



# Washington Forum on US-Sino Innovation and Collaboration

## Economic Development and Innovation

**Rich Bendis**, President & CEO, BioHealth Innovation

Trump National Golf Club, Sterling, VA 20165

October 3, 2017



# The Global Innovation Imperative

- Innovation is Key to Growing and Maintaining a Country's **competitive** Position in the Global Economy and to address Global Challenges
- **Collaboration** among Small and Large Businesses, Universities, and Research Institutes is Essential for Innovation & Commercialization
- **New Institutions and New Incentives**, are increasingly important to support collaboration and foster innovation
- Competitive advantages are increasingly tied to human capital and innovation
- **Economic growth** is closely related to education/ workforce, energy, climate change, environmental, natural resource, geopolitical issues & entrepreneurship



**OPEN  
INNOVATION  
MATTERS**

# How Leading Regions Respond to the Innovation Imperative?

- They are providing four things:
  - High-level Focus
  - Sustained Support for R&D: Leveraging Public and Private Funds
  - Support for Innovative SMEs
  - New Innovation **Partnerships** to bring new products and services to market



# Why Is Innovation Essential?



**“INNOVATION  
DISTINGUISHES BETWEEN  
A LEADER AND A  
FOLLOWER.”**

**- STEVE JOBS**

**INNOVATION** is the creation and transformation of knowledge into new products, processes, services that meet market need and interactions, entertainment forms, and ways of communicating and collaborating

***“Never before in history  
has innovation offered  
promise of so much to so  
many in so short a time.”***

**Bill Gates - Microsoft**



# Regional Innovation Clusters

## Five Key Components to Consider When Defining Unique Regional Assets

*What you make, including your existing & prospective industry clusters*

**ECONOMIC  
BASE**

**ENTRE-  
PRENEURSHIP**

*Your capacity to create companies wholly new or from existing firms*

*What you do: your workforce skills & human capital base*

**TALENT**

**INNOVATION  
& IDEAS**

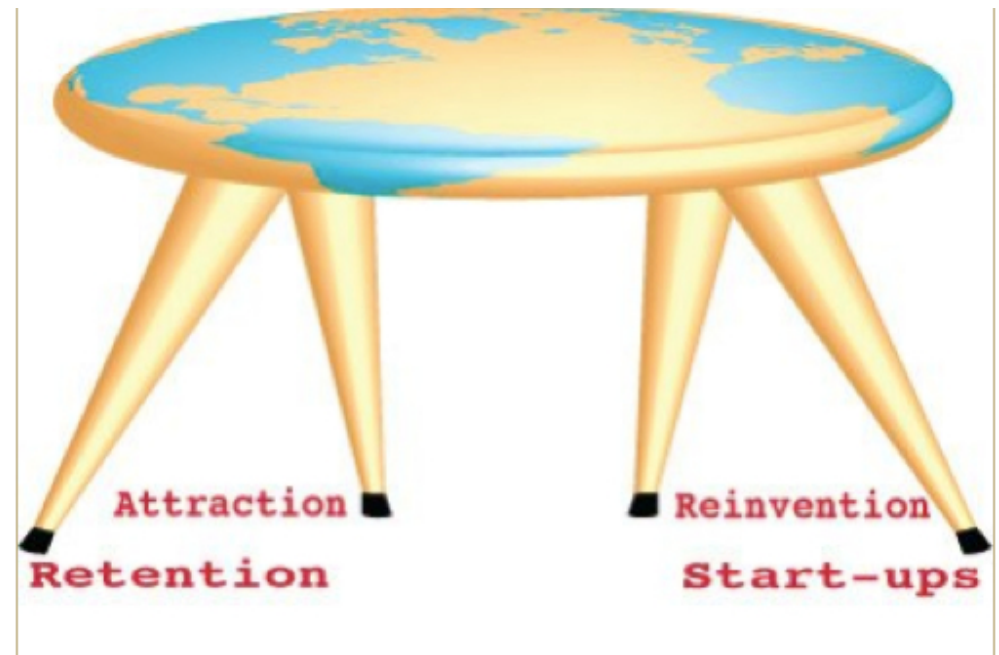
*Your capacity to innovate and generate new ideas*

**Location, Infrastructure, Amenities,  
Factor Costs, Natural Resources**

*The basic conditions defining the economic milieu of the region*

# Economic Development

- Economic Development is like a
- 4 - legged stool:
  - **Attraction**
  - **Retention**
  - **REINVENTION**
  - **Grow Your Own**
- IBED requires patience and persistence, continuity and consistency
- Working with early-stage companies takes time
- A balanced portfolio economic development strategy is best!



# Goals of Innovation-Based Economic Development

Intervene at the margins of private sector investment flows of capital (financial and intellectual) to:

- Address economic transition
- Capture the benefit of investments in research and development, higher education
- Build entrepreneurial cultures
- **Help existing companies grow**
- Diversify both rural and urban economies
- Develop global innovation network



# The Secret Recipe to Building an Innovation Ecosystem

- There is none!
- Key Ingredients: Universities, Governments, NGOs, Incubators, and Startups
- These are nothing compared to:  
A committed group of people with a high degree of trust, collaboration, sharing, and interdependency



**Welcome to the**



**Our Goal:  
To become a Top 3  
BioHealth Hub by 2023**

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



## Unrivaled Research Assets | Unfulfilled Commercial Promise

800+ BioHealth Companies



National Institutes of Health



## 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**



# BHI is an Innovation Intermediary

BHI is a public-private partnership, 501(c)(3) nonprofit. Our mission is to connect market relevant technology to business resources with the goal of elevating the BioHealth Capital Region



- 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

Maryland  
Carroll

Baltimore  
County

Harford

National Cancer  
Institute  
Fort Detrick/  
Medical Facilities  
Frederick  
Frederick



**BioHealth Innovation**

Center for Medicare  
and Medicaid Innovation  
Johns Hopkins Homewood  
University of Maryland  
Medical Center & Biomedical  
Research Facility  
University of  
Maryland  
Baltimore County  
EAGB  
Greater Alliance of Greater Baltimore

**Baltimore**

SPARK  
Johns Hopkins  
East Baltimore  
Johns Hopkins  
Bayview

Howard

US Dept  
of Energy  
National Institute of  
Standards & Technology  
The Universities at  
Shady Grove  
Johns Hopkins Belwood Campus  
National Cancer Institute  
Rockville

**Montgomery  
County**

Johns Hopkins  
Applied Physics  
Laboratory

Anne Arundel

Loudon  
County

US Dept of  
Health & Human  
Services  
Walter Reed Army  
Institute of Research  
National Institutes of Health  
Uniformed Services University of the Health Sciences  
NOAA  
FDA  
NASA Goddard  
USDA National  
Agriculture Library

Children's  
Hospital  
HHS

Annapolis

Fairfax  
County

INOVA

**Washington D.C.**

US Dept of Defense  
(Pentagon)

Prince George's

Virginia



## Challenges to Innovation Economy

Lack of connection of innovation resources

Lack of an entrepreneurial culture and C-level executives

Lack of early-stage funding for commercializing technologies

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

## BHI Value Proposition

Connect regional innovation assets

Develop an entrepreneurial talent and support pipeline

Attract funding for technology commercialization

Evaluate commercially relevant federal and university technology

# Major Regional BioHealth Companies





# Public BioHealth Companies Headquartered in the Region
























# Recent Venture Capital Investments



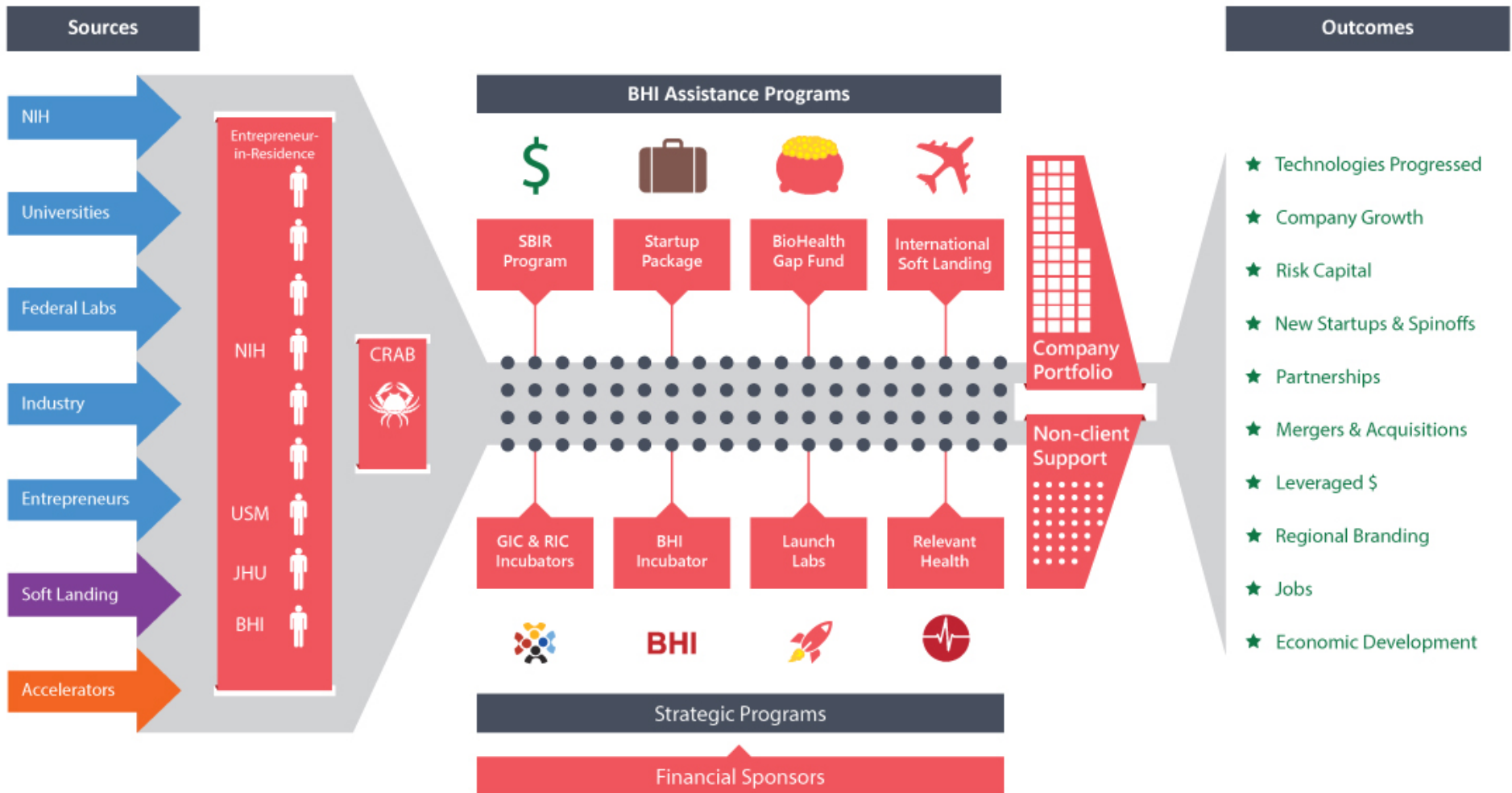
# Regional BioHealth Ecosystem Partners



# BHI Board of Directors

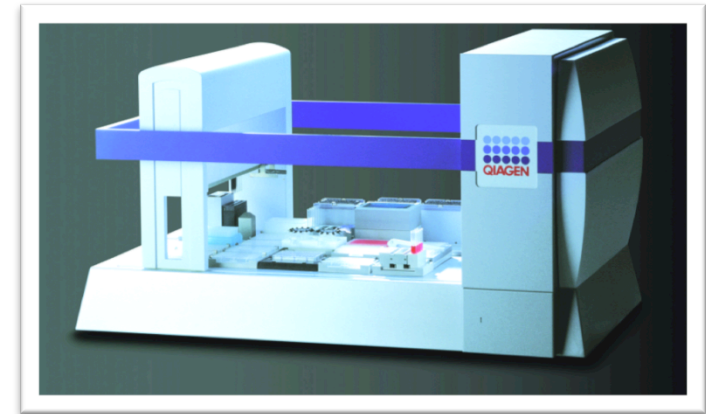
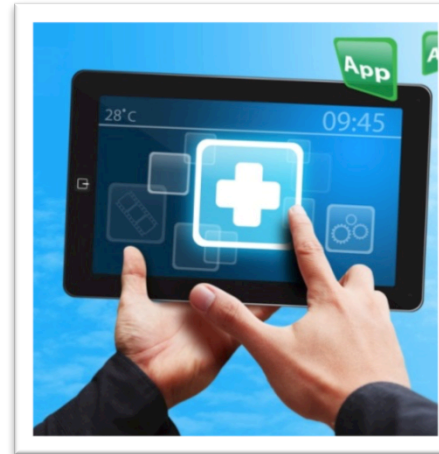
	<b>Daniel Abdun-Nabi</b> <b>(Vice-Chairman)</b> CEO, Emergent BioSolutions, Inc.		<b>David M. Gillece</b> Market Leader Cushman & Wakefield		<b>Beth Meagher</b> Principal Deloitte Consulting LLP
	<b>Richard A. Bendis</b> President & CEO BioHealth Innovation, Inc.		<b>William Hearl, Ph.D.</b> Founder and CEO, Immunomic Therapeutics, Inc.		<b>Lily Qi</b> Assistant Chief Administrative Officer Montgomery County Government
	<b>Jarrod Borkat</b> Senior Director, External Partnerships and Collaborations MedImmune		<b>Rick Ivey</b> Vice President R&D BD Diagnostics		<b>John A. Sackett</b> President Shady Grove Adventist Hospital
	<b>Robert Caret, Ph.D.</b> Chancellor University System of Maryland		<b>Dave Lemus (Treasurer)</b> CEO Medigene, Inc.		<b>Robert Silverman</b> Head Externalized Drug Discovery Partnering, Roche
	<b>Kenneth Carter, Ph.D.</b> Chairman Noble Life Sciences		<b>Douglas Liu (Chair)</b> Senior VP of Global Operations Qiagen		
	<b>Christopher Callaghan</b> Group Vice President, Healthcare Banking M&T Bank		<b>Joel Marcus</b> CEO & Founder Alexandria Real Estate Equities, Inc.		
	<b>Ronald J. Daniels</b> President Johns Hopkins University		<b>David Mott</b> General Partner New Enterprise Associates		
	<b>Jens Eckstein, Ph.D.</b> President SR One (GSK)		<b>Charles Morton (Secretary)</b> Partner Venable LLP		<b>Mike Gill (Ex-Officio)</b> Secretary Department of Commerce

# BHI Business Model



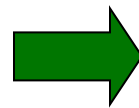
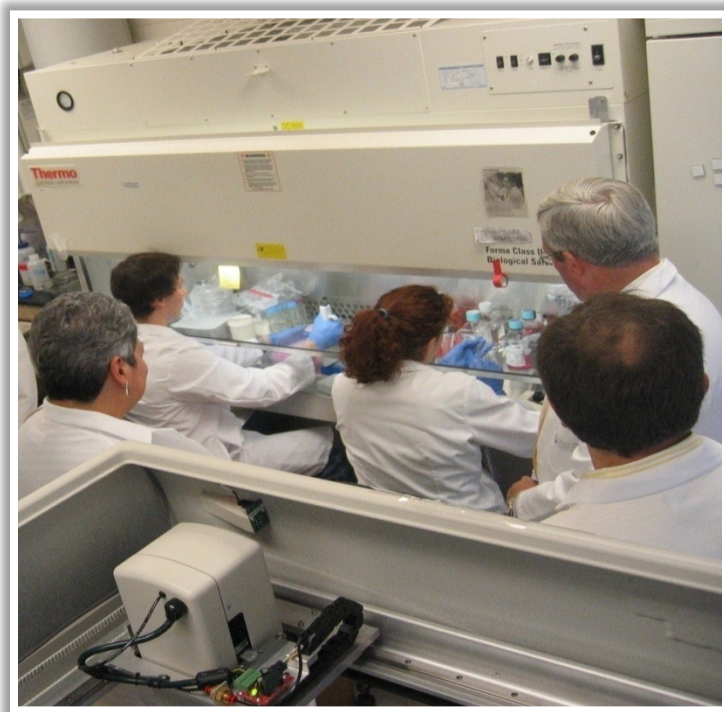
# BHI Technology Focus

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



# Innovation Paradigm Shift

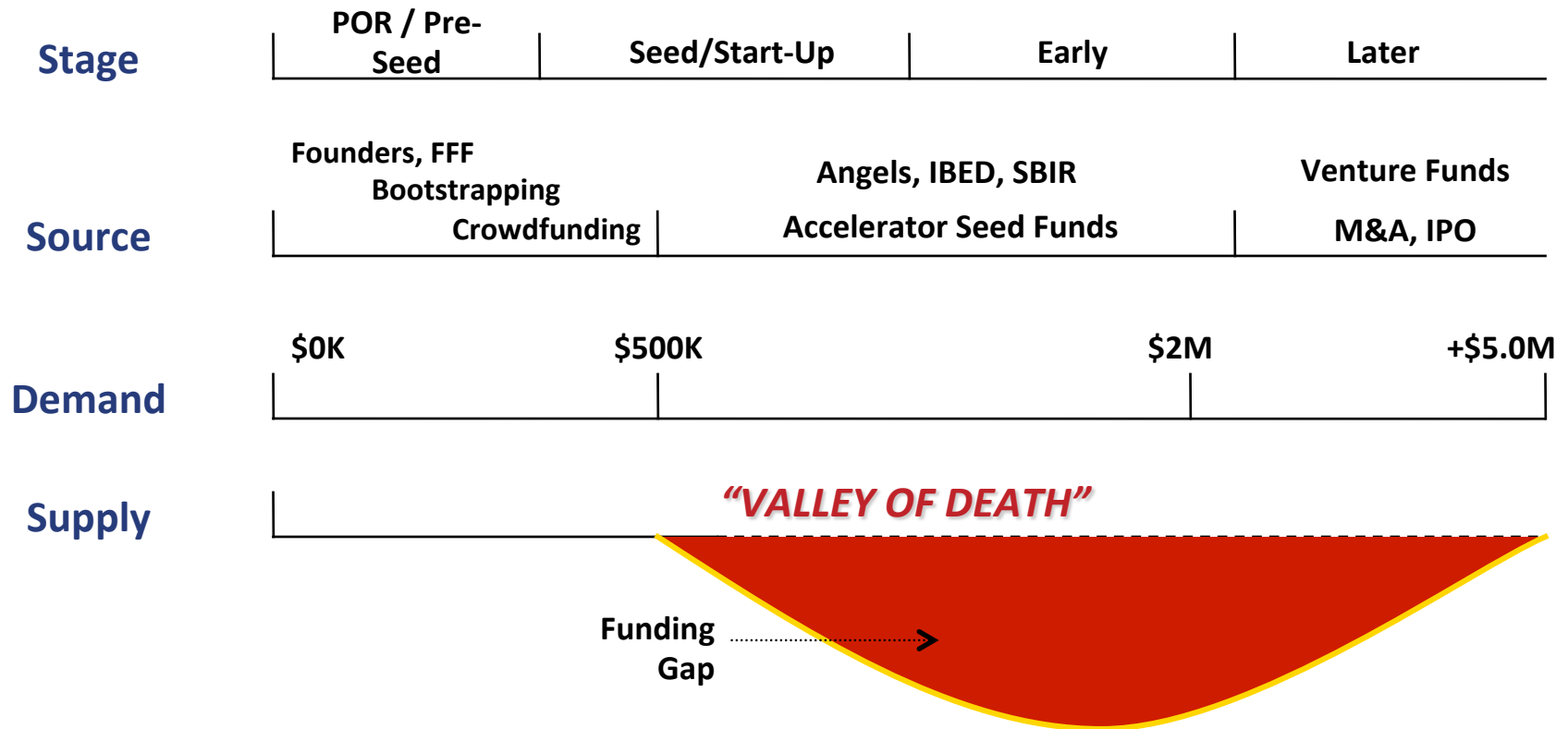
**PROOF OF CONCEPT**  
**(Technological Feasibility)**  
**Laboratory Push**  
**“It Works!”**



**PROOF OF COMMERCIAL RELEVANCE**  
**(Market Pull)**  
**“It Works To Solve A Problem”**  
**“I’ll Buy It”**



# Innovation Capital **Valley of Death**





# BHI Innovation Capital Map

Pre-Proof of Concept	Translational Research/ Proof of Concept	Proof of Commercial Relevance/Pre-Seed	Seed/ Start-Up	Early Stage	Later Stage
\$25,000 - \$1,500,000 (over 5 yrs)	\$15,000 - \$750,000 (over 3 yrs)	\$15,000 - \$1,500,000	\$50,000 - \$1,500,000	\$200,000 - \$2,500,000	\$2,500,000+
<ul style="list-style-type: none"> <li>NIH R01</li> <li>NIH R03</li> <li>NIH R21</li> <li>Maryland Stem Cell Research Fund (MSCRF)</li> </ul>	<ul style="list-style-type: none"> <li>SBIR/STTR Grant Phase 1</li> <li>NCATS Cures Acceleration Network (CAN)</li> <li>Maryland Stem Cell Research Fund (MSCRF) research</li> <li>TEDCO Technology Validation Program - Proof of Concept</li> <li>TEDCO Maryland Innovation Initiative - Phase 1</li> <li>JHU - Coulter Translational Research Partnership</li> <li>UVA - Coulter Translational</li> </ul>	<ul style="list-style-type: none"> <li>Maryland Industrial Partnerships (MIPS @ UMD)</li> <li>SBIR/STTR Phase 2</li> <li>TEDCO Maryland Innovation Initiative - Phase 2</li> <li>Maryland Stem Cell Research Fund (MSCRF) - Pre-Clinical</li> <li>Virginia Bioscience Health Research Corporation</li> </ul>	<ul style="list-style-type: none"> <li>Dingman Center Angels (UMD)</li> <li>Maryland Momentum Fund</li> <li>UVA Seed Fund</li> <li>TEDCO Seed Fund</li> <li>CIT BioSeed Fund</li> <li>Baltimore Angels</li> <li>New Dominion Angels</li> <li>SBIR/STTR Phase 2</li> </ul>	<ul style="list-style-type: none"> <li>VTC Innovation Fund</li> <li>Maryland Venture Fund</li> <li>Abell Venture Fund</li> <li>Camden Partners Exelixis Fund</li> <li>Inova Strategic Investments</li> </ul>	<ul style="list-style-type: none"> <li>Maryland Venture Fund</li> <li>ABS Capital Partners</li> <li>Greenspring Associates</li> <li>Novak Biddle Venture Partners</li> <li>Sterling Venture Partners</li> <li>Harbert Venture Partners</li> <li>JMI Equity</li> <li>New Enterprise Associates (NEA)</li> <li>MMG Ventures LLP</li> <li>TDF</li> </ul>

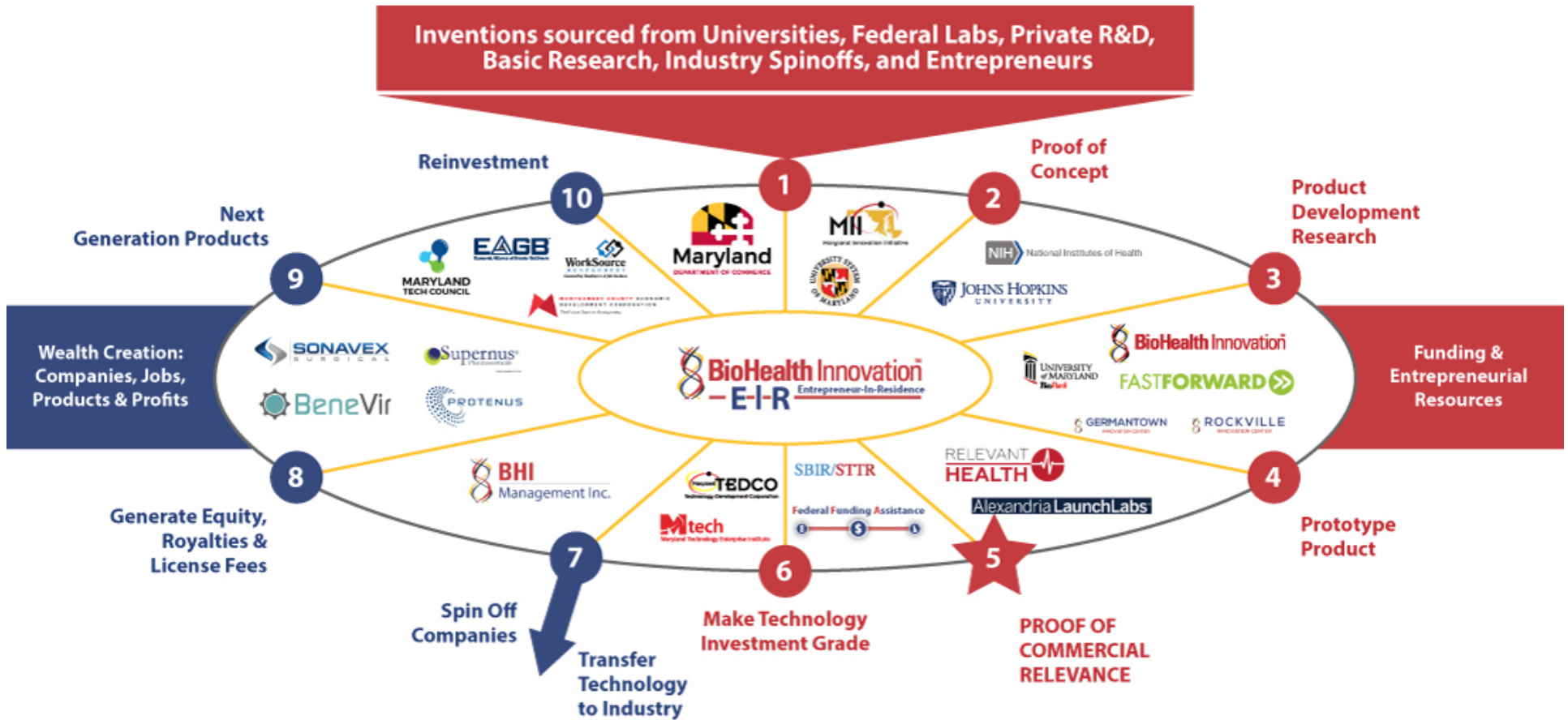
## Funding Type Key

- Academic
- Federal
- Private Capital
- Economic Development

## Tax Credits

- Maryland Biotechnology Investor Tax Credit
- Virginia Angel Investor Tax Credit
- Montgomery County Biotechnology Investor Tax Credit

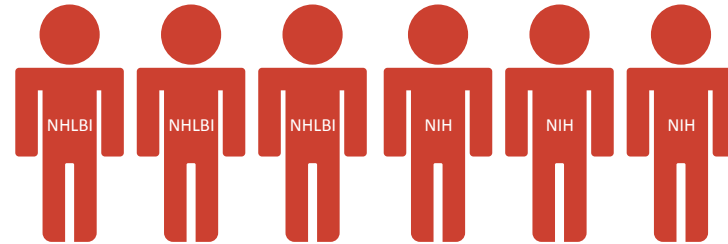
# BHI Commercialization Model



# 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.

# Who are the Entrepreneurs-in-Residence?

Our EIRs are experienced entrepreneurs, venture capitalists and industry business developers managing a commercially relevant biohealth portfolio.



Ken  
Malone (USM)



Albine  
Martin (JHU)



Ethel  
Rubin (NHLBI)



Steve Wolpe  
(NHLBI)



Luis Gutierrez  
(NIH)



Anthony Saleh  
(Entrepreneurial  
fellow)

Additional NIH  
EIRs

BHI's EIRs specialize in:







- Product development
- Investment that encompasses technology diligence
- Fundraising
- Running companies
- Commercializing novel medical technologies





# BHI Company Portfolio




● Therapeutic   
 ● Medical Device   
 ● DreamIt Health   
 ● Health IT / IT   
 ● R&D Tool   
 ● Relevant Health








 BeneVir  
 active immunotherapy against evolving tumors  
 VLP Therapeutics  
 Cartesian  
 THERAPEUTICS  
 AgamiLife  
 PSTx | PARADIGM SHIFT  
 THERAPEUTICS  
 CORVIDIA  
 Precision Cardiovascular Therapeutics  
 orgenesis™  
 miRecule  
 Therapies for Cancer  
 Artgen  
 AVIDEA  
 TECHNOLOGIES  
 Asulon Pharma  
 COARE Therapeutics  
 Dansar

 PERCEPTIVE  
 NAVIGATION  
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 SURGICAL  
 Sisu Global Health  
 APPIAN  
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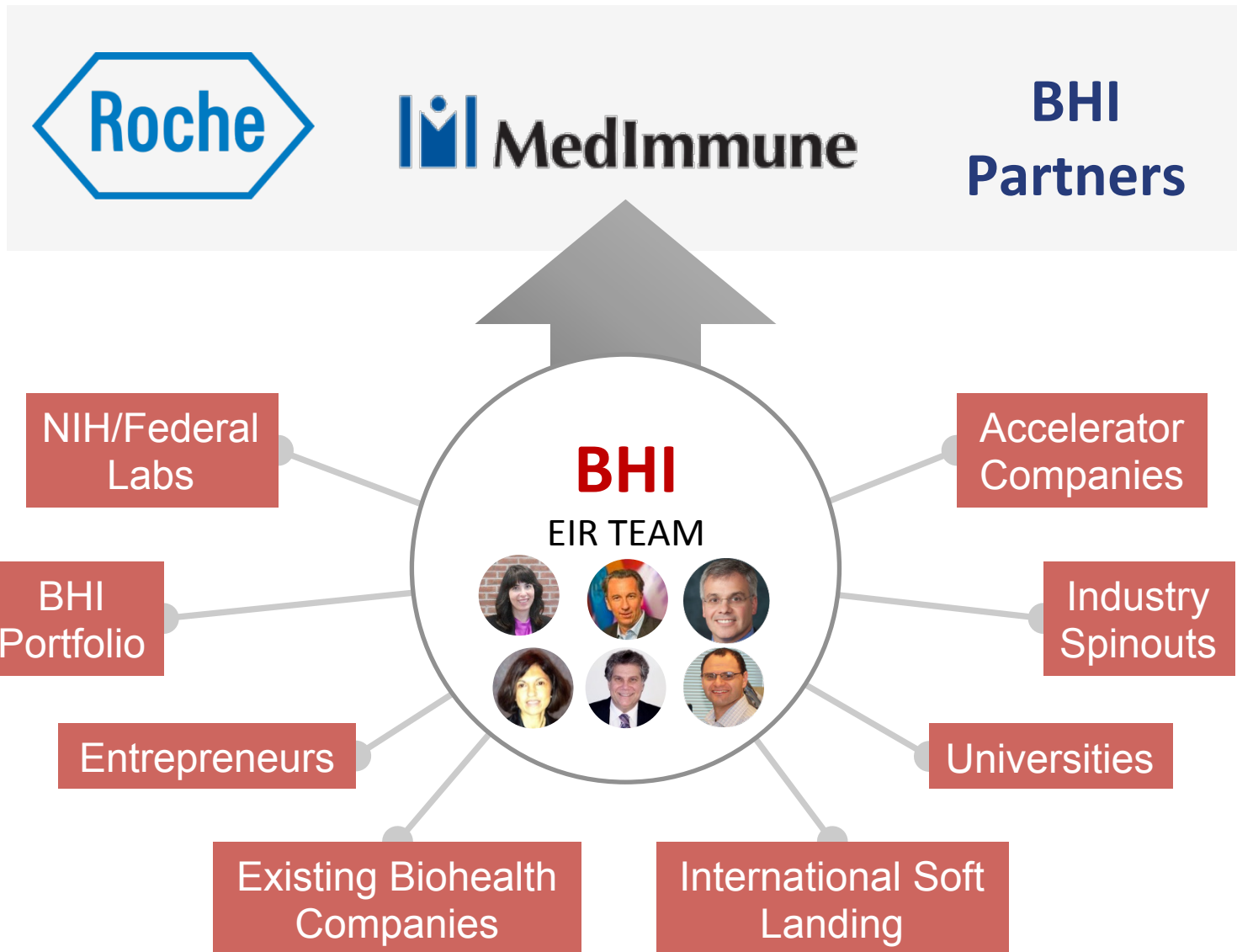
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 Avhanahealth  
 COGNUSE  
 Quantified  
 CARE  
 emocha  
 InsightMedi  
 Baton  
 REDOX

 TERTIUS  
 ANALYTICS  
 Networks. Clusters. Regions.  
 mdlogix  
 accelerating clinical research  
 TISSUE ANALYTICS  
 breezio  
 bwell

 MIMETAS  
 the organ-on-a-chip company  
 MOCKV  
 SOLUTIONS  
 VAKSEA  
 3DBioWorks

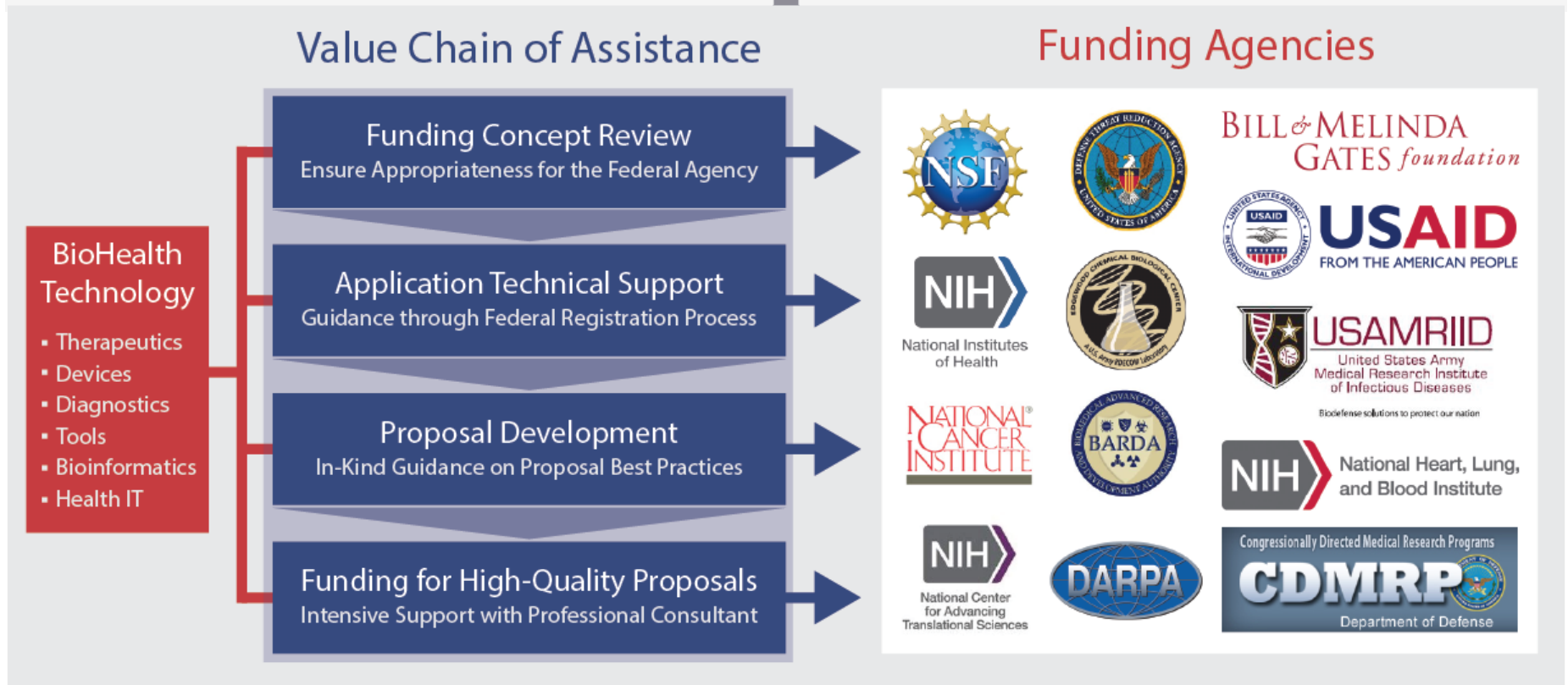
 AgeWell  
 biometrics  
 CheeksUp  
 Neopenda  
 werbie  
 lazy  
 GastroGirl™  
 EMPOWERING OPTIMAL DIGESTIVE HEALTH  
 ERGONOMETRI

# 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
- Non-dilutive



\$13.5 M Funding awarded | 38 wins of 94 submissions since Jan. 2014 | 40% success rate

# BHI Startup Package

## Incubation



## Consulting



## Clinical Services



## Accounting



## Intellectual Property



## Corporate Legal



## Preclinical Services



## Banking



## Reimbursement



## Scientific Data Management Services



## Grant Writing





# Alexandria LaunchLabs



## 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.



# RELEVANT HEALTH



- 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  
biometrics

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

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

Ergonometri  
*We've got your worker's back*

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

GastroGirl™

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

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

Neopenda

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

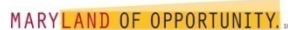
werbie

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

# Dreamit Health Baltimore

- 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



D2

Baton

Decisive Health



# Rockville Innovation Center

## Class A office space located in the heart of the bustling Rockville Town Center

- Focused on biohealth convergence, the connection between disciplines in the healthcare market, including Health Technology, Bioinformatics, Health Information, Health Cybersecurity and other enabling technologies.
- Access to BHI's business resources including Entrepreneurs-in-Residence (EIRs), MITRE technologists, key-opinion-leader sessions, tactical workshops on technology development, and entrepreneurship support from various corporate, strategic and investment partners. 23,000 sqft of flexible office space
- 36 offices and office suites
- Support in both hardware and software development.
- Flexible one year lease agreements with 60-day notice terms.
- Shared conference rooms
- Shared kitchenette/lunch room
- Steps away from restaurants, nightlife, community events and fitness facilities



# Rockville Innovation Center Portfolio

23 Companies | 100 Jobs

## Technology



## Health Tech



## Biotech/Life Sciences



# Germantown Innovation Center

## Montgomery County's premier space for life sciences companies

- Located in the heart of the BioHealth Capital Region, featuring unmatched assets and resources.
- 32,000 sqft, 45 offices, 2 huddle areas, 2 conference rooms and 1 large multi-purpose room
- 11 wet labs averaging 500 sqft and 2 modular clean rooms (Class 100) for life sciences companies
- Green-design elements, including Lab floors of rapidly renewable materials and efficient mechanical systems
- Free parking
- Access to BHI's business resources including Entrepreneurs-in-Residence (EIRs), preclinical services, legal services and more.



# Germantown Innovation Center Portfolio

23 Companies | 115 Jobs

## Diagnostics



epigenomics

Adera Labs



## Therapeutics



Biologics Resources  
Vaccine & BioPharma Company

Medytox



Neuraly Inc.

Leads Biolabs

origenes™

## Health IT



WITCHOLOGY®

4G Four Gates LLC  
Business + Technology Services

## Technology

LEVEREGE

KINETIC  
ANALYSIS  
CORPORATION

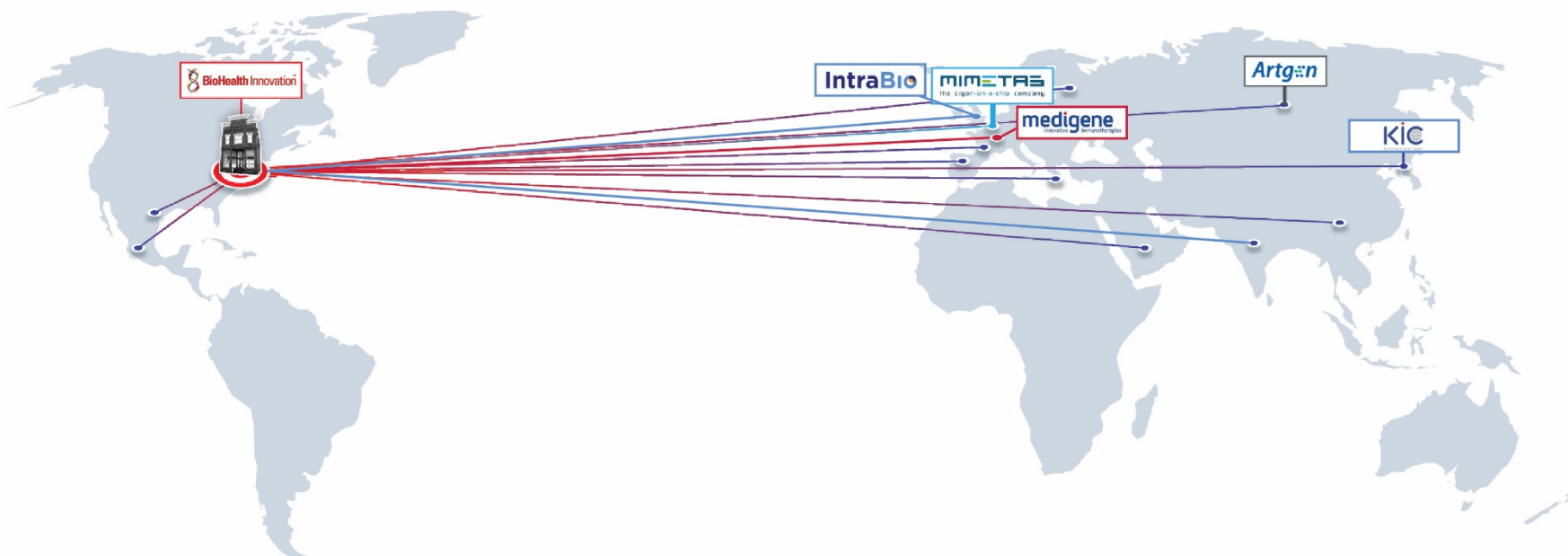
DSPlogic



SERVEFED™

MACHFU

# BHI International Soft Landing



China	North America
Estonia	South America
Germany	Spain
Greece	Israel
India	Russia
Korea	Latvia
Netherlands	South Korea

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.





# 2018 BioHealth Capital Region Forum

Join us as we showcase  
accomplishments and discuss  
opportunities for the future  
of the BioHealth Capital Region

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

**April 23 + 24, 2018**

One MedImmune Way, Gaithersburg, MD 20878

# 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](http://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](http://www.biohealthinnovation.org/news)



## BioHealth Capital Region

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

[www.biohealthcapital.com](http://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



## I-CORPS



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



National Institutes  
of Health



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.



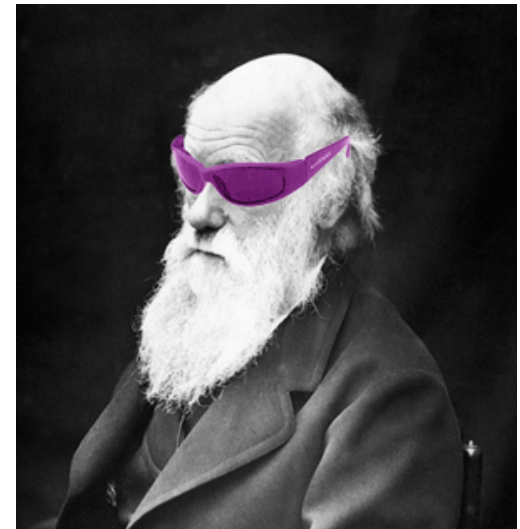
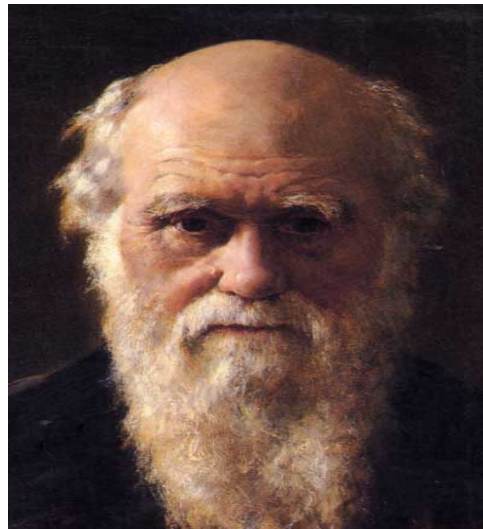
The NCAI Centers are at the Boston Biomedical Innovation Center, the Cleveland Clinic, and the UC-CAI in Los Angeles.

The REACH Hubs operate at the Lond Island Bioscience Hub, the University of Louisville, ExcITE HUB, and the University of Minnesota-REACH.

# Change Is Inevitable

“It is not the strongest of species that survive, nor the most intelligent, but the ones most responsive to change.”

**Charles Darwin**



"Coming together is a beginning, staying together is progress, and working together is success."

**Henry Ford**



## **BHI: The Triple Bottom Line**

**Grows high-paying jobs and businesses**

A large, hollow, downward-pointing arrow with a thin black outline, centered between the first and second boxes.

**Expands tax base; improves economic vitality**

A large, hollow, downward-pointing arrow with a thin black outline, centered between the second and third boxes.

**...and benefits human health!**

## **BHI** Contact

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Rockville, MD 20850

8 Market Place  
Baltimore, MD 21202

(301) 637-7950

[info@biohealthinnovation.org](mailto:info@biohealthinnovation.org)

[www.biohealthinnovation.org](http://www.biohealthinnovation.org)

