Alex H. Wagner, PhD

Contact Information

480-ALEX-PHD
awagner@genome.wustl.edu

Research Interests

Bioinformatics, Cancer Genomics, Machine Learning

Research Experience

Postdoctoral Research Associate January 2015 to Present

McDonnell Genome Institute,
Washington University School of Medicine
Saint Louis, MO
Advisors:
Obi L. Griffith, PhD
Ramaswamy Govindan, MD

Graduate Research Assistant August 2010 to December 2014

Coordinated Laboratory for Computational Genomics,
University of Iowa College of Engineering
Iowa City, IA
Advisors:
Terry A. Braun, PhD
Edwin M. Stone, MD, PhD

Clinical Laboratory Technologist July 2008 to July 2010

Department of Laboratory Medicine and Pathology,
Mayo Clinic, Rochester, MN
Supervisors:
Dianna Bowden
Thomas P. Moyer, PhD

Biological Laboratory Aide Jan 2007 to Sep 2007

USDA Agricultural Research Service,
Iowa State University, Ames, IA
Supervisor: David Grant, PhD

Education

University of Iowa, Iowa City, IA

PhD, Computational Genetics, December 2014

- Thesis Topic: *Computational Methods for Identification of Disease-Associated Variations in Exome Sequencing*
- Advisors: Terry A. Braun, PhD and Edwin M. Stone, MD, PhD
- GPA: 3.90

Graduate Certificate, Bioinformatics, May 2013

- Advisor: Terry A. Braun, PhD
- GPA: 3.96

Iowa State University, Ames, IA
BS, Biology, May 2008
- Minor in Mathematics
- *Cum Laude*
- GPA: 3.51

Extracurricular Education
High Performance Computing, Gregory Howes, Iowa, Summer 2012
Machine Learning, Andrew Ng, Stanford (Online), Fall 2011
Intro to Databases, Jennifer Widom, Stanford (Online), Fall 2011

Bibliography

1. K Cotto[†], **AH Wagner**[†], YY Feng, S Kiwala, AC Coffman, G Spies, A Wollam, NC Spies, OL Griffith, M Griffith (2017) "DGIdb 3.0: a redesign and expansion of the drug-gene interaction database.". *Nucleic Acids Research*. doi: 10.1093/nar/gkx1143.

2. M Griffith, NC Spies, K Krysiak, JF McMichael, AC Coffman, AM Danos, BJ Ainscough, CA Ramirez, DT Rieke, L Kujan, EK Barnell, **AH Wagner**, ..., OL Griffith (2017) "CIViC is a community knowledgebase for expert crowdsourcing the clinical interpretation of variants in cancer". *Nature Genetics*. doi: 10.1038/ng.3774.

3. BJ Ainscough, M Griffith, AC Coffman, **AH Wagner**, J Kunisaki, MNK Choudhary, JF McMichael, RS Fulton, RK Wilson, OL Griffith, ER Mardis (2016) "DoCM: a database of curated mutations in cancer". *Nature methods*. doi: 10.1038/nmeth.4000.

4. M Griffith, OL Griffith, K Krysiak, ZL Skidmore, MJ Christopher, JM Klco, A Ramu, TL Lamprecht, **AH Wagner**, ..., TJ Ley (2016) "Comprehensive genomic analysis reveals FLT3 activation and a therapeutic strategy for a patient with relapsed adult B-lymphoblastic leukemia". *Experimental hematology*. doi: 10.1016/j.exphem.2016.04.011.

5. ZL Skidmore, **AH Wagner**, R Lesurf, KM Campbell, J Kunisaki, OL Griffith, M Griffith (2016) "GenVisR: Genomic Visualizations in R". *Bioinformatics*. doi: 10.1093/bioinformatics/btw325.

6. **AH Wagner**, AC Coffman, BJ Ainscough, NC Spies, ZL Skidmore, KM Campbell, K Krysiak, D Pan, JF McMichael, JM Eldred, JR Walker, RK Wilson, ER Mardis, M Griffith*, OL Griffith* (2016) "DGIdb 2.0: mining clinically relevant drug?gene interactions". *Nucleic Acids Research*. doi: 10.1093/nar/gkv1165.

7. SS Whitmore, **AH Wagner**, AP DeLuca, AV Drack, EM Stone, BA Tucker, S Zeng, TA Braun, RF Mullins, TE Scheetz (2014) "Transcriptomic analysis across nasal, temporal, and macular regions of human neural retina and RPE/choroid by RNA-Seq". *Experimental Eye Research*. doi:10.1016/j.exer.2014.11.001

8. TP Sharma, CM McDowell, Y Liu, **AH Wagner**, D Thole, BP Faga, RJ Workinger, TA Braun, AF Clark (2014) "Optic nerve crush induces spatial and temporal gene expression patterns in retina and optic nerve of BALB/cJ mice". *Molecular Neurodegeneration*. doi: 10.1186/1750-1326-9-14

9. TA Braun, RF Mullins, **AH Wagner**, J Andorf, R Johnston, B Bakall, AP DeLuca, G Fisherman, R Weleber, A Cideciyan, S Jacobson, V Sheffield, B Tucker, EM Stone (2013) "Non-exomic and synonymous variants in ABCA4 are an important cause of Stargardt disease". *Human Molecular Genetics*. doi: 10.1093/hmg/ddt367

10. **AH Wagner**, KR Taylor, AP DeLuca, TL Casavant, RF Mullins, EM Stone, TE Scheetz, TA Braun (2013), "Prioritization of Retinal Disease Genes: An Integrative Approach." *Human Mutation*. doi: 10.1002/humu.22317

11. **AH Wagner**, VN Anand, W Wang, JE Chatterton, D Sun, AR Shepard, N Jacobson, L Pang, AP DeLuca, TL Casavant, TE Scheetz, RF Mullins, TA Braun, AF Clark (2013) "Exon-level expression profiling of ocular tissues". *Experimental Eye Research*. doi: 10.1016/j.exer.2013.03.004

12. AP DeLuca, **AH Wagner**, KR Taylor, B Faga, D Thole, VC Sheffield, EM Stone, TL Casavant, TE Scheetz, TA Braun (December 2011) "Sequencing and disease variation detection tools and techniques". *9th IEEE/ACS International Conference on Computer Systems and Applications (AICCSA)*. doi: 10.1109/AICCSA.2011.6126607

[†]Denotes Co-First Authorship

Funding

Training Awards

- *NCI F32 Postdoctoral Fellowship* 2017–present
- *NCI T32 Postdoctoral Training in Cancer Biology* 2016–2017
- *NIGMS T32 Predoctoral Training Grant in Genetics* 2013–2014
- *NIGMS T32 Predoctoral Training Grant in Bioinformatics* 2011–2013
  - Consecutive annual awards granted for 2011-2012 and 2012-2013.

Travel Awards

- *NSF Travel Grant, ISMB 2013* July 2013
- *Graduate Student Senate Travel Grant, ARVO 2013* May 2013

Merit

Research Awards

- *ICTS Precision Medicine Abstract Award* January 16, 2018
  - Precision Medicine Symposium, Institute of Clinical and Translational Science, Washington University in Saint Louis
  - The most outstanding research was selected from more than 75 applicants to present to Eric Green, the director of the National Human Genome Research Institute (NHGRI).
- *D.C. Spriestersbach Dissertation Prize* 2015
  - Genetics Program Nomination
  - This biennial award recognizes excellence in doctoral research. Each of the twenty biological/life sciences programs at the University of Iowa nominates one dissertation submitted between July 1, 2013 and June 30, 2015 to compete for the award.
- *Outstanding Student Research Award* 2012–2013
  - This annual award recognizes a single student in the College of Engineering for exemplary research in the fields of bioinformatics and computational biology.

Oral Presentation Awards

- Annual Bioinformatics Retreat, University of Iowa August 16, 2013
  - *Best Student Talk*
- Midwest Eye Research Symposium July 6, 2012
  - *Outstanding Oral Presentation*, 2nd Place

Poster Presentation Awards

- Interdisciplinary Health Research Poster Session April 23, 2013
  - *Best Poster Award*, Center on Aging

Presentations

External Presentations

- Curating the Clinical Genome, Hinxton, UK June 2016
  The Drug Gene Interaction Database
- AGBT Annual Conference, Orlando, FL February 2016
  The Drug Gene Interaction Database
- ISMB Annual Conference, Berlin, Germany July 2013
  Positive and Unlabeled Learning for Prioritization (PULP)
- ARVO Annual Conference, Seattle, WA May 2013
  Positive and Unlabeled Learning for Prioritizing Candidate Variants in Retinal Degenerative Diseases
- BICB Industry Symposium, Minneapolis, MN May 2013
  Positive and Unlabeled Learning for Prioritizing Candidate Variants in Retinal Degenerative Diseases
- ARVO Annual Conference, Ft. Lauderdale, FL May 2012
  RNA Sequencing for Identification of Genetic Factors in Retinal Disease
- Joint Bioinformatics Retreat, Ames, IA Aug 2011
  Using RNA Sequencing To Identify And Isolate Causative Genetic Factors In Retinal Disease

Washington University in Saint Louis

- ICTS Precision Medicine Symposium — January 2018
  Coordinating variant interpretation knowledgebases improves clinical interpretation of genomic variants in cancers
- Postdoctoral Research Symposium — March 2017
  The Drug Gene Interaction Database

University of Iowa

- Genetics Retreat 2014 — October 2014
  Active Phenotype Acquisition for the Genetic Characterization of Heritable Retinal Diseases
- Engineering Research Open House 2014 — April 2014
  Positive and Unlabeled Learning for Prioritization (PULP)
- Genetics Retreat 2013 — October 2013
  Prioritizing Disease Genes in Exome Studies
- Joint Bioinformatics Retreat — August 2013
  Positive and Unlabeled Learning for Prioritization
- Interdisciplinary Health Research Poster Session — April 2013
  Positive and Unlabeled Learning for Prioritizing Candidate Variants in Retinal Degenerative Diseases
- Genetics Retreat 2012 — November 2012
  Machine Learning Based Prioritization of Retinal Disease Genes
- Joint Bioinformatics Retreat — October 2012
  Prioritization of Retinal Disease Genes: An Integrative Approach
- Midwest Eye Research Symposium — July 2012
  Machine Learning Based Prioritization of Eye Disease Genes
- Genetics Retreat 2011 — February 2012
  Exon-level Expression Profiling of Ocular Tissues

Teaching Experience

Instructor — Fall 2017-Current
Escape from Perlgatory: Developing in Python and Ruby
McDonnell Genome Institute
Saint Louis, MO

Teaching Assistant / Lecturer — Nov 2017
Advanced Sequencing Technologies and Applications
Cold Spring Harbor Laboratories
Cold Spring Harbor, NY

Workshop Instructor — Nov 2016
CIViC Hackathon
Netherlands Cancer Institute (NKI)
Amsterdam, NL

Teaching Assistant / Lecturer — Nov 2016
Advanced Sequencing Technologies and Applications
Cold Spring Harbor Laboratories
Cold Spring Harbor, NY

Teaching Assistant Fall 2014
051:123 - Bioinformatics Techniques
Instructor: Thomas L. Casavant
Department of Biomedical Engineering
University of Iowa

Guest Lecturer Spring 2014
051:080 - Bioimaging and Bioinformatics
Instructor: Todd E. Scheetz
Department of Biomedical Engineering
University of Iowa

Teaching Assistant Spring 2014
051:122 - Computational Genomics
Instructor: Thomas L. Casavant
Department of Biomedical Engineering
University of Iowa

Teaching Assistant Fall 2013
051:123 - Bioinformatics Techniques
Instructor: Terry A. Braun
Department of Biomedical Engineering
University of Iowa

Instructor Fall 2013
Introduction to Bioinformatics Computing with Python
Supplement to 051:123 - Bioinformatics Techniques
Department of Biomedical Engineering
University of Iowa

Teaching Assistant Fall 2006
BIOL 313 - Principles of Genetics
Instructor: Jack Girton
Department of Biology
Iowa State University

Service

Peer Review
- Genome Medicine April 2017
- Nature Communications August 2016
- Science Translational Medicine August 2016

Editor, CIViC Knowledgebase 2015-Present
- Moderated curation of clinical interpretations of genomic variants from biomedical literature
- Proliferative editor, with over 450 moderations (#6 all-time leader in moderations)

Executive Committee, Bioinformatics Training Grant Renewal S13-F14
- Assisted in curriculum development for proposed Bioinformatics PhD program
- Researched student career development resources to be utilized by the program
- Collaborated with co-PIs and others in writing the grant proposal to fund the program

Planning Committee Chair, Ann. UI Bioinformatics Retreat S13-F14
- Planned logistics of the 2013 and 2014 annual bioinformatics retreats
- Invited selected extramural faculty to participate in the retreats

Software Familiarity

Programming languages and environments:
- C, C++, Java, LSF, Matlab, SQL, Perl, Python (PyCharm), R (RStudio), Ruby on Rails (RubyMine), SGE, UNIX

Common software (bioinformatics):
- Bedtools, Ballgown, Bowtie, BWA, Cufflinks, GATK, GenVisR, GMS, Kallisto, IGV, Picard, Pizzly, RNA-SeQC, Samtools, Stringtie, Tophat, UCSC Genome Browser, VCFTools

Common software (other):
- Git, GitHub, JIRA, LaTeX