

Jing Ma, Ph.D.

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ADDRESS

- Fred Hutchinson Cancer Research Center
Division of Public Health Sciences
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EDUCATION

- University of Michigan, Ann Arbor, MI, Ph.D., Statistics, 2015
Advisor: Prof. George Michailidis
Dissertation Title: Estimation and Inference in High-Dimensional Gaussian Graphical Models with Structural Constraints
- Fudan University, Shanghai China, B.S., Mathematics, 2010
with University Distinction (Highest)

POSITIONS AND EMPLOYMENT

- Assistant Member, Biostatistics, Division of Public Health Sciences, Fred Hutch Cancer Research Center, 8/2017 -
- Postdoctoral Research Fellow, Department of Biostatistics and Epidemiology & Department of Statistics, University of Pennsylvania, 8/2015 - 7/2017

AWARDS, HONORS AND SCHOLARSHIPS

National Awards

- National Science Foundation Conference Travel Grant, 2015
- National Merit Scholarship from Ministry of Education of China, 2008

Department/University Awards

- Rackham School of Graduate Studies Conference Travel Grant, 2012, 2013, 2014 & 2015
- Outstanding Graduate Student Instructor Award, 2012-2013
- Rackham International Students Fellowship, 2011-2012
- Outstanding First Year Ph.D. Student Award, 2011
- College Graduate Excellence Award of Shanghai, 2010

RESEARCH INTERESTS

- Graphical models, network analysis
- High-dimensional statistical inference
- Applications to genomics, metabolomics and microbiome

BIBLIOGRAPHY

Refereed Research Articles

1. **Ma, J.**, Shojaie, A. and Michailidis, G. Network-based pathway enrichment analysis with incomplete network information. *Bioinformatics* 32(20):3165–3174, 2016.
2. **Ma, J.** and Michailidis, G. Joint structural estimation of multiple graphical models. *Journal of Machine Learning Research* 17:1–48, 2016.
3. von Rundstedt, F., Kimal, R., **Ma, J.**, Arnold, J., Gohlke, J., Putluri, V., Krishnapuram, R., Piyarathna, D., Lotan, Y., Godde, D., Roth, S., Storkel, S., Levitt, J., Michailidis, G., Lerner, S., Coarfa, C., Sreekumar, A., Putluri, N. Integrated pathway analysis of a metabolic signature in bladder cancer - a linkage to The Cancer Genome Atlas project and prediction of survival. *Journal of Urology* 195(6):1911–1919, 2016.
4. *Cai, T. T., **Ma, J.** and Zhang, L. CHIME: clustering of high-dimensional Gaussian mixtures with EM algorithm and its optimality. *To appear in Annals of Statistics*. 2018
[L. Zhang was a recipient of ASA Biopharmaceutical Section Student Paper Award at the 2017 ICASA Applied Statistics Symposium.]

Invited Book Chapters

5. Li, H. and **Ma, J.** Graphical models in genetics, genomics and metagenomics. In *Handbook of Graphical Models*. Editors: Mathias Drton, Steffen Lauritzen, Marloes Maathuis, Martin Wainwright. Chapman & Hall / CRC, 2017.

Papers under Review

6. *Cai, T. T., Li, H., **Ma, J.**, and Xia, Y. Differential Markov random field analysis with applications to detecting differential microbial community structures. *In revision for Biometrika*.
7. Vantaku, V., Putluri, V., Bader, D., Maity, S., **Ma, J.**, Arnold, J., Rajapakhe, K., Donepudi, S., von Rundstedt, F., Devarakonda, V., Karanam, B., McGuire, S., Stossi, F., Coarfa, C., Kavuri, S., Lotan, Y., Sreekumar, A., Putluri, N. Epigenetic loss of AOX1 expression via EZH2 leads to metabolic deregulation and more aggressive bladder cancer. *In revision for Nature Communications*.
8. **Ma, J.**, Shojaie, A. and Michailidis, G. A comparative study of network-based pathway enrichment analysis methods. *Submitted to Briefings in Bioinformatics*.

Work in Progress

- **Ma, J.**, Karnovsky, A., Afshinnia, F., Wigginton, J., Feldman, H., Rader, D., Shama, K., Porter, A., Rahman, M., He, J., Hamm, L., Shafi, T., Pennathur, S., Michailidis, G. Differential network-based enrichment analysis of lipid pathways altered in Chronic Kidney Disease progression. *In preparation for Cell Systems*.

Technical Reports

- *Cai, T. T., Li, H. and **Ma, J.** A zero-inflated Poisson model for metagenomic microbial community profiling.

FUNDING HISTORY

Funded Projects as Co-Investigator: Ongoing

- **NIH R21 Award**; Role: Co-I (PI: A. Roxby; Sub: D. Fredricks). 4% FTE.
Title: “DMPA use and vaginal bacterial diversity among African women”. 4/2018 -

*alphabetical ordering authorship

Funded Projects as Co-Investigator: Pending

- NIH R01 Award; Role: Co-I (PI: M. C. Wu). 20% FTE.
Title: “Joint Analysis of Microbiome and Other Genomic Data Types”. Submitted in 10/2017.
- NIH U19 Award; Role: Co-I (PI: D. Promislow; Sub: S. Schwartz). 15% FTE.
Title: “The Dog Aging Project: The Genetic and Environmental Determinants of Healthy Aging in Companion Dogs”. Submitted in 1/2018.
- NIH R01 Award; Role: Co-I (PIs: H. Bolouri and S. Meshinchi). 10% FTE.
Title: “Transcription Networks underlying Poor Prognosis in Pediatric AML”. Submitted in 2/2018.
- NIH R01 Award; Role: Co-I (PI: M. C. Wu). 10% FTE.
Title: “New Kernel Machine Methods for Chemical Mixtures in Environmental Genomic Studies”. Submitted in 2/2018.

SOFTWARE

- **netgsa**: R-package for network-based gene set analysis. On [CRAN](#).
- **CHIME**: Matlab code for clustering high-dimensional Gaussian mixtures with the EM algorithm. On [GitHub](#).
- **TestBMN**: R-package for differential analysis of binary Markov networks. On [GitHub](#).

ORAL PRESENTATIONS

Invited Oral Presentations at Conferences and Symposia

- Joint Statistical Meetings, Vancouver, Canada. (7/2018)
- 12th International Vilnius Conference on Probability Theory and Mathematical Statistics / 2018 IMS Annual Meeting on Probability and Statistics, Vilnius, Lithuania. (7/2018)
- 2018 Fred Hutch Microbiome Symposium, Seattle, WA. (3/2018)
- ICSA Applied Statistics Symposium, Chicago, IL. (6/2017)
- ICSA Applied Statistics Symposium, Atlanta, GA. (6/2016)
- ICSA/KISS Joint Applied Statistics Symposium, Portland, OR. (6/2014)

Invited Seminars and Colloquia

- Translational Research Program Faculty Meeting, Public Health Sciences Division, Fred Hutchinson Cancer Research Center, Seattle, WA. (2/2018)
- Postdoc Meeting, Public Health Sciences Division, Fred Hutchinson Cancer Research Center, Seattle, WA. (2/2018)
- SLAB LAB, Department of Biostatistics, University of Washington, Seattle, WA. (2/2018)
- Biostatistics/ATME Joint Seminar, Public Health Sciences Division, Fred Hutchinson Cancer Research Center, Seattle, WA. (1/2018)
- Department of Statistics, University of Florida, Gainesville, FL. (1/2018)
- Department of Biostatistics, University of Washington, Seattle, WA. (1/2018)
- School of Mathematics, University of Bristol, Bristol, UK. (2/2017) [Declined]
- Biostatistics Program, Public Health Sciences Division, Fred Hutchinson Cancer Research Center, Seattle, WA. (2/2017)

- School of Mathematics and Statistics, University of Melbourne, Melbourne, Australia. (1/2017) [Declined]
- Department of Statistics, University of Warwick, Coventry, UK. (1/2017)
- Department of Mathematics and Statistics, Lancaster University, Lancaster, UK. (10/2016)

Contributed Oral Presentations

- Joint Statistical Meetings, Chicago, IL. (8/2016)
- Joint Statistical Meetings, Seattle, WA. (8/2015)
- The 9th ICSA International Conference, Hong Kong, China. (12/2013)
- Joint Statistical Meetings, Montreal, Canada. (8/2013)
- Joint Statistical Meetings, San Diego, CA. (8/2012)

Poster Presentations

- ENAR Annual Meeting, Washington D.C. (3/2017)
- Michigan Student Symposium for Interdisciplinary Statistical Sciences, Ann Arbor, MI. (4/2012 & 3/2014)

PROFESSIONAL ACTIVITIES

University/Center Service

- Co-Chair, ATME Affinity Group Seminar Series, Fred Hutch Cancer Research Center, 1/2018-
- Faculty host for UW prospective student visit, 3/2018
- Organizing committee member of the 2018 Fred Hutch Microbiome Symposium, 3/2018
- Student committee member of the Seventh Michigan Student Symposium for Interdisciplinary Statistical Sciences (MSSISS), 9/2012 - 4/2013
- Co-Chair, Graduate Student Statistical Topics Seminar Series, Department of Statistics, University of Michigan, 9/2011 - 4/2013
- Coordinator of Reading Group on Statistical Modeling and Analysis of Networks, Department of Statistics, University of Michigan, 9/2011 - 3/2012

Session Chair

- *Understanding the Microbiome Complexity – Genetics and Networks*, ICSA Applied Statistics Symposium, Chicago, IL. (6/2017)
- *Efficient Methods for Structured Large Genomics Data – Contributed Papers*, Joint Statistical Meetings, Chicago, IL. (8/2016)
- *Methods for Variable and Model Selection – Contributed Papers*, Joint Statistical Meetings, San Diego, CA. (8/2012)

Journal Review

- Referee for Bioinformatics (2)
- Referee for Biometrika (1)
- Referee for Biometrics (2)
- Referee for Biostatistics (1)
- Referee for Electronic Journal of Statistics (2)

- Referee for Journal of the American Statistical Association: Theory and Methods (1)
- Referee for Journal of Multivariate Analysis (2)
- Referee for ICIS 2016 (1)
- Referee for Molecular & Cellular Proteomics (1)
- Referee for NIPS 2016 (5)
- Referee for Scientific Reports (Nature) (1)
- Referee for Statistics in Biosciences (1)

Other

- Judge for 2018 ASA Section on Genomics and Genetics Student Paper Competition (3)

Professional Memberships

- Eastern North American Region International Biometric Society, 2016 - present
- International Chinese Statistical Association, 2014 - present
- American Statistical Association, 2010 - present

TEACHING

Graduate Courses

- Instructor for Review of Linear Algebra. Summer 2013 & 2014
- Instructor for the Applied Qualifying Exam. Summer 2012, 2013 & 2014
- Graduate Student Instructor, Multivariate and Categorical Data Analysis. Winter 2012
- Graduate Student Instructor, Applied Statistics and Data Analysis. Fall 2011 & 2012
[GSI Excellence in Teaching Award.]

Undergraduate Courses

- Graduate Student Instructor, Introduction to Probability and Statistics. Fall 2011 & Winter 2012
- Experienced Graduate Student Instructor, English Language Institute. Summer 2011
- Lab Instructor, Introduction to Statistics and Data Analysis. Fall 2010 & Winter 2011

ADVISING AND FORMAL MENTORING

PhD Student

- Kun Yue, UW Biostatistics PhD student (joint with A. Shojaie).

Student Collaborator

- Nanxun Ma, UW Biostatistics PhD student, working with M. C. Wu.

OTHER EXPERIENCES

- Research Assistant, Department of Computational Medicine & Bioinformatics, University of Michigan, 1/2015 - 7/2015
- Research Assistant, Department of Molecular & Cellular Biology, Baylor College of Medicine, 9/2014 - 5/2015
- Research Scientist Intern, Avaya Labs, 5/2013 - 7/2013
- Research Assistant, Center for Statistical Consultation and Research, University of Michigan, 1/2013 - 12/2013