

**TRAVIS WHEELER**  
**CURRICULUM VITAE**  
(updated May 2023)

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**Department of Pharmacy Practice & Science**  
**University of Arizona**  
**Tucson, AZ**

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**<http://www.wheelerlab.org>**

### **RESEARCH INTERESTS**

I have more than 25 years experience in research and software development. I currently mentor a group of 22 researchers in the College of Pharmacy at the University of Arizona, ranging from bioinformaticians to software engineers and machine learning scientists, and from undergraduates to senior research staff. We design algorithms, statistical models and machine-learning methods for problems motivated by biological data; because methods are only as valuable as the software that implements them, we release well-tested software tools and develop workflows, containerized systems, and web services to share associated tools and results.

My group's long-standing research focus has been on annotation of biological sequences and accompanying problems in analysis of genome/protein sequences. In recent years, we have increasingly invested energy in projects tied to developing advanced Machine Learning strategies for genomics, virtual drug screening, and animal tracking and behavior classification. We are particularly driven by problems involving highly accurate analysis of massive scale data (e.g. billions of drug candidates, or petabytes of genome or molecular dynamics data).

### **PROFESSIONAL EXPERIENCE**

Director, Health Sciences Bioinformatics Research Group	2023 – current
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 ( <a href="http://tolweb.org">tolweb.org</a> ; 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 Populations” (with Jason Karnes as co-I). \$50K direct.	Oct 2022 – Dec 2023
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

Pending

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) (Impact score: 15; funding imminent)	Jul 2023 – Jun 2028
FDA CERSI (subaward) – “Deep Learning Strategies to Improve Prediction of Off-target Drug Interactions”. \$2.75M direct.	Sept 2023 – Aug 2028
DOE – “Probabilistic and Machine Learning models for improved analysis of community competence and extra-prokaryotic components in microbiomes”. \$688K direct.	Sept 2023 – Aug 2026

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**

TE Hub – director	2022 – present
CompbioAsia workshop – organizing committee, lead instructor	2022 – present
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