



BioHealth InnovationSM
Maryland's Commercialization Collaborative

Deshpande Symposium 2015

Entrepreneurial Universities: Culture and Ecosystems Track
Building the Regional Innovation Ecosystem

Christy Wyskiel

Senior Advisor to the President at Johns Hopkins University

6/9/2015

The Region – Central Maryland

- Unrivaled Research Assets -
- Unfulfilled Commercial Promise -
- 550+ BioHealth Companies -



National Institutes
of Health



National Heart, Lung,
and Blood Institute



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



Implementing a new Innovation Paradigm

- Willingness to deviate from traditional and parochial perspectives
- Encourage public investment and risk taking
- Developing trust through collaboration
- Ensuring the paradigm is responsive to partners' missions
- Building consensus of all constituents through education, participation, and positive outcomes
- Move from technology-based economic development to
- **Innovation-Based Economic Development**

BioHealth Innovation – Bridging the Gap



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

BOARD

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

Johns Hopkins President Ron Daniels

- Founding BHI board and executive committee member
- On BHI Board since 2012
- Focused on building the relationship between Montgomery County and Baltimore



Christy Wyskiel

- Senior Advisor to the President at JHU
- JHU/BHI Liaison
- Rich Bendis Surrogate

Johns Hopkins Montgomery County Campus



- BHI headquartered in Montgomery County
- Partner on regional innovation and entrepreneurial initiatives
- For example: Perceptive Navigation, a Johns Hopkins spinout is a BHI portfolio company which has received significant EIR support and has offices at the Montgomery Count

OUR PARTNERS

Private Sector



Government



Academia



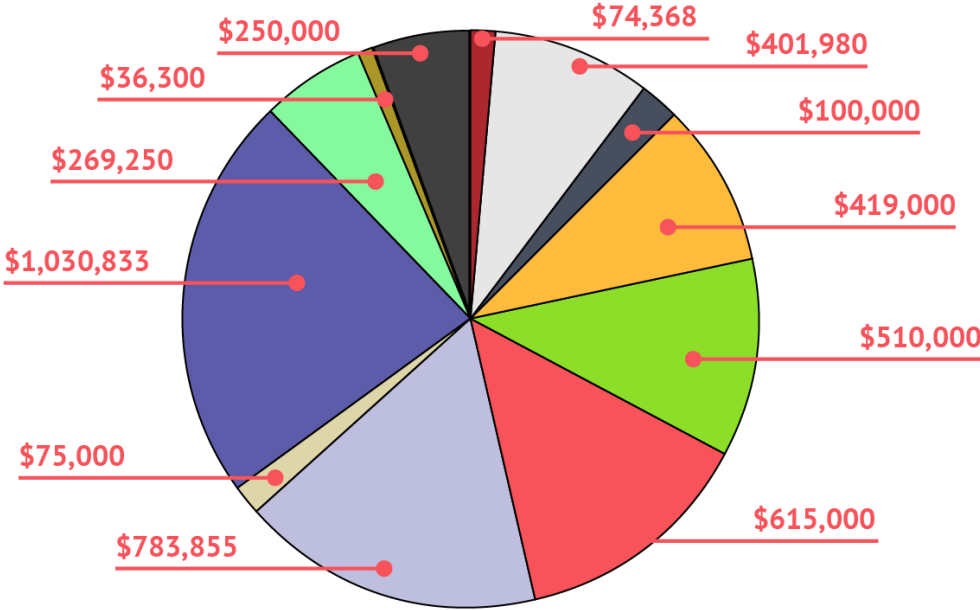
NGOs



PROJECTED FUNDING

\$4,565,585

2015 Funding



- University
- Sublease Income
- Special Projects Income
- Private Sector
- NGO
- EIR Funding
- Relevant Health Accelerator
- Local Government
- In-Kind
- Foundation
- Federal Grants
- Client Services

9:1

Leverage Ratio to each County \$

WHAT BHI DOES

Industry

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

Geography



Central
Maryland



USA



Global

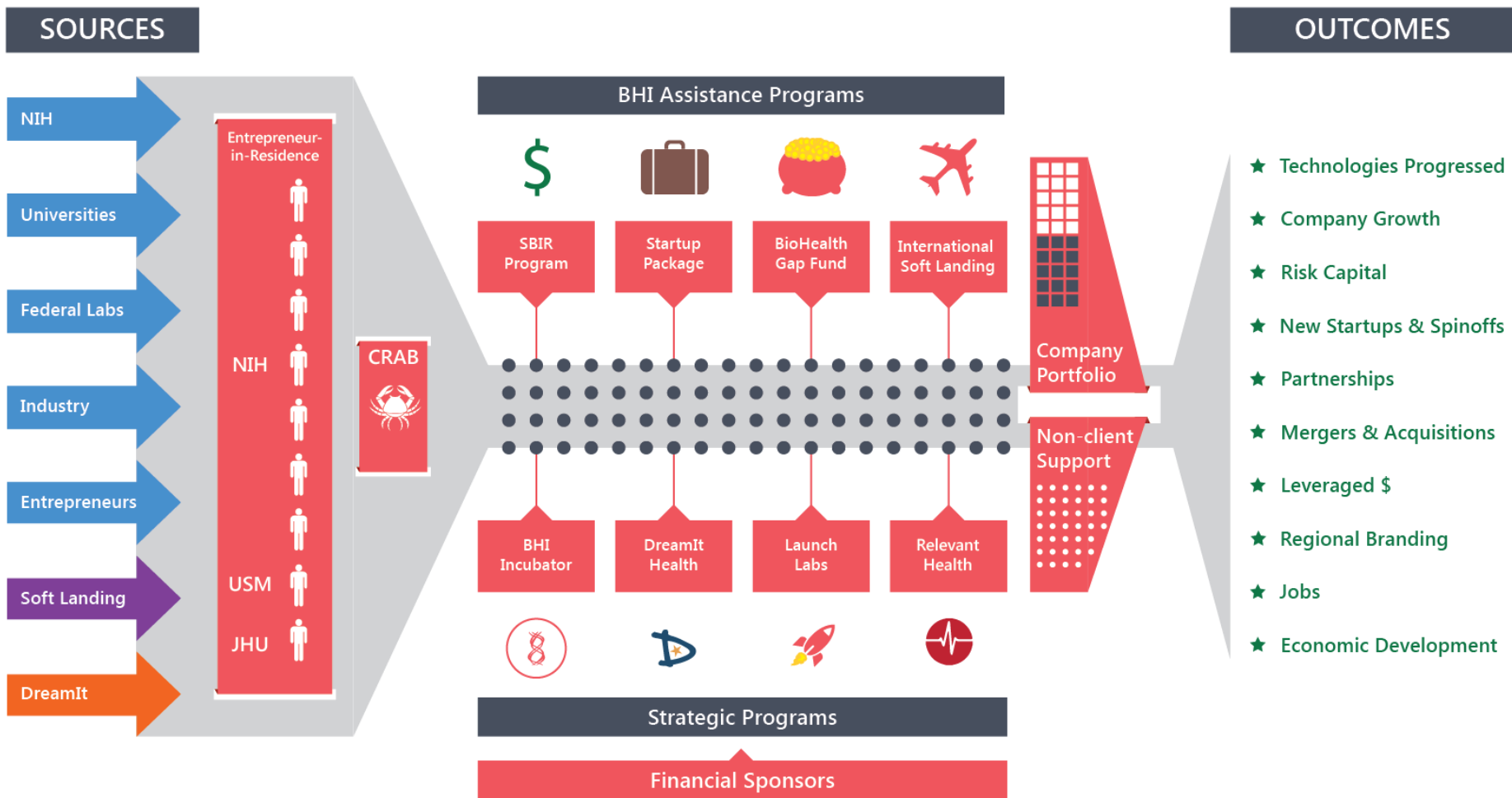


- Private
- Government
- Academia
- NGO

BHI is a private public partnership governed and managed by the private sector. Our mission as an innovation intermediary is to:

- 1 Advance Technologies**
- 2 Accelerate Innovation**
- 3 Globally Connect**

BHI BUSINESS MODEL

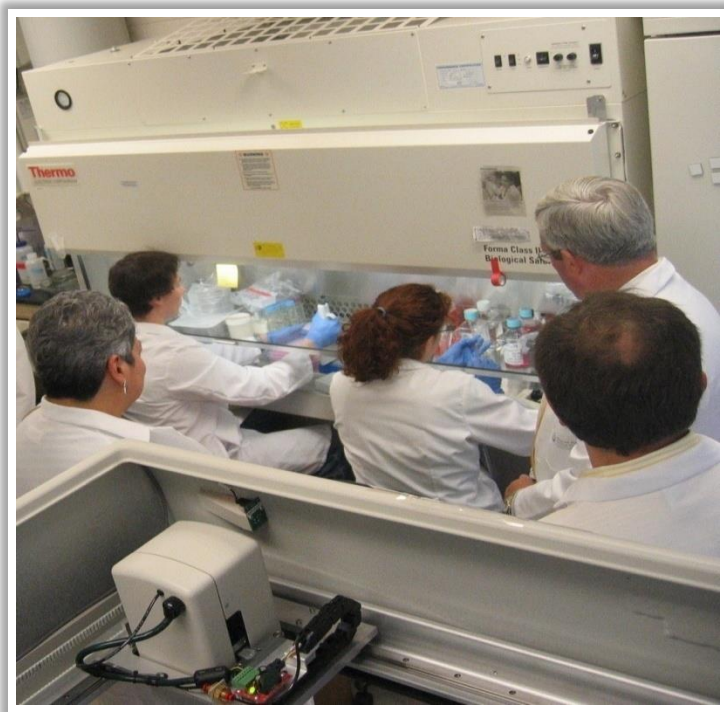


Innovation Paradigm Shift

**PROOF OF CONCEPT
(Technological Feasibility)**

Laboratory Push

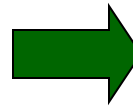
“It Works!”



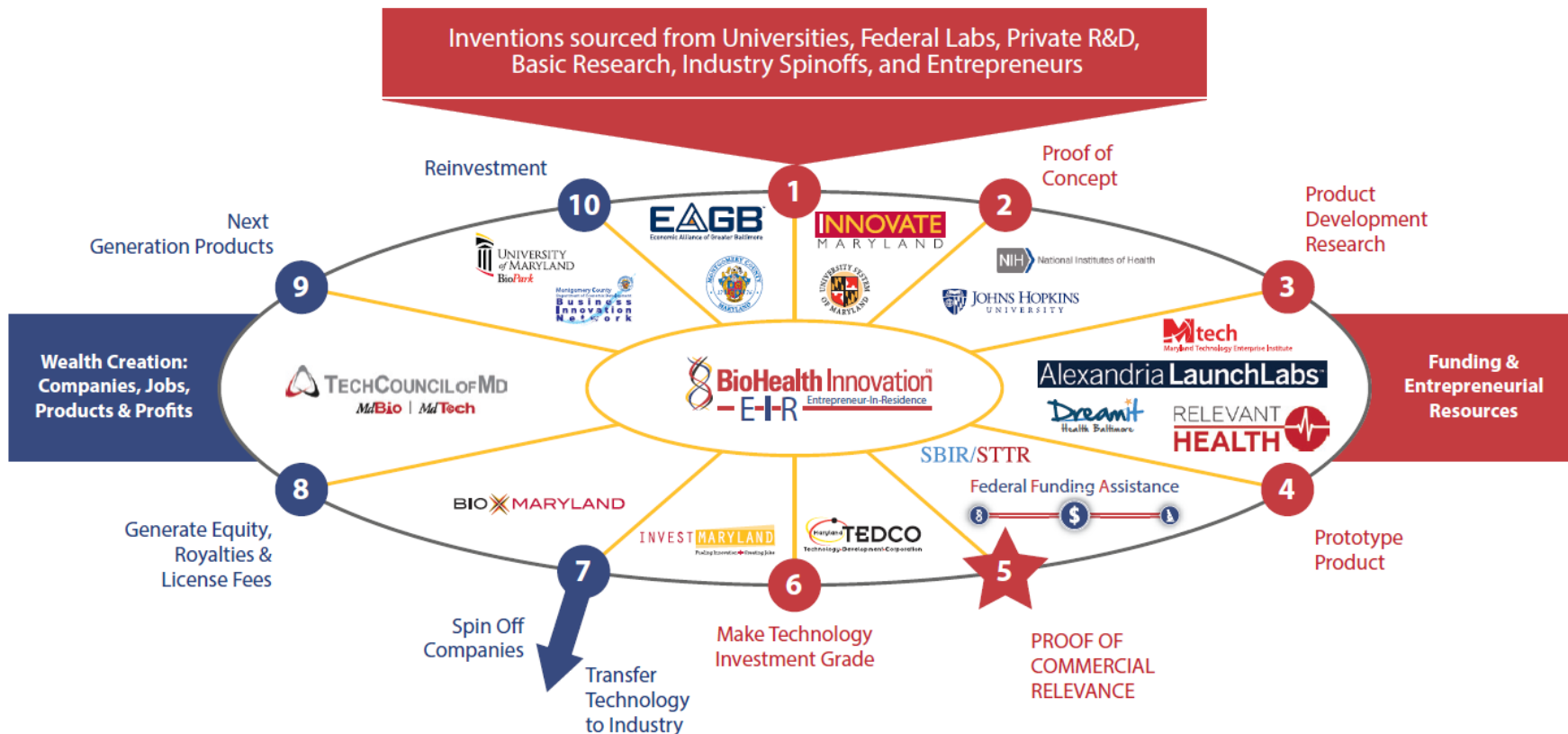
**PROOF OF COMMERCIAL RELEVANCE
(Market Pull)**

“It Works To Solve A Problem”

“I’ll Buy It”



BHI Commercialization Model



WHERE WE EXCEL

Entrepreneur-in-Residence Program

1

Experienced Entrepreneurs, Venture Capitalists and Industry business developers managing a commercially relevant biohealth portfolio.



Todd Chappell (NIH)



Ram Aiyar (NHLBI)



Ken Malone (USM)



Albine Martin (JHU)



Ethel Rubin (NHLBI)



Steve Wolpe (NHLBI)



Additional NIH EIRs

BHI Scouting Clients



BHI Partners

Replicable to **ANY** Region

JHU EIR: Albine Martin



- Entrepreneur-in-Residence with BHI since 2015
- Working within Johns Hopkins University and Medical Center to find interesting science and technologies to commercialize
- 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.

Examples of Federal Funding Assistance to JHU

- **Perceptive Navigation**

Submitted a Phase II STTR to the National Heart Lung & Blood Institute for an

- **Sonavex Surgical**

Submitted a Phase I SBIR to the National Heart Lung & Blood Institute for an

- **Revolve Biotechnologies**

Submitted a Phase I SBIR to the National Institute of Mental Health

DreamIt Health Baltimore



- Joint initiative between Johns Hopkins and BioHealth Innovation to create a startup Accelerator in Baltimore
- Attract and retain promising high growth HIT entrepreneurs in MD
- Two successful cohorts of 15 companies

- **Partners:**

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








Dreamit Cohorts

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 

2

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

Innovation Capital Map



Capital Sources by Investment Stage

Pre-Proof of Concept \$25,000 - \$1,500,000 (over 3 yrs)	Translational Research/ Proof of Concept \$15,000 - \$750,000 (over 3 yrs)	Proof of Commercial Relevance/Pre-Seed \$15,000 - \$500,000	Seed/ Start-Up \$50,000 - \$1,500,000	Early Stage \$200,000 - \$2,500,000	Later Stage \$2,500,000+
<ul style="list-style-type: none"> NIH R01 NIH R03 NIH R21 Maryland Stem Cell Research Fund (MSCRF) - Various 	<ul style="list-style-type: none"> ★ SBIR/STTR Federal Funding Assistance Program SBIR/STTR Grant Phase 1 NCATS Dures Acceleration Network (CAN) Maryland Stem Cell Research Fund (MSCRF) - Various TEDCO Technology Validation Program - Proof of Concept TEDCO Maryland Innovation Initiative - Phase 1 JHU - Coulter Translational Research Partnership 	<ul style="list-style-type: none"> Maryland Industrial Partnerships (MIPS @ UMD) TEDCO Maryland Innovation Initiative - Phase 2 Maryland Stem Cell Research Fund (MSCRF) - Pre-Clinical TEDCO Technology Validation Program - Market Assessment SBIR/STTR Phase 2 	<ul style="list-style-type: none"> Dingman Center Angels (UMD) BioMaryland Biotechnology Dev. Award - Translational Research TEDCO Patent Assistance Program TEDCO Technology Commercialization Fund TEDCO Maryland Innovation Initiative - Phase 3 SBIR/STTR Phase 2 ★ BioHealth Gap Fund 	<ul style="list-style-type: none"> Propel Baltimore Fund TEDCO Veterans' Opportunity Fund Invest Maryland: Maryland Venture Fund BioMaryland Biotechnology Dev. Award - Commercialization Abell Venture Fund M/MG Ventures LLP TDF ★ BioHealth Gap Fund 	<ul style="list-style-type: none"> Maryland Venture Fund Authority ABS Capital Partners Greenspring Associates Novak Biddle Venture Partners Sterling Venture Partners Harbert Venture Partners JMI Equity New Enterprise Associates (NEA)

Funding Type Key

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

Tax Credits

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

BHI Startup Package

Corporate Legal



Intellectual Property



Clinical Services



Accounting



Laboratory Space



Incubation



Banking



Payer Advisory Services



Scientific Data Management Services



Grant Consulting



Comprehensive Portfolio Slide - 31 Companies - 126 FTEs*

TIER

A
4

3DBioWorks

UMB / UMCP 3 Ken Malone

3DBioWorks grows cord stem cells in 3D printed bioreactors.

Mimetas US

Netherlands 1 Todd Chappell

Mimetas is developing and marketing Organ-on-a-Chip solutions for the pharmaceutical industry.

Tertius Analytics

UMD 1 Ethan Byler

Tertius Analytics provides analytical tools for network modeling of regional industry clusters.

Asulon Pharma

UMD 2 Ken Malone

Asulon is developing small molecule therapeutics for rapid acting anti-depressants.

B
4

Magnifygen

Montgomery County 1 Todd Chappell

Magnifygen is developing novel immunotoxins for the treatment of solid and liquid tumors.

Intravenous Solutions

Stony Brook, NYC to MD 1 Ram Aiyar

IVS is a medical device company redefining infusion pump systems.

MDLogix

Baltimore 20 Ken Malone

MD Logix has fully commercialized a mental health assessment tool.

MockV Solutions

Montgomery County 1 Todd Chappell

MockV Solutions is developing novel kits to make biotherapeutic process development cost efficient.

C
6

BWell America

Montgomery County 4 Ken Malone

BWell America, Inc. is a data analytics driven wellness company providing employer groups, healthcare payers and exchanges with real time wellness analytics.

Nanovir

Kalamazoo, MI 2 Ram Aiyar

Nanovir is developing small molecule anti-viral cures for Hepatitis and Human Pappiloma Virus.

Paradigm Shift Therapeutics

UMB/NIH 3 Ram Aiyar

Paradigm Shift Therapeutics is developing small molecule therapeutics to support counter-terrorism and radiation oncology products.

Tissue Analytics

NIH 5 Ken Malone

Tissue Analytics is developing a sophisticated platform for remotely evaluating chronic wounds using a smartphone.

VLP Therapeutics

Montgomery County 8 Todd Chappell

Developing a platform vaccine like particle technology that has the potential to be used for various diseases including cancer.

Corvidia

Boston 1 Ram Aiyar

Corvidia is a large molecule therapeutics company focused on cardiometabolic syndromes that redefine the precision health for cardiology.

D
17

Benevir

Montgomery County 5

Perceptive Navigation

JHU 2

Appian Medical

Montgomery County 3

N5 Sensors

UMCP & NIST 5

Avhana

DreamIt 1 7

Cognuse

DreamIt 1 5

Emocha

DreamIt 1 6

Protenus

DreamIt 1 6

Quantified Care

DreamIt 1 4

Aegle

DreamIt 1 3

Patientfeed

DreamIt 1 4

Baton

DreamIt 2 4

Decisive Health

DreamIt 2 2

InsightMedi

DreamIt 2 4

Real Dietitian

DreamIt 2 3

Sisu Global Health

DreamIt 2 3

Redox

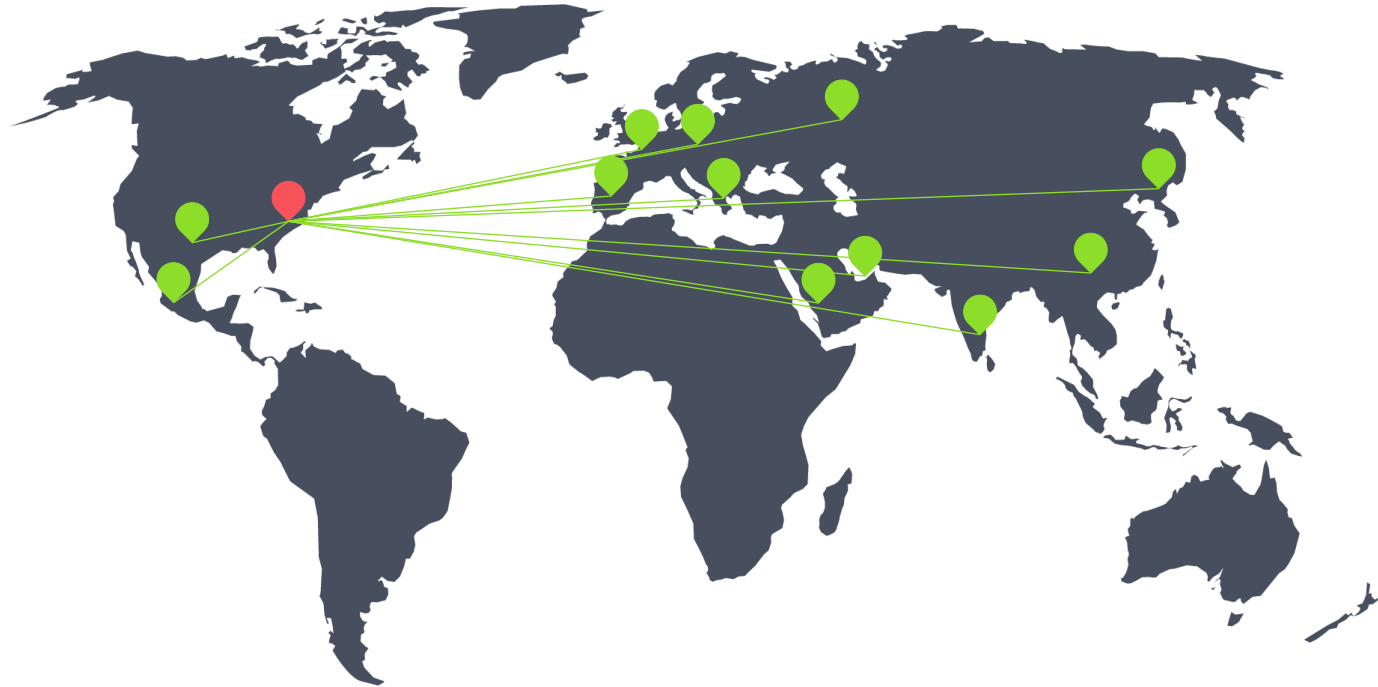
DreamIt 2 7

* Numbers do not reflect BHI employees, company consultants and full-time equivalents at each of the portfolio companies.

OPPORTUNITIES FOR COLLABORATION

Connections

- > Regional
- > National
- > Global
- > Partners
- > Board Members
- > Collaborators



BHI Clients receive **FULL** Network Access

Public Private Partnership Best Practices, Common Attributes

- Longevity
- Bipartisan Support & Champions
- Independent Organizations
- Continuous Reinvention
- Private Sector Involvement
- Understand Return On Investment
- Sustainability In Funding
- Accountable
- Innovative
- Effective Leadership

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

