

ANNUAL REPORT – Calendar Year 2023

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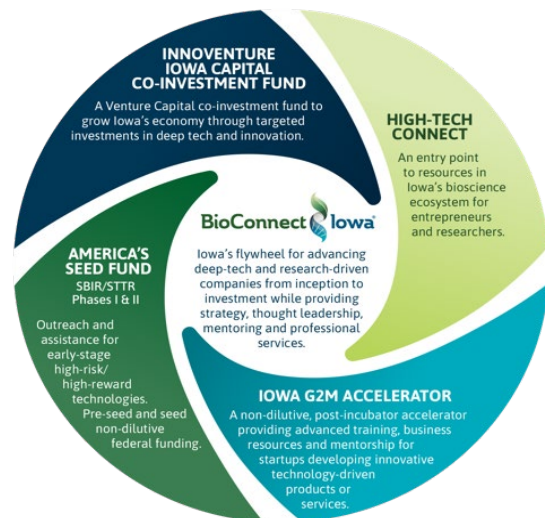
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In 2023, BioConnect Iowa continued to fuel the growth and impact of Iowa's bioscience sector, building upon its previous successes and introducing new initiatives. Leveraging its Innovation Flywheel, BioConnect Iowa facilitated the acceleration of entrepreneurs, enabling a streamlined journey from inception to investment, and ensuring promising ideas could swiftly progress toward commercialization.

Highlights include:

- In June 2023, the updated Iowa Bioscience Strategy showcased the advancements and momentum within Iowa's bioscience sector since 2017.
- The InnoVenture Iowa Fund, Iowa's pioneering venture capital initiative supported by federal funds awarded to the Iowa Economic Development Authority (IEDA), bolstered early-stage startup companies. Notably, the second InnoVenture Iowa Challenge experienced exponential growth, doubling in size and attracting increased sponsorships.
- Iowa-based researchers continued to reap the benefits of the America's Seed Fund, the largest source of early-stage, non-dilutive funding in the nation. In 2023, 19% of Iowa companies participating in the America's Seed Fund: Iowa Program secured federal funding, nearly doubling the national average. This achievement, coupled with federal funds to state funds ROI of 8:1, underscores the success in securing funding opportunities for bioscience innovation.
- The Iowa G2M Accelerator, a collaborative effort between Iowa State Startup Factory, VentureNet Iowa, and BioConnect Iowa, continued to provide invaluable support to entrepreneurs, enabling them to expedite the scaling process for their startups.
- Continuing their strategic partnerships, the BioConnect Iowa team maintained close collaboration with the Bioscience Platform Chief Technology Officers at Iowa State University and University of Iowa.
- BioConnect Iowa unveiled a new strategy and campaign aimed at expanding and accelerating Iowa's bioscience sector: InnoVenture Iowa Services and InnoVenture Iowa Studio. These initiatives are poised to catalyze further growth and innovation within Iowa's vibrant bioscience ecosystem, positioning the state as a hub for bioscience excellence and opportunity.

BioConnect Iowa Innovation Flywheel



IOWA'S BIOSCIENCE STRATEGY REFRESH:

The IEDA launched a refresh of the Iowa Bioscience Strategy in July 2022 by retaining TEconomy Partners, LLC, to assess and refine the 2017 Iowa Bioscience Strategy. Released in June 2023, the updated strategy evaluates emerging bioscience opportunities, trends, technologies, and market dynamics associated with the four core bioscience platforms and identifies key focus areas for the next five years.

The evaluation aimed to achieve the following objectives:

- Provide an assessment of Iowa's position in the bioscience sector, leveraging the insights gained from TEconomy Partners' collaboration with the Biotechnology Industry Organization.
- Evaluate the implementation and efficacy of the previous Iowa Bioscience Strategy.
- Assess the progress made in advancing each of the four Bioscience platforms, while also assessing emerging opportunity areas, disruptive technologies, and market trends since 2017.
- Refine the strategies and actions outlined in the plan, both those specific to individual platforms and those cutting across multiple areas, to better align with identified opportunities and anticipated future needs.

Key recommendations found in the report include:

- Maintain the implementation of crucial elements outlined in the 2017 strategy.
- Explore the potential of an additional platform opportunity focused on Regenerative Agriculture.
- Strengthen communication channels to enhance outreach and engagement.
- Focus efforts on boosting deal flow to maximize the utilization of the established ecosystem.
- Sustain funding for operational investments, asset acquisitions, and investment initiatives through private, federal, foundation grants, and other sources to foster science and technology advancement.

As the entity created by IEDA under Iowa law to provide services and receive and disburse funds to enhance bioscience-based economic development in the state, BioConnect Iowa plays a key role in implementing TEconomy Partners' recommendations.

IOWA'S BIOSCIENCE STRATEGY EXECUTION AND PLATFORMS

BIOBASED PRODUCTS PLATFORM (Kevin Moore, Chief Technology Officer, Iowa State University): The Biobased Products innovation ecosystem continues supporting commercially relevant research and development and connecting industry to university faculty. This platform also continues to focus on adding scale-up capability and infrastructure to support commercialization of biobased products. (*Biobased Products Platform Innovation Ecosystem 2023 Year-End Update, Office of the Vice President for Research*)

- Ten projects were supported in 2023 in areas such as fermentation food ingredients, carbon fibers, ethanol co-product upgrading, animal probiotics, and conversion of discarded plastics into chemicals and fuel. By the end of FY24, Iowa State University's (ISU) Biobased Products platform will have funded 40 different research projects led by more than 30 primary investigators supporting 10 ISU startup companies and partnerships with 15 Iowa-based companies.

- The platform also continues its focus on adding scale-up capability commercialization infrastructure. The ISU Center for Crop Utilization Research (CCUR) has completed work for more than 40 biotechnology companies across the U.S. In addition, strategic partnership discussions have been held with a multinational food ingredient company that plans to construct an Iowa-based contract manufacturing fermentation scale-up facility.
- More than \$30 million in grant awards have been received by ISU in Biobased Products areas in 2023, including:
 - A five-year National Science Foundation (NSF) EPSCOR award which includes funding for biomaterial research initiatives.
 - A \$2 million NSF award for the conversion of natural gas and biomass to hydrogen and performance carbons.
 - A \$1.8 million Department of Energy (DOE) award for the development of microbial organisms and fermentation processes to produce bioproducts; and
 - Two awards from the Department of Defense (DoD) Biomanufacturing Institute (BioMADE) for novel fermentation design and development of advanced sensors.
- In Iowa State-related biobased startup company progress:
 - Soybean oil derivative / asphalt additive company Soylei Technologies has hired an experienced CEO and was awarded a \$4.6 million National Institute of Food and Agriculture (NIFA) grant in support of technology commercialization.
 - Biopesticide company Pyrone Systems has closed an investor funding round from funds including InnoVenture Iowa Fund.
 - Launch of new startups: Rise Energy, developing technology to convert biomass to fuels and biochar, and Upcycling+, developing technology to convert waste plastics to fuels and chemicals.

DIGITAL AND PRECISION AGRICULTURE PLATFORM (Nadilia Gomez, Chief Technology Officer, Iowa State University): The Digital and Precision Agriculture Platform continues to support innovation-driven enterprises by providing funding, guidance and meaningful connections to experts at Iowa State University and in the state of Iowa. (*Digital and Precision Agriculture Platform Innovation Ecosystem 2023 Year-End Update, Office of the Vice President for Research*)

Key emphases in 2023 included:

- Seven projects were supported with seed grants and expert advice in areas such as sensor technology, predictive algorithms soil informatics, advanced engineering of biolistic transformation, and pesticide-detecting nanoparticles.
- Five projects are in incubation for seed grants, fellowships and demonstration grants reflecting the progress of previously funded projects and the improved commercial viability and industry relevance of new platform-supported projects.
- A series of networking events was established to foster connections between ISU researchers, ISU Research Park, and Iowa-based innovation-driven enterprises.
- Investment to add farm-scale prototyping and testing capability and infrastructure to support commercialization of digital precision ag solutions through the Alliant Energy Innovation Center.
- Facilitate ISU faculty engagement to enhance interdisciplinary collaboration directed at applied field research in hyperspectral imaging, artificial intelligence, machine learning, livestock management and telehealth.

Key Accomplishments and Economic Impacts

- ISU researchers funded by the platform developed computer-enhanced algorithms that detect anomalies in swine production much earlier than traditional methods. This scientific breakthrough leveraged led to a \$300,000 award from USDA Agriculture and Food Research Initiative (AFRI).
- SoilSerdem and EnGeniousAg were awarded \$1 million NSF Phase II SBIR grants.
- Contributed to the USDA proposal for \$4 million submitted by ISU agronomy faculty on AI-driven climate smart agricultural research and demonstration, integrating autonomous farm management activities, continuous real-time sensing of soil and plant conditions and weather parameters, and intelligent data harvesting for analysis and visualization.
- Contributed to the submission of a \$300,000 proposal to develop workforce in cybersecurity using virtual reality (VR) educational curriculum and training for English learners in rural communities.

VACCINES AND IMMUNOTHERAPEUTICS PLATFORM (Mike Roof, Chief Technology Officer, Iowa State): The key areas of emphasis for the Vaccines, Diagnostics and Immunotherapeutics (VDI) platform in 2023 were: (1) expanding innovation and technology available for licensing and commercial development, (2) infrastructure and training, and (3) supporting startups. (*Vaccines, Diagnostics and Immunotherapeutics Platform Innovation Ecosystem 2023 Year-End Update, Office of the Vice President for Research*)

Key emphases and accomplishments in 2023 included:

- The VDI Platform continues to support expanding the innovation pipeline through internal seed grants. To date, more than 15 grants totaling more than \$750,000 have been invested in the development of new technologies. The most recent grants funded research focused on defining protective immunity in swine for the porcine epidemic diarrhea (PED) virus and the use of advanced machine learning algorithms to monitor and predict emerging viral diseases.
- Collaborating with the ISU Veterinary College and industry partners, VDI engaged more than 100 faculty, staff and students in career advancement and industry competency training opportunities.
- Invested in third-party market research with 30 company contacts to ensure the platform's key research and technology development priorities align with industry.
- In cooperation with BioConnect Iowa and the University of Iowa, and Iowa State University, launched a website which provides a single, unified point of contact to introduce, assess, and connect people, services, technology and programs to our external partners.

Key Accomplishments and Economic Impacts:

- In FY23, the VDI Platform facilitated more than \$950,000 in external funding from a spectrum of companies ranging from smaller startups (Genvax, MAZEN) to global multinationals (Boehringer, MERCK, CEVA).
- Mike Roof is a Principal Investigator for the NSF-awarded \$20 million Iowa EPSCoR project focused on research capacity and infrastructure for advanced biomanufacturing.
- The CYVAX lab, launched in 2022, successfully hosted four companies in 2023. Two have transitioned to company-specific space in the ISU Research Park and Des Moines. ELANCO is currently using the facility to assess new ISU technology, while also expanding its Iowa employee base.

MEDICAL INNOVATIONS PLATFORM (Jordan Kaufmann, Chief Technology Officer, University of Iowa)

The focus areas for the Medical Innovations Platform in 2023 were:

- Expanding the influx of technologies into the commercialization pipeline,
- Improving knowledge of commercialization among early career talent, and
- Supporting startups.

Key emphases and accomplishments in 2023 included:

- The Nurse Innovators Program continues to support nurses at UIHC with a goal of spreading that support across the state of Iowa. Since its inception, the program has reached over 300 nurses, generated 28 projects, and resulted in four new invention disclosures. In November 2023, nurses were invited to present their projects in a pitch competition and the three top presentations were awarded grants to continue development beyond the Nurse Innovators Program.
- Innovation Fellows Program—A second cohort of Fellows were selected to enhance their knowledge of commercialization and to gain exposure to industry experts. The Fellows also acted as a conduit between their respective labs and the commercialization ecosystem to gain and distribute information. Cohort 1 continues to reach out to attend events and stays engaged with the Office of Innovation.
- Programming and space planning continues for the Medical Innovation Hub, a leading-edge facility on the University of Iowa medical campus to engage clinical faculty and external companies in developing and quickly iterating their ideas. Both external and internal partners are engaged in the development to ensure that the needs of the community at large are met.
- Supported companies raised a combined \$29 million in equity funding in 2023. Three new medical innovation companies were formed in 2023.
- Continued supporting new and existing startups in the medtech ecosystem.

AMERICA'S SEED FUND – Iowa Program: Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Outreach Program



The US Small Business Administration's (SBA) Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs are competitive initiatives designed to incentivize small businesses across the United States to engage in Federal Research/Research and Development (R/R&D) with potential for commercialization.

In response to the low participation of Iowa businesses in applying for SBIR/STTR awards and the low success rate in receiving these awards, the IEDA established the SBIR/STTR Outreach Program. Led by Anne McMahon, the SBIR/STTR Statewide Program Coordinator, this program aims to provide support and assistance to innovative Iowa businesses seeking federal funding through America's Seed Fund programs.

In FY2023, seven Iowa companies received awards:

1. NeoVaxSyn
2. Viewpoint Molecular Targeting
3. NeoVaxSyn
4. Viewpoint Molecular Targeting
5. Engenious Ag
6. Genvax Technologies Inc.
7. Pathware

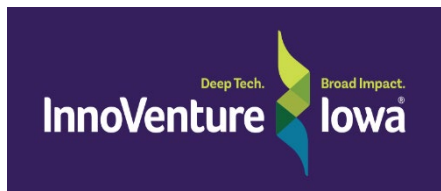
FISCAL YEAR	APPLICATIONS SUPPORTED	AWARDS*	SUCCESS RATE
2021	52	16	31%
2022	38	13	34%
2023	38	7	19%

* not all awards are made in the same fiscal year of application.

Building on the effectiveness and success of the SBIR/STTR Outreach Program, starting in July 2023, the IEDA enhanced its support further by increasing the number of awards to Phase 1 SBIR/STTR awardees from \$25,000 to \$50,000.

INNOVENTURE IOWA FUND

Launched in August 2022, the InnoVenture Iowa Fund is a \$30 million co-investment fund designed to support early-stage startup companies in biosciences, advanced manufacturing and information technology.

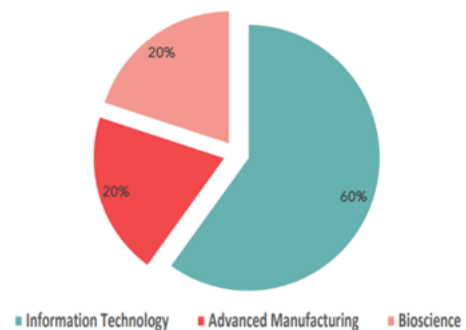


As the state's first public venture capital fund, the InnoVenture Iowa Fund is uniquely positioned to close the gap in funding for early-stage Iowa startups while spurring future innovation in industries where Iowa is naturally competitive. InnoVenture Iowa's active involvement underscores its commitment to fostering innovation and entrepreneurship in Iowa's startup ecosystem.

Funding is provided by IEDA through the U.S. Treasury Department's State Small Business Credit Initiative (SSBCI), a small business aid program which was expanded through the federal American Rescue Plan Act.

Kaylee Williams serves as InnoVenture Iowa Fund's Investment Director. By the end of 2023, InnoVenture Iowa had invested in 18 startup companies, amounting to a total investment of \$5.5 million. Each startup receives an average investment of \$264,000, providing substantial support for their growth and development efforts.

Investment Portfolio Platforms



The InnoVenture Iowa Investment Committee is responsible for all investment decisions. At the end of 2023, the Investment Committee for the InnoVenture Iowa Fund included:

- Martina Bockenstedt is the Vice President of Operations at Engineering Services and Products Co. and lives in Dyersville.
- Clayton Nevins is the New Venture Lead at Pivot Bio, and lives in Ames.
- Anita Norian is President of GW Nutrition, and founder of Norian Consulting, and is from Des Moines.
- Leigh Parker is Executive Director, Government Training Software Engineering at Boeing and lives in Springville.

- Gary Weihs is Managing Partner for Kincannon & Reed and lives near Harlan.

Broadly, investments by the InnoVenture Iowa Fund represent between 10-25% of startup fundraising rounds, spanning from \$250,000 to \$2 million. Companies seeking investment funding from InnoVenture Iowa are primarily focused on bioscience, advanced manufacturing or information technology, and must show a signed term sheet from a lead investor for consideration from the InnoVenture Iowa Investment Committee.

The **2023 InnoVenture Iowa Challenge** is the largest pitch competition in the Midwest and is produced by InnoVenture Iowa Fund and BioConnect Iowa. This event features the region's only \$100,000 grand prize, awarded to an Iowa-based, early-stage bioscience, advanced manufacturing or information technology startup company. Each year, three finalists are chosen from hundreds of applicants to compete on-stage for the prize.



The 2023 InnoVenture Iowa Challenge was won by Jayson Ryner, founder of ReEnvision Ag based in Nora Springs.

ReEnvision Ag is creating a new category of planter for farmers the Ultra-Low Disturbance Planter, SeedSpike™. Farmers know that early planting maximizes revenue, and the Ultra-Low Disturbance Planter, SeedSpike™ extends the planting window, reduces soil compaction, returning yield increase potential.

The other two 2023 finalists were Upcycling+ from Ames and Classroom Clinic from Carroll.

IOWA GO-TO-MARKET (G2M) ACCELERATOR PROGRAM

The Iowa Go-To-Market (G2M) Accelerator program, funded through a grant from the US Economic Development Administration as part of its Build To Scale program, was launched in 2021. The Iowa G2M Accelerator is managed and supported by BioConnect Iowa, ISU Startup Factory and VentureNet Iowa.

The Iowa G2M Accelerator program is specifically designed to support Iowa companies developing technology-driven innovative products or services that have participated in another incubator, accelerator, or business assistance program, and can benefit from focused, customized guidance getting to market. Entrepreneurs receive targeted 1-on-1 mentoring, pro bono business support and group workshops specifically designed to meet their needs at this point of their business launch. Areas of focus include law, finance, corporate development, branding, marketing, human resources and recruiting, and facilitates connections with support services and providers across Iowa.



In 2023, four companies completed the Iowa G2M Accelerator program. With grant funds still available, the US Economic Development Administration approved a fourth year for the Iowa G2M Accelerator through September 2024, providing additional support for three new companies.

HIGHTECH CONNECT IOWA

HighTech Connect Iowa (www.hightechiowaconnect.org) is an online guide that connects Iowa's research-driven high-tech startups to relevant public and private resources. The needs of High-tech startups to grow and thrive are unique and complex because they typically involve intellectual property, and product development timelines are often long and costly. For public resources, HighTech Connect Iowa directs users to content on IASourceLink. For private resources, users are connected directly to each resource's website.



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