

WEI CHEN

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University of Michigan
Ann Arbor, MI 48109-2029

EDUCATION

Ph.D.	Biostatistics Center for Statistical Genetics University of Michigan, Ann Arbor, MI, USA Advisor: Gonçalo R. Abecasis	2011 (expected)
M.S.	Mathematics Michigan State University, East Lansing, MI, USA Advisor: Gang Bao	2006
B.S.	Computational Mathematics Nanjing University, Nanjing, China	2003

HONORS AND AWARDS

ASHG Trainee Research Semifinalist Award	2010
ENAR Diversity Workshop Travel Grant	2009
Rackham Conference Travel Grant, University of Michigan	2007 - 2010
Outstanding Student Award, Nanjing University, China	2003
People's Scholarship, Nanjing University, China	2001 - 2002
Red Hawk Fellowship, Nanjing University, China	2000

RESEARCH EXPERIENCE

My research mainly focuses on developing statistical, computational methods and software in genotype imputation, SNP calling and rare variant analysis with applications in genome-wide association studies (GWAS) of age-related macular degeneration (AMD) and next generation sequencing (NGS).

Department of Biostatistics, University of Michigan, Ann Arbor, Michigan

Research Assistant under the supervision of Dr. Gonçalo R. Abecasis Jun 2006 - Present

- Developed a state space reduction method for hidden Markov model in genotype imputation
- Developed a LD-based SNP calling and phasing method for trios in NGS
- Performed a candidate gene study and a genome-wide association study on AMD
- Developed efficient and user-friendly software for the first genome-wide eQTL study
- Work on an adaptive multiple testing procedure for GWAS and rare variants analysis
- Organize a worldwide AMD consortium for meta analysis of existing GWAS

Department of Mathematics, Michigan State University, East Lansing, Michigan

Research Assistant May 2004 - Dec 2004

- Studied mathematical and statistical modeling in biochemistry and near-field optics

TEACHING EXPERIENCE

Department of Biostatistics, University of Michigan, Ann Arbor, Michigan

Teaching assistant

Jan 2010 - Dec 2010

- Graded the graduate course *Models in Human Genetics*

Department of Mathematics, Michigan State University, East Lansing, Michigan

Instructor

Sep 2003 - Dec 2005

- Taught undergraduate courses *Applied Calculus and College Algebra*
- Developed syllabuses, quizzes, exams, and homework

Teaching assistant

Jan 2006 - May 2006

- Graded the graduate course *Partial Differential Equations*

Supervisor in the Mathematics Learning Center

May 2004 - May 2006

- Coordinated duties of over 30 teaching assistants

PUBLICATIONS

Peer Reviewed Papers Published or In Press

1. **Chen W**, Stambolian D, Edwards AO, Branham KE, Othman M, Jakobsdottir J, Tosakulwong N, Pericak-Vance MA, Campochiaro PA, Klein ML, Tan PL, Conley YP, Kanda A, Kopplin L, Li Y, Augustaitis KJ, Karoukis AJ, Scott WK, Agarwal A, Kovach JL, Schwartz SG, Postel EA, Brooks M, Baratz KH, Brown WL; Complications of Age-Related Macular Degeneration Prevention Trial Research Group, Brucker AJ, Orlin A, Brown G, Ho A, Regillo C, Donoso L, Tian L, Kaderli B, Hadley D, Hagstrom SA, Peachey NS, Klein R, Klein BE, Gotoh N, Yamashiro K, Ferris Iii F, Fagerness JA, Reynolds R, Farrer LA, Kim IK, Miller JW, Cortón M, Carracedo A, Sanchez-Salorio M, Pugh EW, Doheny KF, Brion M, Deangelis MM, Weeks DE, Zack DJ, Chew EY, Heckenlively JR, Yoshimura N, Iyengar SK, Francis PJ, Katsanis N, Seddon JM, Haines JL, Gorin MB, Abecasis GR, Swaroop A. Genetic variants near *TIMP3* and high-density lipoprotein-associated loci influence susceptibility to age-related macular degeneration. **Proc Natl Acad Sci U S A**. 2010 Apr 20;107(16):7401-6.
2. The 1000 Genomes Project Consortium. A map of human genome variation from population scale sequencing. **Nature**. 2010 Oct 28;467(7319):1061-73.
3. Kunju LP, Cookingham C, Toy K, **Chen W** and Kleer CG. EZH2 marks breast epithelium at risk for breast cancer development. **Mod Pathol**. 2010 In press.
4. Peng J, **Chen W**, Venook AP, Sheng W, Xu Y, Guan Z, Cai G, Cai S. Long-term outcome of early stage rectal cancer undergoing standard resection and local excision. **Clin Colorectal Cancer**. 2010 In press
5. Ding J, Gudjonsson JE, Liang L, Stuart PE, Li Y, **Chen W**, Weichenthal M, Buchert E, Franke A, Cookson W, Nair RP, Elder JT and Abecasis GR. Gene Expression in Skin and Lymphoblastoid Cells: New Statistical Method Reveals Extensive Overlap in cis-eQTL Signals. **Am J Hum Genet**. 2010 In press.
6. Baratz KH, Tosakulwong N, Ryu E, Brown WL, Branham K, **Chen W**, Tran KD, Schmid-Kubista KE, Heckenlively JR, Swaroop A, Abecasis G, Bailey KR, Edwards AO. E2-2 Protein and Fuchs's Corneal Dystrophy. **N Engl J Med**. 2010 Sep 9;363(11):1016-24.

7. Peng J, **Chen W**, Sheng W, Xu Y, Cai G, Huang D, Cai S. Oncological outcome of T1 rectal cancer undergoing standard resection and local excision. **Colorectal Dis.** 2010 Sep 22
8. Kanda A, Stambolian D, **Chen W**, Curcio CA, Abecasis GR, Swaroop A. Age-related macular degeneration-associated variants at chromosome 10q26 do not significantly alter ARMS2 and HTRA1 transcript levels in the human retina. **Mol Vis.** 2010 Jul 15;16:1317-23.
9. Strunnikova NV, Maminishkis A, Barb JJ, Wang F, Zhi C, Sergeev Y, **Chen W**, Edwards AO, Stambolian D, Abecasis G, Swaroop A, Munson PJ, Miller SS. Transcriptome analysis and molecular signature of human retinal pigment epithelium. **Hum Mol Genet.** 2010 Jun 15;19(12):2468-86.
10. Peng J, Wang Z, **Chen W**, Ding Y, Wang H, Huang H, Huang W, Cai S. Integration of genetic signature and TNM staging system for predicting the relapse of locally advanced colorectal cancer. **Int J Colorectal Dis.** 2010 Nov;25(11):1277-85.
11. **Chen W**, Liang L, Abecasis GR. GWAS GUI: graphical browser for the results of whole-genome association studies with high-dimensional phenotypes. **Bioinformatics.** 2009 Jan 15;25(2):284-5.
12. Wang M, Peng J, Yang W, **Chen W**, Mo S, Cai S. Prognostic analysis for carcinoid tumors of the rectum: a single institutional analysis of 106 cases. **Colorectal Dis.** 2009 Oct 27
13. Dixon AL, Liang L, Moffatt MF, **Chen W**, Heath S, Wong KC, Taylor J, Burnett E, Gut I, Farrall M, Lathrop GM, Abecasis GR, Cookson WO. A genome-wide association study of global gene expression. **Nat Genet.** 2007 Oct;39(10):1202-7.
14. Swaroop A, Branham KE, **Chen W**, Abecasis G. Genetic susceptibility to age-related macular degeneration: a paradigm for dissecting complex disease traits. **Hum Mol Genet.** 2007 Oct 15;16 Spec No. 2:R174-82.
15. Kanda A *, **Chen W***, Othman M, Branham KE, Brooks M, Khanna R, He S, Lyons R, Abecasis GR, Swaroop A. A variant of mitochondrial protein LOC387715/ARMS2, not HTRA1, is strongly associated with age-related macular degeneration. **Proc Natl Acad Sci U S A.** 2007 Oct 9;104(41):16227-32. * Equal Contribution

Papers In Revision or Under Review

16. Sivakumaran TA, Igo RP Jr, Kidd JM, Itsara A, Kopplin LJ, **Chen W**, Hagstrom SA, Peachey NS, Francis PJ, Klein ML, Chew EY, Ramprasad VL, Sim X, Mitchell P, Seielstad M, Stambolian D, Edwards AO, Lee KE, Leontiev DV, Jun G, Wang Y, Tian L, Qiu F, Henning AK, LaFramboise T, Sen P, Aarthi M, George R, Raman R, Das MK, Vijaya L, Kumaramanickavel G, Wong TY, Swaroop A, Abecasis GR, Klein R, Klein B EK, Nickerson DA, Eichler EE, Iyengar SK. Non-Y402H SNPs and copy number at the *CFH*-RCA locus are associated with AMD. **PLoS Genet.** 2010 in revision
17. McKay GJ, Silvestri G, Chakravarthy U, Dasari S, Fritsche LG, Weber BH, Keilhauer CN, Klein ML, Francis PJ, Klaver CC, Vingerling JR, Ho L, Jong P, Dean M, Sawitzke J, Baird PN, Guymer RH, Stambolian D, Orlin A, Seddon JM, Peter I, Wright AF, Hayward C, Lotery AJ, Ennis S, Gorin MB, Weeks DE, Kuo CL, Hingorani AD, Sofat R, Cipriani V, Swaroop A,

Othman M, Kanda A, **Chen W**, Abecasis GR, Yates JR, Webster AR, Moore AT, Seland JH, Rahu M, Soubrane G, Tomazzoli L, Topouzis F, Vioque J and Fletcher AE, The Rotterdam Study Group, The EUREYE Study Group and Chris C. Patterson. Variations with age in Apolipoprotein E frequency in a pooled analysis of older people in a large sample. **Am J Epidemiol.** 2010 Submitted.

Papers Under Internal Review for Submission (preprint available)

18. **Chen W**, Li Y, Abecasis G. State Space Reduction in hidden Markov model for haplotyping, imputation and analysis of Shotgun Sequence Data.
19. **Chen W**, Li B, Li Y, Sanna S, Busonero F, Sidore C, Abecasis GR. An efficient and accurate LD-aware SNP calling and phasing method for sequencing in trios.
20. Li, B, **Chen W**, Sanna S, Busonero F, Sidore C, Abecasis GR. A likelihood based framework for efficient and accurate variant calling in families for next generation sequencing data.

CONFERENCE PRESENTATIONS

1. **Chen W***, Li B, Li Y, Abecasis G (2010) An Efficient and accurate LD-aware SNP calling and phasing method for Trios. *The 60th Annual Meeting of the American Society of Human Genetics* (platform)
2. Li B, **Chen W**, Abecasis G (2010) A likelihood based framework for efficient and accurate variant calling in families for next generation sequencing data. *The 60th Annual Meeting of the American Society of Human Genetics* (platform)
3. Xiao C, Ward A, Blackwell T, Mnev A, **Chen W**, Anderson P, Kang H, Li B, Zhan X, Stewart D, Lee W, Stromberg M, Leong W, Indap A, Barnett D, Agarwala R, Marks C, Paschall J, Sneddon T, Garner J, Church D, Phon L, Shumway M, Preuss D, Yaschenko E, DiCuccio M, Abecasis G, Marth G, Sherry S, the 1000 Genomes Project (2010) A modular pipeline for detecting human genetic variations from next-generation sequencing data at NCBI. *The 60th Annual Meeting of the American Society of Human Genetics* (poster)
4. Trost M, Kang H, Anderson P, Li B, **Chen W**, Fuchsberger C, Zhan X, Abecasis GR (2010) A library and tools for manipulating and analysing next generation sequence data. *The 60th Annual Meeting of the American Society of Human Genetics* (poster)
5. **Chen W***, Stambolian D, Edwards AO, Branham KE, Othman M, Jakobsdottir J, Tosakulwong N, Pericak-Vance MA, Campochiaro PA, Klein ML, Weeks DE, Zack D, Chew EY, Heckenlively JR, Francis PJ, Katsanis N, Haines JL, Gorin MB, Abecasis GR, Swaroop A, CAPT Research Group, AMD GWAS Consortium (2009) Genomewide scan for age-related macular degeneration. *The 59th Annual meeting of the American Society of Human Genetics* (platform)
6. Sivakumaran TA, Igo RP Jr, Kidd JM, Itsara A, Kopplin LJ, **Chen W**, Hagstrom SA, Peachey NS, Francis PJ, Klein ML, Chew EY, Ramprasad VL, Leontiev DV, Jun G, Wang Y, Tian L, Henning AK, LaFramboise T, Sen P, Aarthi M, George R, Raman R, Das MK, Vijaya L, Kumaramanickavel G, Lee KE, Swaroop A, Abecasis GR, Klein R, Klein B EK, Nickerson DA, Eichler EE, Iyengar SK (2009) Non-Y402H SNPs and copy number at the *CFH*-RCA locus are associated with AMD. *The 59th Annual meeting of the American Society of Human Genetics* (platform)
7. Ding J, Gudjonsson JE, Liang L, Stuart PE, **Chen W**, Nair RP, Elder JT, Abecasis GR (2009) A method to estimate the sharing of eQTLs between tissues, with application to skin and lymphoblastoid cells. *The 59th Annual Meeting of the American Society of Human Genetics* (poster)

8. Swaroop A, **Chen W**, Stambolian D, Branham KE, Othman M, Chew EY, Heckenlively J, Tosakulwong N, Edwards AO, Abecasis GR. Genome Wide Association Study (GWAS) of Age-Related Macular Degeneration (AMD) (2009) *The Annual Meeting of the Association for Research in Vision and Ophthalmology* (poster)
9. **Chen W***, Fu H. (2009) A Bayesian approach for tailored therapy strategy: hidden markov mixture ITP model for predicting patient response to therapy. *Joint Statistical Meeting* (poster)
10. Kunju LP, **Chen W**, Kleeer CG (2009) ER/PR Positive and ER/PR Negative DCIS: Morphologic Characterization in a Cohort of Age-Matched Cases. *The Annual Meeting of United States and Canadian Academy of Pathology* (poster)
11. Gorin MB, Jakobsdottir J, Conley JP, Ortube MC, Ferrell RE, **Chen W**, Abecasis GR, Swaroop A, Edwards AO, Stambolian DE, Weeks DE (2009) Further Explorations in the Genetics of Age-related Maculopathy (ARM). *The Annual Meeting of the Association for Research in Vision and Ophthalmology* (poster)
12. Ding J, Gudjonsson JE, Liang L, Nair RP, **Chen W**, Stuart PE, Voorhees JJ, Elder JT, Abecasis GR (2009) Genome-wide association study of gene expression in human skin. *Cold Spring Harbor Biology of Genomes meeting* (poster)
13. **Chen W***, Li Y, Abecasis GR (2008) State Space Reduction in Hidden Markov Model for Haplotyping, Imputation and Analysis of Shotgun Sequence Data. *The 58th Annual Meeting of the American Society of Human Genetics* (poster)
14. Ding J, Gudjonsson JE, Liang L, **Chen W**, Nair RP, Stuart PE, Voorhees JJ, Elder JT, Abecasis GR (2008) A genome-wide association study of gene expression in skin. *The 58th Annual Meeting of the American Society of Human Genetics* (poster)
15. **Chen W***, Liang L, Lathrop GM, Cookson W OC, Abecasis GR (2007) MRBS Browser: Graphical browsing for whole-genome association studies of global gene expression. *The 57th Annual Meeting of the American Society of Human Genetics* (poster)

*Presenting Author

PATENT APPLICATION

Listed as co-inventor of the patent application titled “Compositions and methods for diagnosing and treating macular degeneration Grant” (submitted 2010)

PROFESSIONAL SERVICE AND AFFILIATIONS

Peer-Reviewed Multiple Articles for: *Bioinformatics, PLoS One, Molecular Vision*

American Society of Human Genetics	2007 - Present
American Statistical Association	2009 - Present
Member of the Mathematical Association of America	2005
Member of American Mathematical Society	2003 – 2005

COMPUTER SKILLS

Proficient in C, C++, R, Perl and UNIX;
Comfortable with SAS, MATLAB and Latex

REFERENCES

Dr. Gonçalo R. Abecasis

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