

2016
**THE STATE
OF THE
START-UP**

TEDCO *INSPIRED!*

A LETTER FROM THE TOP

Building a thriving entrepreneurial ecosystem requires an array of successful programs, transformational leadership, and a compelling narrative that is shared by members of the ecosystem and valued by external partners. Maryland is a national entrepreneurial and innovation force thanks to the talent and promise of Maryland companies and its world-class scientific institutions and universities. The fundamental and ground-breaking discoveries made in these labs drive our nation's research. Innovation takes place outside those labs as well—with a rich foundation of incubator and federal lab space. And then there is TEDCO. We are nationally known as more than a seed/early-stage funding resource—we are the hub of Maryland's entrepreneurial ecosystem, where start-ups find mentors, funding, organizational assistance, facilities for daily operations and a roadmap for success.

Each year, TEDCO funds, supports and advises more than 100 Maryland startup companies and entrepreneurs. This past fiscal year was inspirational for TEDCO. We built on our past accomplishments by innovating, much like the companies we serve. Inside this report, you will learn more about mdPACE, a new program targeting medical device companies, the enhanced Maryland Venture Fund, and the redesigned Life Science Investment Fund. You will read about a few Maryland companies that have received TEDCO support and are on the road to contributing to the vibrant innovation economy in our state.

As technology and the very nature of doing business changes, TEDCO continues to evolve. We've come a long way since our inception in 1998 and our funding opportunities and educational and networking events allow us to support more entrepreneurs and start-up companies than ever before. As much as we do, however, TEDCO does not forge the path alone. Many others contribute to our innovation community, ranging from legislatively-created boards and commissions, universities, incubators, angel investors, non-profits and numerous public agencies. TEDCO staff participated on no less than 40 boards, commissions and panels this year, ensuring that we remain deeply connected to Maryland's entrepreneurial ecosystem.

We are honored to lead TEDCO, an organization built with the guidance of our volunteer board of directors and the dedication of our talented staff. As we move towards new horizons, we remain strategically focused on serving the evolving needs of Maryland's entrepreneurs and on growing our innovation economy. We hope this report leaves you with as much inspiration as we feel every day for Maryland's innovation community. With your support and involvement, we look forward to continuing to build and celebrate Maryland's bright future.

Sincerely,



Newt Fowler
Chair,
TEDCO Board of Directors



John M. Wasilisin
President and Chief Operating Officer



OUR MISSION

- ▶▶ To facilitate the creation of tech businesses and foster their growth in all regions of the State through the commercialization of technology.

OUR VISION FOR THE FUTURE

- ▶▶ To be Maryland's leading source of seed/early-stage funding for technology transfer and development programs and entrepreneurial business assistance.





2016 YEAR IN REVIEW

Since 1998, TEDCO has played a critical and effective role in the innovation and entrepreneurship ecosystem in Maryland. And fiscal year 2016 was an inspirational year for TEDCO with the implementation of three new programs.

MARYLAND VENTURE FUND IMPLEMENTATION

On October 1, 2015, the Maryland Venture Fund (MVF) was transferred from the Maryland Department of Commerce to TEDCO. TEDCO's goal was to operate the MVF more like a professional venture capital fund. The first phase of the new administration of MVF under TEDCO centered on assessing the existing portfolio. This process included a forensic review of all 81 active legacy investments, determining the investment amounts and securities owned in each company, meeting fact-to-face with management teams, assessing business viability and ability to scale, and concluding whether any further capital allocations should be made.

Through active portfolio management, the team has worked aggressively to maximize the value of the legacy portfolio. We have determined the fair market value of the portfolio, built relationships with management teams, and held companies accountable to their plans. Today the foundation for the new MVF is set—a new team with the requisite experience is in place and the existing portfolio has been pruned, stabilized, and is now actively managed and supported. MVF is currently aggressively identifying new investment opportunities through its vast local network built over decades of operating in this region.

“With the Maryland Venture Fund now being led by a new team that brings professional venture capital and successful operating experience, it is poised to be a premier venture capital fund investing in innovative companies in the region. We look forward to rolling up our sleeves to help entrepreneurs in our portfolio companies and partnering with other venture firms to lead new investments in this region.”

—Andy Jones, Managing Director, MVF

LIFE SCIENCE INVESTMENT FUND IMPLEMENTATION

The Life Science Investment Fund (LSIF) was transferred to TEDCO from the Maryland Department of Commerce on October 1, 2015. Under TEDCO's management, LSIF was designed to specifically meet the needs of Maryland companies developing products that address human health concerns and require approval from the U.S. Food and Drug Administration (FDA).

Out of 16 companies that applied for LSIF investments in FY16, four received \$200,000 each. These companies focused on therapeutics (AsclepiX Therapeutics) and medical devices (Sonavex Inc, Vasoptic Medical Inc, and Gel-e Inc).



"These 'Lifescience/Biohealth' startups face a long runway to commercialization, requiring multiple investment rounds based on critical product development success. The TEDCO investments will help these companies bridge the gap to FDA approval while improving their company valuation to help raise capital from sophisticated investors. In fact, two of our current portfolio companies have successfully raised follow-on capital already!"

—Dr. Arti Santhanam, LSIF Manager



mdPACE IMPLEMENTATION

mdPACE is a new program jointly funded by TEDCO and the U.S. Department of Commerce, under the U.S. Economic Development Administration (EDA) i6 Grant, to help medical device companies efficiently navigate the FDA regulatory process. The output of the program will be an increased flow of FDA cleared devices from the Central Maryland region. This in turn will result in heightened visibility among investors and manufacturers such that the increase is sustainable. A reliable critical mass of medical device clearances in the Central Maryland region will eventually lead to businesses formed around those devices remaining in the region. This growth will result in the creation of additional indirect and non-scientific jobs in the area, bringing with it the associated economic development benefits. During FY2016, the following mdPACE milestones were realized:

- ▶ **Funded via a \$500,000 grant from EDA and a \$500,000 TEDCO cash match**
- ▶ **4 companies accepted into the program**
- ▶ **Funded two client company projects intended to move the technology closer to FDA clearance**

These new programs increased TEDCO's impact on the innovation community and the economic well-being of the State. A study by the Battelle Technology Partnership Practice found TEDCO's economic contribution to the Maryland economy totaled almost \$1 billion in 2015, generating a total of 358 jobs with average labor income per job estimated at \$74,700.

TEDCO BY THE NUMBERS

- 6** active mentoring and education programs
- 8** active funding programs
- 400+** seed investments over 14 years
- 280+** current portfolio companies
- \$22M** awarded to start-ups
- \$1B** follow-on funding—45.5:1 leverage!

"Efficiently navigating the FDA clearance process is a potential bottleneck for any young medical device company. TEDCO has created a high-value program that is really making a difference!"

—Howard Carolan, Co-founder & CEO of CoapTech



Neil Davis speaks at the 2016 Entrepreneur Expo event.

"Our team has broad exposure to taking medical devices through the FDA's 510(k) process. TEDCO's mdPACE consulting team has strong domain expertise and was really able to fill in the gaps for us!"

—Rahul Kaliki, CEO, Infinite Biomedical Technologies

TEDCO SUCCESS STORIES



Lessoncast Learning Co-Founder and CEO, Nicole Tucker-Smith



Lessoncast, a startup in the TU Incubator at Towson University, is transforming how teachers get better at what they do in the classroom. K12 schools and teacher education programs use Lessoncast to develop, capture, and share effective teaching practices through a unique video technology and real-time analytics aligned to student learning data.

Each year schools in the US spend \$8 billion on teacher training and development. Recent reports, however, have shown that schools have zero evidence to show to what extent this investment is benefiting teachers or students. This low ROI is because typical teacher professional development is one-size-fits all and lacks proof of classroom mastery.

Flipping traditional methods, Lessoncast provides schools with their own personalized teacher learning platform. Teachers access professional learning aligned to the needs of their students. The Lessoncast web app captures video evidence of classroom application. Principals and superintendents get dynamic reports showing how teacher learning impacts student outcomes. In recognition of the high yield potential for this type of teacher learning technology to improve student learning, Lessoncast

was a recipient of a grant from the Michael and Susan Dell Foundation to expand use of the data analytics to create more effective learning environments.

TEDCO helped Lessoncast through the Technology Commercialization Fund, which enabled the company to launch a pilot with Baltimore City Public Schools in partnership with the Baltimore Teachers Union. This pilot helped to validate using Lessoncast to demonstrate local teaching frameworks of effective teaching and paved the way for implementation with some of the company's largest customers.

Lessoncast works with school districts and teacher education programs in Maryland, New Jersey, New York, Iowa, Florida, and California. In 2017, Lessoncast will begin a contract with schools in Toronto as well. While the sales cycle has been notoriously difficult in the education market, this company has survived and excelled by partnering with more established professional development organizations looking to augment their services with the Lessoncast technology.

"The Lessoncast team has been relentless in their development of technology for K-12 professional development", said Neil Davis, TEDCO's Director of Entrepreneurial Initiatives. "The Company's focused bootstrap strategy has leveraged our investment into a business that is expected to break even in 2017 and be profitable in 2018."

The **Maryland Innovation Initiative (MII)** has awarded \$18 million to more than 180 commercialization projects and 45 start-up companies since its inception in late 2012. Awards were given across a variety of industries, including therapeutic, software, medical devices and engineering.

“MII is the leading program in Maryland that supports the transition of technology from the academic research laboratory through product development to commercialization in a start-up company,” says John Wasilisin, President and COO. “The program has been a game changer for innovators at Maryland’s research universities to take the next step in becoming entrepreneurs.”

MII-funded start-up companies have been successful in getting follow-on funding totaling \$21 million from federal funds, angel investors and venture capital firms. Two recent examples are:



- **Longeviti**, a developer of CAD/CAM, laser, and robotic technology, licensed from Johns Hopkins University, to assist in craniofacial surgery. The company closed a \$2 million Series A in July 2016 and attracted executives from a Fortune 500 company.



MF FIRE

- **MF Fire**, a developer of the Catalyst Stove, licensed from University of Maryland, College Park. This is the first ultra-clean wood stove, emitting less smoke than a single cigarette. MF Fire recently received EPA certification and raised almost \$900,000 in new funds in 2016 from various sources, including one of the first successful SEC Equity Funding offerings.

“After almost four years of investments, the exciting part is seeing these early technologies and teams move out from the lab, attract talent and close on seed capital investment,” says Jennifer Hammaker, Director of the Maryland Innovation Initiative. “That is a heavy lift and takes the full coordinated effort of our university partners, Site Miners and TEDCO to make it happen. It demonstrates that there are talented faculty and students who are embracing the entrepreneurial culture and doing the hard work necessary to commercialize.”

As MII-funded companies become part of TEDCO’s portfolio, they also get to take advantage of



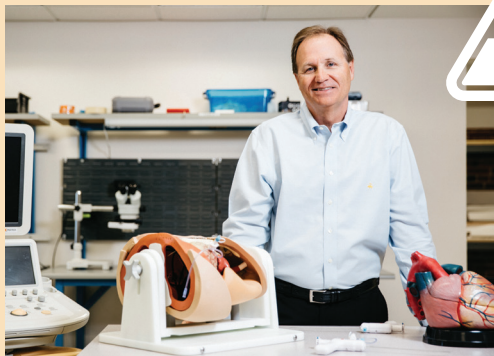
Chad Gordon, Longeviti; Barbara Slusher, Johns Hopkins University; Jennifer Hammaker, TEDCO; Jesse Christopher, Longeviti

TEDCO’s wide array of resources. From mentors and roundtables to loaned executives, the companies receive the assistance and support they need as they move through team building, balancing the funding element and negotiating deals.

“We are extremely honored to be a part of this business collaboration with Johns Hopkins, Walter Reed National Military Medical Center, and the MII,” says Jesse Christopher, CEO of Longeviti. “From Longeviti’s infancy, our Chief Surgical Officer and Founder Chad Gordon leveraged his relationship with MII to accomplish a Phase 1 effort—the development of leading edge software that will create increased successes in the surgical arena. After a lightning-speed start-up, Longeviti has raised \$2 million in funding, published a variety of medical articles, attracted top executives from several Fortune 500 companies, created new jobs, and has established several Longeviti offices in and around Baltimore.”

The MII program funnels deals to TEDCO’s later stage funding programs like its Technology Commercialization Fund and Life Sciences Investment Fund. MII has been garnering attention from the angel and venture community by providing them a “first-look” at more than 180 innovative technologies coming out of top research universities in Maryland.

The Maryland Innovation Initiative (MII) program was created as a partnership between the State of Maryland, five Maryland academic research institutions (Johns Hopkins University, Morgan State University, University of Maryland College Park, University of Maryland Baltimore and University of Maryland Baltimore County) and TEDCO. With \$5.6 million in annual funding, MII is designed to promote commercialization of research conducted in these universities through the creation of start-up companies. MII funds up to \$265,000 per project through two phases of the program; technology assessment and company formation.



HARPOON MEDICAL

Harpoon Medical is commercializing a potentially transformative medical device that will help doctors repair damaged mitral valves through minimally invasive surgery.

Degenerative mitral regurgitation is a common heart disorder that afflicts millions of people across the globe and leads to 50,000 operations each year in the United States, alone. Today the standard of care for mitral valve repair is open-heart surgery, which requires the patient's breastbone to be split open and his or her heart to be stopped (cardiac arrest). This risky procedure often results in recovery periods of several weeks followed by lengthy stints of physical therapy. Moreover, open-heart surgery is costly for payers and time-intensive for providers. Harpoon Medical's device allows surgeons to repair the mitral valve while the patients' heart is still beating through a minor incision, enabling patients to recover faster and doctors to spend less time in the operating room.

This novel approach caught the attention of Edwards Lifesciences, a worldwide leader in heart replacement and repair technologies, which made a strategic investment in Harpoon that brought the company's total funding to \$17.5 million. As part of the transaction, Edwards also secured an option to acquire the startup.

But three years ago, before Harpoon's story was widely known, the company received \$100,000 of critical funding from the Maryland Innovation Initiative (MII) to help commercialize its initial prototype. "Venture capitalists and partners always want to see a certain amount of progress and traction," said Harpoon CEO Bill Niland. "But finding the capital to get to that point presents a serious challenge, even for experienced teams."

In addition to the MII award, the Maryland Venture Fund has invested \$750,000 in Harpoon Medical in both the company's Series A and B financings. Harpoon Medical is a perfect example of a TEDCO seed funded company that also has demonstrated growth potential to attract investment from the Maryland Venture Fund.

"Dr. Gammie and Bill Niland make an absolutely exceptional team," said TEDCO President and COO, John Wasilisin. "The pairing of a serial entrepreneur and a world-renowned clinician and scientist is the kind of recipe for success that the region should be striving to replicate."

Dr. James Gammie, Professor of Surgery and Chief of Cardiac Surgery at the University of Maryland, conceived of the mitral valve technology that became the basis for Harpoon Medical in 2012. Niland, who previously founded the respiratory medical device company Vapotherm, was brought onboard in 2013.

The device is currently undergoing trials in Europe to attain CE Mark clearance, and Harpoon will turn its sights towards the US market and FDA approval in this year. Harpoon has 12 full-time employees in its Camden Yards office in downtown Baltimore. That number could grow to nearly 20 by the end of the year.

"The pairing of a serial entrepreneur and a world-renowned clinician and scientist is the kind of recipe for success that the region should be striving to replicate."

—John Wasilisin, President and COO, TEDCO

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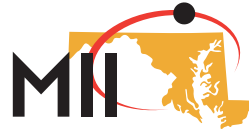
Timoth Copney

Office Administrator

OUR PROGRAMS



Technology Commercialization Fund



Maryland Innovation Initiative



Rural Business Innovation Initiative



Incubator
Assistance Fund



Maryland Entrepreneur Resource List



Technology
Validation Program



Maryland Venture Fund



Propel
Baltimore Fund



Federal Technology Transfer Initiatives



Life Sciences Investment Fund



Maryland Stem Cell Research Fund



Product Acceleration & Commercialization by Executives



Cybersecurity Investment Fund



EE
Executive Exchange



NIST-Science and Technology
Entrepreneurship Program



SEED
Seed Investment Funds



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