

The University of Iowa

FY21 Annual Economic Development Report

The University of Iowa ranks as one of the top-200 overall universities in the world and remains ranked by Reuters as one of the top-100 most innovative universities in the world. These recognitions are indicative of the quantity and quality of the research and educational experiences supported daily at the University of Iowa. These activities subsequently translate into positive impact on the economy of Iowa. The university's existing strategic plan calls to "Support the translation of intellectual work into applications to enhance economic development." This strategy will be implemented through:

- 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 problems

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.

Subsequently, this report provides a description of the UI's key initiatives in the economic development space—Protostudios, UI Research Park, Translational Research Incubator, UI Research Foundation, UI Ventures, MADE, Center for Advancement, John Pappajohn Entrepreneurial Center (JPEC), UI Pharmaceuticals, and activities at the College of Engineering.

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 President, oversees and coordinates the economic development activities for faculty, staff and graduate students at the University of Iowa. Of the UI organizations listed below that contribute to economic development efforts, five report directly to the Chief Innovation Officer: Protostudios, UI Research Park, Translational Research Incubator, UI Ventures, and MADE.

In FY21, the "Innovation Team" focused its efforts around several broad themes, including:

Focus on MedTech and EdTech. The University supports a broad array of research and development efforts and possesses expertise across a wide range of disciplines, but external reviews commissioned by the State of Iowa identified highly concentrated capabilities in the medical technology and education technology sectors. At the University, efforts are focused on exposing faculty, staff and students to the system of support which exists within the university

and in the surrounding community to assist them in transitioning their research or other ideas towards commercialization, and enable student participation.

Mobilizing an External Network. Drawing on a broad network of contacts in the medical device industry and the venture capital community, the Innovation Team is exposing UI start-ups and entrepreneurially minded faculty, staff and students to skills and connections heretofore not readily available on the Iowa campus. The network of individuals able to assess start-ups, offer strategic and experiential assistance, and connect them to talent not resident to Iowa. These volunteers are complemented by an expanding stable of Entrepreneurs in Residence.

Creating a Concierge Service to Support UI Faculty Innovations. Under the direction of UI Ventures, the Innovation Team has begun laying the groundwork for a comprehensive suite of services to assist UI faculty looking to engage the innovative 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. In FY21, emphasis was on growing the nascent support structures, which were launched in FY20, and continued outreach for Biomedical engineering, and the Colleges of Dentistry, Nursing, Medicine, Pharmacy and Education.

Extending Advanced Prototyping Services to Medical Innovators. With the financial support of the IEDA, Protostudios acquired an advanced anatomical printer to assist medical device innovators. The new machine is located inside the UI Hospitals and Clinics and has enabled Protostudios to better reach, engage and support medical innovators. Throughout FY20-21, this new office established itself and is now serving increasing numbers of clients devising medical device products and concepts.

Expansion of GAP Funding Programs. In both FY19 and 20 in partnership with the College of Medicine, the Innovation Team designed and administered \$100,000 GAP funds to promote faculty innovation in medical device and software. The Innovation Team solicited entries, review by external experts, coordinated the evaluation of the entries, and administered the funds. That model has rolled out to include competitions at the Colleges of Engineering, Nursing, and Education thus far. 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.

III. University of Iowa Economic Development Infrastructure



University of Iowa
Research Foundation

Research and scholarship from faculty and staff at the University of Iowa often lead to the discovery of innovations that can improve the quality of life for people in the state, the nation, and worldwide. The University of Iowa Research Foundation (UIRF) works to obtain intellectual property protection—like patents and copyrights—on these innovations and partners with industry for the commercial development of new products and services.

UIRF is part of the Office of the Vice President for Research and works to deliver UI innovations out into the world by:

- Building relationships with researchers through intellectual property protection and commercialization;
- Working collaboratively with industry through intellectual property licensing and other partnerships

UIRF manages a diverse portfolio of inventions including educational materials, engineering advancements and physical materials, imaging and diagnostics technologies, and a variety of therapeutic inventions.

Technology transfer is an integral part of all Research 1 universities in the U.S., and UIRF has been serving as the University of Iowa’s technology transfer office since its founding in 1975. Many at UI are familiar with UIRF’s largest commercialization success: the Department of Microbiology and Immunology’s CMV promoter. This 1983 invention was licensed by UIRF to over 120 companies and generated over \$170 million for the inventor and the university. Because of the phenomenal success of this invention, the university community often overlooks the number of other UI inventions currently on the market, including:

- the Zimmer Biomet Trabecular Metal Total Ankle;
- the English-language mobile app tutorial *Sounds of Speech*;
- IDx-DR, the first ever diagnostic artificial intelligence algorithm to receive FDA approval (for detection of diabetic retinopathy); and
- a mobile learning platform that aids dental and nursing students worldwide.

In the last few years, UIRF has inked deals with companies for products ranging from cranial plates for traumatic brain injury, gene therapies for cystic fibrosis (UIRF's licensee was acquired in 2018 as part of a \$3 billion deal with Sumitomo Dainippon Pharma), CRISPR tools to treat neurological disorders, a new high school equivalency exam, a dietary supplement for companion animals, a device to treat atrial fibrillation (UIRF's licensee was acquired by Boston Scientific this year), to LED gas sensors (UIRF's licensee had its first commercial sale this year).

After nominations from UIRF, two UI inventors have been inducted into the National Academy of Inventors. Through its commercialization efforts, UIRF helps our researchers expand the relevance of their work to have a direct impact on people's lives.

In addition to the public impact, UIRF's activities directly enhance UI's research mission in ways large and small:

- Revenue from licensing paid to colleges, departments, and the OVPR, in the amount of \$14.8 million in the last ten years.
- Many UIRF licensing deals lead to sponsored research in the UI inventors' labs, and all sponsored research agreements, including SBIR/STTR grants, include intellectual property and licensing provisions.
- Many grantors—foundations, companies, consortia, and increasingly federal agencies—expect grantee institutions to demonstrate their robust commercialization capabilities and sometimes detailed commercialization plans in grant submissions.
- Those same granting agencies impose strict, detailed requirements for reporting on inventions made using their funds. For federal agencies, the Bayh Dole Act outlines these requirements from disclosure to patenting activity to licensing to detailed financial reports. Enforcement of these requirements has become more diligent and strict in the last four or five years. UI's research partners HHMI and the VA have similar requirements.
- Federal and foundation grants require researchers to make their research tools widely available. As an alternative to one-off, sometimes time-consuming material transfer agreements (also known as MTAs) requests, UIRF makes these tools available through revenue-bearing licenses. UIRF currently has over a hundred research tools licensed to various companies.

In the past five years, UIRF has worked on over 500 disclosures with over 800 UI researchers from all colleges (including 13 CLAS departments).

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 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.



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, 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.



The Translational Research Incubator (TRI) (<https://uiventures.uiowa.edu/translational-research-incubator>) serves as the wet-lab counterpart to Protostudio's dry-lab program. The TRI space, located in the Medical Laboratories building on the university's campus is a complement to the UI Research Park as it can house up to four early-stage research-based biomedical or life science companies focused on commercializing technology developed at the University of Iowa.

Much of the support for TRI goes to purchasing equipment that can be shared among the company tenants. This allows companies to focus their limited resources on technology-specific development to maximize their funding -and do so in close proximity to their day jobs. The space is ideal for small start-ups that need to conduct early-stage proof-of-concept experiments, often with SBIR/STTR funding, in order to attract the investment needed to expand operations at the UI Research Park and other locations in the eastern Iowa region. The TRI space is currently full with a waiting list for occupancy.



UI Ventures (<https://uiventures.uiowa.edu/>) assists university faculty and staff in creating new companies based upon their research. It facilitates connections between the faculty and outside mentors, services and investors and serves as a liaison between the company and university services. Working closely to support the University of Iowa Research Foundation, UI Ventures actively engages with outside investors and business experts to improve visibility of UI companies and bring business expertise to campus. In addition, UI Ventures manages the TRI incubator and operates the MADE program to encourage faculty and staff innovation and entrepreneurship throughout campus.

MADE



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 technology sectors with the first products to launch being low risk medical devices developed at UIHC across several departments. Products are available for sale through the 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.



The John Pappajohn Entrepreneurial Center (Iowa JPEC) (<https://www.iowajpec.org/>) offers nationally recognized comprehensive entrepreneurial education 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 (on-campus and online) 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, the Certificate in Entrepreneurial Management for all undergraduate students, the Certificate in Arts Entrepreneurship for arts students, and the Certificate in Media Entrepreneurialism for journalism and mass communication students. Advanced entrepreneurship courses are also offered to MBA students at several locations across the state of Iowa as well as virtually.

Iowa JPEC and its university partners also play an important role in the development of Iowa-based technology and high-growth start-up companies. Whether providing one-on-one consulting services and group training, working with start-up companies on technology transition, directing UI students on advanced field study projects, or providing training and seminars to business executives, Iowa JPEC seeks to support the next generation of entrepreneurs and business leaders.



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



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 85 pharmaceutical professionals. UI Pharmaceuticals has been operating for nearly 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

Center for Biocatalysis and Bioprocessing

The Center for Biocatalysis and Bioprocessing (CBB) (<https://cbb.research.uiowa.edu/>) is an academic center on the campus of the University of Iowa focused on advancing biotechnology through the creation and dissemination of discoveries in the biocatalytic sciences. The Center's core missions are to 1) enhance student education, 2) promote faculty research, 3) support economic development, and 4) grow a thriving workforce in biotechnology.

The Center is proud of its exceptional microbial bioprocessing facility that operates within the University of Iowa Research Park. This facility provides a unique campus environment to promote its education, research, economic and workforce development missions. As an internationally recognized contract development and manufacturing operation (CDMO), the CBB facility specialized in the optimization and scale-up of complex bioprocesses for the production of 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 U.S. Food and Drug Administration (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. Products manufactured in the CBB's cGMP suite can be used for toxicity testing, stability analysis, and, finally, administration to human volunteers in the phase 1 clinical trial. The CBB operates the only facility in the State of Iowa that manufactures vaccines and therapeutic proteins for Phase I clinical trials in people.

From the standpoint of economic development, the Center's microbial bioprocessing facility provides an unmatched expertise in biotechnology that attracts clients from around the world. Clients range from international corporations to virtual startups. In addition, the facility's professional staff supports clients who are preparing SBIR/STTF grant applications and our staff consults for companies preparing IND applications for the FDA. An exciting initiative for the CBB's biomanufacturing facility is a potential partnership with an international company to produce recombinant-reagents targeted for the cultivation of specialized cell for novel cell and gene therapeutics, including those for personalized medicine. These r-reagents represent a critical part of the national supply chain for biomanufacturing of the next generation of biotherapeutics.

College of Engineering

The UI College of Engineering (<https://engineering.uiowa.edu/>) is educating nearly 2,000 undergraduates and 280 masters and PhD students. The College recently completed a \$37 million, 65,000-square-foot addition to the Seamans Center for the Engineering Arts and Sciences. The addition includes expanded classrooms, collaborative learning spaces, learning and discovery in fluid mechanics, sustainability, advances in teaching and conducting research in computer-aided design and simulation, and fosters engineering and the arts.

There are 15,265 engineering alumni living and working throughout the world – 4,432 alone in the state of Iowa – many with corporate and personal ties to the College through recruitment, mentoring, guest seminars, faculty consulting, sponsored research, financial giving, and other interactions. Among distinguished alumni are eight members of the National Academy of Engineering.

Key research units at the College of Engineering include:

- [Center for Bioinformatics and Computational Biology](#) -- High-performance computational and informational resource to help researchers learn about genetic basis of human disease and other biomedical phenomena. Also enables interdisciplinary research in basic life sciences and applied medicine.

- [Iowa Technology Institute](#) -- Conducts basic and applied research in modeling and simulation and comprises the following seven units: Advanced Manufacturing Technology Group (AMTech); Biomechanical of Soft Tissue Program (BioMost); Musculoskeletal Imaging Modeling and Experimentation MIMX); National Advanced Driving Simulator (NADS); Operator Performance Laboratory (OPL); Reliability and Sensory Prognostics Systems (RSPS); and Virtual Soldier Research Program (VSR).
- [NADS — National Advanced Driving Simulator](#) -- Home to the largest driving simulator in the US, the National Advanced Driving Simulator (NADS) has been a leader in driving safety research for more than 20 years. Through work with students, faculty, staff, programs, and university-wide collaborators, NADS partners with government, industry, and academic leaders to improve safety by researching the connection between drivers, motor vehicles, and road users.
- [IIHR — Hydroscience & Engineering](#) -- Acknowledged international leader in fluid mechanics, environmental hydraulics, and water and air resources. Home of the Iowa Flood Center, engaged in flood projects in several Iowa communities and employs several graduate and undergraduate students participating in flood-related research; and the Lucille A. Carver Mississippi Riverside Environmental Research Station, which conducts unique interdisciplinary educational and research programs focusing on river ecology in a holistic way.
 - [IFC — Iowa Flood Center](#) -- Born out of the 2008 floods, the Iowa Flood Center at the University of Iowa provides Iowans with accurate, science-based information to help them assess and understand their flood risks. The center's goal is to improve flood monitoring and prediction capabilities in Iowa, while developing strategies to help mitigate and prevent future flood damages.
 - [IGS — Iowa Geological Survey](#) -- The Iowa Geological Survey has a rich scientific history in the state, serving Iowans for more than 150 years through the collection and analysis of geologic and groundwater data. With this information, the IGS helps effectively understand Iowa's natural resources for long-term sustainability and economic development.
- [Iowa Institute for Biomedical Imaging](#) -- Aims to foster multi-disciplinary and cross-college research and discovery in biomedical imaging and image analysis, and improve training and education.
- Interdisciplinary Research Centers
 - [Carver Family Center for Macular Degeneration](#)
 - [Center for Global and Regional Environmental Research](#)
 - [Center for Health Effects of Environmental Contamination](#)
 - [Center for International Rural and Environmental Health](#)
 - [Environmental Health Sciences Research Center](#)
 - [Heartland Center for Occupational Health and Sustainability](#)
 - [Iowa Injury Prevention Research Center](#)
 - [Iowa Superfund Basic Research Program](#)
 - [John and Marcia Carver Nonprofit Genetic Testing Laboratory](#)
 - [NSF Center for Environmentally Beneficial Catalysis](#)
 - [Orthopaedic Biomechanics Laboratory](#)

- [Photopolymerizations Center \(NSF I/UCRF\)](#)
- [Public Policy Center](#)
- [UI Informatics Initiative](#)
- [UI Water Sustainability Initiative](#)

III. UI’s Economic Development Activities in FY21

Impact on economic growth in Iowa

- The UI Research Park is home to 32 companies, employing over 2500 total employees, 800 of those located on the park. Total payroll associated with Park companies is more than \$2.9 million.
- UI Ventures currently supports 47 companies including 1 that formed in FY20.
- MADE had 4 products on the market in FY21 and students continued to develop an additional 7 products originating from the Colleges of Medicine and Dentistry, and the UIHC Dept of Nursing.
 - Two MADE student graduated and had multiple job offers directly related to their work at MADE.
- Protostudios resumed client work in August of 2020. By early 2021 Protostudios monthly billings had surpassed pre-COVID levels.
- The Protostudios UIHC office opened in August of 2020. UIHC Client traffic has been high with meetings almost every day.
- About 60% of Protostudios’ projects are medically related.
- 2020 also saw the first academic introduction of the Protostudios designed and manufactured teeth. Hundreds of these have been sold and used by students to practice dental procedures. Each tooth design was guided by dental college professors to provide the look and material feel of real teeth. Each tooth consists of multiple 3D printed layers mimicking major tooth components e.g. enamel, dentin, pulp, nerve, and decay.
- The fully vaccinated Protostudios’ team traveled to both UNI and Iowa State to meet with our sister organizations (TechWorks & CIRAS). Communication and cooperative development continues with each of them.
- The second student employed by Protostudios graduates in December and has accepted a job in Decorah Iowa. His job is a virtual parallel to his Protostudios job experience.
- Iowa JPEC

○ Start-up Companies Served (New Business Starts)	233
○ Program, Seminar & Workshop Participants	4,808
○ Estimated Job Creation	364
○ Hours dedicated to Clients	13,605
○ Total Clients (Individuals receiving assistance)	833
○ Total Youth Impacted (K-12)	51,394
○ Seed Money Awarded	\$606,200

- Total Participants Across All Programs) 10,522
(Including Academic, Outreach, and Youth)
- 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.
- In FY21 UI Pharmaceuticals worked with ~100 different clients to manufacture and testing ~120 individual lots of material, resulting in ~\$18.8M in total revenues. Of particular note these projects include two NIH Task Order programs for investigational drugs to treat Jansen metaphyseal chondrodysplasia (<https://uip.pharmacy.uiowa.edu/news/2020/12/ui-pharmaceuticals-awarded-nih-ncats-grant-dosage-form-development-and-manufacturing>), and COVID-19. Additionally, UI Pharmaceuticals support of client Actuate Therapeutics, resulted in the receipt of Fast Track FDA Designation for their product 9-ING-41 for the treatment of adults and children with advanced refractory cancers (<https://uip.pharmacy.uiowa.edu/news/2021/08/ui-pharmaceutical-client-actuate-therapeutics-receives-fast-track-fda-designation-9>). UI Pharmaceuticals currently supports client programs across the United States as well as in Europe, Asia, Africa, and South America.
- The Center for Biocatalysis and Bioprocessing supported projects with 5 clients based in Iowa, 11 clients from elsewhere in the U.S., and 5 located outside the U.S. in FY21.
- Industry partnerships at the College of Engineering offer support for research and technology development in addition to experiential learning opportunities for Iowa engineering students. In FY21, notable partnerships included:
 - Collins Aerospace (gift funding and sponsored research with Tom Schnell)
 - Carver Trust (lab kits, student support, faculty support, labs with focus on biomedical engineering)
 - Deere Foundation (gift funding and programmatic support in Mechanical Engineering)
 - Providing students with opportunities to work with businesses, particularly Iowa businesses, is a priority for the College of Engineering.
 - 125 unique engineering students participated in a co-op or internship in FY21.
 - 96 of those students were in the state of Iowa
 - 76.8% were in the state of Iowa
 - Engineering students worked for 117 different employers

Promotion of economic growth in Iowa

- 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. In FY21, UI faculty/staff companies were awarded \$5,508,545 in SBIR/STTR grants across 9 companies and 8 companies secured equity funding totaling \$57,050,000. One spin out company was acquired for \$295 million.
- UI Research Park's BioVentures Center traditionally monthly host lunch and learns in collaboration with SBDC and JPEC throughout the year for start-up companies and the multi-purpose room and other conference rooms in the BVC are used by several

collaborating groups, including the Iowa Innovation Corporation and the Iowa Economic Development Authority (IEDA). These activities were suspended due to COVID but are anticipated to return once allowed.

- Iowa JPEC:
 - Academic Program – Iowa JPEC delivers campus-wide and online undergraduate education and technology innovation coursework in the MBA program. Majors (BA or BBA) and certificate programs exist for all undergraduate students at UI including specialized programs for students in engineering, performing arts, and journalism. During FY21, 4,566 students enrolled in 135 classes, 334 students received a degree and 130 students earned an entrepreneurship certificate.
 - Bedell Lab Student Incubator – The student 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 1,503 students since opening in 2004. During FY21, the Startup Incubator supported 45 student start-ups made up of 61 students. An example of a student startup supported by the Startup Incubator in FY21:
 - Hawkeye Surgical Lighting, founded by Anthony Piscopo (19BS Biology), a second-year medical student in the Carver College of Medicine, and David Christianson, a third-year neurosurgery resident, partnered to solve a decades-old operating room problem—poor lighting and visualization during surgery. They created a compact surgical light that causes gliomas (cancerous brain tumors) to glow bright red, a technology previously only available through bulky multimillion-dollar microscopes. Piscopo and Christianson built the idea into a feasible business by participating in Iowa JPEC’s UI Innovators (NSF I-Corps) Workshop. They are continuing to grow the company in the graduate student track of the Hawkeye Summer Accelerator program. Their minimum viable product is currently being tested on human patients in 10 different operating rooms at University of Iowa Hospitals & Clinics.
 - Hawkeye Summer Accelerator - Throughout the twelve-week program, accelerator teams 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 Hawkeye Startup Accelerator aims to drive the start-up process for students, while increasing their start-ups' chance for success. In FY21, 15 teams and 24 students participated.
 - Business plan and pitch competitions – Iowa JPEC hosts and sponsors a variety of elevator, business model and business plan competitions for UI students. During FY21, a total of \$599,450 was awarded to start-ups.

- Innovation Challenge – In order to increase campus-wide entrepreneurial activity and accelerate technology commercialization, a new year-long training program and competition launched in FY20. Administered by the John Pappajohn Entrepreneurial Center and co-sponsored by the Office of the Vice President for Research, UI Research Foundation and Office of the Chief Innovation Officer, the program had 117 participants in FY21.
- IdeaStorm Competitions are entry level pitch competitions that require no prior experience. Students simply share their idea with the crowd in two minutes or less. This introduced 118 new students to entrepreneurship in FY21.
- Game Changer – This is a new online event that provides participants with a platform to develop ‘impact driven entrepreneurship’ that will address a United Nations Sustainable Development Goal. During FY21, 16 students participated.
- 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 FY21, 283 teachers from 250 schools in 41 states used the curriculum nationwide and impacted 12,756 students.
 - STEM Innovator Program – This professional development program for teachers infuses innovation and entrepreneurship into K-12 classrooms. In FY21, 361 educators from 145 schools in 18 states received curriculum, training, and support, impacting 37,903 students.
 - Summer Camps – Offered online (COVID), Naperville, IL and West Des Moines, IA. 51 youth from 7 states participated. Participants ranged in age from 5th-12th grades.
 - Innovator Competition – Competition for high school students to showcase their business startup, invention, or innovation. 431 students from 101 schools across 28 states participated. A total of \$6,500 in seed capital was awarded.
- Seminars, Workshops, and Lecture Series – Iowa JPEC hosted more than 94 different opportunities last year for students, faculty, and people from the community. In FY21, over 4,808 attendees came to learn from experienced entrepreneurs on a variety of topics.
- 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 FY21, 275 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. Today, 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 FY21, this program was not held due to COVID-19.

- Student Organizations – Several campus-wide clubs and organizations focused on entrepreneurship are sponsored by Iowa JPEC.

Summary of FY21 economic development activities

- UIRF:

	FY16	FY17	FY18	FY19	FY20	FY21
Disclosures	151	93	143	83	95	101
Licenses + options	40	58	51	48	37	47
Patent applications	297	148	153	160	146	95
Provisionals	88	49	35	42	36	40
PCTs	29	29	17	16	24	13
Regular US	142	83	44	53	38	26
Foreign	126	36	57	49	48	16
Issued patents	67	42	74	54	72	86
US	25	24	27	22	17	29
Foreign	42	18	47	32	55	57

- Wellmark Venture Capital Fund
 - Four companies funded at \$100,000 each
- Business Consulting Program
 - Iowa clients served 70
 - Industries include: profit, non-profit, NGO, start-up/entrepreneurial, retail, engineering, financial, veterans' services, software/IT, manufacturing, restaurant, research, event coordinating
 - Iowa counties represented 13
 - Johnson, Polk, Scott, Linn, Muscatine, Plymouth, Iowa, Woodbury, Cerro Gordo, Blackhawk, Jackson, Benton, Buchanan, Dallas, Clinton, Dubuque, Scott
 - Hours dedicated to one-on-one consulting 12,636
- Institute for International Business
 - Iowa clients served 3
 - Industries include: international trade, food processing/consumer products, medical devices
 - Iowa Counties represented: Benton, Des Moines, Johnson
- Iowa Innovation Associates (IIA) Internship Program
 - Student internships 23
 - Iowa businesses served 18
 - Iowa counties represented 5
 - Linn, Johnson, Polk, Dubuque, Scott Industries include: Agriculture, Real Estate, Non-Profit, event planning, Environmental, Automotive, Finance, Medical, Data Analytics, software/IT, retail, marketing
- National Science Foundation NSF I-Corps Program

- Number of businesses 39
- Number of participants (faculty & staff) 50
- Hawkeye Summer Accelerator
 - Number of teams 15
 - Number of participants 24
- Small Business Development Center
 - Start-ups companies served (new business starts) 14
 - Total clients counseled (individuals assisted) 322
 - Estimated job creation 123
 - Hours dedicated to clients 903
 - Total capital – loans + equity \$7,147,629
 - Workshops 0

Support of Economic Development Outreach in Iowa

- UICA has presented its Impact Report to dozens of corporate partners to demonstrate specific examples of campus wide engagement with those partners. Examples of engagement include recruitment, experiential learning, board and speaking activity, as well as philanthropic support. The compilation of this information in one report enables UI's corporate partners to evaluate and extend their engagement with the university.
- Venture School Entrepreneurial Training Program – Iowa JPEC offers an immersive “Lean LaunchPad”, business model canvas, eight-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 FY21, workshops were offered in Coralville/UI, Davenport/EICC, Iowa City, Cedar Falls/UNI, Des Moines, Sioux City, Dubuque and Mason City/NIACC. There were 80 teams made up of 99 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 FY21, the UI SBDC served 322 start-ups. This contributed to the creation of 124 jobs and \$ 7,147,629.44 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 FY21, 25 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 FY21, 103 projects were completed for 70 clients in 22 counties (Johnson, Polk, Scott, Linn, Muscatine, Plymouth, Iowa, Woodbury, Cerro Gordo, Blackhawk, Jackson, Benton, Buchanan, Dallas, Clinton, Dubuque, Scott)
- Iowa Innovation Associates Internship Program – Iowa JPEC provides funding support enabling Iowa start-ups to hire UI student interns as they work to grow their businesses. In FY21, 23 students were placed in 18 start-ups in these Iowa counties: Linn, Johnson, Polk, Dubuque, Scott

- Pappajohn Entrepreneurial Ventures Competition – In partnership with the Pappajohn entrepreneurship centers at ISU, UNI, Drake, and NIACC, Iowa JPEC sponsors this annual competition to support start-ups around the state. Each year, over \$50,000 is awarded in total to three companies.
- Wellmark Venture Capital Fund – Iowa JPEC is the regional administrator of the \$5 million Wellmark Venture Capital Fund that supports the creation and growth of new businesses throughout the state. Iowa JPEC screens applications, performs due diligence, evaluates business concepts, and assists applicants with their business plans. Iowa JPEC partners with area angel investors, equity fund managers, lenders, the Iowa Economic Development Authority and the Small Business Administration to help business owners secure additional funding. During FY21, four businesses each received \$100,000 in funding.
- 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, UI Ventures, and Iowa JPEC. The goal of this program is to accelerate 90 faculty and staff start-ups. During FY21, 39 start-ups made up of 50 faculty and staff participated.
 - Viewpoint Molecular Targeting, Firefly Photonics, and Theion Agriculture are examples of an early-stage businesses being supported by this program.
- 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, state agencies, other universities, and community colleges.
- 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.

Regents Innovation Funds Spent to Promote Economic Development in Iowa

- Protostudios: \$248,369 for personnel and general expenses
- UI Research Park: \$79,396 for BioVentures Center personnel, operating/general expenses
- UI Ventures and MADE: \$557,435 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. Research at the University of Iowa makes Iowa a healthier, more prosperous, and attractive place to live. The university will continue to ensure that every dollar invested in research is leveraged by developing new economic opportunities for Iowans.