Opportunity Title: Bioinformatics for Army Biotechnologies
Opportunity Reference Code: ARL-R-HRED-300137

Organization DEVCOM Army Research Laboratory

Reference Code ARL-R-HRED-300137

Description **About the Research**

Investigating and onboarding novel organisms and engineering novel properties into chassis biosystems requires management and analysis of bioinformation. The successful candidate will work across a number of teams to provide bioinformatic support to genetic, proteomic, biochemical, pathway, and systems biology research projects.

Purpose:
Microbial bioinformatics to include data analysis, predictive and descriptive modeling of genomic, metagenomictranscriptomic, proteomic, and metabolic datasets, relationships and phenomena.

Experience/Skills:
• Advanced degree (PhD or Masters with equivalent experience) in biological or chemical sciences/engineering, with focus on combined theoretical/experimental approaches to understand and engineer microbial consortia.
• Must have experience with analysis of multi-omics data driving toward development of whole-system models of microbial consortia.
• Experience with microbial engineering, genome-scale metabolic modeling, and experimental design are preferred.
• Must have expertise in R and/or Python as well as Linux.
• Must be able to obtain a secret clearance.
• Able, interested, and motivated to work in a multidisciplinary environment.
• Able to work on multiple sub-projects simultaneously.
• Excellent English skills in speech and writing.

Overarching Position Description:
The Biotechnology Branch of the US Army Research Laboratory seeks a contract Bioinformatician to join a multidisciplinary team of microbiologists, biological engineers, computational biologists, chemists, and materials scientists performing research on microbial consortia for materials conversion. The contract Bioinformatician will be responsible for processing and analyzing large-volume sequencing, transcriptomic and proteomic data, and will contribute to the design of the –omics experiments that generate these data. In addition, this team member will build, maintain, and refine genome-scale metabolic models describing individual organisms as well as multi-organism consortia, in order to help guide the team's efforts to understand key metabolic features and relationships of natural and designed material-converting microbial consortia. Interacting and developing technical collaborations with external leaders in the field and maintaining a keen awareness of the current literature and developments in the field are also important components of this position.

Specific Tasks and Duties:
Assist with the design of genomic and metagenomic sequencing experiments.

• Design and implement novel state-of-the-art analysis pipelines and methods to distill large sequencing and –omics datasets into the most significant and actionable results aligned with the experimental objectives.
• Construct and analyze results from single- and multi-organism genome-scale metabolic models to predict or constrain the space of expected products and metabolic relationships between organisms in consortia.
• Communicate results in presentations, written reports, open journal publications, and patent applications.
• Maintain current awareness of the relevant technical landscape by reading literature and participating in technical conferences or symposia.
• Identify potential external collaborators. Develop strategic and mutually beneficial collaborative relationships to advance Army capabilities and accelerate accomplishment of project goals.

ARL Advisor: **Valerie E. Martindale**

ARL Advisor Email: **valerie.e.martindale.civ@army.mil**

About HRED

The Human Research and Engineering Directorate (HRED) is ARL's principal center for research and development directed toward optimizing Soldier performance and human-autonomy teaming. Research within HRED focuses on how to improve Soldier performance in a dynamic and changing battlefield. As technology and autonomous systems become an increasingly integral part of Soldier teams, it is critical to determine how these systems can work with and be adapted to the Soldier and their capabilities. Autonomous systems must be able to be integrated into Soldier teams and move from tools to teammates. Critical to this is an understanding of how humans and human teams perform and change in dynamic environments and situations. HRED leverages human-robot interaction, human-informed machine learning, human cognition and adaptive teaming to improve human-autonomy teaming for future Army teams.

About ARL-RAP

The Army Research Laboratory Research Associateship Program (ARL-RAP) is designed to significantly increase the involvement of creative and highly trained scientists and engineers from academia and industry in scientific and technical areas of interest and relevance to the Army. Scientists and Engineers at the CCDC Army Research Laboratory (ARL) help shape and execute the Army's program for meeting the challenge of developing technologies that will support Army forces in meeting future operational needs by pursuing scientific research and technological developments in diverse fields such as: applied mathematics, atmospheric characterization, simulation and human modeling, digital/optical signal processing, nanotechnology, material science and technology, multifunctional technology, combustion processes, propulsion and flight physics, communication and networking, and computational and information sciences.

A complete application includes:

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- **Curriculum Vitae or Resume**
- **Three References Forms**
  - An email with a link to the reference form will be available in Zintellect to the applicant upon completion of the on-line application. Please send this email to persons you have selected to complete a reference.
  - References should be from persons familiar with your educational and professional qualifications (include your thesis or dissertation advisor, if applicable)
- **Transcripts**
  - Transcript verifying receipt of degree must be submitted with the application. Student/unofficial copy is acceptable

If selected by an advisor the participant will also be required to write a **research proposal** to submit to the ARL-RAP review panel for :

- Research topic should relate to a specific opportunity at ARL (see Research Areas)
- The objective of the research topic should be clear and have a defined outcome
- Explain the direction you plan to pursue
- Include expected period for completing the study
- Include a brief background such as preparation and motivation for the research
- References of published efforts may be used to improve the proposal

A link to upload the proposal will be provided to the applicant once the advisor has made their selection.

Questions about this opportunity? Please email ARLFellowship@orau.org.

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Master's Degree or Doctoral Degree.
- **Academic Level(s):** Any academic level.
- **Discipline(s):**
  - **Life Health and Medical Sciences** (1 👁)
- **Age:** Must be 18 years of age