nearly \$112 million, resulting in an estimated \$7.0 million in state income taxes in 2012.
- BioVentures Center at the Research Park currently has 11 resident companies, who employ 75 people, and have leased 11 of the 20 laboratories in this facility to startup companies. The eleven companies occupy 11 laboratories and 23 offices in BVC, accounting for 74% of leasable space.

**Iowa State University:**

- The ISU Research Park continues to be successful in initiating as well as nurturing numerous new businesses. Eight new companies and affiliates joined the Park in FY 2012, bringing the historical total to 218 companies, research centers, and affiliates. Currently, there are 76 companies, research centers, and affiliates located in the Park, employing 1,200 people.
- Companies receiving technical assistance from ISU's Institute for Physical Research and Technology reported that the estimated impact of projects conducted over the last 3 years is \$9.9 million per year. Companies also estimated over 18 jobs were created or retained each year from 2005-2011.
- In FY 2012, 1,372 businesses from 97 counties in the state received assistance on projects or attended educational workshops from ISU Extension and Outreach's Center for Industrial Research and Service staff or partners. Companies responding to surveys reported \$46 million in new investments, \$16 million in costs saved or avoided, and \$352 million in sales gained or retained. Company executives stated that 5,667 jobs were added or retained as a result of the assistance they received from CIRAS and partners.
- The Small Business Development Center (SBDC) provided business assistance to companies, involving 2,695 clients and 11,259 counseling hours. They also conducted 232 training workshops in which 3,727 individuals participated.

**University of Northern Iowa:**

- UNI provided service in all 99 counties to nearly 885 unique business, community and local government clients; another 10,900 individuals were engaged in the MyEntre.Net entrepreneurial support system.
- UNI involved 202 faculty members and more than 2,400 students in the delivery of these services.

- UNI's three incubator/accelerators programs and MyEntre.Net helped start or expand 266 business ventures creating 481 FTE jobs.
- 22 student businesses were tenants in the John Pappajohn Entrepreneurial Center's Student Business Incubator and 41 additional student entrepreneurs were assisted by the affiliate program.

### **Engagement**

Many organizational units at the Regents universities are engaged with Iowa's people, industry and communities for the promotion of the state's economic development. Key economic development efforts include: research, intellectual property development and technology transfer, business incubation and acceleration, direct technical assistance to local and regional economic development groups, technical assistance and counseling to businesses, market research for Iowa companies and attracting and retaining businesses in the state. These activities are also highly coordinated with the economic development efforts of the Governor, the Iowa General Assembly and state agencies including the Iowa Department of Economic Development.

### **State Funding for Economic Development and Technology Transfer**

State funding in FY2012 was provided in two primary economic development program areas:

#### **1. Ongoing Economic Development and Technology Transfer Programs: FY 2012 \$3.21 million**

In FY 2012, the state provided \$3.21 million for several ongoing programs which include the research parks at SUI and ISU, the Institute for Physical Research and Technology, the Small Business Development Centers, the Institute for Decision Making, the Metal Casting Center and the Center for Advanced Drug Development. For FY 2013, state support for these programs remained level funded at \$3.21 million. Total state support for these programs now stands at \$3.21 million for FY 2013. This is a decline of 53.7% below the \$7.63 million provided in FY 2002.

#### **2. Grow Iowa Values Fund (GIVF): FY 2012 \$1.5 million**

In FY 2005, the General Assembly authorized a ten-year annual appropriation of \$5 million under the GIVF to the Regents universities for purposes of supporting the human and physical infrastructure needed to effectively develop and transfer technology discoveries and to fund development projects involving existing companies and start ups.

Many of the GIVF-funded projects involve multi-year research and development efforts with private companies. A number of projects funded in earlier years are now being completed and are demonstrating a significant impact on job and wealth creation.

For FY 2012 the General Assembly approved \$1.5 million in GIVF funding, of which \$1.44 million was allocated for the three universities and \$60,000 was allocated for projects submitted by Iowa's independent colleges and universities. The FY 2013 GIVF appropriation was increased to \$3 million and renamed the Regents' Innovation Fund. The Board of Regents approved the universities' FY 2013 Regents Innovations Fund proposals at the August 2012 Board meeting. The universities and companies involved in GIVF projects have identified matching funds for the projects.

Examples of projects included:

- IDx was provided GIVF proof of concept funding in 2007 by the University of Iowa. IDx is a medical instrument and software company that provides computerized automated

detection of diabetic retinopathy, risks of cardiovascular disease, and infections. IDx has seven patented algorithms (3 granted and 4 pending) that read digital photos of the retina within seconds. These algorithms have been found to be as good as or better than retinal experts. The results have been published widely in peer-reviewed top Ophthalmology journals. In summary, IDx has licensed patented computer reading algorithms that can detect diabetic retinopathy, hypertensive retinopathy and arteriole-venous ratios. These algorithms have been proven in clinical trials of thousands of patients and the results have been published. IDx has almost completed development on a low cost camera which is easy to use to get high quality retinal images. IDx will market the retinal imaging technology to primary care physicians, "minute clinics" and specialists worldwide. The analysis of the retinal images will provide health care providers with important information concerning the best treatment of their patients at a low cost.

- Iowa State professor Hui Hu is collaborating with Goodrich Engine Components Division (GECD) to develop advanced flow diagnostics to quantify the characteristics of spray flows and to elucidate underlying physics of the important processes, such as the breakup of liquid jets and sheets, atomization and evaporation of fuel droplets, and air/fuel mixing in order to assist GECD in developing next generation fuel nozzles for maximized energy efficiency while minimizing pollutant emissions, and maintaining the operability requirements. An advanced multi-functional spray flow diagnostic system, which is composed of high-energy laser system, high-speed imaging system and associated the optics and optic-mechanic devices, has already been developed as a result of this GIVF project. A comprehensive experimental study has been conducted to characterize a fuel injector/atomizer nozzle provided by GECD to assist GECD to develop next generation fuel nozzles/injectors.
- UNI in partnership with the Iowa Partnerships for Economic Progress (IPEP), Regents universities, community colleges, utilities, Professional Developers of Iowa (PDI) and the Iowa Department of Education, IDM strengthened the Business Expansion & Strategic Trends (BEST) of Iowa program. BEST of Iowa supports local economic development organizations in implementing or increasing the effectiveness of their business retention and expansion efforts. BEST initiatives include enhancing statewide coordination of existing industry programs and implementation of the Synchronist Business Information System® at the regional level. Specifically, this project assisted with improving data collection and input at state and regional levels as well as developing a coordinated response to technology transfer issues on behalf of the Regents universities.

#### Private College Grant Program

Of the \$1.5 million in FY 2012 GIVF funding, \$60,000 was awarded by the Board of Regents to two independent universities and colleges for economic development and technology transfer projects.

- Grand View University received \$50,000 to seek the synthesis of novel oligosaccharide-4 phosphate derivatives which will provide a better understanding of substrate inhibition for glycogen degradation in phosphorylases. It is anticipated that the outcomes of this research will make a substantive contribution to the design of active site inhibitors of phosphorylase *b*. This will lead to a better understanding of how to design inhibitors to control glycogen degradation and new treatments for diabetes.
- Central College received \$10,000 for a Prairies for Agriculture Project. The goal of the project is to reconstruct an endangered ecosystem in a manner that provides economic opportunities for

farmers, ranchers, and other members of the public. The research team will examine and demonstrate the benefits of restoring prairie ecosystems within the agricultural landscape by planting over 375 plots with different combinations of prairie plants. The broad goal of the research is to determine which specific mixes of plants provide the most biomass for fuel/forage production while simultaneously producing the most agricultural and environmental benefits. The research site will also be used for demonstration purposes to educate agricultural producers, business people, government officials and the public on the potential of prairies.

**Full Reports Available**

The full annual reports from the universities are available at the Board of Regents website and will be provided to the General Assembly, the Governor's Office, the Legislative Services Agency and the Iowa Department of Economic Development.

Indicators	FY 2010				FY 2011				FY 2012			
	ISU	SUI	UNI	Regents Totals	ISU	SUI	UNI	Regents Totals	ISU	SUI	UNI	Regents Total
1. Number of disclosures of intellectual property	111	70	8	189	106	68	8	182	102	102	9	213
2. Number of patent applications filed	26	107	8	141	47	90	5	169	56	116	7	179
3. Number of patents awarded	29	97	3	129	25	43	3	75	16	59	2	77
4. Number of license and option agreements executed on institutional intellectual property <b>in total</b>	97	21	3	121	49	24	2	75	50	21	3	74
5. Number of license and option agreements executed on institutional intellectual property <b>in Iowa</b>	32	6	2	41	19	5	1	25	19	7	3	29
6. Number of license and option agreements yielding income	260	129	11	400	217	94	11	322	188	94	10	292
7. Revenue to Iowa companies as a result of licensed technology <sup>1</sup>	\$58 million	\$2.03 million	\$2.7 million	\$62.7 million	\$86 million	\$1.99 million	\$2.4 million	\$90.4 million	\$101 million	\$2.2 million	\$2.6 million	\$105.8 million
8. Number of startup companies formed, <b>in total</b> (through licensing activities)		3		3*	2	3		5		2		2
9. Number of startup companies formed, <b>in Iowa</b> (through licensing activities)		3		3*	2	3		5		2		2
10. Number of start up companies formed through UNI MyEntreNet/Incubator			72	72*			61	61			73	73
11. Number of companies in research park/incubators	59	46	30	135	57	41	23	121	59	41	24	124

\*corrected numbers

Indicators	FY 2010				FY 2011				FY 2012			
	ISU	SUI	UNI	Regents Totals	ISU	SUI	UNI	Regents Totals	ISU	SUI	UNI	Regents Total
12. Number of new companies in research parks and incubators	11	3	11	25	10	2	15	27	8	2	16	26
13. Number of employees in companies in research parks and incubators	758	2010	61	2829	846	1618	45	2509	838	1812	49	2699
14. Royalties and license fee income	\$9.4 million	\$27 million	\$118,849	\$36.52 million	\$11.3 million	\$6.28 million	\$99,074	\$18.57 million	\$9.9 million	\$7.05 million	\$209,823	\$17.16 million
15. Total sponsored funding (\$ million)	\$388.2 million	\$466.5 million	\$42 million	\$896.7 million	\$342.3 million	\$456.5 million	\$43 million	\$841.8 million	\$360.2 million	\$438.1 million	\$43 million	\$841.3 million
16. Corporate-sponsored funding for research and economic development <sup>2</sup> in total (\$ million)	\$21.1 million	\$30.8 million	\$1.55 million	\$53.45 million	\$24.9 million	\$44.7 million	\$2.07 million	\$71.7 million	\$23.4 million	\$52.9 million	\$1.27 million	\$77.57 million
17. Corporate-sponsored funding for research and economic development <sup>2</sup> in Iowa (\$ million)	\$11 million	\$1.8 million	\$1.55 million	\$14.35 million	\$12 million	\$1.5 million	\$2.07 million	\$15.6 million	\$11 million	\$1.1 million	\$1.27 million	\$13.27 million

<sup>1</sup>Aggregate sales reported by Iowa companies of products and services based on licensed inventions.

<sup>2</sup>Excludes corporate philanthropy