CURRICULUM VITAE

Jing Ma, Ph.D.

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PERSONAL DATA

Place of Birth	Henan, China
Work Address	Fred Hutchinson Cancer Center Division of Public Health Sciences 1100 Fairview Ave. N PO Box 19024 - M2-B500 Seattle, WA 98109-1024
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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 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

Current projects as Principal Investigator

2022-2027	NIH R01 GM145772 Title: *Statistical Methods for Network-based Integrative Analysis of Microbiome Data* Role: Principal-Investigator Total costs: $1,838,548
2022-2024	Fred Hutch Translational Data Science Integrated Research Center Pilot Award Title: *Systems biology analysis of the immunomodulatory influence of circulating gut microbe-derived metabolites after transplantation* Role: Principal-Investigator (Contact PI; MPI with Kate Markey) Total costs: $100,000

Current projects as Co-Investigator

2018-2023 NIH U19 AG057377 (PI: Promislow D; Sub PI: Schwartz S)
Title: *The Dog Aging Project: The Genetic and Environmental Determinants of Healthy Aging in Companion Dogs*
Total costs (to Ma Lab): $149,633

2020-2024 NIH R01 GM133848 (PI: Shojaie A; Sub PI)
Title: *Novel Statistical Inference for Biomedical Big Data*
Total costs (to Ma Lab): $135,251

2021-2023 NIH R01 CA217970 (PI: Phipps A)
Title: *Bacterial Correlates of Colorectal Cancer Subtypes and Survival*
Total costs (to Ma Lab): $30,800

Completed projects as Principal Investigator

2021-2022 Fred Hutch Pathogen-Associated Malignancies Integrated Research Center / Microbiome Research Initiative Pilot Award
Title: *Statistical Methods for Network-based Analysis of the Colorectal Cancer Microbiome*
Total costs: $75,000

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*
Total costs (to Ma Lab): $8,213

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*
Total costs (to Ma Lab): $33,366

2018-2022 NIH R01 GM129512 (PI: Wu M)
Title: *Joint Analysis of Microbiome and Other Genomic Data Types*
Total costs (to Ma Lab): $116,635

BIBLIOGRAPHY

[* indicates alphabetical ordering authorship.]

[† indicates corresponding author.]

[Name underlined indicates student or postdoc mentored.]

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**, $\cdots$, 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*. 17(6): e1008979, 2021.

12. Yue K, **Ma J**, Thornton T and Shojaie A. REHE: fast variance components estimation for linear mixed models. *Genetic Epidemiology*. 45(8):891–905, 2021.

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

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

14. Schwartz SM, Urfer SR, White M, Megquier K, Shrager S, Dog Aging Project Consortium (..., **Ma J**, ...), Akey JM, Benton B, Borenstein E, Castelhano MG, Coleman AE. Lifetime prevalence of malignant and benign tumors in companion dogs: cross-sectional analysis of Dog Aging Project baseline survey. *Veterinary and Comparative Oncology*. 2022

15. Bray EE, Zheng Z, Tolbert MK, McCoy BM, Dog Aging Project Consortium (..., **Ma J**, ...), Kaeberlein M, Kerr KF. Once-daily feeding is associated with better health in companion dogs: results from the Dog Aging Project. *GeroScience*. 44:1779–1790, 2022.

16. Lee H, Collins D, Creevy K, Promislow DE, and Dog Aging Project Consortium (..., **Ma J**, ...). Age and physical activity levels in companion dogs: results from the Dog Aging Project. *The Journals of Gerontology: Series A*. In press, 2022

17. Hoffman JM, Tolbert MK, Promislow DE, Dog Aging Project Consortium (..., **Ma J**, ...). Demographic factors associated with joint supplement use in dogs from the Dog Aging Project. *Frontiers in Veterinary Science*. 9:906521, 2022.

18. Yarborough S, Fitzpatrick A, Schwartz SM, and Dog Aging Project Consortium (..., **Ma J**, ...). Evaluation of cognitive function in the Dog Aging Project: associations with baseline canine characteristics. *Scientific reports*. 12:13316, 2022.

19. Hoffman JM, Tolbert MK, Promislow DE, and Dog Aging Project Consortium (..., **Ma J**, ...). Demographic factors associated with joint supplement use in dogs from the Dog Aging Project. *Frontiers in Veterinary Science*. 1102, 2022.
20. Praczko D, Tinkle AK, Arkenberg CR, McClelland RL, Creevy KE, Tolbert MK, Barnett BG, Chou L, Evans J, McNulty KE, Dog Aging Project Consortium (..., **Ma J**, ...), and Levine JM. Development and evaluation of a survey instrument to assess veterinary medical record suitability for multi-center research studies. *Frontiers in Veterinary Science*. 9:941036, 2022.
21. Collins D, Lee H, Dunbar MD, Crowder K, and Dog Aging Project Consortium (..., **Ma J**, ...). Associations between neighborhood disadvantage and dog walking among participants in the Dog Aging Project. *International Journal of Environmental Research and Public Health*. Accepted, 2022

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

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]

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
3. McCoy BM, Brassington L, Jin K, Dolby GA, Shrager S, Collins D, Dunbar M, Snyder-Mackler N, Dog Aging Project Consortium (..., **Ma J**, ...). Social determinants of health and disease in companion dogs: A cohort study from the Dog Aging Project. *bioRxiv*. 2022. https://doi.org/10.1101/2022.04.08.487645
4. Nam Y, White M, Karlsson EK, Creevy KE, Promislow DE, McClelland RL, Dog Aging Project Consortium (..., **Ma J**, ...). Dog Size and Patterns of Disease History Across the Canine Age Spectrum: Results from the Dog Aging Project. *bioRxiv*. 2022. https://doi.org/10.1101/2022.05.03.490110

ORAL PRESENTATIONS

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 (Virtual) IMSI Workshop – Multiscale Microbial Communities: Dynamical Models, Ecology, and One Health, Chicago, IL (Organizers: Hongzhe Li, Pamela Martinez, Shulei Wang)

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

12/22 The 14th International Conference of the ERCIM WG on Computational and Methodological Statistics, London, UK (Organizer: Aaron Molstad)

Invited Seminars and Colloquia

10/16 (Virtual) 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

10/20 (Virtual) Hanash Lab Meeting, The University of Texas MD Anderson Cancer Center

01/21 (Virtual) Gut Origins of Latino Diabetes (GOLD) Monthly Meeting, Albert Einstein College of Medicine, New York, NY

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

07/22 (Virtual) Guest Speaker at Wellcome Genomic Course on "Genetic Analysis of Mendelian and Complex Disorders"

10/22 Mini-TED Talk at Public Health Sciences Division Faculty Meeting, Fred Hutchinson Cancer Center, Seattle, WA

10/22 Fred Hutch-UW Rigor, Reproducibility and Transparency Seminar Series, Seattle, WA

AWARDS, HONORS AND SCHOLARSHIPS

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

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

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 (BDMA) Study Section

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
2022	Judge for ICSA Student Paper Competition

Referee Service

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,
Statistics in Biosciences,
Statistics in Medicine,
Structural Equation Modeling,
Wiley Interdisciplinary Reviews: Computational Statistics

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.

Professional Organizations

2010-	American Statistical Association
2014-	International Chinese Statistical Association
2016-2017	Eastern North American Region International Biometric Society

TEACHING RESPONSIBILITIES

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
- Linear Algebra Bootcamp. Summer 2013 & 2014

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

Instructor at Texas A&M University

- STAT312: Statistics for Biology. Fall 2019

ADVISING AND MENTORING

Postdoctoral Fellows

2018-2020	Yue Wang, PhD in Biostatistics, UNC Chapel Hill (joint with Ali Shojaie). Current/First position: Assistant Professor of Statistics at Arizona State University.
2021-2022	Ilias Moysidis, PhD in Statistics, Pennsylvania State University. Current/First position: Researcher at Centre for Research & Technology - Hellas, Greece.

Graduate Students

2021-	Fang Nan, UW Biostatistics MS student (thesis-track).
2022-	Xinyi Xie, UW Statistics MS student.

Undergraduate Students

2022	Antoinette Fang, SURP Intern from University of Chicago Mathematics.

Student Collaborator

2017-2018	Nanxun Ma, UW Biostatistics PhD student, working with Michael Wu.
2017-2020	Kun Yue, UW Biostatistics PhD student, working with Ali Shojaie.
2018-2020	Michael Hellstern, UW Statistics MS student, working with Ali Shojaie.
2020-2021	Yunbi Nam, UW Biostatistics MS Capstone student.
2020-	Kristyn Pantoja, Texas A&M Statistics PhD student, working with David Jones.
2021-	Lakshin Kumar, UW Biochemistry undergraduate student, working with Daniel Promislow.

MS and PhD Committees in Non-Chair Role

2018-2019	Arjun Sondhi, UW Biostatistics PhD student (advisor: Ali Shojaie).
2022-2023	Pearl Liu, UW Biostatistics PhD student (advisor: Michael Wu).

Independent Study Students

2020	Yuan Tian, UW Biostatistics MS Capstone student.

SPECIAL LOCAL RESPONSIBILITIES

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.

Fred Hutchinson Cancer Center & University of Washington

03/18 Organizing committee member of the 2018 Fred Hutch Microbiome Symposium.
03/18 Faculty host for UW Biostatistics Prospective PhD Student Visit Days.
2019 Chair, Biostatistics Seminar Series.
03/21 Faculty host for UW Biostatistics Prospective PhD Student Visit Days.
10/21 Panelist for Fred Hutch Biostatistics Post-doc faculty recruitment meeting.
03/22 UW MSTP Prospective MD/PhD Student Interview.
03/22 Fred Hutch PHS Biostatistician/Clinical Trialist Faculty Search Interview.
05/22 Judge for Fred Hutch Joint Microbiome Research Initiative & Pathogen-Associated Malignancies IRC Retreat Lightning Talks and Posters.
2022 Organizing committee member of the 2022 Fred Hutch Biostatistics Program Faculty Retreat.

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.