

Gregory Ian Lang

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LEHIGH
UNIVERSITY.

Education:

Harvard University, Cambridge, MA (2002 – 2007)
Ph.D. Molecular Biology
Thesis: Mutation rate variation in the yeast *Saccharomyces cerevisiae*
Advisor: Andrew Murray
Thesis Committee: Erin O'Shea (chair), Dan Hartl, Roy Kishony, Matt Michael

Millersville University of Pennsylvania, Millersville, PA (1997 – 2001)
B.S. Molecular Biology
Minors: Physics, Biochemistry

Professional Employment and Experience:

Assistant Professor (2013 – present)
Lehigh University, Department of Biological Sciences

Post-doctoral Researcher (2007 – 2013)
Princeton University, Lewis-Sigler Institute for Integrative Genomics
Advisor: David Botstein


Submitted Manuscripts with Lehigh Affiliation:

16. Song G, Lee J, Kim J, Kang S, Lee H, Kwon D, Lee D, Lang GI, Cherry JM, Kim J. Integrative Meta-Assembly Pipeline (IMAP): Chromosome-level genome assembler combining multiple de novo assemblies. (**submitted to BMC Bioinformatics**).

In this paper we present a new pipeline for building chromosomal-level sequence assemblies of simple eukaryotic genomes using short read sequencing data. I became involved in this project because our lab wanted to generate a better reference genome for our evolution experiments. My role as middle author was to provide short read sequence data and to edit the manuscript.



Publications with Lehigh affiliation (**F1000** Faculty of 1000 recommendation):

15. Fisher KJ, Buskirk SW, Vignogna RC, Marad DA, and Lang GI. 2018. Adaptive genome duplication affects patterns of molecular evolution in *Saccharomyces cerevisiae*. **PLoS Genetics**. May 25;14(5):e1007396. doi: 10.1371/journal.pgen.1007396. PMID: 29799840
- In this paper we report recurrent genome duplication in 46 haploid yeast populations evolved for 4,000 generations. We find that genome duplication confers a fitness advantage, and that this immediate fitness gain is accompanied by a shift in genomic and phenotypic evolution. My role as senior author was to design and direct the project, to supervise the students performing the experiments, and to edit the manuscript. All authors are Lang Lab members. I am the corresponding author.*
14. Marad DM, Buskirk SW, and Lang GI. 2018. Altered access to beneficial mutations slows adaptation and biases fixed mutations in diploids. **Nature Ecology & Evolution**. May;2(5):882-889. doi: 10.1038/s41559-018-0503-9. PMID: 29581586
- In this paper we perform a 4,000-generation evolution experiment using diploid strains of the yeast *Saccharomyces cerevisiae*. We show that the rate of adaptation and spectrum of beneficial mutations are influenced by ploidy. My role as senior author was to design and direct the project, to supervise the students performing the experiments, and to write the manuscript. All authors are Lang Lab members. I am the corresponding author.*
13. Lang GI. 2018. Measuring mutation rates using the Luria-Delbrück fluctuation assay. **Methods Mol Biol**. 1672:21-31. doi: 10.1007/978-1-4939-7306-4_3. PMID: 29043614
- In this methods paper I outline the essential features of performing Luria-Delbrück fluctuation assays—one of the most commonly used methods for measuring the mutation rate in microorganisms. I describe common missteps and tips for improving the accuracy of mutation rate estimates. In addition, I provide tools for analyzing data from fluctuation assays.*

12.  Buskirk SW, Peace RE, and Lang GI. **2017**. Hitchhiking and epistasis give rise to cohort dynamics in adapting populations. *Proc Natl Acad Sci U S A*. 2017 Jul 18. pii: 201702314. doi: 10.1073/pnas.1702314114. PMID: 28720700
In this paper we utilize a bulk-segregant approach to identify beneficial mutations across 11 lineages of experimentally-evolved yeast populations. In total, we determine the fitness effects for 116 mutations. We identify a striking example of synergistic epistasis in one of the populations. My role as senior author was to design and direct the project, to supervise the students performing the experiments, and to write the manuscript. All authors are current or former Lang Lab members. I am the corresponding author.
11. Fisher KJ, and Lang GI. **2016**. *Invited Review Article*: Experimental evolution in fungi: An untapped resource. *Fungal Genetics and Biology*. Sep;94:88-94. doi: 10.1016/j.fgb.2016.06.007. Epub 2016 Jun 30. PMID: 27375178
In this invited review article we describe the current state of fungal experimental evolution and why fungi are uniquely positioned to answer many of the outstanding questions in our field. We also review which fungal species are most well suited for experimental evolution. Both authors are Lang Lab members. I am the corresponding author.
10. Frenkel EM, McDonald MJ, Van Dyken JD, Kosheleva K, Lang GI, and Desai MM. **2015**. Crowded growth leads to the spontaneous evolution of semistable coexistence in laboratory yeast populations. *Proc Natl Acad Sci U S A* Aug 3. pii: 201506184. PMID: 26240355
*In this paper we report spontaneous diversification during experimental evolution in the yeast *Saccharomyces cerevisiae*. We demonstrate that stable sub-populations are maintained by negative frequency-dependent selection, in which dispersal reduces interference competition for nutrients among kin. My role as middle author was to consult on the design and implementation of the experiments and to edit the manuscript.*
9. Lang GI, and Desai MM. **2014**. *Invited Review Article*: The spectrum of adaptive mutations in experimental evolution. *Genomics*. Dec;104(6 Pt A):412-6. doi: 10.1016/j.ygeno.2014.09.011. Epub 2014 Sep 28. PMID: 25269377
In this invited review article we describe our current understanding of the spectrum of mutations observed across systems used in the field of experimental evolution, with a focus on epistatic interactions between beneficial mutations and constraints on evolutionary outcomes. I am a corresponding author.
8. Lang GI, Parsons L, and Gammie A. **2013**. Mutation rates, spectra, and genome-wide distribution of spontaneous mutations in mismatch repair deficient yeast. *G3*, Sep 4;3(9):1453-65. PMID: 23821616
*In this paper we performed mutation accumulation assays to generate a genome-wide view of the rates, spectra, and distribution of mutation in the yeast *Saccharomyces cerevisiae* in the absence of mismatch repair. My role as first author was to design and perform the experiments and to edit the manuscript, which was written primarily by the senior author.*
7. Lang GI, Rice DP, Hickman MJ, Sodergren E, Weinstock GM, Botstein D, and Desai MM. **2013**. Pervasive genetic hitchhiking and clonal interference in forty evolving yeast populations. *Nature*, Aug 29;500(7464):571-4. PMID: 23873039
*In this paper we use whole-genome whole-population timecourse sequencing to examine the dynamics of genome sequence evolution at high temporal resolution in 40 replicate *Saccharomyces cerevisiae* populations. This was the first demonstration that many mutations arise and move synchronously through populations as mutational "cohorts." As co-first author I was involved in all aspects of performing the experiments, data analysis, and writing the manuscript. I am a corresponding author.*

This work is featured in the second edition of Bergstrom and Dugatkin's "Evolution" textbook (pages 335-337), for which I provided a figure (Figure 9.26) and accompanying text.

Publications Prior to My Lehigh Appointment (Faculty of 1000 recommendation):

6. Lang GI, Botstein D, and Desai MM. **2011**. Genetic variation and the fate of beneficial mutations in asexual populations. *Genetics*. Jul;188(3):647-61. PMID: 21546542
5.  Lang GI, Murray AW. **2011**. Mutation rates across budding yeast Chromosome VI are correlated with replication timing. *Genome Biology and Evolution*. 3:799-811. PMID: 21666225
4. Lang GI, and Botstein D. **2011**. A test of the coordinated expression hypothesis for the origin and maintenance of the GAL cluster in yeast. *PLoS ONE*. Sep 22; 10.1371/journal.pone.0025290. PMID: 21966486
3.  Lang GI, Murray AW, and Botstein D. **2009**. The cost of gene expression underlies a fitness trade-off in yeast. *Proc Natl Acad Sci U S A*. Apr 7;106(14):5755-60. PMID: 19299502
2. Lang GI, Murray AW. **2008**. Estimating the per-base-pair mutation rate in the yeast *Saccharomyces cerevisiae*. *Genetics*. Jan;178(1):67-82. PMID: 18202359
1. Hepfer CE, Arnold-Croop S, Fogell H, Steudel KG, Moon M, Roff A, Zaikoski S, Rickman A, Komsisky K, Harbaugh DL, Lang GI, Keil RL. **2005**. *DEG1*, encoding the tRNA:pseudouridine synthase Pus3p, impacts *HOT1*-stimulated recombination in *Saccharomyces cerevisiae*. *Mol Genet Genomics*. Dec;274(5):528-38. PMID: 16231152

Competitively Awarded Research Support

- Source: **National Institutes of Health 1R01GM127420-01 (active)**
Total Costs: \$1,654,069 (\$210,000 Direct Costs per year for five years)
Name: Mapping genetic interactions between growth-promoting mutations in yeast (**05/01/18 – 04/31/23**)
Major Goals: The major goals of this proposal are to (1) leverage the power of evolutionary “replay” experiments to identify a local network of genetic interactions, (2) to extend this analysis genome-wide, and (3) to determine the extent to which genetic interactions persist across environments.
Description: Annual salary support for PI (2.5 mo.), two post-doctoral fellows, and graduate students. Research support for consumables, equipment usage fees, travel expenses, and support for publication costs.
- Source: **Faculty Innovation Grant, Lehigh University 459664 (active)**
Total Costs: \$30,000
Name: Host-virus coevolution and the resolution of intragenomic conflict (**09/01/17 – 08/31/18**)
Major Goals: The goals of this proposal are to (1) isolate and sequence the yeast Killer virus and (2) determine the mechanism of Killer loss in yeast experimental evolution.
Description: Research support and 50% salary support for my post-doctoral fellow Sean Buskirk in order to perform pilot experiments and generate preliminary data for a future grant submission to either the NIH or NSF.
- Source: **The Charles E. Kaufman Foundation of The Pittsburgh Foundation KA2014-73925 (completed)**
Total Costs: \$150,000
Name: Epistatic interactions and constraints on evolutionary outcomes in yeast experimental evolution (**09/01/14 – 12/31/16**)
Major Goals: The goals of this proposal are to (1) determine how fitness effects and epistatic interactions contribute to the fitness gains during experimental evolution and (2) determine how epistasis constrains evolutionary paths.
Description: Research support for consumables and equipment usage fees. This grant also provided graduate student summer support, travel expenses, and support for publication costs.
- Source: **Biosystems Dynamics Summer Institute, a Lehigh University grant from HHMI (completed)**
Total Costs: \$44,375
Name: Identification of driver mutations in experimental evolution (**05/21/14 – 06/31/14**)
Major Goals: The goals of this proposal are to identify biological pathways that regularly yield mutations that drive adaptation and to develop bioinformatics tools for the analysis of whole-genome whole-population sequencing data from long-term experimental evolution.
Description: Summer stipend and research support for graduate students D. Marad (Molecular Biology, Lehigh) and M. Messersmith (Comp. Science, Lehigh), and undergraduate students R. Peace (Bioengineering, Lehigh), K. Trinh (Bioengineering, Lehigh), D. Auth (Bioinformatics, Gannon), T. Tavolara (Comp. Science, Rochester).
Role: Co-PI with Daniel Lopresiti, Department of Computer Science, Lehigh University

Professional Societies, Honors, and Awards:

- Nominated for the CAS Dean's Award for Teaching, 2018
Nominated for Lehigh University Graduate Mentorship Award, 2017
Class of '68 Junior Faculty Fund Award, 2017
Eugene Mercy, Jr. President and Provost's Fund for Faculty Development Travel Grant, 2016
EMBO CPP Travel Fellowship, 2016
Member of the American Society of Microbiology, 2015 – present
GSA Chair's Choice Plenary Talk at the Fungal Genetics Meeting, 2015
Charles E. Kaufman New Investigator, 2014
Member of the Society for Molecular Biology and Evolution, 2014 – present
Eugene Mercy, Jr. President and Provost's Fund for Faculty Development Travel Grant, 2014
EMBO CPP Travel Fellowship, 2014
Member of the Genetics Society of America, 2010 – present

Scholarly Presentations at National and International Scientific Conferences with Lehigh Affiliation (Since 2013):

11. Genetics Society of America, Population Evolution and Quantitative Genetics Conference. (13 – 16 May, 2018)
Madison, WI
Poster: Buskirk SW, Lang GI, Host-virus genome coevolution in laboratory populations of yeast.

10. Genetics Society of America, Fungal Genetics Meeting. (14 – 19 March, 2017)
Pacific Grove, CA
Invited Speaker: [Lang GI](#), Fitness and epistasis in yeast experimental evolution.
9. Experimental Approaches to Evolution and Ecology using Yeast and other Model Systems. (19 – 23 October, 2016)
Heidelberg, Germany
Talk: [Lang GI](#), Linking the emergence of epistatic interactions to the dynamics of adaptation.
8. American Society for Microbiology: 2nd Conference on Experimental Microbial Evolution. (4 – 7 August, 2016)
Washington, DC
Talk (*presented by Sean Buskirk*): Buskirk SW, Peace RE, [Lang GI](#), Characterizing patterns of epistasis in experimentally-evolved yeast.
Poster (*presented by Daniel Marad*): Marad DA, [Lang GI](#), Rate of adaptation and spectrum of beneficial mutations in haploids and diploids.
Poster (*presented by Chris Graves from Brown University*): Graves CJ, Bauer C, Siegal ML, [Lang GI](#), Weinreich DM, Yeast populations adapted to periodic stress trade fast growth for stress resistance.
7. Genetics Society of America, The Allied Genetics Conference. (13 – 27 July, 2016)
Orlando, FL
Talk: [Lang GI](#), Buskirk SW, Peace RE, Characterizing patterns of epistasis in yeast experimental evolution.
Poster (*presented by Katie Fisher*): Fisher K, [Lang GI](#), Quantifying host genome response to gene drive.
6. Genetics Society of America, Fungal Genetics Meeting. (17 – 22 March, 2015)
Pacific Grove, CA
Chair's Choice Plenary Talk: [Lang GI](#), Genome sequence evolution in experimental populations of *S. cerevisiae*.
5. Experimental Approaches to Evolution and Ecology using Yeast and other Model Systems. (12 – 16 October, 2014)
Heidelberg, Germany
Talk: [Lang GI](#), Genome sequence evolution in experimental populations of *S. cerevisiae*
4. American Society for Microbiology: 1st Conference on Experimental Microbial Evolution. (19 – 22 June, 2014)
Washington, DC
Invited Speaker: [Lang GI](#), The dynamics of genomic sequence evolution in experimental populations of *S. cerevisiae*.
3. Annual Meeting for the Society of Molecular Biology and Evolution. (8 – 12 June, 2014)
San Juan, Puerto Rico
Symposium Organizer: *Genome Scale Approaches to Experimental Evolution*.
Poster: [Lang GI](#), The dynamics of genomic sequence evolution in experimental populations of *S. cerevisiae*.
2. Comparative Genomics of Eukaryotic Microorganisms: Patterns of Complexity in Eukaryotic Genomes. (19 – 24 Oct, 2013)
San Feliu de Guixols, Spain
Invited Speaker: [Lang GI](#), Hickman M, Parsons L, Desai MM, Weinstock GM, Botstein D. The dynamics of genomic sequence evolution in experimental populations of *S. cerevisiae*.
1. Gordon Research Conference on Microbial Population Biology. (21 – 26 July, 2013)
Proctor Academy, Andover, NH
Poster: [Lang GI](#), Rice DP, Hickman MJ, Sodergren E, Weinstock GM, Botstein D, and Desai MM. The dynamics of genomic sequence evolution in experimental populations of *Saccharomyces cerevisiae*.

Scholarly Presentations at Regional Meetings (number of presentations from our lab):

- Lehigh Valley Ecology and Evolution Symposium, Cedar Crest College, 7 April 2018 (3 talks)
- Three Rivers Evolution Event, University of Pittsburgh, 9 September 2017 (1 talk)
- Evolution in Philadelphia Conference, University of Pennsylvania, 15 April 2017 (4 talks)
- Lehigh Valley Ecology and Evolution Symposium, Desales University, 8 April 2017 (4 talks)
- Lehigh Valley Ecology and Evolution Symposium, Muhlenberg College, 18 April 2015 (2 posters)

Upcoming Invited Seminars with Lehigh Affiliation:

- 24. International Laboratory for Human Genome Research, Queretaro, Mexico. *Visiting Professors Program "Horizons in Genomics 2018."* 24 September 2018.

Invited Seminars with Lehigh Affiliation (since 2013):

- 23. Carnegie Mellon University, Pittsburgh, PA. *Departmental Seminar*. 11 April 2018.
- 22. Millersville University of Pennsylvania. *Departmental Seminar*. 28 March 2018.
- 21. University of Michigan, Ann Arbor. *Departmental Seminar*. 18 January 2018.
- 20. University of California, San Diego. *Departmental Seminar*. 3 November 2017.
- 19. Georgetown University. *Departmental Seminar*. 12 October 2017.

18. DuPont. Wilmington DE. *Seminar*. 29 September 2017.
17. Kavli Institute of Theoretical Physics, University of California, Santa Barbara. *Seminar*. 3 August 2017.
16. Cold Spring Harbor, Yeast Genetics Course. *Seminar*. 28 July 2017.
15. Stony Brook University. *Departmental Seminar*. 12 May 2017.
14. Villanova University. *Departmental Seminar*. 2 February 2017.
13. Dartmouth College. *Graduate-student Invited Departmental Seminar*. 19 December 2016.
12. Penn State, Hershey Medical Center. *Departmental Seminar*. 5 December 2016.
11. Brown University. *Departmental Seminar*. 15 November 2016.
10. Cornell University. *Departmental Seminar*. 15 April 2016.
9. Rowan University. *Departmental Seminar*. 11 November 2015.
8. Princeton University. *Princeton Area Yeast Meeting*. 4 April 2015.
7. University of Alabama, Birmingham. *Departmental Seminar*. 1 April 2015.
6. Calico (California Life Company). South San Francisco. *Seminar*. 5 March 2015.
5. University of Nebraska, Lincoln. *Departmental Seminar*. 5 March 2015.
4. Bryn Mawr College. *Departmental*. 29 October 2014.
3. University of New Hampshire. *Departmental Seminar*. 6 March 2014.
2. Princeton Plasma Physics Laboratory. *Departmental Seminar*. 26 February 2014.
1. Cedar Crest College. *Departmental Seminar*. 20 February 2014.

Courses Taught:

BIOS 325 (formerly BIOS 398). *Microbiology Lab* (Lehigh, Spring 2017, Spring 2018)
 BIOS 324. *Microbiology* (Lehigh, Fall 2014, Fall 2015, Fall 2016, Fall 2017, Fall 2018)
 BIOS 396/496. *Molecular Evolution*. (Lehigh, Spring 2014, Spring 2015, Spring 2016).
 BIOS 090. *Understanding the Human Genome*. (Lehigh, Fall 2013).

Lecturer, *Project Lab in Molecular Biology*. (Princeton, August 2011).
 Lecturer: Alison Gammie

Teaching Fellow, *A Systems Approach to Biology*. (Harvard, Spring 2005).
 Lecturers: Marc Kirschner, Lewis Cantley, Walter Fontana, and Jeremy Gunawardena

Curriculum-Development Committee, *A Systems Approach to Biology*. (Harvard, Fall 2004 – Spring 2005)

Teaching Fellow. MCB/HHMI Outreach, *Fly learning and memory* (Harvard, March 2004)

Teaching Fellow. *Introduction to Genetics and Genomics*. (Harvard, Fall 2003).
 Lecturer: William Gelbart

Summary of Teaching History and Course Evaluations:

	Course Enrollment	Overall, the instructor's teaching was effective (0-5)	Overall the quality of the course was good (0-5)	I learned a great deal in this course (0-5)	
FA 2013	BIOS 090: Understanding the Human Genome	18	4.94 (17)	4.88 (17)	4.76 (17)
	<i>Department Average</i>		4.46 (575)	4.45 (574)	4.48 (574)
	<i>College of Arts & Sciences Average</i>		4.34 (7880)	4.35 (7663)	4.31 (7663)
SP 2014	BIOS 396/496: Molecular Evolution	15	4.93 (14)	5.00 (14)	4.79 (14)
	<i>Department Average</i>		4.41 (676)	4.40 (675)	4.41 (669)
	<i>College of Arts & Sciences Average</i>		4.38 (6463)	4.37 (6332)	4.34 (6315)
FA 2014	BIOS 324: Microbiology	31	4.96 (26)	4.96 (26)	5.00 (27)
	<i>Department Average</i>		4.15 (748)	4.21 (745)	4.19 (753)
	<i>College of Arts & Sciences Average</i>		4.35 (7420)	4.39 (7299)	4.32 (7320)
SP 2015	BIOS 396/496: Molecular Evolution	12	4.89 (9)	5.00 (9)	4.89 (9)
	<i>Department Average</i>		3.56 (721)	3.66 (720)	3.84 (722)
	<i>College of Arts & Sciences Average</i>		4.32 (6009)	4.35 (5843)	4.33 (5823)
FA 2015	BIOS 324: Microbiology	49	4.93 (46)	4.93 (46)	4.89 (46)
	<i>Department Average</i>		4.22 (1355)	4.20 (1355)	4.15 (1341)
	<i>College of Arts & Sciences Average</i>		4.36 (12108)	4.36 (12018)	4.26 (11809)
SP 2016	BIOS 396/496: Molecular Evolution	12	5.00 (9)	5.00 (9)	4.89 (9)
	<i>Department Average</i>		4.22 (1144)	4.22 (1137)	4.15 (1112)
	<i>College of Arts & Sciences Average</i>		4.40 (10115)	4.38 (9961)	4.29 (9842)

FA 2016	BIOS 324: Microbiology	57	4.68 (41)	4.71 (41)	4.61 (41)
	<i>Department Average</i>		4.21 (1220)	4.18 (1217)	4.15 (1177)
	<i>College of Arts & Sciences Average</i>		4.44 (12623)	4.43 (12473)	4.34 (12385)
SP 2017	BIOS 398: Microbiology Laboratory	21	5.00 (21)	5.00 (21)	4.81 (21)
	<i>Department Average</i>		4.28 (1076)	4.37 (1074)	4.45 (1045)
	<i>College of Arts & Sciences Average</i>		4.42 (10505)	4.41 (10416)	4.57 (10306)
FA 2017	BIOS 324: Microbiology	52	4.86 (29)	4.90 (29)	4.83 (29)
	<i>Department Average</i>		4.15 (1167)	4.17 (1148)	4.12 (1131)
	<i>College of Arts & Sciences Average</i>		4.31 (10941)	4.31 (10864)	4.28 (10711)
SP 2018	BIOS 325: Microbiology Laboratory	23	5.00 (16)	5.00 (16)	4.87 (15)
	<i>Department Average</i>		4.23 (559)	4.28 (555)	4.32 (549)
	<i>College of Arts & Sciences Average</i>		4.35 (8022)	4.35 (7950)	4.34 (7853)
Overall	My Evaluations		4.89 (228)	4.91 (228)	4.82 (228)
	<i>Department Average</i>		4.19 (9241)	4.21 (9200)	4.21 (9073)
	<i>College of Arts & Sciences Average</i>		4.37 (92086)	4.37 (90819)	4.34 (90027)

Guest Lectures:

BIOS 010. *Bioscience in the 21st Century*. Lecture: "Genome Evolution" (Fall 2013, Fall 2014, Fall 2015, Fall 2016)

BIOS 388. *Biological Sciences Honors Seminar*. Lecture: "Yeast Experimental Evolution" (Spring 2014).

BIOS 340. *Molecular Basis of Disease*. Lecture: "Evolution of a Bacterial Pathogen" (Fall 2013).

Undergraduate Research Advising (16 grades assigned, 35 credit hours):

Completed: Kenneth Brill. Fall 2014 (1 credit BIOS 161), Spring 2015 (2 credits BIOS 161), Fall 2015 (2 credits BIOS 161), Spring 2016 (2 credits BIOS 391), Fall 2016 (3 credits BIOS 391 as a writing intensive course), Spring of 2017 (3 credit Thesis).

Completed: Rebecca Unterborn. Fall 2016 (2 credits BIOS 391), Spring 2017 (2 credits of BIOS 391).

Completed: Ali O'Donnell. Spring 2015 (1 credit BIOS 161), Fall 2015 (2 credits BIOS 161).

Completed: Ryan Emily Peace. Spring 2014 (2 credits, BIOE 142), Fall 2014 (2 credits, BIOE 132), Spring 2015 (4 credits, BIOE 242). Ryan is currently a graduate student in bioengineering at Boston University (#9 in bioengineering according to U.S. News & World Report's national ranking).

Completed: Jessica Moore. Summer of 2014. Jessica was supported by a Grants for Experiential Learning in Health (GELH) Grant from Lehigh University.

Jasper Jeffrey. Fall 2017 (3 credits BIOS 391), Spring 2018 (2 credits of BIOS 391), Fall 2018 (3 credits of BIOS 391).

Alecia Rokes. Spring 2018 (2 credits of BIOS 391), Fall 2018 (3 credits of BIOS 391).

Graduate Research Advising:

Completed: Thesis committee member for Michael McQuillan (Integrative Biology). Advised by Amber Rice 2016 – 2018.

Completed: Thesis committee member for Katie Mageeney (Molecular Biology). Advised by Vassie Ware, 2015 – 2018.

Completed: Thesis committee member for Bitu Khalili (Physics). Advised by Dimitrios Vavylonis, 2015 – 2017.

Completed: External thesis committee member for Christopher Graves in the Department of Ecology and Evolutionary Biology, Brown University. Chris was advised by Daniel Weinreich, 2016 – 2017.

Completed: External thesis committee member for Marcus Dillon in the Department of Molecular, Cellular, and Biomedical Sciences at the University of New Hampshire. Marcus was co-advised by Vaughn Cooper (UNH) and Michael Lynch (Indiana University), 2013 – 2016.

Completed: Hamidu Mohammed. Rotation Student (Molecular Biology), Spring 2017.

Completed: Joseph Rozek. Rotation Student (Integrative Biology), Fall 2014.

Ryan Vignogna, Graduate Student (Biochemistry), 2016 – present.

Daniel Marad, Graduate Student (Molecular Biology), 2014 – present.

Kaitlin Fisher, Graduate Student (Integrative Biology), 2014 – present.

Thesis committee member for Donglai Shen (Molecular Biology). Donglai is advised by Robert Skibbens.

Thesis committee member for Alex Huynh (Integrative Biology). Alex is advised Amber Rice.

Thesis committee member for Caitlin Zuilkoski (Molecular Biology). Caitlin is advised by Robert Skibbens.

External thesis committee member for Stephanie Lauer in The Center for Genomics and Systems Biology, New York University. Stephanie is advised by David Gresham, 2015 – present.

Postdoctoral Student Mentoring:

Sean W. Buskirk (Ph.D. Infectious Diseases, University of Georgia), September 2015 – present.

Dimitra Aggeli (Ph.D. Biochemistry and Molecular Biology, SUNY Upstate Medical University), June 2018 – present.

Departmental Service:

Chair of Faculty Search Committee, Biostatistics, Assistant Professor, 2018.

Faculty Search Committee, Infectious Disease, Assistant Professor, 2016.

Graduate Committee, 2015 – present.

Coordinator for the Cell & Molecular graduate student qualifying exam, 2015 – 2018.

Infrastructure Committee, 2014 – present.

Organizer of the Lehigh Yeast Group Meetings, Spring 2014 – Spring 2016.

Co-organizer of the Graduate Research Seminar Series, Fall 2013 – Spring 2016.

University Service:

Data X Innovation Grant Committee, 2015.

Faculty Search Committee, DataX/Connected Health, Assistant Professor, 2015.

Speaker, Lehigh Research Cafe on Boundaries and interfaces, 5 August 2015.

Professional Service:

Instructor for the Cold Spring Harbor Laboratory Yeast Genetics and Genomics Course, 2018 – present.

Instructor for the European Molecular Biological Organization (EMBO) Practical Course: Measuring intra-species diversity using high-throughput sequencing, Oeiras, Portugal, July 2015.

Symposium Organizer for *Genome Scale Approaches to Experimental Evolution* at the Annual Meeting for the Society of Molecular Biology and Evolution in San Juan, Puerto Rico. June 2014.

Reviewer for *BioEssays*, *Bioinformatics*, *BMC Genomics*, *BMC Molecular Systems Biology*, *Current Biology*, *eLife*, *Evolution*, *G3*, *Genetics*, *Genome Biology and Evolution*, *Molecular Biology and Evolution*, *Nature Communications*, *Nature Ecology and Evolution*, *PLoS Genetics*, *PLoS ONE*, *PNAS*, *Proceedings of the Royal Society B*, and *Science*. I have served as an *ad hoc* grant reviewer for the Medical Research Council, NSF DEB, NSF MCB, NSF CAREER, NSF LTREB, and I have served on the NSF DEB DDIG review panel and the NIH GVE study section.

Professional Development:

2nd Avida-ED Active LENS Workshop. 9 – 11 June 2016. NSF BEACON Center for the Study of Evolution in Action, Michigan State University, East Lansing, MI