OFFICE OF THE VICE CHANCELLOR FOR RESEARCH AND ECONOMIC DEVELOPMENT

USM Board of Regents
Committee on Research and Economic Development
December 10th, 2024
Zoom

AGENDA FOR OPEN SESSION   **10:30 a.m.**

Call to Order   **Regent Bill Wood**

1. Approval of the minutes – Regent Bill Wood

2. Research Roundup – Vice Chancellor Michele Masucci, University System of Maryland (USM)
   - Notable Achievements
   - Current and Future Activities
   - NSF HERD Results

3. Salisbury University Enterprise Research Report – Dean of Graduate Studies and Research Clifton Griffin – Salisbury University
   - NSF EPIIC Grant, Executive Director of Entrepreneurship Mike Jensen – Salisbury University

4. Economic Development – Executive Director of Economic Development Lindsay Ryan – USM
   - Venture Development
   - Major Programs and Resources for Commercialization Across the USM – Report Out from Working Group – Lindsay Ryan
   - Technology Commercialization at the University of Maryland, Baltimore (UMB) – Associate Vice President, Office of Technology Transfer and Executive Director of UM Ventures - Phil Robilotto
   - Maryland Economic Council Economic Report, 2024 – Secretary and Regent Kevin Anderson

Q and A

USM Board of Regents

Committee on Research and Economic Devel

October 29th, 2024

Zoom

Call to Order: Regent Wood called the meeting of the Research and Economic Development Committee of the University System of Maryland Board of Regents to order in public session at 1:01 pm on Tuesday October 29, 2024, via Zoom.

In attendance:

> **Regents:** Bill Wood, Yehuda Neuberger, Josiah Parker, Linda Gooden, Anwer Hasan, Michele Masucci, Lindsay Ryan, Michael Ravenscroft, Sidd Kaza, Bob Gatte, Matthew Jenkins.

> **Audience:** 31 attendees in the audience.

Agenda:

1. **Renewing Committee Charter – Committee Name Change**. Regent Bill Wood presented the committee charge of the Committee on Research and Economic Development. There were no changes to the charge.

2. **Research and Economic Development Highlights**. Vice Chancellor Michele Masucci provided an update on Research and Economic Development, highlighting research achievements across USM, including expenditures, awards, and the upcoming opening of UMB's 4MLK Building. She also discussed programs at UMD, UMCES, and UMBC, the hiring of Julia Chadwick as USM Director of Research and Development, and next steps for

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the OVCRED office's strategic plan. Additionally, she presented the USM External Engagement Strategy Task Force, its members, and objectives. All materials are available to the public on the USM website.

3. **Enterprise Research across the USM: Focus on Towson University.** Associate Provost for Research and Dean of Graduate Studies Sidd Kaza provided an update on Towson University's research efforts, covering student demographics, plans to achieve R2 Carnegie classification, and strategies for increasing research doctorates. He also reviewed research expenditures, grants submitted and highlighted notable research projects and principal investigators. All presentation materials are available to the public on the USM website.

4. **Momentum Fund Update.** Mike Ravenscroft updated the group on the USM Maryland Momentum Fund, discussing portfolio performance, major investments, and the impact of venture capital on both the fund and Maryland. He then introduced CEO Bob Gatte, who presented on High-T Tech, highlighting their products, team, financing, and growth plans, including staff expansion and new industry partnerships. All presentation materials are available on the USM website.

5. **Launch Fund Update.** Lindsay Ryan presented updates on the USM Launch Fund. The focus of this presentation was on the recent recipients of funding, and on the official Launch Fund press release. All presentation materials are available to the public on the USM website.

Discussion Note: At the meeting, Regent Wood proposed identifying notable research projects at USM universities that could spark public interest and periodically highlighting them both internally and in the media. He suggested exploring this idea with the Board of Regents (BOR) and campus leadership to determine its potential value. By selecting and showcasing exceptional projects, these impactful and sometimes life-changing accomplishments could gain the recognition they deserve, elevating the research, the universities, and the USM. Regent Wood also noted that bringing these projects to the public's attention could create a meaningful positive impact.

Action items: Regent Wood called to approve the committee charge for the Research and Economic Development Committee, seconded by Regent Gooden, passed unanimously.

Adjourned: Regent Wood called to adjourn the meeting at 2:30 pm, seconded by Regent Gooden, passed unanimously.

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EASTERN SHORE · UNIVERSITY OF MARYLAND GLOBAL CAMPUS **REGIONAL CENTERS //** UNIVERSITIES AT SHADY GROVE · UNIVERSITY SYSTEM
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Office of the Vice Chancellor for Research and Economic Development

Board of Regents Committee on Research and Economic Development

Michele Masucci, Ph.D.

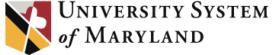Vice Chancellor for Research and Economic Development

December 10, 2024

UNIVERSITY SYSTEM *of* MARYLAND

Agenda

1. **Welcome and Approval of the Minutes** – Regent Wood

2. **Research and Economic Development Highlights** – Michele Masucci

     - Notable achievements in research across the USM

     - Current and Future Activities

     - NSF HERD Results FY 2024

3. **Enterprise Research across the USM: Focus on Salisbury University** – Clifton Griffin and Mike Jenson

4. **Economic Development** – Lindsay Ryan

     - Venture Development

     – Major Programs and Resources for Commercialization Across the USM – Report Out from Working Group – Lindsay Ryan

     – Technology Commercialization at the University of Maryland, Baltimore (UMB) – Associate Vice President, Office of Technology Transfer and Executive Director of UM Ventures - Phil Robilotto

     – Maryland Economic Council Economic Report, 2024 – Secretary and Regent Kevin Anderson

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1. RESEARCH AND ECONOMIC DEVELOPMENT HIGHLIGHTS ACROSS USM

Michele Masucci, Vice Chancellor for Research and Economic Development
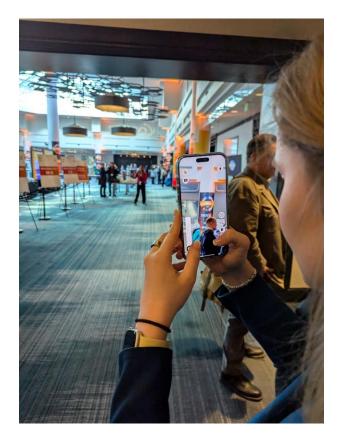
UNIVERSITY SYSTEM *of* **MARYLAND**

Highlights

Tedco Entrepreneur Expo – Nov 27, 2024

This is Rebecca from ReBokeh, a Launch Fund awardee, showing me her app. TEDCO partnered with her company to provide access to the app during the event. The app helps people with mild and moderate vision impairment utilize a smartphone to have a better visual experience. For example, this may mean being able to better read the conference agenda signboard. Rebecca is one of several Marylanders honored with the Forbes 30 Under 30 lists. There are several categories. Rebecca Rosenberg of ReBokeh AND Adeola Ajani of FemEquity were both honored in the category of "Social Impact: Leveraging business smarts to save the world". The are both TU-affiliated, and both are USM Launch Fund awardees.
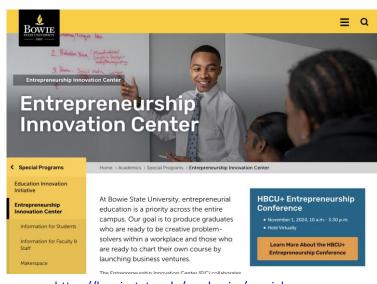
Bowie State University Designated as a 2024 GCEC Highly Commended Institution

The Global Consortium of Entrepreneurship Centers Awards are designed to showcase and celebrate the very best of university entrepreneurship; The nine distinct categories allow centers and leaders to select areas where they feel they are making the most impact. The 2024 awards were presented at the GCEC Conference at Babson College on November 16. Bowie's Entrepreneurship Innovation Center was named Highly Commended in 2024.

https://bowiestate.edu/academics/special-programs/entrepreneurship-innovation-center/

Bowie is the first HBCU to be so honored; learn more here:

https://globalentrepreneurshipconsortium.org/gcec-awards/

https://bowiestate.edu/about/news/2024/entrepreneurship-innovation-center-receives-top-award.php

Highlights (Continued)

The University of Maryland received a 1.8 M grant from the Agency for Healthcare Research and Quality to study the impacts of intense heat and rising air pollution from wildfires to human health; led by Amir Sapkota, Professor and Chair of Epidemiology and Biostatistics in the School of Public Health

More Here: https://today.umd.edu/1-8m-grant-to-fund-public-health-researchers-study-of-climate-change-and-kidney-disease

UMD's Professor Abani Pradhan in the Department of Nutrition and Food Science and the **Center for Food Safety and Security Systems** at the University of Maryland awarded nearly 600K to use genomics and machine learning tools to examine conditions leading to foodborne illness outbreaks.

https://cfs3.umd.edu/

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Bowie State University (BSU) will develop AI infrastructure, provide training, and create AI-related educational modules to empower underrepresented groups as part of $10M investment by NSF in AI Research at HBCUs and HSIs

July 3, 2024

NSF Invests $10M In AI Research At HBCUs, Hispanic-Serving Institutions

The US National Science Foundation (NSF) has announced an investment to enhance diversity and inclusion within the artificial intelligence (AI) research community.

https://peopleofcolorintech.com/articles/nsf-invests-10m-in-ai-research-at-hbcus-hispanic-serving-institutions/

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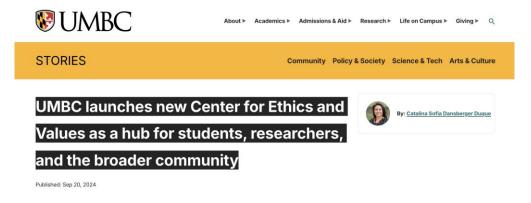**The University of Maryland Center for Environmental Science** received a $1 M gift to endow a Professorship at CBL in the name of Tom Miller, long time director of the center.

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The University of Maryland, Baltimore County launches new Center for Ethics and Values as a hub for students, researchers, and the broader community.

https://umbc.edu/quick-posts/center-for-ethics-and-values-launch/

Highlights (Continued)

UMBC awarded $5 M by NASA for a phase study to develop an advanced X ray system
As part of an imaging Satellite; this development may be selected for full development in subsequent years of the program.

Eileen Meyer works with students in her research group on parts to renovate and upgrade the telescope on UMBC's campus—one of her many projects beyond the AXIS telescope.
(Marlayna Demond '11/UMBC)

https://umbc.edu/stories/axis-x-ray-telescope-selected-for-further-study/

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- **System External Engagement Strategy Task Force**
- **Major Resource Programs and Funds working group**, report out today
- **USM improvements** in grant administration within the USM
  - Focus on policy, compliance, procedures
- **Awards and recognition** for excellence in research, discovery and innovation at the system level

USM Research Expenditures at a Glance

Institution	NSF Herd FY 2023	HERD Rank	Basic Carnegie Designation	2025 US News and World Rankings	Notes
Bowie	$2,612,000	531/360	Master's Colleges & Universities: Larger Programs	120 Regional North 44 Top Public North	41st HBCUs HERD 11 HBCU USN 54 Social Mobility USN
Coppin			Master's Colleges & Universities: Small Programs	151-165 Regional North 57-60 Top Public North	DNR HERD 27 HBCU USN 96 Social Mobility USN
Frostburg			Master's Colleges & Universities: Larger Programs	91 Regional North 32 Top Public North	DNR HERD 73 Social Mobility USN
Salisbury	$14,557,000	331/242	Master's Colleges & Universities: Larger Programs	49 Regional North 17 Top Public North	152 Social Mobility USN
Towson	$17,198,000	319/235	Master's Colleges & Universities: Larger Programs	15 Regional North 5 Top Public North	54 Social Mobility USN
UBalt	$6,615,000	411/292	Special Focus Four-Year: Research Institution	84 Regional North 29 Top Public North	64 Social Mobility USN
UMB	$1,385,302,000	18/11	Special Focus Four-Year: Research Institution	13 Nursing in US	In FY 2019, the UMB and UMD began reporting as one research unit to reflect their new strategic partnership. This relationship was codified through the University of Maryland Strategic Partnership Act passed by the Maryland General Assembly in 2016. Prior to FY 2019, both campuses reported to the survey as separate institutions.
UMCP			R1 - Doctoral Universities: Very High Research Activity	44 National 17 Top Public National	
UMBC	$144,262,000	156/112	R1 - Doctoral Universities: Very High Research Activity	144 National 74 Top Public National	15 Undergrad Teaching USN 14 Most Innovative USN 236 Social Mobility USN
UMCES	$53,233,000	223/160			
UMES	$10,730,000	355/259	R2 - Doctoral Universities: High Research Activity	388 National 208 Public National	22nd HBCUs HERD 16 HBCUs USN 181 Social Mobility USN
UMGC			Master's Colleges & Universities: Larger Programs		DNR HERD
Total	$1,634,509,000	All/Public	New Classifications in 2025		

3. ENTERPRISE RESEARCH UPDATE

Focus on Salisbury University
Clifton Griffin and Mike Jenson

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4. ECONOMIC DEVELOPMENT UPDATE

Lindsay Ryan, M.S., Executive Director of Economic Development

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Contact OVCRED

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410.706.3361

Julia Chadwick
She/Her/Hers
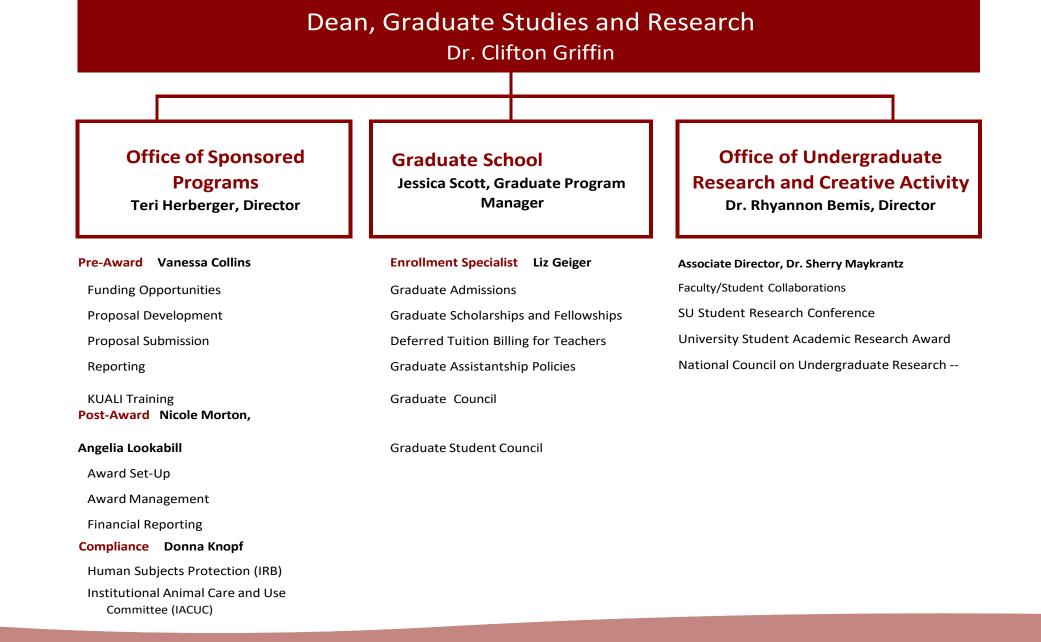Director of Research Development
jchadwick@usmd.edu
(301) 445-8050

Matthew Jenkins
Administrative Assistant II
OVCRED - USM
mjenkins@usmd.edu

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Salisbury University – Research Productivity, Graduate Education and Economic Development

Dr. Clifton Griffin, Dean of Graduate Studies and Research
Mr. Mike Jensen, Executive Director of Entrepreneurship

Dean, Graduate Studies and Research
Dr. Clifton Griffin

Office of Sponsored Programs
Teri Herberger, Director

Graduate School
Jessica Scott, Graduate Program Manager

Office of Undergraduate Research and Creative Activity
Dr. Rhyannon Bemis, Director

Pre-Award   Vanessa Collins

Funding Opportunities

Proposal Development

Proposal Submission

Reporting

KUALI Training

Post-Award   Nicole Morton,

Angelia Lookabill

Award Set-Up

Award Management

Financial Reporting

Compliance   Donna Knopf

Human Subjects Protection (IRB)

Institutional Animal Care and Use Committee (IACUC)

Enrollment Specialist   Liz Geiger

Graduate Admissions

Graduate Scholarships and Fellowships

Deferred Tuition Billing for Teachers

Graduate Assistantship Policies

Graduate Council

Graduate Student Council

Associate Director, Dr. Sherry Maykrantz

Faculty/Student Collaborations

SU Student Research Conference

University Student Academic Research Award

National Council on Undergraduate Research --

External Funding Activities
"Research Pays for Research"

NSF Higher Education Research & Development Survey		
Research & Development Expenditures (in thousands)		
Fiscal Year 2023	$14,557	
Fiscal Year 2022	$10,614	
Fiscal Year 2021	$10,552	
Fiscal Year 2020	$9,496	
Fiscal Year 2019	$9,368	

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External Funding Activities
"Research Pays for Research"

	# of Proposals	# of Awards	Award Amounts
Fiscal Year 2024	124	105	$9,270,452
Fiscal Year 2023	95	74	$12,208,466
Fiscal Year 2022	145	105	$9,327,129
Fiscal Year 2021	100	74	$6,348,376
Fiscal Year 2020	114	101	$6,207,464

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Maryland Industrial Partnerships Awards

- **Connecting Researchers to Local Companies**

Year	Department	Amount	Company
2022	GIS	$61,914	Argo Navigation, LLC
2019	Info Systems	$73,632	GreenScreen LLC
2016-2017	Info Systems	$132,102	Operational Precision Systems LLC
2013-2014	Biology	$175,926	GreatGrow, LLC
2013-2014	Social Work	$183,367	CARE-2, LLC

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SU High Impact Practice – Student Research
Office of Undergraduate Research and Creative Activity

- SU Student Research Conference Over Last Five Years – 83 to 152 Oral and Poster Presentations

- Summer Research Projects- includes NSF-REU, Henson School Fellows, and OGS&R Fellows – 23 (2020-Remote) to 77 (2024) Individual Student Projects

SU High Impact Practice – Student Research
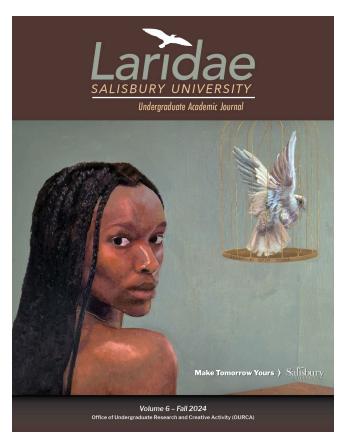## Office of Undergraduate Research and Creative Activity

- Posters on the Bay

Laridae – Undergraduate Research Journal -Sixth Edition

- https://www.salisbury.edu/administration/academic-affairs/graduate-studies-and-research/ourca/laridae.aspx

Graduate School

- Salisbury University Approved to Create Graduate School – April 2024
- 16 Masters Programs, Five On-line
- Doctor of Nursing Practice and Doctor of Education – Literacy Studies, both on line
- Five Certificate Programs
- Newest Degree Program – Masters of Public Communication – Fall 2024
- Adding Multiple Accelerated Masters Programs

SALISBURY UNIVERSITY

Graduate School

- Enrollment
  - 737 Total Graduate Enrollment for Fall 2024
  - Highest Total Graduate Enrollment was 974 in Fall 2024
  - Majority of Graduate Students - Working Professionals (60+%)
  - Largest Graduate Program – Masters of Social Work (Satellite Locations Including UMGC Joint Program in Germany)
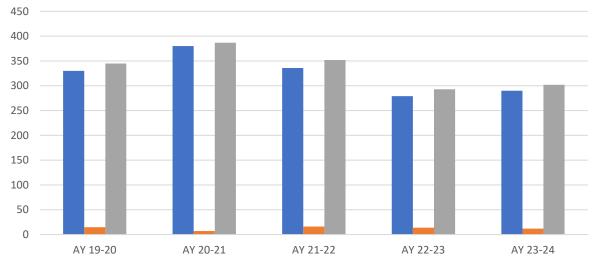
Graduate School

Student Demographics

DIVERSITY NUMBERS - GRADUATE PROGRAMS					
	Fall 2020	Fall 2021	Fall 2022	Fall 2023	FALL 2024
TOTAL ENROLLMENT	974	875	745	749	736
Female	777	677	564	584	558
Male	192	195	175	160	170
Undisclosed	5	3	6	3	3
Interdeterminate/Intersex/Unspecified				2	5
American Indian	1	2	2	6	5
Asian	15	17	15	16	14
Black	136	124	93	141	167
Hispanic	23	19	40	50	51
Pacific Islander	1	1	1	3	1
Multiple Races	30	25	24	1	1
Diverse Sub-Total	206	188	175	217	239
%	21.15%	21.49%	23.49%	28.97%	32.47%
Nonspecified	44	38	23	13	17
White	724	649	547	519	480
Non-Diverse Sub-Total	768	687	570	532	497

Graduate School

- Degrees Awarded

SALISBURY UNIVERSITY

Research Success!

$2.6 Million Federal Grant to Enhance One-of-a-Kind SU Partnership to Investigate and Curb Elder Financial and High-Tech Fraud

NSF Awards SU $380K for Rural AI Solutions and Engagement Project

Enabling Partnerships to Increase Innovation Capacity (EPIIC) Grant

U.S. National Science Foundation

What is EPIIC?
"Supports the growth of inclusive innovation ecosystems through capacity-building efforts at institutions of higher education with limited research capacity — preparing these institutions to participate in NSF Regional Innovation Engines at a future time."
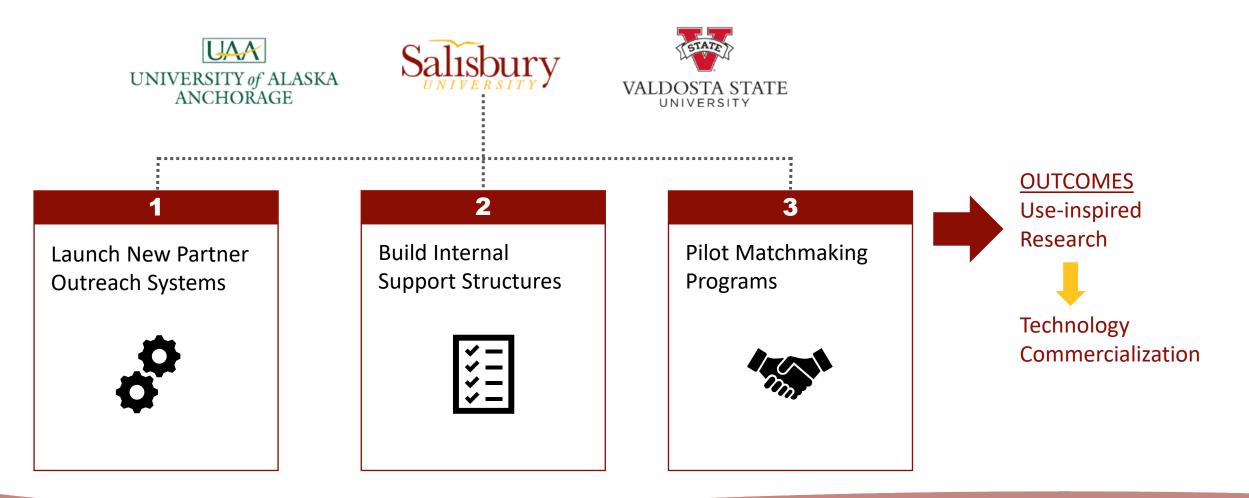
Salisbury University Award
- 2nd Round (~50 colleges and universities)
- $380,000
- 3-year Project (2024-2027)

Key Technologies
- Advanced Manufacturing
- Advanced Wireless
- **Artificial Intelligence**
- Biotechnology
- Quantum Information Science
- Semiconductors
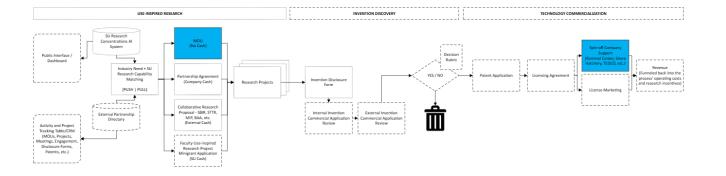- Novel Materials
- Microelectronics

https://new.nsf.gov/funding/opportunities/epiic-enabling-partnerships-increase-innovation-capacity

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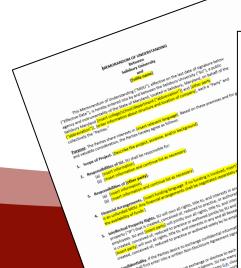
Rural AI Solutions & Engagement (RAISE)

UAA
UNIVERSITY *of* ALASKA
ANCHORAGE

Salisbury
UNIVERSITY

V STATE
VALDOSTA STATE
UNIVERSITY

1

Launch New Partner
Outreach Systems

2

Build Internal
Support Structures

3

Pilot Matchmaking
Programs

OUTCOMES
Use-inspired
Research

Technology
Commercialization

RAISE: Initial Activities

SU Innovation Process Mapping

Using AI to Analyze SU's Research Specializations

Creating Templates & Forms

Learning from EPIIC Peer Institutions

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Perdue Farms: AI Chick Counting for Hatchery Quality Control Checks

Facial Recognition Software

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USM Innovation Collective

Lindsay Ryan
Executive Director of Economic Development
December 10, 2024

UNIVERSITY SYSTEM
of MARYLAND

USM Invention, Innovation, and Entrepreneurship Support

USM OVCRED re-convened USM leaders supporting invention, innovation, and entrepreneurship in November.

The group was challenged to characterize USM's collective support, success, and future directions.

A preview of this characterization follows, and a full report will be released in 2025.

USM Invention, Innovation, and Entrepreneurship Support
A Strong Base

Education – All 12 institutions support students of all ages with innovation and entrepreneurship education. Many provide venture development training and capital through competitions.

Discovery to Creation and Impact – All 12 institutions create environments that foster discovery, invention, and creation with pathways to impact.

3

USM Innovation Collective
Excellence

The USM Innovation Collective is the constellation of resources that support inventors, innovators, and entrepreneurs.

For the Good of Maryland – All of Maryland

USM supports all Marylanders. Whether a student, faculty inventor, or community member is being supported, USM is developing human capital.

Diverse, Distributed, AND Connected

USM supports a range of industries, geographies, and enterprise types, which promotes resilience. These resources and the people who power them are connected for greater effectiveness and efficiency.

OpenAI. *AI-Generated Image.* Created on 12/5/24, via ChatGPT

4

USM Innovation Collective
Excellence

For the Good of Maryland – All of Maryland

USM adds about 180 startups each year to the portfolio of ventures it significantly supports

- About 1/3 are led by USM students
- 7% are translating USM research discoveries into impact

Diverse, Distributed, AND Connected

Ventures Supported by USM Funding Source
- Mix
- Only Shore Hatchery
- Only MIPS
- Only StarTUp Accelerator
- Another Fund

USM Innovation Collective
Excellence in Action

A substantial portion of the USM Innovation Collective consists of **16+ expansive resources and placed-based resources at 7 institutions do not require USM student or faculty ties:**

- **Training, Expertise & Talent Available Across the State.** Includes the Innovation Extension and I-Corps, Maryland Technical Internship Program, Small Business Development Centers, Legal Clinics, and Maryland New Venture Program

- **Funding-Forward Support Available Across the State.** Includes the Launch Fund, Momentum Fund, Dingman Angels, Maryland Industrial Partnerships, and Chesapeake Bay Seed Capital Fund

- **Bolstering Local Economies.** Includes the Baltimore Fund, Discovery Fund, StarTUp Armory and Accelerator, SU Shore Hatchery, and Incubators, Research Parks, and Innovation Districts

- **Discovery, Innovation in Focus.** Includes the Quantum Startup Foundry, U.S. Harmful Algal Bloom Control Incubator

Several USM Innovation Collective resources **support university-affiliated individuals across multiple universities:** Maryland and Baltimore Innovation Initiatives; IMET Ratcliffe Environmental Entrepreneur Fellowship; UMB/UMBC NIH REACH Hub

6

USM Innovation Collective
Excellence for Impact & Moving to Preeminence

Conventional Metrics

Jobs created

    (8,600 jobs created through Maryland Industrial Partnerships)

Revenue or Investment

    (15:1 capital leveraged, $150M+ through Momentum Fund)

A Level Deeper

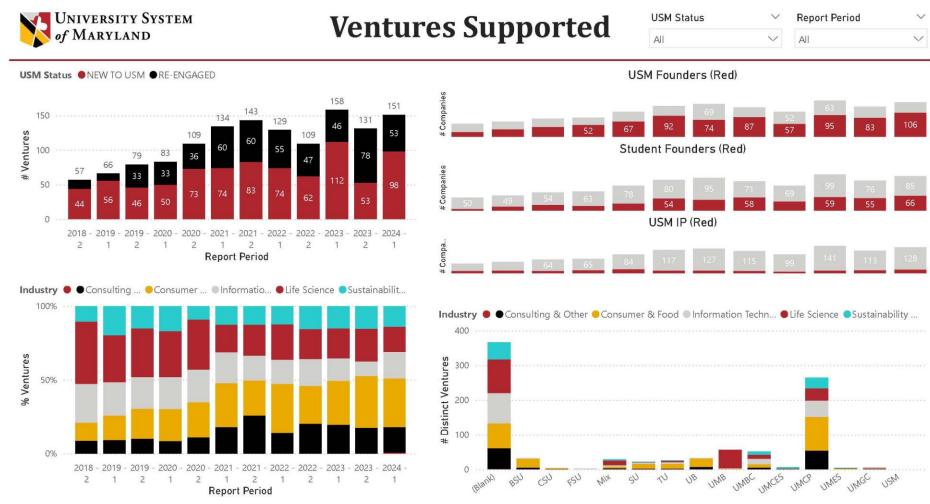Hiring USM graduates

Social mobility

Addressing needs in Maryland

Stay tuned for more!

APPENDIX

Venture Development Report January – July 2024
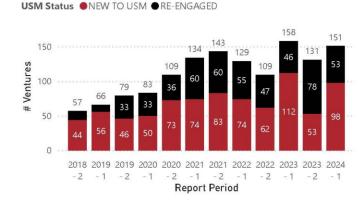
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Ventures Supported

Ventures Supported

10
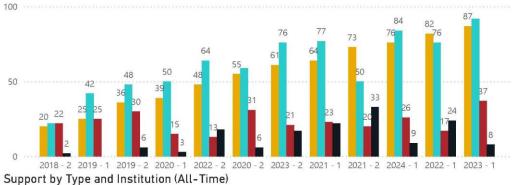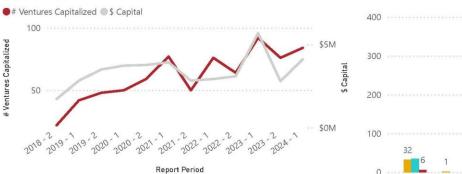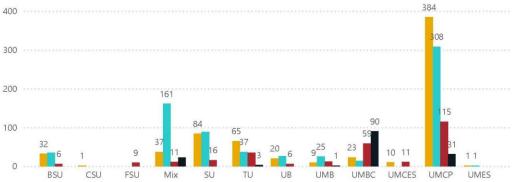
Additional State-Wide Venture Support

MARYLAND TECHNOLOGY INTERNSHIP PROGRAM
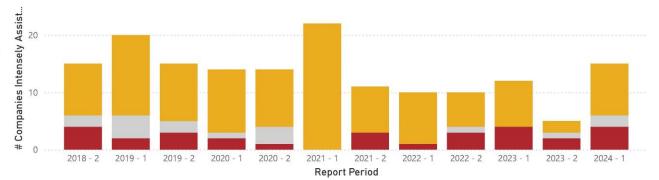
Helps Maryland retain top tech talent by increasing the number of paid technical internships offered in the state. Administered by UMBC and funded by the State of Maryland, the program offers financial assistance to technology-based businesses, as well as state and local agencies, to hire more interns (mtip.umbc.edu).

About 30% of startup participants also are USM "spinouts" or "spin-ins".

AMERICA'S SBDC MARYLAND

The Maryland Small Business Development Center (SBDC) is a public-private partnership between the U.S. Small Business Administration, the State of Maryland and UMCP. The Maryland network hosts entrepreneurial assistance programs at a number of USM institutions.

Companies Assisted Through USM Small Business Development Centers

University ● Frostburg State University (FSU) ● Salisbury University (SU) ● University of Maryland

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USM Innovation Collective

Lindsay Ryan
Executive Director of Economic Development
December 10, 2024

UNIVERSITY SYSTEM of MARYLAND

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USM supports all Marylanders. Whether a student, faculty inventor, or community member is being supported, USM is developing human capital.

Diverse, Distributed, AND Connected

USM supports a range of industries, geographies, and enterprise types, which promotes resilience. These resources and the people who power them are connected for greater effectiveness and efficiency.

OpenAI. *AI-Generated Image.* Created on 12/5/24, via ChatGPT

4

USM Innovation Collective
Excellence

For the Good of Maryland – All of Maryland

USM adds about 180 startups each year to the portfolio of ventures it significantly supports

- About 1/3 are led by USM students
- 7% are translating USM research discoveries into impact

Diverse, Distributed, AND Connected

52/85

USM Innovation Collective
Excellence in Action

A substantial portion of the USM Innovation Collective consists of **16+ expansive resources and placed-based resources at 7 institutions do not require USM student or faculty ties:**

- **Training, Expertise & Talent Available Across the State.** Includes the Innovation Extension and I-Corps, Maryland Technical Internship Program, Small Business Development Centers, Legal Clinics, and Maryland New Venture Program

- **Funding-Forward Support Available Across the State.** Includes the Launch Fund, Momentum Fund, Dingman Angels, Maryland Industrial Partnerships, and Chesapeake Bay Seed Capital Fund

- **Bolstering Local Economies.** Includes the Baltimore Fund, Discovery Fund, StarTUp Armory and Accelerator, SU Shore Hatchery, and Incubators, Research Parks, and Innovation Districts

- **Discovery, Innovation in Focus.** Includes the Quantum Startup Foundry, U.S. Harmful Algal Bloom Control Incubator

Several USM Innovation Collective resources **support university-affiliated individuals across multiple universities:** Maryland and Baltimore Innovation Initiatives; IMET Ratcliffe Environmental Entrepreneur Fellowship; UMB/UMBC NIH REACH Hub

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USM Innovation Collective
Excellence for Impact & Moving to Preeminence

Conventional Metrics

Jobs created

(8,600 jobs created through Maryland Industrial Partnerships)

Revenue or Investment

(15:1 capital leveraged, $150M+ through Momentum Fund)

A Level Deeper

Hiring USM graduates

Social mobility

Addressing needs in Maryland

Stay tuned for more!

54/85

7

University of Maryland Baltimore – UM Ventures

Commercialization Activities
December 2024

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UM VENTURES, BALTIMORE | ACTIVITIES

Intellectual Property

IP Group
125 disclosures/yr*
~2300 active patents

Marketing/Licensing

Licensing Group
40 licenses/yr*
8 startups/yr*

(Averaging over 5 yrs)

Startups

New Ventures Group
- *Entrepreneurial guidance*
- *Specialized consulting*
- *Internal startup mgmt.*
  - **NVI program**

+ COMMERCIAL ADVISORS

Investments

Technologies – LSIPF
42 technology investments

Startups – Equity Investments
19 investments in 12 companies, with 4 exits

Accelerating the commercialization of our intellectual property and technologies
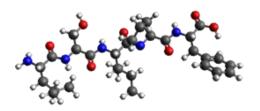
LIFE SCIENCES IP FUND

UM Ventures, Baltimore
Center for Maryland Advanced Ventures

isoprene

living PHARMA

SurgiGYN

Breethe

Protaryx

HARPOON MEDICAL

NeoProgen

MEDCURA

SONOSA Medical Inc

NEXT STEP ROBOTICS

GLIKNIK
TRULY NOVEL THERAPIES

COAPTECH

LIFE SCIENCES IP FUND (LSIPF)	NEW VENTURES INITIATIVE (NVI)	UMVB EQUITY INVESTMENTS
• Pre-company R&D • Launched 2018 • >$33 million in catalyzed capital • Generate 3rd party data via CROs and the UM Ventures	• Launch and manage UMB IP based companies • Initiated 2015 • 3 startups • 2 exits	• Make direct investments in UMB IP based startups • Initiated 2014 • >$100 million in catalyzed capital • 6 approved products
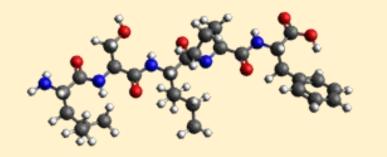
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Laboratory

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LSIPF Investment Process and Criteria

Intellectual Property
- Disclosed technology
- Assigned to UMB OTT

Review Committee
- Internal/external committee members
- Review the science, unmet medical need, impact, commercial readiness and the potential market opportunity
- Potential and likelihood of 3rd party co-funding and licensing
- Project Development
- Need/impact on meaningful advancement of the technology
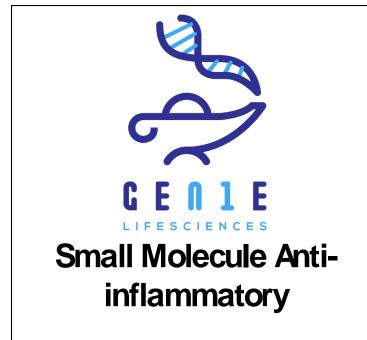
Funding
- Generate 3rd party data
- Funding is milestone gated

42 technology investments since 2018

Therapeutics	Medical Devices
23	19

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Select Life Sciences IP Fund Startups

Small Molecule Anti-inflammatory

Founded 2018
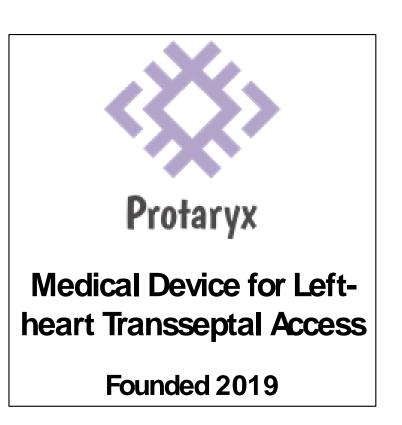
- Raised >$20 million in venture funding
- Completed Phase I Clinical Study
- Ongoing Phase II Clinical Study

Small Molecule Cancer Therapeutic

Founded 2018

- $2 million Phase II SBIR
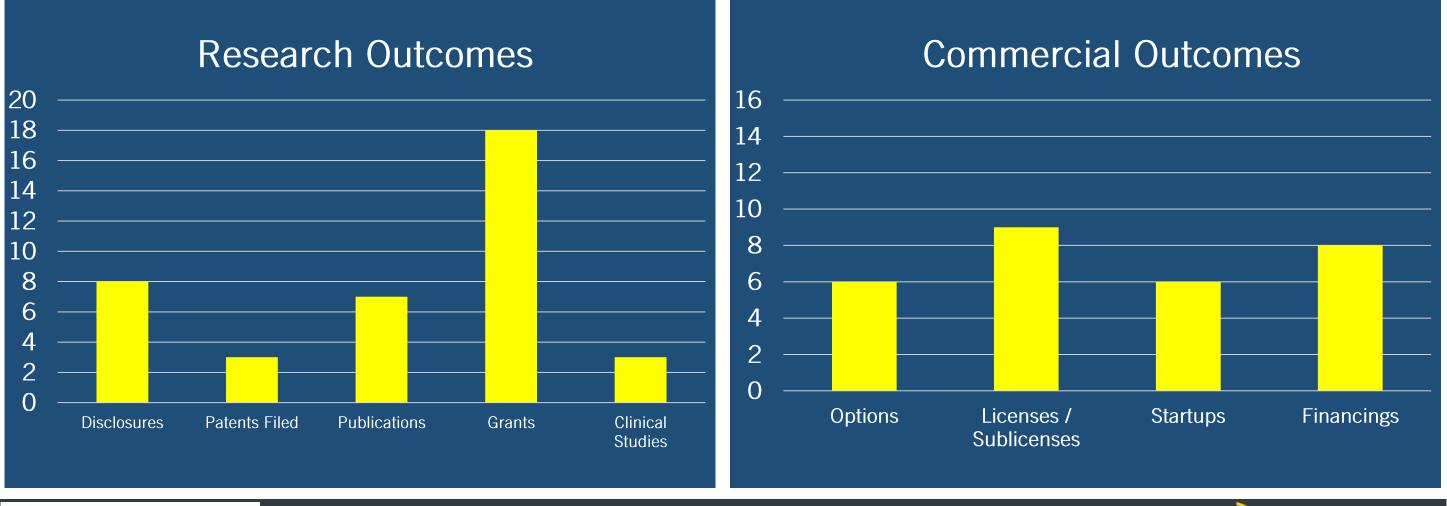
Medical Device for Left-heart Transseptal Access

Founded 2019

- $8.3 million Series A

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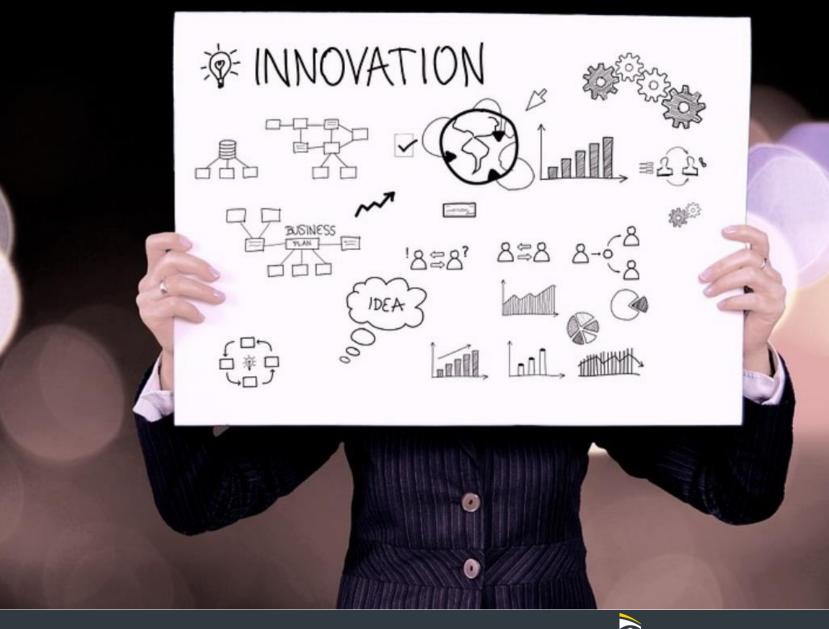
NEW VENTURES INITIATIVE (NVI)

New Ventures Startups

NEW VENTURES STARTUPS

Universal CAR T Cell Therapy

Founded 2015

Minimally Invasive Surgical Device

Founded 2016

Small Molecule Cancer Therapeutic

Founded 2018

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acquired by

Lentigen Technology Inc.
a Miltenyi Biotec Company

Living Pharma, Inc., a University of Maryland, Baltimore New Ventures startup launched December 2015, develops personalized CAR T Cell therapy.

July 20, 2017

received strategic investment from

Strategic Partner

SurgiGyn, Inc., a University of Maryland, Baltimore New Ventures startup launched August 2016, develops minimally invasive surgical devices for gynecological surgery.

January 24, 2018 and July 9, 2018

acquired by

Strategic Partner

SurgiGyn, Inc., a University of Maryland, Baltimore New Ventures startup launched August 2016, develops minimally invasive surgical devices for gynecological surgery.

February 13, 2020

received strategic investment from

HOTHTHERAPEUTICS

Isoprene Pharmaceuticals, Inc., a University of Maryland, Baltimore New Ventures startup launched June 2018, develops small molecules for oncology and dermatology applications .

July 31, 2020

entered into an exclusive license agreement

HOTHTHERAPEUTICS

Isoprene Pharmaceuticals, Inc., a University of Maryland, Baltimore New Ventures startup launched June 2018, develops small molecules for oncology and dermatology applications .

July 31, 2020

Awarded $2,000,000 Phase II SBIR

National Cancer Institute

September 7, 2021

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UMVB EQUITY INVESTMENTS

UM VENTURES PORTFOLIO
Company Investments
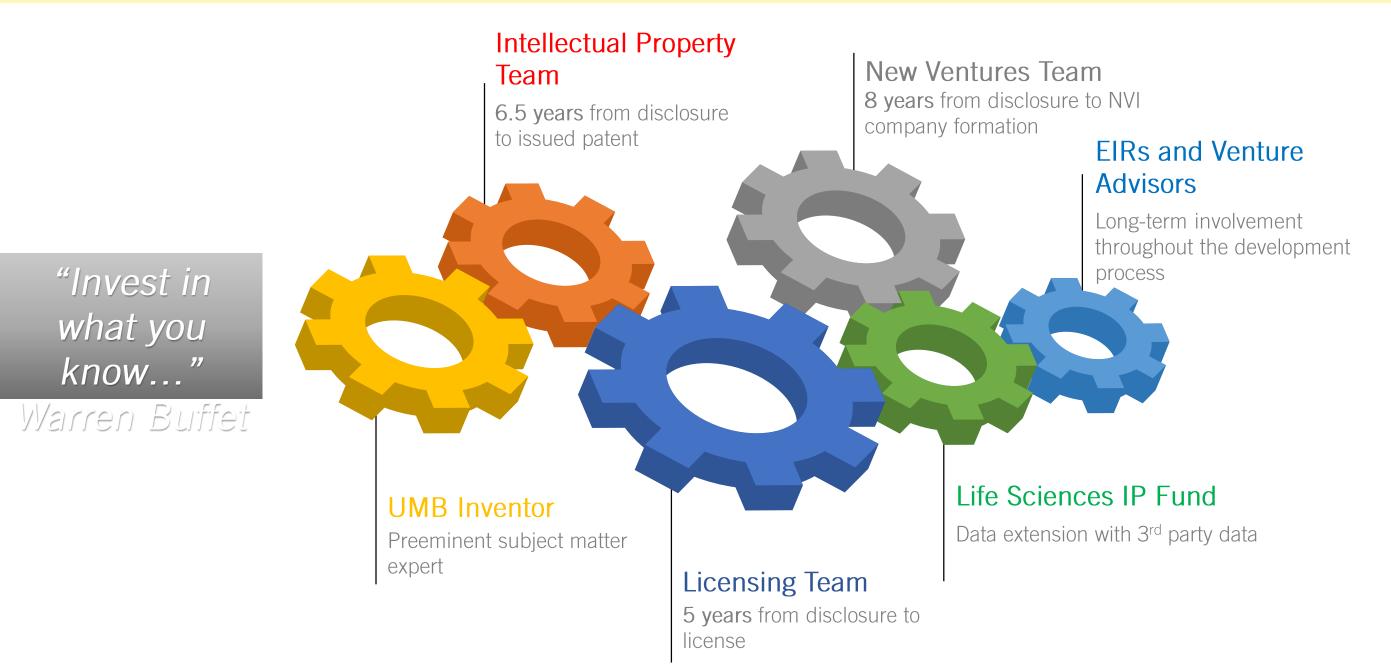
From Inception Throughout Development

Intellectual Property Team

6.5 years from disclosure to issued patent

New Ventures Team
8 years from disclosure to NVI company formation

EIRs and Venture Advisors

Long-term involvement throughout the development process

"Invest in what you know…"
Warren Buffet

UMB Inventor

Preeminent subject matter expert

Life Sciences IP Fund

Data extension with 3rd party data

Licensing Team

5 years from disclosure to license

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Investment Portfolio

HARPOON MEDICAL	**Breethe**	**living PHARMA**	**MEDCURA**
• Nov. 2014 – First Investment • Exit – Edwards Dec. 2017	• Apr. 2015 – Seed Round • Exit – Abiomed Apr. 2020	• Jun. 2015 – NVI Seed • Exit – Miltenyi Jul. 2017	• Dec. 2016 – Seed Round • Co-owned tech w/ UMCP
SurgiGYN	**NEXTSTEP ROBOTICS**	**COAPTECH**	**NeoProgen**
• Sept. 2017 – NVI Seed • Exit – Med Device Feb. 2020	• Dec. 2018 – Seed/Bridge • Momentum Fund Company	• Jan. 2018 – Initial (Seed) • Aug. 2020 – Series B • Sept. 2024 – Series B2	• Apr. 2019 – Seed Round • Momentum Fund Company
Protaryx	**isoprene**	**GLIKNIK TRULY NOVEL THERAPIES**	**SONOSA Medical Inc**
• Jan. 2020 – Seed Round • Jun. 2020 – Series A (Ajax Health)	• Jan. 2021 – NVI Seed • Aug. 2021 – Phase II SBIR	• Jul. 2021 – Series C • Jun. 2023 – Series C-1	• Oct. 2023 – Pre-seed Round

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Investment Portfolio

19 investments totaling $1.8 million

Awarded Grants	Co-funding and Follow-on Capital*	Total Capital*
$14.1 million	$86.3 million	$100.4 million

*Excludes UMVB investments and capital received by shareholders from acquisitions

Investment Portfolio Exits

an NM company was acquired by

a Miltenyi Biotec Company

July 20, 2017

acquired by

HARPOON MEDICAL

Edwards Lifesciences

$100,000,000 cash and $150,000,000 milestones

December 6, 2017

SurgiGYN

an NM company was acquired by

Strategic Partner

February 13, 2020

Breethe

acquired by

ABIOMED
Recovering hearts. Saving lives:

April 29, 2020

$20 billion average market capitalization of acquiror at time of acquisition

UMVB Return

Direct investment + common shares from license + earnouts and milestones

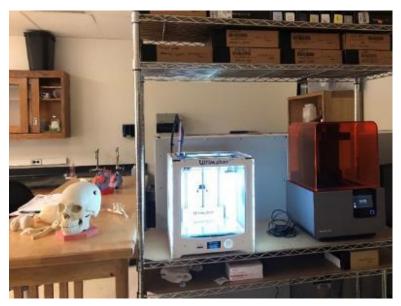Direct investment + common shares from license

16x

Preferred shares from direct investment (Direct Investment)

5x

Resources for UMB Inventors & Startups

UM Ventures' Wet Lab

- Molecular & cell biology capabilities
- **Opened 2019** (UM BioPark)
- TRP expansion for UMB inventors (& Biorepository storage available)
- Designed for UMB startups (currently in high demand)
- Staffed by 1 FTE MD and PhD researchers

UM Ventures' Prototyping Lab

- Design, 3-D printing & tooling capabilities
- **Opened 2021** (Bressler Rm. 4034)
- Linked with UMD Fischell Biomedical Device Institute
- Staffed by full-time Medical Device Research Engineer

4MLK
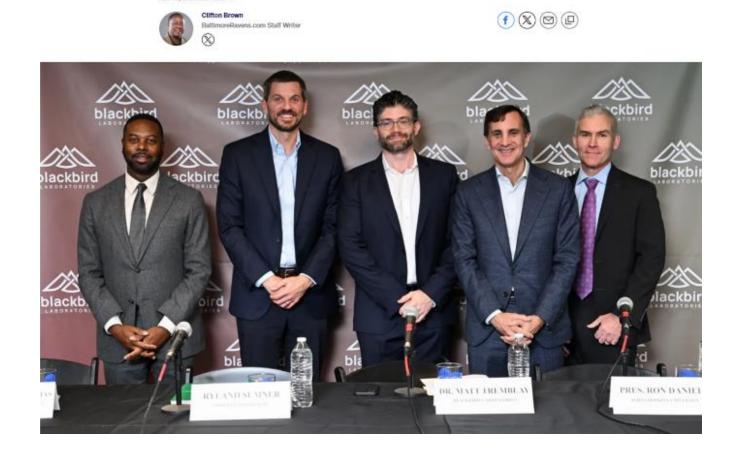
- Gateway between the BioPark, UMB, and UMMC
- **Opening** *(MLK Jr Blvd & Baltimore St.)*
- Class A laboratory, office, co-working and convening spaces

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NEW R&D FUNDING OPPORTUNITIES – BLACKBIRD LABS & UM-BILD

Blackbird Laboratories Launches With $100 Million Grant from Stephen and Renee Bisciotti Foundation

Nov 07, 2023 at 04:36 PM

Clifton Brown
BaltimoreRavens.com Staff Writer

University of Maryland, Baltimore Receives Landmark Funding to Create New Innovation Hub in West Baltimore and the Region

November 21, 2023 | Deborah Kotz

UM School of Medicine Faculty Leading the Way in Attracting Life Sciences Start-Up Companies, Building a Diverse Workforce

University of Maryland, Baltimore (UMB) President Bruce Jarrell, MD, FACS, and University of Maryland School of Medicine (UMSOM) Dean Mark Gladwin, MD, announced today that the university has received a four-year, $4 million Research Evaluation and Commercialization Hubs (REACH) grant from the National Institutes of Health (NIH). The grant, shared with the University of Maryland Baltimore County (UMBC), will support both institutions' work advancing the biomedical entrepreneurship and innovation economy in West Baltimore and Greater Baltimore. It will also serve to train one of the most diverse biomedical and entrepreneurial workforces in the country.

"We recognize that to create our own unique cohort of newly trained

Life Sciences IP Fund

- 42 technology investments with $5 million committed
- 6 startups
- 19:1 catalyzed capital to LSIPF investment
- 3 clinical studies (2 first in human clinical studies)

NVI Startups

- 3 NVI startups
- 2 exits (Living Pharma and SurgiGyn)
- 2 strategic investments
- $2 million Phase 2 SBIR (Isoprene Pharmaceuticals)

UMVB Resources

- Convergent Bio wet laboratory
- Medical device prototyping laboratory
- Business management

UMVB Investments

- 19 investments in 12 companies
- 16x return (plus upside) on 4 investment exits including equity from UMB IP license agreements
- >$100 million in catalyzed capital
- 6 product approvals

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Contact Us

Phil Robilotto, DO, MBA
Associate Vice President
Office of Research & Development
Director, UM Ventures, Baltimore

(410) 706-2378

probilotto@umaryland.edu

https://www.umventures.org/

Purpose: Advance biomedical entrepreneurship and innovation economy in West Baltimore and Greater Baltimore
Funding: Supported by a $4 million Research Evaluation and Commercialization Hubs (REACH) grant from the National Institutes of Health
Upcoming Launch Dates: Applications for the next round of Financing will open in February 2025 for the September 2025 funding cycle

Programming Metrics		
Cohort #1 – Sept, 2024		
	6 UMB Technologies	$450,000
Cohort #2 – April 2025		
	5 UMB Technologies	$375,000

Life Sciences IP Fund – Select Therapeutic Projects

Project ID	Technology	Project	Status
CMAV-2022-002	Chimeric Antigen Receptor targeting CD229	• IND enabling membrane proteome array • Clinical study: Multiple myeloma	• Partnered
CMAV-2024-001	Non-opioid drug for neuropathic pain	• Development of an oral, extended-release formulation • Clinical study: Neuropathic pain	
CMAV-2024-002	Monoclonal antibodies for the management of obesity	• PoC studies testing antibodies to a novel target in obesity	
CMAV-2024-005	Targeting a novel cancer antigen expressed on the cell surface	• Target antigen surface expression analysis • Antibody characterization	
CMAV-2025-001	Anti-obesity small molecule	• PoC studies testing a small molecule in a diet induced obesity model	

LIFE SCIENCES IP FUND – THERAPEUTICS
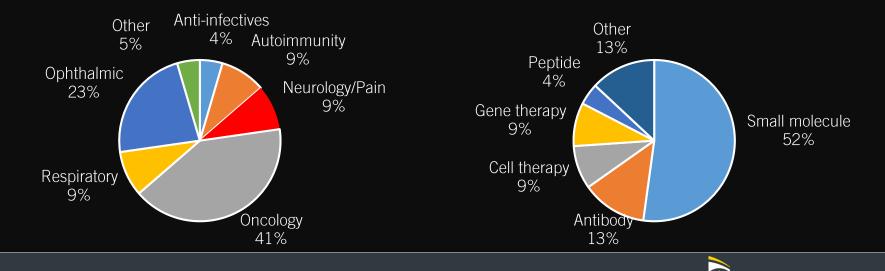
- 23 therapeutics projects
- $1.35 million funded
- Over $4 million committed to projects

Disease Area

- Other 5%
- Anti-infectives 4%
- Autoimmunity 9%
- Neurology/Pain 9%
- Oncology 41%
- Respiratory 9%
- Ophthalmic 23%

Modality

- Other 13%
- Peptide 4%
- Gene therapy 9%
- Cell therapy 9%
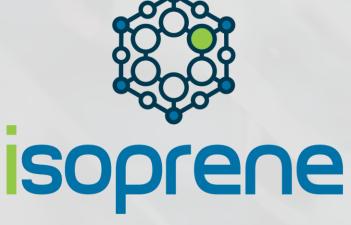- Antibody 13%
- Small molecule 52%

CONVERGENT BIO

UM Ventures, Baltimore - Innovation Laboratory

- 650ft^2 launched in 2019
- Molecular & cell biology capabilities
- Staffed by 1 FTE MD and PhD researchers

KaloCyte
- Investment from Maryland Momentum Fund and Old Line Capital
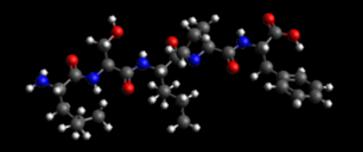- $46.4 million Consortium DARPA Award

isoprene
- $2 million Phase II SBIR

COURIER THERAPEUTICS
www.couriertherapeutics.com
- Acquired by Valo Health, LLC a Flagship Pioneering company

LIFE SCIENCES IP FUND

UM Ventures, Baltimore
Center for Maryland Advanced Ventures

Accelerate development without burdening the researcher's laboratory operations

Generate 3rd party data and extend findings

Milestone gated investments

The University of Maryland Strategic Partnership Act of 2016 created the Center for Maryland Advanced Ventures (CMAV)

CMAV has launched several initiatives, including the Life Sciences IP Fund (LSIPF) in December 2017

42 technology investments since 2018

Therapeutics	Medical Devices
23	19

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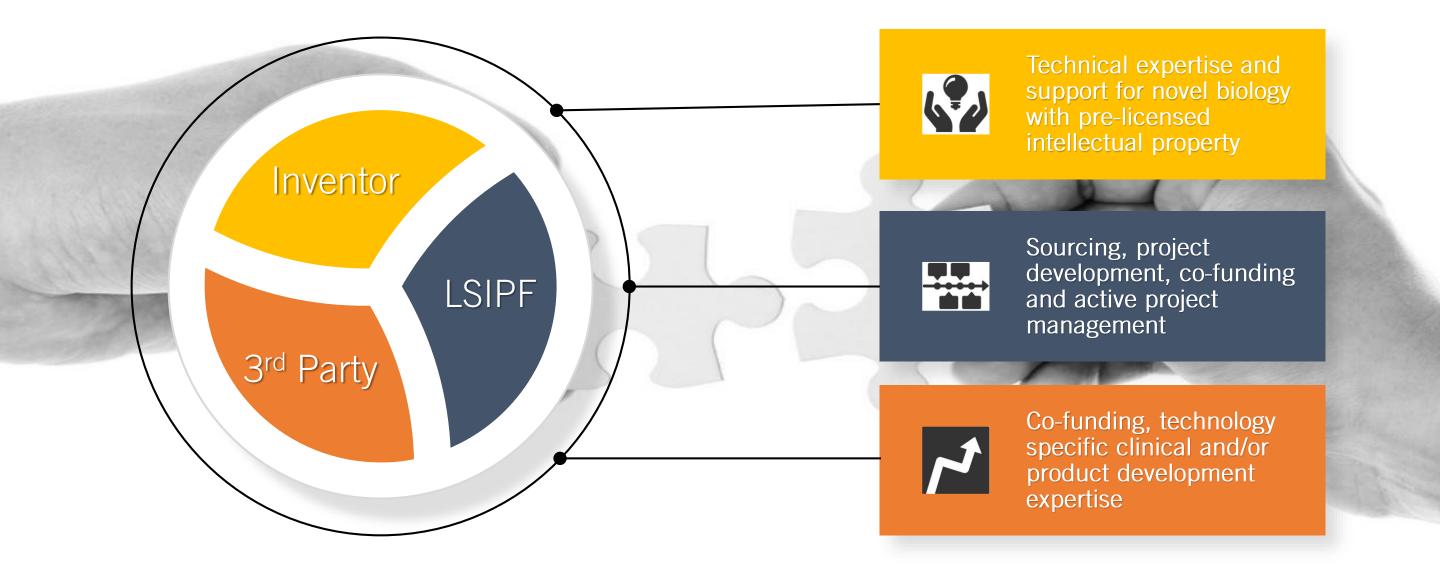
3rd Party Partnership Model

Inventor

LSIPF

3rd Party

Technical expertise and support for novel biology with pre-licensed intellectual property

Sourcing, project development, co-funding and active project management

Co-funding, technology specific clinical and/or product development expertise

Maryland Economic Council (MEC) October 2024 Report Overview

Presented to the Committee on Research and Economic Development

USM Board of Regents

December 10, 2024

Key Recommendations

1) Corporate Tax Reduction and Modernization

- Implement a phased reduction of the corporate tax rate from 8.25% with a goal of ~ 5.00% over several years to enhance Maryland's competitiveness.

- Modernize the corporate tax code to reflect contemporary business realities and prevent the creation of new corporate loopholes.

- Balance the need for a competitive tax environment with the requirement to maintain essential services, exploring targeted incentives for new businesses and innovation

2) Consolidate Economic Development Efforts

- Establish a Centralized Economic Development Authority to unify efforts and improve coordination.

- Consolidate remaining state functions under a smaller Department of Commerce to enhance strategic direction and support for businesses.

Key Recommendations

3) Develop an Integrated Economic Plan:

- Charge the Department of Commerce and MEDC with creating and regularly updating a comprehensive economic strategy
- Engage local jurisdictions and private sector partners to ensure the strategy reflects Maryland's diverse economic needs
- Provide Maryland businesses with robust assistance in winning federal and state procurement contracts

4) Foster Better Coordination and Collaboration:

- Create incentives for counties to align their economic development plans with state goals.
- Hold regular coordination meetings and joint initiatives to ensure consistent efforts across the state.

Key Recommendations

5) Track and Report Key Economic Metrics:

- Implement a public-facing dashboard to track economic metrics and hold entities accountable.

- Establish independent oversight to monitor the performance of economic development efforts.

6) Implement a Statewide Client Management System:

- Implement a Statewide Client Relationship Management (CRM) System: to track business interactions and ensure coordinated efforts.

- Create a single sign-on portal as the "front door" for all business interactions with the state

Key Recommendations

7) Enhance Legislative Advocacy and Coordination:

- Move forward in establishing the Governor's Office of Business Advancement to represent the business community and prevent anti-business legislation

8) Improve Maryland's Startup Infrastructure:

- Support founders with better access to networks, resources, and structured acceleration programs and aggregate current state efforts to support founders.

- Establish innovation districts and provide gap financing for startups.

Key Recommendations

9) Protect and Enhance Maryland's Workforce:

- Increase investment in workforce training programs, including mid-level training, and internships to align with future industry needs.

- Include workforce development as elements in higher education degree and non-degree training programs.

- Create on ramps for new graduates and improve the state's capacity to retain a highly skilled workforce.

- Strengthen alignment across all workforce investments, especially higher education, to align with the state's economic development efforts