SHIYANG MA

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Department of Biostatistics ⋄ Columbia University

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EDUCATION

University of Rochester; Rochester, NY   *2016 – 2019*
Ph.D. in Statistics, Department of Biostatistics and Computational Biology
− Advisors: Dr. Michael P. McDermott and Dr. David Oakes
− Dissertation: Methods for Improving Efficiency in Clinical Trials

University of Rochester; Rochester, NY   *2014 –2016*
M.A. in Statistics, Department of Biostatistics and Computational Biology

Sichuan University; Chengdu, China   *2009 –2014*
B.S. in Mathematics, Department of Mathematics

EXPERIENCE

Columbia University; New York, NY   *2019/10 – Present*
Postdoctoral Research Scientist, Department of Biostatistics
− Supervisor: Dr. Iuliana Ionita-Laza

President, Chinese Students and Scholars Association at University of Rochester   *2017 – 2018*

Biostatistics Intern, Mayo Clinic; Rochester, MN   *2017*

AWARDS AND HONORS

Gold Medal, Best student research awards, Theory and methodology, UP-STAT   2018

RESEARCH INTEREST

statistical genetics; **clinical trials**

- developing statistical and computational methods for the analysis of genetic data
- dose-response studies and adaptive designs

PUBLICATIONS

- **Ma, S.**, Wang, C., Khan, A., Liu, L., Dalgleish, J., Kiryluk, K., He, Z. and Ionita-Laza, I. (2022) Fine-mapping gene-based associations via knockoff analysis of biobank-scale data with applications to UK Biobank. Submitted.

- He, Z., Liu, L., Belloy, M. E., Guen, Y. L., Sossin, A., Liu. X., Qi. X, **Ma, S.**, Wyss-Coray, T., Tang, H., Sabatti, C., Candès, E., Greicius, M. D. and Ionita-Laza, I. (2022) Summary statistics knockoff inference empowers identification of putative causal variants in genome-wide association studies. Submitted.

- **Ma, S.** and McDermott, M. P. (2022) Adaptive dose-response studies to establish proof-of-concept in learning-phase clinical trials. ***Biometrical Journal***, 64(1), 146-164.

- **Ma, S.**, Dalgleish, J., Lee, J., Wang, C., Liu, L., Gill, R., Buxbaum, J. D., Chung, W. K., Aschard, H., Silverman, E. K., Cho, M. H., He, Z. and Ionita-Laza, I. (2021) Powerful gene-based testing by integrating long-range chromatin interactions and knockoff genotypes. ***Proceedings of the National Academy of Sciences of the United States of America***, 118(47), e2105191118. (IF=12.779, Multidisciplinary Sciences 9 out of 73)

• He, Z., Guen, Y. L., Liu, L., Lee, J., **Ma, S.**, Yang, A. C., Liu. X., Rutledge, J., Losada, P. M., Song, B., Belloy, M. E., Butler, R. R., Longo, F. M., Tang, H., Mormino, E. C., Wyss-Coray, T., Greicius, M. D. and Ionita-Laza, I. (2021) Genome-wide analysis of common and rare variants via multiple knockoffs at biobank scale, with an application to Alzheimer disease genetics. ***American Journal of Human Genetics***, 108(12), 2336-2353. (IF=11.043, Genetics & Heredity 10 out of 175)

• Prasad, P., Brown, L., **Ma, S.**, McDavid, A., Rudmann, A., Lent, D., Reagan-Webster, P., Valcin, K. E., Graman, P. and Apostolakos, M. (2021) "If the glove fits": Hospital-wide universal gloving is associated with improved hand hygiene and may reduce Clostridioides difficile infection. ***Infection Control and Hospital Epidemiology***, 42(11), 1351-1355. (IF=6.52)

• **Ma, S.** and McDermott, M. P. (2020) Generalized multiple contrast tests in dose-response studies. ***Statistics in Medicine***, 39(6), 757-772.

• Andrzejewski, K. L., **Ma, S.**, Owens, A., Bull, M. T., Biglan, K. M., Kanchana, S., Mink, J. W., McDermott, M. P., Crane, B. T., Barbano, R. (2018) Alterations in vestibular function in individuals with cervical dystonia and the effects of botulinum toxin treatment. ***Basal Ganglia***, 13, 1-6.

• Schobel, S. A., Palermo, G., Auinger, P., Long, J. D., **Ma, S.**, Khwaja, O. S., Trundell, D., Cudkowicz, M., Hersch, S., Sampaio, C., Dorsey, E. R., Leavitt, B. R., Kieburtz, K. D., Sevigny, J. J., Langbehn, D. R., Tabrizi, S. J.; TRACK-HD, COHORT, CARE-HD, and 2CARE Huntington Study Group Investigators. (2017) Motor, cognitive, and functional declines contribute to a single progressive factor in early HD. ***Neurology***, 89(24), 2495-2502. (IF=11.8, Clinical Neurology 10 out of 212)

• Couderc, J. P., **Ma, S.**, Page, A., Besaw, C., Xia, J., Chiu, W. B., de Bie, J., Vicente, J., Vaglio, M., Badilini, F., Babaeizadeh, S., Chien, C. S., Baumert, M. (2017) An evaluation of multiple algorithms for the measurement of the heart rate corrected JTpeak interval. ***Journal of Electrocardiology***, 50(6), 769-775.

PRESENTATIONS

• The 34th New England Statistics Symposium (NESS); Hybrid conference. "Powerful gene-based testing by integrating long-range chromatin interactions and knockoff genotypes" (Invited talk), October 2021.

• Eighth Annual Conference of the Upstate chapters of the American Statistical Association (UP-STAT); Rochester, NY. "Adaptive dose-response studies with generalized multiple contrast tests", April 2019.

• 2018 Joint Statistical Meetings; Vancouver, British Columbia, Canada. "Does it Pay to Repeat the Baseline?" August 2018.

• Seventh Annual Conference of the Upstate chapters of the American Statistical Association (UP-STAT); Rochester, NY. "Generalized Multiple Contrast Tests in Proof-of-Concept Dose-Response Studies," April 2018.

• International Society for Computerized Electrocardiology 42nd Annual Conference; St. Simons Island, GA. The 2017 ISCE "JTpeak" Initiative, April 2017.

JOURNAL REVIEW

Journal of Applied Statistics; *Clinical Trials: Journal of the Society for Clinical Trials*; *Statistics in Biopharmaceutical Research*; *Biostatistics and Epidemiology*

SOFTWARE DEVELOPED

• **BIGKnock**: An R package of performing biobank-scale gene-based association test via knockoffs.

• **GeneScan3DKnock**: An R package for performing improved gene-based testing by integrating long-range chromatin interactions, along with knockoff-enhanced tests.

• **GeneScan3D - UK Biobank Gene-based Results**: Browser of the GeneScan3D gene-based results for 1,403 UK biobank binary phecodes, 42 BioBank Japan binary phenotypes and 5 psychiatric phenotypes.