

## ***Postdoctoral Research Associate, Department of Entomology*** **Understanding Insecticide Resistance Evolution through Chemical Ecology**

### **Job Description**

The newly established urban entomology research lab of Dr. Warren Booth in the Department of Entomology at the Virginia Polytechnic Institute and State University is recruiting a 1-year (with possibility of a second-year reappointment) postdoctoral researcher to investigate insecticide resistance evolution through chemical ecological studies in indoor urban pest insects.

Project description: The successful candidate will quantify resistance to insecticide active ingredients in German cockroach populations collected from low-income housing. They will test the hypothesis that cockroaches sampled from larger field populations will have relatively high levels of resistance (when compared to susceptible laboratory strains) to multiple insecticide active ingredients found in consumer and professional use control products. The reasoning for this, is that depending on the age of the housing facility, many of the apartments have been treated frequently for multiple decades with the least expensive (due to low-bid contract requirements), and most rapidly applied, pesticide formulations available. Furthermore, residents will treat using over-the-counter products. Combined, these will promote the evolution of insecticide resistance to multiple active ingredients. As such, within large cockroach populations, insecticide resistance is likely to be rampant. There may be opportunities to combined chemical ecological approaches with whole-genome sequencing to further understand mutations associated with resistance.

The successful candidate will primarily be responsible for the investigation of insecticide resistance evolution in field-derived German cockroach populations through behavioral and high-throughput biochemical assay-based experiments. The main objectives are (i) to quantify resistance levels to insecticide active ingredients, (ii) to investigate the relationship between population size and cross-resistance profiles, and (iii) to collaborate with the lab of Dr. Dini Miller (Virginia Tech) to develop methods for the rapid assessment of resistance levels in field cockroach strains.

The successful candidate will participate in field collection and management of lab strains, experimental design, and will be responsible for data collection, analyses, and the preparation of peer-reviewed first and co-authored publications. Furthermore, the postdoctoral associate may be asked to assist Dr. Booth in writing grant proposals. The candidate will help manage the Booth Lab, including interacting heavily with post-doctoral researchers, graduate and undergraduate students, and ordering supplies, etc. The candidate will be expected to present the research at scientific meetings. There will be an opportunity to assist with the development and delivery of courses related to urban evolutionary biology taught by Dr. Booth, if desired.

Interested applicants should provide a cover letter, a C.V., and contact information for 3 references. The cover letter should include a brief description of previous research experience and interest in the position. Informal inquires can be sent to Warren Booth (warrenbooth@vt.edu).

**Required Qualifications**

- Ph.D. in entomology, chemical ecology, or related field awarded no more than four years prior to the effective date of the appointment with a minimum of one year of eligibility remaining.
- Detailed understanding of urban pest biology, insecticide resistance mechanisms, and resistance mechanism evolution
- Significant expertise in insecticide assays, experimental design, statistical analyses, and scientific writing

**Preferred Qualifications**

Previous experience with urban pest insect population biology and insect rearing methods.

**Appointment Type**

Restricted

**Salary Information**

Commensurate with Experience

**Review Date**

11/18/2022

**Anticipated start date:** January 2nd 2023.

**Additional Information**

Interested applicants should provide a cover letter, a C.V., and contact information for 3 references. The cover letter should include a brief description of previous research experience and interest in the position. Informal inquiries can be sent to Warren Booth (warrenbooth@vt.edu)

The successful candidate will be required to have a criminal conviction check.

**Where to apply:** <https://careers.pageuppeople.com/968/cw/en-us/job/522339/postdoctoral-associate>

**About Virginia Tech**

Dedicated to its motto, *Ut Prosim* (That I May Serve), Virginia Tech pushes the boundaries of knowledge by taking a hands-on, transdisciplinary approach to preparing scholars to be leaders and problem-solvers. A comprehensive land-grant institution that enhances the quality of life in Virginia and throughout the world, Virginia Tech is an [inclusive community](#) dedicated to knowledge, discovery, and creativity. The university offers more than 280 majors to a diverse enrollment of more than 36,000 undergraduate, graduate, and professional students in eight [undergraduate colleges](#), a [school of medicine](#), a [veterinary medicine](#) college, [Graduate School](#), and [Honors College](#). The university has a significant presence across Virginia, including the [Innovation Campus](#) in Northern Virginia; the Health Sciences and Technology Campus in Roanoke; sites in Newport News and Richmond; and numerous [Extension offices](#) and [research centers](#). A leading global research institution, Virginia Tech conducts more than \$500 million in research annually.

Virginia Tech does not discriminate against employees, students, or applicants on the basis of age, color, disability, sex (including pregnancy), gender, gender identity, gender expression, genetic information, national origin, political affiliation, race, religion, sexual orientation, or military status, or otherwise discriminate against employees or applicants who inquire about, discuss, or disclose their compensation or the compensation of other employees or applicants, or on any other basis protected by law.

If you are an individual with a disability and desire an accommodation, please contact Dr. Warren Booth at warrenbooth@vt.edu during regular business hours at least 10 business days prior to the event.

**Advertised:** October 17, 2022

**Applications close:** Open until filled