Effective Strategies in Developing Accelerator Models

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President & CEO
BioHealth Innovation, Inc.
Central Maryland

Unrivaled Research Assets

- 59 Federal Laboratories, Centers, and Institutes

Annual Maryland R&D Investment

- Federal: $12 billion
- JHU/USM: $3.5 billion
An Innovation Intermediary

Align local technologies, assets and resources to advance innovation

- Regionally-oriented
- Private-public partnership
- 501(c)(3) nonprofit
- Market-driven
- Private sector-led

Technology Focus
- E-Health
- Therapeutics
- Mobile Health
- Medical Devices
- Healthcare Services
- BioHealth Cyber Security
- Health Informatics
- Diagnostics
Partners and Sponsors

[Logos of various partners and sponsors]
BHI Commercialization Model

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

1. PROOF OF CONCEPT
2. TENURE
3. FUNDING & ENTREPRENEURIAL RESOURCES
4. PROTOTYPE PRODUCT
5. PROOF OF COMMERCIAL RELEVANCE
6. MAKE TECHNOLOGY INVESTMENT GRADE
7. TRANSFER TECHNOLOGY TO INDUSTRY
8. GENERATE EQUITY, ROYALTIES, & LICENSE FEES
9. NEXT GENERATION PRODUCTS
10. REINVESTMENT

PUBLICATIONS
PhD's
Patents

WEALTH CREATION: COMPANIES, JOBS, PRODUCTS & PROFITS

SPINOFF COMPANIES

MAKE TECHNOLOGY INVESTMENT GRADE

TRANSFER TECHNOLOGY TO INDUSTRY

GENERATE EQUITY, ROYALTIES, & LICENSE FEES

NEXT GENERATION PRODUCTS

REINVESTMENT
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”

→ $
What is an Entrepreneur in Residence?

An active partner with research institutions

Todd Chappell

- 13 Years Scientific
- 4 Years Financial / Venture Capital
- 13 Years Entrepreneurial Management

"I thought that the BHI EIR experience would lead me to my next startup... but instead I now feel like a kid in a scientific candy store with the unlimited opportunities of the EIR program becoming its own interesting startup."
Our Entrepreneur in Residence:
Todd Chappell

+ 30 NIH Postdocs and Interns

Identify ➔ Evaluate ➔ Transfer / Startup

- Drugs
- Vaccines
- Health IT
- Diagnostics
- Therapeutics
- Medical Devices

"The NIH OTT/ BHI EIR program helps our 150 technology transfer professionals gain access to real-time needs of industry, the market, and the investment community."

Mark Rohrbaugh
Director of the NIH Office of Technology Transfer
NIH/OTT:
First Year Outcomes

97 Innovations identified

63 Innovations progressed

12 Innovations in Primary Analysis

5 Client Relationships

1 NCI Startup

1 Industry License Pending
### Client Companies

<table>
<thead>
<tr>
<th>Client Company</th>
<th>Service/Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Personalized Diagnostics, LLC</td>
<td>Offers chemosensitivity profiling services to provide personalized treatment plans</td>
</tr>
<tr>
<td><strong>Personalized Cancer Care</strong></td>
<td></td>
</tr>
<tr>
<td>Ahead Research, Inc.</td>
<td>Web/Mobile application that matches patients to high quality healthcare providers</td>
</tr>
<tr>
<td><strong>Personalized Diagnostics</strong></td>
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<tr>
<td>Mimetas</td>
<td>Organ-on-a-Chip solutions as an early screening model to predict toxic side effects and drug efficacy</td>
</tr>
<tr>
<td><strong>Pharmaceutical</strong></td>
<td></td>
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<tr>
<td>Perceptive Navigation, LLC</td>
<td>Develops medical devices related to image-guided, minimally-invasive markets</td>
</tr>
<tr>
<td><strong>Medical Device</strong></td>
<td></td>
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</tbody>
</table>
Potential Future EIR Expansion
Innovation Capital Valley of Death

Stage
- Pre-Seed
- Seed/Start-Up
- Early
- Later

Source
- Founders, FFF, Bootstrapping, Crowdfunding
- Angels, IBED, SBIR, Accelerator Seed Funds
- Venture Funds, M&A, IPO

Demand
- $0K
- $500K
- $2.5M
- $5.0M

Supply

Funding

Gap

VALLEY OF DEATH
# Central Maryland Innovation Capital Map

## Capital Sources by Investment Stage

<table>
<thead>
<tr>
<th>Pre-Proof of Concept</th>
<th>Translational Research / Proof of Concept</th>
<th>Proof of Commercial Relevance / Pre-Seed</th>
<th>Seed / Start-Up</th>
<th>Early Stage</th>
<th>Later Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>$25K - $1.5M (over 3 years)</td>
<td>$15K - $750K (over 3 years)</td>
<td>$3K - $500K</td>
<td>$50K - $1.5M</td>
<td>$200K - $2M</td>
<td>$2M+</td>
</tr>
</tbody>
</table>

### Pre-Proof of Concept
- NIH R01
- NIH R03
- NIH R21
- Maryland Innovation Initiative (MII) (Managed by TEDCO)

### Translational Research / Proof of Concept
- NCATS Cures Acceleration Network (CAN)
- SBIR/STTR Grant Phase I
- Maryland Stem Cell Research Fund (MSCRF)
- TEDCO Technology Validation Program
- JHU-Coulter Translational Research Partnership

### Proof of Commercial Relevance / Pre-Seed
- Maryland Industrial Partnerships (MIPS @ UMD)
- TEDCO Technology Commercialization Fund
- MII Phase 2 Grant
- MII Phase 3 Grant
- HSI SBIR/STTR Commercial Relevance Program (CRP)
- BHI Commercial Relevance Fund (CRF)

### Seed / Start-Up
- Dingman Center Angels (UMD)
- Propel Baltimore Fund
- BioMaryland Center Biotechnology Development Awards - Translational Research
- SBIR / STTR Phase II
- BHI Central Maryland Angel Fund

### Early Stage
- Invest Maryland: Maryland Venture Fund
- BioMaryland Center Biotechnology Development Awards - Commercialization
- Maryland Health Care Product Development Corporation
- Abell Venture Fund
- MMG Ventures LP
- TDF

### Later Stage
- 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)

### Associations
- Association of University Resource Parks (AURP)
- Association of University Technology Managers (AUTM)
- Licensing Executive Society (LES)
- Angel Capital Association (ACA)
- Mid-Atlantic Venture Association (MAVA)
- National Venture Capital Association (NVCA)

### Funding Type Key
- Academic
- State of Maryland
- Federal
- Associations
- Economic Development
- BioHealth Innovation, Inc.
- Private Capital

### Tax Credits
- Maryland Biotechnology Investor Tax Credit
- Montgomery County Biotechnology Investor Tax Credit
Innovation Capital Programs

SBIR/STTR Assistance Program
Help companies prepare high-quality SBIR/STTR grant proposals.

BHI Angel Fund
Bridge the gap between pre-seed investments and institutional venture capital.

BHI Commercial Relevance Investment Fund
Pre-seed and early-stage, equity-based innovation capital fund to help grow companies
New BHI Health IT Accelerator

An intensive **16-week program** for top-recruited companies and entrepreneurs

Provides a network of experienced mentors in:

- Business
- Marketing
- Product Development

No HIT accelerators currently in Maryland
Public Private Partnerships

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
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"The BHI EIR program represents a significant paradigm shift in the way NIH hopes to advance commercially relevant science."