

Caleb B. Hubbard

Curriculum Vitae

Department of Entomology • University of California
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Education

University of California Ph.D. Entomology Major: Medical & Veterinary Entomology Minors: Evolutionary Genetics, Urban Entomology	Riverside, CA 2015-present
University of California B.S. Biology	Riverside, CA 2011-2015

Research Experience

University of California <i>Graduate Research Assistant</i>	Riverside, CA 2015-present
Physiological and behavioral resistance to insecticides, integrated pest management of filth flies	
Determination of molecular mechanisms conferring insecticide resistance	
University of California <i>Undergraduate Research Assistant</i>	Riverside, CA 2012-2015
Evolution of cancer suppression in <i>Drosophila melanogaster</i> PI: Leonard Nunney (Evolution Ecology and Organismal Biology)	
Bioinformatics and development of mutant strains of <i>Neurospora crassa</i> PI: Katherine Borkovich (Plant Pathology and Microbiology)	

Research Grants & Fellowships

June 2020-December 2020 Dissertation Year Program Fellowship Total Direct Costs: \$12,970
August 2019-August 2024 ELN Professional Edition- 5-year Developmental Grant Total Direct Costs: \$6,200
June 2018-August 2018 PI: Dr. Jaroslaw Krzywinski “Advanced training in molecular and bioinformatics methods to study the biology of biting flies” BBSRC UK-US partnering Fellowship Total Direct Costs: \$4,250

Peer Reviewed Publications

Hubbard, C.B., and A.C. Gerry. Genetic evaluation and characterization of behavioral resistance to imidacloprid in the house fly. *Journal of Pesticide Biochemistry and Physiology*.

Murillo, A.C., **C.B. Hubbard**, A.C. Gerry, H.C. Hinkle. 2020. Big problems with little house fly, *Fannia canicularis* (Diptera: Fanniidae). *Journal of Integrated Pest Management*.

Hubbard, C.B. and A.C. Gerry. 2020. Selection, reversion, and characterization of house fly (*Musca domestica*) behavioral resistance to the insecticide imidacloprid. *Journal of Medical Entomology*. doi: 10.1093/jme/tjaa105

Hubbard C.B. and A.C. Gerry. 2019. Evaluation of Spider Venom Toxin-Based Insecticide to Control House Flies, 2018. *Arthropod Management Tests*. doi: 10.1093/amt/tsz006.

Publications in Play

Gerry, A. C., L. Zahn, A. C. Murillo, **C.B. Hubbard** and F. Jurjis, Efficacy of Fluralaner Solution Administered to Egg Layer Chickens through Drinking Water for Control of Northern Fowl Mite (*Ornithonyssus sylviarum*). *In Preparation*.

Extension Publications

Hubbard, C. and A. Murillo Backyard Poultry Fly Control. UC Cooperative Extension *Poultry Ponderings*. Fall 2016.

Select Press Coverage

Peiser, J. 'Harris/Fly 2024': Debate viewers couldn't look away from the bug on Pence's head. *The Washington Post*. 8 Oct 2020

Bernstein, J. Maggots and murder: what insects can teach us about crime. *University of California Riverside News*. 29 April 2019

Rivera, C. Universities are focusing more on undergraduate research projects. *Los Angeles Times*. 27 Nov 2014

Daily News. Redlands East Valley science students work with UCR. *Los Angeles Daily News*. 30 May 2013

Professional Presentations

Hubbard, C. and A.C. Gerry. Genetics and inheritance of behavioral resistance to imidacloprid in the house fly. Poster uploaded digitally for the 29th Annual UCR Urban Pest Management Conference, UC Riverside, Riverside CA. *Conference rescheduled due to COVID-19*

Hubbard, C. Pests of the hospital. *Invited Speaker*. Western University of Health Sciences: College of Podiatric Medicine, Chino Valley Medical Center and Kaiser Permanente Central Valley Medical Center Didactics Conference. 12 December 2019.

Gerry, A. C., L. Zahn, A. C. Murillo, **C. Hubbard** and Faris Jirjis. Control of northern fowl mite (*Ornithonyssus sylviarum*) on layer chickens using a fluralaner solution administered through drinking water. Entomological Society of America Annual Meeting, St. Louis, Mo. 19 November 2019

Hubbard, C., and A.C. Gerry Autosomal linkage analysis and inheritance of behavioral resistance to imidacloprid in house flies. Entomological Society of America Annual Meeting, St. Louis, Mo. 18 November 2019

Hubbard, C., J.G. Scott, A.C. Gerry. Autosomal linkage analysis of behavioral resistance to imidacloprid in the house fly. Poster presented at the Department of Entomology Graduate Student Seminar Day, UC Riverside, Riverside, CA. 17 September 2019

Hubbard, C. and A.C. Gerry. Evaluation of a Novel Spider Venom Toxin-Based Insecticide to Control House Flies. Poster presented at the 28th Annual UCR Urban Pest Management Conference, UC Riverside, Riverside, CA. 20 March 2019

Hubbard, C. and A.C. Gerry. To feed or not to feed: The flaw of traditional resistance screening. Entomological Society of America, Entomological Society of Canada, and Entomological Society of British Columbia Joint Annual Meeting, Vancouver, BC. 11-14 November 2018*

Hubbard, C. and A.C. Gerry. To feed or not to feed: Physiological resistance to insecticides, the flaw of traditional screening practices. Department of Entomology Graduate Student Seminar Day, UC Riverside, Riverside, CA. 19 September 2018

Hubbard, C. Behavioral resistance to imidacloprid in house flies: What We Know and What We Don't. *Invited Speaker*. Vector Molecular Biology Research Group Meeting, Pirbright Institute, Pirbright, United Kingdom. 3 August 2018. *

Hubbard, C. and A.C. Gerry. High throughput Screening of feeding behavior of house flies selected for behavioral resistance to the Neonicotinoid: Imidacloprid. Poster presented at 27th Annual UC Riverside Urban Pest Management Conference, Riverside, CA. 21 March 2018

Hubbard, C. and A.C. Gerry. Evaluation of the landing preference of house flies selected for behavioral resistance to the Neonicotinoid: Imidacloprid. 7th International Society of Vector Ecology Meeting, Palma de Mallorca, Spain, 1-7 October 2017*

Hubbard, C. and A.C. Gerry. Screening of feeding behavior of house flies selected for behavioral resistance to the Neonicotinoid: Imidacloprid. Poster presented at Department of Entomology Graduate Student Seminar Day, UC Riverside, Riverside, CA. 18 September 2017

Hubbard, C. and A.C. Gerry. Evaluation of the feeding preference of house flies selected for behavioral resistance to the Neonicotinoid: Imidacloprid. Livestock Insect Worker Conference Annual Meeting, Savannah, GA. 25-28 June 2017.

Zahn, L., A.C. Gerry, **C. Hubbard**. Survival Time of House Flies (Diptera: Muscidae) Exposed to a Novel Granular Bait. Livestock Insect Worker Conference Annual Meeting, Savannah, GA. 25-28 June 2017.

Hubbard, C. and A.C. Gerry A solution to the pesky house fly (*Musca domestica L.*): Behavioral Resistance to Imidacloprid. Department of Entomology Graduate Student Seminar Day, UC Riverside, Riverside, CA. 14 September 2016.

* Denotes international presentations

Select Extension & Outreach Presentations

Hubbard, C. Home invaders: Pests plaguing the home. 4th Annual Riverside Insect Fair. Riverside, CA. 27 April 2019

Hubbard, C. Controlling the pesky fly: Techniques to prevent and eliminate nuisance flies. Fifth annual Southern Area Animal Science Field Day. Walnut, CA. 22 September 2018

Hubbard, C. What's Bugging Your Farm Friends. Fourth Annual Southern Area Animal Science Field Day. Walnut, CA. 23 September 2017

Hubbard, C., and L. Zahn. Back Yard Bugs 3st Annual Riverside Insect Fair. Riverside, CA. 29 April 2017

Hubbard, C., E. McDermott, A. Murillo, and L. Zahn. Home Invaders (Fleas, Ticks, Flies) 2st Annual Riverside Insect Fair. Riverside, CA. 18 April 2016

Teaching Experience

University of California, Riverside, CA

Teaching Assistant

ENTM 10: Natural History of Insects, Winter 2020

- Responsible for teaching discussion sections and creating and grading evaluations; 160 undergrad/graduate students; with Dr. E. Rankin

ENTM 154: Forensic Entomology, Spring 2019

- Responsible for teaching laboratory sections and creating and grading evaluations; 40 undergrad/graduate students; with Dr. A. Gerry

ENTM 126: Medical & Veterinary Entomology, Winter 2018

- Responsible for teaching laboratory sections and creating and grading evaluations; 40 undergrad/graduate students; with Dr. A. Gerry

ENTM 126: Medical & Veterinary Entomology, Winter 2017

- Responsible for teaching laboratory sections and creating and grading evaluations; 40 undergrad/graduate students; with Dr. O. Akbari

Guest Lecturer

- **Hubbard, C.** (2020) "Veterinary Entomology: House flies, behavior and resistance" Natural History of Insects, Department of Entomology, University of California, Riverside, CA. *Via Distance Education*; Zoom lecture due to COVID-19
- **Hubbard, C.** (2020) "Muscomorpha Flies" Medical and Veterinary Entomology, Department of Entomology, University of California, Riverside, CA.
- **Hubbard, C.** (2019) "Alternative Career Paths: Life as a Research Scientist." AP Biology, Yucaipa High School, Yucaipa, CA; 2 classes with 40 students total
- **Hubbard, C.** (2019) "Veterinary Entomology: Who are we and why do we do it." Careers in Science, Lot Whitcomb Elementary School, Portland, OR. *Via Distance Education*; 1 class with 20 student total
- **Hubbard, C.** (2018) "Livestock Ectoparasites." Agriculture Biology, Eureka High School, Eureka, IL. *Via Distance Education*; 2 classes with 60 students total
- **Hubbard, C.** (2018) "Principles of Epidemiology Part 1." Medical and Veterinary Entomology, Department of Entomology, University of California, Riverside, CA. *Lecture and Lab Sections*
- **Hubbard, C.** (2018) "Principles of Epidemiology Part 2." Medical and

Veterinary Entomology, Department of Entomology, University of California, Riverside, CA.
Lecture and Lab Sections

- **Hubbard, C.** (2017) “Biting and Nonbiting Muscoid Diptera/ Myiasis” Medical and Veterinary Entomology, Department of Entomology, University of California, Riverside, CA. *Lecture and Lab Sections*
- **Hubbard, C.** (2017) “Hemiptera: Bedbugs and Kissing Bugs” Medical and Veterinary Entomology, Department of Entomology, University of California, Riverside, CA. *Lecture and Lab Sections*
- **Hubbard, C.** (2017) “Mites and Ticks” Medical and Veterinary Entomology, Department of Entomology, University of California, Riverside, CA. *Lecture and Lab Sections*

Undergraduate Laboratory Assistant

BIOL 20: Dynamic Genome, Spring 2014, Winter 2015

- Responsible for assisting in the teaching of laboratory sections; Computational and Experimental approaches in investigating the genomes of plants and animals; 50 undergraduate students; with Dr. S. Wessler, and Dr. JM. Burnette

Scholarships & Awards

- 2020** The Pacific Egg & Poultry Association Student Merit Award
Carl Strom / Western Exterminator Company Scholarship - \$1000.00
Novogene Life Sciences NovoBowl Sequencing award- \$250.00
Tejal Reddy Endowed Graduate Award - \$6400.00
- 2019** *First place, Riverside* Insect Fair, Best Educational Booth - \$100.00
Carl Strom/ Western Exterminator Company Scholarship - \$400.00
- 2018** *Second Place, President’s Prize runner-up*, student oral presentation at ESA, ESC, and ESBC Joint Annual Meeting
Graduate Student Affairs travel grant- \$500.00
Francis A. & Jane Davies Gunther Endowed Graduate Award in Entomology- \$2500.00
Carl Strom/ Western Exterminator Company Scholarship - \$400.00
- 2017** 7th International Congress of the Society for Vector Ecology Student Travel Grant- \$1500.00
- 2015** UCR Dean’s Distinguished Fellowship - \$5000.00

Professional Training

- Illumina Genomics Training Workshop, University of California, Riverside. Winter, 2020
- Advanced training in Molecular and Bioinformatics methods to study the biology of biting flies, The Pirbright Institute, Pirbright, Surrey, England. 25 June - 6 August 2018.
- Teaching Development Workshop, University of California, Riverside. Spring, 2018
- Teaching Assistant Orientation and Training, University of California, Riverside. Fall, 2016
- WebGIS and Mobile Data Collection Workshop, University of California, Riverside. 20 Oct. 2015

Academic & Professional Service

Manuscript Reviewer

Journal of Economic Entomology
Biocontrol Science & Technology

University of California, Riverside, CA

Department of Entomology

Outreach Coordinator: Winter 2016, Spring 2016

Neil A. Campbell Science Learning Laboratory

Treasurer: The Dynamic Genome Outreach Group, 2012-2015.

Professional Memberships

Association for Chemoreception Science, 2020-present

Society of Vector Ecology, 2016-2018

Entomological Society of America, 2015-*present*