

Samprit Banerjee, M. Stat.

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Education

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| 2003 – 2008 (expected) | PhD in Biostatistics
Dept. of Biostatistics, University of Alabama at Birmingham
Concentration: Statistical Genetics |
| 2001-2003 | M.Stat (Masters in Statistics)
Indian Statistical Institute, Kolkata, India
Specialization: <i>Biostatistics and Data Analysis</i> |
| 1998-2001 | B.Stat (Bachelors in Statistics)
Indian Statistical Institute, Kolkata, India |

Dissertation Summary

My dissertation is titled “*Bayesian multivariate modeling of multiple traits for genome-wide epistatic QTL mapping*”. I have developed Bayesian MCMC algorithms to model two multivariate models, namely, Seemingly Unrelated Regression model and the traditional multivariate model to detect genes, gene-by-gene interaction and gene-by-environment interactions across the whole genome. I have compared the performance of these methods with the univariate trait-by-trait analysis and found that the SUR model is best suited for the QTL mapping framework in terms of identification.

Research Experience

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| Jun 2005 - Present | Graduate Research Assistant under Dr. Nengjun Yi , Dept. of Biostatistics, University of Alabama, Birmingham
<i>Developing Bayesian methods to detect gene by gene and gene by environment interaction for QTL's in inbred mice.</i> |
| Aug 2003 –June 2005 | Graduate Research Assistant, under Dr. Varghese George , Dept. of Biostatistics, University of Alabama at Birmingham
<i>Worked on Marginal Structural Models to investigate genetic effect in AIDS.
Worked on developing Bayesian methods for QTL detection in Human Genetics.</i> |
| Summer 2001: | Research Assistant under Dr. B. Roy , Dr. D. Sengupta and Dr. P. Chaudhuri , Indian Statistical Institute, Kolkata.
<i>Data handling and preliminary statistics for the lifetime of currency notes- a part of a project for the Reserve Bank of India.</i> |

Teaching Experience

- 2007 Teaching Assistant for Quantitative Methods in Epidemiology, (Graduate level Epidemiology course) (Summer 2007), University of Alabama at Birmingham.
- 2003 Tutoring service for Biostatistics for Public Health, (Graduate level course for Public Health personnel) (Fall 2003) at University of Alabama at Birmingham.

Presentations (not exhaustive)

- 2008 Two-day offsite Retreat, Section on Statistical Genetics, Dept. of Biostatistics, UAB, January 2008: "Bayesian QTL Mapping with Multiple Traits"
- 2007 Job Talk, Dept of Biostatistics, Medical College of Georgia, November: "Bayesian QTL Mapping with Multiple Traits" ([Abstract](#))
- Joint Statistical Meeting, Salt Lake City, July 2007: "Bayesian SUR Modeling of Multiple Ordinal Traits for Genome-Wide Epistatic QTL Mapping" ([Abstract](#)).
- ENAR, Atlanta, March 2007: "Modeling of Multiple Traits for Genome-wide Epistatic QTL Mapping" ([Abstract](#)).
- Invited Seminar, [Human Genetics Unit](#), Indian Statistical Institute, Kolkata, India, July 2007: "Bayesian Multiple Traits Analysis for QTL Mapping With Seemingly Unrelated Regression".
- Class presentation, Advanced Bayesian Inference, UAB December 2007: "Bayesian Sparse Regression"
- Journal Club Meeting, Section on Statistical Genetics, Dept. of Biostatistics, UAB, May 2007: "Bayesian Modeling of Multivariate Quantitative Traits using Seemingly Unrelated Regression"
- 2005 Class presentation, Population Genetics, UAB, December 2005: "Statistical Issues in Forensic Sciences"
- Journal Club Meeting, Dept. of Biostatistics, UAB, September 2005: "A Seemingly Unrelated Poisson Regression Model".
- Journal Club Meeting, Section on Statistical Genetics, Dept. of Biostatistics, UAB, May 2005: "Mapping Quantitative Trait Loci with Censored Observations"
- Class presentation, Statistical Genetics – II, UAB, April 2005: "The Coalescent Theory"
- 2004 Class presentation, Statistical Genetics – I, UAB, November 2004: "Construction of Multilocus Genetic Linkage Maps in Humans – The Lander-Green algorithm"

Short Courses and Workshops

- 2008 The 2008 International Workshop on Methodology of Twin and Family Studies, University of Colorado at Boulder.
- 2006 Advanced QTL Mapping module of the 11th Annual [Summer Institute in Statistical Genetics](#), University of Washington at Seattle.

CURRICULUM VITAE

HPC (High Performance Computing) [Bootcamp](#) (2006, 2007), University of Alabama at Birmingham.

2005 Short Course in R, Univ. of Alabama at Birmingham (Instructor: [Dr. Thomas Lumley](#)).

Published Works

- 1) Yandell BS, Mehta T, **Banerjee S**, Shriner D, Venkataraman R, Moon JY, Neely WW, Wu H, Smith Rv, Yi N (2007)- R/qtlbim: QTL with Bayesian interval mapping in experimental crosses. **Bioinformatics** 23(5):641-3.
- 2) Yi N, Shriner D, **Banerjee S**, Mehta T, Pomp D and Yandell BS (2006). An efficient Bayesian model selection approach for interacting QTL models with many effects. **Genetics** 176(3) 1865-77.
- 3) Yi N, **Banerjee S**, Pomp D and Yandell BS (2006). Bayesian mapping of genome-wide interacting QTL for ordinal traits. **Genetics** 176(3) 1855-64.
- 4) Mikuls TR, Saag KG, George V, Mudano AS and **Banerjee S**,(2004) Racial Disparities in the Receipt of Osteoporosis Related Healthcare Among Community-Dwelling Older Women with Arthritis and Previous Fracture. **J of Rheumatology** 32 p 870-875.

Manuscripts under review/ in preparation

- 1) **Banerjee S**, Yandell BS and Yi N: Bayesian QTL mapping with multiple traits. *Submitted to Genetics*.
- 2) **Banerjee S** and Yi N: Large-scale hierarchical generalized linear model for genome-wide QTL analysis. *To be submitted*.
- 3) Mountz JD, Lu Lu, Yi N, **Banerjee S**, Williams RW, Hsu HC: Multiplex inheritance of generalized autoimmune disease in BXD2 recombinant inbred strain of mice.
- 4) Musani S, Yi N, **Banerjee S**, Barlow SC, Zhang J, Li Q, Allison DB and Bullard DC, : Mapping Quantitative Trait Loci for ordinal diseases via EM algorithm based on the standardized threshold model.
- 5) **Banerjee S** and Yi N, Modeling of multiple traits for genome-wide epistatic QTL mapping. *Work in progress*.
- 6) **Banerjee S** and Yi N, Bayesian tests for pleiotropy and pleiotropy vs. close linkage. *Work in progress*.
- 7) **Banerjee S** and Yi N, Mapping QTL for multivariate ordinal traits. *Work in progress*.

Software Skills

Statistical Software	R, SAS and Matlab.
Programming languages	C, C++, FORTRAN.
Typesetting software	Microsoft Excel, Microsoft Word, LaTeX, Mathtype
Operating Systems	Window, Linux and UNIX.
Software development tools	CVS, SVN, Bugzilla, Confluence and Jira.

Software Development

Part of the [R/qtlbim](#) (Yandell *et. al.* 2007) development team.

R/qtlbim is an extensible, interactive environment for the Bayesian Interval Mapping of QTL, built on top of R/qtl (Broman et al. 2003), providing Bayesian analysis of multiple interacting quantitative trait loci (QTL) models for continuous, binary and ordinal traits in experimental crosses.

R/qtlbim v.2.0.0 would be a major release in Spring 2008 and would include part of my work (Bayesian multiple QTL mapping for multiple correlated traits) on my dissertation.

Fellowships and Awards

2008	Awarded 3 rd prize for the Graduate Students Research Day competition at UAB.
2006	Awarded fee-waiver and travel award (\$500) for the 11 th Annual Summer Institute in Statistical Genetics (2006), University of Washington, Seattle.
2001	Masters in Statistics Scholarship, Indian Statistical Institute, 2001-2003.
1998	Bachelors in Statistics Scholarship, Indian Statistical Institute, 1998-2001.
1996	Ranked 42 nd (of 0.7 million) in the state of West Bengal, Higher Secondary Examination/
1995	Received Gold Medal in the All India Mathematics Talent Search Test.

Memberships

2006 – present	American Statistical Association
2006 -- present	International Biometric Society, Eastern North American Region (ENAR)

Referees

Nengjun Yi, PhD

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David B. Allison, PhD

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