



# Jacob L. Steenwyk

Ph.D. Candidate  
Evolutionary genomics  
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<https://jlsteenwyk.github.io>

## EDUCATION

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

## AWARDS

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

## RESEARCH INTERESTS

- DNA damage and repair
- Gene and genome evolution
- 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

<b>Curb Center Vanderbilt</b>	12/18-4/19, Graphic art projects that bridge the gap between artist and scientist, \$300
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## PUBLICATIONS

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+ 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.<sup>+</sup>, D.A. Opulente<sup>+</sup>, J. Kominék<sup>+</sup>, X. Zhou<sup>+</sup>, **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

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- 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

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- 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

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

## TEACHING EXPERIENCE

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- 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

## WORKSHOP TEACHING

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- 2019** Founder and instructor of ‘A beginner’s guide to making figures in R’, Vanderbilt University, Nashville, TN (scheduled)  
**2019** Teaching assistant for the workshop on Phylogenomics, Evolution and Genomics, Český Krumlov, Czech Republic

## POSTER PRESENTATIONS

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- 2019** 30<sup>th</sup> Fungal Genetics Conference at Asilomar, Pacific Grove, CA  
**2019** Asperfest pre-meeting at 30<sup>th</sup> 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

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- 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

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- 2019-Pres.** Chair, MEGAMicrobe, Vanderbilt Institute for Infections, Immunology and Inflammation, Nashville, TN
- 2018-Pres.** Vice President, Inclusivity in Biological Sciences 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 Tennessee Chapter
- 2017-Pres.** Educational outreach booth design and execution, MEGAMicrobe, Nashville, TN
- 2017-Pres.** Communications chair, Inclusivity in Biological Sciences 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** Co-chair, MEGAMicrobe, 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

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- 2019** Connecting the Dots, ArtLab, Vanderbilt University, Nashville, TN
- 2018** The Intersection between Art and Science, ArtLab, Vanderbilt University, Nashville, TN

## MANUSCRIPT REVIEWER

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