Opportunity Title: CDC Development of Metabolomics Approaches to Support Newborn Screening
Opportunity Reference Code: CDC-2026-0074

Organization Centers for Disease Control and Prevention (CDC)

Reference Code CDC-2026-0074

How to Apply ***To submit your application, scroll to the bottom of this opportunity and click APPLY.***

A complete application consists of:

- An application
- Transcripts – Click here for detailed information about acceptable transcripts
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- One educational or professional recommendation. Your application will be considered incomplete, and will not be reviewed until one recommendation is submitted.

All documents must be in English or include an official English translation.

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Application Deadline 11/6/2026 3:00:00 PM Eastern Time Zone

Description ***Applications will be reviewed on a rolling-basis.**

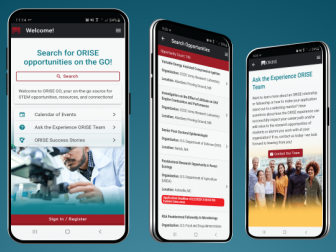
CDC Office and Location: A fellowship opportunity is available in the Division of Laboratory Sciences (DLS), National Center for Environmental Health (NCEH), at the Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia. Fellowship training will occur in the Division of Laboratory Science (DLS), Newborn Screening and Molecular Biology Branch (NSMBB), Biochemical Mass Spectrometry Laboratory (BMSL).

The Centers for Disease Control and Prevention (CDC) is one of the major operation components of the Department of Health and Human Services. CDC protects America from health, safety and security threats, both foreign and in the U.S. Whether diseases start at home or abroad, are chronic or acute, curable or preventable, human error or deliberate attack, CDC fights disease and supports communities and citizens to do the same. CDC increases the health security of our nation. As the nation's health protection agency, CDC saves lives and protects people from health threats. To accomplish its mission, CDC conducts important science and provides health information that protects our nation against expensive and dangerous health threats, and responds when these arise.

BMSL supports newborn screening laboratories through the development of newborn screening assays, technology transfer, training, production of quality assurance materials as well as assisting state programs to expand screening to new conditions of high priority.

Research Project: You will participate in a mentored research project focused on discovering, validating, and characterizing biomarkers of rare

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metabolic diseases in dried blood spots (DBS). The project will integrate high-resolution mass spectrometry (HRMS)-based metabolomics with targeted triple-quadrupole mass spectrometry (LC-MS/MS) to improve the clinical sensitivity and specificity of newborn screening assays.

An important component of the project will evaluate the suitability of HRMS for first- and second-tier newborn screening. A hybrid targeted and untargeted strategy will be investigated in which established biomarkers are measured concurrently with broad, untargeted metabolic profiles. For potential first-tier applications,you will evaluate whether HRMS can provide the analytical sensitivity, selectivity, precision, robustness, throughput, and reproducibility required for population-based screening. For potential second-tier applications, HRMS will be evaluated as a reflex approach for resolving presumptive-positive results, detecting disease-specific metabolites, identifying interfering compounds, and improving clinical specificity without requiring collection of an additional specimen.

The performance of HRMS-based screening will be compared with established targeted triple-quadrupole methods. The project will also assess the potential value of retaining full-scan HRMS data for retrospective analysis as new biomarkers and metabolic disorders become clinically relevant.

Using targeted and untargeted metabolomic approaches, you will compare specimens from individuals with confirmed metabolic diseases with unaffected controls to identify novel biomarkers and disease-associated metabolic patterns. Candidate biomarkers and analytically significant unknown compounds will be investigated using accurate mass measurements, isotope patterns, tandem mass spectra, database and spectral-library searches, and, when available, authentic reference materials.

A major component of the project will examine biomarker stability and degradation in DBS under conditions relevant to specimen drying, transport, and storage. Controlled studies may evaluate the effects of time, temperature, humidity, light, oxygen exposure, and storage atmosphere. Targeted measurements will quantify changes in established biomarkers, while HRMS-based metabolomics will be used to identify degradation products, characterize degradation pathways, and discover indicators of compromised specimen quality.

You will summarize the research through scientific reports, presentations, conference abstracts, and peer-reviewed publications.

Learning Objectives: You will receive training and experience in:

- DBS sample preparation and extraction
- HRMS-based targeted and untargeted metabolomics
- Evaluation of HRMS for first- and second-tier newborn screening
- Targeted quantitative analysis using triple-quadrupole mass spectrometry

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- Identification and structural characterization of unknown compounds
- Mass-spectrometry method development, optimization, and validation
- Instrument operation, maintenance, and troubleshooting
- Metabolomic and quantitative data processing and statistical analysis
- Development and use of standard operating procedures
- Development, manufacture, and characterization of DBS proficiency-testing, quality-control, linearity, and calibration materials
- Evaluation of material homogeneity, stability, commutability, and assigned values
- Interpretation and communication of scientific findings

You will also be trained in the development and manufacture of DBS-based quality-assurance materials for newborn screening laboratories. These materials may include proficiency-testing specimens, quality-control materials, linearity materials, and DBS-based calibrators. Training will encompass material design, analyte enrichment, blood preparation, dispensing and spotting, drying, packaging, storage, and production documentation. You will participate in evaluating material homogeneity, stability, commutability, target-value assignment, and lot-to-lot consistency using HRMS and targeted triple-quadrupole methods. This experience will provide an understanding of how well-characterized quality-assurance materials support assay validation, ongoing performance monitoring, interlaboratory comparability, and harmonization of newborn screening measurements.

Mentor(s): The mentor for this opportunity is Kostas Petritis (nmo3@cdc.gov). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: 2026. Start date is flexible and will depend on a variety of factors.

Appointment Length: The appointment will initially be for one year, but may be renewed upon recommendation of CDC and is contingent on the availability of funds.

Level of Participation: The appointment is full time.

Citizenship Requirements: This opportunity is available to U.S. citizens and Lawful Permanent Residents (LPR) only.

ORISE Information: This program, administered by ORAU through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and CDC. Participants do not become employees of CDC, DOE or the program administrator, and there are no employment-related benefits. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE.

The successful applicant(s) will be required to comply with Environmental, Safety and Health (ES&H) requirements of the hosting facility, including but not limited to, COVID-19 requirements (e.g. facial covering, physical distancing, testing, vaccination).

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Questions: Please visit our Program Website. After reading, if you have additional questions about the application process please email CDCrpp@orau.org and include the reference code for this opportunity.

Qualifications The qualified candidate should have received or be currently pursuing a doctoral degree in one of the relevant fields (chemistry, biochemistry, or related science). Degree must have been received within the past five years, or be anticipated to receive by 11/30/2026.

Preferred skills:

- Experience with quadrupole and high-resolution mass spectrometers; experience with quantitative measurements using isotope labeled internal standards.
- Previous experience with untargeted MS acquisition methods and informatics workflows including peak alignment, feature deconvolution, and metabolite identification preferred.
- Experience with developing liquid chromatography methods is preferred.
- Familiar with Isotopic Ratio Outlier Analysis (IROA).
- Programming in Python and/or R preferred.
- Experience in chemical, and analytical laboratory research.

Stipend $78,972.00 – $100,964.00 Yearly

Point of Contact Rachel

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Doctoral Degree received within the last 60 months or anticipated to be received by 11/30/2026 11:59:00 PM.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (3 👁)
  - **Life Health and Medical Sciences** (3 👁)

Affirmation I certify that I have not previously been employed by CDC or by a contractor working directly for CDC. I understand that CDC does not permit individuals with a prior employment relationship with CDC or its contractors to participate as trainees in the ORISE program. (Exceptions may be granted for individuals who, since the previous CDC employment, have obtained a new STEM degree which necessitates training in a new field.)