

**Governing Iowa's public  
universities and special schools**

University of Iowa  
Iowa State University  
University of Northern Iowa  
Iowa School for the Deaf  
Iowa Braille and Sight Saving School  
Lakeside Laboratory Regents Resource Center  
Western Iowa Regents Resource Center



Michael J. Richards, MD, President, *West Des Moines*  
Patty Cownie, President Pro Tem, *Des Moines*  
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Milt Dakovich, *Waterloo*  
Nancy Dunkel, *Dyersville*  
Zackery Leist, *Clarion*  
Jim Lindenmayer, PhD, *Ottumwa*

Mark J. Braun, Executive Director

**MEMORANDUM**

December 17, 2019

Mr. Charlie Smithson  
Secretary of the Senate  
State Capitol Building  
Des Moines IA 50319

Ms. Meghan Nelson  
Chief Clerk of the House  
State Capitol Building  
Des Moines IA 50319

Glen Dickinson, Director  
Legislative Services Agency  
State Capitol Building  
Des Moines IA 50319

Re: Economic Development and Technology Transfer Report

Dear Members of the Iowa General Assembly:

Pursuant to Iowa Code and Iowa Acts, the enclosed annual report includes information from the University of Iowa, Iowa State University, the University of Northern Iowa, and their respective research foundations as follows:

Iowa Code §262B.3(3)  
2013 Iowa Acts, Chapter 141.54 (HF 604)

Patents and Licenses for FY 2019  
Activities, Projects, and Programs Funded with  
Board of Regents Innovation Fund Approp,  
Technology Commercialization, Entrepreneurship,  
Regional Development, and Market Research  
Report

If you have any questions or need more information, please don't hesitate to contact this office.

Sincerely,

Mark J. Braun

\\Box Sync\Board of Regents Shared\BF\Legislative\2020 session\Reports\

Attachments  
cc: Robin Madison  
Legislative Liaisons  
Legislative Log

Contact: Mary Braun

**ANNUAL ECONOMIC DEVELOPMENT AND TECHNOLOGY TRANSFER REPORT**

**Action Requested:** Receive the report.

**Full Reports Available:** The full annual reports from the University of Iowa (UI), Iowa State University (ISU) and the University of Northern Iowa (UNI) are available on 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.

**Executive Summary:** Iowa's three public universities collaborate with business and industry and with each other to foster success for all economic development and entrepreneurship efforts in Iowa. They significantly impact Iowa on a daily basis and demonstrate to the public the value of research through research-based expertise and business assistance directly to Iowa's people, industry and communities in all 99 counties. Conducting academic research also results in intellectual property discoveries and innovations available to business, industry and the marketplace; and it provides Iowa with an educated workforce as more than 75,000 students are pursuing academic excellence at one of the Regents three universities.

The Regents universities research and economic activities outlined in their reports meet the Board of Regents Strategic Plan, Priority 2, Objective 2.3: The Regent Enterprise will build strategic collaborations among universities and with outside entities to foster opportunities for innovation and economic development. Each institution shall report annually on significant partnership and/or collaboration activities. This includes both quantitative and qualitative metrics that demonstrate the impact of these activities.

**FY 2019 Highlights:**

The Regents universities work diligently to develop breakthroughs that help to improve Iowa's economy through economic development, technology transfer and commercialization of research. Collectively, the three universities provided nearly \$1.1 billion dollars in total sponsored funding to the State of Iowa, with over half of it coming from competitive federal grants and awards. The Regents universities faculty and researchers compete with other faculty and researchers from around the world to win this funding for their work. Students are the beneficiaries of this hard work as they get hands-on experience participating in this research.

The Regents universities provide economic development assistance to Iowa businesses and start-up companies. The numbers fluctuate on an annual basis, but generally reflect an upward trend over several years. These numbers also only tell part of the story. First, the value added by providing assistance to licensees and startup companies as they take these (usually) early stage research ideas and turn them into revenue is not reflected. In addition, information on revenue from licensed patents is only collected during the patent term, which results in an underreporting of revenue generated from products that contain university technology. However, these statistics reflect excellent performance when compared to similar institutions.

The charts on the next page show the combined statistics for the three universities over the past five fiscal years, FY 2015 through FY 2019. See the chart at end of the docket item for the details from each university.

<b>Licenses, Intellectual Property and Patents</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>
Patent applications filed	261	438	305	299	260
Patents awarded	84	84	59	117	88
Disclosures of intellectual property	290	304	234	299	259
Total license and option agreements executed on institutional intellectual property	150	125	145	104	96
License and option agreements executed on institutional intellectual property <b>in Iowa</b>	76	66	59	32	38
License and option agreements yielding income	300	290	330	322	292
Revenue to <b>Iowa</b> companies as a result of licensed technology	\$12.3 M	\$9.6 M	\$14.1 M	\$41.7 M	\$13 M
Royalties and license fee income	\$4.9 M	\$4.9 M	\$5 M	\$6.2 M	\$4.6 M

<b>Companies</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>
Total startup companies formed through licensing activities	19	28	29	7	10
Startup companies formed <b>in Iowa</b> through licensing activities	15	21	21	5	9
Startup companies formed through UNI assistance	94	142	134	96	94
Companies in research parks and incubators	156	162	185	179	189
New companies in research parks and incubators	28	35	66	60	168
Employees in companies in research parks and incubators	3,603	3,460	3,493	3,673	4,766

<b>Income and Funding</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>
Total sponsored funding	\$1,028.8 M	\$1,016.8 M	\$1,099.1 M	\$1,102.7 M	\$1,098.5 M
Sponsored funding from federal grants	\$477.7 M	\$490.2 M	\$465.6 M	\$518.2 M	\$540.4 M
Total Corporate-sponsored funding	\$131.8 M	\$129.7 M	\$145.7 M	\$143.7 M	\$135.3 M
Corporate-sponsored funding <b>in Iowa</b>	\$19 M	\$21.2 M	\$25.7 M	\$23.1 M	\$32.2 M

State Appropriations. In FY 2019, the Iowa General Assembly appropriated \$10.2 million in total funding for economic development, technology transfer and commercialization of research to the three Regents universities. This is an increase of \$1.5 million from the state's general fund for the new ISU/UI biosciences innovation program and for UNI's additive manufacturing center. The remaining \$8.7 million comes from the \$66 million Skilled Worker and Job Creation Fund (SWJCF), which the General Assembly created for FY 2014 to centralize funding for job creation, job training, and job learning opportunities.

The Regents universities received two new appropriations in FY 2019, totaling \$1.5 million, which is divided as follows:

- A new \$1.1 million appropriation to ISU and UI for a biosciences innovation program. The Board had requested \$4.0 million. The funding is divided \$825,000 to ISU and \$275,000 to UI. The funding will start the four bioscience platforms identified in the TEconomy report where Iowa has the greatest likelihood of achieving a differentiated leadership position to grow and diversify the state's economy: biobased chemicals, precision and digital agriculture, vaccines and immunotherapeutics, and medical devices. The funding will facilitate technology transfer, incubate start-ups and accelerate technology transfer, attract external funding and provide innovation ecosystem services, and develop a skilled workforce.
- A new \$400,000 appropriation to UNI for the expansion of the Metal Casting Center's additive manufacturing capabilities related to investment castings technology and industry support, which fully funds the Board's request.

The remaining \$8.7 million allocated from the SWJCF to the Board of Regents universities, which has not changed since creation of the fund in FY 2014, is divided as follows:

- \$3 million to the Regents Innovation Fund, which is used in the areas related to technology commercialization, marketing, entrepreneurship, business growth, and infrastructure projects and programs needed to assist in implantation of activities under Iowa Code chapter 262B (Commercialization of Research). The Regents universities invest the funds received from the legislature 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: 35% to UI, 35% to ISU, and 30% to UNI.
- \$2 million to UI for implementing the entrepreneurship and economic growth initiative. The appropriation is used to expand public/private partnerships and programing through the Pappajohn Entrepreneurial Center.
- \$209,000 to UI for the UI Research Park, Technology Innovation Center and UI Pharmaceuticals (formerly Advanced Drug Development program). UI must direct expenditures for research toward projects that will provide economic stimulus for Iowa and emphasize providing services to Iowa-based companies.
- \$2.4 million to ISU for small business development centers, the ISU Research Park and the Center for Industrial Research and Service. At least \$735,728 must be allocated for purposes of funding small business development centers. ISU is to direct expenditures for research toward projects that will provide economic stimulus for Iowa and emphasize providing services to Iowa-based companies. The industrial incentive program must focus on Iowa industrial sectors and seek contributions and in-kind donations from businesses, industrial foundations, and trade associations, and that moneys for the Center for Industrial Research and Service industrial incentive program can only be allocated for projects which are matched by private sector moneys for directed contract research or for nondirected research. The match required of small businesses for directed contract research or for nondirected research shall be \$1 for each \$3 of state funds. The match required for other businesses for directed contract research or for nondirected research shall be \$1 for each \$1 of state funds. The match required of industrial foundations or trade associations shall be \$1 for each \$1 of state funds.
- \$1.07 million to UNI for the Metal Casting Center, the MyEntreNet internet application, and the Institute for Decision Making. UNI must allocate at least \$617,638 for purposes of support of entrepreneurs through the university's Center for Business Growth and

Innovation and Advance Iowa program. UNI must direct expenditures for research toward projects that will provide economic stimulus for Iowa and emphasize providing services to Iowa-based companies.

### **FY 2019 University Reports Highlights**

**University of Iowa:** Reuters once again cited UI as one of the 100 most innovative universities in the world. This recognition is indicative of the impact the university can have upon the economy of Iowa and is why economic development is a component of the university's strategic plan. The university is focused on supporting the translation of intellectual work into applications to enhance economic development. This strategy will be implemented through:

- Exploring increased opportunities for entrepreneurial education, new venture creation, technology transfer and innovation; and
- Connecting faculty, staff, and students to organizations to solve social, technical, and business problems

President Harreld's decision to split the Office of the Vice President for Research from Economic Development during FY 2019 provided the university with an opportunity to examine its efforts and bring new focus to promoting statewide economic development; their report begins with a summary of that effort.

Their annual report also provides a description and the activities of eight of the UI's key initiatives in the economic development space:

1. Protostudios, a state-of-the-art, rapid-prototyping facility that works with UI researchers, researchers from other Iowa universities, and community members to develop fully functional prototypes of product ideas, allowing innovators to test, redesign and determine manufacturing paths and demonstrate usability to investors.
2. UI Research Park, home to a world-class business incubator program that has nurtured over 100 UI start-ups and other new ventures since its founding. Incubator tenant companies can draw on both the research and business resources of the university, including access to UI libraries, hazardous waste management services, support for SBIR/STTR grants (Small Business Innovation Research/Small Business Technology Transfer federal grants), educational seminars, networking opportunities and shipping/package handling.
3. Translational Research Incubator, serves as the wet-lab counterpart to Protostudio's dry-lab program. The TRI space is a complement to the UI Research Park as it can house up to four early-stage research-based biomedical or life science companies focused on commercializing technology developed at the university.
4. UI Research Foundation, assists UI faculty researchers in the transfer of technology from the laboratory to the marketplace. The office manages a wide variety of intellectual properties arising from research programs throughout the university, and it is the resource for faculty and staff researchers in the areas of patent prosecution, innovation marketing and licensing.
5. UI Ventures, assists university faculty and staff in creating new companies based upon their research. It facilitates connections between the faculty and outside mentors, services and investors and serves as a liaison between the company and university services. In

addition, UI Ventures manages the TRI incubator and operates the MADE program to encourage faculty and staff innovation and entrepreneurship throughout campus.

6. MADE, is a manufacturing and e-commerce initiative launched in FY 2018. Iowa MADE is a first of its kind program, in the nation, whose mission is to encourage and facilitate the UI community to bring innovative, need-based products to market with the goal of enhancing economic development at the university as an extension of research and scholarship.
7. John Pappajohn Entrepreneurial Center, offers nationally recognized comprehensive entrepreneurial education programs to all Iowans. Iowa JPEC and its university partners play an important role in the development of Iowa-based technology and high-growth start-up companies. Whether providing one-on-one consulting services and group training, working with start-up companies on technology transition, directing UI students on advanced field study projects, or providing training and seminars to business executives, Iowa JPEC seeks to support the next generation of entrepreneurs and business leaders.
8. UI Center for Advancement (UICFA). The mission of the center is to advance the UI through engagement and philanthropy, and its Corporate and Foundation Relations group promotes economic development through connecting corporate partners with the UI's strengths. In addition, the UICFA is a key player in tapping UI's extensive alumni base to support entrepreneurship and technology commercialization through monetary resources and, equally important, advice and expertise.

**Iowa State University:** In 2016, ISU 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. As the APLU states, "The designation acknowledges universities working with public and private sector partners in their states and regions to support economic development through a variety of activities, including innovation and entrepreneurship, technology transfer, talent and workforce development and community development."

ISU promotes economic growth in Iowa by providing business and technical assistance to existing companies, supporting the creation of new companies, helping attract new companies and entrepreneurs to Iowa, creating intellectual property and moving research ideas to the market, and contributing to workforce and entrepreneurial development.

ISU pioneered the first statewide Extension Service in 1906. The extension experiment – universities actively transferring their research and expertise to every corner of every state – was immensely successful across America and remains so today. Each year, more than a million Iowans directly benefit from ISU Extension and Outreach programs. ISU Extension and Outreach, in collaboration with ISU colleges, impacts economic development in the state through all of its programs – Community and Economic Development, as well as Agriculture and Natural Resources, Human Sciences, and 4-H Youth Development.

The Office of Economic Development and Industry Relations (EDIR) consists of the following key university economic development units that provide integrated and comprehensive business, technical, entrepreneurial support, and educational services to Iowa State's clients and partners:

1. The Center for Industrial Research and Service (CIRAS) works with business and industry to enhance their performance through service offerings in five general areas: technology, growth, productivity, enterprise leadership and workforce.
2. The Small Business Development Center (SBDC), administered by Iowa State, consists of 15 regional centers serving all 99 counties in Iowa. SBDC assists individuals interested in starting new companies and provides business services and counsel to existing companies across Iowa to solve management problems, to improve operations, to seek financing, and to pursue new opportunities. Iowa State also operates two regional centers.
3. Pappajohn Center for Entrepreneurship serves entrepreneurs, provides entrepreneurial opportunities for students including a student accelerator, hosts statewide and local business plan and pitch competitions, and participates in university-wide academic programs in entrepreneurship, including an interdisciplinary minor in entrepreneurial studies, graduate courses, a major in entrepreneurship for business students, and a PhD program in entrepreneurship.
4. ISU Research Foundation and Office of Intellectual Property and Technology Transfer protects, manages, markets and licenses the intellectual property of ISU researchers and implements agreements related to research collaborations with industry.
5. ISU Research Park provides a resource-rich environment including close proximity and easy access to Iowa State University for its tenant companies, which include start-ups and established companies that range from growing entrepreneurial ventures to global corporations. The Research Park offers high quality labs and office space, as well as numerous services and amenities that support the efforts of science- and technology-based organizations.

EDIR also serves as the gateway or portal to the university's expertise, capabilities, resources, and facilities that support and enhance economic development throughout the state. Thus, EDIR works very closely with 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.

Their annual report provides a description and activities for these programs and centers.

**University of Northern Iowa:** In FY 2019, the University of Northern Iowa (UNI) provided economic development assistance throughout all of Iowa's 99 counties for the 20<sup>th</sup> consecutive year. UNI's Business and Community Services (BCS) was also recognized by the Greater Cedar Valley Alliance as Partner of the Year. Every dollar received from the state to BCS leverages five dollars in private grants, fees or federal funding.

UNI's economic development outreach programs are housed in the BCS division and work toward supporting the UNI strategic goal of contributing to the economic vitality of the state. Since 2000, BCS has engaged the entire university community in its outreach efforts, including faculty, staff, students, and alumni – all of whom play a critical role in enhancing economic development across Iowa.

Specific areas of service offered by UNI BCS include: entrepreneurship, community and economic development, market research, environmental research, sustainability, advanced manufacturing, metal casting and additive manufacturing.

Their annual report provides a description and the activities of the 12 programs located within Business and Community Services (<https://bcs.uni.edu/>):

1. Advance Iowa
2. Center for Business Growth & Innovation
3. Center for Energy and Environmental Education
4. Geoinformatics Training, Research, Education and Extension Center (GeoTREE)
5. Institute for Decision Making
6. Iowa Waste Reduction Center
7. John Pappajohn Entrepreneurial Center
8. Metal Castings Center and Center for Additive Manufacturing
9. Recycling and Reuse Technology Transfer Center
10. Small Business Development Center
11. Strategic Marketing Services
12. Tallgrass Prairie Center



Indicators	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019			
	ISU	SUI	UNI	Regents Total	ISU	SUI	UNI	Regents Total	ISU	SUI	UNI	Regents Total	ISU	SUI	UNI	Regents Total	ISU	SUI	UNI	Regents Total
Number of disclosures of intellectual property	130	149	11	290	143	151	10	304	130	93	11	234	145	143	11	299	165	83	11	259
Number of patent applications filed	110	148	3	261	139	296	3	438	152	148	5	305	143	153	3	299	98	160	2	260
Number of patents awarded	31	50	3	84	15	67	2	84	15	42	2	59	42	74	1	117	32	54	2	88
Number of license and option agreements executed on institutional intellectual property in total	108	40	2	150	84	39	2	125	85	58	2	145	51	51	2	104	46	48	2	96
Number of license and option agreements executed on institutional intellectual property in Iowa	61	13	2	76	45	19	2	66	39	18	2	59	21	9	2	32	25	12	1	38
Number of license and option agreements yielding income	157	135	8	300	153	128	9	290	199	122	9	330	185	127	10	322	155	127	10	292
Revenue to Iowa companies as a result of licensed technology	\$8 million	\$1.62 million	\$2.7 million	\$12.32 million	\$5.2 million	\$1.26 million	\$3.1 million	\$9.56 million	\$9.9 million	\$0.5 million	\$3.7 million	\$14.1 million	\$36.9 million	\$1.24 million	\$3.6 million	\$41.74 million	\$8.3 million	\$1.2 million	\$3.5 million	\$13 million
Number of startup companies formed, in total (through licensing activities)	4	15	--	19	6	22	--	28	9	20	--	29	2	4	1	7	4	5	1	10
Number of startup companies formed, in Iowa (through licensing activities)	4	11	--	15	5	16	--	21	8	13	--	21	2	2	1	5	4	4	1	9
Number of startup companies formed through UNI assistance	--	--	94	94	--	--	142	142	--	--	134	134	--	--	96	96	--	--	94	94
Number of companies in research parks and incubators	70	55	31	156	74	59	29	162	115	46	24	185	118	41	20	179	130	38	21	189
Number of new companies in research parks and incubators	11	6	11	28	17	4	14	35	43	7	16	66	40	6	14	60	151	1	16	168
Number of employees in companies in research parks and incubators	1,580	1,966	57	3,603	1,709	1,635	116	3,460	1,702	1,704	87	3,493	2,178	1,429	66	3,673	2,253	2,459	54	4,766
Royalties and license fee income	\$3 million	\$1.87 million	\$12,776	\$4.9 million	\$3.3 million	\$1.62 million	\$21,722	\$4.94 million	\$3.3 million	\$1.67 million	\$35,050	\$5.0 million	\$4.3 million	\$1.72 million	\$21,500	\$6.24 million	\$2.8 million	\$1.77 million	\$29,050	\$4.6 million
Total sponsored funding	\$424.9 million	\$565 million	\$38.9 million	\$1.0288 billion	\$425.8 million	\$552 million	\$39.1 million	\$1.0169 billion	\$503.6 million	\$557.7 million	\$37.8 million	\$1.0991 billion	\$509.2 million	\$554.0 million	\$39.5 million	\$1.1027 billion	\$469.0 million	\$588.7 million	\$40.8 million	\$1.0985 billion
Sponsored funding from federal grants	223.9 million	\$231.9 million	\$21.1 million	\$477.7 million	\$229.5 million	\$240.3 million	\$20.4 million	490.2 million	\$219 million	\$224.4 million	\$22.2 million	\$465.6 million	\$235.6 million	\$260.5 million	\$22.1 million	\$518.2 million	\$237.1 million	\$281.5 million	\$23.2 million	\$541.8 million
Corporate-sponsored funding in total	\$39.6 million	\$91.7 million	\$575,000	\$131.8 million	\$43.8 million	\$75.9 million	\$435,000	\$120.1 million	\$45.3 million	\$99.5 million	\$875,000	\$145.7 million	\$51.3 million	\$91.6 million	\$803,000	\$143.7 million	\$57.2 million	\$77.1 million	\$1.0 million	\$135.3 million
Corporate-sponsored funding in Iowa	\$16.5 million	\$2 million	\$575,000	\$19 million	\$11.9 million	\$1.9 million	\$435,000	\$14.2 million	\$14.3 million	\$10.5 million	\$875,000	\$25.7 million	\$7.8 million	\$14.9 million	\$400,000	\$23.1 million	\$20.7 million	\$10.9 million	\$560,000	\$32.2 million