

# Andrew Pike

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## CURRENT POSITION

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**Assistant Professor of Biology, Oberlin College, Oberlin, OH, July 2024-Present.**

## EDUCATION

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**Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD, 2010-2015**

**Ph.D.** in Molecular Microbiology and Immunology. Thesis Title: “The effects of genetic modification on *Anopheles stephensi*”

**Michigan State University, East Lansing, MI, 2008-2010**

**M.S.** in Entomology. Thesis Title: “Three way interactions between *Wolbachia*, dengue virus, and their host, *Aedes aegypti*”

**Oberlin College, Oberlin, OH, 2004-2008**

**B.A.** Majors: Biology and Mathematics, Honors in Mathematics  
Minors: Computer Science and Religion

## TEACHING EXPERIENCE

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**Assistant Professor of Biology, Oberlin College, Oberlin, OH, July 2024-Present (Visiting July 2022-June 2024).**

**Disease Ecology with Lab** – Fall 2023.

**Organismal Biology Lecture** – Fall 2022, 2023 and 2024.

**Organismal Biology Lab** – Spring 2024 and Fall 2024.

**Molecular Biology, Cell Biology, and Biochemistry Lab** – Fall 2022.

**Biology of Infectious Diseases and their Global Impact** – Spring 2023 and 2024.

**Immunity and Pathogenesis** – Spring 2023.

**Planned:** Invertebrate Biology – Spring 2025

**Guest Lecturer, John Carroll University**

**Senior Seminar:** Spring 2023

**Lecturer on Immunology, Harvard Medical School/HMX, May 2019-July 2022**

**Adjunct Faculty, Emmanuel College Department of Biology**

**Organismic and Evolutionary Biology Lab** – Spring 2022.

**Experimental Biology** – Fall 2021.

**Cancer Biology** – Spring 2021.

**Life on Earth** – Fall 2020.

**Organismic and Evolutionary Biology Lab** – Spring 2020.

**Guest Lecturer, Boston College**

**Cell Biology:** Spring 2022

**Adjunct Faculty, Towson University Department of Biology**

**Principles of Biology:** Spring 2017

**Guest Lecturer, University of Maryland School of Medicine**  
**Host Defenses and Infectious Disease: Fall 2016**

**Teaching Assistant, Johns Hopkins Bloomberg School of Public Health**  
**Biology of Parasitism Laboratory: Spring 2013-Fall 2015.**  
**Public Health Perspectives on Research: Spring 2013-Fall 2014.**

**Teaching Assistant, Michigan State University**  
**Integrative Studies Biological 201 Laboratory: Fall 2009-Spring 2010**

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#### RESEARCH EXPERIENCE

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**(Visiting) Assistant Professor** – Oberlin College, Oberlin, OH. Mentoring undergraduate students in projects related to insecticide resistance and microbial interactions among native mosquitoes in northern Ohio. Additionally supervised students in individual research projects during upper-level laboratory courses

**Lecturer** – Harvard Medical School/HMX, Boston, MA. Utilized learning analytics to investigate behaviors that can predict student success in asynchronous online courses.

**Post-doctoral Fellow** – University of Maryland School of Medicine, Baltimore, MD. Identified serological markers of malaria exposure in the laboratory of Dr. Christopher Plowe.

**Graduate Student: Ph.D.** – Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD. Rotations in the Dimopoulos, Pineda and Rasgon labs. Thesis work measuring the effects of transgenic immune activation on mosquito fitness and gene expression in the Dimopoulos lab.

**Graduate Student: M.S.** – Michigan State University, East Lansing, MI. Examining interactions between dengue virus, mosquitoes, and the endosymbiont *Wolbachia* in the Xi lab.

**Undergraduate Student** – Oberlin College, Oberlin, OH. Research and honors work with Dr. Bob Bosch on the use of mathematical optimization methods to create visual art.

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#### FORMAL PEDAGOGICAL TRAINING

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**Inclusion, Diversity, Equity, Access, Leadership (IDEAL) Professional Development workshop,** Science Museum of Minnesota, August 2023 and May 2024. Five-day workshop focusing on ways to promote inclusion, diversity, equity and access in STEM classrooms, with a two-day follow up session.

**Curriculum Fellowship,** Harvard Medical School, May 2019-May 2022. Training in best pedagogical practices along with participating in and leading biology education journal clubs, education workshops and trainings diversity, equality, and inclusion trainings.

**Collaborative Teaching Fellowship,** University of Maryland/Towson University, Aug. 2016-May 2017. Short course on teaching pedagogy including lecturing, alternative teaching methods, designing effective assessments and engaging students.

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#### GRANTS AND FELLOWSHIPS

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**Oberlin College Curriculum Development Grant: Spring 2023**

**Oberlin College Grant-in-Aid of Research Award: Spring 2023**

**Johns Hopkins Malaria Research Institute Predoctoral Fellowship: Jan. 2013-Dec. 2014**

**Tropical Medicine Dinner Club of Baltimore Simpson Student Award in Tropical Disease Field Research: April 2014**

**Johns Hopkins Center for Global Health Field Research Award:** March 2014  
**The Dr. Lloyd and Mae Rozeboom Scholarship:** Spring 2011 and Spring 2012  
**Michigan State University Department of Entomology Hutson Travel Fellowship:** Feb. 2010

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LITERATURE REVIEW AND EDITING EXPERIENCE

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**Guest Editor, *JMBE* Themed issue on “Opportunities and Challenges of Online Instruction – Blurring the Lines Between Online and On-site Teaching and Learning,”** April 2021-April 2022  
**Guest Reviewer, *JMBE* Themed Issue on “Teaching in a Time of Crisis,”** Oct. 2020-Feb. 2021  
**Reviewer, *Insect Biochemistry and Molecular Biology*,** Jan. 2018-Dec. 2019  
**Associate Editor, *the POSTDOCKET*,** Nov. 2016-Dec. 2017

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OTHER PROFESSIONAL EXPERIENCE

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**United States Food and Drug Administration:** Microbiology Reviewer, Oct. 2017-May 2019  
**University of Maryland School of Medicine:** Post-doctoral fellow, March. 2015-Oct. 2017

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PUBLICATIONS

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*Published manuscripts (18)*

- Pike, A.,** C. Pietryski,<sup>§</sup> P. Deighan, J. Kuchner, D. Lau, A. Seshan and P. March. “MORFIN; a simple, robust, insertional mutagenesis method for use in CURE labs and research programs.” *G3 (Bethesda)*. 2024;14(5):jkae036. doi:10.1093/g3journal/jkae036
- Tewey, M., D. Coulibaly, J. Lawton, E. Stucke, A. Zhou, A. Berry, J. Bailey, **A. Pike**, A. Dara, A. Ouattara, K. Lyke, O. Ifeonu, M. Laurens, M. Adams, S. Takala-Harrison, A. Niangaly, B. Kouriba, A. Koné, A. Rowe, O. Doumbo, J. Patel, J. Tan, P. Felgner, C. Plowe, M. Thera, and M. Travassos. “Natural immunity to malaria preferentially targets the endothelial protein C receptor-binding regions of PfEMP1s.” *mSphere*. 2023; e0045123. doi:10.1128/msphere.00451-23
- Pike, A.,** M. Bunch, C. DeGennaro, and M. Parker. “Small online courses provide robust learning gains and improve student confidence in the basic biomedical sciences” *Med Sci Educ*. 2022;32(6):1425-1432. doi:10.1007/s40670-022-01660-4
- Friedman-Klabanoff, D.J., M.A. Travassos, O.O. Ifeonu, S. Agrawal, A. Ouattara, **A. Pike**, J.A. Bailey, M. Adams, D. Coulibaly, K.E. Lyke, M.B. Laurens, S. Takala-Harrison, B. Kouriba, A.K. Kone, O.K. Doumbo, J.J. Patel. M.A. Thera, P.L. Felgner, J.C. Tan, C.V. Plowe, and A.A. Berry. 2021 “Epitope-specific antibody responses to a Plasmodium falciparum subunit vaccine target in a malaria-endemic population.” *J Infect Dis*. 223(11):1943-1947.
- Bailey, J.A., A.A. Berry, M.A. Travassos, A. Ouattara, S. Boudova, E.Y. Dotsey, **A. Pike**, C.G. Jacob, M. Adams, J.C. Tan, R.M. Bannen, J.J. Patel, J. Pablo, R. Nakajima, A. Jasinskas, S. Dutta, S. Takala-Harrison, K.E. Lyke, M.B. Laurens, A. Niangaly, D. Coulibaly, B. Kouriba, O.K. Doumbo, M.A. Thera, P.L. Felgner, and C.V. Plowe. 2020. “Microarray analyses reveal strain-specific antibody responses to *Plasmodium falciparum* apical membrane antigen 1 variants following natural infection and vaccination.” *Scientific Reports* 10(1):1-12.
- Zhou, A.E., A.A. Berry, J.A. Bailey, **A. Pike**, A. Dara, S. Agrawal, E.M. Stucke, A. Outtara, D. Coulibaly, K.E. Lyke, M.B. Laurens, M. Adams, S. Takala-Harrison, J. Pablo, A. Jasinskas, R. Nakajima, A. Niangaly, B. Kouriba, A.K. Kone, J.A. Rowe, O.K. Doumbo, M.A. Thera, J.J. Patel, J.C. Tan, P.L. Felgner, C.V. Plowe, and M.A. Travassos. 2019. “Antibodies to peptides in semiconserved domains of RIFINs and STEVORs correlate with malaria exposure.” *mSphere* 4(2):e00097-19.

- Travassos, M.A., A. Niangaly, J.A. Bailey, A. Ouattara, D. Coulibaly, K.E. Lyke, M.B. Laurens, J. Pablo, A. Jasinkas, R. Nakajima, A.A. Berry, M. Adams, C.G. Jacob, **A. Pike**, S. Takala-Harrison, L. Liang, B. Kouriba, A.K. Kone, J.A. Rowe, J. Moulds, D.A. Diallo, O.K. Doumbo, M.A. Thera, P.L. Felgner and C.V. Plowe. 2018. "Children with cerebral malaria or severe malarial anaemia lack immunity to distinct variant surface antigen subsets." *Scientific Reports* 8(1):1-14.
- Pike, A.** and G. Dimopoulos. 2018. "Genetic modification of *Anopheles stephensi* for resistance to multiple *Plasmodium falciparum* strains does not influence susceptibility to o'nyong'nyong virus or insecticides, or *Wolbachia*-mediated resistance to the malaria parasite." *PLoS One* 13(4):e0195720.
- Pan, X., **A. Pike**, D. Joshi, G. Bian, M. McFadden, P. Lu, X. Liang, F. Zhang, A.S. Raikehl and Z. Xi. 2017. "The bacterium *Wolbachia* exploits host innate immunity to establish a symbiotic relationship with the dengue vector mosquito *Aedes aegypti*." *ISME Journal* 12(1):277-288.
- Pike, A.**, N. B. Dizaji, Y. Dong, A. Gacita<sup>§</sup> and G. Dimopoulos. 2017. "Changes in the microbiota cause genetically modified *Anopheles* to spread into a population." *Science* 357(6358):1396-1399.
- Anglero-Rodriguez Y.I., B.J. Blumberg, Y. Dong, S.L. Sandiford, **A. Pike**, A.M. Clayton, and G. Dimopoulos. 2016. "A natural *Anopheles*-associated *Penicillium chrysogenum* enhances mosquito susceptibility to *Plasmodium* infection." *Scientific Reports* 6(1):1-10.
- Mesquita, R.D., R.J. Vionette-Amaral, C. Lowenberger, R. Rivera-Pomar, F.A. Monteiro, P. Minx, J. Spieth, A.B. Carvalho, F. Panzera, D. Lawson, A.Q. Torres, J.M.C. Ribeiro, M.H.F. Sorgine, R.M. Waterhouse, M.J. Montague, F. Abad-Franch, M. Alves-Bezerra, L.R. Amaral, H.M. Araujo, R.N. Araujo, L. Aravind, G.C. Atella, P. Azambuja, M. Berni, P.R. Bittencourt-Cunha, G.R.C. Braz, G. Calderon-Fernandez, C.M.A. Carareto, M.B. Christensen, I.R. Costa, M. Dansa, C.R.O. Dumas-Filho, I.F. De-Paula, F.A. Dias, G. Dimopoulos, S.J. Emrich, N. Esponda-Behrens, P. Fampa, R.D. Fernandez-Medina, R.N. da Fonseca, M. Fontenele, C. Fronick, L.A. Fulton, A.C. Gandara, E.S. Garcia, F.A. Genta, G.I. Firaldo-Calderon, B. Gomes, K.C. Gondim, A. Granzotto, A.A. Guarneri, R. Guigo, M. Harry, D.S.T. Hughes, W. Jablonka, E. Jacquin-Joly, M.P. Juarez, L.B. Koerich, J.M. Latorre-Estivalis, A. Lavore, G.G. Lawrence, G. Lazoski, C.R. Lazzari, R.R. Lopes, M.G. Lorenzo, M.D. Lugon, D. Majerowicz, P.L. Marcet, M. Mariotti, H. Masuda, K. Megy, A.C.A. Melo, F. Missirlis, T. Mota, F.G. Noriega, M. Nouzova, R.D. Nunes, R.L.L. Oliveira, G. Oliveira-Silveira, S. Ons, L. Pagola, G.O. Paiva-Silva, A. Pascual, M.G. Pavan, N. Pedrini, A.A. Peixoto, M.H. Pereira, **A. Pike**, C. Polycarpo, F. Prodocimi, R. Ribeiro-Rodrigues, H.M. Robertson, A.P. Salerno, D. Salmon, D. Santesmasses, R. Schama, E.S. Seabra-Junior, L. Silva-Cardoso, M.A.C. Silva-Neto, M. Souza-Gomes, M. Sterkel, M.L. Taracena, M. Tojo, Z.J. Tu, J.M.C. Tubio, R. Urisc-Bedoya, T.M. Venancio, A.B. Walter-Nuno, D. Wilson, W.C. Warren, R.K. Wilson, E. Huebner, E.M. Dotson, and P.L. Oliveira. 2015. "The genome of *Rhodnius prolixus*, an insect vector of chagas disease, reveals unique adaptations to hematophagy and parasite infection." *PNAS* 112 (48) 14936-14941.
- Sandiford, S.L., Y. Dong, **A. Pike**, B.J. Blumberg, A.C. Bahia, and G. Dimopoulos. 2015. "Cytoplasmic actin is an extracellular insect immune factor which is secreted upon immune challenge and mediates phagocytosis and direct killing of bacteria, and is a *Plasmodium* agonist." *PLoS Pathogens* 11(2): e1004631.
- Pike, A.**, A. Vadlamani, S.L. Sandiford, A. Gacita and G. Dimopoulos. 2014. "Characterization of the Rel2-regulated transcriptome and proteome of *Anopheles stephensi* identifies new anti-*Plasmodium* factors." *Insect Biochemistry and Molecular Biology* 52:82-93.

- Hamm, C.A., C.A. Handley, **A. Pike**, M.L. Forister, J.A. Fordyce, and C.C. Nice. 2014. "Wolbachia infection and Lepidoptera of conservation concern." *JIS* 14(6).
- Dong, Y., C. M. Cirimotich, **A. Pike**, R. Chandra and G. Dimopoulos. 2012. *Anopheles* NF- $\kappa$ B-regulated splicing factors direct pathogen-specific repertoires of the hypervariable pattern recognition receptor AgDscam. *Cell Host and Microbe* 12(4): 521-30.
- Hughes, G.\*, **A. Pike**\*, P. Xue, and J. Rasgon. 2012. Invasion of *Wolbachia* into *Anopheles* and other insect germlines in an *ex vivo* organ culture system. *PLoS One* 7: e36277.
- Guo, X., Y. Xu, G. Bian, **A. Pike**, Y Xie, and Z. Xi. 2010. Response of the mosquito protein interaction network to dengue infection. *BMC Genomics* 11(1):380.

*In Press (1)*

- Parker, M., M. Bunch and **A. Pike**. "Is anybody watching: A multi-factor motivational framework for educational video engagement." In press at *Computers & Education*. doi:10.1016/j.compedu.2024.105148.

*Book chapters (1)*

- Pike, A.**, C.M. Cirimotich and G. Dimopoulos. 2013. "Impact of transgenic immune Deployment on mosquito fitness." In W. Takken and C.J. Koenraadt [eds.], *Ecology of Parasite-Vector Interactions*. Wageningen Academic Publishers, Wageningen. 2013 19-33.

*Conference proceedings and editorials (2)*

- Pike, A.**, S. Pandey, C.C. Goller, J. Herzog and S.T. Parks. 2022 "Opportunities and challenges of online instruction and effective pedagogy that blurs the lines between online and on-site teaching and learning." *JMBE* 23(1):e00047-22 .
- Bosch, R. and **A. Pike**. 2009. "Map-colored mosaics" *Bridges Banff II: Mathematical Connections in art, music, and science* 139-146.

*Submitted (3)*

- Dong, Y., S. Kang, S. Sandiford, **A. Pike**, R. Ubalee, K. Kobylinski and G. Dimopoulos. "Prefoldin chaperonin complex disruption results in mosquito leaky gut and blocks a broad spectrum of malaria parasites." In review at *Nature*
- Parker, M., M. Bunch and **A. Pike**. "Learning behavior and performance in high-stakes online courses." In review at *The Journal of Computer Assisted Learning*

§ Mentored undergraduate student

\* These authors contributed equally to this work

INVITED RESEARCH PRESENTATIONS

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2023	Centre College Biology Department, Danville, KY Oxford College Biology Department, Oxford, GA
2022	Colby College Biology Department, Waterville, ME Cornell College Biology Department, Mount Vernon, IA

CONFERENCE PRESENTATIONS

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- Pike, A.** et al. "The use of small peptide microarrays to detect malaria exposure," oral presentation presented as part of the American Society for Tropical Medicine and Hygiene Annual Meeting, Baltimore, MD, USA, 5-9 Nov. 2017 (presented by A.A. Berry).

- Pike, A.** et al. "Distribution, infection status and blood-feeding behavior of *Anopheles* spp. mosquitoes in Southern Malawi," poster presented as part of the American Society for Tropical Medicine and Hygiene Annual Meeting, Baltimore, MD, USA, 5-9 Nov. 2017.
- Pike, A.** et al. "Measuring species- and region-specific markers of mosquito bites by small peptide arrays," poster presented as part of the American Society for Tropical Medicine and Hygiene Annual Meeting, Atlanta, GA, USA 13-17 Nov. 2016.
- Pike, A.** and G. Dimopoulos. "Transgenic *Anopheles stephensi* fitness and susceptibility to various infections," poster presented as part of the American Society for Tropical Medicine and Hygiene Annual Meeting, New Orleans, LA, USA 2-6 Nov. 2014.
- Pike, A.** and G. Dimopoulos. "The effects of transient immune deployment on transgenic *Anopheles stephensi* fitness," poster presented as part of the American Society for Tropical Medicine and Hygiene Annual Meeting, Washington, DC, USA 13-17 Nov. 2013.
- Pike, A.** and G. Dimopoulos. "The effects of transient immune deployment on transgenic *Anopheles stephensi* fitness," poster presented as part of the ESF/EMBO symposium on Integrated Insect Immunology: From Basic Biology to Environmental Applications, Pultusk, Poland, Sept. 23-28 2013.
- Pike, A.** et al. "The Rel2 regulated transcriptome and proteome of Rel2 overexpressing *Anopheles stephensi*," poster presented as part of the Keystone Symposia on Molecular and Cellular Biology: Malaria, New Orleans, LA, USA 20-25 Jan. 2013.
- Pike, A.** et al. "The Rel2 regulated proteome of the malaria vector *Anopheles stephensi*," poster presented as part of the Summer Frontiers Symposium on "Training the innate immunity: immunological memory in innate host defense," Nijmegen, The Netherlands, 28-29 June 2012.
- Pike, A.** et al. "Effects of *Wolbachia* and dengue virus infection on the mosquito *Aedes aegypti*," poster presented as part of the Entomological Society of America Annual Meeting, Indianapolis, IN, USA, 13-16 Dec. 2009.
- Pike, A.** et al. "Role of innate immunity in regulation of *Wolbachia* infection level in *Aedes aegypti*," poster presented as part of the American Society of Tropical Medicine and Hygiene Annual Meeting, Washington DC, USA, 18-22 Nov. 2009.

#### AWARDS

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- Emmanuel College Excellence in Undergraduate Education Award:** Spring 2023
- Promoted to Full Member of Sigma Xi:** Spring 2023
- Hope Hibbard Memorial Scholarship in Biology:** Spring 2008
- Edward Wong Memorial Prize in Mathematics:** Spring 2008
- Norman J. Goldring Scholar-Athlete Award:** Spring 2008
- Elected as an Associate Member of Sigma Xi:** Spring 2008

#### LEADERSHIP EXPERIENCE

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- Student Constituency Representative,** Johns Hopkins University Bloomberg School of Public Health Centennial Working committee, Aug. 2012-Dec. 2015
- Vice President of Social and Cultural Affairs,** Johns Hopkins University Bloomberg School of Public Health Student Assembly, May 2011-May 2012
- Member at Large,** Johns Hopkins University Bloomberg School of Public Health Student Assembly, Aug. 2010-May 2011 and May 2012-Dec. 2015
- Member,** Johns Hopkins University Bloomberg School of Public Health Deans for Students Network, Aug. 2010-May 2011
- Vice President,** Michigan State University Graduate-Undergraduate Entomology student Society, Jan. 2009-Dec. 2010

MEMBERSHIPS

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**Sigma Xi**

**Entomological Society of America**