



# BHI Introduction

**Rich Bendis**

President & CEO

BioHealth Innovation, Inc.

Baltimore

2/25/2015

# The Region – Central Maryland

- Unrivaled Research Assets -
- Unfulfilled Commercial Promise -



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**



**JOHNS HOPKINS**  
UNIVERSITY



# Maryland



**BioHealth Innovation**  
Maryland's Commercialization Collaborative

## Baltimore County

### Baltimore

- Center for Medicare and Medicaid Innovation
- Johns Hopkins Homewood
- University of Maryland Medical Center & Biomedical Research Facility
- University of Maryland Baltimore County
- Johns Hopkins East Baltimore
- Johns Hopkins Bayview



## Howard

Johns Hopkins Applied Physics Laboratory

## Montgomery County

### Rockville

- US Dept of Energy
- National Institute of Standards & Technology
- The Universities at Shady Grove
- Johns Hopkins Belward Campus
- National Cancer Institute
- US Dept of Health & Human Services
- National Institutes of Health
- Uniformed Services University of the Health Sciences
- Walter Reed Army Institute of Research
- NOAA
- HHS
- US Dept of Defense (Pentagon)

## Anne Arundel

- NASA Goddard
- FDA
- USDA National Agriculture Library

### Annapolis

University of Maryland at College Park

## Washington D.C.

## Prince George's

## Frederick

- National Cancer Institute
- Fort Detrick/ Medical Facilities

### Frederick

## Virginia

## Harford

## 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

# BioHealth Regional Innovation Cluster Assets



JOHNS HOPKINS  
UNIVERSITY



NEA  
New Enterprise Associates\*

MARYLAND OF OPPORTUNITY.™

EAGB™



APL  
The Johns Hopkins University  
APPLIED PHYSICS LABORATORY

NIH National Institute of Neurological Disorders and Stroke

NIH National Heart, Lung, and Blood Institute

NIH  
National Institutes of Health



NATIONAL  
CANCER  
INSTITUTE

BIO X MARYLAND

MdBio

Montgomery County, Maryland  
Montgomery College

NCATS NIST

Center for Medicare & Medicaid  
INNOVATION

WALTER REED  
ARMY MEDICAL CENTER



Rockville  
Economic Development, Inc.  
Known for the Companies We Keep

USDA

HHMI  
HOWARD HUGHES  
MEDICAL INSTITUTE



National Biodefense Analysis  
and Countermeasures Center

TIGR  
THE INSTITUTE FOR GENOMIC RESEARCH

FDA

USAMRIID  
United States Army  
Medical Research Institute  
of Infectious Diseases  
Biodefense solutions to protect our nation

J. Craig Venter  
INSTITUTE



Bio  
BIOTECHNOLOGY  
INDUSTRY ORGANIZATION

# BioHealth Innovation is an Innovation Intermediary

An private-public partnership, serving as an innovation intermediary in Central Maryland 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
- Market-driven, private sector-led and funded
- Neither a government initiative, nor a membership organization

# Regional BioHealth Ecosystem Partners

## ACADEMIA

- RESEARCH/T2
- LIFELONG LEARNING
- ECONOMIC DEVELOPMENT

## INDUSTRY

- PROFIT
- PROCESS
- PRODUCT

**INSEPARABLE  
MISSIONS**

## GOVERNMENT

- SUSTAINABILITY
- INFRASTRUCTURE SUPPORT
- ECONOMIC POLICY

## FOUNDATIONS

- ECONOMIC GROWTH
- COMMUNITY INVESTMENT
- REGIONAL COLLABORATION



# BHI Partners and Sponsors

## Private Sector



## Government






















## Academia



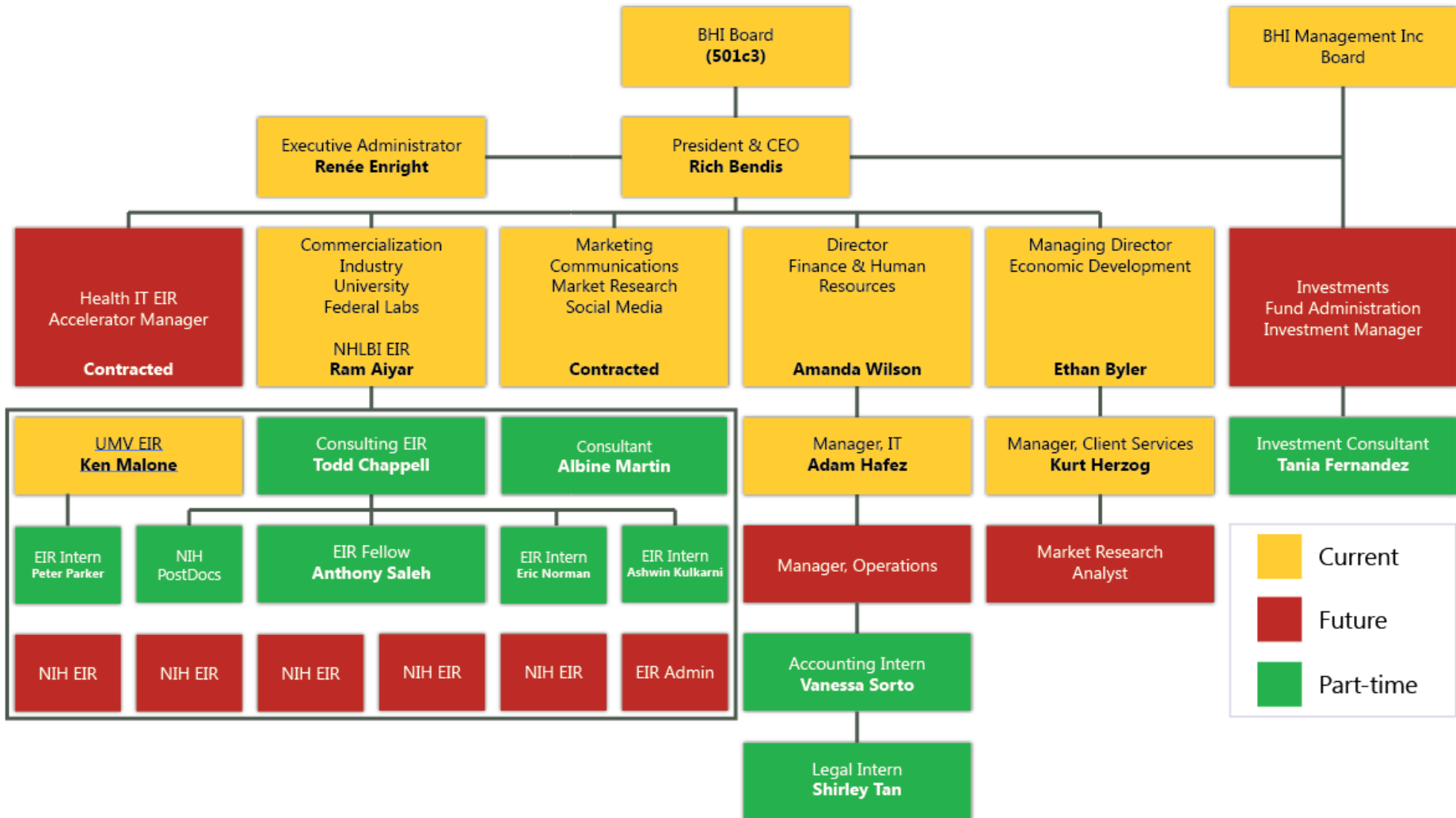
## NGOs



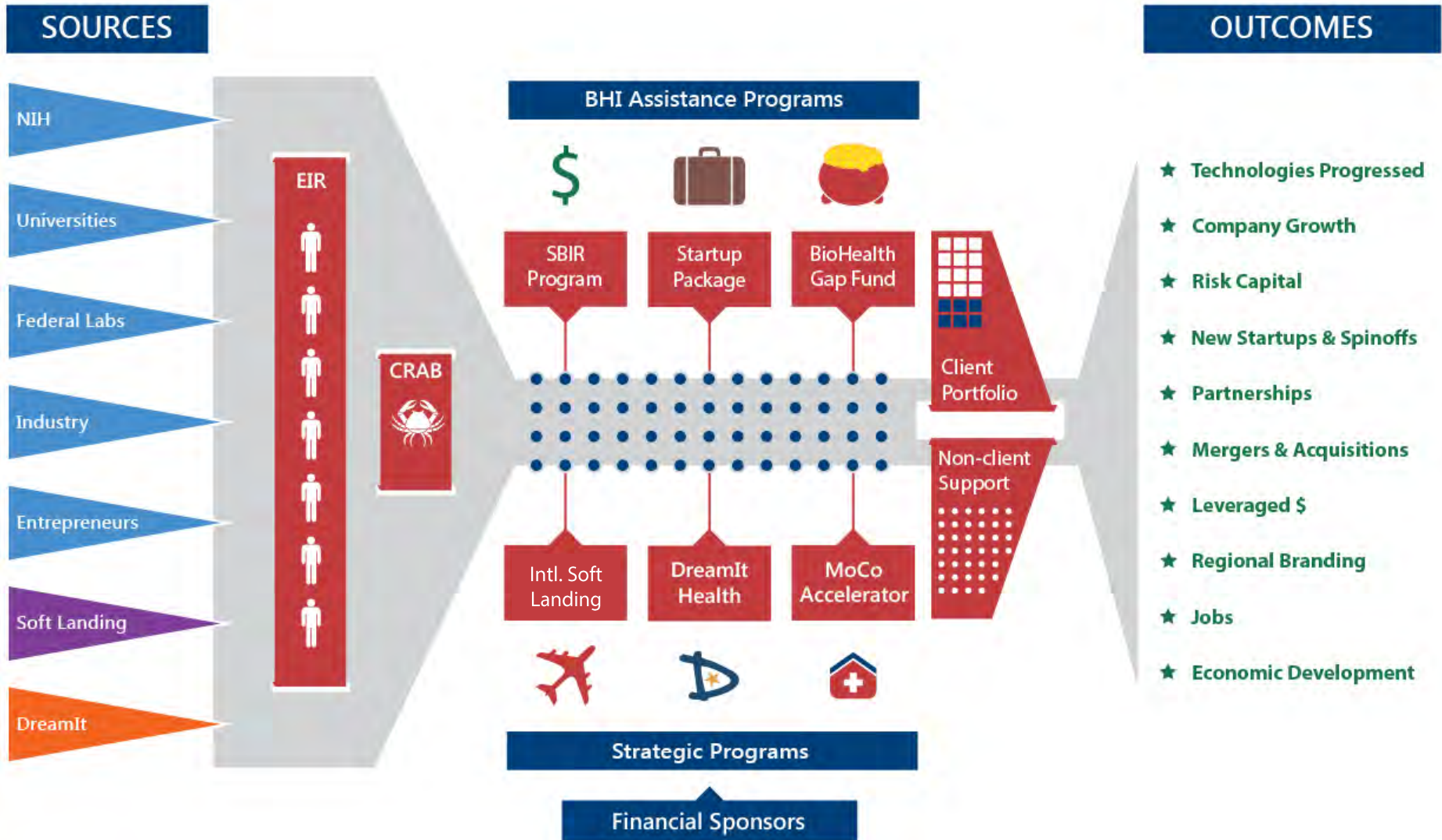
# BHI Board of Directors

 <p><b>Daniel J. Abdun-Nabi</b> CEO, Emergent BioSolutions</p>	 <p><b>Judith Dunn</b> VP, Global Head of Clinical Dev. Roche</p>	 <p><b>Douglas Liu</b> Senior VP of GO Qiagen</p>
 <p><b>Michael J. Baader, Esq.</b> General Counsel Greenspring Associates</p>	 <p><b>Jens Eckstein</b> President SR One (GSK)</p>	 <p><b>Charles Morton</b> Partner Venable LLP</p>
 <p><b>Richard A. Bendis</b> President &amp; CEO BioHealth Innovation, Inc.</p>	 <p><b>David M. Gillice (Secretary)</b> Regional Managing Principal Cassidy Turley</p>	 <p><b>David Mott</b> General Partner New Enterprise Associates</p>
 <p><b>Kenneth Carter</b> Chair Noble Life Sciences</p>	 <p><b>Rick Ivey</b> Vice President R&amp;D BD Diagnostics</p>	 <p><b>John A. Sackett</b> President Shady Grove Adventist Hospital</p>
 <p><b>Dave Lemus</b> CEO Sigma-Tau Pharmaceuticals</p>	 <p><b>Joel Marcus</b> CEO &amp; Founder Alexandria Real Estate</p>	 <p><b>J. Thomas Sadowski</b> President &amp; CEO EAGB</p>
 <p><b>Chris Callaghan</b> Group VP, Healthcare Banking M&amp;T Bank</p>	 <p><b>Beth Meagher</b> Principal Deloitte Consulting LLP</p>	 <p><b>Reginald Seeto</b> VP, Partnering and Strategy MedImmune</p>
 <p><b>Ronald J. Daniels</b> President Johns Hopkins University</p>	 <p><b>William E. Kirwan</b> Chancellor University System of MD</p>	 <p><b>Thomas Street</b> ACAO MoCo Government</p>

# BHI Organizational Chart

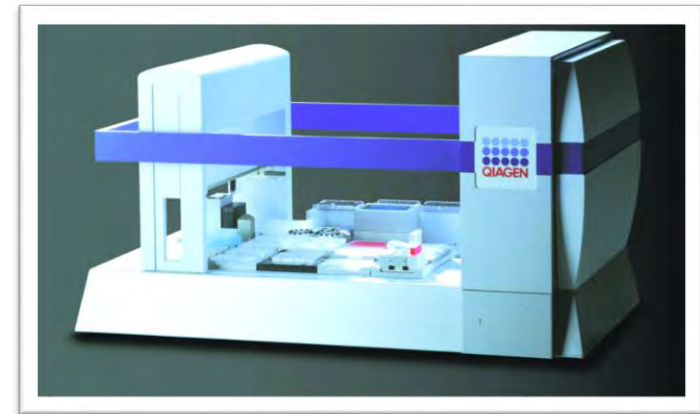


# BHI Program Structure



# BHI Technology Focus

- Therapeutics
- Diagnostics
- Medical Devices
- Healthcare Services
- E-Health
- Mobile Health
- Electronic Medical Records
- Health Informatics
- BioHealth Cyber Security

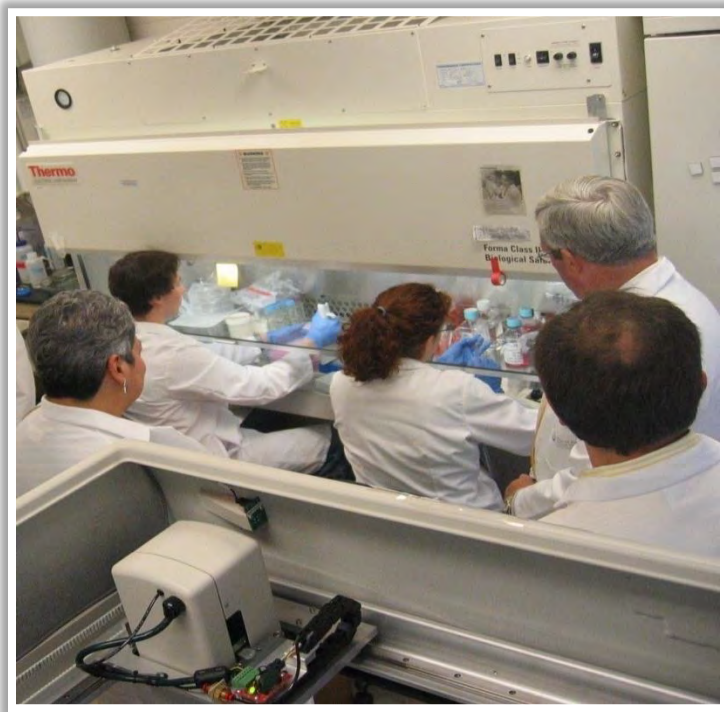


# Innovation Paradigm Shift

**PROOF OF CONCEPT  
(Technological Feasibility)**

**Laboratory Push**

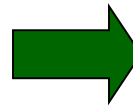
**“It Works!”**



**PROOF OF COMMERCIAL RELEVANCE  
(Market Pull)**

**“It Works To Solve A Problem”**

**“I’ll Buy It”**

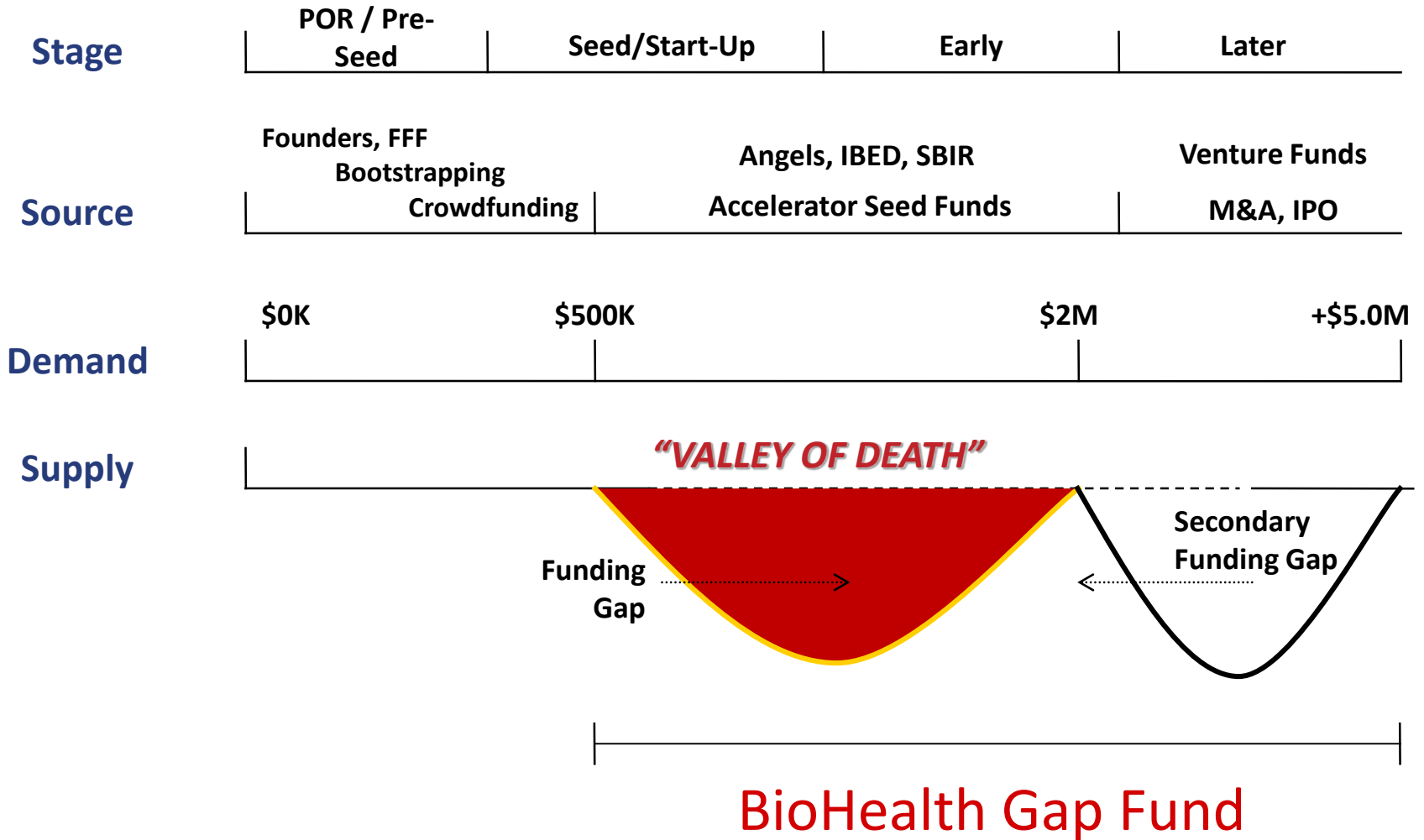


# BHI Commercial Relevance Advisory Board



- 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.

# Innovation Capital **Valley of Death**

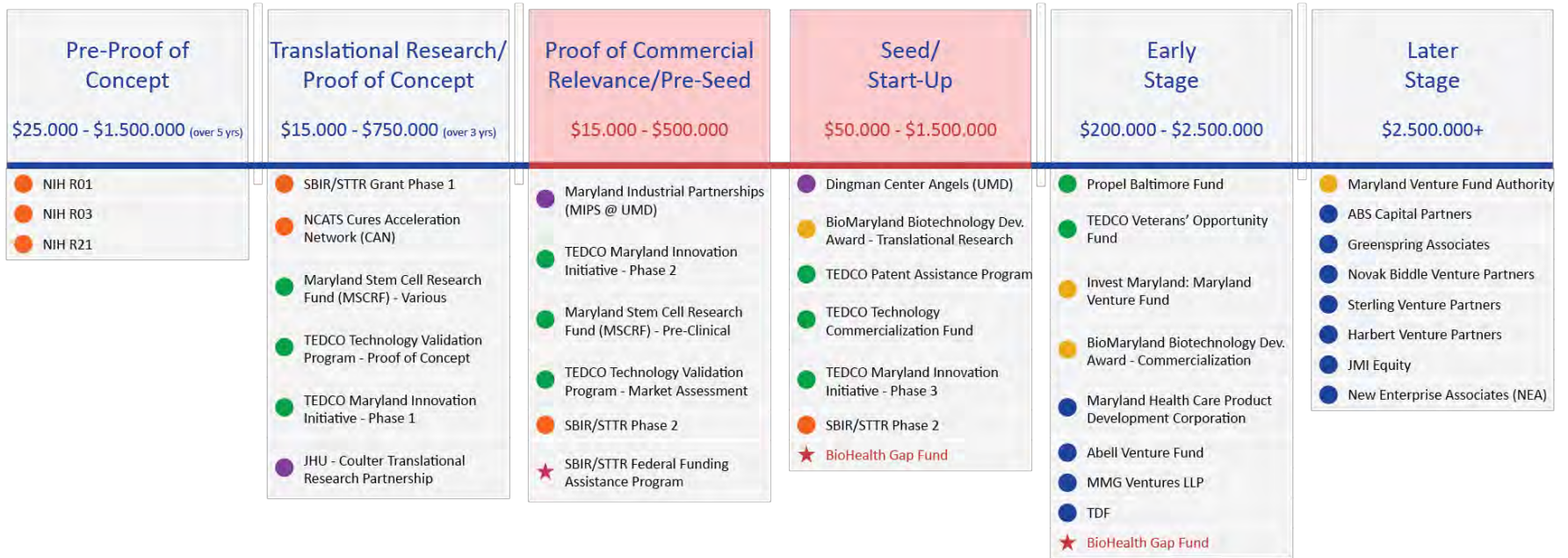




# BHI Innovation Capital Map



## Capital Sources by Investment Stage



### Funding Type Key

- Academic
- State of Maryland
- Federal
- BioHealth Innovation, Inc.
- Economic Development
- Private Capital

### Tax Credits

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

# BHI Commercialization Pipeline

**Source** and evaluate biohealth intellectual properties (IP)

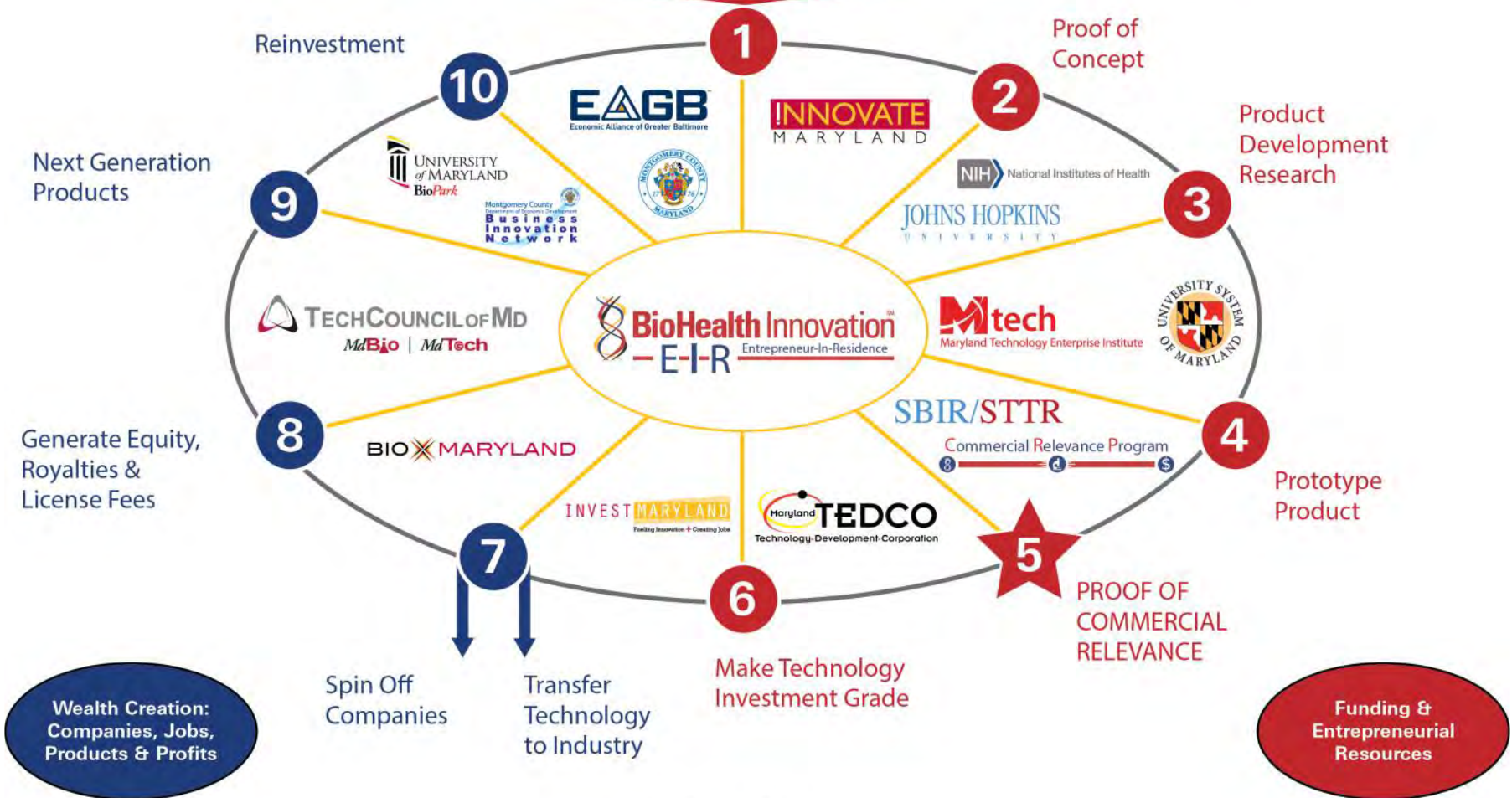
**Identify** funding for market-relevant IP

**Grow** and markets businesses and products



# BHI Commercialization Model

Inventions patented through Universities, Federal Labs, Private R&D, and Basic Research



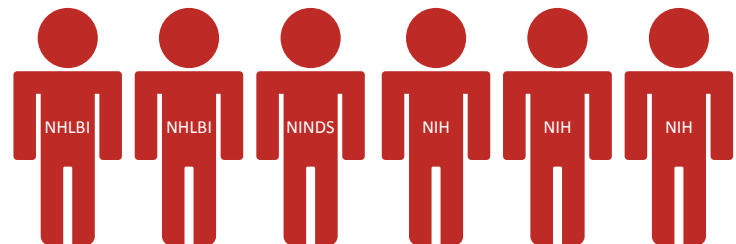
# NIH Partnership Agreements



**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.



**NIH Consulting Entrepreneur Services Contract for 5 NIH Entrepreneurs-in-Residence**



# BHI Entrepreneur-in-Residence Program

A team leader who combines scientific, financial/VC and entrepreneurial management experience to:

- Perform due diligence
- Develop biohealth project-focused companies

**Proactively** identifies and commercializes **market-relevant** intellectual properties from:

- Federal labs
- Universities
- Private sector

## 2014 Status

4

EIRs



3

Licenses  
Granted



2

Spinouts

1

Submitted  
Application License

15

Current Clients

7

Pending Clients

-

Potential New  
Clients

## 2015 Outcomes

- Grow portfolio companies to 20
- Develop specific goals for each portfolio company and aggregate into overall 2015 goal

# Who are the Entrepreneurs-in-Residence?



## Ram Aiyar (NHLBI)

Ram assists the National Heart Lung and Blood Institute (NHLBI) in translating disruptive science into commercially viable technologies. He works with the relevant stakeholders within the NIH to develop commercial plans and/or develop licensing opportunities such that the NIH technologies can be translated into commercially viable entities that will solve unmet medical needs of patients.



## Ken Malone (UM Ventures)

Ken has built his career on creating economic value from science. Whether it was developing new business lines for global corporations or spinning out new ventures from universities, he has engaged in the commercialization of hundreds of new products in advanced materials and life sciences.



## Todd Chappell (EIR Consultant)

Todd assists the Office of Technology Transfer (OTT) in the evaluation of existing technologies, provide an entrepreneurial perspective on new licensing proposals from start-up companies, advise on opportunities for new ventures, assist with developmental strategies, and mentor scientists to help ensure their research becomes commercially valuable.

















## Albine Martin (EIR Consultant)

Dr. Albine Martin brings over 20 years of product commercialization and corporate development experience with 3 public companies located in Maryland and representing the biotechnology, diagnostics and life sciences sector. She has also served as a member of Active Angels, Inc where she syndicated and provides diligence for early stage investments.

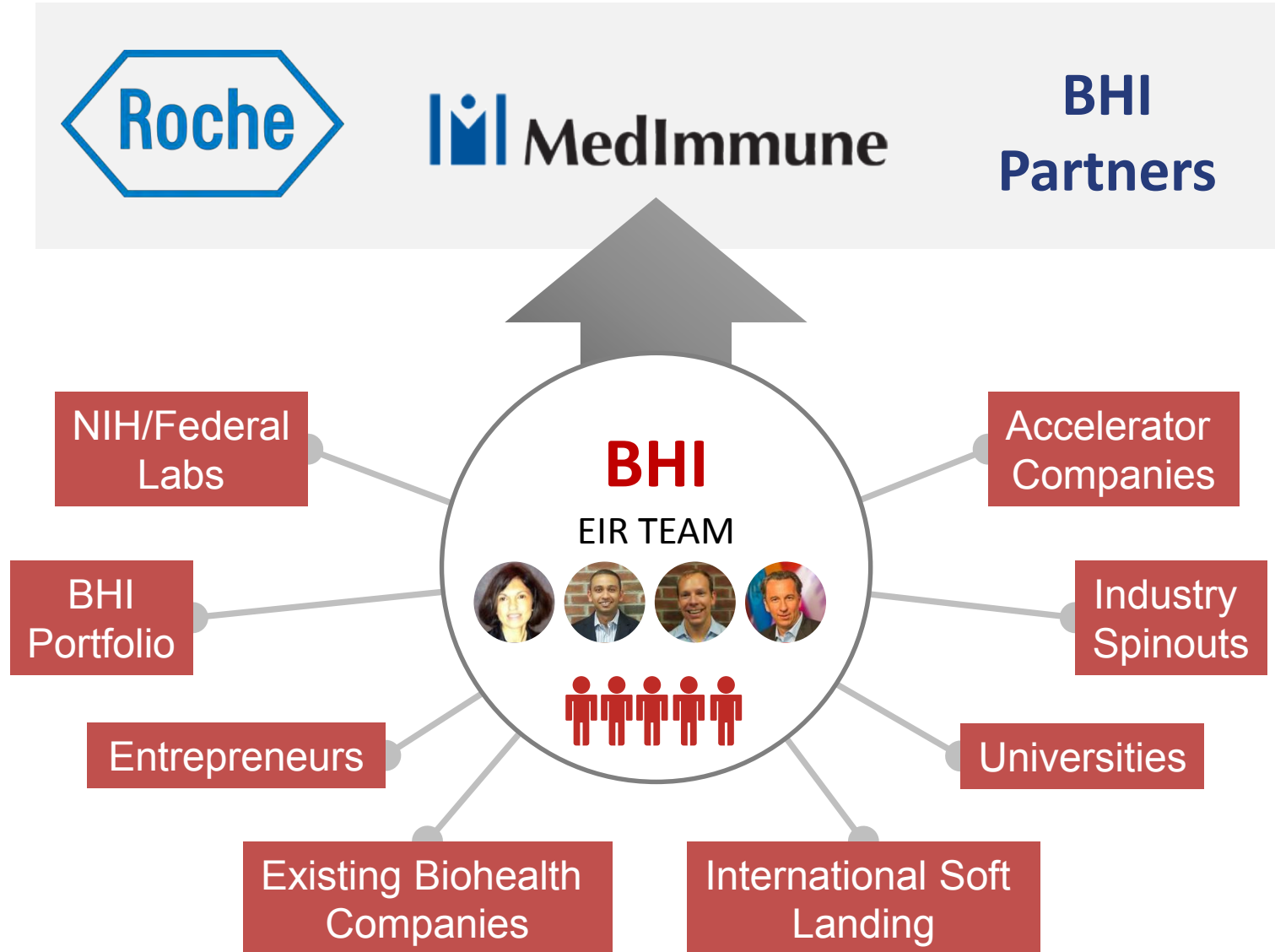
**Pending:**  
5 new NIH EIRs

# BHI Company Portfolio

<p><b>Therapeutic</b></p>	<p>Ram Aiyar   NYU</p> 	<p>Todd Chappell   NIH</p> 	<p>Todd Chappell   NIAID</p> 	<p>Todd, Tania, Rich   MoCo Entrepreneur</p> 	<p>Ram Aiyar   Michigan</p> 
<p><b>Medical Device</b></p>	<p>Todd   JHU</p> 	<p>Ram   NY</p> <p><b>Intravenous Solutions</b></p>	<p>Todd   Physician *</p> <p><b>Sinus Bath</b></p>		
<p><b>Personalized Medicine</b></p>	<p>Ethan Byler   India</p> 	<p>Ethan   SG Incubator *</p> 			
<p><b>Health IT / IT</b></p>	<p>Ken Malone   JHU</p> 	<p>Ethan   UMCP *</p> 	<p>Ken   Baltimore Entrepreneur</p> 	<p>+ 14 DreamIt Accelerator Companies</p>	
<p><b>R&amp;D Tool</b></p>	<p>Todd   Netherlands</p> 	<p>Todd   HGS Entrepreneur</p> 	<p>Todd   India *</p> <p><b>HepTox</b></p>	<p>Ken   Baltimore Entrepreneur</p> <p><b>3DBioWorks</b></p>	
<p><b>Occupational Safety and Health</b></p>	<p>Ken   UMCP</p> 				

\* Pending

# BHI Scouting





## Small Business Innovation Research (SBIR) Grant

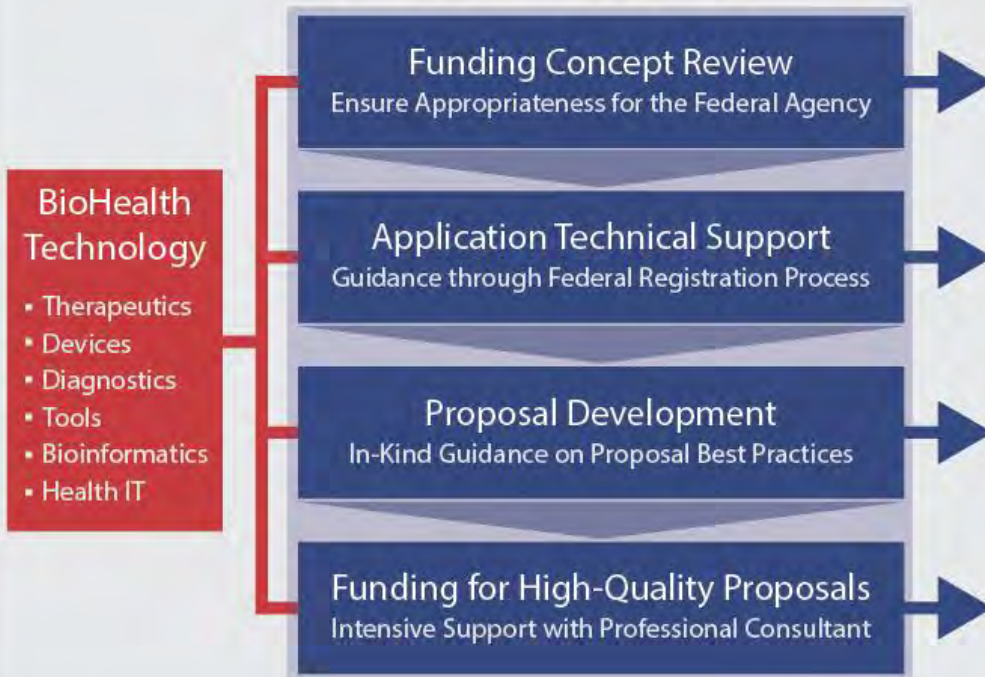
- \$2.2 billion annual United States Government program coordinated by the Small Business Administration provides grants or contracts to small businesses to spur technological innovation
- Grants awarded in 3 phases between \$100,000 and \$1.5 million
- Non-dilutive



# BHI Federal Funding Assistance

- \$2.2 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

## Value Chain of Assistance



## Funding Agencies



# **BHI** Federal Funding Assistance

Running Total – Small Businesses Assisted

**7** Awards won; \$2.25M in funding

**22** Projects supported by BHI funds

**121** Projects Reviewed

**46** Grant Proposals Submitted

# BHI Startup Package

## Corporate Legal



## Intellectual Property



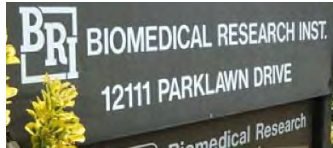
## Clinical Services



## Accounting



## Laboratory Space



## Incubation



## Banking



## Payer Advisory Services



## Scientific Data Management Services



## Grant Consulting



# BHI Incubator

BHI interacts with companies and technologies at various stages in the biohealth industry from the results of basic research to companies currently selling products in the market. At these multiple levels of maturity, BHI evaluates whether the organization can help progress the scientist, inventor, entrepreneur, and/or business manager to support the growth of the entity.

We have a dedicated co-working space at our headquarters in Rockville where we support client companies with the goal of progressing the business model for the company.

The BHI Incubator is a member of MBIA, NBIA, and is a certified Maryland TEDCO Incubator.



MockV  
Solutions



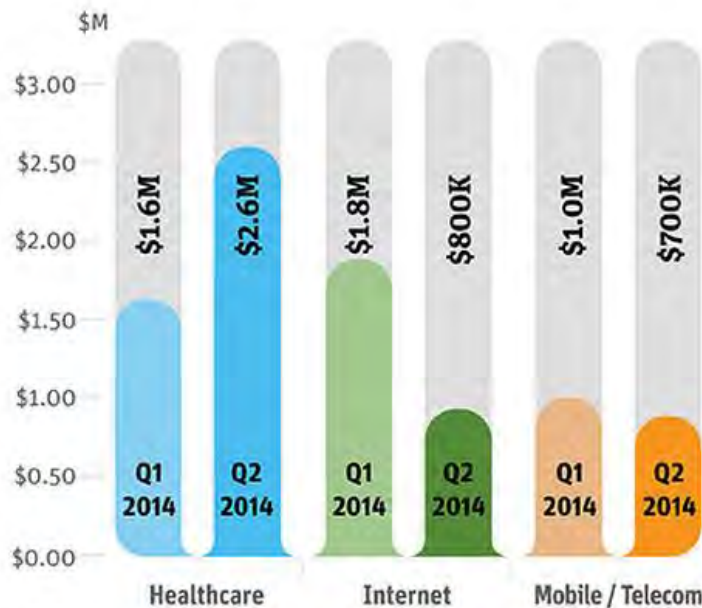
Strand  
Genomics



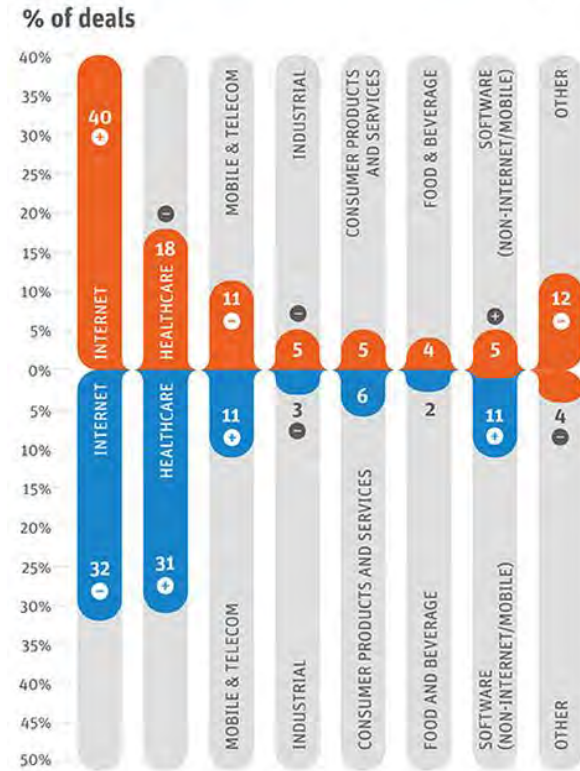
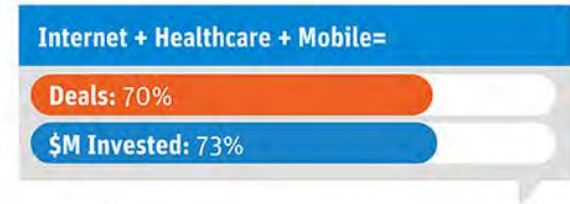
Mimetas  
US, Inc.

# Health IT ... Booming

- Increased investments in the mobile and healthcare sectors helped boost the median size of angel and angel group syndicate rounds
- Mobile health technologies projected to be worth \$11.8 billion by 2018



\* Median round size, including non-angel investors



\$M invested

+ Indicates an increase over Q1 2014  
 - Indicates a decrease from Q1 2014



- A Health IT Accelerator is an intensive 16 week program that admits top-recruited companies and entrepreneurs, provides a curriculum and network of experienced mentors in business, marketing and product development in the Health IT arena to “accelerate” top companies.

- Retain promising high growth HIT entrepreneurs in MD


- **Partners:**

- ❖ BioHealth Innovation, Inc.
- ❖ Johns Hopkins University
- ❖ DreamIt Ventures
- ❖ Economic Alliance of Greater Baltimore
- ❖ Northrop Grumman
- ❖ Kaiser Permanente
- ❖ DBED








# DreamIt Accelerator Companies 1

JHU  
Affiliated

	● Wearable biometric devices	Baltimore, MD	
	● Practicing smarter medicine	Baltimore, MD	
	● Mobile Cognitive Rehabilitation	Talinn, Estonia	
	● Mobile Information Platform	Baltimore, MD	
	● Protecting Patient Data	Baltimore, MD	
	● Respiratory Medical Device	Athens, Greece	
	● Inpatient Care Collaboration	Pittsburgh, PA	
	● Augmented Reality Treatment	Barcelona, Spain	
	● Digital Workflow Management	Baltimore, MD	



# DreamIt Accelerator Companies 2

<b>Baton</b>	● A mobile app designed to ensure more efficient patient handoffs between hospital teams.	Baltimore, MD
 Sisu Global Health	● Makes devices for the “most challenging” medical environments.	Grand Rapids, MI
 DECISIVE HEALTH	● A platform that helps practices	San Francisco
 InsightMedi	● A photosharing network for the healthcare industry	Spain
 RD Real Dietitian	● A telehealth platform focused on increased access to dietitians	Chicago, IL
 <b>REDOX</b>	● A modern API that enables software developers to integrate with legacy health IT systems.	Baltimore, MD

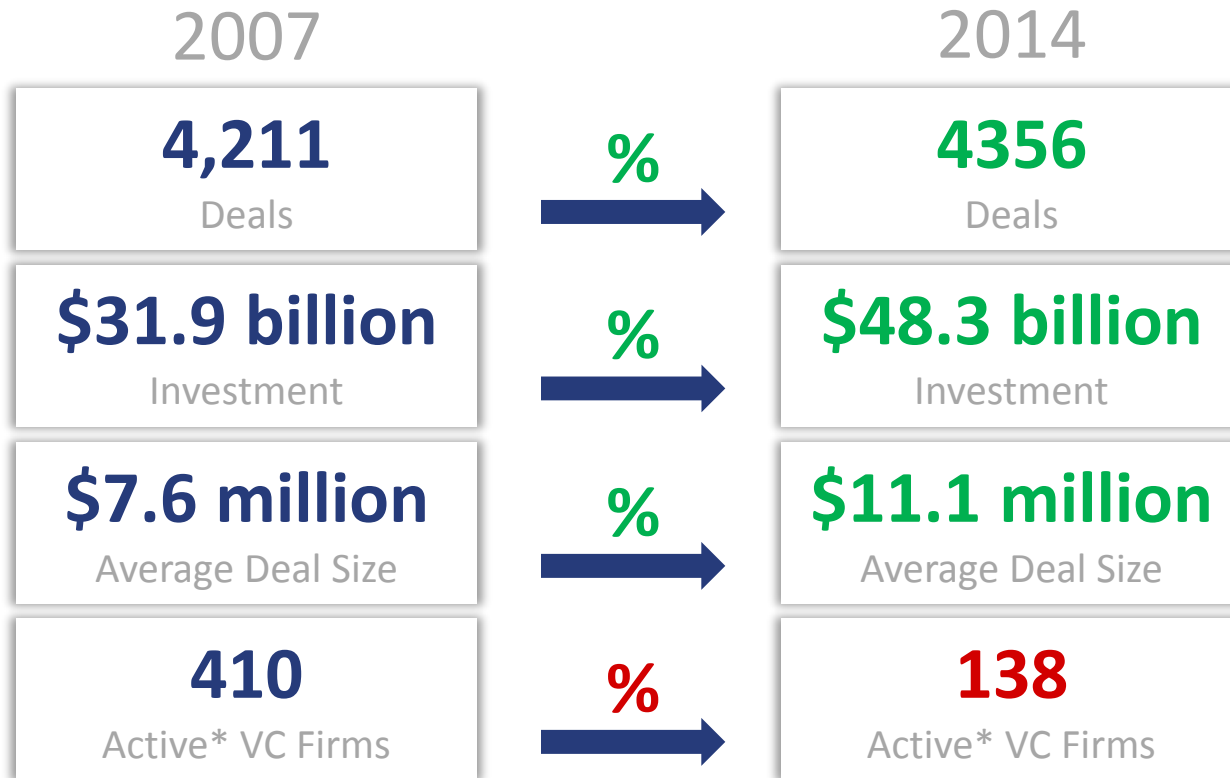
# Montgomery County Healthtech Accelerator



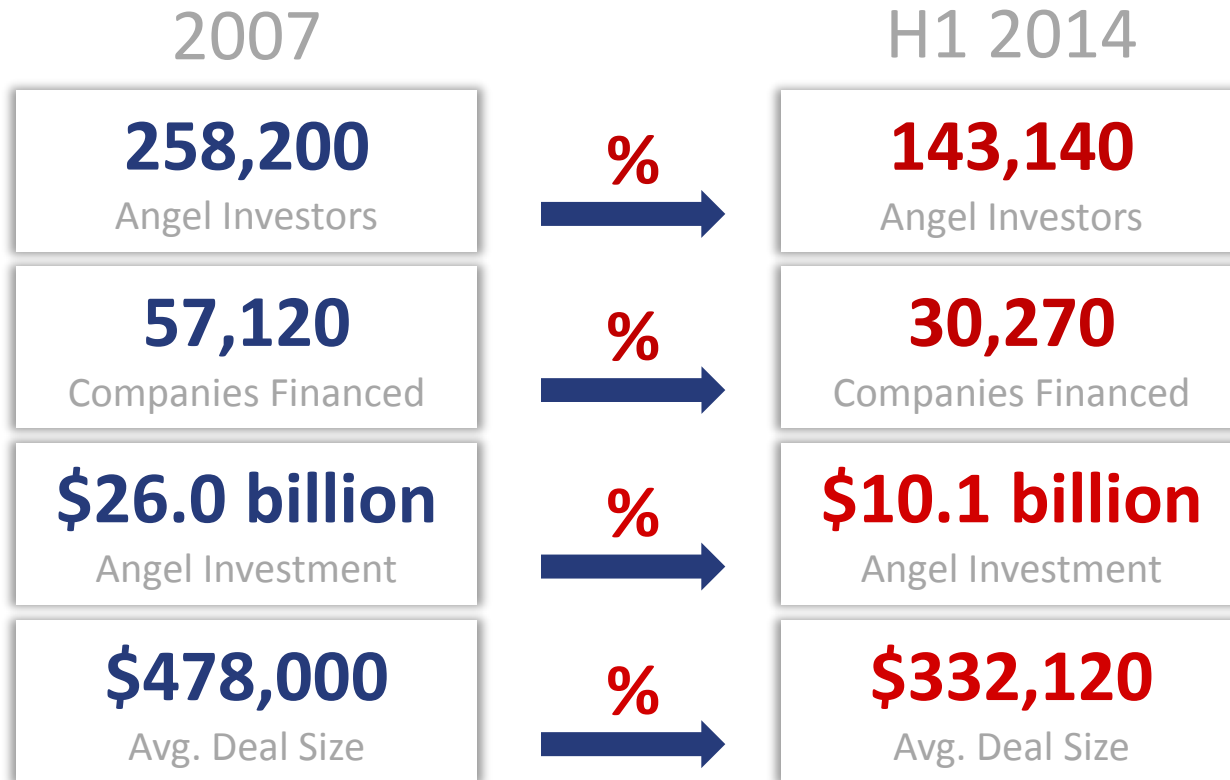
- Business accelerator for health startups in 2015
- 5 month formal co-working program with 7 month continuation
- Connect founders with a strong mentor network
- Help founders grow into a company ready for pilot testing and
- Cohorts of 8 - 10 companies and their founders recruited globally
- Up to \$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



# US Venture Capital Investment



# US Angel Investment





# BioHealth Gap Fund

- Will provide direct seed and early-stage equity investments ranging from \$500,000 to \$2,000,000
- Focused on BioHealth companies that fall into the 4 categories: Therapeutics, Medical Devices, Diagnostics, and Health IT
- Goal: Achieve a \$20,000,000 to \$50,000,000 initial fund
- Expectation: 30% of companies generating 10x the original investment
- 2015 – Target first close

# BHI International Soft Landing



- China
- Estonia
- Germany
- Greece
- India
- Korea
- Netherlands
- North America
- South America
- Spain

# Maryland Regional Biotech Forum

**DON'T REGISTER**  
MEDIMMUNE | ONE MEDIMMUNE WAY | GAITHERSBURG, MD 20878  
30-31 MARCH 2015

**MARYLAND REGIONAL BIOTECH FORUM**  
GROWING OUR ECOSYSTEM

JOIN US AS WE SHOWCASE ACCOMPLISHMENTS AND DISCUSS OPPORTUNITIES FOR THE FUTURE OF THE BIOTECH INDUSTRY IN THE MARYLAND REGION.

PRESENTED BY

BioHealth Innovation  
AstraZeneca  
MedImmune  
Tech Council of MD

## Tech Council of MD

9210 Corporate Boulevard  
Suite 470  
Rockville, MD 20850

## MARYLAND BIOTECH FORUM

AstraZeneca/MedImmune, BioHealth Innovation, and the Tech Council of Maryland have partnered to host a comprehensive two-day biotechnology industry forum that is focused on the Maryland region. Policymakers will discuss growing the biotech ecosystem, while world-renowned leaders from the commercial and academic sectors will talk about their roles in driving development and workforce innovation. Several prominent leaders will be speaking at the event, including Soriot, Executive Director and Chief Executive Officer, AstraZeneca; Martine Rothblatt, Chairman and CEO of United Therapeutics; Rachel King, CEO and founder of GlycoMimetics; Joel Marcus, Chairman, CEO, and founder of Alexandria Real Estate Equities, and Maryland Governor Larry Hogan (Invited).

Company showcase breakout sessions will highlight some exciting developments that have come out of the area in diagnostics, therapeutics, medical devices, and health IT. We will also have several targeted and topical scientific and breakout sessions. Join us for an event that will spotlight a world-class biopharmaceutical community that has been a significant economic driver for the region over the past decade.

This is a free, invitation-only event. Seating is limited, so early registration is encouraged. **REGISTER AT [WWW.MARYLANDBIOTECHFORUM.COM](http://WWW.MARYLANDBIOTECHFORUM.COM)**

# BHI Website and News



## BHI Website

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

<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.

<http://www.biohealthinnovation.org/news>



# 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.



National Institutes  
of Health



The BHI Commercialization Consulting Club is a place where BHI's EIRs and Commercialization Consultants can discuss all aspects of the technologies being researched and make new networking connections.



The Postdoc Conference & Career fair is for current postdoctoral fellows working in Washington, D.C. area federal labs and universities, and for companies recruiting high-level S.T.E.M. (Science, Technology, Engineering and Mathematics) professionals.

KAUFFMAN | **FASTTRAC**.  
Startup your idea.

Not currently active



The FastTrac program is a practical, hands-on, entrepreneur-learning program designed to help entrepreneurs hone the skills needed to create, manage, and grow a successful business.

**INN**oVATE™

Not currently active



The INNovATE program provides applied training for postdoctoral fellows, research scientists, and other professionals who want to start life science based companies.

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

**Grows high-paying jobs and businesses**



**Expands tax base; improves economic vitality**



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

# BHI Key Staff

## BioHealth Innovation, Inc.

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The Wire Hardware store  
- BHI's Office Space

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