



Michael J. Richards, MD, President, West Des Moines  
Sherry Bates, President Pro Tem, Scranton  
David R. Barker, PhD, Iowa City  
Robert Cramer, Adel  
Abby Crow, Tiffin  
Nancy Dunkel, Dyersville  
Jim Lindenmayer, PhD, Ottumwa  
JC Risewick, Johnston  
Greta Rouse, Emmetsburg

Mark J. Braun, EdD, Executive Director

November 29, 2023

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

Tim McDermott, Director  
Legislative Services Agency  
State Capitol Building  
Des Moines IA 50319

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)

Patents and Licenses for FY 2023

2013 Iowa Acts, Chapter 141.54 (HF 604)

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

Collectively, in FY 2023, the three universities provided nearly \$1.28 billion dollars in total sponsored funding to the state of Iowa, including \$687.8 million from competitive federal grants and awards. The Regent universities aid 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 2023, there were 3,550 employees in the 213 companies located in the university research parks and incubators, 138 license and option agreements on institutional intellectual property were executed, and 158 patents were awarded. For FY 2023, 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.

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\2024 session\Reports\

Attachments

cc: Michael Peters  
Legislative Liaisons  
Legislative Log

## **ANNUAL ECONOMIC DEVELOPMENT AND TECHNOLOGY TRANSFER REPORT**

**Action Requested:** Receive the report.

**Full Reports Available:** The FY 2023 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 daily 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 2023 Highlights:**

Collectively, in FY 2023, the three universities provided nearly \$1.28 billion dollars in total sponsored funding to the state of Iowa, including \$687.8 million from competitive federal grants and awards. 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 aid 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 2023, there were 3,550 employees in the 213 companies located in the university research parks and incubators, 138 license and option agreements on institutional intellectual property were executed, and 158 patents were awarded. These numbers only tell part of the story. The value added by aiding licensees and startup companies as they take these typically 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.

<b>Licenses, Intellectual Property and Patents</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
Patent applications filed	260	250	239	284	289
Patents awarded	88	176	158	150	158
Disclosures of intellectual property	259	237	256	197	215
Total license and option agreements executed on institutional intellectual property	96	85	96	84	136
License and option agreements executed on institutional intellectual property <b>in Iowa</b>	38	34	30	16	27
License and option agreements yielding income	292	260	217	208	201
Revenue to <b>Iowa</b> companies as a result of licensed technology	\$13 M	\$10.3 M	\$6.9 M	\$12.1 M	\$11.5 M
Royalties and license fee income	\$4.6 M	\$4.6 M	\$4.8 M	\$6.5 M	\$5.3 M

<b>Companies</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
Total startup companies formed through licensing activities	10	7	15	5	7
Startup companies formed <b>in Iowa</b> through licensing activities	9	5	12	3	6
Startup companies formed through UNI assistance	94	99	107	98	75
Companies in research parks and incubators	189	191	185	194	213
New companies in research parks and incubators	168	72	55	55	62
Employees in companies in research parks and incubators	4,766	4,596	4,460	4,478	3,550

<b>Income and Funding</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
Total sponsored funding	\$1,098.5 M	\$1,207.8 M	\$1,449.5M*	\$1,515.4 M	\$1,277.3 M
Sponsored funding from federal grants	\$540.4 M	\$648.3 M	\$790.3 M*	\$617 M	\$687.8 M
Total Corporate-sponsored funding	\$135.3 M	\$143.3 M	\$159.8 M	\$199.9 M	\$203.0 M
Corporate-sponsored funding <b>in Iowa</b>	\$32.2 M	\$21.6 M	\$20.59 M	\$27.6 M	\$32.6 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 2023, 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 was equal to the FY 2022 state appropriation. The two state general fund appropriations for FY 2023, 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 the same level as FY 2022. 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.
- \$2.42 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 \$704.1 in external funding in FY 2023, including \$561.3 million in funds to support cutting-edge research, public service and creative discovery. UI has secured more than \$363 million in federal funding in FY 2023, a 16.5 percent increase over the previous year. A specific significant increase in UI funding is from NASA, which exceeded \$75 million in FY 2023, more than doubling the previous year's total. The funds that UI receives support a range of activities that advance the pace of research and discovery, engage students in transformational experiences, and benefit citizens of Iowa, the nation and the world.

Iowa State University secured \$530.5 million in total external funding for FY 2023. ISU researchers attracted \$301.3 million to support their experiments and projects, setting the university's record for annual, external, sponsored research funding; it topped the previous record, set in FY 2022, by \$17.1 million. The new research total also includes records for federal research funding (\$206.9 million) and non-federal research funding (\$94.4 million). Among the organizations to provide major support to ISU research projects include the National Science Foundation, the U.S. Department of Agriculture, and the Department of Health and Human Services and the National Institute of Health.

The University of Northern Iowa provided economic development assistance to all of Iowa's 99 counties for the 24th consecutive year. UNI's economic development outreach programs are housed in the Business and Community Services (BCS) division and work toward supporting UNI strategic goal 2, to "Empower Communities to Shape Their Future." 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 Building a Better Iowa. Client interaction reached 3,953, a record high for BCS outreach centers and programs.

Indicators	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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	165	83	11	259	132	95	10	237	144	101	11	256	82	103	12	197	130	72	13	215
Number of patent applications filed	98	160	2	260	102	146	2	250	114	123	2	239	94	188	2	284	112	175	2	289
Number of patents awarded	32	54	2	88	98	76	2	176	71	86	1	158	69	80	1	150	97	59	2	158
Number of license and option agreements executed on institutional intellectual property <b>in total</b>	46	48	2	96	46	37	2	85	47	47	2	96	34	48	2	84	87	47	2	136
Number of license and option agreements executed on institutional intellectual property <b>in Iowa</b>	25	12	1	38	22	10	2	34	22	7	1	30	10	5	1	16	14	12	1	27
Number of license and option agreements yielding income	155	127	10	292	154	95	11	260	118	87	12	217	113	83	12	208	113	76	12	201
Revenue to Iowa companies as a result of licensed technology	\$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	\$12.1 million	\$3.0 million	\$4.0 million	\$4.5 million	\$11.5 million
Number of startup companies formed, <b>in total</b> (through licensing activities)	4	5	1	10	4	2	1	7	8	6	1	15	1	3	1	5	1	5	1	7
Number of startup companies formed, <b>in Iowa</b> (through licensing activities)	4	4	1	9	4	0	1	5	8	3	1	12	1	1	1	3	1	4	1	6
Number of startup companies formed through UNI assistance	--	--	94	94	--	--	99	99	--	--	107	107	--	--	98	98	--	--	75	75
Number of companies in research parks and incubators	130	38	21	189	135	34	22	191	134	32	19	185	142	32	20	194	159	31	23	213
Number of new companies in research parks and incubators	151	1	16	168	53	5	14	72	35	5	15	55	45	2	8	55	48	2	12	62
Number of employees in companies in research parks and incubators	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	2,491	1,022	37	3,550
Royalties and license fee income	\$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	\$3.1 million	\$2.16 million	\$49,068	\$5.3 million
Total sponsored funding	\$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	\$530.5 million	\$704.1 million	\$42.7 million	\$1,277.3 million
Sponsored funding from federal grants	\$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	\$301.3 million	\$366.3 million	\$20.2 million	\$687.8 million
Corporate-sponsored funding <b>in total</b>	\$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	\$67.6 million	\$134.2 million	\$1.22 million	\$203.0 million
Corporate-sponsored funding <b>in Iowa</b>	\$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	\$22.8 million	\$8.8 million	\$950,000	\$32.6 million

# IOWA STATE UNIVERSITY

## OF SCIENCE AND TECHNOLOGY

---

### FY23 ANNUAL ECONOMIC DEVELOPMENT AND TECHNOLOGY TRANSFER REPORT TO BOARD OF REGENTS, STATE OF IOWA

---

PRESENTED BY:

David Spalding  
Raisbeck Endowed Dean, Debbie and Jerry Ivy College of Business  
Vice President, Office of Economic Development and Industry Relations

October 1, 2023

## Annual Economic Development and Technology Transfer Report – FY2023

As the land-grant institution in the very first state to adopt the Morrill Act, Iowa State University supports the land-grant ideals of putting science, technology, and human creativity to work. Iowa State's Economic Development and Industry Relations (EDIR) team in partnership with Iowa State Extension is focused on innovation and economic prosperity in all 99 Iowa counties.

Economic development is a top priority at Iowa State, and the university is very proud of the impact it has on both the lives of its students and our state economy. Iowa State's **economic development programs, services and initiatives** contribute to the overall positive net impact the university creates on Iowa's business community and the return on investment it generates for students, taxpayers, and society. Through President Wendy Wintersteen's **Innovation and Entrepreneurship Initiative**, we are embedding innovation and entrepreneurship more deeply into our culture and curriculum. By doing so, we are cultivating the next generation of innovators and entrepreneurs while responding to the needs of our communities and state.

Iowans can count on Iowa State to serve as a trusted resource, using our core strengths—innovation, science-based extension and outreach, and education. Our economic development and innovation efforts have also been recognized nationally and globally. 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:

- Center for Industrial Research and Service (CIRAS)
- Iowa State University Research Park (ISURP)
- Office of Innovation Commercialization
- Iowa's Small Business Development Centers
- Pappajohn Center for Entrepreneurship

Iowa State's Economic Development and Industry Relations (EDIR) department is focused on innovation and economic prosperity for all 99 counties in Iowa. It was designed as a one-stop shop for businesses and entrepreneurs who want to work with Iowa State. There are countless ways for businesses, founders, and innovators to engage with Iowa State and the entities in EDIR, and our Iowa State Extension partners are many times the starting point. Our focus in EDIR is on initiating, broadening, and strengthening these interactions into meaningful engagement opportunities across campus for the betterment of the state economy.

We have been recognized both nationally and globally for our work in Economic Development and innovation. Iowa State won the 2022 Innovation and Economic Prosperity Award from the Association of Public and Land-grant Universities. The award was in the "Innovation" category – recognizing our initiatives to spur innovation, entrepreneurship, and technology-based economic development. It's our fourth award in seven years and we have been a finalist in two other years, including this year.

Financially, Iowa State has a major impact on the economy of the state of Iowa. This is backed up by an analysis recently completed of Iowa State University's economic impact on the state of [Iowa for the fiscal year ending June 30, 2022](#).

- Iowa State produced a \$5 billion impact last year.
- Iowa State supports 57,142 jobs – or 1 out of every 36 jobs in Iowa.
- ISU research spending and activities created a net total of \$235.3 million in added income for the state economy.



We are one of the leading research universities in the United States. Last year Iowa State ranked 17<sup>th</sup> in research funding among all universities that don't have a medical school. Our students benefit from studying at a major research university because the faculty who teach them need to be at the leading edge of their fields and they bring that knowledge back into the classroom. Many of those researchers also get engaged in research projects for industry. Areas where we engage with companies include:

**WORKFORCE** Iowa State graduated almost 6,800 students this past academic year, and we provide more graduates who stay in Iowa than any other university in the United States. We work closely with industry to meet their hiring needs and achieve successful placement outcomes for our graduates. Our Career Services and corporate engagement teams partner with businesses to meet their needs by developing internship programs, offering speaking opportunities on campus, engaging with student organizations, and positioning them at our career fairs. Many companies utilize our research park as a training hub and beachhead location to help them retain interns and to serve as a continuing pipeline into recruitment.

**RESEARCH** is the driving force behind economic development at Iowa State. The resources available through the EDIR office allow businesses to access a wide range of researchers and connect with services to help businesses grow and thrive. Multiple businesses have set up innovation and technical scouting offices at our research park for a closer view into the intellectual property being generated both at the university and by our startup community.

Groups like the Translational Artificial Intelligence Consortium at Iowa State are another example of corporate engagement. In addition to hosting events on next generation technologies, businesses can access faculty expertise across the university by engaging directly with our scientific and research community through sponsored research, hiring graduate students, or a variety of other means.

**UPSKILL, RESKILL, CONTINUING EDUCATION.** Iowa State offers tailored curriculum and programs to upskill, reskill and support leaders with continuing education, such as the Executive MBA program. We also offer a variety of fully online programs for working professionals including masters of Seed Technology and Business; masters of Business Analytics; masters of Engineering Management; and MBA. Iowa State also recently launched fully customized education programs for individual companies to meet their needs. These include both upskill classroom and bootcamp type engagements; content is driven by corporate partners and paired with university expertise.

**FACILITIES AND EQUIPMENT** are also available for industry partners to access via a fee for service model. Oftentimes, there are pieces of equipment that are costly to purchase that a company might only need to use periodically, and those can be accessed for public use. This could include anything from scale up facilities, to field access, to milling and grinding equipment, gene sequencers and more. An example is an Off-Highway Vehicle Chassis Dynamometer for testing of complete highway vehicles.

A closer look at our EDIR organizations and partners follows:

The **Center for Industrial Research and Service (CIRAS)** works with business and industry across all 99 counties to enhance their performance through service offerings in five general areas: technology, growth, productivity, leadership, and workforce. CIRAS leads three federal business outreach programs and three state-based programs, with staff and partners located across campus and across the state. Since 1963, CIRAS has partnered with Iowa companies and communities to help them prosper and grow. A vast network of university and industry experts brings years of professional experience to CIRAS, making us a leading integrator of solutions in Iowa. Over the past five years, CIRAS and its partners have reported impact from companies totaling more than \$3 billion and more than 36,000 jobs created or retained because of the assistance they received.

**CIRAS FY23 HIGHLIGHTS:** Last year, 1,721 businesses from 98 counties in the state received assistance on projects or attended educational workshops from CIRAS staff or partners.

To meet changing expectations from companies, CIRAS launched ExporTech 2.0 in partnership with the Iowa Economic Development Authority (IEDA). ExporTech is a national export assistance program that helps companies develop customized plans for growing their level of exports. It is a joint effort of CIRAS, the Manufacturing Extension Partnership, the Iowa Economic Development Authority (IEDA), and the U.S. Department of Commerce. When ExporTech was first introduced by CIRAS in 2014, participants attended three full-day events scheduled about a month apart. Content experts covered topics like sales and distribution strategies, pricing and payment practices, logistics, regulations and certifications, and marketing messages. The same topics are covered in the new hybrid model.

This new approach helps businesses develop and deploy an exporting strategy provides them with more flexibility. “We learned a great deal about building our global presence and making contacts, as well as the details of exporting and registrations in each country,” said Dr. Rebecca Quesnell, vice president of operations and research/product development director at TransAgra International, who expects to double their international sales because of the effort.

Lily Okech, a Uganda refugee, overcame language barriers and adversity to establish Cleaning for Hope, a thriving commercial cleaning service in Des Moines. With determination and support from the CIRAS APEX Accelerator, Okech secured her first contract of \$49,500 from the Iowa Department of Transportation. Okech credits CIRAS with positioning her to successfully compete for the award as well as future government work.

Cedar Ridge Winery and Distillery, located in Swisher, faced challenges with their packaging equipment. Recognizing the potential for assistance, Murphy Quint, head distiller and chief of operations at Cedar Ridge, reached out to CIRAS after learning about the Iowa Economic Development Authority’s program to help manufacturers with technology equipment purchases. With help from CIRAS, Cedar Ridge received a \$50,000 Manufacturing 4.0 Grant, enabling them to invest in new automated equipment that streamlined their bottling process.

Fairy Tale Cotton Candy, a food manufacturer based in Des Moines, sought guidance from CIRAS to propel their business growth. Owner Steve Shearer expressed, “Working with CIRAS makes it easy to manage everything.” CIRAS aided with plant layout, federal food safety requirements, and marketing support. As a result, the company has experienced remarkable results, including over \$1.5 million in sales, cost savings, and investments over the past three years.

CIRAS completed support of the Iowa Economic Development Authority (IEDA) Manufacturing 4.0 Technology Investment Grant program. Starting in 2021, CIRAS conducted more than 330 on-site technology assessments for small manufacturers across Iowa. Third-party surveys with assessment participants through June 2023 have identified \$94M in financial impact and more than 400 jobs added or retained because of this program.

**Iowa State University Research Park (ISURP)** provides a resource-rich environment *where innovators flourish*. ISURP is a bricks and mortar real estate development, but its value to its tenants, Iowa State, and the Iowa economy lies in its engagement with the university and the seamless coordination and engagement opportunities it offers tenant partners. This includes proximity and easy access to Iowa State for both start-ups and established companies that range from growing entrepreneurial ventures to global corporations. Tenants can seamlessly access Iowa State’s vast array of workforce with customized solutions, the research enterprise, equipment and

more, and the proximity to the university is a differentiator for retention and conversion of talent and innovation. ISURP offers high quality labs and office space, as well as numerous community events, services and amenities that support the efforts of science- and technology-based organizations.

**ISURP FY23 HIGHLIGHTS:** After experiencing some of its highest vacancy rates in ISURP history during the height of the COVID19 pandemic, ISURP had its best year by numerous measures in FY23. The organization shifted its focus to finding mutually beneficial ways to say ‘**yes**’ to community and university partners, tenants, and prospects, and it paid off. ISURP is now almost completely full, with over 98% occupancy. Fifteen tenants took or added space this year, resulting in a net increase of 39,842 square feet leased, and numerous partnerships have paid dividends.

ISURP expanded its footprint in corporate engagement and added an employee focused on creating customized workforce solutions for tenant partners. Beachhead offices for many ISURP companies offer corporate partners a leg up on both innovation and workforce and an engagement team works with others across the institution to provide a concierge service to demystify and differentiate the process of accessing important university resources.

ISURP also started construction on a \$14M building for a booming biologics company, Pivot Bio, a 36,000 square foot customer success center that will open in November. ISURP expanded its partnership with Iowa State’s Digital and Precision Ag team, a renowned research group currently housed at Iowa State’s BioCentury Research Farm, led by professor Dr. Matt Darr, that works with corporate partners on ag innovation in the autonomy and sensing space. This is the most productive research team in Iowa State history, holding more than 70 patents and tech transfer outcomes, with 32 products sold globally, and accounting for more than 300 jobs in ag tech. ISURP brought additional corporate partners to this esteemed research group and provides resources to enable them to continue to scale their footprint to help additional Iowa companies. To that end, ISURP partnered with ISU Digital Ag, and Alliant Energy to begin construction on an \$18 million, 87,000 square foot facility that will open next December. The facility will allow Digital Ag Innovation to continue to work alongside test ground and partners at ISURP and also to scale and bring together multiple players in the agriculture space in shared communal and high bay spaces, all with the goal of bringing the next generation of technology solutions to farmers. Alliant Energy provided \$3M to enable construction, the first naming gift in ISURP history.

An important aspect of continued research park expansion is also expansion of the amenities offered to those that choose to work at ISURP. To that end, ISURP is also partnered with Iowa State Athletics on the CYTown redevelopment project, an effort to bring additional entertainment options, hotel, and flat floor space to Ames, while also funneling revenues back into the functional obsolescence of our performing arts facilities. Phase I parking lots and infrastructure are underway, and an announcement was made for the first anchor tenant, McFarland Clinic, to start construction in 2024. ISURP also leaned into its live, work, play environment and created a second unique partnership with ISU Athletics and will provide a home for Iowa State’s rising tennis program by expanding an existing facility previously owned by Ames Fitness, and adding outdoor clay courts and a locker room and team area.

ISURP also has several projects in the works that will come to fruition in FY23-24 to bring housing to the research park community—a critical need in our community to serve the base of 2500 employees working and commuting ISURP daily.

**The Office of Innovation Commercialization (OIC)** serves the Iowa State University community and the state of Iowa by commercializing intellectual property resulting from the research enterprise at ISU. Consisting of the Iowa State University Research Foundation (ISURF) and the Office of

Intellectual Property and Technology Transfer (OIPTT), OIC develops and executes appropriate protection and licensing strategies for both pre-partnered innovations (funded by industry-sponsored research agreements) and un-partnered technologies (primarily funded through federally sponsored research programs). Established and startup companies benefit from licensing intellectual property rights by creating new products, decreasing manufacturing costs, improving revenue streams, and increasing market share.

**OIC FY23 HIGHLIGHTS:** Iowa State researchers submitted 130 intellectual property disclosures (not including datasets) and ISURF filed 112 patent applications. In calendar year 2022, Iowa State was recognized for having 39 U.S. utility patents issued, ranking 87th of the top 100 worldwide and 54<sup>th</sup> of the top 100 U.S. universities granted U.S utility patents by the National Academy of Inventors.

In FY23, Iowa State was awarded 42 U.S. utility patents and an additional 13 patents from foreign countries for an overall total of 55. ISURF executed 87 license and option agreements for ISU technologies in FY23, 14 of which were with Iowa companies. ISURF currently has 113 license and option agreements which are yielding income. Iowa companies reported \$3.0 million of revenue from sales of ISU-licensed technologies in calendar year 2022, and one startup company was formed during that time period to commercialize ISU technologies. Global sales of licensed technologies was \$95 million. ISURF has been self-supported since 1992 through returns on its licensed technology portfolio; in addition, ISURF has returned over \$9.4 million over the last ten years to Iowa State and the Ames National Laboratory to support further investments in the research enterprise. ISURF distributes royalty revenue in accordance with the royalty sharing policy to technology inventors and retained earnings more than what is needed to support ISURF's operations are utilized to support research initiatives as recommended and approved by the ISURF Board of Directors.

The Office of Intellectual Property and Technology Transfer negotiates and executes sponsored research agreements for ISU with industry partners and commodity groups as well as nondisclosure agreements and material transfer agreements for Iowa State University. In FY22, OIPTT handled more than 1200 agreements.

Ames Laboratory researchers have developed new alloys for applications that require high strength, creep resistance and high tensile ductility at high temperatures. Applications include next-generation gas turbine engines, improved wind energy generators, and manufacturing dies. ISURF and the Ames National Laboratory are working with one of the big three U.S. automotive manufacturers to investigate opportunities for the alloy to improve current manufacturing techniques in a two million dollar, federally funded project.

Iowa State University researchers have developed new thermoplastic elastomers from soybean oils with initial markets in asphalt paving. As a replacement for conventional SBS polymers in asphalt, these renewably-sourced polymers allow for reduction of greater than 40% of virgin petrochemical materials in new roads through reincorporation of recycled asphalt. ISURF has licensed an extensive portfolio of patents to an Iowa-based startup company for commercialization of the technologies.

Iowa State University researchers discovered an enhanced method of producing antibodies for in the lab for diagnostic purposes. ISURF is working with a California-based company with an Iowa manufacturing presence to explore the commercial opportunities for this technology.

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 small companies across Iowa to solve management problems, to improve operations, to seek financing, and to pursue new

opportunities. Iowa State also operates two of the regional centers.

**SBDC FY23 HIGHLIGHTS:** Iowa's Small Business Development Center support thousands of businesses every year across many different industries. In State fiscal year 2023, the Small Business Development Center (SBDC) supported 4,569 companies across Iowa-- a minimum of five distinct clients in every Iowa county.

SBDC helps businesses in a variety of ways, including business planning, customer discovery, cash flow projections, financial analysis, loan proposal/capital request assistance, business growth strategies, marketing strategies, startup assistance, export assistance, and market research. The 4,569 businesses supported by SBDC accounted for \$111.1 million in new capital totaling 689 capital events and an increase of \$153.8 million in sales, including the creation of 1,661 jobs and 211 business starts.

SBDC also awards two Entrepreneur of the Year prizes. The 2023 Deb Dalziel Woman Entrepreneur of the Year was Nannette Griffin of Griffin Muffler and Brake. In 1997, after realizing she wanted to change the automotive repair customer experience, she opened Griffin Muffler and Brake. Nannette performed brake jobs and her husband did custom exhaust work. When an opportunity came to purchase a building in Ft. Madison, Nannette contacted the SBDC to help with loan options, and the business expanded. In 2007, tragedy struck when the building burned down. Nannette and her husband took the opportunity to rebuild to become more efficient. In 2019, Nannette founded the Southeast Iowa Chapter of Midwest Auto Care Alliance because it was a three-hour drive to the closest chapter in Des Moines. She is leading change by uniting fellow automotive repair shops to work together.

2023 Neal Smith Entrepreneur of the Year was Jorge Villeda, owner of Villeda Construction. Villeda Construction opened in 2014 at the Indian Hills Regional Entrepreneurship Center Incubator. Due to steady growth, Villeda purchased a vacant building in downtown Ottumwa and renovated it into commercial space to serve as headquarters. The growth of the business required Villeda Construction to change their business model and adapt to new challenges. With assistance from the SBDC, Villeda Construction gained knowledge in the areas of construction bonding, financial projections, QuickBooks bookkeeping and job closings. SBDC has also helped Jorge start a second business.

The **Pappajohn Center for Entrepreneurship** serves entrepreneurs on campus and in the community, providing entrepreneurial opportunities for students including a statewide tech startup incubator, student accelerator, hosting statewide and local business plan and pitch competitions, and participating in university-wide academic programs in entrepreneurship ranging from a cross-campus minor to a PhD program. The Pappajohn Center for Entrepreneurship has a presence in the Research Park Core Facility and on campus in the Student Innovation Center. Flagship programs include Iowa State Startup Factory, CYstarters, and CyBIZ Lab.

**PAPPAJOHN CENTER FOR ENTREPRENEURSHIP FY23 HIGHLIGHTS:** In November, the Global Consortium of Entrepreneurship Centers (GCEC) announced Iowa State University Pappajohn Center for Entrepreneurship as the winner of the 2022 Nasdaq Center for Entrepreneurial Excellence Award, the highest honor presented during the 2022 GCEC Awards, for universities and colleges with more than 5,000 students.

In 2022-23, the Iowa State Pappajohn Center and local Small Business Development Center served 1,423 clients, delivering 3,978 hours of mentoring, which was responsible for 63 new

ventures, 362 jobs, and resulted in \$41.4M in capital raised.

The ISU Pappajohn Center touched more than 9,600 individuals through its programs, advocacy events, training, and student programs and more than \$280,000 was awarded to young entrepreneurs, including \$71,000 in national prize awards that helped seed new startups.

CyBIZ Lab, our interdisciplinary student consulting agency served 39 companies, and employed 52 students. CyBIZ Lab provides the opportunity for cross functional teams of undergraduate and graduate students to work on fee based business and organizational projects. It also gives founders, entrepreneurs, and businesses a chance to solve a business problem, while working alongside student consultants. Live cases are also conducted as part of a for-credit classroom experience.

The Reiman Entrepreneur Internship Program is an endowed internship program that encourages students to explore working in startup companies. The endowment matches 50% of student wages for any approved Iowa State Research Park companies. In FY23, the program supported 33 students.

The Iowa State Startup Factory is a startup incubator helping researchers and inventors develop a roadmap to realize the societal and economic impact of their high-tech innovations. In FY23, the Iowa State Startup Factory served 14 companies (18 participants) that attracted \$5.4M in capital. Since its inception in 2016, 125 companies have completed the program, 147 jobs have been created by those companies and those companies have self reported \$63.8M in dilutive and non dilutive funding raised. Program staff and Entrepreneurs in Residence contributed just shy of 1,000 hours of individual mentoring support to companies as part of the Venture Mentor Service, an MIT modeled program focused on team-based mentorship for startup founders and entrepreneurs. Iowa State Startup Factory's footprint extends beyond Iowa, with collaborations in Kenya East Africa, and California.

When Iowa State Startup Factory companies complete the program, they oftentimes are still not mature enough to seek external investment. Iowa Go-To-Market (G2M), a partnership between BioConnect Iowa, the Iowa State University Startup Factory, and VentureNet Iowa, provides follow-on support for Iowa entrepreneurs who are developing technology driven innovative products or services and need additional support to increase their livelihood of commercial success. G2M served 13 companies (20 participants) that received \$11.6M in new funding. Program staff and the G2M entrepreneurs in residence contributed more than 350 hours of individual mentoring to participating companies.

CYstarters is an 11-week summer accelerator for Iowa State students or recent graduates to focus on their startup or business idea. The summer accelerator completed its annual 11-week immersive training program for 15 student ventures (19 participants). Staff and professional service providers in the community contributed more than 220 hours of individual mentoring to program participants. An additional 35 professional alumni and peer mentors volunteered time supporting student ventures.

Although students from across campus may take one of the nearly 100 courses that offer entrepreneurship content, a growing number of students are pursuing entrepreneurship as their primary educational focus. Fall 2023 data shows a total of 153 students with Entrepreneurship as a first major, 34 with second majors and an additional 114 students declaring an entrepreneurship minor. Many more participate in co-curricular programming opportunities.

## **RESEARCH**

The [Iowa State Research](#) enterprise received **\$301.3M** in **external sponsored research funding** for fiscal year 2023. This marked the first time the university exceeded \$300M in external research funding, and represented an increase of \$17.1 million, or 6%, compared to the previous record of \$284.2M set in FY22. **Total external funding**, though, was down from the FY22 record of \$601.7M to **\$530.5M** in FY23. New records for both federal and non-federal research funding contributed to the new benchmark for total research funding. The \$206.9M in federal research funding received in FY23 was up from the previous record of \$198.2M set in FY22, and the \$94.4 million in non-federal research funding topped the previous record of \$86M, also established in FY22.

Here are a few examples of new projects receiving initial funding in FY23:

- In May 2023, a multi-institution initiative, led by Laura Jarboe, Iowa State Cargill Professor in Chemical Engineering, was announced by the National Science Foundation (NSF) as one of [six new EPSCoR projects](#) that would receive an award of \$20M over five years. The Iowa initiative – known as [Chemurgy 2.0](#) – brings Iowa State together partner institutions the [University of Iowa](#), the [University of Northern Iowa](#), [Central College](#) and [Dordt University](#) in an effort the team believes will position Iowa as a national leader in advanced biomanufacturing.
- In August 2022, Kaoru Ikuma, associate professor in Civil, Construction and Environmental Engineering, received over \$3.2M from the U.S. Environmental Protection Agency (EPA) to support a four-year research effort. Ikuma and her team will [explore water reuse](#) as a means of improving water security in small rural communities.
- The National Pork Board awarded Iowa State and four other partner institutions – the University of Georgia, University of Minnesota, North Carolina A&T, and North Carolina State University -- \$5.1M of an estimated total of \$8.5 million over five years to spearhead the [Real Pork Trust Consortium](#). The diverse multidisciplinary team will use the [We Care Ethical Principles](#) of pork production as a framework for improving communication and education through each step of the pork supply chain with the goal of increasing the resilience and adaptability of the pork industry.

**BIOSCIENCES-BASED INITIATIVES.** Iowa State continues to expand the impact of the university's Biosciences-focused Innovation Ecosystems with Iowa Legislature support, and in partnership with [BioConnect Iowa](#). The legislature allocated \$2.6M for FY23 to support Iowa State's research and development efforts across three Biosciences platforms: Biobased Products, Digital and Precision Agriculture and Vaccines and Immunotherapeutics.

The state's investment has resulted in platform dollars being invested in a variety of ways to create additional opportunities in each targeted area including leveraging funds to win federal research and development awards, providing seed funds to university startups for scale up opportunities, and the purchase of shared equipment to support research and entrepreneurial scale up. Some outcomes include:

- The Department of Defense (DOD) provided \$2.1M in funding to BioIndustrial Manufacturing and Design Ecosystem ([BioMADE](#))– its largest award to date – to enable Iowa State and industry partners, Cargill and Genomatica to begin fermentation scale-up predictive modeling.
- Researchers began work on a \$2.7 million Department of Energy (DOE) project including Iowa State, [ADM](#), [3M](#), and [Diageo](#) that grew from a seed grant exploring biodegradable polymers.
- Iowa State-related startup companies [Soylei Innovations](#) expanded product sales in 2022, negotiated an additional technology license with the ISU Research Foundation, and created strategic alliances with outside industry partners. [Pyrone Systems](#) received initial funding; and [Janas Materials](#), a prior seed grant recipient, was awarded a \$25,000 Proof of Commercial

Relevance (POCR) loan by the [Iowa Economic Development Authority](#) (IEDA).

- [CYVAX](#) – a vaccine development laboratory focused on USDA-compliant master seeds, manufacturing scale-up, and commercial development of materials used for clinical trials – opened in the ISU Research Park. By the end of the 2022, CYVAX had two tenants. In October, 25 participants attended the facility’s inaugural Iowa State-industry training session focused on commercial development. CYVAX co-hosted the program with [Bio-Techne](#).
- Iowa State kicked off a strategic partnership with Merck, guaranteeing funding of at least \$250,000 per year. By the end of 2022, more than 15 animal health projects were in place, exceeding \$900,000 in funding, and [ELANCO](#) Animal Health established a presence at ISURP.

**IOWA STATE EXTENSION AND OUTREACH**, in collaboration with Iowa State colleges, impacts economic development in the state through all of its programs—Agriculture and Natural Resources, Community and Economic Development, Human Sciences, and 4-H Youth Development.

Since approximately 30-40% of crop revenue goes toward farmland rental expenses, land leasing arrangements are a top concern for Iowa producers and farmland owners. Agriculture and Natural Resources extension specialists provided unbiased, research-based **farmland leasing education**, reaching 1,235 participants in the past year; 297 completed a post program evaluation. Approximately 91% reported an increase in knowledge of leasing, 93% in legal issues, and 86% in cash rental rates; 98% reported increased confidence to change their lease agreements.

Midwest beef producers expressed a desire for more research on incorporating winter and summer **forage crop rotation** into their cattle production enterprise. The practice is used to reduce cattle feed cost, improve soil health, and manage production risk, and drives improved water quality and resiliency to extreme weather events. ISU Extension and Outreach beef specialists and field agronomists developed **programming for cow-calf producers**, delivered via on-farm demonstration field days at 15 locations across the state to 732 producers. An additional, 8,800 indirect contacts were made through social media and podcasts. The field program impacted 378,917 acres in Iowa, with a return of almost \$1.5M in increased grazing days for those who adopted annual forages.

One of the most significant threats to sustainable and profitable corn production in Iowa is the western corn rootworm, and a needs assessment indicated a lack of knowledge on identification, scouting, and effective management options for this pest. Twelve ISU Extension and Outreach agronomists and entomologists organized seven **hands-on corn rootworm demonstrations** at Iowa State research and demonstration farms across the state in summer 2022 for farmers and agricultural professionals. Most of the farmers who attended plan to change their management of corn rootworm, and nearly 80% of farmers responding to the survey expect to increase profits by at least \$5/acre on their combined 6,118 acres.

Iowa’s Food Code requires at least one supervisory employee in licensed foodservices to be certified in food safety through an approved program. In Federal FY22, 2,018 Iowans participated in **ServSafe** classes taught by Human Sciences extension specialists, with 70% successfully earning the Certified Food Protection Manager credential. ServSafe is the National Restaurant Association Educational Foundation’s internationally recognized food safety certification program, providing food service workers with the knowledge they need to protect the public from foodborne illnesses.

The **Volunteer Income Tax Assistance program** trains community volunteers to provide free tax preparation to qualified individuals with low or moderate income. In Federal FY22, Human Sciences extension specialists trained and supported 128 volunteers who completed IRS certification and then provided 8,955 hours of their time. With outreach and administrative support from 17 county extension offices, the volunteers provided 2,450 Iowans with free, accurate tax preparation, allowing them to save approximately \$666,400 on tax preparation fees. The volunteers also helped 810 of



these lowans claim \$1.1M in Earned Income Tax Credit refunds, boosting family income.

<b>Summary of ISU Economic Development and Innovation Data</b>	
a. Number of disclosures of intellectual property (excluding data sets)	130
b. Number of patent applications filed	112
c. Number of patents awarded: U.S. issued patents	42
total issued patents (world-wide)	55
d. Number of license and option agreements executed on institutional technologies:	
in total	87
in Iowa	14
e. Number of license and option agreements yielding income	113
f. Revenue to Iowa companies as a result of licensed technology (CY22)	\$3.0M
g. Number of startup companies formed (through licensing activities) in total	
in Iowa	1
in Iowa	1
h. Number of companies in research park and incubators	
pre-incubator companies	28
private	109
university related	22
i. Number of new companies in research park and incubators pre-incubator companies	28
private	19
university related	1
j. Number of employees in companies in research park and incubators	2491
k. Royalties and license fee income	\$3.1 million
l. Total sponsored funding received	\$530.5 million
How much of this is for research	\$301.3 million
m. Corporate sponsored funding received for research and economic development:	
in total	\$67.6 million
in Iowa	\$22.8 million
n. Iowa special appropriations for economic development, in total SBDC	\$3.474 million
CIRAS Technology Assistance Program ISU	\$0.936M
Research Park	\$1.365M
Regents Innovation Fund	\$0.122M
	\$1.050M
o. Research expenditures (federal, state and local; business; nonprofit; institution funds; all other sources, FY23):	\$289.1 million
p. Licenses and options executed per \$10 million research expenditures (FY19 AUTM Survey)	3.0
q. Sales of licensed products by Iowa-based companies (CY22)	\$3.0 million
r. Number of employees for current Research Park tenants and incubators, as well as former tenants that are still in existence in basic form world-wide	43,703

**Summary of FY23 RIF Commercialization Program Projects**

<b>Principal Investigator</b>	<b>FY23 RIF Commercialization Program Projects (\$448,000 of \$1,050,000 RIF Allocation)</b>	<b>Award Amount</b>
<b>Dr. Cheng Huang (Electrical and Computer Engineering)</b>	Efficient, Small-Form-Factor and Low-Cost Power Management Integrated Circuits for Portable Solar-Powered Applications   Design of new solar-charger chip.	\$50,000
<b>Dr. Shan Jiang (Materials Science Engineering)</b>	Additive to improve waterborne wood stains   Scaled up the reaction 300X, shortened reaction time 4X, improved stability, provided 2-gallon samples to industry partner, and samples showed excellent performance.	\$50,000
<b>Dr. Ratnesh Kumar (Electrical and Computer Engineering)</b>	Designing and Ultra-low-powered IoT System for Energy Harvester Integrated Battery-free Operation   Demonstrated a breakthrough by writing a custom program to reduce power consumption; preparing for patent submission.	\$50,000
<b>Dr. Young-Jin Lee (Chemistry)</b>	Rapid Antibiotic Susceptibility Testing by Deuterium Labeling of Bacterial Lipids in On-Target Microdroplet Cultures   Technical progress led to patent filing April 2023, NIH R21 proposal pending to continue research.	\$33,000
<b>Dr. Wenzhen Li (Chemical and Biological Engineering)</b>	A Multi-Purpose Waste Upcycling Process Enabled by the Scalable Production and Conversion of Ammonium Bicarbonate	\$50,000
<b>Denis Prodius (Ames National Lab)</b>	Separation of Critical Materials Using Microwave Technology   Focus on Rare Earth Elements (RREs)	\$50,000
<b>Dr. Guowen Song (Apparel, Events &amp; Hospitality Management)</b>	Development of hand-specific thermoregulation model and systematic tool for PPE design and evaluation   Established a thermoregulation model together with preliminary human trial validation, as well as initiated design innovation for protective gloves as guided by model prediction (use by firefighters).	\$50,000
<b>Dr. Sri Sritharan (Civil, Construction and Environmental Engineering)</b>	Enabling Hexcrete Technology for Tall Wind Towers Nationwide   Established design loads for tall towers, completed dimensioning of 40-m pedestal, and completed analysis under design loads.	\$50,000
<b>Dr. Ling Zhang (Apparel, Events &amp; Hospitality Management)</b>	Fit Adjustable Nursing Undergarments   Established new company, finalized bra design, products currently in mass production set for U.S. delivery November 23, online store designed and running.	\$50,000

## The University of Iowa

### FY23 Annual Economic Development Report

Ranked as a top-200 “best global universities” and #47 “best public university” accompanied by 33 consecutive years with one of the nation’s “best academic hospitals,” the University of Iowa stresses bringing “learning and discovery into the service of the people of the state of Iowa, the nation and the world” as a central mission. Translation of research and knowledge generated by University of Iowa faculty, staff and students is a central means through which this mission is accomplished. Those actions subsequently translate into positive impact on the economy of Iowa. The University’s 2022-2027 strategic plan calls to “Accelerate entrepreneurship and support broader economic development through innovative engagement and partnerships with industry and community organizations.” This strategy is implemented by:

- Creating increased opportunities for entrepreneurial education, new venture creation, technology transfer, with a specific focus in medtech and edtech innovation, and
- Connecting faculty, staff, and students to organizations and subject matter experts to solve unmet needs in social, health, technical, and business

A robust strategy incenting economic development, on a campus like the University of Iowa, is key to transforming ideas into impact benefiting Iowans and beyond.

Consequently, this report provides a description of the UI’s key initiatives in the economic development space— the work of the Chief Innovation Officer, who oversees Protostudios, UI Research Park, Translational Research Incubator, UI Ventures, and MADE; UI Research Foundation; John Pappajohn Entrepreneurial Center (JPEC); UI Pharmaceuticals, and other activities.

#### I. Organizing to Support Economic Development

The Chief Innovation Officer, who reports to the Vice President for External Relations with a dotted-line report to the University President, oversees and coordinates the economic development activities for faculty, staff and graduate students at the University of Iowa. The Chief Innovation Officer oversees: Protostudios, UI Research Park, Translational Research Incubator, UI Ventures, and MADE.

In FY23, several broad themes served as the central organizing principles of the Innovation Office, including:

***Establishing the Medical Innovation Hub.*** With the support of an \$8 million grant from the Governor’s office, the Office of Innovation will open the Medical Innovation Hub located adjacent to the UI’s Hospitals & Clinics and healthcare campus. The Hub will become the gathering place for healthcare innovators and industry. There they can access unique

equipment, resources and expertise while also commingling with other innovative faculty, staff and graduate students. A key success factor in similar spaces elsewhere is proximity to the “day jobs” of those clinicians, researchers and grad students eager to take advantage of this offering. Creating an innovation Hub within the healthcare complex is a major cultural breakthrough that will reduce the bottleneck of faculty seeking start-up company wet lab space while propelling nascent entrepreneurs forward.

***Evolving the UI Research Park.*** As the area surrounding the UI’s Research Park continues to rapidly develop (with the construction of a new UIHC facility, an orthopedic surgical center, and housing, restaurants and shops connecting Coralville and North Liberty), the Research Park is situated to benefit from the increased vibrancy of the area. With the Regents’ concurrence, a change in ownership rules enacted in FY23 allows the Park to sell land, where before it could only be leased, thereby removing a barrier frequently cited as a negative by prospective partners. New marketing approaches, signage, engaging experienced business development talent and programming also are under development to raise the Park’s profile.

***Seeding Interest in Translational Activities with Next Generation.*** The Iowa Innovation Leadership Fellows program launched in FY23. The first cohort consisted of 12 competitively selected graduate students, post-doctoral researchers, and first year medical/dental students in order to teach the significance of translational research outcomes, how to go about solving unmet needs and gaining exposure and connections to industry experts. They learned about the programs available to support entrepreneurial activities and commercialization efforts on campus. They interacted with UI faculty, alumni and entrepreneurs with experience in commercialization of academic research. The Fellows offer the Office of Innovation unique insights to help shape communications with academic departments, identify opportunities to engage with those departments, and encourage their colleagues to consider translational activities when appropriate.

***Extending the UI Innovation Support Structure Across Iowa.*** With grant support from the Ewing Marion Kauffman Foundation the Office of Innovation launched the Nurse Innovators project, which is designed to encourage nurses to bring forward solutions to unmet needs. We guide and assist with their further development. Intentionally, this project intends to work with nurses working around the State of Iowa and across a variety of nursing professions. The goal is to evaluate the innovative potential across Iowa, empower nurses to pursue addressing unmet needs while exposing underserved healthcare communities and workers to the support that the Office of Innovation can extend to innovators outside the university.

***Mobilizing an External Network.*** The Innovation Office is exposing UI start-ups and entrepreneurially minded faculty, staff and students to skills and connections drawn from a network of contacts in the healthcare innovation and venture capital space. The network of individuals able to assess start-ups potential, offer strategic and experiential assistance, and connect them to essential talent not resident to Iowa.

***Creating a Concierge Service to Support UI Faculty Innovations.*** Under the direction of UI Ventures, the Innovation Team established a comprehensive suite of services to assist UI faculty looking to engage the commercialization process. This service has and will continue to connect entrepreneurial faculty and companies with strategic support from medtech venture capital and industry knowledge, FDA guidance, intellectual property or clinical study guidance and reimbursement strategies.

***Expansion of Innovation Funding Programs.*** Building on the successful Innovation fund programs in partnership with the Colleges of Medicine, Engineering and Department of Nursing to promote faculty innovation in medical device and software and College of Education to support Edtech, UI Ventures expanded Innovation Funding to College of Dentistry and College of Pharmacy in FY23. Encouraging proof of concept and translational projects is a key building block in the Economic Development pipeline. In addition to meeting practical and clinical needs, the projects provide a resource for innovative faculty to promote a more inventive culture. In FY23, 11 awards were made across 5 colleges for a total of \$480,000 granted. The majority of the awards supported medical device (55%), followed by software (27%), and training tools (18%).

## II. University of Iowa Economic Development Infrastructure



---

**University of Iowa  
Research Foundation**

Researchers at the University of Iowa continue to develop innovative solutions in an attempt to address the world's most pressing issues, while entrusting their inventions to the UI Research Foundation (UIRF) for patenting and licensing into the commercial market. UI researchers have seen great success over the last year both in the lab and through commercial efforts. For example, Cardio Diagnostics, a pioneering precision cardiovascular medicine company founded by a UI faculty and graduate student, announced an expansion of their IP portfolio which is exclusively licensed from UIRF. And Perspective Therapeutics, Inc., a precision oncology company developing alpha-particle therapies and complementary diagnostic imaging agents based in-part on IP licensed from UIRF, announced the presentation of extremely encouraging results regarding its lead preclinical candidate for neuroendocrine tumors.

In the past year, UIRF continued to work with company partners to bring UI technologies closer to commercial development. UIRF recently completed a license with hC Bioscience, a faculty founded start-up that recently extended their Series A funding round to \$40 million. UIRF also completed a license with Harvest Increase Agriculture, another faculty founded start-up company focused on agriculture science and plant growth. These efforts demonstrate UIRF's commitment to working with all researchers across campus, from therapeutics to chemical engineering. UIRF is also committed to helping our faculty members commercialize and distribute their research tools, for example cell lines and mouse models. As such, UIRF has signed licenses with several new biotech and reagent companies, and extended licenses with existing partners. These are just a few examples of how UIRF has helped our university researchers amplify the impact of their work to directly benefit people's lives.

Revenue from the licensing agreements UIRF negotiates with our company partners is shared with our inventors personally and also supports department, collegiate, and cross-campus research efforts. Many licensing relationships also lead to sponsored research at the university. And in fact, the connection between research grants and inventions goes both ways—federal agencies, non-profit-foundations, and corporations usually include intellectual property provisions in their grants, and UIRF takes the lead in helping our researchers satisfy these requirements.

# protostudios

Protostudios (<https://protostudios.uiowa.edu/>) is a state-of-the-art, rapid-prototyping facility located in the MERGE co-working space in downtown Iowa City, Van Allen Hall and at UIHC. It works with UI researchers, researchers from other Iowa universities and healthcare institutions 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. Protostudios primary focus is on biomedical and electronics prototyping with access to 3D printers (plastics, metals, ceramics) milling, laser/wet jet cutter, printed circuit board fabrication, and consulting from on-staff industrial designers and engineers. Anatomical modeling of human organs prior to complex surgeries is developing into a key value add of Protostudios.

The creation of Protostudios was funded through a \$1.5 million Strategic Infrastructure Fund grant from the Iowa Economic Development Authority, and the authority approved a \$500,000 grant to outfit additional space for new equipment that expands the organization's capabilities.

## IOWA

### Research Park

The UI Research Park (<https://researchpark.uiowa.edu/>) leases building sites and space to growing technology companies that require sustained research relationships with the university. The Park is home to a 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.

The BioVentures Center (BVC) in the park contains wet laboratory modules that can be shared for life science companies and office/dry laboratory modules for engineering and technology-based companies. The BioVentures Center wet lab space is currently full and has a waiting list.

The Park is also home to three of the university's specialized core facilities. These facilities provide technical support services critical to the growth of start-up companies as well as existing industry partners:

- Center for Biocatalysis and Bioprocessing operates a microbial fermentation facility and specializes in both upstream and downstream bioprocessing with expertise in process

scale up for food products, biofuels, biopharmaceuticals, and other biotechnology products.

- National Advanced Driving Simulator conducts research and development on driving safety for the government, military, and industry partners.
- State Hygienic Laboratory is the state’s environmental and public health laboratory, serving all ninety-nine Iowa counties as well as out-of-state clients by testing and tracking infectious diseases and illnesses.

# IOWA

## UI Ventures

UI Ventures (<https://uiventures.uiowa.edu/>) assists university faculty and staff in transforming their research into successful business endeavors so that their technologies can reach the population it was intended to help. As part of the Office of Innovation, UI Ventures supports a cultural transformation on campus and provides access to capital and world-class talent to build successful companies around innovations originating from research at the university. As faculty develop technology, they are often left with an unknown question of “What’s next?” as their research evolves beyond basic principles and requires additional expertise and funding beyond what is available at the University. UI Ventures supports this transition through deployment of GAP funds to address specific business validation questions and utilizes a robust network of experts who have successfully started, scaled, and exited companies in the same areas as our faculty entrepreneurs. If faculty choose to start a new company, UI Ventures facilitates connections with industry-specific executives and funding resources to launch and grow their companies as well as serving as a liaison between the company and university services. UI Ventures routinely brings venture capitalists and successful entrepreneurs from around the country to campus so that faculty may directly engage with those who have direct experience. In addition, UI Ventures manages the TRI incubator, Nurse Innovators program, and operates the MADE program to encourage faculty and staff innovation and entrepreneurship throughout campus.



The Translational Research Incubator (TRI) (<https://uiventures.uiowa.edu/translational-research-incubator>) serves a critical role in launching medtech companies by providing 1) a physical location for the company in close proximity to clinical founders; and 2) shared lab equipment so companies can focus their limited resources on technology-specific development to maximize their funding. Much of the support for TRI goes to purchasing and maintaining



equipment that can be shared among the company tenants with an in-kind contribution of at-cost facility space.

The TRI space, located in the Medical Laboratories building, can house up to four early-stage research-based biomedical or life science companies focused on commercializing technology developed at the University of Iowa. The space is ideal for small start-ups that need to conduct early-stage proof-of-concept experiments, often with SBIR/STTR funding, to attract the investment needed to expand operations at the UI Research Park and other locations. The TRI has proven successful in helping companies secure over \$12M in both federal (SBIR/STTR) and private grants. These companies have gone on to raise over \$57M in equity funding.



Iowa MADE (<https://iowamade.org/>) 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.

MADE is a manufacturing and e-commerce initiative launched in FY18 with 3 objectives: 1) bring simple, low volume technology to market utilizing local Iowa manufacturing whenever possible; 2) contribute to a cultural transformation around innovation on campus; and 3) provide students with an opportunity to learn first-hand the tools necessary to bring a product to market. The program crosses several departments with products from Ophthalmology, Anesthesiology, Dentistry, Cardiothoracic Surgery, and General Surgery. Products are available for sale through the [iowamade.org](https://iowamade.org) website and revenue is used to reimburse development costs to encourage continued support of innovation and development. All technologies remain available for licensing to an external company through UIRF.

An undergraduate student operations team maintains the FDA compliant quality system, manufacturing, product management, marketing, and sales. These students have the unique opportunity to gain in depth real-world experience and leadership skills on campus to complement their classroom education.

# IOWA

---

## **John Pappajohn Entrepreneurial Center**

The John Pappajohn Entrepreneurial Center (Iowa JPEC) (<https://www.iowajpec.org/>) offers nationally recognized comprehensive entrepreneurial education and training programs that are available to all Iowans. At the undergraduate level, Iowa JPEC and the Department of Management and Entrepreneurship offer a BBA in Management with an Entrepreneurial Management Track to Tippie College of Business students. Iowa JPEC and the College of Liberal Arts and Sciences offer a BA in Enterprise Leadership (on-campus and online). In addition, Iowa JPEC offers the Technological Entrepreneurship Certificate for engineering students and the Certificate in Entrepreneurial Management for all undergraduate students. The Tippie College of Business offers a Graduate Innovation Certificate. Advanced entrepreneurship courses are also offered to MBA students.

Iowa JPEC and its university partners also play an important role in the development of Iowa-based technology and high-growth start-up companies. On-campus programs include business incubation programs for undergraduate students, business incubation and acceleration programs for faculty, staff, and graduate students, and the NSF I-Corps Training program as an affiliate of the Great Lakes I-Corps Hub. Statewide entrepreneurial support programs include Venture School entrepreneurial training program, MIT-based Venture Mentoring Service for entrepreneurs, Business Consulting, and Enterprise Internships.

# IOWA

---

## **Center for Advancement**

The University of Iowa Center for Advancement's (UICA) (<https://www.foriowa.org/>) Corporate and Foundation Relations group promotes economic development through connecting corporate partners with the UI's strengths. In addition to connecting established companies with the university, the Center for Advancement 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

---

## UI Pharmaceuticals

UI Pharmaceuticals (<https://uip.pharmacy.uiowa.edu/>) is a fee for service entity on the University of Iowa Campus that provides contract drug manufacturing (CDMO) services to academic, biotech, and pharmaceuticals clients. These services range from early-stage formulation development, analytical method support, clinical trial material manufacturing, to commercial product manufacture and support. It is organizationally structured as a division of the UI College of Pharmacy and employs approximately 95 pharmaceutical professionals. UI Pharmaceuticals has been operating for over 45 years and supports the manufacturing and testing of both clinical and commercial products. The seven departments that comprise the program are as follows:

- Sterile Manufacturing
- Non-Sterile Manufacturing
- Quality Assurance
- Analytical Services
- Preformulation and Formulation Development
- Business Development
- Engineering and Facilities

# IOWA

---

## Center for Biocatalysis and Bioprocessing

The Center for Biocatalysis and Bioprocessing (CBB) (<https://cbb.research.uiowa.edu/>) is an academic center at the UI focused on advancing biotechnology through the creation and dissemination of discoveries in the biocatalytic sciences.

As an internationally recognized contract development and manufacturing operation (CDMO), the CBB facility specialized in the optimization and scale-up of complex bioprocesses to produce pilot-scale, high valued bio-based chemicals. Most notably, the CBB's facility fills a worldwide niche to produce recombinant proteins of commercial and research value.

A fraction of these proteins is produced under strict standards defined by the FDA, referred to as *current good manufacturing practices* (cGMP). The CBB's cGMP suite operates under the 2008 FDA guidance for Phase I clinical studies, which means the products produced under this standard can be used to determine the safety and efficacy of putative therapeutics. The CBB's cGMP operation is ideally suited for startup companies with limited budgets who need

information for the Chemistry, Manufacturing, and Control (CMC) section of their Investigative New Drug (IND) applications required by the FDA before Phase I clinical trial testing can begin. The CBB operates the only facility in the State of Iowa that manufactures vaccines and therapeutic proteins for Phase I clinical trials in people.

Clients range from international corporations to virtual startups. In addition, the facility's professional staff supports clients who are preparing SBIR/STTR grant applications and staff consults for companies preparing IND applications for the FDA.

The CBB bioprocessing facility is initiating a new effort designed to accelerate the translational path required to realize commercially viable products from laboratory discoveries. In the biotechnology sector, failure to demonstrate manufacturability is a major barrier to commercialization. The CBB's expertise in both the development and scale-up of robust biomanufacturing processes is ideally suited to help startup companies to bridge this gap. Successful demonstration of manufacturability greatly reduces the risk of the technology and increases its commercial value, thereby enhancing investment opportunities.

### III. University of Iowa's Economic Development Activities in FY23

- **UI Research Park**
  - The UI Research Park is home to 31 companies, employing over 3,600 total employees, 1,022 of those located on the park. Total payroll associated with Park companies is more than \$3 million.
  - Companies residing on the Research Park, and in particular those residing in the BioVentures Center, have access to a variety of services, including: Shared laboratory equipment room; Executive board room and conference rooms; Multi-purpose room seating 70; Breakroom/vending area, atrium and lounge areas; Shipping/receiving area; High-speed wired & wireless internet; Emergency backup generator; Shared equipment room that includes: Autoclave, Laboratory glassware washer/dryer, RO/DI water system, Ice machine, -80° freezer; and the vast resources at the UI's CCOM via their core facilities.
- **UI Ventures**
  - UI Ventures currently supports 31 companies including 4 that formed in FY23.
  - Faculty and staff founded companies raised over \$33 million in equity funding in FY23.
  - In FY23, four UI faculty/staff companies were awarded \$2.7 million in SBIR/STTR grants.
  - In FY23, 9 Innovation Fund awards were made across 5 colleges for a total of \$315,000 granted to faculty to aid the translation of their research towards commercial potential.
  - Launched the Nurse Innovators program, reaching >300 nurses with 20 projects in development
  - Supported the inaugural Innovation Leadership Fellows cohort comprised of graduate and postgraduate students, medical students, and dentists
  - Expanded the Entrepreneur in Residence program to include a Venture Capitalist in Residence
  - UI Ventures continues to build a stronger economic development pipeline through programs that support business executive interactions, coaching and connections with investors, business strategy support, and other startup resources.
- **Iowa MADE**
  - MADE had 4 products on the market in FY23 and students continued to develop an additional 4 products originating from the Colleges of Medicine and Dentistry, and the UIHC Dept of Nursing.
  - MADE alumni continue to receive competitive job offers directly related to their work at MADE and are 100% employed upon graduation.
  - MADE utilizes suppliers in Iowa to support the state economy and presently 100% of part suppliers are Iowa companies
- **Protostudios**

- Protostudios worked with 36 clients across 46 unique design and production projects in FY23.
- Employed 6 UI students providing them with hands-on experience in client interaction, project management, design, and a variety of technical skills.
- **Iowa JPEC**
  - Key metrics
 

○ Start-up Companies Served (New Business Starts)	531
○ Program, Seminar & Workshop Participants	5,730
○ Estimated Job Creation	274
○ Hours dedicated to Clients	11,538
○ Total Clients (Individuals receiving assistance)	772
○ Total Youth Impacted (K-12)	21,355
○ Seed Money Awarded	\$408,350
○ Total Participants Across All Programs	11,059

(Including Academic, Outreach, and Youth)
  - Academic Program – Iowa JPEC delivers campus-wide and online undergraduate education and technology innovation coursework in the MBA and other graduate management programs. Majors (BA and BBA) and Certificate programs exist for all undergraduate students at UI including specialized programs for students in engineering. During FY23, 4,405 students enrolled in 137 classes, 351 students received a degree and 87 students earned an entrepreneurship certificate.
  - Bedell Lab Student Incubator – The student Startup Incubator housed at the 10,000 sq. ft. Bedell Entrepreneurship Learning Laboratory has 17 private offices for the most advanced start-ups, numerous co-working spaces for the others, and several conference rooms. This campus-wide program is open to students from every college and major. The students receive intense mentoring and support as they launch or expand their businesses. The program, one of the first of its kind in the nation, has impacted 1,594 students since opening in 2004. During FY23, the Startup Incubator supported 36 student start-ups made up of 49 students.
  - Startup Incubator Summer Track – Throughout the twelve-week program, accelerator teams made up of undergraduate and students meet daily to launch their start-up by using Lean LaunchPad methodologies. Through brunch-and-learns, work sessions with experienced mentors, weekly pitches, and lectures, the program aims to drive the start-up process for students, while increasing their start-ups’ chance for success. In FY23, 24 teams and 34 students participated.
  - Business plan and pitch competitions – Iowa JPEC hosts and sponsors a variety of ideation, elevator pitch, business model, and business plan competitions for UI students, faculty, and staff. During FY23, a total of \$408,350 was awarded to start-ups.

- Jacobson Institute for Youth Entrepreneurship – The Jacobson Institute is a comprehensive program that enriches K-12 students’ lives through classroom and practical educational experiences. Programming and impact include:
  - BizInnovator Program – Curriculum and teacher training focused on entrepreneurship and business. In FY23, 269 teachers from 234 schools in 42 states used the curriculum nationwide and impacted 11,804 students.
- Alumni-Student Mentoring Program – This program was established to connect entrepreneurship students with esteemed alumni to enhance students’ professional and personal development for future success. In FY23, 114 students were paired alumni mentors.
- Okoboji Entrepreneurial Institute – Iowa JPEC established the annual, week-long Okoboji Entrepreneurial Institute (OEI) in a partnership among state of Iowa universities and colleges, as well as Iowa Lakes Corridor Development in 2006. To date, this summer program continues to provide students with an immersion into entrepreneurship and business strategy and develop an outstanding network of peers and business professionals. In FY23, 7 students participated for a total of 199 since inception.
- Student Organizations – Several campus-wide clubs and organizations focused on entrepreneurship are sponsored by Iowa JPEC.
- Venture School Entrepreneurial Training Program – Iowa JPEC offers an immersive “Lean LaunchPad”, business model canvas, seven-week boot camp training program named Venture School to accelerate start-ups. Venture School is offered in multiple locations across Iowa. The program emphasizes real-world entrepreneurship through experiential learning, a flipped classroom, and immediate feedback. During FY23, workshops were offered in Coralville/Kirkwood CC, Davenport/EICC, Des Moines/DMACC, Sioux City/Iowa’s West Coast Initiative, Dubuque/Innovation Lab, Mason City/NIACC, and virtually. There were 83 startups made up of 92 entrepreneurs.
- UI Small Business Development Center – The UI hosts an SBDC that serves a five-county area (Cedar, Johnson, Iowa, Poweshiek, and Washington counties). During FY23, the UI SBDC served 327 start-ups and small businesses. This contributed to the creation of 109 jobs and \$7,191,848 in equity being raised.
- Institute for International Business (IIB) – The IIB is dedicated to advancing knowledge and international skills in business and educational communities through research, education, and consulting. During FY23, 4 International consulting projects were completed by University of Iowa students and faculty.
- Business Consulting Program – Iowa JPEC offers business consulting services to entrepreneurial and start-up companies around the state. During FY23, 71 projects were completed for 44 clients in 14 counties: Adair, Allamakee,

Blackhawk, Dubuque, Hennepin, Johnson, Linn, Louisa, Mitchell, Polk, Poweshiek, Scott, Washington, Woodbury.

- Iowa Enterprise Interns Program – Iowa JPEC provides funding support enabling Iowa start-ups to hire UI student interns as they work to grow their businesses. In FY23, 12 students were placed in 18 start-ups in these Iowa counties: Dallas, Dubuque, Johnson, Linn, and Plymouth.
- Pappajohn Entrepreneurial Ventures Competition – In partnership with the Pappajohn entrepreneurship centers at ISU, UNI, Drake, and NIACC as well as the Iowa Economic Development Authority, Iowa JPEC sponsors this annual competition to support start-ups around the state. Each year, over \$100,000 in seed funding is awarded in total to three companies.
- NSF I-Corps Training Program – The University of Iowa was awarded a multi-year National Science Foundation (NSF) I-Corps Site grant in FY15 to support UI faculty, staff, and student entrepreneurs. This program is a joint effort between the Office of the Vice President for Research and Economic Development, the UI Office of Innovation, UI Ventures, and Iowa JPEC. The goal of this program is to accelerate 90 faculty and staff start-ups. During FY23, 26 start-ups made up of 28 faculty and staff participated.
- Regional Partnerships / Eco-system Development – Iowa JPEC partners and engages with numerous local, regional, and statewide organizations to support entrepreneurs and contribute to the vital entrepreneurial ecosystem. These organizations include chambers of commerce, economic development organizations, business accelerators (Global Insurance Accelerator, Goldman Sachs 10,000 Small Businesses, Iowa Startup Accelerator, and TechStars, state agencies, other universities (Drake, ISU, and UNI), and community colleges (DMACC, EICC, Kirkwood, NIACC, WIT).
- National Engagement – Iowa JPEC engages with several national and international organizations focused on small business, entrepreneurship, economic development and technology commercialization. This includes not only membership but also committee participation and invitations to present best practices.
- **UI Center for Advancement**
  - Assists with aligning recruiting efforts and providing access to UI faculty and staff. It promotes corporate partner and foundation student scholarship and programming opportunities. UICA facilitates UI's partnership with ICR Iowa to promote "Boomerangs" to return to the state to fill job openings.
- **UI Pharmaceuticals**
  - In FY23 UI Pharmaceuticals worked with ~100 different clients to manufacture and testing ~90 individual lots of material, resulting in ~\$17 million in total revenues UI Pharmaceuticals currently supports client programs across the United States as well as in Europe, Asia, Africa, and South America.



- UI Pharmaceuticals made significant progress in bringing its state of the art sterile manufacturing facility online, targeting revenue generating batches in the first quarter of 2024.
- **Center for Biocatalysis and Bioprocessing**
  - The Center generated \$3.2 million in annual revenue working with biopharma, commodity proteins and food products projects.
- **UI Research Foundation**

	<b>FY17</b>	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>FY21</b>	<b>FY22</b>	<b>FY23</b>
Disclosures	93	143	83	95	101	103	72
Licenses + options	58	51	48	37	47	48	47
Patent applications	148	153	160	146	95	188	174
Issued patents	42	74	54	72	86	80	58

**Regents Innovation Funds Spent to Promote Economic Development in Iowa**

- Protostudios: \$225,897 for personnel and general expenses
- UI Research Park: \$79,835 for BioVentures Center personnel, operating/general expenses
- UI Ventures and MADE: \$713,352 for personnel, consultants, student interns, award and general expenses

The University of Iowa recognizes the important role it has to play in the state’s economic development ecosystem. The university is committed to improving the quality of life in Iowa through a sustainable cycle of research and creative activity leading to job and wealth creation in the State. Realization of these goals make Iowa a healthier, more prosperous, and attractive place to live. The university will continue to ensure that Federal, State and philanthropic monies invested in research is leveraged to develop new economic opportunities for Iowans.



## **University of Northern Iowa Annual Economic Development Report – FY2023**

### **Section 1. UNI’s Economic Development Activities to Enhance Economic Growth in Iowa – Highlights and Summary**

The University of Northern Iowa (UNI) provided economic development assistance to all of Iowa’s 99 counties for the 24th consecutive year. UNI’s economic development outreach programs are housed in the Business and Community Services (BCS) division and work toward supporting UNI strategic goal 2, to “Empower Communities to Shape Their Future.” 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 Building a Better Iowa. Client interaction reached 3,953, a record high for BCS outreach centers and programs.

Specific areas of service offered by UNI BCS include: entrepreneurship, community and economic development, market research, environmental research and sustainability, metal casting, and manufacturing 4.0.

#### **Some exceptional recognition and milestones in the past year include:**

- UNI’s Advance Iowa program, in partnership with the Iowa Governor’s Office and the National Center for Employee Ownership, launched the Iowa Center for Employee Ownership (IA-CEO).
- STAR4D, a military painting program of the Iowa Waste Reduction Center, reached a milestone of training more than 5,000 members of all branches of the United States military and recently celebrated its 20<sup>th</sup> anniversary.
- The United States Association of Small Business & Entrepreneurship recognized the UNI John Pappajohn Entrepreneurial Center’s collaboration with the Black Business Entrepreneurship Accelerator as the best Model Community Accelerator/Incubator in the U.S.
- The UNI Foundry 4.0 Center was recognized by the Center for Energy and Smart Manufacturing Institute as a Center of Excellence for its Internet of Things (IoT) and sensor technology projects with the casting industry.
- The Center for Business Growth and Innovation and the Foundry 4.0 Center started the second phase of a major project with the Defense Logistics Agency to enhance supply chain resiliency for sustainment parts for the military.
- The UNI John Pappajohn Entrepreneurial Center worked with the Black Business Entrepreneurship Accelerator (BBEA) catering businesses in a unique venue takeover at the UNI Dining Center on campus. Five BBEA entrepreneurs took advantage of the opportunity to showcase their menu and build their business brand while creating future catering contracts for UNI Dining.

## Summary of BCS’ key economic development program outcomes for FY2023:

### Overall Outcomes

- Provided service to clients in all 99 Iowa counties with a total of 3,953 unique businesses, communities, nonprofit organizations, and governmental entities, and served an additional 54,155 unique visitors to IASourceLink.
- Reached more than 259,000 Iowans through BCS programs and projects.
- Engaged 132 faculty members and 225 students in the direct delivery of BCS client services, and another 3,153 students were reached by BCS programs.
- Leveraged each \$1 invested by the state with \$5 in private grants, contracts, fees or federal funding.

### Summarized Impacts on the Iowa Economy

- The Institute for Decision Making (IDM) partnered with the statewide Industry 4.0 Partner Consortium organized by Iowa’s community colleges and Iowa State’s Center for Industrial Research and Services (CIRAS) to offer Manufacturing 4.0 training.
- IDM and Strategic Marketing Services (SMS) assisted the Iowa Economic Development Authority (IEDA) and its tourism industry partners to conduct a statewide survey of tourism organizations to assess impacts and programming.
- More than 315,000 acres of public roadsides have been assisted by the Tallgrass Prairie Center with ecological integrated management services.
- Two additional cohorts of the Black Business Entrepreneur Accelerator (BBEA) were assisted by the UNI JPEC. Overall, assistance has been provided to 60 BBEA graduates.
- The UNI Family Business Center expanded its programming to reach 183 family businesses in 64 counties across Iowa.
- Green Iowa AmeriCorps has now provided energy efficiency services to 7,500 homes in Iowa and completed 5,500 projects through assistance from 2,800 volunteers and with 350 community organizations.

### Entrepreneurship, Business Development and Incubation

- Supported 1,750 Iowa businesses with market information by the Business Concierge team, which is part of IASourceLink, a joint program of the UNI JPEC and the IEDA.
- Conducted 18 seminars and/or presentations related to succession planning and employee ownership in all regions of Iowa.
- Expanded the UNI Family Business Center with programs such as the breakfast series, family business workshops, peer group meetings, the annual Iowa Family Business Conference and just launched the first family business management course at UNI.
- Assisted 68 Iowa companies in 25 counties through Advance Iowa.
- Incubated 12 student businesses in the UNI JPEC R.J. McElroy Student Business Incubator, with 20 additional students who were assisted as affiliate tenants.
- Hosted 12 peer group meetings and 59 networking and educational events related to financial literacy and value building.
- Served 293 new clients through UNI’s Small Business Development Center (SBDC).

**Local Economic Development**

- Provided strategic planning and comprehensive research assistance to 117 community partners, 12 additional regional groups, and 47 service providers and utilities across Iowa through IDM.
- Conducted a statewide survey of tourism organizations and presented the results to assist the IEDA and its tourism industry partners.
- Assisted the Iowa Department of Education develop a regional center location study and web mapping application to determine the geographical gaps in work-based learning programs.
- Partnered with a statewide Industry 4.0 Partner Consortium to help economic developers to better assist local manufacturers.
- Trained an additional 91 economic developers through the Heartland Economic Development Course.

**Waste Reduction, Environmental Assistance, and Sustainability**

- Completed more than 700 educational events and engaged nearly 8,000 volunteers in environmental service projects through Green Iowa AmeriCorps.
- Distributed native seed for 43 county roadsides and more than 2,000 acres as part of the Tallgrass Prairie Center's (TPC) roadside vegetation project and published an interactive map to showcase native roadsides.
- Installed and managed 62 vegetable gardens for underserved families through Green Iowa AmeriCorps.
- Certified 34 craft breweries across the state through the Iowa Green Brewery project, a nationally recognized program of the Iowa Waste Reduction Center (IWRC).
- Provided customized environmental technical assistance and on-site reviews through the IWRC to 126 Iowa small businesses and conducted 23 energy efficiency visits with small businesses.
- Conducted solar radiation modeling for the entire state of Iowa by the GeoTREE Center for the Iowa Energy Center
- Expanded the Irvine Prairie in rural Benton County from 77 to 292 acres.

**Advanced Manufacturing and Market Research**

- Trained 250 military painters at 5 satellite training sites through the STAR4D program.
- Served 25 Iowa foundries and supply chain companies with automation and Internet of Things (IoT) sensor technologies through the Foundry 4.0 Center.
- Expanded a major supply chain resiliency program with the Defense Logistics Agency to enhance the Department of Defense supply chain for sustainment parts.
- Hosted nearly 1,000 visitors to demonstrate new Manufacturing 4.0 innovations and the digital twin at the Foundry 4.0 Center.
- Received recognition as a national center of excellence by The Smart Manufacturing Institute for the Foundry 4.0 Center's work with advanced sensors.
- Conducted research among Iowa businesses for the IEDA to better inform economic assistance and programming related to recent economic conditions by SMS.
- Provided market research and competitive intelligence to 15 Iowa companies and organizations by Strategic Marketing Services (SMS).

**Section 2. Technology Transfer and Intellectual Property**
**FY2023**

	<b>UNI</b>
Number of disclosures of intellectual property	13
Number of patent applications filed	2
Number of patents awarded	2
Number of license and option agreements executed on institutional intellectual property	2
Number of license and option agreements yielding income	12
Revenue to Iowa companies as a result of licensed technologies	\$4,500,000
Number of start-up companies formed, in total and in Iowa	75
Number of companies in research parks and incubators	23
Number of new companies in research parks and incubators	12
Number of employees in companies in research parks and incubators	37
Royalties/license fee income	\$49,068
Total sponsored funding	\$42,719,790
Corporate-sponsored funding for research and economic development and revenue generation (excludes corporate philanthropy - all in Iowa)	\$1,222,000
i. Annual appropriations for economic development	\$1,460,740
ii. Regents Innovation Fund	\$900,000

**Section 3. Overview of UNI’s Economic Development Programs**

UNI outreach services and community and economic development activities are outlined in a table format on the following four pages. The format provides a brief overview of each program, its purpose, types of clients served, outcomes from the past year, and some aggregate outcomes. Together, the programs served 3,953 unique businesses and organizations in the past year and another 54,155 individuals through the IASourceLink.com entrepreneurial development system and the Business Concierge.

**Section 3. Overview of UNI’s Economic Development Programs (continued)**

Services	FY23 Results	Cumulative Results
<b>Advance Iowa (AI)</b>		
<p>Rural/urban consulting program focused on small- and medium-sized existing businesses to provide succession planning, strategic planning, training, peer round tables</p> <p><b>Serves:</b> Small and medium enterprises (SME)</p>	<ul style="list-style-type: none"> <li>✓ 68 companies assisted</li> <li>✓ 18 seminars on succession planning, employee ownership, financial literacy and value building</li> <li>✓ 12 peer group meetings</li> <li>✓ Hosted and supported 59 networking, educational and business assistance workshops/events</li> <li>✓ Launched the Iowa Center of Employee Ownership</li> </ul>	<ul style="list-style-type: none"> <li>✓ Project work with 170 SMEs, impacting 5,692 employees across the state in all quadrants and industries</li> </ul>
<b>Family Business Center (FBC)</b>		
<p>Programs and services for Iowa family-owned businesses including business succession, next-generation leadership development, peer learning and events</p> <p><b>Serves:</b> Small and medium family-owned enterprises</p>	<ul style="list-style-type: none"> <li>✓ 183 companies assisted</li> <li>✓ 5 part seminar series for family-owned companies</li> <li>✓ Annual conference with 108 attendees</li> <li>✓ 4 Learning Sessions</li> <li>✓ Annual Hosted Family Workshop with 54 attendees</li> <li>✓ Service to clients in 64 counties</li> </ul>	<ul style="list-style-type: none"> <li>✓ Worked with 326 small- and mid-sized family-owned companies across the state in all quadrants and industries</li> </ul>
<b>Center for Energy and Environmental Education (CEEE)</b>		
<p>Technical assistance, educational programs and leadership in residential energy efficiency services, local food systems, improving community food security and environmental health, and sustainability efforts for K-12 schools</p> <p><b>Serves:</b> Iowa residents, nonprofit organizations, local governments, school districts, and counties</p>	<ul style="list-style-type: none"> <li>✓ Through Resilient Iowa Communities, rural communities gained access to greenhouse gas inventory services and expertise</li> <li>✓ Green Iowa AmeriCorps provided over 500 households with energy efficiency services, completed 700 education events and engaged nearly 8,000 volunteers in environmental service projects</li> <li>✓ AmeriCorps members installed and managed 62 vegetable gardens for the underserved members of the Cedar Valley</li> </ul>	<ul style="list-style-type: none"> <li>✓ Over the past 14 years Green Iowa AmeriCorps has provided energy efficiency services to 7,500+ homes and educated 105,000 people. The program has completed more than 5,500 service projects alongside more than 350 community organizations and 28,000+ volunteers</li> <li>✓ More than 925 members have given 822,000 hours to our communities with an in-kind value of a volunteer value of \$28 million</li> </ul>

<b>Geoinformatics Training, Research, Education and Extension Center (GeoTREE)</b>		
<p>Geospatial technologies, education, research and outreach activities for federal, state, local and tribal agencies</p> <p><b>Serves:</b> Federal, state, local and tribal governmental agencies</p>	<ul style="list-style-type: none"> <li>✓ Carried out urban heat monitoring and modeling in 10 Iowa Cities for the Iowa Energy Center</li> <li>✓ Provided solar radiation modeling throughout Iowa for the Iowa Energy Center</li> <li>✓ Developed modeling and mapping for Regional Center Study with the Iowa Department of Education</li> <li>✓ Participated in or conducted multiple educational lessons to UNI and K-12 students</li> </ul>	<ul style="list-style-type: none"> <li>✓ Project work with public agencies, academic groups/departments and private companies</li> <li>✓ Development and delivery of many geospatial data and custom applications</li> <li>✓ Conducted more than 100 Iowa-focused research projects</li> </ul>
<b>Institute for Decision Making (IDM)</b>		
<p>Hands-on community and economic development guidance and research</p> <p><b>Serves:</b> Economic development organizations, chambers of commerce, city councils, communities, utilities and others</p>	<ul style="list-style-type: none"> <li>✓ Assistance and research provided to 117 community organizations, 12 regional development groups, and 47 services providers and utilities</li> <li>✓ Assisted the Iowa Department of Education develop a regional center location study and web mapping application</li> <li>✓ Assisted the Iowa Economic Development Authority and its tourism industry partners conduct a statewide survey of tourism organizations</li> <li>✓ Partnered in a statewide Industry 4.0 Partner Consortium</li> </ul>	<ul style="list-style-type: none"> <li>✓ Served more than 850 communities, counties and economic development groups in all of Iowa’s 99 counties</li> <li>✓ Trained more than 1,350 economic development professionals</li> </ul>
<b>Iowa Waste Reduction Center (IWRC)</b>		
<p>Free, confidential, non-regulatory environmental and energy efficiency assistance for small businesses, public entities, food waste reduction, and education</p> <p><b>Serves:</b> Small businesses in Iowa; food waste generators; military and industrial painters</p>	<ul style="list-style-type: none"> <li>✓ Detailed one-on-one environmental assistance was provided to 126 Iowa small businesses, including 23 energy efficiency visits</li> <li>✓ Military painter training was conducted by IWRC staff and at 5 satellite sites training a total of 250 painters</li> </ul>	<ul style="list-style-type: none"> <li>✓ Provided detailed assistance or on-site review to 6,696 Iowa small businesses</li> <li>✓ Certified 34 Iowa craft breweries through the Green Brewery program</li> <li>✓ Provided nearly 5,000 certifications to military painters and DoD contractors</li> </ul>

<b>John Pappajohn Entrepreneurial Center (JPEC) and Small Business Development Center (SBDC)</b>		
<p>Entrepreneurship education, business consulting and training, research, and capital investment programs serving entrepreneurs.</p> <p><b>Serves:</b> Student entrepreneurs, faculty and staff, small and medium-sized businesses, entrepreneurs, and entrepreneurial service providers</p>	<ul style="list-style-type: none"> <li>✓ Served 5,895 individuals</li> <li>✓ 12 student businesses incubated</li> <li>✓ 2 additional cohorts of BBEA served an additional 20 business owners</li> <li>✓ 10 webinars hosted 5,136 participants</li> <li>✓ Iowa Source Link (ISL) website accessed by 54,155 unique visitors</li> <li>✓ SBDC served 293 clients</li> </ul>	<ul style="list-style-type: none"> <li>✓ The JPEC Student Business Incubator has provided space to more than 229 student business owners</li> <li>✓ Since FY11, 3,833 College of Business students have learned about and crafted an elevator pitch</li> <li>✓ Since FY11, 72 businesses and nonprofits have had their projects completed by Entrepreneurial Strategy students</li> <li>✓ Since FY12, over 450,000 unique users have been served on the ISL platform</li> </ul>
<b>Metal Castings Center (MCC) and Foundry 4.0 Center (F4C)</b>		
<p>Metal casting technologies, applied research, testing, training and manufacturing 4.0 technologies</p> <p><b>Serves:</b> Iowa casting users, foundries and foundry suppliers</p>	<ul style="list-style-type: none"> <li>✓ Initiated contracts with 25 Iowa casting companies</li> <li>✓ Provided technology-related outreach projects to 4 Iowa foundries and technical assistance to 50 additional foundries</li> <li>✓ Conducted DOD-sponsored research into Automation and robotics, IoT and Digital Twins production process</li> <li>✓ Provided training and one-on-one technical training in Manufacturing 4.0 technologies and sensor applications</li> </ul>	<ul style="list-style-type: none"> <li>✓ Over 2,350 industry-funded projects have been completed and more than 100 clients assisted with additive manufacturing and cast metals technology</li> </ul>



<b>Strategic Marketing Services (SMS)</b>		
<p>Market research and analysis</p> <p><b>Serves:</b> Businesses, entrepreneurs and nonprofit organizations</p>	<ul style="list-style-type: none"> <li>✓ Completed 5 market research projects with 9 organizations</li> <li>✓ Assisted many local Iowa community organizations including municipalities, economic developers, utility organizations and businesses</li> <li>✓ Provided consulting services to 6 Iowa organizations, including the energy sector, health care services, manufacturing and higher education</li> </ul>	<ul style="list-style-type: none"> <li>✓ Since 1990, market research and analysis services have been provided to 336 Iowa companies</li> </ul>
<b>Tallgrass Prairie Center (TPC)</b>		
<p>Coordination of county roadside managers, farmers and agricultural conservation professionals; native seed industry; educational materials on the tallgrass prairie ecosystem; restoration to support recommendations</p> <p><b>Serves:</b> Iowa county governments, ag technical service providers/buyers, UNI and local educators, community, county conservation boards, and academic researchers</p>	<ul style="list-style-type: none"> <li>✓ Distributed native seed for 43 county roadsides</li> <li>✓ Supplied native seed stock to commercial growers</li> <li>✓ Provided technical support to landowners, farmers, and professionals in all 99 counties</li> <li>✓ Distributed prairie roots banners and displays to more than 50 schools and science museums</li> <li>✓ Provided advanced scientific training and hands on experience to UNI undergraduate and graduate students</li> <li>✓ Expanded Irvine Prairie in rural Benton County from 77 to 292 acres with funding for installation and maintenance</li> </ul>	<ul style="list-style-type: none"> <li>✓ More than 50,000 acres of Iowa counties rights-of-way have been planted with native vegetation</li> <li>✓ 47 Iowa counties use ecologically-integrated management on 315,000 acres of public roadsides</li> <li>✓ Public and private land managers accessed 89 species of Iowa-sourced seed including grasses, sedges, wildflowers, and scrubs</li> <li>✓ Trained over 100 UNI students with hands-on experience and scientific training since 2002, impacting conservation practices and monarch butterfly recovery efforts</li> </ul>

#### **Section 4: Regents Innovation Funding Report**

The UNI FY2023 Regents Innovation Funding (RIF) Annual Report (also known as the Skilled Worker and Job Creation Fund) is on file at the University of Northern Iowa and was submitted separately. Projects and outcomes partially supported by the RIF are included in this annual report.

#### **Section 5: Collaborative Projects**

Each year, UNI works closely with the other Regent institutions and state and federal agencies on collaborative projects. The following projects represent a sampling of these joint initiatives.

##### **Advance Iowa facilitates partnerships with state agencies and foundations**

- Advance Iowa launched the Iowa Center for Employee Ownership (IA-CEO), marking it as the 21st such center in the United States. Leveraging the program's extensive experience in employee ownership, IA-CEO quickly rose as one of the top five centers in terms of funding support and dedicated staff. The Center is a collaboration with the Governor's office, Iowa Economic Development Authority, Drake Law, Principal Financial, and many private sector companies.
- Continuing its partnership with the Iowa Governor's Office and the Empower Rural Iowa Initiative, UNI Advance Iowa contributed to enhancing economic vitality in rural communities. By working closely with business owners, the program focused on improving the profitability, sustainability, and scalability of rural operations, ensuring a lasting positive impact.
- Advance Iowa extended its efforts to drive business ownership transition planning in communities facing sudden disruptions. The program worked directly with three community partners to develop comprehensive plans, helping to minimize job losses due to unforeseen circumstances. Additionally, support was provided to eight other communities, guiding them through the exit planning process.

##### **SBDC assists the small business community**

- The UNI Small Business Development Center director served as an instructor for the 24/7 BLAC Black Business Entrepreneurship Accelerator (BBEA). Twenty additional Black-owned small businesses participated in these cohorts.

##### **Center for Energy and Environmental Education (CEEE) collaborated on projects with Iowa State University and the University of Iowa**

- CEEE provides services to Iowa municipalities to conduct greenhouse gas inventories and best practice assessments across Iowa, including communities such as Fairfield, Mt. Vernon, Decorah, and Urbandale with the goal of expanding in 2023-2024.
- CEEE worked closely with the ISU Extension Local Food & Enterprise Development program through a Planning grant from the Kellogg Foundation, to develop a plan to strengthen Iowa's food system.

##### **The GeoTREE Center worked collaboratively with state agencies and multiple organizations**

- The GeoTREE Center works with state agencies such as the Iowa Department of Natural Resources, local agencies including Waterloo Water Works, non-profits like the Community Foundation of Northeast Iowa, and provided services to numerous other private companies.

- The GeoTREE Center worked on funded projects from the Iowa Department of Natural Resources, Iowa Energy Center, Iowa Department of Education, Waterloo Water Works, Black Hawk Soil and Water Conservation District, Vacation Okoboji, Iowa Geographic Information Council, Cedar Trails Partnership, and Iowa Governor’s STEM Advisory Council.

#### **Family Business Center (FBC) collaborates with rural development and national association**

- The UNI Family Business Center is a member of the Iowa Rural Development Council, focusing on representing the voice of family-owned companies across the state. This includes a focus on succession planning, local business ownership and the need for planning and communications.
- The UNI Family Business Center partnered with the Professional Directors Association (PDA) to launch a board member matchmaking program. PDA provides a clearinghouse of potential advisory and fiduciary board members for Iowa Businesses. The FBC acts as a consulting service to provide families with independent, strategic board members for the businesses. This is enhanced by PDA’s directory of prospects, as well as their knowledge and education materials on board member best practices.

#### **Institute for Decision Making (IDM) collaborated with economic development partners**

- IDM, in partnership with GeoInformatics Training Research Education and Extension (GeoTREE) Center and the College of Education’s Educational Leadership and Postsecondary Education programs, assisted the Iowa Department of Education with the development of a Regional Center Location Study and web mapping application. The study and application helped the Regional Planning Partnerships (RPP’s), school districts, community colleges and their partners see what a strategically designed network of regional center facilities could look like within their region and statewide.
- IDM continued its active engagement in the statewide Industry 4.0 Partner Consortium, organized collaboratively by Iowa’s community colleges, Iowa State University’s Center for Industrial Research and Service (CIRAS), and the Iowa Economic Development Authority. IDM staff served leadership roles in implementing the Consortium’s education and awareness activities.

#### **Iowa Waste Reduction Center (IWRC) collaborated with state and national partners**

- The IWRC partnered with the Iowa Association of Energy Engineers to host a second annual Iowa Energy Trends Workshop in the greater Des Moines area.
- The IWRC partnered with the Iowa State University Brewing Science Lab to present about sustainable brewing practices to ISU brewing students, and collaborated with Brewing Science Lab staff in the development of a carbon neutral/negative beer that was served at a joint booth at the Iowa Craft Brew Festival.
- The IWRC staff worked with Iowa DNR and other stakeholders to help rewrite current restrictive composting administrative rules to help facilitate growth of compost industry in the state.

#### **John Pappajohn Entrepreneurial Center (JPEC) collaborations benefit students and community**

- JPEC staff developed and delivered programming for two cohorts of the Black Business Entrepreneur Accelerator (BBEA), a program of 24/7 BLAC, serving 20 Black-owned businesses in the Cedar Valley region. In collaboration with UNI Dining, the Black Capital Study & Projects, and JPEC staff, BBEA catering businesses were invited to participate in a venue takeover of the UNI Dining Center on campus. Five food entrepreneurs took advantage of the opportunity to

showcase their menu to the UNI campus and the Cedar Valley community. This partnership was beneficial to not only the food entrepreneurs, who now had a way paved to secure future catering contracts, but to UNI Dining as they have been experiencing labor shortages, a problem for which this partnership could be a solution.

#### **IASourcelink (ISL) - Iowa Economic Development Authority**

- In the past year, 54,155 Iowans sought information from ISL, and direct business assistance was provided to 1,750 Iowa business owners via the Iowa Business Concierge services. The ISL program continues as a strong partnership between UNI and the IEDA. ISL staff provides assistance on business-related questions and frequently links Iowa businesses with other support resources from around the state.

#### **Metal Casting Center (MCC) and Foundry 4.0 Center (F4C) collaborate with regent institutions and technical organizations**

- The F4C is collaborating with Youngstown State University on two federally-funded research projects in the development and technology transfer to the metal castings industry and with Ohio State University on several casting-related projects.
- The F4C collaborated with Hawkeye Community College to provide workshops on the basics of robotics for Department of Defense supply companies in the metal casting industry.

#### **Strategic Marketing Services (SMS) partners with Iowa organizations**

- The IEDA, IDM and SMS surveyed human resource professionals from businesses and organizations across the state about what workforce challenges they were experiencing and how the businesses and organizations are handling these workforce challenges. The IEDA utilized the study findings to better inform their statewide workforce policy and programs.
- SMS assisted Iowa 4-H in learning general opinions and perceptions of their brand and messaging from parents of children grades 4 through 12 across the state. Two phases of research were conducted. Iowa 4-H utilized the findings in developing a statewide marketing strategy and campaign.

#### **Tallgrass Prairie (TPC) Partners with Iowa universities and associations**

- The Prairie on Farms Program provided technical assistance on prairie reconstruction in collaboration with technical services providers like the Iowa State University STRIPS team, Practical Farmers of Iowa, Hertz Farm Management, agricultural landowners, USDA Natural Resources and The University of Iowa Flood Center. Activities included field days, a working group meeting, an online botany course, a help desk, and distribution of case studies on prairie strips.
- The Research and Restoration Program supplied the USDA Farm Service Agency (FSA) with an assessment of the Conservation Reserve Program's role in monarch butterfly recovery. USDA FSA is also funding a 30-year, \$500,000 grant to the TPC in collaboration with Xerces Society for Invertebrate Conservation to assess the supply and demand factors affecting native seed price and availability.
- Iowa Roadside Management coordinated with the Iowa DOT and the Federal Highway Administration to supply enough seed to plant more than 1,100 acres of county Iowa roadsides with native plants.