

REQUEST FOR APPLICATIONS
Year 4
MGH-MIT Strategic Partnership Grand Challenge 1: Diagnostics



MASSACHUSETTS
GENERAL HOSPITAL

Grand challenge 1: Make diagnosis cost-effective and accurate, and guide individual clinical decisions based on real-time monitoring and massive patient data sets.

Award Types and Amounts:

- 5 (five) grants at \$100,000 (total costs) **per team (to be spent over 1-2 years)**

Letter of Intent: A Letter of intent submitted via the ECOR Online Grant Management Portal is required by December 1, 2017 if you plan on submitting a proposal. Letters of intent should include the names of the principal investigators from both MGH and MIT and a brief description of the project. Please note: Write to: imes_rfp@mit.edu AND to ecor@partners.org

Full Proposal Submission Date: January 15, 2018

Project Start Date: April 15, 2018

Submission Information: Letters of intent and applications should be submitted online via the ECOR Online Grant Management Portal. This user-friendly system will allow the MGH PI to submit on behalf of the MGH-MIT team. Click [here](#) for instructions for submitting the application and letter of intent online.

Goal of the MGH-MIT Strategic Partnership Grand Challenge 1 Projects

The MGH-MIT Strategic Partnership aims to bring together approaches from engineering and basic science with clinical medicine, and to foster the rapid translation from bedside to bench and back to bedside.

MGH is the world's leading research hospital, and has access to enormous amounts of patient data corresponding to the pathogenesis of diverse diseases, and the clinical outcome of specific interventions. MIT has the ability to invent new devices that can acquire large physiological data sets, and to harness massive computing power to extract actionable information from this "big data". Bringing together MGH clinicians with MIT engineers can lead to new devices and algorithms that are expected to transform the ability to diagnose disease states and determine optimal intervention strategies, thus improving the efficiency of overall healthcare delivery. Joint approaches by engineers and clinical scientists toward clinical/translational research are expected and projects that involve the use of clinical data are strongly encouraged.

This is a call for applications for collaborative research projects that focus on critical problems in the following areas:

- *Devices* - Providing a rich set of streaming data including, but not limited to in-vitro and in-vivo continuous monitoring; novel sensors; reduced cost imaging modalities; point-of-care instruments
- *End-to-End Systems* - Transduction of physiological signals from imaging, pathology and real-time monitoring to easily manipulated data structures. Information extraction from these data can be used to guide individual clinical decisions.
- *Assessment of Patient Health* – Advanced data acquisition and analysis techniques facilitating the integration of multiple data sets from a single patient providing a platform for a comprehensive assessment of patient health.
- *Health Modeling* – Mathematical methods to accurately predict patient survival, and the impact that medical choices have on such survival. Such approaches may be used for both the management of patients with illnesses, as well as for aiding asymptomatic patients who will benefit from preventive health services.
- *Software Tools* - Manage, share, and register the disparate forms of existing experiential data to capture the specific state of a patient at a given point in time.
- *Assembly and Analysis of Large Patient Registries* – MGH hospital data systems, tumor registries, medical billing systems, and other electronic systems have now reached a level of maturity which makes possible the assembly of huge datasets with enormous statistical power.

All applications must be from a team composed of at least one faculty member of the MGH and one faculty member of MIT. Faculty members may be Assistant, Associate or full Professors or those with principal investigator status at MIT or MGH. Teams with more than two principal investigators are welcomed, but each investigator must participate meaningfully in the project.

Preference will be given to teams that are employing unique and highly innovative approaches with a path to further funding at the end of the seed grant clearly described. Project benchmarks should be realistically achievable in the time frame proposed.

Proposal Submission Information

1. Format

- The research proposal may not exceed three pages including figures and tables. Cover page, biosketches, budgets, and one page of literature citations do not count toward the page limit.
- Please use 12 point Cambria or 11 point Arial font and margins of 0.5 inches or greater.

- The following are required components:
 - Cover Page. Include the title of the project, principal investigators' names and project abstract
 - NIH biosketches for each principal investigator. Include Part A (Personal Statement)
 - Budgets and Budget Justifications. Using PHS 398 form pages, submit one per institution per year with additional overall budget for the project
 - Research Plan: Include Background and Significance, Specific Aims, Research Plan
 - Literature Citations
- The research proposal should clearly articulate the following:
 - What is the primary unmet medical need you are addressing?
 - What approaches do you intend to use and why are they novel?
 - What are the anticipated experimental challenges?
 - What are the short- and longer-term goals of the research?
 - What can be reasonably accomplished within the funding period?
 - What clinically translatable applications might emerge from this work now or in the future?
 - What are your plans to obtain further funding?

2. Resources and Budget

- Funding for the project must be allocated in equal amounts to the MIT and MGH components.
- Budget requests and justifications must be submitted using PHS 398 form pages for each institution as well as an overall project budget for the full project period.
- Funds may be used for research expenses, which may include salary and benefits for PIs and other research staff, supplies and equipment.
- As soon as applicants are invited to submit a full proposal, they should connect with the following grant administrators for additional information and for help with budget preparation:
 - MGH administration: Maire Leyne, mleyne@mgh.harvard.edu
 - MIT administration: Irene Huang, imes_rfp@mit.edu
- Funding may be requested for up to a two-year period, but continuation at the end of year one is subject to performance review.

3. Scientific and Budget Due Dates

A **letter of intent** submitted via the ECOR Online Grant Management Portal (see above) is required by December 1, 2017 if you plan on submitting a proposal. **The final application is due** January 15, 2018. **However, we request that all applicants e-mail their final version of the budget to Maire Leyne (MGH) and Irene Huang (MIT) for final review** before submission of the full grant application **at least 1 week** before the submission deadline.

Progress Reports

Grantees must submit a progress report after 12 months of funding and one at the end of the project. Continuation of funding into the second year will be dependent on a satisfactory review of the Progress Report. Progress will be measured against stated benchmarks and timelines.

Other requirements

- Members of the winning teams will/may be asked to attend/present at several other MGH-MIT Strategic Partnership-related occasions (e.g., donor events) as well as participate in additional review cycles.
- MGH-MIT Strategic Partnership funding must be acknowledged in publications, presentations and invention disclosures.

Contact Information

Please direct questions to:

imes_rfp@mit.edu

ecor@mgh.harvard.edu

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