

Ali Afify
Department of Biology
Drexel University

RESEARCH INTERESTS

Interested in the olfactory cues affecting different mosquito behaviors. Recent research focused on understanding how insect repellents are sensed by the mosquito olfactory system. Future goal is to study mosquito oviposition cues; what cues are attractive and what are repellent to egg laying mosquitoes, which neurons and receptors are involved in sensing oviposition cues, and how these cues can be used to control mosquitoes and prevent transmission of mosquito-borne diseases.

EDUCATION

- September 2014: PhD in Natural Sciences (Biology), **University of Konstanz** and the **International Max Planck Research School for Organismal Biology**.
- 2009: M.Sc. in Zoology and Agricultural Nematology, **Cairo University**.
- 2001: B.Sc. in Plant Protection, **Cairo University**.

RESEARCH EXPERIENCE

- September 2022- Present: **Assistant Professor**, Department of Biology, Drexel University.
- April 2016-August 2022: **Postdoctoral Researcher**, Department of Neuroscience, Johns Hopkins University School of Medicine.
- April 2015-March 2016: **Postdoctoral Researcher**, Applied Center for Entomonematodes, Cairo University.
- May 2010-September 2014: **Research Assistant**, Department of Biology, University of Konstanz.
- January 2009-May 2010: **Research Assistant**, Applied Center for Entomonematodes, Cairo University.
- August 2007-January 2009: **Visiting Scholar**, Centre for Vector Biology, Rutgers University.
- January 2003-August 2007: **Research Assistant**, Applied Center for Entomonematodes, Cairo University.

AWARDS AND FELLOWSHIPS

- 2020: **The Alfred Blalock Young Investigator Award** from the Johns Hopkins University School of Medicine.
- 2019: **The Drescher Travel Award** from the Department of Neuroscience, Johns Hopkins University School of Medicine.
- 2017: **Postdoc Poster Award** at the Johns Hopkins Annual Neuroscience Retreat.
- 2017: **Fellowship** of the Johns Hopkins Malaria Research Institute (JHMRI).
- 2010: **PhD Fellowship** from the International Max Planck Research School (IMPRS) for Organismal Biology.
- 2007: **Fulbright student scholarship** to join the Center for Vector Biology, Rutgers University.

PUBLICATIONS

- **Afify A**, Potter CJ (2022). Calcium imaging of *Anopheles coluzzii* mosquito antennae expressing the calcium indicator GCaMP6f. Cold Spring Harb Protoc. doi: 10.1101/pdb.prot107918.
- **Afify A**, Potter CJ (2022). Genetically encoded calcium indicators for functional imaging of mosquito olfactory neurons. Cold Spring Harbor Protocols doi:10.1101/pdb.top107683.
- Task D, Lin C, Vulpe A, **Afify A**, Ballou S, Brbić M, Schlegel P, Raji J, Jefferis G, Li H, Menuz K, Potter CJ (2022). Chemoreceptor Co-Expression in *Drosophila melanogaster* Olfactory Neurons. eLife. doi: 10.7554/eLife.72599.
- Maguire SE, **Afify A**, Goff LA, Potter CJ (2022). Odorant-receptor-mediated regulation of chemosensory gene expression in the malaria mosquito *Anopheles gambiae*. Cell Reports, 38 (10). doi: 10.1016/j.celrep.2022.110494.
- Konopka JK, Task D, **Afify A**, Raji J, Deibel K, Maguire S, Lawrence R, Potter CJ (2021). Olfaction in *Anopheles* mosquitoes. Chemical Senses. doi: 10.1093/chemse/bjab021.
- Melo N, Capek M, Arenas O, **Afify A**, Yilmaz A, Potter C, Laminette P, Para A, Gallio M, Stensmyr MC (2021). The irritant receptor TRPA1 mediates the mosquito repellent effect of catnip. Current Biology. doi: 10.1016/j.cub.2021.02.010.
- **Afify A**, Potter CJ (2020). Insect Repellents mediate species-specific olfactory behaviors in mosquitoes. Malaria Journal, 19 (127). doi: 10.1186/s12936-020-03206-8.
- **Afify A**, Betz JF, Riabinina O, Lahondère C, Potter CJ (2019). Commonly used insect repellents hide human odors from *Anopheles* mosquitoes. Current Biology, 29 (21): 3669-3680. doi: 10.1016/j.cub.2019.09.007.
- Eliason J, **Afify A**, Potter CJ, Matsumura I (2018). A GAL80 collection to inhibit GAL4 transgenes in *Drosophila* olfactory sensory neurons. G3, 8 (11): 3661-3668. doi: 10.1534/g3.118.200569.
- **Afify A**, Galizia CG (2015). Chemosensory cues for mosquito oviposition site selection. Journal of Medical Entomology, 52(2):120-30. doi: 10.1093/jme/tju024.
- **Afify A**, Horlacher B, Roller J, Galizia CG (2014). Different repellents for *Aedes aegypti* against blood-feeding and oviposition. PLoS One, 9 (7): e103765. doi: 10.1371/journal.pone.0103765.
- **Afify A**, Galizia CG (2014). Gravid females of the mosquito *Aedes aegypti* avoid oviposition on *m*-cresol in the presence of the deterrent isomer *p*-cresol. Parasite & Vectors, 7:315. doi: 10.1186/1756-3305-7-315.
- Kesavaraju B, **Afify A**, Gaugler R (2012). Strain specific differences in intraspecific competition in *Aedes albopictus* (Diptera: Culicidae). Journal of Medical Entomology, 49(5):988-92. doi: 10.1603/ME11245.
- Kesavaraju B, Alto B, **Afify A**, Gaugler R (2010). Malathion influences competition between *Aedes albopictus* and *Aedes japonicus*. Journal of Medical Entomology, 47(6):1011-8. doi: 10.1603/me10011.
- El-Bishlawy SHMO, **Afify A**, Shamseldean MM (2009). Description and factors affecting activities of the *Gammarus* sp., a crustacean predator of *Culex pipiens* mosquito larvae in Egypt. Egyptian Journal of Biological Pest Control, 19 (2): 99-104.

- Kesavaraju B, Afify A, Gaugler R (2009). Growth and survival of the invasive *Aedes albopictus* larvae on *Diospyros virginiana* (American persimmon) leaves. *Journal of Medical Entomology*, 46(3):465-70. doi: 10.1603/033.046.0308.

PRESENTATIONS

ORAL PRESENTATIONS

- November 2020: *Functional characterization of mosquito repellents*. **Virtual** talk at the Entomological Society of America virtual annual meeting.
- August 2020: *Species-specific differences in the mosquito olfactory response to repellents*. **Virtual** talk at the International Symposium on Olfaction and Taste.
- September 2019: *Neurogenetic characterization of mosquito repellents*. The **keynote** talk at the annual meeting of the Greater Baltimore Society of Neuroscience Chapter.
- March 2019: *Neurogenetic characterization of mosquito repellents*. Department of Neuroscience, Johns Hopkins University School of Medicine.
- November 2018: *Neurogenetic characterization of mosquito repellents*. Johns Hopkins Malaria Research Institute seminar series at the Bloomberg School of Public Health.
- November 2017: *Neurogenetic characterization of Anopheles gambiae mosquito repellents*. The Future of Malaria Research Symposium, Baltimore, USA.
- February 2017: *Mosquito-borne diseases: a modern approach to an old solution*. Fulbright Alumni Regional Conference: Contemporary Health Issues, Cairo, Egypt.
- October 2016: *Repellents of mosquito host finding and oviposition site selection*. Rutgers Entomology Departmental Seminar series.
- September 2010: *Odor cues for egg laying substrate choice in mosquitoes*. Grand Challenges in Ecology and Evolution symposium at the Max Planck Institute for Ornithology, Seewiesen, Germany.
- April 2008: *Mermithid nematodes as biocontrol agents of mosquitoes*. New Jersey Mosquito Biologists Working Group meeting at the Center for Vector Biology, Rutgers University.
- November 2007: *Biological control of mosquitoes*. Department of Entomology, Rutgers University.

POSTERS

- April 2019: The Johns Hopkins Annual Postdoctoral conference. Baltimore, Maryland, USA.
- September 2017: The Johns Hopkins Annual Neuroscience Retreat, Cambridge, Maryland, USA.
- September 2013: Grand Challenges in Communication in Social Communities symposium at the Max Planck Institute for Ornithology, Seewiesen, Germany.
- March 2013: German Neuroscience Society meeting, Göttingen, Germany.
- March 2008: New Jersey Mosquito Control Association meeting, Atlantic City, New Jersey, USA.

TEACHING EXPERIENCE

- October 2019: Gave a **guest lecture** for “Principles of Biology” class at Towson University, Baltimore.
- September 2017-March 2018: Participated in the "**Collaborative Teaching Fellows Program**" at Notre Dame of Maryland University, to gain teaching skills and explore current pedagogical theory and practice.
- 2011–2014: Participated in **teaching** the “Animal Physiology” compact course for Bachelor students at the department of Biology, University of Konstanz.

LEADERSHIP AND OUTREACH

- **Co-editing** a special issue on “Chemoreception in Insects: Function and Evolution” for the journal “Insects”.
- Fall 2021: **Volunteered** to serve in the committee on diversity and inclusion at the department of Neuroscience, Johns Hopkins School of Medicine.
- May 2020-April 2021: Wrote a **weekly column** on recent scientific discoveries for the public, at “Al madayin post” magazine (Published in Germany, In Arabic).
- November 2020: **Co-organized** the **symposium** “Where Did You Come From, Where Are You Going? Insect Navigation: From Neurons to Behavior” at the Entomological Society of America virtual annual meeting.
- July 2019: **Presented** at the Baltimore Science Slam event for the general public.
- September 2016-2018: **Volunteered** for different activities at "Project Bridge" in order to communicate science to the Baltimore community.
- June 2013: **Taught** at “Science goes public” and “Kids go science” programs, organized by the Max Planck institute of ornithology, Radolfzell, Germany.
- June 2013: **Interview** with the German newspaper Südkurier:
(<http://www.suedkurier.de/region/kreis-konstanz/radolfzell/Ali-Afifi-Der-Herr-der-Muecken;art372455,6134848>.)
- February 2009: **Interview** with the Egyptian TV channel OTV.
- November 2008: **Interview** with the Egyptian national radio.