Jacob L. Steenwyk

Ph.D. Candidate
Evolutionary genomics
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EDUCATION

Present	Graduate Student Biological Sciences Advisor: Antonis Rokas GPA: 3.97	**Vanderbilt University**
2016	M.S. Biochemistry and Molecular Biology Advisor: John G. Gibbons GPA: 3.98	**Clark University**
2015	B.A. Biochemistry and Molecular Biology Advisor: Denis Larochelle Cumulative GPA: 3.84 Science GPA: 3.84	**Clark University**

AWARDS

2019	Graduate student travel grant, Vanderbilt University
2019	Curb Center Fellow, ArtLab, Vanderbilt University, Nashville, TN
2018	*GENETICS* Peer Review Training Program, Genetics Society of America
2018	Best poster award, Gordon Research Seminar, Holderness, NH
2018	Best poster award, Gordon Research Conference, Holderness, NH
2018	Best poster award, Department of Biological Sciences, Vanderbilt University
2018	T-shirt design contest winner, Department of Biological Sciences, Vanderbilt University
2017	Graduate student travel grant, Vanderbilt University
2016	Graduate student council travel awards, Clark University
2015	Summa cum laude, Clark University
2014	Summer research scholar, Bridging the gaps, University of Southern California Keck School of Medicine
2013	Global environmental microbiology scholar, Center for dark energy biosphere investigations, University of Southern California
2011	Jonas Clark Scholar, Clark University

RESEARCH INTERESTS

- DNA damage and repair
- Gene and genome evolution
- Evolution of technologically and medically significant fungi
- Phylogenetics and phylogenomics

SOCIETIES

Genetics Society of America, American Society for Microbiology, Mycological Society of America, Society for the Advancement of Chicanos/Hispanics and Native Americans in Science

FUNDING

Curb Center Vanderbilt	12/18-4/19, Graphic art projects that bridge the gap between artist and scientist, $300

PUBLICATIONS

+ represents equal contributors; P/S represents preprint/submitted

P/S: Ries, L.N.A., **J.L. Steenwyk**, P.A. de Castro, P.B.A. de Lima, F. Almeida, L.J. de Assis, A.O. Manfiolli, A. Takahashi-Nakaguchi, Y. Kusuya, D. Hagiwara, H. Takahashi, X. Wang, J. Obar, A. Rokas, G.H. Goldman. Heterogeneity of Nutritional Differences Among *Aspergillus fumigatus* Clinical Isolates.

P/S: Knowles, S.L., H.A. Raja, A.J. Wright, A.M.L. Lee, L.K. Caesar, N.B. Cech, M.E. Mead, **J.L. Steenwyk**, L.N.A. Ries, G.H. Goldman, A. Rokas, & N.H. Oberlies. Mapping the Fungal Battlefield: Using in situ Chemistry and Deletion Mutants to Monitor Interspecific Chemical Interactions between Fungi.

P/S: Mead M.E., S.L. Knowles, H.A. Raja, S. R. Beattie, C.H. Kowalski, **J.L. Steenwyk**, L.P. Silva, J. Chiaratto, L.N.A. Ries, G.G. Goldman, R.A. Cramer, N.H. Oberlies, & A. Rokas (2018). Characterizing the pathogenic, genomic, and chemical traits of *Aspergillus fischeri*, the closest sequenced relative of the major human fungal pathogen *Aspergillus fumigatus*. bioRxiv: doi: 10.1101/430728.

P/S: **Steenwyk, J.L.**, X.-X. Shen, A.L. Lind, G.G. Goldman, & A. Rokas (2018). A robust phylogenomic timetree for biotechnologically and medically important fungi in the genera *Aspergillus* and *Penicillium*. bioRxiv: doi: 10.1101/370429.

P/S: **Steenwyk, J.**, J. St. Denis, J. Dresch, D. Larochelle, & R. Drewell (2017). Whole genome bisulfite sequencing reveals a sparse, but robust pattern of DNA methylation in the *Dictyostelium discoideum* genome. bioRxiv. doi: 10.1101/166033

(6) Eidem, H.R., **J.L. Steenwyk**, J. Wisecaver, J.A. Capra, P. Abbot, & A. Rokas (2018). integRATE: a desirability-based data integration framework for the prioritization of candidate genes across heterogeneous 'omics and its application to preterm birth. BMC Medical Genomics. doi: 10.1186/s12920-018-0426-y

(5) Shen, X.-X.$^{+}$, D.A. Opulente^{+}, J. Kominek^{+}, X. Zhou^{+}, **J.L. Steenwyk**, K.V. Buh, M.A.B. Haase, J.H. Wisecaver, M. Wang, D.T. Doering, J.T. Boudouris, R.M. Schneider, Q.K. Langdon, M. Ohkuma, R. Endoh, M. Takashima, R. Manabe, N. Čadež, D. Libkind, C.A. Rosa, J. DeVirgilio, A.B. Hulfachor, M. Groenewald, C.P. Kurtzman, C.T. Hittinger & A. Rokas (2018). Tempo and mode of genome evolution in the budding yeast subphylum. Cell. doi: 10.1016/j.cell.2018.10.023

(4) Segal, E.S., V. Gritsenko, A. Levitan, B. Yadav, N. Dror, **J.L. Steenwyk**, Y. Silberberg, K. Mielich, A. Rokas, N.A.R. Gow, R. Kunze, R. Sharan, & J. Berman (2018). Gene Essentiality Analyzed by In Vivo Transposon Mutagenesis and Machine Learning in a Stable Haploid Isolate of *Candida albicans*. mBio. doi: 10.1128/mBio.02048-18

(3) **Steenwyk, J.L.** & A. Rokas (2018). Copy number variation in fungi and its implications for wine yeast genetic diversity and adaptation. Frontiers in Microbiology. doi: 10.3389/fmicb.2018.00288

(2) **Steenwyk, J.** & A. Rokas (2017). Extensive Copy Number Variation in Fermentation-Related Genes among *Saccharomyces cerevisiae* Wine Strains. G3: Genes | Genomes | Genetics. doi: 10.1534/g3.117.040105

(1) **Steenwyk J.L.**, J.S. Soghigian, J.R. Perfect, & J.G. Gibbons (2016). Copy number variation contributes to cryptic genetic variation in outbreak lineages of *Cryptococcus gattii* from the North American Pacific Northwest. BMC Genomics. doi: 10.1186/s12864-016-3044-0

INVITED TALKS

2019 Phylogenomics and Evolution Group, North Carolina State University, Raleigh, NC (scheduled)
2018 ArtLab, Vanderbilt University, Nashville, TN
2015 TedXClarkUniversity, Clark University, Worcester, MA

CONTRIBUTED TALKS

2019 Science club at the library, Nashville Public Library, Nashville, TN (scheduled)
2018 Nashville Science Club, Jackalope Brewing Co., Nashville, TN
2017 Mycological Society of America, Univ. of Georgia, Athens, GA
2016 Mycological Society of America, Univ. of California Berkeley, Berkeley, CA
2016 Graduate Student Multidisciplinary Conference, Clark University, Worcester, MA

UNDERGRADUATE ADVISING

Current Megan A. Phillips
Current Benjamin Buckman
2018 Devin G. Arrants

WORKSHOP TEACHING

2019 Founder and instructor of 'A beginner's guide to making figures in R', Vanderbilt University, Nashville, TN (scheduled)
2019 Instructor, Workshop on Phylogenomics, Evolution and Genomics, Český Krumlov, Czech Republic
2019 Instructor, Workshop on Genomics, Evolution and Genomics, Český Krumlov, Czech Republic

TEACHING EXPERIENCE

2017-Pres. Teaching Assistant, Introductory Biology Lab, Vanderbilt University, Nashville, TN
2016 Teaching Assistant, Introduction to Biostatistics, Clark University, Worcester, MA
2014-2015 Teaching Assistant, Cell Biology, Clark University, Worcester, MA

POSTER PRESENTATIONS

2019 30th Fungal Genetics Conference at Asilomar, Pacific Grove, CA
2019 Asperfest pre-meeting at 30th Fungal Genetics Conference at Asilomar, Pacific Grove, CA
2018 Cellular and Molecular Fungal Biology, Gordon Research Conference, Holderness, NH
2018 Cellular and Molecular Fungal Biology, Gordon Research Seminar, Holderness, NH
2018 Department of Biological Sciences Annual Retreat, Vanderbilt University, Nashville, TN
2015 Bumpus Symposium, Clark University, Worcester, MA
2015 Traina Scholars Presentation, Clark University, Worcester, MA
2015 Summer Research Presentation, Clark University, Worcester, MA

RESEARCH EXPERIENCE

2016-Pres. Antonis Rokas Lab at Vanderbilt University, Nashville, TN. Doctoral Research. Evolution of medically and technologically significant fungi.
2015-2016 John Gibbons Lab at Clark University, Worcester, MA. Undergraduate and Master's Research. Copy number variation in the human pathogen, *Cryptococcus gattii.*
2015-2016 Robert Drewell Lab at Clark University, Worcester, MA. Undergraduate and Master's Research. Genome-wide methylation patterns in the social amoeba, *Dictyostelium discoideum.*

2014 Ite A. Laird-Offringa Lab at University of Southern California, Los Angeles, CA. Bridging the Gaps Summer Scholar. Mapping the autoimmune triggering epitope of *ELAVL4* in small cell lung cancer.

2013 John Heidelberg and Eric Webb Labs at University of Southern California, Los Angeles, CA. Global Environmental Microbiology Summer Scholar. Fresh and marine water microbial diversity.

SERVICE

2019-Pres. Co-chair, MEGA*Microbe*, Vanderbilt Institute for Infections, Immunology and Inflammation, Nashville, TN

2018-Pres. Vice President, Inclusivity in Biosciences Association, Vanderbilt University, Nashville, TN

2018-Pres. Vice President, Graduate Student Association, Department of Biological Sciences, Vanderbilt University, Nashville, TN

2018-Pres. Member, American Society of Microbiology Vanderbilt University Chapter

2017-Pres. Educational outreach booth design and execution, MEGA*Microbe*, Nashville, TN

2017-Pres. Communications chair, Inclusivity in Biosciences Association, Vanderbilt University, Nashville, TN

2017-Pres. Member of the Dean of Graduate Student's survey quantitative analysis subgroup, Graduate Diversity and Inclusion Committee, Vanderbilt University, Nashville, TN

2017-Pres. Judge, Middle Tennessee Science and Engineering Fair, Belmont University, Nashville, TN

2018-2019 Vice co-chair, MEGA*Microbe*, Vanderbilt Institute for Infections, Immunology and Inflammation, Nashville, TN

2017-2018 Secretary, Graduate Student Association, Department of Biological Sciences, Vanderbilt University, Nashville, TN

2017-2018 Scientific consultant, Little Harpeth Brewing, Nashville, TN

2017 Vanderbilt Student Volunteers for Science, Volunteer Science Teacher, West End Middle School, Nashville, TN

2014-2015 Undergraduate Subcommittee for Department of Chemistry, Biochemistry and Molecular Biology Faculty Search Committee, Clark University, Worcester, MA

2014-2015 Science Education Outreach Blogger, C-DEBI Sci-Curious Blog

ART SHOWS

2019 Connecting the Dots, ArtLab, Vanderbilt University, Nashville, TN

2018 ArtLab opening reception, ArtLab, Vanderbilt University, Nashville, TN

2018 The Intersection between Art and Science, ArtLab, Vanderbilt University, Nashville, TN

MANUSCRIPT REVIEWER

Systematic Biology, Molecular Genetics and Genomics, BMC Genomics, PLoS One, Young Scientists Journal, Scholarly Undergraduate Research Journal