

## 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:

Student Associate: Quantifying DNA Extraction Efficiency in Microbes for Biosurveillance, Biotherapeutics, and Microbiome Studies

### The work will entail:

The objective of this project is to support the development of a benchmark DNA extraction method that effectively lyses microbial cells using focused ultrasonication. This project is part of a larger initiative to study microbial communities. The selected candidate will optimize parameters to achieve high-efficiency DNA extraction using focused ultrasonication. This work will involve a diverse panel of microbes, including Gram-positive and Gram-negative bacteria, spores, and fungi, all of which are relevant to the biotechnology, diagnostics and therapeutics, and microbiome sectors. Key tasks will include operating a focused ultrasonication instrument, measuring DNA fragment size distribution, and conducting fluorometric assays to assess extraction efficiency. We encourage candidates with experience in microbial cell culture and a willingness to learn new techniques, such as focused ultrasonication and the use of a Bioanalyzer, to apply.

### U.S. Citizen Preferred

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

- Investigating the potential use of focused ultrasonication on a panel of microbes hard to lyse.
- Applying techniques including focused ultrasonication, fluorimetric assays, and DNA fragment size measurements.
- Providing weekly updates at internal meetings.
- Summarizing and presenting final results and findings.
- Ensuring that results, protocols, and documentation have been archived or otherwise transmitted to the larger organization.

### Qualifications

- Coursework in relevant courses such as biotechnology, biology, microbiology, or a related field
- At least 1 semester of relevant laboratory experience involving live microbial cells (i.e., hands-on labs as part of coursework or research experience)
- Familiarity with aseptic technique
- Familiarity with culture of microbial cells in broth and/or on agar
- Strong oral and written communication skills.
- We invite candidates who are eager to learn new techniques, enjoy asking questions, and are comfortable facing new challenges to apply.

## 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.