TOPIC: BioHealth Innovation -- Maryland's Commercialization Collaborative

COMMITTEE: Economic Development and Technology Commercialization

DATE OF COMMITTEE MEETING: March 29, 2012

SUMMARY: The Committee will be updated on the status of the Maryland BioHealth Innovation Initiative.

ALTERNATIVE(S): This is an information item.

FISCAL IMPACT: This is an information item.

CHANCELLOR’S RECOMMENDATION: This is an information item.

COMMITTEE RECOMMENDATION: DATE:

BOARD ACTION: DATE:

SUBMITTED BY: Joseph F. Vivona (301) 445-2783
www.biohealthinnovation.org
“The Region”--Central Maryland

Unrivaled Research Assets
Unfulfilled Commercial Promise
A Region Rich with Research Institutions
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’s 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 by January 2012
- Presidential Memo “Accelerating Technology Transfer and Commercialization of Federal Research in Support of High-Growth Businesses”
  - Establish goals and measure progress
  - Streamline the federal government’s technology transfer and commercialization process
  - Facilitate commercialization through local and regional partnerships
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
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 Innovation
Maryland’s Commercialization Collaborative
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
- Not a government initiative, nor a membership organization
BHI: An Innovation Intermediary that Connects Sectors, Industries, Communities, & Markets
Regional BioHealth Ecosystem Partners

**ACADEMIA**
- Research/T2
- Lifelong Learning
- Economic Development

**INDUSTRY**
- Profit
- Process
- Product

**GOVERNMENT**
- Sustainability
- Infrastructure Support
- Economic Policy

**FOUNDATIONS**
- Economic Growth
- Community Investment
- Regional Collaboration

**INSEPARABLE MISSIONS**
BHI Founding Partners and Sponsors

BHI Funding Sources:
- private sector
- universities and foundations
- public sector
BHI Board of Directors

Michael J. Baader, Esq.
Managing Director, Venable LLP

Richard Bendis
Interim CEO, BioHealth Innovation, inc.

Scott Carmer (Chair)
Executive Vice President of Commercial Operations, MedImmune

Kenneth Carter
Chair, Noble Life Sciences

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 England Associates

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

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 Industry Focus

- Biotechnology
- 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”**

<table>
<thead>
<tr>
<th>Stage</th>
<th>POR / Pre-Seed</th>
<th>Seed/ Start-Up</th>
<th>Early</th>
<th>Later</th>
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<tbody>
<tr>
<td>Source</td>
<td>Founders, FFF</td>
<td>Angels, I BED, SBI R</td>
<td>Accelerator Seed Funds</td>
<td>Venture Funds</td>
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<td></td>
<td>Bootstrapping</td>
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<td>Supply</td>
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### Funding Gap

- **“VALLEY OF DEATH”**
- Secondary Funding Gap

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**BioHealth Innovation**

Maryland’s Commercialization Collaborative

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## Connect Funding Sources at Every Stage to Fill Gaps

<table>
<thead>
<tr>
<th>DREAM</th>
<th>CONCEPT</th>
<th>APPLIED</th>
<th>COMMERCIAL RELEVANCE</th>
<th>STARTUP</th>
<th>ROLL OUT</th>
<th>GROWTH</th>
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<tr>
<td>Founders Bootstrapping Crowdfunding</td>
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<td>Accelerator</td>
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<td>Federal</td>
<td>ANGEL</td>
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<td>MARYLAND</td>
<td>SBA</td>
<td>H.I.G. Bioteck Ventures</td>
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<td>Friends Family Series</td>
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<td>MARYLAND</td>
<td>DED</td>
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<td>Tech Council of MD</td>
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<td>MdTech</td>
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How does BHI work?

Commercialization Pipeline

Sources and evaluates biohealth intellectual properties (IP)

Funds market-relevant IP

Grows and markets businesses and products
BHI Deal Goals

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.*
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
Partnership Intermediary Agreement (PIA)

• PIA between BHI and NIH’s Office of Technology Transfer 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.
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
BHI Road Map & H-RIC
Implementation Strategy

Regional Innovation Planning
- Regional Cluster Study
- Asset Mapping
- Innovation Index
- Entrepreneur’s Resource Guide

Innovation Capital
- BHI Direct Investment Program
- Regional Angel Fund ($5M) Start up/Mgt
- SBIR/STTR Assistance Program Mgt.
- Early-stage Venture Fund ($100M) Start up/Mgt

Commercialization & Jobs
- University & Federal Lab Commercialization Program
- BioHealth Innovation Acceleration Program
- E-Health and M-Health Competition & Accelerator
- Executive in Residence Programs

Innovation Workforce
- Entrepreneurial Support Programs
- INNoVATE program
- Community College Bio Workforce

Location & Infrastructure
- Incubators & Accelerators Facility Enhancement

BioHealth Innovation
Maryland’s Commercialization Collaborative
BHI: Connecting Centers of Excellence in the Region

LifeSci Village™ at FDA

Great Seneca Science Corridor

Baltimore’s Bayview Research Cluster

University of Maryland bioPark

Science + Technology Park at JHU
1. Generate an initial 1st year financial commitment - $1.5M from public sector, academia, public foundations & industry.

2. Recruit Board Leadership, establish initial team & create a legal entity for BHI.

3. Develop specific metrics & outcome goals for BHI.

4. Source initial commercialization deal prospects locally, regionally, and globally.

5. Provide qualified candidate start-up firms with management counsel, business plan development support, network connection & access to early stage capital.

6. Create access to early stage capital through a network of existing funds & fund organizations.

7. Create an BHI early stage seed fund & angel fund.

8. Develop strategic partner relationships with existing regional organizations.

9. Apply for appropriate Global, Federal, Regional, State grant opportunities from Government, Foundation, & Industry sources.

10. Develop Strategic & operating plans for BHI.

11. Develop an electronic data base of all entrepreneurial, financial & innovation resources in the Region.
How is Success Measured?

BHI Metrics – First 5 Years

<table>
<thead>
<tr>
<th>Metric</th>
<th>Now</th>
<th>In 5 Years</th>
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</thead>
<tbody>
<tr>
<td>VC Funding for Biotech</td>
<td>$79 Million</td>
<td>$150</td>
</tr>
<tr>
<td>Gov’t Funding for Biotech</td>
<td>Increased SBIR proposals &amp; success</td>
<td>Improve Maryland’s ranking</td>
</tr>
<tr>
<td>Source Prospective Deals Annually</td>
<td>30</td>
<td>150</td>
</tr>
</tbody>
</table>

- 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!
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