CURRICULUM VITAE
Jing Ma, Ph.D.
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PERSONAL DATA

Place of Birth	Henan, China
Work Address	Fred Hutchinson Cancer Research Center
	Division of Public Health Sciences
	1100 Fairview Ave. N
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EDUCATION

2006-2010   Fudan University, Shanghai, China, B.S., Mathematics
with University Distinction (Highest)

2010-2015   University of Michigan, Ann Arbor, MI, Ph.D., Statistics
Advisor: Prof. George Michailidis

POSTGRADUATE TRAINING

2015-2017   Postdoctoral Research Fellow, Department of Biostatistics and Epidemiology & Department of Statistics, University of Pennsylvania.

FACULTY POSITIONS

2017-   Assistant Professor of Biostatistics, Division of Public Health Sciences, Fred Hutchinson Cancer Research Center.

2019-   Affiliate Assistant Professor, Department of Biostatistics, University of Washington.

2019-2020   Assistant Professor, Department of Statistics, Texas A&M University.

2020-   Adjunct Assistant Professor, Department of Statistics, Texas A&M University.

RESEARCH FUNDING

A. Current projects as Principal Investigator

2021-2022   Fred Hutch Pathogen-Associated Malignancies Integrated Research Center / Microbiome Research Pilot Award
Title: Statistical Methods for Network-based Analysis of the Colorectal Cancer Microbiome
Person Months per budget period: 1.8

B. Current projects as Co-Investigator

2018-2022   NIH R01 GM129512 (PI: Wu M)
                Title: Joint Analysis of Microbiome and Other Genomic Data Types
                Person Months per budget period: 1.8

2018-2023   NIH U19 AG057377 (PI: Promislow D)
                Title: The Dog Aging Project: The Genetic and Environmental Determinants of Healthy Aging in Companion Dogs
                Person Months per budget period: 1.24

2020-2024   NIH R01 GM133848 (PI: Shojaie A)
                Title: Novel Statistical Inference for Biomedical Big Data
                Person Months per budget period: 1.2

2021-2023   NIH R01 CA217970 (PI: Phipps A)
                Title: Bacterial Correlates of Colorectal Cancer Subtypes and Survival
                Person Months per budget period: 0.48

C. Pending

2022-2027   NIH R01 GM145772
                Title: Statistical Methods for Network-based Integrative Analysis of Microbiome Data
                Role: Principal-Investigator
                Person Months per budget period: 3.0

D. Completed projects as Co-Investigator

2017-2018   NIH R21 Award (PI: Roxby A; Sub: Fredricks D)
                Title: DMPA Use and Vaginal Bacterial Diversity among African Women

2018-2019   NIH R01 Award (PI: Bhatti P)
                Title: The Impact of Prenatal Exposure to Persistent Organic Pollutants on Kinetics of Immune Response to Vaccines and Seroprotection in Infants

BIBLIOGRAPHY

[* indicates alphabetical ordering authorship.]

[† indicates corresponding author.]

[Name underlined indicates student or postdoc mentored.]

A. Publications in Peer-Refereed Journals

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, TT, **Ma, J** and Zhang, L. CHIME: clustering of high-dimensional Gaussian mixtures with EM algorithm and its optimality. *Annals of Statistics*. 47(3):1234–1267, 2019.

   - L. Zhang was a recipient of ASA Biopharmaceutical Section Student Paper Award at the 2017 ICSA Applied Statistics Symposium.

5. *Cai TT, Li H, **Ma J**†, and Xia Y. Differential Markov random field analysis with applications to detecting differential microbial community networks. *Biometrika*. 106(2):401–416, 2019.

6. **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. *Bioinformatics*. 35(18):3441–3452, 2019.

7. **Ma J**†, Shojaie A and Michailidis G. A comparative study of topology-based pathway enrichment analysis methods. *BMC Bioinformatics*. 20 (546). 2019

8. Wang Y, Randolph T, Shojaie A and **Ma J**†. The generalized matrix decomposition biplot and its application to the microbiome data. *mSystems*. 4:e00504-19. 2019.

   - Selected as **Editor's pick**.

9. Vantaku V, Putluri V, Bader D, Maity S, **Ma J**, · · ·, Sreekumar A and Putluri N. Epigenetic loss of AOX1 expression via EZH2 leads to metabolic deregulation in bladder cancer. *Oncogene*. 39:6265–6285, 2020.

10. **Ma J**. Joint microbial and metabolite network estimation with the censored Gaussian graphical model. *Statistics in Biosciences*. 13:351–372, 2021.

11. Hellstern M, **Ma J**, Yue K and Shojaie A. netgsa: Fast computation and interactive visualization for topology-based pathway enrichment analysis. *PLoS Computational Biology*. 2021.

12. Yue K, **Ma J**, Thornton T and Shojaie A. REHE: fast variance components estimation for linear mixed models. *Genetic Epidemiology*. 2021.

    - Kun Yue was a recipient of the Best Student Paper Award at the 2021 WNAR meeting.

13. Creevy K, Akey J, Kaeberlein M, Promislow D, and the Dog Aging Project Consortium (..., **Ma, J**, ...). An open science study of ageing in companion dogs. *Nature*. 602:51–57, 2022.

B. Book Chapters

1. 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, 2018.

2. **Ma, J**, Yue, K and Shojaie, A. Networks for compositional data. In *Statistical Analysis of Microbiome Data.* Editors: Subharup Guha, Somnath Datta. Springer, 2021

C. Other Refereed Scholarly Publications

1. **Ma, J.** Estimation and Inference in High-Dimensional Gaussian Graphical Models with Structural Constraints. University of Michigan. 2015. [PhD Thesis]

D. Preprints

1. Wang Y, Shojaie A, Randolph T and **Ma J**. Generalized matrix decomposition regression: estimation and inference for two-way structured data. https://arxiv.org/abs/2104.08408

2. Wang Y, **Ma J** and Shojaie A. Direct estimation of differential Granger causality between two high-dimensional time series. https://arxiv.org/abs/2109.07609

A. Invited Talks at Conferences and Symposia

06/14 International Chinese Statistical Association/Korean International Statistical Society Joint Applied Statistics Symposium, Portland, OR

06/16 International Chinese Statistical Association Applied Statistics Symposium, Atlanta, GA

06/17 International Chinese Statistical Association Applied Statistics Symposium, Chicago, IL

03/18 Fred Hutch Microbiome Symposium, Seattle, WA

06/18 Data Science Innovation Lab: Mathematical Challenges of Single Cell Dynamics, Bend, OR

07/18 The 12th International Vilnius Conference on Probability Theory and Mathematical Statistics / 2018 IMS Annual Meeting on Probability and Statistics, Vilnius, Lithuania (Organizer: Hongzhe Li)

07/18 Joint Statistical Meetings, Vancouver, Canada (Organizer: Ni Zhao)

12/18 The 11th International Conference of the ERCIM WG on Computational and Methodological Statistics, Pisa, Italy (Organizer: Yin Xia)

02/19 The Role of Genomics and Metagenomics in Human Health: Recent Developments in Statistical and Computational Methods, Banff, Canada (Organizer: Hongzhe Li)

07/19 International Chinese Statistical Association Conference, Tianjin, China

12/19 The 12th International Conference of the ERCIM WG on Computational and Methodological Statistics, London, UK (Organizer: Ni Yang)

08/20 (Virtual) Joint Statistical Meetings, Philadelphia, PA (Organizer: Sandipan Roy)

02/22 IMSI Workshop – Multiscale Microbial Communities: Dynamical Models, Ecology, and One Health, Chicago, IL (Organizer: Hongzhe Li, Pamela Martinez, Shulei Wang, and Rachel Whitaker)

06/22 International Chinese Statistical Association Applied Statistics Symposium, Gainesville, FL (Organizer: Zhigang Li)

07/22 International Chinese Statistical Association Conference, Xi'an, China (Organizer: Gen Li)

B. Invited Seminars and Colloquia

10/16 Department of Mathematics and Statistics, Lancaster University, Lancaster, UK

01/17 Department of Statistics, University of Warwick, Coventry, UK

02/17 Biostatistics Program, Public Health Sciences Division, Fred Hutchinson Cancer Research Center, Seattle, WA

01/18 Department of Biostatistics, University of Washington, Seattle, WA

01/18 Department of Statistics, University of Florida, Gainesville, FL

01/18 Biostatistics/ATME Joint Seminar, Public Health Sciences Division, Fred Hutchinson Cancer Research Center, Seattle, WA

02/18 Statistical Learning Applied to Biology Lab Seminar, Department of Biostatistics, University of Washington, Seattle, WA

02/18 Translational Research Program, Public Health Sciences Division, Fred Hutchinson Cancer Research Center, Seattle, WA

11/18 Department of Statistics, Texas A&M University, College Station, TX

09/19 University of Michigan 50th Anniversary Symposium, Ann Arbor, US

12/19 (Virtual) The Dog Aging Project Science Seminar Series, Texas A&M University, College Station, TX

03/21 (Virtual) Translational Data Science Seminar Series, Fred Hutchinson Cancer Research Center, Seattle, WA

11/21 (Virtual) Biostatistics Seminar Series, Fred Hutchinson Cancer Research Center, Seattle, WA

11/21 (Virtual) ASA Section of Statistics in Genomics and Genetics (SSGG) Webinars

AWARDS, HONORS AND SCHOLARSHIPS

A. National Awards

2008	National Merit Scholarship from Ministry of Education of China
2015	Travel Award, National Science Foundation
2018	Travel Award, Data Science Innovation Lab
2018	Travel Award, The Jayne Koskinas Ted Giovanis Foundation for Health and Policy

B. Department/University Awards

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

PROFESSIONAL ACTIVITIES

A. Invited Session Organized
B. Session Chair

2012	*Methods for Variable and Model Selection – Contributed Papers*, Joint Statistical Meetings, San Diego, CA.
2016	*Efficient Methods for Structured Large Genomics Data – Contributed Papers*, Joint Statistical Meetings, Chicago, IL.
2017	*Understanding the Microbiome Complexity: Genetics and Networks – Invited Papers*, ICSA Applied Statistics Symposium, Chicago, IL.
2019	*Methodological Innovation in Large-scale Genomics Data Analysis – Invited Session*, ICSA China Conference, Tianjin, China.

C. Referee Service

Referee for Annals of Applied Statistics, Bioinformatics, Biometrika, Biometrical Journal, Biometrics, Biostatistics, Electronic Journal of Statistics, Frontiers in Genetics, IEEE Access, Journal of Computational Biology, Journal of the American Statistical Association – Applications & Case Studies, Journal of the American Statistical Association – Theory & Methodology, Journal of Machine Learning Research, Journal of Multivariate Analysis, Molecular & Cellular Proteomics, Nucleic Acids Research, Optimization and Engineering, PLoS Computational Biology, Scientific Reports (Nature), Statistics in Biosciences, Statistics in Medicine, Structural Equation Modeling: A Multidisciplinary Journal, Wiley Interdisciplinary Reviews: Computational Statistics

D. Conference Review

2016	Reviewer for International Conference on Information Systems
2016	Reviewer for Conference on Neural Information Processing Systems (NIPS)
2018	Judge for ASA Section on Genomics and Genetics Student Paper Competition
2018	Reviewer for Conference on Neural Information Processing Systems (NIPS)
2019	Judge for ASA Section on Genomics and Genetics Student Paper Competition
2020	Judge for ASA Section on Genomics and Genetics Student Paper Competition

E. Grant Review

2020	FHCRC Translational Data Science Integrated Research Center Pilot Grant
2020	UW ITHS Research Innovation Award
2020	FHCRC Division of Public Health Sciences Bid & Proposal Projects
2021	FHCRC Translational Data Science Integrated Research Center Pilot Grant
2022	NIH Biodata Management and Analysis Study Section February Review

F. Professional Organizations

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

TEACHING RESPONSIBILITIES

A. Instructor at the University of Michigan

- STAT250: Introduction to Statistics and Data Analysis (Lab Instructor). Fall 2010 & Winter 2011

- Applied Qualifying Exam. Summer 2012, 2013 & 2014

- Review of Linear Algebra. Summer 2013 & 2014

B. Graduate Student Instructor at the University of Michigan

- English Language Institute. Summer 2011

- STAT600: Applied Statistics and Data Analysis. Fall 2011 & 2012

    - GSI Excellence in Teaching Award

- STAT425: Introduction to Probability and Statistics. Fall 2011 & Winter 2012

- STAT601: Multivariate and Categorical Data Analysis. Winter 2012

C. Instructor at Texas A&M University

- STAT312: Statistics for Biology. Fall 2019

ADVISING AND MENTORING

A. Postdoctoral Fellows

2018-2020	Yue Wang, PhD in Biostatistics, UNC Chapel Hill (joint with A. Shojaie). Current/First position: Assistant Professor of Statistics at Arizona State University.
2021 -	Ilias Moysadis, PhD in Statistics, Pennsylvania State University.

B. Graduate Students

2021-   Fang Nan, UW Biostatistics MS student.

C. Student Collaborator

2017-2018   Nanxun Ma, UW Biostatistics PhD student, working with M C. Wu.
2017-2020   Kun Yue, UW Biostatistics PhD student, working with A Shojaie.
2018-2020   Michael Hellstern, UW Statistics MS student, working with A Shojaie.
2020-   Kristyn Pantoja, Texas A&M Statistics PhD student, working with D E. Jones.
2021-   Lakshin Kumar, UW Biochemistry undergraduate student, working with D E.L. Promislow.

D. MS and PhD Committees in Non-Chair Role

2018-2019   Arjun Sondhi, UW Biostatistics PhD student (advisor: Ali Shojaie).

E. Independent Study Students

2020   Yuan Tian, UW Biostatistics MS Capstone student.
2020-2021   Yunbi Nam, UW Biostatistics MS Capstone student.
2021   Anh-Minh Nguyen, UW Biostatistics MS Capstone student.

SPECIAL LOCAL RESPONSIBILITIES

A. University of Michigan

2011-2012   Coordinator of Reading Group on Statistical Modeling and Analysis of Networks, Department of Statistics.
2011-2013   Co-Chair, Graduate Student Statistical Topics Seminar Series, Department of Statistics.
2012-2013   Student committee member of the Seventh Michigan Student Symposium for Interdisciplinary Statistical Sciences (MSSISS).

B. Fred Hutchinson Cancer Research Center

2018   Organizing committee member of the 2018 Fred Hutch Microbiome Symposium.
2018   Faculty host for UW Biostatistics Prospective PhD Student Visit Days.
2019   Chair, Biostatistics Seminar Series.
2021   Faculty host for UW Biostatistics Prospective PhD Student Visit Days.
2021   Panelist for Fred Hutch Biostatistics Post-doc faculty recruitment meeting.

C. Texas A&M University

2019-2020   Chair of grants writing committee.

PUBLICLY AVAILABLE SOFTWARE

- **netgsa**: R package for network-based pathway enrichment analysis.

  - Stable release on CRAN.

  - Development version on GitHub.

- **JSEM**: R code for joint structural estimation of multiple Gaussian graphical models. On GitHub.

- **DNEA**: R code for differential network-based enrichment analysis. On GitHub.

- **TestBMN**: R package for testing high-dimensional binary Markov networks. On GitHub.

- **CHIME**: Matlab code for clustering high-dimensional Gaussian mixtures with the EM algorithm. On GitHub.

- **GMDecomp**: R package for generalized matrix decomposition (GMD) and GMD-biplots. On GitHub.

- **metaMint**: R package for joint estimation of metabolite and microbial interaction networks. On GitHub.

- **REHE**: R code for fast variance component estimation in linear mixed models. On GitHub.