Postdoctoral position at Emory University: Medical Entomologist

The Vazquez-Prokopec Lab at Emory University seek an outstanding and highly motivated postdoctoral researcher whose interests focus on medical entomology, vector ecology and control. The successful applicant will join a multidisciplinary team with funding from various sources, including NIH, NSF, USAID, IVCC and CDC (click here for more details). Our lab (www.prokopeclab.org) is based in the Department of Environmental Sciences at Emory University. Primary research areas are disease ecology, spatial and landscape epidemiology and global health. Additionally, our lab is member of the Program in Population Biology, Ecology and Evolution and has active collaborations with the Centers for Disease Control and Prevention (CDC/Entomology Branch), University of Georgia, University of California-Davis and the Autonomous University of Yucatan.

This position will be funded by two projects occurring in the city of Merida (Mexico) focused on: a) evaluating the impact of insecticide resistance on the effectiveness of indoor application of insecticides against *Aedes aegypti*; and b) the development of a method to better target indoor residual spraying of insecticides in urban areas where *Aedes aegypti* is resistant to pyrethroids. Projects will involve fieldwork activities, performing experiments in replicated experimental houses as well as in neighborhoods of Merida where a control trial will be conducted. Other research activities will involve participating in ongoing research at the ProkopecLab in Atlanta and the State of Georgia, conducting vector ecology studies with *Aedes albopictus* and field sampling of ticks for a vector competence study. We also provide time for expanding research interests to new topics/areas not currently covered by our lab.

Qualifications: a) A PhD in Entomology, Ecology or related fields; b) fieldwork experience ; c) Interest or experience investigating insecticide resistance mechanisms; d) strong writing skills (evidenced in peer-reviewed publications) and quantitative training (ideally, using the software platform R). Fluency in Spanish will be an additional asset.

Candidates will be encouraged to dedicate a portion of their time to developing and leading projects of their own. Teaching opportunities are also available for those interested.

Details:

Compensation and Start Date: The position is open for 2-3 years, pending assessment of first year performance. We will follow NIH salary scale, with a yearly starting salary of $50,000 and a standard Emory University benefits package.
To apply, submit a single PDF to Dr. Vazquez-Prokopec at gmvazqu@emory.edu including: a) a cover letter describing your interest in the position and field(s) of research; b) an updated CV; c) names and contact information of three references. The start date is negotiable, with a target of June-July 2019. Application screening will continue until a suitable candidate is found.

A brief description of the main project for this position is found below.

Worldwide, the impact of efforts to control *Aeedes aegypti* and prevent dengue and chikungunya transmission has been limited and unsustainable owing, in large part, to the lack of effective vaccines and antivirals, limited effectiveness or inadequacy of current tools to combat mosquito vectors, and limitations in public health infrastructures of most endemic countries. The widespread distribution of *Ae. aegypti* resistance to pyrethroids (the insecticide class most widely utilized in public health over the past decade) has emerged as an additional challenge to global health efforts to reduce disease burden. Despite significant advancements in the understanding of the molecular and physiological mechanisms responsible for the differential survival of *Ae. aegypti* to pyrethroids, there is a significant knowledge gap with regard to the ecological and epidemiological implications of insecticide resistance. This project aims to experimentally investigate the entomologic impact and population-level consequences of insecticide applications targeting adult *Ae. aegypti* in a context of strong spatial and temporal heterogeneity in both the frequency and principal mechanisms of pyrethroid resistance. Through house enclosure studies and perturbation experiments performed in the Yucatan Peninsula, Mexico (an area where *Ae. aegypti* is experiencing a widespread selection pressure for resistance to insecticides), we will experimentally address the following questions: a) Is pyrethroid resistance affecting the efficacy of indoor residual spraying insecticides?, and b) Can we both reduce *Ae. aegypti*-human contacts and locally manage pyrethroid insecticide resistance by rotating the insecticide class applied indoors?. Addressing these questions has a significant public health impact, as current insecticide resistance management strategies are based on untested assumptions about the population dynamics of resistant and susceptible mosquitoes in response to changes in local insecticide selection pressure. Pursuing an eco-evolutionary perspective (i.e., acknowledging that there are feedback loops between mosquito population dynamics and the evolutionary processes driven by the application of insecticides) could help move the field of mosquito insecticide resistance research forward. Our project is innovative in that we will simultaneously quantify the ecological and evolutionary consequences of resistance under controlled field conditions, providing an evidence-base for devising the public health impact of pyrethroid resistance in *Ae. aegypti*. Results derived from this project will have a direct impact on the design of future insecticide resistance surveillance and management strategies.