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INSTITUTE



**BioHealth Innovation**  
Maryland's Commercialization Collaborative

# **Innovation Collaboration with the Frederick National Laboratory for Cancer Research**

October 10, 2012

**Richard A. Bendis**

President & CEO

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



# Maryland

- 5.64 % of Gross State Product attributed to federal research and development spending (Source: SSTI, 2009 Data)
  - Highest of any State in the U.S.
- Maryland Federal R&D investment over \$12 billion annually
- 59 Federal Laboratories, Centers, & Institutes in Maryland



# “The Region”--Central Maryland

**Unrivaled Research Assets**  
**Unfulfilled Commercial Promise**

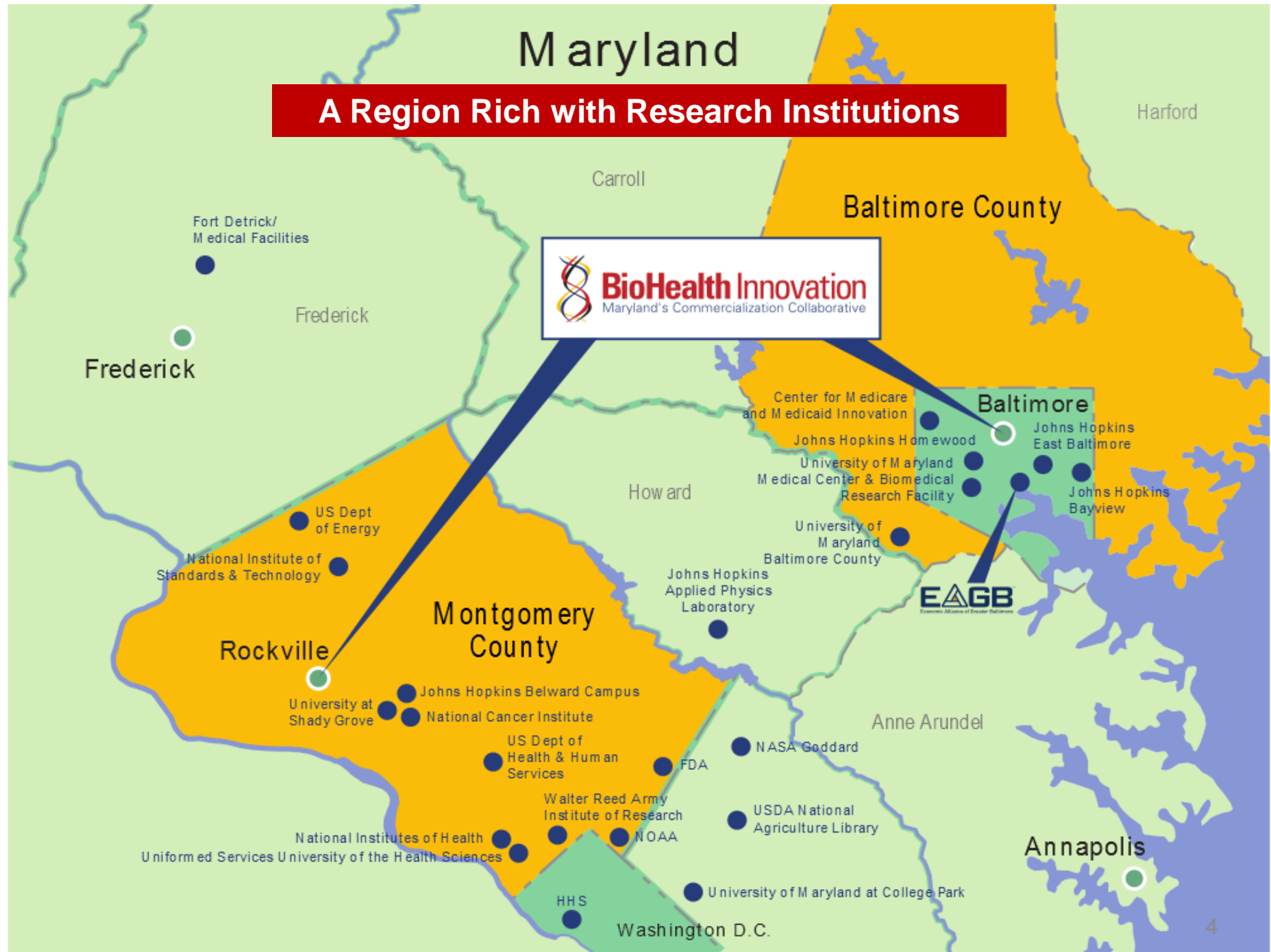


# Maryland

## A Region Rich with Research Institutions



**BioHealth Innovation**  
Maryland's Commercialization Collaborative



# Alignment of National, State, and Regional Policies



**Obama  
Administration**



**Governor  
O'Malley  
(Maryland)**



**County Executive  
Ike Leggett  
Montgomery County**



**Stephanie Rawlings -  
Blake  
Mayor of Baltimore**

- Link Both State, County & City Strategies to Obama Administration Objectives
- Develop an integrated Regional BioHealth Economic Development and Transit Strategy
- Present the “Regional Job Generating BioHealth and Transit Plan” to the White House & partner with federal agencies and other stakeholder organizations as a “Showcase Model.”
- Develop structure & governance for the regional BioHealth innovation intermediary
- Obtain Priority Federal Funding for Region’s BioHealth Industry-Federal Labs-University Innovation Intermediary Pilot Plan
- Obtain Priority Federal Funding for the region’s Innovative “State of the Art” Comprehensive Rapid Transit Vehicle Plan (CCT et al)
- Develop a pilot BioHealth-Regional Innovation Cluster (H-RIC) program



# 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

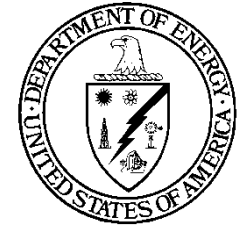
Connects regional innovation assets

Develops an entrepreneurial talent and support pipeline

Attracts funding for technology commercialization

Develops a continuum of innovation workforce

# BioHealth Regional Innovation Cluster Assets



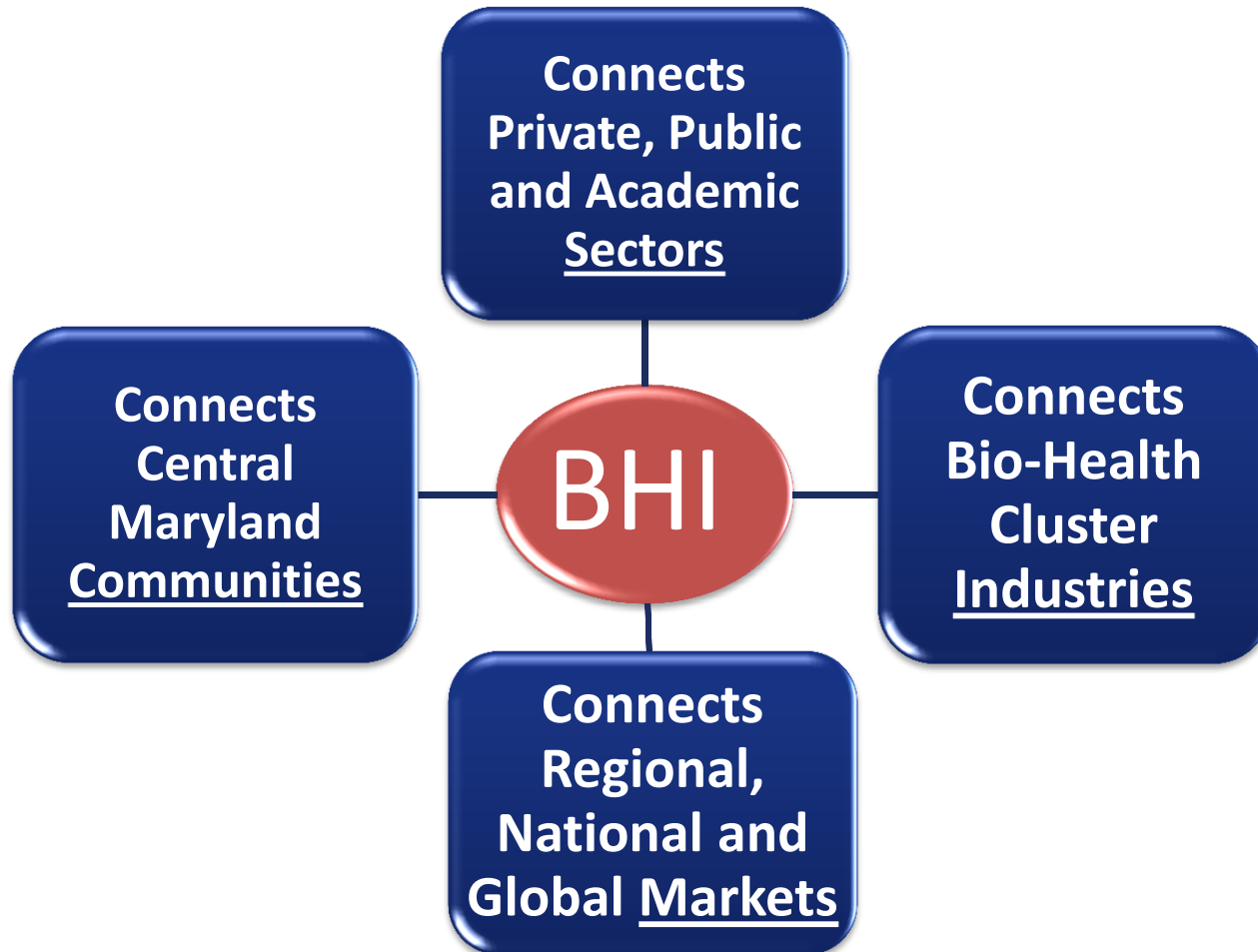
# What is A Regional Innovation Intermediary?

- 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

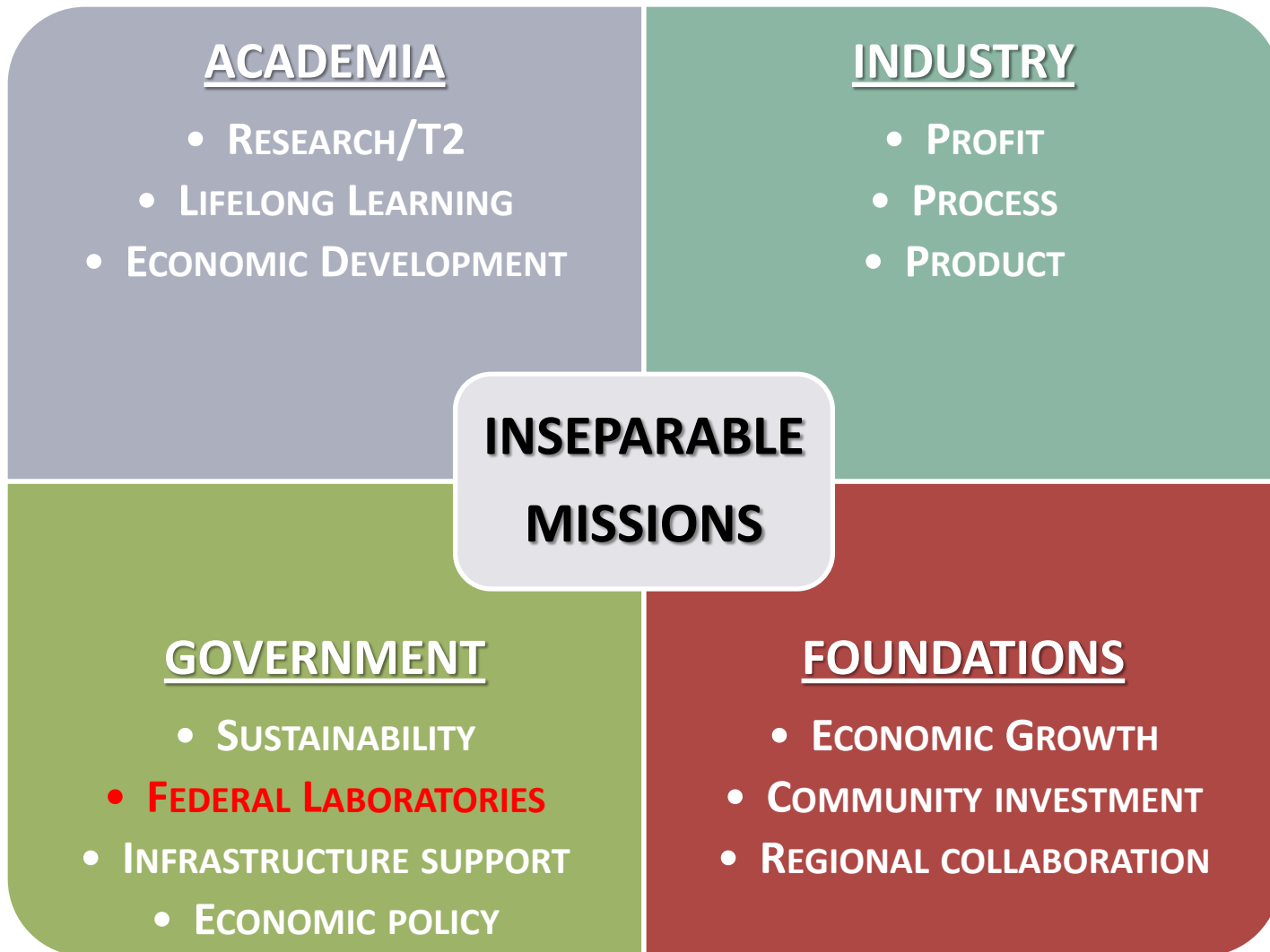




# **BHI:** An Innovation Intermediary that Connects Sectors, Industries, Communities, & Markets



# Regional BioHealth Ecosystem Partners



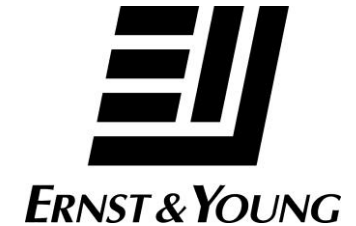
# BHI Partners and Sponsors



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UNIVERSITY



NEA



VENABLE<sup>®</sup>LLP



# BHI Board of Directors



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Qiagen



**Richard Bendis**  
President & CEO, BioHealth Innovation, Inc.



**David Mott**  
General Partner, New Enterprise Associates



MedImmune

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**Thomas Street**  
Assistant Chief Administrative Officer,  
Montgomery County Government

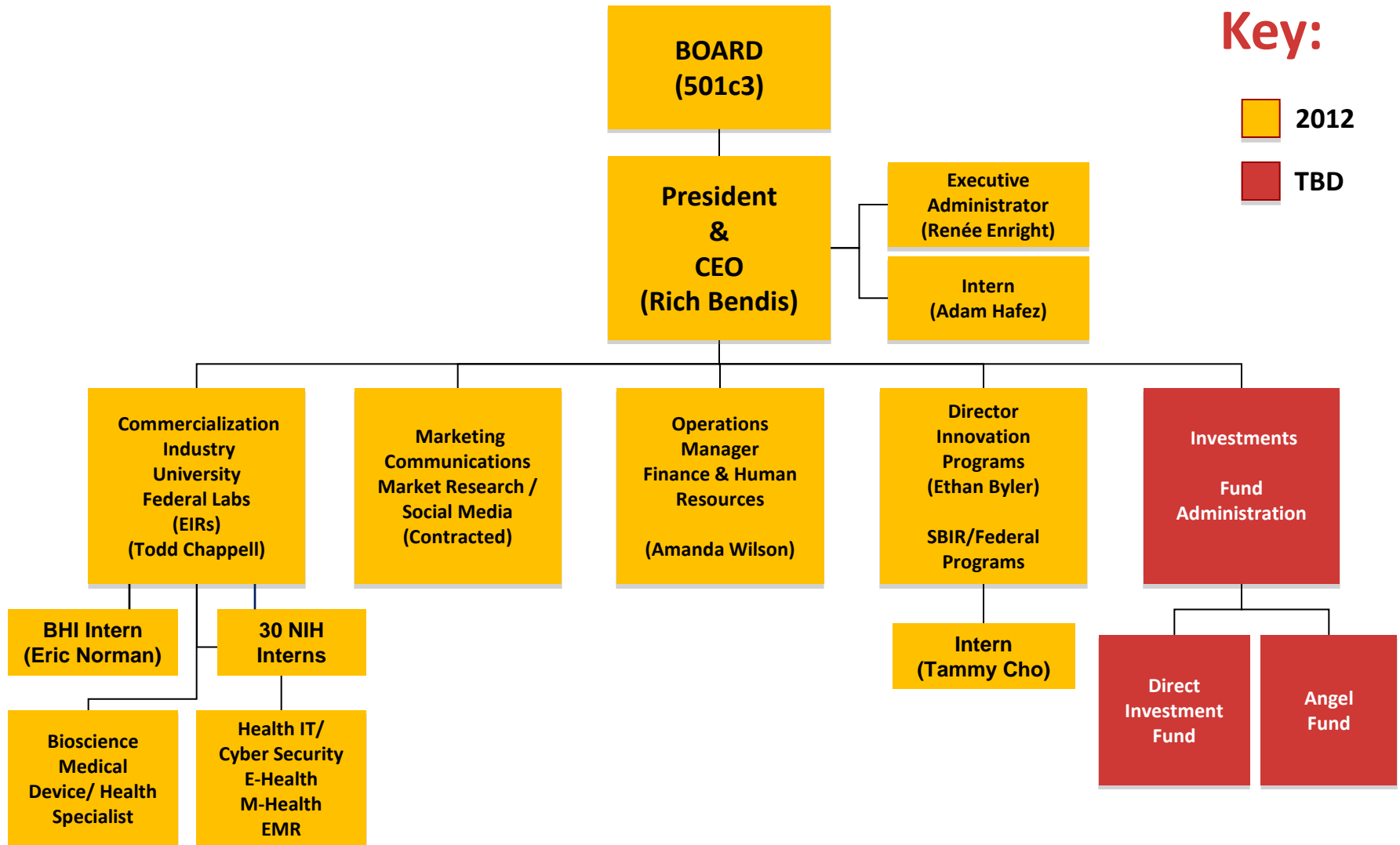


# BHI Organizational Chart

**Key:**

2012

TBD



# 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!”**

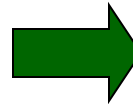


**PROOF OF COMMERCIAL RELEVANCE**

**(Market Pull)**

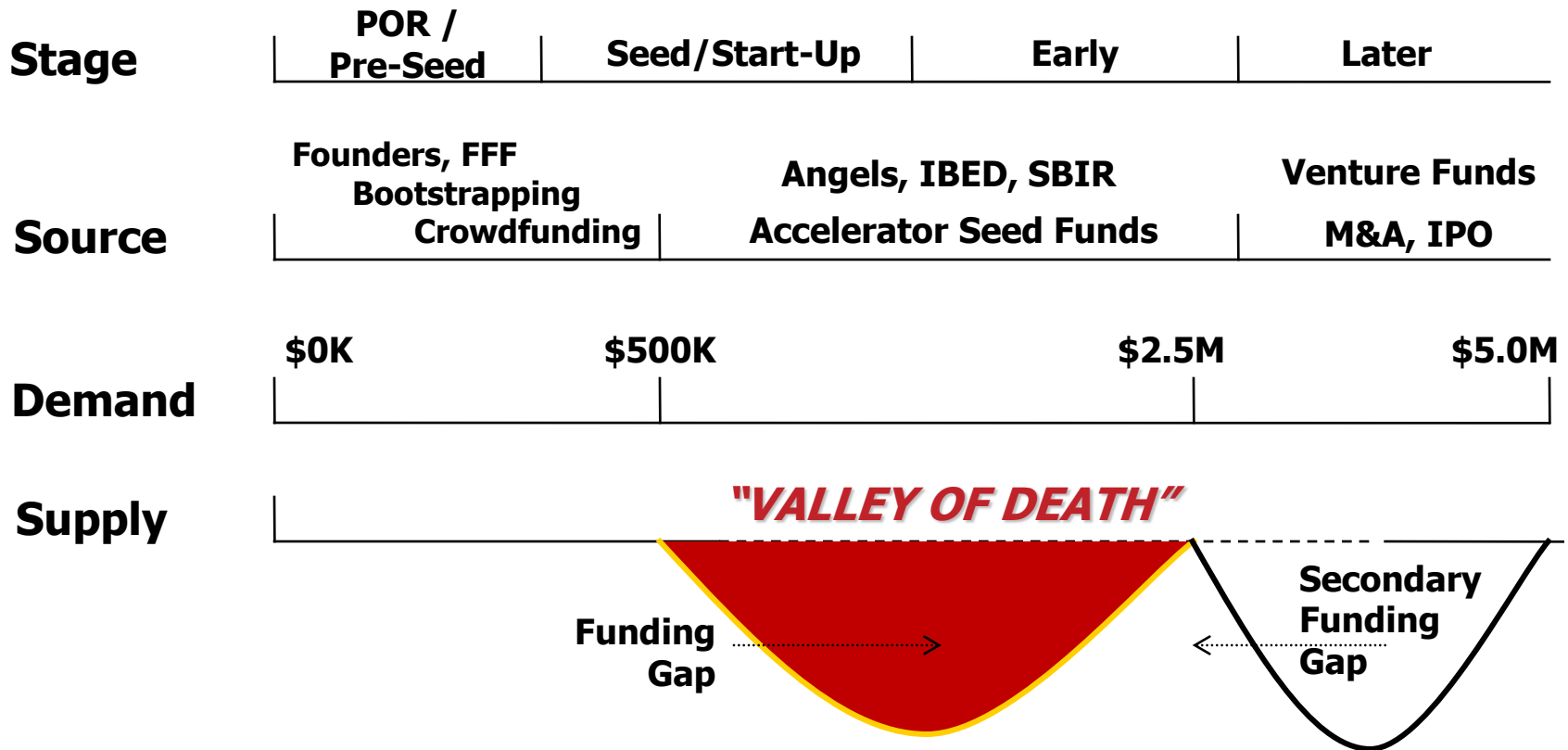
**“It Works To Solve A Problem”**

**“I’ll Buy It”**



# Innovation Capital

## “VALLEY OF DEATH”





# 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.



# 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"> <li>NIH R01</li> <li>NIH R03</li> <li>NIH R21</li> <li>Small Business Technology Transfer Research Grant (STTR) Phase I</li> <li>Innovate Maryland</li> </ul>	<ul style="list-style-type: none"> <li>NIH Center for Accelerated Innovations (CAI)</li> <li>NCATS Cures Acceleration Network (CAN)</li> <li>Small Business Innovation Research Grant (SBIR) Phase I</li> <li>Maryland Stem Cell Research Fund (MSCRF)</li> <li>TEDCO University Technology Development Fund (UTDF)</li> <li>TEDCO TechStart</li> <li>Maryland Biotechnology Center's Translational Research Award</li> </ul>	<ul style="list-style-type: none"> <li>Maryland Industrial Partnerships (MIPS @ UMD)</li> <li>Maryland Biotechnology Center's Biotechnology Commercialization Awards</li> <li>TEDCO Maryland Technology Transfer and Commercialization Fund (MTTCF)</li> <li><b>BHI SBIR/STTR Commercial Relevance</b></li> <li><b>BHI Commercial Relevance Fund (CRF)</b></li> </ul>	<ul style="list-style-type: none"> <li>Dingman Center Angels (UMD)</li> <li>TEDCO Johnson &amp; Johnson Joint Investment Program</li> <li>Propel Baltimore Fund</li> <li>SBIR / STTR Phase II</li> <li><b>BHI Central Maryland Angel Fund</b></li> <li>National Association of Seed &amp; Venture Funds (NASVF)</li> <li>Angel Capital Association (ACA)</li> </ul>	<ul style="list-style-type: none"> <li>Maryland Health Care Product Development Corporation (MHCPDC)</li> <li>Invest Maryland: Maryland Venture Fund</li> </ul>	<ul style="list-style-type: none"> <li>Maryland Venture Fund Authority</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>National Venture Capital Association (NVCA)</li> </ul>
<ul style="list-style-type: none"> <li>Association of University Resource Parks (AURP)</li> <li>Association of University Technology Managers (AUTM)</li> <li>Licensing Executive Society (LES)</li> </ul>					
<ul style="list-style-type: none"> <li>New Enterprise Associates (NEA)</li> <li>TDF</li> <li>Abell Venture Fund</li> <li>MMG Ventures LP</li> <li>Mid-Atlantic Venture Association (MAVA)</li> </ul>					

### Funding Type Key

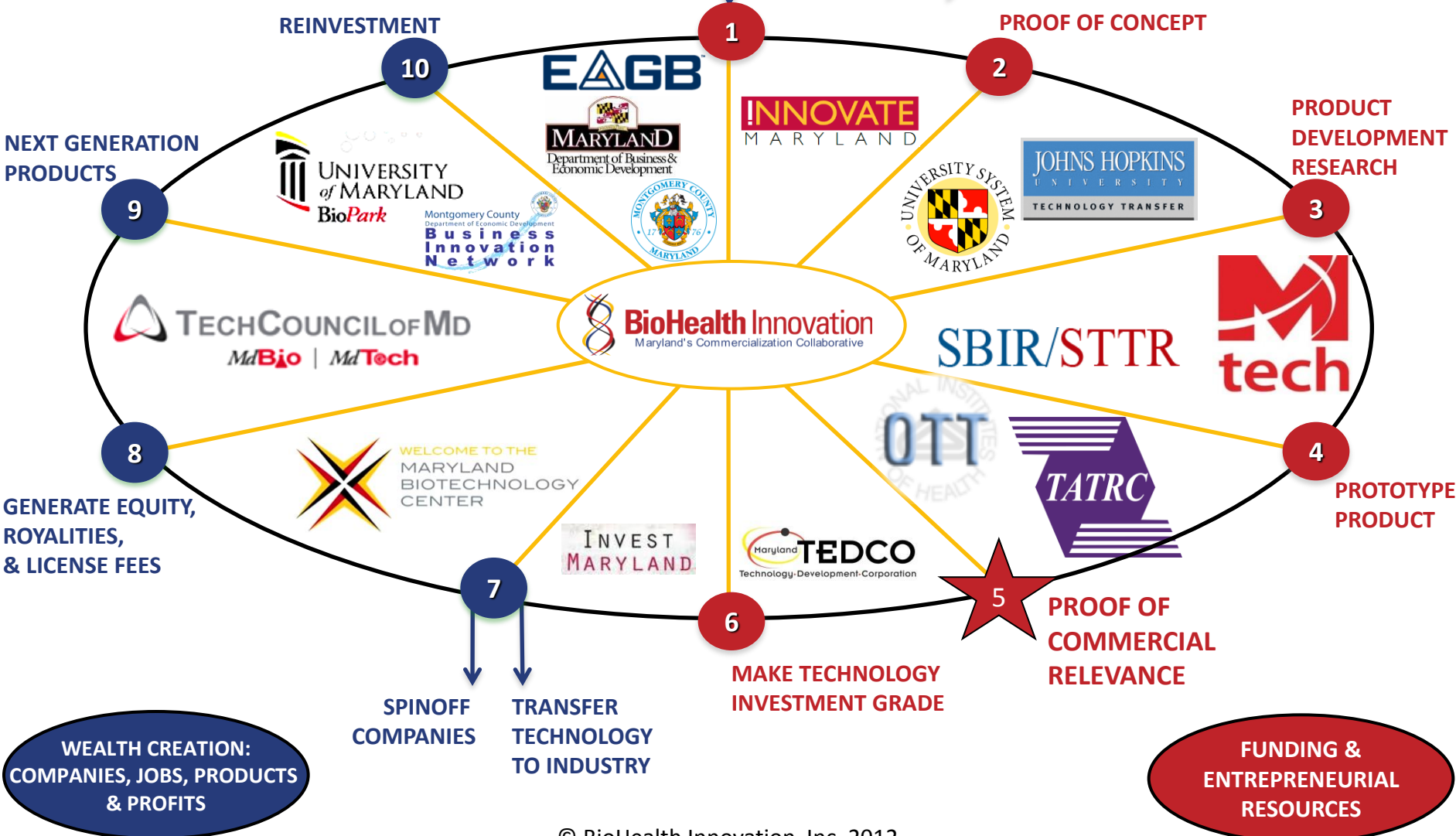
- Academic
- Accelerator
- Associations
- Federal
- BioHealth Innovation, Inc.
- Innovation-based Economic Development (IBED)
- State of Maryland
- Venture Capital

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

# BHI Commercialization Model

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

PUBLICATIONS  
PhD's  
TENURE  
PATENTS



# Innovation Resource Guide

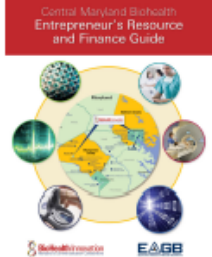
## *“Financing and Entrepreneurial Resource for Montgomery County and the Greater Baltimore Region”*

- Entrepreneur and Innovation Resource Network
- Innovator Financing Guide
- The Startup's Guide to Intellectual Property
- Doing Business with the Federal Labs



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

# 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>



# 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.
  - TATRC has funded 241 MD based projects over the last 12 years.



# Entrepreneur-in-Residence (EIR)

- Identify market viable biohealth assets
- Act as liaison among federal labs, academic, industry, venture capital, and non-profit
- Detailed commercial evaluation of most valuable technologies
- Provide early-stage developmental strategies
- Nurture relationships with scientists, mentor to ensure research becomes commercially valuable, and track progress
- Identify creative funding to advance exciting, novel technologies
- Enable licensing and create new BioHealth companies



# 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

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

- Federal Labs
- Universities
- Private Sector

## Progress (6 months into Program)

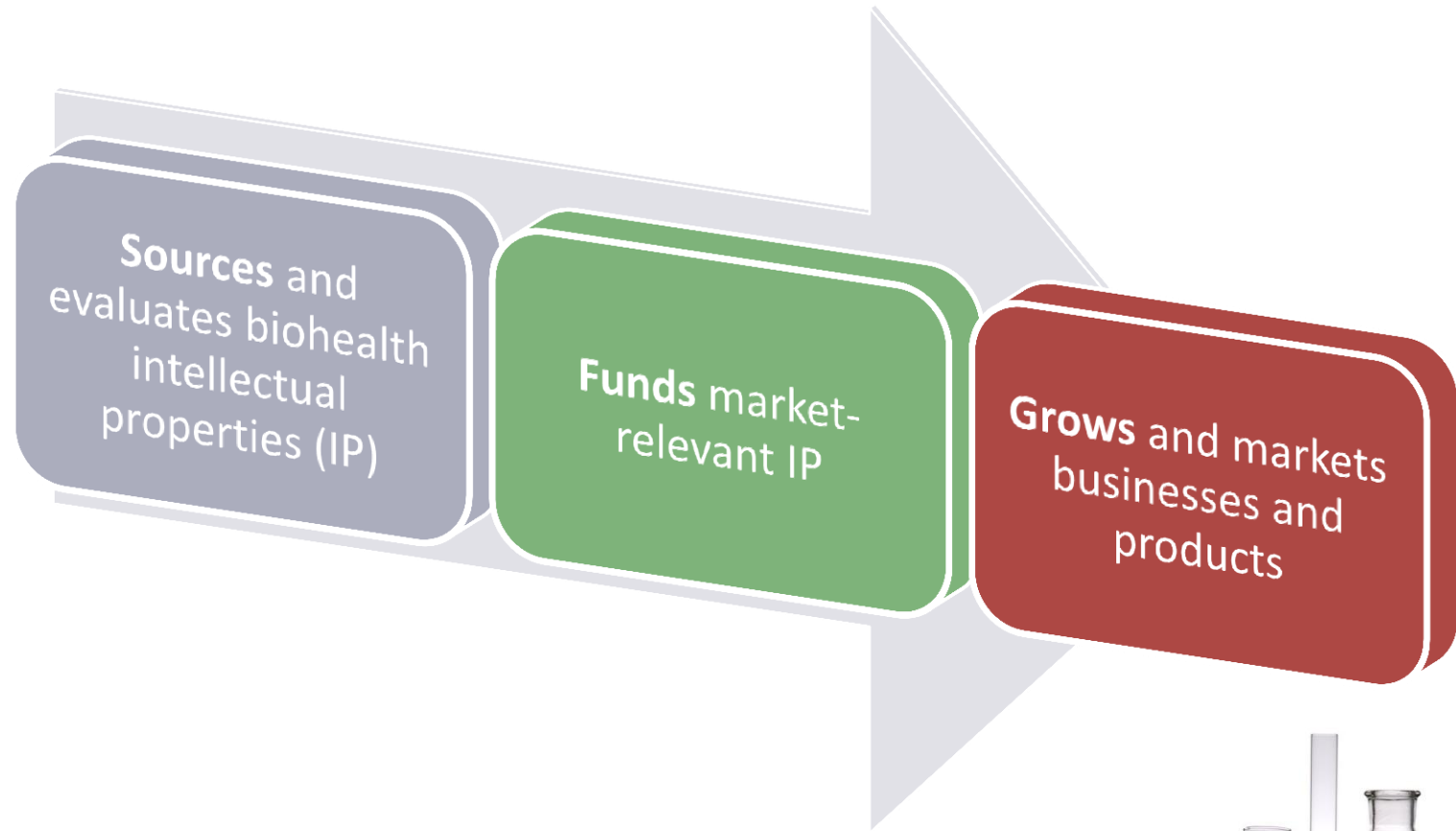
- 73 Innovations identified and initially screened
- 7 Progressed to Secondary Analysis (Safety & Efficacy Profiling, IP Diligence, Regulatory & Development Pathways) and 12 to Primary Analysis
- 32 No De-prioritized, 22 still Under Review
- Goal to fund the operation of more EIRs



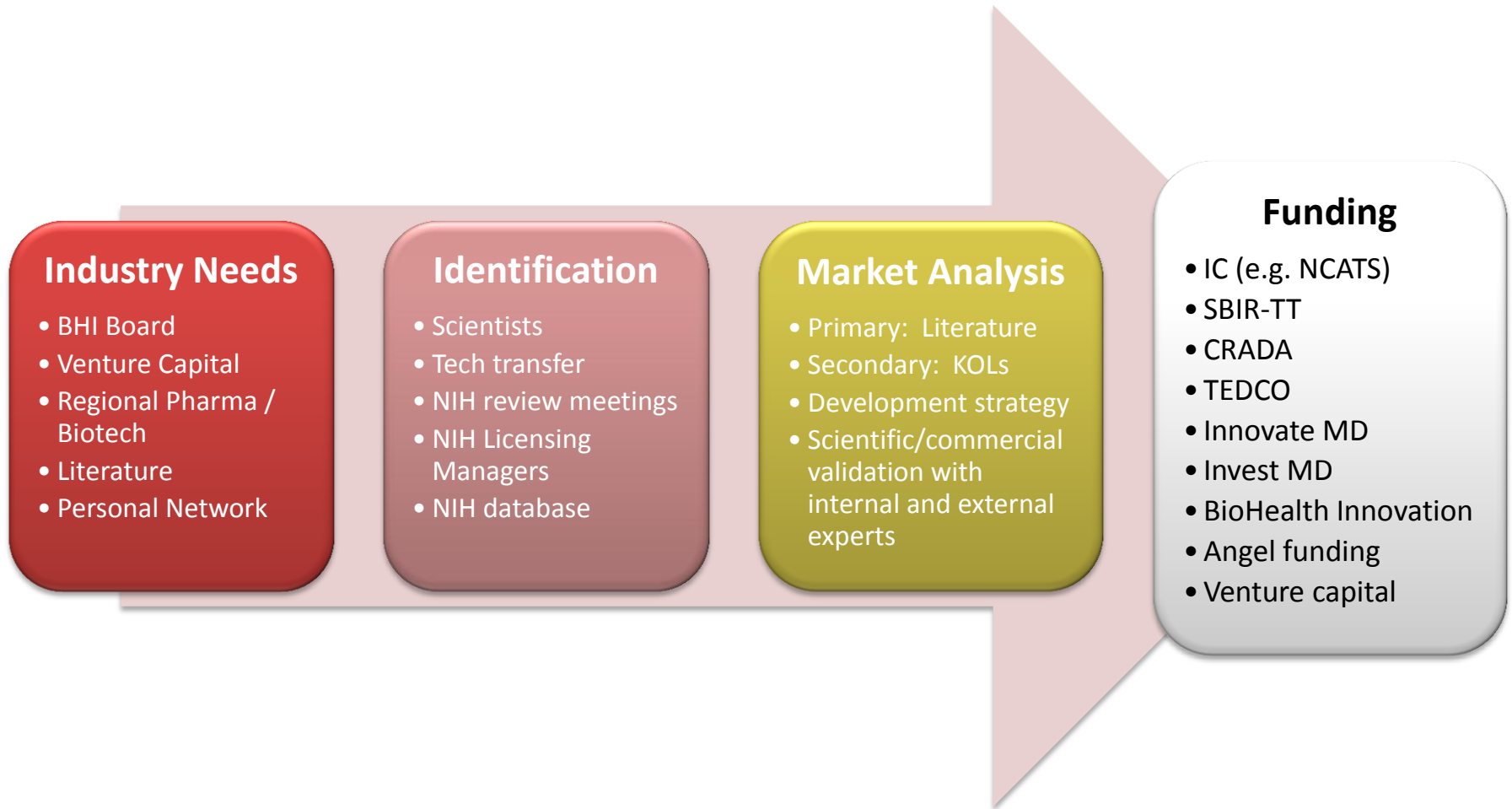


# How does **BHI** work?

## Commercialization Pipeline



# What is the Overall Process for Licensing / Creating Company?



# Identifying Opportunities

## Lead Approach (NIH)

Technology Review Committees

Technology Transfer Branch Chiefs  
and Licensing Managers

Successful Scientists

## Systematic Approach (NIH + Other Institutions)

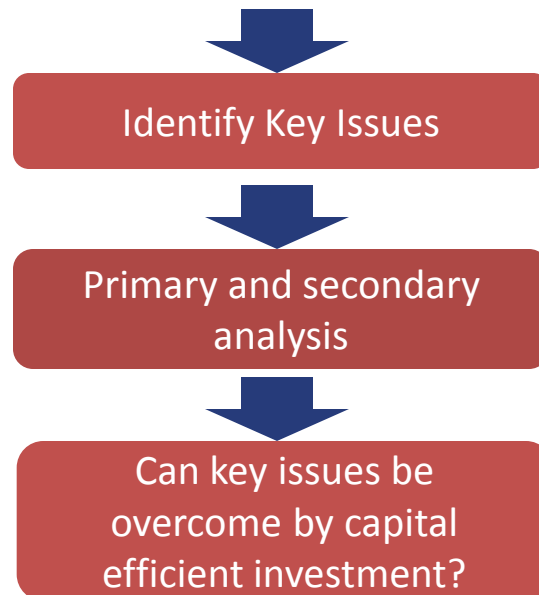
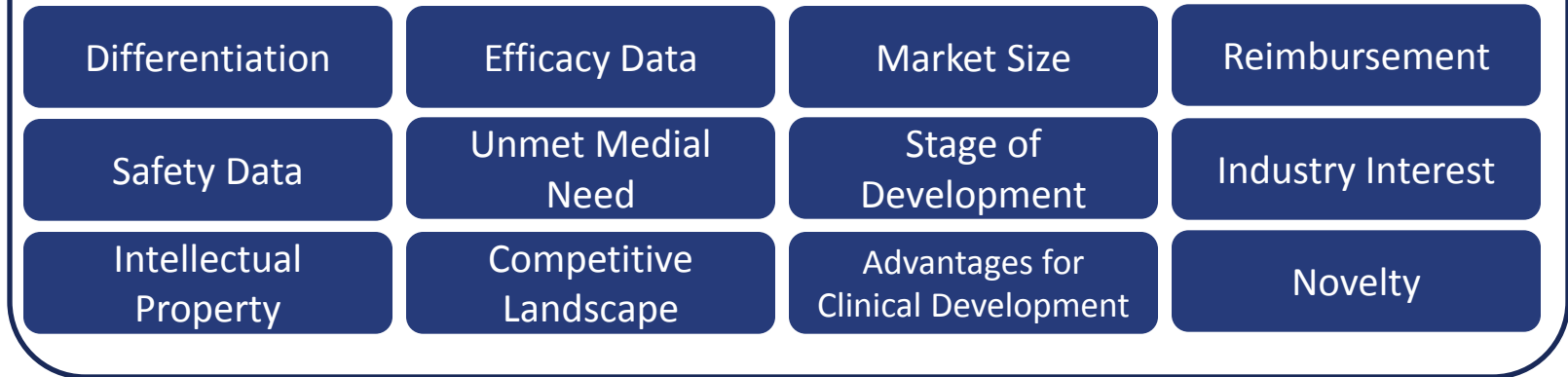
Evaluation of market needs from  
regional players

Directed analysis using database  
and meetings with scientists

Commercial, development, and  
funding analysis

# Early-Stage Analysis of Commercial Relevance

## Selected Criteria for Value Proposition



# Key Considerations for Technology Focus

- **Clear unmet need that benefits public health**
- **First-in-class, best-in-class therapies**
- **Target biohealth areas that reflect strategic objectives**
- **Clinical development advantage**
- **Relevance to strategic needs**



# EIR Integration into NIH System

- **Office at the central Office of Technology Transfer (OTT)**
  - Non-clinical collaborator
  - Report to Director and Deputy Director of centralized OTT
  - Full access to NIH campus and staff
  - Training 30 NIH Interns & Fellows on Commercialization
- **Active participant in Technology Review Groups at top three institutions**
  - Review of patent prosecution decisions for new and existing inventions
- **Active participant in Technology Development Coordinator meetings**
  - Key decisions on selected technologies
- **Access to database (SYNAPSE) detailing invention filings**



# EIR Expectations



- **Assist OTT in the evaluation of existing technologies**
- **Provide an entrepreneurial perspective to OTT in its evaluation of new licensing proposals**
- **Advise OTT on opportunities for new ventures based on NIH/FDA technologies**
- **Assist with developmental strategies**
- **Mentor scientists to help ensure their research becomes commercially valuable**



- **Identify market viable innovations from NIH and other regional institutions**
- **Act as liaison among regional biohealth stakeholders and NIH**
- **Primary and secondary commercial analysis of lead technologies**
- **Develop novel technologies that are at conceptual stage**
- **Act as catalyst to license most interesting technologies and fund start-up companies**



# Maryland Universities/EIR Interaction

**! INNOVATE**

Maryland's Innovation Initiative

- **\$5.8M budget**
- **5 University partners**
- **5 University site miners**
- **40 University pre proof-of-concept technologies funded**
- **\$25-\$150K funded per technology**

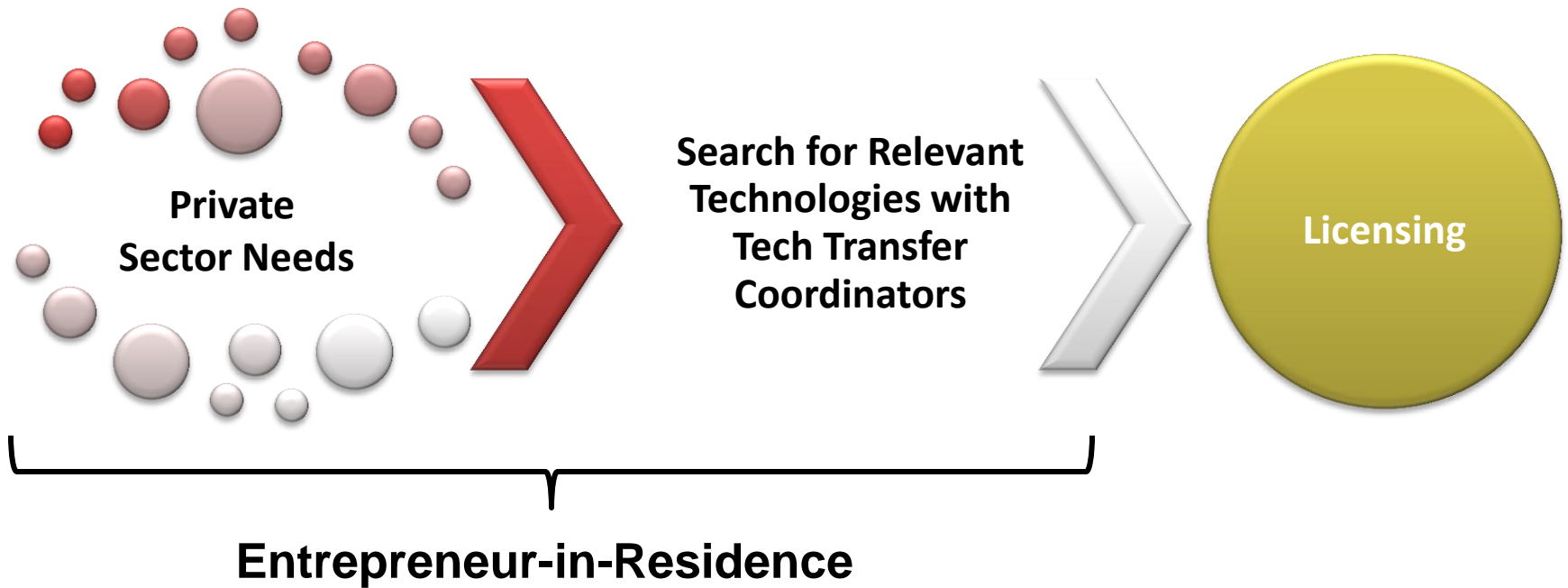


- **Regular meetings between BHI/EIR and site miners**
- **BHI identifies most commercially relevant technologies**
- **BHI and INNOVATE MD partnership opportunities**

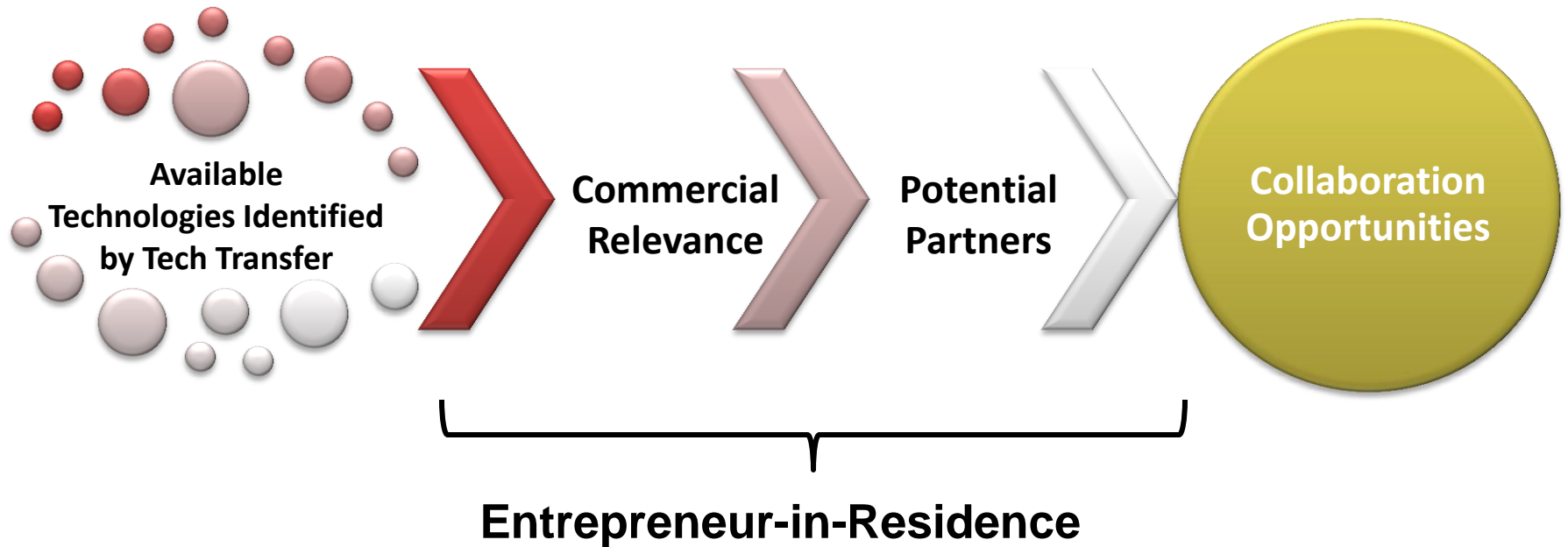




# Licensing Opportunities



# Collaboration Opportunities



# Working Together Today!



**BioHealth Innovation**<sup>SM</sup>  
Maryland's Commercialization Collaborative

## Tech Transfer Speaker Series National Cancer Institute SBIR session

- **SBIR Contract Solicitation Discussion today**
- **BHI promoting and working with NCI SBIR companies**



# **BHI Partner Organization:**

## **MedImmune Partners With Cancer Institutes To Test New Antibodies**

 **MedImmune**

**AstraZeneca** 

- **Cancer Research Institute (CRI)**
- **Ludwig Institute for Cancer Research**

# BHI/NCI Collaboration Opportunities



- **BHI/NCI** Dedicated EIR
- **BHI/NCI** Commercial Relevance Opportunity Fund
- **BHI/NCI** Commercial Relevance Acceleration Team

## Next Steps...

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