Center for the
Advancement of
Wearable Technologies

EPSCoR
RESEARCH IN PUERTO RICO

University of Puerto Rico
Central Administration
Rio Piedras: (787) 765-5170
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IRG 1 EXPLORATORY FUNDS COMPETITION
FY 2023-2024
SUBMISSION DEADLINE: **October 20th, 2023**

INTRODUCTION

IRG1 Overall goal: To build the research infrastructure for the engineering of sensing technologies for wearable devices. This will be accomplished through the:

1) recruitment of graduate students, post-docs, and new faculty hires
2) acquisition of state-of-the-art instrumentation
3) support research activity in the following areas:
   - Development of microfluidic technologies for enhanced sampling capabilities and biomolecule enrichment
   - Development of sensing technologies for new detection capabilities and improved signal measurements
   - Examination of materials and skin interactions for data-driven design of wearable devices

Exploratory Funds:

The objective of the exploratory research grants within CAWT is to provide a small "seed" funding for the development of novel and innovative ideas that will provide the means to obtain preliminary results for collaborative proposals within IRG1 members and other members of the jurisdiction, as applicable. Specifically, they are intended to:

1) Leverage collaborations within the CAWT/IRGs, other jurisdiction researchers, and CAWT facilities.
2) Be catalytic in seeking competitive (federal) funding.
3) Have to translate to high-risk/high-payoff research work.
4) Be within the scope of the NSF cooperative agreement.
5) Lead to tangible outcomes.
6) Capitalize on existing IRG resources.

The participation and inclusion of IRG existing members is encouraged, but optional. Evaluation priority will be given to those proposals that also contain at least one junior faculty (defined as a faculty member that does not possess the rank of full professor). Four-year college faculty will be encouraged to apply. An investigator may serve as Principal Investigator (PI) on only one proposal and two as participant.

The exploratory seed funds in IRG1 will be used to explore new emerging areas of interest to IRG1. A total of 2-3 projects are expected to be funded per year.

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Funds can be used for materials, publications, small instrumentation (less than $5k), and student research stipends.

For YEAR 5 (2023-2024), the exploratory funds in IRG1 will be targeted to:

1) **Detection of new analytes of potential health interest from non-invasive body fluids such as but not limited to sweat, saliva, tears, and others. Analytes associated with cardiovascular and respiratory diseases will be prioritized.**
2) **Strategies to improve sample collection and readouts from skin**
3) **Design of low-power, fast, and sensitive sensors for wearables**
4) **Computational/Data-driven strategies to improve signal-to-noise ratio during data collection and analysis**
5) **Fabrication of SMART materials for wearable sensing applications**

PROPOSAL CONTENT

FORMAT:

The proposal should be at most 3 pages long. The document should be formatted using a 0.5 in margin and Arial 11 font. The 3 pages should only include the project description, innovation, summary from previous exploratory funds (if any), IRG 1 relevancy statement, group description, research plan, outcomes, and budget/justification.

Cover Letter (1 page max, not included within the 3-page max)
Each proposal must contain a cover letter, addressed to the IRG1 leader, highlighting the important aspects of the proposal.

1. Title

Should be located at the top of the first page of the proposal. Below the title, the names of the faculty members and corresponding organizations should be included. Make sure you distinguish which faculty member will serve as the principal investigator of the proposal.

2. Project Description

This should be a brief description of the project, what challenge(s) it intends to address, and what is the preliminary hypothesis of the proposed work. It should also include the **intellectual merit** (encompasses the potential to advance knowledge) and the **broader impact** (encompasses the potential to benefit society and contribute to achieving specific, desired societal outcomes).

3. Innovation

This section intends to briefly describe the innovative aspect of the project. Some questions that can be used to guide the discussion are but not limited to: (i) Does the application challenge and seek to shift current research paradigms by utilizing novel theoretical concepts, approaches or methodologies, instrumentation, or

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interventions? (ii) To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts? (iii) Does the project address an important problem or a critical barrier to progress in the field? (iv) Are the concepts, approaches or methodologies, instrumentation, or interventions novel to one field of research or novel in a broad sense?

4. Summary of work from previous exploratory funds (only if applicable)
Provide a summary of the main outcomes of any previous exploratory award.

5. IRG 1 Relevancy Statement
Here you must address:

- How is this project of interest to IRG 1?
- How will you capitalize on existing IRG1 resources? This includes professional network and/or specialized instrumentation. IRG1 Instrumentation includes: SeaHorse XFe24 Analyzer, Bionavis 210 VASA SPR, Keyence BZX 800 and Keyence BKX 3D surface profiler, Spark Tecan plate reader and Nikon reflective InfraRed confocal microscope.

  https://cawt.upr.edu/

6. Research plan
Provide a brief summary of how the proposed research will be conducted, including methodologies, etc. Make sure that the proposed research can be conducted within the time scale of the proposal (1 year), and provide a timetable with objectives and deliverables/outcomes. Also, include relevant preliminary data if available.

7. Project Outcomes
You must provide not only scientific outcomes, but also which agency/programs will this project be submitted for full funding and in which time frame.

OTHER REQUIRED DOCUMENTS (EXCLUDED FROM THE 3 PAGE LIMIT):

8. References
Provide all necessary references in any appropriate format.

9. Budget (2-page Max)
You can request up to $50,000 in direct funds (indirect funds are not allowed) to cover expenses associated with research assistants (graduate or undergraduate students), materials, publications or any small equipment (<$5,000) that is fully justified within the scope of the proposed work. Provide a justification for the funds requested and distribution.

10. NSF format biosketch for PI and Co-PI(s)

11. Management Plan (1 page Max)

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This section must include a Gantt chart, which should include only the proposed milestones, tasks, and outcomes, the time frame for each task and outcome, and the person responsible for it. Also, it should include a paragraph explaining the roles, expertise, and responsibilities of each member of the team. You must address how well-qualified is the team to conduct the proposed activities. If a junior faculty member is part of the team a brief description of his/her development plan should be included.

12. Reviewers List
Provide a list of 3-4 reviewers that could or should not review your proposal.

Incomplete applications will be disqualified and will not be considered for funding.
Awards are expected to be announced by **[December 11th. 2023]**
SUBMISSION DEADLINE: **October 20th, 2023**

SUBMIT MATERIALS AS A SINGLE PDF file to:
Noelma Galiano at (noelma.galiano@upr.edu) and (cc) IRG1 leaders to Maribella Domenech (maribella.domenech@upr.edu) and
Madeline Torres-Lugo (madeline.torres6@upr.edu)

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