

STEPHEN RONG, PhD

CURRICULUM VITAE

EDUCATION

Brown University, Providence, RI

01/2021

Ph.D. in Biology and Computational Biology, Center for Computational Molecular Biology

Advisor: William G. Fairbrother, **Thesis:** *Splicing regulation and natural selection in human evolution.*

Washington University in St. Louis, MO

05/2014

B.A. in Mathematics and Anthropology, Minor in Biology, Graduated *Summa Cum Laude*

Advisors: David C. Queller, Renato Feres, **Thesis:** *Relatedness, conflict, and the evolution of eusociality.*

RESEARCH EXPERIENCE

Yale University, New Haven, CT

Postdoctoral Research Associate, Reilly Lab

06/2021 – present

- TBD

Brown University, Providence, RI

Postdoctoral Research Associate, Fairbrother Lab

01/2021 – 04/2021

- Developed analysis pipelines for various applications of massively parallel splicing assays.

Graduate Research Assistant, Fairbrother Lab

08/2017 – 01/2021

- Led collaborative project on applying massively parallel splicing assays to discover splicing variants in archaic introgression and the evolution of modern and archaic humans.
- Collaborated with Geisinger HealthCare Systems to apply massively parallel splicing assays to discover splicing variants in a large, sequenced patient population.
- Demonstrated a role of mutation rate variation and purifying selection on maintaining cis-regulatory motifs that act as splicing enhancers and silencers.

Graduate Research Assistant, Ramachandran Lab

08/2014 – 07/2017

- Developed population genetic simulations to evaluate summary statistics for detecting selective sweeps from standing variation.

IGERT Graduate Traineeship in Reverse Ecology

08/2014 – 05/2019

- Barnacle Genome Project: Analyzed population genetic admixture in barnacle pool-seq data.
- Amphipod Parasite Project: Developed methods to assign sex using population genetic data.
- Sider's Pond Sediment Project: Analyzed 16S rRNA sequencing of microbes in lake sediment core.

Washington University in St. Louis, MO

Undergraduate Research Assistant, Strassmann-Queller Lab

08/2013 – 07/2014

- Developed mathematical models and simulations for the evolution of eusociality.

The University of Kansas, Lawrence, KS

Undergraduate Research Assistant, NSF-REU in Evolutionary Biology

05/2013 – 07/2013

- Developed simulations for modeling coral-endosymbiont population genetics.

The University of Washington, Seattle, WA

Undergraduate Research Assistant, NSF-REU in Mathematics

06/2012 – 08/2012

- Developed a mathematical proof for an inverse problem on electrical resistor graphs.

PEER-REVIEWED PUBLICATIONS

- Ahlquist, K, [and 3 others], **Rong, S**, Villanea, F, Witt, K. Our tangled family tree: new genomic methods offer insight into the legacy of archaic admixture. *Genome Biology and Evolution*, (2021).
- Nunez, JC, Ferranti, DA, **Rong, S**, [and 9 others]. From tides to nucleotides: genomic signatures of adaptation to environmental heterogeneity in barnacles. *Molecular Ecology*, (2021).
- Nunez, JC, **Rong, S**, Damian-Serrano, A, [and 9 others]. Ecological load and balancing selection in circumboreal barnacles. *Molecular Biology and Evolution*, (2020).
- **Rong, S**, Buerer, L, Rhine, CL, [and 3 others]. Mutational bias and the protein code shape the evolution of splicing enhancers. *Nature Communications*, (2020).
- Nunez, JC, Flight, PA, Neil, KB, **Rong, S**, [and 5 others]. Footprints of natural selection at the mannose-6-phosphate isomerase locus in barnacles. *PNAS*, (2020).
- Sugden, LA, Atkinson, EG, Fischer, AP, **Rong, S**, [and 2 others]. Localization of adaptive variants in human genomes using averaged one-dependence estimation. *Nature Communications*, (2018).
- Liao, X*, **Rong, S***, Queller, DC. Relatedness, conflict, and the evolution of eusociality. *PLoS Biology*, (2015).
(*Contributed equally to this work)

NON-PEER-REVIEWED PUBLICATIONS

- Queller, DC, **Rong, S**, Liao, X. Some agreement on kin selection and eusociality? *PLoS Biology*, (2015).
- **Rong S**, Constructing n to 1 graphs. *University of Washington REU in Mathematics*, (2012).

CONFERENCES/PRESENTATIONS

- The Allied Genetics Conference, Poster (2020)
- Brown EEB Department, Seminar Talk (2020)
- Eukaryotic mRNA Processing Meeting, Poster (2019)
- Evolution Meeting, Poster (2019)
- Evolution Meeting, Poster (2016)
- Probabilistic Modeling in Genomics Meeting, Poster (2015)
- Brown EEB Department, Seminar Talk (2014)
- Washington University in St. Louis, Undergraduate Research Symposium, Poster (2014)

TEACHING EXPERIENCE

Brown University, Providence, RI

Graduate Teaching Assistant:

- BIOL 0495 Statistical Analysis of Biological Data (2016)
- BIOL 0480 Evolutionary Biology (2015)

Washington University in St. Louis, MO

Undergraduate Course Grader:

- MATH 310 Foundations for Higher Mathematics (2013)
- MATH 201 Freshman Seminar in Multivariable Calculus (2012)

FELLOWSHIPS AND AWARDS

- NSF Graduate Research Fellowship Recipient (2016)
- Washington University in St. Louis Departmental Honors in Anthropology (2014)
- Washington University in St. Louis, Departmental Honors in Mathematics (2014)
- Lambda Alpha Anthropology Honor Society (2014)
- Sigma Xi Scientific Research Society (2014)
- Missouri Collegiate Math Competition 2nd Place Team (2014)
- Putnam Math Competition Top 200 (2010), Top 400 (2012)

SERVICE AND OUTREACH

- National Science Bowl, question writer and reviewer (2018 – present)
- Brown Junior Researchers Program, local public school science outreach (2016 – 2018)
- Vartan Volunteers Program, local public school science outreach (2015 – 2016)

- Brown EEB Department, weekly departmental seminar organizer (Spring 2017)
- Brown EEB Department, weekly departmental social organizer (Fall 2015)
- Washington University in St. Louis, College Council, student event organizer (2011 – 2014)

PROFESSIONAL DEVELOPMENT

- Brown University, Ancestral Recombination Graph Workshop (2020)
- Brown University, Center for Computational Visualization Conference (2019)
- SMBE Satellite Meeting on Modern Methods for the Study of Ancient DNA (2018)
- UCLA Computational Genomics Summer Institute (2017)
- Brown University, Sheridan Teaching Center Certificate I (2016)
- New England Regional SACNAS Conference (2016)

PROFESSIONAL MEMBERSHIPS

- Society for the Study of Evolution: Student Member (2019)
- American Association for the Advancement of Science: Student Member (2017)
- Society for Industrial and Applied Mathematics: Brown University Chapter Member (2015)

GRADUATE COURSEWORK

Current Topics in Functional Genomics (2017) • Interacting with Data Seminar (2015) • Coalescent Theory (2015) • Algorithmic Foundations of Computational Biology (2015) • Inference in Genomics and Molecular Biology (2015) • Computational Molecular Biology (2014) • Human Population Genomics (2014)