



**Development
Services Agency**

John R. Kasich, Governor

David Goodman, Director



Third Frontier
Innovation Creating Opportunity

www.OhioThirdFrontier.com

Advisory Board Meeting

April 16, 2015

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Agenda

10:00	Call to Order Approval of 12/10/2014 Meeting Minutes (Vote)	Mark Collar
10:10	CY 2015 Program Update	Norm Chagnon
10:20	Metrics Update	Keith Jenkins
10:40	Game Changers: <ul style="list-style-type: none">- Global Cardiovascular Innovation Center<ul style="list-style-type: none">- Mark Low- Harrington Discovery Institute<ul style="list-style-type: none">- Fred C. Rothstein- John M. Rice- Baiju Shah	Anthony Howard

Agenda Continued

11:40	High Performers <ul style="list-style-type: none">- Knotice – Jon Grimm- Cleveland HeartLab – Jake Orville- Updox – Mike Morgan- Zipscene – Sameer Munger	Mihaela Jekic
12:40	Closed Program Wrap-up	Nic Turner
12:50	Other Business	All
01:00	Adjourn	

CY 2015 Program Plan Update

Development of CY 2015 program plan developed around some key strategic drivers:

- Sharper focus on support of start-up and early stage companies
- Catalyze faster returns in the priority areas of biomedical and software/IT

CY 2015 Program Plan Update

Functional Area	Program	CY2015
Innovation		
	Entrepreneurial Signature Program	-
Capital		
	Pre-seed Fund Capitalization Program	60.0
	Seed +	
	Commercial Acceleration Loan Fund	30.0
Commercialization		
	Technology Validation & Start-up Fund	5.0
Total		95.0

CY 2015 Program Plan Update

- Closed Programs Wrap-up
- Metrics/Dashboards
- Tracking High-performing Companies
- Statewide Partner Meetings
- Inclusion
- Web Presence/TechOhio

Metrics Update

Overview

- Inventory and accounting for a segment of the startup and entrepreneurial space
 - Pre-Seed investments of \$100K+ since 2006
- Focused on 3 key metrics segmented several ways
 - New jobs created, follow-on equity and product sales / revenue
 - By vintage, tech focus area, high performers
- Not intended to be predictive or exhaustive
 - Tells us where to look next
 - Larger data set to be examined

ESP and Pre-Seed Fund Portfolio

- Over 900 companies have received assistance with roughly half receiving some Pre-Seed investment
 - This analysis focuses on the 287 receiving \$100K+ since 2006



Pre-Seed Investments Since 2006

287 companies

\$134M total invested • \$100K+ each

2,130

New
Jobs

\$1.3B

Follow-on
Equity

\$833M

Product
Sales / Rev.

Sustainability

- Of the 287 companies, nearly 80% have either exited (15) or were still reporting (213) in 2014
 - 7 of the 15 exits occurred in 2014
- Together these 228 companies represent:
 - 93% of all jobs created
 - 83% of all follow-on equity
 - 74% of all product sales / revenue

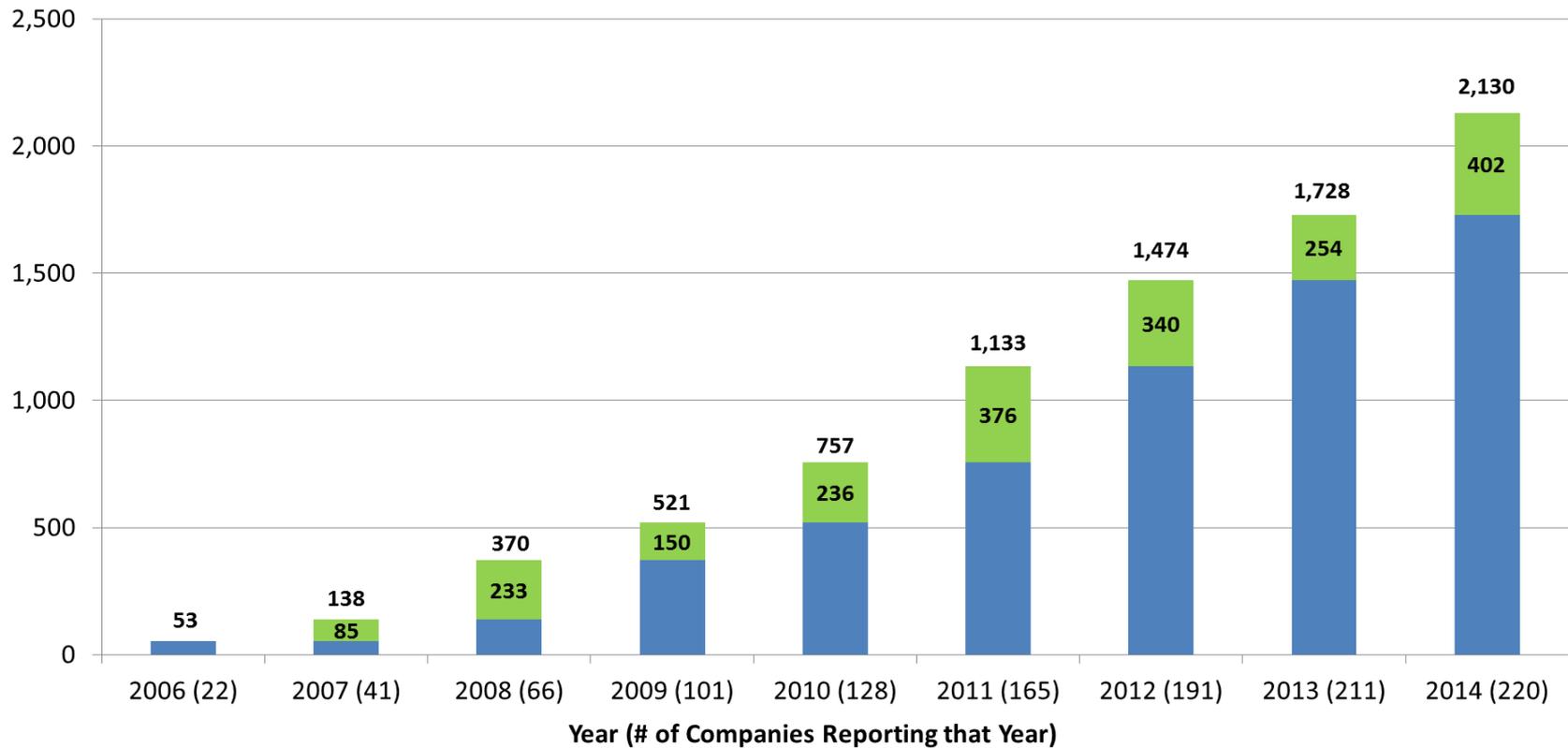
Totals by Tech Focus Area

- Med Tech and IT continue to be the primary jobs and leverage generators

	All	Medical Technology	Software / IT	Advanced Materials	All Other Tech
Total Companies	287	91	142	23	31
Total Investment \$M	\$134	\$52	\$60	\$10	\$12
New Jobs	2,130	666	1,168	147	149
Follow-on Equity \$M	\$1,322	\$698	\$421	\$115	\$92
Product Sales / Rev \$M	\$833	\$193	\$451	\$71	\$118

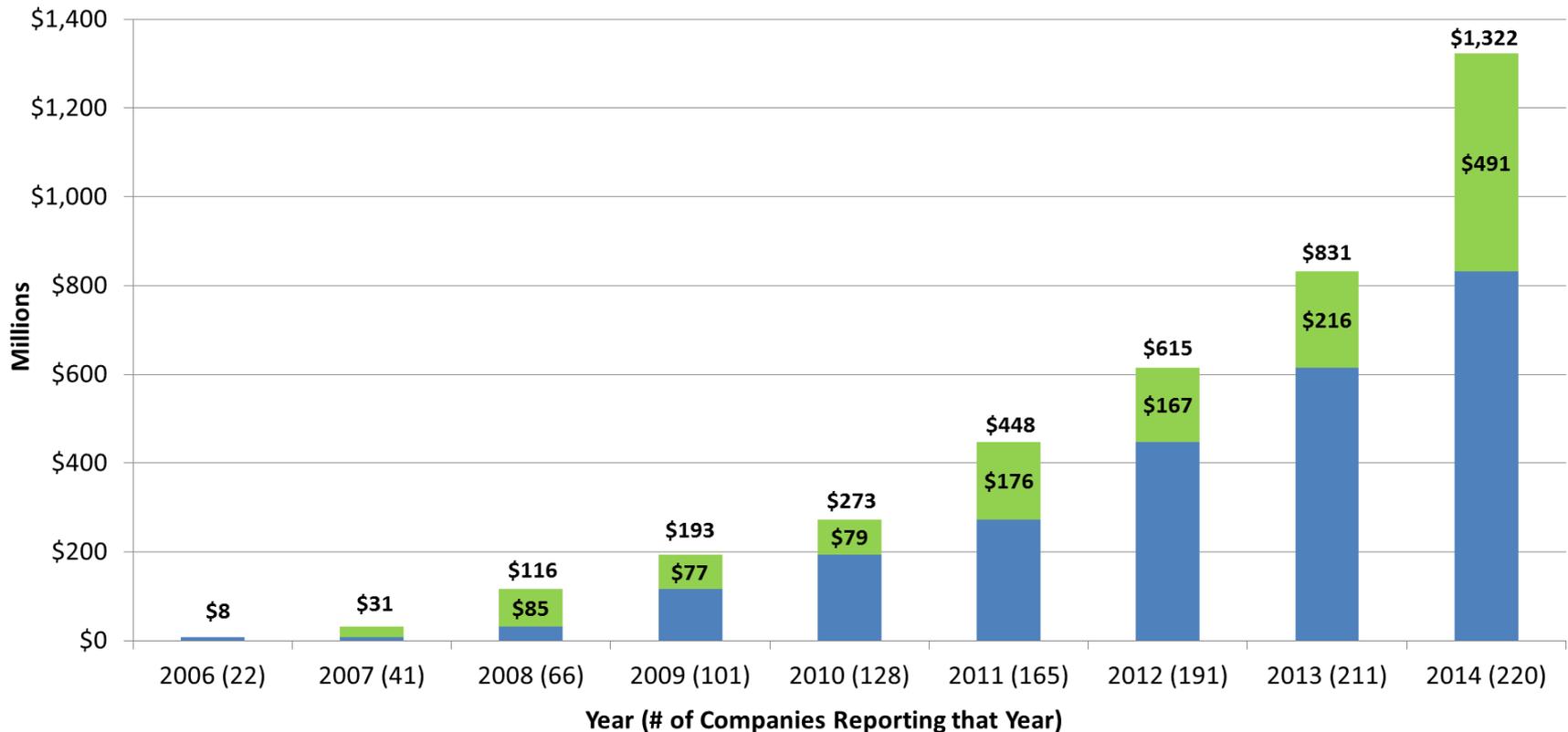
Total New Jobs Created

- Green indicates net new job creation from the prior year



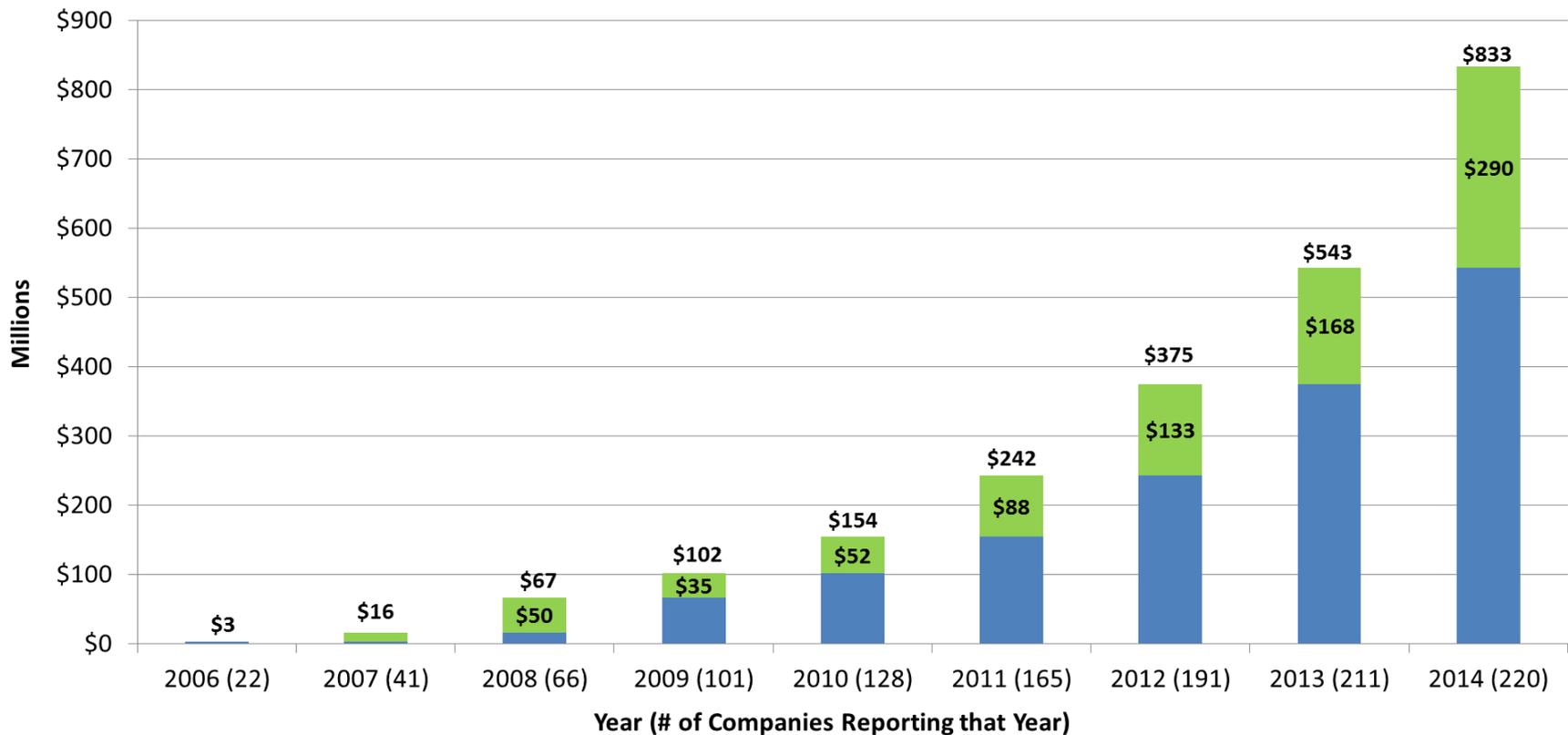
Follow-on Equity Generated

- Green indicates new equity generated in that year



Product Sales / Revenue Generated

- Green indicates new product sales generated in that year



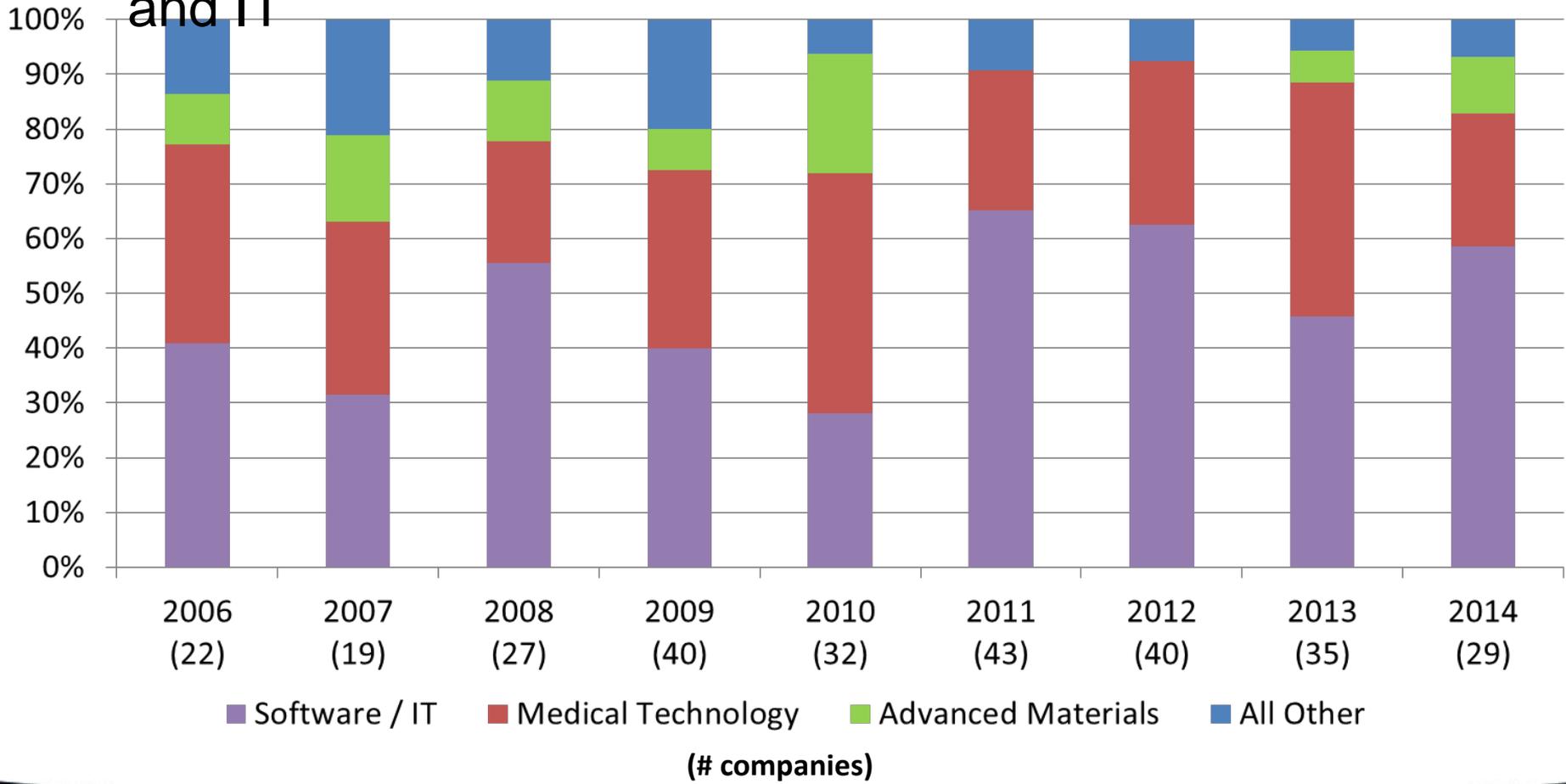
Metrics by Vintage

- Companies are assigned to a vintage based on the year they received their initial investment

	Totals	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Companies	287	22	19	27	40	32	43	40	35	29
Total Investment \$M	\$134	\$14.2	\$9.1	\$14.8	\$20.5	\$16.3	\$20.1	\$17.4	\$11.1	\$10.1
New Jobs	2,130	476	134	137	389	385	152	238	92	127
Follow-on Equity \$M	\$1,322	\$235	\$318	\$140	\$160	\$258	\$122	\$53	\$28	\$9
Product Sales \$M	\$833	\$249	\$39	\$108	\$189	\$123	\$42	\$48	\$16	\$19

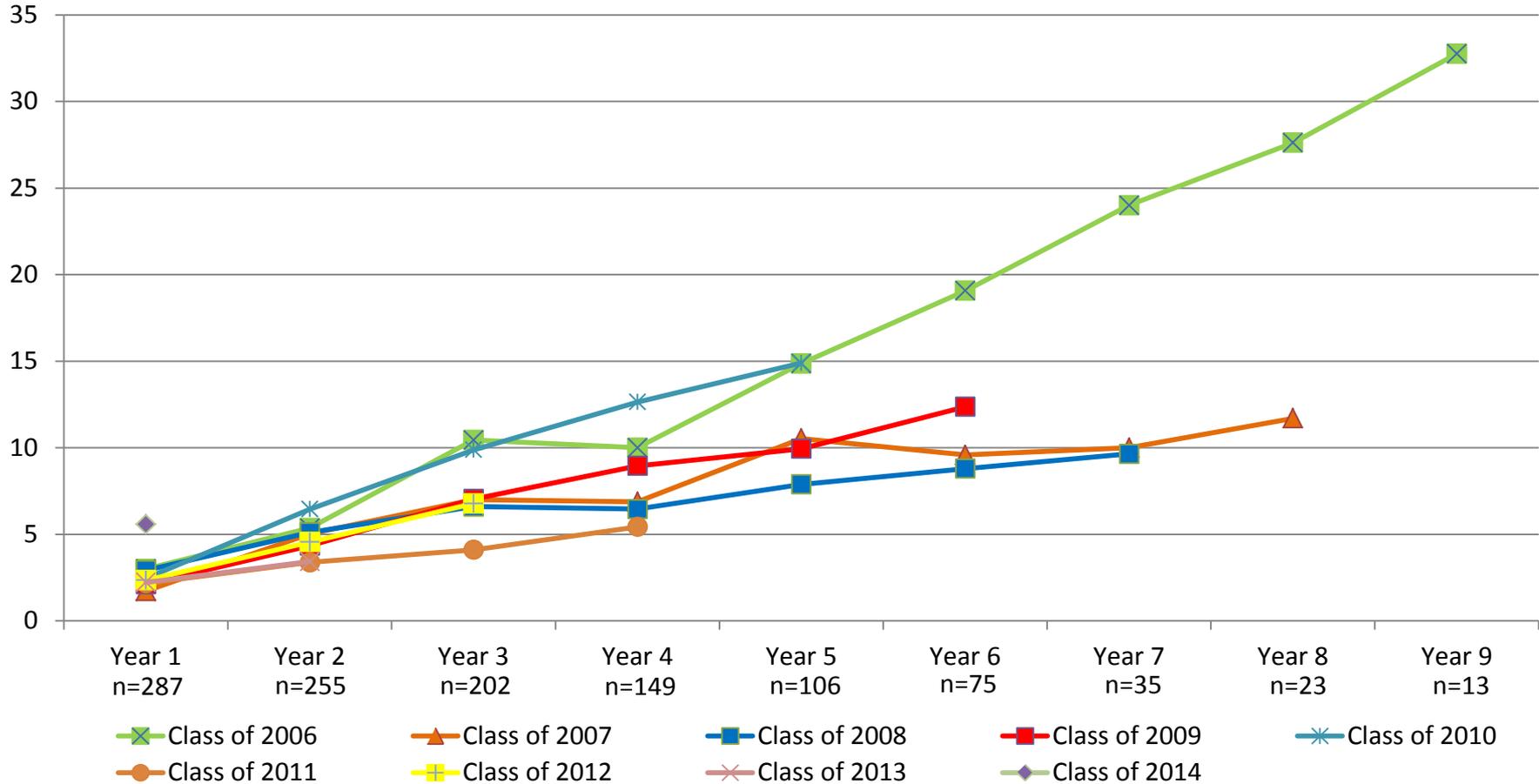
Tech Focus Areas by Vintage

- Investments are increasingly concentrated in med tech and IT



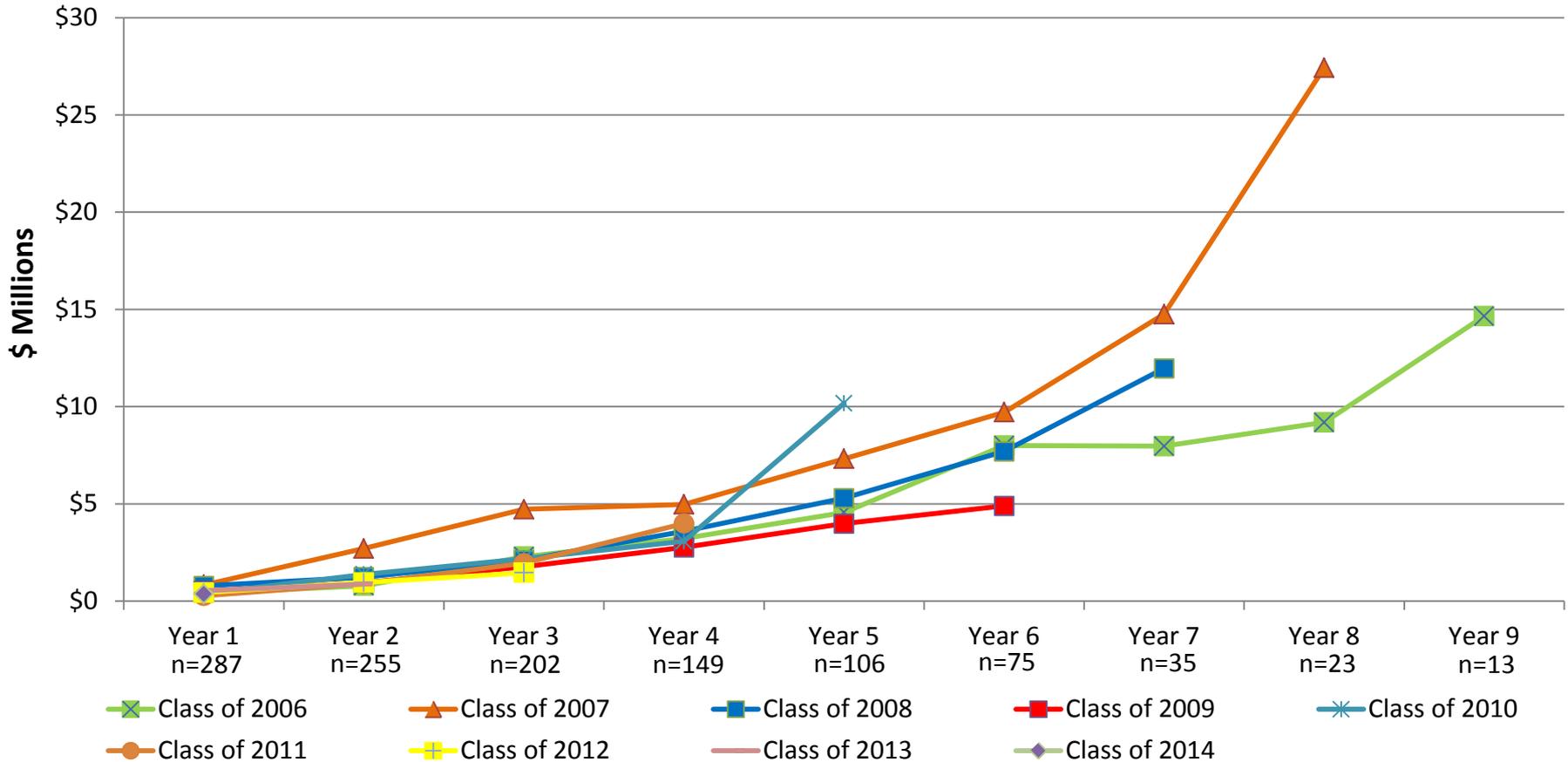
Jobs Created by Vintage

- Per-reporting-company average



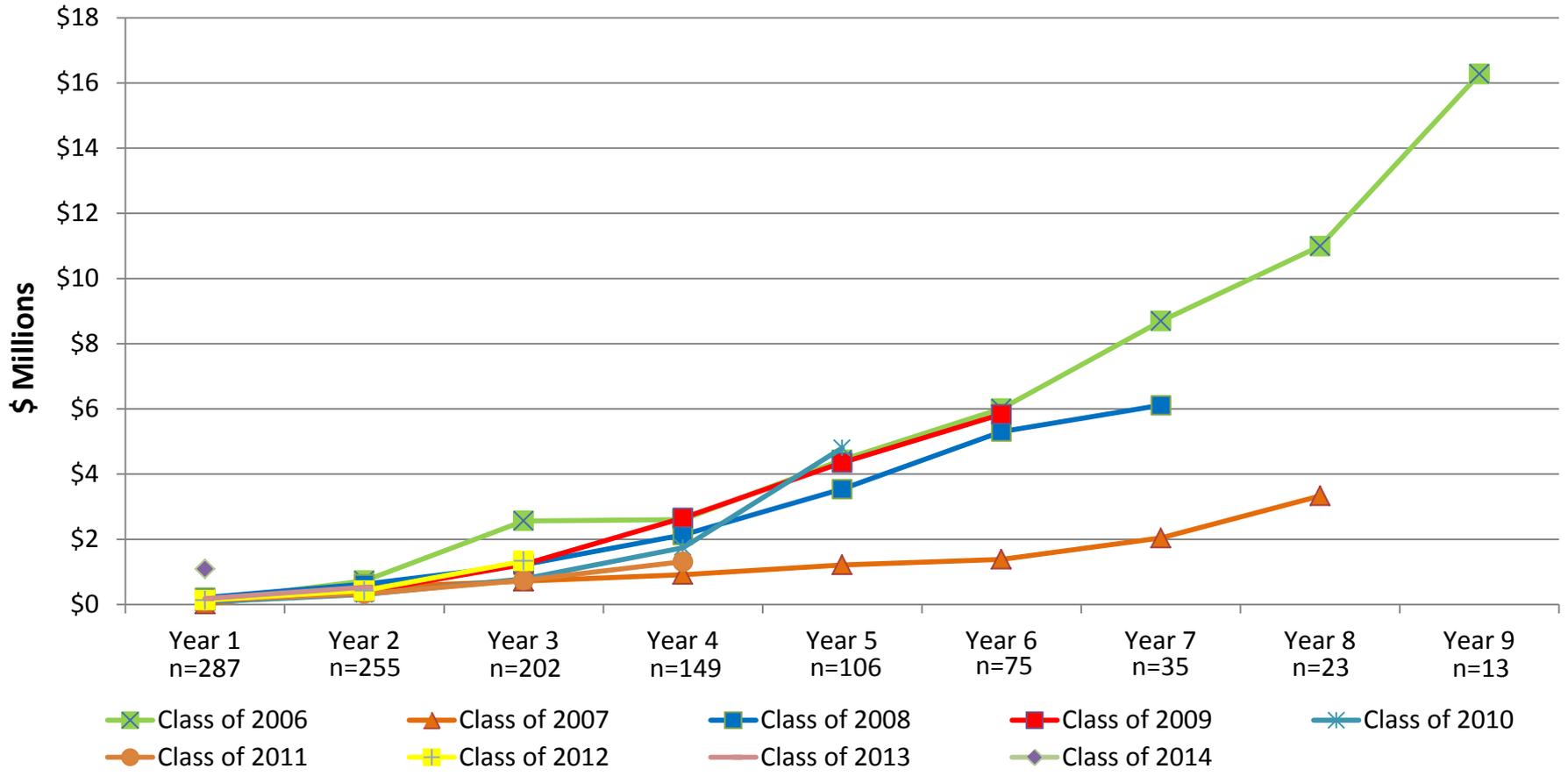
Follow-on Equity Generated by Vintage

- Per-reporting-company average



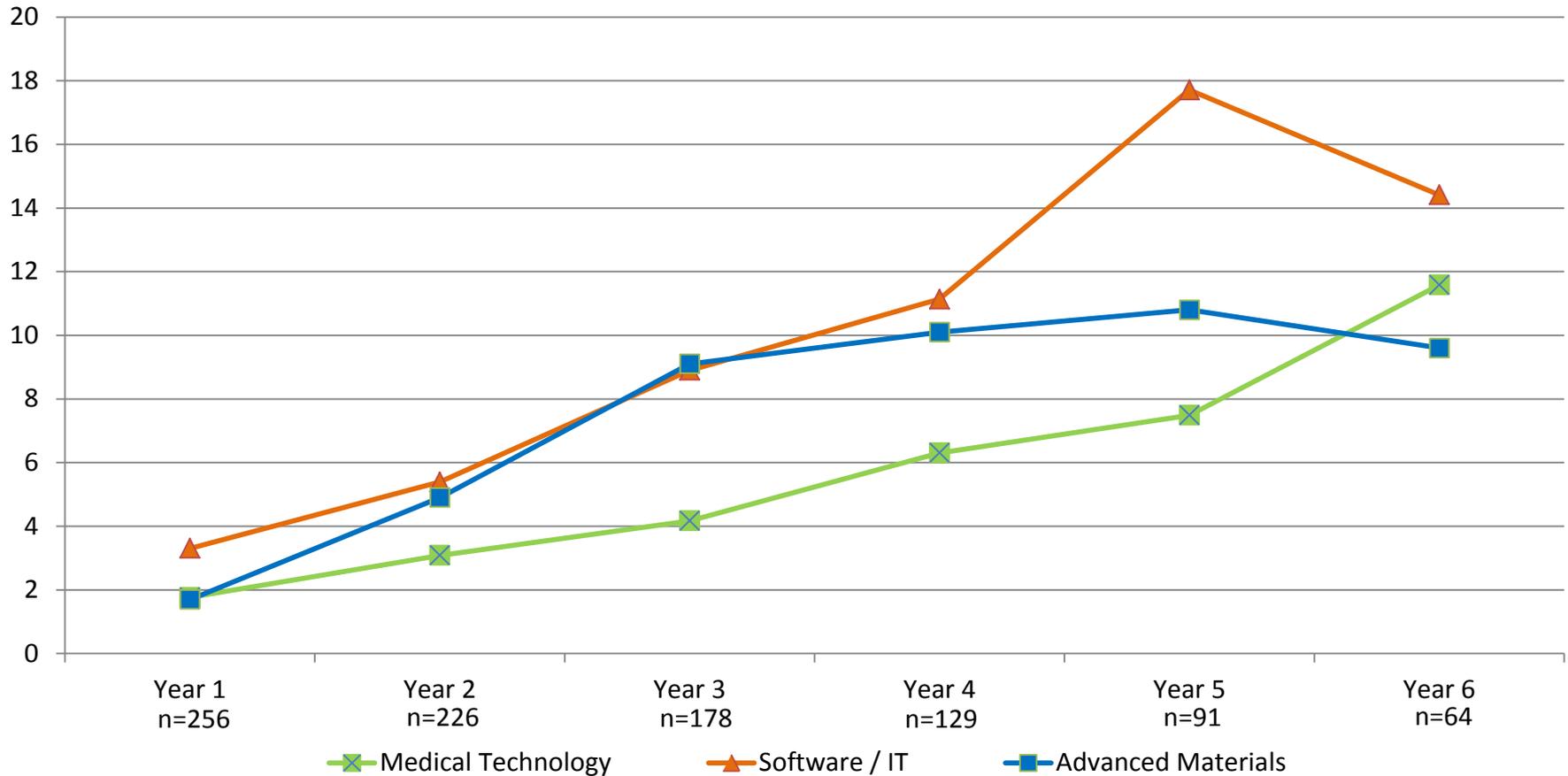
Product Sales / Rev Generated by Vintage

- Per-reporting-company average



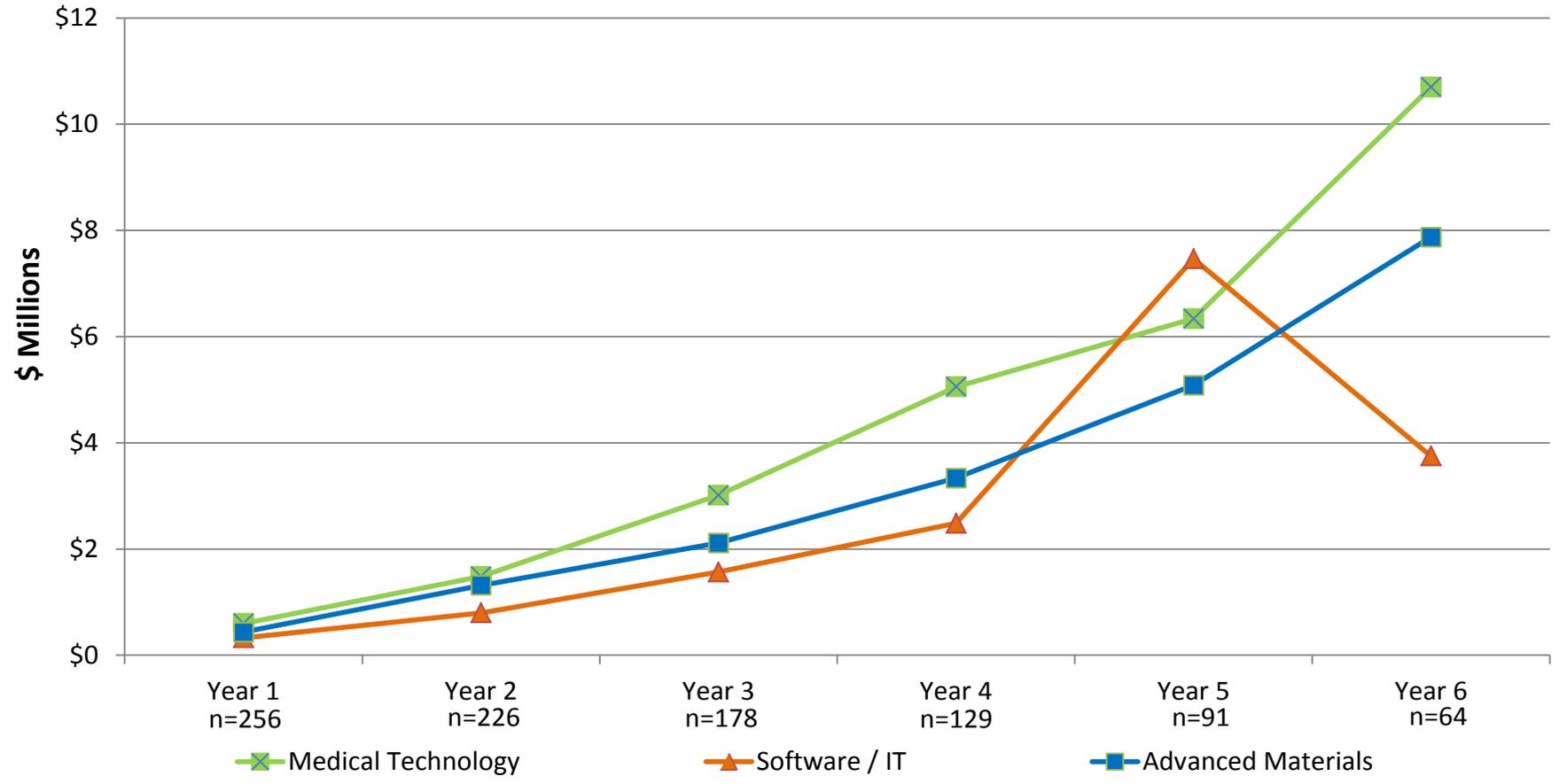
Jobs Created by Tech Focus Area

- Per-reporting-company average



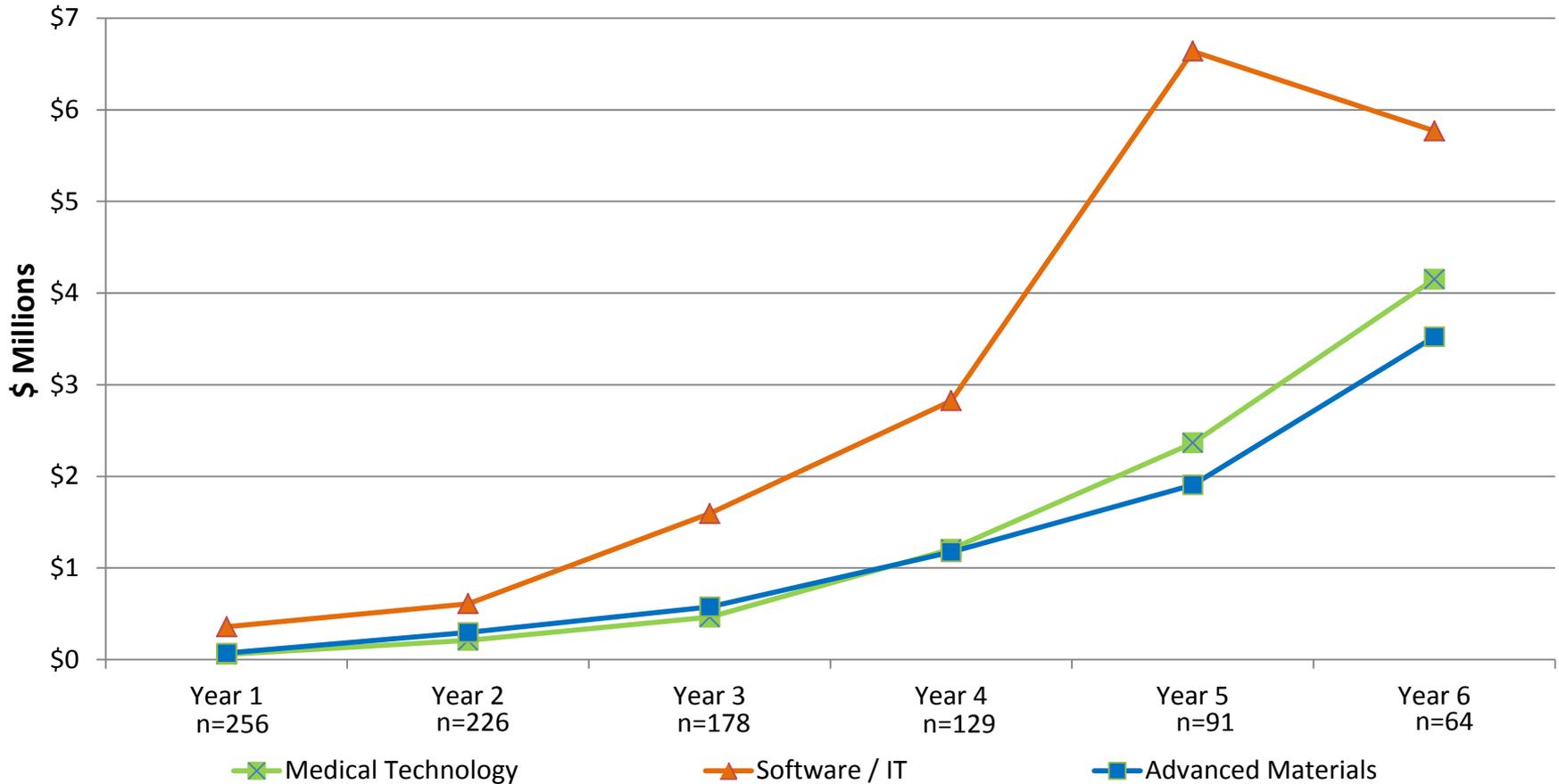
Follow-on Equity Generated by Tech Focus Area

- Per-reporting-company average



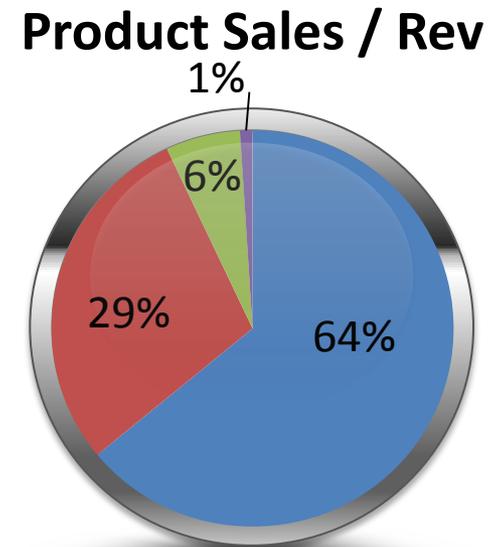
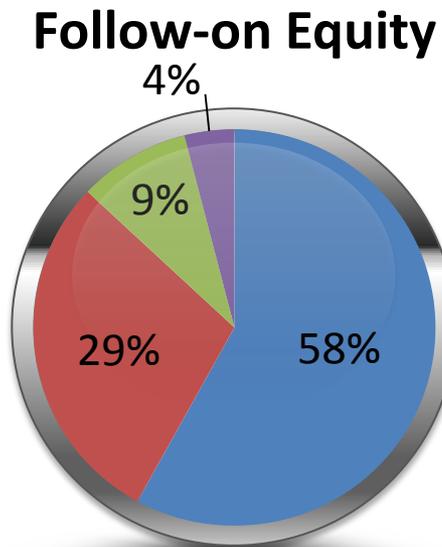
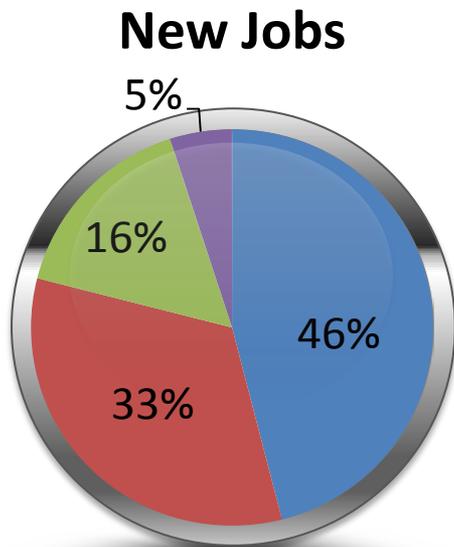
Product Sales / Rev Generated by Tech Focus Area

- Per-reporting-company average



Metric-Specific High Performers

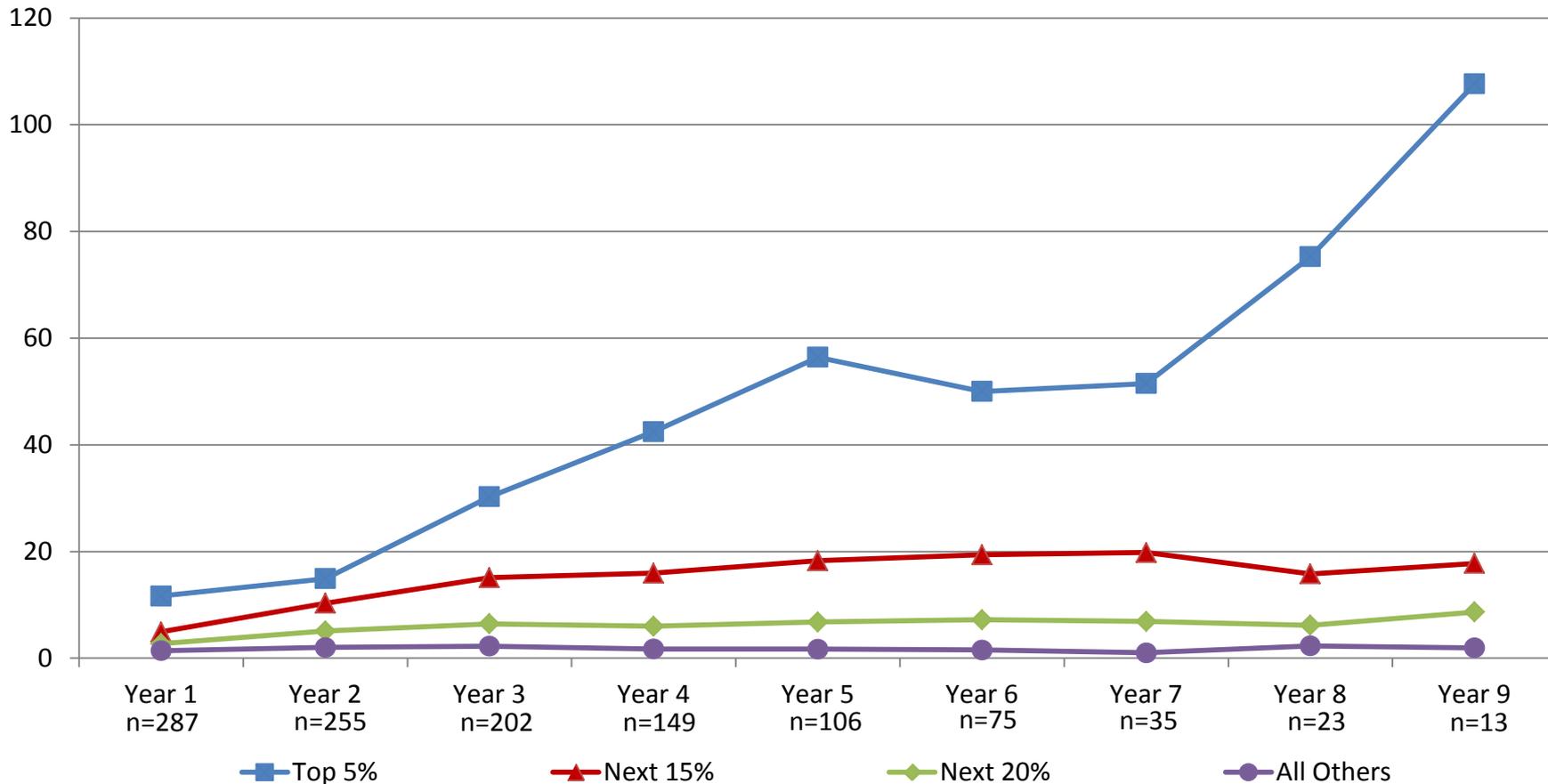
- Each chart represents the top companies for that metric (i.e. “blue” companies for jobs may not be “blue” for equity or sales)



■ Top 5% (14) ■ Next 15% (42) ■ Next 20% (56) ■ All Others (175)
(parentheses indicate total companies)

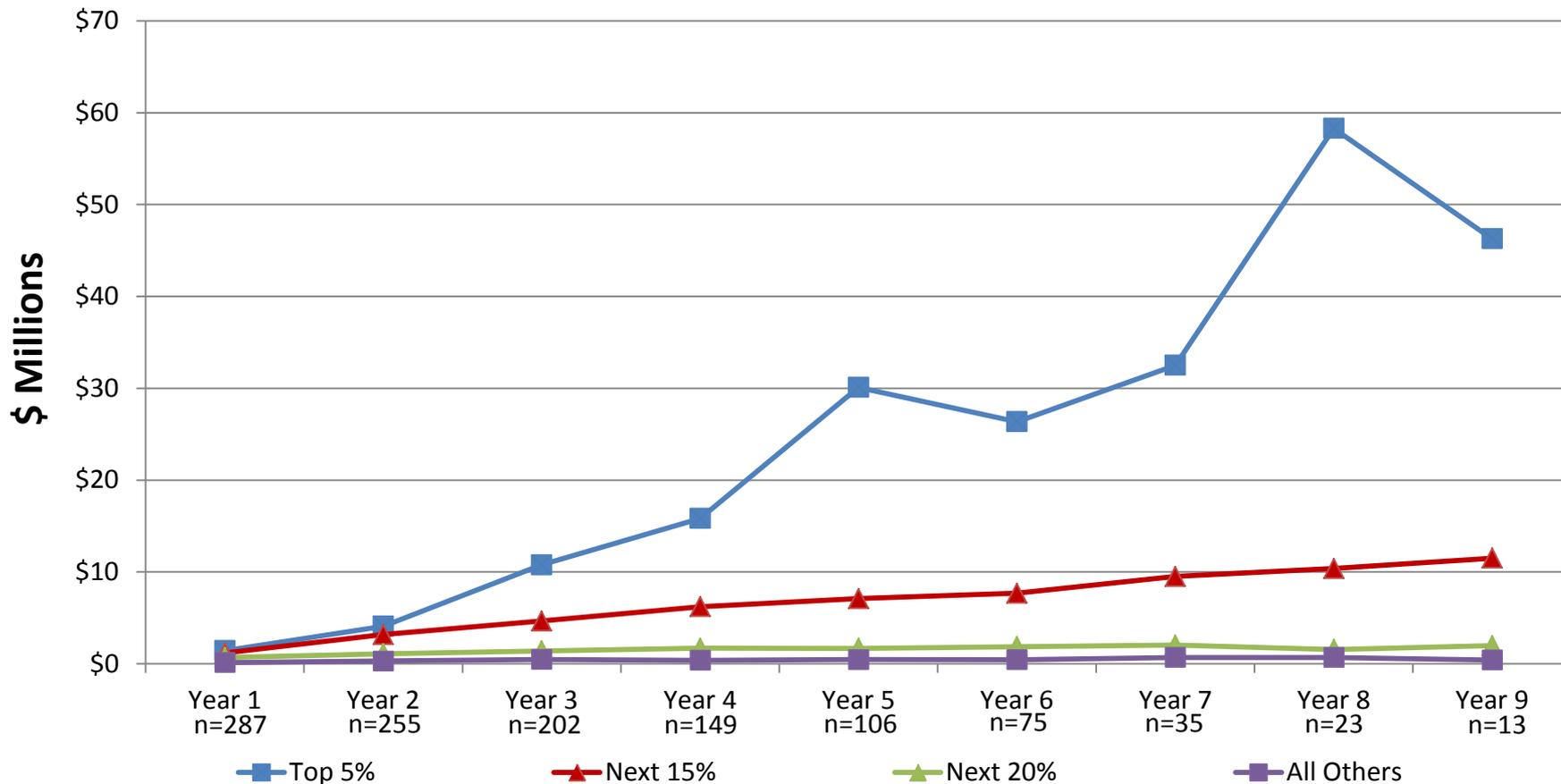
Jobs Created by Performance Percentiles

- Per-reporting-company average



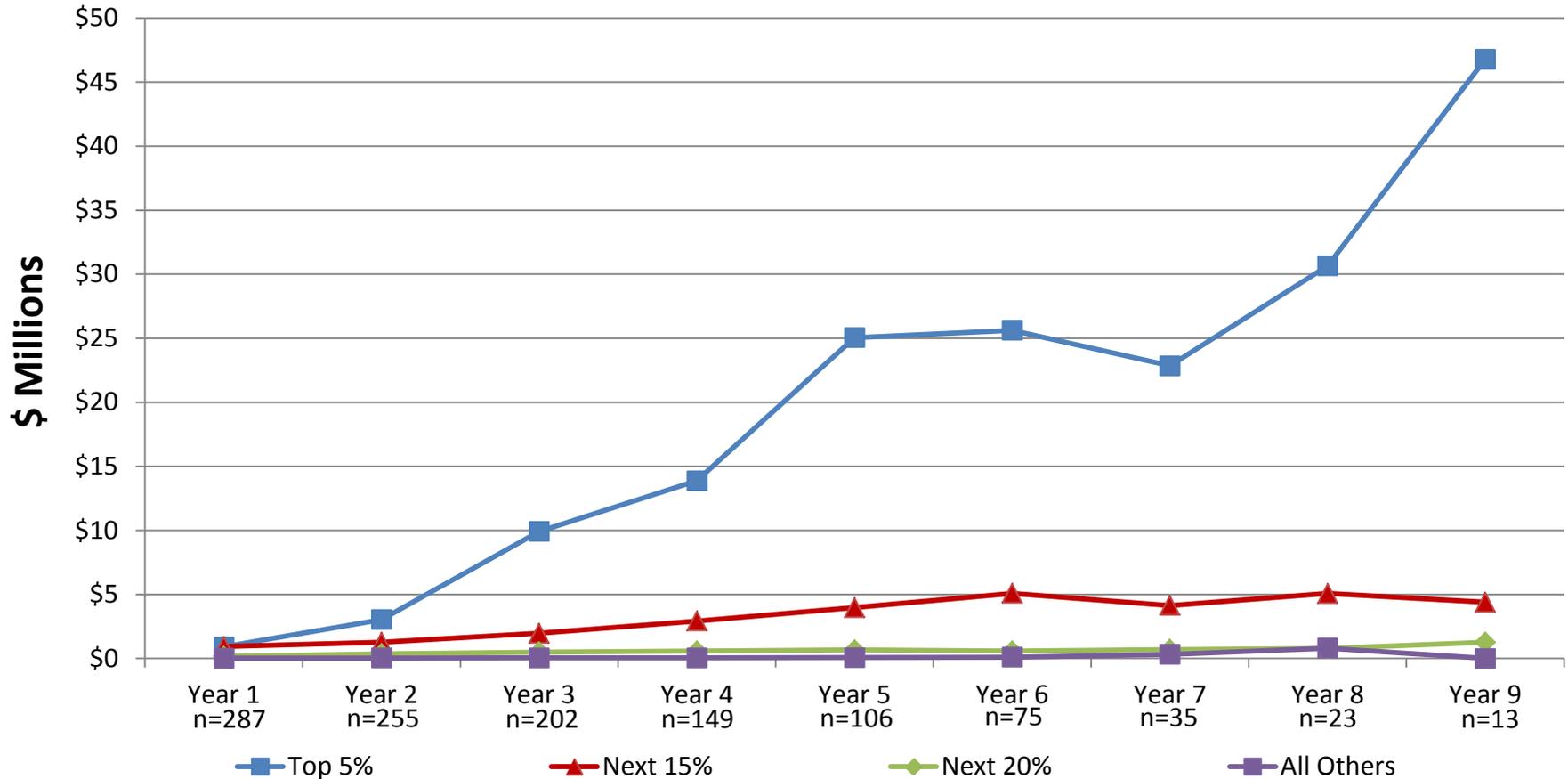
Follow-on Equity Generated by Performer Class

- Per-reporting-company average



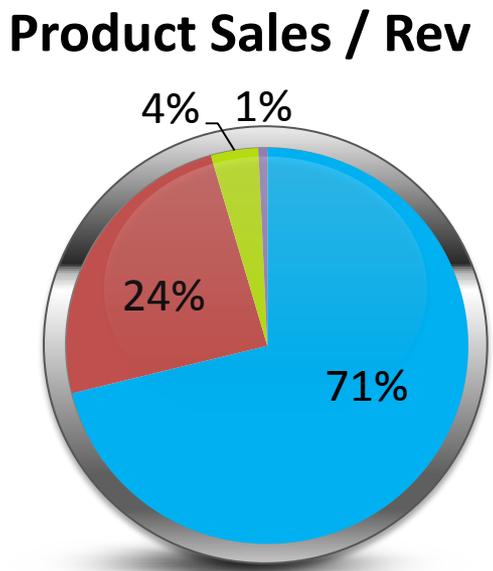
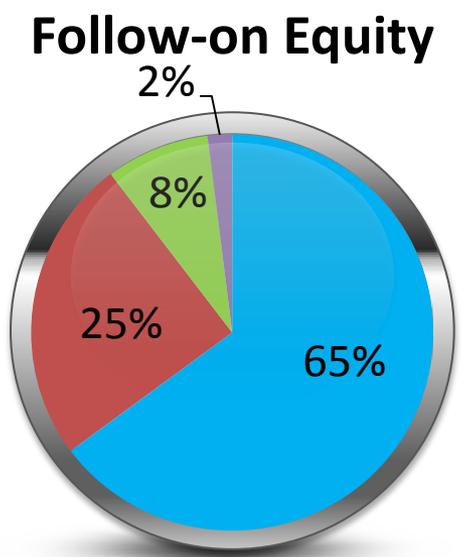
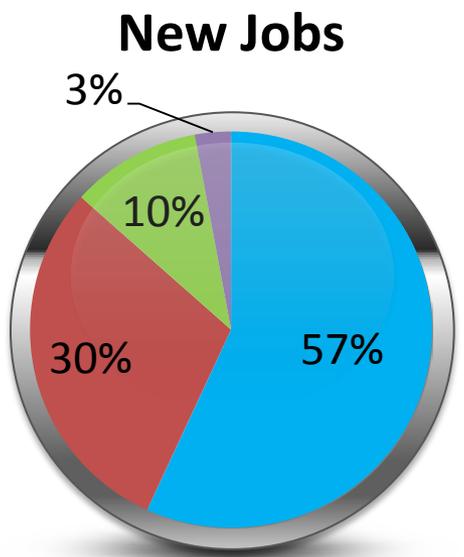
Prod. Sales / Rev Generated by Performer Class

- Per-reporting-company average



Composite High Performers – All Metrics

- Each pie wedge contains the same companies across metrics (i.e. any and all “blue” companies before are “blue” here)



■ Blue Group (n=31) ■ Red Group (n=66) ■ Green Group (n=79) ■ All Others (n=111)

2006

2007

2008

2009

2010

assurex
health

Akebia™
THERAPEUTICS

ThinkVine

catacel™
Driving Reaction Technology

covermymeds®

Knotice

ECHOGEN
POWER SYSTEMS

CerviLenz®

ClevelandHeartLab®
Know your risk.

explorys

mid

zipscene

WIRELESS
ENVIRONMENT

Global Cooling

SPARKBASE

AquaBlok®
Composite Particle System

Juventas
THERAPEUTICS

updox

Thermalin
Diabetes, LLC

OniShift

2011

2012

2013

2014

aerpio
therapeutics

n channel

7 SIGNAL®
THE WI-FI PERFORMANCE COMPANY

Talis
CLINICAL^{LLC}

PRINT
SINDICATE

BLUE WATER
SATELLITE, INC.

acceptd.



EcolibriumSolar

STACK

Tour de Force CRM
Be Efficient. Be Effective.

Roadtrippers

VentureMed
GROUP

cordata
HEALTHCARE INNOVATIONS

Notable Successes in 2014

Company	Technology / Market	Outcome
Akebia	Therapies for kidney disease	Completed \$100M IPO
Knotice	Social media marketing software	Acquired by large New York software firm
Ecolibrium Solar	Lightweight, low-cost solar panel mounts	\$7 million sales/quarter; Southeast Ohio success
Aerpio	Therapies for vascular disease	Raised \$22M in second quarter
Cleveland HeartLab	Novel biomarker technologies	Revenue up 883% to \$27M; #543 on Inc. 5,000
Catacel	Metal foil catalysts for process applications	Acquired by specialty chem firm Johnson Matthey
CoverMyMeds	Medication benefit automation software	Received significant investment from Calif. PE
Updox	Physician connectivity and CRM solutions	Named to "150 Great Places to Work in Healthcare" and Central Ohio "Best Places to Work"

Questions?

Game Changers

Global Cardiovascular Innovation Center

- Mark Low, Managing Director

Harrington Discovery Institute

- Fred C. Rothstein, M.D., President UHCCMC
- Baiju Shah, J.D., CEO, BioMotiv
- John M. Rice, Ph.D., Investment Advisory Board Chair, HDI

GCIC

Global Cardiovascular Innovation Center



GCIC Presentation to Ohio Third Frontier Advisory Board and Commission

Mark Low

April 16, 2015

Ohio

Third Frontier
Innovation Creating Opportunity

Global Cardiovascular Innovation Center

Mission and Scope

- Catalyze economic development in Ohio by developing, incubating and commercializing cardiovascular technology
- A consortium of university, hospital, industry, and economic development partners within Ohio
- Established by \$60M grant from Ohio Third Frontier Project, 2007
- Also managing  **Atrial Fibrillation**
Innovation Center
- Goals:
 - Job Creation: 855 at average wage of \$69,500
 - New Venture-Backed and Recruited Companies: 43
 - Seed and Venture Capital Invested: \$207M
 - Cost Share Commitment: \$190.5M (3:1)



GCIC Partners and Affiliates

The State of Ohio



Institutional Partners



Partners in Economic Development



GCIC Programs

- **Commercialization Funding**
Provide seed funding and support to new product development
- **Product Development Acceleration**
Provide product management and business planning support by industry-experienced staff
- **Business Attraction**
Bring new businesses to Ohio to grow the Cardiovascular cluster
- **New Company Incubation**
Operate and manage incubator facility for start-up companies
- **Preclinical Investigation Capabilities**
Operate state-of-art preclinical facility for sponsored research, product development, procedure training



Navigating the Pathway to Commercialization

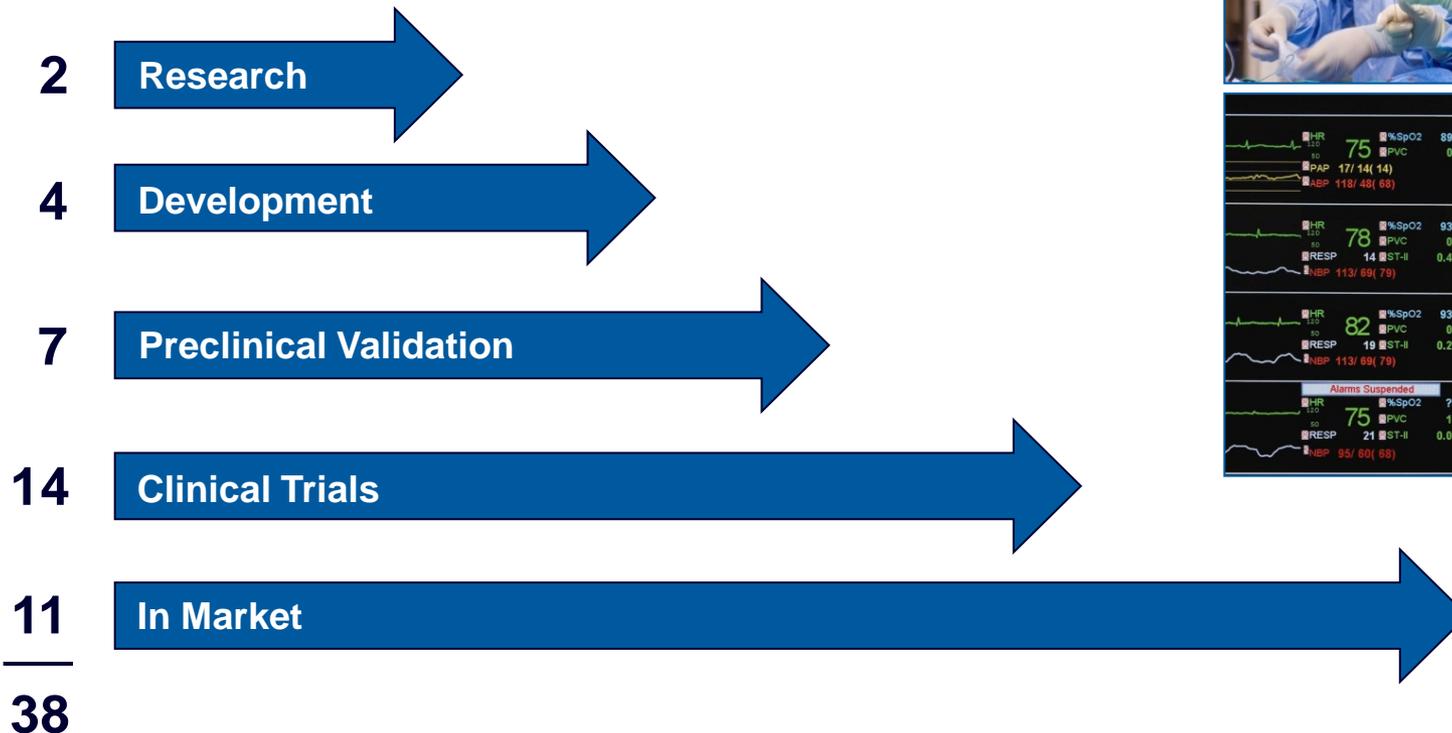
- Product Development Funding
- Provide Project Guidance
 - Hands-On Project Management
 - Design Input, Prototyping Resources
 - Business Strategy
 - Market Analysis
 - Clinical, Regulatory Strategy
 - Cost/Reimbursement Strategy
 - Staffing Referrals
- Position Companies for Follow-on Funding
 - Commercialization Advisory Board Visibility
- Education Programs for Inventors and Developers
- Incubation Space and Services



Commercialization Success

Advancing technology into physician's hands and into service to patients

Progress of 45 technologies funded...



Advancing Technology to Market

Clinical

Market



GCIC – a Successful Catalyst and Magnet for New Business in Ohio

State Grant A Level Metric	Grant Target*	Total as of Q4 2014**	Status
Job Creation	855	861 101%	Exceeded Goal
Venture Capital Backed and Recruited Companies	43	75 Funded, Attracted or Incubated 174%	Exceeded Goal
Seed and Venture Capital Invested	\$207M	\$566.5M Follow-on Funding (Excluding Cost Share) 273%	Exceeded Goal
Cost Share Reported	\$190.5M	\$196.5M 103%	Exceeded Goal

* Grant Period. Start: February 2007. Extended to end of 2016.

** \$44.7M of \$60M Total Grant Funds Expended/Committed (75%).

Key Factors of Success

- **Have a Specific Area of Focus and Core Strength**
 - Cardiovascular Healthcare
 - Cleveland Clinic - World Renowned, #1 in Heart Care
- **Hire Industry-Experienced Staff**
 - Cardiovascular Product Development and Marketing
- **Establish and Rely on Advisory Boards**
 - Commercialization Advisory Board with Science, Clinical, Finance, and Industry Representation or Background
- **Establish Selective and Business-Practical Programs**
 - Commercialization-Focused, Results-Oriented
 - Promote Broad-Based Outreach, Collaboration, and Partnership
- **Set Goals, Measure Results, and Be Flexible to Adjust**
 - Pivot as Necessary and as Circumstances Warrant

What's Next?

GCIC Sustainability Strategy

1. Return on Investment.
Conversion of GCIC Funding Awards to Equity/Liquidity.
2. New Grants to Expand and Grow the Operation
e.g. NIH Center for Accelerated Innovations (NCAI).
3. Fee/Equity for Service Opportunities.
4. External Investment.

NIH Center for Accelerated Innovations (NCAI) at Cleveland Clinic

- Mission to improve translation of basic science advances and discoveries into commercially viable products that improve patient care and advance public health.
- One of three inaugural NCAI's established by  National Heart, Lung, and Blood Institute
- 7 year program beginning in 2013 to provide development funding, project management, and to develop commercialization expertise.
- Targeting heart, lung, blood and sleep disorders and diseases.
- Broad based funding
 - \$11.2M grant from NHLBI
 - \$ 1.5M grant from Ohio Third Frontier
 - \$ 0.3M grant from National Science Foundation

NCAI-CC Consortium of Partners and Affiliates



Complementary Programs



- Heart, Lung, Blood, Sleep
- Institution-Based Projects
- Establish Proof of Concept
- 1 Year Scope of Work
- Project Guidance
- Milestone Reviews
- Grant Funding
- \$50K - \$125K + 1:1 Match
- Next Stage: SBIR, GCIC



- Cardiovascular
- Company-Based Projects
- Early-Stage Development
- 1 Year Scope of Work
- Project Guidance
- Milestone Reviews
- Convertible Debt Funding
- \$300K - \$500K + 2:1 Match
- Next Stage: VC Financing

GCIC/NCAI Team

Mark Low

Marwane Berrada

Kelly Emerton

Suguna Rachakonda

R. "Sakthi" Sakthivel

Tom Sudow

Michael Austriaco

Laura Konczos

Veronika Dwyer

Managing Director

Sr. Director, Product Development

Sr. Director, Product Development

Sr. Director, Product Development

Sr. Director, Product Development

Director, Business Development

Manager, Market Intelligence

Mgr., Incubator and Preclinical Programs

Administrative Coordinator



Global Cardiovascular Innovation Center



www.gcic.org



Global Cardiovascular Innovation Center



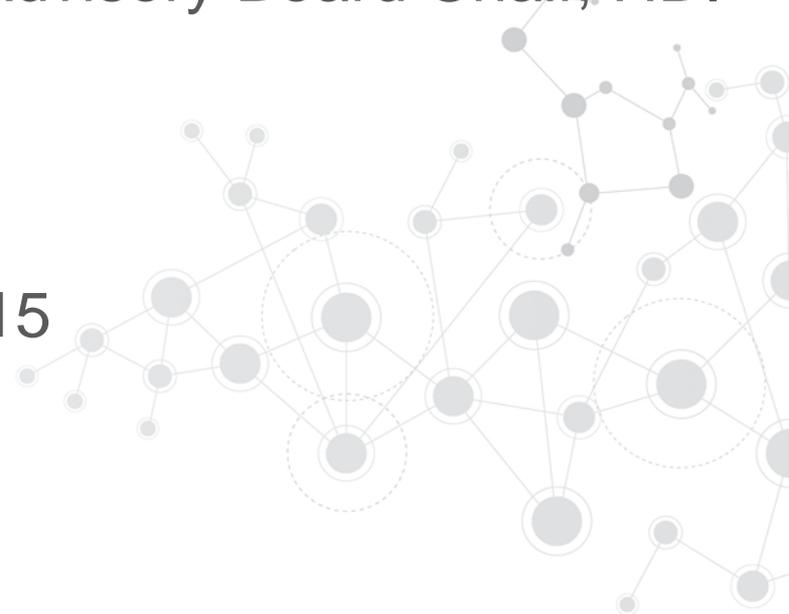
Ohio Third Frontier Grant Update

Fred C. Rothstein, M.D., President UHCCMC

Baiju Shah, J.D., CEO, BioMotiv

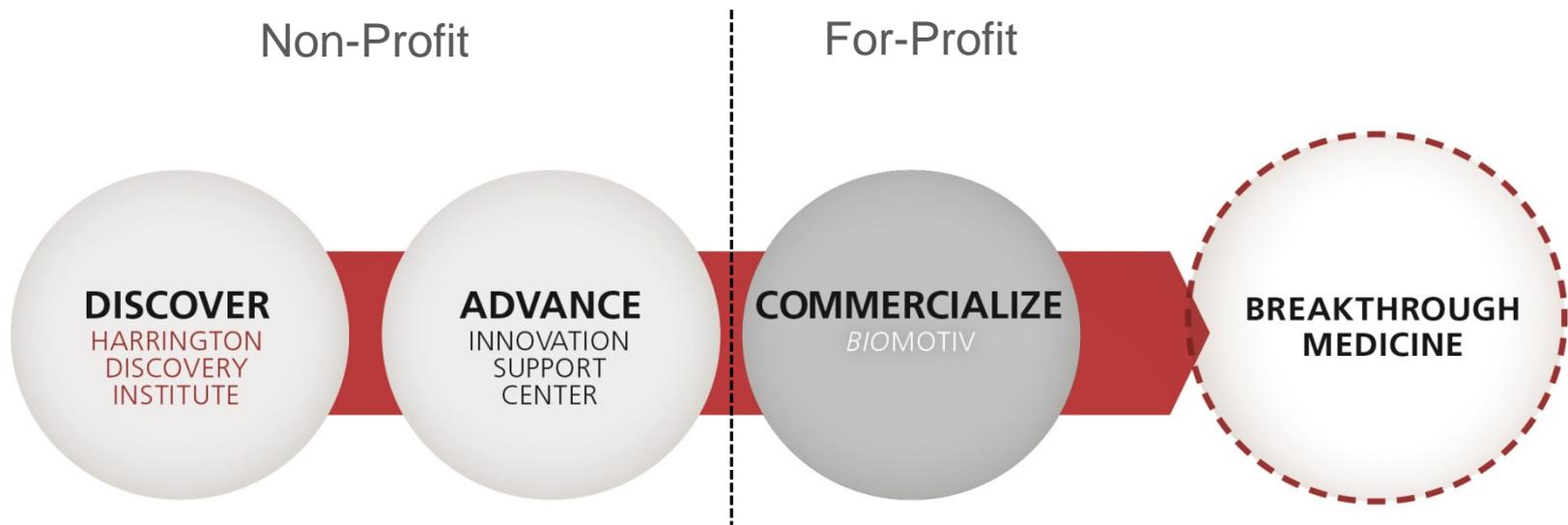
John M. Rice, Ph.D., Investment Advisory Board Chair, HDI

April 16, 2015



The Harrington Project

Accelerating Breakthrough Discoveries into Medicines



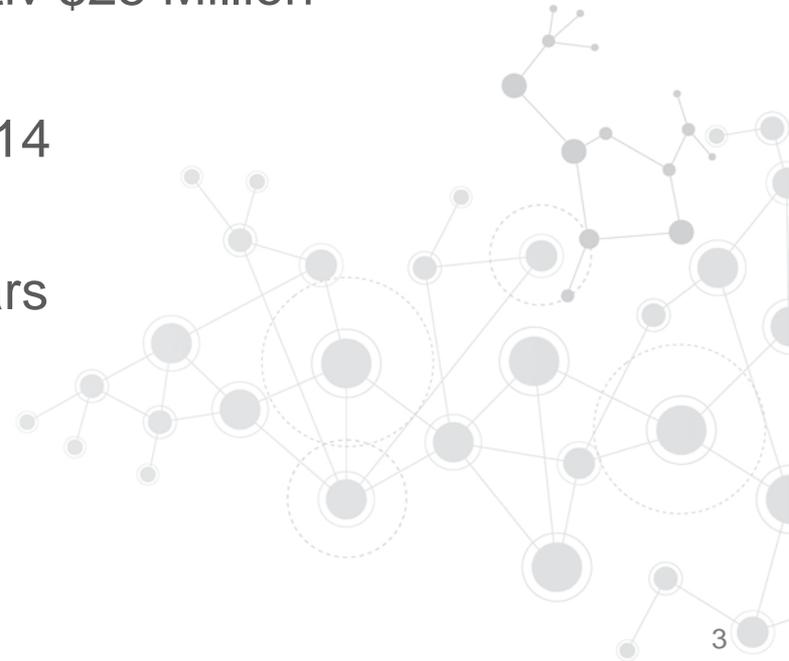
Novel Model

Alignment of Non-profit and For-profit Resources

Development Transitions to For-Profit as Projects Mature

HDI-State of Ohio Initiative Review

- OTF Grant Application submitted November 2013
- Ohio Third Frontier Commission Award in June 2014
 - OTF Grant: \$25 Million
 - Cost Share: UH \$25 Million, BioMotiv \$25 Million
- Agreement Signed on December 31 2014
 - Funding Period: 4 Years
 - Project Measurement Period: 6 Years



Harrington Project Potential Impact

1. Creation of a pharmaceutical development hub for the nation's best technologies
2. Attraction of major strategic partnerships and funding
3. Leveraging of Ohio resources to develop technologies
4. Development of Ohio-based start-up companies
5. Strengthen global pharmaceutical base in Ohio



Strategic Partnerships

- **Foundation Fighting Blindness**
\$30 Million National Center of Excellence
2-3 additional scholars per year
- **Alzheimer's Drug Discovery Foundation**
ADDF-Harrington Scholar program (2-3/year)
- **University of Oxford**
Oxford-Harrington Scholar program (1-3/year)
- **Takeda Pharmaceuticals (BioMotiv)**
\$25 Million strategic investment
Cardiovascular, Metabolic Disease, Immunology

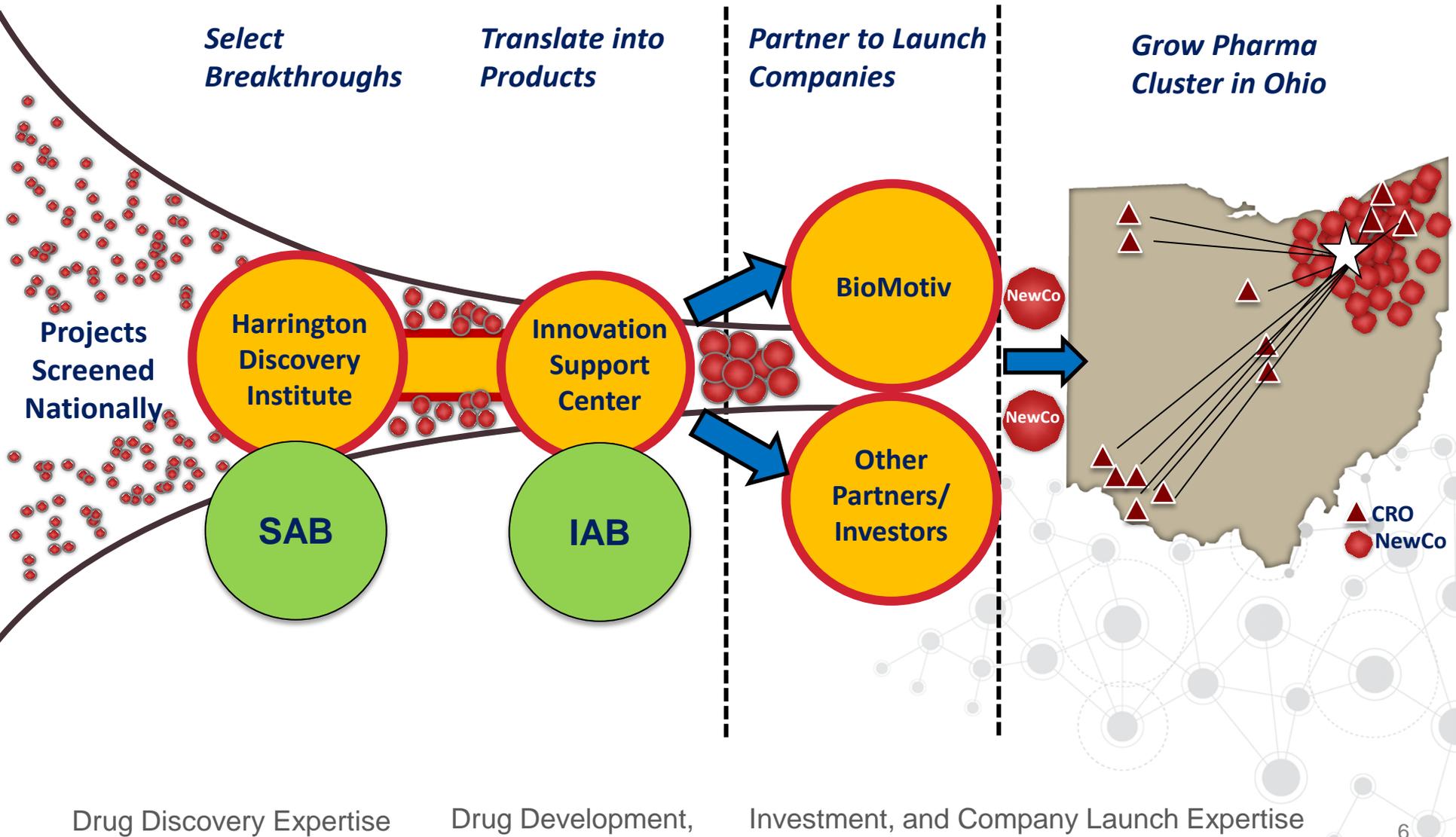
FOUNDATION
FIGHTING
BLINDNESS



Alzheimer's
Drug Discovery
Foundation



Product Pipeline Development



Portfolio of Projects in Development



OptiKira: An Example

- Dr. Scott Oakes and Dr. Feroz Papa, Harrington Scholars at UCSF, Class of 2013
- Developed inhibitors of a target which plays a key role in premature cell death
- Target applications in several diseases including blindness, diabetes, and Lou Gehrig's Disease or ALS
- Work featured in *Cell*
- Company launched in Ohio 2015
- Foundation Fighting Blindness has strong interest in project
- BioMotiv:
 - Licensed IP from UCSF and University of Washington
 - Added management team
 - Initiating development of technologies



UCSF

University of California
San Francisco

Ohio Life Sciences Service Providers



Summary

- Major partnerships with national disease foundations and global institutions and pharmaceutical companies
- Highly-selected, breakthrough technologies
 - Over 1,200 opportunities reviewed to date, from which 40 programs initiated
 - Each year will add 20 additional scholars to pipeline
- Technology Development & Commercialization
 - Expanding Ohio-based teams and network of life science service providers
 - 4 Ohio-based companies created to date
- Establishing Ohio as a pharmaceutical development hub

High Performers

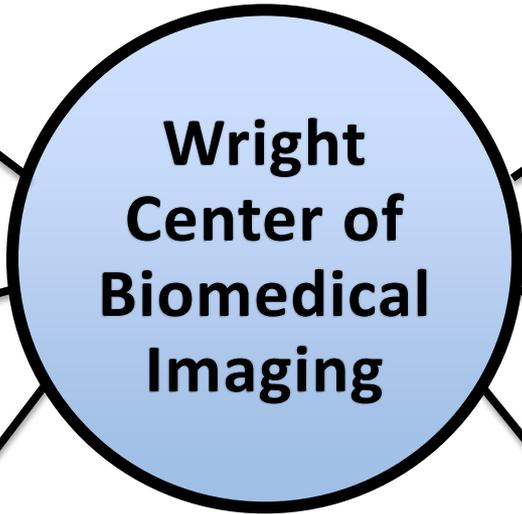
Closed Program Wrap-up

Closed Program Wrap-up

- Projects that are complete and past required reporting period
- Focusing metrics on active programs to align with startup and early stage focus
- In the process of preparing wrap-up reports on Biomedical and Advanced Materials areas
- Assessment of select projects to capture:
 - Key outcomes and continued activity
 - Lasting infrastructure
 - Potential overlap with Ohio Third Frontier's current focus

Wright Center Award

created



Created Molecular R&D Center with Cardinal Health

Commercialized Philips 7T Achieva MRI machine

Commercialized Philips Ingenuity PET/CT system

Relocation/Consolidation of Philips SPECT R&D activities in Ohio

Also received:

- Ohio Research Scholars Program
- Imaging Cluster
- Wright Project
- Biomedical Research Commercialization Program (2)

▲ = Recipient of additional OTF investment

Attracted:

- ViewRay ▲
- Rapid Biomedical

Spun out:

- Quality Electrodynamics ▲
- BioInvision
- Collaborative Sciences
- AllTech Medical
- Empirion

Biomedical

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Organization

Primary Investment

Key Impacts

National Center for Regenerative
Medicine

Wright Center of Innovation

- Founding member Athersys Inc. has become a \$231 million company
- 8 spinout companies (3 in portfolio)

Center for Gene Regulation in Health and
Disease

Ohio Research Scholars Program

- 2 spinout companies (1 in portfolio)

Ohio Center for Microfluidic Innovation

Wright Project

- 4 spinout companies (1 in portfolio)
- NSF center in microfluidics

University of Toledo

Ohio Research Scholars Program

- 5 spinout companies (4 in portfolio)
- NSF center in orthopedic innovation

Ohio Neuromodulation and
Neurostimulation Partnership

Biomedical Research
Commercialization Program

- 6 spinout companies (3 in portfolio)
- Developed and sold a neurostimulation device to Medtronic for \$42 million

Computational Medicine Center

Wright Center of Innovation

- 1 spinout company: AssureX. Company currently employs 240 Ohioans and has raised more than \$100 million in private equity. (currently in portfolio)

OrthoHelix Surgical Design, Inc.

Biomedical Cluster Program

- New orthopedic products
- Acquired by Tornier Inc. for \$125 million

Advanced Materials

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Organization	Primary Investment	Key Impacts
Cornerstone Research Group	Ohio Research Commercialization Grant Program	<ul style="list-style-type: none"> - 1 spinout company - \$25 million in sales
OSU/ EDWI/Fabrisonic	Wright Project	<ul style="list-style-type: none"> - New, commercially available metal 3D printer
Syscom Advanced Materials	Ohio Research Commercialization Grant Program	<ul style="list-style-type: none"> - New metal fiber material. Currently used on Mars Curiosity Rover
Case Center for Surface Engineering	Wright Project	<ul style="list-style-type: none"> - Led to research agreements with several major international corporations
Nanotek Instruments	Ohio Research Commercialization Grant Program	<ul style="list-style-type: none"> - Accelerated development of new material for battery electrodes - Set up pilot manufacturing facility
Powdermet	Ohio Research Commercialization Grant Program	<ul style="list-style-type: none"> - 2 spinout companies (both in portfolio) - New coating technology and material for oil and gas industry
Spectra Group Limited	Ohio Research Commercialization Grant Program	<ul style="list-style-type: none"> - New line of materials for 3D printing and rapid prototyping



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Agenda

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|-------------|--|-----------------------|
| 1:00 | Call to Order
Approval of 2/12/2015 Meeting Minutes (Vote) | David Goodman (Chair) |
| 1:05 | Commercial Acceleration Loan Fund (Vote) | Diane Chime |
| 1:25 | Other Business | |
| 1:30 | Adjourn | |

Commercial Acceleration Loan Fund

Ohio Third Frontier - Commercial Acceleration Loan Fund

April 16, 2015

Borrower	County	Industry	Project Amount	Loan Award	CALF Project Funding Percentage	New Jobs Created
Blackbook HR, LLC	Hamilton	IT-Business	\$1,800,000	\$1,200,000	67%	54

Summary Evaluator Recommendation

Market	Technology/Product	Intellectual Property	Legal	Business Model	Financial Review	Management Team	Evaluator Recommendation

Evaluation performed by Fred Richards.

Ohio Third Frontier - Commercial Acceleration Loan Fund

April 16, 2015

Borrower	County	Industry	Project Amount	Loan Award	CALF Project Funding Percentage	New Jobs Created
Homeward Healthcare, LLC	Lucas	IT-Healthcare	\$1,500,000	\$1,000,000	66%	11

Summary Evaluator Recommendation

Market	Technology/Product	Intellectual Property	Legal	Business Model	Financial Summary	Management Team*	Evaluator Recommendation

Evaluation performed by Fred Richards

**Evaluator recommendation of yellow based on the absence of full-time w2 employees*