Small Grants to Advance Translational Science (S-GATS) Program

Presenters:

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Information Session Agenda

1. Welcome and Introductions
2. Small Grants to Advance Translational Science Program
   - Program overview
   - Applicant eligibility
   - Program priorities
   - Application process
   - Review process and criteria
   - Post-award requirements
   - Resources
3. Questions and Answers

Program Overview

Funding opportunity supported by the National Center for Advancing Translational Sciences (NCATS), part of the NIH.

Provides one-year awards to support projects aimed at advancing the science of translation.

Focuses on advancing cross-disciplinary team science, with the goal of helping research teams identify generalizable principles and scalable solutions that can be applied across a range of diseases, research initiatives, and translational processes.

Prioritizes actionable research that addresses unmet scientific needs and/or improves health outcomes of the community and advances health equity for traditionally marginalized, underserved, and underrepresented populations, as appropriate.

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Program Overview (cont'd)

Funding amounts: From $25,000 to $50,000 in direct costs only. Cost sharing is not allowed. Projects must be fully supported with the Tufts CTSI funds awarded through the S-GATS funding mechanism.

Project period: May 1, 2023 through April 30, 2024. Project extensions are not allowed.

Procedures and requirements:

- Project start and release of funds are contingent upon receipt of all necessary local institutional and regulatory approvals.
- Projects involving human and/or animal participants as well as projects that involve a foreign component are required to seek and receive NCATS' prior authorization.
- All awardees will have access to on-going pre- and post-award scientific and logistical support and be able to request post-award dissemination and implementation resources and services.

Applicant Eligibility

Principal Investigator (PI) must have a primary position or faculty appointment at a Tufts CTSI-affiliated academic, medical, industry, not-for-profit, and community partner or collaborator organization.

Medical residents, fellows, post-doctoral fellows, or medical students are **not** eligible to serve as Lead PIs. However, they may be included in key personnel along with collaborators not affiliated with Tufts CTSI.

At the time of award, each budgeted key personnel member of the research team must have an eRA Commons Username and be eligible to receive NIH funding.

Eligible Sites

Action for Boston Community Development
Asian Community Development Corporation
Asian Task Force Against Domestic Violence
Asian Women for Health
Authentic Caribbean Foundation
Boston Chinatown Neighborhood Center
Brandeis University
Broad Institute
Center for Information and Study on Clinical Research Participation
Cooperative Services Inc. Support & Development
Critical Path Institute
Greater Boston Chinese Golden Age Center
Greater Boston Section of the National Council of Negro Women
Institute for Clinical Research and Health Policy Studies
Kaiser Permanente Center for Health Research
Lahey Hospital and Medical Center
Maine Medical Center
Massachusetts Biotechnology Education Foundation
Massachusetts General Hospital Institute of Health Professions
Massachusetts Institute of Technology
Medical Legal Partnership, Boston
Museum of Science, Boston
New England Quality Care Alliance
Newton-Wellesley Hospital
Northeastern University
Phillips Research
Point32Health
RAND Corporation
Rounding The Bases, Inc.
The Jackson Laboratory
The People's Academy
Tufts Medical Center/Tufts Medicine
Tufts University
Union Capital Boston
Urban College of Boston

Program Priorities

Projects must seek to understand a scientific or operational principle underlying a step of the translational process.

Scientific principles focus on factors directly related to the selection of the research question, research approaches and research methods.

Operational principles focus on how team functioning, organizational environment, and the culture of science influence the research. They facilitate the science.

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Example Translational Roadblocks

1. Conducting clinical research. Needed are for innovations to improve clinical research design, implementation, and operations: Quality, Safety, Efficiency, Effectiveness, and Informativeness

Biomarker qualification process

Health informatics

- Data interoperability
- Electronic health records for research
- Data transparency/release

Community and stakeholder engagement and team science

- Engagement, recruitment, retention of populations and/or subpopulations in clinical research
- Incentives/credit for team science
- Community and stakeholder engagement at all stages of translational process

Regulatory processes

Shortening time to adoption of successful interventions

Impact

- Incentives/credit for health improvement
- Measuring impact on health (or lack thereof)

Clinical study designs and conduct

- Clinical trial networks and multi-site studies
- Clinical outcome criteria (e.g., patient-reported outcomes)
- Clinical diagnostic criteria
- Contemporary clinical trial designs
- Implementing single IRB processes

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Example Translational Roadblocks (cont'd)

2. Ensuring benefits are widespread. There is a need for equity in distributing the benefits of clinical and translational science across populations.

Interventions to address existing disparities
Innovations to disrupt the perpetuation of disparities or creation of new ones
Specific disparities:
- Rural disparities
- Disparities among minoritized groups
- Disparities among other underserved populations

3. Translating findings. There is a need for more efficient processes for moving research findings into improved clinical care and community health dissemination.

Understanding the translational process
Integration of project management
Incentives/credit for team science or health improvement
Community and stakeholder engagement at all stages of translational process
Solutions to problems/barriers in one disease area that are generalizable to other disease areas

Example Translational Roadblocks (cont'd)

4. Collaborating across organizations. There is a need to minimize organizational-level barriers to collaborating effectively across sites in order to accelerate translation.

Organizational structures and processes to support collaboration
Clinical trial networks
Single Institutional Review Boards

5. Developing the clinical and translational science workforce. There is a need for effective education/training of clinical and translational science workforce.

Workforce diversity – strategies to engage populations underrepresented in clinical and translational science
Team science training, including all types of stakeholders who may be affected by clinical and translational science
Scientific training
Including rigor and reproducibility
Communications training
Systems thinking training

Successful Proposal

Responsive Project Categories	Proposal Strategy	Answer These Questions	Proposal Submission
Develop, test, or disseminate a new research methodology or new technologies, tools, resources that will *increase the efficiency and effectiveness of translation*	Frame your project as a "case example" – what are the generalizable findings the project will generate and how might these findings be applied broadly -OR- How will what you propose to "build" or "develop" be broadly applicable across therapeutic areas, interventions, contexts, etc.	How will the proposed method or process increase translational effectiveness or efficiency? What are other applications in which the proposed innovation will increase translational effectiveness or efficiency?	Lead with the big picture problem being addressed and NOT the case example Clearly articulate the generalizable applications State how the case example will be used to derive new translational research methods or operational principles
Develop, test, or disseminate a new therapy or technology with generalizable application to *address an identified translational roadblock*		What is the translational roadblock being addressed? What are other applications in which the proposed innovation overcomes a translational roadblock?	

The following types of projects are NOT responsive:

- Those that focus on crossing a particular step of the translational process for a particular target or disease
- Those that focus on generating preliminary data for a larger grant submission/project to develop a new line of research
- Those extending or augmenting or enhancing an existing project

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Case Study 1

A translational limitation in preclinical research is the lack of generalizable tools for the expedited drug development from mechanistic studies to develop novel therapeutics. There are bioinformatic tools for establishing clusters of putative pathways based on genetic analysis of genes that are aberrant in disease states, as well as rational drug design programs that optimize drug leads based on a putative validated target that could be tested in animal models. However, thus far, these tools cannot “talk” to each other. The seamless integration between these powerful bioinformatics tools would expedite preclinical studies that could accelerate drug discovery. We propose to develop a novel platform technology that integrates genetic data and data on validated drug targets. While we will use breast cancer as a model for developing and testing the proposed platform. If successful, the platform will be applicable to any disease for which the required data sets are available. Thus, the proposed work is highly responsive to the mission of improving translational science by developing new methods to increase the efficiency of translation and thus is highly appropriate to the CTSA’s call for proposals.

Through our collaborations with The Jackson Laboratory and Servier Pharmaceuticals, we will develop a computer program that searches the National Cancer Institute (NCI) Cancer Atlas for genes and alleles that are altered in metastatic breast cancer and provide scores for their impact on disease severity. We will integrate a second search engine within the proposed platform which will use pharmaceutical parameters (e.g., drugability, off target effects, dosing and toxicity) to find an optimal lead compound for the genes/alleles identified in the Cancer Atlas database. Using Servier’s exclusive Khime technology, optimal lead compounds, specific to the genes/alleles identified, will be determined based on protein structure (if available) and they will synthesize the candidate lead compounds. Finally, we will test the candidate lead compound in vitro with breast cancer cells for efficacy in cancer cell killing. We will further test promising compounds in patient derived xenograft models (derived from patients carrying the relevant mutant allele) provided by The Jackson Laboratory as a preclinical test for inhibiting tumor growth and increasing survival.

Together, these studies will validate the platform and provide the team with an important approach to genetically derived breast cancers. The platform would be provided to the CTSA Consortium and the community at large after its introduction by publication.

Case Study 1 Highlights

A translational limitation in preclinical research is the lack of generalizable tools for the expedited drug development from mechanistic studies to develop novel therapeutics.

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While we will use breast cancer as a model for developing and testing the proposed platform. If successful, the platform will be applicable to any disease for which the required data sets are available.

Case Study 2

Enrolling and retaining research volunteers is a major challenge for many studies. Barriers to participant enrollment are numerous and there can be added challenges to the recruitment and retention for studies focused on hard-to-reach populations, those in conducted in international and/or rural settings, or those conducted in situations where person-to-person contact may increase health risks for study participants and study staff. Difficulty travelling to the study site is one example of a common barrier for many potential research participants and can limit study enrollment. To address this challenge we will design and beta-test an improved remote clinical study platform that can be used broadly to allow remote participation in a range of clinical studies.

Existing remote clinical trial platforms can be expensive and/or have a rudimentary user interface and can be difficult for many participants to navigate – particularly for those who are less technology savvy. Thus, the primary project goals will focus on the designing and evaluating an easy-to-navigate, open-source remote clinical studies platform targeted to adults with limited computer or internet comfort, experience, or expertise. The platform will support the remote conduct of all study activities (e.g., eligibility screening, obtaining informed consent, study visits) and will focus on providing easy to use participant data entry processes, procedures, and portals, including electronic patient-reported outcomes (ePRO) technology.

To beta-test the platform we will host focus groups where members will participate in a mock remote research study. Participants be asked to perform specific data entry and reporting tasks on the platform, and subsequently complete a survey on the user experience and ease of platform navigation. We will host three sequential focus groups with feedback from early groups informing improvements throughout an iterative design process.

The proposed technology seeks to enable increased participation in clinical trials, facilitate study conduct, and improve the research volunteer experience. Its use is generalizable to a broad range of settings, populations, and research studies and addresses a fundamental translational roadblock to the efficient conduct of clinical studies – the recruitment and retention of diverse research participants.

Case Study 2 Highlights

Enrolling and retaining research volunteers is a major challenge for many studies. Difficulty travelling to the study site is one example of a common barrier for many potential research participants and can limit study enrollment.

To address this challenge we will design and beta-test an improved remote clinical study platform that can be used broadly to allow remote participation in a range of clinical studies.

The platform will support the remote conduct of all study activities (e.g., eligibility screening, obtaining informed consent, study visits) and will focus on providing easy to use participant data entry processes, procedures, and portals, including electronic patient-reported outcomes (ePRO) technology.

Its use is generalizable to a broad range of settings, populations, and research studies.

Case Study 3

Prevention programs often fail to reach the people who could benefit the most because of ineffective implementation in real world settings. For example, a review of 18 studies of obesity prevention programs in head start settings found that educators often do not follow evidence-based practices. One reason for this is that program implementers in early care and education settings may not use strategies that overcome contextual barriers to uptake of evidence-based practices. Needed are effective, stakeholder engaged methods for selecting and using implementation strategies to increase the uptake of evidence-based interventions in these settings.

We propose to conduct a type III hybrid effectiveness and implementation science trial focused on understanding how an evidence-based intervention can be effectively implemented in an early education setting. Using the We Inspire Smart Eating (WISE) intervention as a case example, we plan to conduct a small-scale implementation trial of two types of implementation strategies (training and reminders only versus an enhanced multi-strategy approach) aimed at improving the use of WISE evidenced based practices by teachers in Head Start programs. The enhanced multi-strategy approach will be developed by partnering with stakeholders using a structured process to identify barriers and facilitators to program uptake and selection of a multi-faceted implementation strategy package. We will assess the reach, effectiveness, adoption, implementation and maintenance of the program using the RE-AIM framework. As well, this study will use a within-trial cost and cost-effective analysis to look at the impact of the Basic Strategy as compared to the Enhanced Strategy.

The results of this prevention trial can be used to develop and test implementation strategies for similar evidence-based programs in different educational settings and for other preventive interventions in similar educational settings. The methods used and the strategies developed can suggest cross-cutting solutions for common translational science challenges. In addition, they could serve as models for preventing implementation failures in other settings (home, community recreation) and for other evidence-based behavior programs such as reducing screen time and increasing physical activity.

Adapted from a publication: Stakeholder selected strategies for obesity prevention in childcare: results from a small-scale cluster randomized hybrid type III trial. (Taren Swindle, PhD, et al.)

Case Study 3 Highlights

Prevention programs often fail to reach the people who could benefit the most because of ineffective implementation in real world settings.

Needed are effective, stakeholder engaged methods for selecting and using implementation strategies to increase the uptake of evidence-based interventions in these settings.

We propose to conduct a type III hybrid effectiveness and implementation science trial using the We Inspire Smart Eating (WISE) intervention as a case example and test two strategies by teachers in Head Start programs.

The results of this prevention trial can be used to develop and test implementation strategies for similar evidence-based programs in different educational settings and for other preventive interventions in similar educational settings.

Adapted from a publication: Stakeholder selected strategies for obesity prevention in childcare: results from a small-scale cluster randomized hybrid type III trial. (Taren Swindle, PhD, et al.)

Case Study 4

Predictive algorithms in health care are regularly used to guide treatment decisions and resource prioritization but may actually introduce bias and unfairness that is unseen (the “black box” problem). In the machine learning community and the population at large, the notion that predictive algorithms can introduce unfairness in decision-making (e.g. predictive policing, credit worthiness, "no fly" lists) is well known. Understanding how these complexities may apply to a healthcare context is needed to ensure that the algorithmic injustices observed in other sectors are not introduced or propagated in clinical decisions, such as in the allocation of scarce clinical resources. Yet ensuring algorithmic fairness requires not just technical expertise, but the engagement of stakeholders to develop consensus about how to supervise algorithms to guide fairer prediction and decision-making in healthcare.

We therefore propose a multidisciplinary team collaboration of experts in clinical prediction, epidemiology and stakeholder engagement to (1) develop a literature-informed map of (a) the various concepts/measures of fairness and (b) the types of decisions relevant to the medical context; (2) engage with expert stakeholders representing various perspectives to identify the full spectrum of relevant real-world cases; and (3) tailor these cases for stakeholders representing diverse backgrounds, and pilot test one in a multi-ethnic patient stakeholder group.

This effort provides the foundation for the creation of practical tools that can be used across the healthcare ecosystem to ensure that algorithms are adhering to our human values of fairness.

Adapted from a proposal abstract: Understanding Algorithmic Bias and Unfairness in Healthcare (Jessica Paulus, ScD and David Kent, MD)

Case Study 4 Highlights

Predictive algorithms in heath care may actually introduce bias and unfairness that is unseen.

We propose a multidisciplinary collaboration of experts in clinical prediction, epidemiology and stakeholder engagement to (1) develop a literature-informed map of the various measures of fairness and the types of decisions relevant to the medical context; (2) engage with expert stakeholders representing various perspectives to identify the full spectrum of relevant real-world cases, and pilot test one in a multi-ethnic patient stakeholder group.

Understanding how these complexities in the healthcare context can ameliorate algorithmic injustices in clinical decision-making, advancing health equity and reducing health disparities.

This effort provides the foundation for the creation of practical tools that can be used across the healthcare ecosystem to ensure that algorithms are adhering to our human values of fairness.

Adapted from a proposal abstract: Understanding Algorithmic Bias and Unfairness in Healthcare (Jessica Paulus, ScD and David Kent, MD)

Application Process

The program has a two-step application process that involves an initial submission of a competitive Letter of Intent (LOI), and, if invited, a full proposal. Both must be submitted via Tufts CTSI's REDCap online submission portal. Incomplete and late submissions will not be accepted.

Key dates:

- LOIs due: Wednesday, October 5, 2022 at 11:59PM
- Letter of Intent outcome notifications: by Monday, November 14, 2022
- Proposals due: Thursday, December 22, 2022 at 11:59PM (by invitation only)
- Award announcement: March 2023

LOI submission guidance and form are available at:
https://collaborate.tuftsctsi.org/redcap/surveys/?s=3MNWFATNWWJN7Y4X

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Letter of Intent

Applicants are strongly encouraged to consult the S-GATS Program support team prior to submission of the initial LOI.

LOI submission must include a concise thought-out description of the ultimate proposal (up to two pages in length) and PI and Co-PI biosketches.

LOI should describe the project and its proposed methods of study in adequate detail so that their merit may be assessed.

All complete LOI submissions will be peer-reviewed for their alignment with the program objectives, translational relevance, scientific rationale and rigor, feasibility, potential for impact, and clarity.

The LOI review process is designed to help identify the most promising and scientifically sound research projects to move forward, and to support further project development.

Full proposals will be accepted by invitation only.

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Letter of Intent and Proposal Review Process and Criteria

Submissions will be reviewed and rated using a nine-point scoring scale following the NIH scoring guidelines (1=exceptional; 9=poor).

- Scientific Peer Review
  1. **Significance** - *ability to produce cross-cutting solutions across multiple diseases, treatments, and interventions while also addressing unmet scientific, patient or population health needs.*
  2. **Innovation** - *focus on increasing the impact of research through innovations in translational research methods, processes, and structures.*
  3. **Approach** - *ability to develop research questions and implement transformative approaches that match the complexity of the translational problem being addressed.*
  4. **Team and Organizational Environment** - *ability to effectively engage stakeholders, leverage cross-disciplinary team science, and build effective boundary-crossing partnerships.*
  5. **Future plans** - *clear articulation of the generalizability of the effort. Any next steps would be next steps for the field (not the investigator).*

Additional Proposal Review Process and Criteria

- Stakeholder Engagement and Dissemination Plan Review Criteria
  1. **Stakeholders** - *ability to identify key stakeholder groups and determine the role they play or may play in the proposed research project or dissemination of its results.*
  2. **Relevance** - *ability to demonstrate explicit relevance of the project and its outcomes to the identified stakeholder groups and the public.*
  3. **Approach** - *rigor of the proposed stakeholder engagement and dissemination plan to meet the proposed objectives and goals.*

- Tufts CTSI Senior Leadership Team Review and Funding Decision

  Key funding considerations: overall impact score, project feasibility, clear strategy and intentional focus on health equity, budget justification, available funds, and distribution across the translational spectrum.

  Expected number of awards: 6-8 awards, depending on the volume of meritorious proposals received and their individual budget requirements.

Post-Award Requirements

Institutional and regulatory approvals (e.g., IRB, IACUC, IBC)

Projects involving human and/or animal subjects as well as projects involving a foreign component may not begin until the appropriate NIH/NCATS prior approvals are received.

- NCATS prior approval for research involving human subjects and/or human cell lines and tissue repositories
- NCATS prior approval for research involving live vertebrate animals or vertebrate animals euthanized for tissue harvest and/or generation of custom antibodies
- NCATS prior approval for research involving a foreign component, as defined by NIH

Progress tracking

Interim and final reporting and long-term outcomes tracking

Citation requirements

Future review commitment

Research Services

Tufts CTSI offers pre-award research services at no cost to all eligible applicants (Tufts CTSI Navigators, Biostatistics, Epidemiology, and Research Design (BERD) Center, Community and Stakeholder Engagement, Research Process Improvement, Informatics, Recruitment and Retention Support Unit (RRSU), T.5 Capacity in Medical Devices, Regulatory, and more).

How to access Tufts CTSI research services?

- Request a virtual consultation or reach out for assistance by contacting the S-GATS Program Team at sgats@tuftsmedicine.org
- Sign up for a virtual research help drop-in session offered by the BERD Center. These 30-minute sessions can be scheduled at: https://www.tuftsctsi.org/research-services/research-design-analysis/.

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Additional Information

S-GATS Program Request for Applications available at
https://www.tuftsctsi.org/funding-opportunities/open-opportunities/small-grants-to-advance-translational-science-s-gats/

Questions?

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