MEDI Biotech Operations Leadership Team (MBOLT) Meeting

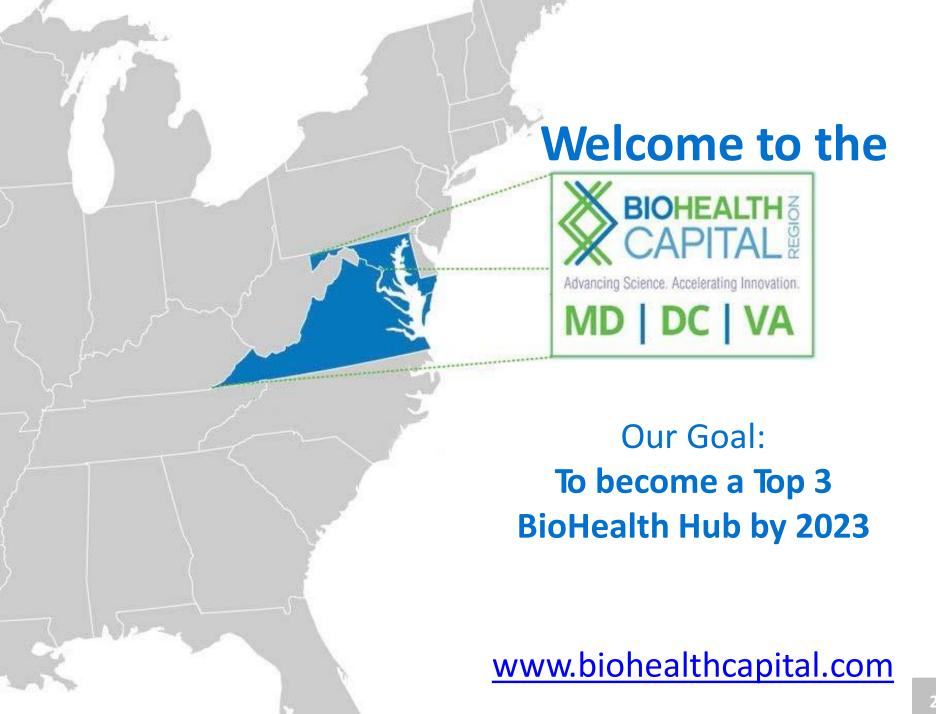
Introduction to Biohealth Capital Region (BHCR) & BioHealth Innovation (BHI)

By Rich Bendis, President and CEO, BHI June 19th, 2018











Top 10 U.S. Biopharma Clusters

Ranking Based on Five Criteria:

- 1. NIH Funding
- 2. Venture Capital Funding
- 3. Patents
- 4. Lab Space
- 5. Jobs

2017

- 1. Boston / Cambridge, MA
- 2. San Francisco Bay Area
- 3. New York-New Jersey
- 4. San Diego
- 5. Maryland / Virginia / DC Metro
- 6. Greater Philadelphia
- 7. Seattle
- 8. Raleigh-Durham, NC (inc. Research Triangle Park, NC)
- 9. Los Angeles / Orange County
- 10. Chicagoland

BHCR News Stories



MedImmune spins out Viela Bio....

"Viela Bio Spins Out of MedImmune; Launches with Up to \$250 Million Series A Financing from Investor Consortium Led by Boyu Capital, 6 Dimensions Capital, and Hillhouse Capital"



Deerfield \$40 million investment in Dracen....

"Health care-focused Deerfield Management leads Baltimore biotech's \$40M round"

THE BALTIMORE SUN

Emergent major contract or opens innovation Center in Baltimore....

"Emergent BioSolutions opens expanded East Baltimore vaccine plant"



Paragon Biosciences expansion....

"Paragon Bioservices Announces New Commercial Manufacturing Facility Expansion"



Benevir....

Montgomery County, Maryland-base BeneVir Biopharm, Inc. to be acquired by Janssen Biotech, Inc. for up to \$1.04B"



Supernus expansion

"Supernus To Expand, Will Move From Rockville To Gaithersburg"



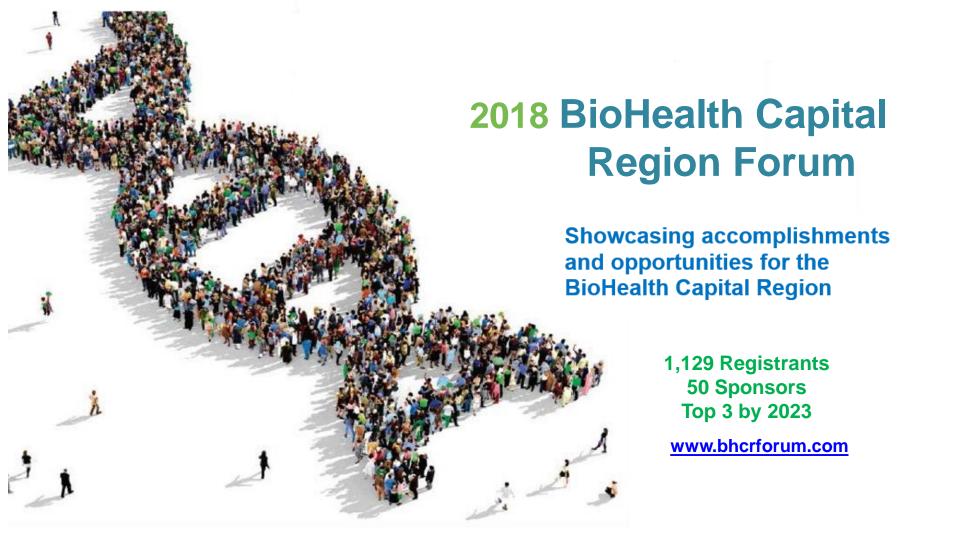
Precision medicine raises \$275 million....

"Precision Medicine Group Raises \$275M to Support Biomarker-Guided Drug Development"

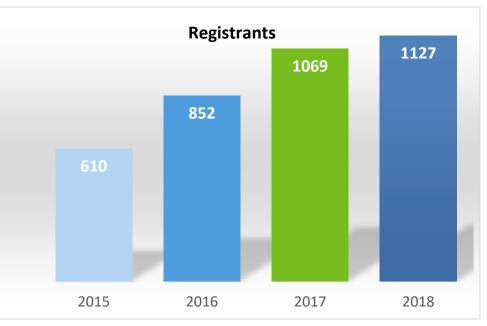


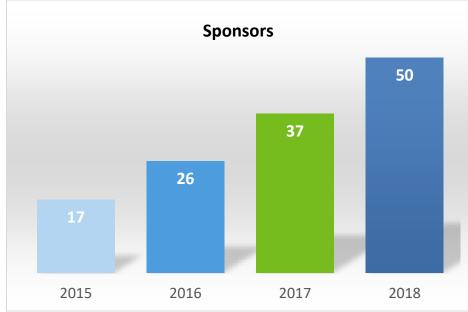
Sucampo sale

"Sucampo Pharmaceuticals closes on its \$1.2B sale to a U.K. company"



BioHealth Capital Region Forum Growth





BHCR Support Organizations





Richard A. Bendis
President /CEO

BHI sources and evaluates marketrelevant bioheath intellectual properties, connects the IP with funding, and assists businesses in marketing and growth





Tami Howie, CEO

"We are a collaborative community that is actively engaged in building strong technology and life science industries by supporting the efforts of our individual members."





George Davis, CEO

"TEDCO provides framework of knowledge, funding, and networking to support an innovation eco-system that nurtures researchers, entrepreneurs, start-ups, and early stage companies engaged in bringing innovation ideas to market."





Jeffrey M. Gallagher CEO

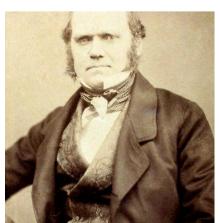
"We fuel the network of leaders that drive bioscience to eradicate disease, save lives, and feed the world.....one innovation at a time."

Darwin of Collaboration

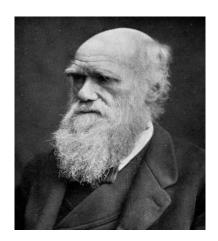
"It is a long history of humankind (and animal kind, too) those who learned to collaborate and improvise most effectively have prevailed."

- Charles Darwin









STATE OF VENTURE-BACKED STARTUPS IN HEALTHCARE

BHCR has Several Good Exits





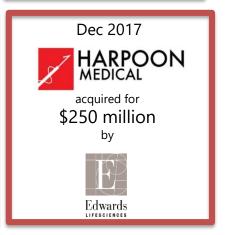








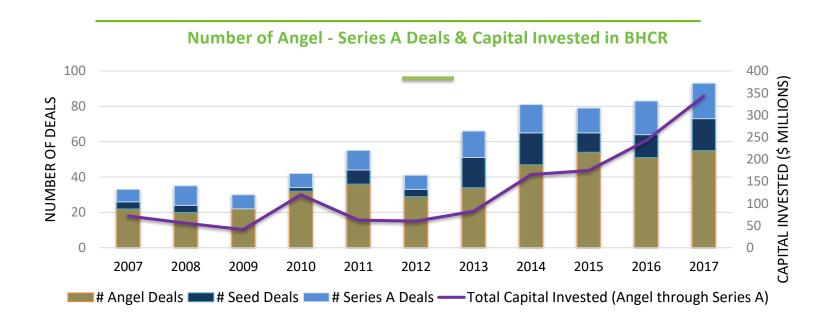






STATE OF VENTURE-BACKED STARTUPS IN HEALTHCARE

Venture Investment in Healthcare in the BHCR





Active ecosystem of independent angels, angel groups, and angel syndicates that invest in an average of 45 deals per year



Consistent Series A activity

Numerous regional and national funders are active in the BHCR for Series A and late-stage venture capital deals



Growing Gap at Seed Stage Deals

With an average 15 seed deals per year, strong startups don't receive funding to conduct necessary experiments for a Series A investment

Recent Venture Capital Funding in BHCR



Raised \$26M to date



Johns Hopkins spin-out Raised \$49M to date





Johns Hopkins spin-out Raised \$14M to date



Johns Hopkins spin-out Raised \$40M to date



Raised \$119M to date



Johns Hopkins spin-out Raised \$28.2M to date

Next@ure

Technology from Yale Raised \$67M to date



Johns Hopkins spin-out Raised \$99.3M to date



Raised \$275M to date



Raised \$10M to date



Johns Hopkins spin-out Raised \$6.6M to date

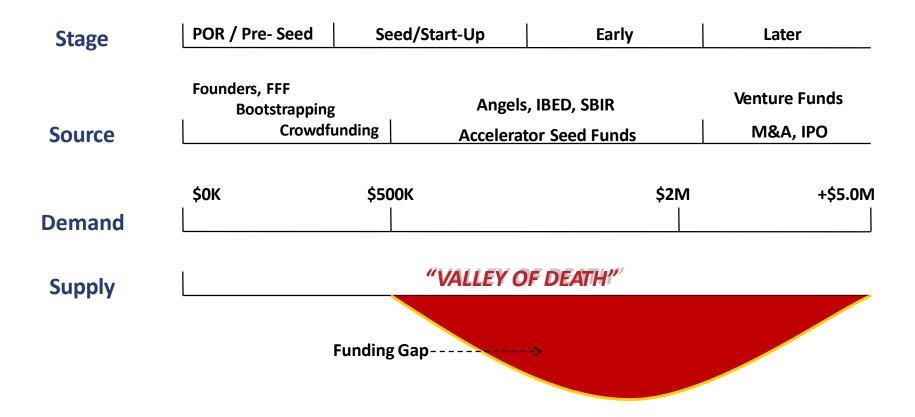


Pfizer spin-out
Raised \$103M to date



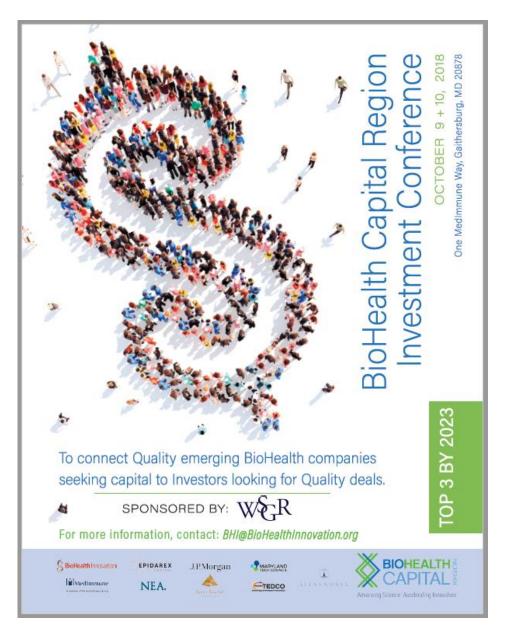
MedImmune/AstraZeneca spin-out Raised \$250M to date

Innovation Capital Valley of Death



BHI Innovation Capital Map





Investment Conference October 9 + 10, 2018



BHCR Gap Fund

Fund Summary:

Structure: Delaware Limited Partnership Size: \$50m with first close at \$25m

Term: 10 years with 2 one-year extension provisions

Investment Period: 3-5 years from final dose date

Typical Investment: \$1m-\$5m per company

Management Fee: 2% of committed capital, declining after investment period, payable annually Carried Interest: 20%

General Partner:

BHI Management, Inc.

- Equity in 33 companies, including 10 co-founded startups
- Have further supported 78+ early-stage biohealth companies with business strategy and developement, customer discovery, and operations
- An experienced team of 6 Entrepreneurs-in-Residence (EIR) and
- 4 Analysts Our EIRs bring 100+ years of cumulative leadership experience and sector expertise to advance startups, mid, and large cap organizations towards significant value inflection
- points Our EIRs are seasoned executives who have advanced organizations from seeds to IPOs
- Our team has connections with operators, funders, and researchers across the biotech and healthcare industries

Lead Investor:



Alexandria Real Estate Equities

Contact Information:



- 22 Baltimore Rd. Rockville, MD 20850
- www.biohealthinnovation.org
- rbendis@biohealthinnovation.org
- 301.637.6439

BioHealth Capital Region Gap Fund

Need for Early Stage Capital

The BioHealth Capital Region (BHCR) has healthy flow of de-risked assets and deals from universities, labs, and insititutes, but lacks early-stage funding.

- #1 In per capita Federal Research Funding:
 - \$26.4 billion in federal R&D funding each year through universities (#1), national labs, and grants (#1).
- High Volume of Translational Funding:
- \$6.4 billion of federal commercialization funding in addition to \$30 million from state sources.
- The Gap: Ongoing Need for Early-stage Funding Growing need for capital among early-stage companies, as most seed investors have moved upstream and now look for more traction before investing.



Solution: BHCR Gap Fund

- Investing in BioHealth companies (health Π, med tech, medical devices, diagnostics, and therapeutics) with a geographic focus in the BHCR.
- Seed to Series A deals: Fill the gap between non-dilutive funding and venture capital Series A financing.
- \$1M-\$5M per company to achieve milestones that create an Inflection point in 12-18 months.
- Companies with Core IP: Creates potential for higher probability of investment success.
- Leveraging research de-risked by non-dilutive funding to launch companies that improve the human
- · Support portfolio companies with business strategy, education, partnerships, and resources to accelerate time to

BHI Management Difference

We have a proven track record of success supporting companies and helping them raise money:











BHI Management Case Study: BeneVir

- BHI quided BeneVir Biopharm pivot from T-Vec mimic to an oncolytic immunotherapy therapeutics platform for advanced solid tumors
 - BHI provided significant support in defining business and development strategy, facilitated intros with multiple VCs and strategic partners within the BHI network
- BeneVir raised \$12m Series A
- 2018 Acquired by Janssen Biotech for \$140m cash + \$900m earn-out

PROTENUS

 BHI provided mentorship & support through DreamIT Health 2014 Raised \$16m to date \$35m valuation at Series B

the organ-on-a-chip company

BHI co-founded US subsidiary BHI Associate runs US subsidiary Raised \$28.9 m+ to date, plus \$2m in grants \$58.5m valuation as of Series B

- Raised \$15m to date \$42.5m valuation at Series B

BHCR Gap Fund

(under development)



General Partner:

BHI Management, Inc.

Lead Investor:



Alexandria Real Estate Equities

BioHealth Capital Regions Serial Entrepreneurs



Mark P. Clein

- Precision for Medicine, Inc.
- United BioSource Corporation
- Infoscriber Corporation
- U.S. BioServices, Inc.



Rachel King

- GlycoMimetics
- NEA
- Genetic Therapy, Inc.



Michael Richman

- NextCure
- Amplimmune



James S. Gammie, MD

- · Correx, Inc.
- Harpoon Medical, Inc.



Ethan D. Leder

- Precision for Medicine, Inc.
- United BioSource Corporation
- · U.S. BioServices, Inc.



Martine A. Rothblatt Ph.D., J.D.

- United Therapeutics Corporation
- GeoStar
- SiriusXM Satellite Radio



Murat V. Kalayoglu

- Cartesian Therapeutics
- Topokine Therapeutics
- HealthHonors Corporation



Wendy Perrow

- AsclepiX Therapeutics
- Alba Therapeutics Corporation



Steve Turner

- · Protea Biosciences Group, Inc.
- · Clinomics BioSciences Inc.
- · Quorum Sciences

University Progress

- USM and JHU have had over 52 life science startups in last 18 months, many receiving venture capital, 4.0 billion in research expenditures, 104 licenses executed, \$60 million in license income, 1208 patent applications filed 258 Patent's issued
- USM has created a new \$25 million momentum venture fund
- New Bluefield Innovations Fund, operated by Deerfield Management to capitalize \$75 million fund to support JHU startups
- UVA entered into partnership with Inova to create a Northern Virginia research and education campus









Regional Initiatives

- Many independent regional initiatives highlighted in this Forum and for first time communication with each other
- Maryland Life Science Advisory Board implementing recommendations for Governor Hogan
- Greater Washington Partnership launched as well as Global Cities Export initiative
- MTC Merger Completed
- MCEDC and WorkSource Montgomery two new private public partnerships operational















Unrivaled Research Assets | Unfulfilled Commercial Promise 800+ BioHealth Companies































State of Maryland: Federal & University Resources

- Population: 5.9 million people
- 59 Federal Laboratories, Centers,& Institutes in Maryland
- Maryland Federal R&D investment exceeding \$12 billion annually

JHU and USM represent another \$3.5 billion in annual R&D







Challenges to Innovation Economy

BHI Value Proposition

Lack of connection of innovation resources

Connect regional innovation assets

Lack of an entrepreneurial culture and C-level executives

Develop an entrepreneurial talent and support pipeline

Lack of early-stage funding for commercializing technologies

Attract funding for technology commercialization

Lack of spin-offs from federal and university R&D

Evaluate commercially relevant federal and university technology

BioHealth Regional Innovation Cluster Assets









































































BioHealth Innovation is a Regional Innovation Intermediary

A public-private partnership, serving as an innovation intermediary in the BioHealth Capital Region with a mission to:

- Advance local technologies, assets and resources
- Accelerate innovation
- Globally connect sectors, industries, communities, and markets



- Regionally-oriented
- Private-public partnership, 501(c)(3)
 nonprofit
- BioHealth Innovation Management, a for-profit subsidiary
- Market-driven, private sector-led and funded
- Neither a government initiative, nor a membership organization

Major Regional BioHealth Companies























































Public BioHealth Companies Headquartered in the Region

































Regional BioHealth Ecosystem Partners

ACADEMIA

- RESEARCH/T2
- LifeLong Learning
- ECONOMIC DEVELOPMENT

INDUSTRY

- PROFIT
- PROCESS
- PRODUCT

INSEPARABLE MISSIONS

GOVERNMENT

- Sustainability
- INFRASTRUCTURE SUPPORT
 - ECONOMIC POLICY

FOUNDATIONS/NGOS

- Economic Growth
- COMMUNITY INVESTMENT
- REGIONAL COLLABORATION

BHI Partners and Sponsors

Private Sector



































































Academia





















<u>Government</u>













Non-Government





















BHI Board of Directors



Daniel Abdun-Nabi

CEO

Emergent BioSolutions, Inc.



William Hearl, Ph.D.

Founder and CEO, Immunomic Therapeutics, Inc.



David Mott

General Partner
New Enterprise Associates



Richard A. Bendis

President & CEO
BioHealth Innovation, Inc.



Ashish K. Kulkarni, Ph.D

EVP & CTO Avantor



Kurt Newman, M.D

President & CEO
Children's National Medical Center



Jarrod Borkat

Vice Chairman
Partnerships and Collaborations
MedImmune



Dave Lemus (Treasurer)

COO/CFO

Prosteros Biostructures GmBH



Lilv Qi

Assistant Chief Administrative Officer Montgomery County Government



Robert Caret, Ph.D.

Chancellor University System of Maryland



Anne S. Lindblad

President & CEO

The Emmes Corporation



John A. Sackett

President

Shady Grove Adventist Hospital



Kenneth Carter, Ph.D.

Chairman

Noble Life Sciences



Douglas Liu (Chair)

Senior VP of Global Operations
Qiagen



Robert Silverman

Head Externalized Drug Discovery Partnering, Roche



Christopher Callaghan

Group Vice President, Healthcare Banking M&T Bank



Joel Marcus

Executive Chairman & Founder Alexandria Real Estate

Equities, Inc.



Ronald J. Daniels

President

Johns Hopkins University



Beth Meagher

Principal

Deloitte Consulting LLP



JOHNS HOPKINS

Jens Eckstein, Ph.D.

President

SR One (GSK)



Charles Morton (Secretary)

Partner

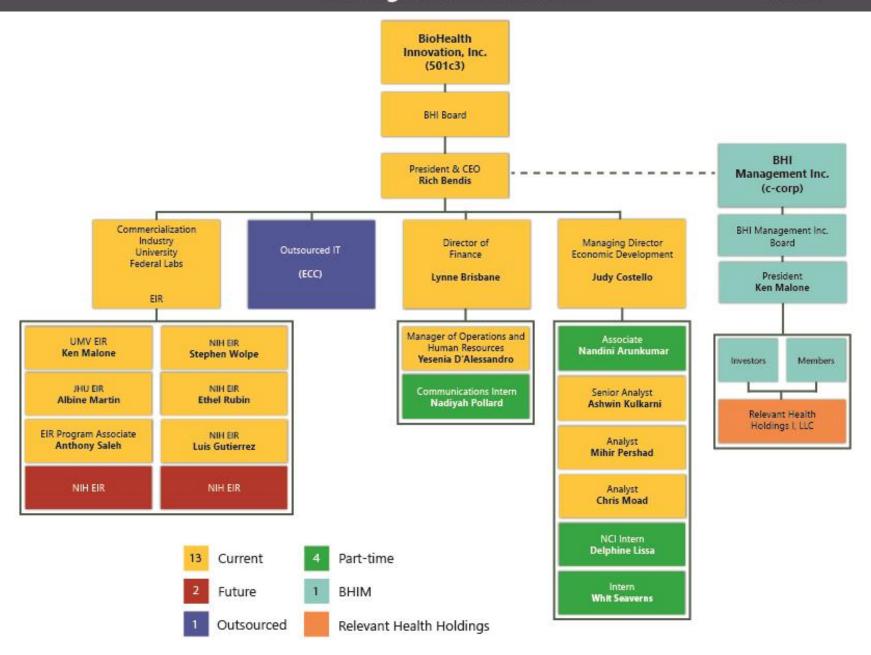
Venable LLP



Mike Gill (Ex-Officio)

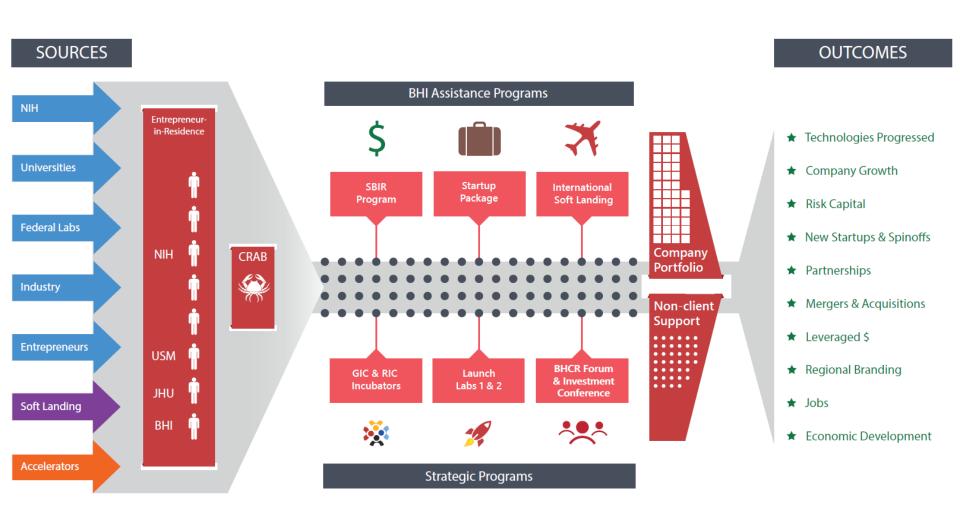
Secretary of Business & Economic Development, Department of Commerce

BHI Organizational Chart



BHI Business Model

Research and technologies enter into the pipeline from sources shown on the left and are evaluated by the EIR team. Commercially relevant startups are connected to assistance programs on a case-by-case basis. Once a startup becomes a portfolio company, the gain access to partners and resources.



BHI Technology Focus

- Therapeutics
- Diagnostics
- Medical Devices
- Healthcare Services
- E-Health
- Mobile Health
- Electronic Medical Records
- Health Informatics
- BioHealth Cybersecurity
- Personalized Health
- Convergence
- Research Tools & Reagents







Innovation Paradigm Shift

PROOF OF CONCEPT
(Technological Feasibility)
Laboratory Push
"It Works!"





PROOF OF COMMERICAL RELEVANCE
(Market Pull)

"It Works To Solve A Problem"

"I'll Buy It"



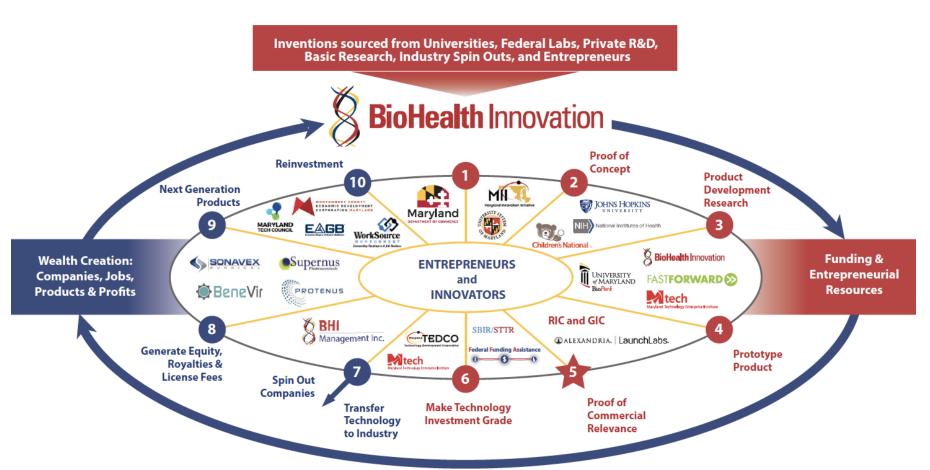
BHI Commercial Relevance Advisory Board (CRAB)



- A pool of experienced biohealth professionals who have agreed to assist BHI in evaluating market-relevant research and product development opportunities
- The CRAB helps determine the commercial applicability of emerging entrepreneurs, companies and their science or technology.

BHI Commercialization Model

This commercialization model shows the steps and partners that are involved in the BHI commercialization and support process. The process below leads to the creation of new companies, spin-outs and strategic partnerships. BHI connects companies with a network of public, private and academic entities.



NIH Partnership Agreements



NIH Consulting Entrepreneur Services Contract for 6 NIH Entrepreneurs-in-Residence





PIA between BHI and NIH's Office of Technology Transfer (OTT) that supports the 27 NIH institutes' \$3 billion intramural research and the Food and Drug Administration to promote and foster cooperative research and accelerate technology commercialization among NIH/FDA, businesses, and universities.

BHI Team



Rich Bendis Founder & CEO BioHealth Innovation

40+ years experience: Innovation America & Innovation Philadelphia, & co-founded 13+ university spin-outs Marion Laboratories. Continental Healthcare Systems, Kimberley Services, Texas Instruments, Polaroid, Quaker Oats



Luis Gutierrez, Ph.D. Entrepreneur-in-Residence NIH

20+ years industry experience:





Ken Malone, Ph.D.

Entrepreneur-in-Residence University System of Maryland

10+ years industry experience





Ethel Rubin, Ph.D. Entrepreneur-in-Residence NIH

10+ years industry experience:



a Mérieux NutriSciences Company



Albine Martin, Ph.D.

Entrepreneur-in-Residence Johns Hopkins University

30+ years industry experience:





Anthony Saleh, Ph.D.

Associate **BioHealth Innovation**





Stephen Wolpe, Ph.D.

Entrepreneur-in-Residence NIH

25+ years industry experience & as an Independent biotechnology consultant





Judy Costello

Executive Director BioHealth Innovation

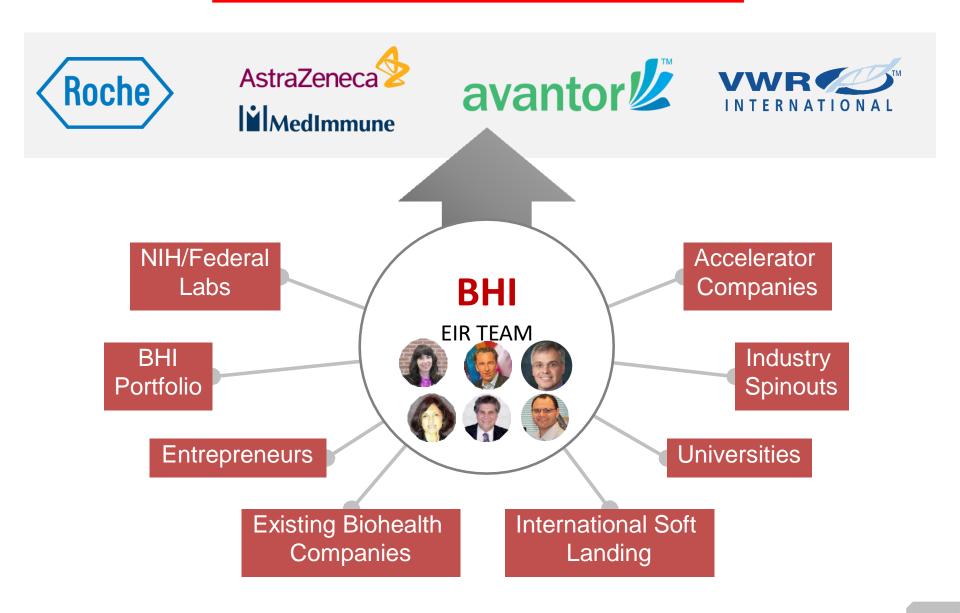
25+ years in economic development in Northern VA, Washington DC, and MD



BHI Company Portfolio



BHI Scouting



BHI Federal Funding Assistance

- \$2.5 billion annual United States Government program coordinated by the Small Business
 Administration provides grants or contracts to small businesses to spur technological innovation
- Grants awarded in 3 phases between \$100,000 and \$1.5 million



BHI Startup Package

Incubation





Consulting

Clinical Services

Accounting

Deloitte.





Intellectual Property





Corporate Legal



Preclinical Services



Banking



Reimbursment



REIMBURSEMENT ADVISORY

Scientific Data
Management Services



Grant Writing





Alexandria LaunchLabs I & II



LaunchLab I



LaunchLab II

FEATURES

- Five laboratory/office modules; each approximately 1,200 Rentable Square Feet (RSF)
- · Laboratory space includes casework, sink, fume hood, equipment storage, emergency generator capacity, etc.
- Office space includes one furnished office, two workstations and common lobby, pantry, conference rooms, IT closet, autoclave, and glass wash so business can immediately commence

LEASE TERMS

- 12 month lease terms with potential for a six (6) month extension
- Base Rent is \$3,925 per month to account for rent and operating expenses inclusive of utilities
- Security deposit is equivalent to one (1) month of Base Rent

Resident Companies include 3i Diagnostics & Antidote Therapeutics.











- Business accelerator for health startups in 2015
- 5 month formal co-working program with 7 month continuation
- Connect founders with a strong mentor network
- Help founders grow into a company ready for pilot testing and
- Cohort of 7 companies and their founders recruited globally
- Up to \$50,000 in stipends per company
- Product focus
- Software developer pool
- Long term support/transition into Montgomery County Incubator Network
- Close proximity to NIH, FDA, HHS, Health companies, international trade representatives and BioHealth Innovation
- Program Duration: October 2015 –
 March 2016













Agewell are developing a data analytics tool which can use the accelerometers in modern devices (cell phones, wearables etc) to determine risk of falling among seniors.

CheeksUp are developing a system to support speech children receiving speech and language support.

Ergonometrix are developing a wearable device which can determine the risk of back injury.

Gastro Girl is a name of a popular blog focused on the community of patients living with GI conditions such as Crohn's, IBS etc. The founders are developing a technology platform focused on delivering health coaching and support to the GI community.

Lazy are developing a product to automate and streamline the collection and submission of key quality metrics by hospitals and other health providers.

The team at Neopenda are developing a monitor to measure neonatal vitals with engineered hats for use in the developing world.

The team at Werbie are developing a mobile and web application focused on the dietary needs of women managing high risk pregnancies.



- Health IT accelerator
- Intensive 16 week program for companies and entrepreneurs.
- Participants receive access to a network of business, marketing and product development mentors.
- Retain promising high growth in Maryland

Partners

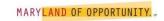




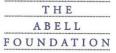












Portfolio

D1







Avhanahealth



Baton

Decisive Health

D2











155 Gibbs Street, Rockville, MD 20850

Montgomery County Innovation Network Facility
Managed by **BioHealth Innovation**, Inc. (BHI)

37 Private Offices and Office Suites | 4,000 square feet of Co-working Space

Features:

- Class A office space located in the heart of the bustling Rockville Town Center—with great access to restaurants, nightlife, community events and fitness facilities.
- Flexible one-year lease agreements with 60-day notice terms.
- Shared conference rooms with state-of-the-art audio visual systems, pre-wired offices to accommodate both telephone and broadband internet service, and wireless internet access.
- Shared kitchenette/lunch room with coffee and other hot gourmet beverages, refrigerator, and microwave.
- Access to market research databases provided through partnership with TEDCO to bona fide entrepreneurs and faculty innovators.



Rockville Innovation Center

25 Companies* | 86 Jobs













05/29/2018



20271 Goldenrod Lane, Germantown, MD 20876

Montgomery County Innovation Network Facility
Managed by **BioHealth Innovation, Inc**. (BHI)

50 Private Offices and Office Suites | 12 Wet labs | 32,000 square feet

Features:

- Turnkey office space with fully fitted wet labs, including RO water, emergency power, and fume hoods. located in the heart of the new Pinkney Innovation Complex at Montgomery College (PIC-MC).
- Flexible one-year lease agreements with 60-day notice terms.
- Shared conference rooms with state-of-the-art audio visual systems, pre-wired offices to accommodate both telephone and broadband internet service, and wireless internet access.
- Shared kitchenette/lunch room with coffee and other hot gourmet beverages,

refrigerator, and microwave.

- On-site access to market research databases provided through partnership with TEDCO to bona fide entrepreneurs and faculty innovators.
- Access to interns, faculty and state-of-art equipment at BioScience Education Center, Montgomery College



Germantown Innovation Center

25 Companies | 126 Jobs











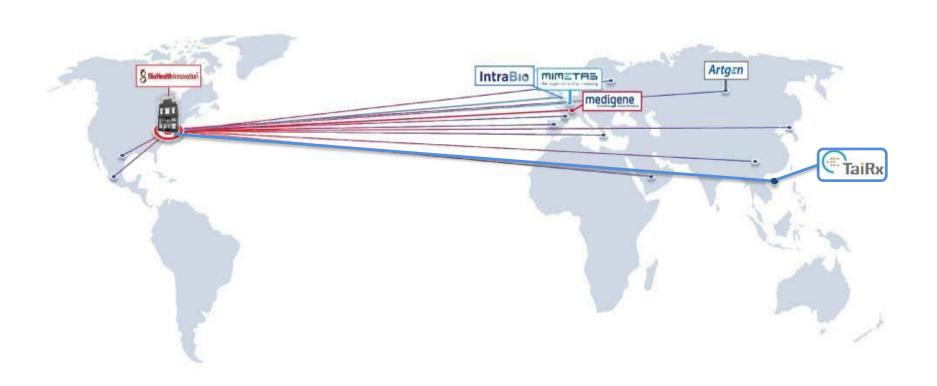




Technology

05/29/2018

BHI International Soft Landing



China South America South America Spain Israel Russia Latvia Korea Netherlands Taiwan North America South America Spain Israel Japan

BHI offers international companies the perfect starting point to create US- based subsidiaries. Soft landing companies are given access to BHI's extensive business resources including Business Development & Sales, Entrepreneurs-in- Residence (EIR), Financial, Grant Writing/SBIR Federal Funding Assistance, Human Resources, Incubation/Site Location, Legal - Corporate & Intellectual Property, Marketing & Promotion, Market Research, Network & Connections, Regulatory & Preclinical /Clinical, and Reimbursement.

Websites, News and More



BHI Website

The BHI website has news, an events calendar, research publications, regional organization feature stories and resources for the biohealth industry.

www.biohealthinnovation.org



BHI News

BHI's weekly e-newsletter highlights the Central Maryland region's news articles, national biohealth trends and feature stories.

www.biohealthinnovation.org/news



BioHealth Capital Region

The BHCR website highlights the region's biohealth news, stories, trends and events.

www.biohealthcapital.com



BHCR News

BHCR News is a monthly publication that highlights industry news throughout the region.



BioTalk

Rich Bendis, hosts BioTalk — conversations with some of the most accomplished and exciting business, academic, and government leaders in the biohealth industry.

Entrepreneur Training Programs





DC I-corps is a custom commercialization program for biohealth related technologies and startup companies. The six-week program guides teams through a rigorous market assessment and validation process ultimately creating a viable business model. BHI has supported Node activity at the NIH, Johns Hopkins U, and University System of Maryland.





BHI participates in the office hour training of Entrepreneurial startups and faculty members in conjunction with the Maryland Technology Enterprise Institute at the Institute for Marine & Environmental Technology of the University of Maryland Baltimore County.

NIH Centers for Accelerated Innovations

Research Evaluation and Commercialization Hubs





Designed to accelerate translation of scientific discovery into commercial products that improve health for patients in the areas of Heart, Lung, Blood, and Sleep technology, BHI EIRs strategically work with the commercial evaluation . With these two programs, the NIH has created a nationwide network of six Centers and Hubs to develop best practices in translating academic innovations.



The NCAI Centers are at the Boston Biomedical Innovation Center, the Cleveland Clinic, and the UC-CAI in Los Angeles.

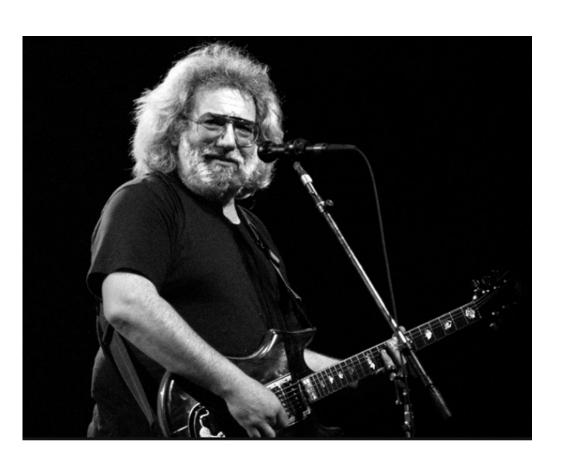


BHI: The Triple Bottom Line

Grows high-paying jobs and businesses

Expands tax base; improves economic vitality

...and benefits human health!



A Call To Action

"Somebody has to do something, and it's just incredibly pathetic that it has to be US."

-- Jerry Garcia
of the Grateful Dead

THIS US IS YOU!

A BIG THANK YOU TO



BHI Contact

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info@biohealthinnovation.org www.biohealthinnovation.org



New office location, effective July 1, 2018

1 Church Street, Suite801 Rockville, MD 20850 (301) 637-7950

info@biohealthinnovation.org www.biohealthinnovation.org

