

# Andrew Pike

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## CURRENT POSITION

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**Visiting Assistant Professor of Biology, Oberlin College, Oberlin, OH, July 2022-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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### **Lecturer in Immunology, Harvard Medical School/HMX, May 2019-July 2022**

Developed all course content, delivered recorded lectures, and coordinated course materials for asynchronous online courses in immune-oncology, novel treatments for inflammatory diseases, and viral immunology. Also assisted in updating the first-year medical school immunology courses to a flipped online format during COVID-19.

### **Adjunct Faculty, Emmanuel College Department of Biology, Spring 2020-Spring 2022**

Acted as instructor of record for the following courses:

**Organismic and Evolutionary Biology Lab** – Spring 2022. Led one section of approximately 20 undergraduate biology majors in in-person lab activities. Updated one of seven laboratory module to better align with course goals.

**Experimental Biology** – Fall 2021. Led one section of 16 undergraduate biology majors. The course was an upper-level CURE-style laboratory course. With the instructor of a second section of this course, currently preparing a manuscript describing this module for publication.

**Cancer Biology** – Spring 2021. Led one section of approximately 25 majors taught synchronously online. The course was an upper level course taught using lectures, paper discussions, and student presentations.

**Life on Earth** – Fall 2020. Led one section of approximately 35 undergraduate non-majors. The course was a general biology survey taught synchronously online using a flipped classroom model.

**Organismic and Evolutionary Biology Lab** – Spring 2020. Led one section of approximately 15 undergraduate biology majors. The course was moved from in-person to online halfway through the semester, requiring a number of modifications to the lab activities.

**Guest Lecturer, Boston College – Cell Biology, Spring 2022**

Prepared pre-class videos and led in-class activities for two days of a semi-flipped cell biology classroom with approximately 80 undergraduate biology majors. The subjects covered were introductory immunology and the biology of cancer.

**Adjunct Faculty, Towson University Department of Biology, Spring 2017**

**Principles of Biology:** Developed all course materials and acted as instructor of record for one section of approximately 30 undergraduate non-majors. The course was a general biology survey taught in person utilizing lectures and several discussions.

**Guest Lecturer, University of Maryland School of Medicine, Fall 2016**

**Host Defenses and Infectious Disease:** Gave lectures and led discussions on primary literature for approximately 15 first year medical students per session.

**Teaching Assistant, Johns Hopkins Bloomberg School of Public Health, Spring 2013-Fall 2015**

**Biology of Parasitism laboratory:** Spring 2013-Fall 2015. Led three journal clubs per semester and changed the journal club format to include an online discussion prior to class. Set up laboratory exercises, answered student questions during class sessions and graded exams for approximately 20 graduate students per semester.

**Public Health Perspectives on Research:** Spring 2013-Fall 2014. Managed course content for a team-taught online course for graduate students in multiple programs including answering student questions and grading assignments.

**Teaching Assistant, Michigan State University Fall 2009-Spring 2010**

**Integrative Studies Biological 201 Laboratory:** Spent approximately equal time lecturing and leading laboratory exercises in three sections of 20 undergraduate non-majors per semester. Lectures and exercises were pre-planned, and delivered without supervision.

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FORMAL PEDAGOGICAL TRAINING

**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 formal trainings related to diversity, equity, inclusion and justice.

**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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RESEARCH EXPERIENCE

**Lecturer** – Harvard Medical School/HMX, Boston, MA. Utilizing the records of past HMX course runs to determine the extent of learning gains and behaviors that can predict student success in asynchronous online courses.

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

**Graduate Student: Ph.D.** – Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD. Rotations in the George Dimopoulos, Fernando Pineda and Jason Rasgon labs working on *Anopheles gambiae* mosquito immunity, modeling mitochondrial movement in neurons, and the introduction of *Wolbachia* into *Anopheles*

spp. mosquitoes, respectively. Thesis work in the laboratory of Dr. Dimopoulos on the effects of transgenic immune deployment on mosquito fitness and gene expression.

**Graduate Student: M.S.** – Michigan State University, East Lansing, MI. Working in the laboratory of Dr. Zhiyong Xi on the three way interactions between dengue virus, its mosquito host, and the intracellular endosymbiont bacterium *Wolbachia*.

**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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#### 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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**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” Manuscript in review at *Medical Science Educator*.

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. 2020 “Epitope-specific antibody responses to a *Plasmodium falciparum* subunit vaccine target in a malaria-endemic population.” *J Infect Dis*.

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. Jasinkas, 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):3952.

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. Jasinkas, 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* 8:6281.
- Pike, A.** and G. Dimopoulos. "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*.
- Pike, A.**, N. B. Dizaji, Y. Dong, A. Gacita 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* 6:34084.
- 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. Daumas-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." *Journal of Insect Science* 14:6.
- 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.
- 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* 11:380.
- Bosch, R. and **A. Pike**. 2009. "Map-Colored Mosaics" *Bridges Banff II: Mathematical Connections in art, music, and science* 139-146.
- \* These authors contributed equally to this work

#### 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.

#### FELLOWSHIPS and AWARDS

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**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

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

**Michigan State University Department of Entomology Hutson Travel Fellowship:** Feb. 2010