

## CURRICULUM VITAE

**Jing Ma, Ph.D.**

August 21st, 2023

### PERSONAL DATA

Place of Birth	Henan, China
Citizenship	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.
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### FACULTY POSITIONS

2017- 2023	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.
2020-2023	Adjunct Assistant Professor, Department of Statistics, Texas A&M University.
2023-	Associate Professor of Biostatistics, Division of Public Health Sciences, Fred Hutchinson Cancer Center.

### HOSPITAL POSITIONS

Not Applicable.

### HONORS

**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	Graduate Student Instructor Excellence in Teaching Award
2012-2015	Rackham School of Graduate Studies Conference Travel Grant

#### **BOARD CERTIFICATION**

Not Applicable.

#### **LICENSURE**

Not Applicable.

#### **PROFESSIONAL ORGANIZATIONS**

2010-	Member of American Statistical Association
2014-	Member of International Chinese Statistical Association
2016-2017	Member of 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

##### **Postdoctoral Fellows**

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

### **Graduate Students**

- 2017-2019 Kun Yue, UW Biostatistics PhD student, joint with Ali Shojaie.  
*Current position:* Data and Applied Scientist at Microsoft
- 2020-2022 Kristyn Pantoja, Texas A&M Statistics PhD student, joint with David Jones.  
*Current position:* Principal Biostatistician at Novartis
- 2022- Xinyi Xie, UW Statistics MS student.
- 2022- Wenjie Guan, UW Statistics MS student.

### **Undergraduate Students**

- 2021-2022 Lakshin Kumar, UW Biochemistry undergraduate student, joint with Daniel Promislow.
- 2022-2023 Antoinette Fang, SURP Intern from University of Chicago Mathematics.

### **Student Collaborator**

- 2017-2018 Nanxun Ma, UW Biostatistics PhD student, working with Michael Wu.
- 2018-2020 Michael Hellstern, UW Statistics MS student, working with Ali Shojaie.
- 2020-2021 Yunbi Nam, UW Biostatistics MS student, working with the Dog Aging Project.

### **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).
- 2022-2023 Fang Nan, UW Biostatistics MS student (advisor: Chongzhi Di).

### **Independent Study Students**

- 2020 Yuan Tian, UW Biostatistics MS student.
- 2022-2023 Yinsheng Wang, UW Operations Research PhD student.
- 2023 Jordan Jackson, UW Molecular Medicine and Mechanisms of Disease PhD student.

### **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 (Topic-contributed session; Organizer: Ni Zhao)
- 12/18 The 11th International Conference of the ERCIM WG on Computational and Methodological Statistics, Pisa, Italy (Invited session; 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 (Invited session; Organizer: Ni Yang)
- 08/20 (Virtual) Joint Statistical Meetings, Philadelphia, PA (Topic-contributed session; 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 (Invited session; Organizer: Gen Li)
- 12/22 (Virtual) The 14th International Conference of the ERCIM WG on Computational and Methodological Statistics, London, UK (Invited session; Organizer: Aaron Molstad)
- 06/23 International Chinese Statistical Association Applied Statistics Symposium, Ann Arbor, MI (Invited session; Organizer: Wen Zhou)
- 08/23 Joint Statistical Meetings, Toronto, CA (Invited session; Organizer: Huilin Li)

#### **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 Mini-TED Talk at 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 Genome Course on “Genetic Analysis of Mendelian and Complex Disorders”
- 09/22 (Virtual) Gut Origins of Latino Diabetes (GOLD) Monthly Meeting, Albert Einstein College of Medicine, New York, NY
- 10/22 Mini-TED Talk at Public Health Sciences Division Faculty Meeting, Fred Hutchinson Cancer Center, Seattle, WA
- 10/22 (Virtual) Fred Hutch-UW Rigor, Reproducibility and Transparency Seminar Series, Seattle, WA
- 04/23 (Virtual) Fred Hutch Microbiome Research Initiative Seminar Series, Seattle, WA
- 05/23 (Virtual) Fred Hutch Data of Cancer Research Seminar Series, Seattle, WA
- 06/08 Fred Hutch Public Health Sciences Promotion Seminar, Seattle, WA

#### EDITORIAL RESPONSIBILITIES

None.

#### SPECIAL NATIONAL RESPONSIBILITIES

##### **Grant Review**

- 02/2022 NIH Biodata Management and Analysis (BDMA) Study Section
- 03/2023 NIH Small Business: Computational, Modeling, and Biodata Management (MCST-14) Study Section

##### **Conference Organization**

- 2023 Committee Member of 2023 WNAR Conference

##### **Conference Review**

- 2016 Reviewer for International Conference on Information Systems
- 2016 Reviewer for Conference on Neural Information Processing Systems (NeurIPS)
- 2018 Judge for ASA Section on Genomics and Genetics Student Paper Competition
- 2018 Reviewer for Conference on Neural Information Processing Systems (NeurIPS)
- 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
- 2023 Judge for ASA Section on Genomics and Genetics 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,  
 Nature Communications,  
 Optimization and Engineering,  
 PLOS Computational Biology,  
 Scientific Reports,  
 Statistics in Biosciences,  
 Statistics in Medicine,  
 Structural Equation Modeling,  
 Wiley Interdisciplinary Reviews: Computational Statistics

#### SPECIAL LOCAL RESPONSIBILITIES

##### **Grant Review**

2020	FHCRC Translational Data Science Integrated Research Center Pilot Grant
2020	UW Institute of Translational Health Sciences Research Innovation Award
2020	FHCRC Division of Public Health Sciences Bid & Proposal Projects
2021	FHCRC Translational Data Science Integrated Research Center Pilot Grant

##### **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
10/22	Organizing committee member of the 2022 Fred Hutch Biostatistics Program Faculty Retreat
03/23	Faculty host for UW Biostatistics Prospective PhD Student Visit Days
05/23	Reviewer for Fred Hutch PHS Research Staff Appreciation Award

### **Texas A&M University**

2019-2020    Chair of grants writing committee

### **RESEARCH FUNDING**

#### **Current projects as Principal Investigator**

2022-2027	NIH R01 GM145772 Title: <i>Statistical Methods for Network-based Integrative Analysis of Microbiome Data</i> Total costs: \$1,838,548 FTE: 25%
2022-2024	Fred Hutch Translational Data Science Integrated Research Center Pilot Award Title: <i>Systems biology analysis of the immunomodulatory influence of circulating gut microbe-derived metabolites after transplantation</i> Role: Contact PI; MPI with Kate Markey Total costs: \$100,000 FTE: 18%

#### **Current projects as Co-Investigator**

2018-2023	NIH U19 AG057377 (PI: Promislow D; Sub PI: Schwartz S) Title: <i>The Dog Aging Project: The Genetic and Environmental Determinants of Healthy Aging in Companion Dogs</i> Role: Co-Investigator; Data and Analysis Core Co-Lead Total costs (subaward): \$1,077,911 FTE: 10%
2020-2024	NIH R01 GM133848 (PI: Shojaie A; Sub PI) Title: <i>Novel Statistical Inference for Biomedical Big Data</i> Total costs (subaward): \$193,903 FTE: 10%
2018-2023	NIH R01 CA217970 (PI: Phipps A) Title: <i>Bacterial Correlates of Colorectal Cancer Subtypes and Survival</i> Total costs (subaward): \$2,839,982 FTE: 5%

#### **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  
 FTE: 15%

#### Completed projects as Co-Investigator

2016-2018 NIH R21 AI129712 (PI: Roxby A; Sub: Fredricks D)  
 Title: *DMPA Use and Vaginal Bacterial Diversity among African Women*  
 Total costs (subaward): \$240,924  
 FTE: 4%

2016-2021 NIH R01 ES025796 (PI: Self S)  
 Title: *The Impact of Prenatal Exposure to Persistent Organic Pollutants on Kinetics of Immune Response to Vaccines and Seroprotection in Infants*  
 Total costs: \$2,940,493  
 FTE: 10%

2018-2022 NIH R01 GM129512 (PI: Wu M)  
 Title: *Joint Analysis of Microbiome and Other Genomic Data Types*  
 Total costs: \$1,584,000  
 FTE: 15%

#### BIBLIOGRAPHY

[\* indicates five most significant publications.]  
 [† indicates alphabetical ordering authorship.]  
 [☒ indicates corresponding author.]  
 [Names underlined indicates student or postdoc mentored.]

##### a). Publications in 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. [original methodology]
2. \***Ma J** and Michailidis G. Joint structural estimation of multiple graphical models. *Journal of Machine Learning Research*. 17:1–48, 2016. [original methodology]
3. von Rundstedt, F, Kimal, R, **Ma, J**, Arnold, J, Gohlke, J, Putluri, V, Krishnapuram, R, Piyaathna, 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. [original work]
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. [original methodology]  
 - 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. [original methodology]



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. [original methodology]
7. **Ma J**✉, Shojaie A and Michailidis G. A comparative study of topology-based pathway enrichment analysis methods. *BMC Bioinformatics*. 20 (546). 2019. [review]
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. [original methodology]
  - 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. [original work]
10. \***Ma J**. Joint microbial and metabolite network estimation with the censored Gaussian graphical model. *Statistics in Biosciences*. 13:351–372, 2021. [original methodology]
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. [original work]
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. [original methodology]
  - 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. [collaboration]
14. Schwartz SM, Urfer SR, White M, Megquier K, Shrager S, Dog Aging Project Consortium (..., **Ma J**, ...), Akey JM, Benton B, Borenstein E, Castelhana 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*. 20(4):797–804, 2022. [collaboration]
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. [collaboration]
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*. 77(10):1986–1993, 2022. [collaboration]
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. [collaboration]
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. [collaboration]
19. 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. [collaboration]

20. 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*. 9(18):11179, 2022. [collaboration]
21. Bray EE, Raichlen DA, Forsyth KK, Promislow DE, Alexander GE, MacLean EL, and Dog Aging Project Consortium (... , **Ma J**, ...). Associations between physical activity and cognitive dysfunction in older companion dogs: results from the Dog Aging Project. *GeroScience*. 45(2):645–661, 2023. [collaboration]
22. \*Wang Y, Shojaie A, Randolph T, Knight P, and **Ma J**. Generalized matrix decomposition regression: estimation and inference for two-way structured data. *The Annals of Applied Statistics*. Accepted, 2023. [original methodology]
23. McNulty KE, Creevy KE, Fitzpatrick A, Wilkins V, Barnett BG, Dog Aging Project Consortium (... , **Ma J**, ...), and Ruple A. The Dog Aging Project End of Life Survey: development and validation of a novel instrument to capture companion dog mortality data. *Journal of the American Veterinary Medical Association*. Accepted, Apr 2023. [collaboration]
24. Xue D, Collins D, Kauffman M, Dunbar M, Crowder K, Schwartz SM, Dog Aging Project Consortium (... , **Ma J**, ...) and Ruple A. Big data from small animals: integrating multi-level environmental data into the Dog Aging Project. *Scientific and Technical Review*. 42:65–74, 2023 [collaboration]

#### 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) Published Software

- **CHIME**: Matlab code for clustering high-dimensional Gaussian mixtures with the EM algorithm. On [GitHub](#).
- **DNEA**: R code for differential network-based enrichment analysis. On [GitHub](#).
- **GMDcomp**: R package for generalized matrix decomposition (GMD) and GMD-biplots. On [GitHub](#).
- **JSEM**: R code for joint structural estimation of multiple Gaussian graphical models. On [GitHub](#).
- **KPR**: R package for kernel penalized regression and inference. On [GitHub](#).
- **metaMint**: R package for joint estimation of metabolite and microbial interaction networks. On [GitHub](#).
- **netgsa**: R package for network-based pathway enrichment analysis.
  - Stable release on [CRAN](#).
  - Development version on [GitHub](#).
- **REHE**: R code for fast variance component estimation in linear mixed models. On [GitHub](#).
- **slr**: R package for regression and classification analysis of compositional data. On [GitHub](#).
- **TestBMN**: R package for testing high-dimensional binary Markov networks. On [GitHub](#).

#### d) Other Publications

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

**e) Manuscripts Submitted**

1. 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. <https://doi.org/10.1101/2022.04.08.487645>. Apr 2023.
2. 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. <https://doi.org/10.1101/2022.05.03.490110>.
3. **Ma J**✉, Pantoja K, and Jones DE. Regression and classification of compositional data via supervised log ratios. <https://arxiv.org/abs/2304.00143>.