

# ***Technology Validation and Start Up Fund***

## ***Round 29 Proposal Evaluations***

**19 July 2022**

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# TECHNOLOGY VALIDATION AND STARTUP FUND

## Table of Contents

<b><u>EXECUTIVE SUMMARY</u></b>	<b>3</b>
<b><u>EVALUATION RESULTS</u></b>	<b>3</b>
<b>TABLE 1 – PHASE 2 PROPOSAL EVALUATION AND FUNDING RECOMMENDATION</b>	<b>4</b>
<b>TABLE 2 – TVSF APPROVAL RATE BY ROUND</b>	<b>5</b>
<b><u>PROPOSAL SUMMARIES</u></b>	
<b>PHASE 2 RECOMMENDED FOR FUNDING</b>	
DNA NANOBOTS	6
MIC MONITOR LLC.	7
MYOPTech, INC.	8
NEURAL EAR	9
ULEVO HEALTH, INC.	10
VISGATE TECHNOLOGY	11
SCREEN TO ACTION, DBA OF SCREENU, LLC	12
<b><u>ROUND 29 ANALYSIS</u></b>	<b>13</b>
<b><u>RECOMMENDATIONS</u></b>	<b>17</b>
<b><u>APPENDIX 1</u></b>	<b>18</b>
<b><u>APPENDIX 2</u></b>	<b>21</b>
TVSF OBJECTIVES AND PHASES	21
DESCRIPTION OF THE REVIEW PROCESS	22

## 1) Executive Summary

Redwood is a Columbus, Ohio based LLC founded by former Battelle executives over 9 years ago. Redwood has assembled an extraordinary team for this Program. Each member of the five-person Redwood team is an accomplished technology commercialization professional with decades of experience in performing business and technical evaluations. This team, combined with identified external subject matter experts, has extensive experience in all six of the Ohio Third Frontier technology focus areas. More detail on the Redwood team is provided in Appendix 1 of this report and on our website ([www.Redwdinnnov.com](http://www.Redwdinnnov.com)). Details of the TVSF program and the review process are provided in Appendix 2.

Eight (8) TVSF Round 29 Phase 2 applications were received and initially reviewed. One application was rejected without further review because it was submitted by an ineligible applicant and is not included in the analytic results. There were no Phase 1 applications this round. All remaining 7 Phase 2 applications totaled \$850,000. Funding is recommended for all 7 Phase 2 applications for a total of \$850,000. This translates to a 100% recommended application funding rate for this TVSF round, compared to the average of 47% over all 29 TVSF rounds.

## 2) Evaluation Results

Summaries of the evaluations of the proposals and funding recommendations are shown in Table 1. Questions were submitted to applicants to answer prior to conducting video interviews. The total recommended funding for Phase 2 projects is \$850,000. Note that the Table 1 column widths are proportional to the weighting of the evaluation criteria. For example, in Table 1, Management Team which is weighted at 20 is four times as wide as ESP Interaction which is weighted at 5. Note that a yellow evaluation indicates that the proposal meets that particular criterion.

More detailed evaluations and recommendations for each Phase 2 proposal may be found in Section 3 of this report.

TECHNOLOGY VALIDATION AND STARTUP FUND

Table 1 – Phase 2 Proposal Evaluation and Funding Recommendation

TVSF Round 29 Proposal Evaluations												
Phase 2 Proposals												
Proposal Number	Lead Applicant	Requested Funding (\$1000)	Recommended Funding? (\$1000)	Team	Opportunity/Market Size	IP Protection/License	Compelling Proof of Concept	Potential Investor/Business Partner Engagement	Business Model	Project plan/Budget Narrative	Start-up in Ohio	ESP Interaction
FY22-2255	DNA Nanobots, LLC	\$150	\$150									
FY22-2256	MIC Monitor, LLC	\$100	\$100									
FY22-2257	Myoptech, Inc.	\$150	\$150									
FY22-2258	Neural Ear	\$100	\$100									
FY22-2260	Ulevo Health Inc.	\$150	\$150									
FY22-2261	VisGate Technologies, Inc.	\$100	\$100									
FY22-2262	Screen to Action	\$100	\$100									
	Total	\$850	\$850									

Evaluation Scale	Absent	Poor	Weak	Meets	Exceeds	Outstanding
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## TECHNOLOGY VALIDATION AND STARTUP FUND

Table 2 lists the funding approval rate by TVSF round. This round’s approval rate of 100% of the total reviewed proposals is a first and is an indication of the high quality of the applications received in Round 29. Prior to Round 29, the historical range of individual rounds has spanned 27 – 75%, with an average of 45%. Incorporating Round 29 into the range, the individual rounds have spanned 27-100%, with an average of 47%.

**Table 2. TVSF Approval Rate by Round**

<b>TVSF Round 29</b>					
<b>Approval Rate by Round</b>					
Round	\$ Recommended	Approval Rate	Round	\$ Recommended	Approval Rate
1 (APR 2012)	\$950,000	35%	20 (NOV 2019)	\$1,350,000	43%
2 (AUG 2012)	\$900,000	52%	21 (FEB 2020)	\$3,944,000	56%
3 (DEC 2012)	\$610,000	44%	22 ( JUN 2020)	\$1,398,630	53%
4 (JUN 2013)	\$864,000	30%	23 (DEC 2020)	\$900,000	50%
5 (FEB 2014)	\$1,462,000	46%	24 (MAR 2021)	\$2,092,900	55%
6 (JUN 2014)	\$998,000	39%	25 (JUN 2021)	\$800,000	75%
7 (OCT 2014)	\$1,100,000	57%	26 (OCT 2021)	\$1,700,000	55%
8 (FEB 2015)	\$710,000	37%	27 (FEB 2022)	\$850,000	43%
9 (JUN 2015)	\$550,000	31%	28 (APR 2022)	\$2,499,976	64%
10 (DEC 2015)	\$925,000	38%	29 (JULY 2022)	\$850,000	100%
11 (APR 2016)	\$1,239,000	46%	<b>Overall</b>	<b>\$42,145,707</b>	
12 (OCT 2016)	\$3,537,269	46%	<b>Average</b>	<b>1,453,300</b>	<b>47%</b>
13 (MAR2017)	\$1,567,500	38%			
14 (SEP 2017)	\$498,832	27%			
15 (DEC 2017)	\$2,250,000	38%			
16 (MAR 2018)	\$2,098,600	52%			
17 (SEP 2018)	\$2,100,000	42%			
18 (DEC 2018)	\$1,150,000	35%			
19 (APR 2019)	\$2,250,000	43%			

### 3) Proposal Summaries

#### Proposal Summaries - Phase 2 Recommended for Funding

<b>Proposal 22-2255</b>	<b>DNA Nanobots</b>	Amount Requested: \$ 150,000
<i>Licensing Institution</i>	Ohio State University	Amount Recommended: \$150,000
Prior Phase 1 Applications: Yes	Prior Phase 2 Applications: No	<b>DNA Nanobots</b>

**Company Snapshot: DNA Nanobots is developing rapid, sensitive, and scalable molecular diagnostic tests using DNA origami, a technology capable of generating nucleic acid detection results in less than 30 minutes.**

Rating (R/Y/G)	Category	Highlights/Issues/Comments
G	Management Team	Strong technical and business team. CEO has business and technical background, as well as successfully leading technical manufacturing, sales and fundraising for prior startups.
Y	Opportunity and Market Size	Total available market estimated to be \$25B, with Covid-19 molecular diagnostics estimated at \$48.9B. Addressable market likely at least \$250M.
Y	Intellectual Property Protection/ License	Negotiating an option to license OSU pending application for diagnostics. Expected to have non-exclusive access to relevant background IP in DNA Origami from OSU.
Y	Compelling Proof of Concept	Planning to have viral and bacterial nucleic acid tests ready for regulatory clearance studies by end of TVSF funding. Local contract lab will conduct the work with DNA Nanobot biosensor designs.
Y	Potential Investor/ Business Partner Engagement	Currently in early discussions with local investors who have expressed interest in supporting company.
Y	Business Model	Propose a two-pronged approach to sell directly to diagnostics labs while developing test kits for future FDA approval.
Y	Project Plan/ budget narrative	InfinixBio (main contractor) is capable and has good track record.
Y	Start-up in Ohio	The company will be based in Central Ohio.
Y	ESP Interaction	Support from Rev1 and other local business development resources.
	<b>Evaluator Recommendation</b>	This application is recommended for funding.

<b>Evaluation Scale</b>	<b>Absent</b>	<b>Poor</b>	<b>Weak</b>	<b>Meets</b>	<b>Exceeds</b>	<b>Outstanding</b>
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**Comments and Recommendations:** The management team, CEO in particular, have a clear vision for the development of the technology (business model), which was clearly articulated in their interview. Forecasts seem optimistic but are achievable if the technology can be successful in real-world application as it is in early laboratory tests. They will also have to navigate the highly competitive molecular diagnostics market. Management and technical teams have chosen a cadre of very strong advisors and contractors. The technology itself holds the promise of shelf-stable, rapid, easy-to-use nucleic acid detection. This application is recommended for funding.

TECHNOLOGY VALIDATION AND STARTUP FUND

<b>Proposal 22-2256</b>	<b>MIC Monitor LLC</b>	Amount Requested: \$100,000
<i>Licensing Institution</i>	University of Akron Research Foundation	Amount Recommended: \$100,000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	<b><i>Corrolytics Test Kit for Detecting and Monitoring MIC</i></b>

**Company Snapshot: The company will sell electrochemical test kits that can differentiate when microbial growth is leading to corrosion for corrosion engineers and asset integrity managers to help them avoid leaks and spills, leading to fines and stricter regulations.**

Rating (R/Y/G)	Category	Highlights/Issues/Comments
Y	Management Team	The Team is very strong in science, engineering, microbiology and other technical areas. A business development staff is on board, as a consultant. Some financial/ fundraising experience.
G	Opportunity and Market Size	Globally, microbiologically influenced corrosion (MIC) monitoring and mitigation is \$9 Billion per year. Microbial corrosion is seen in the upstream and midstream part of oil and gas industry.
Y	Intellectual Property Protection/ License	US Patent application has been filed and published. Developing proprietary algorithms.
Y	Compelling Proof of Concept	Proposal states that lab testing with several bio-organisms of interest in the oil and gas industry show an acceptable accuracy in "clean systems".
Y	Potential Investor/ Business Partner Engagement	I-Corps training with over 300 customer contacts/ interactions to get feedback and inputs to the work.
Y	Business Model	Initial revenue model of direct sales to Asset Integrity Managers and Corrosion Engineers. Model validated through I-Corp interviews.
Y	Project Plan/ budget narrative	Prototype test kit produced, software developed and kits tested.
Y	Start-up in Ohio	Plan to have a presence in Northeast Ohio.
Y	ESP Interaction	Working with Akron Incubation center and other resources available
	<b>Evaluator Recommendation</b>	This application is recommended for funding.

<b>Evaluation Scale</b>	<b>Absent</b>	<b>Poor</b>	<b>Weak</b>	<b>Meets</b>	<b>Exceeds</b>	<b>Outstanding</b>
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**Comments and Recommendations:** A very strong technical team with needed financial/ fund raising experience and record to execute the business plan. The team is urged to proactively seek the needed \$ 1.5 M-targeted from SBIR- from other contacts and engagements that they have developed, as a backup. Further, expand the Team to include sales/ marketing/ manufacturing to exploit the full potential of the offering.

TECHNOLOGY VALIDATION AND STARTUP FUND

<b>Proposal 22-2257</b>	<b>Myoptech, Inc.</b>	Amount Requested: \$150,000
<i>Licensing Institution</i>	Ohio State University	Amount Recommended: \$150,000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: 28	<b><i>Novel Myopia Control</i></b>

**Company Snapshot: Myoptech will develop a novel contact lens to slow or halt myopia progression. The optical design is expected to result in superior clinical outcomes compared to the lens on the market. The target market for this technology will be patients with myopia who are candidates for contact lenses.**

Rating (R/Y/G)	Category	Highlights/Issues/Comments
G	Management Team	Extremely strong, experienced team in ophthalmology, specifically in novel contact lens technologies. The team has previously raised >\$15M in the eye care life sciences. Time commitments appropriate.
G	Opportunity and Market Size	Applicant states the annual addressable market for myopia control in the U.S. is \$1.6B and \$5B+ globally.
Y	Intellectual Property Protection/ License	Option to OSU PCT application that discloses a novel method to perform myopia control with a contact lens, includes multiple potential versions of the unique design.
Y	Compelling Proof of Concept	Proof of concept to be achieved under TVSF funding will include bench testing of fabricated lenses. Clinical testing would begin after completion of the TVSF-funded project.
G	Potential Investor/ Business Partner Engagement	Early discussions with interested investors with whom they have worked before.
Y	Business Model	Business model is to manufacture, sell and distribute a branded myopia control contact lens.
G	Project Plan/ budget narrative	Plan is well-developed and vendors have been identified.
Y	Start-up in Ohio	Registered with the Ohio Secretary of State.
G	ESP Interaction	Established relationship with ESP and ESP-connected investors.
G	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Absent	Poor	Weak	Meets	Exceeds	Outstanding
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**Comments and Recommendations:** Myoptech has an extremely strong, experienced team with specific experience and a successful track record in eye healthcare. Project plans and market approach are clear. The ultimate test of the technology will be effectiveness in clinical studies to follow. Leadership has demonstrated prior success raising funds for novel contact lens technologies and they are familiar with potential investors and strategic partners. This proposal is recommended for funding.



TECHNOLOGY VALIDATION AND STARTUP FUND

<b>Proposal 22-2258</b>	<b>Neural Ear</b>	Amount Requested: \$ 100,000
<i>Licensing Institution</i>	Ohio State University	Amount Recommended: \$100,000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: 27,28	<b>Neural Ear</b>

**Company Snapshot: Neural Ear will create an iPhone and Android app that will improve performance of hearing aids and hearables (ear buds and the like) by filtering out background sounds in noisy environments (“the cocktail party problem”), thereby helping the wearer to increase speech comprehension. The app will use methods, machine learning and algorithms developed at OSU, patented and patent pending, as well as deep neural networks to be held as trade secret. If successful, then licensing opportunities are likely with strategic partners who manufacture high-end hearing aids.**

Rating (R/Y/G)	Category	Highlights/Issues/Comments
Y	Management Team	Critical roles are all represented on the team, including technical, healthcare business, software expertise and audiology. Key software resource is committed, as evidenced by his continuing work on the project.
G	Opportunity and Market Size	Total Addressable Market (TAM) is hearing aid and hearable owners with live listening mobile application capabilities. Obtainable market value estimate is \$537 million.
Y	Intellectual Property Protection/ License	Option to license OSU issued US Patent and pending applications. Algorithms may be trade secret. Code to be encrypted. Infringement may be difficult or expensive to detect.
G	Compelling Proof of Concept	Future CTO scaled down deep neural network machine learning algorithm into a sample mobile application. Plan is to distribute app and demonstrate noise reduction and customer satisfaction.
Y	Potential Investor/ Business Partner Engagement	Discussions with 3 Ohio-based investors plus firms out of state for additional fundraising. Long-term plan is to partner with a strategic.
Y	Business Model	Business plans are focused and clearly presented. Product development, testing and launch of phone app are reasonable.
Y	Project Plan/ budget narrative	Goal is to release a quality mobile application product within a year.
Y	Start-up in Ohio	Plan forecasts 46 employees plus uses other Ohio-based resources.
Y	ESP Interaction	Regional ESP engagement is preliminary.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Absent	Poor	Weak	Meets	Exceeds	Outstanding
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**Comments and Recommendations:** The strategy (business model) is clearly presented and logical. Forecasts are optimistic but achievable. The leadership team is new to running a startup and would benefit from coaching and advice. We recommend that the leadership consult with Rev1 advisors and seek advice as business challenges arise. This application is recommended for funding.

TECHNOLOGY VALIDATION AND STARTUP FUND

<b>Proposal 22-2260</b>	<b>Ulevo Health, Inc.</b>	Amount Requested: \$150,000
<i>Licensing Institution</i>	University of Miami	Amount Recommended: \$150,000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	<b>Ulevo Health</b>

**Company Snapshot: Ulevo Health is commercializing a lightweight, personalized device, worn on the ankle or above the knee, to automatically detect and reduce muscle spasms with vibration for patients with neurological disease, brain, or spinal cord injuries, allowing for an improved quality of life without side effects.**

Rating (R/Y/G)	Category	Highlights/Issues/Comments
G	Management Team	Strong team with technical and business experience in the medical device market area. The management's experience in seed, start-up and early-stage healthcare company fundraising experience is extensive.
Y	Opportunity and Market Size	Global Muscle Spasm Market segment identified. Spasm relief and prevention from those suffering from neurological disease, spinal cord injury, paralysis and other injuries exceeded \$4B in 2021.
G	Intellectual Property Protection/ License	Exclusive license of PCT application filed in 2019. International searching authority indicate all claims were novel and non-obvious.
Y	Compelling Proof of Concept	MVP completed, tested in two different groups of subjects, 2 and 25 cohorts. This was completed prior to licensing technology in March 2022. Feedback being used to develop second consumer model.
Y	Potential Investor/ Business Partner Engagement	Ulevo plans to rely on partner, Ikove Ventures to obtain outside funding. Extensive network of potential investors available to Ikove.
Y	Business Model	Plan to sell 2 personalized spasm detection and prevention devices- one through medical distributors; second a consumer-direct product
G	Project Plan/ budget narrative	Second generation product will be completed with TVSF funds.
Y	Start-up in Ohio	Ulevo to leverage medical device infrastructure in Columbus.
G	ESP Interaction	Dayton ESP is intimately involved with Ulevo.
	<b>Evaluator Recommendation</b>	This application is recommended for funding.

<b>Evaluation Scale</b>	<b>Absent</b>	<b>Poor</b>	<b>Weak</b>	<b>Meets</b>	<b>Exceeds</b>	<b>Outstanding</b>
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**Comments and Recommendations:** Strong team with technical, medical, business and fundraising experience in the medical device market area. Working with ESP in Dayton. Data collected from 2 subject groups with encouraging results. TVSF funds would be used to build and validate a second-generation consumer model to perform tests on multiple subjects within The Miami Project to Cure Paralysis program.

TECHNOLOGY VALIDATION AND STARTUP FUND

<b>Proposal 22-2261</b>	<b>VisGate Technology</b>	Amount Requested: \$100,000
<i>Licensing Institution</i>	Ohio State University	Amount Recommended: \$100,000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	<b>3 Step Control system for WBG devices</b>

**Company Snapshot: VisGate is commercializing a technology that offers a three-step short circuit protection of Wide Band Gap (WBG) devices. This technology limits power loss of the device and addresses current limitations in overcurrent and short circuit protection.**

Rating (R/Y/G)	Category	Highlights/Issues/Comments
Y	Management Team	Team is well balanced at this early stage with CEO having experience, track record in funding and growing startups. Aided by a credible technical staff
G	Opportunity and Market Size	Potentially a very large market (>\$2B/ yr.) in emerging WBG devices for EV and other applications.
Y	Intellectual Property Protection/ License	A utility patent has been filed and response to office action due on May 18, 2022. Negotiating with OSU for exclusive license.
Y	Compelling Proof of Concept	The team has been working in this area for over 10 years and have demonstrated the efficacy of their 3-step control scheme to a TRL 6 in lab testing.
Y	Potential Investor/ Business Partner Engagement	VisGate is part of the Ilove Startup Nursery. Ilove provides services such as fundraising to help VisGate raise \$ 2M in years 2/3.
Y	Business Model	Seems reasonable, major focus is developing fast charging technology for EVs.
Y	Project Plan/ budget narrative	Design,build pilot device,testing complete for H-Bridge Circuit module
G	Start-up in Ohio	Committed to growing business in OH
Y	ESP Interaction	Yes, working with Dayton Entrepreneurial Center.
	<b>Evaluator Recommendation</b>	This application is recommended for funding

Evaluation Scale	Absent	Poor	Weak	Meets	Exceeds	Outstanding
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**Comments and Recommendations:** A strong technical team and prior experience in fund raising and deep connections to potential partners/ funding sources through Ilove. The technology has broad application potential in the emerging multibillion dollar/ year Fast Charging EV market. The Team is urged to critically review the IP position -appears to be just US coverage-and its impact, as the market is global and mostly in China and Europe. Need to add financial staff to refine and update business model and financial pro forma.

TECHNOLOGY VALIDATION AND STARTUP FUND

<b>Proposal 22-2262</b>	<b>ScreenU, LLC (dba Screen To Action)</b>	Amount Requested: \$100,000
<i>Licensing Institution</i>	Ohio State University	Amount Recommended: \$100,000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	<b>Screen To Action, Motivational Wellness SBIRT Platform</b>

**Company Snapshot: Screen To Action (S2A) is a web-based software platform used to screen campus student populations and the needs of their student life, health, and wellness programs to better educate students about substance misuse (alcohol, marijuana and prescription drugs) and its effects, how to identify situations and make behavior changes.**

Rating (R/Y/G)	Category	Highlights/Issues/Comments
G	Management Team	Management team has excellent blend of technical, sales, S/U fund raising and general business management experience focused in the Health Care/Wellness Industries including the use of on-line web-based products.
Y	Opportunity and Market Size	Multiple Markets & Applications: University & High School (substance abuse), Corporate (health & wellness), Home Caregivers, Prevention Treatment. TAM > \$75 MM. Appear to be large up-sale potential.
Y	Intellectual Property Protection/ License	No patent IP. Code is copyright protected and not disclosed. Market leadership position and reputation is considered substantial barrier to competition. License will be obtained from OSU.
G	Compelling Proof of Concept	Proposal states that the software deployed to > 75 colleges. Current product considered MVP @ TRL 8 for the college market and TRL 6 target product. User feedback requested specific enhancements.
G	Potential Investor/ Business Partner Engagement	Discussions with potential investors. Apportis, a local company that provides software-based wellness solutions, is a strategic partner.
Y	Business Model	Enterprise sales of license + custom services & analytics. Revenue (Year 5) \$10.5 MM with NM @ \$9.5 MM and GM @ \$3.7 MM.
G	Project Plan/ budget narrative	Detailed budget breakdown. Identified vendors/suppliers/consultants.
G	Start-up in Ohio	Provide >50 high paying jobs from local sources.
G	ESP Interaction	Discussion with Rev1. CEO partook Rev1 Customer Learning Lab.
<b>Evaluator Recommendation</b>		This application is recommended for funding.

<b>Evaluation Scale</b>	<b>Absent</b>	<b>Poor</b>	<b>Weak</b>	<b>Meets</b>	<b>Exceeds</b>	<b>Outstanding</b>
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**Comments and Recommendations:** Strong, versatile, and motivated management team that is well suited to execute business plan. Socially beneficial business with multiple identified SBIRT applications to address wellness/health issues. Successful prototype in one application (University Substance Abuse) provides good framework for other applications (High School, Corporate, Elder Home Care). Feedback from possible users

included the business plan. No patent IP on software. Organization know-how and reputation from initial deployment of SBIRT software provides significant competitive barrier.

#### 4) Round 29 Analysis

Figure 1 shows the proposal activity and funding recommendations by technology source for Phase 2 proposals. OSU was the most active with five submissions followed by one submission from the University of Akron and the University of Miami. All seven applications are recommended for funding.

Figure 1. Round 29 Funding by Technology Source

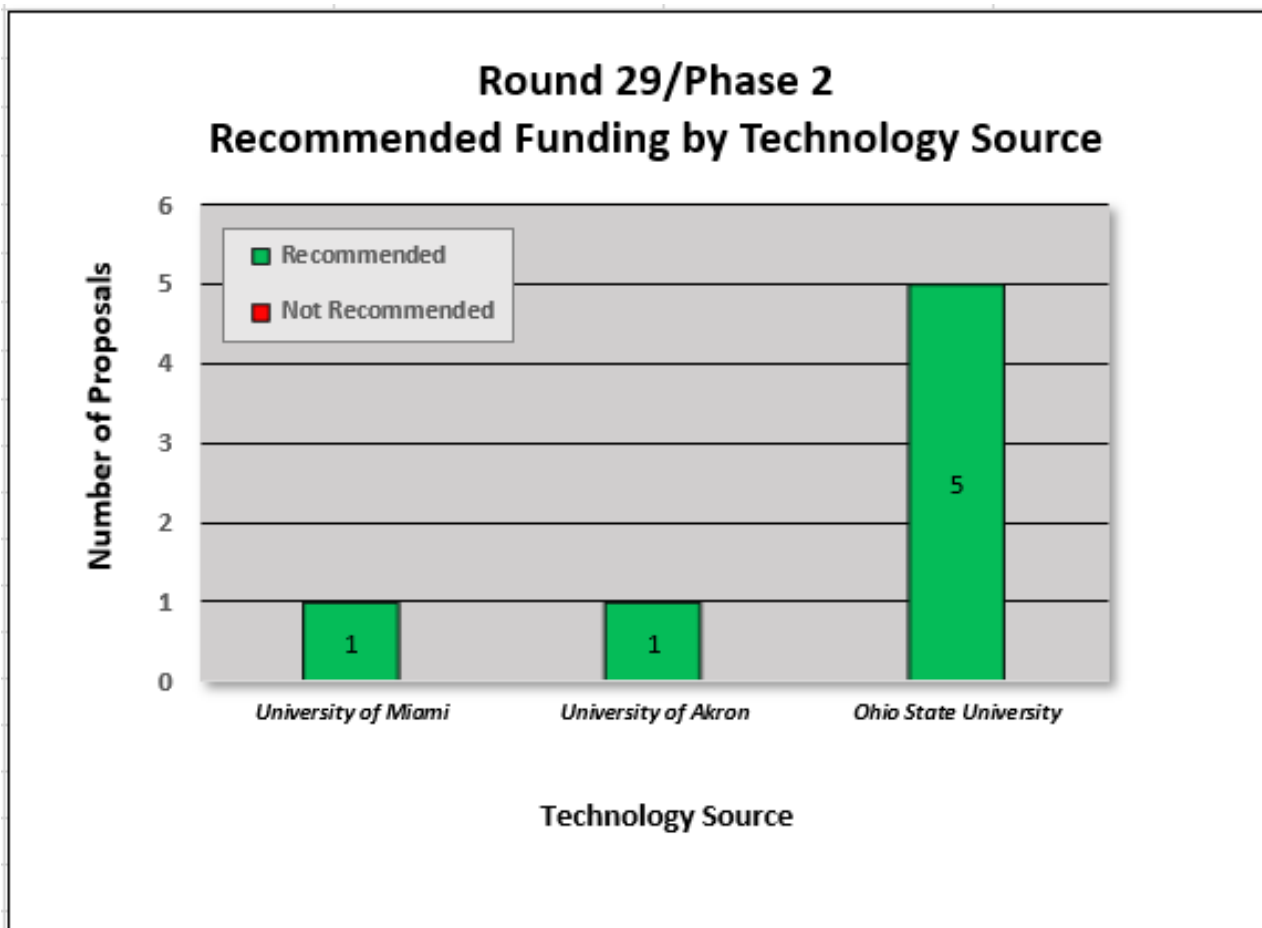
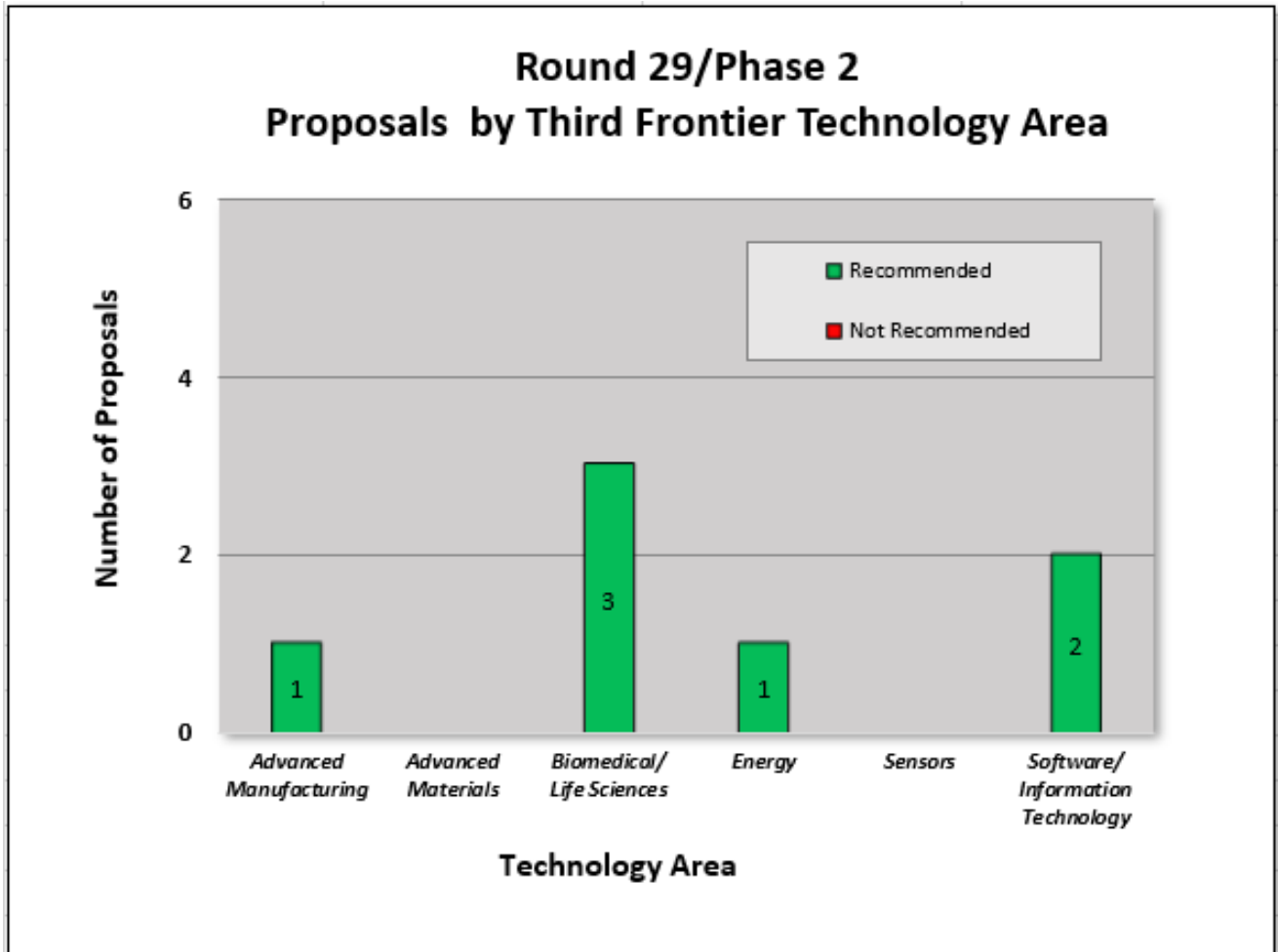


Figure 2 depicts Phase 2 proposal activity and funding recommendations by Third Frontier focus area. In Round 29, three of the seven proposals (43%) are in Biomedical/Life Sciences, two of the seven in Software/Information Technology (29%) and one each in Energy (14%) and Advanced Manufacturing (14%). All seven applications are recommended for funding.

**Figure 2. Round 29 Phase 2 Proposal Activity by Third Frontier Technology Area**



## TECHNOLOGY VALIDATION AND STARTUP FUND

Figure 3 shows the aggregate ratings by evaluation criteria for all Phase 2 proposals. Management team and market opportunity were the strongest categories in Round 29. While business model was rated as the weakest, followed by intellectual property, all criteria in all proposals in Round 29 met or exceeded the criteria minimum for funding.

**Figure 3. Round 29 Phase 2 Proposal Rating Summary**

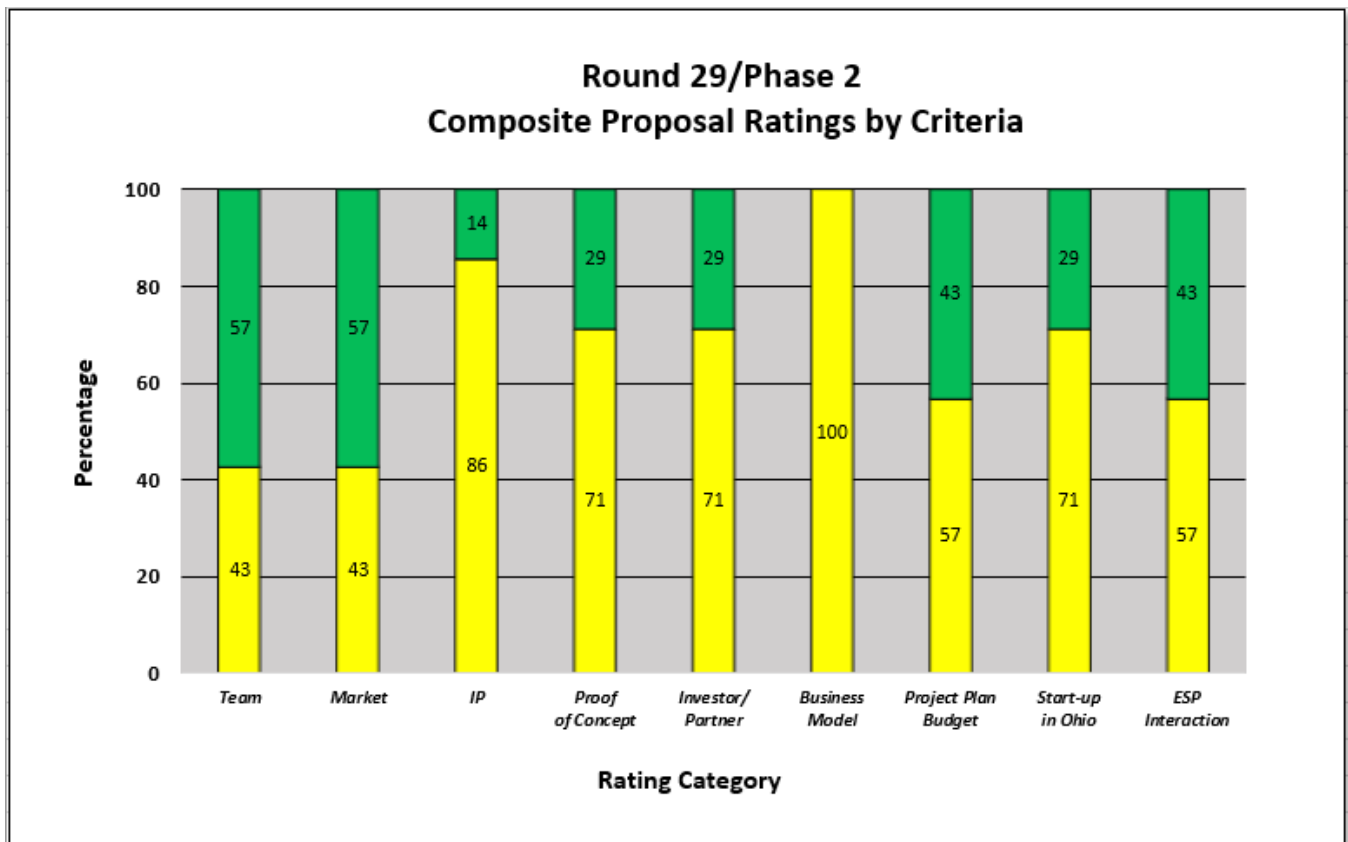


Figure 4 shows the percent meets or exceeds of the business model by Round. In the previous nine Rounds, business model was the lowest rating in Rounds 20-23 (53% average  $\geq$  meets) and Round 26 (28%). The RFP was revised to elicit stronger business models prior to Round 24 and it appears that the proposals have provided stronger business models in subsequent Rounds. The last 6 rounds average 69% average  $\geq$  meets, even with the Round 26 (28%). This was the first time that the Business Model met the criteria for all proposals. The average over all 10 rounds is 63%.

Figure 4: Rounds 20 to 29 Phase 2 Analysis of Business Model

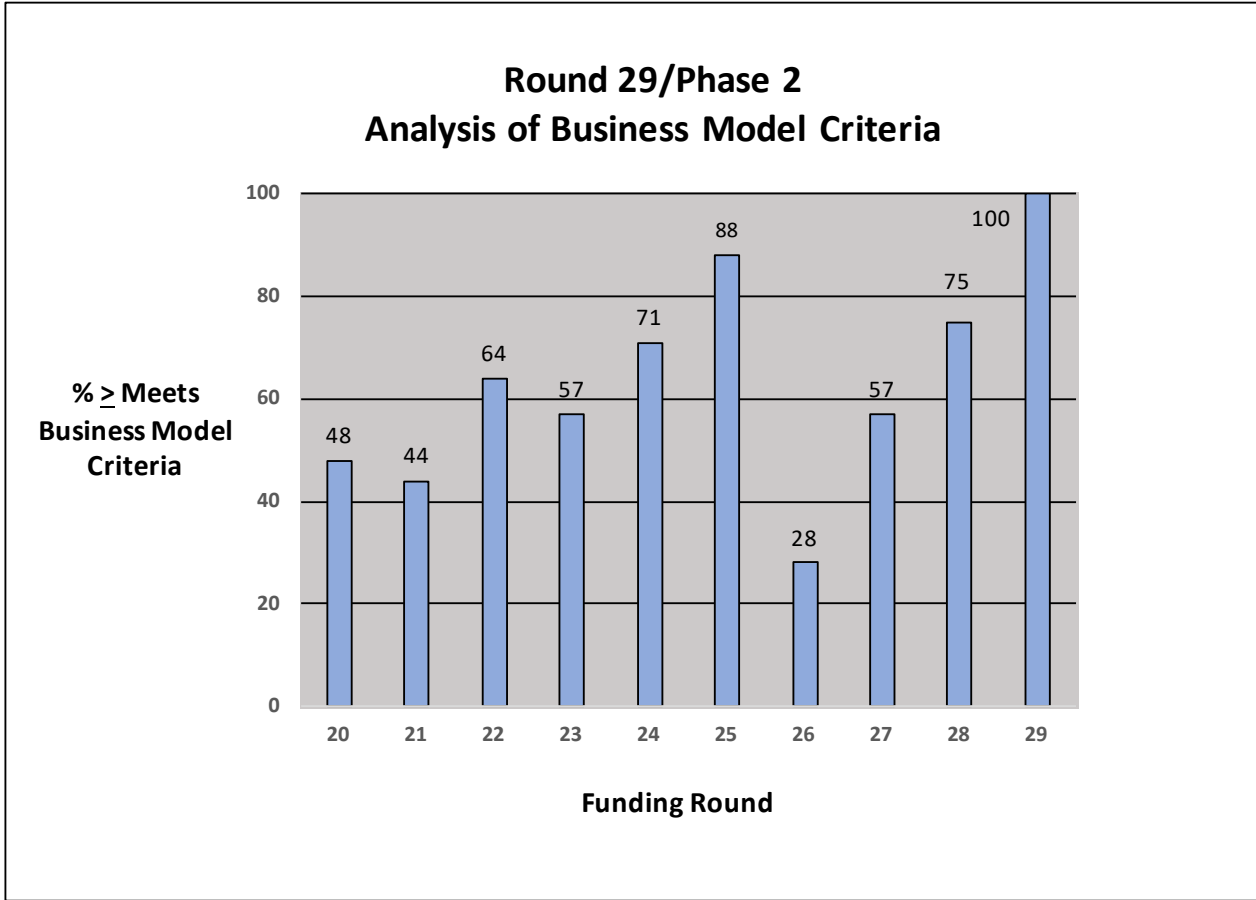
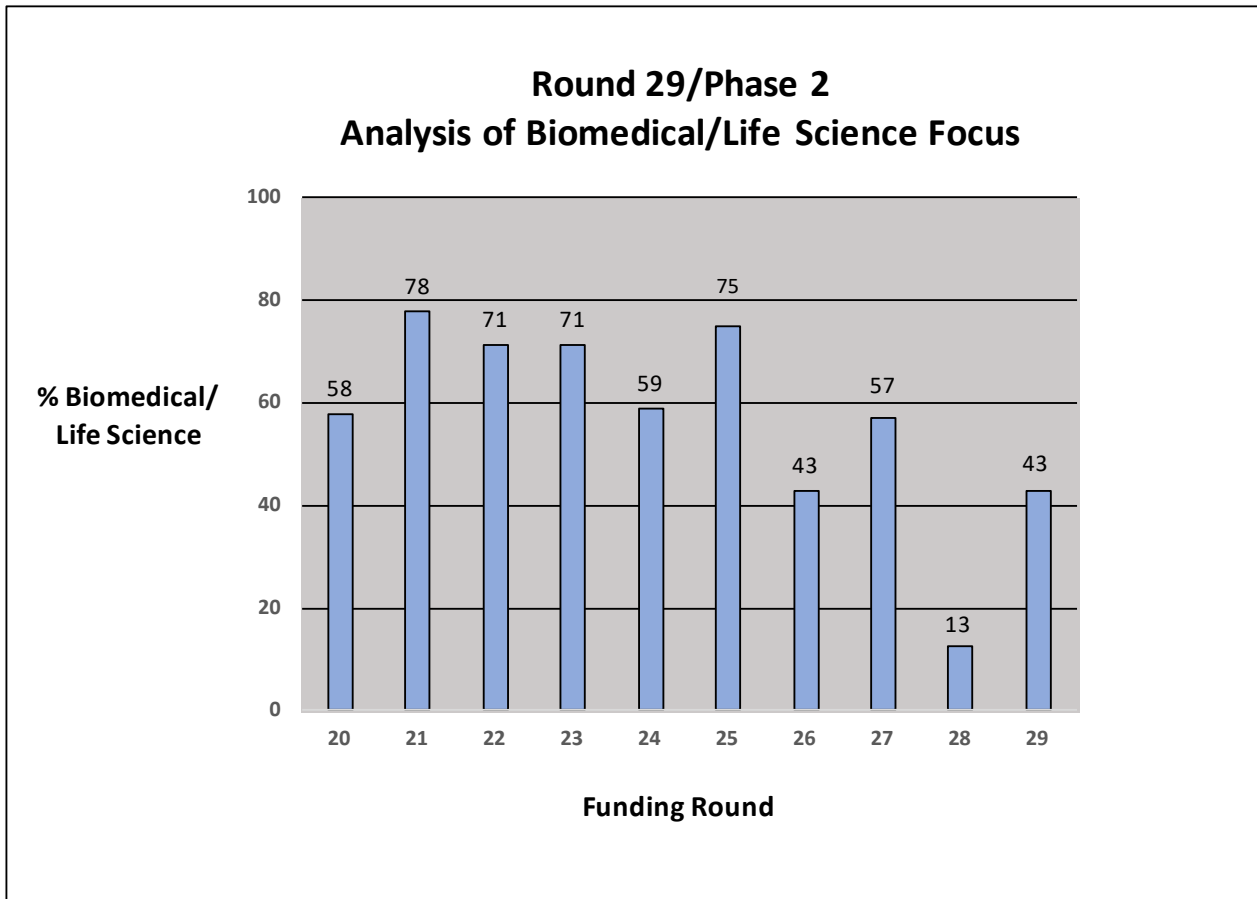




Figure 5 shows the percentage of Biomedical/Life Sciences applications for the last 10 Rounds. Round 29 represents 43% in Third Frontier Technology areas that are Biomedical/Life Sciences. This was the third time that Biomedical/ Life Sciences has been in the minority of the applications (43%) in the last 10 rounds, and specifically 3 of the last 4 rounds (Round 26, 43%; Round 28, 13% Biomedical/ Life Sciences. Average of the last 4 rounds is 39%. All ten rounds average 57% of the applications in Biomedical/Life Sciences.

**Figure 5: Rounds 20-29 Phase 2 Analysis of Biomedical/Life Science Focus**



**Carry Through and Reapplication**

Phase 1 Carry Through: There is 1 Phase 2 applicant that previously received Phase 1 funding and it is being recommended for funding.

There are two Phase 2 reapplications. There is one reapplication for the second time and it is being recommended for funding. There is one reapplication for the third and it is being recommended for funding.

**5) Recommendations**

Biomedical/ Life Sciences applications have been in the majority of the applications in 7 of the last 10 rounds. Three of the last 4 rounds have had a minority of Biomedical/ Life Sciences applications. It is recommended that active outreach efforts be developed to encourage more proposals in other Third Frontier Technology areas that reflect the diverse markets and economic activities in the State.

## Appendix I

### Summary of Redwood team and qualifications

Redwood, as a company, has been providing technology commercialization services for over 9 years while each team member has been active in this field for over 25 years.

Each Redwood team member

- possesses an advanced technical degree and extensive business proficiency
- has worked across the spectrum of technology commercialization from invention to successful market introduction
- understands how to assess a concept case from the perspective of aligning technologies to product applications in specific markets
- has lived, both conceptually and literally, the iterative process of understanding market needs and wants, value chains and who the customers are within the value chain

Team members have all worked for major corporations, research institutions, venture capital firms and technology start-up companies gaining a comprehensive understanding of what is necessary for development teams to successfully commercialize a technology. The Redwood team has served as evaluators for the Ohio Advanced Manufacturing program and an individual team member served as an evaluator for CALF, TIP and IOF loan programs for over a decade.

The five members of the Redwood team are highly qualified evaluators for the TVSF program and have combined experience and expertise in the following areas (combined years):

Commercializing technology into market pulled products (125+ years)

Market/Technology Assessment (140+ years)

Startup/ Spin out companies (50+ years)

Board member/Advisor to Startups (30+ years)

Evaluating/ monitoring RFPs/ Funding selection (40+ years)

The following is a brief summary of the five principal team members used in this evaluation Round.

### **Herb Bresler**

- BS Biological Sciences, University of Maryland; BS Secondary Science Education, University of Maryland; PhD Immunology and Infectious Diseases, The Johns Hopkins University School of Hygiene and Public Health
- Former Senior Research Leader and Chief Scientist for Health and Life Sciences, Battelle Memorial Institute, responsible for evaluation of new technology-based business opportunities, intellectual property development, licensing and tech transfer; created and implemented new metrics to increase returns on discretionary R&D; cultivated approximately 1150 invention disclosures, 900 patent applications, and 120 granted patents, leading to \$52 million company funding
- Recipient of four R&D 100 awards for breakthrough medical devices in neuroscience and diagnostics
- Former Director of the Laboratory of Cellular Immunotherapeutics at the Arthur G. James Cancer Hospital and Research Institute at The Ohio State University

### **John McArdle**

- BE, Manhattan College, MS, Northeastern University, Chemical Engineering
- MBA, Finance / International Business, University of Chicago (Booth School of Business)
- Former Business Development Manager, Battelle
- Former Product Line Manager – Koch Industries
- Former Technical Sales Manager, Allied Signal Corporation
- Recognized expert in water and wastewater treatment technologies
- Successful track record of introducing innovative technologies for a variety of municipal, industrial, and military applications in domestic and overseas markets.

### **Jim Sonnett**

- BS, University of Virginia, MS, University of Massachusetts, PhD, University of Delaware, all in chemical engineering
- Former Vice President – Science and Technology, Battelle Health & Life Sciences
- Former R&D Leader – W. L. Gore & Associates and E. I. DuPont
- Built and led high impact innovation organizations in aerospace, electronics, and life sciences
- Former Board Member – Velocys, Ventaira, Battelle Ventures
- Adjunct professor – Ohio State University Fisher School of Business

### **Susan Stanton**

- BS, Millersville University, Chemistry, MPh, Syracuse University, Organic Chemistry, PhD, University of Rochester, Organic Chemistry
- Personally developed 12+ products and led new product development teams at Mobay, Alcoa & Nexicor
- Holder of 10+ patents
- Former VP Market and Technology Assessment at the National Technology Transfer Center
- Over 15 years as an angel investor in technology-based startups
- Over 15 years as an evaluator for Ohio Third Frontier funds including IOF, CALF and TIP
- Over 8 years teaching market and business analytics to STEM graduate and post doc students.

### **Bhima Vijayendran**

- BS, University of Madras, MS, University of Madras, PhD, University of Southern California in Polymer and Surface Science, MBA, University of New Haven
- Former Senior Research Leader and Vice President Business Development, Battelle Memorial Institute; Chief Research Officer, Battelle Science and Technology, Malaysia
- Former Director, Discovery Research, PPG Industries
- Recognized as one of the leading authorities on advanced materials, special chemical and polymer systems in numerous markets including: Renewable and clean technology, Energy, Nano Technology and Industrial Products.

Recipient of ten R&D 100 awards and over 100 patents and numerous other awards.

## Appendix 2

### TVSF objectives and phases

The Technology Validation and Start-up Fund (TVSF) provides grants under two phases to transition technology from Ohio Eligible Research Institutions into the marketplace through Ohio start-up companies. Under Phase 1, Ohio Research Institutions may apply for a pool of funds to support validation/ proof that will directly impact and enhance both the commercial viability of their unlicensed technologies and ability to support a start-up company. Under Phase 2, Ohio start-up and young companies may apply for funding to commercialize a technology they intend to license from a university or an Ohio research institution.

The goals of Phase 1 include:

- Generate the proof needed to move technologies to the point that they are either ready to be licensed by an Ohio start-up company or deemed unfeasible for commercialization. The institutions are encouraged to work with potential Ohio licensees to identify the proof needed.
- Perform validation activities such as demonstration and assessment of critical failure points in subsequent development, prototyping, scale-up and commercialization in order to generate this proof with strong preference for these activities being performed by an independent 3<sup>rd</sup> party source.

The goals of Phase 2 include:

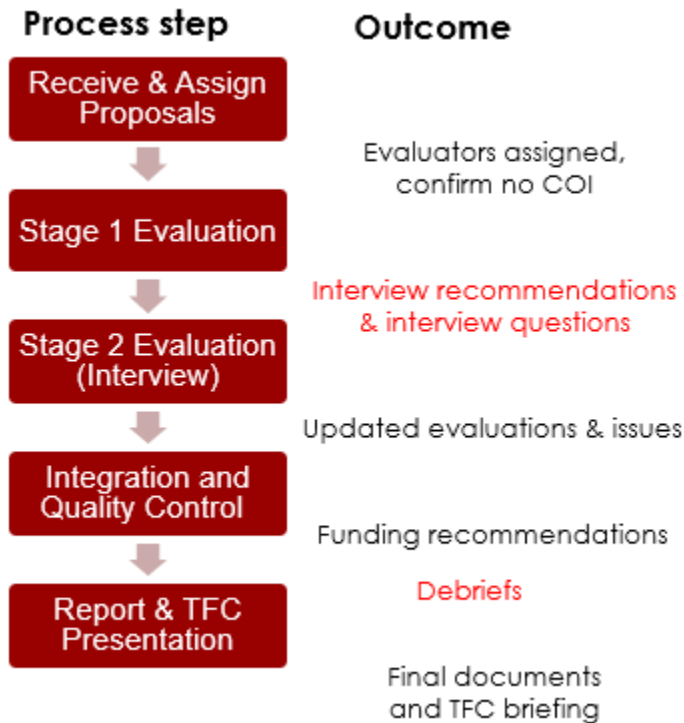
- Accelerate the commercialization of technology by Ohio start-up companies that license technology developed at Eligible Institutions during the critical early stage of life of the company.
- Generate the proof needed to move technology to the point where it is able to be commercialized or additional funds for commercialization can be raised. A clearly identified path to subsequent funding opportunities and working directly with potential investors to define the proof needed for investment into the company is strongly encouraged.
- Funded activities may include, but may not be limited to, beta prototype development and deployment to potential customers for testing and evaluation and market research/ business development in order to generate the proof needed.

Based upon these goals, the proposal evaluation criteria were developed. The proposals were then evaluated based on the criteria.

## Description of review process

Review summary. Our overall review process flow and outcomes by stage are shown in Figure 1. A similar process has been successfully used by Redwood in prior projects for public and private clients. Discussions were held with the TVSF program manager after all but the initial step in Figure 1.

**Figure 1. TVSF Evaluation Process**



**Review and Assign Proposal** In this first step proposals were summarized and a primary evaluator was assigned who has the appropriate background and no conflict of interest.

**Stage 1 Evaluation** Stage 1 evaluations were conducted for each proposal using the criteria shown below in Tables 1 and 2. Differentially weighted criteria were used to evaluate Phase 1 and Phase 2 proposals. Each proposal was rated on a 0 (absent) – 5 (Outstanding) scale for each criterion, an approach used by the NSF and in other State of Ohio programs. The weightings reflect the experience of the Redwood team and our belief that some factors, for example team and market opportunity in Phase 2, are more important than others.

The entire review team subsequently discussed all the evaluations to ensure consistency and agreed upon which applicants to invite for interviews. Interview questions were then provided in advance to each applicant.

## TECHNOLOGY VALIDATION AND STARTUP FUND

**Stage 2 Evaluations (Interviews)** The standard procedure for this step is: In-person or Zoom (due to Covid restrictions), 45-minute interviews were held with each invited applicant to discuss the advance questions plus other topics of interest to the evaluators. A minimum of two Redwood team members participated in the interviews in person or Zoom with additional team members joining via conference call or Zoom. Interviews in this round were held via Zoom video conference call.

**Integration and Quality Control** Proposal evaluations were updated based on interview results. A calibration review was held by the review team to ensure that evaluations were performed consistently and that any changes made were a result of team consensus. Based on this review, proposals were recommended for funding.

**Table 1 – Phase 1 Evaluation Criteria**

Criterion	Weighting	Description
Alignment and Compliance	Go / No go	Institutional alignment with TVSF intent and compliance with RFP
Project Selection Committee	20	Skills, background and commitment of the committee members
Deal Flow; Budget Strategy	15	Is the projected deal flow consistent with the requested budget to enable committing funds within 1 year?
External Participation	15	Does process ensure validation activities will be performed by 3 <sup>rd</sup> parties; ESPs and state-funded programs/organizations are enlisted to enhance commercialization activities of the project?
Track Record	15	Is there a strong Phase 1 or comparable program track record of licensing and newco creation? If not, is there a plan for improvement?
Metrics	15	Realism and impact of proposed metrics, including licensing, start-ups.
Project Management & Experience	15	Is there a strong project management strategy and appropriate experience of people who allocate the pool of funds and manage individual projects?
Project Selection Process	5	Is there a clear, appropriate process for project selection?

## TECHNOLOGY VALIDATION AND STARTUP FUND

**Table 2 – Phase 2 Evaluation Criteria**

<b>Criterion</b>	<b>Weighting</b>	<b>Description</b>
Alignment & compliance	Go / No Go	Proposal alignment with TVSF intent and compliance with RFP
Management Team	20	Skills, background and commitment
Opportunity / market size	15	What is the market segment and total addressable market? Is it a platform or breakthrough technology or incremental improvement? If breakthrough, is it compatible with viable commercialization pathways?
IP Protection / License	15	Is IP adequately protected, does it enable the business model, is it differentiated from likely competition, is license likely within 9 months?
Compelling Proof of Concept	15	Was meaningful input from potential customers and key performance metrics used to design Proof of Concept? Are the competitive advantages compelling for potential customers?
Potential Investor / Business Partner Engagement	10	Is there company engagement / collaboration independent of licensing institution, including financial backing?
Business Model	10	Is the business model realistic AND achievable? Can the service / manufacturing model be scaled?
Project Plan / Budget Narrative	5	Is the budget consistent with proof in 1 year?
Start-up in Ohio	5	Does a start-up exist or is it planned? Will the start-up be in Ohio?
ESP Interaction	5	Is team engaged with ESP? Has team incorporated feedback from ESP into the project, proposal or business plan?