



Center for Immunotherapeutic Transport Oncophysics

NATIONAL INSTITUTES OF HEALTH
NATIONAL CANCER INSTITUTE

PHYSICAL SCIENCES-ONCOLOGY CENTER
Center for Immunotherapeutic Transport Oncophysics (CITO)

TRAINEE RESEARCH PROGRAM

Request for Applications

Deadline

Proposals can be submitted anytime, on a rolling basis.

Center and Funding Opportunity Overview

The Center for Immunotherapeutic Transport Oncophysics (CITO) focuses on identifying and understanding the multi-scale transport properties of immune cells and molecules (systemically and within the tumor microenvironment) and other biophysical properties of the tumor microenvironment, in order to ultimately develop effective cancer immunotherapies. Two Research Projects, the Transport Oncophysics Core (TOC), and the Education and Outreach Unit (EOU) support the accomplishment of our goals within this central theme. **Project 1** aims to determine the transport phenomena of dendritic cell (DC) vaccines for breast cancer and pancreatic cancer and post-vaccination changes in the transport of endogenous DCs, effector T cells, and macromolecular drugs. This information will be used to improve vaccines and immune responses in these two cancer models. **Project 2** aims to determine the effects of multi-scale transport phenomena of pancreatic ductal adenocarcinoma (PDAC) on the distribution of immune cells and nutrients in the tumor microenvironment, during tumor progression. Project 2 also examines the role of immune checkpoint, phosphatidylserine (PS), in suppressing immune response in the tumor microenvironment of PDAC. The **TOC** supports both projects with modeling, computational, and imaging capabilities (e.g., PET, intravital microscopy) to integrate the scientific data into parameters that ultimately inform the rational design of optimal cancer immunotherapeutics, and to improve the immunogenicity of breast and pancreatic cancers, both of which are historically known to be lowly immunogenic. The **EOU** serves as the communication and engagement platform for students, trainees, patient advocates, junior faculty investigators, and researchers of the CITO, those of the Physical Sciences-Oncology Network (PS-ON), and the scientific and lay communities beyond.

In this Request for Applications (RFA), the CITO is soliciting applications for research awards that allow trainees to participate in short-term, interactive laboratory or clinical research with a host investigator within the CITO/PS-ON. The proposed research should be under the overarching theme of transport oncophysics, in the context of cancer immunology and immunotherapy. Applications may address any particular challenge and is highly encouraged to complement or synergize with the current CITO Projects, and to collaborate with the respective investigators. Proposed projects may also augment the ideas, scope, technologies, and capabilities of the CITO.

These research ventures could last approximately ten weeks and may include, but not limited to, research in a traditional, wet-bench laboratory or clinical rotations with a physician cancer researcher.

Eligibility

Postdoctoral associates, graduate students, or undergraduate students from the laboratories of CITO investigators and/or collaborators are eligible to apply. Applicants must identify and obtain a letter of support from the potential host investigator.

Funding Information

A successful applicant will be awarded approximately \$5,000 that can be used toward approved research-related expenses. The number of awards per year and the amount of funding for each awardee will be subject to the quality of the submissions and program priorities.

The awardee will be required to submit a final scientific report to the CITO Administrative Core (email: cito-psoc@houstonmethodist.org) at the end of the research period, within 30 business days of the project end date. The awardee may also be expected to present scientific results supported directly or indirectly by this award, at conferences/seminars/workshops hosted by the CITO.

Criteria for Selection

Selection of the awardees will be overseen by a committee comprised of Project/Core Co-Leaders/Co-Investigators and program administrators and will be based on scientific merit and relevance to program priorities. Specific review criteria include: 1) alignment with the thematic concepts of the CITO; 2) emphasis on applying physical sciences (i.e., transport oncophysics) to cancer research; 3) scientific merit (strong hypothesis, rationale, objectives, feasibility); 4) a high degree of innovation (e.g., merging interdisciplinary approaches, testing from unique perspectives, development or implementation of new tools); and 5) investigator qualifications.

Submission Requirements

The following components must be included in the application, in the indicated order and in one (1) PDF file:

- **Research plan** (maximum 2 pages including figures, tables, and references, if included)
 - Indicate primary mentoring investigator
 - Indicate potential host investigator
 - Summarize background and significance of the proposed project
 - Explain specific objectives to be accomplished and accompanying timeline
 - Clarify how the funds will be spent
 - Explain why conducting the work in the host laboratory, rather than elsewhere, is conducive to the project's success
- **Letter of support** from the potential host investigator
- **Biosketch** for the trainee (current NIH format, maximum 5 pages)

Formatting Guidelines

- All files must be in one PDF, in the order indicated under “submission requirements”
- Font: Arial 11, Times New Roman 12, or Calibri 12
- Margins: At least 0.5 in. in all directions
- Page size: 8.5 in. x 11 in.
- Spacing: Single space or no more than 6 lines of type in one inch
- No headers or footers (these include page numbers, names, or other descriptors)

Applications must be received via electronic submission to cito-psoc@houstonmethodist.org.

Contact Information

Questions related to this RFA may be directed to:

Center for Immunotherapeutic Transport Oncophysics (CITO)

Physical Sciences-Oncology Center (PS-OC)

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