

## **Rebekah Hall**

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### **Education**

#### **M.Sc. in Applied Mathematics / 2022 – present**

Simon Fraser University

*Thesis topic:* Local Adaptation of Life-History Traits in Seasonal Environments

*Supervisor:* Dr. Ailene MacPherson

*GPA:* 4.24

#### **B.Sc. Honors in Applied Mathematics / 2017 – 2022**

University of Alberta

*GPA:* 3.9

### **Research Experience**

#### **Graduate Student / Sept 2022 – present**

Department of Mathematics, Simon Fraser University

*Supervisor:* Dr. Ailene MacPherson

- Mathematical models and stochastic simulations of local adaptation of life-history traits under density-dependent natural selection in seasonal environments

#### **Research Assistant / Nov 2019 – Apr 2022**

Department of Physics, University of Alberta

*Supervisor:* Dr. Daniel Charlebois

- Stochastic simulations of yeast colony growth and morphology when exposed to magnetic fields
- Stochastic simulations of the effects of crowding and non-genetic drug resistance on the evolution of drug resistant cells in spatially-heterogenous environments

#### **Mathematics Research Project / Jan 2021 – Apr 2021**

MATH 499, Department of Mathematical and Statistical Sciences, University of Alberta

*Supervisor:* Dr. Jay Newby

*Course coordinator:* Dr. Paul Buckingham

- Numerical methods for reaction-diffusion models of cell polarisation

### **Publications**

**Rebekah Hall**, Daniel A. Charlebois. Lattice-based Monte Carlo simulation of the effects of nutrient concentration and magnetic field exposure on yeast colony growth and morphology. (2022) *In Silico Biology*, 14:53-69.

### **Submitted for publication**

**Rebekah Hall\***, Akila Bandara\*, and Daniel A. Charlebois. Fitness effects of a demography-dispersal trade-off in *Saccharomyces cerevisiae* colonies. (2023) Submitted to *Physical Biology*. (\* equal contribution)

### **Other Publications**

**Rebekah Hall**, Daniel A. Charlebois. Book review on “A World Beyond Physics: The Emergence and Evolution of Life” by Stuart A. Kauffman. (2020) *The Quarterly Review of Biology*, 95:133.

### **Presentations**

*Upcoming*: Local Adaptation of Life History Traits in Seasonal Environments.

*To present at*: 4<sup>th</sup> Biennial Meeting of SIAM Pacific Northwest Section; October 2023; Western Washington University, Bellingham, WA.

Simulating the effects of nutrients and magnetic fields on yeast colony growth and shape.

*Presented at*: Festival of Undergraduate Research and Creative Activities; March 2022; University of Alberta, Edmonton, AB.

### **Posters**

**Rebekah Hall**, Ailene MacPherson. Local Adaptation of Density-Dependent Life History Traits.

*Poster presented at*: EcoEvo Symposium; October 2022; Brackendale, BC.

### **Awards and Scholarships**

SIAM PNW 2023 Travel Support (\$500) / **2023**

Peter Borwein Memorial Graduate Scholarship in Mathematics (\$3 300) / **2023**

SFU Special Graduate Entrance Scholarship (\$10 000) / **2022**

Dean’s Silver Medal in Science / **2022**

Murray Thomas Gibson Memorial Scholarship in Mathematics (\$1 000) / **2021**

NSERC Undergraduate Summer Research Award (\$6 000) / **2021**

Alberta Innovates Summer Research Studentship (\$6 000) / **2020**

NSERC Undergraduate Summer Research Award (*declined to accept AI Studentship*) / **2020**

### **Teaching Experience**

**Graduate Teaching Assistant / Sept 2023 – present**

Department of Mathematics, Simon Fraser University

MATH 150 (*Calculus I with Review*) seminars.

Calculus Workshop, supporting MATH 150, MATH 151 (*Calculus I*), MATH 152 (*Calculus II*), and MATH 251 (*Calculus III*).

**Substitute Lecturer / Sept 2023**

Department of Mathematics, Simon Fraser University  
Substitute for MATH 150/151 (*Calculus I*)

**Graduate Teaching Assistant / Sept 2022 – Apr 2023**

Department of Mathematics, Simon Fraser University  
Q Workshop, supporting MATH 190 (*Principles of Mathematics for Teachers*) and FANX99 (*Foundations of Analytical and Quantitative Reasoning*).

**Undergraduate Grader / Jan 2020 – Apr 2020**

Department of Mathematical and Statistical Sciences, University of Alberta  
MATH 146 (*Calculus for the Physical Sciences II*).

**Service and Community Involvement****President / Sept 2023 – present**

Math Graduate Caucus, Simon Fraser University

**Graduate Student Representative / Sept 2023 – present**

Graduate Studies Committee, Simon Fraser University

**Group Co-coordinator / Sept 2023 – present**

Math Graduate Student Support Group, Simon Fraser University

**Graduate Student Representative / Feb 2023 – present**

Math Equity, Diversity, and Inclusion Advisory Group, Simon Fraser University

**Treasurer / Sept 2022 – Aug 2023**

Math Graduate Caucus, Simon Fraser University