Rosemary Braun

Curriculum Vitae

Education

Ph.D., Physics
University of Illinois, Urbana–Champaign 2004
Dissertation: *Molecular Dynamics Studies of Interfacial Effects on Protein Conformation*
Advisor: Prof. K. Schulten, Physics (Theoretical and Computational Biophysics Group)

M.P.H., Biostatistics
Johns Hopkins–Bloomberg School of Public Health 2006
Thesis: *Identifying Differentially Expressed Gene–Pathway Combinations*
Advisor: Prof. G. Parmigiani, Biostatistics

B.S., Physics
Stony Brook University (SUNY Stony Brook) 1996
Honors College Thesis: *Binary Pulsar Evolution*
Advisor: Prof G. E. Brown, Physics (Nuclear Theory Group)

Academic Appointments

Northwestern University
Associate Professor with tenure 01/2021—present
Molecular BioSciences [primary]
Engineering Science & Applied Mathematics
Physics & Astronomy
Assistant Professor 10/2011—12/2020
Biostatistics, Preventive Medicine [primary]
Engineering Sciences & Applied Mathematics
Physics & Astronomy
Institute and center affiliations:
Northwestern Institute on Complex Systems (NICO)
Center for Sleep and Circadian Biology

NSF-Simons National Institute for Theory and Mathematics in Biology
Associate Director for Education and Outreach 07/2023—present
Research theme leader, "Information Processing"

Santa Fe Institute
External Professor 09/2023—present

National Institutes of Health
Postdoctoral Fellow, National Cancer Institute 2005–2011
Laboratory of Population Genetics (PI: Ken Buetow)

Publications

Complete list: https://scholar.google.com/citations?hl=en&user=T5XfkMkAAAAJ&sortby=pubdate

* corresponding author; † Braun lab student/postdoc; • co-first

[55] Eliza Duvall† and **Rosemary Braun***. Analyzing Co-expression Networks with Network Skeleton Extraction. *BMC Bioinformatics*, Forthcoming, 2026.

[54] Connor Puritz† and **Rosemary Braun***. Copula modeling of gene coexpression in single-cell RNA sequencing data. *Bioinformatics Advances*, Forthcoming, 2026.

[53] Bingxian Xu† and **Rosemary Braun***. VIST: Variational inference for single cell time series. *Genome Biology*, 27(9), 2026.

[52] Joseph I Bailey•, Connor H Puritz•†, Karolina J Senkow, Nikolay S Markov, Estefani Diaz, Emmy Jonasson, Zhan Yu, Suchitra Swaminathan, Ziyan Lu, Samuel Fenske, et al. Profibrotic monocyte-derived alveolar macrophages are expanded in patients with persistent respiratory symptoms and radiographic abnormalities after COVID-19. *Nature Immunology*, 25(11):2097–2109, 2024.

[51] Yuheng Fu†, Arpan Das, Dongmei Wang, **Rosemary Braun***, and Rui Yi*. Reconstruction of 3-dimensional tissue organization at the single-cell resolution. *Genome Biology*, 25(1):164, 2024.

[50] Yitong Huang† and **Rosemary Braun***. Platform-independent estimation of human physiological time from single blood samples. *Proceedings of the National Academy of Sciences*, 121(3):e2308114120, 2024.

[49] Bingxian Xu†, Dae-Sung Hwangbo, Sumit Saurabh, Clark Rosensweig, Ravi Allada, William Kath, and **Rosemary Braun**. Temperature-driven coordination of circadian transcriptome regulation. *PLoS Computational Biology*, 20(4):e1012029, 2024.

[48] Bingxian Xu† and **Rosemary Braun**. Detecting Rhythmic Gene Expression in Single Cell Transcriptomics. *J Biol Rhythms*, 39(6):581–593, 2024.

[47] Yitong Huang†, Yuanzhao Zhang, and **Rosemary Braun***. A minimal model of peripheral clocks reveals differential circadian re-entrainment in aging. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 33(9), 2023.

[46] Dae-Sung Hwangbo, Yong-Jae Kwon, Marta Iwanaszko†, Peng Jiang, Ladan Abbasi, Nicholas Wright, Sarayu Alli, Alan L Hutchison, Aaron Dinner, **Rosemary Braun**, and Ravi Allada. Dietary Restriction Impacts Peripheral Circadian Clock Output Important for Longevity in Drosophila. *eLife*, doi:10.7554/elife.86191.1, 2023.

[45] Minjee Kim, Francesca L Facco, **Rosemary Braun**, Michael S Wolf, Blas Garcia-Canga, William A Grobman, Phyllis C Zee, and Kathryn J Reid. The association between light exposure before bedtime in pregnancy and the risk of developing gestational diabetes mellitus. *American Journal of Obstetrics & Gynecology MFM*, 5(8), 2023.

[44] Prithvijit Mukherjee, Chian-Yu Peng, Tammy McGuire, Jin Wook Hwang, Connor H Puritz†, Nibir Pathak, Cesar A Patino, **Rosemary Braun**, John A Kessler, and Horacio D Espinosa. Single cell transcriptomics reveals reduced stress response in stem cells manipulated using localized electric fields. *Materials Today Bio*:100601, 2023.

[43] Connor Puritz†, Elan Ness-Cohn†, and **Rosemary Braun***. An Implementation of a Multidimensional KS Test in R. *R Journal*, 15(3), 2023.

[42] Kristin Johnson, Simon Freedman, **Rosemary Braun**, and Carole LaBonne. Quantitative Analysis of Transcriptome Dynamics Provides Novel Insights into Developmental State Transitions. *BMC Genomics*, 23(1):723, 2022.

[41] Minjee Kim, Thanh-Huyen Vu, Matthew B Maas, **Rosemary Braun**, Michael S Wolf, Till Roenneberg, Martha L Daviglus, Kathryn J Reid, and Phyllis C Zee. Light at night in older age is associated with obesity, diabetes, and hypertension. *Sleep*, 2022.

[40] Connor Puritz†, Elan Ness-Cohn†, and **Rosemary Braun***. Package 'fasano.franceschini.test'. *Comprehensive R Archive Network*, 2022.

[39] S Kendall Smith, Peter Tran, Katherine A Madden, Jill Boyd, **Rosemary Braun**, Erik S Musiek, and Yo-El S Ju. Validation of Blood-Based Transcriptomic Circadian Phenotyping in Older Adults. *Sleep*:zsac148, 2022.

[38] Daniela Grimaldi, Kathryn J Reid, Nelly A Papalambros, **Rosemary Braun**, Roneil G Malkani, Sabra M Abbott, Jason C Ong, and Phyllis C Zee. Autonomic dysregulation and sleep homeostasis in insomnia. *Sleep*, 44(6):zsaa274, 2021.

[37] Minjee Kim, Eric M Liotta, Matthew B Maas, **Rosemary Braun**, Blas Garcia-Canga, Daniel R Ganger, Daniela P Ladner, Kathryn J Reid, and Phyllis C Zee. Rest-activity rhythm disturbance in liver cirrhosis and association with cognitive impairment. *Sleep*, 44(6):zsaa288, 2021.

[36] Minjee Kim, Kathryn Reid, Matthew Maas, Thanh-Huyen Vu, **Rosemary Braun**, Martha Daviglus, and Phyllis Zee. Greater Light Exposure Is Associated with More Robust Rest-Activity Rhythms in Community-Dwelling Older Adults. *Sleep*, 44(Supplement_2):A67–A67, 2021.

[35] Elan Ness-Cohn†, Ravi Allada, and **Rosemary Braun***. Comment on "Circadian rhythms in the absence of the clock gene Bmal1". *Science*, 372(6539), 2021.

[34] Elan Ness-Cohn† and **Rosemary Braun***. TimeCycle: topology inspired method for the detection of cycling transcripts in circadian time-series data. *Bioinformatics*, 37(23):4405–4413, 2021.

[33] Daniel C Levine, Heekyung Hong, Benjamin J Weidemann, Kathryn M Ramsey, Alison H Affinati, Mark S Schmidt, Jonathan Cedernaes, Chiaki Omura, **Rosemary Braun**, Choogon Lee, et al. NAD+ controls circadian reprogramming through PER2 nuclear translocation to counter aging. *Molecular Cell*, 2020.

[32] Matthew B Maas, Marta Iwanaszko†, Brian D Lizza, Kathryn J Reid, **Rosemary Braun**, and Phyllis C Zee. Circadian Gene Expression Rhythms during Critical Illness. *Critical Care Medicine*, 48(12):e1294–e1299, 2020.

[31] Elan Ness-Cohn†, Marta Iwanaszko†, William L Kath, Ravi Allada, and **Rosemary Braun***. TimeTrial: An Interactive Application for Optimizing the Design and Analysis of Transcriptomic Times-Series Data in Circadian Biology Research. *J Biol Rhythms*, 35:439–451, 5 2020.

[30] Daniela Grimaldi, Nelly A Papalambros, Kathryn J Reid, Sabra M Abbott, Roneil G Malkani, Maged Gendy, Marta Iwanaszko†, **Rosemary Braun**, Daniel J Sanchez, Ken A Paller, et al. Strengthening sleep-autonomic interaction via acoustic enhancement of slow oscillations. *Sleep*, 2019.

[29] **Rosemary Braun***, William L Kath, Marta Iwanaszko†, Elzbieta Kula-Eversole, Sabra M Abbott, Kathryn J Reid, Phyllis C Zee, and Ravi Allada. Reply to Laing et al.: Accurate prediction of circadian time across platforms. *Proceedings of the National Academy of Sciences*, 116(12):5206–5208, 2019.

[28] Sahil D Shah† and **Rosemary Braun***. GeneSurrounder: network-based identification of disease genes in expression data. *BMC Bioinformatics*, 20:229, 2019.

[27] Tomasz Wojdyla, Hrishikesh Mehta, Taly Glaubach, Roberto Bertolusso, Marta Iwanaszko†, **Rosemary Braun**, Seth J Corey, and Marek Kimmel. Mutation, drift and selection in single-driver hematologic malignancy: Example of secondary myelodysplastic syndrome following treatment of inherited neutropenia. *PLoS Computational Biology*, 15(1):e1006664, 2019.

[26] Sara M Clifton, **Rosemary Braun**, and Daniel M Abrams. Next steps for modelling the evolution of ornamental signals. *Animal Behaviour*, 2018.

[25] Patryk Janus, Katarzyna Szołtysek, Gracjana Zając, Tomasz Stokowy, Anna Walaszczyk, Wiesława Widłak, Bartosz Wojtaś, Bartłomiej Gielniewski, Marta Iwanaszko†, **Rosemary Braun**, et al. Pro-inflammatory cytokine and high doses of ionizing radiation have similar effects on the expression of NF-kappaB-dependent genes. *Cellular Signalling*, 46:23–31, 2018.

[24] Phan Nguyen† and **Rosemary Braun***. Time-lagged Ordered Lasso for network inference. *BMC Bioinformatics*, 19(1):545, 2018.

[23] NA Papalambros, D Grimaldi, KJ Reid, SM Abbott, RG Malkani, G Santostasi, M Gendy, A Ritger, **Rosemary Braun**, D Sanchez, et al. Acoustically Induced Changes In Sleep Spindle And Autonomic Activity Predict Memory Consolidation. *Sleep*, 41(suppl_1):A34–A34, 2018.

[22] **Rosemary Braun***, William L Kath, Marta Iwanaszko†, Elzbieta Kula-Eversole, Sabra M Abbott, Kathryn J Reid, Phyllis C Zee, and Ravi Allada. Universal method for robust detection of circadian state from gene expression. *Proceedings of the National Academy of Sciences*, 115(39):E9247–E9256, 2018.

[21] Gary Wilk† and **Rosemary Braun***. regQTLs: Single nucleotide polymorphisms that modulate microRNA regulation of gene expression in tumors. *PLoS Genetics*, 14(12):e1007837, 2018.

[20] John Wilson IV, Kathryn J Reid, **Rosemary Braun**, Sabra M Abbott, and Phyllis C Zee. Habitual light exposure relative to circadian timing in delayed sleep-wake phase disorder. *Sleep*, 41(11):zsy166, 2018.

[19] Phan Nguyen† and **Rosemary Braun***. Semi-supervised network inference using simulated gene expression dynamics. *Bioinformatics*, 34(7):1148–1156, 2017.

[18] Nelly A Papalambros, Giovanni Santostasi, Roneil G Malkani, **Rosemary Braun**, Sandra Weintraub, Ken A Paller, and Phyllis C Zee. Acoustic enhancement of sleep slow oscillations and concomitant memory improvement in older adults. *Frontiers in Human Neuroscience*, 11:109, 2017.

[17] Gary Wilk† and **Rosemary Braun***. Integrative analysis reveals disrupted pathways regulated by microRNAs in cancer. *Nucleic Acids Research*, 46(3):1089–1101, 2017.

[16] Sara M Clifton, **Rosemary Braun**, and Daniel M Abrams. Handicap principle implies emergence of dimorphic ornaments. *Proceedings of the Royal Society B: Biological Sciences*, 283(1843):20161970, 2016.

[15] Michael Kennedy, Rebecca Daugherty, Cecilia Garibay, Camellia Sanford, Jennifer Koerner, Jennifer Lewin, and **Rosemary Braun**. Science Club: Bridging In-School and Out-of-School STEM Learning Through a Collaborative, Community-Based After-School Program. *Connected Science Learning*, 1(1), 2016.

[14] **Rosemary Braun***. Systems analysis of high-throughput data. *Advances in Experimental Medicine and Biology*, 844:153, 2014.

[13] Sahil Shah[†] and **Rosemary Braun***. Network Methods for Pathway Analysis of Gene Expression Data. *arXiv preprint arXiv:1411.1993*, 2014.

[12] Qing-Rong Chen, **Rosemary Braun**, Ying Hu, Chunhua Yan, Elizabeth M Brunt, Daoud Meerzaman, Arun J Sanyal, and Kenneth Buetow. Multi-SNP analysis of GWAS data identifies pathways associated with nonalcoholic fatty liver disease. *PloS One*, 8(7):e65982, 2013.

[11] **Rosemary Braun***, Richard Finney, Chunhua Yan, Ying Hu, Qing-Rong Chen, Michael Edmonson, Daoud Meerzaman, and Kenneth Buetow. Discovery analysis of TCGA Data Reveals Association Between Germline Genetic Variation and Survival in Ovarian Cancer Patients. *PLoS One*, 8(3):e0055037, 2013.

[10] **Rosemary Braun*** and Kenneth Buetow. Pathways of Distinction Analysis: a new technique for multi-SNP analysis of GWAS data. *PLoS Genetics*, 7(6):e1002101, 2011.

[9] **Rosemary Braun***, Greg Leibon, Scott Pauls, and Daniel Rockmore. Partition Decoupling for Multi-gene Analysis of Gene Expression Profiling Data. *BMC Bioinformatics*, 12(497), 2011.

[8] Ewy A. Mathé, Giang Huong Nguyen, Elise D. Bowman, Yiqiang Zhao, Anuradha Budhu, Aaron J. Schetter, **Rosemary Braun**, Mark Reimers, Kensuke Kumamoto, Duncan Hughes, Nasser K. Altorki, Alan G. Casson, Chang-Gong Liu, Xin Wei Wang, Nozomu Yanaihara, Nobutoshi Hagiwara, Andrew J. Dannenberg, Masao Miyashita, Carlo M. Croce, and Curtis C. Harris. MicroRNA expression in squamous cell carcinoma and adenocarcinoma of the esophagus: associations with survival. *Clinical Cancer Research*, 15:6192–6200, 2009.

[7] **Rosemary Braun***, William Rowe, Carl Schaefer, Jinghui Zhang, and Kenneth Buetow. Needles in the Haystack: Identifying Individuals Present in Pooled Genomic Data. *PLoS Genetics*, 5(10):e1000668, 2009.

[6] **Rosemary Braun***, Leslie Cope, and Giovanni Parmigiani. Identifying Differential Correlation in Gene/Pathway Combinations. *BMC Bioinformatics*, 9:488, 2008.

[5] Jordi Cohen, Anton Arkhipov, **Rosemary Braun**, and Klaus Schulten. Imaging the migration pathways for O_2, CO, NO, and Xe inside myoglobin. *Biophysical Journal*, 91:1844–1857, 2006.

[4] James C. Phillips, **Rosemary Braun**, Wei Wang, James Gumbart, Emad Tajkhorshid, Elizabeth Villa, Christophe Chipot, Robert D. Skeel, Laxmikant Kale, and Klaus Schulten. Scalable Molecular Dynamics with NAMD. *Journal of Computational Chemistry*, 26:1781–1802, 2005.

[3] **Rosemary Braun**, Donald M. Engelman, and Klaus Schulten. Molecular dynamics simulations of micelle formation around dimeric Glycophorin-A transmembrane helices. *Biophysical Journal*, 87:754–763, 2004.

[2] **Rosemary Braun**, Mehmet Sarikaya, and Klaus Schulten. Genetically Engineered Gold-Binding Polypeptides: Structure Prediction and Molecular Dynamics. *Journal of Biomaterials Science*, 13:747–758, 2002.

[1] Justin Gullingsrud, **Rosemary Braun**, and Klaus Schulten. Reconstructing Potentials of Mean Force Through Time Series Analysis of Steered Molecular Dynamics Simulations. *Journal of Computational Physics*, 151:190–211, 1999.

Patents

[1] **Rosemary Braun**, Ravi Allada, and Phyllis Zee. *Biomarkers of endogenous biological time*. U.S. Patent 11 328 790. 2022.

Preprints

[3] Bingxian Xu† and **Rosemary Braun***. Identification of Distinct Topological Structures From High-Dimensional Data. *bioRxiv*, doi:10.1101/2025.08.26.672446, 2025.

[2] Ziyu Zhao†, Dae-Sung Hwangbo, Sumit Saurabh, Clark Rosensweig, Ravi Allada, William L Kath, and **Rosemary Braun***. Modeling Transient Changes in Circadian Rhythms. *arXiv*:doi:10.48550/arXiv.2304.07412, 2023.

[1] Taichi Q Itoh, Evrim Yildirim, Satya Surabhi, **Rosemary Braun**, and Ravi Allada. period Translation as a Core Mechanism Controlling Temperature Compensation in an Animal Circadian Clock. *bioRxiv*, doi:10.1101/2022.02.21.481387, 2022.

Invited Talks (selected, restricted to last 5 years)

The Time-Traveler's Cells: Circadian Orchestration Between Cells and Across Tissues
UPenn Chronobiology and Sleep Institute — Philadelphia, PA, 2025

Life's Manifold Paths: discovering complexity and emergent simplicity in high-dimensional data
Complex Systems Society Conference (invited) — Siena, Italy, 2025

The Time–Traveller's Cells
Chronobiology GRC (invited) — Barcelona, Spain, 2025

Complexity and Emergent Regularity in Living Systems
Northwestern Institute on Complex Systems (NICO) Seminar — Evanston, IL, 2025

Complexity and Emergent Regularity in Living Systems
Santa Fe Institute — Santa Fe, NM, 2025

Keeping accurate time in a fluctuating world
Simons Foundation — New York, 2025

It's about time: quantifying dynamics in sparse, noisy, high–dimensional data
University of New South Wales Dept of Mathematics — Australia/virtual, 2025

A tale of many clocks: integrating multiple measures of circadian function
Advances in Sleep and Circadian Science, invited — Florida, 2025

A Perspective on Biological Physics
APS Conference for Undergraduate Women and Gender Minorities in Physics, invited — Fermilab, 2025

About Time: Quantifying Transient Dynamics in Oscillatory High-Dimensional Systems
Society for Mathematical Biology (invited) — Seoul, Korea, 2024

Invited panelist: "Circadian biomarkers and digital health: where are we and what do we need?"
Society for Research on Biological Rhythms (SRBR) — San Juan, Puerto Rico, 2024

Big Data Approaches for Novel Mechanistic Insights on Disorders of Sleep and Circadian Rhythms
National Heart, Lung, and Blood Institute (NHLBI), NIH — Washington DC/virtual, 2024

(Machine) Learning to Tell The Time: Integrating molecular and wearable device data to model circadian rhythms
UCLA Psychology Seminar — Los Angeles, CA, 2023

Interdisciplinary Training at the Math/Bio Interface
National Academies of Science, Engineering, and Mathematics; Board on Mathematical Sciences and Analytics (invited) — Irvine, CA, 2023

What Matters in Life? The search for meaningful collective variables in high-dimensional data
Santa Fe Institute — Santa Fe, NM, 2023

The Circadian Data Deluge: Challenges and Opportunities
Advances in Sleep and Circadian Science, invited — Florida, 2023

Statistics Colloquium
University of Copenhagen — Copenhagen, 2023

Biomedical Mathematics Colloquium
Institute for Basic Science (IBS-BIMAG), Korea — Korea/virtual, 2022

Toward a network understanding of circadian gene regulation
Society for Research on Biological Rhythms (SRBR), invited — Florida, 2022

NBIA Colloquium
Niels Bohr Institute — Copenhagen, 2022

Theoretical and Computational Biophysics Seminar
University of Illinois at Urbana-Champaign — Urbana, IL, 2021

Time Flies: Circadian Regulation in Drosophila
TSRC Workshop on Emergent Simplicity in Biophysical Dynamics — Telluride, 2021

Grants (reverse chronological by end date)

NIH/NIA 1R01AG081520
Noradrenergic Dysregulation, Sleep and Cognition in Older Adults with Insomnia (Zee)
Role: co-I — 2024-2029

NIH/NHLBI 1P01HL169188
Integrated mechanisms of primary and chronic graft dysfunction following lung transplantation (Bharat)
Role: co-I — 2024-2029

NSF 2235451 & Simons Fnd MP-TMPS-00005320
NSF-Simons National Institute for Theory and Mathematics in Biology (Carthew)
Role: **co-PD/PI** — 2023-2028

NITMB Project Grant
Keeping Growing Clocks in Sync (Braun)
Role: **PI** — 2024-2025

NSF 2217317
Integrative Wildlife Nutrition: From Molecules and Microbes to Macro-Ecology (Amato)
Role: **co-PD/PI** — 2022-2025

NSF 2150134
REU Site: Quantitative Biology at Northwestern University (Braun)
Role: **PI** — 2022-2025

NIH/NIA 1R01AG068579-01
Reconstructing the Temporal Landscape of Gene Regulation in Aging (Braun)
Role: **PI** — 2020-2025

NIH/NHLBI 1R01HL158139-01A1
Targeting abnormal alveolar immune activation and failed epithelial repair in COVID-19 (Misharin)
Role: co-I — 2022-2025

NIH/NHLBI 1R01HL153312-01
Lung Transplant Injury Drives Chronic Lung Allograft Dysfunction via Recruitment of Monocyte-derived Alveolar Macrophages (Misharin)
Role: co-I — 2020-2024

NSF 1764421-01 / SFAR 597491-RWC01
NSF-Simons Center for Quantitative Biology at Northwestern University (Carthew)
Role: co-I & **Project leader** ("Environmental Cycles") — 2018–2023

NIH/NIA 2P01AG011412-18A1
Alterations of Sleep In Circadian Timing in Aging (Zee)
Role: co-I — 2017–2022

NIH/NHLBI 1R01HL140580
Strengthening Circadian Signals To Enhance Cardiometabolic Function (Zee)

Role: co-I 2017–2022

James S McDonnell Fnd - Complex Systems Scholar Award 220020394
Modeling Biocomplexity: from molecular interactions to population genetics (Braun)
Role: **PI** 2015–2021

NIH/NHLBI 1R01HL128173-01
Multiscale Modeling of Myelodysplastic Syndromes (Corey)
Role: **Site PI** 2015–2018

DARPA D15AP00027
Modeling Neuroscience for enhancing Memory Operations through Non-Invasive Channels (MNEMONIC) (Paller)
Role: co-I 2016–2018

Northwestern University Data Science Initiative
Modeling Complex Cancer Mechanisms through Integrative Analyses of Omic Data
Role: PI 2017–2018

DARPA D15AP00027
Biochronicity Grand Challenge: Human Time Stamp Development, Validation and Prediction (Allada)
Role: co-I 2015–2017

Northwestern University Data Science Initiative
Enabling Precision Medicine via Integrative Network Analysis of LINCS Data (Braun)
Role: PI 2016

Northwestern University Data Science Initiative
Elucidating the interplay of genetics and miRNA expression in cancer systems biology: model building and validation (Braun)
Role: PI 2016

NIH/NCI K22CA148779
Novel Pathway Analysis Methods for Identifying Genomic Causes of Cancer (Braun)
Role: **PI** (*non*-mentored K22) 2012–2015

NIH/NCI CPFP
Cancer Prevention Postdoctoral Fellowship (Braun)
Role: PI 2005–2009

Awards and Media Coverage

Awards

Teacher of the Year, Program in Public Health, Northwestern University 2019
Teaching Excellence Award, Program in Public Health, Northwestern University 2018
Dean's Teaching Award, Feinberg School of Medicine, Northwestern University 2017
Spotlight Talk, q-Bio Conference on Cellular Information Processing 2012
Poster Award, 12th International MGED Meeting 2009
Fellows Award for Research Excellence, National Institutes of Health 2009

Media Coverage and Appearances (selected)

Selected international media coverage of *Universal method for robust detection of circadian state from gene expression* (PNAS 2018): 2018
Scientific American [link]
Wired [link]
Popular Science [link]
Smithsonian [link]
Chicago Tribune [link]
Newsweek [link]

San Francisco Chronicle [link]
WebMD [link]
Canadian Broadcasting Corporation (print) [link]
Voice of America (print) [link]
NBC 5 Chicago (TV) [link]
ABC News (TV)[link]
CBC Radio 1, 3:45 Central time on Thu 13 Sept 2018 (link?)
BBC / Naked Scientist podcast [link]
AAAS/NPR Science Update [link]
Agence France-Presse [link]

Selected international media coverage of *A minimal model of peripheral clocks reveals differential circadian re-entrainment in aging.* (Chaos 2023): 2023
Washington Post [link]
BBC Science Focus [link]
Newsweek [link]
NY Post [link]
Daily Mail [UK] [link]
Telegraph [UK] [link]
AP [link]

Selected international media coverage of *Platform-independent estimation of human physiological time from single blood samples.* (PNAS 2024): 2024
News-Medical.Net [link]

Podcasts, Radio, and other media appearances
Too Lazy to Read the Paper podcast, 23 July 2022. [link]
Mindscape podcast, 25 Sept 2023. [link]
Big Biology podcast, 7 Mar 2024. [link]
Unexpected Elements, ***BBC World Service***, 11 July 2024. [link]
Ideas Afternoon, ***CBC Radio***, 3 Sept 2024. [link]
A disorganized life about living self-organization, ***Living Histories podcast***, 21 May 2025. [link]

Instruction and Educational Leadership

Courses developed/taught at Northwestern

IBIS455: Special Topics: Combatting Scientific Misinformation*	2024
BIO338/IBIS478: Modeling Biological Dynamics*	2022–date
EB306: Introduction to R Programming*	2017–2020
EB403: Statistical Inference (Graduate mathematical statistics)	2016–2020
IGP484: Quantitative Biology: Statistics and Data Analysis for the Life Sciences*	2016–2020

* new course developed; course numbers $\geq$ 400 denote graduate courses

Educational leadership at Northwestern

Associate Director for Education and Outreach,	
National Institute for Theory and Mathematics in Biology	2023–date
Director, Statistical Bioinformatics Concentration, MS Biostatistics Program	2017–2020

q-Bio Summer School

co-Director, Cancer Dynamics Track	2016–date
Invited instructor	2013–date

RusNANO and Skolkovo Technical Institute, Moscow, Russia
co-Director & Instructor, Genomic Data Analysis Summer School 2012

Cold Spring Harbor Laboratory
Statistical Analysis of Genome Scale Data Summer School 2012

Foundation for Advanced Education in the Sciences Graduate School, NIH

Calculus 2009–2011
Computational Biophysics Workshop 2007

Research Supervision

PhD Students

Paul Ge (Applied Mathematics) current
Maximillian Mattessich (Applied Mathematics) current
Eliza Duvall (Integrated Biological Sciences) PhD, 2026
Co-expression Network Generation and Analysis in Systems Biology Research
Connor Puritz (Applied Mathematics) PhD, 2025
Testing and Modeling Dependencies in High-Dimensional Data with Applications to Single-Cell RNA Sequencing
Nikolai Markov (Driskill Graduate Program in Life Sciences; co-advised with A.Misharin) PhD, 2025
Alveolar Immune Dynamics and Clinical Outcomes in Severe Pneumonia: A Multi-Modal Analysis of Pathogen-Specific Responses and Treatment Success
Yuheng 'Cady' Fu (Driskill Graduate Program in Life Sciences; co-advised with Rui Yi) PhD, 2025
A Spatiotemporal Atlas of the Skin: Computational Integration of Single-Cell and Spatial Transcriptomics
Bingxian Xu (Integrated Biological Sciences) PhD, 2025
Statistical and network analysis of circadian transcriptomic time series
(now Postdoc, Harvard)
Ziyu Zhao (Applied Mathematics) PhD, 2024
Modeling Transient Changes in Circadian Oscillation of Drosophila Melanogaster Due to a Temperature Step Change
Elan Ness-Cohn (Driskill Graduate Program in Life Sciences) PhD, 2022
Topology Inspired Methods for the Design and Analysis of Transcriptomic Time-Series Data in Circadian Biology Research
(now Postdoc, Chicago Biomedical Consortium)
Sahil D. Shah (Applied Mathematics) PhD, 2019
Statistical Methods for the Network–Based Analysis of Genomic Data
(now Machine Learning Engineer, Condé Nast)
Phan Nguyen (Applied Mathematics) PhD, 2018
Methods for Inferring Gene Regulatory Networks from Time Series Expression Data
(now Research Scientist, Lawrence Livermore National Laboratory)
Gary Wilk (Chemical and Biological Engineering) PhD, 2018
microRNA Regulation of Genes with Genetic Variation and their Systems-level Consequences in Cancer
(now Data Scientist, Central Intelligence Agency)

Masters Theses

Yue Wu (Quantitative & Systems Biology) MS, 2025
Mordechai Walder (Quantitative & Systems Biology) MS, 2021
Nish Trivedi (Biotechnology) MS, 2021
Sook-Won Jee (Biotechnology) MS, 2021
Hye Soo Cho (Biostatistics) MS, 2020
Qinnan Zhu (Biostatistics) MS, 2019
Megan McCabe (Biostatistics) MS, 2019
Quan Mai (Biostatistics) MS, 2015

Undergraduate research students

Nick Dommert current
Ginny Ghang (UCLA) 2024
Palak Shah 2023-2024
May Nguyen BS, Statistics, 2022

Postdocs

Sneha Kachhara	2022–2025
(now postdoc, Exeter UK)	
Yitong (Pepper) Huang	2021–2024
(now Assistant Professor, Dept of Mathematics, Smith College)	
Marta Iwanaszko	2015–2019
(now Assistant Professor, Feinberg School of Medicine, Northwestern)	

Service

Manuscript Review (alphabetical by journal)

Bioinformatics; Current Bioinformatics; IEEE/ACM Transactions on Computational Biology and Bioinformatics; Journal of the American Chemical Society (JACS); Journal of the American Medical Association (JAMA); Journal of Biological Rhythmns; Journal of Theoretical Biology; Langmuir; Nucleic Acids Research; PLoS Genetics; PLoS One; Sleep; Source Code for Biology and Medicine

Grant Review (US and international)

Inserm, France (French equivalent of NIH	2024, 2025
NIH Modeling and Analysis of Biological Systems Study Section [MABS]	*standing*, 2023–date
	ad-hoc, 2018–2022
NIH Informatics SBIR Study Section	ad-hoc, 2014–2018
Erwin Schrödinger Fellowship, Austrian Science Fund	ad hoc, 2012–2014
CORE Programme, Luxembourg National Research Fund	ad hoc, 2018–2019

Editorial Responsibilities

Journal of Biological Rhythms	2023–date
Scientific Reports	2012–2018
NIH Fellows' Editorial Board	2007–2008

Institutional Committee Service

Associate Director for Education and Outreach, NITMB	2024–date
Committee on Tenure, Weinberg College of Arts & Sciences (Northwestern)	2024–2026
Faculty Search Committee, Mathematics, Northwestern	2024-2025
Ad-Hoc Tenure Committee, Weinberg College of Arts & Sciences (Northwestern)	2023
Faculty Search Committee, Chemical and Biological Engineering, Northwestern	2022-2023
Leadership Council, Northwestern Center for Quantitative Biology	2021–2023
Faculty Search Committee, Molecular Biosciences, Northwestern	2021-2022
Advisory Board, Northwestern Institute on Complex Systems	2018–date
Biophysics/Complex Systems Faculty Search Ctte, Physics and Astronomy, Northwestern	2018
Executive Committee, Northwestern Institute on Complex Systems	2014–date
PhD Program Launch Committee, Biostatistics, Northwestern	2013; 2017–2020
Biophysics/Complex Systems Faculty Search Ctte, Physics and Astronomy, Northwestern	2016
Scientific Review Committee (SRC), Robert H. Lurie Cancer Center	2013

Outreach

Science Club (science outreach to 6-8 grade CPS students), Science and Society	
Role: statistical evaluation of after-school program efficacy	2015–date
WESAM (Women in Engineering Sciences & Applied Mathematics) faculty advisor	ongoing
Hobart Women's College, Faculty Fellow	2023–date