Technology Validation and Start Up Fund

Round 33 Proposal Evaluations

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1) Executive Summary

Redwood is a Columbus, Ohio based LLC founded by former Battelle executives over 10 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). Details of the TVSF program and the review process are provided in Appendix 2.

Thirteen (13) TVSF Round 33 Phase 2 applications were received and initially reviewed. Two applications were withdrawn without further review and are not included in the analytic results. This was a Phase 2 only round. The remaining 11 Phase 2 applications totaled $1,550,000. Funding is recommended for 8 Phase 2 applications for a total of $1,100,000. (Note: 1 application submitted as a Biomedical/Life Sciences was deemed to be Software/Information Technology as only trade secret and no patent Intellectual Property is available from the licensing Institution.) Funding is not recommended for 3 Phase 2 applications for a total of $400,000. This translates to a 73% recommended application funding rate for this TVSF round, compared to the average of 49% over all 33 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 $1,100,000. 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.

Table 1 – Phase 2 Proposal Evaluation and Funding Recommendation

Table 1
Phase 2 Proposal Evaluation and Funding Recommendation
TVSF Round 33

Proposal Number	Lead Applicant	Requested Funding ($1,000)	Recommended Funding ($1,000)	Team	Opportunity/Market Size	IP Protection	Proof of Concept	Potential Investor & Business Partner Engagement	Business Model	Project Plan/Budget Narrative	Growth Plan in Ohio	ESP Interaction
FY23-5486	BioChip Labs	150	150									
FY23-5488	Genosera, LLC	150	150									
FY23-5489	Kilele Health, LLC	150	150									
FY23-5490	Medical Interface Solutions, LLC	150	100									
FY23-5492	NeoIndicate	150	150									
FY23-5493	Neucore Bio, Inc	150	150									
FY23-5494	PHope	150	150									
FY23-5496	Raider Technologies LLC	100	100									
	Sub-Total	1150	1100									
FY23-5485	Altered Gravity, LLC	150	0									
FY23-5487	Empower Battery Technology	100	0									
FY23-5496	Rescue Ventilation Solutions, LLC	150	0									
	Sub-Total	400	0	Column width is proportional to score weighting in each category								
	Total	1550	1100									
Evaluation Scale				Weak		Meets		Exceeds				

Table 2 lists the funding approval rate by TVSF round. This round's approval rate is 73% of the total reviewed proposals. The historical range of individual rounds has spanned 27 – 100%, with an average of 49%.

Table 2. TVSF Approval Rate by Round

TVSF Round 33
Approval Rate by Round
Phase 2

Round	$ Recommended	Approval Rate
1 (APR 2012)	$950,000	35%
2 (AUG 2012)	$900,000	52%
3 (DEC 2012)	$610,000	44%
4 (JUN 2013)	$864,000	30%
5 (FEB 2014)	$1,462,000	46%
6 (JUN 2014)	$998,000	39%
7 (OCT 2014)	$1,100,000	57%
8 (FEB 2015)	$710,000	37%
9 (JUN 2015)	$550,000	31%
10 (DEC 2015)	$925,000	38%
11 (APR 2016)	$1,239,000	46%
12 (OCT 2016)	$3,537,269	46%
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%
20 (NOV 2019)	$1,350,000	43%
21 (FEB 2020)	$3,944,000	56%
22 (JUN 2020)	$1,398,630	53%
23 (DEC 2020)	$900,000	50%
24 (MAR 2021)	$2,092,900	55%
25 (JUN 2021)	$800,000	75%
26 (OCT 2021)	$1,700,000	55%
27 (FEB 2022)	$850,000	43%
28 (APR 2022)	$2,499,976	64%
29 (JULY 2022)	$850,000	100%
30 (OCT 2022)	$3,700,000	71%
31 (JAN 2023)	$100,000	50%
32 (APR 2023)	$850,000	64%
33 (JULY 2023)	$1,100,000	73%
Total Funding	**$47,895,707**	
Average/Round	**$1,451,385**	**49%**

3) Proposal Summaries

Proposal Summaries - Phase 2 Recommended for Funding

Proposal 23-5486	**BioChip Labs, Inc.**	Amount Requested: $150,000
Licensing Institution	Case Western Reserve University	Amount Recommended: $150,000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	***Rapid Hemoglobin-Oxygen Dissociation Assay (RHODA) for red blood cell health and disease***

Company Snapshot: BioChip Labs (BCL) is an operating diagnostic laboratory company located in Cleveland. BCL provides a suite of diagnostic tests to improve outcomes for patients by testing red blood cell function.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
G	**Management Team**	Company operating since 2020. Current management and technical teams operate the growing business. Leadership is appropriate mix of science, technology, customer service and venture. CEO is experienced in new medical products and fundraising.
Y	**Opportunity/Market Size**	As a tool for determining the shelf-life and quality of banked blood, the global addressable market opportunity is >$1B. Other markets $10-26M annually.
Y	**Intellectual Property Protection**	In negotiations with CWRU for rights to new provisional patent application covering new high throughput assay for screening red cells' ability to carry oxygen.
Y	**Proof of Concept**	Project will deliver assay ready for blood banking and drug development. Letter from U Alberta blood bank and interest from pharma companies support appropriateness of PoC goals.
Y	**Potential Investor/ Business Partner Engagement**	Global pharma expressed interest in the new assay for drug development.
Y	**Business Model**	Current operating company revenue is growing ~$500K/yr. Licensing and packaged assay products to occur in future years.
Y	**Project Plan/ Budget Narrative**	Project plan to is clearly stated and achievable.
G	**Growth Plan in Ohio**	Current NE Ohio company is growing 3-6 staff/yr.
R	**ESP Interaction**	No ESP interaction needed. BCL is an operating company for ~3yr.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds

Comments and Recommendations: BCL has demonstrated the ability to operate and grow the current laboratory business, now located in the Global Cardiovascular Innovation Center, initially funded by an OTF grant. BCL has achieved steady growth in revenue (50% year over year) and personnel by adding assays and selling CLIA (Clinical Laboratory Improvement Amendments) and non-CLIA (research) services. This proposal is recommended for funding.

Proposal 23-5488	**Genosera, Inc.**	Amount Requested: $150,000
Licensing Institution	Research Institute at Nationwide Children's Hospital	Amount Recommended: $150,000
Prior Phase 1 Applications: Yes	Prior Phase 2 Applications: No	***Development of GNE gene therapy***

Company Snapshot: Genosera is a preclinical company developing a novel gene therapy for treatment of GNE myopathy (GNEM), a rare genetic disease that causes progressive muscle wasting. The therapy utilizes an Adeno associated virus (AAV); the same technology used successfully for other gene therapies from Children's. Their two-gene approach represents a platform for treating many muscle diseases.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
G	**Management Team**	The 3-member team has vast experience in gene therapy development, pharma, and venture funding.
G	**Opportunity/Market Size**	Using the current price point for other rare disease gene therapies, and 10% penetration of GNEM, market would be $8.8-$12B. The platform can also be applied to at least 27 forms of muscle disease.
Y	**Intellectual Property Protection**	In active negotiations for an exclusive license to 5 patent applications.
Y	**Proof of Concept**	Successful completion of the TVSF-funded work will position Genosera to hold a pre-IND (Investigational New Drug) meeting with the FDA.
G	**Potential Investor/ Business Partner Engagement**	Genosera in discussions with multiple experienced investors who view the pre-IND meeting as key inflection point for funding.
Y	**Business Model**	Business model includes venture, patient advocacy and angel funding. Model similar to previous NCH gene therapy companies.
G	**Project Plan/ Budget Narrative**	Plan and deliverables stated and achievable in timeframe and budget
G	**Growth Plan in Ohio**	Genosera is headquartered in Columbus, Ohio.
G	**ESP Interaction**	Actively engaged client of Rev1 and Rev1 Ventures.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds

Comments and Recommendations: Genosera is using a tried-and-true technology and business development pathway, presented in a well-organized proposal. Their presence builds on, and takes advantage of the gene therapy ecosystem in Columbus. This proposal is recommended for funding.

Proposal 23-5489	**Kilele Health Inc.**	Amount Requested: $150,000
Licensing Institution	University of Cincinnati	Amount Recommended: $150,000
Prior Phase 1 Applications: Yes	Prior Phase 2 Applications: No	***Continuous Monitoring for Heart Heath***

Company Snapshot: Kilele Health, LLC is developing a button-sized sensor/chemistry detection device to be worn by patients to monitor NT-proBNP (N-terminal prohormone of brain natriuretic peptide), a critical indicator of heart stress.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
G	**Management Team**	The current team consists of 3 individuals. Members have skills and experience in technical and medical startup business expertise, fund raising and successful commercialization of technology.
G	**Opportunity/Market Size**	The Heart Failure patient monitoring market is large. The addressable market is identified at over $4B.
G	**Intellectual Property Protection**	The company has an agreement to license an initial set of 20 patent applications from University of Cincinnati and an option agreement on a total of 42 patent applications.
G	**Proof of Concept**	The company has a validated lab prototype that is ready for use in animal testing. Bench results showing 1+ week performance for commercially developed aptamers has been demonstrated.
Y	**Potential Investor/ Business Partner Engagement**	Team members have engaged with several potential investors and are actively engaging with strategic business partners.
G	**Business Model**	Market launch in the medical device market in 2027. Regulatory, reimbursement, customer needs and market entry strategies included
G	**Project Plan/ Budget Narrative**	Plan is directed to obtain information for seed funding in 2024.
G	**Growth Plan in Ohio**	Company based in Ohio. Economic impact on Ohio is delineated.
G	**ESP Interaction**	Has interacted with both CincyTech and Entrepreneurs Center.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds

Comments and Recommendations: The Team consists of 3 members having extensive experience in both technical and medical startup business expertise, fund raising and successful commercialization of medical device technologies. The business model accounts for the need to obtain regulatory and reimbursement approvals and identified the customer needs and market entry strategy. They have ongoing ESP interaction and are licensing an extensive intellectual property platform from the University. This application is recommended for funding.

Proposal 23-5490	**Medical Interface Solutions LLC**	Amount Requested: $150,000
Licensing Institution	University of Cincinnati	Amount Recommended: $100,000
Prior Phase 1 Applications: Yes	Prior Phase 2 Applications: No	***Strokenekt AI–Pre-Hospital Stroke Diagnostic Support App***

Company Snapshot: Medical Interface Solutions LLC (MIS) is developing a mobile application to aid first responders in detecting stroke signs, connecting them to an expert stroke clinician and directing them to the nearest treatment facility.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
Y	**Management Team**	The 5-member management team has experience and expertise in management and technical areas needed to pursue commercialization of the technology. Some business development experience for Biotech startups is present.
Y	**Opportunity/Market Size**	The market for stroke diagnostic technologies is currently valued at $3.1B, with an estimate of the U.S. Service Addressable Market to be $427M for pre-hospital decision support solutions.
Y	**Intellectual Property Protection**	IP is trade secret protection on the software. No patent application has been made.
Y	**Proof of Concept**	TRL 3 work completed in facial grimace/smile, arm lift and facial asymmetry with U Cincinnati. Team plans a 200-participant clinical comparative data study in partnership with Kettering Health Network.
Y	**Potential Investor/ Business Partner Engagement**	MIS is currently reaching out to angel investors, health systems with venture arms and software focused VC groups for seed stage monies
Y	**Business Model**	A detailed pro forma is included. Non-dilutive funding will be targeted as available. Seed and Series A investment rounds identified.
G	**Project Plan/ Budget Narrative**	Project outlined is consistent with steps to commercialize product.
Y	**Growth Plan in Ohio**	MIS is expected to hire 12 and expand to 50 employees in years 3-5.
G	**ESP Interaction**	Interaction with Entrepreneurs Center in Dayton since March 2021.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds

Comments and Recommendations: The company has a 5-member management team with skills and expertise in the areas needed to commercialize the product. The Intellectual Property is trade secret software algorithms and no applications have been made for patent protection. The maximum award allowance for a software technology is $100,000. MIS is an Ohio based company with strong roots in the community. They have been involved with the Entrepreneurs Center for over 2 years. The company is recommended for funding at the maximum award amount for software technology.

Proposal 23-5492	**NeoIndicate LLC**	Amount Requested: $150,000
Licensing Institution	Case Western Reserve University	Amount Recommended: $150,000
Prior Phase 1 Applications: Yes	Prior Phase 2 Applications: No	***PTP (protein tyrosine phosphatase) mu targeted treatment of invasive cancer***

Company Snapshot: NeoIndicate is developing theranostic (therapeutic and diagnostic) products that can provide rapid, accurate information for clinicians to utilize a "detect and treat" strategy for diagnosing, imaging and selectively treating cancers as part of definitive surgical treatment.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
Y	**Management Team**	Leaders all skilled in their areas of expertise covering scientific leadership, commercialization of medical imaging technology, and science business operations. Project led by inventor/founder.
Y	**Opportunity/Market Size**	Potential market (US) is $4.5B for glioblastoma. Same product potentially useful in prostate, lung, melanoma, ovarian and breast cancer.
G	**Intellectual Property Protection**	In negotiation with CWRU for two new patent applications focused on the therapeutic aspects of the platform.
Y	**Proof of Concept**	Milestones are clearly stated and achievable within the project period, providing data to support first human clinical trials.
G	**Potential Investor/ Business Partner Engagement**	Safety data from TVSF work will support an SBIR grant proposal and Phase 1 clinical support from Case Comprehensive Cancer Center.
Y	**Business Model**	Initial revenue from licensing to strategic partners. Later, royalties will fund development of additional products.
Y	**Project Plan/ Budget Narrative**	Project plan is clearly presented and appears achievable.
Y	**Growth Plan in Ohio**	Plans provide for growth in Ohio and leverage existing ecosystem.
G	**ESP Interaction**	Lengthy engagement with multiple ESPs.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds

Comments and Recommendations: NeoIndicate proposes work based on new IP to be licensed – development of a theranostic product – with great potential for improving cancer treatment and earning significant revenue. Inventor/ founder is the central team member whose continued participation is essential. This project is recommended for funding.

Proposal 23-5493	**Neucore Bio, Inc.**	Amount Requested: $150,000
Licensing Institution	Ohio State University	Amount Recommended: $150,000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	***Extracellular Vesicle therapeutics for treatment of rare disease***

Company Snapshot: Neucore Bio is a genetic engineering company developing technologies to enable the next generation of genetic medicine. The company designs and produces extracellular vesicles that provide cell-selective delivery of precision genetic medicines.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
G	**Management Team**	Management team has a proven track record in building high-value gene therapy and advanced biologics businesses resulting in multiple clinical products and successful company exits.
G	**Opportunity/Market Size**	The global viral gene therapy market size was valued at $2B in 2020.
G	**Intellectual Property Protection**	Neucore has licensed a broad base of patents from OSU, comprising eleven invention disclosures to protect the proprietary FIXE technology platform.
G	**Proof of Concept**	An MVP has been developed and tested both in vitro and in vivo in the lab. Next steps focus on manufacturing scalability and delivery technology requirements.
G	**Potential Investor/ Business Partner Engagement**	Multiple conversations with VCs, and prospective biopharma companies who are interested in nonviral gene therapy technologies.
G	**Business Model**	Two prong strategy to develop and commercialize products 1. through Neucore or 2. partner with companies.
G	**Project Plan/ Budget Narrative**	Plan to ID a scalable manufacturing process acceptable to the FDA.
G	**Growth Plan in Ohio**	Founded in Columbus, Neucore plans to grow company in Ohio.
G	**ESP Interaction**	Neucore is working with both Rev1 and Cincytech ESPs.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds

Comments and Recommendations: Neucore has a strong management team with a proven track record in building high-value gene therapy and advanced biologics businesses. There have been several clinical products and successful company exits. This platform technology is based on intellectual property of a suite of precision-medicine delivery technologies for neurological and neuromuscular diseases that precisely target the delivery of genetic-based therapeutics. The team has multiple contacts within the VC, investment bank research analysts and biopharma companies who have expressed an interest in nonviral gene therapy technologies. Neucore is recommended for funding.

Proposal 23-5494	**PHope**	Amount Requested: $150,000
Licensing Institution	Ohio State University	Amount Recommended: $150,000
Prior Phase 1 Applications: Yes	Prior Phase 2 Applications: No	***PHope's Novel ECMO Cath and Docking Station***

Company Snapshot: PHope's prototype consists of both a newly developed catheter and a complementary septal docking station which offers significant improvements in ExtraCorporeal Membrane Oxygenation (ECMO) patient outcomes.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
G	**Management Team**	Company has a strong entrepreneurial and medical team with a skilled suite of contract providers.
Y	**Opportunity/Market Size**	ECMO market size was valued at $281M in 2021. The combination of the current ECMO market plus adjacent markets that the PHope device enables are attractive.
Y	**Intellectual Property Protection**	A non-provisional patent application covering the key aspects of the novel device was filed by Ohio State in 2022 with a priority date of 4 March 2021.
Y	**Proof of Concept**	The planned proof of concept is reasonable and will create value with prospective investors, partners and customers.
G	**Potential Investor/ Business Partner Engagement**	Significant interaction has occurred with prospective partners and customers.
G	**Business Model**	A standard business model for medical devices is planned. Absent acquisition, the company will enter the market independently.
Y	**Project Plan/ Budget Narrative**	Project plan and budget are creditable.
Y	**Growth Plan in Ohio**	The most likely business outcome is a sale to a strategic investor.
Y	**ESP Interaction**	Significant interaction with Rev1 has occurred.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds

Comments and Recommendations: This is a strong application to develop a medical device with the potential to substantially improve ECMO treatment outcomes and open adjacent markets for cardiopulmonary disease. The team is strong in all regards. Funding is recommended.

Proposal 23-5495	**Raider Technologies LLC**	Amount Requested: $100,000
Licensing Institution	Air Force Research Laboratory	Amount Recommended: $100,000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: 32	***Low Cost AAM Radar System***

Company Snapshot: Raider Technologies LLC leverages a unique frequency diverse array (FDA) radar architecture that is significantly lower in cost and complexity for acquisition, detection and tracking of targets.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
Y	**Management Team**	CEO has strong technology development and program management skills and has added a Board of Advisors with entrepreneurial experience and high potential networks.
G	**Opportunity/Market Size**	Significant multi-billion-dollar opportunity in a rapidly growing area. Full market penetration requires new FCC regulation.
Y	**Intellectual Property Protection**	Company has filed new provisional IP that augments the strong but dated IP to be licensed from AFRL.
Y	**Proof of Concept**	PoC goals are aggressive, yet plausible, given prior USAF and Converge work in this area. In addition, Converge is working at attractive rates.
Y	**Potential Investor/ Business Partner Engagement**	Progress has been made with prospective customers, go to market partners and investors since last application.
Y	**Business Model**	Business model now will have appropriate IP support and the projected profitability is attractive.
Y	**Project Plan/ Budget Narrative**	Prior USAF work and Converge experience make plan plausible.
G	**Growth Plan in Ohio**	Strong stated commitment with significant employment potential.
G	**ESP Interaction**	Strong ESP engagement and influence is apparent.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds

Comments and Recommendations: This proposal targets a large, rapidly growing market in drone aviation safety. Since last round, the team has added needed business experience, strengthened its' IP position, made further progress with prospective customers, partners and investors and improved their business model / margins. Funding is recommended.

Proposal Summaries - Phase 2 Not Recommended for Funding

Proposal 23-5485	**Altered Gravity, LLC**	Amount Requested: $150,000
Licensing Institution	University of Toledo	Amount Recommended: $0
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	***Biomimetic Engineered Space Technology (BEST)***

Company Snapshot: Altered Gravity, LLC is developing biomimetic engineered Space Technology to simulate the partial gravity conditions on Earth while culturing 3D tissues, tissue analogs, and organs to study human diseases, physiology, and drug efficacy.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
R	**Management Team**	Team needs to add product development and life sciences specific entrepreneurial experience / bandwidth to complement the founder's scientific skills.
R	**Opportunity/Market Size**	The assertion and follow up discussion regarding a $1B market size was not creditable. The team is also encouraged to consider other possible life sciences markets.
Y	**Intellectual Property Protection**	The patent application has not been published and initial PCT search results are promising. The described patent claims have the potential to provide a strong competitive advantage.
G	**Proof of Concept**	The proof of concept given in the application is consistent with anticipated market needs and will create value.
R	**Potential Investor/ Business Partner Engagement**	The founders had extensive market discovery discussions during iCorps. It is not clear how much further progress has occurred.
R	**Business Model**	The proforma revenue ramp is overly optimistic given the company's current status.
G	**Project Plan/ Budget Narrative**	The project plan and budget are creditable.
Y	**Growth Plan in Ohio**	The application specifically mentions growth in Ohio.
Y	**ESP Interaction**	There has been some ESP interaction via UT affiliates.
	Evaluator Recommendation	This application is not recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds

Comments and Recommendations: The application targets an interesting market with a potentially compelling offering. If the company chooses to reapply, the numerous areas rated red above must be addressed.

Proposal 23-4387	**Empower Battery Technology, Inc**	Amount Requested: $100,000
Licensing Institution	Ohio State University	Amount Recommended: $0
Prior Phase 1 Applications: Yes	Prior Phase 2 Applications: 28	***High Energy Density Fast Charging Sodium-Ion Batteries***

Company Snapshot: Empower Battery Technology, Inc. has developed a fast-charging sodium anode which can significantly improve energy density, cycle life and charge speed for sodium ion battery, creating a low-cost alternative to lithium ion batteries.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
R	**Management Team**	A very strong technical Team with good connections to Honda. CEO has manufacturing experience. Team does not have the skill sets needed for BD, fundraising etc. needed to successfully commercialize an early-stage project in an emerging market.
Y	**Opportunity/Market Size**	A large opportunity if company pursues anode and battery opportunities for sodium battery markets. If it is only anodes, the size is $ 50 M/yr.
Y	**Intellectual Property Protection**	PCT filed and licensing discussions with OSU underway.
Y	**Proof of Concept**	Prior research effort for improved anode for Lithium batteries is progressing for EV market. Inventor anticipates similar results for sodium battery.
R	**Potential Investor/ Business Partner Engagement**	Aware of the competitive landscape and partnering opportunities; but not clear any engagements have taken place.
R	**Business Model**	Revenue projection of about $ 1M/yr after 5 years is not consistent with need to raise over $60M to execute the plan.
Y	**Project Plan/ Budget Narrative**	Budget is consistent with proof in one year.
Y	**Growth Plan in Ohio**	Plan to build business in OH.
Y	**ESP Interaction**	Active engagements with Rev1.
	Evaluator Recommendation	This application is not recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds

Comments and Recommendations: The Team is technically very strong with a well-established researcher in batteries and connections to Honda. The CEO has a manufacturing background. The Team lacks the needed skill sets/experience/awareness to commercialize an early-stage lab project to target markets/ customers. The market opportunity for a cost effective and competitively performing sodium anode/battery is over several billon dollars/yr. If the Team chooses to reapply, they are encouraged to include a more credible and realistic business plan that would support the level of investment with projected revenues.

Proposal 23-5496	**Rescue Ventilation Solutions, LLC**	Amount Requested: $150,000
Licensing Institution	University of Cincinnati	Amount Recommended: $0
Prior Phase 1 Applications: Yes	Prior Phase 2 Applications: No	***SPIRITUS***

Company Snapshot: Rescue Ventilation Solutions, LLC is developing SPIRITUS, a compact, intuitive, inexpensive, self-powered, disposable device for use on patients requiring manual ventilation with a Bag Valve Mask (BVM) in the prehospital or hospital setting.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
Y	**Management Team**	Management team has commercial, technical and clinical experience and include the inventors of the device. Several team members have significant outside work responsibilities. This will need to be managed with staff added as needed to support future business activities.
Y	**Opportunity/Market Size**	Proposal makes a case for the need for reliable and easy to operate device. USA Total Addressable Market is ~ $1.0 billion. Price constraints in EMS setting appears to limit commercial opportunity.
Y	**Intellectual Property Protection**	Pending patent covers device/method of use. It is not apparent that trade secret/know-how will appreciably enhance competitive barriers to entry.
G	**Proof of Concept**	Current prototype TRL 5/6 (demo in relevant environment) with lower cost sensor identified. Project team is well positioned to know market need and performance requirements of the proposed device.
G	**Potential Investor/ Business Partner Engagement**	Previous UC Venture Lab/TVSF funding. Existing relationships with local VC firms.
R	**Business Model**	Exclusive focus on medical provider market. Current business model has problematic price constraints. Rev $3.7/GM 60%/NM 11% (Yr 5).
Y	**Project Plan/ Budget Narrative**	Project plan/contractors/pricing provided for proposed project work.
Y	**Growth Plan in Ohio**	Proposal confirms plans to remain and hire in Ohio.
Y	**ESP Interaction**	ESP participation in interview would have been helpful.
	Evaluator Recommendation	This application is not recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds

Comments and Recommendations: Balanced project team with commercial, technical, and clinical expertise. Market strategy appears focused exclusively on medical providers (EMS/hospitals). Current commercial strategy accommodates pricing constraints in EMS setting that are challenging from an investor perspective. Competition appears focused on hospital settings where such price constraints are perhaps less problematic. It would be helpful if additional market segments and delivery strategies could be identified with the potential for higher revenue and profit.

4) Round 33 Analysis

Figure 1 shows the proposal activity and funding recommendations by technology source for Phase 2 proposals. There were three applications each with technology from Ohio State University and University of Cincinnati, two from Case Western Reserve University and one submission each from Air Force Research Laboratory, Nationwide Children's Hospital and the University of Toledo. Two applications from Ohio State University, University of Cincinnati and Case Western Reserve University are recommended for funding. One application each from Air Force Research Laboratory and Nationwide Children's Hospital is recommended for funding.

Figure 1. Round 33 Funding by Technology Source

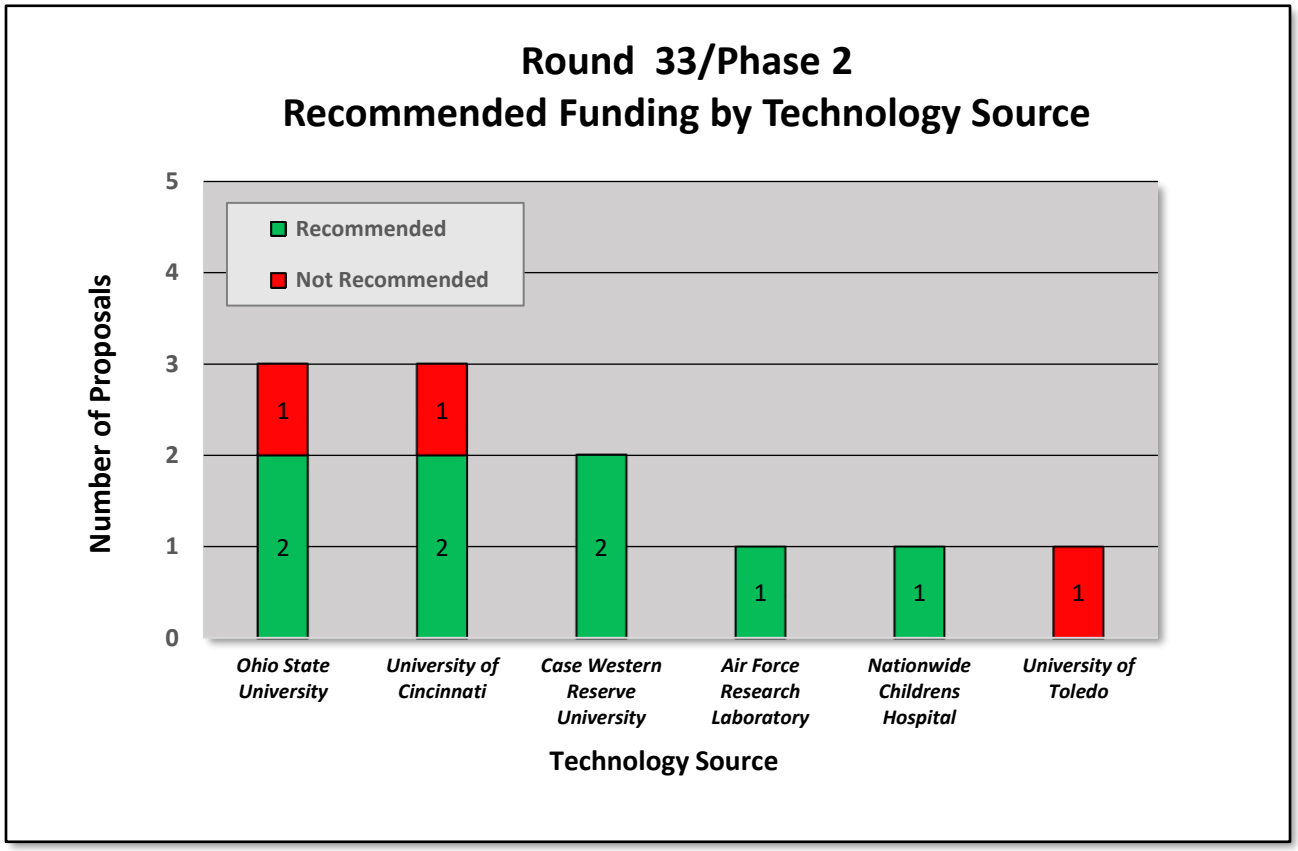


Figure 2 depicts Phase 2 proposal activity and funding recommendations by Third Frontier focus area. In this Round, eight of eleven proposals (73%) are in Biomedical/Life Sciences, one of eleven each is in Advanced Materials (9%), Sensors (9%), and Software/Information Technology (9%). Six Biomedical/Life Sciences and one each in Sensors and Software/Information Technology are recommended for funding. Rounds 20 to 32 prior round average is 55%.

Figure 2. Round 33 Phase 2 Proposal Activity by Third Frontier Technology Area

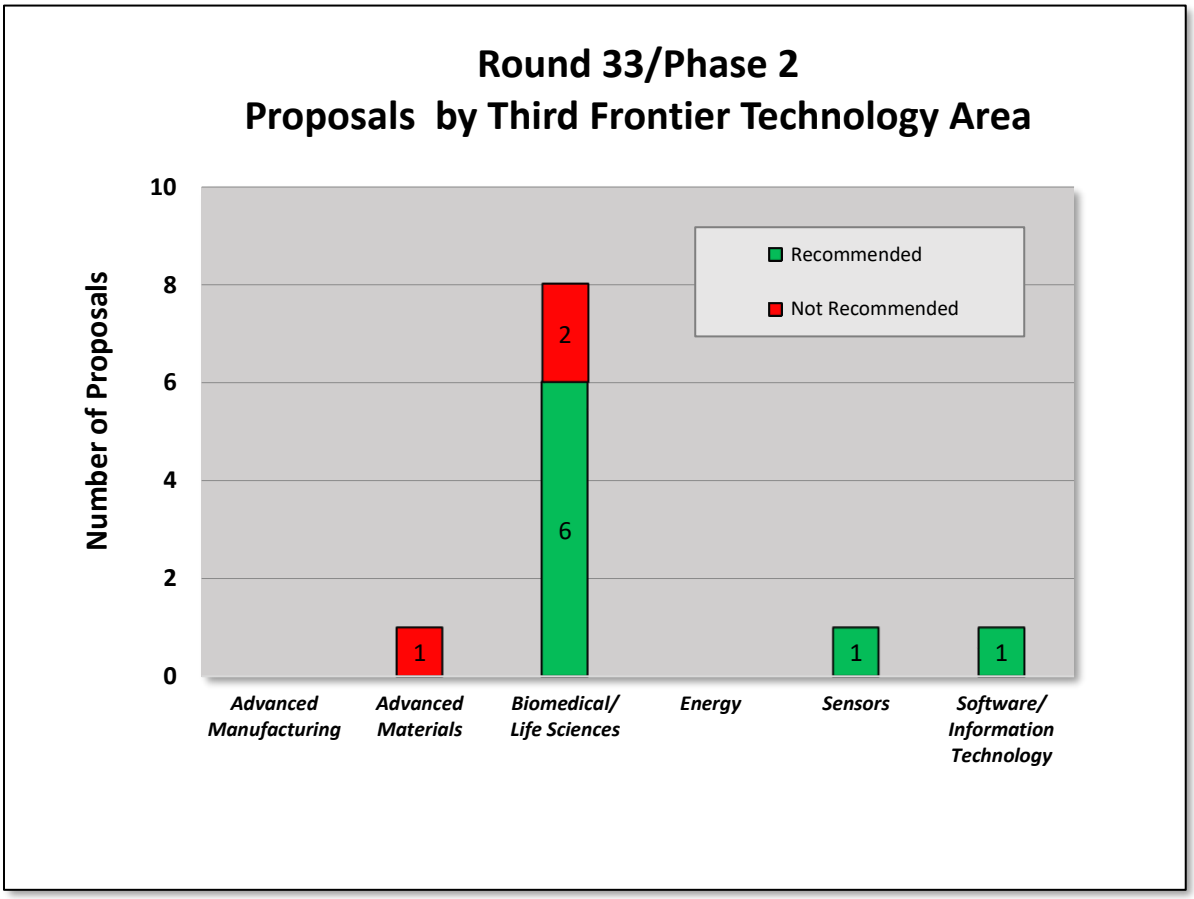


Figure 3 shows the aggregate ratings by evaluation criteria for all Phase 2 proposals. IP Protection, Proof of Concept, Project Plan Budget and Growth Plan in Ohio were the strongest categories in this Round. Business Model was rated as the weakest.

Figure 3. Round 33 Phase 2 Proposal Rating Summary

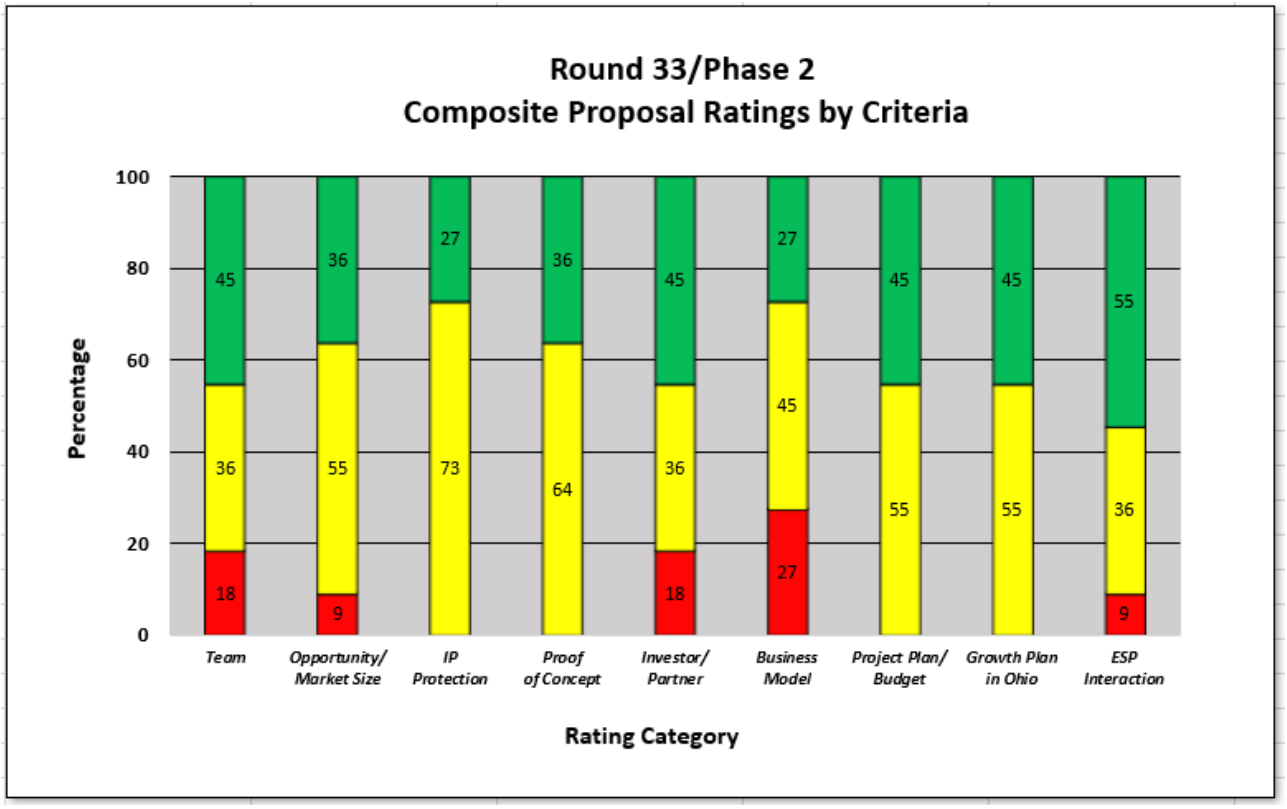


Figure 4 shows the percent meets or exceeds of the business model by Round. In the previous eleven Rounds, business model was the lowest rating in Rounds 20-23 (53% average ≥ meets), Round 26 (28%) and Round 31 (50%). The RFP was revised to elicit stronger business models prior to Round 24 and it appears that the proposals have provided stronger business models in subsequent Rounds. The last 10 rounds average 69% average ≥ meets, even with the Round 26 (28%). The average over all 13 previous rounds is 64%.

Figure 4: Rounds 20 to 33 Phase 2 Analysis of Business Model

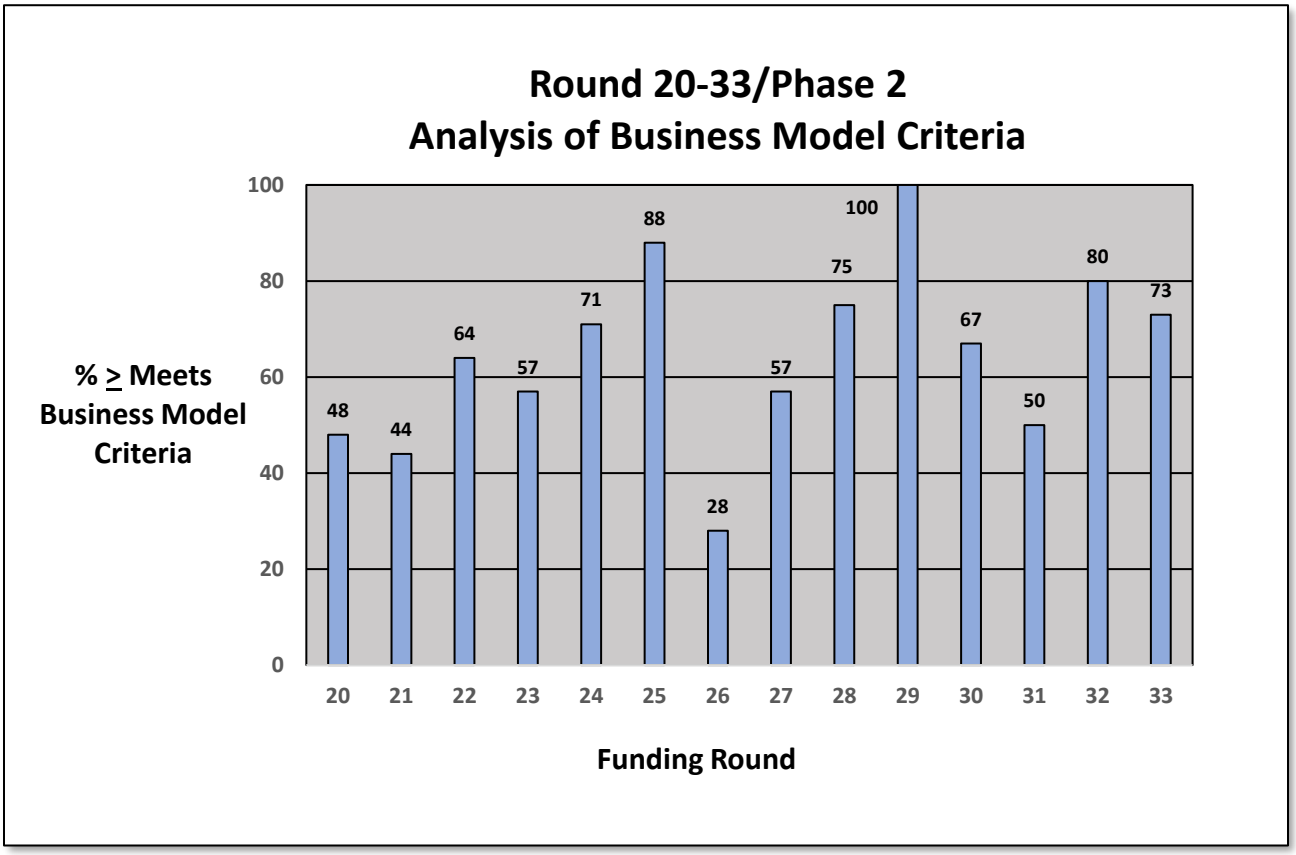
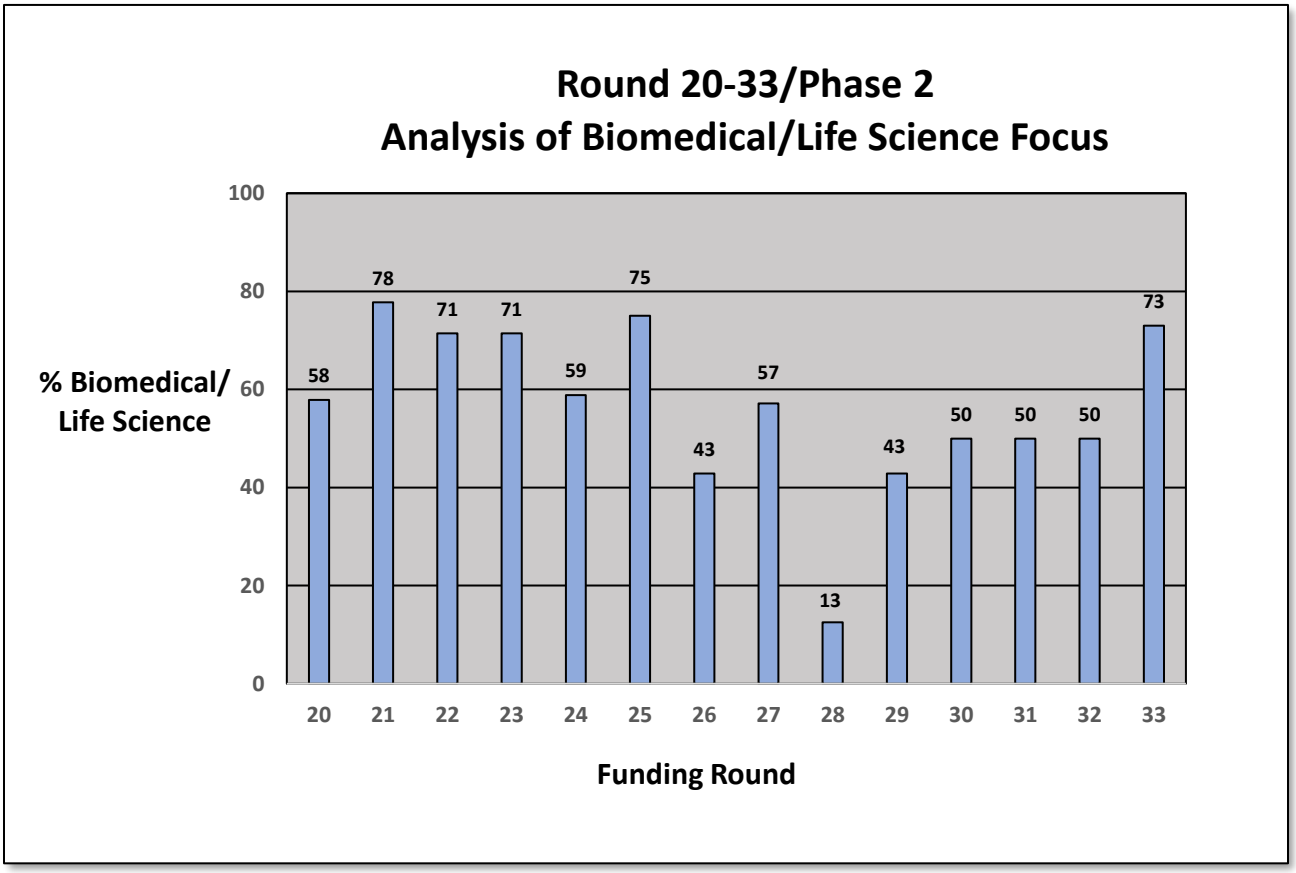


Figure 5 shows the percentage of Biomedical/Life Sciences applications for the last 14 Rounds. Round 33 represents 73% in Third Frontier Technology areas that are Biomedical/Life Sciences. Biomedical/ Life Sciences has been in the minority of the applications 3 times in the last 14 rounds. All fourteen rounds average 56% of the applications in Biomedical/Life Sciences.

Figure 5: Rounds 20-33 Phase 2 Analysis of Biomedical/Life Science Focus



Carry Through and Reapplication

Phase 1 Carry Through: There were seven Phase 2 applicant that previously received Phase 1. Five of the seven are recommended for funding.

There are two Phase 2 reapplication for the first time (or second application) and one is recommended for funding.

5) Recommendations

Biomedical/ Life Sciences applications have been 50% or more of the applications in 11 of the last 14 rounds. Three of the last 8 rounds have had a minority of Biomedical/Life Sciences applications. It is recommended that continued outreach efforts be used 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 10 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 and Jobs Ohio
- 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 3rd party source.

The goals of Phase 2 include:

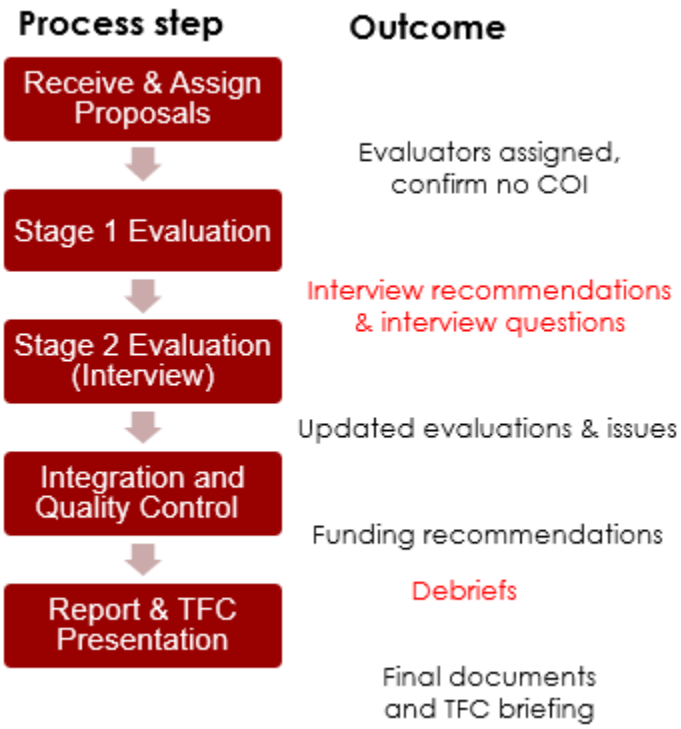
- Accelerate the commercialization of technology by Ohio start-up companies that license technology developed at Eligible Institutions during the critical early stage of life of the company.
- Generate the proof needed to move technology to the point where it is able to be commercialized or additional 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.

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 3rd 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?

Table 2 – Phase 2 Evaluation Criteria

Criterion	Weighting	Description
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	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?
Growth Plan 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?