

Ailene MacPherson

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Education

PDF *University of Toronto* 2020-current
EEB Postdoctoral fellow
Ph.D. Zoology *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., Keeling M.J., Otto, S.P., 2021. Coevolution fails to maintain genetic variation in a host–parasite model with constant finite population size. *Evolution*
MacPherson, A., Keeling M.J., Otto, S.P., 2020. Coevolution fails to maintain genetic variation in a host-parasite model with constant finite population size. *Theor. Popul. Biol.*
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. *Theor. Popul. Biol.*
MacPherson, A., Nuismer, S.L., 2017. Natural selection and the probability of parallel genetic evolution from standing genetic variation. *J. Evol. Biol.*
MacPherson, A., Hohenlohe, P.A., Nuismer, S.L., 2015. Trait dimensionality explains widespread variation in local adaptation. *Proc. R. Soc. Lond. 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. *J. Evol. Biol.*
Balemba, O.B., Stenkamp-Strahm, C.H., Cady, J., **MacPherson, A.,** 2011. High-fat diet-induced neuropathy of enteric nervous system and the effect of Alpha-7 Nicotinic Acetylcholine receptor agonist, DMAB-Anabaseine Dihydrochloride. *Gastroenterology*

Pre-print:

Louca, S., McLaughlin A., **MacPherson, A.,** Joy, J.B., Pennell, M.W., 2020. Fundamental identifiability limits in molecular epidemiology. *bioRxiv*
MacPherson, A., Louca, S., McLaughlin A., Joy, J.B., Pennell, M.W., 2020. A General Birth-Death-Sampling Model for Epidemiology and Macroevolution. *bioRxiv*
MacPherson, A., Wang, S., Yamaguchi, R., Rieseberg, L.H., Otto, S.P., 2020. Parental Population Range Expansion Before Secondary Contact Promotes Heterosis. *bioRxiv*

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

<i>EEB Postdoctoral Fellowship</i> University of Toronto (2020)	55,000 CAD/Year
<i>Graduate Fellowship</i> American Association of University Women (2019)	20,000 USD
<i>Zoology Graduate Fellowship</i> University of British Columbia Zoology (2019)	15,000 CAD (Declined)
<i>Godfrey Hewitt Mobility Award</i> European Society of Evolutionary Biology (2018)	1,500 Euro
<i>Zoology Four-Year Fellowship</i> University of British Columbia Zoology (2015-2018)	15,000 CAD/Year
<i>BCB Graduate Research Fellowship</i> University of Idaho (2013-2015)	21,000 USD/Year
<i>Outstanding Senior in Mathematics</i> University of Idaho (2015)	500 USD
<i>College of Science Dean's Award</i> 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:	Evolution, Genetics, Theor. Popul. Biol., Am. Nat., Proc. R. Soc. Lond. B, J. Mol. Evol.
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:	University of Toronto-EEB Modelling Club Managing Fisheries with Math–Grade 12 <i>Palmer H.S., Palmer, Alaska</i> 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