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2009 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 \$774.4 million in funding sponsored by federal and corporate sources in FY 2009. 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:

- 177 new intellectual property disclosures
- 174 patent applications
- 143 new patents awarded
- 95 new license and option agreements on intellectual property
- 269 total license and option agreements yielded income
- \$52.3 million in royalty and fee income
- \$107.9 million in revenue generated by Iowa companies as a direct result of university technologies
- 2948 Iowans employed at 146 companies at the SUI, ISU and UNI research parks and incubators
- 13,586 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.

State funding of ongoing economic development programs at the universities has declined by 58% comparing FY 2001 to FY 2010. Grow Iowa Values Fund appropriations to the universities in FY 2010 are 10% lower than the original FY 2005 authorization.

Selected 2009 Economic Development and Technology Transfer Highlights

-Occupancy has already reached nearly 50% for SUI's new BioVentures Center, a 35,000 square foot state-of-the-art biosciences incubator providing laboratory facilities to support companies commercializing faculty research.

-Companies licensing technologies originated at ISU reported sales of \$103 million as a result of those technologies.

-Assistance from the UNI Institute for Decision Making helped local communities create more than 1,500 jobs in those communities.

-The SUI Research Park reports 2,029 employees living in 107 communities in 31 Iowa counties with an annual payroll of nearly \$100 million, generating \$5.7 million in state income taxes.

-Companies receiving technical assistance from ISU's Institute for Physical Research and Technology reported \$14.5 million in increased sales, increased investments or reduced operating costs as a result of the assistance.

-46 companies graduated from UNI business incubation programs and leveraged \$4 million in new commercial and equity financing in the Cedar Valley.

-The SUI John Pappajohn Entrepreneurial Center was rated one of the Top 25 programs in the nation by *Entrepreneur* magazine.

-775 businesses from 96 counties received assistance from ISU's Center for Industrial Research and Service and reported 3,079 jobs created or retained, \$184 million in sales gained or retained, and \$24 million in costs avoided.

-UNI's MyEntreNet program now lists more than 3,000 actively engaged users across the state.

-2,544 clients in 99 counties received 11,519 hours of business counseling from the Small Business Development Centers.

-The UNI Metal Casting Center provided technical assistance to 30 foundries in Iowa.

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 2009. 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 FY2009 was provided in three primary economic development program areas:

1. Ongoing Economic Development and Technology Transfer Programs: FY 2009 \$3.79 million

In FY 2009, the state initially provided \$3.79 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. The initial appropriations were reduced by across the board and selective budget reversions of approximately 2.5%. The FY 2010 appropriation was then reduced by 6.7% during the 2009 legislative session and by another 10% by the Governor's October 9, 2009 across the board cut, bringing the present FY 2010 net appropriation to \$3.18 million. This is a decline of 58% below the \$7.63 million provided in FY 2001.

2. Grow Iowa Values Fund (GIVF): FY 2009 \$4,000,000

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 example, nine startup companies whose projects received GIVF funding through ISU in FY 2006 report \$23.5 million in new investment and cost savings and \$9.1 million in sales increases, for an average impact of \$3.6 million per company. That compares to a total of \$1.9 million in GIVF funds invested by ISU that entire fiscal year.

The FY 2009 GIVF appropriation was reduced by \$1 million as part of a larger state government-wide effort to provide funds for flood recovery. For FY 2010, the legislature approved \$4.5 million in GIVF funding, of which \$4.32 million was allocated for the three universities and \$180,000 was allocated for projects submitted by independent colleges and universities. The Board of Regents approved the universities' FY 2010 proposals at the August, 2009 board meeting. The universities and companies involved in the projects have identified \$4.46 million in matching funds for the projects. Examples of projects included:

-\$146, 610 for development, evaluation and commercialization of vaccines for swine influenza virus. The project will be conducted in partnership with Harrisvaccines, Inc., an Iowa company with 17 employees. Technology developed by the company enables much more rapid production of vaccines for all subtypes of H1 and H3 influenza. Swine influenza has an annual impact of \$200 million on the swine industry.

-\$450,000 to support new company formation and faculty education programs through the SUI Research Foundation.

-\$180,000 to the National Ag-Based Lubricants Center for work on new methods of improving the performance of vegetable oils as lubricants, and for new techniques using vegetable oils as engine lubricants.

Private College Grant Program

Of the \$4 million in FY 2009 GIVF funding, \$160,000 was awarded by the Board of Regents at the December 2008 meeting to two independent universities and colleges for economic development and technology transfer projects. The two projects include \$254,156 in matching funds.

Drake University received \$60,000 for the establishment of a Pharmacogenomics Training and Research Laboratory (PTRL). Pharmacogenomics is a discipline of health science related to the manner in which genes affect individual responses to drugs, presenting an opportunity to customize treatment or therapies for diseases such as breast cancer and leukemia. The PTRL will serve as a central facility for Drake faculty involved in research, and on a fee basis for organizations outside the University. The facility is intended to foster the development of intellectual property as a result of the research conducted.

Luther College received \$100,000 for a project entitled "A New Class of Plant-based Plastics Derived from Soybean and Corn Oil." The researcher proposes to develop polyguanidine polymers from the fatty acids found in corn and soybean oil. The investigator believes these specific polymers, derived entirely from plants, offer market advantages compared to other bioplastics which still contain some percentage of petroleum based products. It is also believed the new polymers will have a more stable molecular structure which will make them better suited for particular applications like liquid crystal displays.

The Board will review FY 2010 proposals from private colleges at the December, 2009 meeting. A total of \$180,000 will be available for these 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.

Many of the projects funded are multi-year initiatives at various stages of development or completion. Highlights of progress made during 2008-2009 include:

-Battelle funds used to create an endowed chair at SUI were instrumental in retaining a key faculty member who has since obtained \$15 million in federal research funding for research in macular degeneration and has created a company which has obtained \$37 million in venture capital investment.

-Private fundraising has now been completed for all four new endowed chairs at ISU. The new chairs created include two in veterinary medicine, one in engineering and one in biorenewable energy science and technology.

-A project using the pig as a model to predict bone disorder predisposition in pigs and humans has attracted additional funding and commercial interest and the ISU project leader reports two startup companies being formed.

-An ISU project designed to develop an enzyme fusion with application in animal neurological and ophthalmological diseases has resulted in an additional \$1 million in external funding and a patent disclosure for a technology of interest to a specific biopharmaceutical company.

-A UNI project involves development of advanced technology to replace heavy castings with high performance titanium castings. The resulting technology is available to the Rock Island Arsenal and is available for licensing by commercial firms throughout the Midwest.

-A collaborative project between UNI's Metal Casting Center and ISU aims to develop advanced manufacturing methods for lightweight steels for use in the wind energy generation industry.

-Battelle funds were used to help create an entrepreneur-in-residence program at SUI which provided the commercialization expertise needed for a researcher to form a company, SantosHuman, Inc. which has since shipped 70 licenses for its software product.

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.

Table 1: Intellectual Property, Technology Transfer, and External Support FY2007-2009

Indicators	FY 2007				FY 2008				FY 2009			
	ISU	SUI	UNI	Regents Totals	ISU	SUI	UNI	Regents Totals	ISU	SUI	UNI	Regents Totals
1. Number of disclosures of intellectual property	114	87	26	227	87	68	16	171	95	70	12	177
2. Number of patent applications filed	41	130	4	175	53	109	8	170	40	128	6	174
3. Number of patents awarded	26	119	7	152	27	65	5	97	23	116	4	143
4. Number of license and option agreements executed on institutional intellectual property in total	113	34	2	149	62	22	4	88	84	18	3	95
5. Number of license and option agreements executed on institutional intellectual property in Iowa	62	3	2	67	13	4	4	21	32	2	3	37
6. Number of license and option agreements yielding income	268	151	11	430	250	143	12	405	121	135	13	269
7. Revenue to Iowa companies as a result of licensed technology ¹	\$83 million	\$1.5 million	\$4.56 million	\$89.06 million	\$84 million	\$1.23 million	\$3.8 million	\$89 million	\$103 million	\$1.71 million	\$3.2 million	\$107.9 million
8. Number of startup companies formed, in total (through licensing activities)	2	1		3	2	2		4	1	2		3
9. Number of startup companies formed, in Iowa (through licensing activities)	2	1		3	2	2		4	1	2		3
10. Number of start up companies formed through UNI MyEntrene/IIncubator			51	51			59	59			74	74
11. Number of companies in research park/ incubators	61	50	15	126	71	51	17	139	62	50	34	146

Indicators	FY 2007				FY 2008				FY 2009			
	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	16	6	23	45
13. Number of employees in companies in research parks and incubators	636	1780	39	2455	923	1962	33	2918	854	2029	65	2948
14. Royalties and license fee income	\$18.1 million	\$17.4 million	\$62 thousand	\$35.56 million	\$9.5 million	\$23.6 million	\$47 thousand	\$33.1 million	\$9.3 million	\$42.9 million	\$117,000	\$52.3 million
15. Total sponsored funding (\$ million)	\$272 million	\$382.2 million	\$29.2 million	\$683.4 million	\$274 million	\$386 million	\$36 million	\$696 million	\$305.2 million	\$429.5 million	\$39.7 million	\$774.4 million
16. Corporate-sponsored funding for research and economic development ² in total (\$ million)	\$14.2 million	\$41.8 million	\$1.7 million	\$57.7 million	\$24.4 million	\$36.3 million	\$1.5 million	\$62.2 million	\$22.4 million	\$38.6 million	\$1.35 million	\$62.35 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	\$12 million	\$1.5 million	\$1.35 million	\$14.85 million

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

²Excludes corporate philanthropy