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ANNUAL ECONOMIC DEVELOPMENT AND TECHNOLOGY TRANSFER REPORT

Action Requested: Receive the report.

Full Reports Available: The full fiscal year (FY) 2022 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, Governor's Office, 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. Research and scholarship from faculty and staff at the Regent universities often lead to the discovery of innovations that can improve the quality of life for people in the state, the nation, and worldwide.

The Regent 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 2022 Highlights: Collectively, in FY 2022, the three universities provided over \$1.5 Billion dollars in total sponsored funding to the state of Iowa, including \$617 million from competitive federal grants and awards. This is a research funding record for both the UI and ISU. The Regent universities work diligently to develop breakthroughs that help to improve Iowa's economy through economic development, technology transfer and commercialization of research. The Regent 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.

Externally sponsored projects supplement the instruction, research, scholarship and public services provided by the Regent universities. These funds do not supplant state general fund dollars. This is true for all external funding (federal or non-federal) because it is required by federal regulation that external funds shall supplement and not supplant state dollars.

The Regent universities also provide assistance to Iowa businesses and start-up companies across Iowa. The numbers fluctuate on an annual basis, but generally reflect an upward trend over several years. In FY 2022, there were 4,478 employees in the 194 companies located in the university research parks and incubators, 84 license and option agreements on institutional intellectual property were executed, and 150 patents were awarded. These numbers only tell part of the story. The value added by aiding 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. Nonetheless, these statistics reflect excellent performance when compared to similar institutions and reflect the economic value the Regent universities provide to the State of Iowa.

The below charts show the combined statistics for the three universities over the past five fiscal years. See the chart at end of the docket item for the details from each university.

Licenses, Intellectual Property and Patents	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Patent applications filed	299	260	250	239	284
Patents awarded	117	88	176	158	150
Disclosures of intellectual property	299	259	237	256	197
Total license and option agreements executed on institutional intellectual property	104	96	85	96	84
License and option agreements executed on institutional intellectual property in Iowa	32	38	34	30	16
License and option agreements yielding income	322	292	260	217	208
Revenue to Iowa companies as a result of licensed technology	\$41.7 M	\$13 M	\$10.3 M	\$6.9 M	\$12.1 M
Royalties and license fee income	\$6.2 M	\$4.6 M	\$4.6 M	\$4.8 M	\$6.5 M

Companies	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Total startup companies formed through licensing activities	7	10	7	15	5
Startup companies formed in Iowa through licensing activities	5	9	5	12	3
Startup companies formed through UNI assistance	96	94	99	107	98
Companies in research parks and incubators	179	189	191	185	194
New companies in research parks and incubators	60	168	72	55	55
Employees in companies in research parks and incubators	3,673	4,766	4,596	4,460	4,478

Income and Funding	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Total sponsored funding	\$1,102.7 M	\$1,098.5 M	\$1,207.8 M	\$1,449.5 M*	\$1,515.4 M
Sponsored funding from federal grants	\$518.2 M	\$540.4 M	\$648.3 M	\$790.3 M*	\$617 M
Total Corporate-sponsored funding	\$143.7 M	\$135.3 M	\$143.3 M	\$159.8 M	\$199.9 M
Corporate-sponsored funding in Iowa	\$23.1 M	\$32.2 M	\$21.6 M	\$20.59 M	\$27.6 M

*FY 2021 sponsored funding includes federal Higher Education Emergency Relief Fund (COVID Relief) funding

State Appropriations: Stable state dollars allow the Regent universities to grow Iowa's economy. In many cases sponsored projects, including many federally sourced projects, require cost share

(match) funds so that the sponsor and the university have a financial stake in the project. In order to provide cost share some state dollars are used and in doing so the Regent universities are able to make every state dollar have twice, and sometimes more, of an impact on the university's instruction, research and public service.

Additionally, federal agencies will only invest in institutions that are financially healthy, compliant with federal regulations that have cutting edge technology and instrumentation, robust public service portfolios, and that have top-tier scholars and researchers. State funding supplies these resources, allowing the Regent universities to attract federal and non-federal funds so that every state dollar invested in the Regent universities has double or more of an impact on Iowa's communities and economy.

For FY 2022, the Iowa General Assembly appropriated nearly \$12.6 million in total funding for economic development, technology transfer and commercialization of research to the three Regent universities, which is a \$2.4 million increase from FY 2021. The two state general fund appropriations for FY 2022, totaling nearly \$3.9 million, are divided as follows:

- Nearly \$3.5 million to ISU and UI for the biosciences innovation program (divided \$2,623,481 to ISU and \$874,494 to UI), which is an increase of \$2.4 million from FY 2021. The funding continues 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.
- \$394,321 to UNI for the expansion of the Metal Casting Center's additive manufacturing capabilities related to investment castings technology and industry support, which is the same as FY 2021. This program was initially funded at \$400,000 in FY 2020.

The remaining \$8.7 million allocated to the Regent universities, from the Skilled Worker and Job Creation Fund (SWJCF), has not changed since creation of the fund in FY 2014:

- \$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 Regent 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 Center for Business Growth and Innovation, 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.

Annual Report Highlights:

The University of Iowa secured its highest-ever level of external funding for research, scholarship, and creative activities in FY 2022 at \$867.2 million, breaking their previous record of \$818 million. The State Hygienic Laboratory continued to receive funds from the Centers for Disease Control and Prevention via the Iowa Department of Public Health, including \$115 million in multiyear awards to meet the high demand for COVID-19 testing and enhance laboratory preparedness for preventing and controlling future infectious disease outbreaks. The record funding is a testament to the commitment and innovation of the university's faculty and staff.

Iowa State University broke its record by securing \$601.7 million in total external funding, breaking the previous record of \$559.1 million. ISU continues to expand the reach and impact of the university's Biosciences-focused Innovation Ecosystems with the critical support of the Iowa Legislature and in close partnership with BioConnect Iowa. The legislature allocated just over \$2.6 million for FY 2022 to support Iowa State's research and development efforts across three Biosciences platforms: Biobased Products, Digital and Precision Agriculture and Vaccines and Immunotherapeutics. The report provides some key accomplishments of each platform during FY 2022.

In FY 2022, the University of Northern Iowa provided economic development assistance throughout all of Iowa's 99 counties, for the 23rd consecutive year. Every dollar received from the state to UNI's Business and Community Services (BCS) division leverages five dollars in private grants, fees or federal funding. Client interaction reached 3,756, a record for BCS outreach centers and programs.

Indicators	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	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	145	143	11	299	165	83	11	259	132	95	10	237	144	101	11	256	82	103	12	197
Number of patent applications filed	143	153	3	299	98	160	2	260	102	146	2	250	114	123	2	239	94	188	2	284
Number of patents awarded in total	42	74	1	117	32	54	2	88	98	76	2	176	71	86	1	158	69	80	1	150
Number of license and option agreements executed on institutional intellectual property in total	51	51	2	104	46	48	2	96	46	37	2	85	47	47	2	96	34	48	2	84
Number of license and option agreements executed on institutional intellectual property in Iowa	21	9	2	32	25	12	1	38	22	10	2	34	22	7	1	30	10	5	1	16
Number of license and option agreements yielding income	185	127	10	322	155	127	10	292	154	95	11	260	118	87	12	217	113	83	12	208
Revenue to Iowa companies as a result of licensed technology	\$36.9 million	\$1.24 million	\$3.6 million	\$41.74 million	\$8.3 million	\$1.2 million	\$3.5 million	\$13 million	\$5.4 million	\$1.1 million	\$3.8 million	\$10.3 million	\$1.7 million	\$1.1 million	\$4.1 million	\$6.9 million	\$5.5 million	2.32 million	\$4.3 million	12.12 million
Number of startup companies formed, in total (through licensing activities)	2	4	1	7	4	5	1	10	4	2	1	7	8	6	1	15	1	3	1	5
Number of startup companies formed, in Iowa (through licensing activities)	2	2	1	5	4	4	1	9	4	0	1	5	8	3	1	12	1	1	1	3
Number of startup companies formed through UNI assistance	--	--	96	96	--	--	94	94	--	--	99	99	--	--	107	107	--	--	98	98
Number of companies in research parks and incubators	118	41	20	179	130	38	21	189	135	34	22	191	134	32	19	185	142	32	20	194
Number of new companies in research parks and incubators	40	6	14	60	151	1	16	168	53	5	14	72	35	5	15	55	45	2	8	55
Number of employees in companies in research parks and incubators	2,178	1,429	66	3,673	2,253	2,459	54	4,766	2,041	2,500	55	4,596	1,913	2,500	47	4,460	1,945	2,500	33	4,478
Royalties and license fee income	\$4.3 million	\$1.72 million	\$21,500	\$6.24 million	\$2.8 million	\$1.77 million	\$29,050	\$4.6 million	\$3.0 million	\$1.57 million	\$45,100	\$4.62 million	\$2.9 million	\$1.81 million	\$63,400	\$4.8 million	\$2.8 million	\$3.65 million	\$35,600	\$6.5 million
Total sponsored funding	\$509.2 million	\$554.0 million	\$39.5 million	\$1,102.7 million	\$469.0 million	\$588.7 million	\$40.8 million	\$1,098.5 million	\$494.7 million	\$666.2 million	\$46.9 million	\$1,207.8 million	\$559.1 million*	\$818.04 million*	\$72.4 million*	\$1,449.5 million*	\$601.7 million	\$867.2 million	\$46.5 million	\$1,515.4 million
Sponsored funding from federal grants	\$235.6 million	\$260.5 million	\$22.1 million	\$518.2 million	\$237.1 million	\$281.5 million	\$23.2 million	\$541.8 million	\$272.5 million	\$346.7 million	29.1 million	\$648.3 million	\$303.5 million*	\$431.3 million*	\$55.5 million*	\$790.3 million*	\$251.7 million	\$343.1 million	\$22.2 million	\$617 million
Corporate-sponsored funding in total	\$51.3 million	\$91.6 million	\$803,000	\$143.7 million	\$57.2 million	\$77.1 million	\$1.0 million	\$135.3 million	\$51.2 million	\$91.1 million	\$1.0 million	\$143.3 million	\$51.5 million	\$107.1 million	\$1.2 million	\$159.8 million	\$62 million	\$136.6 million	\$1.27 million	\$199.9 million
Corporate-sponsored funding in Iowa	\$7.8 million	\$14.9 million	\$400,000	\$23.1 million	\$20.7 million	\$10.9 million	\$560,000	\$32.2 million	\$11.8 million	\$8.8 million	\$1.0 million	\$21.6 million	\$12.2 million	\$7.49 million	\$900,000	\$20.59 million	\$18.8 million	\$8 million	\$800,000	\$27.6 million

* FY 2021 sponsored funding includes federal Higher Education Emergency Relief Fund (COVID Relief) funding