

Position and Title

Assistant professor, Department of Biostatistics, the University of Alabama at Birmingham

Contact Information

Department of Biostatistics
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Education

- May 2005 **Ph.D.**, Biostatistics
Department of Epidemiology and Public Health, Yale University
Dissertation: "Statistical Methods for Haplotype Analysis in Genetic Studies"
Committee: Theodore R. Holford, Hongyu Zhao, Kenneth K. Kidd
- May 2003 **M.Phil.**, Biostatistics
Department of Epidemiology and Public Health, Yale University
- Jul 1993 **M.S.**, Applied Mathematics
Peking University, Beijing, China
- Jul 1990 **B.S.**, Computational Mathematics
Peking University, Beijing, China
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Professional Experience

- Aug 2005 – present **Assistant Professor**, Department of Biostatistics, the University of Alabama at Birmingham
- Feb 2003 – Jul 2005 **Research Assistant**, Department of Epidemiology and Public Health, Yale University
- Jun 2004 – Jul 2005 **Consultant**, University of Connecticut Health Center, Farmington, CT
- Jan 2004/2001 – May 2004/2001 **Teaching Assistant**, Department of Epidemiology and Public Health, Yale University
- Sep 2002 – Feb 2003 **Research Assistant**, Department of Genetics, Yale University
- Nov 2001 – Sep 2002 **Research Assistant**, Connecticut Mental Health Center and Department of Psychiatry, Yale University
- Sep 2000 – Dec 2001 **Statistical Lab Tutor**, Department of Epidemiology and Public Health, Yale University
- Aug 1998 – Jun 1999 **Researcher**, China Academic Library and Information System Administration Center, Peking University, China
- Jul 1993 – Aug 1998 **Researcher & Software Engineer**, Institute of Computer Science and Technology, Peking University

- Nov 1994 – Dec 1995 **Draftsman**, participation in creating the China national standard: Chinese Internal Code Specification (abbreviated as GBK)
- Sep 1990 – Jul 1992 **Teaching Assistant**, Department of Mathematics, Peking University, China
- Oct 1989 – Jun 1990 **Research Assistant**, Department of Mathematics, Peking University, China
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Honors and Awards

International Genetic Epidemiology Society Travel Award (2005)
 Departmental Graduate Fellowship for tuition and stipend, Yale University (1999 - 2001)
 Guanghua Scholarship, Peking University; merit scholarship for students (1989, 1992)

Research Interests

1. Statistical genetics and genomics: Genetic linkage and association analysis, disequilibrium mapping, haplotype analysis, population genetics, and bioinformatics.
 2. Statistics/Biostatistics: Machine learning methods, longitudinal data analysis, survival analysis, missing data problems and imputation methodology, and their applications in genetics and bioinformatics.
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Selected Current Grant Support

R01GM081488 (PI: Nianjun Liu) NIH/NIGMS Genome Wide Haplotype Association Analysis	04/01/08 - 03/31/13
R01HL092173 (PI: Nita Limdi) NIH/NHLBI Genetic and Environmental Determinants of Warfarin Response	05/20/08 – 04/30/13
R01GM077490 (PI: David Allison) NIH/NIGMS Genome-wide Structured Association Testing & Regional Admixture Mapping	09/01/07- 08/31/11

Professional Services

Journal Reviewing

Annals of Human Genetics
 Bioinformatics
 Biometrics
 Biostatistics
 BMC Bioinformatics
 Cancer Epidemiology Biomarkers & Prevention
 Computational Statistics and Data Analysis
 Genetic Epidemiology
 Human Heredity
 Human Molecular Genetics
 JAMA

Journal of Clinical Endocrinology and Metabolism
 Molecular Psychiatry
 PLoS Genetics
 Statistica Sinica

Conference Reviewing

Computational Systems and Bioinformatics Conference (CSB) 2006

Grant Reviewing

The Israel Science Foundation, 2008

The Association of Schools of Public Health (ASPH)/Centers for Disease Control and Prevention (CDC)/Prevention Research Centers (PRC) Minority Fellowship Program Application Review Committee, 2007

Working Committee

Member, China Information Technology Standardization Technical Committee, 1995 - 1997

Member, China Universal Multiple-Octet Coded Character Set Working Group, 1995 – 1997

Other

April 2008 – present Member, Postdoc Search Committee, Section on Statistical Genetics, Department of Biostatistics, University of Alabama at Birmingham

Professional Memberships

American Statistical Association
 Institute of Mathematical Statistics
 American Society of Human Genetics
 International Genetic Epidemiology Society

Course Taught

Course Instructors

General Linear Models	Fall, 2008
Dept of Biostatistics, the University of Alabama at Birmingham	
Gave lecture, graded assignments and examinations	
Non Thesis Research	Fall, 2008
Dept of Biostatistics, the University of Alabama at Birmingham	
Gave lecture, graded assignments and examinations	
Statistical Consulting	Summer, 2008
Dept of Biostatistics, the University of Alabama at Birmingham	
Gave lecture, graded assignments and examinations	
General Linear Models	Fall, 2007
Dept of Biostatistics, the University of Alabama at Birmingham	
Gave lecture, graded assignments and examinations	

Lectures

Introduction to Statistical Genetics	Spring, 2007
One lecture on haplotype analysis	Dept of Biostatistics, Univ of Alabama at Birmingham
Quantitative Methods	Spring, 2007
One lecture on pharmacokinetics statistics	Dept of Biostatistics, Univ of Alabama at Birmingham
Principles of Genetics/Genetic Basis of Disease	Spring, 2006
One lecture on genetic association analysis	Dept of Biostatistics, Univ of Alabama at Birmingham

Teaching Assistants

Statistical Thinking	Spring, 2001, 2004
Taught recitation classes for graduate course on statistical analysis. Graded assignments and examinations	Department of Epidemiology and Public Health, Yale University
Statistical Lab Tutor	Sep 2000 – Dec 2001
Helped students and some other members of the Yale Medical School with statistical analysis in their assignments, projects, theses, and studies	Department of Epidemiology and Public Health, Yale University
Calculus, Advanced Algebra and C Programming Language	Sep 1990 – Jul 1992
Taught recitation classes for undergraduate students. Graded assignments and examinations	Department of Mathematics, Peking University, China

Mentorship Activities

Oct 2008 - present	Advisor of Samantha Seals, Ph.D. student in the Department of Biostatistics, University of Alabama at Birmingham
Aug 2007 – Dec 2008	Advisor and mentor of Fenglong Xie, M.S. student in the Department of Biostatistics, University of Alabama at Birmingham Master project: Are SNPs in FCAR Associated with SLE?
2007	Member, mater thesis committee for Justin T. Arcury

Publications

Peer Reviewed

1. **N. Liu**, S.L. Sawyer, N. Mukherjee, A.J. Pakstis, J.R. Kidd, K.K. Kidd, A.J. Brookes, H. Zhao (2004) Haplotype Block Structures Show Significant Variation among Populations. *Genetic Epidemiology* 27: 385-400.
2. G. Sanacora, R.M. Berman, A. Cappiello, D. Oren, A. Kugaya, **N. Liu**, R. Gueorguieva, D. Fasula, D. Charney (2004) Addition of the α 2-Antagonist Yohimbine to Fluoxetine: Effects on Rate of Antidepressant Response. *Neuropsychopharmacology* 29: 1166-1171.
3. J.H. Krystal, W. Abi-Saab, E. Perry, C. D'Souza, **N. Liu**, R. Gueorguieva, L. McDougall, T. Hunsberger, A. Belger, L. Levine, A. Breier (2005) Preliminary Evidence of Attenuation

- of the Disruptive Effects of the NMDA Glutamate Receptor Antagonist, Ketamine, on Working Memory by Pretreatment with the Group II Metabotropic Glutamate Receptor (mGluR) Agonist, LY354740, in Healthy Human Subjects. *Psychopharmacology* 179: 303-309.
4. **N. Liu**, L. Chen, S. Wang, C. Oh, H. Zhao (2005) Comparison of Single Nucleotide Polymorphisms and Microsatellites in Inference of Population Structure. *BMC Genetics* 2005, 6(Suppl 1):S26.
 5. L. Chen, **N. Liu**, S. Wang, C. Oh, H. Zhao (2005) Whole Genome Association Studies in Alcoholism Comparing Different Phenotypes Using Single-Nucleotide Polymorphisms and Microsatellites. *BMC Genetics* 2005, 6(Suppl 1):S130.
 6. S. Wang, S. Huang, **N. Liu**, L. Chen, C. Oh, H. Zhao (2005) Whole-Genome Linkage Analysis in Mapping alcoholism genes Using Single Nucleotide Polymorphisms and Microsatellites. *BMC Genetics* 2005, 6(Suppl 1):S28.
 7. C. Oh, S. Wang, **N. Liu**, L. Chen, H. Zhao (2005) A Bayesian Genome Screening of Maximum Number of Drinks as an Alcoholism Phenotype with the New Haseman-Elston Method. *BMC Genetics* 2005, 6(Suppl 1):S116.
 8. S. Huang, S. Wang, **N. Liu**, L. Chen, C. Oh, H. Zhao (2005) Whole-Genome Scan in Mapping Recombination Modifier Genes Using Single Nucleotide Polymorphisms and Microsatellites. *BMC Genetics* 2005, 6(Suppl 1):S51.
 9. Y. Liu, **N. Liu**, H. Zhao (2005) Inferring protein-protein interactions through high-throughput interaction data from diverse organisms. *Bioinformatics* 21: 3279-3285.
 10. **N. Liu**, I. Beeraman, R. Lifton, H. Zhao (2006) Haplotype Analysis in the Presence of Informatively Missing Genotype Data. *Genetic Epidemiology* 30: 290–300.
 11. B. Wu, **N. Liu**, H. Zhao (2006) PSMIX: an R Package for Population Structure Inference via Maximum Likelihood Method. *BMC Bioinformatics* 2006, 7:317.
 12. **N. Liu**, H. Zhao (2006) A Non-parametric Approach to Population Structure Inference Using Multilocus Genotypes. *Human Genomics* 2(6): 353-364.
 13. D. Redden, J. Divers, L. Vaughan, H. Tiwari, M. Beasley, J. Fernandez, R. Kimberly, R. Feng, M. Padilla, **N. Liu**, M. Miller, D. Allison (2006) Regional Admixture Mapping and Structured Association Testing: Conceptual Unification and an Extensible General Linear Model. *PLoS Genet* 2(8): e137.
 14. S. Wu, L. Leng, Z. Feng, **N. Liu**, H. Zhao, C. McDonald, A. Lee, F. Arnett, P. Gregersen, M. Mayes, R. Bucala (2006) Macrophage Migration Inhibitory Factor Promoter Polymorphisms and the Clinical Expression of Scleroderma. *Arthritis and Rheumatism* 54: 3661-3669.
 15. S. Musani, D. Shriner, **N. Liu**, R. Feng, C. Coffey, N. Yi, H. Tiwari, D. Allison (2007) Detection of GenXGene Interactions in Genome-Wide Association Studies of Human Population Data. *Human Heredity* 63:67-84.
 16. J. Arcaroli, J. Sankoff, **N. Liu**, D. B. Allison, J. Maloney, E. Abraham (2008) Association between Urokinase Haplotypes and Outcome from Infection-Associated Acute Lung Injury. *Intensive Care Medicine* 34:300–307.
 17. J.M. Kelley, L.B. Hughes, R. Feng, **N. Liu**, M.A. Padilla, L.K. Vaughan, S.L. Bridges (2008) Evaluating Linkage Disequilibrium and Recombination Provides a Haplotype-

- tagging SNP Panel of the Major Histocompatibility Complex in African Americans. *Genes and Immunity* 9:271–273.
18. **N. Liu**, K. Zhang, H. Zhao (2008) Haplotype-Association Analysis. *Adv. Genet.* 60:335-405.
 19. N.A. Limdi, T.M. Beasley, M.R. Crowley, J.A. Goldstein, M.J. Rieder, D.A. Flockhart, D.K. Arnett, R.T. Acton, **N. Liu** (2008) VKORC1 polymorphisms, haplotypes and haplotype groups on warfarin dose among African–Americans and European–Americans. *Pharmacogenomics*, 9:1445-1458.
 20. W.K. Chung, A. Patki, N. Matsuoka, B.B. Boyer, **N. Liu**, S.K. Musani, A. Goropashnaya, P.L. Tan, N. Katsanis, S.B. Johnson, P.K. Gregersen, D.B. Allison, R.L. Leibel, H.K. Tiwari (2009) Analysis of 30 Genes (355 SNPS) Related to Energy Homeostasis for Association with Adiposity in European-American and Yup'ik Eskimo Populations. *Human Heredity* 67:154-162 (DOI: 10.1159/000181153).
 21. **N. Liu**, D. Zhang, H. Zhao (2009) Genotyping Error Detection in Samples of Unrelated Individuals without Replicate Genotyping. *Human Heredity* 67:154-162 (DOI: 10.1159/000181153).
 22. **N. Liu**, R. Bucala, H. Zhao (2008) Modeling Informatively Missing Genotypes in Haplotype Analysis. *Communications in Statistics – Theory and Methods* (In press).

Book Chapters

1. Z. Feng, **N. Liu**, and H. Zhao (2007). Haplotype inference and association analysis in unrelated samples. In “Current Topics in Human Genetics: Studies in Complex Diseases” (H. W. Deng, H. Shen, Y. J. Liu, and H. Hu, eds.), pp. 135–176. World Scientific Publishing Company, Singapore

Published Conference Abstracts

1. G. Sanacora, R. Berman, A. Cappeillo, D. Oren, **N. Liu**, D. Charney. Addition of the 2-antagonist Yohimbine to Fluoxetine: Effects on Rate of Antidepressant Response. The Society of Biological Psychiatry 57th Annual Meeting, Philadelphia PA, May 16-18, 2002.
2. J.H. Krystal, W. Abi-Saab, E. Perry, C. D’Souza, **N. Liu**, L. McDougall, A. Belger, L. Levine, A. Breier. Modulation of Ketamine-induced Working Memory Deficits in Healthy Human Subjects by the Group II Metabotropic Agonist, LY354740. The American College of Neuropsychopharmacology 41st Annual Meeting, San Juan, Puerto Rico, December 8-12, 2002.
3. G. Sanacora, R. Berman, A. Cappeillo, D. Oren, **N. Liu**, D. Charney. The 2-antagonist Yohimbine Hastens Antidepressant Response to Fluoxetine. The American College of Neuropsychopharmacology 41st Annual Meeting, San Juan, Puerto Rico, December 8-12, 2002.
4. **N. Liu**, H. Zhao. A Nonparametric Approach for Population Structure Inference Using Multilocus Genotypes. The American Society of Human Genetics 54th Annual Meeting, Toronto, Ontario, Canada, October 26-30, 2004.
5. J.H. Krystal, E. Perry, W. Abi-Saab, C. D’Souza, **N. Liu**, R. Gueorguieva, L. McDougall, T. Hunsberger, A. Belger, L. Levine, A. Breier. Preliminary Evidence of Attenuation of the Disruptive Effects of the NMDA Glutamate Receptor Antagonist, Ketamine, on Working Memory by Pretreatment with the Group II Metabotropic Glutamate Receptor (mGluR)

- Agonist, LY354740, in Healthy Human Subjects. The International Congress on Schizophrenia Research, Savannah, Georgia, April 2-6, 2005.
6. **N. Liu**, H. Zhao. Haplotype Analysis in the Presence of Missing Data. International Genetic Epidemiology Society 14th Annual Meeting, Park City, Utah, October 23-24, 2005
 7. S. Gu, **N. Liu**, H. Zhao, K.K. Kidd. The Efficiency and Transferability of tagSNPs in Six Populations from Three tagSNP Selection Algorithms. The American Society of Human Genetics 55th Annual Meeting, Salt Lake City, Utah, October 25-29, 2005.
 8. **N. Liu**, I. Beerman, R. Lifton, H. Zhao. Haplotype Analysis in the Presence of Missing Data. The American Society of Human Genetics 55th Annual Meeting, Salt Lake City, Utah, October 25-29, 2005.
 9. **N. Liu**. Using Disease Information in TagSNP selection for Disease Association Mapping. The American Society of Human Genetics 56th Annual Meeting, New Orleans, October 9-13, 2006.
 10. **N. Liu**, D. Zhang, H. Zhao. Genotyping error detection in unrelated samples. The American Society of Human Genetics 57th Annual Meeting, San Diego, October 23-27, 2007.
 11. **N. Liu**. Modeling SNP genotype data with informative missingness in samples of unrelated individuals. The American Society of Human Genetics 58th Annual Meeting, Philadelphia, November 12-15, 2008.
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Oral Presentations

Conference Oral Presentations

1. **N. Liu**, S.L. Sawyer, N. Mukherjee, A.J. Pakstis, J.R. Kidd, K.K. Kidd, A.J. Brookes, H. Zhao. Measures of Similarity for Haplotype Block Structures Show Variation among Populations. The American Society of Human Genetics 53rd Annual Meeting, Los Angeles, California, USA, November 4-8, 2003.
2. **N. Liu**, S.L. Sawyer, N. Mukherjee, A.J. Pakstis, J.R. Kidd, K.K. Kidd, A.J. Brookes, H. Zhao. Similarity Measures for Haplotype Block Structures Show Variation Among 16 Populations. The International HapMap Community Analysis Meeting, Baltimore, MD, USA, April 18-20, 2004.
3. **N. Liu**, D. Zhang, H. Zhao. Genotyping Error Detection in Samples of Unrelated Individuals. International Biometric Society ENAR Annual Meeting, Arlington, VA, USA, March 16-19, 2008.
4. **N. Liu**, I. Beerman, R. Lifton, R. Bucala, H. Zhao. Haplotype Analysis in the Presence of Informatively Missing Genotype Data. 1st NHGRI-funded Conference: Haplotype Analysis of Population & Pedigree Data in Association Studies. Birmingham, AL, USA, May 7 - 8, 2008.

Invited Seminar Talks

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| Dec. 9, 2004 | Computational Biology and Bioinformatics Track, Yale University |
| Mar. 4, 2005 | Department of Mathematics and Statistics, Georgia State University |
| Mar. 24, 2005 | Center for Human Genetics Research, Vanderbilt University |
| Mar. 28, 2005 | Department of Biostatistics, School of Public Health, University of Alabama at Birmingham |

- Apr. 8, 2005 Department of Biostatistics, The Johns Hopkins University
- Apr. 15, 2005 Department of Biostatistics and Applied Mathematics, University of Texas M.D. Anderson Cancer Center
- Apr. 22, 2005 ROWE Program in Human Genetics, University of California, Davis