

HOLLY C. MCQUEARY

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EDUCATION

**Doctor of Philosophy in Genetics**  July 2020

The University of Georgia Athens, GA, USA

*Dissertation Title:* “Genomic and transcriptomic impacts of small- and large-scale spontaneous mutations in yeasts”

*Advisor:* Dave Hall

**Bachelor of Science in Cell and Molecular Biology** 2015

The University of South Florida Tampa, FL, USA

*Thesis: Ultrasonic Mouse Vocalizations Facilitate the Acoustic Startle Reflex in Male CBA/CaJs*

RESEARCH EXPERIENCE

**Graduate Research Assistant,** *Hall Lab, University of Georgia* 2015 – 2020

* Analyzed genomic data regarding loss of heterozygosity in diploid mutation accumulation progenitor lines of *Saccharomyces cerevisiae* using Linux/bash scripting
* Produced an experimental plan for future dissertation work in the form of an NSF grant, and orally defended the research plan
* Trained and mentored 9 undergraduate students in laboratory techniques and bioinformatics approaches
* Guided a team of undergraduates in producing a novel experimental protocol for a competitive fitness assay using flow cytometry
* Produced and analyzed whole-transcriptome datasets for 45 aneuploid and euploid yeast mutation accumulation lines with existing bioinformatics tools including R, JMP, the Tuxedo suite, and DESeq2
* Designed and carried out a 200-day mutation accumulation experiment with 192 individual lines of *Saccharomyces paradoxus* in order to determine the effect of transposon load on mutation rate and spectrum using comparative genomics
* Collaborated with another lab to determine the rate of transposition in the 192 *S. paradoxus* lines
* Determined rate and spectrum of spontaneous mutations in 144 *S. paradoxus* mutation accumulation lines using bioinformatic tools including fastQC, SAMtools, BWA, and GATK
* Held yearly committee meetings with 5 members of the faculty in order to evaluate progress towards degree and implemented ways to improve performance
* Presented biological research results biannually to colleagues
* Engineered yeast strains to produce GFP using CRISPR/Cas9 system

**Undergraduate Research Assistant,** *Global Center for Hearing and Speech Research* 2013 – 2015

* Assisted with behavioral studies involving mice
* Handled mice prior to experiments, and injected mice with sodium salicylate to induce tinnitus and examine the effects of treatment on the acoustic startle reflex
* Placed mice on platforms inside boxes atop arduinos that transmitted the startle reflex of a mouse in response to a loud noise to the computer
* Trained new undergraduate research assistants on basic laboratory techniques

PUBLICATIONS

*In prep*

**McQueary, H**, D. Hall. Impacts of aneuploidy on gene expression in *Saccharomyces cerevisiae*

*In prep*

**McQueary, H**, A. Tsfoni, D. Hall. Transposon presence increases rate of multinucleotide mutations in *Saccharomyces paradoxus*

PRESENTATIONS/POSTERS

**Talk Titled:** “*Effects of Ploidy and Transposon Load on Mutation Rate* 2019

*in* Saccharomyces paradoxus”

GENE 8880

Department of Genetics

University of Georgia

Athens, GA

**Talk Titled:** “*Effects of Differing Transposon Load on Mutation Rate in* 2019

Saccharomyces paradoxus”

Southeastern Population Ecology and Evolutionary Genetics Meeting

Clemson Outdoor Lab, SC

**Talk Titled:** “*Gene expression in aneuploid yeast*” 2018

GENE 8880

Department of Genetics

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Athens, GA

**Poster Titled:** “*Effects of Aneuploidy on Gene Expression in Yeast* 2018

*Mutation Accumulation Lines*”

Southeastern Population Ecology and Evolutionary Genetics Meeting

Mountain Lake Biological Station, VA

**Talk Titled:** “*Dosage Compensation in Yeast*” 2017

GENE 8880

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Athens, GA

**Talk Titled:** *“Evolution of Dosage Compensation in* Saccharyomces cerevisiae*.”*2017

Genetics Graduate Student 3MT Competition

University of Georgia

Athens, GA

**Poster Titled:** *“Rates and Biases of Mitotic Gene Conversion in* Saccharomyces cerevisiae*.”* 2016

Evolution

Austin, TX

**Talk Titled:** *“Evolution of Dosage Compensation in* Saccharomyces cerevisiae*.”* 2016

3 Minute Thesis (3MT) Competition

University of Georgia

Athens, GA

**Poster Titled:** *“Ultrasonic Mouse Vocalizations Facilitate the Acoustic Startle* 2015

*Reflex in Male CBA/CaJs”*

Undergraduate Research and Arts Colloquium

University of South Florida

Tampa, FL

RESEARCH SUPPORT

**Awarded**  2019

Genetics Graduate Student Association Travel Award ($500)

Department of Genetics

University of Georgia

**Awarded** 2019

Southeastern Population Ecology and Evolutionary Genetics Travel Award ($100)

American Society of Naturalists

**Awarded** 2018

Mary E. Case Award for Excellence in Teaching ($1000)

Department of Genetics

University of Georgia

**Awarded** 2018

Robin Hightower Graduate Support Fund ($666)

Department of Genetics

University of Georgia

**Awarded**

Graduate Travel Award for Submission of NSF GRFP Proposal 2017

University of Georgia Graduate School ($250)

**Awarded**

*Evolution of dosage compensation in* Saccharomyces cerevisiae. 2016

Rosemary Grant Awards. ($2,500)

Society for the Study of Evolution

**Awarded**

Graduate Travel Award for Submission of NSF GRFP Proposal 2016

University of Georgia Graduate School ($250)

*Not Awarded* 2018

NIH T32 Training Grant

Department of Genetics

University of Georgia

*Not Awarded* 2017

Graduate Student Travel Award

Genetics Graduate Student Association

University of Georgia

*Not Awarded* 2017

NIH T32 Training Grant

Department of Genetics

University of Georgia

*Not Awarded*

*Experimental Evolution of Dosage Compensation in* Saccharomyces cerevisiae 2016

NSF Graduate Research Fellowship Program. ($138,000)

*Not Awarded* 2016

Hightower Award

Department of Genetics

University of Georgia

*Not Awarded* 2016

NIH T32 Training Grant

Department of Genetics

University of Georgia

*Not Awarded*

*Analysis of the Lack of Polyadenylation of 3 Proline tRNAs in* Escherichia coli*.* 2015

NSF Graduate Research Fellowship Program. ($138,000)

*Not awarded*

*Analysis of why 3 proline E. coli tRNAs behave differently than the bulk of E. coli tRNAs.* 2015

Sigma Xi Grants in Aid of Research. ($1,000)

AWARDS

**Outstanding Teaching Assistant Award** 2018

Graduate School

University of Georgia

Athens, GA

MEMBERSHIPS

**Chapter Social Chair** 2016 – 2017

Genetics Graduate Student Association

**Student Member** 2016 – present

American Society of Naturalists

**Student Member** 2016 – present

Society for the Study of Evolution

**Student Member** 2012 – 2015

National Society of Leadership and Success

OUTREACH AND SERVICE

**GGSA Travel Award Committee Chair** 2018

Genetics Graduate Student Association

University of Georgia

Athens, GA

**Paper Reader** 2018

Georgia Junior Science & Humanities Symposium

**Science Fair Judge** 2018

Clarke County Science and Engineering Fair

Clarke Middle School

Athens, GA

**Reptile Education** 2017

Clarke Middle School

Athens, GA

**Timekeeper/Rules Judge** 2017

2017 National Science Bowl

University of Georgia

Athens, GA

**Grant Reviewer** 2016

Genetics Graduate Student Association Travel Awards

University of Georgia

Athens, GA

**Science Fair Judge** 2016

Georgia Junior Science & Engineering Fair

Athens, GA

**Blog Contributor** 2016

Athens Science Observer

Athens, GA

**Paper Reader** 2016

Georgia Junior Science & Humanities Symposium

TEACHING EXPERIENCE

**Graduate Teaching Assistant,** *Evolutionary Biology* Spring - Summer 2019

* Lead 4 discussion sections per week for 45 students and hold office hours
* Upload quizzes and exams for internet-based testing
* Proctor quizzes and exams for 150 students

**Graduate Teaching Assistant,** *Introductory Genetics* Fall 2017 – Fall 2018

* Lead 2 discussion sections per week for 45 students, and hold office hours during the week
* Grade and proctor exams during the semester for 300 students

**Graduate Teaching Assistant,** *Biology I for Non-Majors* Summer 2017

* Coordinate assignments and material for an online course
* Grade assignments and give feedback for 100 students
* Hold virtual office hours

**Graduate Laboratory Assistant,** *Biology I for Non-Majors*  Fall 2016 – Spring 2017

* Lead 3 laboratory classes per week for 20 students, assist students during labs
* Grade assignments and hold office hours
* Proctor exams for biology courses

PROFESSIONAL DEVELOPMENT

**7th Annual Online Career Conference** 2020

Beyond the Professoriate

**Georgia Bio Career Symposium** 2019

Participated in networking events and panel discussions related to careers in life sciences and how to apply for careers outside of academia.

Georgia Bio

**Life Sciences Industry Day 2019** 2019

Participated in networking events, workshops, and talks related to careers in life sciences outside of academia.

UGA Graduate School xPD (Experiential Professional Development)

**Extern,** UGA Startup Extern Program, Innovation Gateway 2019

Participated in market research and development for a software company providing services for recycling education. Cooperated with two other externs, an intern, the Associate Director of the startup program, and the owners of the company to create a 10-slide pitch deck for investors.

**Industry Career Exploration Workshop**  2018

UGA Graduate School xPD (Experiential Professional Development)

**GSPS Career Day** 2018

Graduate Students and Postdocs in Science

**Federal Job Search Workshop** 2018

UGA Graduate School xPD (Experiential Professional Development)

MENTORING

**Anastacia Bankey** 2018 – 2019

Undergraduate Research Assistant

**Emma Fullett** 2018 – 2019

Undergraduate Research Assistant

**Ariella Tsfoni** 2018 – present

Undergraduate Research Assistant

**Sam DeMario** 2017 – 2018

Undergraduate Research Assistant

CURO Student

**Brittania Johnson** 2017 – 2018

Undergraduate Research Assistant

CURO Student

**Alexandra Mulliken** 2017 – 2018

Undergraduate Research Assistant

CURO Student

**Brooke Hull** 2016 – 2018

Women In Science (WiSci) Mentee

**Alexander Jamarillo** 2016

SUNFIG Student

SKILLS

Eukaryotic microbial cell culture, Prokaryotic microbial cell culture, DNA extraction and purification, RNA extraction and purification, Plasmid isolation, Transformation, Quantification of nucleic acids, Flow cytometry, Laboratory inventory management, RNA sequencing analysis, R, Python, Linux, Bash scripting, Cluster scripting, Git, JMP, Whole-genome sequence analysis, Microsoft Office

REFERENCES

**Hall, David**  *Major Professor*

[davehall@uga.edu](mailto:davehall@uga.edu)

Department of Genetics

University of Georgia

Athens, GA

**Dyer, Kelly** *Committee Member*

[kdyer@uga.edu](mailto:kdyer@uga.edu)

Department of Genetics

University of Georgia

Athens, GA

**Bergman, Casey**  *Collaborator*

[cbergman@uga.edu](mailto:cbergman@uga.edu)

Department of Genetics and Institute of Bioinformatics

University of Georgia

Athens, GA