LEHIGH UNIVERSITY

Call for Proposals: Seed Translational Research Projects

We are inviting faculty-led teams to submit proposals for Seed Translational Research Projects (STRPs) as part of Lehigh's NSF-funded Accelerating Research Translation (ART) initiative. We aim to fund projects that will translate fundamental research into real-world impacts, which may be economic or social, within a relatively short time frame.

Each project can request up to $125,000 per year in direct costs for up to two years. We anticipate funding two projects this round. There will be additional rounds in 2025 and 2026.

Project Criteria

We seek projects stemming from fundamental research that have demonstrated a clear analytical or experimental proof of concept. Proposals should showcase how fundamental research has led to innovative solutions with potential for significant economic and/or societal benefits.

Each STRP proposal should outline a feasible plan to develop a prototype within two years that can be effectively demonstrated in an environment relevant to its intended real-world application. This can include innovations in public policy, community programming, educational methods, as well as more traditional technological advancements.

Proposals must be highly focused, with a clearly defined pathway toward tangible deliverables. Please provide a detailed timeline, expected deliverables, and an exit strategy that describes how the project will transition from the research phase to implementation and scaling.

By supporting a broad range of translational efforts, we aim to foster innovations that not only lead to economic growth but also social benefits, such as enhancing community well-being, improving educational outcomes, or addressing social inequities.

Proposals

Proposals are due by June 15, 2024 and must include the following components:

Part 1: Description of the Innovation

Detail the innovation, which can range from a technological advancement to a social or educational intervention, you seek to translate. Describe its potential applications and anticipated positive impacts on economic and societal outcomes. (Limit to 500 words)

- Proposing teams must also submit an Invention Disclosure Form by the submission deadline, if they have not already.

Part 2: Assessment of Innovation Readiness Level

Provide an evaluation of your innovation's current stage of readiness, including benchtop prototypes, trials, studies, or ongoing applications that support its effectiveness and feasibility. Supporting documents can be attached. See Assessing Readiness Levels section below for more information. (Limit to 500 words)

Part 3: Project Description

Each project can request up to $125,000 direct costs per year for up to two years. Explain how you would use this funding to develop a prototype that will be successfully tested within two years in a relevant operational environment.

- Describe how you will engage with potential users or beneficiaries to tailor your solution effectively through user-centered design and iterative development processes. Explain how you will validate and test your solution with specific target groups.
- Discuss how your project will address and incorporate principles of diversity, equity, inclusion, and accessibility throughout the prototype development and testing phases.
- Provide a clear and detailed timeline with specific milestones and deliverables against which progress can be evaluated.
- Outline one or more exit strategies for your project. Describe how you plan to conclude the research phase and transition the innovation into a sustainable, operational phase. This should include potential pathways for scaling, commercialization, venture creation, or integration into existing systems or frameworks, depending on the nature of the innovation. Detail any partnerships, funding opportunities, or market strategies that will be used to ensure the longevity and impact of the project beyond the duration of the grant.

Please note that ART funding cannot be used for the purchase or acquisition of major equipment or instrumentation but can be used to buy equipment up to $50K or to gain access to such equipment or instrumentation that can be shown as necessary for the activities of an STRP.

Part 4: Educational Impact on Graduate Students and Postdocs

Describe how the project will contribute to the translational research skills of graduate students and/or postdocs involved. Outline specific educational activities and experiences that will enhance their understanding of translating innovations into real-world applications. (Limit to 500 words)

Part 5: Inclusivity

Detail how your project will engage individuals from underrepresented and underserved groups. Discuss strategies to create an inclusive research environment that is accessible to all participants. (Limit to 500 words)

Part 6: Budget & Budget Justification

Include a budget for Years 1 and 2 (using the Lehigh Internal Budget Excel spreadsheet) and include a short justification for each budget line item.

Parts 1 to 6 can be submitted in a single document, with the budget in a separate spreadsheet.

Post-Award Evaluation and Commitments

The progress of each awarded STRP toward milestones and deliverables will be monitored by the ART Leadership team, and decisions about Year 2 funding will be based on progress made.

PIs and Co-PIs on awarded STRPs are expected to serve as ART (Research Translation) Ambassadors for the Lehigh community.

More Information

We will host informational sessions and office hours for interested teams in the coming weeks. We strongly suggest that teams considering proposing STRPs contact us to discuss plans and proposals. We can provide guidance on aspects including readiness levels, user-centered design, exit strategies, etc.

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Assessing Readiness Levels

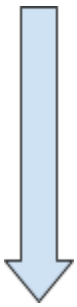
Innovation readiness can be assessed in terms of technology readiness level (TRL) or evidence readiness level (ERL). While the former is suitable for technological innovations, the latter may be more appropriate for socially-oriented innovations arising from fundamental research in the social and behavioral sciences.

Different agencies and entities have defined TRLs in slightly different ways – see table below. In terms of technologically-focused STRPs, we are seeking innovations that are currently at TRL 3 or 4, with strong potential for reaching TRL 5 or 6 within the two year funded period of the STRP.

Table 1 highlights the key differences of the adoption of TRL scale by NASA, Horizon 2020, UK House of Commons and Ocean Energy Europe

Table 1 TRL scales and respective definitions by NASA, Horizon 2020 and UK House of Commons.

TRL Scale	NASA Definition (https://esto.nasa.gov/trl/)	HORIZON 2020 (EU)	UK House of Commons, Technology and Innovation Centres	Ocean Energy Europe
1	Basic principles observed and reported.	Basic principles observed	Basic principles observed and reported.	Basic Research Principles: principles postulated and observed but no experimental proof available
2	Technology concept and/or application formulated.	Technology Concept formulated	Technology concept and/or application formulated.	Technology formulation
3	Analytical and experimental critical function and/or characteristic proof of concept.	Experimental proof of concept	Analytical and experimental critical function and/or characteristic proof of concept.	Applied Research: First laboratory tests completed; proof of concept
4	Component and/or breadboard validation in laboratory environment	Technology validated in Lab	Technology basic validation in a laboratory environment.	Small scale prototype built and tested in a laboratory environment
5	Component and/or breadboard validation in relevant environment.	Technology validated in relevant environment	Technology basic validation in a relevant environment.	Large scale prototype tested in intended environment
6	System/sub-system model or prototype demonstration in an operational environment.	Technology demonstrated in relevant environment	Technology model or prototype demonstration in a relevant environment.	Prototype system tested in intended environment close to expected performance
7	System prototype demonstration in an operational environment.	System prototype demonstration in operational environment	Technology prototype demonstration in an operational environment.	Demonstration system operating in operational environment at pre-commercial scale
8	Actual system completed and "flight qualified" through test and demonstration.	System complete and qualified	Actual Technology completed and qualified through test and demonstration.	First of a kind commercial system: manufacturing issues solved
9	Actual system flight proven through successful mission operations.	Actual system proven in operational environment	Actual Technology qualified through successful mission operations.	Full commercial application, technology available for consumers



From: Bhattacharya, Sujit & Kumar, Vipan & Nishad, Shiv Narayan. (2022). Technology Readiness Level: An Assessment of the Usefulness of this Scale for Translational Research. Productivity. 62. 112-124.

For innovations stemming from social and behavioral research, the ERL scheme below may be useful. In terms of STRPs, we are seeking innovations that are currently at ERL 6 or 7, with strong potential to reach ERL 8 within the two year funded period of the STRP.

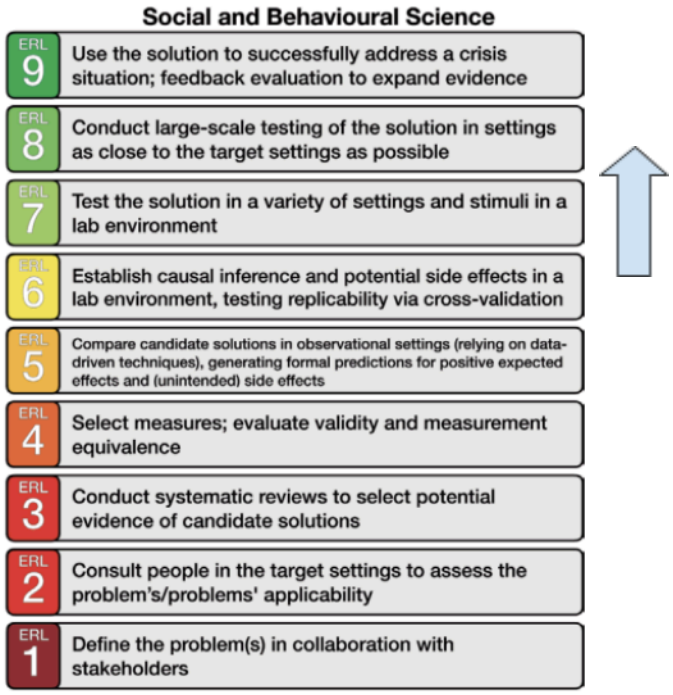


Fig. 2 | Proposed social and behavioural sciences evidence readiness levels.

From IJzerman, H., Lewis Jr, N. A., Przybylski, A. K., Weinstein, N., DeBruine, L., Ritchie, S. J., ... & Anvari, F. (2020). Use caution when applying behavioural science to policy. *Nature Human Behaviour*, *4*(11), 1092-1094.