**PREP Research Associate**

This position is part of the National Institute of Standards and Technology (NIST) Professional Research Experience Program (PREP). NIST recognizes that its research staff may want to collaborate with researchers at academic institutions on specific projects of mutual interest and, therefore, requires those institutions to be recipients of a PREP award. The PREP program involves staff from a wide range of backgrounds conducting scientific research across various fields. Individuals in this position will perform technical work supporting the collaboration's scientific research.

**Research Title:**
Undergraduate Researcher: Isothermal Microcalorimetry Measurements of Microbial Cells

**The work will entail:**
Microbial total cell and viable cell count are critical measurements for biotechnology products, necessary for determining contamination and sterility as well as understanding relative bioactivity of therapeutics. This project supports ongoing work to establish reliable cell count measurements of complex microbial communities to assure confidence for biotechnology product development. Measuring microbial cell count will involve culturing microbes followed by exposing them to a controlled set of stressors (e.g., antimicrobial compounds, competing microbial cells, lyophilization). Samples will then be assessed for cell count and viability using isothermal microcalorimetry. The student will be responsible for performing isothermal microcalorimetry measurements of microbes with Biotechnology and industrial applications. This project will involve microbial cell culture and treatment including cells encapsulated in microfluidic-based droplets, data acquisition and analysis, and preparation of presentation materials.

**U.S. Citizen Preferred**

**Key responsibilities will include but are not limited to:**

- Culturing microbial cells
- Preparing controlled dilutions and treatments of cells
- Executing isothermal microcalorimetry measurements
- Analyzing data
- Presenting results at internal meetings
- Ensuring that results, protocols, software, and documentation have been archived or otherwise transmitted to the larger project
- Adhering to safety and laboratory maintenance protocols

**Qualifications**

- Completed two semesters of undergraduate level lab and course work in biochemistry, biology, biotechnology or other relevant topic.
- 1 or more year(s) of relevant experience in biotechnology lab work.
- Familiarity with biological sample handling including pipetting and aseptic technique.
- Familiarity with microbial culture.
- Strong oral and written communication skills.
- Direct experience with data handling in Excel, R, and/or Python preferred.

**Privacy Act Statement**

**Authority:** 15 U.S.C. § 278g-1(e)(1) and (e)(3) and 15 U.S.C. § 272(b) and (c)

**Purpose:** The National Institute for Standards and Technology (NIST) hosts the Professional Research Experience Program (PREP) which is designed to provide valuable laboratory experience and financial assistance to undergraduates, post-bachelor's degree holders, graduate students, master's degree holders, postdocs, and faculty.

PREP is a 5-year cooperative agreement between NIST laboratories and participating PREP Universities to establish a collaborative research relationship between NIST and U.S. institutions of higher education in the following disciplines including (but may not be limited to) biochemistry, biological sciences, chemistry, computer science, engineering, electronics, materials science, mathematics, nanoscale science, neutron science, physical science, physics, and statistics. This collection of information is needed to facilitate administrative functions of the PREP Program.

**Routine Uses:** NIST will use the information collected to perform the requisite reviews of the applications to determine eligibility, and to meet programmatic requirements. Disclosure of this information is also subject to all the published routine uses as identified in the Privacy Act System of Records Notices: NIST-1: NIST Associates.

**Disclosure:** Furnishing this information is voluntary. When you submit the form, you are indicating your voluntary consent for NIST to use of the information you submit for the purpose stated.