RHODE ISLAND INBRE Biomedical Research Excellence
Bioinformatics Core Facility

RI-INBRE Request for Proposals
Bioinformatics Pilot Project -PUIs- 2021

The goal of the RI-INBRE Bioinformatics Pilot Project (BPP) funding mechanism is to support small-scale bioinformatics projects at the Rhode Island Primarily Undergraduate Institutions (PUIs). While projects may encompass any aspect of bioinformatics, preference will be given to projects that propose data generation (e.g. sequence analysis) and/or the use of computational resources for data analysis and storage (e.g. cloud computing services), and address the RI-INBRE research themes of **Cancer, Environmental Health Sciences,** or **Neuroscience**. Experimental approaches that can be funded under this mechanism include but are not limited to:

- Genomic sequencing (microbial isolate genome sequencing, metagenomics, resequencing)
- Transcriptomics (RNA-seq)
- Epigenomics (ChIP-seq, ATAC-seq)
- Other sequencing protocols (3C/4C, RAD-seq)

Prior to submission, applicants **are required** to consult with the RI-INBRE Bioinformatics Core Director to discuss experimental design, project costs, and services required. Projects that propose downstream data analysis in collaboration with the RI-INBRE Bioinformatics Core, and/or sequencing services through an INBRE genomics core facility will be favorably reviewed. Applications developed under this mechanism should describe how the funded research will be used to enhance existing research projects and/or how it will provide a foundation for future studies.

Eligibility: Eligibility is restricted to tenure-track assistant or associate professors at the Rhode Island PUIs.

Budget: The final budget will be determined through consultation between the investigator, the RI-INBRE bioinformatics core, and the RI-INBRE administration, and is expected not to exceed $10,000 per project, except under exceptional circumstances. Funds will be issued in the form of a payment voucher to the sequencing facility and not issued directly to the investigator/PUI. Project funds can be used for sample/library preparation, sequencing, and downstream data analysis only. Funds will need to be used within one year of the award date.

Deadline: There is no formal deadline for submission of applications. Funds are limited and we encourage investigators to begin the consultation and planning process early.

Additional Requirements: All data generated will be deposited in public repositories (e.g. NCBI-SRA, NCBI-GEO, etc.) in accordance with NIH public access and data sharing policies. Student participation is a requirement. By accepting a BPP award, the PI agrees to submit a 1-page outcome summary within 12 months and will be required to present their project data at a RI-INBRE bioinformatics one-day symposium scheduled for late 2021/early 2022.

Application Procedures: All applications must be assembled in the following sequence in an all-in-one pdf file. Format a single-column page and use a 0.6-inch margin all around the proposal. Use Arial font size 11 for text and font size 9 for figures, diagrams, and tables. Scan only letters of support or other signed documents.

Proposal	Page Limits
Bioinformatics Pilot Project Plan • Significance • Innovation • Approach	3 pages
Budget and Justification	1 page
Bibliography	No page limit
Letters of Support	No page limit

The BPP Plan (3-page limit) is comprised of the following: Significance, Innovation and Approach. Please emphasize the Approach section with a particular focus on the sequencing strategy and experimental design.

- **Significance:** Explain the importance of the problem or critical barrier to progress in the field that the proposed research addresses. Explain how the proposed research will improve scientific knowledge, technical capability, and/or clinical practice in one or more broad fields. Describe how the concepts, methods, and technologies that drive this field will be changed if the proposed aims are achieved.

  This section should address the **scientific premise**, which refers to the quality and strength of the prior research used as the basis for the proposed research question or project; this is distinct from the hypothesis or justification.

  The applicant should discuss the strengths and weaknesses of the prior research used to support the application and describe how the proposed research will address weaknesses or gaps identified by the applicant. For example, a discussion of scientific premise might include attention to the rigor of previous experimental designs, either conducted by the applicant or reported in the literature.

- **Innovation:** Explain how the application challenges and seeks to shift current research paradigms. Describe any novel theoretical concepts, approaches or methodologies to be developed or used, and any advantage over existing methodologies. Explain any refinements, improvements, or new applications of theoretical concepts, approaches or methodologies.

- **Approach:** Describe the overall strategy, methodology, and analyses to be used to accomplish the specific aims of the project. Include how the data will be collected, analyzed, and interpreted. Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the aims. If the project is in the early stages of development, describe any strategy to establish feasibility, and address the management of any high-risk aspects of the proposed work. If available, the approach section should include **preliminary data** demonstrating the feasibility of the proposed studies.

  This section should also explicitly address **scientific rigor and reproducibility**, which is the strict application of the scientific method to ensure robust and unbiased experimental design, methodology, analysis, interpretation and reporting of results. Whereas scientific premise pertains to supporting data, scientific rigor and reproducibility pertains to the proposed research. The applicant should describe experimental controls, plans to reduce bias (blinding, randomization, subject inclusions and exclusion criteria, etc.), power analyses, and statistical methods, as appropriate. In particular, describe the sequencing strategy to be employed including but not limited to the following:

  - Sequencing strategy (e.g. short read, long read, paired end, whole genome, resequencing, metagenomic, etc.)
  - Sequencing technology (e.g. Illumina, Pac Bio, MinION, etc.)
  - Sequencing provider (INBRE sequencing partner or external sequencing)
  - Library preparation
  - Experimental design (# samples, # replicates)
  - Sequencing depth/Number of reads per sample
  - Data management plan (storage, accessibility, etc.)
  - Workflows/Pipelines

Budget and Justification: Itemize and justify time and effort, services, and supplies. We anticipate that funds will be primarily allocated for library prep, sequencing, and data storage/analysis. Please consult with the Bioinformatics Core regarding questions about the budget.

Biographical Sketch. A biosketch is required for the investigator. Please include your eRA Commons ID, and make sure that the personal statement in the biosketch describes why your experience and qualifications make you particularly well suited for an BPP award from the RI-INBRE Program. In section D. Additional Information: Research Support and/or Scholastic Performance, include your ongoing (current), completed, and pending (grants that you have applied for and are awaiting a decision) research support.

Please strictly adhere to the new NIH biosketch guidelines. Follow the exact format of the sample non-fellowship biosketch. Proposals with incorrectly formatted biosketches will be deemed noncompliant and may not be reviewed. NIH Biosketch Instructions: https://grants.nih.gov/grants/forms/biosketch.htm

Bibliography (no page limit): Provide a bibliography of references cited. Each reference must include all authors' names (in the publication sequence), the article and journal-title, book title/volume number, page numbers, and publication year. Be concise and select only literature references pertinent to the proposed research.

Letters of Support (no page limit): If applicable, provide letters of support from collaborators.

Submit the all-in-one PDF proposal to Chris Hemme (hemmecl@uri.edu) and Laura Arrighi (larrighi@uri.edu).

For questions regarding grant application preparation, please contact Laura Arrighi, RI-INBRE Coordinator (401-874-9288, larrighi@uri.edu)