

Opportunity Title: USDA-ARS Postdoctoral Gut Microbial Research Fellowship

Opportunity Reference Code: USDA-ARS-2022-0004

Organization U.S. Department of Agriculture (USDA)

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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
- Two educational or professional recommendations

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

Application Deadline 4/29/2022 3:00:00 PM Eastern Time Zone

Description *Applications are reviewed on a rolling-basis and this posting could close before the deadline.

ARS Office/Lab and Location: A research opportunity is currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS) at the Eastern Regional Research Center, Dairy and Functional Food Research Unit (DFFRU) located in Wyndmoor, Pennsylvania.

The Dairy and Function Foods Research Unit (DFFRU) conducts science and engineering research on dairy products and byproducts, post-harvest preservation, functional foods and pre-/probiotics. The Diet and Gut Microbiome research group within the DFFRU has the unique mission to provide an in-depth understanding of the interactions between diet, the human gut microbial community, and human health which necessitates a willingness to work with both microbial and mammalian systems. Ongoing projects aim to determine how dairy and other dietary components affect the population dynamics and metabolome of the gut microbiota in the small and large intestine.

Research Project: The goal of this postdoctoral research project is to explore the impact of food and microbial metabolites on the proliferation and differentiation status of human intestinal stem cells from different regions of the gut. The participant will aim to develop a screen to investigate the independent and synergistic effects of different metabolites. The participant will gain experience with qRT-PCR, metabolomics, protein analysis, flow cytometry, cell sorting and microscopy as they perform follow up studies to fully elucidate observed phenotypes. Depending on interest and skill set, the project could evolve toward a creation of modified gut microflora which produce or degrade specific substrates that impact human health.

Learning Objectives: The participant will have the unique opportunity to broaden their knowledge of molecular biology, food technology, and gut microbiology. The participant will be trained to operate instruments used to culture anaerobic microbial communities in vitro and gain experience in 2D and 3D culturing of intestinal epithelial cells. This project will enhance the participant's capacity to independently design, plan, and implement complicated experiments while they gain expertise in the exciting and



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growing field of microbiome research.

Mentor(s): The mentor for this opportunity is LinShu Liu (linshu.liu@usda.gov). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: Winter 2021/2022. Start date is flexible and will depend on a variety of factors.

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

Level of Participation: The appointment is full-time.

Participant Stipend: The participant(s) will receive a monthly stipend commensurate with educational level and experience.

Citizenship Requirements: This opportunity is available to U.S. citizens 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 ARS. Participants do not become employees of USDA, ARS, 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.

Questions: Please visit our [Program Website](#). After reading, if you have additional questions about the application process please email USDA-ARS@ornl.gov and include the reference code for this opportunity.

Qualifications The qualified candidate should have received a doctoral degree in one of the relevant fields.

Preferred skills:

- Skilled in aseptic technique
 - mammalian tissue culture (3D TC experience a plus)
 - microbial culturing
- Experience with immunostaining, histology, confocal microscopy, qRT-PCR
- Experience with genetic manipulation of mammalian and/or microbial cells (ie. Crispr/Cas9, shRNA/siRNA, bacterial transformation)

- Eligibility Requirements**
- **Citizenship:** U.S. Citizen Only
 - **Degree:** Doctoral Degree.
 - **Discipline(s):**
 - **Life Health and Medical Sciences** ([7](#)👁)