



Maryland Innovation Initiative

# ANNUAL REPORT

*Advancing  
Technologies from  
lab to market*

2021

# Table of Contents

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3	Letter from MII Executive Director & Chair of the Board
4	About MII
5	Program Overview
6	MII by the Numbers
9	Economic Impact
10	Portfolio Companies
12	Astek Diagnostics Accepted into the Y Combinator: An MII Success Story
14	A Culture of Collaboration Creates the MII Advantage
16	Media Highlights
17	Community Engagement
18	Board of Directors
19	Who We Are



“ For nearly a decade, MII has supported the commercialization of innovative research from Maryland’s world-class universities. I’m grateful to play a part in the stewardship of this remarkable program.”

- Renee Winsky  
*Leadership Maryland*

Letter From

# MII Executive Director & Board Chair

Greetings,

Welcome to the FY21 Maryland Innovation Initiative (MII) annual report. Within this report you will find various annual numbers and metrics that attempt to capture the amazing technology commercialization and venture creation success in the entrepreneurial story of Maryland.

As we reflect on the past nine years of the fund, we are proud of the unique program model we have created a diverse public-private partnership to educate, innovate, support, and grow university-driven technology commercialization and entrepreneurship platform. The steady success in venture creation, attraction of follow-on investments and job creation speak to the commitment of the University partners, the State of Maryland and ecosystem partners to the mission of the MII program.

If the FY20 was a testament to the resilience of Maryland's faculty innovators, FY21 was the year of opportunity and expansion! We saw record number of new technologies explored and de-risked through MII grants. We also saw a strong push towards both digital health and cybersecurity technologies applied across various industry sectors. The Fund's health and life sciences portfolio, however, remained strong, with emphasis on respiratory disease management as well as diagnostics, including for viral infections such as COVID-19.

The theme of opportunity and expansion also applied to the MII program itself. As a testament to the program success, the Maryland State legislature entrusted the Initiative with the task of expanding the program beyond the research universities in the state. As a result, we will be developing two pilot programs for our newest partners, Bowie State University and Frostburg University, spanning the next two years. We hope to take the lessons learned from the main MII Fund to develop a robust entrepreneurial culture at both these community anchor institutions.

As we enter the tenth year as a program and fund, we are excited for what the future of innovation in Maryland. After all, innovation can be found at the nexus of need and all things creative, and we at MII thrive in this environment!



Dr. Arti Santhanam – Executive Director, MII

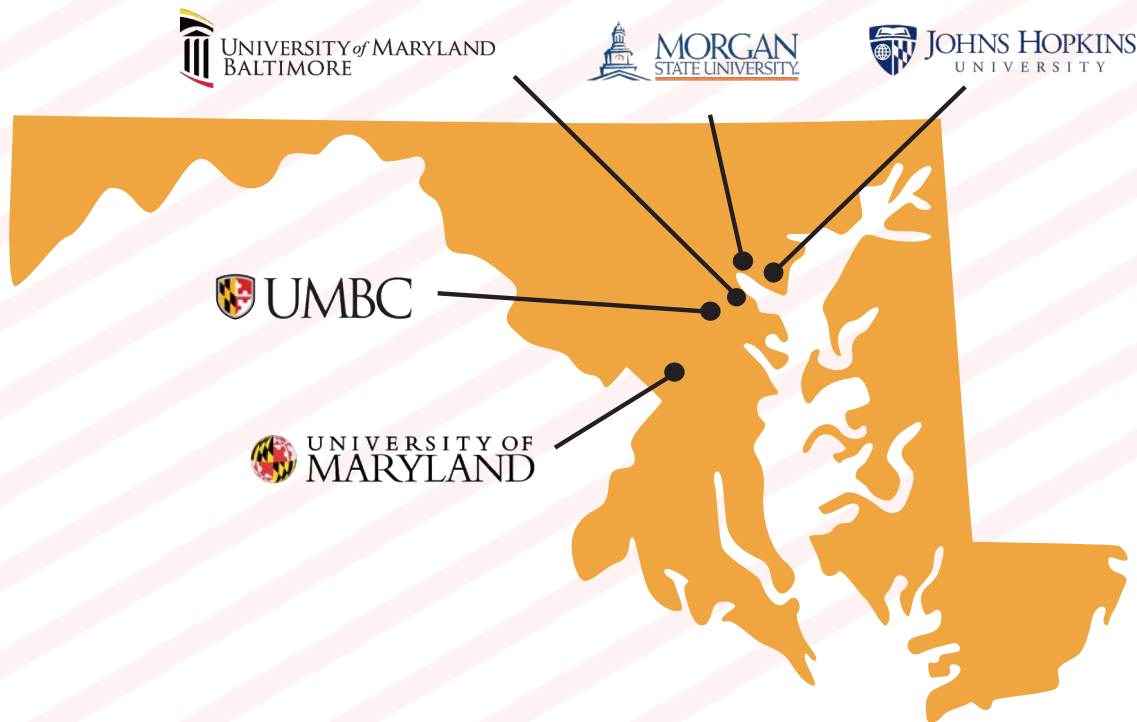


Robert Hallenbeck – Board Chair

## About the Maryland Innovation Initiative

### What is MII?

The MII program is Maryland's premier early-stage technology transfer and commercialization program. Established in 2012, MII is a partnership between the State of Maryland; Johns Hopkins University; Morgan State University; the University of Maryland, College Park; the University of Maryland, Baltimore; and the University of Maryland, Baltimore County. The program's mission is to accelerate promising technologies with significant commercial potential to market while leveraging each partner university's strengths. This "Bench-to-Market" approach is encouraged through start-up creation. The program offers grants to de-risk technologies in the universities and investments to the spinouts as they begin their entrepreneurial journeys.



“

MII funding and Site Miner guidance empower Maryland faculty to transform their discoveries into products, services, and startups that positively impact society, create jobs, attract investment, and benefit the economies of Maryland, the US, and the world.

- **Kenneth Porter**  
*University of Maryland, College Park*



## Program Overview

The MII Program was created to accelerate and support the transition of technologies with promising commercial value from partnering universities into products and services that address relevant market needs. To accomplish this, the program is divided into two phases: a Technology Assessment Grant for full-time university faculty and a Company Formation Investment for university start-ups.

### TECHNOLOGY ASSESSMENT

Technology Assessment Grant awards are available exclusively to qualifying universities and are capped at \$115,000 a sole application and \$165,000 for a joint application. Projects, including all subcontracts, must be completed within nine months of the date of execution of the award.

### COMPANY FORMATION

The Company Formation Investments encourages commercial product development in preparation for a product launch, or the advancement of a product to achieve a commercial milestone that could significantly increase the company's commercial value and better positions them to attract follow-on funding (grants and investments). MII Company Formation investments are capped at \$150,000.

“

BLOCKsynop's TEDCO MII funding was instrumental in enabling us to develop and validate our fully functional Neural Blockade Monitor prototype. We were able to make significant progress in a relatively short period of time.

- **Wayne Sternberger, Lead Technologist**  
**BLOCKsynop**



HAYSTACK SOLUTIONS

“

MI I fills a critical gap in the early-stage funding space that really changes the odds of a technology surviving the transition from a nurturing university environment to the violent winds of unmitigated commerce. The MII diligence process during the Company Formation Stage can be parlayed into additional private investment alongside the state, because other investors will get confidence from the rigorous analysis and 'stamp of approval.'

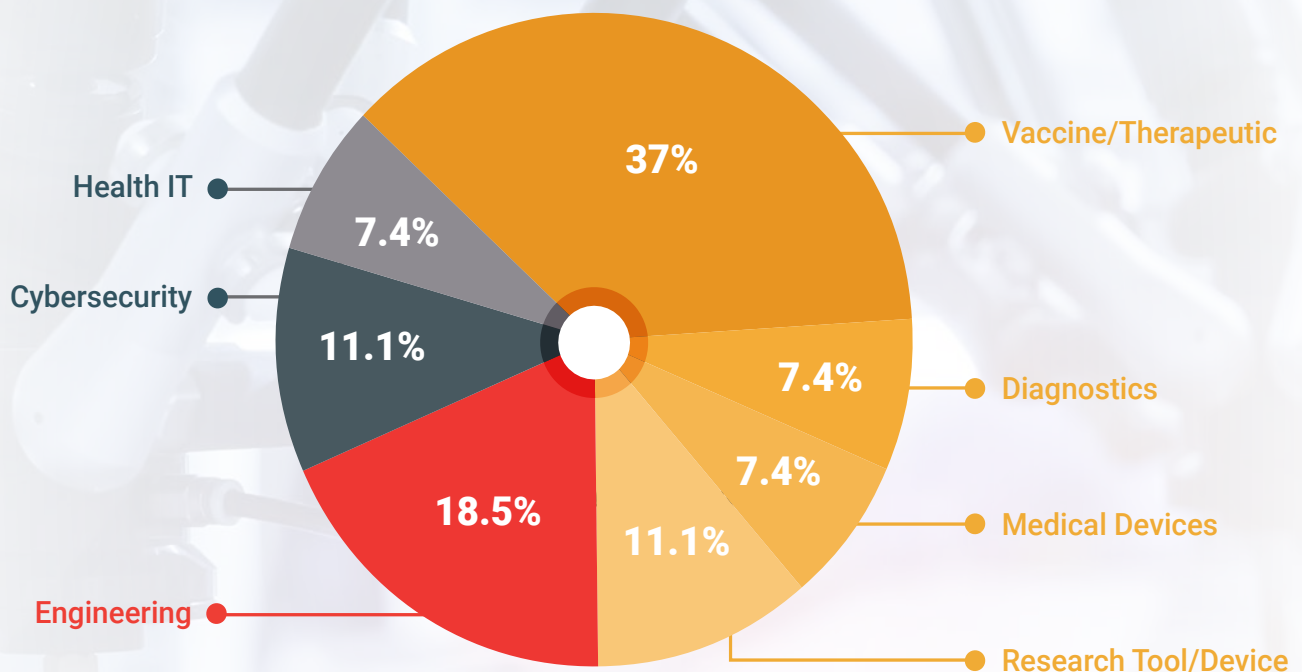
- **Doug Britton, CEO**  
**Haystack Solutions**

## MII by the Numbers

### Awards by Tech Class

FY 2021

MII supports a diverse portfolio of awardees from various technical domains that include but are not limited to life sciences, engineering, and information technology. The diversity of Awards by Tech Class ultimately reflects MII's partner universities and that of the world-class research conducted by scientists across the State.



INFORMATION TECHNOLOGY  
LIFE SCIENCES  
ENGINEERING

“ MII plays a significant role in helping Johns Hopkins faculty transform their research into new medicines and is a major force behind Maryland's burgeoning ecosystem.

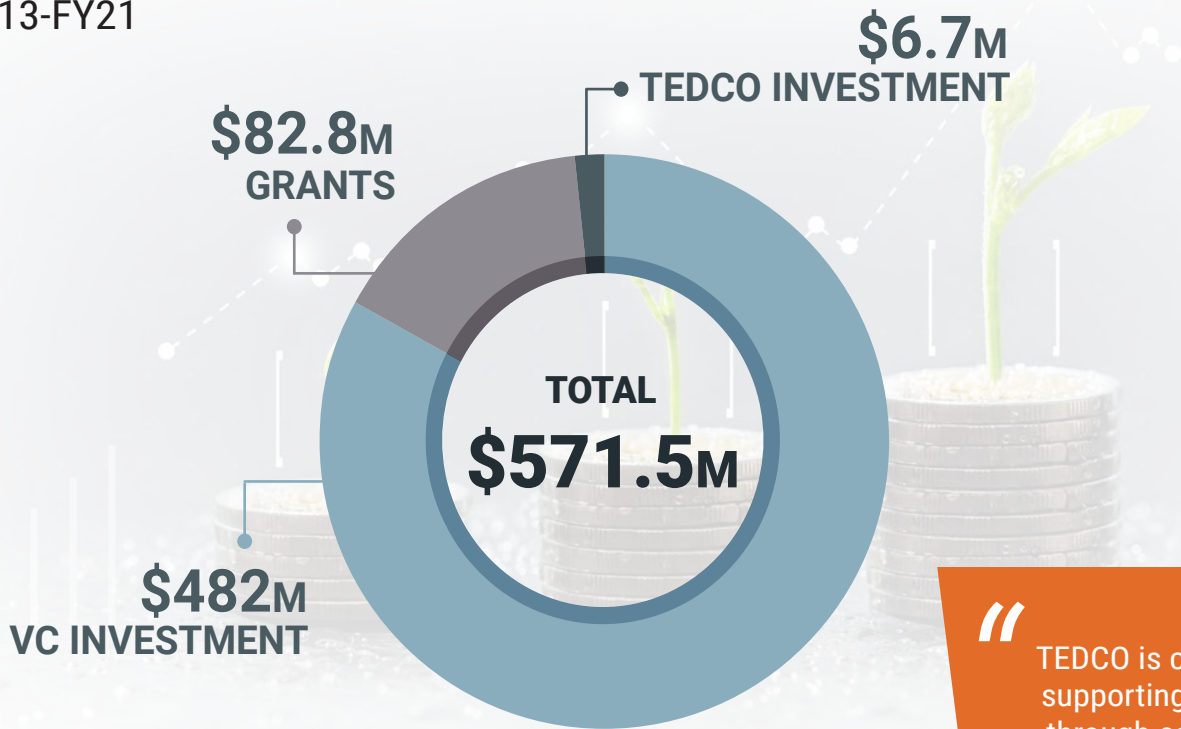
- Patrick Ho  
*Johns Hopkins University*



MII creates successful, scalable start-up tech companies in Maryland, as demonstrated by their ability to attract follow-on funding. Over the past nine years, MII companies have successfully de-risked technology and attracted over \$570 million in follow-on funding. Furthermore, 84% of this funding comes from sophisticated tech investors such as angels and venture capitalists.

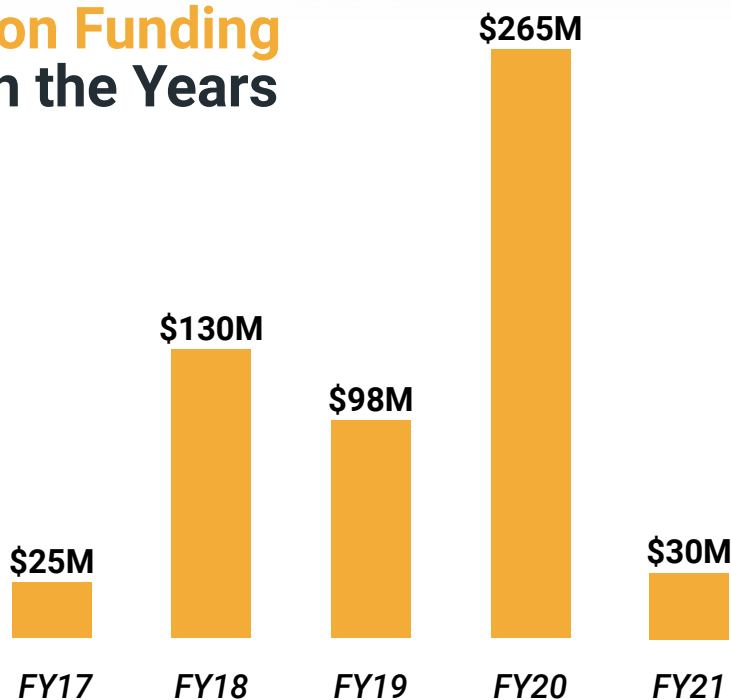
## Follow-on Funding

Program to Date  
FY13-FY21



## Follow-on Funding Through the Years

FY17-FY21



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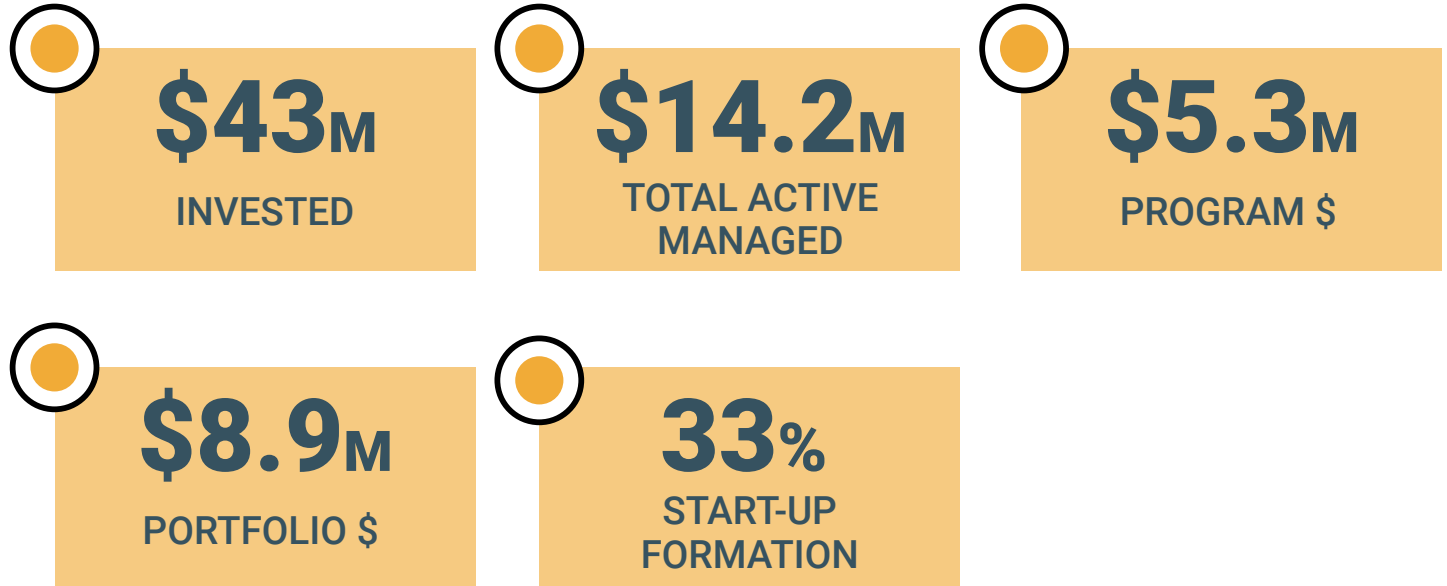
TEDCO is committed to supporting start-ups through each step of their early-stage process, and MII is an ideal representation of the kind of support and guidance these companies can leverage to jumpstart their innovative products.

- Mary Beth Tung  
Maryland Energy Administration



## Portfolio Management

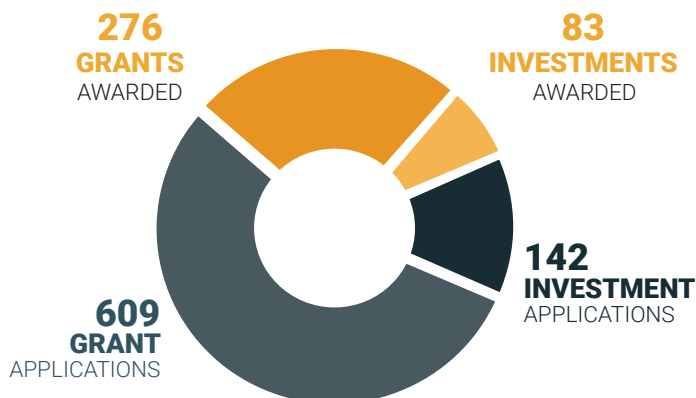
Program to Date  
FY13-FY21



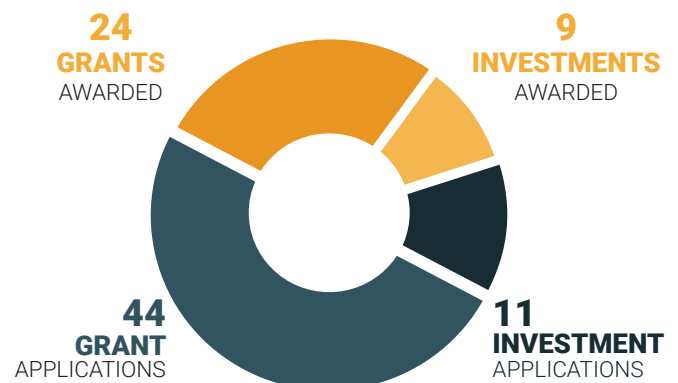
## Applications, Grants and Investments

To date, MII has reviewed 609 grant and 142 investment applications and has an award funding rate of 45% and 58% of applicants, respectively. In FY21 alone, MII reviewed 44 grant and 11 investment applications and awarded funding to 55% and 82% of applicants. While the demand for MII funding remains consistently high, the success rate for funding is also a reflection of the maturation of the ecosystem as the program's applicants become increasingly savvy about technology commercialization.

### PROGRAM TO DATE FY13-FY21



### FY 2021

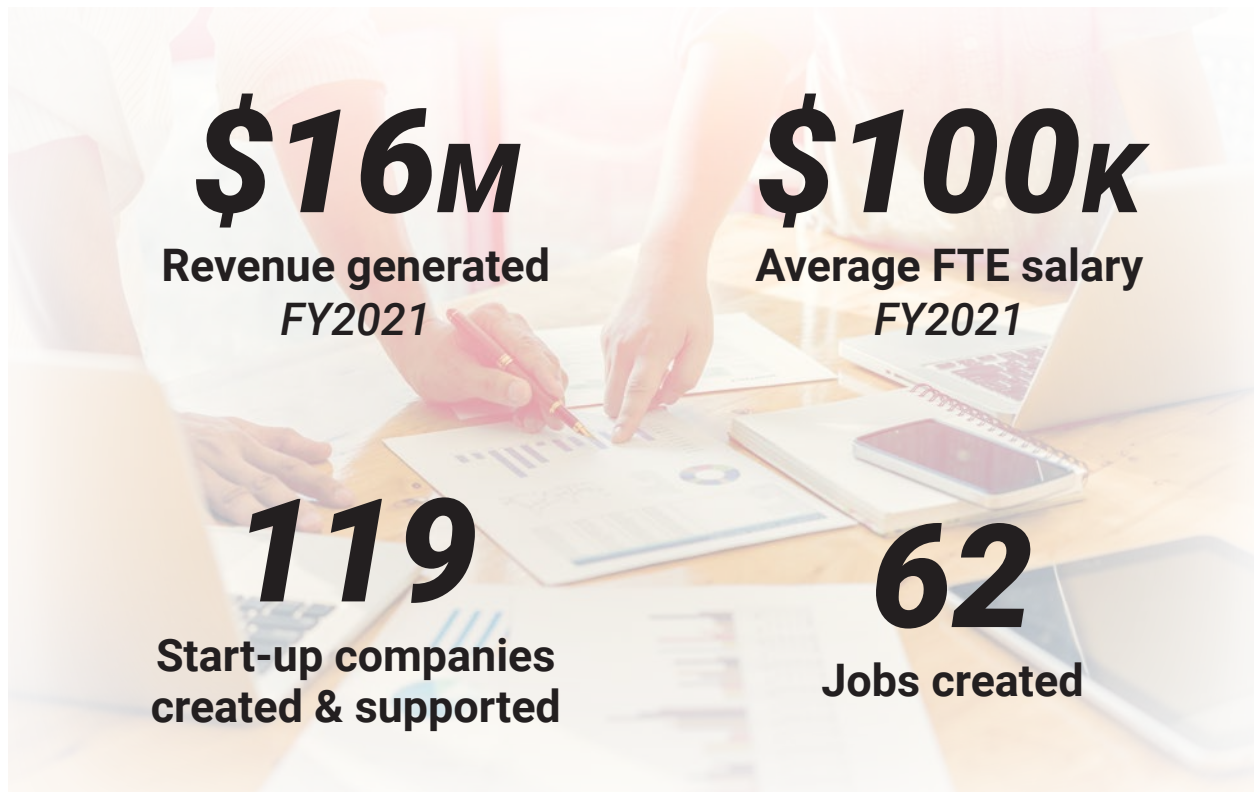


APPLICATIONS

AWARDS



## Economic Impact



MII has funded/invested a total of \$43 million over the past nine years while maintaining a steady 25-35% start-up creation rate—a testament to the program model and the excellent work of the MII site miners and university tech transfer offices. While small, the MII team manages an increasing number of portfolio investments with the goal of accelerating commercialization. Indeed, 57% of the MII companies raise follow-on funds, either through grants or investments, within two years. While still fledgling, MII start-up companies have continued to contribute to the economic development of their communities through revenue generation and high-tech workforce development—a true economic development success.



“ The MII program is a great example of a sector agnostic, diverse but collaborative success in advanced technology commercialization. We are so proud of our partner universities & entrepreneurs.

- **Dr. Arti Santhanam**  
*MII Executive Director*

## MII FY2021 Portfolio Companies



### BLOCKsynop

**BLOCKsynop**, located in Baltimore City, is a Johns Hopkins University spinout developing a monitoring device that provides an objective measurement to quantify controlled delivery and effectiveness of neural blocks on pain.

### Capsulomics

**Capsulomics, Inc.**, located in Baltimore, is a Johns Hopkins University spinout resolving diagnostic and prognostic uncertainty to help prevent, detect, and treat gastrointestinal diseases.



**Evincis Bio.**, located in Baltimore, is a Johns Hopkins University spinout solving therapeutic challenges in Urology with innovative medical technologies.



**PreSquared, LLC**, located in Baltimore City, is a University of Maryland, Baltimore County spinout that builds products to help health organizations prioritize patient care based on levels of risk.

“ The Maryland Innovation Initiative has been a key element in moving Morgan innovations from the laboratory, through the commercialization pipeline, and into new and existing businesses in Baltimore City and the State.

- **Willie May**  
*Morgan State University*



**Geminus Therapeutics**, located in Baltimore, is a University of Maryland, Baltimore spinout Developing Best-in-Class Artemisinin (ART714) for Treating Leukemia.



HAYSTACK SOLUTIONS

**Haystack Solutions**, located in College Park, is a University of Maryland, College Park spinout developing a revolutionary assessment for cybersecurity talent identification and human capital optimization.



**Geothermal Technologies**, located in Bel Air, is a Johns Hopkins University spinout developing the technology to provide clean, economically competitive energy.

# ML4Cyber

**ML4Cyber, LLC**, located in Baltimore, is a University of Maryland, Baltimore County spinout developing machine learning cyber security solutions.

# Empower Therapeutics

**Empower Therapeutics**, located in Baltimore, is a University of Maryland, Baltimore spinout developing a platform for quantitative neuromodulation that combines non-invasive therapeutics with electrical sensors and machine learning.

“ MII models the support TEDCO gives to companies from idea and development stages to successful commercialization. We are particularly pleased that MII’s portfolio reflects the diversity of applications and technology that our partner universities bring to the initiative. Our companies have utilized these strengths to kickstart their pioneering products and strengthen Maryland’s innovation ecosystem.

- **Tammi Thomas**  
TEDCO



# Astek Diagnostics Accepted into the Y Combinator: An MII Success Story

TEDCO, Maryland's economic engine for technology companies, announced today that Astek Diagnostics Inc. (Astek), a Maryland Innovation Initiative (MII) portfolio company was accepted into the Y Combinator (YC).

"It felt surreal to be chosen to participate in YC," said Mustafa Al-Adhami, CEO, Astek. "It is incredible when your idols become your mentors and we are so grateful for the chance to learn from them."

"We view the MII program as an extension of the continuum of support that we provide to inventors at UMBC. It is a vital part of our technology transfer process.

- **Wendy Martin**  
*University of Maryland,  
Baltimore County*

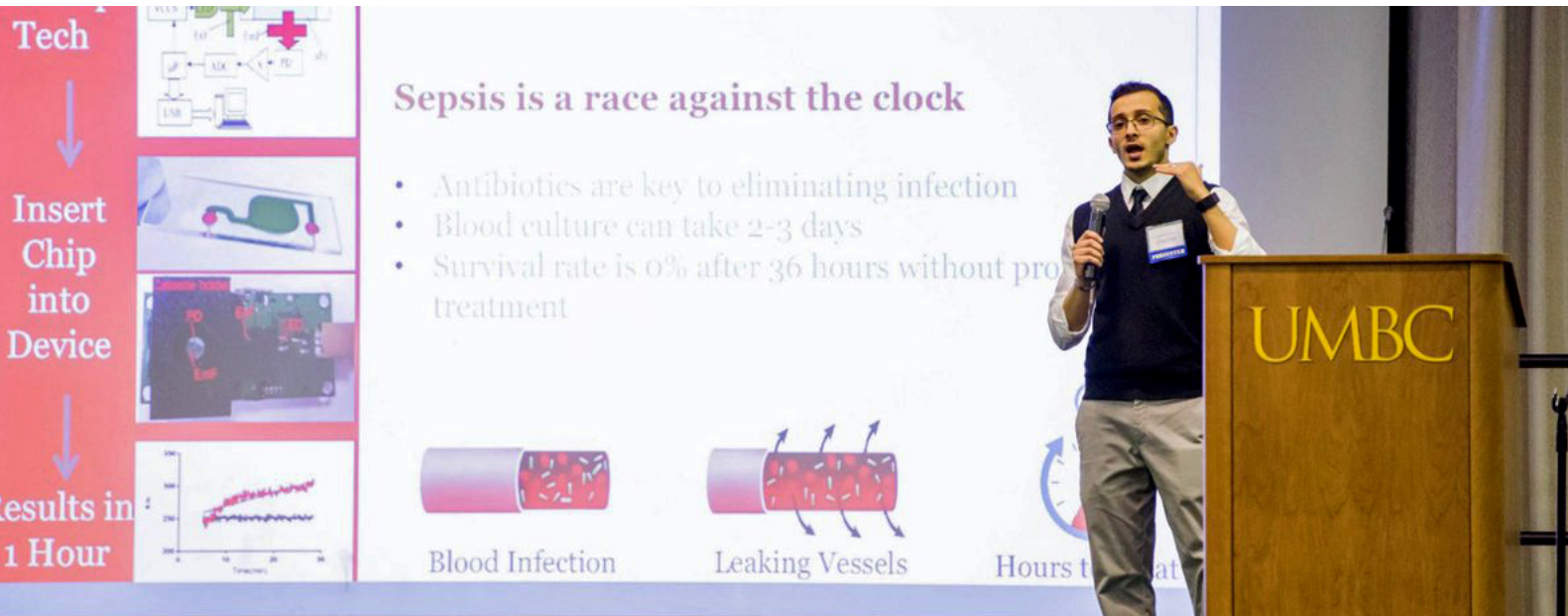
Astek, located in Baltimore, is a University of Maryland, Baltimore County spinout that is building a platform (Eugris) that guides physicians in prescribing appropriate antibiotics for patients with bacterial sepsis in one hour. Sepsis is a life-threatening condition that affects more than 1 million patients a year in the United States and even more patients around the globe and is one of the leading causes of death. For patients suspected of sepsis or septic shock, rapid initiation of the correct antibiotic therapy is crucial: Every hour of delay increases mortality by 7-8%. A proof-of-concept prototype of the Astek diagnostic platform has been verified using commercial blood and archived clinical samples. The Eugris is projected to launch in the market 2023.

"We're excited to work with Mustafa as he develops Eugris. Sepsis -- which is the leading cause of death in US hospitals -- is an incredibly important problem to tackle and we're impressed with the progress he's already made to validate the technology," said Surbhi Sarna, YC.



**Mustafa Al-Adhami**





YC is a startup accelerator, based in San Francisco, working with companies to refine their pitch to investors. A highly competitive program, the YC has an approximate 3% acceptance rate. After a three month long program, the startups present their companies at the final Demo Day. Y Combinator has invested in over 3,000 companies including Airbnb, Dropbox, Stripe, Reddit, Instacart, Docker and Gusto. The combined valuation of YC companies is over \$300B.

“Astek received a \$165,000 in grants from the MII Technology Assessment Phase to de-risk the technology followed by a \$150,000 investment through MII’s Company Formation Phase in 2020. We couldn’t be more pleased to see their successes continue through this valuable program.,” said Dr. Arti Santhanam, executive director, TEDCO’s MII. “We always want to see our portfolio companies taking the initiative to continue to grow and the Y Combinator program is going to be invaluable to the future growth of this Maryland start-up.”



# A Culture of Collaboration Creates the MII Advantage

By: Griffin St. Louis

Established as partnership between Maryland's premier research labs and as a State-funded initiative, collaboration is at the core of Maryland Innovation Initiative (MII). As one of many funds administered by TEDCO and guided by the vision of new TEDCO CEO Troy LeMaile-Stovall, the MII team pushed the organization's core value of collaboration even further with the goal of providing better services to awardees and stakeholders. TEDCO's *mission is to internally align the organization towards a cohesive vision to create a culture of Operational Excellence and Ecosystem Advancement that supports entrepreneurship through collaboration.*

Over the duration of an award, the MII team meets at a minimum of 3 times with

Principal Investigators (PIs) who lead both Tech Assessment grants and Company Formation investments to learn about their technology, understand their future aspirations, and become familiar with their resource needs. The relationships built with PIs allow the MII team to closely match their unique needs to other TEDCO programs that are equipped to serve them in a specific capacity.

During FY2021, the MII team referred several MII companies to other TEDCO programs that resulted in positive outcomes. For example, UMBC MII start-up Astek Diagnostics (Astek) seeking to learn more about the SBIR/STTR funding mechanism was referred to Kim Mozingo, Director of Federal Programs to leverage the



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TEDCO SBIR/STTR Proposal Lab. Through this cross-functional collaboration, Astek was connected to the Entrepreneurship and Ecosystem Empowerment (E3) team to leverage a Network Advisor as a Loaned Executive who, in-part, supported the company's successful application into Y-Combinator! Additionally, three other MII companies, HaloCyTech (MSU), BLOCKsynop (JHU-Applied Physics Laboratory), and VecTech (JHU) were connected to Brittany Eleazer who manages the Prelude Pitch under E3. Each company gave an investor pitch to a panel of experienced mentors and TEDCO staff who asked questions and provided feedback with the intent to refine each presentation and further prepare the companies to attract follow-on funding.

Notably, an MII company from JHU developing a therapeutic to treat recurring dormant liver stage malaria and malaria prophylaxis called AliquantumRx had long sought to hire an experienced executive to guide their fundraising and commercialization efforts. After numerous discussions with the team to better understand what TEDCO may be able to do to help, the MII team introduced AliquantumRX to Lisa Dorsey Assistant Director of E3 who manages the Network Advisor and Loaned Executive program. Through collaborative efforts, Lisa was able to match the company's needs with a Network Advisor who is a seasoned serial entrepreneur with experience in successfully commercializing healthcare technologies. Importantly, TEDCO was able to support this engagement by paying for 40 hours of the

Network Advisor's time to fulfill a temporary executive role, offer guidance on their pitch deck, executive summary, investor materials, and fundraising strategy. In a short period of time through focused effort from TEDCO programs, AliquantumRx received assistance that has drastically improved their approach to communicate with investors and potential partners as they move toward FDA clinical trials.

Purely viewed from a funding perspective, MII has continued to demonstrate its merit as Maryland's premier early-stage technology transfer and commercialization program as evident by the metrics presented in this annual report. Yet, when considered comprehensively in-part with TEDCO's broader service offerings available to entrepreneurs through its numerous programs, MII punches well above its weight-class in terms of value added to awardees. Whether it is FDA regulatory consultation or a first time B2C sales strategy, loaned executives, or leveraging resources through our extensive regional and national partners, funding from the MII program represents more than the dollars awarded.



**Griffin St. Louis – Program Manager, MII**

# Media Highlights

TEDCO invests in **NuMoon Technologies** in Columbia



**Airgility** Develops Aerial Unmanned System to Support Defense Missions

TEDCO Awards 45 Grants to Maryland Businesses Hit Hardest by the Pandemic

**Airgility** in Maryland: Innovation Lives Here

**NextStep Robotics** raised \$500,000 in new funding that will help the company progress toward launch of its wearable device to treat a condition that's common in stroke survivors.

Baltimore start-up **NextStep Robotics** raises \$500K while eyeing product launch



Maryland's Innovation Initiative's portfolio company, **ACTIVEcharge**, participates in **College Park's Maryland Energy Innovation Accelerator's** first cohort



**emocha Health** Closes \$6.2M Series A Funding Round

**Surgical Robots as a Service** Gains Traction in Pandemic Aftermath



**Astek Diagnostics** Accepted into the Y Combinator



TEDCO Portfolio Companies Make the **Maryland Future 20 List**



**21 Emerging Life Science Companies** Fueling Maryland's Biohealth Ecosystem



**Glyscend Therapeutics** raises \$20.5M Series A to advance a new way of treating Type 2 diabetes





## Community Engagement



### Arti Santhanam Selected as One of The Daily Record's 2021 Maryland's Top 100 Women Honorees

Leadership Maryland Announced the Class of 2021: Special Congrats to **TEDCO's Arti Santhanam**



**I95**BUSINESS  
WOMEN *of* INFLUENCE

Recipient of **I95 Business Magazine's 2021 Women of Influence Award**

“ University of Maryland, Baltimore's faculty are increasingly entrepreneurial and programs such as the Maryland Innovation Initiative provide critical early-stage funding, helping them commercialize their technologies.

- **Mary Morris**  
*University of Maryland, Baltimore*



## Board of Directors

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**Robert Hallenbeck**  
*BD Biosciences  
(Retired)*



**Patrick Ho**  
*Johns Hopkins University*



**Wendy Martin**  
*University of Maryland,  
Baltimore County*



**Willie May**  
*Morgan State University*



**Mary Morris**  
*University of Maryland,  
Baltimore*



**Kenneth Porter**  
*University of Maryland,  
College Park*



**Mary Beth Tung**  
*Maryland Energy  
Administration*



**Renee Winsky**  
*Leadership Maryland*

## Who We Are

### MII SUPPORT STAFF

**Arti Santhanam**

*MII Executive Director*

**Griffin St. Louis**

*MII Program Manager*

**Silvia Goncalves**

*MII Assistant Manager*

### TEDCO SUPPORT STAFF

**Troy LeMaile-Stovall**

*CEO*

**Terry Rauh**

*Chief Operating Officer*

**Tammi Thomas**

*Chief Marketing & Communications  
Officer*

**Ira Schwartz**

*Counsel TEDCO*

**Stephen Auvil**

*Chief Program Operations Officer*

**Ann Pulley**

*Assistant Controller*

**Jody Sprinkle**

*Chief Government Relations & Policy  
Officer*

### MII SITE MINERS

Bob Storey  
Graham Allaway  
Albine Martin  
Ray Dizon  
John Davis

Richard Huguen  
Alastair Mackay  
Brad Young  
Emily English  
David Fink

Robert Balcerzak  
Chris White  
Daniel Nadash  
Mark Komisky  
Annastasiah Mhaka

### MII REVIEWERS

Irfan Ali  
Kevin Chang  
Greg Cooper  
Ernesto Chanona  
Glenn Falcao  
Steve Ferguson  
Caroline Hoedemaker  
Linda Folsom-Jackson

Vivek (Vick) Khera  
Shree Koushik  
Paul LaPorte  
Matthew Miessau  
Jen Murray  
Cyrus Etemad-Moghadam  
Wendy Perrow  
Nilay Shah

Gus Simiao  
Brian Skutt  
Jeff Strovel  
Niall Sweeny  
Arti Varanasi  
Ken Walz  
Guy Wassertzug  
Joseph Zack



Pictured Left to Right: **Griffin St. Louis** – Program Manager; **Dr. Arti Santhanam** – Executive Director; **Silvia Goncalves** – Assistant Manager

# MARYLAND INNOVATION INITIATIVE

*Our mission is to accelerate promising technologies  
with significant commercial potential to market.*

## **TEDCO**

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[www.TEDCOMD.com](http://www.TEDCOMD.com)



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