



Audrey P. Gasch, PhD

Curriculum vitae

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Personal Data

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Education

Undergraduate: 1990-1994, B.S. Biochemistry, University of Wisconsin-Madison, Lab of Bill Reznikoff

Graduate: 1994-2000, Ph.D. Biochemistry, Stanford University Department of Biochemistry, Lab of Patrick O. Brown

Postgraduate: 2000-2003, Postdoctoral Research in Genomics, Lawrence Berkeley National Laboratory, Lab of Michael B. Eisen

Present Appointment/Position

2004-2011 Assistant Professor of Genetics, University of Wisconsin-Madison
Laboratory of Genetics
2004-present Faculty Member of the Genome Center of Wisconsin, University of Wisconsin-Madison
2007-present Great Lakes Bioenergy Research Center, Project Leader

2011-2016 Associate Professor of Genetics, University of Wisconsin-Madison
Laboratory of Genetics
2016-present Professor of Genetics, University of Wisconsin-Madison
Laboratory of Genetics
2016-present Director of Graduate Studies in Genetics, University of Wisconsin-Madison

Professional Society Memberships

Genetics Society of America

Honors and Awards

2001 – 2004 NSF Postdoctoral Fellowship in Biological Informatics
2005 – 2008 Beckman Young Investigator Award
2005 – 2010 NSF CAREER Award
2007 Burroughs Wellcome Program in Pathogenesis of Infectious Disease, UW
Nominee
2015 UW-Madison College of Agricultural and Life Sciences Pound Research
Award
2016 UW-Madison H.I. Romnes Faculty Fellowship



Grant Support

Current Support:

2R01GM083989-06, \$215,000 annual direct funds 4/01/08 - 3/31/18
1.5 calendar months
NIH NIGMS

Functional Genomics of Stress Defense in Yeast

The goal of this project is to identify genetic determinants of stress resistance in yeast as a model eukaryote, using a variety of functional-genomic approaches.

Role: PI

Department of Energy, \$194,158 direct funds in 2016 11/08 – 10/18
1.0 calendar months

Great Lakes Bioenergy Research Center (GLBRC)

Dr. Gasch's role is to oversee research on yeast fermentation for biofuel production. The goal of research ongoing in the Gasch Lab is to engineer stress-tolerant yeast strains for industrial next-generation fuel production. As Project Leader, Dr. Gasch is responsible for research in her lab and also coordinating research across four yeast research labs working within GLBRC.

Role: Project Leader

Past Support:

MCB-0447887 5/15/05 – 4/30/11
NSF Early CAREER Development Award

The Role of the Protein Kinase C Pathway and Chromatin Remodeling Factors in Orchestrating the Environmental Stress Response in Yeast

The goal of this project was to investigate the dependence of the environmental stress response (ESR) on the PKC pathway and chromatin remodeling factors in yeast.

Role: PI

ARRA R01 GM083989 Collaborative Supplement 7/16/09 – 6/30/2011
NIH NIGMS

This supplement supported a collaboration between the Gasch Lab and Dr. Josh Coon's Lab in the UW-Madison Chemistry Department to compare dynamic changes in protein abundance to transcript abundance in yeast responding to stress.

Role: PI

Beckman Young Investigator Award 9/1/05 – 8/31/08
Beckman Foundation

A Genomic Approach to Understanding Acquired Stress Resistance in Yeast

The goal of this project was to characterize acquired stress resistance in yeast conditioned to stress.

Role: PI

CCF-0728767 9/15/07 – 8/31/08
NSF

Genomic Network Tomography (Nowak, PI, Gasch, co-PI)

The goal of this project was to develop Genomic Network Tomography to investigate the structure of the cellular signaling network. Dr. Gasch's role was to collaborate on algorithm design and analysis and interpretation of results.

Role: co-PI



Publications

Refereed Articles

Weinreich, M.D., **Gasch, A.P.**, Reznikoff, W.S. (1994). Evidence that the *cis* preference of the Tn5 transposase is caused by nonproductive multimerization. *Genes & Dev.* 8(19):2363-2374

Lyons, T.J., **Gasch, A.P.**, Gaither, L.A., Botstein, D., Brown, P.O., Eide, D.J. (2000). Genome-wide characterization of the Zap1p zinc-responsive regulon in yeast. *PNAS.* 97(14):7957-7963

Gasch, A.P., Spellman, P.T., Kao, C.M., Carmel-Harel, O., Eisen, M.B., Storz, G., Botstein, D., Brown, P.O. (2000). Genomic expression programs in the response of yeast cells to environmental changes. *Mol. Biol. Cell* 11(12):4241-4257

+ **Highlighted in MBC article 2010 Jan;21(1):4-6, currently >3,700 citations**

Carmel-Harel, O., Stearman, R., **Gasch, A.P.**, Botstein, D., Brown, P.O., and Storz, G. (2001). Role of thioredoxin reductase in regulating the Yap1p-dependent response to oxidative stress in *Saccharomyces cerevisiae*. *Mol. Micro.* 39(3):595-605

Lee, S.L., Pellichioli, A., Demeter, J., Vaze, M., **Gasch, A.P.**, Malkova, A., Brown, P.O., Stearns, T., Foiani, M. and Haber, J.E. (2001). Arrest, adaptation and recovery following a chromosome double-strand break in *Saccharomyces cerevisiae*. *Cold Spring Harb. Symp. Quant. Biol.* 65: 303-314

Segal, E., Taskar, B., **Gasch, A.P.**, Friedman, N., Koller, D. (2001). Rich Probabilistic Models for Gene Expression. *ISMB.* 17(1):243-252

Gasch, A.P., Huang, M., Metzner, S., Elledge, S.J., Botstein, D., Brown, P.O. (2001). Genomic expression responses to DNA-damaging agents and the regulatory role of the yeast ATR homolog Mec1p. *Mol. Biol. Cell* 12(10):2987-3003

Yoshimoto, H., Saltsman, K., **Gasch, A.P.**, Li H.X., Ogawa, N., Botstein, D., Brown, P.O., Cyert, M.S. (2002). Genome-wide analysis of gene expression regulated by the calcineurin/Crz1p signaling pathway in *Saccharomyces cerevisiae*. *J Biol Chem.* 277(34):31079-31088

+ **Highlighted in Faculty of 1000**

Gasch A.P. and Eisen M.B. (2002). Exploring the conditional coregulation of yeast gene expression through fuzzy k-means clustering. *Genome biology.* 3(11):research0059.1

Gasch, A.P., Werner-Washburne, M. (2002). The genomics of yeast responses to environmental stress and starvation. *Functional and Integrative Genomics *Funct. Integr. Genomics** 2(4-5):181-192

Koc, A., **Gasch, A.P.**, Rutherford, J.C., Kim, H.Y., Gladyshev, V.N. (2004). Methionine sulfoxide reductase regulation of yeast lifespan reveals reactive oxygen species-dependent and -independent components of aging. *PNAS.* 101(21):7999-8004

Gasch, A.P.*, Moses, A.M., Chiang, D.Y., Fraser, H.B., Berardini, M., Eisen, M.B.* (2004). Conservation and evolution of *cis*-regulatory systems in Ascomycete fungi. *PLoS Biol* 2(12):



e398

+ Highlighted in Faculty of 1000, Highlighted in Nature Reviews Genetics

Chiang, D.Y., Nix, D.A., Shultzaberger, R.K., **Gasch, A.P.**, Eisen, M.B. (2006). Flexible promoter architecture requirements for coactivator recruitment. *BMC Mol Biol.* 7:16

Gasch, A.P.* (2007) Comparative genomics of environmental stress responses in Ascomycete fungi. *Yeast.* 24(11):961-76.

Eng, K.H., Kvitek, D.J., Wahba, G., **Gasch, A.P.**, and Keles, S. (2007). Exploratory statistical analysis of multi-species time course gene expression data. Proceedings of the 56th Session of the International Statistical Institute. *Invited Paper.*

Berry, D.B. and **Gasch, A.P.*** (2008). Stress-activated genomic expression changes serve a preparative role for impending stress in yeast. *Mol. Biol. Cell,* 19(11):4580-4587

+ Highlighted in ACB Incytes Newsletter as one of the top articles of the issue

Kvitek, D.J., Will, J.L., **Gasch, A.P.*** (2008). Variations in stress sensitivity and genomic expression in diverse *S. cerevisiae* isolates. *PLoS Genetics,* 4(10):e1000223

+ Highlighted in Faculty of 1000

Alejandro-Osorio, A.L.[#], Huebert, D.J.[#], Porcaro, D.T., Sonntag, M.E., Songdet Nillasithanukroh, Will, J. **Gasch, A.P.*** (2009). The histone deacetylase Rpd3p is required for transient changes in genomic expression in yeast responding to acute stress. *Genome Biology* 10(5):R57

Pei Fen Kuan, Huebert, D.J., **Gasch, A.P.**, Keles, S. (2009). A non-homogeneous hidden state model on first-order differences for automatic detection of nucleosome positions. *Statistical Applications in Genetics and Molecular Biology*, Statistical Applications in Genetics and Molecular Biology, 8 (1): Article 29.

Wohlbach, D. J.[#], Thompson, D. A.[#], **Gasch, A. P.***, Regev, A.* (2009) From elements to modules: regulatory evolution in Ascomycota fungi. *Current Opinion in Genetics & Development.* 19:1-8

Eng, K.[#], Kvitek, D.J.[#], Keles, S., **Gasch, A.P.*** (2010). Transient genotype-environment interactions provide a source of expression variation for essential genes. *Genetics.* 184(2):587-593

+ Noted in the Highlights section of Genetics

Will, J.L., Kim, H.S., Clarke, J., Painter, J.C., Fay, J.C, **Gasch, A.P.*** (2010) Incipient balancing selection through adaptive loss of aquaporins in natural *S. cerevisiae* populations. *PLoS Genetics* 6(4):e1000893:1-9

Lewis, J.A., Elkan, I.M., McGee, M.A., Higbee, A.J., **Gasch, A.P.*** (2010) Exploiting natural variation in *Saccharomyces cerevisiae* to identify new genes for increased ethanol resistance. *Genetics,* 186(4):1197-1205

+ Highlighted in International Business Times and Ethanol Producer Magazine

Lee, M.V.[#], Topper, S.E.[#], Hubler, S.L., Wenger, C.D., Coon, J.J.* , **Gasch, A.P.*** (2011) An integrated model of stress-dependent gene expression in yeast. *Molecular Systems Biology.* 7:514



+ Highlighted in *ProteoMonitor Magazine*, Faculty of 1000

Wohlbach, D.J., Kuo, A., Sato, T., Potts, K.M., Salamov, A., LaButti, K.M., Sun, H., Clum, A., Pangilinan, J., Lindquist, E., Lucas, S., Lapidus, A., Jin, M., Gunawan, C., Balan, V., Dale, B., Jeffries, T. W., Zinkel, R., Barry, K.W., Grigoriev, I.V., **Gasch, A.P.*** (2011) Comparative genomics of xylose-fermenting fungi for enhanced biofuel production. *PNAS*. 108(32):13212-7

+ Highlighted in *Ethanol Producer Magazine*

Berry, D.B., Guan, Q., Hose, J., Haroon S., Gebbia, M., Heisler, L.E., Corey Nislow, C., Giaever, G., **Gasch, A.P.*** (2011) Multiple means to the same end: the genetic basis of acquired stress resistance in yeast. *PLoS Genetics*, 7(11):e1002353

+ Highlighted in Faculty of 1000

Yin, W., Amaike, S., Wohlbach, D.J., **Gasch, A.P.**, Chaing, Y., Wang, C.C., Bok, J., Rohlfs, M., Keller, N.P. (2011) An *Aspergillus nidulans* bZIP response pathway hardwired for defensive secondary metabolism operates through *afIR*. *Molecular Microbiology*, 83(5):1024-34

Huebert, D.H., Kuan, P.F., Keleş, S. **Gasch, A.P.*** (2012) Dynamic changes in nucleosome occupancy, transcription-factor binding, and gene expression in the yeast stress response. *Molecular Cell Biology*, 32(9):1645-53

+ Highlighted in Faculty of 1000

Guan, Q.#, Haroon, S.#, González Bravo, D., Will, J.L. **Gasch, A.P.*** (2012) Cellular memory of acquired stress resistance in *Saccharomyces cerevisiae*. *Genetics*, 192(2):495-505

+ Highlighted in Faculty of 1000, + Noted in the Highlights section of Genetics

Huebert, D.H. and **Gasch, A.P.*** (2012) Defining flexible vs. inherent promoter architectures: The importance of dynamics and environmental considerations. *Nucleus*. 3(5):399-403

Lewis, J., **Gasch, A.P.*** (2012) Natural variation in the yeast glucose signaling network reveals a new role for the Mig3p transcription factor. *G3: Genes, Genomes, Genetics*. 2(12):1607-1612

Roy S.*, Lagree, S. Hou Z., Thomson, JA, Stewart R., **Gasch A.P.** (2013) Integrated module and gene-specific regulatory inference implicates upstream signaling networks. *PLoS Computational Biology*. 9(10)e1003252

Sato T.K., Liu T., Parreiras L.S., Williams D.L., Wohlbach D.J., Bice B.D., Ong I.M., Breuer R.J., Qin L., Busalacchi D., Deshpande S., Daum C., **Gasch A.P.**, Hodge DB. (2014) Harnessing Genetic Diversity in *Saccharomyces cerevisiae* for Fermentation of Xylose in Hydrolysates of Alkaline Hydrogen Peroxide-Pretreated Biomass. *Applied and Environmental Microbiology* 80(2): 540-554

Merrill, A.E., Hebert, A.S., Potts, G.K., MacGilvray, M.E., Rose, C.M., Voigt, E.A., Bailey, D.J., Bradley, J.C., Wood, W.W., El Masri, M., Westphall, M.S., Yin, J., **Gasch, A.P.**, Coon, J.C.* (2014). NeuCode labels for relative protein quantification. *Molecular and Cellular Proteomics*. 13(9):2503-12

Lewis, J.A., Broman, A.T., Will, J.L., **Gasch, A.P.*** (2014). Genetics architecture of ethanol-responsive transcriptome variation in *Saccharomyces cerevisiae* strains. *Genetics*. Sep;198(1):369-82



Kennedy-Darling, J. Guillen-Ahlers, H., Shortreed, M., Scalf, M., Frey, B., Kendzioriski, C., Olivier, M., **Gasch, A.P.**, Smith, L. (2014). Discovery of chromatin-associated proteins via sequence-specific capture and mass spectrometric protein identification in *Saccharomyces cerevisiae*. *Journal of Proteome Research*. 13(8):3810-25

Parreiras L.S., Bruer, R.J., Narasimhan, R.A., Higbee, A.J., La Reau, A., Tremaine, M., Qin, L., Willis, L.B., Bice, B.D., Bonfert, B.L., Pinhancos, R.C., Balloon, A.J., Uppugundla, N., Liu, T., Li, C., Tanjore, D., Ong, I.M., Li, H., Pohlmann, E.L., Serate, J., Withers, S.T., Simmons, B.A., Hodge, D.B., Westphall, M.S., Coon, J.J., Dale, B.E., Balan, V., Keating, D.H., Zhang, Y., Landick, R., **Gasch, A.P.**, Sato, T.K. (2014). Engineering and two-stage evolution of a lignocellulosic hydrolysate-tolerant *Saccharomyces cerevisiae* strain for anaerobic fermentation of xylose from AFEXTM pretreated corn stover. *PLoS ONE*. Sep 15;9(9):e107499

Sorokin, E. **Gasch, A.P.**, Kimble, J.E.* (2014) Genomic analysis of *in vivo* cell fate reprogramming. *Genetics*. 198(2):561-75

Wohlbach, D.W., Rovinskiy, N., Lewis, J.A., Sardi, M., Schackwitz, W.S., Martin, J.A., Deshpande, S., Daum, C., Lipzen, A., Sato, T.K., **Gasch, A.P.*** (2014). Comparative genomics of *Saccharomyces cerevisiae* natural isolates for bioenergy production. *Genome Biology and Evolution*. Sep 5;6(9):2557-66

Chasman, D.#, Ho, Y.H.#, Berry, D.B., Nemeč, C.M., MacGilvray, M.E., Hose, J., Merrill, A. E., Lee, M. V., Will, J.L., Coon, J.J., Ansari, A.Z., Craven, M., **Gasch, A.P.*** (2014). Pathway connectivity and signaling coordination in the yeast stress-activated signaling network. *Molecular Systems Biology*. 10(11):759. 1-23

Clowers, K., Heilberger, J., Will, J.L., Piotrowski, J., **Gasch, A.P.*** (2015). Ecological and genetic barriers differentiate natural populations of *Saccharomyces cerevisiae*. *Molecular Biology and Evolution*. 32(9):2317-27

Ho, Y.H. and **Gasch, A.P.*** (2015). Exploiting the yeast stress-activated signaling network to inform on stress biology and disease signaling. *Current Genetics*. 61(4):503-11

Hose, J., Yong, M., Sardi, M., Wang, Z, Newton, M.A., **Gasch, A.P.*** (2015). Dosage compensation can buffer copy-number variation in wild yeast. *eLife*. 10.7554/eLife.05462

Clowers, K., Will, J.L., **Gasch, A.P.*** (2015). A unique ecological niche fosters hybridization of oak-tree and vineyard isolates of *Saccharomyces cerevisiae*. *Molecular Ecology*. 24(23):5886-98

Gasch, A.P.*, Payseur, B.A.*, Pool, J.* (2016). The power of natural variation for model organism biology. *Trends in Genetics*. 32(3):147-54

Gasch, A.P.*, Hose, J, Newton, MA, Sardi, M, Yong, M, Wang, Z. (2016). Further support for aneuploidy tolerance in wild yeast and effects of dosage compensation on gene copy-number evolution. *Elife*. 10.7554/eLife.14409.

Mcllwain, S.J., Peris, D., Sardi, M., Moskvin, O.V., Zhan, F., Myers, K., Riley, N.R., Buzzell, A., Parreiras, L.S., Ong, I.M., Landick, R., Coon, J.J., **Gasch, A.P.**, Sato, T.K., Hittinger, C.T.* (2016). Genome sequence and analysis of a stress-tolerant, wild-derived strain of *Saccharomyces cerevisiae* used in biofuels research. *G3: Genes, Genomes, Genetics*. 6(6):1757-66



HyCCAPP as a tool to characterize promoter DNA-protein interactions in *Saccharomyces cerevisiae*. (2016). Guillen-Ahlers, H., Rao, P.K., Levenstein, M.E., Kennedy-Darling, J., Perumalla, D.S., Jadhav, A.Y., Glenn, J.P., Ludwig-Kubinski, A., Drigalenko, E., Montoya, M.J., Göring, H.H., Anderson, C.D., Scalf, M., Gildersleeve, H.I., Cole, R., Greene, A.M., Oduro, A.K., Lazarova, K., Cesnik, A.J., Barfknecht, J., Cirillo, L.A., **Gasch, A.P.**, Shortreed, M.R., Smith, L.M., Olivier, M. *Genomics*. 107(6):267-73.

Sardi, M., Rovinskiy, N., Zhang, Y., **Gasch, A.P.*** (2016). Leveraging genetic background effects in *Saccharomyces cerevisiae* to improve lignocellulosic hydrolysate tolerance. *Applied Environmental Microbiology*. 16;82(19):5838-49

Sato, T.K., Tremaine, M., Parreiras, L.S., Hebert, A.S., Myers, K.S., Alan J. Higbee, A.J., Sardi, M., McIlwain, S.J., Ong, I.M., Breuer, R.J., Narasimhan, R.A., McGee, M.A., Dickinson, Q., Reau, A.L., Xie, D., Tian, M., Reed, J.L., Hittinger, C.T., Coon, J.J., **Gasch, A.P.***, Landick, R.* (2016). Directed evolution reveals unexpected epistatic interactions that alter metabolic regulation and enable anaerobic xylose use by *Saccharomyces cerevisiae*. *PLoS Genetics*. DOI:10.1371/journal.pgen.1006372

Nemec, C.M., Gilmore, J.M., Yi-Hsuan Ho, Y.H., Hintermair, C. Singh, A.K., Ringelberg, K.J., Tseng, S.C., Heidemann, M., Zhang, Y., Florens, L., Akhtar, M.S., Eick, D. Audrey P. Gasch, Michael P. Washburn, Ansari, A.Z. (2016). Non-canonical CTD-kinases regulate gene-class specific functions of RNA Polymerase II. *PNAS*, *Submitted*.

Wilinski, W., Buter, N., Klocko, A.D.,² Christopher P. Lapointe, C.P., Selker, E., Gasch, A.P. and Wickens, M. (2016). Recurrent rewiring and emergence of RNA regulatory networks. *Resubmitted*.

Bacher, R., Chu, L.F., Leng, N., **Gasch, A.P.**, Newton, M.A., Thomson, J.A., Stewart, R.M., Kendzioriski, C. (2016). SCnorm: A quantile-regression based approach for robust normalization of single-cell RNA-seq data. *Nature Methods*. *Resubmitted*.

Non-Refereed Articles

Gasch A.P.* and Yvert, G. (2015) MEETING REPORT on Experimental Approaches to Evolution and Ecology Using Yeast & Other Model Systems. *G3: Genes, Genomes, & Genetics*. 5(6) 1021-1023

Chapters in Books

Gasch, A.P. (2002). Yeast genomic expression studies using DNA microarrays. In *Guide to Yeast Genetics and Molecular and Cellular Biology*. C. Guthrie and G.R. Fink (ed). *Methods in Enzymology*. 350: 393-414

Gasch, A.P. (2002). The Environmental Stress Response: a common yeast response to environmental stresses. In *Topics in Current Genetics: Yeast Stress Responses*. S. Hohmann and P. Mager (ed). Volume 1, *Topics in Current Genetics* (series editor S. Hohmann) Springer-Verlag Heidelberg p. 11-70

* corresponding author

both authors contributed equally

+ recognition



Patents

8795996 Genes related to xylose fermentation and methods of using same for enhanced biofuel production, Inventors: Dana Wohlbach and Audrey P. Gasch.

8178331 Recombinant yeast with improved ethanol tolerance and related methods of use, Inventors: Jeffrey A. Lewis and Audrey P. Gasch

P160326: Genes that improve tolerance to lignocellulosic toxins when over-expressed in yeast *Saccharomyces cerevisiae*.

Inventors: Maria Sardi and Audrey P. Gasch

P160421 Identification of Azf1, a gene whose over-expression improves the rate of anaerobic xylose fermentation in engineered yeast strains.

Inventors: Kevin Myers and Audrey P. Gasch

Educational Activities & Presentations

Classroom Teaching

Fall 2005, 2006, 2008, 2010, 2012, 2014, 2016 Genetics 885 (formerly 875): Advanced Genomic and Proteomic Analysis, co-taught with Nicole Perna (3 credits, enrollment: 17-23 graduate students + auditors)

This is a graduate-level course aimed at teaching biologists computational methods in genomic analysis. The course consists of two 50-minute lectures per week plus a 3-hour per week computer lab where students get hands-on experience analyzing large-scale datasets. A large component of the course is a semester-long computational project conducted under the guidance of either Nicole or myself. The students put together a 10-page research paper on their computational results and present a 10-minute talk on their projects. I teach eight weeks of the course but work with students one-on-one on their individual projects throughout the semester. The course is highly regarded among graduate students; several of the class projects have gone on to publication.

Spring 2010, 2012, 2014, 2016 Genetics 660 (formerly 677): Evolutionary Genomics (2 credits, enrollment: 12-15 under/graduate students + auditors)

This course is aimed at graduate students and upper-level undergraduates interested in evolutionary genomics. The course consists of two 50-minute lectures per week, in which I give one lecture and students rotate in presenting a paper related to the lecture. In addition, each student writes a 7-page research proposal on a topic of their choice related to evolutionary genomics. I meet separately with most of the presenters to aid them in their presentation. I also work extensively with many students as they prepare their research proposals.

Fall 2011- 2015, Spring 2017 Molecular and Medical Genetics 721 (3 credits, enrollment: >300 medical students)

I teach one lecture each year in this course for medical students, in which I give an overview of clinical genomic sequencing, present several case studies on the use of genome sequencing in human genetics, and discuss ethical implications of whole-genome sequencing in the clinics.

Spring 2004-2011 Genetics 703: Topics in Eukaryotic Regulation (2 credits, enrollment: 20-25 graduate students)

Each year, I gave one lecture in Genetics 703, a required course for Genetics graduate students. I presented key challenges and considerations in genomic analysis, using genomic expression analysis as an example. Many of the students went on to take our course on this topic, Genetics 885, described above.



Fall 2006-2007

Biochemistry 660: Biochemical Techniques

I presented one lecture on the technique of DNA microarray analysis.

Mentoring

Current Graduate Students

DeElegant Robinson

Genetics Training Program, joined the lab in 12/15. Dee is working on several projects looking at the impact of yeast genetic background on fitness consequences of gene over-expression

Maria Sardi

Microbiology Training Program, joined the lab in 12/12. Maria was awarded an NSF predoctoral fellowship in 2013. She is a co-author on two manuscripts, about to submit a first-authorship manuscript, and has several other projects that will produce manuscripts.

Matt MacGilvray, MS

Microbiology Training Program, joined the lab in 2/13. Matt was awarded a predoctoral fellowship from the UW-Madison Genomic Sciences Training Program. Matt is a co-author on two manuscripts from the lab and is preparing a first-authored manuscript to be submitted soon.

Past Graduate Students

Adriana Alejandro-Osorio, PhD

Biomolecular Chemistry Program, joined in 7/04, PhD 1/07. Adriana was awarded funding through the Molecular Biosciences Training Grant (MBTG) and Genomic Sciences Training Program (GSTP). She was a lead author on one publication. After obtaining her PhD, she was a senior consultant at Booz-Allen-Hamilton in the Global Health Initiative (with the Gates Foundation); she is currently a consultant with Global Impact.

Jessica Clarke, MS

Genetics Program, joined in 12/06, MS 8/08, continued to work in the lab as a research technician until 9/09. Jessica was an exceptional graduate student who studied the evolution of cis-regulatory elements across fungal species using comparative genomics. She was a co-author on one publication. She decided to pursue her interests in horticulture and left the program with a Master's degree.

Scott Topper, PhD, FACMG

Genetics Program, joined in 1/05, PhD 6/10. Scott passed the Genetics Prelim A with honors and was awarded a UW-Madison GSTP predoctoral fellowship. He was a first author on one high profile paper. After becoming board-certified in the University of Chicago Clinical Genetics Program, Scott was the assistant director of the University of Chicago Genetic Services Laboratory before leaving to become Head of Clinical Genomics at the company Invitae where he works currently.

David Berry, PhD

Genetics Program, joined in 12/04, PhD 1/11. David published three manuscripts while in the lab, including two first-authored papers. David passed his Genetics Prelim A exam with honors and was awarded a Vilas Travel Award in 2009. He is currently finishing a postdoctoral position at UCSF in Stanley Prusiner lab and is entering the academic job market.

Dana Huebert, PhD

Cellular and Molecular Biology Program, joined in 11/05, PhD in 7/11. Dana published four papers while in the lab (two first-authored papers, one co-authored paper, and one review). She was awarded four years of MBTG funding and was a finalist in the NSF Predoctoral Fellowship



program two years in a row. Dana is now an assistant professor in the Department of Biology at West Virginia University.

Suraiya Haroon, PhD

Genetics Program, joined the lab in 6/08, PhD 8/12. Suraiya was a first author on one publication and co-author on a second publication while in the lab. She was awarded a Vilas Travel Award in 2010. Suraiya is currently a postdoctoral fellow at the Children's Hospital of Philadelphia.

Claire Chung, MS

Genetics Program, joined the lab in 12/08. MS in 2/11. Claire currently works in the biotech industry.

Elisha Yi-Hsuan Ho, PhD

Cellular and Molecular Biology Program, joined the lab in 2/12, PhD 7/15. Elisha was a co-first author on one manuscript and one review, she is completing experiments for a second first-authorship paper, and she is about to submit two other manuscripts on which she will be a co-author. She was awarded a CMB travel award in 2014. Elisha is currently completing a short-term postdoctoral fellowship in the Gasch Lab.

Katie Clowers, PhD

Genetics Training Program, joined the lab in 12/09, PhD 7/15. She was awarded a Vilas travel award, a UW-Madison Genetics Stone Travel Award, and was a finalist in the DOE Science Graduate Fellowship program in 2010. Katie has just left the lab for a postdoctoral position in the lab of Steve Gygi at Harvard University.

Past and Current Postdoctoral Fellows

Qiaoning Guan, PhD

9/06 – 3/07. Qiaoning published two manuscripts during her short time in the lab. She was awarded a prestigious Rhett Foundation Fellowship in 2007 to conduct a second postdoc in the lab of Dr. Jasper Rine at UC-Berkeley. She then went on to lead the BGI-Davis sequencing center and is currently a fellow in the Clinical Genetics program at the Children's Hospital of Philadelphia.

Dana Wohlbach, PhD

9/07 – 6/13. Dana was awarded a CIBM NIH training fellowship from 9/07-8/09. She published five manuscripts (including two first-authored manuscripts, one review, and two co-authored manuscripts) during her time in the lab. Her work also led to one patent filed by WARF. Dana is now an assistant professor at Dickinson College.

Jeff Lewis, PhD

1/08 – 12/12. Jeff published four papers during his time in the lab (including three first-authored works). His work led to one patent filed by WARF. Jeff is now an assistant professor at the University of Arkansas.

Tejaswini Pachpor, PhD

1/12-1/13. Tejaswini conducted a short postdoc in the lab. She subsequently moved to Bethesda, MD where she did a second postdoc at NIH.

Nikolay Rovinskiy, PhD

3/13-9/15. Nikolay has just left the lab for a position at the company *DNASTAR*, which writes



software for genetic and genomic data analysis. He was a co-author on one manuscript and will be listed as an author on a future work.

Kevin Myers, PhD

8/13-present. Kevin is working on several projects related to engineering yeast for biofuel production.

Past and Current Undergraduate Students

Stephanie Boeckmann, 8/04-2/05, subsequently a graduate student at SUNY Upstate Medical University

Daniel Kvitek, 8/04-9/07, Hilldale Award Winner, 2007, co-first author on two publications, PhD from Stanford University, currently a scientist at Invitae, a clinical sequencing startup company

Megan Sonntag, 1/05-8/07, co-author on one publication, subsequently a graduate student at Cornell University

John Painter, 9/05-12/07, co-author on one publication, subsequently a research technician at Roche-Nimblegen, Madison WI and now works in the biotech industry

Emily Lange, 9/07-6/08

Reuben Hoffman, 1/08-5/08

Umnia Abdelrahman, 1/08-5/08

Songdet Nillasithanukroh, 1/08-5/10, Hilldale Award Winner, 2009, co-author on one publication, subsequently a graduate student at Carnegie-Mellon University

Yash Jahla, 1/08-5/09

Katie Potts, 1/09-present

Nate Hawes, 8/08-7/10, subsequently Dental School, Boston University

Isaac Elkon, 1/09-8/10, co-author on one publication, subsequently a graduate student at U. Washington

Diego Gonzales, 6/10 – 8/10, summer research student from Puerto Rico, subsequently medical school

Jacob Hilzinger, 6/10-6/13, subsequently a graduate student at the U. of Delaware

Alica Mendez, 1/11 – 5/13, subsequently attended pharmacy school

Natalie DeCheck, 9/11-6/13

Dylan Braun, 1/12-5/12

Chris Mun Yong, 8/12 – 8/14, Hilldale Award Sinner, 2013, selected for the UW-Madison undergraduate SCORE program, co-author on one manuscript. Subsequently accepted into the Washington University graduate program

Ben McCammon, 7/13-6/15, currently a technician at Covance

Lucy Abrams, 1/14-5/14

Bennet Abide, 8/15-8/16

Molly Krause, 1/5-present

Ryan Anderson, 5/15-present

Thesis Committees served on

Past Graduate Student Thesis Committees



<u>Student, Program</u>	<u>Major Professor</u>
Elenita Kanin, Biochemistry	Ansari
Amy Hubert, Genetics	Goodwin/Anderson
Erin Patterson, Genetics	Fox
Mike Benton, Chemistry	Palecek
Mark Staudt, Biomolecular Chemistry	Hull
Nick Shera, Genetics	Schwartz
Lisa Farmer, Genetics	Vierstra
Bob Schmitz, Genetics	Amasino
Dana Wohlbach, Genetics	Sussman
Adriana Alejandro Osorio, Biomolecular Chemistry	Gasch
Briana Tegle, CMB	Schwartz
Angela Verdoni, Genetics	Ikeda
Xinjie Xu, Genetics	Ikeda
Omar Salgado, Genetics	Gasch
Yu Qiu, CMB	Blattner
Qioning Guan, Genetics	Culbertson
Jessica Clarke, Genetics	Gasch
Jen Van Vleet, MDTP	Jeffries
Scott Topper, Genetics	Gasch
Masaya Higurashi, IPIB	Craig
David Berry, Genetics	Gasch
Palmer Yu, CMB	Thomson
Aaron Kershner, CMB	Kimble
Jason Peters, Genetics	Landick
Josh Tietjen, MDTP	Ansari
Dana Huebert, CMB	Gasch
Juan Rodriguez-Molina, IPIB	Ansari
David Zhang, Biochem, IPIB	Ansari
Ben Schmidt, Genetics	Anderson
Beth Buckley, Genetics	Kennedy
Suraiya Haroon, Genetics	Gasch
Claire Chung, Genetics	Gasch
Yi-Cai Su	Jeffries
Rup Chakravorty, CMB	Sugden
Daniel Willinsky, CMB	Wickens
Elena Sorkin, CMB	Kimble
HeeSoo Park, Mol. Environ. Toxicology	Yu
Katie Clowers, Genetics	Gasch
John Hvala, Genetics	Payseur
Ashlan Musante, CMB	Smith
M. Violet Lee, Chemistry	Coon
Doug Phansteil, Chemistry	Coon
Nick Gladman, Genetics	Vierstra
Sarah Marsh, Genetics	Curie
Anna Merrill, Chemistry	Coon
Deborah Chasman, Computer Science	Craven
Katie Clowers, Genetics	Gasch
Elisha Ho, CMB	Gasch
Thomas Malott, Chem. Eng.	Shusta
Chris Calvey, CMB	Jeffries



Lindsay Traeger, Genetics
Virginia Lamb, Genetics
Douglass Porter, IPIB
Drew Hasling, Genetics
Corey Nemecek, IPIB
Anna Kropornica, Genetics

Ansari

Sussman
Anderson
Kimble, Wickens
Pelegri
Ansari

Current Graduate Student Thesis Committees

<i>Student, Program</i>	<i>Major Professor</i>	<i>Dates</i>
Jenna Lorenzini, CMB	Klein	2010-present
Christina Kuang, Genetics	Hittinger	2012-present
Rachel Knoener, Chemistry	Smith	2012-present
Erik Jessen, Genetics	Landick	2012-present
Nick Riley, Chemistry	Coon	2012-present
Maria Sardi, MDTP	Gasch	2013-present
Matt MacGilvray, MDTP	Gasch	2013-present
Emily Baker, MDTP	Hittinger	2013-present
Mike Veling, IPIB	Pagliarini	2014-present
Gina Gordon, MDTP	Pflegger	2015-present
Taylor Scott, CMB	McClellan	2016-present
Rebecca Reese, CMB	Alrid	2016-present

Service Activities

Departmental

2004-2006	Genetics Curriculum Committee
2004-2006	Genetics Retreat Committee
2005-2016	Genetics Computing Committee, Chair
2007-2016	Genetics Student Advisory (formerly First Year) Committee
2012	Departmental Administrator Hiring Committee, led to the hiring of Pat Litza
2012-present	Genetics Fundraising Committee
2013-2016	Tenure promotion committee for Chris Hittinger
2015-2016	Genetics Chair's Advisory Committee
2016-present	Director, Genetics PhD Training Program

Campus

2005-2006	Genome Center Cluster-Hire Search Committee (Chair, 2006) – led to the hiring of Colin Dewey (Departments of Biostatistics & Medical Informatics and Computer Science)
2006-2009	Genome Center Seminar Series, organizer
2006-2007	Evolution Group Seminar Series Committee
2005-present	UW-Biotech Center, Gene Expression Center Advisory Committee
2010-2012	Advanced Genome Analysis Resource, Advisory Committee
2010-2012	Wisconsin Institute for Discovery – Systems Biology Focus Group Hiring Committee, led to hiring of Sushmita Roy (Departments of Biostatistics & Medical Informatics and Computer Science), Kalin Vestigian (Departments of Bacteriology and Physics), and Laurence Loewe (Department of Medical Genetics)
2010-present	Genomics Sciences Training Program Curriculum Committee



2010-present 2014	Great Lakes Bioenergy Center, Area 3 Leadership Council Basic Research Focus team for UW-Madison College of Agricultural and Life Sciences
2014-present	Organizer of the Quantitative Biology Initiative (QBI) on campus, aimed at enhancing the quantitative biology community and recruiting students and postdocs to campus
2014-2015	Frontiers Team investigating research priorities for planned renewal of the Great Lakes Bioenergy Research Center grant
2015	Baldwin Professorship Selection Committee
National/International	
2006-2010	<i>Yeast Genetics and Molecular Biology</i> Conference organizing committee
2006-present	<i>Saccharomyces</i> Genome Database (SGD) Advisory Board
2009	Joint Genome Institute 'Grand Challenge' Advisory Panel
2010	NSF Panel Member, Mechanisms of Genetic Inheritance
2010-present	Joint Genome Institute Fungal Advisory Committee
2012	Department of Energy advisory committee on the 10 year strategic vision for the Joint Genome Institute

Ad hoc grant reviewer for the National Institutes of Health (NIH), National Science Foundation (NSF), Department of Energy (DOE), Israeli Science Foundation, Wellcome Trust

Editorial Service

Ad hoc reviewer for *Bioinformatics*, *BioMed Central*, *BMC Bioinformatics*, *Eukaryotic Cell*, *FEBS Journal*, *G3*, *Genetics*, *Genome Biology*, *Genome Research*, *Journal of Biology*, *Molecular Biology and Evolution*, *Molecular Biology of the Cell*, *Molecular and Cell Biology*, *Molecular Genetics & Genomics*, *Molecular Systems Biology*, *Nature Genetics*, *NAR*, *PLoS Biology*, *PLoS Computational Biology*, *PLoS Genetics*, *PLoS ONE*, *PNAS*, *RNA*, *Science*, *Trends in Genetics*, *Yeast*, and others.

Associate Editor: *GENETICS* (2014-2015), *G3: Genes, Genomes, Genetics* (2011 – 2015)

Senior Editor: *GENETICS*, section on Genome & Systems Biology (10/2015 – present)

Ad hoc editor for: *PLoS Genetics*, *PLoS Computational Biology*

Outreach

7/20/05	Spoke at Wisconsin Rural Leadership Program on “Political and Economic Ramifications of Genomic Technology in Wisconsin”
7/28/05	Tutored visiting students from Kenyon College on microarray analysis, in conjunction with the UW-Biotech Center Gene Expression Center
11/05, 11/10, 11/11	“Expanding Your Horizons” Workshops on genetic research for 10-13 year old girls
4/27/06	Spoke to high school math students at Wisconsin Mathematics, Science, and Engineering Talent Search Annual Honors Day



- 5/19/06 Spoke to high school students during Madison East High School Math Week
6/06, 6/07 Sat on a panel to attract minority students from the Summer Research Program to graduate school.
- 7/9/08 Served as Summer Research Program discussion leader on phylogenetic tree construction
- 7/29/08 Led video interview on mutations and evolution for *Untamed Science* educational videos for K-12 kids
- 8/30/08 Spoke to Undergraduate Genetic Association students about genomics and genomic careers
- 11/26/08 Guest on Larry Meiller Show. Wisconsin Public Radio, topic on Biofuels research at UW-Madison
- 2/7/09 Darwin Day, Invited speaker
- Spring 2009 Profiled by Madeline Fisher for Wisconsin Week 'conversations' piece
- 7/1/09 Spoke to GLBRC summer students/SRP/summer-visiting teachers on yeast biofuels research within GLBRC
- 7/15/09 Interviewed by Seed Magazine
- 7/16/09 Interviewed by Michael Penn of GROW Magazine about evolutionary research
- 7/09 Profiled by UW-Madison GROW magazine
- 5/22/10 Co-hosted a lunch discussion group, with Rick Amasino, about Agricultural Genetics at the UW-Madison Laboratory of Genetics Centennial Celebration
- 6/10-8/10 Hosted a summer SRP student from Puerto Rico, Diego Gonzalez
- 7/10 Participated in the SROP/McNair graduate fair to expose visiting minority and under-represented students to UW-Madison grad departments
- 10/22/10 Participated in minority recruiting at the first annual UW-Madison BOPs (Biosciences Opportunity Previews) program.
- 9/11/12 Organized science tables at the Lowell Elementary School Family Picnic
- 9/28/12 Served on BOPs panel to recruit minority graduate students
- 10/9/12 Spoke at the Lowell Elementary School Minority Parent Empowerment (PEP) meeting
- 1/13 – 2/13 Led science activities in Lowell classrooms. Volunteer taught in the Lowell Elementary School 4-5th grade science class, twice weekly. This is part of a broader program with the UW Adult Role Models in Science and the Madison Metropolitan School District to update the Madison elementary curriculum to incorporate more science into the daily activities (pilot for the Young Science Scholars program)
- Spring, 2013: Led hands-on activities at four Family Science Nights at local elementary Schools and community centers.
- Fall, 2013 Participated in minority recruiting at the first annual UW-Madison BOPs (Biosciences Opportunity Previews) program.
- 2013-present: Serving as Scientist in Residence at Lowell Elementary School as part of the Young Science Scholars (YSS) program. The YSS program is working with the Madison Metropolitan School District (MMSD) and local scientist and science educators to revitalize the science curriculum in MMSD public schools.
- 2014 Awarded a National STEM Volunteer Program grant from AAAS to support the Young Science Scholars program.
- 4/14 Gave a public Lecture in the Wisconsin Institute for Discovery lecture series *Sound Waves*
- 2013-present Created and manage the Family Science Nights Volunteer Connection program that aims to connect schools and community centers with >150 researcher and student volunteers from UW-Madison, Madison Technical College, local biotech



companies, and beyond. 20-25 Family Science Nights organized each year.