

Brent Allman *He/Him/His*

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Education

Emory University	ATLANTA, GA
Ph.D. Population Biology, Ecology, and Evolution (PBEE)	<i>Aug '16 – present</i>
University of Georgia (UGA)	ATHENS, GA
Post-Baccalaureate Research Education Program in Infectious Disease (PREP)	<i>July '15 – June '16</i>
University of San Diego (USD)	SAN DIEGO, CA
B.A. Mathematics and Biology Minor	<i>Sept '11 – May '15</i>
Queen Mary University of London (Studies Abroad)	LONDON, UNITED KINGDOM
Cryptography and War: How Mathematics Saved Democracy	<i>July '13 – Aug '13</i>

Research Experience

Emory University	ATLANTA, GA
Doctoral Student	<i>August '16 – present</i>
<i>Advisors:</i> Drs. Katia Koelle and Daniel Weissman	
I am studying how cellular coinfection and genetic exchange mechanisms in RNA viruses impact natural selection, navigation through fitness landscapes, and pandemic emergence. With influenza virus and SARS-CoV-2 as my study systems, I explore these topics by implementing computational methodologies including: individual-based models, deterministic and stochastic model fitting, and phylogenetic analysis of sequencing data.	
University of Georgia	ATHENS, GA
Graduate Research Trainee	<i>July '15 – June '16</i>
<i>Advisors:</i> Drs. Jessica Kissinger and Juan Gutierrez	
<i>Programs:</i> Post-Baccalaureate Research Experience Program (PREP)	
My research focused on the creation of a mathematical model to quantifying the infrequent sexual recombination events in the evolutionary history of the parasite, <i>Toxoplasma gondii</i> . To do this, I analyzed population genomic data using bioinformatics tools such as ADMIXTURE. During this time I also gained wet lab experience by assisting a graduate student on cell culture and PCR experiments.	
University of San Diego	SAN DIEGO, CA
Senior Thesis in Mathematics	<i>Sept '14 – May '15</i>
<i>Mentor:</i> Dr. Ani Velo	
I developed a research project that was completed over the course of an academic year. We built a deterministic mathematical model to determine HIV transmission dynamics among men who have sex with men in San Diego County. A secondary aim of the project was to apply theoretical treatments in the model to verify that prevention and education will lower HIV transmission rates.	
Research Assistant	<i>May '11 – June '15</i>
<i>Mentor:</i> Dr. Hugh Ellis	
<i>Programs:</i> Ronald E. McNair Scholars Program, Summer Undergraduate Research Experience, Pre-Undergraduate Research Experience	
I worked in the lab of Dr. Hugh Ellis for four years and was the lead undergraduate in the lab after my first year. In this role, I was responsible for training and mentoring incoming undergraduates, ordering supplies, performing assays, analyzing data using R, and obtaining funding for research. The project focuses on whether the Eared Grebe, a flightless waterbird, changes metabolic intensity of their organs independent of the mass of those organs.	
University of Colorado, Boulder	BOULDER, CO
Research Intern	<i>June '14 – August '14</i>
<i>Mentors:</i> Drs. Robin Dowell and Mary Allen	
<i>Program:</i> Leadership Alliance; Summer Multicultural Access to Research Training (SMART) Program	
I helped develop an open-source piece of software called Nudge, an interface for case-based ethics training in the sciences. The user-generated stories are “Choose-Your-Own-Adventure” style, with stochasticity determining outcomes of a user’s ethical decisions. Self-taught programming languages for the project are HTML, PHP, CSS, jQuery, and MySQL. Nudge is available at http://dowell.colorado.edu/nudge/ .	

Publications

Allman BE, Koelle K, and Weissman DB. "Heterogeneity in viral infections increases the rate of deleterious mutation accumulation." *bioRxiv*, Submitted to *Genetics*. May 2021. DOI: [10.1101/2021.05.07.443113](https://doi.org/10.1101/2021.05.07.443113).

Zhu H*, **Allman BE***, and Koelle K. "Fitness estimation for viral variants in the context of cellular coinfection." *Viruses*. June 2021. DOI: [10.3390/v13071216](https://doi.org/10.3390/v13071216).

Allman BE and Weissman DB. "Hitchhiking in space: ancestry in adapting, spatially-extended populations." *Evolution*. January 2018. DOI: [10.1111/evo.13431](https://doi.org/10.1111/evo.13431).

Civitello DJ, **Allman BE**, Morozumi C, Rohr JR. "Assessing the direct and indirect effects of food provisioning and nutrient enrichment on wildlife infectious disease dynamics." *Philosophical Transactions of the Royal Society B*. March 2018. DOI: [10.1098/rstb.2017.0101](https://doi.org/10.1098/rstb.2017.0101).

*equal contributions

Research Grants & Fellowships

National Science Foundation Graduate Research Fellowship	March 2017
Evidence-Focused Mini-Grant for Teaching (\$300)	Feb 2017
Emory Graduate Diversity Fellowship	Aug 2016
IMSD Fellow	Aug 2016
USD Associated Students Research Grant (amounts vary)	Springs 2012 – 14
SURE Research Grant (\$2000)	Summer 2013
PURE Research Grant (\$2000)	Summer 2011

Awards & Recognitions

Bouchet Graduate Honor Society Inductee	April 2021
Berl Boykin Fierce Leadership Award from Emory Office of LGBT Life	March 2021
Emory Kharen Fulton Graduate Award for Service in Diversity, Equity, and Inclusion	Sept 2019
Emory PBEE Scholar of the Year	April 2018
Outstanding Contributions to Multicultural Awareness at USD	May 2015
L. Reuben Mitchell Award for Campus-Wide Impact at USD	May 2015
NSF Scholar in STEM	Spring 2014 – Spring 2015
Ronald E. McNair Scholar	Spring 2013 – Spring 2015
Changemaker Scholarship	2014 – 2015
Coca-Cola First Generation Scholarship	April 2014
Multicultural Center's Student Leader of the Month	April 2014
Putnam Mathematical Competition Participant	Dec 2013

Journals Referred and Grant Panels

<i>Virus Evolution</i> . Reviewer.	2021
<i>Evolution</i> . Reviewer.	2018
<i>Writing a Successful NSF GRFP</i> . Emory Office of Undergraduate Research. Grant Panelist.	2017 – 2019
<i>Emory Undergraduate Independent Research Grants</i> . Grant Panelist.	2018

Conference Participation

"Estimating variant fitness from longitudinal *in vivo* studies for pathogens undergoing cellular coinfection"

Oral. *American Society for Virology*, Virtual, 40th Annual Meeting. July 2021

Oral. *Graduate Division of Biological and Biomedical Sciences Symposium*, Virtual, Emory. Feb 2021

"Influenza A virus packaging signal mismatch and evolution after reassortment"

Oral. *PBEE Seminar Series*, Virtual, Emory University. Sept 2020

"Heterogeneity in viral infections increases the rate of deleterious mutation accumulation"

Poster. *Society for Molecular Biology and Evolution*, Virtual. July 2021

Poster. *Yale Bouchet Conference on Diversity and Graduate Education*, Virtual, Yale University. April 2021

Oral. *PBEE Seminar Series*, Atlanta, GA. February 2020

Poster (cancelled: COVID-19). *Society for Molecular Biology and Evolution*, Quebec, Canada. July 2020

"The natural history of RNA viruses impacts the speed of Muller's ratchet"

- Poster. *Ecology and Evolution of Infectious Diseases*, Princeton, NJ. June 2019
- Poster. *Evolution of Complex Life*, Atlanta, GA. May 2019
- Oral. *PBEE Seminar Series*, Atlanta, GA. Feb 2019
- Poster. *Ecology and Evolution of Infectious Diseases*, Glasgow, UK. May 2018
- Poster. *Simons Theoretical Biology Symposium*, New York. April 2018

"Quantitative *in silico* approaches to inferring sexual recombination events among *Toxoplasma gondii* populations"

- Poster. *Emory STEM Research and Career Symposium*, Atlanta, GA. Oct 2016
- Poster. *Intelligent Systems for Molecular Biology*, Orlando, FL. July 2016
- Oral. *PREP Symposium*, Athens, GA. May 2016
- Poster. *Molecular Parasitology and Vector Biology Symposium*, Athens, GA. May 2016

Facilitator: "The Emory Ph.D. Experience: Succeeding in a Graduate Program"

- Emory STEM Research and Career Symposium*, Atlanta, GA. Oct 2016, '17

Attendee

- Tenth International Conference on Bioinformatics*, Atlanta, GA. Nov 2015

Exhibitor and Recruiter for PREP

- Society for the Advancement of Chicanos/Hispanics and Native Americans in Science Conference*, Washington, D.C. Oct 2015

"Applications and Development of a Mathematical Model for HIV Transmission Dynamics of Men Who Have Sex With Men in San Diego County."

- *Poster. *Annual Biomedical Conference for Minority Students*, Seattle, WA. Nov 2015
- Oral. *Mathematics and Computer Science Senior Project Showcase*, San Diego, CA. May 2015
- Poster. *USD Creative Collaborations*, San Diego, CA. April 2015

"Metabolic Intensity in Eared Grebes"

- Poster; 2nd author. *American Society of Biochemistry and Molecular Biology*, Boston, MA. March 2015
- Oral. *Senior Capstone Seminar to Biology Majors and Faculty*, San Diego, CA. Oct 2014
- Poster. *USD Creative Collaborations*, San Diego, CA. April 2015
- Oral. *Univ. of California San Diego Summer Research Conference*, San Diego, CA. Sept 2013
- Poster. *USD Undergraduate Research Conference*, San Diego, CA. April 2013

"Nudge Software Development: Training Scientists in Ethical Decision-Making."

- *Oral and Poster. *Out to Innovate National Conference for LGBTQA Scientists*, Atlanta, GA. Nov 2014
- Oral. *Leadership Alliance National Symposium*, Stamford, CT. July 2014
- Poster. *SMART Symposium*, Boulder, CO. July 2014

"DNA and Knot Theory: Topological Applications to Biology."

- Oral. *UCSD Undergraduate Math Day*, San Diego, CA. April 2014
- Oral. *Pacific Coast Undergraduate Math Conference*, Pepperdine Univ. March 2014

COMAP Math Modeling Competition, Successful Participant Springs 2012 – '15

**Received travel award via competitive application.*

Graduate Service and Commitment to Diversity

Provost's Task Force for the Graduate Division of Biological and Biomedical Sciences. *Member*. Jan '20 – April '20

Emory Diversifying Graduate Education. *Ambassador*. Aug '19 – present

The Leadership Alliance National Symposium. *Planning Committee & Session Facilitator*. March '19 – present

Health Professions Readiness Education Program. *Research Mentor*. June '19 – July '19

Laney Graduate School Assistant Dean for Professional Development and Career Planning	Hiring Committee.
Member.	April '19 – June '19
Vice President of Campus Life Hiring Committee.	Member.
	April '18 – Oct '18
LGBTQ+ Graduate Student Coalition.	Vice President ('18 - '19), President ('19 - '21).
	April '18 – May '21
PBEE Seminar Committee.	Ethics Chair ('17 - '19) and Member.
	Sept '17 – present
Queer Graduate Student Weekly Discussion Group.	Facilitator.
	Aug '17 – present
Division Student Advisory Council.	PBEE Representative.
	May '17 – Jan '19
Initiative to Maximize Student Development.	Fellow and Mentor.
	Aug '16 – present

Undergraduate Leadership and Involvement

PRIDE

President (2014 – '15), **VP of Institutional Advocacy** (2013 – '14), **Historian** (2012 – '13)

Advisor: Dr. Evelyn Kirkley, Dept. of Theology and Religious Studies

- Led student organization at USD with over 120 members and an executive board of 9 members.
- Planned educational drag show, Supreme Drag Superstar, for three consecutive years with over 500 attendees each year.
- Planned educational and social events including networking events between PRIDE and the LGBT Faculty and Staff Employee Group.
- Challenged administration on the University's commitment to inclusion and diversity through dialogue and assessment.
- Obtained over \$10,000 for events from Associated Students each year.

Rainbow Educator

Rainbow Educator Management Team Member (2013 – '14), **Rainbow Educator** (2012 – '15)

Advisor: Adan Sanchez, United Front Multicultural Center

- Facilitated workshops as small as 10 and as large as 150 persons.
- Worked with staff, students, faculty, and alumni to develop and facilitate workshops with the aim of educating the USD community on issues of sexual orientation, gender, race, ethnicity, and class.

Resident Assistant (RA)

Graduate and Law Student RA (2014 – '15), **First Year Experience RA** (2012 – '14), **Living and Learning Theme Coordinator** (2013 – '14)

- Fostered an environment in the residence halls where all students could be successful and feel welcome.
- Formed relationships with all residents.
- Collaborated with other RAs and campus partners to create intentional programs for residents to connect and learn.
- Served as a resource regarding university services and policies.
- Enforced policy, managed conflict, logged damages, and ensured that the residence hall remained a safe and inclusive space to live.

Teaching Experience

Emory University

ATLANTA, GA

Emory College Online Teaching Strategies (ECOTS) Fellow

May '20 – June '20

Appointment: Emory College of Arts and Sciences

Course: Online Teaching Strategies and Pedagogy

- Facilitated an online course for the Emory Biology Department faculty to help them transition their in-person courses into online courses. Most classes took place online Fall 2020 because of the coronavirus pandemic.
- Held weekly online synchronous discussions of the course material.
- Modeled appropriate online pedagogy and "netiquette."
- Managed online discussion boards, asynchronous course modules, and review of assessments through Canvas LMS.

Guest Lecturer

Feb '19

Professor: Dr. Karen Levy, Dept. of Environmental Health Sciences, Rollins School of Public Health

Course: Environmental Determinants of Infectious Disease (EHS 750)

- Prepared a lecture for students at the MPH and Ph.D. level titled "The Evolution of Infectious Diseases" which covered the four forces of evolution in the context of infectious disease.

Teaching Assistant*Aug '18 – Dec '18**Mentor:* Dr. Katia Koelle, Dept. of Biology*Course:* Evolution (BIOL 241)

- Supervised weekly discussions on scientific literature with student facilitators.
- Lectured on the evolution of sex.
- Graded synopses on the literature read for discussions.
- Graded exams.

Teaching Assistant*Jan '17 – May '17**Mentor:* Dr. Rachelle Spell, Dept. of Biology*Course:* Foundations of Modern Biology II (BIOL 142)

- Was awarded an Evidence-Based Mini-Grant to develop a field trip to the Centers for Disease Control to learn about basic biomedical research in a public health context.
- Developed curriculum incorporating quantitative approaches to concepts in genetics.
- Developed and implemented Process Oriented Guided Inquiry Learning (POGIL) activities into the curriculum. Topics included genomics, population biology, and evolution.
- Actively participated in seminars and journal clubs with Biology faculty teaching the same course.
- Prepared lectures on population genetics and evolution.
- Graded exams.

University of San Diego

SAN DIEGO, CA

Mathematics Tutor*Jan '15 – May '15**Mentor:* Dr. Cameron Parker, Dept. of Mathematics

- Tutored students individually and in groups.
- Primarily tutored algebra, introductory modern math, and first semester calculus courses.

Computer Languages & Tools

–MATLAB

–R

–Bioconductor

–HTML

–jQuery

–L^AT_EX

–Python

–Unix

–CSS

–PHP