

# H↑GROWTH

*Investing in Hawaii's Future*

Proof of Concept Centers: A Best Practices Symposium

# The HI Growth Initiative is a Best Practices Approach to Economic Development

**H↑GROWTH**

● Entrepreneur Development

● Research Commercialization

● Startup Investment Capital

## **BEST PRACTICES**

**Public-Private Partnership**

**Entrepreneur-Driven**

**Global Relevance**

**Comprehensive & Integrated**

# HI Growth Investment Strategy

## ENTREPRENEUR DEVELOPMENT

Support mentoring, collaboration, and funding opportunities for Hawaii entrepreneurs to establish their business ventures

## RESEARCH COMMERCIALIZATION

Actively partner research commercialization activities with university and private-industry programs to create high-growth businesses

## STARTUP INVESTMENT CAPITAL

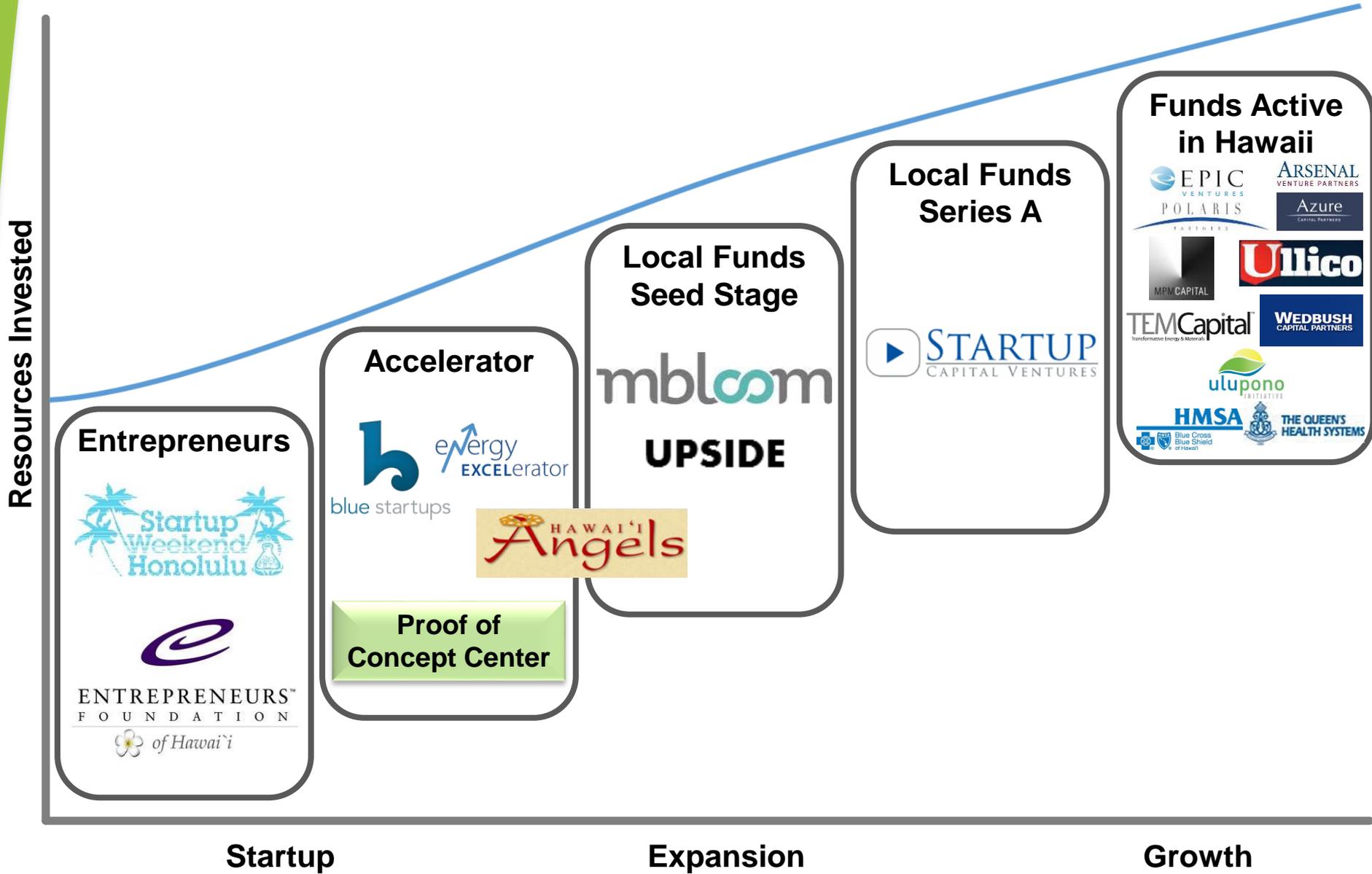
Network Hawaii's high-growth businesses into the broader universe of mainland and international investors active in the sectors important to Hawaii

Initiative	Description
Connect and Network (CAN)	Sponsorship for events that connect and network entrepreneurs with investors
Designer-In-Residence	Fashion business accelerator
Innovation Report	Inventory of Hawaii's innovation assets
Blue Startups	Software business accelerator
Transmedia Accelerator	Creative and digital media content accelerator

Initiative	Description
Proof of Concept Center	Seed capital to validate commercial potential of research

Initiative	Description
UPSIDE	Seed University of Hawaii tech
mbloom	Seed software
Startup Capital Ventures	Series A tech
New Fund	TBD

# #StartupParadise



# **Proof of Concept Centers are Effective Models of Commercialization**

**Connect and Leverage** the core commercialization activities of universities/research institutions

Provide **Mentoring and Advisory Services** to entrepreneurs and nascent businesses seeking to commercialize technology and raise investment capital

Manage a **Seed Grant/Investment** program to develop investable projects

# Case Study: University-Centric



## Mission Statement

*To accelerate the commercialization of UCSD innovations into the marketplace, foster and facilitate the exchange of ideas between the University and industry, and prepare engineering students for the entrepreneurial workplace*

### **FOCUS**

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**Seed Funding**  
**Advisory Services**  
**Educational Programs**

### **TRACK RECORD**

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**\$5 million in Grants**  
**32 Companies Created**  
**\$150 million in Follow-On Funding**

# Case Study: Community College Focused



*Partner with community colleges to stimulate entrepreneurship and promote innovation that develops smart entrepreneurs, forming and leading strong businesses that create new jobs in communities across the country*

## FOCUS

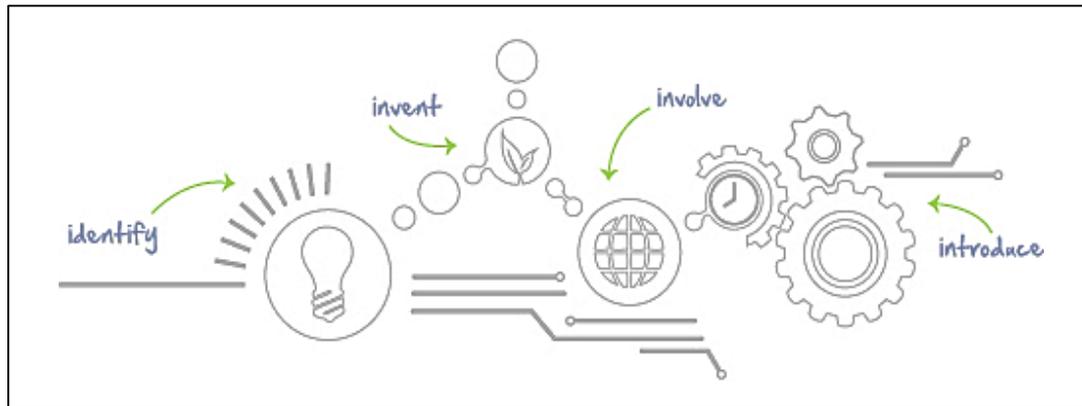
**Seed Funding**  
**Intensive Coaching & Mentoring**  
**Education & Internship Opportunities**

## PARTNERS

Ewing Marion  
**KAUFFMAN**  
Foundation

 **Lorain County  
Community College**  
SERVING OUR COMMUNITY SINCE 1963

# Case Study: Investment Fund Approach



Source: Emergent Technologies

**IDENTIFY** the commercial possibilities of a platform technology

**INVENT** new ways to expand applications to solve real world problems

**INVOLVE** partners in transforming the technology to meet specific market needs

**INTRODUCE** the technology through new businesses and products

## KEY POINTS

Invested Over \$500 million

Partnerships Secured for 16 of 19 Portfolio Companies

Entrepreneur Venture Program Gives Experienced Entrepreneurs Access to “Plug-and-Play” Technologies

# Best Practices Symposium



**von LIEBIG**  
ENTREPRENEURISM CENTER

**Dr. Rosibel Ochoa**  
**Executive Director**



**innovat!on fund**  
A M E R I C A

**Lisa Delp**  
**Director**



**emergent**

**Blair Duncan**  
**Executive Vice President**



# The von Liebig Entrepreneurism Center an NSF I-Corps Site

Rosibel Ochoa, PhD  
Executive Director  
gochoa@ucsd.edu

November 14<sup>th</sup>, 2013

# Mission

- Accelerate transfer of university discoveries to the private sector
- Prepare students for entrepreneurial workforce
- Increase collaboration between university and industry

## Entrepreneurism Center Track Record

**500+ technologies screened, 142 teams funded**

**\$6M in POC grants and business mentorship**

**43 Startups supported, five licenses**

**+1000 students participated in educational programs**

**200+ Jobs, \$150 Million raised**



William J. von Liebig

# Integrated Approach to Commercialization

**Proof of Concept:** gap funding and business mentoring to validate technology for the market.



**Education:** focus on entrepreneurship, customer development, venture mechanics.



**Launchpad to innovation ecosystem:**  
Venture creation, team development, follow on funding, industry partnerships.



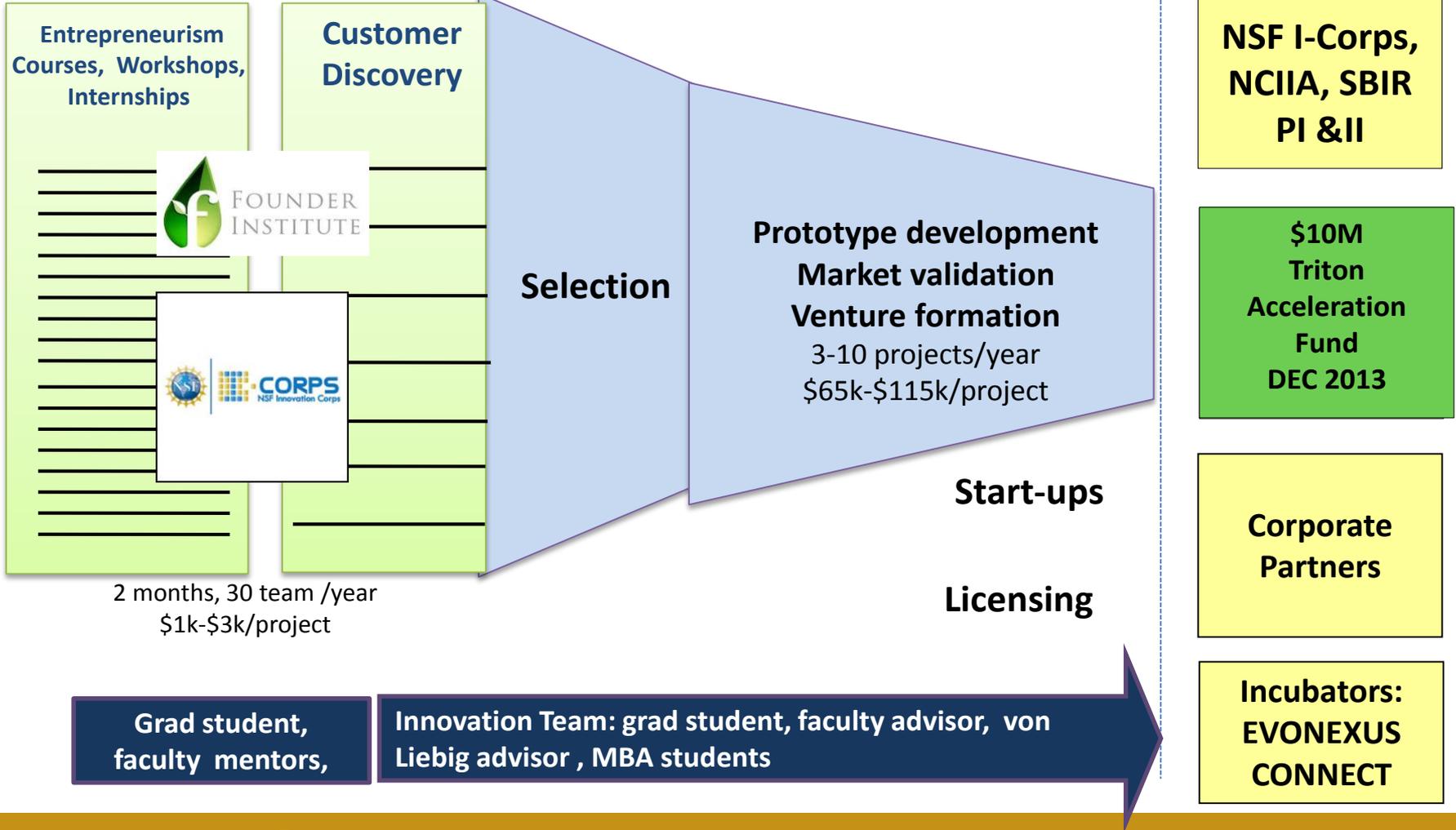
*“an effective vehicle to help launch the commercialization of university innovation and to fill the seed-stage funding gap for new technologies” Kauffman Foundation, Jan 24<sup>th</sup> 2008*

# Entrepreneurism Center Process

## Education

## Technology Acceleration

## Launch



### Lessons Learned

- Researchers need business-oriented guidance toward technology validation.
- Focus on the market and the customer before start building prototypes.
- Do not expect faculty to start companies. Focus should be on grad students and post-docs, with support from faculty.
- Business plan competitions have limited effectiveness in moving technology toward commercialization.
- A well structured process that selects best candidates and ties grant payments to achievement is critical.
- “Innovation without entrepreneurs goes nowhere”.
- Leverage the ecosystem around the university.



Hawaii Strategic Development Corporation

**Proof of Concept Centers:  
A Best Practices Symposium**

November 14 & 15, 2013

Lisa Delp, Director  
Innovation Fund America

# Innovation Fund America

- Replicate the successful Lorain County Community College Innovation Fund model at academic institutions around the nation.
- Make community colleges a recognized front-door for workforce development, entrepreneurial support, and early-stage investment opportunities.
- Partner with the Kauffman Foundation to pilot IFA at community colleges in NC, CA, and MO.

# Ohio Third Frontier

- Create technology-based products, companies, and jobs.
- Support applied research and commercialization.
- Facilitate entrepreneurial assistance.
- Assist in early-stage capital formation.
- Enable expansion of a skilled talent pool.

# Ohio Third Frontier Funding

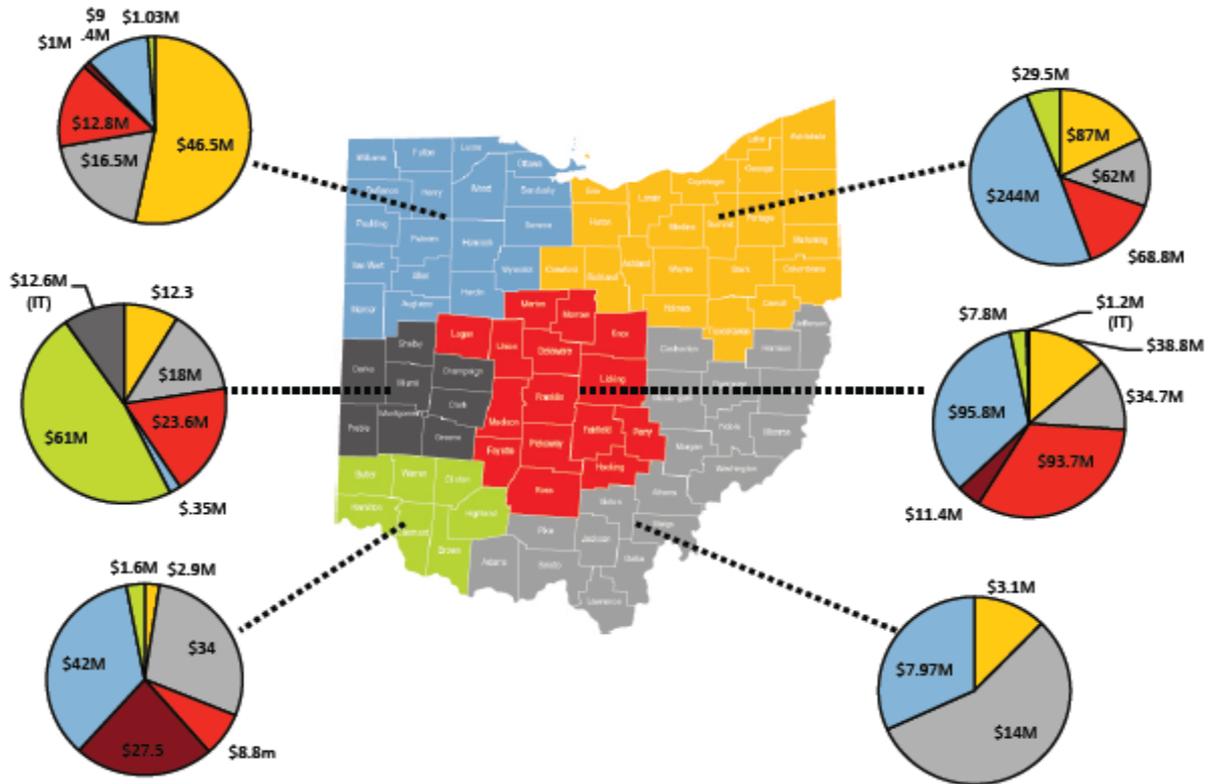
- Funded by \$2.3 billion in voter approved bonds.
- Disburses funds through competitive process.
- Provides both grants and loans.
- Has \$550 million remaining to invest.

# Focus Areas

- Biomedical - \$402M
- Advanced Energy - \$192M
- Instruments, Controls & Electronics - \$103M
- Advanced Materials - \$206M
- Advanced Propulsion - \$39.9M

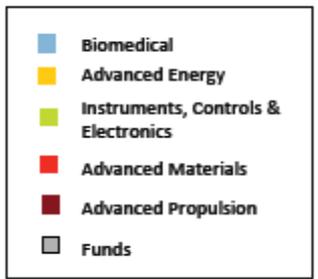
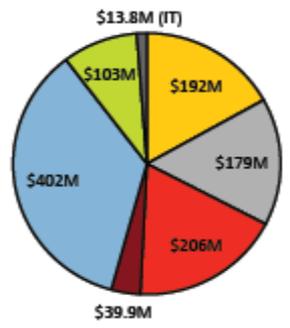
Source: Ohio Third Frontier 2012 Annual Report

## Ohio Third Frontier Funds Awarded by Sector/Region



**Awards Per Region:**  
 Northeast: 213  
 Central: 111  
 West Central: 56  
 Northwest: 37  
 Southwest: 33  
 Southeast: 8

**Total State Funds Per Region:**  
 Northeast: \$494M  
 Central: \$282M  
 West Central: \$130M  
 Southwest: \$118M  
 Northwest: \$87M  
 Southeast: \$25M



# Entrepreneurial Support

- Entrepreneurial Signature Program locations providing services, mentoring and business support
- Edison Incubator Program started in 1983 to provide office / lab space, business support and services

# Capital Access

- Pre-Seed Fund Capitalization Program to stimulate access to early-stage capital
- Ohio Capital Fund to catalyze the creation of new Ohio funds and investment from out-of-state funds

**Grand Summary of Statistics**  
(Since the program's inception in 2002)

Program Name	State Funds Awarded	State Funds Expended	Cost Share Reported	Leverage	Jobs Created/ Retained	Companies Attracted	Leverage Ratio	Cost per Job	Average Salary
Biomedical Research Commercialization Program	\$151,769,923	\$140,890,198	\$209,501,491	\$953,753,876	1,650	40	6.7	\$85,976	\$64,778
Engineering & Physical Sciences Research Commercialization Program	\$81,677,370	\$75,648,605	\$91,517,544	\$353,156,972	641	6	4.7	\$118,017	\$66,356
Biomedical Wright Centers of Innovation	\$87,302,970	\$87,302,967	\$183,401,015	\$441,747,211	754	20	5.1	\$115,786	\$100,861
Engineering & Physical Sciences Wright Centers of Innovation	\$149,594,300	\$132,211,859	\$272,703,236	\$956,598,060	1,350	56	7.2	\$97,935	\$57,526
Mega-Wright Centers of Innovation	\$59,999,086	\$33,768,800	\$90,595,595	\$266,737,590	270	44	7.9	\$125,070	\$70,000
Wright Projects	\$102,371,597	\$74,252,901	\$126,631,141	\$187,442,649	593	25	2.5	\$125,216	\$58,204
Ohio Research Scholars Program *	\$146,510,334	\$72,643,523	\$47,051,167	\$66,894,397	174	6	0.9	\$417,492	\$68,780
Biomedical	\$13,960,148	\$4,639,689	\$8,716,173	\$14,902,989	86	0	3.2	\$53,950	\$77,477
Advanced Energy	\$41,115,854	\$28,772,033	\$28,821,701	\$116,921,923	294	6	4.1	\$97,864	\$53,648
Advanced Imaging	\$13,542,470	\$5,621,638	\$8,180,105	\$29,945,955	114	1	5.3	\$49,313	\$89,004
Advanced Materials	\$14,579,672	\$7,550,683	\$9,646,512	\$20,642,777	50	1	2.7	\$151,014	\$64,121
Advanced Sensors	\$8,977,738	\$5,451,831	\$6,683,884	\$2,858,660	50	0	0.5	\$109,037	\$51,957
Fuel Cell	\$51,288,209	\$45,427,754	\$35,386,796	\$190,295,042	365	2	4.2	\$124,460	\$59,722
PhotoVoltaics	\$10,333,963	\$6,827,349	\$6,307,739	\$2,697,005	52	0	0.4	\$131,295	\$60,087
Ohio Research Commercialization Grant Program	\$13,333,115	\$13,060,518	\$6,566,066	\$209,227,949	306	14	16.0	\$42,681	\$58,157
Third Frontier Action Fund	\$18,582,863	\$17,342,877	\$32,335,323	\$138,534,215	429	57	8.0	\$40,426	\$52,210
<b>Entrepreneurial Signature Program</b>	<b>\$115,486,477</b>	<b>\$101,617,886</b>	<b>\$62,657,523</b>	<b>\$1,422,843,568</b>	<b>3,991</b>	<b>609</b>	<b>14.0</b>	<b>\$25,462</b>	<b>\$47,173</b>
<b>Pre-Seed Fund Capitalization Program</b>	<b>\$64,286,032</b>	<b>\$48,414,137</b>	<b>\$193,289,543</b>	<b>\$2,650,475,368</b>	<b>4,405</b>	<b>348</b>	<b>54.7</b>	<b>\$10,991</b>	<b>\$69,559</b>
Industrial Research & Development Center Program	\$22,267,473	\$5,374,929	\$5,663,514	\$4,920,446	81	0	0.9	\$66,357	\$82,301
Ohio's New Entrepreneurs (ONE) Fund	\$560,000	\$340,000	\$0	\$4,855,000	16	25	14.3	\$21,250	\$30,625
Targeted Industry Attraction Program	\$2,700,000	\$750,000	\$250,000	\$13,266,087	274	0	17.7	\$2,737	\$54,612
<b>Grand Totals</b>	<b>\$1,170,239,594</b>	<b>\$907,910,178</b>	<b>\$1,425,906,069</b>	<b>\$8,048,717,740</b>	<b>15,945</b>	<b>882 **</b>	<b>8.9</b>	<b>\$57,001</b>	<b>\$62,013</b>

# Results

- Ecosystem Changes
- Discovery and Development
- Jobs and Investment

# Questions?

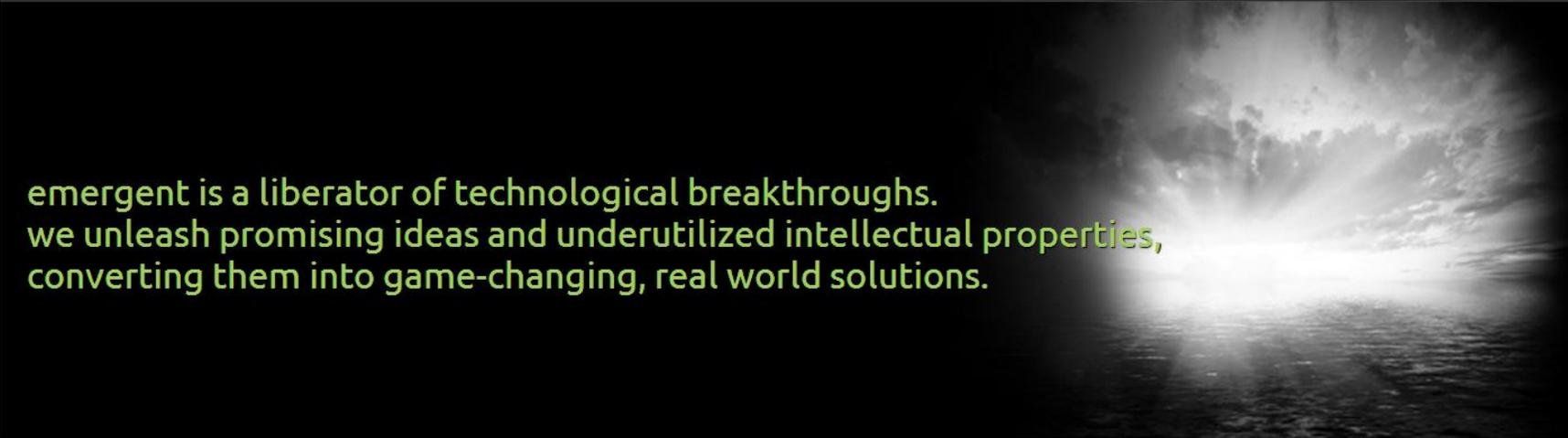
Lisa Delp

ldelp@lorainccc.edu

[innovationfundamerica.org](http://innovationfundamerica.org)



Emergent Technologies, Inc  
Corporate Summary



emergent is a liberator of technological breakthroughs.  
we unleash promising ideas and underutilized intellectual properties,  
converting them into game-changing, real world solutions.

- I. Emergent History
- II. Emergent Model and Value
- III. Innovation Processing
- IV. Case Studies

Emergent is an innovation solutions company that provides access to world-changing technologies

We serve:

- Research Institutions
- Companies
- Investors
- Entrepreneurs

# Emergent's History

1989-2000

- Early Stage Technology Development Consulting

2001-2013

- Raised and Managed Four "University Affinity" Venture Funds
- Launched and Provided Management Services to 19 Portfolio Companies

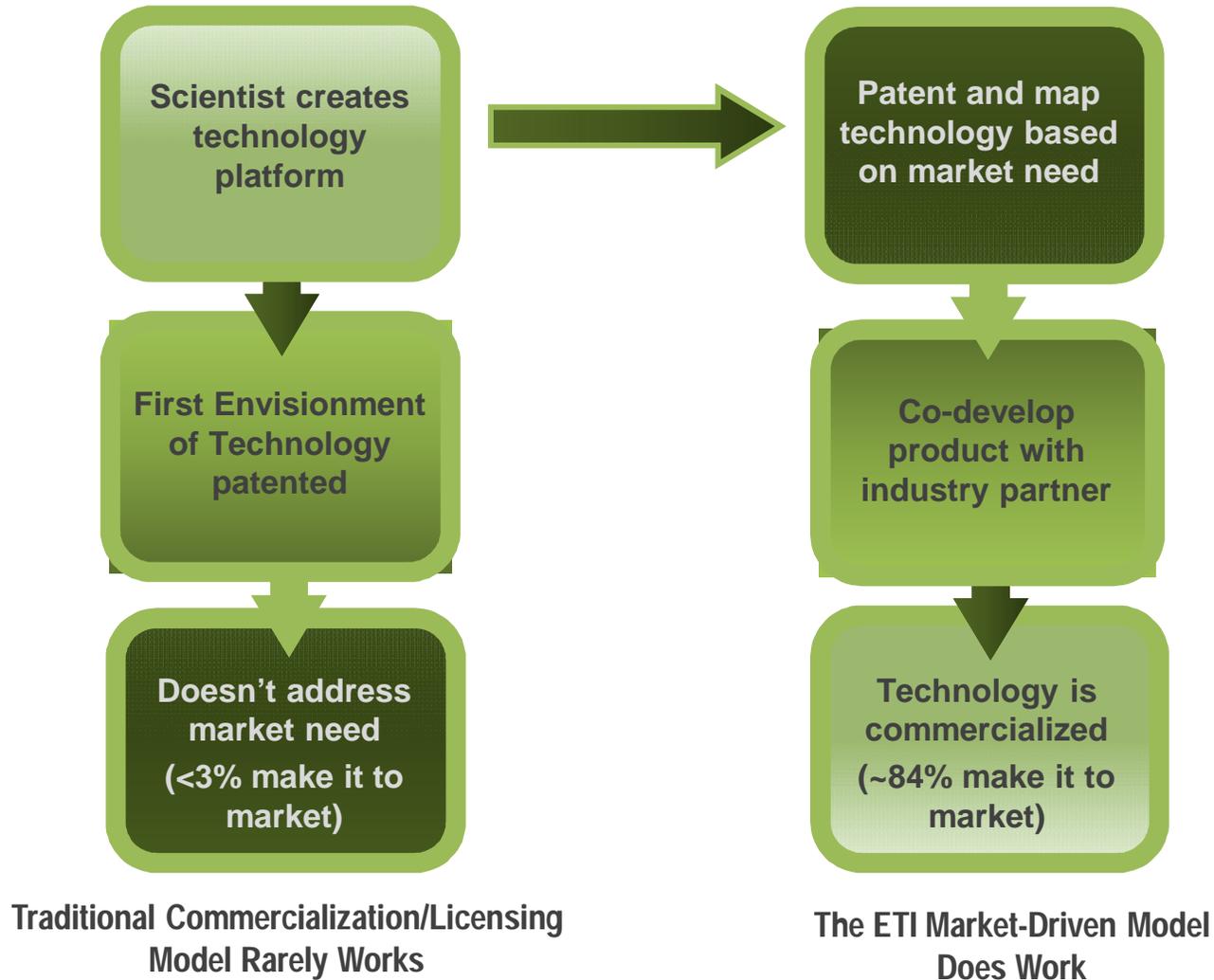
2010-2013

- Launched Knowledge Based Solutions

## Emergent Quick Facts

- Formed as consultancy in 1989
- Four VC Funds; first fund in 1999
- \$80 million under management
- 19 portfolio companies, 16 have industry partners
- >4,000 industry contacts
- >15 University affiliations
- >350 patents under management
- >50 transactions in last 18 months (PCs and Services)

## The Emergent Model – Market Driven



## The Emergent Model – Mapping to Market Need

Emergent Portfolio  
Company

Original  
Application

Co-development  
Partner

Final Industry  
Application



Anti-  
Coagulants



Drug-  
Delivery



Contact  
Lenses



Dental  
Sealants



Stents



Water-  
Proof  
Goose  
Down



Sarin Gas  
Detection



Analyte  
Detection in  
Produced  
Water



## Fund Commercialization Track Record

Emergent has invested in 19 portfolio companies across 4 funds and 3 Universities since 1999:

- 16 of these companies have active partnerships
- 2 were dissolved as the technologies could not be enabled in the inventor's labs
- 1 was unable to successfully attain market acceptance

Emergent's diverse contact network includes research and industry expertise in:

- Biotechnology
- Biopharmaceuticals
- Biomaterials
- Nanotechnology
- Medical Device
- Agriculture
- Packaged Goods
- Consumer Goods
- Cosmetics & Personal Care
- Dental & Orthodontics
- Immunology
- Antimicrobials
- Surface Coatings
- Diagnostics
- Therapeutics
- Chemical and Biological Sensors
- Oilfield Services
- Energy
- Clinical Research
- Drug Delivery
- Drug Manufacturing

# Emergent Innovation Engine

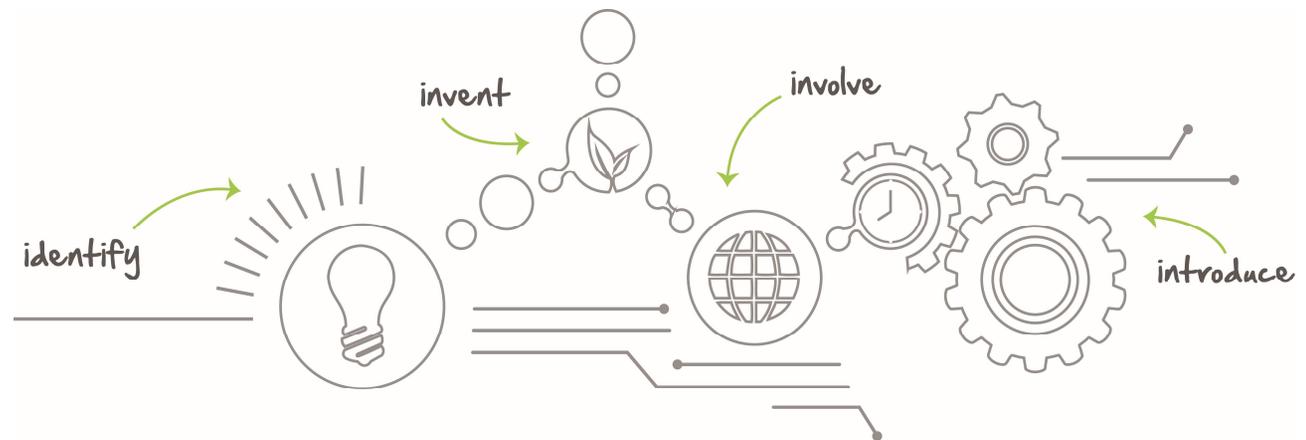
**Identify** the commercial possibilities of a platform technology

**Invent** new ways to expand applications within the platform to solve real world problems

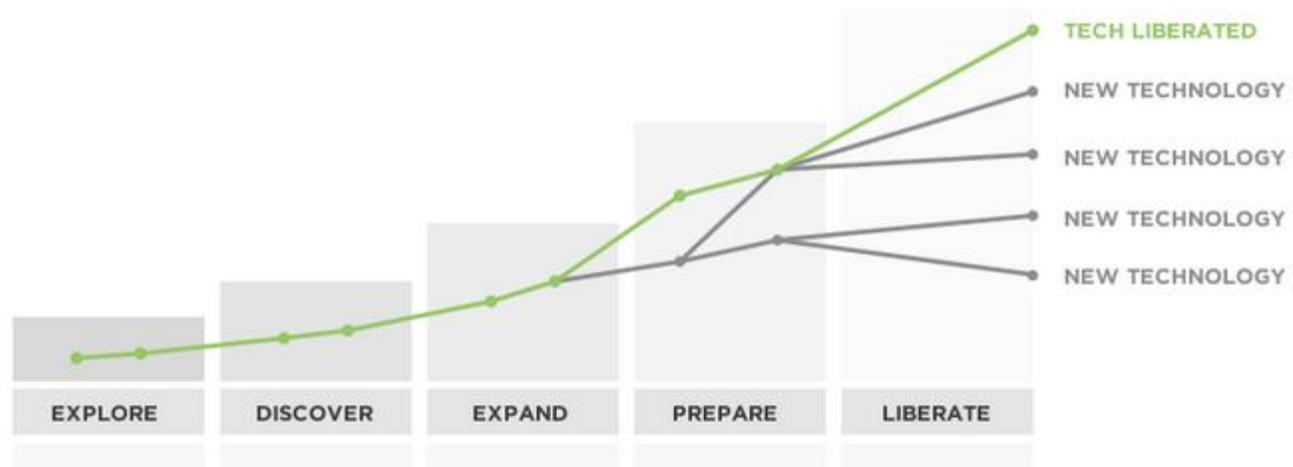
**Involve** partners in transforming the technology to meet specific market needs

**Introduce** the technology through breakthrough businesses & innovative partner products

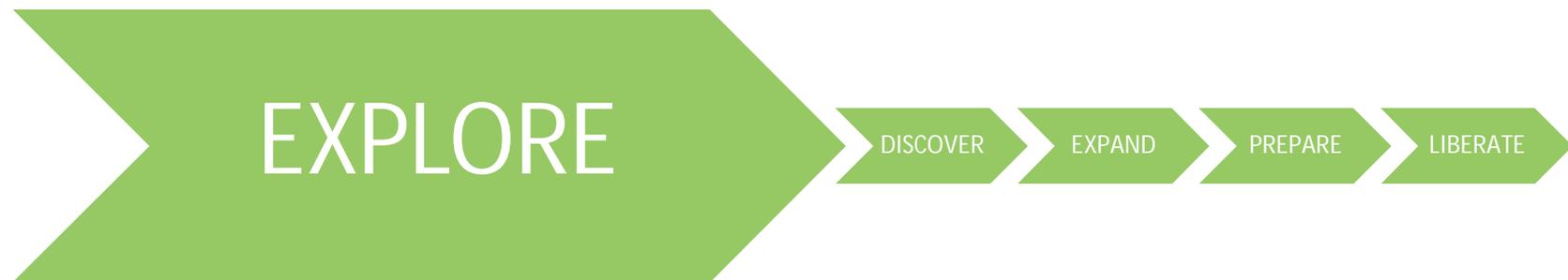
**Access  
Emergent's  
Innovation  
Engine**



# The Innovation Process



# The Innovation Process



Evaluate the technical and commercial platform potential of an intellectual property asset or group of assets.

- ETI Selection Criteria
- Inventor Interview
- White Space Analysis
- Needs/Capacity Assessment
- Market Sizing/Upside Potential
- Early Industry Feedback
- Landscape Analysis

# The Innovation Process



Safe knowledge transfer between industry and Emergent to correctly define and quantify opportunity.

- IP SafeZone™
- White Space Analysis
- Market Sizing/Upside Potential
- Industry Feedback

# The Innovation Process



Map technical capabilities of the innovation to market needs.

- Collaborative Expansion
- Define Industry Specifications
- TechSpec™ Roadmap
- New Patent Filings

# The Innovation Process



Systematically decrease risk and increase value.

- Execute TechSpec™ Roadmap
- TechStep™ Development
- Non-Dilutive or Project-Based Financing
- Proof of Concept
- Industry Feedback

# The Innovation Process

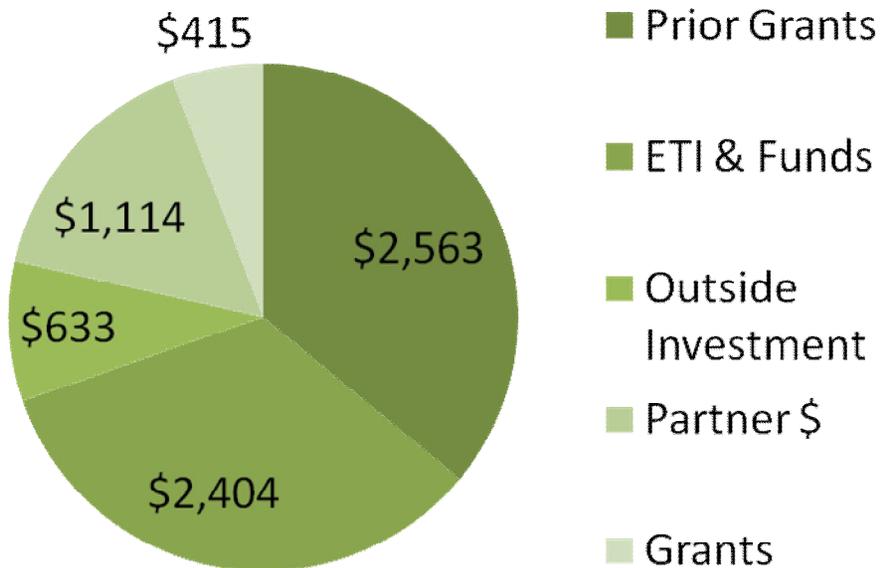


Execute commercialization deals for discrete applications and repeat.

- Emergent Partnering Model
- Development/License Deal
- Market Sizing/Upside Potential
- Auction
- Monetization

## Creating Financial Leverage

### New Co. Funding



### Hyalose/Novozymes Case Study

Grants	\$6.5M
ETI / Funds	\$2.1M
Scale-Up*	\$25M
Plant Facility*	\$60M
Marketing/Dist.*	\$10M
	<u>\$103.6M</u>

Estimated cost to bring product to market - \$103.6M

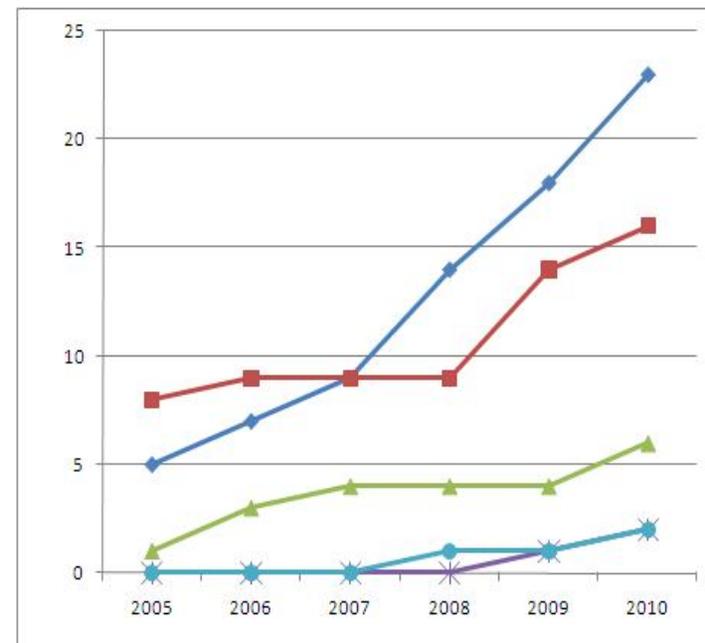
\*Novozymes incurred costs

## Case Study: Emergent Model Value Creation

Company: Selenium, Ltd.  
Fund: WesTech

### Indicators of Value Creation

- ◆ Applications
- Patents
- ▲ Partners
- ✱ Products
- Approvals



Age	Applications	Patents	Partners	Products	Approvals	Value
Year 1 2005	5	8	1	0	0	\$1,500,000
Year 2 2006	7	9	3	0	0	\$2,500,000
Year 3 2007	9	9	4	0	0	~\$10,000,000
Year 4 2008	14	9	4	0	1	~\$15,000,000
Year 5 2009	18	14	4	1	1	~\$22,500,000
Year 6 2010	23	16	6	2	2	~\$35,000,000

# Emergent Expertise & Services

## Knowledge Based Services and Tools Menu

### INTELLECTUAL PROPERTY

- Landscape Analysis
- Portfolio Analysis
- Intellectual Property Strategy
- Valuation Research and Analysis
- Competitive Intelligence
- Transaction/Licensing Strategy
- Negotiation

### RESEARCH & DEVELOPMENT

- Technical Due Diligence and Consulting
- Grant Application Drafting/Review
- Research and Clinical Management
- Institutional/Agency Liaison
- Collaborative Expansion
- Data and Milestone Management
- Laboratory Services



### BUSINESS

- Strategic Planning
- Business Plan Drafting/Review
- Financial Planning and Management
- C-Level Support
- Human Resource Management
- Contract Development, Negotiations and Management

### TRANSACTIONS

- Deal Philosophy
- Due Diligence (Buy/Sell)
- Fund Management/Strategy
- Licensing
- Strategic Asset Sales
- M&A Consulting and Analysis
- Monetization Strategy and Negotiation

### SALES & MARKETING

- Market Research and Analysis
- Public Relations (Press Releases, Industry Publications)
- Technical Marketing Strategy and Plans
- Collateral and Sales Tools
- Trade Shows and Conferences
- Business Development
- Sales Cycle and Auction Management