Anna Ritz

Biology Department
Reed College

[J2] Hannah Meier, Isaac Schuman, Tamara Layden, Anna Ritz, Colin Kremer, and Samuel Fey. Temperature mediated transgenerational plasticity in uences movement behaviour in the green algae *Chlamydomonas reinhardtii*. Functional Ecology 2022. [publisher link]

[C2] Aysegul Bumin, Anna Ritz, Donna Slonim, Tamer Kaveci, and Kejun Huang. FiT: Fiber-Based Tensor Completion for Drug Repurposing. 13th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM-BCB) 2022. Chicago, IL. Best Student Paper Award. [proceedings]

[J3] Ananthan Nambiar, Simon Liu, Maeve O1BAd5 [illegible]

[C2]

[C7] Alexander King , Ibrahim Youssef, and Anna Ritz . Factors A ecting Network-Based Gene Prediction Across Diverse Diseases. 10th Workshop on Integrative Data Analysis in Systems Biology (IDASB) 2019, San Diego, CA, USA. [publisher link]

[J9] Nicholas Franzese, Adam Groce, T. M. Murali, and Anna Ritz . Hypergraph-based Connectivity Measures for Signaling Pathway Topologies. PLOS Computational Biology 2019 Oct 25;15(10):e1007384. [pub. link]

[C8] Invited for special issue based on full paper from the Great Lakes Bioinformatics Conference (GLBio) 2019, Madison, WI, USA. Presented by Anna Ritz. [bioRxiv]

[J10] Ibrahim Youssef, Je rey Law, and Anna Ritz . Integrating Protein Localization with Automated Signaling Pathway Reconstruction. BMC Bioinformatics 2019. 20(505). [publisher link] [bioRxiv]

[C9] Extended version of full paper from the International Conference on Bioinformatics and Biomedicine (BIBM) 2018, Madrid, Spain. Presented by Anna Ritz. [proceedings]

[C10] Marika Swanberg , Ira Globus-Harris , Iris Gri th , Anna Ritz , Adam Groce, and Andrew Bray. Improved Di erentially Private Analysis of Variance. 19th Privacy Enhancing Technologies Symposium (PETS) 2019, Stockholm, Sweden. [proceedings] [arXiv]

[J11] Miriam Bern y, Alexander King y, Derek A. Applewhite, and Anna Ritz . Network-Based Prediction of Polygenic Disease Genes Involved in Cell Motility. BMC Bioinformatics 2019, 20(12), 313. [publisher link]

[C11] Invited for special issue based on full paper from the CNB-MAC 2018, Washington D.C., USA. Presented by Anna Ritz.

[J12] Kimberly A. Peters, Elizabeth Detmar, Liz Sepulveda, Corrina Del Valle , Ruth Valsquier , Anna Ritz , Stephen L. Rogers, and Derek A. Applewhite. Establishment of a cell-based assay to investigate non-muscle myosin II contractility via the Folded-gastrulation signaling pathway in Drosophila S2R+ cells. Journal of Visualized Experiments (JoVE) 2018, (138), e58325. [publisher link]

[P3] Anna Ritz,tz25 [-6398 wf 8.496 -o09(assa)10543l5blishmen
lar Biology Concepts. 49th ACM Technic112(28(Sym)1(p)51(osium)-(28(on)-428aComputer)-427(Science)51(e)-428a 2018,
Baltimore, MD, USA. [proceedings]

[C12] Zachary Campbell , Andrew Bray, Anna Ritz , and Adam Groce,tz25 [-6398 60.712 0 l S Q BT /F15 10.9091 Tf 380
[arXiv]

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caDelns,(V)84(a(eres)-48(O'DConnlla,)3)1(Dand)1(es)-1lraa,Juestn(,)]TJ/F26 10.9091 Tf3943.355 0 Td [(Anna)-400(Ritz)]TJ/F1

[J16] Anna Ritz , Christopher L. Poirel, Allison N. Tegge, Nicholas Sharp, Allison Powell , Kelsey Simmons, Shiv Kale, and T. M. Murali. Pathways on Demand: Automated Reconstruction of Human Signaling

[J28] Lulu Cao, Kebing Yu, Cindy Banh, Vinh Nguyen, Anna Ritz, Benjamin J. Raphael, Yuko Kawakami, Toshiaki Kawakami, and Arthur R. Salomon. Quantitative Time-Resolved Phosphoproteomic Analysis of Mast Cell Signaling. Journal of Immunology 2007. 179: 5864-5876. [publisher link]

[C18] Benjamin J. Anderson, Deborah S. Gross, David R. Musicant, Anna M. Ritz, Thomas G. Smith, and Leah E. Steinberg. Adapting K-Medians to Generate Normalized Cluster Centers. Proceedings of the Sixth SIAM International Conference on Data Mining (SDM) 2006. pp165-175. [proceedings]

Other Publications and Reports

[O1] Darsh Mandera and Anna Ritz. An Ensemble Learning Approach for Cancer Drug Prediction, 2020. [bioRxiv]

[O2] Anna Ritz. Algorithms for Identifying Structural Variants in Human Genomes. Ph.D. Dissertation, Brown University, 2012. [pdf]

[O3] Anna Ritz. A Minimum Description Length Approach to the Multiple Motif Problem. Sc.M. Thesis, Brown University, 2008. [pdf]

[O4] Benjamin J. Anderson, David R. Musicant, Anna M. Ritz, Andrew Ault, Deborah S. Gross, Melanie Yuen, Markus Gaelli. User-Friendly Clustering for Atmospheric Data Analysis. Technical Report 2005a, Carleton College, 2005. [pdf]

Honors and Awards

Nov 2020 Lynwood W. Swanson Promise for Scienti c Research Award, The M. J. Murdock Charitable Trust. This award \is aimed at recognizing a junior faculty who has demonstrated an exceptional potential in establishing an exemplary, productive, and sustainable research program." ($10,000)

Jan 2020 Tenure Gira e, sent anonymously \to people from equity seeking communities who have earned tenure in a biology discipline." (priceless)

May 2019 Undergraduate Research Mentoring (URM) Award, National Center for Women in Information & Technology (NCWIT). The URM Award recognizes faculty \for their outstanding mentorship, high-quality research opportunities, recruitment of women and minority students, and e orts to encourage and advance undergraduates in computing-related elds." ($5,000)

May 2013 Symbolic Ph.D. Recipient, Brown University. The symbolic degree recipient is nominated to represent all Ph.D. recipients in the presentation of degrees by the President of the University.

2008{2011 NSF Graduate Research Fellowship Program (GRFP) Fellow (see Past External Funding).

Funding

Current External Funding

May 2023{Apr 2026 NSF Division of Biological Infrastructure (DBI) #2233967
Collaborative Research: BeeHive: A Cross-Problem Benchmarking Framework for Network Biology. Principal Investigator (with PI T.M. Murali at Virginia Tech and PI Anthony Gitter at UW-Madison) ($92,513 to Reed, $1.5M total)

Aug 2022{Aug 2023 The Alliance to Advance Liberal Arts Colleges (AALAC) Workshops
Bioinformatics and Computational Biology in the Liberal Arts. [funded proposal]
Lead Organizer; workshop planned in late June 2023 at Reed College ($10,000)

Jun 2022{May 2023 NSF Division of Computing and Communication Foundations (CCF) #2230929
NSF Student Travel Grant for the 2022 International Workshop on Computational Network Biology: Modeling, Analysis, and Control (CNB-MAC) . Principal Investigator ($10,000)

Jun 2018{May 2023 NSF Division of Biological Infrastructure (DBI) #1750981
CAREER: Network-Based Signaling Pathway Analysis: Methods and Tools for Turning Theory into Practice. Principal Investigator ($938,147)

Sep 2018{Aug 2023 NSF Division of Computer and Network Systems (CNS) #1817245
SaTC: CORE: Small: RUI: Di erentially Private Hypothesis Testing
Co-Principal Investigator (with PI Adam Groce and Co-PI Andrew Bray) ($344,684)

Aug 2017{Jul 2023 NSF Division of Molecular and Cellular Biosciences (MCB) #1716964
RUI: Investigating the Molecular Mechanisms of Non-muscle Myosin II Contractility
Co-Principal Investigator (with PI Derek Applewhite) ($589,432)

Past External Funding

Sep 2018{ Aug 2022 NIH National Institute of General Medical Sciences (NIGMS) 1R15GM129857
Mouth-brooding: a Teleost Adaptation as a Tractable Model of Metabolic Disorder
Senior Personnel (with PI Suzy Renn) NIH R15 ($419,497)

May 2016{Aug 2019 M.J. Murdock Charitable Trust (College Research Program for Nat. Sciences)
Developing Computational Methods to Identify Candidate Driver Genes Involved in Signaling Pathway Dysregulation in Colorectal Cancer
Principal Investigator ($41,500)

May 2016{Apr 2019 M.J. Murdock Charitable Trust
Investigating Cellular & Molecular Mechanisms of Neurogenesis in the Developing Zebra sh
Multi-Institutional Award to Reed College, Whitworth University, & Lewis & Clark College.
Co-Principal Investigator (with PI Kara Cerveny at Reed) ($240,000)

Sep 2017{Aug 2018 CRA Collaborative Research Experience for Undergraduates (CREU)
Graph-Based Semi-Supervised Learning to Predict Genes Associated with Schizophrenia
Principal Investigator ($7,500); Summer Extension Awarded ($8,000)

Sep 2016{Oct 2017 NSF Division of Computing and Communication Foundations (CCF) #1643361
A Course-Based Undergraduate Conference Experience in Computational Biology
Principal Investigator ($13,562)

Jun 2008{May 2011 NSF Graduate Research Fellowship Program (GRFP)
An Integrated View of Signaling Pathways
Mentor: Benjamin Raphael ($90,000)

Other Funding and Travel Awards

Oct 2022 NSF ASCEND Professional Development Mini-Grant Award ($500)

March 2022 Social Justice Research Internship Funding for Gender Bias in Written Evaluations ($3,000)
Reed Summer Scholarship Funds to support the Social Justice Research Internship ($1,500)

March 2021 Reed Summer Scholarship Funds for books on DEI in science and technology ($350).

Nov 2018 Reed College Stillman Drake2R G /F15 10,9 [-4787(Mae6m.549 oks)-3340 pt4787(M7(supp)-28

Mep 2018SIGCSEep 201pWament ($500)

May 2018

Presentations

Undergraduate or recently-graduated co-author. High school co-author. Presenter.

Invited Talks

Dec 2022 Accelerating Therapeutics for Opportunities in Medicine, Oak Ridge National Lab (Virtual)
Oct 2022 Arab Academy for Science, Technology, and Maritime Transport (AASTMT) Bioinformatics and Computational Biology Workshop (Virtual)
Jul 2022 Summer Liberal Arts Institute (SLAI), Carleton College
Jun 2022 Workshop on Future Directions in Network Biology, University of Notre Dame
Jun 2022 Reunion Lecture, Reed College
Mar 2022 Department of Biomedical Informatics, University of Arkansas (Virtual)
Sep 2021 Biology Department, Reed College
Jun 2021 Oregon AI Summit (Oregon Chapter of the Girls Computing League, Virtual)
Mar 2021 Science and Mathematics, Sarah Lawrence College (Virtual)
Dec 2020 Department of Computer Science, Haverford College (Virtual)
Oct 2020 Department of Computer Science, Willamette University (Virtual)
ACM Student Chapter, Lewis & Clark College (Virtual)
Oct 2019 Department of Mathematics and Statistics, Washington State University Vancouver
Sep 2019 Biology Department, Reed College
Aug 2019 Paci c Northwest Quantitative Biology (PacNoW QB) Symposium, OHSU
Feb 2019 Computer Science & Biology Departments, Rhodes College
Sep 2018 Paci c Northwest Quantitative Biology (PacNoW QB) Symposium, Lewis & Clark DepartF-333(Biology [-.a
Oct 2020 Departmenois hem728eunion Lecture, Reek
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Conference and Workshop Oral Presentations

Abstract-submitted talks shown below. For conference proceeding talks, see underlined names in Publications.

Mar 2023 Pramesh Singh, Hannah Kuder, and Anna Ritz. Identifying Network Communities using Higher-Order Structures. American Physical Society.

Jul 2021 Heyuan Zeng, Jinbiao Zhang, Gabriel A. Preising, Tobias Rubel, Pramesh Singh, and Anna Ritz. Graphery: interactive tutorials for biological network algorithms. ISMB.

May 2021 Chris Magnano, Tobias Rubel