

TRAVIS WHEELER
CURRICULUM VITAE

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Department of Pharmacy Practice & Science
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<http://www.wheelerlab.org>

RESEARCH INTERESTS

My research group designs algorithms, statistical methods, and software solutions for problems motivated by biological data. We are particularly focused on the annotation of biological sequences and the accompanying problem of searching for similar sequences within large-scale biological sequence databases, but our work also addresses transposable elements, soil microbiomes, drug discovery, natural language processing, and animal tracking and behavior classification. Projects in our group range from statistical modeling, to indexing and search algorithms, to low-level software optimization, to FPGAs, to deep neural networks, to web services.

PROFESSIONAL EXPERIENCE

Associate Professor, Department of Pharmacy Practice & Science, University of Arizona	2022 – current
Associate Professor, Department of Computer Science, University of Montana	2019 – 2022
Assistant Professor, Department of Computer Science, University of Montana	2014 – 2019
Senior Research Scientist, HHMI Janelia Research Campus	2011 – 2014
Postdoctoral Associate, HHMI Janelia Research Campus (Sean Eddy)	2009 – 2011
Tree of Life Web Project (tolweb.org ; Lead Architect and Developer)	2000 – 2003
Intuit, Inc.	1995 – 2000

EDUCATION

Ph.D. Computer Science, University of Arizona, Tucson	2009
Efficient construction of accurate multiple alignments and large-scale phylogenies	
Advisors: John Kececioglu (Computer Science)	
Mike Sanderson (Evolutionary Biology)	
Minor in Evolutionary Biology	
Minor Advisor: David Maddison (Evolutionary Biology)	
M. S. Computer Science, University of Arizona, Tucson	2006
Advisor: John Kececioglu	
B. A. Ecology and Evolutionary Biology, University of Arizona, Tucson	1995
Minors in Anthropology and English	
Cum Laude, Phi Beta Kappa	

PUBLICATIONS / SOFTWARE, WEBSITES, AND DATABASES

See listings at: <http://wheelerlab.org/scholar>

FUNDING

Current

UA BIO5 Rapid Grant – “Building an open repository for protein/drug molecular dynamics simulations and associated analyses” (with Tyson Swetnam as co-I). \$50K direct.	Jan 2023 – Jul 2023
NIH R01 subaward – “EmCAST: Stabilizing Proteins and Tuning Dynamics with High Precision and Accuracy” (PI: Bruce Bowler) Total \$800K direct; Wheeler lab: \$65K direct. (R01GM148610)	Nov 2022 – Oct 2027
NIH Subaward through AllofUs – “Discovery of Immunogenomic Associations with Disease and Differential Risk Across Diverse	Oct 2022 – Dec 2023

Populations” (with Jason Karnes as co-I). \$50K direct.	
NIH R21 – “Building Knowledge About Alternatively-spliced Dual-Coding Exons”. \$275K direct. (R21HG012283)	Jul 2022 – Jun 2024
NIH R01 – “Development and Maintenance of RepeatMasker and RepeatModeler” (Multi-PI with Arian Smit and Robert Hubley at ISB) Total \$2.1M direct; Wheeler lab: \$490K direct. (R01HG002939)	Apr 2022 – Dec 2026
NIH R01 supplement – Role of Glucose metabolism in Chondrocyte Mechanotransduction (PI = Ron June, Montana State University) Total \$150K direct; Wheeler lab: \$75K direct. (R01AR073964)	Oct 2021 – Sep 2022
DOE BER – “Machine learning approaches for integrating multi-omics data to expand microbiome annotation”. (Joint with Jason McDermott at PNNL) Total \$1.05M; Wheeler lab: \$735K direct. (DE-SC0021216)	Sep 2020 – Aug 2023
NIH R01 – “Machine learning approaches for improved accuracy and speed in sequence annotation”. \$950K direct. (R01GM132600)	Nov 2019 – Oct 2023
NIH U24 – “Dfam: sustainable growth, curation support, and improved quality for mobile element annotation” (Multi-PI with Arian Smit and Robert Hubley at ISB). Total \$1.9M direct; Wheeler lab: \$450K direct. (U24HG010136)	Jul 2018 – Jun 2023
<u>Pending</u>	
FDA CERSI (subaward) – “Deep Learning Strategies to Improve Prediction of Off-target Drug Interactions”. \$2.75M direct.	Sept 2023 – Aug 2028
NSF – “IRES Track II: Cross-disciplinary Computational Biology Training” (Multi-PI with Travis Hughes and Amitava Roy). Total \$265K direct.	Sept 2023 – Aug 2026
NIH U24 – “Dfam: sustainable growth, curation support, and improved quality for mobile element annotation”. (Multi-PI with Arian Smit and Robert Hubley at ISB) Total \$3.78M direct; Wheeler lab: \$375K direct. (U24HG010136)	Jul 2023 – Jun 2028

TEACHING

Computational Biology
 Data Structures and Algorithms
 Analysis of Algorithms
 Advanced Algorithms and Theory
 Computational Medicine
 Parallel Computing
 Introduction to Computer Science
 Introductory Computing for Biologists

SERVICE

CompBioAsia workshop – organizing committee, lead instructor	2022, 2023
NIH/DOE Peta-scale Computing Workshop and code-a-thon series – team lead	2021 – present
Dean’s Advisory Board – College of Humanities and Sciences, U. Montana.	2020 – 2021
Graduate Program Coordinator, Dept of Computer Science, U. Montana.	2018 – 2021
Assistant Chair, Dept of Computer Science, U. Montana.	2016 – 2018
UM General Education Committee, member	2016 – 2018
Reviewer: AICoB, ACM-BCB, Bioinformatics, BMC Bioinformatics, Database, Frontiers in Bioinformatics, GLBIO, IEEE-TCBB, MBE, Patterns, PLoS One, PLoS CompBio, Science. Grants: NSF, NIH, DOE, USGS, Genome Atlantic.	2011 – present