



STATE OF STARTUPS

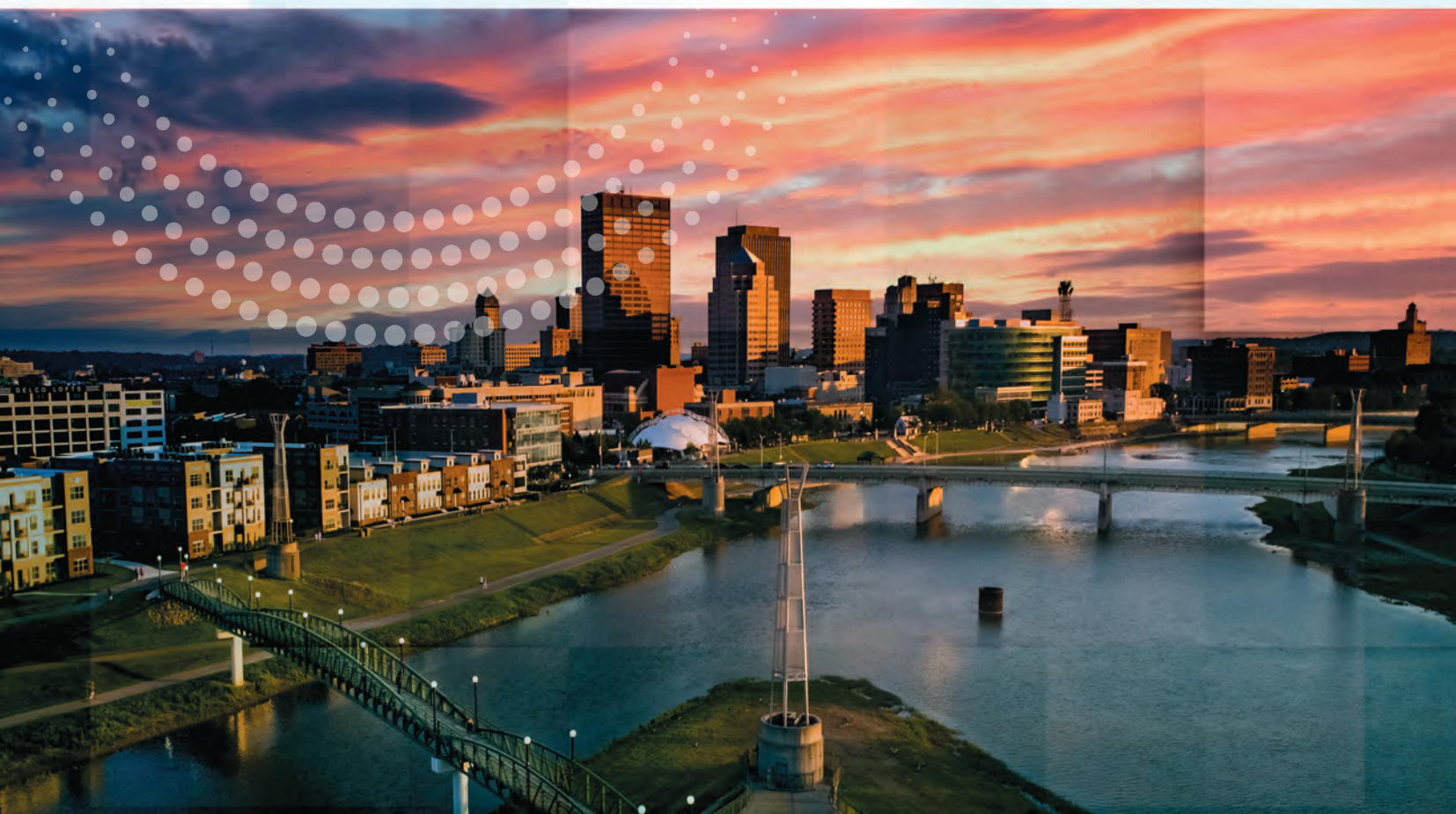
2022



\$415M

TOTAL NON-DILUTIVE FUNDING RAISED

2016-2020



WELCOME TO THE 2022 STATE OF STARTUPS IN OHIO

DEAR READER:

This report is the result of a collaboration with and among the state's top venture development organizations that are leading the way in fueling and connecting the vibrant ecosystem that is Ohio's startup community.

2021 marked the third consecutive year that Ohio companies received over \$1 billion in venture capital investment – all records in the Buckeye State.

This report highlights the successes and vital importance of the segment of venture capital that invests in the early-or seed-stage, innovation-based, high-growth companies in Ohio.

It also underscores the importance of fostering a healthy environment for science and tech-enabled Ohio startups in catalyzing sustained economic growth in our state for the long-term.

For Ohio innovation-based startups, our regional venture development organizations serve as hubs with connections to a



NICK FORTINE

MARKET PRESIDENT & PUBLISHER
COLUMBUS BUSINESS FIRST

large ecosystem of resources including capital investment, advisory services, talent and leadership, market intelligence, business partnerships and much more.

Innovative, entrepreneurial, early-stage companies are businesses like no other. They birth big ideas. They build better mouse traps. They reimagine cutting-edge products, solutions and innovations.

But early-stage startups take longer than typical small businesses to gestate. And their journey requires not only capital investment, but a supporting ecosystem, roadmap and technical assistance to help guide them on their way to long-term success. Our regional venture development organizations provide the gateway to those resources.

The data show us that sharing the journey of the innovation-based startup is worth the investment. The lion's share of new jobs and wealth over the past three decades were created by innovative startups. And startups deliver a significantly larger economic impact than other companies in terms of revenues, investments, jobs and wages paid.

On behalf of my colleagues at the *Cincinnati Business Courier*, *Cleveland Business Journal*, *Columbus Business First* and *Dayton Business Journal*, thank you to our partners at CincyTech, JumpStart, Rev1 Ventures, TechGROWTH Ohio and The Entrepreneurs' Center for inviting us to partner on this report. ■

SPONSORED CONTENT



DEAR READER,

OHIO'S INNOVATION ECONOMY IS THRIVING.

Hardly a day goes by without news of a venture-funded startup raising millions of dollars, hiring dozens of people or introducing an exciting new product or service.

As Nick notes in his introductory letter, Ohio startup companies are setting records for fundraising year after year. More incredible are the ripple effects this has throughout the state. Our own research shows that for every \$1 invested in these startups, there is a \$66 economic impact. Indeed, there is a lot to be excited about—and the future is even brighter.

That is why we are proud to partner with American City Business Journals to compile this inaugural State of Startups in Ohio report. It details the strength of our statewide innovation ecosystem, the factors driving Ohio's success and the organizations working together to make it happen.

These successes do not happen overnight or in a vacuum. High-growth companies have to be cultivated, supported and funded.

Their longer runway requires different types of capital and technical assistance from main street businesses. But the longer journey is worth the wait: venture-backed companies have up to 9X the economic impact of other companies in terms of revenues, investments and wages paid.

In Ohio, collaboration is key to supporting high-growth companies. Each of our six regions is anchored by a venture development organization, providing capital, delivering services and acting as facilitator to develop collective capacity across the entrepreneurial ecosystem.

Partnering with Ohio Third Frontier, the state's program to support innovation-based startups, through direct investment and guided entrepreneurial services, has established regional hubs producing meaningful results. We work with each other and a vast array of partners to commercialize new ideas, co-invest in deals, share market intelligence and provide advisory services. As experienced investors and seasoned entrepreneurs, our venture development organizations help attract talent to startups and capital from investors outside the state.

Mentoring and supporting companies, first in early stages and then through subsequent business development stages, is especially important to women, rural and BIPOC entrepreneurs. We collaborate with organizations serving underrepresented entrepreneurs and through our intentional strategies to increase inclusiveness we collectively have 45 percent client diversity.

Ohio has all the pieces in place to compete and win, from top-tier research institutions to strategic investment capabilities. It is truly an exciting time to be part of the innovation economy with science and tech-enabled startups paving the future for Ohio.

Whether you are a startup founder, investor, economic development stakeholder or someone who is eager to learn about all the innovation taking place, we trust you will find this report useful. And we hope you join us in supporting the high-growth ecosystem that is moving Ohio forward. Thank you for your interest and support. ■



5-YEAR SNAPSHOT FROM 2016-2020

COLLECTIVE IMPACT

The collective impact of Ohio's venture development organizations is impressive. Each year, these organizations help new companies begin their journey while concurrently working with existing clients to reach their next major investment or revenue milestone.

This produces a compounding impact that grows each year resulting in a five-year impact of over \$10 billion to Ohio's economy.

The data on the right summarizes the impact of the venture development organizations on the state's economy from 2016-2020.

RETURN ON PUBLIC INVESTMENT

INVESTMENTS IN OHIO'S VDOs HAS RETURNED

\$66
FOR EVERY \$1
IN PUBLIC FUNDS

(calculated by the total impact of \$10B divided by total state support of \$136.5MM over a 5-year period.)

CLIENT PROFILE

2,034
CLIENTS SERVED
(342 NEW CLIENTS/YEAR)

45%
CLIENT DIVERSITY
(WOMEN OR FOUNDERS OF COLOR)

10,570
JOBS CREATED

\$71,624
AVERAGE WAGE
(41% ABOVE STATE AVERAGE)

INVESTMENT LEVERAGE

167
COMPANIES FUNDED

\$110M
INVESTMENTS BY VDOs

\$31:1
CO & FOLLOW-ON
INVESTMENT ATTRACTED

**32 states
16 countries**
PROFILE OF OUTSIDE INVESTORS

ECONOMIC IMPACT

\$3.74B
REVENUES GENERATED

\$3.39B
CAPITAL ATTRACTED

\$2.87B
EXITS

\$10B
TOTAL IMPACT



STATE OF STARTUPS: OHIO



\$3.39B

TOTAL CAPITAL ATTRACTED
TO OHIO STARTUPS

2016-2020



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THE IMPORTANCE OF INNOVATION HIGH-GROWTH

Economies grow through innovation--continually discovering new products and improving the way we live and do business. You might say that a region's vitality reflects the businesses that live there: economies, like businesses, will flounder if they remain stagnant.

While companies of all sizes rely on innovation to increase profits or keep relevant as markets change, the majority of job growth and economic impact comes from companies focused on radical innovations that can transform industries or create new markets, and the technologies or business models that disrupt existing markets. These companies are the problem solvers for our most pressing challenges from medical advancements to climate change to data security, as well as the shapers of new consumer trends. The vibrancy of these companies attracts talent and investors and creates new opportunities to grow Ohio's economy.




Companies with innovative solutions pave the path for Ohio's future, and these high-growth, high-impact startups are key to a resilient economy. Research indicates that regions with active high-impact startups have twice the job and business creation rates compared to regions with less active startups, underscoring the importance of an innovation culture.

How do innovation-based startups differ from other small businesses?

While most small businesses sell or service existing products, innovation-based companies are busy developing new technologies or products. The innovation cycle that turns ideas or scientific discoveries into marketable products takes time and significant investment just to reach the first sale. It also requires a business infrastructure and support system that is fundamentally different from programs that aid other small businesses.

Innovation-based startups need specialized resources to protect their intellectual property, conduct market trials, validate customer needs, and provide early capital to support the commercialization of research. These added business development elements extend the time, money, and expertise required to start a company. For internet technology startups this can take a year, and for companies seeking a new drug therapy it could be a decade or more. ■





INNOVATION-BASED WITH STARTUPS

THE IMPACT

The longer journey of an innovation-based company is worth the wait. Once these companies are launched and established, they have an outsized impact on a region's economy.

:: CREATOR OF JOBS

Innovation-based startups have the unique ability to create jobs at more than five times the rate of traditional companies. The Congressional Research Service states that “while high-impact startups account for only 5-6% of all businesses with employees, they seem to account for almost all [net] job creation in the economy.” With products sold nationally and internationally, they create a multiplier effect on jobs and suppliers. The Economic Policy Institute reports that an information technology or advanced manufacturing firm supports 5-7 indirect jobs for every direct job it creates, while a company in retail trade supports only 1.2 indirect jobs.

:: MAGNET FOR TALENT AND SUPPLIERS

Another benefit of an innovation economy is the attraction of talented, creative people as well as companies that benefit from being part of the supply chain. People hoping to create the next big thing want to work with companies with a history of creating. Large companies often want to locate their most forward-looking R&D and product development operations in areas with a strong startup culture.

:: ATTRACTOR OF PRIVATE INVESTMENT

The presence of talented people and innovative companies attract private investment, especially venture capital, which significantly accelerates a company's growth. A research study from Stanford University indicates that while venture-backed companies account for less than 1 percent of firms, they account for 42 percent of publicly traded companies and 85 percent of total research and development at those public companies. All in all, venture-backed companies have up to 9X the economic impact of other companies in terms of revenues, investments, and wages paid.

This outsized impact is why Ohio's five venture development organizations serving the six regions of the state are committed to helping entrepreneurs build great companies and unlock the full potential of an innovation economy.



WHY OHIO?

Across the country, regions outside of Silicon Valley, New York and Boston are becoming hubs for innovation-based companies.

Communities in Ohio are joining the ranks of Austin, Seattle, and Raleigh-Durham in creating inviting environments for high-impact startups; and in doing so are attracting new talent, investment and companies.

A vibrant innovation ecosystem does not happen overnight. Boston and Silicon Valley began venture funds in the 1950s, the Research Triangle in North Carolina was established over 50 years ago through a strong public-private collaboration. Given the history of other regions, the strides Ohio has made in a relatively short period of time is impressive. For instance, in 2014 Ohio ranked 27th among states for fast-growing companies. In 2020, only 6 years later, the state ranked 11th.

Environments for high-impact startups require a combination of core assets, strong partnerships and connections to capital and expertise. In Ohio, this has been accomplished through a statewide network of regional hubs or venture development organizations, each capitalizing on the unique assets and industries in their area. The development of regional hubs was enabled by the state's \$2 billion Third Frontier Program which began in 2002 and expanded in 2015. This regional model, combined with nationally recognized assets, is at the heart of why Ohio is a burgeoning hub for high-impact startups. ■

In the pages that follow, we highlight four key aspects of the innovation ecosystem which have contributed to Ohio's success:

CORE INNOVATION ASSETS

The institutions and programs that provide the R&D, investment, and advisory capabilities required for innovation-based companies to thrive.

ACTIVE PARTNERSHIPS AND NATIONAL REACH

Partnerships that increase collective capacity and connections to mentors, markets and money outside the state that amplifies and accelerates a startup's trajectory.

STRUCTURED VENTURE DEVELOPMENT ORGANIZATIONS

INCLUSIVENESS

Ohio's model for providing seamless support and investment to high impact startups.

The commitment and ongoing work to help women and entrepreneurs of color succeed.



WHY OHIO?

OHIO'S CORE INNOVATION ASSETS

RESEARCH & DEVELOPMENT

\$2.4B
IN UNIVERSITY RESEARCH
(11TH IN THE U.S.)

\$9.7B
IN PRIVATE SECTOR RESEARCH
(11TH IN THE U.S.)

206
SBIR AWARDS
(6TH IN THE U.S.)

INVESTMENT CAPITAL

OVER
\$340M
IN RESIDENT FUNDS UNDER
MANAGEMENT BY VDOS

\$1.14B
RAISED BY OHIO
COMPANIES IN 221 DEALS
(2020)

800%
GROWTH IN
VENTURE CAPITAL
FROM 2013-2020

ENTREPRENEURIAL SUPPORT

FIVE REGIONAL VENTURE DEVELOPMENT
ORGANIZATIONS SERVING OVER

2,000
HIGH-IMPACT STARTUPS

20+
INNOVATION STARTUP CENTERS
AND INCUBATORS

From world class research institutions to active investment funds and advisory services with deep innovation expertise, the breadth and depth of Ohio's innovation and entrepreneurial assets are growing and increasingly catching the attention of the nation. Ohio consistently ranks in the top quartile for key research and innovation metrics that provide a foundation for new technologies and a culture of entrepreneurship. Ongoing public sector support has helped to leverage private investment and augment the growth of these assets. According to the National Science Foundation, Ohio has ranked between 3rd and 5th in public support for science and innovation over the past 10 years.

Each year, more than 30 universities in the state receive federal research awards, with Ohio State University, Case Western Reserve, and the University of Cincinnati accounting for over \$762 million in 2019 alone. Cincinnati Children's Hospital, the Cleveland Clinic, Nationwide Children's Hospital and Battelle Labs are nationally known for their research. Active research in the private sector continuously puts Ohio in the top 10 states for small business innovation awards.

One of the fastest growing aspects of Ohio's innovation ecosystem is the amount of venture capital attracted by startups in the state. The sharp rise in VC investments has been amplified by a decade long effort to establish resident funds—funds that are based in Ohio and which focus on helping Ohio companies. In 2013, Ohio companies received \$127 million in VC investments. By 2020 VC grew to \$1.14 billion in 221 deals, and 2021 exceeded \$2 billion, with record-setting deals.

The ability for a company to access research and capital is amplified by the level and consistency of entrepreneurial support that provides startup space, mentors, and connections to customers. In Ohio, strong regional entrepreneurial ecosystems provide in-depth services to thousands of high-impact startups, leveraging over \$180 million of private sector contributions that provide additional mentoring and investment support alongside the programming provided by venture development organizations. ■



DIVERSITY, EQUITY AND INCLUSION

LEVELING THE PLAYING FIELD

Women, Black, Indigenous and People of Color (BIPOC), as well as rural entrepreneurs, often have fewer resources and face additional challenges in starting an innovation-based business. In 2020, women-led startups in the U.S. received only 2.3 percent of venture capital, and Black and Latinx founders only 2.4 percent of the total VC funding. To no surprise, this is underscored by a lack of diverse investors. According to Crunchbase, 81 percent of VC firms lack a single Black investor, and All Raise reports that 65 percent of funds lack even one female investor.

The best way to help underrepresented entrepreneurs be investment-ready is to ensure they have a strong product and viable business plan and they must be able to access the right assistance and capital at the right time throughout each business stage. In Ohio, entrepreneurial organizations have developed ongoing and intentional strategies to increase the reach and programming that can help women, BIPOC and rural entrepreneurs succeed in launching innovation-based companies.

In addition to supporting underrepresented businesses, venture development organizations across Ohio are preparing the next generation of entrepreneurs by providing internships and advanced fellowships focused on placing BIPOC and female students into opportunities at high growth innovation-based companies. ■



EFFORTS TO ENHANCE EQUITY ACROSS OHIO

A few examples are highlighted below.

The **Tech Equity Initiative** is a multi-organizational effort in NE Ohio that provides a dedicated Entrepreneur-in-Residence to connect tech-based entrepreneurs of color with services and resources. The Initiative is a partnership between Economic Community Development Institute (ECDI), the Hispanic Business Center, The Presidents' Council, The Urban League of Greater Cleveland and JumpStart.

Rev1 Ventures provides financial support and subject matter expertise for OSU's REACH for Commercialization program for women that brings women who have launched companies in front of women who are trying to – providing a safe space to hone business pitches and discuss targeted topics.

JumpStart's Focus Fund invests seed capital (alongside advisory services) in tech-based companies led by female entrepreneurs and entrepreneurs of color throughout Ohio – as well as those willing to move to the state.

In 2017, **CincyTech** partnered with other seed-stage investors to form the Hillman Accelerator in Cincinnati. A first of its kind in the Midwest, Hillman was specifically created to support tech companies founded by women and ethnic minorities.

The Entrepreneurs' Center cofounded the Greater West Dayton Incubator (GWDI), a facility serving historically underrepresented West Dayton and partnered with the Dayton Area Chamber of Commerce's Minority Business Partnership in launching Project Engenuity, to identify minority, women and veteran founders to leverage SBIR research contracts for non-dilutive technology development funding.

TechGROWTH Ohio in SE Ohio has worked extensively with rural entrepreneurs with 85 percent of their VC investments classified as rural.



WHY OHIO?

VENTURE DEVELOPMENT ORGANIZATIONS

Ohio has developed an award-winning model to help support the unique needs of high impact companies. Five venture development organizations (VDOs) provide specialized services and early investment through a structured, regional approach that is backed by private and public sector partners. Each VDO is staffed with serial entrepreneurs and seasoned investors who have “been there and done that,” providing the know-how and the connections to take a product to market and scale the business. They act as a central hub playing three key roles:

NAVIGATOR:

Providing direct services and accelerator programs to help inventors and entrepreneurs navigate the challenges of commercializing research and launching new companies.

FACILITATOR:

Facilitating partnerships within and outside the region to expand access to critical resources and markets.

INVESTOR:

Managing concept and seed funds that provide critical seed money to high-impact startups, attracting follow-on investment.

VDOs are client-focused, with advisors and investors working together on behalf of the company. They develop ongoing relationships with startups to provide continued support throughout different business development stages. Whether it's six months or six years, VDOs find the partners and connections to help companies meet their growth objectives. This stick-with-it-ness creates traction for companies that is hard to duplicate with programs of limited duration. As CincyTech, the VDO for the Cincinnati region, notes: “we invest early and partner for the long-run.”

As early investors, these organizations have played a critical role in expanding Ohio's venture capital market and have a reputation for solid investments. With the ability to vet both technologies and business operations, venture development organizations have become trusted partners to outside investors. The first money and resident funds VDOs provide send a strong message that there is local skin in the game and a commitment to see a company succeed. ■

SERVICES PROVIDED BY VDOs

- ❖ Vetting new technologies and scientific discoveries.
- ❖ Validating markets to ensure significant growth opportunities.
- ❖ Developing business and capital plans to chart a path for launching a company.
- ❖ Providing early, first money investments that is key to attracting other investors.
- ❖ Connecting to first customers and corporate partners.
- ❖ Identifying and building out executive teams and key talent.



WHY OHIO?

ACTIVE PARTNERSHIPS

Examples of these partnerships are far-reaching and can be found at every stage of business development and investment cycle.

:: EXPANDING RESOURCES FOR ENTREPRENEURS

Entrepreneurs benefit from this collaboration by having expanded access to resources, capital and markets. For example, JumpStart works closely with a network of more than a dozen collaborators to serve Northeast and Northwest Ohio. Collectively, these networks have engaged more than 10,000 clients who have created more than 10,000 jobs and contributed \$6.6 billion to the economy since 2010.

:: TAKING NEW DISCOVERIES TO MARKET

Ohio's universities and medical centers are actively partnering with venture development organizations to commercialize new technologies and scientific discoveries. In the Columbus region, Rev1 Ventures has developed a partnership with the Ohio State University and Nationwide Children's Hospital to annually vet over 150 technologies and scientific discoveries, resulting in as many as 15 new spinout companies each year. In a similar manner, JumpStart healthcare partnerships in Northwest Ohio help grow medical innovation with examples such as the New Big Idea competition with ProMedica and the formation of the Healthcare Collaboration Fund with University Hospitals Ventures in Cleveland. CincyTech's extensive work with the University of Cincinnati and Cincinnati Children's Hospital Medical Center has resulted in ground-breaking companies including Kurome Therapeutics and Eikonoklastes Therapeutics.

:: BRINGING NATIONAL RESEARCH OPPORTUNITIES TO OHIO

Tapping into the power of federal labs and research conducted at military bases can result in new opportunities for entrepreneurs. Across Ohio, partnerships with federal research institutions are resulting in new startups. The Entrepreneurs' Center (EC), in collaboration with the Wright Brother Institute (WBI), has partnered with the US Air Force Research Laboratory (AFRL) to commercialize technologies internal to AFRL and the businesses supporting the AFRL mission. The partnership has evaluated more than 150 AFRL technologies and facilitated the formation of more than 25 new businesses utilizing AFRL technology, as well as assisted more than 250 businesses in their commercialization efforts, resulting in more than \$200M in follow-on funding. In Northeast Ohio, JumpStart has partnered with NASA's Glenn Research Center to access and validate the market potential of patented inventions where viable technologies discovered through targeted assessments are then paired with specialized entrepreneurs to bring the ideas to the public.

**IN OHIO,
COLLABORATION
IS NOT JUST LIP
SERVICE, IT IS
A CORE VALUE
OF THE MANY
ORGANIZATIONS
SUPPORTING
HIGH-IMPACT
STARTUPS.**





AND NATIONAL REACH

:: PROVIDING SPACES THAT ACCELERATE COLLABORATION AND GROWTH

While some innovation-based businesses are a result of commercializing research from elsewhere, many are inventing technologies themselves. These businesses can greatly benefit from each other and from having a suite of resources collocated or within nearby proximity. The EC and the University of Dayton (UD) partnered to create the 100,000-square-foot Arcade Innovation Hub (AIH). A magnet for new companies, the mixed-use space houses the EC and UD's Crotty Center for Entrepreneurial Leadership, venture and angel capital organizations, entrepreneurial development partners, and over 112 small businesses in co-share, fixed share and traditional office spaces.

:: FOSTERING CORPORATE CONNECTIONS THAT AMPLIFY MARKET OPPORTUNITIES

The private sector provides first financial support to Ohio's venture development organizations, which is then matched by state support from Ohio Third Frontier. Large corporations can help startups to validate their product, attract their first significant customer, or develop strategic investment relationships. In turn, corporations get insights into new products. A classic example of this is how Rev1 Ventures in Columbus has formed strategic partnerships with multiple corporations to source and screen innovations in their industry. Two of these programs include State Auto Labs (a partnership with State Auto), and G-Force Innovations (a partnership with Grange) that are targeting innovations that are reinventing the insurance industry. Similarly, Jumpstart has sourced and screened over 625 technologies for corporate partners since 2010.

:: OPENING DOORS TO NATIONAL AND GLOBAL NETWORKS

While companies are rooted in Ohio, their markets are not. Launching a high-impact or innovation-based startup requires connections to investors, customers, and expertise outside of Ohio. Each of the state's venture development organizations works diligently to develop national and international networks. By acting as a conduit to external resources, they help companies to access strategic capital, expertise, and markets outside of their region.

:: ATTRACTING CAPITAL FROM ACROSS THE WORLD

One of the most visible benefits of this reach is the attraction of investment capital from funds and angel investors outside of the state. Since 2007, CincyTech has developed a co-investment network of over 90 funds and 30 strategic investors from across the U.S., helping startups in Cincinnati access over \$1 billion of venture capital. In the past seven years, the number of co-investors outside of Ohio investing alongside Rev1 Ventures in Columbus has grown from a handful of investment partners to over 64 co-investors from 32 states and eight countries with over \$194 million of capital attracted in 2020 alone. VisionTech Angels (VTA) is an angel investor network of more than 130 angel investors across Indiana and Ohio that has invested in 50 growth-minded companies. The EC, serving the Dayton region, leads the Ohio Chapter of VTA preparing local companies for the network of investors that reaches beyond the region. In Athens, TechGROWTH Ohio has helped rural entrepreneurs access additional capital including investments from VCs and angels in Columbus and Cincinnati as well as funds in 30 other states and five countries, including Japan and South Africa.



CENTRAL



ESTABLISHED 2013

ABOUT

Rev1 Ventures is a startup studio that combines capital and strategic services to help startups scale and corporations innovate. Our seasoned internal team and vetted network of partners rally around founders and teams to help them more effectively validate a product, structure a company, land customers, raise capital, and build a team. Since 2013, we have funded over 130 startups and helped our clients generate \$3.8 billion in impact. Our network of more than 45 private sector and community partners provide first financial support to Rev1's mission – and a 3X leverage on state support from Ohio Third Frontier. These partners also collaborate with startups, providing market feedback, acting as first customers, and investing in startups. Examples include The Ohio State University, Nationwide, JM Smucker Company, Worthington Industries, Cardinal Health, Franklin County and the City of Columbus.



2016-2020 METRICS

\$2.06B
ECONOMIC
IMPACT

\$1.43B
TOTAL CAPITAL
ATTRACTED

2,099
CLIENT JOBS

\$32.93M
OHIO THIRD
FRONTIER SUPPORT

681
NEW CLIENTS

PRIMARY
SERVICES
rev1ventures.com

- Advisory support
- Learning labs
- Strategic talent support
- Corporate customer connections
- Capital access planning
- Vetted service provider program
- Mentor network
- Innovation center with startup/ spinout office and wet labs
- Private sector support: 47 partners provide first funding for our mission, including: The Ohio State University, Nationwide, The JM Smucker Company, Worthington Industries, Cardinal Health, Franklin County, City of Columbus.



STATE OF STARTUPS: OHIO

STARTUP SPOTLIGHTS



DAVE RICHARDS,
CEO

CLARAMETYX BIOSCIENCES

Clarametyx Biosciences is a preclinical stage biotechnology company developing targeted biologic therapies to combat serious bacterial infections. Antibiotic resistance is one of the top threats to public health worldwide. Driven by scientific discoveries from Dr. Lauren O. Bakaletz and Dr. Steven Goodman at Nationwide Children's Hospital, Clarametyx is developing an innovative technology that precisely targets the structure of the bacterial biofilm. This protective layer shields bacteria from antibiotics and the patient's immune system, contributing to difficult-to-treat infections and increasing antibiotic resistance. Clarametyx's non-antibiotic antibody is designed to rapidly collapse biofilms, rendering the bacteria far more vulnerable to antibiotic intervention and immune response. In addition to therapeutic applications, Clarametyx's technology may serve as a powerful vaccination approach to prevent infections. Clarametyx is initially focused on treating serious pulmonary infections. Clarametyx Biosciences received funding from Rev1 Ventures, Ohio Innovation Fund and Emerald Shoals in 2020.



DOUG MCCOLLOUGH,
CEO

COLOR CODED LABS

Color Coded Labs is an innovative talent incubator building a rich pool of diverse tech talent in Central Ohio that will change the region's tech ecosystem. The lab offers an intimate, culturally focused approach to training. Color Coded Labs is a Black owned and operated Columbus-based startup. This 19-week, self-paced boot camp focuses on coding and other technical skills for participants to be able to increase their existing salary levels and move into entry and mid-level tech positions. "We invested in this model to help create a culture that will drive that success and allow our talent to support their future growth," said Doug McCollough co-founder and CEO, Color Coded Labs. Classes are virtual and there are in-person sessions. "This is a win-win for participants and the tech industry," said McCollough. "We prepare participants to enter the tech workforce and build their capacity for improved wages, while at the same time, we help companies fill the gap for tech jobs in their businesses." Color Coded Labs receives investment and ongoing support from Rev1 Ventures.

PHOTO BY: Jeffrey Konczal



ZACH ZETTLER,
President

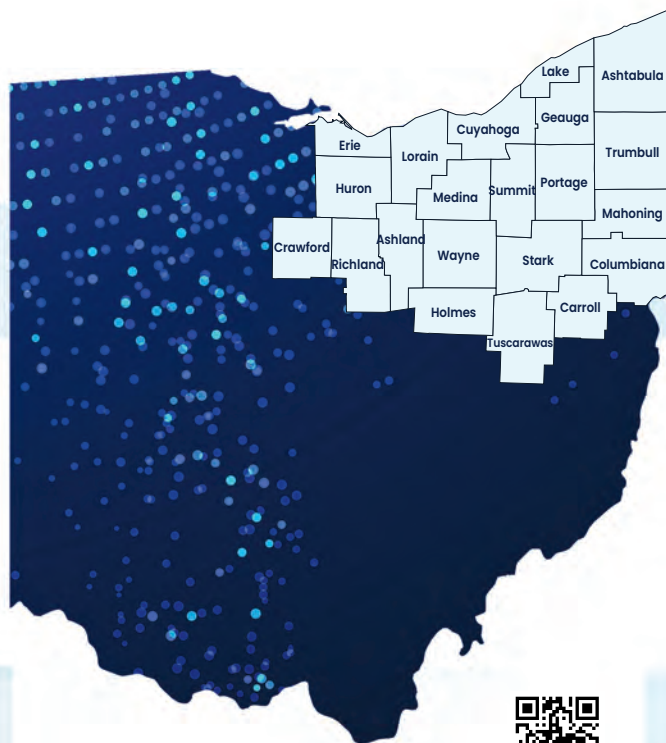
UPDOX

Updox delivers a leading healthcare communication platform for in-person and virtual care. The company's consistent and industry-leading success in connecting patients' entire care teams sets the foundation for truly effective value-based care. Located in Dublin, Updox serves more than 560,000 users across healthcare practices, health systems, pharmacies and more than 210 million patients. During the pandemic, Updox facilitated more than 3.5 million telehealth visits and continues to support more than 15,000 visits per day. In December 2020, Updox was acquired by EverCommerce, a leading software commerce platform. Updox received critical initial seed capital and follow-on funding from Rev1 Ventures. According to Updox President Zach Zettler, support from partner Rev1 Ventures was critical to the company's ability to establish its market, develop its platform and, ultimately, grow the business. "Our growth this year and over the past 11 years is in large part due to the support we've received in our own backyard, including the early investment and backing of Rev1 Ventures," said Zettler.

PHOTO BY: dk photographic



NORTHEAST



ABOUT

JumpStart is a venture development organization helping entrepreneurs grow, researchers commercialize and corporations innovate. We bring together capital, services and connections to accelerate the growth of entrepreneurship and catalyze meaningful growth in Northern Ohio's innovation economy.

Our mission is to unlock the full potential of entrepreneurship to transform entire communities.



2016-2020

METRICS

\$4.82B

ECONOMIC
IMPACT

\$1.45B

TOTAL CAPITAL
ATTRACTED

5,652

CLIENT JOBS

\$58.5M

OHIO THIRD
FRONTIER SUPPORT

675

NEW CLIENTS

PRIMARY SERVICES

jumpstartinc.org

- **Capital** - Venture capital investment, grant funding and friendly lending opportunities for high-potential tech startups and small businesses.
- **Services** - Technical assistance, education and programs that help business owners work smart and grow.
- **Connections** - An extensive network of resources—from advisors to corporate clients and investors. To learn more, visit jumpstartinc.org.



STARTUP SPOTLIGHTS



GERALD HEDRICK,
CEO

ABLE

Able is the SaaS onboarding leader for North American staffing firms. Headquartered in Cleveland, Able was born out of a staffing firm in 2015 and spun out as its own software company in 2017, when Gerald Hedrick joined as CEO after building and scaling Vox Mobile. JumpStart led Able's seed and Series A round, and Able completed its \$7 million series B round in early 2020, led by Plymouth Growth Partners with support from JumpStart, Rev1 Ventures, Ohio Innovation Fund, and North Coast Angel Fund. Able's mobile-first onboarding automation platform makes qualifying, hiring, and engaging candidates easy for everyone involved. Staffing firms can hire up to 90 percent faster at half the cost, while ensuring every new hire is ready and able to have a great first day at their new job. Able has also been featured on best places to work in technology lists with both The Tech Tribune and Purpose Jobs.



CHARLIE LOUGHEED,
CEO

AXUALL

Axuall is a digital professional identity network enabling healthcare providers to share their authenticated credentials and qualifications in real-time. Formed 2018 with \$3 million of venture funding by former founding members of Explorys, which was acquired by IBM, Axuall was designed alongside healthcare organizations (University Hospitals, MedStar, and MetroHealth), telehealth (Wheel), and staffing (Hyr Medical) companies to address the verification delays and interoperability challenges. Health Management Academy recently completed a case study with Axuall detailing the ROI benefits of digital credentials. Axuall piloted with three major healthcare systems, University Hospitals, MedStar Health and MetroHealth. Launched commercially in 2020, Axuall is being deployed in multiple major markets. Its platform supports NCQA and Joint Commission standards and can be integrated into existing workflows. In July of 2021, Flare Capital, Jumpstart, University Hospital Ventures, MedStar Health, Epsilon Health, Intermountain Ventures, and Northcoast Ventures were a few of the investors to participate in Axuall's Series A Round of \$10.4 million in financing to support the acceleration of research and development, implementation, sales and marketing as the company grows its customer base of healthcare organizations.



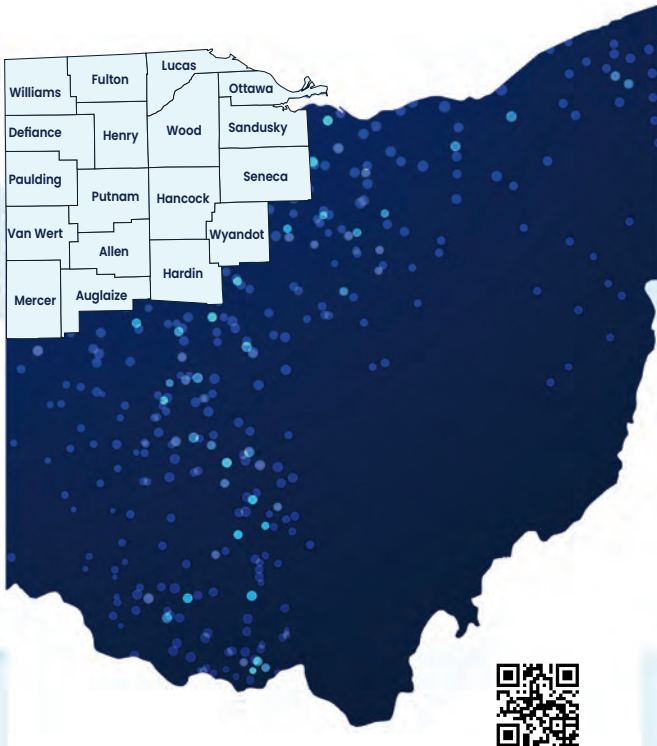
DAVID BOONE,
CEO

BLENDED

BlendEd is an instructor experience platform allowing college professors to build and deliver content-rich learning experiences more effortlessly than ever. David Boone founded the company in July 2020 and has since raised \$1.4 million from JumpStart, Reach Capital, Black Tech Nation (delete comma) and other investors. He brings his experience leading teams of data scientists at Microsoft and is currently building a team of mission-driven innovators to grow BlendEd. David experienced firsthand the discrepancies in available resources of college instructors between Ivy League schools and community colleges, which account for 0.4 percent and 46 percent of U.S. undergraduates, respectively. He set out to create an all-in-one solution for multi-modal digital resources for community college professors. BlendEd is based in Cleveland (delete comma and "Ohio") and will launch in the spring semester of 2022 at Lorain County Community College. It has a waitlist of over 100 professors at community colleges nationwide.



NORTHWEST



ABOUT

JumpStart is a venture development organization helping entrepreneurs grow, researchers commercialize and corporations innovate. We bring together capital, services and connections to accelerate the growth of entrepreneurship and catalyze meaningful growth in Northern Ohio's innovation economy.

Our mission is to unlock the full potential of entrepreneurship to transform entire communities.



2019-2020 METRICS

\$29.4M

ECONOMIC
IMPACT

\$15.3M

TOTAL CAPITAL
ATTRACTED

207

CLIENT JOBS

\$655K

OHIO THIRD
FRONTIER SUPPORT

58

NEW CLIENTS

PRIMARY SERVICES

jumpstart.com

- **Capital** - Venture capital investment, grant funding and friendly lending opportunities for high-potential tech startups and small businesses.
- **Services** - Technical assistance, education and programs that help business owners work smart and grow.
- **Connections** - An extensive network of resources—from advisors to corporate clients and investors. To learn more, visit jumpstartinc.org.



STARTUP SPOTLIGHTS



TRACY MOMANY
CEO

:: GUARDIAN MEDICAL

Guardian Medical, USA Inc. began as a joint venture between Plastic Technologies, Inc. and a prominent Orthopedic Surgeon. PTI is a world-renowned plastics manufacturing and design firm that brings 30+ years in the food and beverage industry. Guardian Medical combines PTI's extensive plastics knowledge with the quality and regulatory expertise from medical device engineers to create modern and innovative sterile packaging solutions. Guardian's CapSure sterile packaging system is unique in the medical device industry. Guardian develops and produces the packaging components and offers sterile packaging services. A team of engineers are committed to making every package solution clinically, economically, and logistically efficient. New perspectives in the market are compelling companies to move to terminally sterile packaging which creates a need for innovative packaging solutions in the medical industry. Guardian Medical works in partnership with OEMs to provide a full array of services around functional package designs and logistic solutions while addressing UDI requirements and reducing the risk of contamination.



ADAM E. RAKESTRAW
Chairman & Co-Founder

:: MEDIVIEW XR, INC

MediView XR, Inc., a Cleveland-based medtech company, was co-founded in 2017 by medical device professionals Adam E. Rakestraw and John W. Black with the goal to empower medical professionals with superhero "x-ray vision." MediView's technologies combine incredible 3D visualization of augmented reality with groundbreaking telecollaboration capabilities. Surgeons can see the patient's anatomy under their skin during procedures without additional radiation, track and navigate their tools and therapies during the procedure and control other connected devices from the augmented reality headset. MediView also empowers care delivery with unique capabilities to immerse remote clinicians across the country in a shared patient care environment with medical imaging and procedure guidance (from basic primary care to surgery). MediView has worked with JumpStart from its inception, utilizing JumpStart's entrepreneur resources, advisors, funding and other programs. The company has drawn unique talent from across the country to establish a growing world-class 26-member team. MediView has partnered with Microsoft to expand the power of augmented reality and has a Strategic Development Agreement with GE Healthcare to implement best-in-class imaging and data.



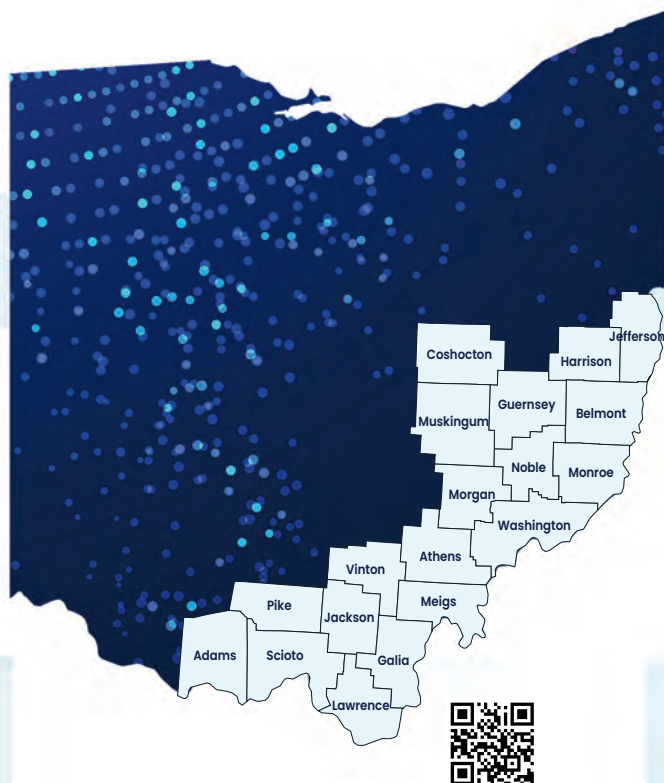
NICHOLAS CRON
CEO

:: NEXTUP.AI

Nextup.ai is a software technology company that is a market leader in productivity software solutions for companies worldwide who use Slack and Microsoft Teams. Nextup.ai creates solutions that support remote workers and increase communication and collaboration at 500+ organizations worldwide. Their collaboration tools allow companies to manage projects seamlessly within Slack and Microsoft Teams without switching context. Nextup.ai was started in 2019 by two Ohio entrepreneurs, Nicholas Cron Jr and Michael Duff. Nextup.ai recently closed a seed funding round with a private Cleveland-based investor. In the last two years, Nextup.ai has grown significantly year over year and had an increase in activity due to the COVID-19 pandemic. Enterprise customers using Nextup's integrations include iRobot, Slack and Activision, among others. Nextup.ai has 12 full-time remote employees located in Toledo, Cleveland and other national and international locations.



SOUTHEAST



TECHGROWTH *ohio*
ESTABLISHED 2008

ABOUT

TechGROWTH Ohio is a venture development organization serving rural Southeast Ohio by providing intensive services, capital and talent to early-stage technology companies with high-growth potential. TechGROWTH Ohio helps companies identify and address opportunities and gaps to accelerate commercialization and prepare entrepreneurs for resource acquisition necessary for their next stage of growth and development. This hands-on engagement helps technology-based entrepreneurs and startup companies establish early market validation, engage in customer discovery, test business models and embrace go-to-market strategies. TechGROWTH Ohio is a premier program at the Voinovich School of Leadership and Public Service at Ohio University, a long-term partner with Ohio Third Frontier and the private sector.



2016-2020
METRICS

\$394.9M

ECONOMIC
IMPACT

\$74.5M

TOTAL CAPITAL
ATTRACTED

374

CLIENT JOBS

\$6.7M

OHIO THIRD
FRONTIER SUPPORT

72

NEW CLIENTS

**PRIMARY
SERVICES**

www.techgrowthohio.com

- Education and Training
- Incubation
- Business Development
- EIR Venture Engagement
- Growth Funding
- Venture Funding



STATE OF STARTUPS: **OHIO**

STARTUP SPOTLIGHTS



BRIAN CLARK
Chief, Aging Research

:: OSTEODX

OsteoDx's proprietary, non-invasive, radiation-free medical device disrupts current bone assessment practices by more directly, accurately and quickly appraising bone strength and treatment efficacy compared to less repeatable methods. OsteoDx, Inc. is founded on technology spun out from Ohio University following refinement through the State's TVSF Program. America's population is aging, and with that comes an increased prevalence of osteoporosis: 1 in 2 women and 1 in 5 men over fifty will experience a fragility fracture, with related U.S. costs of \$52 billion per year. Unfortunately, despite widespread screenings, 98 percent of individuals deemed "at risk" never experience a fracture, and 80% of those "not at risk" succumb to a fracture. With support from TechGROWTH Ohio, OsteoDx has received financial, technical, and marketing guidance and secured a \$2 million Phase II SBIR award. With investment from TechGROWTH Ohio, the company is currently deploying evaluation systems at multiple clinical and research sites. Upon completion of regulatory approvals, the company anticipates near-term sales into the research sector followed by clinical market entry.



SEAN JONES
Founder

:: QUICKLOADZ

QuickLoadz is a revolutionary manufacturer of automated, computer-controlled, WiFi-enabled, patented trailers, allowing drivers to load and unload shipping containers in minutes without ever leaving their seat in the truck cab. Founded in 2013 by Sean Jones of Athens, the QuickLoadz trailer is the only trailer manufacturer that allows any container to be moved anywhere without additional capital-intensive, expensive infrastructure such as loading docks, warehouses and cranes. With funding and technical assistance from TechGROWTH Ohio, combined with SBA-backed financing, QuickLoadz was able to organize the business, file for patents, conduct market research, develop its business plan, and identify and set up manufacturing and operations. A participant in the JobsOhio-sponsored ELITE program, QuickLoadz has increased revenues by 66 percent in five years while continuing plans for expansion. "TechGROWTH Ohio showed me that a product I had developed for myself and thought had a limited market actually had worldwide use and could change freight and logistics." With 90 percent of the world's freight travels in standardized sea shipping containers, QuickLoadz is the last piece in the new world of freight.

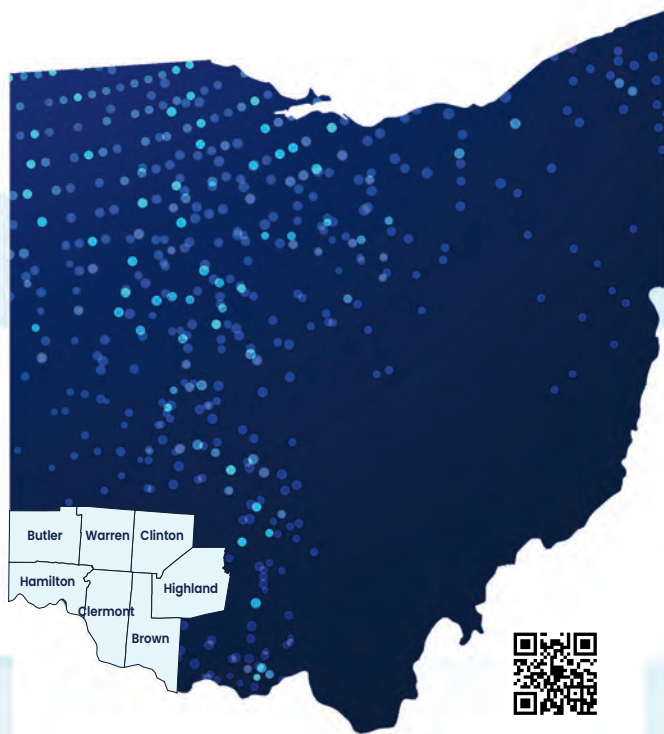


GUY RIEFLER
Founder

:: TRUE PIGMENTS

The story of True Pigments embodies everything that is uniquely Southeast Ohio. Born out of history, True Pigments is the transformation of economic and environmental destruction, into a triple-bottom-line business venture. A joint collaboration between OU professors Guy Riefler (Russ College of Engineering) and John Sabraw (College of Fine Arts), and launched by Rural Action, True Pigments is a social enterprise with patented technology that turns AMD (acid mine drainage) wastewater into a socially, financially and environmentally sustainable commodity while restoring polluted streams and making the U.S. iron pigment supply chain cleaner. One of the first teams to participate in the I-Corps@Ohio program, True Pigments takes contaminated water, reduces its acidity, removes iron oxide and returns clean water to the source while producing pigments that can be used in paint, concrete, bricks, industrial coatings, agricultural fertilizer and cosmetics. A company at the intersection of engineering, art, social enterprise and watershed restoration, investors and business advisors include Rural Action, TechGROWTH Ohio, the OU Tech Transfer TechSeed Fund, Impact Investments (Angel Fund) and funding from Foundations and individual Angels.

SOUTHWEST



cincytech

ESTABLISHED 2007

ABOUT

CincyTech is a public-private, seed-stage investor focused on life sciences and digital companies. CincyTech provides advice and capital to entrepreneurs, helps organizations commercialize technology through startups and catalyzes investment from individuals and institutions into high-growth companies. Since its founding in 2006, CincyTech has been among the Midwest's most active seed funds, investing in more than 80 technology and health startups in southwest Ohio. These portfolio companies have collectively driven more than \$1 billion in economic impact in the region, attracting follow-on venture capital from the nation's top-tier funds and employing more than 1,000 people.



2016-2020 METRICS

\$1.96B
ECONOMIC
IMPACT

\$522.8M
TOTAL CAPITAL
ATTRACTED

1,630
CLIENT JOBS

\$28.6M
OHIO THIRD
FRONTIER SUPPORT

393
NEW CLIENTS

PRIMARY SERVICES

www.cincytechusa.com

- **Advisory** – Our team of experts, includes scientists, researchers, physicians, marketers and entrepreneurs who champion the best ideas.
- **Capital** – Catalyzes investment from individuals and institutions into high growth companies.
- **Technical assistance** – Focusing on healthcare and digital investments, we help with recruitment, business planning, and connecting prospective customers and business partners.
- **When you succeed, we succeed.** Our goal is to provide support until companies win. That means helping with recruitment, business planning, and connecting prospective customers and business partners.



STARTUP SPOTLIGHTS



DON WRIGHT
CEO

Clarigent Health

Clarigent Health was founded in 2017 and backed by an experienced team of investors led by CincyTech. Clarigent Health is committed to improving mental health care and saving lives. Using patented AI algorithms to detect vocal biomarkers, Clarigent Health designs products that are both easy to understand and easy to use. Its HIPAA-compliant solutions are built to empower mental health professionals and to support better treatment for better outcomes. Clarigent Health is advancing scientific understanding and product capabilities through clinical trials and research, including an ongoing study open to the public. In 2021, Clarigent Health entered into a partnership with Terrace Metrics and the Hamilton County Juvenile Courts to create a first-of-its-kind medical assessment. The assessment is designed to help better understand how youth are developing resiliency and social and emotional learning. Also in 2021, Clarigent received a competitive Small Business Innovation Research (SBIR) grant from the National Institutes of Health (NIH) to advance development of their machine-learning algorithms, including an investigation of the effects of COVID-19 on the algorithms.



JAN ROSENBAUM
CEO

Kurome Therapeutics

Kurome Therapeutics is a preclinical stage company developing an unprecedented, targeted approach for treating hematological cancers. The company's series of IRAK 1/4 and panFLT3 inhibitors have demonstrated a broad range of efficacy in acute myeloid leukemia (AML) patient-derived cell lines, as well as a synergy with one of the leading chemotherapy medications for treating AML. The approach has the potential to optimize the effect of both drugs while limiting negative side effects. Kurome's targeted approach has the potential to promise radical advancements in the fight against AML and other forms of cancer, even in settings of adaptive resistance to treatment. AML takes 50 percent of patients every year, largely due to the development of resistance, said Jan Rosenbaum, Ph.D., the company's chief executive officer and chief scientific officer. The importance of the target for Kurome's technology in myeloid malignancies was identified in 2013 by Daniel Starczynowski, Ph.D., Professor, Cincinnati Children's Hospital Medical Center (Cincinnati Children's). Craig Thomas, Ph.D. at the National Center for Translational Sciences (NCATS) at the National Institutes of Health (NIH) joined the project a year later. Kurome secured the license to develop the therapies from Cincinnati Children's Medical Center. Kurome is on track to begin its clinical trials in 2024.



PHILLIP OGILBY
CEO

STACK

STACK Construction Technologies is the industry's leading cloud-based preconstruction platform for preconstruction professionals. Founded in 2015, STACK provides a centralized hub where plans, specs and other construction documents can be stored, evaluated, measured and shared. STACK delivers easy-to-use takeoff, estimating and proposal solutions for thousands of subcontractors, general contractors, suppliers and manufacturers to ultimately improve project outcomes and profitability. STACK's solution powers seamless plan and document management, real-time collaboration and a more efficient digital preconstruction workflow. In 2021, STACK was recognized by the Cincinnati Business Courier as No. 24 on the Fast 55 list, which recognizes the fastest-growing privately held companies in Greater Cincinnati. The company grew more than 86 percent between 2018 and 2020. "STACK is revolutionizing the way preconstruction teams do business – not only saving time but also increasing accuracy, improving workflows and allowing for collaboration in a way that's critical in today's environment," said co-founder and CEO Phillip Ogilby.



WEST

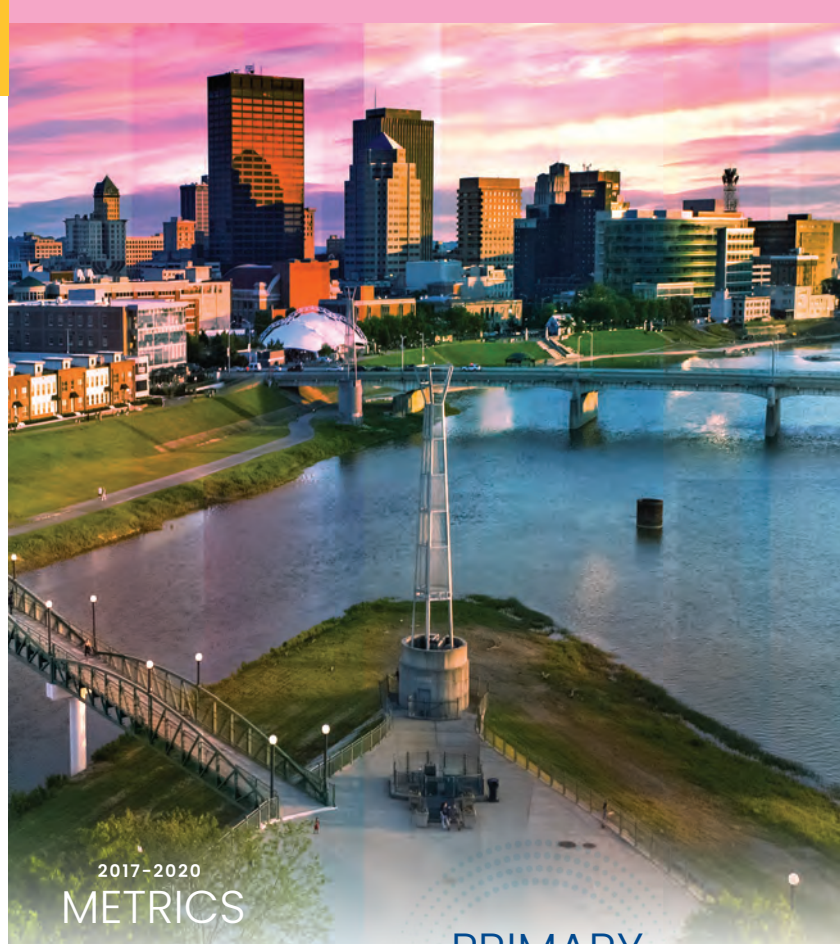


**Entrepreneurs'
Center**

ESTABLISHED 2017

ABOUT

The Entrepreneurs' Center (EC) is a modern economic development organization that powers progress and prosperity through entrepreneurship. Annually, the EC works with over 1,000 brilliant entrepreneurs to start and grow companies, create jobs, generate revenue, and attract investment. We empower main street and technology businesses through complimentary professional services including: business planning, mentoring, training, networking, and commercialization. Our talented and experienced team of advisors, entrepreneurs-in-residence, and staff design and facilitate diverse, world-class business acceleration programs on behalf of corporations, higher education institutions, and government agencies including the U.S. Department of Defense from their headquarters at The Hub Powered by PNC Bank in the historic Dayton Arcade.



2017-2020 METRICS

\$209.5M

ECONOMIC
IMPACT

\$58.9M

TOTAL CAPITAL
ATTRACTED

609

CLIENT JOBS

\$9.1M

OHIO THIRD
FRONTIER SUPPORT

155

NEW CLIENTS

PRIMARY SERVICES

ecinnovates.com

- **Business Planning** - Leading entrepreneurs in implementing their ideas for writing a business plan. Providing in-depth analysis of their opportunity and the specific market, strategic insight, financial planning and budgeting, and coaching on goals and the importance of creating a realistic timeline for achieving them.
- **Mentoring** - Advising leaders to achieve personal and professional goals, while introducing them to alternate ways of thinking, challenging their limiting assumptions, and sharing valuable life lessons to help them avoid pitfalls on their entrepreneurial journey.
- **Training** - Providing resources and solutions for every stage of a startup, enabling entrepreneurs to make sound decisions for the successful operation and advancement of their businesses.
- **Networking** - Supporting creators and innovators through strategic introductions that foster an exchange of information and connections to establish mutually beneficial long-term relationships that can aid in bringing their ideas to life.
- **Commercialization** - Unlocking the commercial potential of technology for government grant awardees. Our programs provide unique opportunities for these entrepreneurs to showcase their concepts to government and industry leaders, as well as investors, to gain valuable feedback and a strong opportunity to bring a product or service to market faster.



STATE OF STARTUPS: OHIO

STARTUP SPOTLIGHTS



JERRICHA HOSKINS
FOUNDER

❖ **ARCANI COIL CARE**

Arcani Coil Care is a black- and female-owned technology-enabled business and leader in the natural hair movement. All Arcani products feature proprietary formulas of all-natural ingredients developed by a licensed cosmetologist focused on caring for hair of all textures. Despite shipping and supply-chain disruptions attributed to COVID-19, the company continued to experience hockey-stick growth with over \$4.1 million in sales in 2020. Arcani is one of the fastest growing black beauty companies on the market. Additionally, Arcani purchased a 25,000-square-foot warehouse in 2020 and expanded manufacturing and operations to the new space with more than 32 employees. This business closed a round of venture investment for over \$1 million to help accelerate further growth.



NICK RIPLINGER
PRESIDENT

❖ **BATTLE SIGHT TECHNOLOGIES**

Battle Sight Technologies (BST), formed in 2017 by a veteran of the US Army, is a technology company working to make the warfighters, law enforcement agencies and first responders' mission safer and simpler. BST offers the CrayTac® to improve communication, increase speed, reduce weight and waste and minimize cost. Their motivation, calling and duty is spearheading technology for the frontline. Since engaging with the Entrepreneurs' Center and venture development organization, BST has identified and acquired more than \$3.5 million in non-dilutive capital funding. And through the venture development grant, the EC was able to directly support BST through a variety of early-stage services including: additional assessments on the technology and assistance with ultimately securing the license for AFRL intellectual property, direct entrepreneur-in-residence support, financial aid to offset intellectual property protections, marketing and scale-up support. BST has secured large orders with DoD customers, licensed a second technology from AFRL, doubled their revenue during the pandemic in 2020 and is projected to more than triple revenue in 2021.



CRAIG JENNINGS
CEO

❖ **SPINTECH HOLDINGS, INC.**

Spintech Holdings, Inc., founded in 2010, provides novel composite manufacturing solutions and high value composite parts for aerospace and defense manufacturers world-wide. Spintech Holdings has created two separate divisions, Smart Tooling and Hawthorn Composites, that generated \$3.5 million in annual product sales in 2020 with an aggressive growth trajectory. Spintech Holdings has raised \$8.3 million in equity capital and convertible notes and has 21 full time employees. Smart Tooling ensures the success of manufacturing complex composite parts and Hawthorn Composites delivers high-value composite parts. Through direct support of the venture development program via the EC, Spintech Holdings focused its messaging, created new websites, and generated content that successfully communicates their abilities to make composites better, cheaper and faster.



OHIO'S INNOVATION ECOSYSTEM

Ohio's broad array of innovation assets are found in all reaches of the state, rather than concentrated in just one or two metropolitan regions. This produces a rich and robust ecosystem for entrepreneurs throughout the state and one that is ranked among the top 10.



AWARE'S PARTNERSHIPS SUPPORT PANDEMIC-ERA BOOM

Aware provides AI-enhanced controls and governance capabilities for the nuanced conversation data set that lives within popular communication tools used by companies globally.

Demand soared for Aware's services amid the work-from-home movement. With the influx of remote work due to the pandemic, platforms like Slack, Microsoft Teams and Workplace from Meta are suddenly top-of-mind for leaders across the globe. Purpose-built for collaboration, Aware offers a unified view across many of these tools.

Customers range from companies with just handfuls of employees to global enterprises such as AstraZeneca, Mercado Libre, Rivian and more.

On the back of pandemic-driven demand, Aware closed another funding round of \$60 million in October. Through multiple investment rounds, Columbus-based Rev1 and Cleveland-based JumpStart Inc., as well as the Ohio Innovation Fund and JobsOhio, helped the company scale operations.

"It's great to partner with investors who truly understand our space and the opportunity," Schumann said of the early-stage capital. "We had the opportunity to remove barriers and truly focus on fully developing our product, selling to the enterprise and, ultimately, growing our business."

Rev1 and JumpStart also provided key connections during an important period of growth.

"WE HAD THE OPPORTUNITY TO REMOVE BARRIERS AND TRULY FOCUS ON FULLY DEVELOPING OUR PRODUCT, SELLING TO THE ENTERPRISE AND, ULTIMATELY, GROWING OUR BUSINESS."

— JEFF SCHUMANN

In 2020, Aware hired five college interns from the inaugural cohort of Rev1's Innovation Internship Program, which connects diverse student talent with startups, provides partial salary reimbursement and delivers ongoing support to manage the hiring and onboarding process.

Aware's interns play an integral role, helping on projects as well as providing tools to strengthen the business.

"We believe in giving people meaningful work at every level of the organization," says Betsy Sewell, Aware spokesperson. "We can't speak highly enough of the interns from Rev1."

Aware continues to leverage Rev1's internship program in a mutually beneficial relationship, itself contributing to the Central Ohio talent pool by developing young talent.

Rev1 and JumpStart continue to provide an array of services at every stage of growth for Aware.

"This relationship exemplifies the type of holistic, versatile support provided by Rev1 and our venture-development peers around the state," says Rev1 President and CEO Tom Walker. "From providing critical early-stage capital to placing high-quality talent and making introductions to business partners and clients, we are proud to play a supporting role in the success of a world-class company like Aware." ■

PHOTO COURTESY OF: AWARE



Jeff Schumann, co-founder and CEO of Aware.





MIKE HOOVEN,
CEO

ENABLE INJECTIONS TO MAKE ON-BODY INFUSOR IN CINCINNATI



In 2010, medical device inventor Mike Hooven was an entrepreneur-in-residence at CincyTech when his next big opportunity presented itself.

Hooven was working with the University of Cincinnati and Cincinnati Children's Hospital Medical Center to commercialize new technologies when he learned about a wearable device for painless injections that was developed by a surgeon at the children's hospital. To raise the initial seed round, Hooven asked for a small investment from CincyTech as well as individuals who had invested in his companies before, leading to the formation of Enable Injections.

"I said, gee, this market for body-worn injectors is going to explode," Hooven says. "This is the biggest opportunity in the medical industry that I've ever seen. Enable has the technology to replace a significant number of intravenous injections."

Enable's on-body infusor, called enFuse, is a small wearable device that sticks to the skin and delivers large volumes of medicine through a small needle that is invisible to the user. The novel drug-delivery technology has the potential to

ENABLE RAISED MORE THAN \$200 MILLION IN THE FORM OF EQUITY INVESTMENTS AND REVENUE FROM PROGRAMS CONDUCTED ALONGSIDE PHARMA PARTNERS.

allow patients to safely, conveniently and cost-effectively self-administer therapies outside of a clinical facility—an innovation that is proving more timely in the era of Covid-19.

Hooven envisions Enable being a multibillion-dollar publicly traded company in the next few years. It already employs more than 175 and is spending \$60 million to develop manufacturing capabilities in Cincinnati.

Enable raised more than \$200 million in the form of equity investments and revenue from programs conducted alongside pharma partners. It most recently completed a \$50 million Series B round, led by global

healthcare leader Sanofi, to scale existing clinical production to high-volume commercial manufacturing. Previous investors ORI Healthcare Fund, CincyTech, Cincinnati Children's Hospital, Cintrifuse, Ohio Innovation Fund, Cleveland Clinic and key private investors also participated in the financing.

"I give CincyTech a lot of credit for this," Hooven says. "What they've done is brought in a lot of money, brought in key executives, increased the visibility of Enable and other startups so people say, you know what, Ohio is actually a good place to start a business."

Hooven recalls local investors offering additional support during a challenging period.

"That's one of the big differences between CincyTech and Children's as opposed to some big names outside the state," Hooven says. "They want to do what is right for Ohio and what will build the economy and create jobs. It's not solely financial." ■



MYONEXUS: A \$165M WIN FOR OHIO



MICHAEL TRIPLETT,
CEO



In 2019, global biotech company Sarepta Therapeutics acquired Nationwide Children's Hospital spinoff Myonex Therapeutics for \$165 million, representing a major win for Ohio's startup ecosystem.

At the time of its sale, Myonex was a clinical stage, rare disease gene therapy company developing first ever treatments for limb-girdle muscular dystrophy based on research from the lab of Dr. Louise Rodino-Klapac at Nationwide Children's. The company's five gene therapies correct missing genes in different forms of the rare condition. After Myonex released promising results from tests, Sarepta, a publicly traded Boston-area biotech company, accelerated its option to purchase the startup.

Although it is no longer a standalone entity, Myonex continues to pay dividends for Ohio.

Sarepta is committed to accelerating development of the five therapies and has invested in Columbus to do so. In October, Sarepta opened an 85,000-square-foot Gene Therapy Center of Excellence, where it has labs for every stage in developing a therapy, from first testing in cells in a dish to analyzing tissue samples from patients injected with the final version.

Led by Dr. Rodino-Klapac, hired by Sarepta in 2018, the lab is serving as the company's main research and development operation. Now at 70 employees in Central Ohio, Sarepta

is expecting to double its headcount by the end of 2022. Company executives believe Columbus could become the most important place in the world for gene therapy development.

Sarepta's sizable Columbus operations would not be possible without the critical seed funding from investors. RevI Ventures' startup studio supported the spinout from Nationwide Children's before CincyTech led a \$2.5 million seed financing with co-investment from RevI, The Jain Foundation, and GFB ONLUS joined initial investors from the limb-girdle muscular dystrophy community.

The sale brought a return for Nationwide Children's, RevI Ventures and CincyTech, along with foundations, parents and patients who invested in Myonex. Entrepreneurial advocates hope returns from such early-stage investments will generate more investment.

"The need for seed and Series A dollars in the state of Ohio, and particularly in the life sciences, is immense, and it is the most critical capital you can get," says serial entrepreneur and former Myonex CEO Michael Triplett. "Ohio's venture development organizations are valuable in their sophistication. Having people who have done this before is absolutely a catalyst to the growth and success of these ventures, the entire ecosystem and the region." ■

"THE NEED FOR SEED AND SERIES A DOLLARS IN THE STATE OF OHIO, AND PARTICULARLY IN THE LIFE SCIENCES, IS IMMENSE, AND IT IS THE MOST CRITICAL CAPITAL YOU CAN GET."

— MICHAEL TRIPLETT



A BREAKTHROUGH FOR NERVE-BLOCK TECHNOLOGY

Founded in 2008, Neuros Medical's patented technology can deliver high-frequency nerve block to targeted nerves in the peripheral nervous system.

In January 2021, Neuros Medical raised a Series BB round of \$38.5 million, co-led by new investors Amzak Health of New York and Sectoral Asset Management of Montreal. With funding in place, Neuros was able to complete enrollment of a clinical trial to assess the system for treating intractable post-amputation pain.

Neuros also received Breakthrough Device Designation from the U.S. Food and Drug Administration for its High-Frequency Nerve Block system.

In the U.S. alone, there are nearly two million lower limb amputees, with 160,000 new amputations occurring annually. Chronic post-amputation pain is a significant unmet medical need, as existing treatment options are limited and consist primarily of opioids and gabapentinoids. Chronic post-amputation pain is estimated to afflict up to 80 percent of patients who undergo a major limb amputation.

Neuros' technology was originally invented by Dr. Kevin Kilgore and Dr. Niloy Bhadra of Case Western Reserve University. Founding CEO Jon Snyder led the company through the initial human clinical trials and into the current pivotal clinical study. He stepped aside in 2017 for Wilder to lead Neuros through the next phases of growth and expansion and is now CEO of another early-stage Cleveland venture.



"I'VE BEEN VERY IMPRESSED BY THE BIOENTERPRISE PRESENCE, CONNECTIVITY BETWEEN THE VCS, COST OF LIVING AND HIGHER EDUCATION."

— THOMAS C. WILDER

JumpStart, North Coast Ventures, Rivervest and angel funds like Queen City Angels provided critical funding at a time when the fledgling startup had few options. They also helped make key connections to grow the business.

"Med-tech requires a little more patience. It can involve a long, capital-intensive process," says Thomas C. Wilder, president and CEO of Neuros. "Especially in the early stages, having that network of investors and firms certainly helped Neuros, and Neuros would not exist today without it."

In an industry typically confined to the coasts, Neuros is benefiting from being located in Cleveland, not in spite of the fact.

"I've been very impressed by the bioenterprise presence, connectivity between the VCs, cost of living and higher education," Wilder says of Ohio. "I was amazed to learn of the JobsOhio programs."

Now, Neuros is hoping to make its mark on the region that has supported it.

"A successful clinical study and eventual liquidity event would be a visible win for the Cleveland community," Wilder says. "And, it would help with future fundraising by medtech companies." ■



PEERRO'S TECH CONNECTS EMPLOYERS, JOB SEEKERS



RACHEL ANGEL, Ph.D.
FOUNDER

Venture Capital investment in female or minority-led businesses accounts for less than 3 percent of capital invested across the U.S. startup ecosystem.

That is why Rachel Angel can be seen as a disruptor of sorts.

Inspired by the hourly jobs that supported her through six years of college, Rachel Angel, Ph.D., put her pharmacy career on hold in 2015 to launch Peerro, a mobile-first job platform. Angel is one of only seven Black woman founders in Ohio, according to ProjectDiane, which tracks data on the nation's woman- and minority-led startups.

Peerro, which combines the words peer and hero, is a career pathway management system that enables young people without college degrees to develop skills and land jobs that lead to advancement and financial independence. Peerro's platform connects job seekers, educators and training programs with employers seeking quality hires to fill entry-level positions.

Peerro's intuitive, mobile-first platform enables students to find entry level jobs and job training programs in their community. The app shows job seekers a roadmap of the steps and qualifications required for a given position and allows them to schedule an interview directly.

Peerro raised funds from CincyTech, Rev1 and Jumpstart—"when I couldn't get it from anywhere else," Angel says—and has partnered with the

organizations for a variety of support services.

In July 2020, Peerro relocated from Cleveland to Cincinnati.

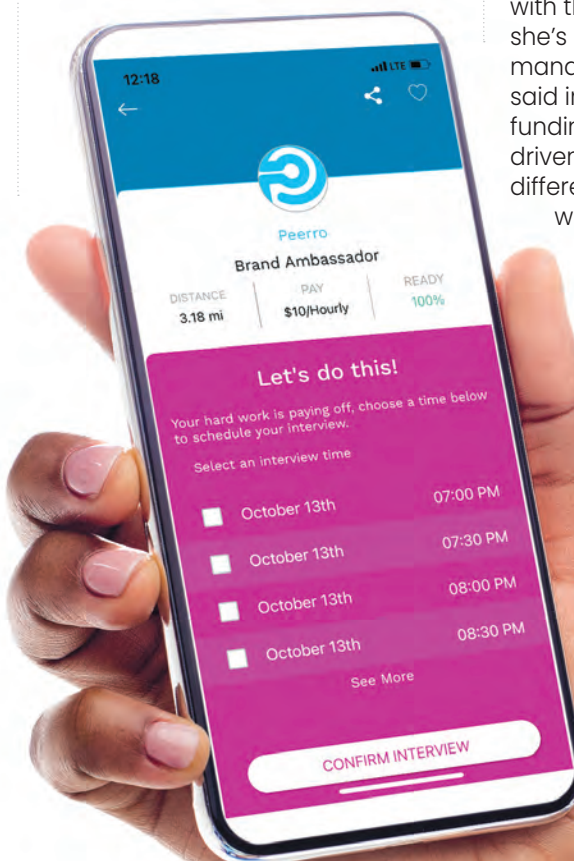
"Having organizations like CincyTech to continue the work of supporting minority founders, or founders that may come from disenfranchised backgrounds, is really important," says Angel, who is Peerro's founding CEO. "There's a unique set of challenges."

Fundraising was critical to get the business off the ground, says Angel, and the assistance from

CincyTech went well beyond that. CincyTech also helped connect Peerro to corporate partners and provided support resources ranging from marketing services to interns, and helped put the right talent in place, including Peerro's chief technology officer.

Stacey Browning, managing director at CincyTech, calls Angel a "force of nature."

"From the beginning, we loved her energy, the mission that she has with the company and the software she's developed," Browning, a managing director at CincyTech, said in an interview after the funding was announced. "She's driven to simultaneously make a difference to non-degreed workers, while helping employers hire motivated, entry-level team members. We see huge potential." ■



STIRLING ULTRACOLD'S FREEZERS SUPPORT COVID-19 VACCINES

Sometimes a startup exit is just a milestone for a company. Other times, as in the case of Stirling Ultracold, it's a reason for a whole community to celebrate.

Athens-based Global Cooling was formed to commercialize a novel Stirling engine designed for use in aerospace, electronics and energy. The company found a niche for the technology in manufacturing a line of environmentally sustainable, ultra-low temperature freezers used in medical research and clinical practice and rebranded itself as Stirling Ultracold. In May 2021, the company was acquired by publicly traded Biolife Solutions in an equity transaction of more than 6.6 million shares.

Stirling's earliest backers included a who's who of investors promoting entrepreneurship in the region and across the state: the East Central Ohio Tech Angel Fund, the Ohio Innovation Fund, JobsOhio, TechGROWTH Ohio and the state-run Third Frontier technology bond fund. Beyond Ohio, national and international investors also supported the company.

"There is a very significant, focused effort in terms of making sure businesses are successful here," prior CEO Dusty Tenney said shortly after arriving from Boston to take the helm in March 2020. "It's unlike anything I've experienced."

TechGROWTH Ohio, a day-one investor in the company, helped develop the original business plan, placed the first CEO and provided executive recruitment services as well as marketing and communications support.



Stirling Ultracold/Global Cooling freezers.

TechGROWTH Ohio Executive Director Lynn Gellermann served on Stirling's board of directors.

"We believe providing a combination of services, capital and talent is critical for the success of technology-based startups," says Gellermann.

When COVID-19 vaccines arrived, there was a surge in demand for the company's freezer equipment.

After Stirling was sold to an out-of-state company, one question loomed: what would happen to one of Ohio's premier startups? It turns out that Biolife is not only keeping the high-tech factory in Ohio, but it also is developing more freezer models under Stirling's existing patents and increasing production at the facility.

"It's been a positive partnership with growth and hiring acceleration occurring post-merger," Gellermann says.

Stirling's exit was a big win for investors and a testament to the role that Ohio's higher education institutions can play in technology-based economic development. And it could be just the success needed to spark more innovation in Appalachia. Some investors are already planning to invest proceeds from the exit into additional startups in the region. ■





Peerro founder Rachel Angel.



© Ohio University/ Photo by Ben Siegel

True Pigment founder John Sabraw.



Mediview XR, Inc. medical imaging.



Enable's wearable injector, enFuse.



STATE OF STARTUPS: OHIO



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