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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:

1. Offering research-based expertise and business assistance directly to Iowa's people, industry and communities in all 99 counties.
2. Conducting academic research that results in intellectual property, discoveries and innovations available to business, industry and the marketplace. In FY 2016, Iowa companies generated \$9.56 million in revenue as a direct result of university discoveries.
3. Educating Iowa's workforce. Today, more than 81,900 students are pursuing academic excellence at the University of Iowa (SUI), Iowa State University (ISU) and the University of Northern Iowa (UNI).

In FY 2016, Iowa's three public universities received \$1.02 billion in total sponsored funding. The Iowa General Assembly also provided \$8.8 million in total funding for economic development efforts. As a result, the universities increased new intellectual property disclosures from 290 disclosures in FY 2015 to 304 in FY 2016. In addition, a total of 3,460 individuals were employed by the 162 companies located at the SUI, ISU and UNI research parks and business incubators.

ISU and UNI Collaboration on Technology Transfer Services. ISU and UNI continue to partner in technology transfer to assess and commercialize intellectual property and with a joint patent and licensing project. UNI has the option to manage the protection and commercialization of their innovations, or they can opt to have the ISU Research Foundation provide these services. ISU does not charge a fee for this service but share any income that is generated from the UNI innovations.

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.

Selected FY 2016 Economic Development and Technology Transfer Highlights

University of Iowa: University of Iowa research generated intellectual property that was transferred to companies. In FY 2016, a larger proportion of technologies (19 of 39 vs. 13 of 40) were licensed or optioned to Iowa companies than in FY 2015. SUI also launched 14 new faculty-founded startups. These startups increased the number of employees and companies in their incubators. As a result, the BioVentures Center is now at 100% occupancy with 17 companies employing 90 people. Their programs have aided startups driving commercialization and raising capital through early de-risking of their technologies. In addition, faculty-led startups secured over \$1.6 million in non-dilutive capital.

One program, the proof-of-concept "GAP" funding program awarded \$663,693 to University of Iowa faculty and staff, distributed among 12 projects in FY 2016. These projects then raised an

additional \$916,500 from other sources, including SBIR/STTR awards, NSF I-Corps grants, state grants and private equity. The GAP funds have been cited by numerous faculty as a critical factor in moving their technologies toward commercialization.

In entrepreneurship, 101 teams, comprised of 308 entrepreneurs, attended Venture School to assess and improve the commercial viability of their startup ideas and business models. In addition, the NSF I-Corps Faculty Innovators Workshop assisted 34 faculty teams with development of a business model. Six of these teams moved on to the highly competitive national NSF I-Corps program, receiving \$50,000 each for additional development.

SUI was also awarded a \$1.5 million Strategic Infrastructure Fund grant from the Iowa Economic Development Authority to purchase 3D modeling software and hardware, prototyping and electronics equipment for a new cutting-edge biomedical and electronics prototyping hub in downtown Iowa City. This facility, called ProtoStudios, will fill a crucial gap in Iowa's existing network of advanced manufacturing hubs by providing the equipment and expertise needed to produce very small, high-resolution, biocompatible medical and electronic device prototypes.

Iowa State University: In 2016, Iowa State University received the prestigious designation as an *Innovation and Economic Prosperity University* by the Association of Public and Land Grant Universities (APLU), the first university in Iowa to receive this recognition.

ISU had a record-setting year with total sponsored funding of about \$426 million, including \$252 million for research. Businesses, corporations and commodity organizations accounted for approximately \$44 million of sponsored funding. ISU researchers submitted 143 disclosures of intellectual property, and their technology transfer office filed 49 patent applications. Additionally, last year ISU technologies resulted in 84 license and option agreements worldwide with 45 in Iowa. ISU currently has 153 license and option agreements yielding income. Iowa companies earned \$5.2 million revenue from ISU licensed technologies in calendar year 2015, and five startup companies based on ISU technologies were formed in Iowa.

The Center for Industrial Research and Service (CIRAS) staff or partners provided assistance to 1,561 businesses from 95 counties on projects or attendance at educational workshops. Companies responding to surveys reported \$424 million in total impact – \$359 million in sales gained or retained, \$52 million in new investments, and \$13 million in costs saved or avoided. Company executives stated that 5,400 jobs were added or retained as a result of the assistance they received from CIRAS and its partners.

The America's Small Business Development Center (SBDC) Iowa, which consists of 15 regional centers serving all 99 counties in Iowa, provided business assistance to a total 3,141 clients and 13,191 counseling hours. As a result of this counseling, 322 new businesses were started and 1,586 jobs were created. Additionally, SBDC assistance was credited by clients with increasing their capital infusion by more than \$62.5 million and increasing their sales by more than \$62.7 million. This translates into four new jobs every day, a new business every 27 hours and an increase of \$5.2 million in sales each month.

The ISU SBDC regional center, in partnership with the ISU Pappajohn Center for Entrepreneurship, provided 533 hours of counseling assistance to startup and existing

companies; served 236 clients with one-on-one counseling; educated 184 attendees through workshops; provided advice to several hundred clients via telephone and e-mail; and advised a number of technology companies in the areas of licensing, equity-based financing, market entry and numerous operational areas. The centers documented 45 new business starts with 144 new jobs created that have generated \$2.79 million in capital infusion.

Thirteen new companies and affiliates, five university departments (one of which rejoined the park after a 17-year absence), and 17 pre-incubator companies joined the ISU Research Park in FY 2016, bringing the historical total to 280 companies and 4,985 employees for current and former tenants that are still in existence worldwide. In June 2016, the Park launched the ISU StartUp Factory to provide a stronger support system for students, faculty and staff wanting to create businesses. The inaugural cohort is comprised of 11 companies representing a wide range of technologies, products and services. Two cohorts are admitted each year.

University of Northern Iowa: Businesses, communities and organizations were served in all 99 Iowa counties for the 17th consecutive year from the University of Northern Iowa. Since 2000, UNI's Business and Community Services (BCS) division has engaged the entire university community in its outreach efforts including faculty, staff, students and alumni – all of whom play a critical role in *Building a Better Iowa*.

Some exceptional outcomes and recognition in FY 2016 include:

- Served as a leader in growing Iowa's position in additive manufacturing research, development and direct company assistance. UNI's Metal Casting Center (MCC) received one of the first Strategic Infrastructure Grants from the Iowa Economic Development Authority (IEDA) to substantially expand service to small- and medium-sized businesses across the state. Additional 3D sand mold printing services and R&D were added and a new design lab opened in partnership with Hawkeye Community College.
- Recognized by the International Business Innovation Association (InBIA) as the Student Entrepreneurship Program of the Year. InBIA is an international association with 2,100 members from 60 countries that recognized UNI's John Pappajohn Entrepreneurial Center (JPEC) in the inaugural year of the award.
- Awarded the winner of the President's Higher Education Community Service Honor Roll in the category of Economic Empowerment. UNI was recognized for the Institute for Decision Making's (IDM) work and its leadership with grass roots economic and neighborhood development in Northeast Waterloo.
- Served as the host institution for the Green Iowa AmeriCorps project. UNI's Center for Energy and Environmental Education (CEEE) led an effort with volunteers to weatherize 14 homes and conduct 175 educational programs reaching 13,000 people across the state.
- Surpassed the 3,000 level for the number of military and contract painters certified by UNI's Spray Technique Analysis and Research for Defense (STAR4D) program.

In FY 2016, UNI's economic development efforts provided services in all 99 counties reaching more than 410,000 Iowans. Services were provided to more than 3,120 businesses, community and local government clients with an additional 22,000 unique visitors through UNI's efforts with MyEntre.Net/IASourceLink. UNI further involved 271 faculty members and nearly 233 students in the delivery of these services and another 2,800 students were impacted by BCS programs. Finally, UNI leveraged each \$1 invested by the state with \$5 in private grants, fees or federal funding.

State Funding for Economic Development and Technology Transfer

State funding in FY 2016 was \$8.8 million, which was provided in two primary economic development program areas:

1. Ongoing Economic Development and Technology Transfer Programs: \$5.8 million

In FY 2016, the state provided \$5.8 million for economic development programs including the research parks at SUI and ISU, the Advanced Drug Development Program at the Oakdale Research Park (SUI), the Entrepreneurship and Economic Growth Initiative (SUI), the Center for Industrial Research and Service (ISU), Small Business Development Centers (ISU), the Institute for Decision Making (UNI), Metal Casting Center (UNI), MyEntreNet internet application (UNI), Center for Business Growth and Innovation (UNI), and Advance Iowa (UNI).

2. Regents Innovation Fund (RIF) for the commercialization of research: \$3.0 million

The \$3 million FY 2016 state appropriation comes from the Iowa Skilled Worker and Job Creation Fund. The money is to be used for capacity building infrastructure in areas related to technology commercialization, marketing and business development efforts in the areas related to technology commercialization, entrepreneurship, and business growth, and infrastructure projects and programs needed to assist in implantation of activities under Iowa Code chapter 262B (Commercialization of Research).

The Regent universities invest these funds in opportunities that yield successful startups, innovative business assistance, and critical research leading to commercialization. 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. The legislation divides the funding as follows: 35% to SUI, 35% to ISU and 30% to UNI.

Indicators	FY 2014				FY 2015				FY 2016			
	ISU	SUI	UNI	Regents Total	ISU	SUI	UNI	Regents Total	ISU	SUI	UNI	Regents Total
1. Number of disclosures of intellectual property	113	139	9	261	130	149	11	290	143	151	10	304
2. Number of patent applications filed	39	184	3	226	36	148	3	187	49	296	3	348
3. Number of patents awarded	33	80	2	115	31	50	3	84	15	67	2	84
4. Number of license and option agreements executed on institutional intellectual property in total	59	32	2	93	108	40	2	150	84	39	2	125
5. Number of license and option agreements executed on institutional intellectual property in Iowa	19	12	2	33	61	13	2	76	45	19	2	66
6. Number of license and option agreements yielding income	176	140	7	323	157	135	8	300	153	128	9	290
7. Revenue to Iowa companies as a result of licensed technology ¹	\$21 million	\$1.87 million	\$1.85 million	\$24.72 million	\$8 million	\$1.62 million	\$2.7 million	\$12.32 million	\$5.2 million	\$1.26 million	\$3.1 million	\$9.56 million
8. Number of startup companies formed, in total (through licensing activities)	3	12	--	15	4	15	--	19	6	22	--	28
9. Number of startup companies formed, in Iowa (through licensing activities)	3	12	--	15	4	11	--	15	5	16	--	21
10. Number of startup companies formed through UNI Incubator	--	--	71	71	--	--	94	94	--	--	142	142
11. Number of companies in research parks and incubators	66	49	29	144	70	55	31	156	74	59	29	162
12. Number of new companies in research parks and incubators	11	7	16	34	11	6	11	28	17	4	14	35
13. Number of employees in companies in research parks and incubators	1370	1824	61	3255	1580	1966	57	3603	1709	1635	116	3460
14. Royalties and license fee income	\$4.8 million	\$1.87 million	\$40,506	\$6.7 million	\$3 million	\$1.87 million	\$12,776	\$4.9 million	\$3.3 million	\$1.62 million	\$21,722	\$4.94 million

Indicators	FY 2014				FY 2015				FY 2016			
	ISU	SUI	UNI	Regents Total	ISU	SUI	UNI	Regents Total	ISU	SUI	UNI	Regents Total
15. Total sponsored funding	\$368.4 million	\$515.8 million	\$40.8 million	\$925 million	\$424.9 million	\$565 million	\$38.9 million	\$1028.8 million	\$425.8 million	\$552 million	\$39.1 million	\$1016.9 million
16. Corporate-sponsored funding for research and economic development in total ²	\$27.8 million	\$71 million	\$1.2 million	\$100 million	\$39.6 million	\$91.7 million	\$575,000	\$131.8 million	\$43.8 million	\$75.9 million	\$435,000	\$120.1 million
17. Corporate-sponsored funding for research and economic development in Iowa ²	\$13 million	\$2.0 million	\$1.2 million	\$16.9 million	\$16.5 million	\$2 million	\$575,000	\$19 million	\$11.9 million	\$1.9 million	\$435,000	\$14.2 million

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

²Excludes corporate philanthropy.