Request for Applications: Mayo Clinic-Arizona State University Team Science Grants

Mayo Clinic and Arizona State University (ASU) are delighted to announce the launch of an exciting collaboration in the area of biomedical sensing. This strategic collaboration capitalizes on the clinical and technological strengths of Mayo Clinic and the broad range of engineering expertise at ASU.

The collaboration aims to foster multidisciplinary teams jointly led by faculty from both institutions to develop high-impact, transformative solutions to address unmet clinical needs of patients. As a mechanism to encourage such activity, leaders from both institutions are pleased to establish a new research awards program: the Mayo Clinic-Arizona State University Team Science Grants in Biomedical Sensing, Functional Restoration, and Biomedical Imaging/Informatics.

Biomedical sensing and imaging can comprise of several approaches for detection and quantification of anatomical, molecular, biochemical, biophysical, pharmacological and physiological parameters, in relation to changes in disease and/or therapy. However, a fundamental limitation has been the validation, integration, interpretation and translation of sensory information into clinically-useful knowledge. To overcome this limitation requires multidisciplinary, team-based approaches involving clinicians, scientists and engineers. Successful teams will work towards identifying large-scale clinical needs for patients, and will strategically leverage the knowledge and resources of both institutions to provide high-impact, transformative solutions for disease identification and treatment.

**Award Information:**
- Mayo Clinic and ASU together intend to commit up to $900,000 to fund a maximum of three awards.
- Application budgets for an award are limited to $300,000 direct costs per year (no indirects).
- The maximum project period is 3 years.
- Award notifications will be made by July 15, 2016. Anticipated start date is August 1, 2016.
- Investigator effort will not be supported.
- Allowable costs include items such as personnel, core facilities, supplies, and travel for participating Mayo faculty to ASU for enhancing the collaborations funded by this initiative. Capital equipment is allowable if adequately justified as critical to the success of the project. Core facility costs should be assigned to the budget corresponding to the institution housing the core(s). Unallowable costs include principal investigator effort, subawards, computers and other general purpose equipment.

**Eligibility and Selection Criteria:**
- Proposals must clearly justify the need for collaborations, with specific attention to the unique benefits that Mayo Clinic-ASU collaborations will bring to the project as well as to both institutions.
- All ACs, SACs, and Consulting staff from all Mayo sites are eligible to apply. Multi-site participation is encouraged.
- Each proposal must have at least two co-principal investigators: one from Mayo Clinic and one from ASU. Teams of investigators from multiple departments are strongly encouraged. Given the need for identification of top areas for further, large-scale investment, team projects led by seasoned investigators will be viewed more favorably.
- Projects must include clearly defined scientific aims, metrics, achievable milestones and deliverables. Well-defined goals such as extramural funding, impact on clinical care, potential commercialization plans etc. will be expected.
- It is the expectation that these teams will be competitive for NIH or NSF center level programs at the end of the internally funded period ($1-10M/year returns)
- A demonstrated, time-limited path from discovery through translation to clinical application has to be clearly defined.
- Preliminary data is not required, but can be useful in justifying potential outcomes especially those projects that are beyond exploratory development and oriented towards implementing technology.
- Continuation of funding is contingent on satisfactory annual project review by Mayo Clinic-ASU leadership.
- Applications will be reviewed by a joint panel of Mayo and ASU faculty.
Submission Information
Applications must be submitted to teamscience@mayo.edu no later than 8:00 a.m. CST Monday, April 4, 2016

- **Cover page (one page limit)**
  - Names and department/division affiliations of Principal Investigators (indicate contact PI)
  - Names of all other participating investigators and their department/division and site
  - Project title
  - Project summary (200 words)

- **Proposals (maximum 3 pages)** using standard NIH spacing and fonts should include the following:
  - Research Overview: Teams can choose to follow an “NIH-style” format for the application (Specific Aims and Research Strategy). Multimedia supplements to enhance the review process will be considered, but cannot be used to bypass the 3-page limit.
  - Description of Team Synergy: Discuss how the members of the team complement each other, why they are uniquely qualified to address the research question, and why a collaboration between Mayo and ASU is critical for success
  - Brief plan for project management and process for making decisions on scientific/technological direction
  - Description of Stakeholder Engagement: Discuss how the team will engage anticipated stakeholders including practitioners, patients, industry regulatory agencies, the public and others.

- **Bibliography** (not included in the 3 pages)
  - Biosketches: NIH formatted biosketch for faculty team members

- **Budget: For Mayo Clinic Investigators:** Budget requests must be submitted to the Mayo Clinic Office of Sponsored Projects Administration (OSPA) no later than March 30, 2016 by 5:00 pm CST. Contact your OSPA specialist (https://collab.mayo.edu/team/OSPAAdmin/OSPA%20Website/Home%20Page/Research%20Administrative%20Assignments.xlsx). **For ASU Investigators:** Please contact your departmental RA. **NOTE:** PIs or their administrators at each institution should coordinate to ensure the total award budget across Mayo and ASU does not exceed $300,000/year.

- **Brief budget justification.** Please remember to justify the need for the Mayo-ASU partnership, and appropriate site-specific distribution of efforts and costs.

Application Deadline
Applications are due no later than **Monday April 4, 2016,** at 8:00 a.m. CST, with funding to begin August 1, 2016.

Reporting
A final report will be required at the end of the funding period. For multi-year applications, annual reports and reviews with satisfactory progress will be required before subsequent year funding will be considered.

More Information
Please direct questions about the application guidelines and/or your submission to teamscience@mayo.edu. More information regarding potential areas and clinical questions of interest can be obtained at mayo.asu.edu/teamscience.

Programmatic Contacts
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Example areas with relevant questions for projects

**Sensing Technologies and Physiological Monitoring:** While the sophistication of biomedical sensing has increased, there is still a large unmet clinical need for developing more rapid, sensitive and specific sensors for a range of diseases.

1) **What technologies would be best suited for long-term and remote physiological monitoring?** While consumer “wearable sensors” have gained the attention of the medical community, the sensitivity, specificity and long-term capabilities of such sensors for medical diagnoses is suspect. There is a need for wearable sensors beyond basic physiological parameters for early interventions and better outcomes.

2) **What technologies would be best suited for the next generation of molecular diagnostics?** There is a huge clinical and commercial market for more sensitive, specific and real-time diagnostic approaches, especially in cancers, cardiovascular disease and personalized medicine. Whether novel electronic, optical and imaging technologies could be developed to address these questions is unknown.

3) **What technologies are needed to extend independent living in older adults?** One-third of American households are home to one or more residents 60 years of age or older. Technologies are needed to allow older adults to age in place. There are four categories of technology that acts as an enabler—Communication and Engagement, Health and Wellness, Learning and Contribution, and Safety and Security. There is a need for technological advancements to assist elders with everyday functioning.

**Functional Restoration**

1) **What are the best biomedical haptic technologies for prosthetics, robotics and emerging areas for enhancing sensation?**

2) **How do we enhance motor control in movement disorders and in prosthetics?**

3) **How do we develop brain-machine interfaces for diagnosis and treatment of neurological and neuromuscular disorders?**

4) **How do we enhance and improve information processing and analyses, particularly using novel imaging and machine learning approaches?**

**Biomedical Imaging and Informatics for Clinical Applications**

1) **How do we integrate multiple imaging modalities to provide real-time (or near real-time) anatomical and functional information for disease diagnosis and biomarkers, responsiveness to therapy or even surgical procedures?**

2) **What novel imaging technologies could enhance spatial and temporal resolution for visualization of body spaces where current technologies are inadequate?**

3) **With increasing resolution and speed, how do we handle large-scale image processing and storage, while performing on-the-fly analysis?**

Answers to these problems could substantially enhance our abilities to improve medical and surgical outcomes, help retain critical structures and functionality with aggressive therapies, reach the goal of performing image-guided robotic surgeries, improve in hospital care of patients (particularly ICU) and improve efficacies of medical therapies. Imaging-based physiological and biomarker monitoring has wide-ranging appeal for medical therapies as well as surgical approaches requiring iterative procedures or combining radiation and other adjuvant therapies.