

Contact: Andy Baumert

2008 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 primarily by providing higher education to the people of the state. They also strengthen the Iowa economy by conducting academic research-most notably when it results in intellectual property and applications in 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 \$696 million in funding sponsored by federal and corporate sources in FY 2008. 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:

- 174 new intellectual property disclosures
- 170 patent applications
- 97 new patents
- 88 new license and option agreements on intellectual property
- 405 total license and option agreements yielding income
- \$33.1 million in royalty and fee income
- \$89 million in revenue generated by Iowa companies as a direct result of university technologies
- 2918 Iowans employed at 139 companies at the SUI, ISU and UNI research parks and incubators
- 13,040 businesses and individuals located in all 99 Iowa counties received technical services and training through the economic development and technology transfer programs at the three universities

Selected 2008 Economic Development and Technology Transfer Highlights

- Companies that have been served through ISU's Institute for Physical Research and Technology Company Assistance Program report a positive annual impact of \$14 million in sales, investments and reduced operating cost.
- An average of \$1.2 million in new commercial and equity investment was generated in each of the 12 UNI MyEntreNet regions in 2008.
- The 1,962 employees of SUI Research Park companies live in 91 communities in 29 counties with an annual payroll of more than \$100 million, generating \$5.7 million in state income taxes.
- ISU Extension's Center for Industrial Research and Service provided service to companies in 93 counties in 2008. The 667 companies served reported \$62 million in new investments, \$12 million in costs saved and \$122 million in sales gained or retained as a result of CIRAS assistance.
- UNI's three incubator programs and MyEntreNet helped start or expand 79 ventures, creating 321 jobs.

-The Small Business Development Center provided 12,295 counseling hours to 4,357 individuals in 99 counties.

-The SUI College of Engineering took the lead in establishing the Iowa Alliance for Wind Innovation and Novel Development to assist the Iowa Department of Economic Development in its efforts to recruit wind energy companies to the state.

-ISU is ranked 2nd in the United States in the number of licenses and options executed per \$10 million of research expenditures.

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. More than 13,000 businesses and individuals in Iowa received these services in 2008. 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.

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.

State Funding for Economic Development and Technology Transfer

State funding in FY2008 was provided in three primary economic development program areas:

1. Ongoing Economic Development and Technology Transfer Programs: \$3.63 million

In FY 2008, the state provided \$3.63 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. State appropriations for these programs are still well below levels provided several years ago. In FY 2001, state appropriations for these programs were \$7.63 million. These programs were responsible for providing technical services and training to more than 13,000 individual businesses and communities in every county in Iowa in 2008.

2. Grow Iowa Values Fund (GIVF): \$5,000,000

In FY 2005, the General Assembly authorized an 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. In August 2008, the Board of Regents approved the FY 2008 proposals by the universities to use \$4.8 million of the GIVF appropriation to strengthen the technology transfer capabilities at each campus and to fund development projects involving several existing companies and start ups. However, since that time, the Governor has announced a 20% cut in the current year's GIVF appropriation in order to provide funds for flood recovery programs. The Board office will work with the universities to determine how the funding reduction will be implemented for current year projects. The universities and companies involved in the projects have identified \$5.13 million in matching funds for the projects. Examples of projects included:

-\$129,968 to ISU to develop in conjunction with a Muscatine company technology converting carbohydrate-based feed stocks produced in Iowa into hexanediol, an industrial chemical with a current market of over \$300 million

-\$85,000 to ISU to develop and commercialize bio-based resins for manufacture of Pella windows

- \$184,407 to ISU for commercialization of a unique atomization process for producing titanium alloy powder; the researchers will form a startup company called Iowa Powder Atomization Technologies which they state will be able to produce the powders for 50-60% below current market prices
- Fit out of new incubator space needed at SUI to create and expand new businesses directly related to commercializing intellectual property
- Gap funding for early stage technologies or startups based on SUI intellectual property
- \$320,000 at UNI to expand business incubation space, recruit additional spinoff and student businesses and expand intellectual property disclosures and licensing agreements
- \$200,000 to further expand UNI's MyEntreNet program
- \$200,000 to UNI's National Ag-Based Lubricants Center to expand biodiesel testing, participate in national standard setting activities, research new formulations and characteristics of bio-based lubricants and fuels

Private College Grant Program

Of the \$5 million in GIVF funding, \$200,000 was awarded by the Board of Regents at the December 2007 meeting to three independent universities and colleges for economic development and technology transfer projects. The three projects include \$218,940 in matching funds.

Drake University received \$71,207 for the second year of a project to enhance technology and product commercialization through the College of Pharmacy DELTA RX Institute. The project is designed to develop entrepreneurial skills among students, practitioners and faculty, including how to develop new formulas and how to find markets for commercialization.

Luther College received \$32,237 for a project to document DNA content variation in Iowa prairie plants to provide basic data for researchers trying to develop the most productive and efficient plantings to produce biomass for alternative fuel production. More than 20 Iowa companies currently supply native plants and seeds in the state.

Clarke College received \$97,164 for a project to develop a web-based HIV analysis laboratory and a software product to be licensed. The library and software will enable researchers to more efficiently mine HIV databases and develop statistical analyses necessary for better treatment options. The project includes as collaborators the universities of Iowa, Wisconsin and Stanford.

The Board will receive new proposals from private colleges at the December meeting. The 20% cut in GIVF funding for flood recovery-related programs will mean \$160,000 is available for these new projects.

3. Battelle Economic Development Appropriations:

The Iowa General Assembly authorized \$20 million in FY 2007 funding to the Regents universities for economic development activities in three key platform areas of biosciences, advanced manufacturing and information technology. Of the total, \$5 million was designated to be used for endowed chairs and faculty salaries, \$6.8 million for related physical infrastructure and \$8.2 million for general support of projects in the key platform areas. The Board of Regents approved the universities' proposals in September of 2006. The universities provide regular progress reports on the Battelle-funded projects at Regents board meetings. No new Battelle funding has been provided by the Iowa legislature since the 2006 Session.

Nearly all of the projects include matching funding, either from businesses, the universities or federal agencies, even though matching funding for platform projects is not required by the legislation. The platform funding provided funding for 23 projects with research participation or investment by more than 40 companies and entrepreneurs to create new products and technology services. The aggregate amount of industry/university/federal matching funding for all three universities was \$49.5 million, resulting in a better than 5 to 1 matching ratio with the \$8.2 million in Battelle platform funding provided. The \$6.8 million of infrastructure proposals are highly integrated to supply key infrastructure support for the research and

commercialization efforts proposed in the platform projects. The \$5 million in endowment and faculty salary funding will attract or retain several top quality faculty members whose research in the targeted platform areas has the highest potential for commercialization.

Many of the projects funded are multi-year initiatives at various stages of development or completion. Highlights of progress made during 2008 include:

- a new 35,000 sf BioVentures Center at SUI and a 45,000 sf speculative wing scheduled for completion in November 2008
- endowed SUI professor Greg Hageman retained through a Battelle-funded initiative recently obtained a \$15 million NIH grant and is affiliated with a spin-off company
- Spin-out company, Exemplar Genetics, Inc., established through SUI in conjunction with TransOva Genetics to produce pig cell lines with a cystic fibrosis genetic profile
- Battelle endowed chair funds matched with a \$1 million gift to the ISU Foundation to hire, as a faculty member, Dr. Peter Nara, vaccine development researcher and entrepreneur
- a new gas clean-up system has been designed and installed to permit additional research in gasification of biomass for fuel production at ISU
- five companies have located at ISU's CyberInnovation Institute Technical Collaboration Facility, including: Deere and Company; Clear Sighted, a developer of intelligent tutoring systems; Kung Pow Studios, a custom animation company; Mack Enterprises, a video and sound editing company; Visual Medical Solutions, a company developing technology to allow visualization and interaction with 3-D images of patients' complex internal systems
- an agreement with an oil well drilling company to field test in oil drilling equipment an ag-based biolubricant developed at UNI
- public release of an abrasive blasting simulator developed at UNI and an agreement with the National Association of Corrosion Engineers to begin development of a co-branded training course

Weather Disaster Services

In addition to ongoing economic development and technology transfer efforts, the Regents universities assisted many businesses damaged by the tornados and floods of 2008. UNI estimated that more than 1,200 small firms in rural communities in northeast Iowa were affected. UNI's Business and Community Services set up a tent in Parkersburg to provide a central point for businesses seeking consulting, planning and recovery assistance. UNI estimated that 700 small businesses in northeast Iowa received these services.

ISU's Center for Industrial Research and Service surveyed manufacturers in all zip codes reported to have severe weather damage. Of the 841 companies that responded, half had been affected by floods and tornados. Of those affected, one-third had direct damage to buildings and machinery. CIRAS estimated damages and lost income would exceed \$100 million.

Table 1: Intellectual Property, Technology Transfer, and External Support FY2006-2008

Indicators	FY 2006				FY 2007				FY 2008			
	ISU	SUI	UNI	Regents Totals	ISU	SUI	UNI	Regents Totals	ISU	SUI	UNI	Regents Totals
1. Number of disclosures of intellectual property	120	89	11	220	114	87	26	227	87	68	16	174
2. Number of patent applications filed	52	178	5	235	41	130	4	175	53	109	8	170
3. Number of patents awarded	19	56	5	80	26	119	7	152	27	65	5	97
4. Number of license and option agreements executed on institutional intellectual property in total	14	43	2	59	113	34	2	149	62	22	4	88
5. Number of license and option agreements executed on institutional intellectual property in Iowa					62	3	2	67	13	4	4	21
6. Number of license and option agreements yielding income	299	92	11	402	268	151	11	430	250	143	12	405
7. Revenue to Iowa companies as a result of licensed technology ¹	\$38 million	\$0.89 million	\$5.9 million	\$44.79 million	\$83 million	\$1.5 million	\$4.56 million	\$89.06 million	\$84 million	\$1.23 million	\$3.8 million	\$89 million
8. Number of startup companies formed, in total (through licensing activities)					2	1		3	2	2		4
9. Number of startup companies formed, in Iowa (through licensing activities)					2	1		3	2	2		4
10. Number of start up companies formed through UNI MyEntrene!/Incubator							51	51			59	59
11. Number of companies in research park/ incubators					61	50	15	126	71	51	17	139

Indicators	FY 2006				FY 2007				FY 2008			
	ISU	SUI	UNI	Regents Totals	ISU	SUI	UNI	Regents Totals	ISU	SUI	UNI	Regents Totals
12. Number of new companies in research parks and incubators					16	3	10	29	12	7	9	28
13. Number of employees in companies in research parks and incubators					636	1780	39	2455	923	1962	33	2918
14. Royalties and license fee income	\$8 million	\$16 million	\$32 thousand	\$24.3 million	\$8.1 million	\$17.4 million	\$62 thousand	\$25.56 million	\$9.5 million	\$23.6 million	\$47,000	\$33.1 million
15. Total sponsored funding (\$ million)	\$279 million	\$366 million	\$19.9 million	\$666 million	\$272 million	\$382.2 million	\$29.2 million	\$683.4 million	\$274 million	\$386 million	\$36 million	\$696 million
16. Corporate-sponsored funding for research and economic development ² in total (\$ million)	\$28.6 million	\$31.9 million	\$1.76 million	\$62.2 million	\$14.2 million	\$41.8 million	\$1.7 million	\$56.7 million	\$24.4 million	\$36.3 million	\$1.5 million	\$62.2 million
17. Corporate-sponsored funding for research and economic development ² in Iowa (\$ million)					\$8.1 million	\$1.6 million	\$1.7 million	\$11.4 million	\$13 million	\$3 million	\$1.5 million	\$17.5 million

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

²Excludes corporate philanthropy