



Jacob L. Steenwyk

Berkeley Science Fellow
Howard Hughes Medical Institute
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CURRENT POSITIONS

- Since 2022** Postdoctoral Scholar, Laboratory of Dr. Nicole King
Dept. of Molecular & Cell Biology, University of California, Berkeley
- Since 2022** Berkeley Science Fellow
Berkeley Postdoctoral Entrepreneurship Program, University of California, Berkeley
- Since 2022** Fifty 50 Member
Fifty Years Industries, LLC
- Since 2022** Scientific Consultant
Latch AI Inc.
- Since 2022** Scientific Advisor
WittGen Biotechnologies
- Since 2020** Founder and Chief Officer
The SciArt Shop

EDUCATION

- | | | |
|-------------|--|------------------------------|
| 2022 | Ph.D., Biological Sciences
Advisor: Dr. Antonis Rokas
GPA: 3.97 | Vanderbilt University |
| 2016 | M.S., Biochemistry and Molecular Biology
Advisor: Dr. John G. Gibbons
GPA: 3.98 | Clark University |
| 2015 | B.A., Biochemistry and Molecular Biology
Advisor: Dr. Denis Larochelle
Cumulative GPA: 3.84; Science GPA: 3.84 | Clark University |

AWARDS

- 2022** Fifty 50 Community Member, Fifty Years Industries, LLC
- 2022** Berkeley Science Fellow, Berkeley Postdoctoral Entrepreneurship Program, University of California, Berkeley
- 2022** Graduate Student Excellence Award Finalist, Society for Molecular Biology and Evolution
- 2022** Hanna H. Gray Fellows Finalist, Howard Hughes Medical Institute
- 2022** Edward Ferguson Jr. Graduate Award, Graduate School, Vanderbilt University
- 2022** James F. Crow Early Career Researcher Award Finalist, Genetics Society of America
- 2022** Harold M. Weintraub Graduate Student Award, Fred Hutchinson Cancer Research Center
- 2021** Sandler Fellows Finalist, University of California, San Francisco
- 2021** Honorable mention, Next Generation Faculty Symposium, Stanford.Berkeley.UCSF
- 2021** Presentation award, Canadian Fungal Research Network and Great Lakes Mycology Conference
- 2021** Graduate Research Excellence Award in Biological Sciences, Vanderbilt University
- 2021** Smriti Bardhan Scholarship, Vanderbilt University

2021	Registration award, Science Talk '21
2020	Favorite Artist Award, Catalyst: A Virtual Sci-Art Exhibition
2020	Oral presentation award, SACNAS – The National Diversity in STEM Virtual Conference
2020	Registration scholarship, SACNAS – The National Diversity in STEM Virtual Conference
2020	Best Talk Honorable Mention, Canadian Fungal Research Network Meeting
2020	Trainee-of-the-Year, Vanderbilt Institute for Infection, Immunology and Inflammation
2019	Gilliam Predoctoral Fellowship, Howard Hughes Medical Institute
2019	Ann Bernard Martin Award for Excellence in Graduate Research, Vanderbilt University
2019	Ruth L. Kirschstein National Research Service Award, National Institutes of Health
2019	Ford Foundation Predoctoral Fellowship, Ford Foundation
2019	Graduate student travel grant, Vanderbilt University
2019	Curb Center Fellow, ArtLab, Vanderbilt University
2018	<i>GENETICS</i> Peer Review Training Program, Genetics Society of America
2018	Best poster award, Cellular and Molecular Fungal Biology, Gordon Research Seminar
2018	Best poster award, Cellular and Molecular Fungal Biology, Gordon Research Conference
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	Bridging the gaps scholar, 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

- Evolution of technologically and medically significant fungi
- Evolution and function of DNA repair
- Genome and gene evolution
- Phylogenomics and phylogenetics
- Software development

TEN HIGHLIGHTED FIRST-AUTHOR PUBLICATIONS

Evolutionary and Comparative Genomics

- (1) **Steenwyk, J.L.**, M.A. Phillips, F. Yang, S.S. Date, T. Graham, J. Berman, C.T. Hittinger, & A. Rokas (2022). An orthologous gene coevolution network provides insight into eukaryotic cellular and genomic structure and function. *Science Advances*. DOI: 10.1126/sciadv.abn0105
- (2) **Steenwyk, J.L.***, A.L. Lind*, L.N.A. Ries, T.F. dos Reis, L.P. Silva, F. Almeida, R.W. Bastos, T.F. de Campos Fraga da Silva, V.L.D. Bonato, A.M. Pessoni, F. Rodrigues, H.A. Raja, S.L. Knowles, N.H. Oberlies, K. Lagrou, G.H. Goldman[^], A. Rokas[^] (2020). Pathogenic allodiploid hybrids of *Aspergillus* fungi. *Equal contributors; [^]Corresponding authors. *Current Biology*. PMID: 32502407; PMCID: PMC7343619; DOI: 10.1016/j.cub.2020.04.071
- (3) **Steenwyk, J.L.**, D. Opulente, J. Kominek, X.-X. Shen, X. Zhou, A.L. LaBella, N.P. Bradley, B.F. Eichman, N. Čadež, D. Libkind, J. DeVirgilio, A.B. Hulfachor, C.P. Kurtzman, C.T. Hittinger[^], & A. Rokas[^] (2019). Extensive loss of cell cycle and DNA repair genes in an ancient lineage of bipolar budding yeasts. [^]Corresponding authors. *PLOS Biology*. PMID: 31112549; PMCID: PMC6528967; DOI: 10.1371/journal.pbio.3000255
- (4) **Steenwyk, J.L.**, X.-X. Shen, A.L. Lind, G.H. Goldman, & A. Rokas (2019). A robust phylogenomic

timetree for biotechnologically and medically important fungi in the genera *Aspergillus* and *Penicillium*. **mBio**. PMID: 31289177; PMCID: PMC6747717; DOI: 10.1128/mBio.00925-19

- (5) **Steenwyk, J.L.**, M.E. Mead*, S.L. Knowles*, H.A. Raja, C.D. Roberts, O. Bader, J. houbroken, G.H. Goldman, N.H. Oberlies, & A. Rokas (2020). Biosynthetic gene clusters, secondary metabolite profiles, and cards of virulence in the closest nonpathogenic relatives of *Aspergillus fumigatus*. *Equal contributors. **Genetics**. PMID: 32817009; PMCID: PMC7536862; DOI: 10.1534/genetics.120.303549

Software Engineering

- (1) **Steenwyk, J.L.**^, D.C. Goltz, T.J. Buida III, Y. Li, X.-X. Shen, & A. Rokas^ (2022). OrthoSNAP: a tree splitting and pruning algorithm for retrieving single-copy orthologs from gene family trees. ^Corresponding authors. **PLOS Biology**. DOI: 10.1371/journal.pbio.3001827
- (2) **Steenwyk, J.L.**^, T.J. Buida III, Y. Li, X.-X. Shen, & A. Rokas^ (2020). ClipKIT: a multiple sequence alignment-trimming software for accurate phylogenomic inference. ^Corresponding authors. **PLOS Biology**. PMID: 33264284; PMCID: PMC7735675; DOI: 10.1371/journal.pbio.3001007
- (3) **Steenwyk, J.L.**^, T.J. Buida III, A.L. LaBella, Y. Li, X.-X. Shen, & A. Rokas^ (2021). PhyKIT: a UNIX shell toolkit for processing and analyzing phylogenomic data. ^Corresponding authors. **Bioinformatics**. PMID: 33560364; PMCID: PMC8388027; DOI: 10.1093/bioinformatics/btab096
- (4) **Steenwyk, J.L.**^, T.J. Buida III, C. Gonçalves, D.C. Goltz, G. Morales, M. Mead, A.L. LaBella, C.M. Chavez, J.E. Schmitz, M. Hadjifrangiskou, Y. Li, & A. Rokas^ (2022). BioKIT: a versatile toolkit for processing and analyzing diverse types of sequence data. ^Corresponding authors. **Genetics**. DOI: 10.1093/genetics/iyac079
- (5) **Steenwyk, J.L.** & A. Rokas (2021). orthofisher: a broadly applicable tool for automated gene identification and retrieval. **G3 Genes|Genomes|Genetics**. PMID: 34544141; PMCID: PMC8496211; DOI: 10.1093/g3journal/jkab250

FUNDING

Howard Hughes Medical Institute	Principal investigator, 09/22, The evolution of pathways responsible for genome integrity in early animals and close relatives, Hanna H. Gray Finalist, \$10,000
Howard Hughes Medical Institute	Principal co-investigator (shared with Antonis Rokas), 09/19-09/22, Examining the loss of diverse DNA repair genes and long-term hypermutation in a lineage of budding yeasts, Gilliam Fellowship, Individual Predoctoral Fellowship, \$150,000
National Institutes of Health	Principal investigator, 08/19-08/22, Examining the loss of diverse DNA repair genes and long-term hypermutation in a lineage of budding yeasts, Ruth L. Kirschstein National Research Service Award, Individual Predoctoral Fellowship (Parent F31), \$88,128 (declined)
Ford Foundation Predoctoral Fellow	Principal investigator, 08/19-08/22, The consequences of aberrant cell cycle and DNA repair processes in budding yeast, Individual Predoctoral Fellowship, \$72,000 (declined)
Curb Center ArtLab Fellow	Principal investigator, 12/18-04/19, Bridging the gap between artist and scientist, ArtLab, Vanderbilt University, \$300

SOFTWARE

- 1) ClipKIT: a multiple sequence alignment-trimming software for accurate phylogenomic inference. [Publication PDF](#); [Documentation](#); [Source code](#)
- 2) PhyKIT: a UNIX shell toolkit for processing and analyzing phylogenomic data. [Publication PDF](#); [Documentation](#); [Source code](#)
- 3) BioKIT: a versatile toolkit for processing and analyzing diverse types of sequence data. [Publication PDF](#); [Documentation](#); [Source code](#)
- 4) OrthoSNAP: a tree splitting and pruning algorithm for retrieving single-copy orthologs from gene family trees. [Publication PDF](#); [Documentation](#); [Source code](#)
- 5) orthofisher: a broadly applicable tool for automated gene identification and retrieval. [Publication PDF](#); [Documentation](#); [Source code](#)
- 6) LVBRs: a cloud-based suite of workflows for bulk RNA-seq quality control, analysis, and functional enrichment. [Publication PDF](#); [Documentation](#); [Source code](#)
- 7) treehouse: a user-friendly application to obtain subtrees from large phylogenies. [Publication PDF](#); [Documentation & source code](#)
- 8) ggpubfigs: an R package for creating color blind friendly figures with ggplot2. [Publication PDF](#); [Documentation & source code](#)

INVITED TALKS

2023	Mycological Society of America Annual Meeting
2022	Biology Department, Loras College
2022	Yeast Genetics Meeting, Genetics Society of America
2022	Hanna H. Gray Fellows Finalists Meeting, Howard Hughes Medical Institute
2022	Molecular mycology meeting, Technion - Israel Institute of Technology
2022	Evolution, Am. Soc. of Naturalists, Soc. for the Study of Evo., and the Soc. of Sys. Biologists, Cleveland, OH (declined due to scheduling conflict)
2022	James F. Crow Early Career Researcher Award Finalist, Genetics Society of America
2022	Department of Biological Sciences, George Washington University
2022	31 st Fungal Genetics Conference at Asilomar, Pacific Grove, CA
2021	Artist-in-Residence program, Vanderbilt Institute for Infection, Immunology and Inflammation
2021	CanFunNet and Great Lakes Mycology Conference
2021	Sandler Fellows Finalists Seminar, University of California, San Francisco
2021	Department of Ecology, Evolution, and Organismal Biology, Iowa State University
2021	Medical Mycology Trainee Seminar Series, University of Utah (Link)
2021	Mycology Graduate Student Organization, University of Georgia
2021	MicroSeminar, International Society for Microbial Ecology (Link)
2021	Alliance for Diversity in Science and Engineering, Young Researchers Conference
2021	Andrew Murray Lab seminar, Harvard University, Cambridge
2020	Institute of Insect Sciences, Zhejiang University
2020	Evan Eichler Lab seminar, University of Washington, Seattle
2020	Genetics Society of America, Early Career Scientist Seminar Series
2020	Nicole King Lab seminar, University of California Berkeley
2020	The National Diversity in STEM Conference, SACNAS
2020	Canadian Fungal Research Network Meeting
2020	Trainee-of-the-year talk, Vanderbilt Institute for Infection, Immunology and Inflammation
2020	Day of Wond'ry, Vanderbilt University, Nashville, TN

2019	Genetics Society of America, Early Career Scientist Seminar Series
2019	Gordon Research Conference, Molecular Mechanisms in Evolution, Easton, MA
2019	Gordon Research Seminar, Molecular Mechanisms in Evolution, Easton, MA (declined)
2019	Focal Point, ArtLab, Vanderbilt University, Nashville, TN
2019	30 th Fungal Genetics Conference at Asilomar, Pacific Grove, CA
2019	Phylogenomics and Evolution Group, North Carolina State University, Raleigh, NC
2018	ArtLab Seminar Series, Vanderbilt University, Nashville, TN
2015	TedXClarkUniversity, Clark University, Worcester, MA

CONTRIBUTED TALKS

2021	Students' Mycology Colloquium, Mycological Society of America
2020	Evolution Seminar Series, Vanderbilt University (Link)
2019	DNA Damage and Response Journal Club, Vanderbilt University, Nashville, TN
2019	Research in Progress Seminar, Vanderbilt University, Nashville, TN
2019	Biological Sciences Annual Retreat, Vanderbilt University, Nashville, TN
2019	Science club at the library, Nashville Public Library, Nashville, TN
2018	Nashville Science Club, Jackalope Brewing Company, Nashville, TN
2017	Mycological Society of America, University of Georgia, Athens, GA
2016	Mycological Society of America, University of California Berkeley, Berkeley, CA
2016	Graduate Student Multidisciplinary Conference, Clark University, Worcester, MA

ADVISING

Undergraduates

2022-Pres. Charu Balamurugan
2019-2022 Qianhui (Olivia) Zheng
2018-2021 Megan A. Phillips

WORKSHOP TEACHING

2019	Organizer and instructor, Values-based leadership, Vanderbilt University, Nashville, TN
2019	Founder and instructor, 'A beginner's guide to making figures in R', Vanderbilt University, Nashville, TN
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

2020	Guest lecture, Science Communication Tools and Techniques, Vanderbilt University, Nashville, TN
2017-2019	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

2022	Decoding the Genome, Howard Hughes Medical Institute
2021	Gilliam Fellows Meeting, Howard Hughes Medical Institute
2021	Biology of Genomes, Cold Spring Harbor Laboratories
2021	Science Talk '21, Science Talk
2020	Gilliam Fellows Meeting, Howard Hughes Medical Institute

2020 Vanderbilt Institute for Infection, Immunology and Inflammation Annual Symposium, Virtual Conference
2020 The Allied Genetics Conference, Virtual Conference
2019 Investigators Science Meeting, Howard Hughes Medical Institute, Bethesda, MD
2019 Gilliam Fellows Annual Meeting, Howard Hughes Medical Institute, Bethesda, MD
2019 Molecular Mechanisms in Evolution, Gordon Research Conference, Easton, MA
2019 Molecular Mechanisms in Evolution, Gordon Research Seminar, Easton, MA
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

2022-Pres. Nicole King Lab at University of California, Berkeley, and Howard Hughes Medical Institute, Berkeley, CA. Post-doctoral Research. The evolution of animal genome function.
2016-2022 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

2020-Pres. Founder and Chief Officer, SciArt with Purpose, <https://jlsteenwyk.com/sciart.html>
2022 Panelist at the Diversity, Equity, and Inclusion Discussion, Yeast Genetics Conference, Genetics Society of America
2022 Scientist-Artist: Embracing Duality, ArtLab, Vanderbilt University
2019-2022 Member, Steering Committee, Early Career Leadership Program, Genetics Society of America
2019-2022 Inclusion Coordinator, The Evolutionary Studies Initiative at Vanderbilt, Vanderbilt University, Nashville, TN
2019-2022 Graphic Illustrator, The Evolutionary Studies Initiative at Vanderbilt, Vanderbilt University, Nashville, TN
2017-2022 Educational outreach booth design and execution, MEGAMicrobe, Nashville, TN
2017-2022 Member of the Dean of Graduate Student's survey quantitative analysis subgroup, Graduate Diversity and Inclusion Committee, Vanderbilt University, Nashville, TN

- 2017-2022** Judge, Middle Tennessee Science and Engineering Fair, Belmont University, Nashville, TN
- 2019-2021** Co-chair, Communication and Outreach Subcommittee, Genetics Society of America
- 2018-2021** Volunteer Deputy, American Society of Microbiology Vanderbilt University Chapter, Nashville, TN
- 2017-2021** Communications chair, Inclusivity in Biosciences Association, Vanderbilt University, Nashville, TN
- 2020** Panelist at the Communication and Outreach Workshop, The Allied Genetics Conference, Genetics Society of America
- 2019-2020** President, Inclusivity in Biosciences Association, Vanderbilt University, Nashville, TN
- 2019-2020** Co-chair, MEGAMicrobe, Vanderbilt Institute for Infections, Immunology and Inflammation, Nashville, TN
- 2018-2019** Vice President, Inclusivity in Biosciences Association, Vanderbilt University, Nashville, TN
- 2013-2019** Administrator and Owner, Molecular Biology and Biochemistry for Researchers and Students Group, LinkedIn
- 2019** Peer review workshop leader, 30th Fungal Genetics Conference at Asilomar, Pacific Grove, CA
- 2018-2019** Vice President, Graduate Student Association, Department of Biological Sciences, Vanderbilt University, Nashville, TN
- 2018-2019** Vice 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

SOCIETIES

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

MANUSCRIPT REVIEWER

Nature Communications; Molecular Biology and Evolution; Systematic Biology; Methods in Ecology and Evolution; Genome Biology and Evolution; Genetics; Microbial Genomics; G3 Genes|Genomes|Genetics; FEMS Yeast Research; Fungal Biology and Biotechnology; BMC Genomics; Nature Communications Biology; PLOS One; Molecular Genetics and Genomics; and others

ART SHOWS

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- 2021** Science Talk '21, Science Talk
- 2020** Catalyst: A Virtual Sci-Art Exhibition, Michigan State University
- 2020** Day of Wond'ry, Vanderbilt University, Nashville, TN
- 2020** Fire-Exhibition, Kefi Collective at Vanderbilt University, Nashville, TN
- 2019** Biomedical Sciences Winter Show, Vanderbilt University, Nashville, TN
- 2019** Focal point, ArtLab, Vanderbilt University, Nashville, TN
- 2019** Connecting the Dots, ArtLab, Vanderbilt University, Nashville, TN
- 2018** ArtLab opening reception, ArtLab, Vanderbilt University, Nashville, TN

POPULAR SCIENCE ARTICLES

- (6) **Steenwyk, J.L.** & K. Giffin. The silver lining of bioinformatics. *Genes to Genomes*. September 12, 2022
- (5) Simopoulos, M.A.C., A.F. Cisneros, A.D. Mendoza, C. Bautista, **J.L. Steenwyk**, N. Ahmad. Hurdles and advances to making science gender-neutral, *ecrLife*. November 26, 2020
- (4) Mendoza, A.D., C. Bautista, E.A. Marnik, C.M.A. Simopoulos, & **J.L. Steenwyk**. Navigating fake news as a scientist, *ecrLife*. October 8, 2020
- (3) **Steenwyk, J.L.** & M. Jonika. How to get started in science communication, *ecrLife*. August 21, 2020
- (2) **Steenwyk, J.L.** & A. Rokas. A new hybrid fungus is found in hospitals and linked to lung disease, *The Conversation*. June 4, 2020
- (1) **Steenwyk, J.L.** & A. Rokas. An outlaw yeast thrives with genetic chaos – and could provide clues for understanding cancer growth, *The Conversation*. May 21, 2019

PUBLICATIONS

Preprints/Submitted

- (6) **Steenwyk, J.L.**, C. Balamurugan, H.A. Raja, C. Goncalves, N. Li, F. Martin, J. Berman, N.H. Oberlies, J.G. Gibbons, G.H. Goldman, D.M. Geiser, D.S. Hibbett, A. Rokas. Phylogenomics reveals extensive misidentification of fungal strains from the genus *Aspergillus*. bioRxiv. DOI: 10.1101/2022.11.22.517304
- (5) **Steenwyk, J.L.**, Y. Li, X. Zhou, X.-X. Shen, A. Rokas. Incongruence in the Tree of Life. Submitted, under revision at *Nature Reviews Genetics*.
- (4) Le, H.G.B.H.^{^*}, **J.L. Steenwyk**^{*}, N. Manske, M. Smolin, A. Abdulali, A. Kamat, R. Kanchana, K. Giffin, A. Andere, K. Workman[^]. ^{*}Equal contributors; [^]Corresponding authors. Latch Verified Bulk-RNA Seq toolkit: a cloud-based suite of workflows for bulk RNA-seq quality control, analysis, and functional enrichment. bioRxiv. DOI: 10.1101/2022.11.10.516016
- (3) Sierra-Patev, S, B. Min, M. Naranjo-Ortiz, B. Looney, Z. Konkel, J.C. Slot, Y. Sakamoto, **J.L. Steenwyk**, A. Rokas, J. Carro, S. Camarero, P. Ferreira, G. Molpeceres, F.J. Ruiz-Dueñas, A. Serrano, B. Henrissat, E. Drula, K.W. Hughes, J.L. Mata, N.K. Ishikawa, R. Vargas-Isla, S. Ushijima, C.A. Smith, S. Ahrendt, W. Andreopoulos, G. He, K. LaButti, A. Lipzen, V. Ng, R. Riley, L. Sandor, K. Barry, A.T. Martínez, Y. Xiao, J.G. Gibbons, K. Terashima, I.V. Grigoriev, & D. Hibbett (2022). A Global Phylogenomic Analysis of the Shiitake Genus *Lentinula*. Submitted, under revision at *Proceedings of the National Academy of Sciences of the United States of America*.
- (2) Zheng, Q., **J.L. Steenwyk**[^], & A. Rokas[^] (2022). Lack of universal mutational biases in a fungal phylum. [^]Corresponding authors. bioRxiv. DOI: 10.1101/2022.03.29.486229
- (1) **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

Peer Review Published

- (51) Li, Y.[^], H Liu, **J.L. Steenwyk**, A.L. LaBella, M.C. Harrison, M. Groenewald, X. Zhou, X.-X. Shen, T. Zhao, C.T. Hittinger, & A. Rokas[^] (2022). [^]Corresponding authors. Contrasting modes of macro- and micro-synteny evolution in a eukaryotic subphylum. *Current Biology*. DOI: 10.1016/j.cub.2022.10.025
- (50) **Steenwyk, J.L.**[^], D.C. Goltz, T.J. Buida III, Y. Li, X.-X. Shen, & A. Rokas[^] (2021). OrthoSNAP: a tree splitting and pruning algorithm for retrieving single-copy orthologs from gene family trees. [^]Corresponding authors. *PLOS Biology*. PMID: 36228036 DOI: 10.1371/journal.pbio.3001827
- (49) Brown, A., M.E. Mead, **J.L. Steenwyk**, G.H. Goldman, & A. Rokas (2022). Extensive sequence divergence of non-coding regions between *Aspergillus fumigatus*, a major fungal pathogen of humans, and its relatives. *Frontiers in Fungal Biology*. DOI: 10.3389/ffunb.2022.802494
- (48) Horta, M.A., **J.L. Steenwyk**, M.E. Mead, L.H.B. dos Santos, S. Zhao, J.G. Gibbons, M. Marcet-Houben, T. Gabaldón, A. Rokas[^], & G.H. Goldman[^] (2022). Examination of genome-wide ortholog variation in clinical and environmental isolates of the fungal pathogen *Aspergillus fumigatus*. [^]Corresponding authors. *mBio*. PMID: 35766381; PMCID: PMC9426589; DOI: 10.1128/mbio.01519-22
- (47) **Steenwyk, J.L.**[^], T.J. Buida III, C. Gonçalves, D.C. Goltz, G. Morales, M. Mead, A.L. LaBella, C.M. Chavez, J.E. Schmitz, M. Hadjiifrangiskou, Y. Li, & A. Rokas[^] (2022). BioKIT: a versatile toolkit for processing and analyzing diverse types of sequence data. [^]Corresponding authors. *Genetics*. PMID: 35536198; DOI: 10.1093/genetics/iyac079
- (46) **Steenwyk, J.L.**, M.A. Phillips, F. Yang, S.S. Date, T. Graham, J. Berman, C.T. Hittinger, & A. Rokas (2022). An orthologous gene coevolution network provides insight into eukaryotic cellular and genomic structure and function. *Science Advances*. PMID: 35507651; PMCID: PMC9067921; DOI: 10.1126/sciadv.abn0105
- (45) Bradley, N.P.* , K.L. Wahl*, **J.L. Steenwyk**, A. Rokas, & B.F. Eichman (2022). Resistance-guided mining of bacterial genotoxins defines a family of DNA glycosylases. *Equal contributors. *mBio*. PMID: 35311535; PMCID: PMC9040887; DOI: 10.1128/mbio.03297-21
- (44) de Castro, P.A., A. Moraes, A.C. Colabardini, M.A.C. Horta, S.L. Knowles, H.A. Raja, N.H. Oberlies, Y. Koyama, M. Ogawa, K. Gomi, **J.L. Steenwyk**, A. Rokas, L.N.A. Ries, & G.H. Goldman (2022). Regulation of gliotoxin biosynthesis and protection in *Aspergillus* species. *PLOS Genetics*. PMID: 35041649; PMCID: PMC8797188; DOI: 10.1371/journal.pgen.1009965
- (43) **Steenwyk, J.L.**[^] & A. Rokas[^] (2021). ggpubfigs: colorblind friendly color palettes and ggplot2 graphic system extensions for publication-quality scientific figures. [^]Corresponding authors. *Microbiology Resource Announcements*. PMID: 34734767; PMCID: PMC8567791; DOI: 10.1128/MRA.00871-21
- (42) Phillips, M.A., **J.L. Steenwyk**[^], X.-X. Shen, & A. Rokas[^] (2021). Examination of gene loss in the DNA mismatch repair pathway and its mutational consequences in a fungal phylum. [^]Corresponding authors. *Genome Biology and Evolution*. PMID: 34554246; PMCID: PMC8597960; DOI: 10.1093/gbe/evab219
- (41) Santos, R.A.C., M.E. Mead, **J.L. Steenwyk**, O. Rivero-Menéndez, A. Alastruey-Izquierdo, G.H. Goldman[^], & A. Rokas[^] (2021). Examining signatures of natural selection in antifungal resistance genes across *Aspergillus* fungi. [^]Corresponding authors. *Frontiers in*

- (40) **Steenwyk, J.L.** & A. Rokas (2021). orthofisher: a broadly applicable tool for automated gene identification and retrieval. G3 Genes|Genomes|Genetics. PMID: 34544141; PMCID: PMC8496211; DOI: 10.1093/g3journal/jkab250
- (39) Ries, L., P. de Castro, L. Silva, C. Valero, T. dos Reis, R. Saborano, I. Duarte, G. Persinoti, **J.L. Steenwyk**, A. Rokas, F. Almeida, J. Costa, T. Fill, S.S.W. Wong, V. Aimaniananda, F. Rodrigues, R. Gonçalves, C. Duarte-Oliveira, A. Carvalho, & G.H. Goldman (2021). *Aspergillus fumigatus* acetate utilization impacts virulence traits and pathogenicity. mBio. PMID: 34311583; PMCID: PMC8406206; DOI: 10.1128/mBio.01682-21
- (38) Mead, M.E. *, **J.L. Steenwyk***, L.P. Silva, P.A. de Castro, N. Saeed, F. Hillmann, G.H. Goldman, & A. Rokas (2021). An evolutionary genomic approach reveals both conserved and species-specific genetic elements related to human disease in closely related *Aspergillus* fungi. *Equal contributors. Genetics. PMID: 33944921; PMCID: PMC8225353; DOI: 10.1093/genetics/iyab066
- (37) **Steenwyk, J.L.**, M.E. Mead, P.A. Castro, C. Valero, A. Damasio, R.A.C. Santos, A.L. LaBella, Y. Li, S.L. Knowles, H.A. Raja, N.H. Oberlies, X. Zhou, O.A. Cornely, F. Fuchs, P. Koehler^, G.H. Goldman^, A. Rokas^ (2021). Genomic and phenotypic analysis of COVID-19-associated pulmonary aspergillosis isolates of *Aspergillus fumigatus*. ^Corresponding authors. Microbiology Spectrum. PMID: 34106569; PMCID: PMC7654854; DOI: 10.1128/Spectrum.00010-21
- (36) LaBella, A.L., D. Ofulente, **J.L. Steenwyk**, C.T. Hittinger, & A. Rokas (2021). Signatures of optimal codon usage in metabolic genes inform budding yeast ecology. PLOS Biology. PMID: 33872297; PMCID: PMC8084343; DOI: 10.1371/journal.pbio.3001185
- (35) **Steenwyk, J.L.** (2021). Evolutionary divergence in the DNA damage response among fungi. mBio. PMID: 33727357; PMCID: PMC8092291; DOI: 10.1128/mBio.03348-20
- (34) Shen, Xing-Xing, **J.L. Steenwyk**, & A. Rokas (2021). Dissecting incongruence between concatenation- and quartet-based approaches in phylogenomic data. Systematic Biology. PMID: 33616672; DOI: 10.1093/sysbio/syab011
- (33) **Steenwyk, J.L.**^, T.J. Buida III, A.L. LaBella, Y. Li, X.-X. Shen, & A. Rokas^ (2020). PhyKIT: a UNIX shell toolkit for processing and analyzing phylogenomic data. ^Corresponding authors. Bioinformatics. PMID: 33560364; PMCID: PMC8388027; DOI: 10.1093/bioinformatics/btab096
- (32) Li, Y., **J.L. Steenwyk**, Y. Chang, Y. Wang, T.Y. James, J.E. Stajich, J.W. Spatafora, M. Groenewald, C. Dunn, C.T. Hittinger, X.-X. Shen^, A. Rokas^ (2020). A genome-scale phylogeny of the kingdom Fungi. ^Corresponding authors. Current Biology. PMID: 33607033; PMCID: PMC8347878; DOI: 10.1016/j.cub.2021.01.074
- (31) **Steenwyk, J.L.** (2021). A portrait of budding yeasts: A symbol of the arts, sciences and a whole greater than the sum of its parts. Yeast. PMID: 32869892; DOI: 10.1002/yea.3518
- (30) **Steenwyk, J.L.**^, T.J. Buida III, Y. Li, X.-X. Shen, & A. Rokas^ (2020). ClipKIT: a multiple sequence alignment-trimming software for accurate phylogenomic inference. ^Corresponding authors. PLOS Biology. PMID: 33264284; PMCID: PMC7735675; DOI: 10.1371/journal.pbio.3001007
- (29) Li, Y., K.T. David, X.-X. Shen, **J.L. Steenwyk**, K.M. Halanych, & A. Rokas (2020). Feature Frequency Profile-based phylogenies are inaccurate. Proceedings of the National Academy

of Sciences of the United States of America. PMID: 33234569; PMCID: PMC7749326; DOI: 10.1073/pnas.2013143117

- (28) Shen, X.-X.[^], **J.L. Steenwyk**, A.L. LaBella, D.A. Opulente, X. Zhou, J. Kominek, Y. Li, M. Groenewald, C.T. Hittinger, & A. Rokas[^] (2020). Genome-scale phylogeny and contrasting modes of genome evolution in the fungal phylum Ascomycota. [^]Corresponding authors. Science Advances. PMID: 33148650; PMCID: PMC7673691; DOI: 10.1126/sciadv.abd0079
- (27) Santos, R.A.C., O. Rivero-Menendez, **J.L. Steenwyk**, M.E. Mead, G.H. Goldman[^], A. Alastruey-Izquierdo, & A. Rokas[^] (2020). Draft genome sequences of four *Aspergillus* section *Fumigati* clinical strains. [^]Corresponding authors. Microbiology Resource Announcements. PMID: 33004453; PMCID: PMC7530925; DOI: 10.1128/MRA.00856-20
- (26) Filho, A.P.C., G.T.P. Brancini, P.A. de Castro, J.A. Ferreira, L.P. Silva, M.C. Rocha, I. Malavazi, J.G.M. Pontes, T. Fill, R. Silva, F. Almeida, **J.L. Steenwyk**, A. Rokas, T.F. dos Reis, L.N.A. Ries, & G.H. Goldman (2020). *Aspergillus fumigatus* G-protein coupled receptors GprM and GprJ are important for the regulation of the cell wall integrity pathway, secondary metabolite production, and virulence. mBio. PMID: 33051372; PMCID: PMC7554674; DOI: 10.1128/mBio.02458-20
- (25) **Steenwyk, J.L.**, M.E. Mead*, S.L. Knowles*, H.A. Raja, C.D. Roberts, O. Bader, J. houbraken, G.H. Goldman, N.H. Oberlies, & A. Rokas (2020). Biosynthetic gene clusters, secondary metabolite profiles, and cards of virulence in the closest nonpathogenic relatives of *Aspergillus fumigatus*. *Equal contributors. Genetics. PMID: 32817009; PMCID: PMC7536862; DOI: 10.1534/genetics.120.303549
- (24) Ries, L.N.A., L. Pardeshi, Z. Dong, K. Tan, **J.L. Steenwyk**, A.C. Colabardini, J.A.F. Filho, P.A. de Castro, L.P. Silva, N.W. Preite, F. Almeida, L.J. de Assis, R.A.C. dos Santos, P. Bowyer, M. Bromley, R.A. Owens, S. Doyle, M. Demasi, D.C.R. Hernández, L.E.S. Netto, M.T. Pupo, A. Rokas, F.V. Loures, K.H. Wong, & G.H. Goldman (2020). The *Aspergillus fumigatus* transcription factor RglT is important for gliotoxin biosynthesis and self-protection, and virulence. PLOS Pathogens. PMID: 32667960; PMCID: PMC7384679; DOI: 10.1371/journal.ppat.1008645
- (23) **Steenwyk, J.L.***, A.L. Lind*, L.N.A. Ries, T.F. dos Reis, L.P. Silva, F. Almeida, R.W. Bastos, T.F. de Campos Fraga da Silva, V.L.D. Bonato, A.M. Pessoni, F. Rodrigues, H.A. Raja, S.L. Knowles, N.H. Oberlies, K. Lagrou, G.H. Goldman[^], A. Rokas[^] (2020). Pathogenic allodiploid hybrids of *Aspergillus* fungi. *Equal contributors; [^]Corresponding authors. Current Biology. PMID: 32502407; PMCID: PMC7343619; DOI: 10.1016/j.cub.2020.04.071
- (22) Mead, M.E.* , A.T. Borowsky*, B. Joehnk, **J.L. Steenwyk**, X.-X. Shen, A. Sil, & A. Rokas (2020). Recurrent loss of *abaA*, a master regulator of asexual development in filamentous fungi, correlates with changes in genomic and morphological traits. *Equal contributors. Genome Biology and Evolution. PMID: 32442273; PMCID: PMC7531577; DOI: 10.1093/gbe/evaa107
- (21) Santos, R.A.C., **J.L. Steenwyk**, O. Rivero-Menendez, M.E. Mead, L.P. Silva, R.W. Bastos, A. Alastruey-Izquierdo, G.H. Goldman[^], & A. Rokas[^] (2020). Genomic and phenotypic heterogeneity of clinical isolates of the human pathogens *Aspergillus fumigatus*, *Aspergillus lentulus* and *Aspergillus fumigatiaffinis*. [^]Corresponding contributors. Frontiers in Genetics. PMID: 32477406; PMCID: PMC7236307; DOI: 10.3389/fgene.2020.00459

- (20) Bastos, R.W., C. Valero, L.P. Silva, T. Schoen, M. Drott, V. Brauer, R. Silva-Rocha, A. Lind, **J.L. Steenwyk**, A. Rokas, F. Rodrigues, A. Resendiz-Sharpe, K. Lagrou, M. Marcet-Houben, T. Gabaldon, E. McDonnell, I. Reid, A. Tsang, B.R. Oakley, F. Loures, F. Almeida, A. Huttenlocher, N.P. Keller, L. Ries, G.H. Goldman (2020). Functional characterization of clinical isolates of the opportunistic fungal pathogen *Aspergillus nidulans*. mSphere. PMID: 32269156; PMCID: PMC7142298; DOI: 10.1128/mSphere.00153-20
- (19) Rokas, A., M.E. Mead, **J.L. Steenwyk**, N.H. Oberlies, & G.H. Goldman (2020). Evolving moldy murderers: *Aspergillus* section *Fumigati* as a model for studying the repeated evolution of fungal pathogenicity. PLOS Pathogens. PMID: 32106242; PMCID: PMC7046185; DOI: 10.1371/journal.ppat.1008315
- (18) Knowles, S.L., M.E. Mead, L.P. Silva, H.A. Raja, **J.L. Steenwyk**, G.H. Gustavo, A. Rokas, & N.H. Oberlies (2020). Gliotoxin, a known virulence factor in the major human pathogen *Aspergillus fumigatus*, is also biosynthesized by the non-pathogenic relative *A. fischeri*. mBio. PMID: 32047138; PMCID: PMC7018655; DOI: 10.1128/mBio.03361-19
- (17) Libkind, D., D. Peris, F.A. Cubillos, **J.L. Steenwyk**, D.A. Opulente, Q.K. Langdon, N. Bellora, A. Rokas, & C.T. Hittinger (2020). Into the wild: new yeast genomes from natural environments and new tools for their analysis. FEMS Yeast Research. PMID: 32009143; PMCID: PMC7067299; DOI: 10.1093/femsyr/foaa008
- (16) Rokas, A., M.E. Mead, **J.L. Steenwyk**, H.A. Raja, & N.H. Oberlies (2020). Biosynthetic gene clusters and the evolution of fungal chemodiversity. Natural Product Reports. PMID: 31898704; PMCID: PMC7332410; DOI: 10.1039/c9np00045c
- (15) Bodinakku, I., J. Shaffer, A.B. Connors, **J.L. Steenwyk**, E. Kastman, A. Rokas, A. Robbat, B. Wolfe (2019). Rapid phenotypic and metabolomics domestication of wild *Penicillium* molds on cheese. mBio. PMID: 31615965; PMCID: PMC6794487; DOI: 10.1128/mBio.02445-19
- (14) Mead, M.E.*, H.A. Raja*, **J.L. Steenwyk**, S.L. Knowles, N.H. Oberlies^, & A. Rokas^ (2019). Draft genome sequence of the griseofulvin-producing fungus *Xylaria flabelliformis* strain G536. *Equal contributors; ^Corresponding authors. Microbiology Resource Announcements. PMID: 31537670; PMCID: PMC6753274; DOI: 10.1128/MRA.00890-19
- (13) **Steenwyk, J.L.** & A. Rokas (2019). treehouse: a user-friendly application to obtain subtrees from large phylogenies. BMC Research Notes. PMID: 31455362; PMCID: PMC6712805; DOI: 10.1186/s13104-019-4577-5
- (12) Labella, A.L., D.A. Opulente, **J.L. Steenwyk**, C.T. Hittinger, & A. Rokas (2019). Variation and selection on codon usage bias across an entire subphylum. PLOS Genetics. PMID: 31365533; PMCID: PMC6701816; DOI: 10.1371/journal.pgen.1008304
- (11) **Steenwyk, J.L.**, X.-X. Shen, A.L. Lind, G.H. Goldman, & A. Rokas (2019). A robust phylogenomic timetree for biotechnologically and medically important fungi in the genera *Aspergillus* and *Penicillium*. mBio. PMID: 31289177; PMCID: PMC6747717; DOI: 10.1128/mBio.00925-19
- (10) **Steenwyk, J.L.**, D. Opulente, J. Kominek, X.-X. Shen, X. Zhou, A.L. LaBella, N.P. Bradley, B.F. Eichman, N. Čadež, D. Libkind, J. DeVirgilio, A.B. Hulfachor, C.P. Kurtzman, C.T. Hittinger^, & A. Rokas^ (2019). Extensive loss of cell cycle and DNA repair genes in an ancient lineage of bipolar budding yeasts. ^Corresponding authors. PLOS Biology. PMID: 31112549; PMCID: PMC6528967; DOI: 10.1371/journal.pbio.3000255

- (9) 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 (2019). Nutritional heterogeneity among *Aspergillus fumigatus* strains has consequences for virulence in a strain- and host-dependent manner. *Frontiers in Microbiology*. PMID: 31105662; PMCID: PMC6492530; DOI: 10.3389/fmicb.2019.00854
- (8) 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 (2019). Characterizing the pathogenic, genomic, and chemical traits of *Aspergillus fischeri*, the closest sequenced relative of the major human fungal pathogen *Aspergillus fumigatus*. *mSphere*. PMID: 30787113; PMCID: PMC6382966; DOI: 10.1128/mSphere.00018-19
- (7) 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 (2019). Mapping the Fungal Battlefield: Using *in situ* Chemistry and Deletion Mutants to Monitor Interspecific Chemical Interactions between Fungi. *Frontiers in Microbiology*. PMID: 30837981; PMCID: PMC6389630; DOI: 10.3389/fmicb.2019.00285
- (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*. PMID: 30453955; PMCID: PMC6245874; DOI: 10.1186/s12920-018-0426-y
- (5) Shen, X.-X.*, D.A. Oplente*, 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). *Equal contributors; ^Corresponding authors. Tempo and mode of genome evolution in the budding yeast subphylum. *Cell*. PMID: 30415838; PMCID: PMC6291210; 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*. PMID: 30377286; PMCID: PMC6212825; 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*. PMID: 29520259; PMCID: PMC5826948; 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*. PMID: 28292787; PMCID: PMC5427499; 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*. PMID: 27590805; PMCID: PMC5009542; DOI: 10.1186/s12864-016-3044-0