



BioHealth Innovation

Maryland's Commercialization Collaborative

**Build it and Ideas will Come – Creating an
Entrepreneurial Culture**

Lily Qi

8/16/2012

Annapolis, MD

(Special Projects Manager for Montgomery County)

www.BioHealthInnovation.org



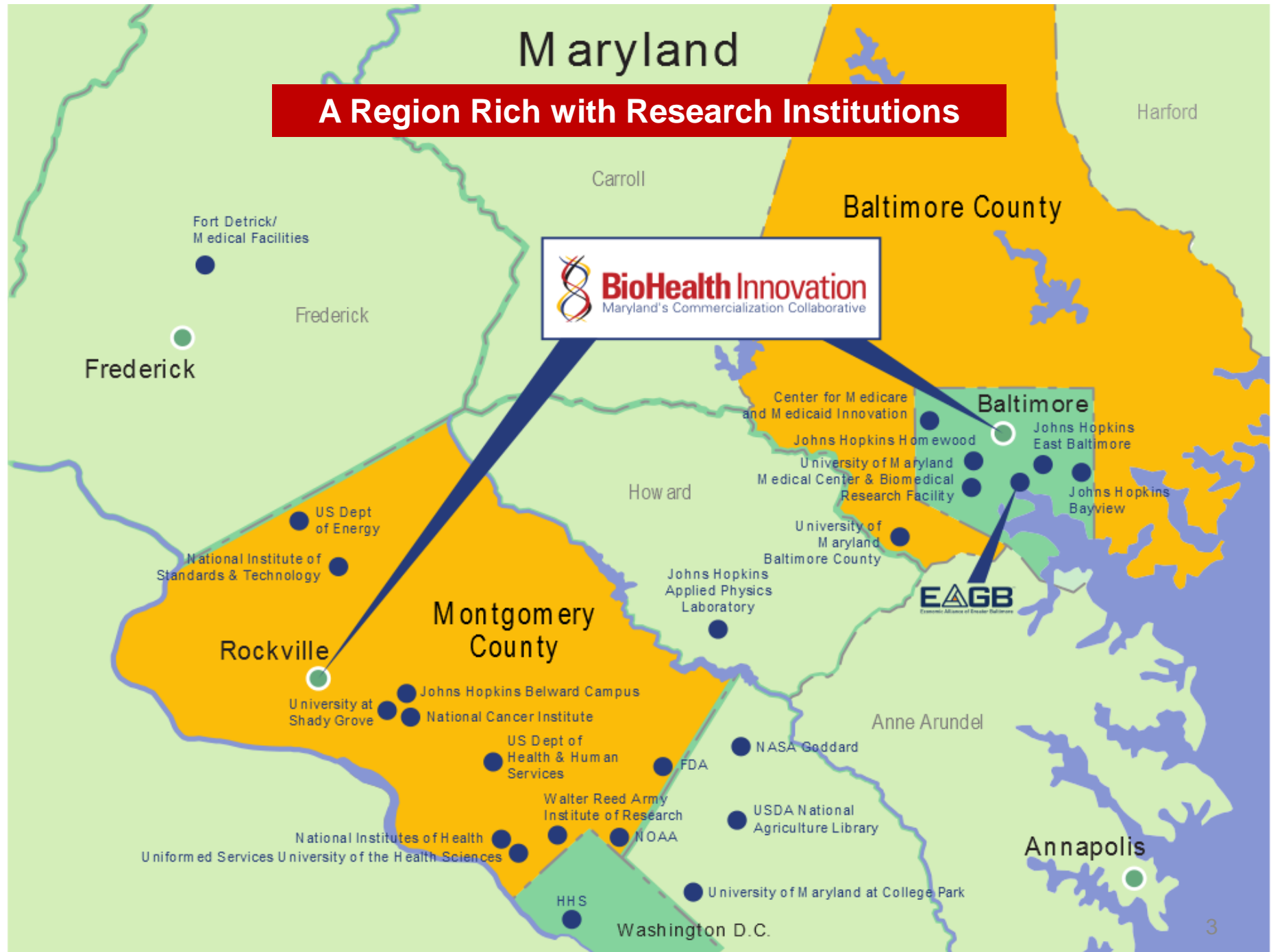
“The Region”--Central Maryland

Unrivaled Research Assets
Unfulfilled Commercial Promise



Maryland

A Region Rich with Research Institutions



Fort Detrick/
Medical Facilities

Frederick

Frederick

Carroll

Baltimore County

Harford

US Dept of Energy
National Institute of Standards & Technology

Rockville

Montgomery County

University at Shady Grove
Johns Hopkins Belward Campus
National Cancer Institute

US Dept of Health & Human Services
FDA

National Institutes of Health
Uniformed Services University of the Health Sciences

Walter Reed Army Institute of Research
NOAA

HHS

Washington D.C.

Howard

Johns Hopkins Applied Physics Laboratory

Center for Medicare and Medicaid Innovation

Johns Hopkins Homewood
University of Maryland Medical Center & Biomedical Research Facility

University of Maryland Baltimore County

Baltimore

Johns Hopkins East Baltimore

Johns Hopkins Bayview

EAGB
Economic Alliance of Greater Baltimore

Anne Arundel

NASA Goddard

USDA National Agriculture Library

Annapolis

University of Maryland at College Park

The Problem--A National Challenge

America is falling behind the world it invented because we are:

- **Out-educated**
- **Out-built in infrastructure**
- **Out-invested in R&D**

by countries in both Europe and Asia.

--*“That Used to Be Us”* by Thomas Friedman, 2011

The Reverse Brain Drain

- ***“Opportunities in China Lure Scientists Home”*** --The Washington Post, February 20, 2008
- American returnees to India cited as reasons for going “back” to where they came from:
 - ***Better Economic Opportunities***
 - ***Family Ties***
 - ***Better Access to Markets***



National Leadership



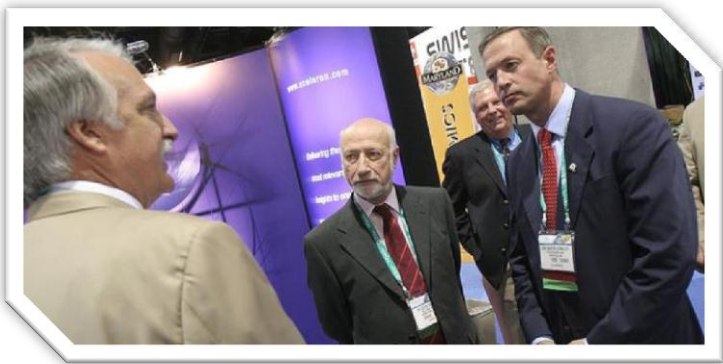
President Obama:

- **Bioeconomy Initiatives**
- **America Invents Act (2011)**

- **America Invents Act**
- **Center for Advancing Translational Sciences** in NIH to advance commercialization (NCATS)
- Develop a **National Bioeconomy Blueprint**
 - Support R&D investments
 - Facilitate the transition from research lab to market
 - Reduce barriers, increase speed and predictability of regulatory process, and reduce cost.
 - Update training programs and align academic institutions incentives
 - Identify and support the development of PPPs and pre-competitive collaborations



State Leadership



Maryland Governor O'Malley:

- **BioMaryland 2020**
- **Invest Maryland**

- **Maryland Biotechnology Investment Tax Credit (\$6 m/yr)**
- **BioMaryland 2020** blueprint
- **Invest Maryland** (\$70 million)
- Maryland Life Sciences Advisory Board
- **The Maryland Venture Fund**
- **Maryland Innovation Initiative**

Local Leadership



County Executive Ike Leggett:

- Accelerate innovation & grow tax base
- Create a regional Montgomery County / Baltimore Innovation Intermediary
- Support life science centers in the region



BioHealth Innovation

Maryland's Commercialization Collaborative

great seneca science corridor master plan

The Life Sciences Center



BioHealth Innovation
Maryland's Commercialization Collaborative

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 a STEM Workforce

BHI Value Proposition

Connects regional innovation assets

Develops an entrepreneurial talent and support pipeline

Attracts funding for technology commercialization

Develops a continuum of innovation workforce



BioHealth Regional Innovation Cluster Assets

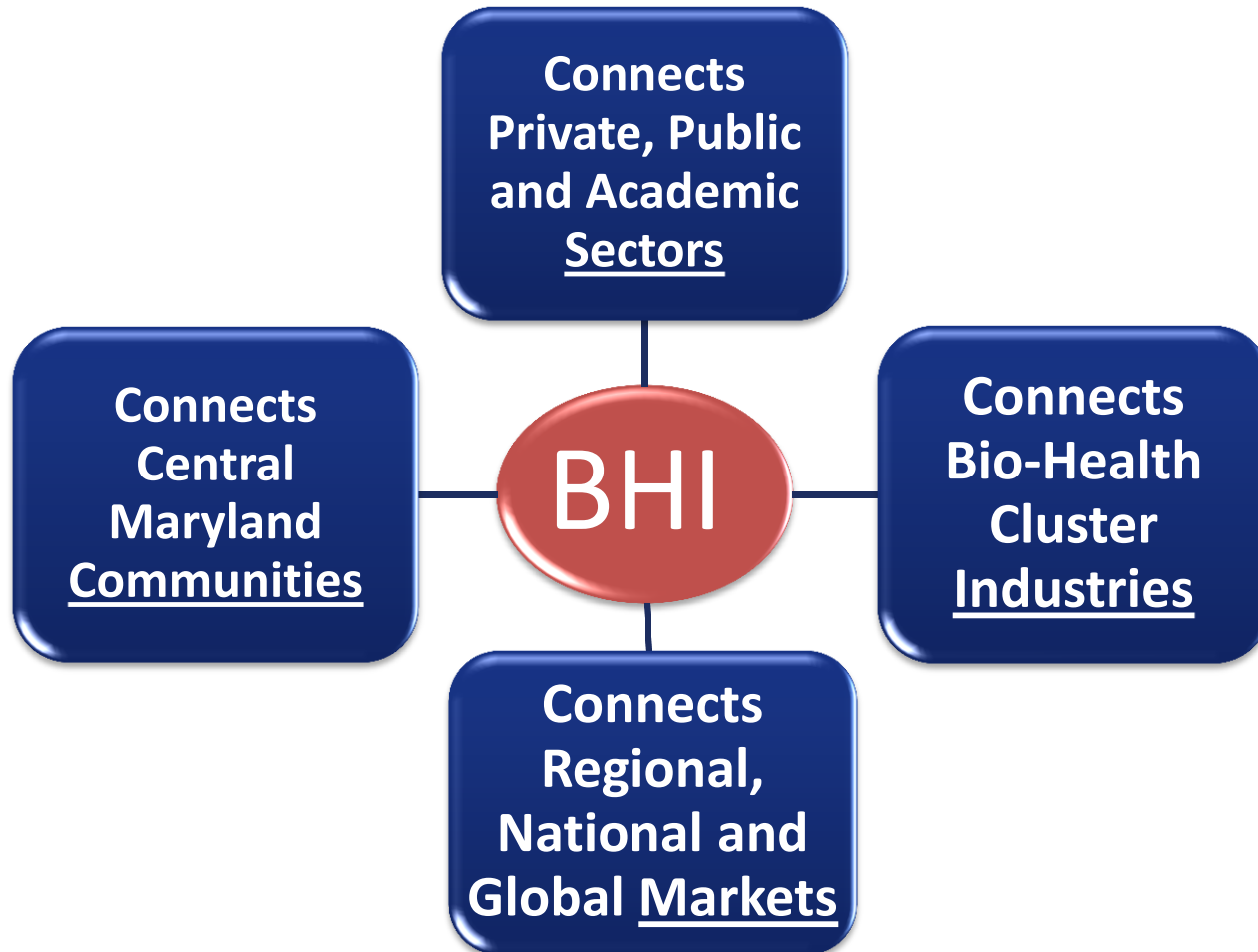


What is A Regional Innovation Intermediary?

- An organization at the Center of the region's, state's and country's efforts
 - Align local technologies, assets and resources
 - Advance Innovation
- Regionally-oriented
- Private-public partnership, 501(c)(3) nonprofit
- Market-driven, private sector-led
- Neither a government initiative, nor a membership organization



BHI: An Innovation Intermediary that Connects Sectors, Industries, Communities, & Markets



Regional BioHealth Ecosystem Partners



BHI Partners and Sponsors



JOHNS HOPKINS
UNIVERSITY



NEA®



BHI Funding Sources:

- private sector
- universities and foundations
- public sector

VENABLE®
LLP



BioHealth Innovation
Maryland's Commercialization Collaborative

BHI Board of Directors

Michael J. Baader, Esq.

Managing Director, Venable LLP

Richard Bendis

President & CEO, BioHealth Innovation, Inc.

Scott Carmer (Chair)

Executive Vice President of
Commercial Operations, MedImmune

Kenneth Carter

Chair, Noble Life Sciences

Scott Dagenais

Senior Vice President, M&T Bank

Ronald J. Daniels

President, Johns Hopkins University

David M. Gillece (Secretary)

Regional Managing Principal, Cassidy Turley

William E. Kirwan

Chancellor, University System of Maryland

Douglas Liu

Senior Vice President of Global Operations, Qiagen

David Mott

General Partner, New Enterprise Associates

Jerry Parrott

Vice President, Corporate Communications and Public
Policy, Human Genome Sciences

Jay Ridder

Office Managing Partner, Ernst & Young

William G. Robertson (Treasurer)

President & CEO, Adventist Healthcare

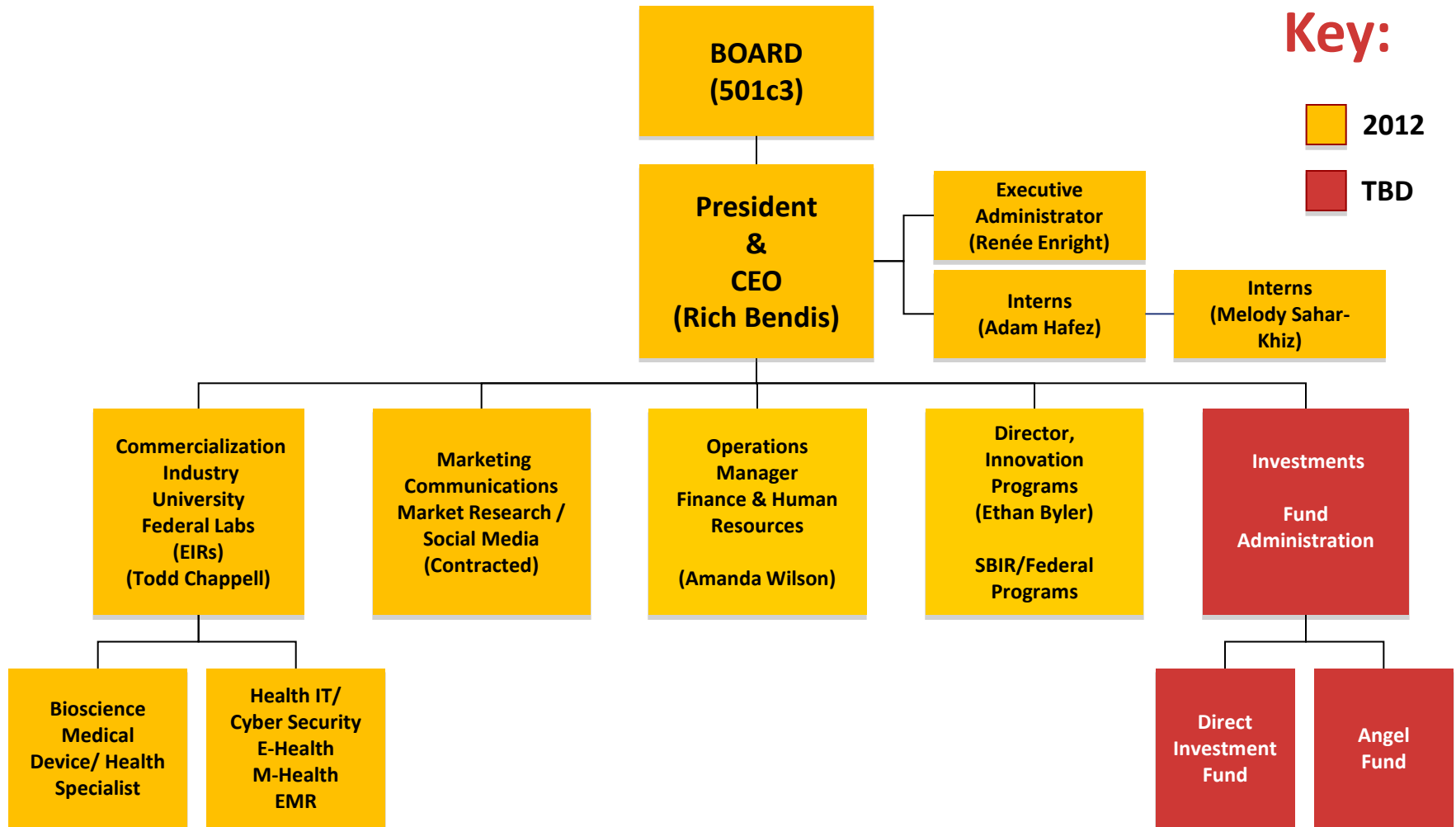
J. Thomas Sadowski

President & CEO, Economic Alliance of Greater
Baltimore

Thomas Street

Assistant Chief Administrative Officer, Montgomery
County Government

BHI Organizational Chart



BHI/EIR 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

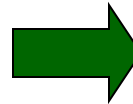
“It Works!”

PROOF OF COMMERCIAL RELEVANCE

(Market Pull)

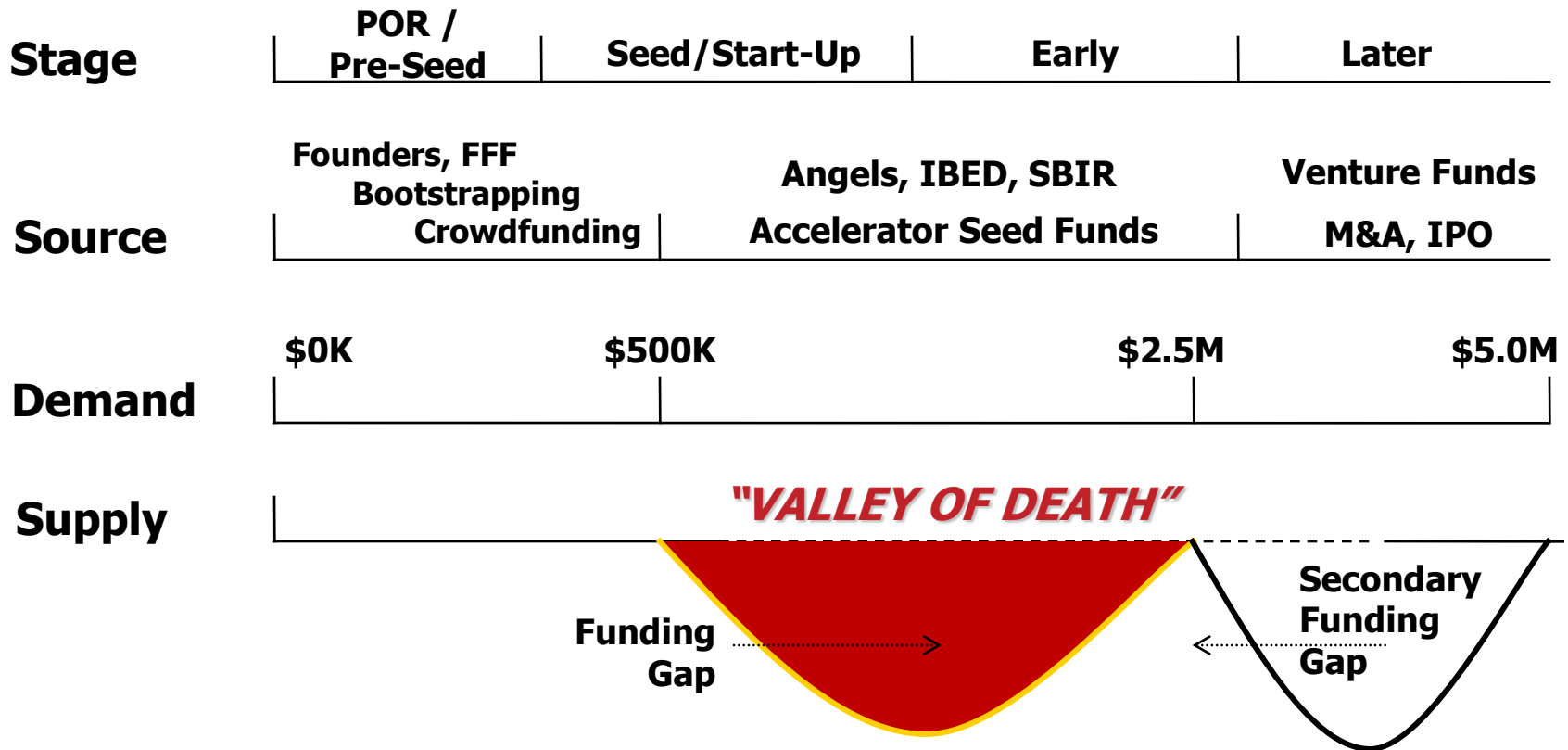
“It Works To Solve A Problem”

“I’ll Buy It”



Innovation Capital

“VALLEY OF DEATH”



Central Maryland Innovation Capital Map

Capital Sources by Investment Stage

Pre-Proof of Concept \$25K - \$1.5M (over 5 years)	Translational Research / Proof of Concept \$15K - \$2M	Proof of Commercial Relevance / Pre-Seed \$50K - \$500K	Seed / Start-Up \$50K - \$1M	Early Stage \$250K - \$2M	Later Stage \$2M+
<ul style="list-style-type: none"> NIH R01 NIH R03 NIH R21 Small Business Technology Transfer Research Grant (STTR) Phase I Innovate Maryland 	<ul style="list-style-type: none"> NIH Center for Accelerated Innovations (CAI) NCATS Cures Acceleration Network (CAN) Small Business Innovation Research Grant (SBIR) Phase I Maryland Stem Cell Research Fund (MSCRF) TEDCO University Technology Development Fund (UTDF) TEDCO TechStart Maryland Biotechnology Center's Translational Research Award 	<ul style="list-style-type: none"> Maryland Industrial Partnerships (MIPS @ UMD) Maryland Biotechnology Center's Biotechnology Commercialization Awards TEDCO Maryland Technology Transfer and Commercialization Fund (MTTCF) BHI SBIR/STTR Commercial Relevance Program (CRP) BHI Commercial Relevance Fund (CRF) 	<ul style="list-style-type: none"> Dingman Center Angels (UMD) TEDCO Johnson & Johnson Joint Investment Program Propel Baltimore Fund SBIR / STTR Phase II BHI Central Maryland Angel Fund National Association of Seed & Venture Funds (NASVF) Angel Capital Association (ACA) 	<ul style="list-style-type: none"> Maryland Health Care Product Development Corporation (MHCPDC) Invest Maryland: Maryland Venture Fund New Enterprise Associates (NEA) TDF Abell Venture Fund MMG Ventures LP Mid-Atlantic Venture Association (MAVA) 	<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 National Venture Capital Association (NVCA)

- Association of University Resource Parks (AURP)
- Association of University Technology Managers (AUTM)
- Licensing Executive Society (LES)

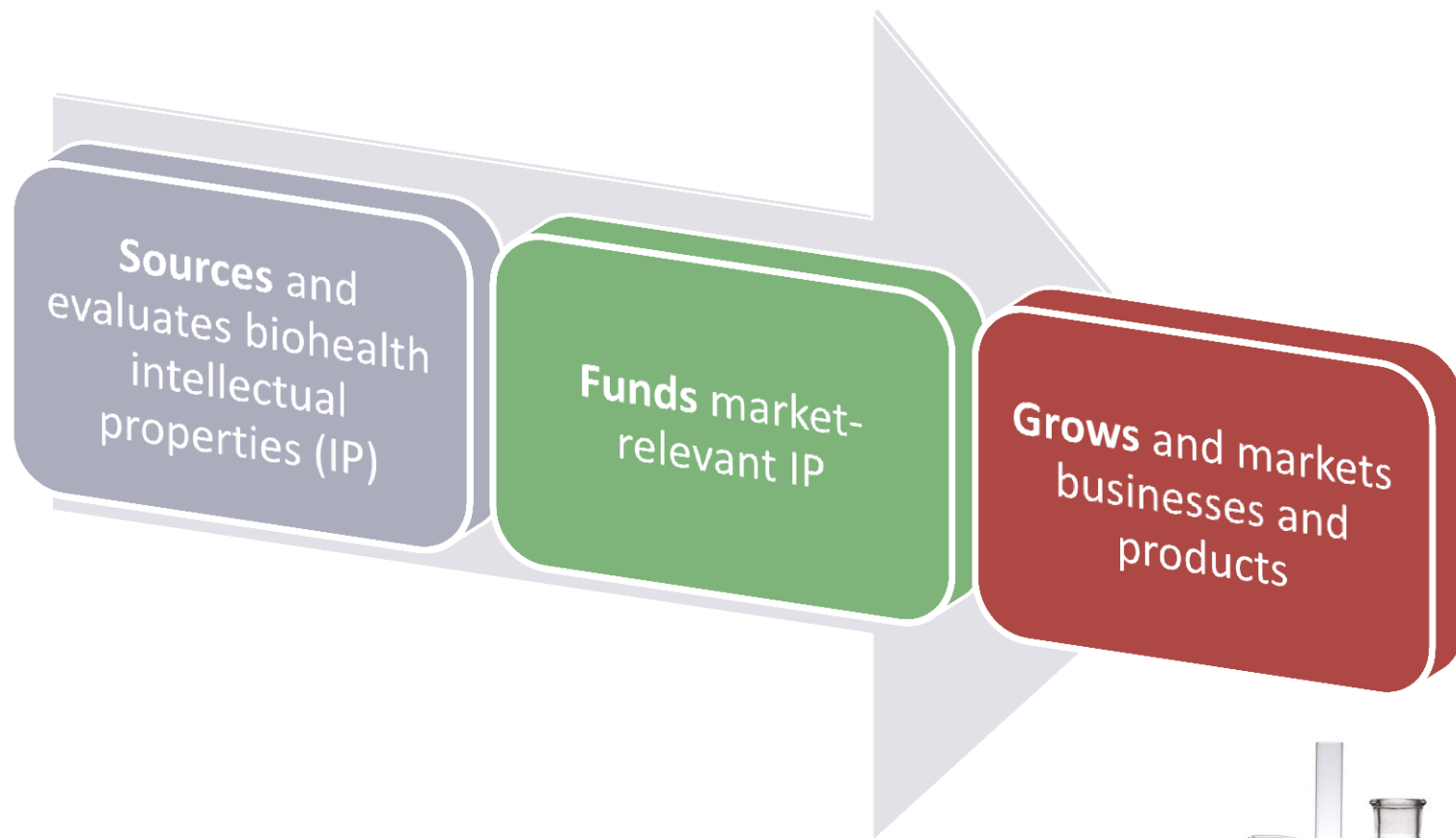
Funding Type Key

- Academic
- Accelerator
- Associations
- Federal
- BioHealth Innovation, Inc.
- Innovation-based Economic Development (IBED)
- State of Maryland
- Venture Capital

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

How does **BHI** work?

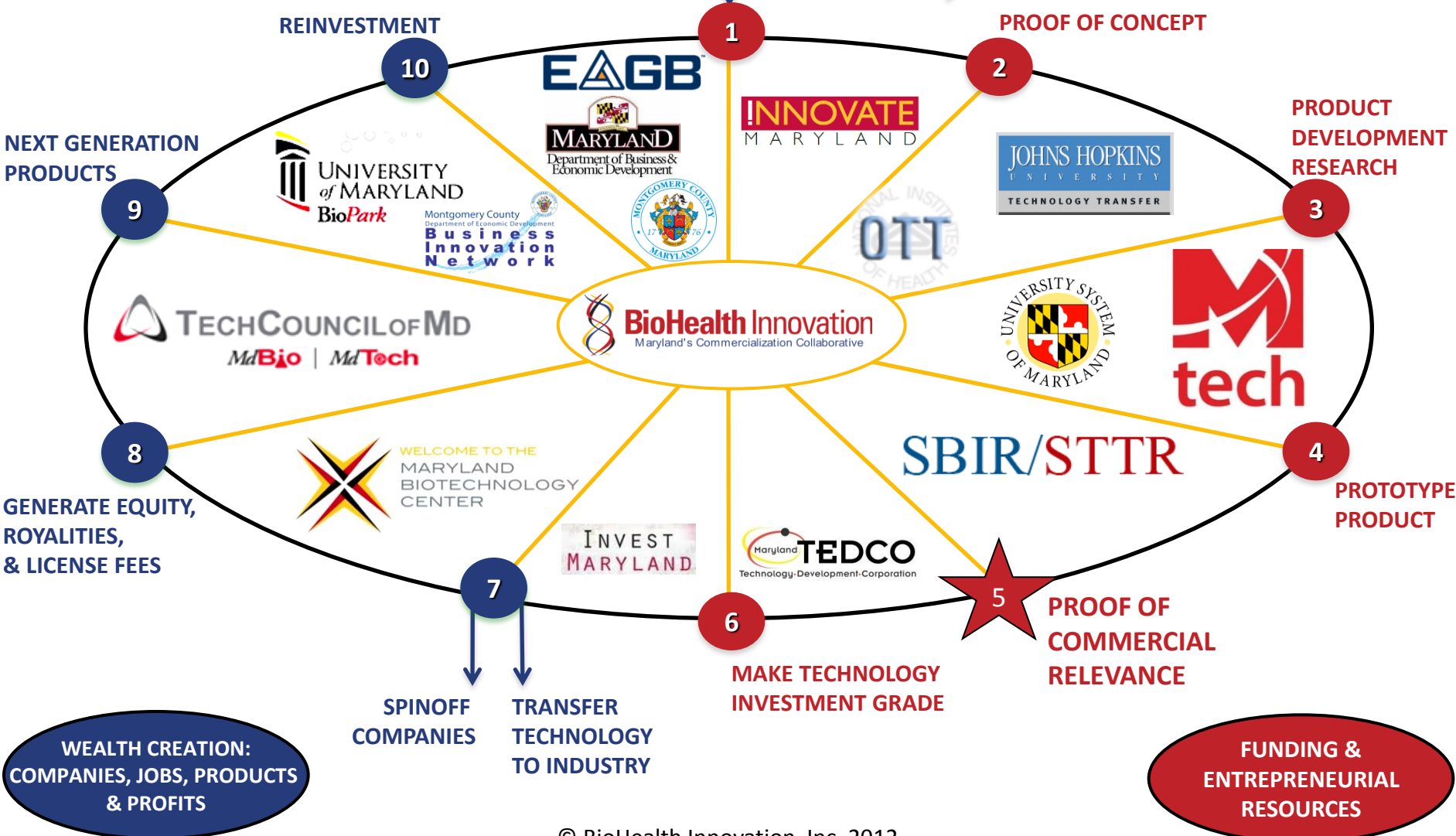
Commercialization Pipeline



BHI Commercialization Model

UNIVERSITIES, FEDERAL GRANTS, PRIVATE R&D, BASIC RESEARCH, INVENTIONS

PUBLICATIONS
PhD's
TENURE
PATENTS



BHI Deal Goals

SEED
CAPITAL

VC Regional History:

Last decade the region: ***\$79.8 million per year****
in biotechnology venture financing (2003-2010).

Goal:

150 prospective deals annually

Fund:

25% or 35 deals per year

Avg. Investment:

\$4.3 million per start-up

Targeted VC Annual Investment

\$150,000,000

*This includes an estimated \$57.7 million per year in Montgomery County, and \$22.1 million per year in the rest of the state.



Partnership Intermediary Agreements (PIA)

- **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.
- **PIA between BHI and the Telemedicine & Advanced Technology Research Center (TATRC)** to capture USAMRMC and TATRC research outcomes and promote further research, product development, commercialization, and economic development opportunities.



Entrepreneur-in-Residence (EIR)

- A team leader who combines scientific, financial/VC and entrepreneurial management experience to:
 - Perform due diligence
 - Develop biohealth project-focused companies



Todd Chappell

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

- Federal Labs
- Universities
- Private Sector

BHI News & Website



BHI Web site

The BHI Web site 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>



Innovation Resource Guide

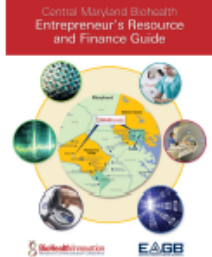
“Financing and Entrepreneurial Resource for Montgomery County and the Greater Baltimore Region”

- Entrepreneur and Innovation Resource Network
- Innovator Financing Guide
- The Startup's Guide to Intellectual Property



Central Maryland Biohealth Entrepreneur's Resource and Finance Guide

- Provides **businesses and entrepreneurs** with information to access resources necessary to **grow** their biohealth businesses.
- **A-Z directory** of relevant businesses, organizations and resources for business assistance, economic development, innovation research, investment and technical assistance.
- A **comprehensive financing guide** designed to prepare businesses and entrepreneurs to navigate the complicated world of financing and investment.
- A **startup's guide to intellectual property** that will introduce entrepreneurs to the complex issues surrounding patents, trademarks, copyrights and trade secrets.
- The guide will be **free** and available in both **print and electronic** formats.



Benefits of Inclusion:

- Exposure to businesses, entrepreneurs, non-profit organizations and government leaders.
- Opportunity to market assistance and investment programs to a large audience.

Benefits of Sponsorship:

- Company logo printed on the inside cover of the guide.
- Exposure to 1,000s of businesses, organizations and government leaders through distribution of the guide.

Benefits of Advertisement:

- Half-to-full-page detailed ads available to market your company or organization.
- Exposure to 1,000s of businesses, organizations and government leaders through distribution of the guide.

To advertise, sponsor or be included in the guide, please contact:

Michael Combs
Economic Alliance
of Greater Baltimore
410-637-4105
mcombs@greaterbaltimore.org



Central Maryland Biohealth Entrepreneur's Resource and Finance Guide is a joint effort between BioHealth Innovation and the Economic Alliance of Greater Baltimore.

For more information, visit:

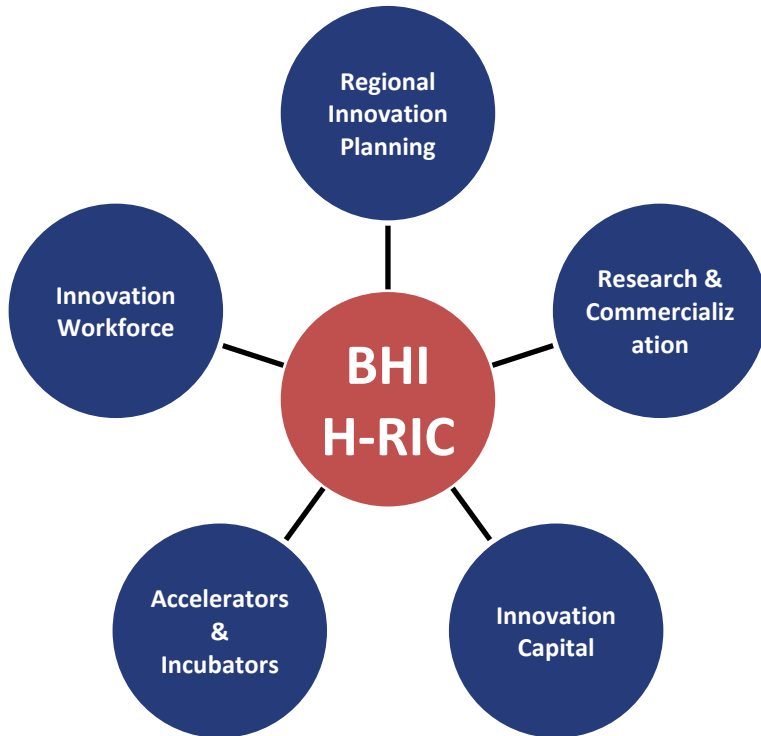
www.biohealthinnovation.org
www.greaterbaltimore.org

BHI Innovation Capital

- **SBIR/STTR Assistance Program** - The BHI SBIR/STTR Assistance Program (in development) will provide assistance to biohealth-driven companies in the Central Maryland region in preparing for high-quality SBIR/STTR grant proposals for submission to federal funding agencies.
- **BHI Angel Fund** - The BHI Angel Fund (in development) will be a member-managed private equity investment fund that bridges the gap between pre-seed investments and institutional venture capital serving the Central Maryland region entrepreneurial needs.
- **BHI Commercial Relevance Investment Fund** - The BHI Commercial Relevance Investment Fund (in development) will be a pre-seed and early-stage, equity-based innovation capital fund to help grow, attract, retain and connect Central Maryland biohealth innovation-based companies that need financing to grow their enterprises.



BHI H-RIC Model



Health Regional Innovation Cluster (H-RIC)

- Regional, cluster-based economic development model
- Modeled after the Department of Energy's Regional Innovation Cluster
- Connects innovation assets to related industries
- Advances human health and economic prosperity

BHI: Connecting Centers of Excellence in the Region

LifeSci Village™ at FDA



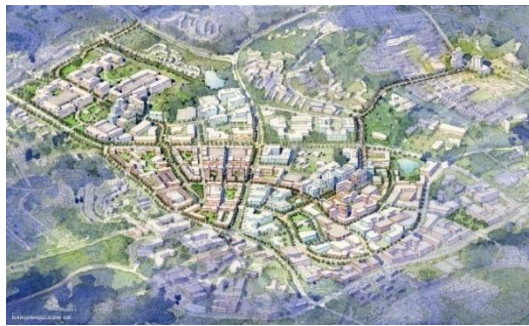
Baltimore's Bayview Research Cluster



Science + Technology Park at JHU



Great Seneca Science Corridor



University of Maryland bioPark



How is Success Measured?

BHI Metrics – First 5 Years

	Now	In 5 Years
VC Funding for Biotech	\$79 Million	\$150
Government Funding for Biotech	Increased SBIR proposals & success	Improve Maryland's ranking
Source Prospective Deals Annually	30	150

Improve return on R&D investment by leveraging equity investment

Create and retain 1,300 jobs

Recruit entrepreneurs, experienced managers and businesses

Commercialize biohealth technologies and create biohealth companies



BHI: The Triple Bottom Line

Grows high-paying jobs and businesses

Expands tax base; **improves** economic vitality

...and **Benefits** human health!

BHI Staff

Richard Bendis

President & CEO

(215) 593-3333

rbendis@bendisig.com

Todd Chappell

Entrepreneur-In-Residence

(978) 933-1622

tchappell@biohealthinnovation.org

Ethan Byler

Director, Innovation Programs

(301) 637-7952

ebyler@biohealthinnovation.org

Renée Enright

Executive Administrator

(301) 637-5372

renright@biohealthinnovation.org

Amanda Wilson

Operations Manager

(301) 637-0699

awilson@biohealthinnovation.org

Adam Hafez

Student Intern

(301) 637-7270

ahafez@biohealthinnovation.org

BioHealth Innovation, Inc.

22 Baltimore Road | Rockville, MD 20850

bhi@biohealthinnovation.org

