Arthropod-Borne Animal Diseases Research Unit

- Position: **Post Doctoral Research Associate**
- Location: **USDA, ARS, Manhattan, KS**
- Tentative start date: **March 2022**
- Requirements: **Ph.D., U.S. Citizenship**

Job Description

We are recruiting a motivated Postdoctoral Research Associate to join our team at the Arthropod-Borne Animal Diseases Unit to study the potential role of RNAi in blocking arbovirus transmission by *Culicoides* biting midges. These extremely efficient vectors transmit several animal disease arboviruses including re-emerging vesicular stomatitis virus (VSV) bluetongue virus, and epizootic hemorrhagic disease virus, Schmallenberg, African horse sickness, and bovine ephemeral fever viruses. Understanding interactions between the midge immune system and these arboviruses is critical to developing effective disease control strategies. Exploiting innate vector responses, such as RNA interference (RNAi), specifically exogenous-small interfering RNAs (exo-siRNAs), has shown promising results in generating arbovirus-refractory mosquito vectors. Recent preliminary evidence that midges use RNAi to regulate arbovirus replication suggests exo-siRNAs may work as a molecular mechanism to reduce viral proliferation and block arboviral transmission.

The Research Associate will optimize RNAi techniques in midges and determine effects of virus-specific exo-siRNAs on infection dynamics and transmission rates. Transcriptomics and bioinformatics (e.g., Gene Ontology enrichment, KEGG pathway mapping) will be used to identify virus-targeted defense mechanisms and identify additional innate responses differentially expressed during virus infection (e.g., Toll, IMD, Jak/Stat). The research goals are to block viral replication and transmission in midges and identify overall innate immune responses of midges to arboviruses that may lead to additional molecular targets. These goals will be key for the long-term translational goal of using endosymbionts (*Wolbachia*) to deliver targeted dsRNA, rendering midges resistant to infection and/or blocking transmission of arboviruses.

Successful applicants should have received a Ph.D. within the last 4 years in microbiology, virology, molecular biology, or entomology and must be a U.S. citizen. Preferences will be given to candidates with research experience in molecular entomology, arbovirology, and transcriptomics/bioinformatics. Potential candidates should be able to work both independently and collaboratively in a research group and pass a minimal security background check. Funding provides salary ($64K+) plus benefits for two years. If interested, email a cover letter, CV, and contact information for 2-3 references to Dr. Barbara Drolet at barbara.drolet@usda.gov.