

**POSTGRADUATE RESEARCH PROGRAM  
NATIONAL EXPOSURE RESEARCH LABORATORY  
U.S. ENVIRONMENTAL PROTECTION AGENCY  
Cincinnati, Ohio**

**Quantitative PCR Assays for Bacterial Indicators of Fecal Pollution in Water.**

**PROJECT # NERL 2004-07**

A research project is available through the Postgraduate Research Program at the U.S. Environmental Protection Agency (EPA), National Exposure Research Laboratory (NERL) in Cincinnati, Ohio. Under the guidance of a research mentor, the participant will gain educational benefits through involvement in a project to develop, optimize and experimentally evaluate novel quantitative Polymerase Chain Reaction (qPCR) assays for general and host source-specific bacterial indicators of fecal pollution in water.

Advanced computer software for analyzing DNA sequence data will be available for this study. The participant will also have access to a state of the art laboratory featuring DNA sequencing and sequence detection instrumentation. The project will initially involve development of qPCR assays from previously published DNA sequence data. Opportunities will exist, however, for the generation of new sequence data from previously unexamined or under-examined fecal indicator bacterial species and from cloned DNA from impaired environmental waters for the purpose of developing additional novel qPCR assays. Further experience will be gained in the extraction of nucleic acids from cultures and environmental water samples, performance and optimization of qPCR analyses, testing for qPCR assay specificity and sensitivity, development and evaluation of quality assurance controls for interferences and data recording, organization and analysis. The participant will also be required to perform analyses on a large number of recreational beach water samples to assess the effectiveness of the assays that are developed in determining water quality.

**QUALIFICATIONS:** Applicants should have received a bachelor's or preferably a graduate degree in a biological science or other appropriate scientific field within three years of the desired starting date (or completion of all requirements should be expected prior to the starting date). Excellent oral and written communication skills are essential. Prior experience in phylogenetic analyses using nucleic acid sequences and with PCR is highly desirable. Applicants should be able to carry out research independently with minimal direction. U.S. citizenship status is preferred. The program is open to all qualified individuals without regard to race, sex, religion, color, age, physical or mental disability, national origin, or status as a Vietnam era or disabled veteran.

The participant will be selected based on academic records, recommendations, research interests, compatibility of background and interests with research programs and projects in NERL, and the availability of funds, staff, programs, and equipment.

The appointment is full-time for one year and may be renewed upon recommendation of NERL and subject to availability of funds. The participant will receive a monthly stipend based on research area and prior

experience. The participant must show proof of health and medical insurance. The appointee will not be considered an employee of EPA.

The Postgraduate Research Program for NERL is administered by the Oak Ridge Institute for Science and Education. ***Please reference Project # NERL 2004-07 when calling or writing for information.*** For additional information and application materials contact: Postgraduate Research Program/NERL, Attn: Betty Bowling, Science and Engineering Education - MS 36, Oak Ridge Institute for Science and Education, P.O. Box 117, Oak Ridge, Tennessee 37831-0117, Phone: (865) 576-8503 FAX: (865) 241-5219, e-mail: [bowlingb@ornl.gov](mailto:bowlingb@ornl.gov).

An application can be found at [www.ornl.gov/orise/edu/EPA/app-gugrgpd.pdf](http://www.ornl.gov/orise/edu/EPA/app-gugrgpd.pdf)