Ailene MacPherson

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Education

PDF *University of Toronto* 2020-*current*
EEB Postdoctoral fellow

Ph.D. *University of British Columbia* 2015-2020
Thesis: Coevolutionary Epidemiology: a population genetic exploration of evolutionary interactions between hosts and their infectious pathogens
Advisor: Sarah P. Otto

MSc. Bioinformatics and Computational Biology *University of Idaho* 2013-2015
Thesis: Estimating the Strength of Natural Selection from Parallel Evolution
Advisor: Scott L. Nuismer

BSc. *summa cum laude* Mathematics *University of Idaho* 2010-2013

Publications

MacPherson, A., Louca, S., McLaughlin A., Joy, J.B., Pennell, M.W., . A General Birth-Death-Sampling Model for Epidemiology and Macroevolution. *In review at PNAS*

MacPherson, A.,Keeling M.J., Otto, S.P., . Feedback Between Coevolution and Epidemiology Can Help or Hinder the Maintenance of Genetic Variation in Host-Parasite Models. *In review at Evolution*

MacPherson, A.,Keeling M.J., Otto, S.P., . Coevolution fails to maintain genetic variation in a host-parasite model with constant finite population size. *In review at TPB*

MacPherson, A., Otto, S.P., Nuismer, S.L., 2018. Keeping pace with the Red Queen: Identifying the genetic basis of susceptibility to infectious disease. *Genetics*

MacPherson, A., Otto, S.P., 2018. Joint coevolutionary-epidemiological models dampen Red Queen cycles and alter conditions for epidemics. *Journal of Theoretical Population Biology*

MacPherson, A., Nuismer, S.L., 2017. Natural Selection and the probability of parallel genetic evolution from standing genetic variation. *Journal of Evolutionary Biology*

MacPherson, A., Hohenlohe, P.A., Nuismer, S.L., 2015. Trait dimensionality explains widespread variation in local adaptation. *Proc. R. Soc. B.*

Nuismer, S.L., **MacPherson, A.**, Rosenblum, E.B., 2012. Crossing the threshold: gene-flow, dominance and the critical level of standing genetic variation required for adaptation to novel environments. *Journal of Evolutionary Biology*

Balemba, O.B., Stenkamp-Strahm, C.H., Cady, J., **MacPherson, A.**, 2011. High-fat diet-induced neuropathy of enteric nervious ssystem and the effect of Alpha-7 Nicotinic Acetylcholine receptoragonist, DMAB-Anabaseine Dihydrochloride. *Gastroenterology*

Presentations and Posters

Invited Talks:

Workshop: *Identifying the genetic basis of Coevolution.* ESEB-STN, Freising, Germany. (2019)

Seminar: *Coevolution between hosts and their infectious pathogens.* Max Plank Institute, Virtual. (2020)

Conferences:

Talk: *Coevolution does not maintain genetic variation.* ASN, . (2020)

Poster: *Dynamics of Coinfection by Distantly Related Pathogens.* ESEB, . (2018)

Poster: *Density-dependent selection in finite populations.* Evo-WIBO, . (2018)

Talk: *Finding disease genes in the face of the Red Queen.* Evolution, . (2017)

Talk: *Epidemiological dynamics disrupt Red Queen cycles.* CSEE, . (2017)

Poster: *A Marriage of the Red Queen to SIR Red King.* Evo-WIBO, . (2016)

Talk: *Natural Selection and Probability of Parallel Evolution.* Evolution, . (2015)

Talk: *Trait dimensionality and local adaptation.* Evo-WIBO, . (2014)

Poster: *Trait dimensionality and local adaptation.* Evolution, . (2013)

Poster: *Crossing the threshold: dominance and adaptation to novel environments.* Evo-WIBO, . (2012)

Funding and Awards

EEB Postdoctoral Fellowship University of Toronto (2020)	55,000 CAD/Year
Graduate Fellowship American Association of University Women (2019)	20,000 USD
Zoology Graduate Fellowship University of British Columbia Zoology (2019)	15,000 CAD (Declined)
Godfrey Hewitt Mobility Award European Society of Evolutionary Biology (2018)	1,500 Euro
Zoology Four-Year Fellowship University of British Columbia Zoology (2015-2018)	15,000 CAD/Year
BCB Graduate Research Fellowship University of Idaho (2013-2015)	21,000 USD/Year
Outstanding Senior in Mathematics University of Idaho (2015)	500 USD
College of Science Dean's Award University of Idaho (2015)	200 USD

Teaching

2020: *Phylogenetics*: Teaching Assistant. University of British Columbia.

2019: *Population Genetics*: Grader. University of British Columbia.

2019: *Biomathematics*: Guest Lecture. University of British Columbia.

2018: *Biostatistics*: Teaching Assistant. University of British Columbia.

2017: *Parasitology*: Teaching Assistant. University of British Columbia.

2017: *Biomathematics*: Guest Lecture. University of British Columbia.

2016: *Evolutionary Ecology*: Teaching Assistant. University of British Columbia.

2015: *Biomathematics*: Teaching Assistant. University of British Columbia.

Professional Activities

Peer Reviews:	Journal of Theoretical Population, The American Naturalist, Proc.R.Soc.Lond.B., Molecular Evolution.
Working Groups	Linking macroevolution and epidemiological (virtual working group 2020)
University Service:	Zoology Graduate Student Association–President V.M. Srivastava Women in Science Memorial Fund–Committee member
Outreach	Managing Fisheries with Math–Grade 12 *Palmer H.S., Palmer, Alaska* Researchers Revealed Video Series: "Counting on it" `https://www.youtube.com/watch?v=Kz5nRY84rAs` Let's Talk Science-Volunteer Idaho Women in STEM K-12 Program-Volunteer