



**Development
Services Agency**

John R. Kasich, Governor

David Goodman, Director



Third Frontier
Innovation Creating Opportunity

www.OhioThirdFrontier.com

Commission Meeting

June 11, 2014

Agenda

- | | | |
|-------|--|--------------------------------|
| 10:00 | Call to Order
Approval of 04/09/2014 Meeting Minutes (Vote) | David Goodman (Chair) |
| 10:05 | Commercial Acceleration Loan Fund (Vote) | Diane Chime |
| 10:30 | Pre-seed Fund Capitalization Program (Vote) | Mike McKay/
Invantage Group |
| 11:00 | Technology Commercialization Center Program (Vote)
<ul style="list-style-type: none">- Harrington Discovery Institute- Neurotechnology Innovations Translator | Anthony Howard/
YourEncore |
| 12:00 | Industrial Research and Development
Center Program (Vote)

<ul style="list-style-type: none">- ALMMII | Anthony Howard |

Agenda (Continued)

12:15	Technology Validation & Start-up Fund (Vote)	Paul Jackson/ YourEncore
12:45	Third Frontier Internship Program (Vote)	Nic Turner
12:55	Entrepreneurial Services RFP	Mihaela Jekic
01:10	CY 2014 Retreat Planning	Norm Chagnon
01:25	Other Business	All
01:30	Adjourn	



Commercial Acceleration Loan Fund



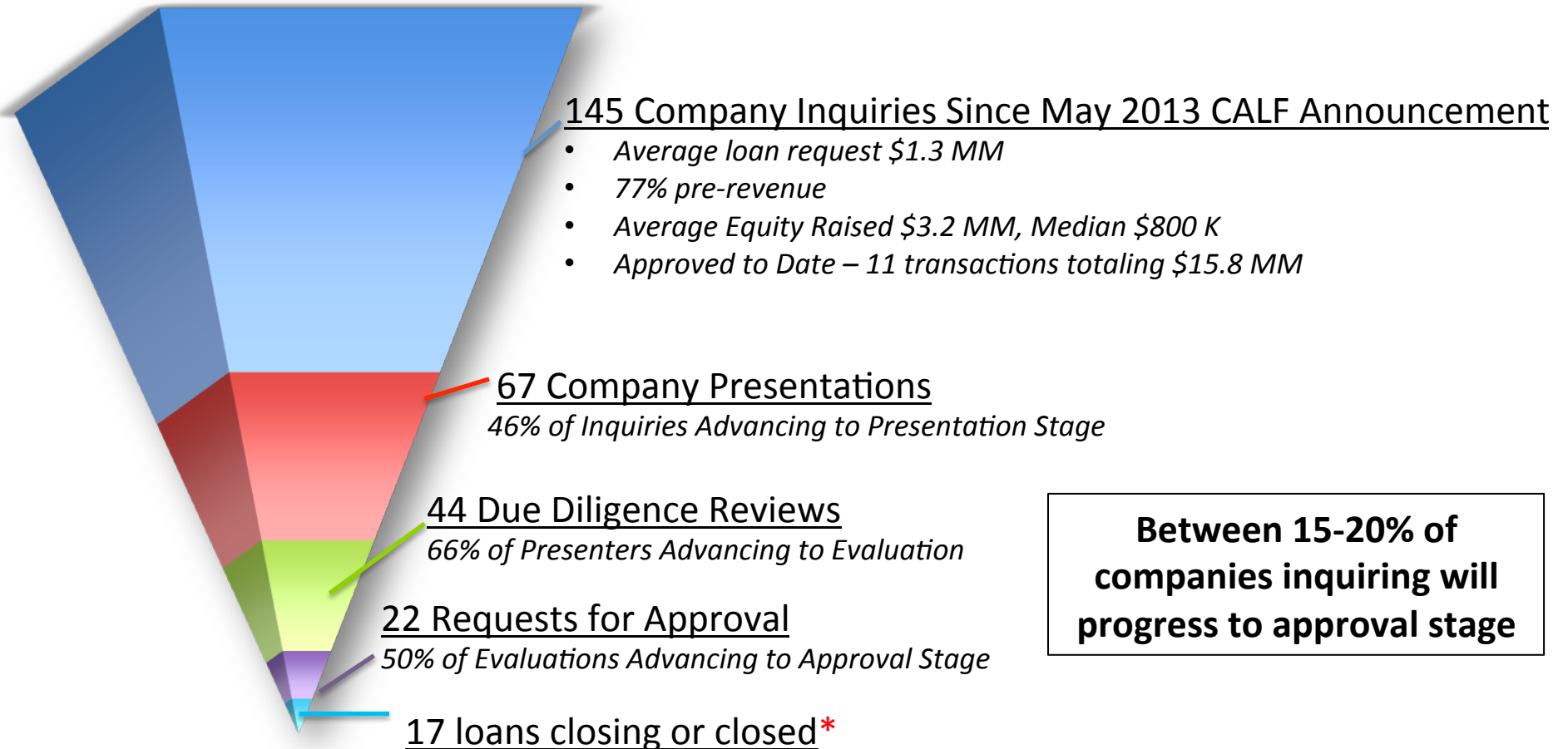
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Early Stage Loans – Year 1 Pipeline Review

Ohio Third Frontier - Commercial Acceleration Loan Fund Small Business Credit Initiative - Targeted Investment Program



**Between 15-20% of
companies inquiring will
progress to approval stage**

* Does not include projects pending approval

Ohio Third Frontier - Commercial Acceleration Loan Fund

June 2014 – Proposed CALF Projects

Company Name	County	Industry	Project Amount	Loan Award	CALF Project Funding Percentage	New Jobs Committed
Cardiox Corporation	Franklin	Medical Devices	\$4,317,672	\$1,700,000	39%	32
CerviLenz, Inc.	Cuyahoga	Medical Devices	\$5,700,000	\$2,000,000	35%	12
Echogen Power Systems, LLC	Summit	Energy	\$10,718,927	\$1,500,000	14%	14
Inmobly, Inc.	Franklin	Information Technology	\$1,340,000	\$1,000,000	75%	16
MAR Systems, Inc.	Cuyahoga	Advanced Technology	\$1,290,000	\$645,000	50%	11
\$6,845,000						85

Note: New Jobs Committed Does Not Include Jobs Retention Commitment



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Ohio Third Frontier - Commercial Acceleration Loan Fund

Evaluator Recommendations Summary

Company Name	Market	Technology/ Product	Intellectual Property	Legal	Business Model	Financial Review	Management Team		Evaluator(s) Recommendation	
Cardiox	IG	IG	IG	IG	IG	IG	IG		IG	
Cervilenz	DevFi	DevFi	DevFi	DevFi	DEA	DEA	DEA	DevFi	DevFi	DEA
Echogen	SBCi	SBCi	SBCi	SBCi	DEA	DEA	DEA	SBCi	SBCi	DEA
Inmobly	OB	OB	OB	OB	DEA	DEA	DEA	OB	OB	DEA
MAR	SBCi	SBCi	SBCi	SBCi	SBCi	SBCi	SBCi		SBCi	

DevFi, (DevFi) Jason Fisher

Diperna Economic Development Advisors (DEA), Michael Diperna

Invantage Group (IG), Ted Bernard

OrangeBoy (OB), Sandy Swanson

SBCi Ltd. (SBCi), Susan Stanton



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Pre-Seed Fund Capitalization Program

2014



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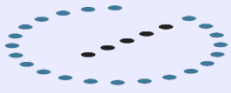
Goals and Objectives

- Increase the number of professionally managed Pre-Seed Funds investing throughout Ohio;
- Increase the amount of early stage capital being invested in Ohio technology-based companies in the Imagining, Incubating, or Demonstrating phases of commercialization;
- Create a risk capital climate that supports the development, retention, and attraction of investable technology companies in Ohio; and
- Build a pipeline of technology company deal flow that increasingly attracts the resources of venture capital firms both within and outside of Ohio.



Program Basics

- ***Lead Applicants:***
 - New and/or existing Pre-Seed Funds that will provide capital to early-stage technology companies;
 - May be organized as for-profit or non-profit;
 - Must be based in Ohio or with a Principal Place of Business in Ohio.
- ***Funding:***
 - \$20 million (CY14)
 - Lead Applicants may request \$500,000 to \$3 million
 - Funding will be in the form of a non-recourse loan
- ***External Evaluator:*** Invantage Group



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Pre-Seed Fund Capitalization Program

2014

**Evaluation Report
June 11, 2014**

Invantage Group
www.invantagegroup.com

Proposal Evaluation Process

- Two-stage evaluation process
 - Two independent evaluators per proposal
 - Stage-1 process
 - Independent assessment of preliminary findings
 - Ensure consistent application of criteria
 - Recommendations for Stage-2 review
 - Stage-2 process
 - Identify gaps & questions
 - Written Q&A and direct interviews
 - Detailed 2nd review
 - Evaluator reviews to reach consensus
 - Finalized funding recommendations

Summary of Pre-Seed Fund Proposal Evaluations

Proposals received	12
Recommended for Stage 2 interview	11*
Recommended for funding	10
Recommended funding amount	\$26 MM

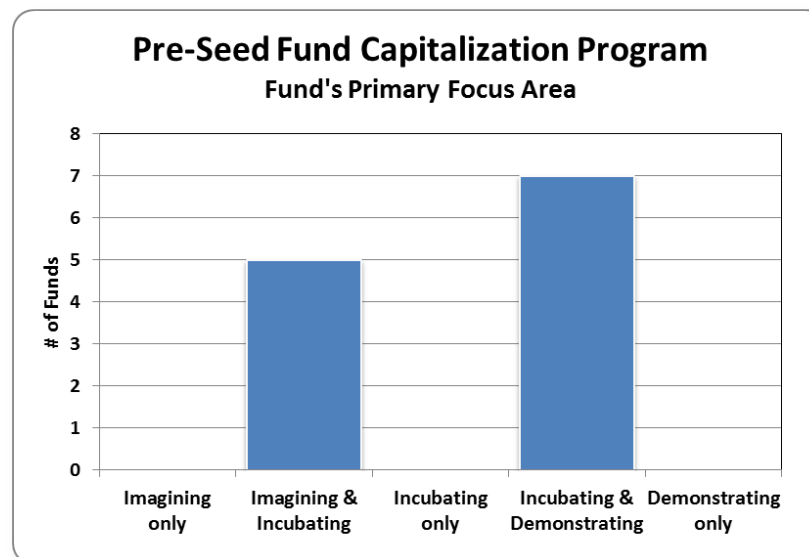
* One (1) proposal was withdrawn by the applicant.

Proposal Evaluation Categories

Opportunity	<ul style="list-style-type: none">• Define & quantify the targeted opportunity• Identify and generate relevant high quality deal flow
Operations	<ul style="list-style-type: none">• Evaluate the relevant organizational design• Review investment process
Relevant Track Record	<ul style="list-style-type: none">• Review previous pre-seed investing experience• Evaluate material successes and failures
Economic Impact	<ul style="list-style-type: none">• Assess the realism & magnitude of projected impact• Examine forecast within context of prior experience
Experience and Qualifications	<ul style="list-style-type: none">• Review the proposed fund management team• Evaluate relevant experience and qualifications
Budget	<ul style="list-style-type: none">• Review budget, cost share, forecast, & commentary• Assess reasonableness of underlying assumptions

General Findings

- Primary fund focus area
 - Program goal to increase early-stage risk capital
 - Funds mention willingness to invest across the spectrum
 - Review pipeline opportunities and past investment experience
 - Gain clearer view of the primary focus
 - More focus on latter phases of early-stage commercialization
 - Some mention other early-stage capital
 - e.g. ESP “imagining” grants



Summary of Evaluations

Sorted by Proposal # within each section						Evaluation Categories and Relative Weighting						
						20%	15%	20%	15%	25%	5%	100%
LOI #	Lead Applicant	Funds Req'd	Region	Fund's Primary Focus Area	Fund History	Opportunity	Operations	Relevant Track Record	Economic Impact	Experience & Qualifications	Budget	Total
Recommended Funds												
14-100	Impact Angel Fund, LLC	\$1,000,000	Northeast	Incubating/Demonstrating	New Fund							
14-101	East Central Ohio Tech Angel Fund II, LLC	\$1,375,000	Southeast	Incubating/Demonstrating	Previous Fund							
14-102	Development Projects, Inc.	\$3,000,000	West Central	Incubating/Demonstrating	Previous Fund							
14-104	Cincinnati Children's Hospital Medical Center	\$3,000,000	Southwest	Imagining/Incubating	Previous Fund							
14-105	Cleveland Clinic Foundation	\$3,000,000	Northeast	Imagining/Incubating	Previous Fund							
14-106	Regional Growth Partnership	\$3,000,000	Northwest	Incubating/Demonstrating	Previous Fund							
14-110	North Coast Angel Fund III	\$3,000,000	Northeast	Incubating/Demonstrating	Previous Fund							
14-114	NCT Ventures Fund II, L.P.	\$3,000,000	Central	Imagining/Incubating	Previous Fund							
14-117	Bizdom Fund	\$2,812,500	Northeast	Incubating/Demonstrating	New Fund							
14-118	Lorain County Community College Foundation	\$3,000,000	Northeast	Imagining/Incubating	Previous Fund							
Withdrawn from Consideration												
14-103	Queen City Angels	\$1,000,000	Southwest	Incubating/Demonstrating	Previous Fund							
Non-recommended Funds												
14-107	OneCommunity	\$1,500,000	Northeast	Imagining/Incubating	New Fund							
Evaluation Definitions <div></div> Strong supporting evidence <div></div> Moderate supporting evidence <div></div> Weak supporting evidence												

Recommended Funds

- Common elements of strongest proposals
 - Strong opportunities, solid investment processes, supportable projections, and impressive experience with early stage investing.

Lead Applicant	Funds Requested	# of Investments	Investment Range	Follow-on Projections	Track Record
East Central Ohio Tech Angel Fund II, LLC	\$1,375,000	5	\$250k to \$350k	\$49 MM	<ul style="list-style-type: none"> • 6 investments, all active and 2 exits • \$25 MM in follow-on capital & \$17MM in revenue
Development Projects, Inc.	\$3,000,000	22	\$100k to \$500k	> \$110 MM	<ul style="list-style-type: none"> • \$11 MM in 34 companies, \$22 MM in follow-on capital • 6 portfolio exits returning \$2.9 MM in cash
Cincinnati Children's Hospital Medical Center	\$3,000,000	8	\$100k to \$500k	\$54 MM	<ul style="list-style-type: none"> • \$4.8 MM in 7 companies (all active) • \$90 MM in A-metrics, 201 jobs w/avg. salary > \$109k
Cleveland Clinic	\$3,000,000	15	\$250k to \$500k	> \$160 MM	<ul style="list-style-type: none"> • \$11 MM in 25 companies; 300 jobs w/avg. salary \$100k • > \$160 MM in follow-on capital; 32x leverage
North Coast Angel Fund	\$3,000,000	15	\$250k to \$350k	> \$255 MM	<ul style="list-style-type: none"> • \$10 MM in 35 companies (1 exit) • > \$250 MM in follow-on capital; 56x leverage
NCT Ventures Fund II	\$3,000,000	12	\$250k to \$500k	\$11 MM	<ul style="list-style-type: none"> • \$20 MM in 12 companies (2 exist, all active) • \$57 MM in A-metrics; 55 jobs created
Bizdom Fund	\$2,812,500	25	\$125k to \$300k	\$8 MM	<ul style="list-style-type: none"> • Accelerator: \$940k in 46 companies (inner city located) • Attracted 15 venture capital and angel investments
Lorain County Community Foundation	\$3,000,000	48 A-awards 36 B-awards	\$25k to \$100k	\$45 MM	<ul style="list-style-type: none"> • 140 awards (\$7.6 MM) to 117 companies • \$145 MM in follow-on capital; 39x leverage

Recommended Funds

- Additional proposals worthy of support
 - Strong support
 - Valuable investment target focus for regional ecosystem
 - Redesigned investment procedures and resources
 - Improved deal flow potential
 - Modest support
 - Weaker or more limited track record
 - Difficult to quantify economic impacts
 - Overall strength and potential benefits of these funds outweigh historical concerns

Lead Applicant	Funds Requested	# of Investments	Investment Range	Follow-on Projections	Track Record
Impact Angel Fund, LLC	\$1,000,000	5	\$250k to \$350k	\$25 MM	<ul style="list-style-type: none">• ECOTAF spin-off fund• 6 companies, \$25 MM in follow-on capital
Regional Growth Partnership	\$3,000,000	22	\$100k to \$500k	> \$16 MM	<ul style="list-style-type: none">• \$9.7 MM in 20 companies• \$87 MM in A-metrics and 140 jobs created/retained

Other Fund Proposals

- Non-recommended fund proposal
 - Fine concept, but lacked several critical elements

Lead Applicant	Request	Potential Benefits	Critical Concerns
OneCommunity	\$1,500,000	<ul style="list-style-type: none">• Focus on information technology related products and services	<ul style="list-style-type: none">• Needs greater clarity of ideal target and intended outcomes• Proposal did not cover several RFP requirements

- Withdrawn fund proposal
 - Queen City Angels: QCA First Fund IV Extension
 - Experiencing stronger than anticipated deal flow
 - Accelerating investments from their existing capital base
 - Prefer to begin planning for a future QCA First Fund V

Discussion



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Pre-Seed Fund Capitalization Program Proposal Evaluations



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Technology Commercialization Center Program

Harrington Discovery Institute



University Hospitals Case Medical Center

The Ohio State University



Neurotechnology Innovations Translator



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Third Frontier “Center” Programs

- Industrial Research & Development Center Program
- Wright Center of Innovation Program
- Technology Commercialization Center Program

Third Frontier “Center” Programs

- Industrial Research & Development Center Program
 - **Active** since 2008, 14 awarded (4 federal, 10 corporate)
 - **M.O.** – Recruits/attracts large R&D centers to Ohio
 - **Funding** – Matches primary funder at up to 15%, not to exceed \$5M, funding is flexible
 - **Oriented** to major R&D center acquisition from which new but separate production/mfg. activity will hopefully flow
 - **Engage** industry by getting them to make a major investment in Ohio or establish a large center with such national stature and prominence in Ohio that it attracts industry engagement

Third Frontier “Center” Programs

- **Wright Center of Innovation**
 - **Active** 2003 – 2007, 13 awarded
 - **M.O.** – Multi-institutional research collaboration partnering w/ established Ohio companies in an area of expertise
 - **Funding** – \$10M – \$25M, 2:1 cash/in-kind match, primarily brick/mortar/equipment
 - **Oriented** to institutional/researcher led projects
 - **Engage** established Ohio industry through facility/equipment access, joint research projects, development of emerging technologies w/ industrial relevance
- **Exception** – Global Cardiovascular Innovation Center

Third Frontier “Center” Programs

- Technology Commercialization Center
 - **Active** since 2013
 - **M.O.** – Single institution focus/lead with 1) deep pipeline of commercializable technology in a focus area of expertise and 2) the ability to attract more tech as well as \$/talent nationally
 - **Funding** – \$10M – \$25M, 2:1 cash only match, funding is flexible
 - **Oriented** to business/investment expertise leadership, NewCo formation, and smart money co-investment
 - **Engage** the entrepreneurial and investment communities to develop and support start-up companies

Harrington Discovery Institute



University Hospitals Case Medical Center

- Harrington Project for Discovery & Development
- Founded 2012
- \$250 Million Initiative
- A unique model of 1) drug candidate selection, 2) acceleration of commercial development, and 3) capitalization of Ohio start-up companies:
 - **HDI** – Attracts and funds, through a Scientific Advisory Board, the very best and most promising drug technologies from across the U.S. – Susan Luria
 - **Innovation Support Center** – Through a Commercial Advisory Board, provides mentorship, resource connections, and business support for product commercialization – Jonathan Stamler
 - **BioMotiv** – Establishes and funds new companies and attracts additional funds, talent and resources – Baiju Shah

Harrington Discovery Institute



University Hospitals Case Medical Center

- **Tom Zenty** – CEO, University Hospitals Health System
- **Fred Rothstein, MD** – President, University Hospitals Case Medical Center
- **Susan Luria** – Executive Director, Harrington Discovery Institute
- **Jonathan Stamler, MD** – Co-Founder and Director, Harrington Discovery Institute
- **Baiju Shah** – CEO, BioMotiv



Innovative Results through Proven Expertise

Technology Commercialization Center Program

Proposal:

Harrington Discovery Institute
 University Hospitals Case Medical Center

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Cincinnati, OH 45242
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Harrington Discovery Institute

Applicant Overview

- The Harrington Discovery Institute (HDI) is the non-profit arm of the Harrington Project for Discovery and Development
 - *Founded in 2012*
 - *Intended full funding level of \$250 million in resources*
 - The Harrington family generously provided \$50 million to launch the initiative
 - BioMotiv, the for-profit accelerator within the project, has since secured \$47 million from investors, and has significant additional commitments
 - *HDI is a part of the Harrington Project, with a stated mission of accelerating the development of medicines based on breakthroughs by physician-scientists*
 - *The proposed project intends to provide value to Ohio in the following ways:*
 1. Create a pharmaceutical development hub for the nation's best technologies
 2. Utilization of Ohio-based resources to validate and develop technologies
 3. Establishment of Ohio-based start-up companies
 4. Attraction of significant additional funding
 5. Strengthen the global pharmaceutical base in Ohio

Proposal Details

Funding sources and uses

- Funding requested to support the HDI-ISC non-profit components.
 - *OTF Request: \$24,998,623*
 - *Cost Share:*
 - University Hospitals: \$25,006,079
 - BioMotiv: \$25,000,000
 - *The requested funds are intended for:*
 - Commercialization of selected projects
 - Launch of new start-up companies based on those projects
 - Development and growth of Ohio's pharmaceutical services infrastructure

Proposal Evaluation

Promise of the Proposal

- Unique opportunity for Ohio to build upon preceding financial support
- High degree of selectivity, with 900 project opportunities assessed, and 28 projects selected for support – to date
- Top-caliber professionals from life sciences industry on advisory boards
- Non-profit / for-profit model may provide competitive advantage
- Broad focus area allows for robust pipeline and deal flow
- Potential for significant economic impact as technologies advance
- Matching funds model limits potential downside for Ohio
- HDI addressing a real and serious unmet need, the growing funding gap for pre-clinical and early-stage life sciences technologies

Proposal Evaluation

Areas of Concern

- Retentiveness of model for Ohio is unproven and unknown
 - *The primary incentive for companies to remain in Ohio in near-term is funding*
 - *The Ohio 'signature' is being built and is future-state, as well as high-risk*
 - *This may change over time as HDI's reputation and track record are more established*
- Variable alignment with Ohio core competencies
 - *Ohio has core competencies, but in focused areas, and technology selection does not take those into account*
 - *Competition from more established pharmaceutical geographies*
- HDI overall mission does not consider geography
 - *Best technologies selected regardless of source*
 - *Early development occurs at source*
 - *Geographic constraints at some point interfere with the overall mission*
- Efficiency of model not proven
 - *Throughput success and advancement of technologies to full commercialization*
 - *Resource allocation based on large initial funding*

Summary Recommendation

- The review team does not see the HDI proposal as a total fit with the TCCP, but this is a question of misalignment with the RFP, not a reflection on the HDI and their mission.
- The size of the program and funding commitments will bring significant benefit to Ohio and is therefore worthy of OTF support, but the award amount should reflect the risk and misalignment with the TCCP.
 - *HDI's work nicely aligns with other Ohio priorities, e.g., the Medical Corridor Initiative.*
- The review team recommends a reduced award in the range of \$10-\$15 million. The reduced award will of course reduce Ohio benefit, as described here by the applicants (Ohio companies only):

Grant Amount	Companies Created	Direct Jobs	Direct Outsourced Jobs	Follow on investment
\$25,000,000	24	161	230	\$203,000,000
\$15,000,000	18	100	150	\$130,000,000
\$10,000,000	12	65	85	\$78,000,000



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Harrington Discovery Institute



University Hospitals Case Medical Center

Staff Input – Administrative/Policy Perspective

- TCC program design has a limitation in that it did not anticipate the uniqueness of the HDI in-sourcing model and BioMotiv fund raise
- Remain flexible to unique/one-of-a-kind opportunities and “Big Ideas”
- Especially those big ideas with independent validation/investment
- Aligns with the State’s initiative to more aggressively pursue pharma
- Builds CRO infrastructure and related business services important to pharma
- HDI model/activity represents a unique opportunity to set Ohio apart

Staff Recommendation

- \$15 million w/ the following performance metrics

Harrington Discovery Institute



University Hospitals Case Medical Center

	Original - \$25M	Revised - \$15M	Revised - \$10M
Project/Reporting Period	4 years/6 years	3 years/6 years	3 years/6 years
Total Companies Retained in Ohio – Year 6	24	18	12
Ohio Jobs Created – Year 6	391 For Profit Direct – 143 Non Profit Direct – 18 For Profit Direct Outsourced – 230	250 For Profit Direct – 88 Non Profit Direct – 12 For Profit Direct Outsourced – 150	150 For Profit Direct – 53 Non Profit Direct – 12 For Profit Direct Outsourced - 85
Follow On Investment in Ohio Companies – Year 6	\$203M	\$130M	\$78M

The Ohio State University

Neurotechnology Innovations Translator

- NIT is a for-profit company formed in collaboration with OSU
 - Focused on neurotechnology-related translational innovations,
 - Identifying promising early stage technologies,
 - Accelerating their development, and
 - Spinning those technologies out into newly created, Ohio-based companies in collaboration with various Venture Capital and Industry partners.
- Specific areas of focus within neurotechnology:
 - Neuromodulation, neural prosthetics, neurorehabilitation, and neurosensing
- Industry/Venture Capital Partners
 - Medtronic, Cardinal, Battelle, Summa Health, Metro Health, NAMSA, Advratech
 - Versant Ventures, Silicon Valley Bank, OrbiMed, H.I.G. Bioventures, Domain Associates, Correlation Ventures, Arboretum Ventures, and Aberdare Ventures

The Ohio State University

Neurotechnology Innovations Translator

- **Ali Rezai, MD** – Associate Dean and Director of Neuroscience Programs and Director of the Center for Neuromodulation, OSU
- **Kevin Wasserstein** – Managing Director of the NIT formerly Managing Director of Versant Ventures
- **Tom Tefft** – President of Neuromodulation and Sr. Vice President, Medtronic



Innovative Results through Proven Expertise

Technology Commercialization Center Program

**Proposal: Ohio State University
Neurotechnology Innovations Translator**



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Neurotechnology Innovations Translator

Opportunity

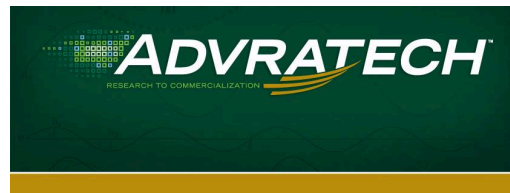
- The Neurotechnology Innovations Translator (NIT) is a for-profit company focused on accelerated development and spin-out of neurotechnology-related innovations
- Focused on significant unmet needs in neuroscience, using novel approaches and leveraging top-tier expertise at Ohio State University (OSU)
- Close partnership with Medtronic and Cardinal Health, which bring expertise, investment capital, support resources and commercialization pathways
- Supported by an extensive network of collaborators and partners, centered in Ohio, leveraging core areas of Ohio strength and research interest, and creating the potential for a unique Ohio signature that will attract and retain technologies, companies, jobs and investment capital
- Attracted interest from private sources of capital, underscoring the unmet need and potential for blockbuster products
- Though pipeline is heavily focused on OSU technologies at this point, this offers potential for early spin-out of technologies more advanced in development and early returns on investment

Proposal Details

Ohio Ecosystem

- The following Ohio partners have committed support and resources for the NIT, though their contributions (with the exception of a discounted portion of NAMSAs commitment) are not included in the budget, offering upside to the budgeted 2:1 match:

Battelle



Proposal Details

Budgeted funds to achieve 2:1 match

- NIT is requesting \$21.06 million from the State, with \$43.1 million in matching funds – total budget \$64.2 million
- OSU committing \$10 million to SCCF, \$10 million in technology development grant funds
- Medtronic has made a \$10 million commitment to the SCCF (discounted to \$7.2 million to reflect step-back provisions), and \$10 million in off-the-shelf devices (discounted to \$1.3 million)
- Cardinal Health has made a \$3 million commitment to the SCCF (discounted to \$2.15 million to reflect step-back provisions)
- Venture Capital partners potential investments discounted to \$12.15 million against LOIs which could total more than 10x that amount

Total Budgeted Commitments (Millions)						
TCC	OSU	Medtronic	Cardinal	NAMSA	Venture Caps	TOTAL
\$21.06	\$20.00	\$8.47	\$2.15	\$0.36	\$12.15	\$64.20

Proposal Details

Budget Breakdown and Matching Funds

- ODSA and NIT have ensured minimum 1:1 match is achieved before spin-out, protecting Ohio's investment
 - *TCC money is 'above the line', meaning, pre-spin out, and matched 1:1 with a \$42.1 MM total budget*
- 2:1 match is achieved post-spin-out when private capital is heavily invested

	TCC	OSU	Medtronic	Cardinal	NAMSA	Venture Caps	TOTAL
Working Capital/ Pre-Seed	2.45	2.4	-	-	-	-	
Seed	13.94	8.8	3.7	0.6	0.3	0.75	
Attracted	4.67	2.3	0.9	0.5	0.1	0.75	42.1
Spin-Out	-	6.5	3.9	1.0	-	10.65	22.1
TOTAL	21.06	20.0	8.5	2.1	0.4	12.15	64.2

Proposal Details

Job Creation Estimates

- The NIT applicants estimate 6 to 9 Seed or Attracted companies by year 4 of the grant, resulting in 4 to 7 independent and sustainable companies by the end of the grant period
- This results in the following job creation estimates:

	Year 4	Year 6
Direct	160	315
Direct Outsourced	45	95

- While modest, these numbers align with analogous job creation metrics for similar companies and are appropriate
- Jobs should not be viewed in isolation, as the attraction of investment capital will bring significant near-term value to the state.

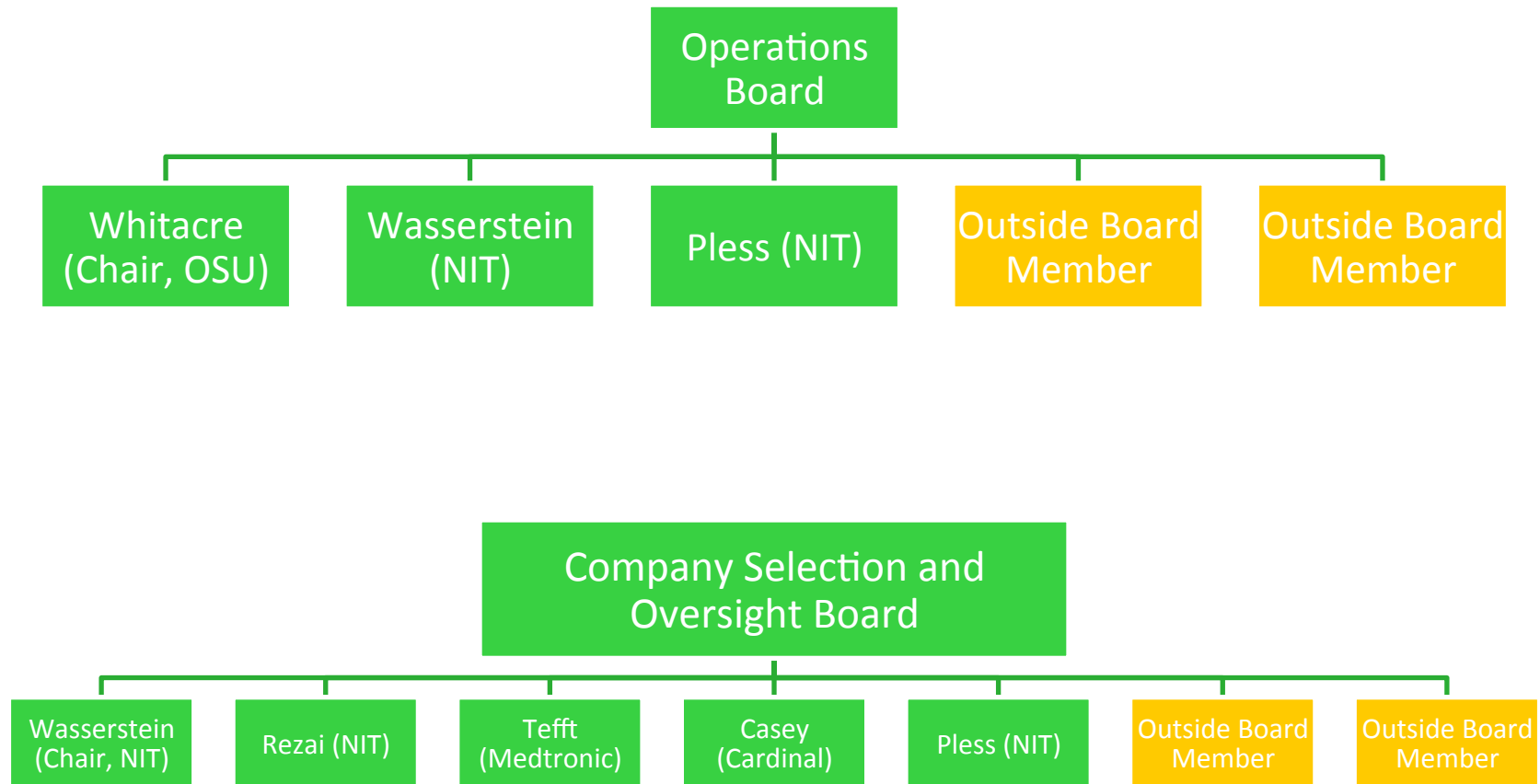
Proposal Details

Remaining Risk Assessment

- Spin-out companies are potential flight risks, though this risk is manageable and acceptable
 - *Ohio ecosystem and NIT expertise*
 - *Medtronic historic acquisition practices*
- Sustainability is possible, but by no means guaranteed
 - *SCCF fund management fee*
 - *OSU renews funding commitments*
 - *Direct NIT investment*
- Governance structure is imbalanced and boards are insular – the review team recommends addition of impartial outside board members unaffiliated with NIT, OSU, Medtronic or Cardinal
 - *Exclusion of Case Western at this early stage, especially given the robustness of the Ohio ecosystem, is reason for concern*
 - *Need to ensure decisions are reviewed by independent parties*
 - *Selection of additional board members subject to ODSA approval*

Proposal Evaluation

Governance Structure - Proposed



Summary Recommendation

- The review team recommends full funding of the NIT proposal at the requested amount of \$21.06 million
 - *Recommendation conditional upon the addition of impartial board members*



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Industrial Research and Development Center Program



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Goals and Objectives

- Attract large corporate, nonprofit, and federal R&D centers to Ohio that have national designations.
- Increase the reputation/visibility of Ohio R&D in targeted technologies.
- Support centers that:
 - conduct value-added applied research at the direction of or in collaboration with Ohio industry,
 - perform industry-directed or industry-oriented problem solving, or
 - develop technologies that are commercializable with an Ohio for-profit company.
- Attract senior research/entrepreneurial talent.
- Create jobs.



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Program Basics

- **Lead Applicant:**

- Ohio state-supported/assisted college or university or an Ohio nonprofit research organization that is competing for a federally funded R&D center to be in Ohio, or
- A for-profit company planning to establish a corporate R&D center in Ohio.

- **Funding:**

- Awards of up to 15% of primary sponsor funding received to establish the Ohio center
- IRDCP award cap of typically no more than \$5 million.



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National Network for Manufacturing Innovation

- National Additive Manufacturing Innovation Institute (America Makes) – \$30 Million – Youngstown, Ohio
- Next Generation Power Electronics Innovation Institute – \$70 Million – North Carolina State Univ.
- Digital Manufacturing and Design Innovation Institute – \$70 Million – Chicago
- Lightweight and Modern Metals Manufacturing Innovation Institute – \$70 Million – Detroit (led by Edison Welding Institute of Columbus, OH)

Edison Welding Institute

- **Applicant:** Edison Welding Institute – American Lightweight Materials Manufacturing Innovation Institute (ALMMII)
- **Federal Sponsor:** Department of Defense
- **US DOD Award:** \$70M **IRDCP Recommended:** \$4,895,821
- **Ohio Collaborators:**
The Ohio State University, Columbus State Community College, MAGNET, Lockheed Martin, Det Norske Veritas, GE Aviation, Honda North America, Alcoa, Eaton Corp., RTI, Navistar, Materion, ASM International, Powdermet Inc., MesoCoat Inc., Innovative Weld Solutions Ltd., Luvata Ohio, Inc., AEM, Real Weld Systems, Inc., Fabrisonic
- **Job Commitment:** 500 jobs



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American Lightweight Materials Manufacturing Innovation Institute (ALMMII)

Purpose of the Center

ALMMII will serve metal production, forming, joining, casting, and manufacturing sectors across the nation for the purpose of accelerating production processes for lightweight alloys in the automotive, aerospace, defense, energy, and heavy manufacturing industries.

EWI, with IRDCP funding, will create a state-of-art manufacturing cell for materials forming and joining with emphasis on lightweight alloys

- Characterization of material properties and formability
- Development of new forming/joining technologies for emerging materials
- Product development – die try-outs, prototyping, and pre-production runs

American Lightweight Materials Manufacturing Innovation Institute (ALMMII)

Commitment Recommendation

IRDCP award to EWI of **\$4,895,821** conditioned on:

- \$70M US DOD grant (a minimum of \$32.5M of which must remain in Ohio, 15% of which equates to the IRDCP grant amount)
- Generate impacts of:
 - Creation of 500 new, full-time Ohio jobs across the consortium during the project period



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Technology Validation and Startup Fund



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Technology Validation & Start-up Fund Program

Purpose

- Support Ohio institutions of higher education and other Ohio not-for-profit research institutions in doing a better job at licensing and monetizing their technological discoveries.
- Create economic growth in Ohio based on start-up companies that license and commercialize technologies developed by Ohio institutions of higher education, other Ohio not-for-profit research institutions and federal labs located in Ohio.



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Technology Validation & Start-up Fund Program

- **Lead Applicants/Phases:**

Phase 1 – Technologies developed at Ohio research institutions needing additional validation/proof before an Ohio start-up company will license. Up to \$50,000 w/ 1:1 cash cost share.

Phase 2 – Ohio start-ups and young companies that are a prospective licensee of a technology from an Ohio institution. Up to \$100,000 as initial capitalization w/ no cost share.

- **External Evaluator:** YourEncore



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Technology Validation & Start-up Fund Program

- 6th Cycle of the TVSF program. To date, including this cycle:
 - Phase 1 proposals - 121 Phase 1 awards - 49
 - Phase 2 proposals - 88 Phase 2 awards - 35
- Staff and Evaluators continued mandatory TVSF debriefs for proposals not recommended in Cycle 5
 - 46 proposals w/ 21 awarded
 - Of the remaining 25 proposals - 24 debriefed
- Current cycle
 - 36 proposals w/ 14 recommended for award
 - 11 proposals are re-submits, of which 6 are recommended



Innovative Results through Proven Expertise

Technology Validation and Start Up Fund- Round 6

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Overview

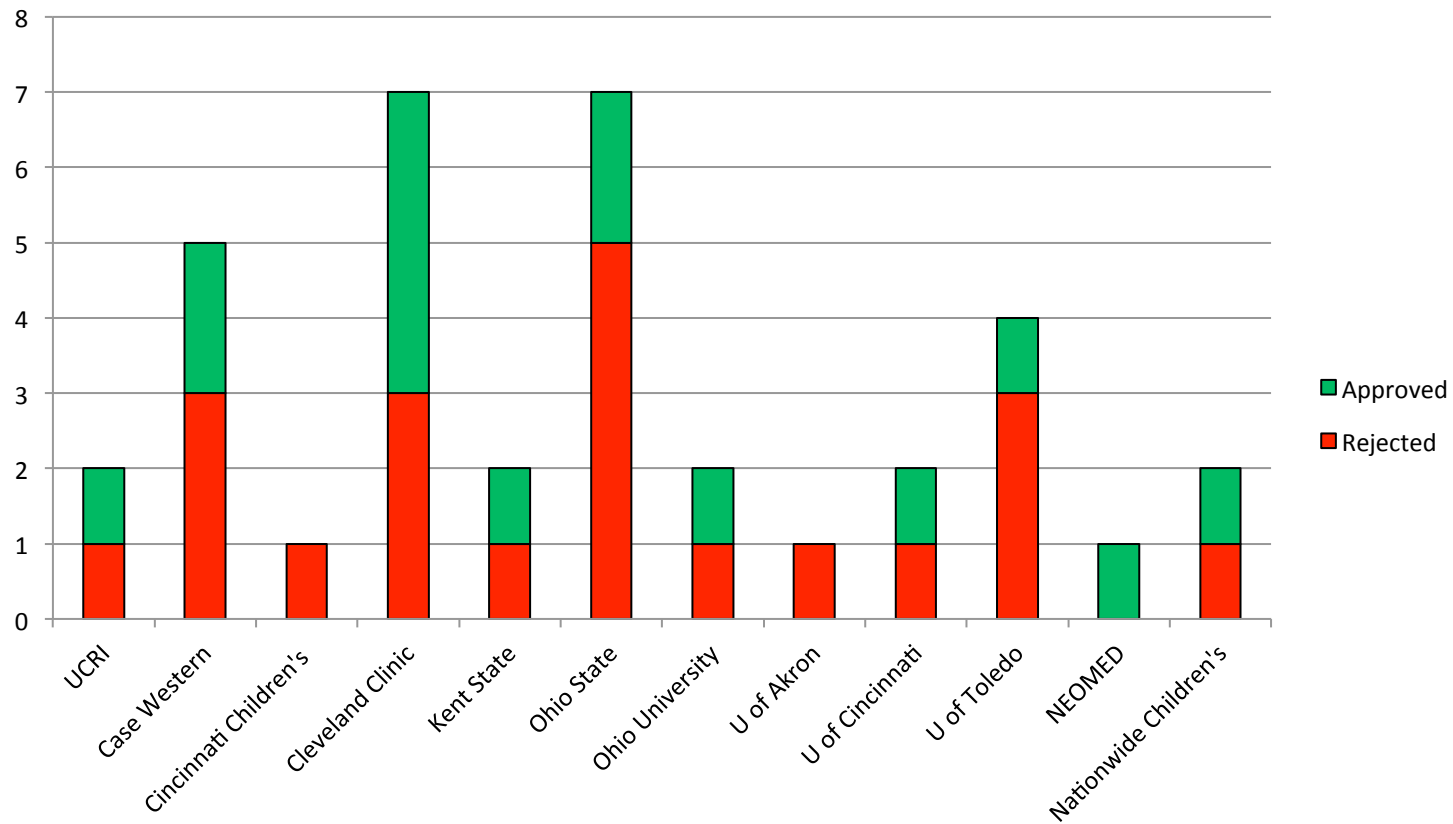
- 39% of grants submitted this round recommended for approval (14 of 36). Total grant dollars recommended is \$998,000.

Round	Approval Rate	\$\$ Recommended
1	35%	\$950,000
2	52%	\$900,000
3	44%	\$610,000
4	30%	\$864,000
5	46%	\$1,462,000
6	39%	\$998,000

- Proposal quality varied broadly.
 - *Overall, submissions this round were less convincing than last round.*
- Continue to encourage potential resubmissions to take advantage of the opportunity to debrief.
 - *It was evident that many benefited from the discussion.*
 - *Resubmission success rate was 55%.*

Overview

■ Round 6 Results: Applications by Institution



Trends

■ Phase 1

- *Strong with Market Opportunity, Budget/ Use of Funds, and Ohio Start Up Potential*
- *Primary opportunities for improvements were in Path to Market, Proof Generation, and 3rd Party Review*
 - Lack of meaningful and/or measureable proof end points
 - Path to Market obstructed by competitive pressures and regulatory hurdles
 - Lack of Independent Validation

■ Phase 2

- *Strong with plan timeline, company backing, IP, budget, Ohio start up and licensing of technology.*
- *Primary opportunities for improvement are Business Model, Proof Generation and Likelihood of Additional Funds.*
 - Business Models lacked financial robustness and market focus.
 - Proof points were not identified or insufficient to attract additional capital
 - Follow on funding was either not identified/ committed or Proof point deficiencies made raising funds unlikely.

Resubmission and Carry Through

Round 6

■ Resubmission

— Phase 1

- 6 of 15 (40%) Phase 1 proposals are resubmissions
- 5 of those 6 (83%) are Recommended for Funding

— Phase 2

- 6 of 21 (29%) Phase 2 proposals are resubmissions
 - 1 previously unsuccessful as Phase 1, 5 Phase 2
- 2 of those 6 (33%) are Recommended for Funding

■ Carry Through

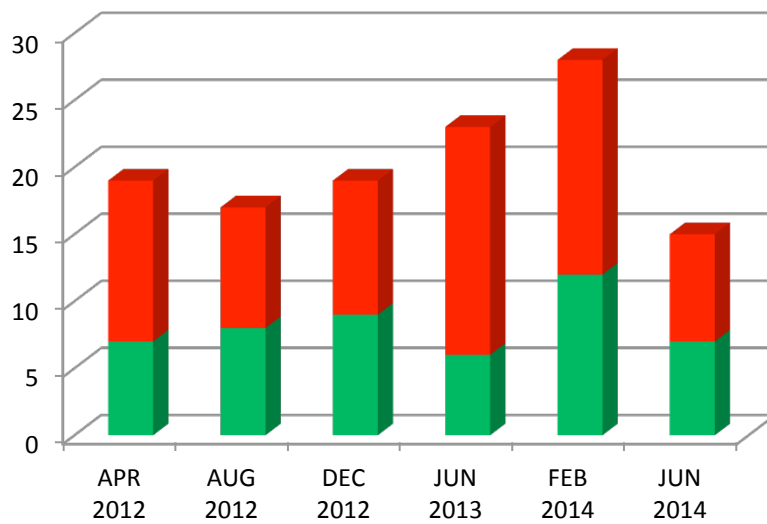
- 2 of 21 (9.5%) Phase 2 proposals were previous Phase 1 awardees
 - 1 of those 2 (50%) is Recommended for Funding in this round.

Trends

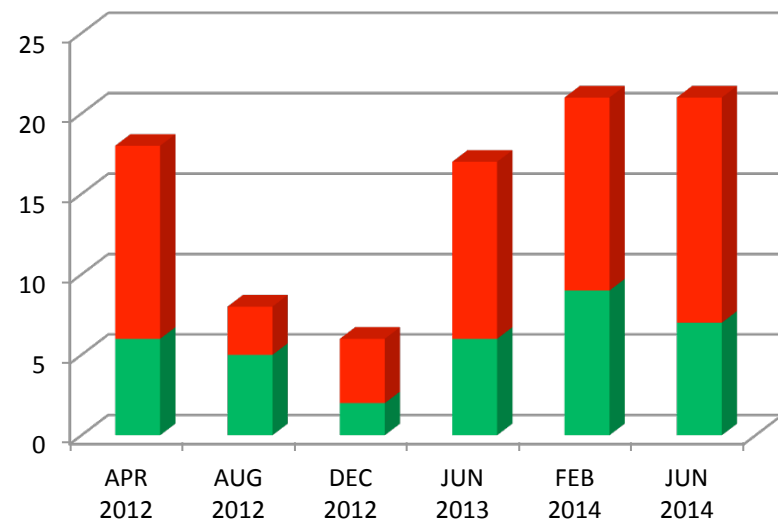
Comparative Results (all rounds to date)

Rounds 1 – 6 Results

Phase 1 Applications



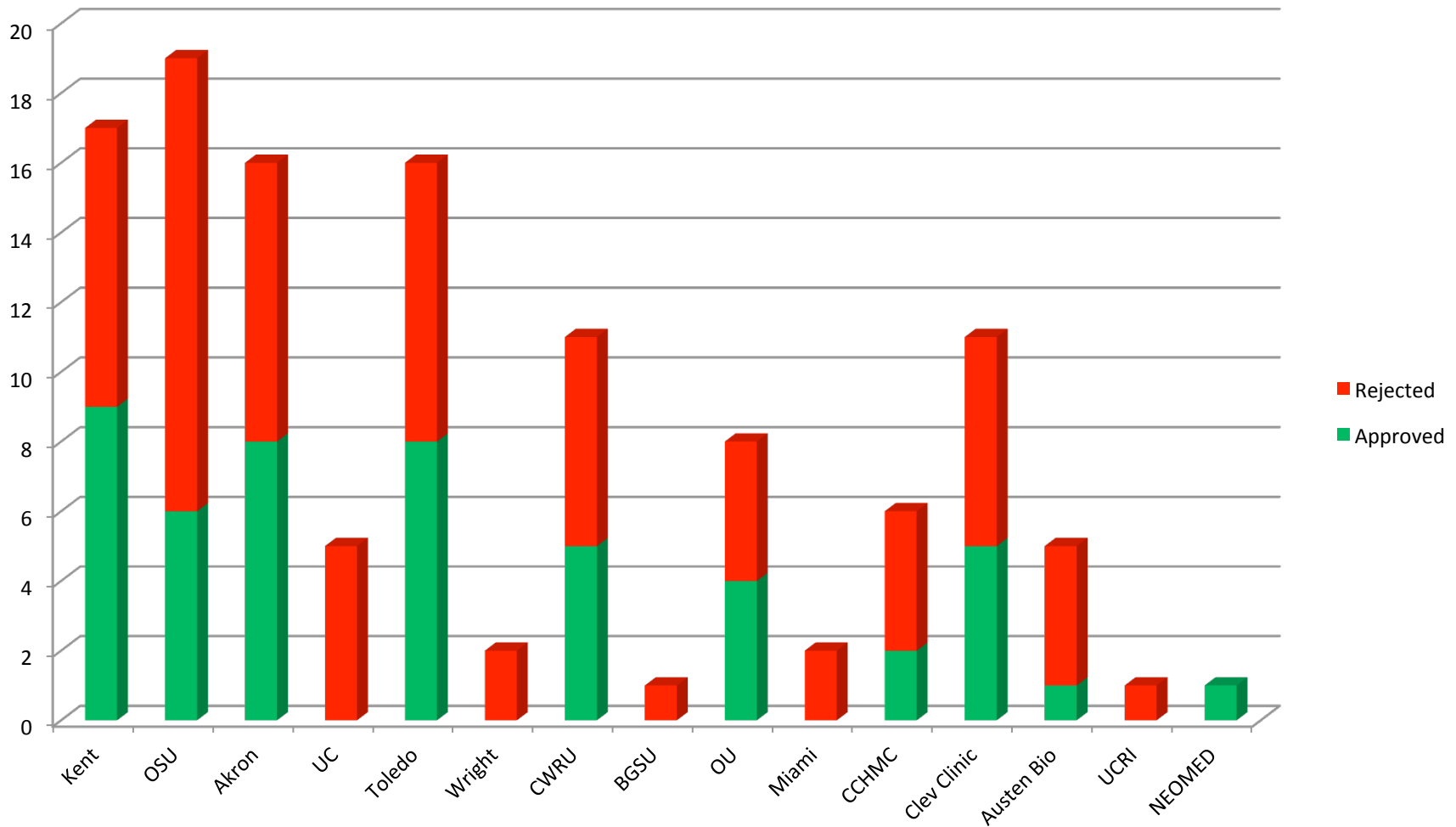
Phase 2 Applications



Trends

Cumulative Results – Phase 1 (all rounds to date)

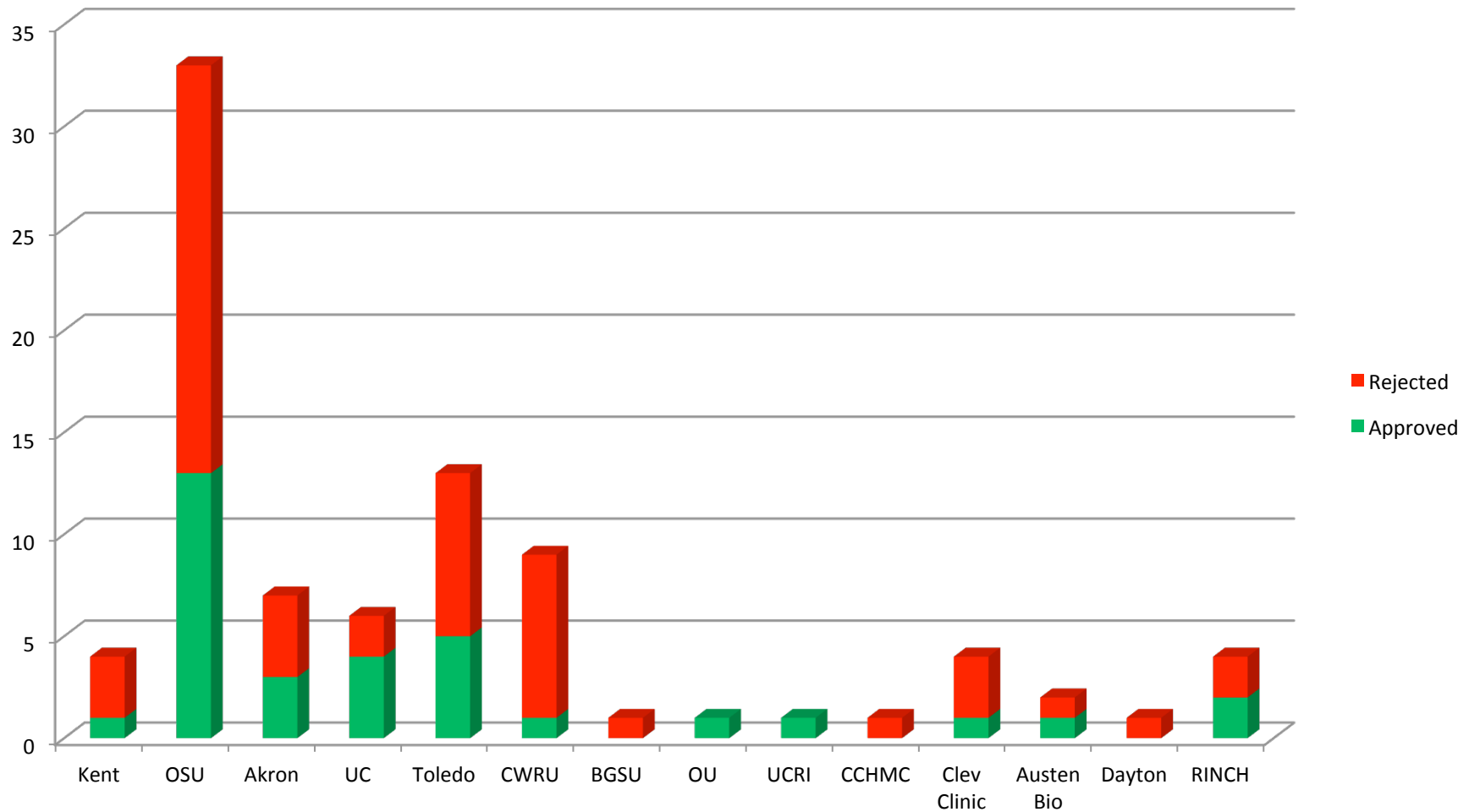
Phase 1 Approved/Rejected by Institution



Trends

Cumulative Results – Phase 2 (all rounds to date)

Phase 2 Approved/Rejected by Institution



Phase I

Summary of Recommendations

PROPOSAL #	Lead Applicant	PROJECT TITLE	Generation of Proof to be Licensed	Project Plan / Team (1 Year)	Independent 3rd Party Review	Reasonable Path to Mkt	IP Protection	Start-up in Ohio	Market Opportunity / Size	Budget Narrative / Use of Funds
14-401	The University of Toledo	Flow-induced electromagnetic anti-fouling technology (FI-EMAF Technology)								
14-402	Case Western Reserve University	Software Suite for Diagnostic Imaging of the Retina by Two-Photon Fluorescence Microscopy								
14-405	Ohio University	Development of a New Versatile LC/MS Interface via Non-Destructive Mass Spectrometric Sensing								
14-407	Case Western Reserve University	Replacing Endoscopic Imaging with Non-Invasive Office Based Screening Test for Barrett's Esophagus								
14-412	The Cleveland Clinic Foundation	Coronary Chronic Total Occlusion Guidewire Family to Treat Coronary Artery Disease								
14-414	Northeast Ohio Medical University (NEOMED)	The Role of Osteoactivin in Bone Regeneration								
14-415	The Cleveland Clinic Foundation	Complex Arrhythmia EP Mapping Catheter								

Phase I

Summary of Recommendations

PROPOSAL #	Lead Applicant	PROJECT TITLE	Generation of Proof to be Licensed	Project Plan / Team (1 Year)	Independent 3rd Party Review	Reasonable Path to Mkt	IP Protection	Start-up in Ohio	Market Opportunity / Size	Budget Narrative / Use of Funds
14-403	Cincinnati Children's Hospital Medical Center	Development of a Novel Electronic Adherence Monitoring Device								
14-404	The Ohio State University	KAir Battery								
14-406	University of Cincinnati Research Institute	Vertical Sleeve Gastrectomy Stapler								
14-408	Ohio University	Intelligence for Diabetes Support System (14DSS)								
14-409	The University of Toledo	Nanoelectronic Memristor Device								
14-410	The Cleveland Clinic Foundation	Autism Spectrum Disorder								
14-411	The Cleveland Clinic Foundation	Cardioscope Direct Intracardiac Imaging in Beating Heart								
14-413	The Cleveland Clinic Foundation	Sleep Apnea								

Phase 1 Proposals Recommended for Funding

- 14-401: The University of Toledo, Flow-induced electromagnetic anti-fouling technology (FI-EMAF Technology), \$43,653
- 14-402: Case Western Reserve University, Software Suite for Diagnostic Imaging of the Retina by Two-Photon Florescence Microscopy, \$25,000
- 14-405: Ohio University, Development of a New Versatile LC/MS Interface via Non-Destructive Mass Spectrometric Sensing, \$50,000
- 14-407: Case Western Reserve University, Replacing Endoscopic Imaging with Non-Invasive Office Based Screening Test for Barrett's Esophagus, \$50,000
- 14-412: The Cleveland Clinic Foundation, Coronary Chronic Total Occlusion Guidewire Family to Treat Coronary Artery Disease, \$50,000
- 14-414: Northeast Ohio Medical University (NEOMED), The Role of Osteoactivin in Bone Regeneration, \$30,000
- 14-415: The Cleveland Clinic Foundation, Complex Arrhythmia EP Mapping Catheter, \$49,000

Phase II

Summary of Recommendations

PROPOSAL #	Licensing Institution	Lead Applicant	PROJECT TITLE	Proof	Project Plan (one year)	Likelihood of Additional Funds at project end	Team	Business Model	Company Backing	IP Protection	Opportunity / Mkt. Size	Budget / Use of Funds	Start-up in Ohio	License with Ohio Institution
14-416	University of Cincinnati	Sense Diagnostics, LLC	Sense Diagnostics, LLC: An Early Stage, Ohio Based, Scalable Neurotechnology Company											
14-423	The Ohio State University	TeraProbes Inc.	Non-contact Probes for High-Frequency Electronic Chip Testing											
14-424	Research Institute at Nationwide Children's Hospital	Lattice Biotech LLC	Broad Spectrum Anti-Infective Monoclonal Antibody for Chronic Infection Markets											
14-425	University of Cincinnati Research Institute	Standard Bariatrics, Inc.	Vertical Sleeve Gastrectomy Stapling Guide											
14-431	Kent State University	Flexible ITO Solutions	Commercialization of Cracked ITO Substrates for Smart Windows											
14-434	The Cleveland Clinic Foundation	Ion-Vac, Inc.	Wound Healing System											
14-436	The Ohio State University	Columbus Technology LLC	DICE											

Phase II

Summary of Recommendations

PROPOSAL #	Licensing Institution	Lead Applicant	PROJECT TITLE	Proof	Project Plan (one year)	Likelihood of Additional Funds at project end	Team	Business Model	Company Backing	IP Protection	Opportunity / Mkt. Size	Budget / Use of Funds	Start-up in Ohio	License with Ohio Institution
14-417	Case Western Reserve University	PolymerPlus LLC	Multilayered Coextrusion of Composite Filter Media for Liquid Filtration and Hydraulic Fracturing Applications											
14-418	The Ohio State University	Sight4All, Inc.	Mobile Vision Diagnostics											
14-419	The Ohio State University	Four Star Animal Health, Inc.	Advanced Adjuvant plus Nanoparticle Technology to Enable Autogenous PRRSV Swine Vaccine											
14-420	Cleveland Clinic	SportSafe LLC	Intelligent Mouthguards for Concussion Monitoring and Injury Prevention in Youth and Adult Contact Sports											
14-421	Kent State University	iRX Reminder	Interoperating Medication Container...											
14-422	University of Akron	TeleHealth Care Solutions	Virtual Physical Examination (VPE) Software											
14-426	Case Western Reserve University	Red5 Pharmaceuticals LLC	Diagnostic Kits to Predict Patient Response to Chemotherapy											

Phase II

Summary of Recommendations

PROPOSAL #	Licensing Institution	Lead Applicant	PROJECT TITLE	Proof	Project Plan (one year)	Likelihood of Additional Funds at project end	Team	Business Model	Company Backing	IP Protection	Opportunity / Mkt. Size	Budget / Use of Funds	Start-up in Ohio	License with Ohio Institution
14-427	University of Cincinnati	Xanthostat Diagnostics, Inc.	Develop Balistat II & 5 Unit Clinical Trial											
14-428	Ohio State University	QuTel, Inc.	Quantum Tunneling Electronics for Ultra-Low Power Electronics											
14-429	University of Toledo	Integrated Solar, LTD	Maximum Power Point Tracker to Interface BIPV to DC Lighting											
14-430	The Ohio State University	Rekovo, LLC	Synaptic Arts											
14-432	The University of Toledo	OsteoNovus, Inc.	Improving Bone Graft Technology											
14-433	Case Western Reserve University	Protimage Diagnostics, LLC	PTPmu Molecular Imaging Probes Identify Cancer Cells During Surgical Resection of Tumors											
14-435	Nationwide Children's Hospital Research Institute	GenomeNext	GenomeNext: Cloud Genomic Analysis solution											

Phase 2 Recommendations for Funding

- 14-416: Sense Diagnostics, LLC, An Early Stage, Ohio Based, Scalable Neurotechnology Company, \$100,000
- 14-423: TeraProbes Inc., Non-contact Probes for High-Frequency Electronic Chip Testing, \$100,000
- 14-424: Lattice Biotech LLC, Broad Spectrum Anti-Infective Monoclonal Antibody for Chronic Infection Markets, \$100,000
- 14-425: Standard Bariatrics, Inc., Vertical Sleeve Gastrectomy Stapling Guide, \$100,000
- 14-431: Flexible ITO Solutions, Commercialization of Cracked ITO Substrates for Smart Windows, \$100,000
- 14-434: Ion-Vac, Inc., Wound Healing System, \$100,000
- 14-436: Columbus Technology LLC, DICE, \$100,000



Visit our website at: www.yourencore.com

Technology Validation & Start-up Fund Program

- Strong, continuing demand from Universities and Start-ups
- Phase 2 pipeline is still developing:
 - Only 8 Phase I's are complete (4 of which are now applicants to Phase 2)
 - 8-10 more Phase I's should finish in the next 2-3 months
- Some initial success:
 - Dec 2013 Metrics: with only \$1.4M awarded, \$4M in leverage
- \$2M will fund 2 more cycles, taking us to early 2015



Third Frontier Internship Program



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Awardees:

Grantee	Region	Bridge funding Requested
Cincinnati USA Chamber	Southwest	\$300,000
Southeastern Ohio Port Authority	Southeast	\$49,500
Workforce Initiative Association	Northeast	\$300,000

* Evaluation conducted by Invantage Group



Entrepreneurial Support Program RFP



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CY 2014 Retreat Planning



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