

Technology Validation and Start Up Fund

Round 37 Proposal Evaluations

23 July 2024

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1) Executive Summary

Redwood is a Columbus, Ohio based LLC founded by former Battelle executives over 11 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.

Round 37 is the third round to introduce a \$200,000 TVSF Phase 2 application process with up to 20% of the funding allowed for personnel. Eleven (11) TVSF Round 37 Phase 2 applications totaling \$2,198,000 were received and reviewed. This was a Phase 2 only round. Funding is recommended for 9 Phase 2 applications for a total of \$1,798,000. Funding is not recommended for 2 Phase 2 applications for a total of \$400,000. This translates to an 82% recommended application funding rate for this TVSF round, compared to the average of 51% over all 37 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 \$1,798,000. 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

Table 1
Phase 2 Proposal Evaluation and Funding Recommendation
TVSF Round 37

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	Market Plan in Ohio	ESP Interaction
FY24-3475	AIMM	200,000	200,000									
FY24-3476	AxoNeural Therapeutics	198,000	198,000									
FY24-3478	LAACClamp Inc.	200,000	200,000									
FY24-3479	LLKD	200,000	200,000									
FY24-3480	Protein Capture Science	200,000	200,000									
FY24-3481	Raider Technologies, LLC	200,000	200,000									
FY24-3483	Scioto AgriTech	200,000	200,000									
FY24-3484	Shark	200,000	200,000									
FY24-3485	Zafer Therapeutics Inc.	200,000	200,000									
	Sub-Total	1,738,000	1,738,000									
FY24-3477	DEB Technologies LLC	200,000										
FY24-3482	Ravee Optics Limited	200,000										
	Sub-Total	400,000	-	Column width is proportional to score weighting in each category								
	Total	2,138,000	1,738,000									
Evaluation Scale				Weak			Meets			Exceeds		

TECHNOLOGY VALIDATION AND STARTUP FUND

Table 2 lists the funding approval rate by TVSF round. This round’s approval rate is 82% of the total reviewed proposals. The historical range of individual rounds has spanned 27% – 100%, with an average of 51%.

Table 2. TVSF Approval Rate by Round

TVSF Round 37						
Approval Rate by Round						
Phase 2						
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%	30 (OCT 2022)	\$3,700,000	71%	
12 (OCT 2016)	\$3,537,269	46%	31 (JAN 2023)	\$100,000	50%	
13 (MAR2017)	\$1,567,500	38%	32 (APR 2023)	\$850,000	64%	
14 (SEP 2017)	\$498,832	27%	33 (JULY 2023)	\$1,100,000	73%	
15 (DEC 2017)	\$2,250,000	38%	34 (OCT 2023)	\$250,000	33%	
16 (MAR 2018)	\$2,098,600	52%	35 (JAN 2024)	\$800,000	59%	
17 (SEP 2018)	\$2,100,000	42%	36 (APR 2024)	\$2,350,000	80%	
18 (DEC 2018)	\$1,150,000	35%	37 (JULY 2024)	\$1,798,000	82%	
19 (APR 2019)	\$2,250,000	43%	Total Funding	\$53,093,707		
			Average/Round	\$1,434,965	51%	

3) Proposal Summaries

Proposal Summaries - Phase 2 Recommended for Funding

Proposal 24-9475	Advanced & Innovative Multifunctional Materials LLC	Amount Requested: \$200,000
<i>Licensing Institution</i>	University of Dayton	Amount Recommended: \$ 200,000
Prior Phase 1 Applications: Yes	Prior Phase 2 Applications: 32,34	<i>Scale Up for Dye & PFAS Water Treatment Technology</i>
Advanced Materials		Entrepreneurs' Center

Company Snapshot: AIMM has developed sorbents for removing both dyes and PFAS from water. The technology is targeting recycling organizations within the respective industries.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
Y	Management Team	A very strong technical team with planned addition of CEO/COO by end of 2024, additional skill sets needed for manufacturing/ scale up and Business development, the Team gets stronger.
G	Opportunity/Market Size	Global market for textile dye/PFAS mitigation is over \$6B with attractive growth.
Y	Intellectual Property Protection	U.S pat 11,878,283 B2 granted in Jan 2024 and AIMM has exclusive license in the field. Additional filings are planned.
Y	Proof of Concept	Promising early-stage lab results with proof of concept at a 5-10 gram scale demonstrated at TRL 4/3.
Y	Potential Investor/ Business Partner Engagement	On going preliminary discussions with a few motivated end users/ potential investors
Y	Business Model	A well laid out business model working closely with textile recyclers. Projected sales of \$2.4M in 2026 very optimistic.
Y	Project Plan/ Budget Narrative	Seems reasonable to achieve 100 gram/day production.
Y	Growth Plan in Ohio	Projected to build a team of 28 FTE by 2028.
Y	ESP Interaction	Active engagement with local EC.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds
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Comments and Recommendations: A very strong technical team with added CEO/COO positions to build manufacturing/ scale up and BD capabilities. The founder has had several impactful discussions with potential end users for the technology. The markets are quite large and attractive. The Team is encouraged to stay focused on the dyes for textiles opportunity followed by PFAS mitigation to establish commercial viability of the technology. Drive the TVSF funded project outcomes to get commitment for scale up and commercialization from the target end users.

TECHNOLOGY VALIDATION AND STARTUP FUND

Proposal 24- 9476	AxoNeural Therapeutics, Inc	Amount Requested: \$198,000
<i>Licensing Institution</i>	Cleveland Clinic	Amount Recommended: \$198,000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	<i>Neupron: Therapeutic for Spinal Cord Injury</i>
Biomedical/ Life Sciences		JumpStart

Company Snapshot: AxoNeural Therapeutics has developed a therapeutic to treat neurodegenerative disease and injury by delivering antioxidant enzymes to sites of neurological disease or insult to mitigate the toxic effect of Reactive Oxygen Species and promote regeneration and healing.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
G	Management Team	Highly qualified and experienced technical/scientific staff with a drug development track record and pharma business experience.
G	Opportunity/Market Size	Initial market \$2.2B. Platform potential of product provides potential larger market access in the future.
G	Intellectual Property Protection	Company has an option to license granted US and EP patents covering the product.
Y	Proof of Concept	Prototype demonstrated in published animal models.
Y	Potential Investor/ Business Partner Engagement	Received small seed investment from Cleveland Clinic Ventures. Expect their continued participation. Other discussions ongoing.
Y	Business Model	Typical business model for a drug development startup. Seeking grants to advance R&D before dilutive funding.
G	Project Plan/ Budget Narrative	Plan and budget thorough and achievable with funds and timelines.
Y	Growth Plan in Ohio	Company in Cleveland, Ohio.
Y	ESP Interaction	Engaged with JumpStart.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds
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Comments and Recommendations: Experienced technical and scientific staff with a drug development track record and pharma business experience. Large market opportunity. Product uses two naturally occurring enzymes with prior clinical use. Successful completion of pre-clinical studies will allow for equity and other fundraising. Pricing model is very well developed for an early-stage drug development company. This application is recommended for funding.

TECHNOLOGY VALIDATION AND STARTUP FUND

Proposal 24-9478	LAACClamp Inc	Amount Requested: \$200,000
<i>Licensing Institution</i>	Ohio State University	Amount Recommended: \$200,000
Prior Phase 1 Applications: Yes	Prior Phase 2 Applications: No	Left Atrial Appendage C-Clamp
Biomedical/ Life Sciences		Rev1

Company Snapshot: LAACClamp has developed an implantable device that has a curved base to conform to the base of the left atrial appendage. The target market is open heart surgeries in the US.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
G	Management Team	The two-person team has both technical and entrepreneurial business experience, including fund-raising and successful exits.
Y	Opportunity/Market Size	The Serviceable Addressable Market is identified as \$900 M based on the number of routine open-heart operations performed annually. The Current Serviceable Obtainable Market is \$150 M and growing.
Y	Intellectual Property Protection	Original provisional patent application family filing date of 9/2/21. Two new disclosures have led to filing one provisional patent application and one is pending. None issued to date.
G	Proof of Concept	Phase 1 TVSF monies were used to derisk the concept drawings and alpha prototype to a functional beta prototype that was validated on the bench and in short term studies in live animals.
Y	Potential Investor/ Business Partner Engagement	Discussions with potential strategic partners; included options for funding, business development, quality management system.
G	Business Model	Regulatory pathway identified, beta prototype used in live animal studies, CPT codes identified. Pricing, gross margins are realistic.
G	Project Plan/ Budget Narrative	Straight forward plan is consistent with the budget narrative.
Y	Growth Plan in Ohio	Proposal states that the company will grow the business in Ohio.
G	ESP Interaction	Established client of Rev1 with an office onsite.
G	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds
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Comments and Recommendations: Two-person team has well rounded skills in technical and entrepreneurial business experience. The market is attractive and early feedback from cardiac surgeons indicate a market need for an improved product in this area. Significant work accomplished with TVSF Phase 1 funds provides the company with a beta prototype to develop into a Minimum Viable Product. Good interactions with potential strategic partners, may provide additional funding and collaboration. Business model is realistic and achievable.

TECHNOLOGY VALIDATION AND STARTUP FUND

Proposal 24-9479	LLKD	Amount Requested: \$200,000
<i>Licensing Institution</i>	United States Army's DEVCOM Armaments Center	Amount Recommended: \$ 200,000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	SkySwatter Counter Drone Tech
Advanced Manufacturing	Entrepreneurs' Center	

Company Snapshot: The SkySwatter is a ballistic counter drone ammo device for versatile, low-cost approach to mitigating close-range drone threats.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
G	Management Team	A very strong team with needed technical, business development, scale up skill sets with deep and strong connections with DoD and supply chain ecosystems in the field.
Y	Opportunity/Market Size	Projected market for the counter drone shot is estimated to be in the multibillion dollar /yr market with attractive growth rate.
Y	Intellectual Property Protection	Three patents with issues dates in 2017 licensed from DoD – exclusive in the field.
Y	Proof of Concept	TRL 8 is claimed in 40 mm grenade form. TRL in the target 18.5 shot gun form factor is not identified.
Y	Potential Investor/ Business Partner Engagement	Early-stage discussions with potential partners/ investors.
Y	Business Model	Projected revenue of \$50K in 2025 growing to \$6.6M in 2028. Attractive margins with low equity need for growth.
Y	Project Plan/ Budget Narrative	Well laid out with outside vendor for proposed TVSF project tasks.
Y	Growth Plan in Ohio	Projected 15 FTE in 2030.
Y	ESP Interaction	Strong engagement with local EC.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds
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Comments and Recommendations: A very strong technical Team with proven track record in early-stage technology development, fund raising and business development. Excellent connections and relationships with DoD and ammunition eco system and supply chain. The Team is encouraged to more fully articulate their longer-range plans to enter the civilian and overseas markets.

TECHNOLOGY VALIDATION AND STARTUP FUND

Proposal 24-9480	Protein Capture Science	Amount Requested: \$200,000
<i>Licensing Institution</i>	Ohio State University	Amount Recommended: \$200,000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: 36,21,20,19	<i>Rapid Biotech Manufacturing with Revolutionary Next Generation of High-Speed iCapTag</i>
Biomedical/ Life Sciences		Rev1

Company Snapshot: Protein Capture Science LLC has developed, validated and are selling an intein cap self-cleavable tag, iCapTag™ technology for the protein purification market. The company is focused on introducing this platform into Good Manufacturing Practices (GMP)-driven protein and protein fragment purifications for mid-size and large-scale protein manufacturers.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
Y	Management Team	The founders have augmented their team with an industry veteran with valuable market network and insight. Team has further improved their strategy for capturing large GMP opportunities.
G	Opportunity/Market Size	Higher yield, faster purification of biologics is a significant market opportunity of hundreds of millions of \$ for a single application.
Y	Intellectual Property Protection	PCS IP includes three issued and two pending patents.
Y	Proof of Concept	The proof of concept is well conceived. The goal is to demonstrate a replicable service to deliver a scalable purification resin and process that can be implemented as is by a biotech customer.
Y	Potential Investor/ Business Partner Engagement	Investor and business partner engagement has increased appreciably since the last application.
Y	Business Model	The team has modified their business model to expedite large scale adoptions while minimizing PCS investment.
Y	Project Plan/ Budget Narrative	The project plan and associated budget are clear and creditable.
Y	Growth Plan in Ohio	The company is committed to growing in Ohio.
Y	ESP Interaction	The company strategy reflects input from Rev1.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds
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Comments and Recommendations: PCS' unique technology targets a large market opportunity in the purification of biological drugs. The objective of the current application, which is distinct from prior applications, is to develop a turnkey technology package which greatly reduces the risk of adoption at PCS customers. The technology package will consist of a specific resin chemistry and a scalable purification process.

TECHNOLOGY VALIDATION AND STARTUP FUND

Proposal 24-9481	Raider Technologies, LLC	Amount Requested: \$200,000
<i>Licensing Institution</i>	Air Force Research Laboratory	Amount Recommended: \$200,000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: 32,33	<i>Intelligent Spectrum Access to Enable Smart City Infrastructure</i>
Sensors		Entrepreneurs' Center

Company Snapshot: Raider Technologies seeks to create a hybrid radar-communication system using the same frequency spectrum to serve both functions simultaneously.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
Y	Management Team	Raider's team has continued to evolve. A new marketing and fundraising group are a complementary addition.
G	Opportunity/Market Size	The market opportunity for military and civilian drones is large and growing rapidly. Infrastructure to allow safe drone operation is a significant opportunity.
Y	Intellectual Property Protection	In addition to a pending radar-based filing, new pending IP, covering both sensing and communication, has been added.
Y	Proof of Concept	The proof of concept is to demonstrate an antenna with combined radar and communications capability that meets technical and economic goals.
Y	Potential Investor/ Business Partner Engagement	Raider continues to appropriately expand their level of investor and prospective partner engagement.
Y	Business Model	The business model is a blend of service (early) and product (later) revenue. The services portion is appropriately focused.
Y	Project Plan/ Budget Narrative	The project plan and budget are clearly described and appropriate.
G	Growth Plan in Ohio	Raider has clear plans to grow in Ohio.
G	ESP Interaction	Raider's engagement with the Entrepreneur's Center is significant.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds
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Comments and Recommendations: Raider continues to pursue an important enabling technology for military and commercial drones. The objective of this application is to demonstrate added communications capability to the previously funded radar sensing antennas for drone safety / control infrastructure. The need for communications has emerged more quickly than anticipated due to several factors, including current global conflicts.

TECHNOLOGY VALIDATION AND STARTUP FUND

Proposal 24-9483	Scioto AgriTech	Amount Requested: \$200,000
<i>Licensing Institution</i>	Ohio State University	Amount Recommended: \$200,000
Prior Phase 1 Applications: Yes	Prior Phase 2 Applications: No	<i>Sustainable Farming with Cell-Penetrating Peptides</i>
Biomedical/ Life Sciences		Rev1

Company Snapshot: Scioto AgriTech leverages a powerful intracellular peptide- and protein-delivery platform, termed “membrane translocation domains (MTDs)”, to deliver biopesticides and bio stimulants to crops to increase yield.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
G	Management Team	CEO and CTO have successful track record in chemical and ag-biotech industry. Co-founders will serve as technical advisors, remain full-time faculty. Team has been working on Scioto regularly for about a year. Team shares expertise and responsibilities appropriately.
G	Opportunity/Market Size	Global market for naturally derived biologicals \$6B/year. Product is a platform, broadly applicable to delivery of biologicals.
Y	Intellectual Property Protection	In negotiation with OSU for two patent applications in Ag fields of use.
Y	Proof of Concept	Product has been shown to increase cell penetration and bioactivity in greenhouse and field studies.
Y	Potential Investor/ Business Partner Engagement	Two Ohio VC groups expressed interest in seed funding.
Y	Business Model	Company will have proprietary products, and will offer improved efficacy biologic products via joint development and/or licensing.
Y	Project Plan/ Budget Narrative	Project plan clear and achievable using well established vendors.
Y	Growth Plan in Ohio	TVSF vendor Ohio-based. Committed to manufacturing in Ohio.
Y	ESP Interaction	Engaged with Rev1 Ventures.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds
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Comments and Recommendations: Strong, experienced, cohesive team. Platform technology broadly applicable to ag-biotech biological products to increase absorption and thereby reduce expense. Funding with a combination of large grants and self-funding until capitalized. Engaged with local potential investors. Business model is a combination of proprietary products and partnerships. TVSF funds will accelerate toxicology and safety testing needed to obtain future funding. This application is recommended for funding.

TECHNOLOGY VALIDATION AND STARTUP FUND

Proposal 24-9484	Shark	Amount Requested: \$200,000
<i>Licensing Institution</i>	Air Force Research Laboratory	Amount Recommended: \$ 200,000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: 36	Autonomous Rescue Craft
Sensors	Entrepreneurs' Center	

Company Snapshot: Shark Rescue Systems is commercializing an optionally piloted autonomous jet ski with add-on automated airdrop and self-righting capability. Initial target market is military & defense. Other possible markets include law enforcement, search/rescue, firefighting, and lifeguarding.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
G	Management Team	The founders are former special forces personnel with excellent insight and connections into the initial market. The team has solidified since Rd 36 application and is a strong mix of product development, market insight / network and operations.
Y	Opportunity/Market Size	Potential markets for autonomous watercraft include military and commercial search and rescue applications. The US military market alone is estimated at \$250M.
G	Intellectual Property Protection	Exclusive field-of-use license for one patent and two applications has been granted from USAF. One published patent has broad coverage.
Y	Proof of Concept	Prototypes have been evaluated in field conditions. TRL between 6 and 7. TVSF funds will be used to produce 3 prototypes for evaluation by initial adopters.
Y	Potential Investor/ Business Partner Engagement	Initial adopters are US Special Forces. Shark team understands Special Forces and broader government procurement well.
Y	Business Model	Business model is aggressive yet creditable.
Y	Project Plan/ Budget Narrative	Vendors identified. Significant in-house manufacturing capabilities.
G	Growth Plan in Ohio	Business plan is to remain/grow in Ohio.
G	ESP Interaction	EC Dayton/ working closely with applicant.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds
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Comments and Recommendations: Balanced management team has US military background with engineering, operational, and fund-raising expertise. Inventor/Founder and SERE operational specialist bring exceptional military contacts & operational awareness to the project. Market applications have high market penetration potential. Proposal states strong level of interest in the military for these products. Business plan and market have been clarified and strengthened since round 36 application.

TECHNOLOGY VALIDATION AND STARTUP FUND

Proposal 24-9485	Zafer Therapeutics Inc	Amount Requested: \$200,000
<i>Licensing Institution</i>	Case Western Reserve University	Amount Recommended: \$200,000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	IND enabling studies for HXB-319 and MSC-based cell therapy
Biomedical/ Life Sciences		Bounce Innovation Hub, program Kinetic: Health Care Innovation in Motion

Company Snapshot: Zafer Therapeutics is developing specifically programmed mesenchymal stromal cell (MSC) therapy, HXB-319, to treat autoimmune vasculitis, that often results in end organ failure.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
Y	Management Team	CEO is experienced serial biotech executive with cell therapy experience. Breadth of team expertise covers all required aspects of new company to reach human clinical trial.
G	Opportunity/Market Size	Serves an unmet medical need. Total market is \$8.4B.
Y	Intellectual Property Protection	One patent application filed, another in development. One issued patent in Australia. Company has an option to license IP.
Y	Proof of Concept	Efficacy demonstrated in mouse models of autoimmune vasculitis, with 100% survival (contrasted with 100% mortality untreated).
Y	Potential Investor/ Business Partner Engagement	CEO and founders have engaged potential investors and strategic partners.
Y	Business Model	Business model is to complete pre-clinical, conduct first-in-human study and seek licensing/co-development partners.
Y	Project Plan/ Budget Narrative	Clear plan to satisfy FDA requirements, achievable with TVSF funds.
Y	Growth Plan in Ohio	Ohio-based. Using CWRU lab for cell therapy manufacturing.
Y	ESP Interaction	Engaged with Bounce Innovation Hub.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds
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Comments and Recommendations: Product addresses a large unmet medical need. Potential to serve a large and growing autoimmune disease market. Strong team with the range of skills to achieve company goals. Therapy shown to be effective in a mouse model of disease. FDA agreed that the planned mouse study is sufficient to support the initiation of clinical trials. This application is recommended for funding.

TECHNOLOGY VALIDATION AND STARTUP FUND

Proposal Summaries - Phase 2 Not Recommended for Funding

Proposal 24-9477	DEB Technologies LLC	Amount Requested: \$200,000
<i>Licensing Institution</i>	Department of Veterans Affairs	Amount Recommended: \$0
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	DEB Technologies, LLC
Biomedical/ Life Sciences		Entrepreneurs' Center

Company Snapshot: The technology is a Device for gait, Efficiency, and Balance (DEB) shoe to prevent leg crossing and subsequent falls in patients with limited leg strength.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
Y	Management Team	CEO/business leader is experienced in company and product development. Supported by a group of committed advisors and consultants. Inventor serves as tech advisor. Chief Medical Officer is an established physical medicine and rehab physician.
Y	Opportunity/Market Size	Total addressable market of \$50M. Likely to be an exclusive supplier to the Veterans Administration.
Y	Intellectual Property Protection	In negotiation for an exclusive license from the Department of Veterans Affairs for two patent applications covering the product. New IP in development.
Y	Proof of Concept	The DEB Shoe has been demonstrated successfully in patients with variety of gait disorders, such as gait disorder secondary to stroke.
Y	Potential Investor/ Business Partner Engagement	Engaged with two Central Ohio VCs. Access to the VA's Intrapreneurial Product Market Place.
R	Business Model	Business plans and regulatory strategy not adequately explained in proposal.
G	Project Plan/ Budget Narrative	Project plan aligns with product goals, using Ohio-based vendor.
Y	Growth Plan in Ohio	Services contractor is Ohio-based. Company committed to Ohio.
Y	ESP Interaction	Working with Dayton Entrepreneurs' Center.
	Evaluator Recommendation	This application is not recommended for funding.

Evaluation Scale	Weak	Meets	Exceeds
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Comments and Recommendations: Leadership team has adequate skills in technical and medical business development. Strong team of strategic partners and advisors. Moderate market addressable with low manufacturing costs. Technology demonstrated in VA rehab setting. Early access to customers via the VA's Intrapreneurial Product Market Place. Planned work at established Ohio product development firm will result in manufacturable prototypes. Regulatory strategy and business model are not adequately described in the proposal. This application is not recommended for funding.

TECHNOLOGY VALIDATION AND STARTUP FUND

Proposal 24-9482	Ravee Optics Limited	Amount Requested: \$200,000
<i>Licensing Institution</i>	Air Force Research Laboratory	Amount Recommended: \$ 0
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	<i>Infrared optics for drone sensing</i>
Advanced Materials	Entrepreneurs' Center	

Company Snapshot: Ravee Optics has developed and demonstrated a new process to manufacture high performance lenses domestically and with readily available materials that can reduce the bulk and cost of thermal imagers making them especially suited to use in drones, small vehicles, and handheld systems.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
R	Management Team	A strong technical Team with deep roots/connections with AFRL programs. Team has limited experience/ track record in fund raising, partner engagements, manufacturing, marketing and sales.
Y	Opportunity/Market Size	Projected at \$ 500M/yr with a CAGR of 19 %.
Y	Intellectual Property Protection	Provisional patent application has been filed. The company is expected to get an exclusive license in the field from AFRL.
Y	Proof of Concept	Currently at a TRL of 5/6 with AFRL funding.
R	Potential Investor/ Business Partner Engagement	Very early-stage discussions have been held with potential investors.
Y	Business Model	Leveraging a novel low-cost META optics technology to capture \$50K sales in 2026 and \$20M in 2028. Project funding needs \$2.5M.
Y	Project Plan/ Budget Narrative	Well laid out to get to TRL of 8/9; MRL 7.
Y	Growth Plan in Ohio	Project to have 8 FTE in 2028.
Y	ESP Interaction	Appears to be limited engagement with local EC.
	Evaluator Recommendation	This application is not recommended for funding.

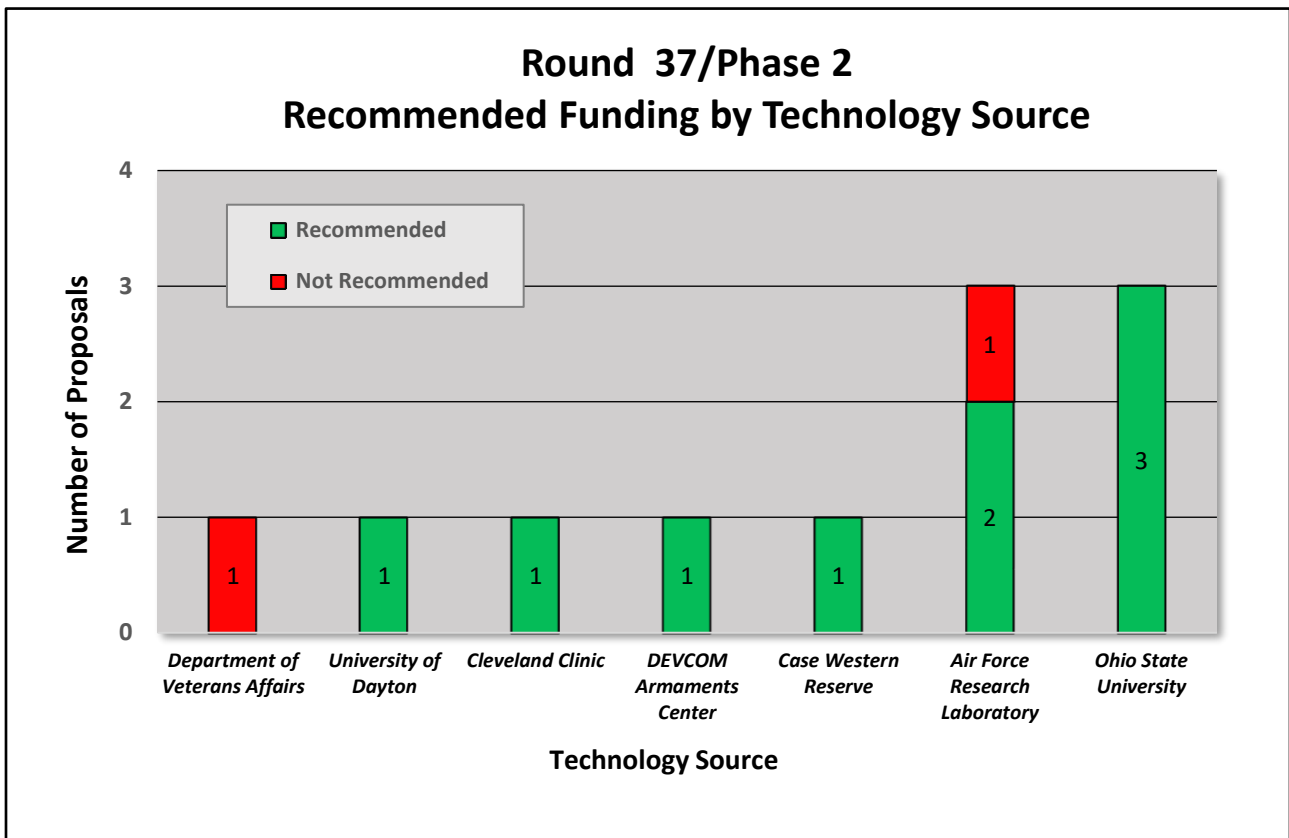
Evaluation Scale	Weak	Meets	Exceeds
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Comments and Recommendations: The Team is quite strong technically and has had success through its parent company Apex Micro Devices in serving DoD client through non dilutional funding sources. The Team is strongly urged to build their fund raising, potential partner engagement, business development, manufacturing, sales and marketing capabilities to meet their business goals and maximize valorization of their potentially impactful technology. This application is not recommended for funding.

4) Round 37 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 Air Force Research Laboratory and Ohio State University and one submission each from Case Western Reserve University, Cleveland Clinic, Department of Veterans Affairs, DEVCOM Armaments Center and University of Dayton. One application each from Air Force Research Laboratory and Department of Veterans Affairs are not recommended for funding. The nine (9) remaining applications are recommended for funding.

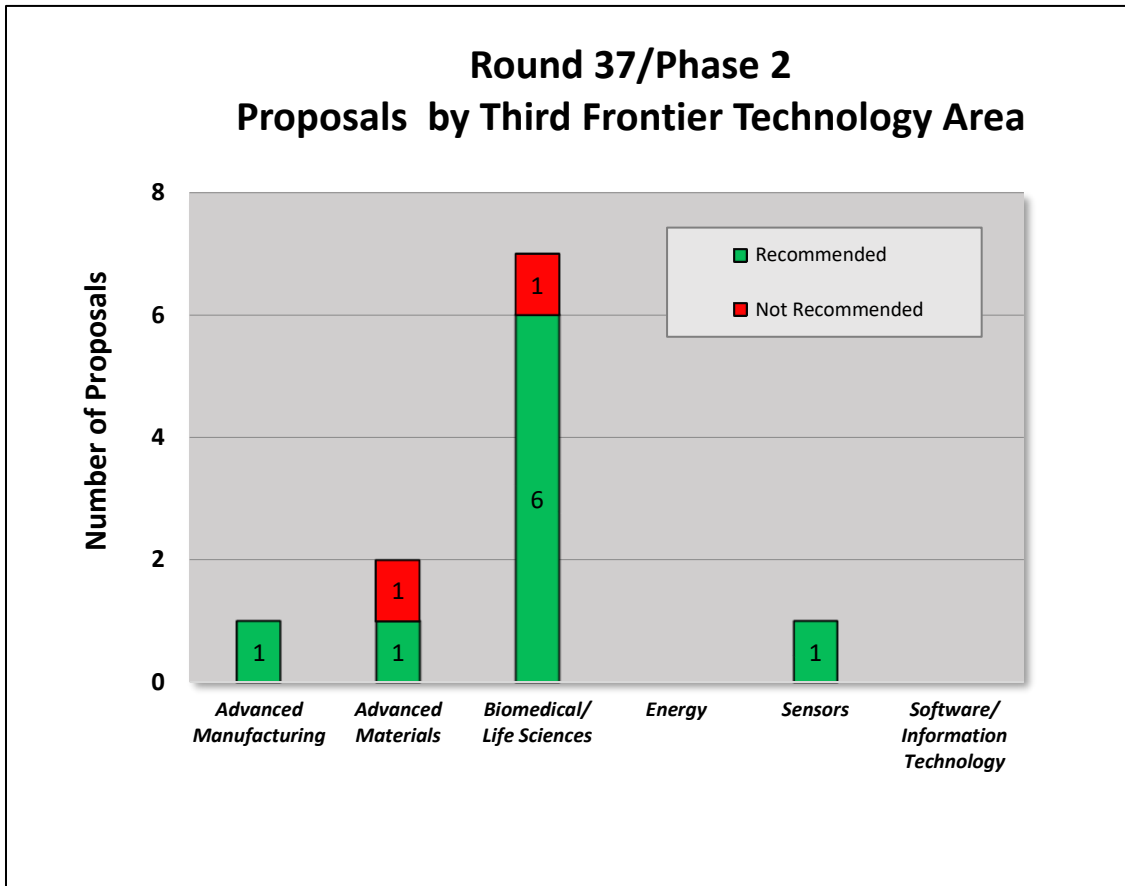
Figure 1. Round 37 Funding by Technology Source



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Figure 2 depicts Phase 2 proposal activity and funding recommendations by Third Frontier focus area. In this Round, seven of eleven proposals (64%) are in Biomedical/Life Sciences, two of eleven (18%) are in Advanced Materials and one of eleven (9%) is in Advanced Manufacturing and Sensors. Six Biomedical/Life Sciences and one each in Advanced Manufacturing, Advanced Materials and Sensors are recommended for funding. Rounds 20 to 36 prior round average is 55% in Biomedical/Life Sciences.

Figure 2. Round 37 Phase 2 Proposal Activity by Third Frontier Technology Area



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Figure 3 shows the aggregate ratings by evaluation criteria for all Phase 2 proposals. Opportunity/ Market Size, followed by Project Plan were the strongest categories in this Round. Investor, then Business Model were rated as the weakest.

Figure 3. Round 37 Phase 2 Proposal Rating Summary

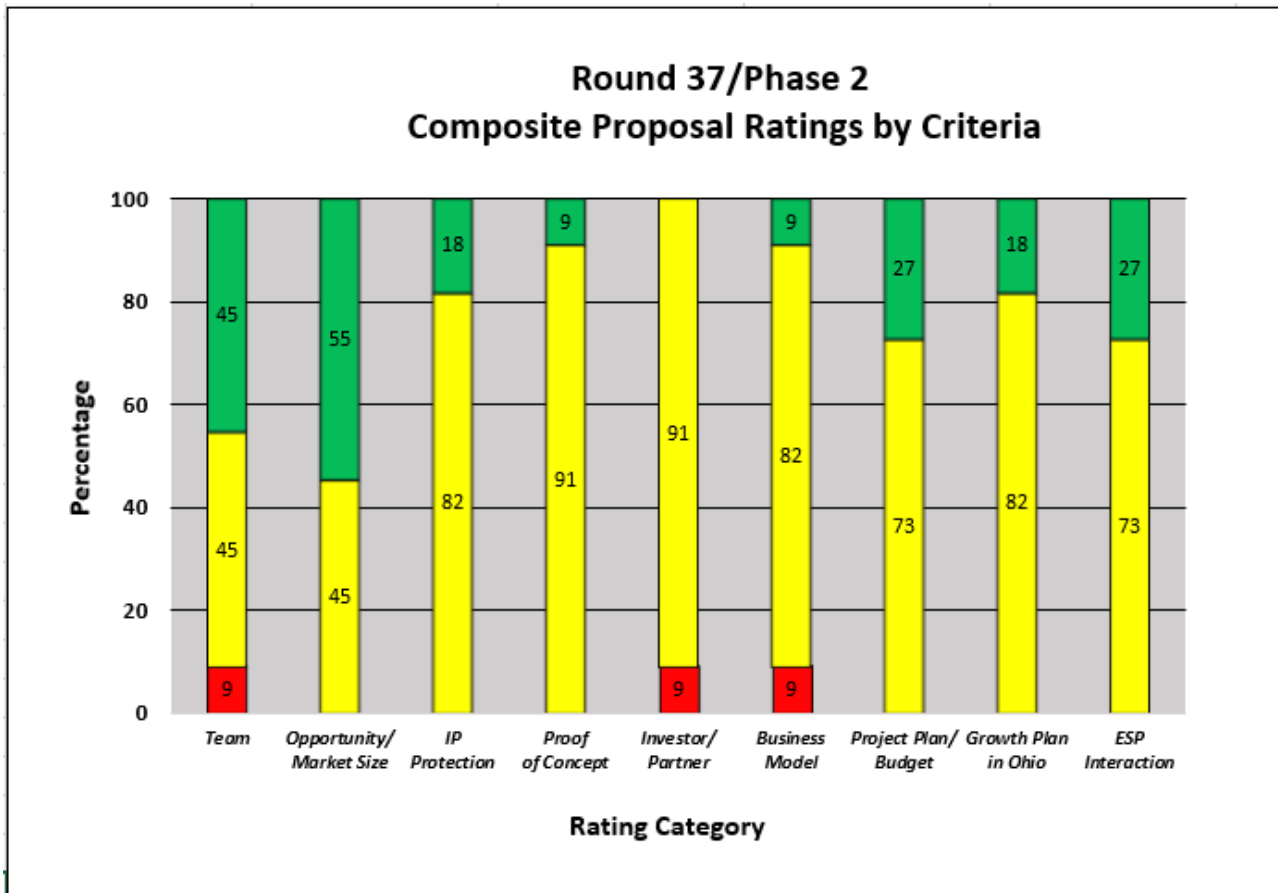


Figure 4 shows the percent meets or exceeds of the business model by Round. In the previous seventeen Rounds, business model was the lowest rating in Rounds 20-23 (53% average \geq meets), Round 26 (28%) and Round 31 (50%). The RFP was revised to elicit stronger business models prior to Round 24 and it appears that the proposals have provided stronger business models in subsequent Rounds. The average over all 17 previous rounds is 65%. The two 50% average \geq meets in Rounds 31 and 35 is concerning and is continuing to be monitored closely over the next few Rounds.

Figure 4: Rounds 20 to 37 Phase 2 Analysis of Business Model

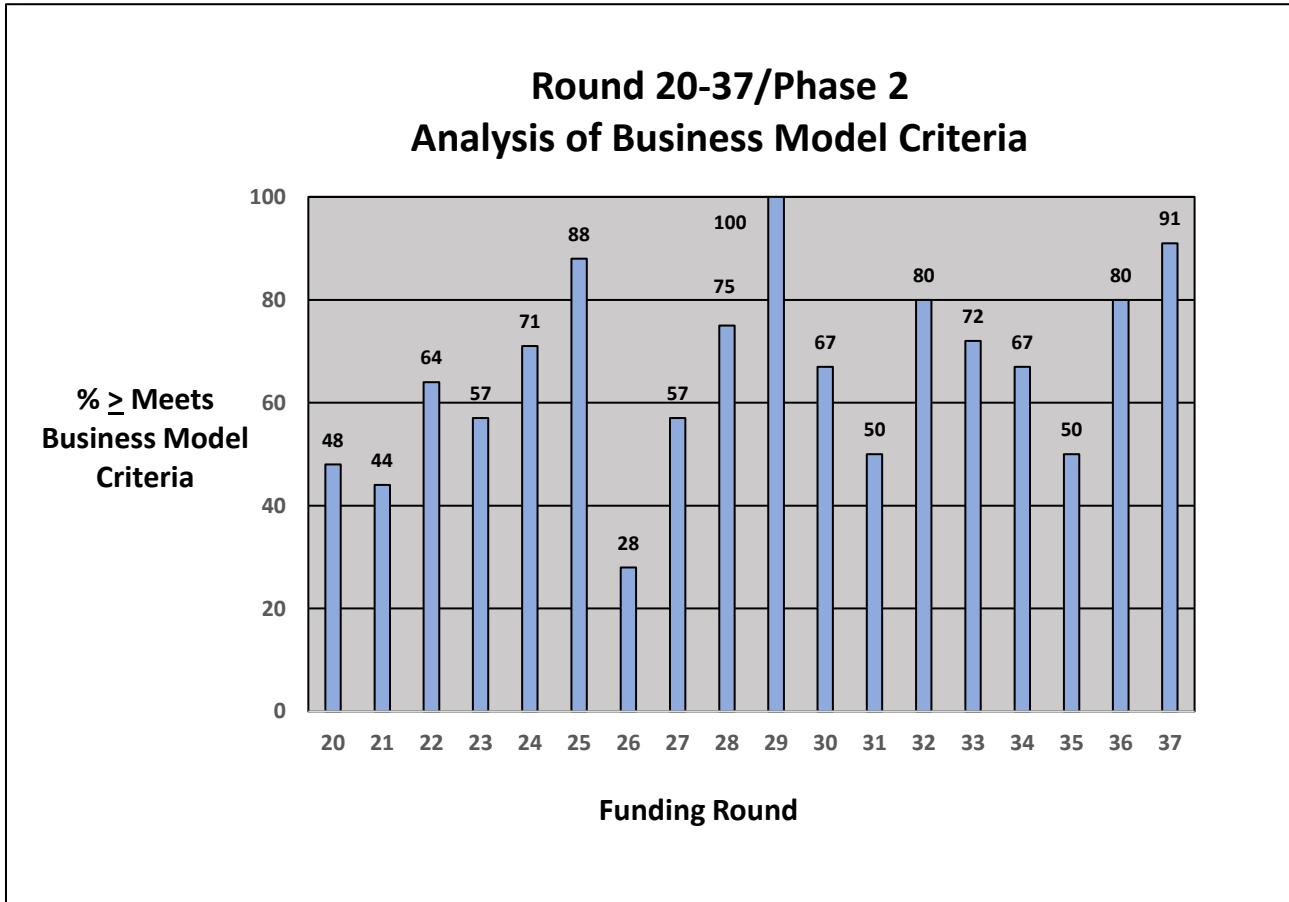
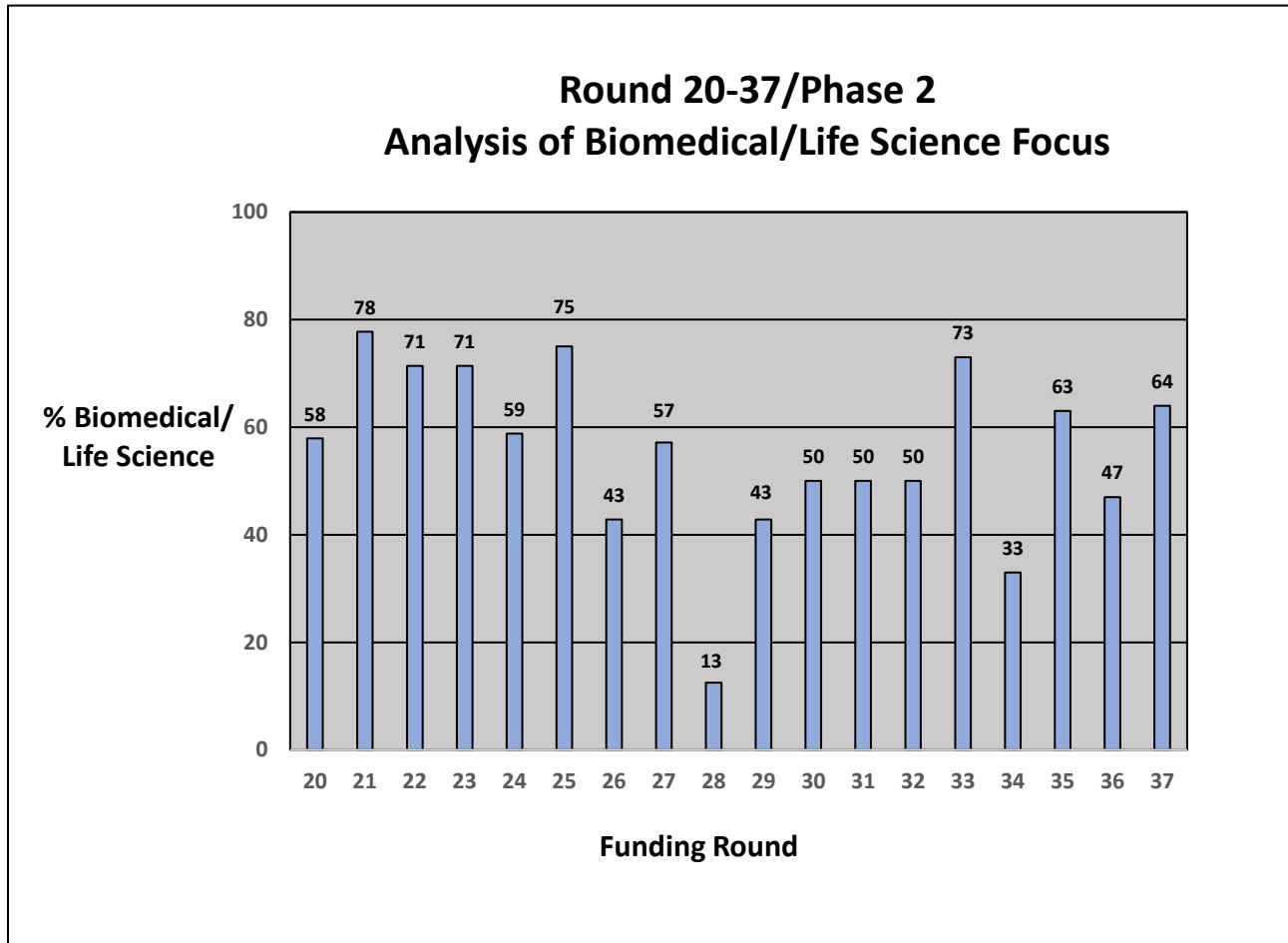


Figure 5 shows the percentage of Biomedical/Life Sciences applications for the last 18 Rounds. Round 37 represents 64% in Third Frontier Technology areas that are Biomedical/Life Sciences. Biomedical/ Life Sciences has been in the minority of the applications 5 times in the last 18 rounds. All seventeen rounds prior to Round 37 average 55% of the applications in Biomedical/Life Sciences.

Figure 5: Rounds 20-37 Phase 2 Analysis of Biomedical/Life Science Focus



Carry Through and Reapplication

Phase 1 Carry Through: There were four Phase 2 applicant that previously received Phase 1 funding and all are recommended for funding.

There is one Phase 2 reapplication for the first time (or second application) and one is recommended for funding. There are two Phase 2 reapplications for the second time (or third application) and both are recommended for funding. There is one reapplication for the fifth time (2 separate projects) and it is recommended for funding.

5) Recommendations

Biomedical/ Life Sciences applications have been 50% or more of the applications in 13 of the last 18 rounds. 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 11 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
- Recipient of 3 R&D 100 awards.
- Distinguished Visiting Professor of Engineering and Applied Science, University of Virginia (Spring 2022)

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:

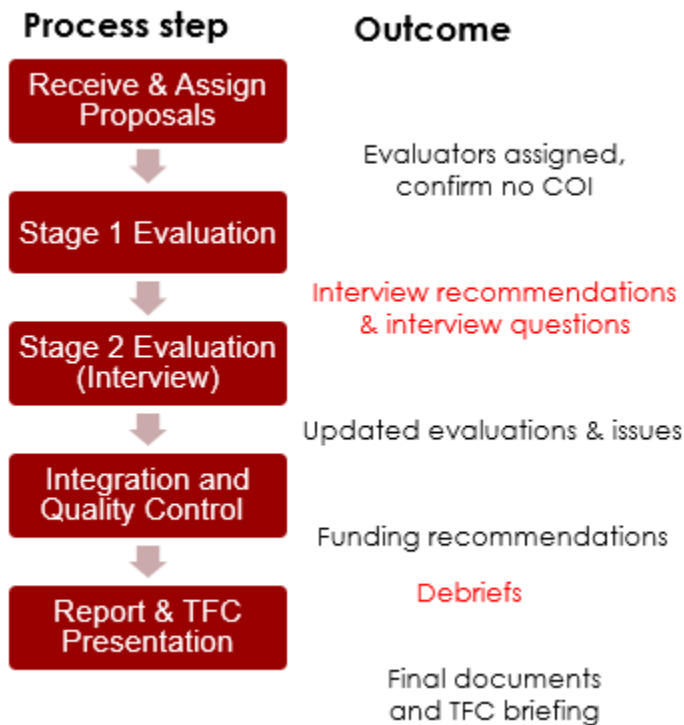
- Accelerate the commercialization of technology by Ohio start-up companies that license technology developed at Eligible Institutions during the critical early stage of life of the company.
- Generate the proof needed to move technology to the point where it is able to be commercialized or additional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

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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 rd 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?

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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?
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? Are growth plan details provided?
ESP Interaction	5	Is team engaged with ESP? Has team incorporated feedback from ESP into the project, proposal or business plan?