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ANNUAL ECONOMIC DEVELOPMENT AND TECHNOLOGY TRANSFER REPORT

Action Requested: Receive the report.

Executive Summary: Iowa's three public universities significantly impact economic development in Iowa on a daily basis in three primary ways:

- Offering research-based expertise and business assistance directly to Iowa's people, industry and communities in all 99 counties.
- Conducting academic research that results in intellectual property, discoveries and innovations available to business, industry and the marketplace. In FY 2014, Iowa companies generated \$24.77 million in revenue as a direct result of university discoveries.
- Educating Iowa's workforce. Today more than 78,000 students are pursuing academic excellence at the University of Iowa (SUI), Iowa State University (ISU) and the University of Northern Iowa (UNI).

In FY 2014, Iowa's public universities received \$925 million in sponsored funding. The State of Iowa provided \$8.7 million in total funding for ongoing and innovation activities as well as \$20.5 million in one-time funding for special initiatives. The universities increased new intellectual property disclosures by 27 percent from 206 disclosures in FY 2013 to 261 in FY 2014. The number of patent applications awarded increased to a high of 115. In addition, a total of 3,255 individuals were employed by the 144 companies located at the SUI, ISU and UNI research parks and business incubators, including 34 new companies and 244 additional jobs over FY 2013.

Also in FY 2014, SUI and ISU restructured their respective university's economic development activities to better serve Iowans, foster entrepreneurship and further streamline the delivery of discoveries to the marketplace. In the fall of 2013, UNI successfully launched Advance Iowa, a job growth assistance program for entrepreneurs in the second stage of business development.

Selected FY 2014 Economic Development and Technology Transfer Highlights

University of Iowa:

In FY 2014, the University of Iowa tailored its economic development strategy and execution to further sharpen the university's alignment with the state's economic development priorities. Their new mission is: *To chart a path to economic prosperity for all Iowans by accelerating business and cultivating the state's workforce.* SUI's economic development enterprise is now organized around five major themes: Innovation, Entrepreneurship, Incubation, Engagement and Culture. Targeted ventures within each of these themes yielded important economic development impacts including:

- Technology Transfer (Innovation) - In FY 2014, SUI separated the intellectual property licensing function from startup assistance, leaving the University of Iowa Research Foundation (UIRF) with the former activities and creating a new entity, UI Ventures, to focus on the latter. This strategy is proving successful as the UIRF has had more time for faculty outreach, which has

produced more invention disclosures and licenses. UIRF received 139 invention disclosures (up 44% over last year). It also executed 32 license or option agreements. University of Iowa startups accounted for 12 of these deals, an 83% increase in the number of startups over last year.

- Faculty Startups (Entrepreneurship) - UI Ventures' focus on startup creation, CEO recruiting and raising capital paid dividends. FY 2014 saw 24 startups in the pipeline with 10 new ones being added in the next year.
 - Iowa Approach, Inc., for example, a medical device startup developing tools to treat atrial fibrillation, used resources from the UIRF for market research, business planning, go-to-market strategy, and early stage capitalization. The company has recruited an experienced CEO, raised \$300,000 in a Series A round, and set regulatory milestones.
- Student Startups (Entrepreneurship) - Fifty-three student businesses are under development through the John Pappajohn Entrepreneurial Center's (JPEC) student incubator program housed at the Bedell Entrepreneurship Learning Laboratory.
 - TranslaCare, a student startup developing software for elderly adults who have experienced some form of speech, language, or memory deficit as a result of neurological injury, was awarded \$100,000 from the Iowa Economic Development Authority. Ryan Ries, a UI Neurobiology and Linguistics major, started the company from the Bedell Laboratory. TranslaCare won 3rd place at the Johns Hopkins Business Plan Competition. The company launched their Iconotouch™ web-based software app in 2014.
- Venture School (Entrepreneurship) - 15 teams comprising 51 entrepreneurs attended Venture School to assess and improve the commercial viability of their startup ideas and business models. Upon completion of the program, 12 new ventures were launched including Iowa Adaptive Technologies, Inc., a medical device startup developing tools to enable disabled patients to communicate with their caregivers, is a recent graduate of Venture School. The company has now hired a full-time CEO and is currently raising a \$750,000 Series A round. Based on the success of the program in Iowa City, SUI will offer Venture Schools in Des Moines, Council Bluffs, Cedar Falls and the Quad Cities in FY 2015.
- Research Park (Incubation) - There are now 12 companies, including three new startups, located at the BioVentures Center (BVC) at the University of Iowa Research Park (UIRP). By more than doubling the number of companies it housed when it opened in 2008, the BVC is now close to full occupancy. There are a total of 36 companies at the UIRP, which employ over 1,800 people.
 - Higher Learning Technologies, an educational app development company, will soon "graduate" from the BVC, having grown its sales to over \$1 million from more than 500,000 downloads of their apps. The company currently employs 20 people and plans to add 20 more over the next eight months.
- UP Global America Summit (Culture) - The University of Iowa served as the presenting sponsor of the first UP Global America Summit last fall. UP Global is a non-profit organization dedicated to fostering entrepreneurship, grassroots leadership, and strong communities across the world. More than 200 community leaders from across the country came together for this three-day

conference. Through this partnership, JPEC hosted Startup Iowa Town Hall at the Innovation EXPO, which brought together nearly 500 students, entrepreneurs, and community builders.

Iowa State University:

Iowa State University recently reorganized its economic development enterprise to make it easier for external constituents to access its expertise, capabilities, resources, and facilities, and to better integrate, coordinate, and grow the vast array of services that ISU offers. The new Office of Economic Development and Industry Relations (EDIR) was announced in Fall 2013, and took effect July 1, 2014.

EDIR now houses key university economic development units such as the Center for Industrial Research and Service (including IPRT Company Assistance), ISU's Small Business Development Center, and Pappajohn Center for Entrepreneurship, the ISU Research Foundation (ISURF), and the Office of Intellectual Property and Technology Transfer. EDIR works very closely with the ISU Research Park and other university units that contribute to the university's economic development efforts and impact, including the Office of the Vice President for Extension and Outreach, the Office of the Vice President for Research, and the academic colleges.

The following are some examples of the direct impact that these ISU units had this past year:

- The ISU Research Park continues to be successful in initiating as well as nurturing numerous new businesses. Eleven new companies and affiliates joined the Park in FY14, bringing the historical total to 232 companies, research centers, and affiliates. Currently, there are 63 companies and research centers and 14 affiliates located in the Park, employing 1,365 and 119 people, respectively.
- There are currently three faculty-affiliated startup companies located in the Innovations Development Facility, the on-campus business incubator in the Roy J. Carver Co-Laboratory under direction of the Plant Sciences Institute. A total of 18 companies have used this business incubator space since the facility opened in September 2003.
- In the last year, the Small Business Development Centers provided business assistance to individuals and companies across the state totaling 2,579 clients and 10,900 counseling hours. As a result of this counseling, 209 new businesses were started and 1,134 jobs created. The program also helped retain 411 jobs. The clients of the SBDC generated capital infusion for their businesses in excess of \$48 million and had sales increases in excess of \$42 million. The SBDC also provided 140 trainings or workshops in which 1,779 individuals participated.

The ISU SBDC, along with the ISU Pappajohn Center for Entrepreneurship, provided 614 hours of counseling assistance to startup and existing companies; served 109 clients with one-on-one counseling; educated 318 attendees through workshops; provided advice to several hundred clients via telephone and e-mail; and advised 24 technology companies in the areas of licensing, equity-based financing, market entry, and numerous operational areas.

- Technologies originating at ISU and licensed to Iowa companies have resulted in over \$21 million in sales by those companies. Total sales of ISURF-licensed technologies were \$462 million, not including germplasm.

- The Regents Innovation Fund (formerly Grow Iowa Values Fund) program at Iowa State has a competitive research component that pairs ISU faculty members with Iowa industries (primarily new to young startups) to create economic benefit for the companies. Surveys completed by companies on projects funded from June 2006 through June 2013 (surveyed one year after project completion) documented 149 jobs created or retained and an annual sales impact of nearly \$19 million due to the research projects conducted in partnership between ISU and the companies.
- ISU's Center for Industrial Research and Service (CIRAS) helps Iowa's economy prosper and grow by enhancing the performance of industry through applied research, education, and technical assistance. CIRAS has been working with companies in communities across Iowa for more than 50 years and has a vision for Iowa of healthy communities through business prosperity. Cumulatively, over the past five years, CIRAS and partners have reported impact from companies totaling over \$2 billion dollars (\$1.7 billion in sales gained or retained, \$221 million in new investments, \$88 million in costs saved or avoided) with 29,390 jobs added or retained as a result of the assistance received.
 - Last year, 1,280 businesses from 94 counties in the state received assistance on projects or attended educational workshops from CIRAS staff or partners. Companies responding to surveys reported \$446 million in total impact — \$383 million in sales gained or retained, \$50 million in new investments, and \$13 million in costs saved or avoided. Company executives stated that 6,795 jobs were added or retained as a result of the assistance they received from CIRAS and its partners.
- ISU Extension and Outreach puts the university's research and resources to work in each of Iowa's 99 counties. Reaching over 1 million people each year, educating Iowa's 4-H youth through STEM programming is a key priority for ISU Extension and Outreach. Of more than 23,000 Iowa youth enrolled in 4-H clubs, more than 16,000 were enrolled in a livestock project area. With such a large portion of Iowa 4-H youth involved in animal agriculture, it is critical for them to have the necessary skills in STEM. Employers in the field of agriculture have increased their demand for knowledgeable and competent workers, especially in STEM-related positions. The number of producers/farmers continues to decline across the country; therefore, substantial research and education on increasing food safety/consumer confidence, animal production, and efficiency has become a top priority with a focus on the latest technology advancements along with basic livestock production to a more urban youth audience. More than 1,900 youth participate at the Iowa State Fair 4-H youth livestock exhibitions.

University of Northern Iowa:

The University of Northern Iowa has a strong history of supporting Iowa's economic development needs through innovative and applied programs. Every year these programs reach out across the state to provide direct assistance in all 99 counties. Specific areas of service offered by UNI include: entrepreneurship, community and economic development, market research, environmental research and service, sustainability, advanced manufacturing, metal casting, and new Iowa immigrants. UNI's economic development outreach programs are housed in the Business and Community Services (BCS) division. BCS engages the entire university community in its outreach efforts including faculty, staff, students and alumni – all of whom play a critical role in the economic health of the state.

In FY 2014, UNI's economic development overall efforts provided service in all 99 counties to more than 1,950 unique business, community and local government clients and reached more than 65,000 Iowans

through BCS programs and projects. Providing these services involved 259 faculty members and nearly 1,900 students. In addition, UNI leveraged each \$1 invested by the state with \$5 in private grants, fees or federal funding.

- In the area of entrepreneurship, business incubation and technology transfer, UNI provided job growth assistance to 53 second-stage Iowa companies through Advance Iowa, the state's certified Economic Gardening program. Usage of IASourceLink online resources, a joint program of UNI and Iowa Economic Development Authority, doubled to 28,000. Also in FY 2014, 16 new companies located in the UNI incubators. MyEntre.Net provided on-demand business and market information to 511 businesses through its Concierge service, and 216 new clients were served by the UNI Small Business Development Center. 20 student businesses were tenants in the John Pappajohn Entrepreneurial Center's R.J. McElroy Student Business Incubator, and 54 additional student entrepreneurs were assisted by the affiliate program.
- In regards to environmental assistance and the bioeconomy, UNI's Buy Fresh, Buy Local project saw participating restaurants and institutional buyers spend \$2.8 million on locally grown foods in calendar year 2013. In FY 2014, Green Iowa AmeriCorps weatherized 329 homes and conducted 589 energy audits, saving nearly \$1.2 million in utility costs. The Tallgrass Prairie Center distributed native prairie seeds to 55 Iowa counties as part of its roadside vegetation project. In addition, recycling and reuse project funding and outreach services were provided to 48 companies and organizations.
- UNI specializes in community engagement. In FY 2014, the Institute for Decision Making (IDM) and the Regional Business Center (RBC) became designated as a federal Economic Development Administration (EDA) University Center and launched a 5-year regional entrepreneurship project in two regions. IDM conducted workforce development planning in eastern and western Iowa in partnership with two community colleges. Community clients report creating approximately 1,500 jobs as a result of local economic development technical assistance from IDM.
- In the advanced manufacturing and market research component of UNI's economic development enterprise, the Metal Casting Center (MCC) provided custom 3D sand-cast mold printing services to 50 foundries and supply chain companies. Federally funded research was started by the MCC to determine effective methods for the acceleration of advanced molding methods by the metal casting industry. In addition, market research and competitive intelligence was provided to 19 Iowa companies by Strategic Marketing Services.

State Funding for Economic Development and Technology Transfer

State funding in FY 2014 was provided in three primary economic development program areas:

1. Ongoing Economic Development and Technology Transfer Programs: FY 2014 \$5.7 million

In FY 2014, the state provided \$5.7 million for economic development programs which include the research parks at SU1 and ISU, the Institute for Physical Research and Technology, the Small Business Development Centers, the Institute for Decision Making and the Metal Casting Center. The FY 2014

appropriation included \$1 million in new funding to SUI for business entrepreneurship. UNI received \$491,000 in new funding to create Advance Iowa, an economic gardening program for second-stage businesses. This is an increase of 77 percent compared to the FY 2013 appropriation.

2. Regents Innovation Funds (RIF – previously the Grow Iowa Values Fund): FY 2014 \$3.0 million

For the last decade, the General Assembly has annually appropriated to the public universities specific funding to support technology transfer, commercialization, entrepreneurship, and business growth. Economic downturns hampered the state's ability to reach the initial promised level, yet the universities invest the funds they receive in opportunities that yield successful startups, innovative business assistance and critical research leading to commercialization. In FY 2014, the public universities received \$3 million. The universities are required to match the funding on a one-to-one basis from non-state resources. Research grants, private investors or companies interested in a project, and other university funds are often used as match dollars.

Examples of projects include:

- University of Iowa: Iowa Approach, Inc. is a medical device company started in 2012 to commercialize an innovative collection of catheter-based tools used to treat atrial fibrillation. The company is working to make atrial fibrillation ablation safer, faster, more accessible, and less expensive. Iowa Approach received \$100,000 in UIRF research grants and business plan competition awards, a \$100,000 Iowa Innovation Acceleration Award, a \$100,000 Wellmark Convertible Note Fund Award. The company recently recruited an experienced CEO, raised \$300,000 in a Series A round, and set regulatory milestones.
- Iowa State University: Faculty members Shavani Garg and Basil Nikolau are optimizing the productivity of novel biorenewable chemicals for lubricant and surfactant applications, using KASIII expressing strains developed in partnership with OmegaChea Biorenewables LLC. Using in-vitro characterization techniques, they identified at least three KASIII enzymes with high binding affinities. For business development, OmegaChea has engaged a senior consultant who has more than 40 years of experience in surfactants and lubricants market, and is working closely with the OmegaChea team to develop a viable commercialization strategy, and also to develop partnerships in the lubricants market. Based on his inputs, the faculty members have identified high-performance synthetic lubricants market as the initial entry-point for OmegaChea's product offerings, followed by growth into surfactants for institutional cleaners.
- University of Northern Iowa: UNI's Strategic Marketing Services (SMS) is a competitive and market intelligence program for small- to mid-sized Iowa companies. The purpose of devoting this funding to competitive and market intelligence projects is to foster economic growth across Iowa by stimulating business expansion opportunities. Accurate information is needed to make sound market entry or expansion decisions. Gathering and analyzing information to make sound business decisions is what SMS provides. Established businesses will be required to pay at least one-half of their project cost. SMS used this innovation funds allocation to conduct market research projects for five Iowa companies including Accumold (Ankeny), Mechdyne (Marshalltown) and Ryko (Grimes).

3. One-Time Special Initiative Funding: FY 2014 \$20.5 million

In FY 2014, the General Assembly provided one-time funding to ISU and UNI for the following special initiatives:

- \$12 million for the ISU Research Park expansion, a three year project that starts with construction of a core facility to provide a one-stop shop for small business owners, clients, entrepreneurs and others seeking business development expertise.
- \$1 million for UNI's Metal Casting Center. This funding, through the Iowa Economic Development Authority, was for a 3D printer, the largest in North America.
- \$7.5 million to ISU to leverage outside research dollars and secure Iowa's prominence in the emerging bioeconomy.

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 Economic Development Authority as required by law.

Indicators	FY 2012				FY 2013				FY 2014			
	ISU	SUI	UNI	Regents Total	ISU	SUI	UNI	Regents Total	ISU	SUI	UNI	Regents Total
1. Number of disclosures of intellectual property	102	102	9	213	98	98	10	206	113	139	9	261
2. Number of patent applications filed	56	116	7	179	39	142	4	185	39	184	3	226
3. Number of patents awarded	16	59	2	77	24	74	2	100	33	80	2	115
4. Number of license and option agreements executed on institutional intellectual property in total	50	21	3	74	79	29	2	110	59	32	2	93
5. Number of license and option agreements executed on institutional intellectual property in Iowa	19	7	3	29	39	8	2	49	19	12	2	33
6. Number of license and option agreements yielding income	188	94	10	292	173	92	9	274	176	140	7	323
7. Revenue to Iowa companies as a result of licensed technology ¹	\$101 million	\$2.2 million	\$2.6 million	\$105.8 million	\$45 million	\$2.38 million	\$2.2 million	\$49.58 million	\$21 million	\$1.87 million	\$1.85 million	\$24.72 million
8. Number of startup companies formed, in total (through licensing activities)		2		2	2	8		10	3	12		15
9. Number of startup companies formed, in Iowa (through licensing activities)		2		2	1	8		9	3	12		15
10. Number of startup companies formed through UNI MyEntrenet/Incubator			73	73			78	78			71	71
11. Number of companies in research park/incubators	59	41	24	124	53	47	28	128	66	49	29	144

Indicators	FY 2012				FY 2013				FY 2014			
	ISU	SUI	UNI	Regents Total	ISU	SUI	UNI	Regents Total	ISU	SUI	UNI	Regents Total
12. Number of new companies in research parks and incubators	8	2	16	26	3	4	18	25	11	7	16	34
13. Number of employees in companies in research parks and incubators	838	1812	49	2699	1240	1707	64	3011	<u>1370</u>	<u>1824</u>	61	<u>3255</u>
14. Royalties and license fee income	\$9.9 million	\$7.05 million	\$209,823	\$17.16 million	\$9.1 million	\$1.4 million	\$75,839	\$10.57 million	\$4.8 million	\$1.87 million	\$40,506	\$6.7 million
15. Total sponsored funding (\$ million)	\$360.2 million	\$438.1 million	\$43 million	\$841.3 million	\$326.4 million	\$424.1 million	\$41.2 million	\$791.7 million	\$368.4 million	<u>\$515.8 million</u>	\$40.8 million	<u>\$925 million</u>
16. Corporate-sponsored funding for research and economic development ² in total (\$ million)	\$23.4 million	\$52.9 million	\$1.27 million	\$77.57 million	\$28.1 million	\$62 million	\$1.15 million	\$91.25 million	\$27.8 million	\$71 million	\$1.2 million	\$100 million
17. Corporate-sponsored funding for research and economic development ² in Iowa (\$ million)	\$11 million	\$1.1 million	\$1.27 million	\$13.27 million	\$13 million	\$1.5 million	\$1.15 million	\$15.65 million	\$13 million	\$2.7 million	\$1.2 million	\$16.9 million

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

²Excludes corporate philanthropy