Philip (Phil) Arevalo

CONTACT INFORMATION

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CURRENT POSITION

Postdoctoral Scholar, University of Chicago, Chicago, IL, September 2017 - Present

Department of Ecology & Evolution
Supervisor: Sarah Cobey
Research topic: The effects of diverse immune histories on influenza evolution.

EDUCATION

Ph.D., MIT, Cambridge, MA, August 2017

Microbiology
Advisor: Martin Polz
Thesis: Horizontal gene transfer as a cohesive force in microbial populations.

Sc.B., Brown University, *cum honoribus*, Providence, RI, 2011

Applied Mathematics-Biology
A.B.: Classics
Advisor: Jeremy Rich
Senior thesis: Diversity of anammox bactera in ocean sediments.

RESEARCH POSITIONS

Research Assistant, Woods Hole Oceanographic Institution, Woods Hole, MA
July 2011 - August 2012

Advisor: Stefan Sievert
Research topic: Bacterial and archaeal community composition in oxygen minimum zones and hydrothermal vents.

PUBLICATIONS

1. **Arevalo, P.***, VanInsberghe, D.*, Elsherbini, J., Gore, J., Polz, M.F. *A reverse ecology approach based on a biological definition of microbial populations.* In revision.
2. **Arevalo, P.**, McLean, H.Q., Belongia, E.A., Cobey, S. *Earliest infections predict the age distribution of seasonal influenza A cases.* In preparation.
3. Polzin J., **Arevalo P.**, Nussbaumer T., Polz M.F, Bright M. (2019). *Polyclonal symbiont populations in hydrothermal vent tubeworms and the environment.* Proceedings of the Royal Society B. doi:10.1098/rspb.2018.1281
4. Rich J.J., **Arevalo P.**, Chang B.X., Devol A.H., Ward B.B. (2018). Anaerobic ammonium oxidation (anammox) and denitrification in Peru margin sediments. Journal of Marine Systems. doi:10.1016/j.jmarsys.2018.09.007
5. **Arevalo P.**, VanInsberghe D., Polz M.F. (2018) A Reverse Ecology Framework for Bacteria and Archaea. In: Population Genomics: Microorganisms. Springer, Cham.
6. Kauffman, K., Hussain, F., Yang, J., **Arevalo, P.**, Brown, J., Cutler, M., Kelly, L., Polz, M.F. (2018). *A major lineage of non-tailed dsDNA viruses as unrecognized killers of marine bacteria.* Nature. doi:10.1038/nature25474
7. Burks D.J., Norris, S., Kauffman, K.M., Joy, A., **Arevalo, P.**, Azad, R.K., Wildschutte, H. (2017). *Environmental vibrios represent a source of antagonistic compounds that inhibit pathogenic Vibrio cholerae and Vibrio parahaemolyticus strains.* MicrobiologyOpen, 6(5). doi:10.1002/mbo3.504.

8. Takemura, A., Corzett, C., Hussain, F., **Arevalo, P.**, Datta, M,. Yu, X., Le Roux, F., Polz, M.F. (2017). *Natural resource landscapes of a marine bacterium reveal distinct fitness-determining genes across the genome.* Environmental Microbiology, 19:2422–2433. doi:10.1111/1462-2920.13765.
9. Chase, A.B., **Arevalo, P.**, Polz, M.F., Berlemont, R., Martiny, J.B.H. (2016). *Evidence for ecological flexibility in the cosmopolitan genus Curtobacterium.* Frontiers in Microbiology, 7:1874. doi: 10.3389/fmicb.2016.01874
10. Hehemann, J.-H.*, **Arevalo, P.***, Datta, M.S.*, Yu, X., Corzett, C., Preheim., S.P., Henschel, A., Timberlake, S., Alm, E.J., Polz, M.F. (2016).*Adaptive radiation by waves of gene transfer leads to fine-scale resource partitioning in marine microbes.* Nature Communications, 7. doi:10.1038/ncomms12860.

** indicates equal contribution of authors*

Presentations and posters

Arevalo, P, McLean, H.Q., Belongia, E.A., Cobey, S. *Earliest infections predict the age distribution of seasonal influenza A cases.* May 2019. Models of Infectious Disease Agent Study (MIDAS) Annual Meeting. Oral presentation.

Arevalo, P, McLean, H.Q., Belongia, E.A., Cobey, S. *The role of immune history in population-level influenza dynamics.* July 2018. Centers of Excellence for Influenza Research and Surveillance (CEIRS) Annual Network Meeting. Oral presentation.

Arevalo, P. *The role of immune history in population-level influenza dynamics.* April 2018. University of Chicago Ecology & Evolution Darwin's Weekly.

Arevalo, P. *Horizontal gene transfer as a cohesive force in microbial populations.* April 2017. University of Chicago Ecology & Evolution Darwin's Weekly.

Arevalo, P. & Polz, M.F. *A biolgical definition for microbial populations and its application to a reverse ecology approach.* August 2016. 16th International Symposium for Microbial Ecology. Evolution. Invited oral presentation (co-convener).

Arevalo, P. *A biolgical definition for microbial populations and its application to a reverse ecology approach.* Center for Microbiome Informatics and Therapeutics. June 2016. Work-in-progress meeting. Oral presentation.

Arevalo, P., Wuchter, C., Yang, T-H., Coolen, M., Sievert, S. *Stratified bacterial and archaeal communities across the oxygen minimum zone of the Eastern Tropical North Pacific.* August 2012 . 14th International Symposium for Microbial Ecology. Microbes in a changing ocean. Contributed oral presentation.

Honors and Awards

National Science Foundation Graduate Research Fellow (2012 - 2017)

MIT Energy Initiative BP Energy Fellow (2012)

Elected to the Society of Sigma Xi (May 2011)

Brown University Povar Prize in Zoology and Physiology (May 2011)

Teaching Experience

Guest lecturer for Evolutionary and Genomic Medicine, University of Chicago (Winter 2018 and Winter 2019)

Graduate of Kaufman Teaching Certificate Program, MIT (Summer 2017)

Teaching Assistant for Microbial Population Genomics, MIT (Fall 2016)

Teaching Assistant for Microbial Genetics and Evolution, MIT (Fall 2014)

Lecturer Bioinformatics Workshop, Centro de Biología Molecular, Managua, Nicaragua (March 2014)

Outreach

Guest Lecturer Biotechnology III, Cambridge Rindge and Latin School (November 2016)

SPLASH Instructor Educational Studies Program, MIT (November 2013 & November 2015)

Service

Graduate Resident Tutor, MIT (March 2014 - Present)

- Ran regular study breaks, assisted in conflict resolution, and ensured general well-being of undergraduate students in a residential setting.

Writing Fellow, Brown University (September 2008 - May 2011)

- Provided writing support for ten students per semester focused on argumentation, style, and clarity.