New Paradigms in Drug Discovery & Development: Bridging the Gap Between Academia & Industry

Martin Graham PhD
Chief Executive Officer
Empire Discovery Institute
Three Generations of Huntington’s Disease

My Family & The Impact of HD
Where Will the Next Generation of New Drugs Come From?
Theme of Talk
“Building Better Bridges”

The World’s Highest Bungee Jump

Hannah & Becca Graham

Bloukrans Bridge – South Africa
709 ft

Empire Discovery Institute
“Transforming Discoveries into Medicines”
Two Worlds

Academia

“Discovery & Innovation”

Pharmaceutical Industry

“Drug Development & Product Approval”
The “Valley of Death”

Where good ideas go to die
Some Noteworthy Facts

“More than half of the medicines under development (~4000 out of 7000) are being developed in the USA”

“The NIH budget for 2019 is $39.2 Billion”

“It is estimated that ~95% of all active patents fail to be commercialized”

“80% NIH funding is awarded through ~50,000 grants to >300,000 researchers at ~2,500 universities, medical schools, and research institutions”

Conclusion: Our Universities represent a largely un-tapped reservoir of innovation
The “Valley of Death”

Empire Discovery Institute
“Transforming Discoveries into Medicines”
The "Valley of Death"

Empire Discovery Institute
"Transforming Discoveries into Medicines"

Deficit in Expertize
Drug development
Regulated studies
Clinical trials
FDA Approval

Pharma & Private Sector Funding

High Funding

Academic Funding
Basic science & research

Low Funding

Early Stage Research
Product Development Approval & Commercialization
How Do We Bridge The “Valley of Death”?  

Meet the Bridge Builders: 

- Harrington Discovery Institute (HDI)  
- Tri-Institutional Discovery Institute (TDI)  
- Empire Discovery Institute (EDI)
Harrington Discovery Institute & BioMotiv

- MD PhD – 2 Year Support
- National Program & UK
- Philanthropic
- Strategic Partners
- For Profit Accelerator

Empire Discovery Institute
"Transforming Discoveries into Medicines"
Tri-Institutional Therapeutics Discovery Institute (Tri-I TDI)

- Memorial Sloan Kettering Cancer Center
- The Rockefeller University
- Weill Cornell Medicine

Empire Discovery Institute
“Transforming Discoveries into Medicines”
Empire Discovery Institute:

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“Bridging the Valley of Death”

Empire Discovery Institute
“Transforming Discoveries into Medicines”

Early Stage Research

EDI

Product Development Approval & Commercialization

Academic Funding

Basic science & research

Bridging the Gap

Drug development
Regulated studies
Clinical trials
FDA Approval

Pharma & Private Sector Funding

High

Funding

Low
Empire Discovery Institute: Mission

“Transforming Discoveries into Medicines”

• Translating basic research into potential drug candidates
• Advancing & de-risking programs
• Demonstrating “proof-of-concept” to facilitate commercialization
• Creating “spin-out” companies based on EDI technologies
• Bringing innovative new therapies to patients
Empire Discovery Institute: Strategy

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Creating a “Virtual Pharmaceutical Company”

- Highly Integrated Expertise
- Scientific
- Technical
- Empire Discovery Institute
- Finance
- Business
- Flexible “Adaptive” Resource
- Low Overhead Costs
- Molecules
- Biologics
- Gene Therapy
How Does it Work?

Advisory Board Oversight
Scientific, Technical, Business & Commercial

Application
Evaluation
Selection

Unmet Need? Novel? Defined MOA? Biomarker?
Market? Competition? Exit?
How Does it Work?

EDI & Advisory Board Oversight
Scientific, Technical, Business & Commercial

1. Workplan & Buget
2. Target to Hit
3. Hit to Lead
4. Lead Optimization
5. IND Enabling

Strategic Pharma & Investment Partner(s)

Yrs 0 1.0 2.5 4.5 5.5
Go No/Go

Clinical Trials

12/16/19
Empire Discovery Institute: Funding

- **NYS Life Science Initiative:**
  - $35.4 M over 5 years
  - 1/3rd Matching Requirement
    - Venture Capital Financing
    - Strategic Pharma Funding
    - Philanthropy
Creating an “Evergreen” Organization

Re-investment

Target To Hit $100K

Hit To Lead $750K

Optimize $3M

Pre-Clinical $3-5M

New Co Creation License

Future Revenues

Revenue Sharing

Investment

Partners

+
Establish a “Virtuous Cycle”

Target To Hit $100K
Hit To Lead $750K
Optimize $3M
Pre-Clinical $3-5M

“Support the next generation of innovation”

New Co Creation License

Future Revenues

Re-investment

Revenue Sharing

Partners

Investment

10
8
6
3
Summary & Take-Away Messages

- Vast untapped Potential in Universities & Institutes
- 95% Active Patents Fail to be Fully Exploited & Commercialized
- Critical Gaps in Funding & Translational Expertise
- We Need to Do Better Job in Bridging the Gaps
- The “Bridge Builders” EDI, HDI and TDI Represent a New Model

“We Need to Fully Exploit these New Approaches To Discovery & Develop New Drugs for our Patients & Families”
Thank You for Listening

A portrait of Austin by Kaitlyn
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