UNIVERSITY SYSTEM of MARYLAND

Board of Regents
Committee on Economic Development and Technology Commercialization

November 5, 2020
Virtual (public listen only access at 443-353-0686, Conference ID: 431 527 212)
Committee Members will be sent Zoom information

Public Session Agenda

(1) Featured Start-Up: CoapTech – Steven Tropello, MD, MS, Founder and CMO, CoapTech (Information Item)

(2) UMB Innovation and Economic Impact – Jim Hughes, Senior Vice President and Chief Enterprise and Economic Development Officer at University of Maryland, Baltimore & Mary Morris, Director of Baltimore Fund (Information Item)

(3) Maryland New Venture Fellows for Cybersecurity via UMBC – Megan Wahler, Director of Entrepreneurial Services, bwtech@UMBC Research and Technology Park (Information Item)

(4) USM Office of Economic Development Update – Tom Sadowski, Vice Chancellor for Economic Development (Information Item)

a. Governing Principles
b. COVID-19 Task Force Activity
c. Momentum Fund Update
d. Industry Partnerships Update

UNIVERSITY SYSTEM of MARYLAND

BOARD OF REGENTS

SUMMARY OF ITEM FOR ACTION
INFORMATION

TOPIC: Featured Startup: CoapTech

COMMITTEE: Economic Development and Technology Commercialization

DATE OF COMMITTEE MEETING: Thursday November 5, 2020

SUMMARY: Steven Tropello, MD, MS, Founder and CMO of CoapTech, will provide an update on the company, which is based on technology he developed at the University of Maryland School of Medicine. Their product, a medical device called the PUMA-G, makes feeding tube placement simpler and more efficient. The PUMA-G received FDA clearance last year and has had positive results with its launch so far. The company raised $7M in financing in a Series B round of financing this fall.

ALTERNATIVE(S): This item is for information purposes.

FISCAL IMPACT: There is no fiscal impact

CHANCELLOR'S RECOMMENDATION: n/a

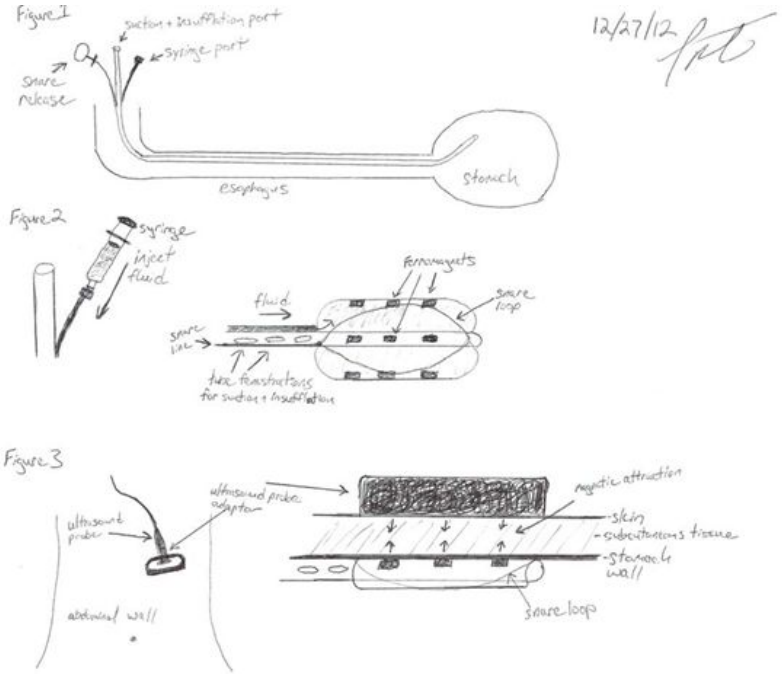
COMMITTEE RECOMMENDATION: DATE:

BOARD ACTION: DATE:

SUBMITTED BY: Tom Sadowski (410) 576-5742

COAPTECH

The PUMA System: Revolutionizing Point-of-Care Ultrasound Technology for Enteral Nutrition and Beyond



The statements, technical information and opinions contained herein are believed to be accurate as of the date hereof.
This discussion may include predictions, estimates or other information that might be considered forward-looking.
While these forward-looking opinions represent management's current judgment, they are subject to risks and uncertainties that may cause actual or future results to materially differ

Patients who cannot eat or swallow must have liquid nutrition pumped into the stomach through a gastrostomy feeding tube

Feeding tube placement typically requires the surgical suite, with expensive imaging and multi-disciplinary specialists.

This model is inefficient and expensive.

CoapTech's **PUMA-G System** is the world's first and only system for feeding tube placement at the patient's bedside, using ***only ultrasound***. Nothing else is needed

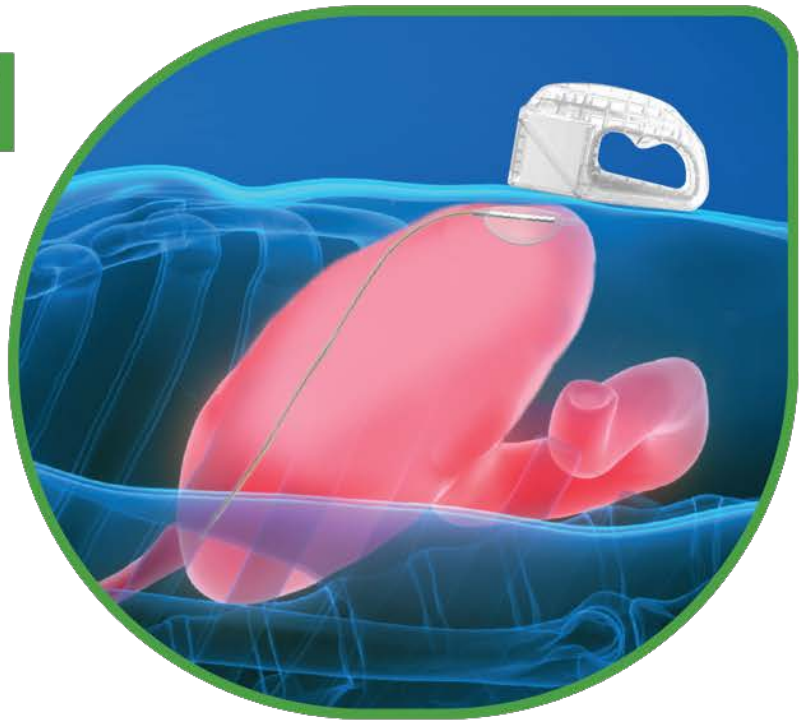
COAPTECH

Introducing The PUMA System™

On top of the skin, an external magnet is used to control a magnetic catheter balloon, which is fed inside hollow organs, magnetically joined, and then filled with fluid, simulating a fluidic organ

Physicians can now visualize and safely perform procedures in the hollow cavity, using any standard ultrasound unit, due to echogenic (ultrasound-visible) properties of the fluid-filled balloon

1



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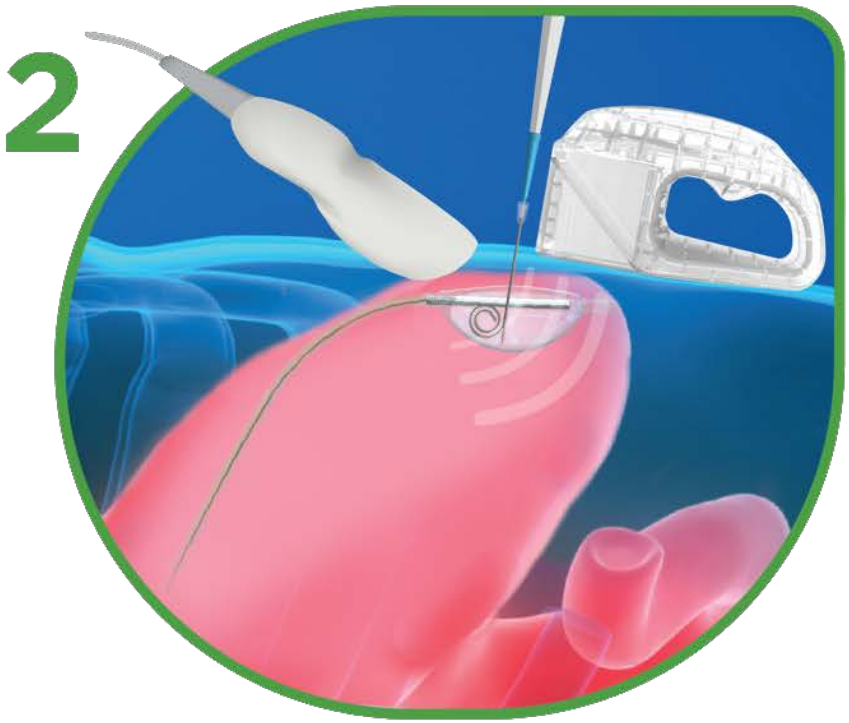
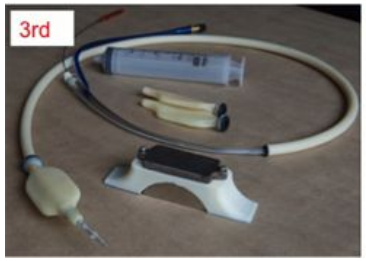


Patented Platform allows ultrasound to guide and visualize procedures in any ***hollow organ*** (e.g. stomach, lung, airway, pubic region), where previously it was unsafe or impossible to do so.

COAPTECH

History of PUMA System™

- Technology Disclosure to OTT UMB (February 2013)
- University of Maryland Dept of Emergency Medicine $10K Grant Funded First Generation Production and Testing (July 2013)
- MII Phase 1 Funded Second – 4th Generation Production and Testing (July 2014 – May 2015)
- CoapTech LLC Formed in March 2016
- MII Phases 2 & 3, Seed Round, MIPS and NIH SBIRs Funded 5th Generation Production, Testing, Regulatory Clearance and Strategic Launch
- PUMA-G First in Human October 2018
- PUMA-G FDA Clearance and First USA Case June 2019



COAPTECH

Market Opportunity

Drivers

- ✓ Exponential growth of ultrasound utilization
- ✓ Market pull for minimally-invasive procedures
- ✓ Relevant conditions (stroke, cancer, diabetes, etc.) ascending in incidence
- ✓ 65+ population ↑ 38% between 2020-2030

PUMA-G Only (lead device)

250-300K gastrostomies annually in US

80% of procedures eligible

$1995 price for PUMA-G full kit

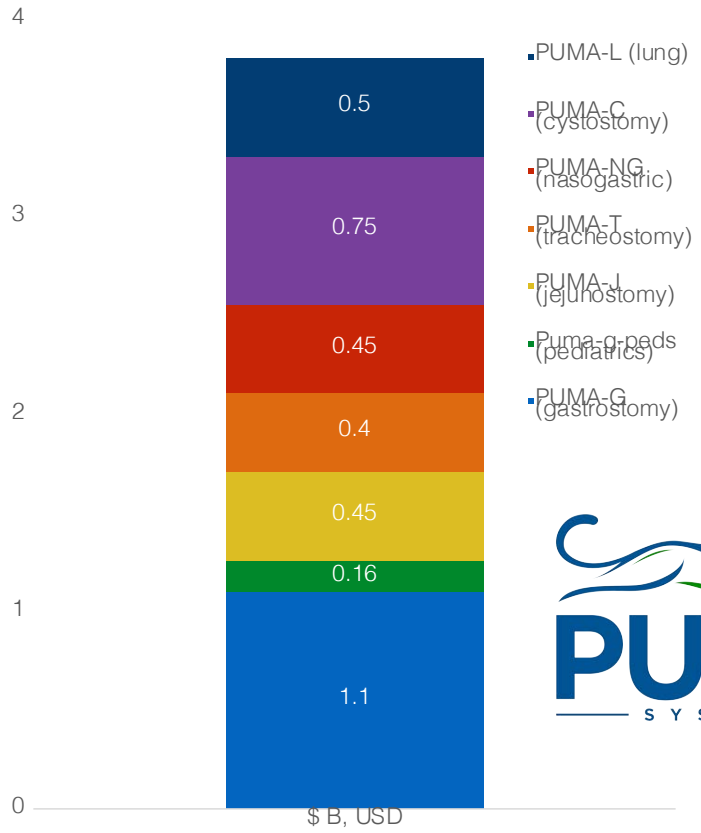
~ $475M US, $950M global TAM (today)

~570M US, 1.1B global TAM (by 2030)

PUMA System (Platform) Total

Applicable to millions of procedures annually worldwide

~4B Worldwide TAM



PUMA SYSTEM

COAPTECH

Company Highlights

- 5 total patents granted worldwide, several additional pending applications
- 10 clinical sites currently participating in limited strategic launch
- Capital Raises To Date:
  - $5.8M in prior funding: $3.7M Seed/Series A + $ 2.1M in grants
  - $8M new Series B round: $7M closed, $1M committed
- $1.5M NIH SBIR Pediatric PUMA-G just awarded
- Company hiring sales team as well as adding more engineering and commercialization support employees
- Transitioned to 100% virtual training in adapting to COVID19 Pandemic

COAPTECH

Management Team

COAPTECH

Steven Tropello MD, MS
Founder, CMO

Howard Carolan, MPH, MBA
Co-Founder, CEO

Jack Kent, MPH, MBA
Chief Commercialization Officer

Liz Goldwasser
VP of Engineering

Board of Directors

Bill Walker, PhD
Fndr/CTO, Hemosonics;
Dir. Of Eng. Entreprnship
@ Duke University

Bill Niland
President, CEO
Harpoon Medical
Baltimore, MD

Jeff Katz
Seed Round Lead Investor
Former CEO Phoenix Med
PD @ Nelcor Pur/Ben

Advisors

Peter Boyd, JD, MBA
VP Business Development
Harpoon Medical

A. Pustavoitau, MD
Critical Care Ultrasound Expert
Johns Hopkins Medicine

Bud Liddell, MD
Interventional Radiologist
Johns Hopkins Medicine

Rob Snead, JD, MBA
Fmr VP Strategy & Development
Owens and Minor

Dan Mitri, JD
Co-Founder, Principal
Empire IP

Support

ROOT3LABS

HARBOR DESIGNS & MANUFACTURING

Maryland TEDCO

NIH

MEDTECH INNOVATOR ACCELERATOR

UNIVERSITY OF MARYLAND VENTURES UMVENTURES.ORG

DINGMAN CENTER ANGELS
ROBERT H. SMITH SCHOOL OF BUSINESS AT THE UNIVERSITY OF MARYLAND

Mtech Maryland Industrial Partnerships

Questions & Answers

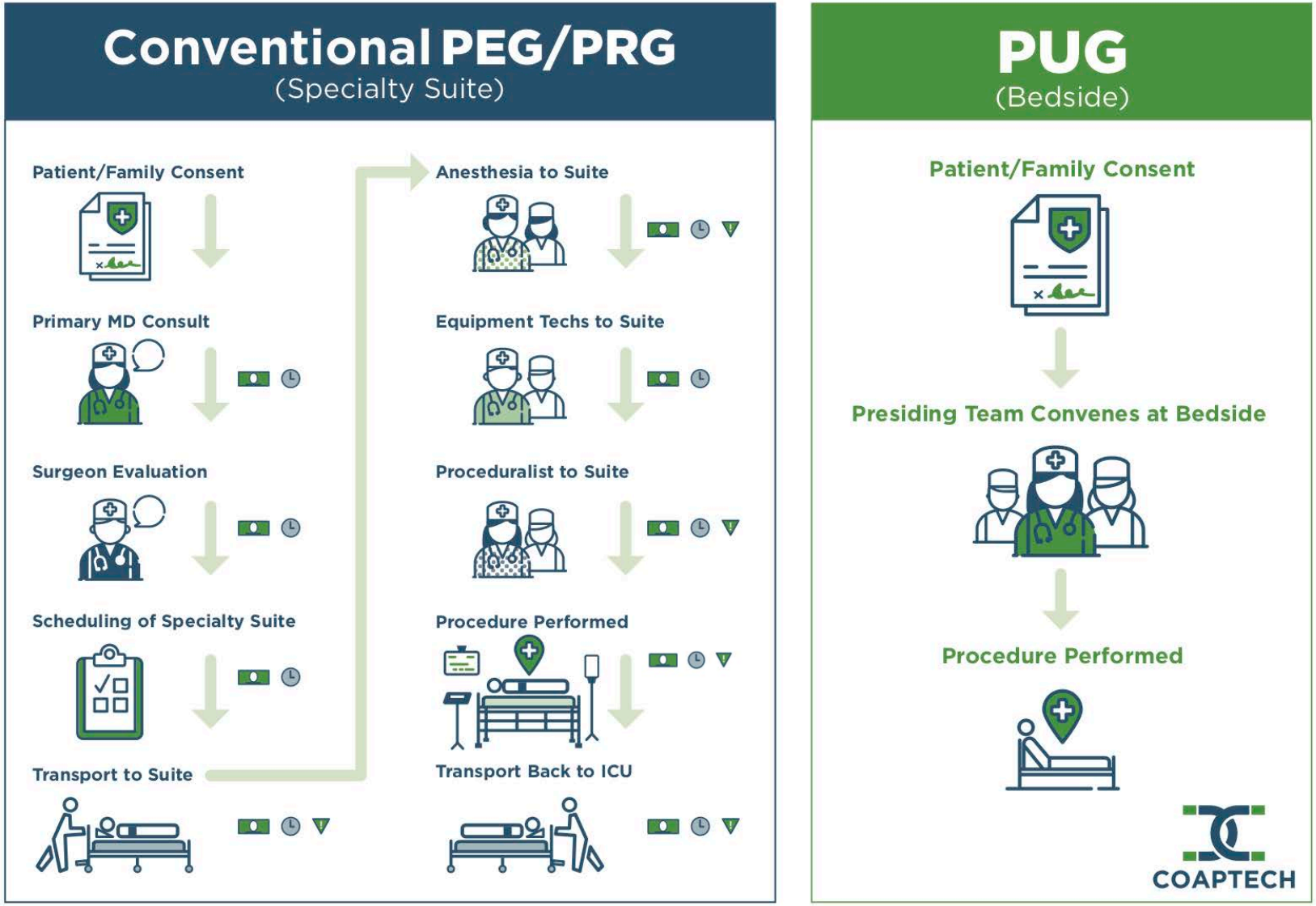
CoapTech Team

#pandemictoast

COAPTECH

G-tube Placement - Workflow

= Adds Money, Adds Time, Adds Risk



1-5 DAYS

< 1 Hour

UNIVERSITY SYSTEM of MARYLAND

BOARD OF REGENTS

SUMMARY OF ITEM FOR INFORMATION

TOPIC: UMB Innovation and Economic Impact

COMMITTEE: Economic Development and Technology Commercialization

DATE OF COMMITTEE MEETING: Thursday November 5, 2020

SUMMARY: Jim Hughes, senior vice president and chief enterprise and economic development officer at University of Maryland, Baltimore (UMB) will provide an overview of the University's economic impact related to innovation and Center for Maryland Advanced Ventures (CMAV) activities. CMAV was created by the Maryland General Assembly to promote the commercialization of University discoveries and create the next generation of Maryland entrepreneurs. Additionally, an update on the Baltimore Fund will be presented by Mary Morris, director of the Fund. A CMAV initiative, the Baltimore Fund offers Maryland public higher education-affiliated companies financial incentives to locate and expand within Baltimore City.

ALTERNATIVE(S): This item is for information purposes.

FISCAL IMPACT: There is no fiscal impact

CHANCELLOR'S RECOMMENDATION: n/a

COMMITTEE RECOMMENDATION: DATE:

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SUBMITTED BY: Tom Sadowski (410) 576-5742

UNIVERSITY OF MARYLAND BALTIMORE

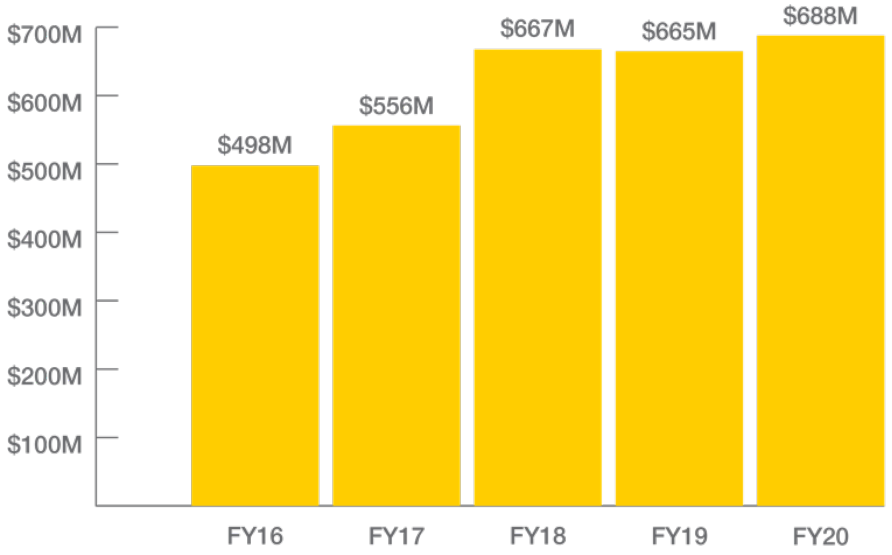
INNOVATION AND ECONOMIC IMPACT

UNIVERSITY of MARYLAND BALTIMORE

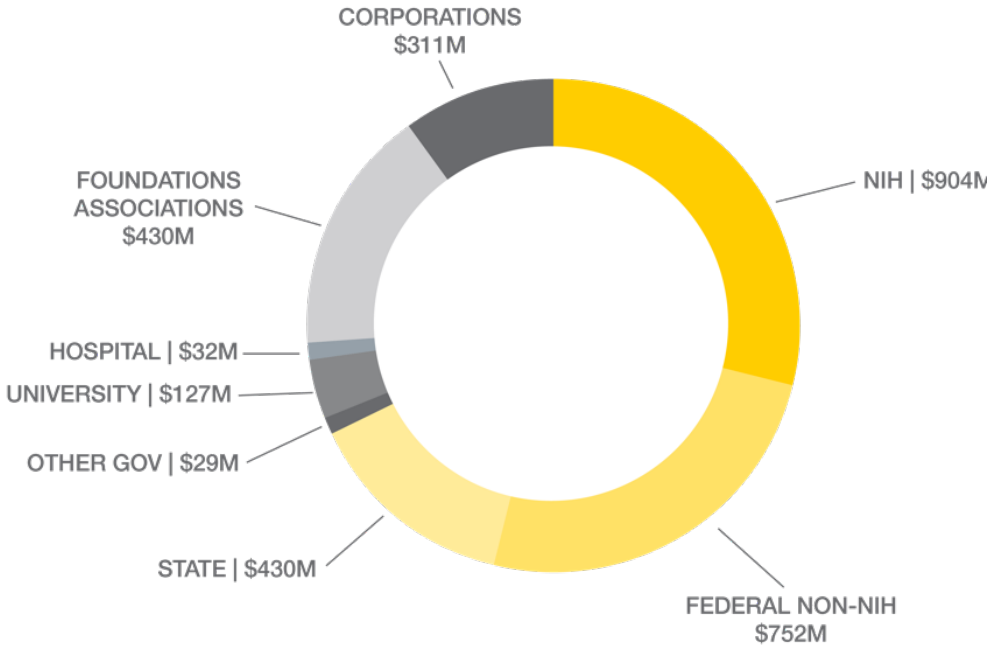
INNOVATION AT UMB

Sponsored Research

Sponsored Research Growth



Sources of Funding



INNOVATION AT UMB

COVID-19 Highlights

UMB has been integral to Maryland's swift and outsized role responding to the COVID-19 pandemic.

- **$40 million** in COVID-related awards
- **50+** federal and corporate sponsors, including:
  - AstraZeneca, Pfizer, Novartis, Novavax, Regeneron, Roche – Genentech, Takeda
  - The Bill and Melinda Gates Foundation
  - Centers for Disease Control and Prevention, Department of Defense, National Science Foundation, National Cancer Institute, National Institute of Allergy and Infectious Diseases
  - State of Maryland Department of Health

Work has included:

- Vaccine and therapeutic development
- Vaccine and therapeutic clinical trials
- Infectious disease research and modeling
- Large-scale testing for the State
- Licensing of intellectual property
- Investment and support of technology development and commercialization

Leaders from UMB serve on the State's Coronavirus Response Team, advising top Maryland officials on health and emergency management decisions.

Illustration by Kyle Rice. Images in illustration by Kathy Strauss,3; Getty Images, 5; CDC

HOME > CULTURE > CULTURE FEATURES

Inside the Race to End the Pandemic

Researchers at the University of Maryland School of Medicine put their lives on hold to create a Covid-19 vaccine — and with the weight of the world on their shoulders, there's no end in sight

Rolling Stone | Oct. 2020 | Read the full story.

INNOVATION AT UMB

UM BioPark During COVID-19

Throughout the COVID-19 pandemic, the UM BioPark has remained open, allowing tenants to continue their existing work as well as take on new demands. Several tenants, including Gilknik, Pharmaron, Catalent, and Illumina, are working on projects to address COVID19.

GLIKNIK
TRULY NOVEL THERAPIES

Catalent
CELL & GENE THERAPY

illumina®

康龙化成
PHARMARON

Gliknik During COVID

Each day of the pandemic, Gliknik has been in the lab at the UM BioPark, creating a newly designed drug for COVID-19. This drug is expected to help symptomatic COVID-19 + patients at risk of advancing to hospitalization, ventilators, and worse, an area where there currently are no good treatments and none on the horizon. Gliknik has cloned cells to produce the drug at high levels and has devised advanced manufacturing techniques that were needed. Next steps are full scale manufacturing, FDA-required toxicology, and then clinical trial in patients.

INNOVATION AT UMB

Grant Initiatives

AI + Medicine for High Impact

Four grants were awarded supporting joint UMB/UMCP teams investigating new ways of tackling major medical challenges in four areas: chronic pain, mental health, aging and age-associated diseases, and neonatal opioid withdrawal syndrome.

- **4 awards** will receive a total of up to **$1.8 million** over three years.

Medical Device Development Fund

The Medical Device Development Fund provides funding that contributes to a meaningful milestone that would advance a medical device technology towards commercialization. In spring 2020, the Fund pivoted to support medical devices related to COVID-19 response.

- **4 awards** totaling **$200,000** were made to joint UMB/UMCP projects

Life Sciences IP Fund

The Life Sciences IP Fund provides proof-of-concept and external validation funding to accelerate commercialization of technologies at UMB.

- **21** technologies funded
- **3** UMB startups were formed

Institute for Clinical & Translational Research (ICTR)

The first Universitywide interdisciplinary hub for clinical translational research and training, ICTR is a unique center which operates as part of a consortium with JHU.

- **17** general projects were funded
- **10** COVID-19 projects were funded

INNOVATION AT UMB

Investment Initiatives

Investing in University discoveries with commercial potential moves our science out of the lab and into the marketplace.

UM Ventures, Baltimore

Invests in early-stage UMB startups with promising commercial potential.

- **$12M+** in publicly disclosed equity was raised by UMB startups
- **2** UMB startups were acquired
- **4** UMB startups have been acquired in the last four years

Maryland Momentum Fund (MMF)

Invests in USM-affiliated companies to support entrepreneurism, catalyze outside investment in early-stage startups, and foster economic development and technology commercialization.

- **$5.9M** committed
- **$27M** in matching funds
- **19** companies

University of Maryland School of Medicine (UMSOM) Innovation Fund

UMSOM established this philanthropic investment fund to invest in UMSOM startups alongside UM Ventures and MMF.

INNOVATION AT UMB

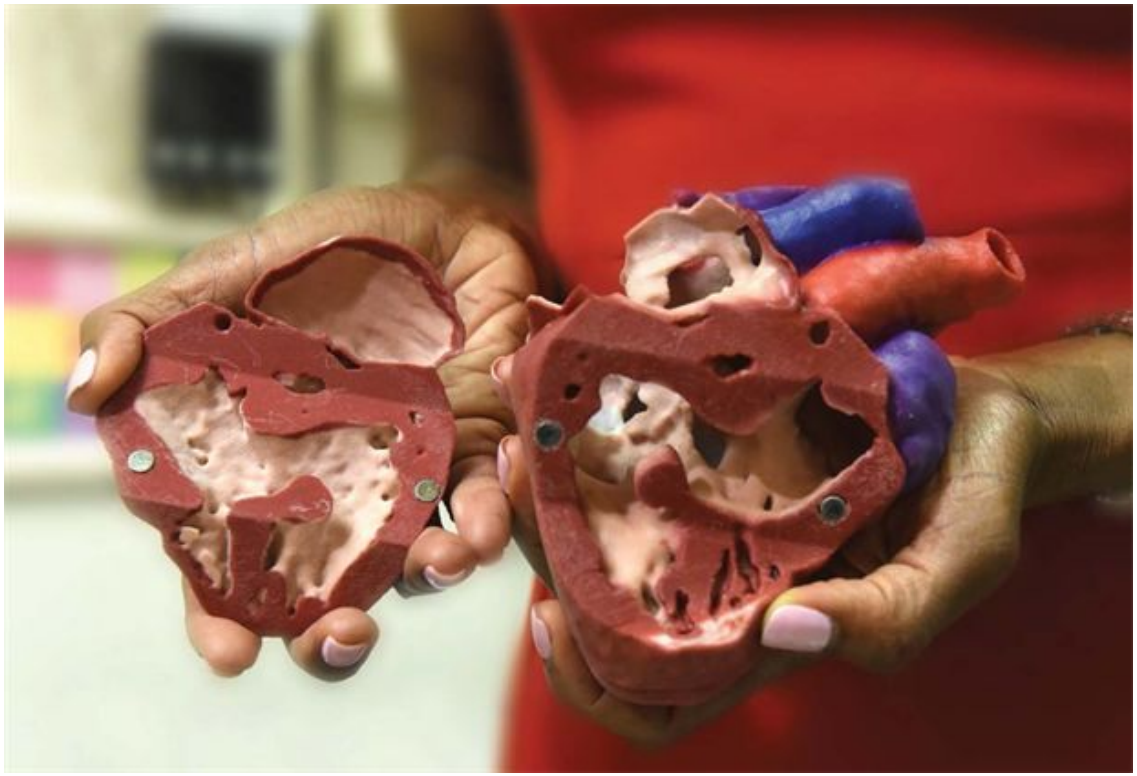
Specialized Facilities

Molecular and Cell Biology Lab

Located in the UM BioPark, this 650 sq. ft. wet laboratory with molecular and cell biology capabilities and specialized equipment gives UMB researchers private space to advance their discoveries. The lab is staffed by UMB's Office of Technology Transfer.

Brody 3D Printing Lab

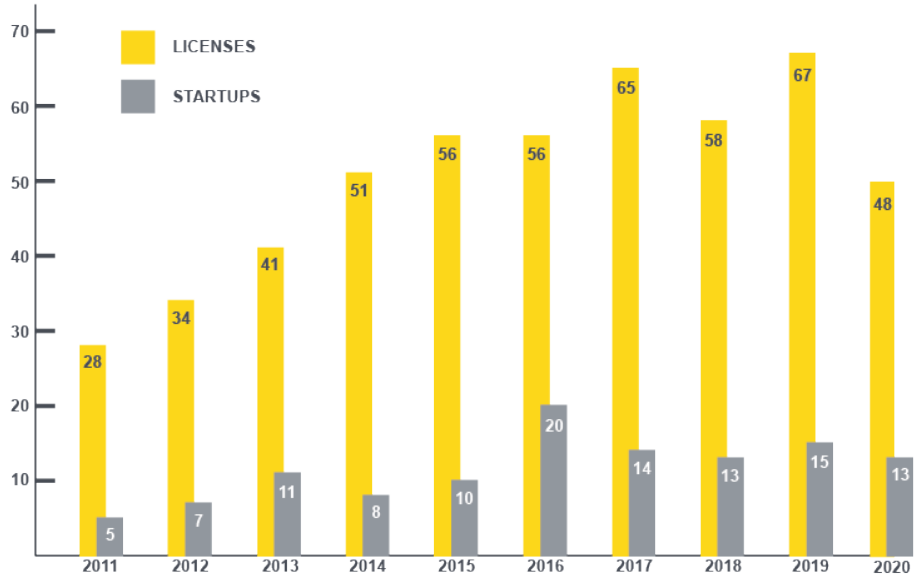
UM Ventures worked with UMSOM to create a medical device innovation and rapid prototyping space to support the rapid expansion of UMB's medical device portfolio. UMB's Office of Technology Transfer and the Robert E. Fischell Institute for Biomedical Devices will provide direct support, enabling CAD drawings, 3D printing, rapid prototyping, and streamlined patent filing.



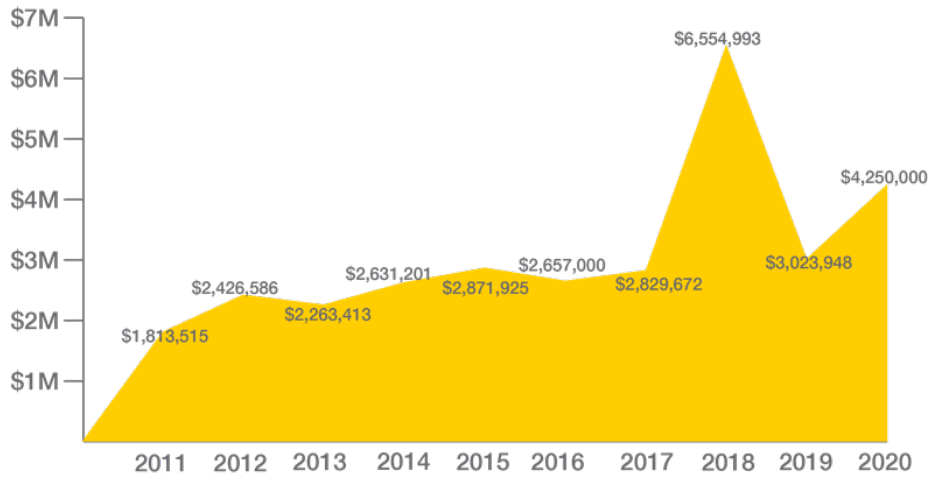
INNOVATION AT UMB

Technology Transfer

Licenses and Startups



Revenue Received



160% Increase in startups 2011-2020

134% Increase in revenue 2011-2020

71% Increase in licenses 2011-2020

ECONOMIC DEVELOPMENT
Services

Small Business Development Center
- **2 locations** on UMB's downtown campus
- **847 constituents** served
- **21** business starts
- **81** loan/equity financings
- **$13M in total funding** with **$4.6M dedicated to COVID-19** projects

Intellectual Property Law and Entrepreneurship Clinic
- **117** clients served
- **2** part-time clinical law instructors
- **12** second- and third-year law students per semester

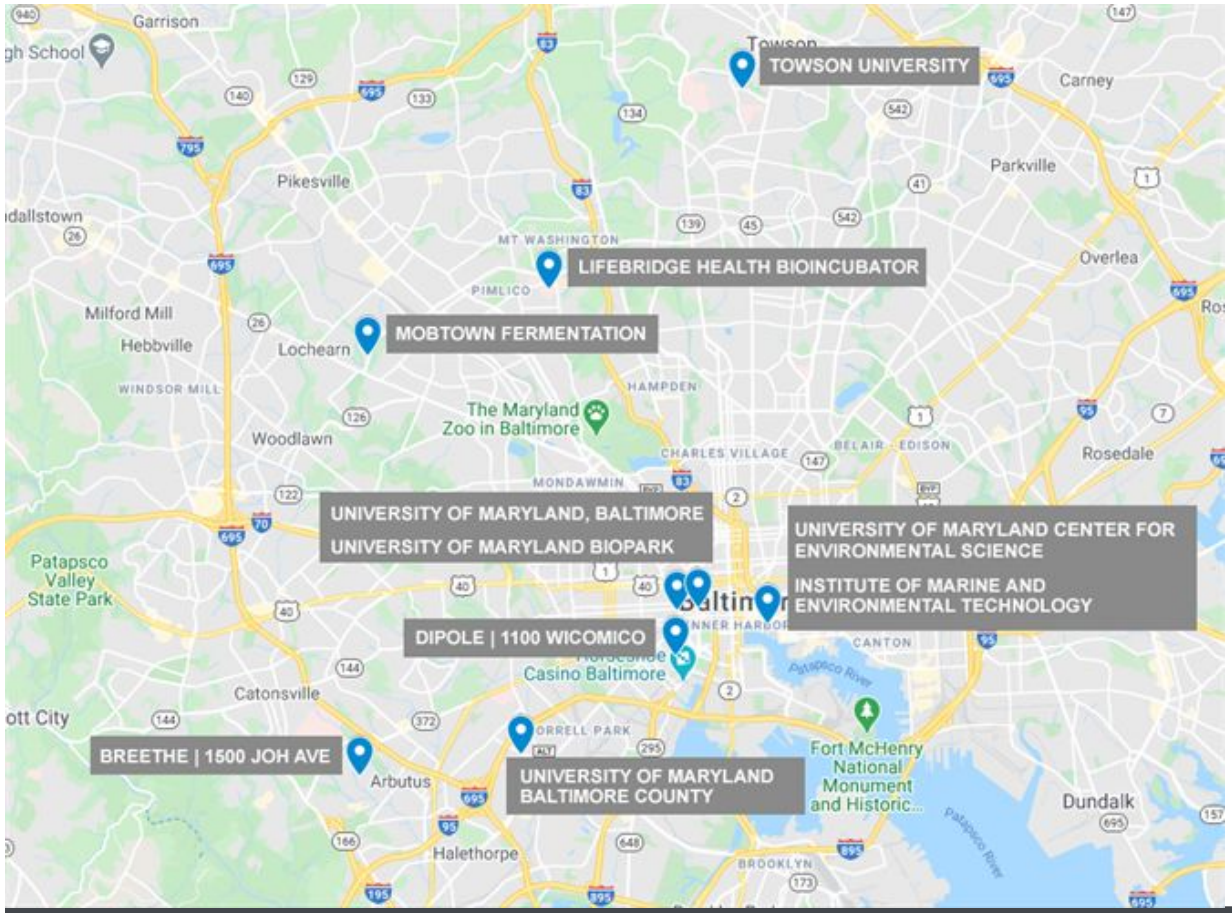
Anchor Ventures
- **3** university partners
- **6** events, including a four-part virtual digital health series

UM BioPark Lion Brothers Building
Center for Maryland Advanced Ventures partners with the UM BioPark to provide early-stage companies with the space and services needed to grow their ventures.
- **9** startups supported
    - **5** were UMB-affiliated

ECONOMIC DEVELOPMENT

The Baltimore Fund

The Baltimore Fund encourages University-created or -sponsored technology companies to locate and expand in Baltimore City. Through engagement with Maryland's entrepreneurial ecosystem and its myriad support programs and resources, the Baltimore Fund helps facilitate the growth of companies.



Advisory Board Members

Tom Sadowski
Vice Chancellor for Economic Development
University System of Maryland

Elizabeth Carven
Senior Director, Regional Growth & Retention
Maryland Department of Commerce

Jim Hughes
Senior Vice President and
Chief Enterprise & Economic Development Officer
University of Maryland, Baltimore

ECONOMIC DEVELOPMENT

The Baltimore Fund

18 COMPANIES

400 JOBS

Wild Kombucha

Catalent CELL & GENE THERAPY

Breethe

bwell

DiPole MATERIALS

Lexington Market Vendor Initiative

- **$200,000** to support a $1M loan fund supporting Lexington Market
- **$50,000 micro loans** through partnership with Baltimore Community Lending
- **Building diversity** among vendor ownership, as illustrated in vendor applications

UNIVERSITY SYSTEM of MARYLAND

BOARD OF REGENTS

SUMMARY OF ITEM FOR INFORMATION

TOPIC: Maryland New Venture Fellows for Cybersecurity via UMBC

COMMITTEE: Economic Development and Technology Commercialization

DATE OF COMMITTEE MEETING: Thursday November 5, 2020

SUMMARY: Megan Wahler, Director of Entrepreneurial Services, bwtech@UMBC Research and Technology Park will discuss the Maryland New Venture Fellowship for Cybersecurity. Funded by a grant from the U.S. Economic Development Agency, this program will enable cybersecurity entrepreneurs to work together to create technologies and other cyber solutions that impact society, including utilities, infrastructure, and critical information systems. These entrepreneurs will include teams composed of graduate students interested in entrepreneurship, experienced entrepreneurs serving as mentors, and faculty from Maryland universities. This program will help leverage this talent, foster collaboration, facilitate new venture creation and get USM ideas to market.

ALTERNATIVE(S): This item is for information purposes.

FISCAL IMPACT: There is no fiscal impact

CHANCELLOR'S RECOMMENDATION: n/a

COMMITTEE RECOMMENDATION: DATE:

BOARD ACTION: DATE:

SUBMITTED BY: Tom Sadowski (410) 576-5742

MARYLAND NEW VENTURE FELLOWSHIP FOR CYBERSECURITY

BUILD TO SCALE VENTURE CHALLENGE
BWTECH@UMBC AND
THE UNIVERSITY SYSTEM OF MARYLAND
BALTIMORE, MARYLAND

UNIVERSITY SYSTEM of MARYLAND

bwtech @UMBC
RESEARCH & TECHNOLOGY PARK

UMBC

bwtechumbc.com

MARYLDAND NEW VENTURE FELLOWSHIP FOR CYBERSECURITY

02

BWTECH@UMBC

Start Here. Grow Here. Stay Here.

Our mission is to foster the creation, growth and sustainability of innovative technology companies in the Greater Baltimore Region. We enable companies to start, grow, and thrive in Maryland by providing dedicated space, resources, guidance, and education throughout their development creating a viable and sustainable workforce.

The Maryland New Venture Fellowship for Cybersecurity Program will develop a pipeline of early stage technologies companies from UMBC and the entire University of Maryland System's 12 universities, connecting deep technical expertise with entrepreneurial master's student talent and local business leaders to continue to secure our infrastructure while creating economic opportunities for the region.

03

STATISTICS AND CHALLENGES

THERE IS A SEVERE SHORTAGE IN NEW CYBER COMPANY FORMATION DESPITE THE FACT THAT THE GREATER BALTIMORE REGION RANKS AT THE TOP FOR CYBER TALENT.

Maryland ranks far behind Silicon Valley, San Francisco, Boston, New York and Virginia in its startup creation and business development. There is an urgent need to support faculty and student entrepreneurship in this field to develop the cyber workforce and create jobs for talent to stay in Maryland.
Source: https://cybersecurityventures.com

#1 IN CYBER DEGREES

Degree-granting universities have expanded cybersecurity related degree programs -- awarding 10,000 bachelor's degrees in cybersecurity related programs since 2015. Maryland's University System graduates more cyber related engineers than anywhere in the country. Maryland ranks #1 in the percentage of Bachelor's Degrees in computers, mathematics, and statistics.

#1 CYBER WORKFORCE IN THE WORLD

Maryland is less expensive to build a company, compared to NY, CA, MA and other technology-focused states Maryland has the largest population of National Security experienced cyber and data science engineers in the world.

#1 CYBER BUSINESS ECOSYSTEM

MD is less expensive to build a company, compared to NY, CA, MA and other technology-focused states. Maryland has the largest population of National Security experienced cyber and data science engineers in the world.

Source: DataTribe, www.datatribe.com

04

SOLUTION: AN EXPERIENTIAL FELLOWSHIP PROGRAM TO FOSTER ENTREPRENEURSHIP IN CYBERSECURITY CONNECTING ENTREPRENEURIAL GRAD STUDENTS WITH EXPERIENCED ENTREPRENEURIAL MENTORS AND STUDENT SOFTWARE DEVELOPERS WITH FACULTY THAT ARE CREATING CYBER TECHNOLOGIES

Alaire Jameson
UMBC
Graduate Student

Donna Ruginski,
Faculty Member in
Cybersecurity

Gregg Smith
Mentor
Entrepreneur

Akshay Peshave
UMBC Student
Engineer Developer

Partners across the Greater Baltimore Region

The MD New Venture Fellowship Program will work with partners across the region. The first year, the program will focus solely on technology coming from the University System of Maryland. Year 2 and 3 of the grant will expand to other area universities and research labs such as the NSA, Army Research Lab, Johns Hopkins University, and NASA

05

06

IMPLEMENTATION STRATEGY

YEAR ONE

The Fellows program will create 10 viable teams. At the core is the mentor who leads the team toward success. The entrepreneurial Fellows (top graduate students from a pool of applicants) will get hands on-experience and management, learning how to vet, create, and lead a great company. Faculty researchers and a member of their technical team are key to developing the technology. At the end of year one, 5-6 great companies will be formed.

YEAR TWO & THREE

In year two and three the program will expand to other universities in the region and research institutions such as NSA, NASA, ARL. Partners and investors will continue to work with companies from the first cohort to ensure success and sustainability.

IMPLEMENTATION PLAN

07

PROGRAM TIMELINE FOR YEAR 1

SEPT/OCT
- Funding received
- Market program, start recruiting
- Applications open

NOVEMBER
- Mentors and Fellows interviewed
- Faculty and tech selected
- "MATCH event" to create teams
- Selected teams meet to build relationship
- Orientation

DEC/JANUARY 2021
- Weekly check-ins with teams
- Monthly weekend seminars to include commercializaiton strategy, concept creation, customer discovery, financial modeling, pilot development, etc.

FEBRUARY 2020
- Pitch presentation
- Companies formed

SPRING 2021
- Selected companies continue under guidance
- Investor introductions and roadshow
- Pilot programs with partners
- Culminating event in May 2021

APRIL 2020
- Begin new cohort recruiting with more universities and research institutions including NSA, Army Research Lab and NASA

Multiple investors are committed to participate in the first 3 cohorts with the goal that they will invest and sponsor the program after year 3.

MARYLAND NEW VENTURE FELLOWSHIP PROGRAM TEAM

09

MEGAN WAHLER

Director, Entrepreneurial Services, bwtech@UMBC

TOM SADOWSKI

Vice Chancellor for Economic Development, University System of Maryland

LINDSAY RYAN

Venture Development Director, University System of Maryland

BRENDA JACKSON

Program Assistant UMBC

10

"Technology that could be used to secure data and infrastructure for civilians ... remains a potential resource — oil in the ground — when it comes to the potential to drive economic growth."

OUTCOMES

Critically vet 30+ technologies safeguarding infrastructure

Train 30 entrepreneurial grad students, experientially

Create 5+ minority owned businesses

Create 6 companies with 10 employees by end of year one

UNIVERSITY SYSTEM of MARYLAND

BOARD OF REGENTS

SUMMARY OF ITEM FOR ACTION
INFORMATION

TOPIC: USM Office of Economic Development Update

COMMITTEE: Economic Development and Technology Commercialization

DATE OF COMMITTEE MEETING: Thursday November 5, 2020

SUMMARY: Vice Chancellor Sadowski will provide an update of governing principles of the Office of Economic Development, COVID-19 Task Force activity, and the Momentum Fund, in addition to providing information in regard to a Regent request to inventory partnerships with industry.

ALTERNATIVE(S): This item is for information purposes.

FISCAL IMPACT: There is no fiscal impact

CHANCELLOR'S RECOMMENDATION: n/a

COMMITTEE RECOMMENDATION: DATE:

BOARD ACTION: DATE:

SUBMITTED BY: Tom Sadowski (410) 576-5742

USM Economic Development

Briefing for Regents Committee for Economic Development Tech Commercialization

November 5, 2020

University System of Maryland

University System of Maryland

USM Economic Development
Agenda

- Governing Principles
- COVID-19 Task Force Activity
- Momentum Fund Update
- Industry Partnerships Update

University System of Maryland

USM Economic Development

Guiding Principles … Proposed Initiatives Going forward

1. Enhance USM Innovation Infrastructure in partnership with Industry and Federal Government

- Work with Governor's office and legislature on bill to establish Innovation Partnership Fund/Tax Credit to help seed tech commercialization, research & innovation and workforce development projects *(complement $100 Billion "Endless Frontiers Act" Legislation being developed by Congress)*
- Generate more industry collaborations, particularly those offering physical proximity to USM institutions, faculty/researchers and students
- Continue to mine/formalize talent supply, internship and workforce development relationships with industry to seed future research collaborations

University System of Maryland

USM Economic Development

Guiding Principles … Proposed Initiatives Going forward

2. Expand USM Venture Finance practice, focused on catalytic "Earlier-Stage" opportunities

- Work with institutional partners to identify "catalytic" earlier-stage investments
- Explore with institutional partners possibility of smaller, flexible fund, with potential for philanthropic support

3. Bolster Tech Transfer efforts by setting new benchmarks and encouraging system-wide collaboration

- Identify funding and shared resources to help broaden System-wide support for Tech transfer, licensing and commercialization— in discussions with TEDCO

University System of Maryland

USM COVID Research & Innovation Task Force

Going forward

- **Acceleration Program:** Additional training for App Challenge winners and others addressing or responding to COVID
  - USM startup & innovators candidates identified
  - Offering COVID specific I-Corps mentoring program in November
  - Identifying Community and Industry partners for sustained accelerator effort
- **Bioproduction and Vaccine Development Strategy:** Working with the Governor's Life Science Advisory Board (LSAB), MD Commerce and MD Tech Council on comprehensive strategy to develop MD's bio-manufacturing, vaccine development, medical supply chain and related workforce capacity; exploring federal funding and industry partnership opportunities

University System of Maryland

USM COVID Research & Innovation Task Force

Going forward

- **Public health communications challenge:** Challenge prize competition aimed at encouraging Marylanders experiencing "COVID fatigue" to remain vigilant, maintain sound public health practices and good hygiene, and when available, to get vaccinated!

- **Public health policy workshop:** Considering forum led by USM experts on possible solutions to public health challenges and disparities, with involvement of industry and community officials.

University System of Maryland

USM COVID Research & Innovation Task Force

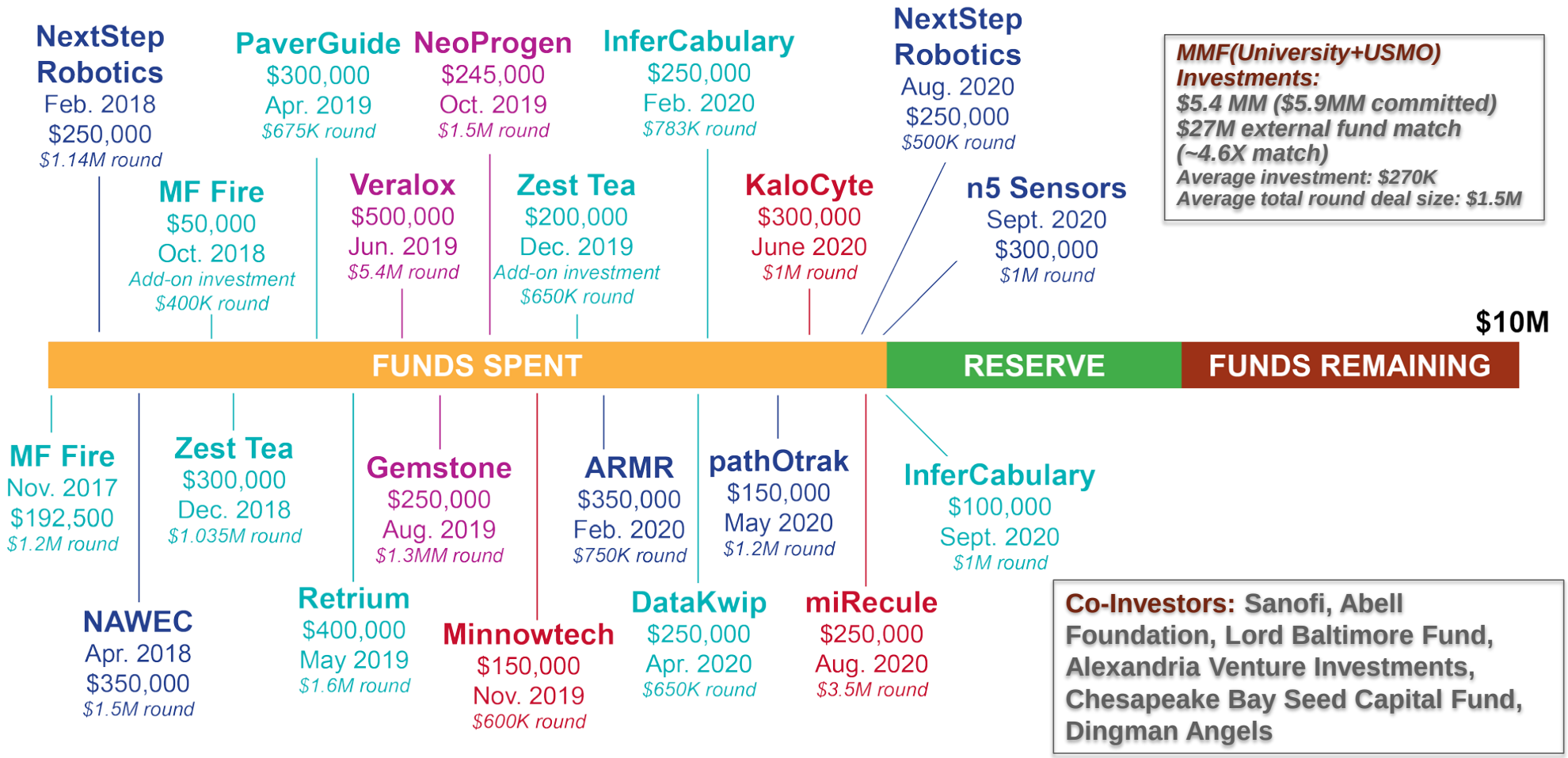
Going forward

Pandemic Research and Preparedness Effort: Joint research effort created/funded in partnership with Industry and Federal Government to address ongoing COVID challenge and future health crises

USM Maryland Momentum Fund

Investments

University System of Maryland



MMF(University+USMO) Investments:
$5.4 MM ($5.9MM committed)
$27M external fund match (~4.6X match)
Average investment: $270K
Average total round deal size: $1.5M

Co-Investors: Sanofi, Abell Foundation, Lord Baltimore Fund, Alexandria Venture Investments, Chesapeake Bay Seed Capital Fund, Dingman Angels

USM Maryland Momentum Fund
Portfolio Companies

University System of Maryland

UMCP IP and Alum
Advanced wood burning stove

UMB IP, Towson Alum
Exoskeleton robot to reverse foot drop for stroke victims.

UMCP IP, Alum
Advanced pulse jet engine

UMCP Alum
High caffeine tea, energy drink product

UMCP IP
Advanced semipermeable pavement system

UMCP Alum
Agile software development management product

UMBC and UMCP Alums
Tissue regeneration via stem cells

UMB IP and Alum
Anticoagulant drug, therapeutics for rare blood disorders

UMB IP and Faculty
Cell-based therapy for cardiovascular disease

UMCES Alum
Sonar to measure shrimp biomass

UM BioPark Tenant
Next-gen tourniquet

Towson Alum, TU Incubator startup
Ed-tech vocabulary app

UMCP Alum
Software platform to manage energy across buildings

UMCP IP and Faculty
Food safety testing technology

UMB/UMBC Faculty, UM BioPark Affiliate
Dried artificial red blood cell

UMCP Alum
RNA Therapeutics

UMCP IP and Faculty
Semiconductor sensor technology

UNIVERSITY SYSTEM of MARYLAND

Industry Partnerships
Executive Summary

- Information is not generally consolidated to enable quick inventory

- Workforce development partnerships are common, some innovation and entrepreneurship collaborations. At major research institutions, significant research partnerships exist with industry. The extent of *partnership* versus *sponsorship/support* involved in these activities varies.

- Increasing *research* partnerships is possible, and there is interest, despite barriers:
  - PI-driven ("bottom up"), but strategic direction can help
  - How are faculty incentivized? How are faculty professionally developed?
  - Know thyself – better understand relative strengths
  - Potential for collaboration as competitive advantage; need to connect; admin support

University System of Maryland

Industry Partnerships

Examples from Comprehensive Universities

Workforce & Education

Google aws jiffy lube

Venture Development and Business Consulting

PERDUE

Kareema McLendon

Research

OPTIMIZE RENEWABLES™

Biotrophics
Advanced & Sustaintable Agriculture

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Industry Partnerships

Examples from Comprehensive Universities

Workforce & Education

- In-"Classroom" – Training enhancement (both ways!) and capstone participation/sponsorship. E.g.: Bowie State University partnership with Google for digital training skills. More here. UMGC's Corporate Learning Solutions.
- Internships, Career Services – E.g.: Towson University conservatively estimates that TU students have internships with between 2,500 - 3,000 unique Maryland employers.

Venture Development and Business Consulting

- Support *for* Competitions, Entrepreneurship Programs – E.g.: Salisbury's Shore Hatchery incorporates judges and sponsorship from local businesses; Service provider support and sponsorship of Towson's accelerator
- Support *from* Entrepreneurship Programs – E.g.: E-Fellows at the University of Baltimore supports student companies.
- Business Consulting Support – Small Business Development Centers (SBDCs), centers to facilitate business consulting from faculty and/or students.

Research

- Gov't-Funded Research Partnership w/ Small Companies – Federal SBIR/STTR, state Maryland Industrial Partnerships (MIPS) grant (~6 per year). E.g.: The University of Maryland Center for Environmental Science's strong track record in MIPS; UMES recent STTRs.
- Place-Based – Frostburg University's collaboration with Optimize Renewables for on-campus microgrid. More here.
- Few conventional sponsored research relationships exist; there is interest but also barriers: lack of familiarity with mechanisms; IP complications; structural prioritization of federal research $