DR. AMBER R. PAULSON

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Citizenship: Canadian

ACADEMIC APPOINTMENTS

2019 – present* Postdoctoral researcher, University of Queen's Biology Department
* affiliated on voluntary basis since November 2020

ACADEMIC DEGREES

2020 Massey University, Ph.D., Genetics

- Thesis: "Temperature- and host-dependent regulation of virulence factors in an insect pathogenic bacterium, *Yersinia entomophaga.*"

2014 University of Victoria, M.Sc., Biological Sciences

- Thesis: "The microbial associates and putative venoms of seed chalcid wasps (Hymenoptera: Torymidae: *Megastimgus*)."

2007 Vancouver Island University, B.Sc. (Honours), Biological Sciences

- Graduated with distinction.

AWARDS

2016-2019: Commonwealth Scholarship and Fellowship Plan
2015 *declined* -Alexander Graham Bell Canada Graduate Scholarships – Doctoral Program
2015-2018 NSERC Post Graduate Scholarship – Doctoral
2018 New Zealand Society for Microbiology – Student Travel Grant
2017 New Zealand Society for Microbiology – Best Student Talk
2012 University of Victoria – M.C. Melburn Award
2011 University of Victoria – Amelia Leith Memorial Fellowship
2007 NSERC Undergraduate Research Award

PROFESSIONAL EXPERIENCE

2013 – 2015 & 2020 – present BC Ministry of Environment and Climate Strategy – Environmental Assessment Office, Project Assessment Officer – Indigenous Nation engagement

2011 Fisheries and Oceans Canada, Aquaculture Resource Management Branch, Aquaculture Management Coordinator/ Indigenous Relations.

2007 – 2011 McNaughton Environmental Consultants Ltd., Environmental Monitor/Fisheries Consultant.

2005; 2006 Mount Arrowsmith Biosphere Foundation, Co-op summer student.

TEACHING, MENTORING AND OUTREACH

2022	Edge of Lyme hack-a-thon – Presented - Exploring the inner world of important Lyme disease vector *Ixodes scapularis*.
2020 – present	Queen's University – coordinate regular writing focus/ check-ins for graduate students and post-doctoral researchers to support a collegial remote work environment.
2021	Queen's Bioinformatics Advanced R Workshop – Bioinformatics approaches for data analysis of short-read sequence data.
2020	Canadian Lyme Disease Research Network – Trainee Series Webinar – Tools for Bioinformatics Short-Read Sequence Data Processing
2020	Hackseq RNA: COVID-19 Ultra-hackathon – Project Leader – Modelling potential miRNA interactions in SARS-CoV-2; https://youtu.be/pxTEwiW6TJU *Second place overall, awarded for top participant satisfaction
2012 – 2013	Laboratory Instructor – Biology 190A/Biology 190B Biology Department, University of Victoria
2013 – 2015	Coordinator – Canadian Association for Girls in Science, Victoria BC Chapter
2006	Teaching Undergraduate Biology (Biology 492 - Entomology) Biology Department, Vancouver Island University

INVITED TALKS AND CONFERENCE PRESENTATIONS

Canadian Lyme Disease Research Network annual general meeting– 2020, virtual.

- Invited symposium talk: Unbiased metagenomic analysis of *Ixodes scapularis* microbiomes in the Kingston Frontenac region.

Agriculture and Agri-Food Canada – 2020, Agassiz, BC.

- Invited seminar lecture: from venoms to virulence factors, transcriptomics provides insights into challenging systems.

Entomological Society of America – 2017, Denver, Colorado

- Invited symposium talk: From venoms to virulence factors – Revealing ecological and evolutionary insights with RNA-seq.

New Zealand Microbiological Society Conference – 2018, Dunedin, New Zealand

- Talk: Exploring the potential role of cold-shock proteins as regulators of virulence in the insect pathogenic bacteria, *Yersinia entomophaga*.

Australian Society for Microbiology Conference – 2018, Brisbane, Australia

- Talk: The *in vivo* transcriptome of the insect pathogen, *Yersinia entomophaga*.

American Society for Microbiology Conference – 2018, Atlanta, Georgia

- Poster: The *in vivo* transcriptome of the insect pathogen, *Yersinia entomophaga*.

New Zealand Microbiological Society Conference – 2017, Auckland, New Zealand

- Talk: The *in vivo* transcriptome of the insect pathogen, *Yersinia entomophaga*.

New Zealand Microbiological Society Conference – 2016, Christchurch, New Zealand

- Talk: *In vivo* RNAseq – in a pinch.

PUBLICATIONS

Paulson, A.R., *in prep.* Evidence from integrated transcriptome analysis for small viral RNA-mediate epigenetic interference by SARS-CoV-2.

Paulson, A.R., D. Huang and R.I. Colautti. *in prep.* Evidence for symbionts and pathogens of blacklegged ticks (*Ixodes scapularis*) in an emerging Lyme disease hotspot.

Paulson, A.R., M. Schoof, N. Naren, M. O'Callaghan, X.-X. Zhang, P.B. Rainey and M.R.H. Hurst. *in prep.* Host- and temperature-dependent Yen6 is an AgrA-like, LytTR-domain containing transcriptional regulator of virulence, carbon metabolism and *yhbY* in *Yersinia entomophaga* MH96.

Paulson, A.R., M. O'Callaghan, X.-X. Zhang, P.B. Rainey and M.R.H. Hurst. 2020. In vivo transcriptome analysis provides insights into host-dependent expression of virulence factors by Yersinia entomophaga MH96, during infection of Galleria mellonella. G3: Genes, Genomes, Genetics: 11(1) 1-12.

Paulson, A.R., J. Ehlting, P. von Aderkas and S.J. Perlman. 2020. Whole-body transcriptome of seed-parasitic wasp, Megastigmus spermotrophus, reveals ecological and evolutionary insights, in Shelomi, M. (ed.) Transcriptomics in Entomological Research. CAB International, pp. 113-135.

Paulson, A.R., C. Le, J. Dickson, J. Ehlting, P. von Aderkas and S.J. Perlman. 2016. Transcriptome analysis provides insight into venom evolution in a seed-parasitic wasp, Megastigmus spermotrophus. Insect Molecular Biology: 25(5) 604-616.

Paulson, A.R., P. von Aderkas and S.J. Perlman. 2014. Bacterial Associates of Seed-Parasitic Wasps (Torymidae: Megastigmus). BMC Microbiology 14.1: 224.

Epelbaum, A., T.W. Therriault, **A.R. Paulson** and C.M. Pearce. 2009. Botryllid tunicates: Culture techniques and experimental procedures. Aquatic Invasions. 4(1): 111-120.

Epelbaum, A., C.M. Pearce, D.J. Barker, **A.R. Paulson** and T.W. Therriault. 2009. Susceptibility of four non-indigenous Ascidian species in British Columbia (Canada) to invertebrate predation. Marine Biology. 156(6): 1311-1320.

PEER REVIEWER

- Insect Science, BMC Genomics, Environmental Entomology, Molecular Ecology, and Tick & Tick-borne Diseases.

PROFESSIONAL MEMBERSHIPS

- Canadian Society of Microbiologists
- The RNA Society
- BC General Employees' Union member

EXPERTISE

- *In vivo* transcriptomics for infection and immunity research;
- Arthropod microbiome, meta-transcriptome, RNA viruses, endosymbionts, *Yersinia*, and *Galleria mellonella*;
- R, Unix Shell, high-performance cluster computing;
- RNA biology, small viral RNA, RNA-RNA & RNA-DNA cross-kingdom signalling;
- Short-read sequencing (16S, RNA-seq, small RNA-seq), experimental design, molecular microbiology, molecular ecology;
- Engagement and consultation with Indigenous Nations and Treaty Partners on the review of major projects.