Fengling Hu

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EDUCATION

Perelman School of Medicine   Philadelphia, PA
MD   August 2019 – Present
- Step 1: 266
- Elective courses: Case Studies in Translational Research; Humanism and Professionalism Through Music; Extreme Noticing: Perception, Awareness, and Writing

Perelman School of Medicine   Philadelphia, PA
Biostatistics PhD   August 2021 – September 2024
- Dissertation: Statistical Methods for Analysis of High-Dimensional Neuroimaging Data
- Awards: Medical Student Research Paper Prize in AI and Informatics in Medicine (2022), ECTRIMS Young Scientific Investigator Travel Award (2024)
- Reviewer for: Brain Informatics, Cognitive Processing, Developmental Cognitive Neuroscience, Epilepsia, Human Brain Mapping, Imaging Neuroscience, Neuroimage, Quantitative Imaging in Medicine and Surgery, Scientific Reports

Amherst College   Amherst, MA
Bachelor of Arts   August 2015 – May 2019
- Summa Cum Laude with Senior Thesis in Statistics
- Major: Statistics & Biology
- GPA: 3.94/4.00
- MCAT: 524/528
- Awards: Walker Teaching Award in Statistics, James R. Elster Award in Biology Research, Mu Sigma Rho Statistics Honor Society Member

RESEARCH EXPERIENCE

Penn Statistics in Imaging and Visualization Endeavor (PennSIVE)   Philadelphia, PA
PhD Student   July 2020 – Present
- Learn, apply, and extend theoretical statistics concepts in the biomedical setting.
- Develop and validate statistically-motivated methodology for computational neuroscience.
- Collaborate with neuroimaging scientists on applied segmentation and analysis problems.

Amherst College – Jeong Lab   Amherst, MA
Research Assistant   July 2017 – May 2019
- Investigate essential metal characteristics in weedy rice species to determine the metal uptake mechanisms.
- Establish *Arabidopsis thaliana* lines with mutations in essential iron-deficiency response proteins.

Northwestern University – Yee Lab   Chicago, IL
Research Assistant   June 2016 – June 2018
- Perform mixed-methods, thematic analysis on a program designed to improve postpartum return to care.
- Investigate themes in text-message-based communication correlated with return for postpartum care.

University of Michigan – Big Data Summer Institute   Ann Arbor, MI
Student Intern   June 2017 – July 2017
- Analyzed single cell RNA sequencing data to determine appropriate methodology for analyzing cell populations and characterizing data collection errors.
- Learned theory behind statistics methodology, applications of big data statistics, and implementation of learned concepts in R.

WORK EXPERIENCE

Graduate Group in Epidemiology and Biostatistics   Philadelphia, PA
BSAC Founder, President, and Consultant   August 2022 – Present
- Work with Graduate Group leadership to build, organize, and run BSAC (Biostatistics Student Analysis Core) within the PhD program while accounting for time and funding constraints.
- Lead outreach for new collaborations and connect collaborators to consultants with appropriate skillset.
- Advocate for fellow BSAC consultants to get appropriate credit and conduct consultations that are limited in scope.
- Provide statistical guidance and conduct analyses for basic science, clinical, and health informatics collaborators.
- Draft methodological descriptions and create figures for publication.

Student Representative   August 2021 – September 2024
- Serve as elected representative for Biostatistics PhD cohort entering in 2021.
- Engage in curriculum reform and administrative concerns with graduate group leaders.

- Provide real-time, anonymized feedback to course instructors.

Teaching Assistant   August 2023 – December 2023
- Attend lectures and lab sections for Introduction to Bioinformatics to provide real-time computational support, coding advice, and biostatistics perspective for student questions.
- Hold office hours and answer student questions via Slack.
- Contribute questions for in-class modules, homework, and exams.
- Grade and provide comments for homework and exams.

Teaching Assistant   October 2022 – March 2023
- Attend lectures and lab sections for Biostatistics for Epidemiologic Methods in order to provide real-time biostatistics perspective on student questions.
- Hold office hours and answer student questions via email.
- Grade and provide comments for homework.

Perelman School of Medicine   Philadelphia, PA
Student Curriculum Council (SCC) Technical Consultant   December 2021 – Present
- Develop and implement a fully-automated algorithm to anonymously post sensitive student questions to a broader forum of medical students.
- Assist SCC Board members with forum moderation in order to maximize near-peer mentorship and inter-class interchange while minimizing opportunities for toxic interactions. Brainstorm and implement algorithmic adaptations to assist with moderation.
- Analyze forum content, sentiment, and question-posting patterns over the forum's lifetime to understand generalizable trends and inform potential implementation of the algorithm in other medical schools.
- Provide statistical guidance during development of the Independent Student Analysis (ISA), a report aimed at capturing student perspectives on school-wide issues and submitted to the Liaison Committee on Medical Education (LCME) for medical school re-accreditation.

Student Interviewer, Student Recruitment Coordinator   August 2021 – May 2023
- Interview MD applicants.
- Organize in-person or virtual recruitment events for MD-PhD applicants to ask questions of current students and get a better sense of Penn MD-PhD community. Enroll current student volunteers to help with recruitment events.
- Meet with MD-PhD applicants to answer questions about Penn MSTP and Philadelphia.

Teaching Assistant   January 2023 – April 2023
- Attend Cell and Tissue Biology small group sessions to answer first-year medical student questions and provide clinical perspectives.

Retreat Planning Committee   March 2022 – August 2022
- Attend bi-weekly planning meetings with other MSTP students and MSTP administrators to plan a yearly retreat for all current MSTP students.
- Coordinate invited faculty talks, student lightning talks, and student poster session. Organize icebreaker activity to welcome first-year students and promote inter-cohort mingling. Plan post-retreat social hour.

No Pain Labor & Delivery – Global Health Initiative   China
Interpreter Coordinator   June 2013 – May 2019
- Mediate conversation between American obstetricians, obstetrical anesthesiologists, neonatologists, and nurses and their Chinese counterparts in the delivery rooms of target hospitals for one week each summer. The goals were to facilitate use of labor analgesia, decrease Cesarean rates, and provide better neonatal care.
- Provide instruction and guidance to a team of mostly American high school, college, and medical school students who are semi-fluent to fluent in Chinese.

PUBLICATIONS

Chen, C., Das, S.R., Tisdall, M.D., Hu, F., Chen, A.A., Yushkevich P.A., Wolk, D.A., Shinohara, R.T. 2024. Subject-Level Segmentation Precision Weights for Volumetric Studies Involving Label Fusion. Human Brain Mapping.

Hu, F., Lucas, A., Chen, A.A., Coleman, K., Horng, H., Ng, R.W., Tustison, N.J., Davis, K.A., Shou, H., Li, M., et al. 2024. DeepComBat: A Statistically Motivated, Hyperparameter-Robust, Deep Learning Approach to Harmonization of Neuroimaging Data. Human Brain Mapping.

Luo, A., Sydnor, V.J., Pines, A., Larsen, B., Alexander-Bloch, A.F., Cieslak, M., Covitz, S., Chen, A., Esper, N.B., Feczko, E., Franco, A.R., Gur, R.E., Gur, R.C., Houghton, A., Hu, F., et al. 2024. Functional Connectivity Development along the Sensorimotor-Association Axis Enhances the Cortical Hierarchy. Nature Communications 15.

Salmon, M.K., Cohen, W.G., Hu, F., Aydin, A., Coskun, A.K., Schilsky, M., Doty, R.L. 2024. Taste and smell function in Wilson's disease. Journal of the Neurological Sciences.

Bagautdinova, J., Bourque, J., Sydnor, V.J., Cieslak, M., Alexander-Bloch, A.F., Bertolero, M.A., Cook, P.A., Gur, R.E., Gur, R.C., Hu, F., et al. 2023. Development of white matter fiber covariance networks supports executive function in youth. Cell reports 42.

Hu, F., Chen, A.A., Horng, H., Bashyam, V., Davatzikos, C., Alexander-Bloch, A., Li, M., Shou, H., Satterthwaite, T.D., Yu, M., et al. 2023. Image harmonization: A review of statistical and deep learning methods for removing batch effects and evaluation metrics for effective harmonization. NeuroImage 120125.

Okar, S.V., Hu, F., Shinohara, R.T., Beck, E.S., Reich, D.S., Ineichen, B.V., 2023. The etiology and evolution of magnetic resonance imaging-visible perivascular spaces: Systematic review and meta-analysis. Frontiers in Neuroscience 17, 527.

Hu, F., Weinstein, S.M., Baller, E.B., Valcarcel, A.M., Adebimpe, A., Raznahan, A., Roalf, D.R., Robert-Fitzgerald, T.E., Gonzenbach, V., Gur, R.C., et al. 2022. Voxel-wise intermodal coupling analysis of two or more modalities using local covariance decomposition. Human Brain Mapping.

Eweje, F.R., Byun, S., Chandra, R., Hu, F., Kamel, I., Zhang, P., Jiao, Z., Bai, H.X., 2022. Translatability Analysis of National Institutes of Health–Funded Biomedical Research That Applies Artificial Intelligence. JAMA Network Open 5, e2144742–e2144742.

Rando, H.M., MacLean, A.L., Lee, A.J., Lordan, R., Ray, S., Bansal, V., Skelly, A.N., Sell, E., Dziak, J.J., Shinholster, L., …, Hu, F., et al. 2022. Correction for Rando et al.,"Pathogenesis, Symptomatology, and Transmission of SARS-CoV-2 through Analysis of Viral Genomics and Structure." Msystems 7, e01447-21.

Rando, H.M., MacLean, A.L., Lee, A.J., Lordan, R., Ray, S., Bansal, V., Skelly, A.N., Sell, E., Dziak, J.J., Shinholster, L., …, Hu, F., et al. 2021. Pathogenesis, symptomatology, and transmission of SARS-CoV-2 through analysis of viral genomics and structure. MSystems 6, 10–1128.

Kim, L.J., Tsuyuki, K.M., Hu, F., Park, E.Y., Zhang, J., Iraheta, J.G., Chia, J., Huang, R., Tucker, A.E., Clyne, M., et al. 2021. Ferroportin 3 is a dual-targeted mitochondrial/chloroplast iron exporter necessary for iron homeostasis in Arabidopsis. The Plant Journal 107, 215–236.

Drzymalski, D.M., Guo, J.-C., Qi, X.-Q., Tsen, L.C., Sun, Y., Ouanes, J.-P.P., Xia, Y., Gao, W.D., Ruthazer, R., Hu, F., et al. 2021. The effect of the no pain labor & delivery-global health initiative on cesarean delivery and neonatal outcomes in china: an interrupted time-series analysis. Anesthesia & Analgesia 132, 698–706.

Martinez, N.G., Strohbach, A., Hu, F., Yee, L.M., 2020. "Real-world" effect of a peer counselor on breastfeeding outcomes in an urban prenatal clinic in the United States. BMC Pregnancy and Childbirth 20, 1–8.

Hu, F., Strohbach, A., Martinez, N.G., Simon, M.A., Yee, L.M., 2019. Patient and provider perceptions of a patient navigation program to improve postpartum care among publicly insured women. American journal of perinatology 38, 248–257.

Park, E.Y., Tsuyuki, K.M., Hu, F., Lee, J., Jeong, J., 2019. PRC2-mediated H3K27me3 contributes to transcriptional regulation of FIT-dependent iron deficiency response. Frontiers in plant science 10, 627.

Strohbach, A., Hu, F., Martinez, N.G., Yee, L.M., 2018. Evaluating the Use of Text Message Communication in a Postpartum Patient Navigation Program for Publicly Insured Women. Patient Education and Counseling.

Bouziat, R., Hinterleitner, R., Brown, J.J., Stencel-Baerenwald, J.E., Ikizler, M., Mayassi, T., Meisel, M., Kim, S.M., Discepolo, V., Pruijssers, A.J., …, Hu, F., et al. 2017. Reovirus infection triggers inflammatory responses to dietary antigens and development of celiac disease. Science 356, 44–50.

Hu, L.Q., Flood, P., Li, Y., Tao, W., Zhao, P., Xia, Y., Pian-Smith, M.C., Stellaccio, F.S., Ouanes, J.-P.P., Hu, F., et al. 2016. No pain labor & delivery: a global health initiative's impact on clinical outcomes in China. Anesthesia & Analgesia 122, 1931–1938.

Zhao, P., Hu, F., 2016. American-trained Chinese anesthesiologists: how are they doing? Journal of Clinical Anesthesia 33, 351–356.

ORAL PRESENTATIONS

Chen, C., Das, S., Tisdall, M., Hu, F., Chen, A., Yushkevich, P., Wolk, D., Shinohara, R. 2024. Subject-level segmentation accuracy weights for volumetric studies involving label fusion. Contributed Talk. *Computational and Financial Econometrics (CFE) and Computational and Methodological Statistics.*

Hu, F., Sicotte, N. L., Ontaneda, D., Reich, D. S., Sati, P., Shinohara, R. T., for the North American Imaging in MS Consortium. 2024. Automated Segmentation of Multiple Sclerosis Lesions, Paramagnetic Rims, and Central Vein Sign on MRI Provides Reliable Diagnostic Biomarkers. Contributed Oral. *Radiological Society of North America.*

Hu, F., Ren, Z., Chen, L., Valcarcel, A. M., Dworkin, J., Renner, B., Daboul, L., O'Donnell, C. M., Verter, E. D., Manning, A. R., Clark, K. A., Bae, E., Chen, C., Lou, C., Satterthwaite, T. D., Shou, H., Li, M., Bilello, M., Bar-Or, A., Calabresi, P. A., Freeman, L., Henry, R. G., Longbrake, E. E., Oh, J., Pelletier, D., Schindler, M. K., Absinta, M., Solomon, A. J., Sicotte, N. L., Ontaneda, D., Reich, D. S., Sati, P., Shinohara, R. T., and the North American Imaging in MS. 2024. Automated Segmentation of Multiple Sclerosis Lesions, Paramagnetic Rims, and Central Vein Sign on MRI Provides Reliable Diagnostic Biomarkers. Contributed Oral. *European Committee for Treatment and Research in Multiple Sclerosis.*

Chen, C., Das, S., Tisdall, M., Hu, F., Chen, A., Yushkevich, P., Wolk, D., Shinohara, R. 2024. Subject-level segmentation accuracy weights for volumetric studies involving label fusion. Invited Oral. *International Conference on Econometrics and Statistics.*

Hu, F., Erus, G., Aidinis, G., Baik, K., Cieslak, M., Cui, Y., Getka, A., Li, H., Ma, Y., Ren, Z., Salo, T., Srinivasan, D., Wu, D., Bergman, M., Wolf, D., Shinohara, R., Shou, H., Fan, Y., Nasrallah, I., Davatzikos, C. 2024. NiCHART: A Software Suite to Translate Neuroimaging Big Data to Individualized Biomarkers in Disease. Contributed Oral. *Organization for Human Brain Mapping.*

Hu, F., Chen, A., Coleman, K., Horng, H., Tustison, N., Li, M., Shinohara, R. 2023. DeepCombat: A Statistically-Motivated, Hyperparameter-Robust, Deep Learning Approach to Harmonization of Neuroimaging Data. Contributed Oral. *Eastern North American Region International Biometric Society.*

Hu, F., Ng, R. 2022. Precision Medicine: Where biology, statistics, and ethics collide. Invited Talk. *University of Pennsylvania Medical Scientist Training Program Grand Rounds.*

Hu, F., Weinstein, S., Baller, E., Valcarcel, A., Adebimpe, A., Raznahan, A., Roalf, D., Robert-Fitzgerald, T., Gonzenbach, V., Gur, R., and others. 2022. Voxel-wise Intermodal Coupling Using Local Covariance Decompositions. Contributed Oral. *Eastern North American Region International Biometric Society.*

POSTER PRESENTATIONS

Luo, A., Sydnor, V., Bagautdinova, J., Alexander-Bloch, A., Larsen, B., Yeh, F., Hu, F., Jaskir, M., Keller, A., Roalf, D., Shafiei, G., Shinohara, R., Cieslak, M., Satterthwaite, T. 2024. Hierarchical Development of White Matter Tracts in Youth. Contributed Poster. *Organization for Human Brain Mapping.*

Chen, C., Das, S., Tisdall, M., Hu, F., Chen, A., Yushkevich, P., Wolk, D., Shinohara, R. 2024. Subject-level segmentation accuracy weights for volumetric studies involving label fusion. Contributed Poster. *Organization for Human Brain Mapping.*

Hu, F., Chen, A., Coleman, K., Horng, H., Tustison, N., Li, M., Shinohara, R. 2023. Statistically-Motivated, Hyperparameter-Robust, Deep Learning Harmonization of Neuroimaging Data. Contributed Poster. *3rd University of Pennsylvania Big Data Conference.*

Hu, F., Chen, A., Coleman, K., Horng, H., Tustison, N., Li, M., Shinohara, R. 2023. Statistically-Motivated, Hyperparameter-Robust, Deep Learning Harmonization of Neuroimaging Data. Contributed Poster. *Joint Statistical Meetings.*

Hu, F., Beck, E., Reich, D., Shinohara, R., Ineichen, B. 2022. Development of an unsupervised, automated segmentation algorithm for enlarged perivascular spaces on 7 tesla magnetic resonance imaging. Contributed Poster. *European Committee for Treatment and Research in Multiple Sclerosis.*

Hu, F., Weinstein, S., Baller, E., Valcarcel, A., Adebimpe, A., Raznahan, A., Roalf, D., Robert-Fitzgerald, T., Gonzenbach, V., Gur, R., and others. 2022. Voxel-wise Intermodal Coupling Analyses of Multiple Images Using Local Covariance Decompositions. Contributed Poster. *Organization for Human Brain Mapping.*

Hu, F., Weinstein, S., Baller, E., Valcarcel, A., Adebimpe, A., Raznahan, A., Roalf, D., Robert-Fitzgerald, T., Gonzenbach, V., Gur, R., and others. 2022. Leveraging principal component analysis to study intermodal coupling in two or more modalities. Contributed Poster. *ASA Statistical Methods in Imaging.*

Yee, L., Niznik, C., DiTosto, J., Slagle, H., Ekpe, E., Summerlin, S., Hu, F., and Grobman, W. 2022. Associations of mindfulness, food security, and health literacy with diabetes-related perinatal health outcomes. Contributed Poster. *American Journal of Obstetrics & Gynecology*.

Martinez, N., Nguyen, A., Hu, F., Strohbach, A., Hajjar, N., and Yee, L. 2017. Effect of Introduction of a Lactation Counselor on Breastfeeding Uptake and Satisfaction in an Urban Prenatal Clinic. Contributed Poster. *Obstetrics & Gynecology*.

Strohbach, A., Hu, F., Martinez, N., Hajjar, N., Simon, M., and Yee, L. 2017. Navigating New Motherhood: Evaluating the Role of Patient-Navigator Communication on Postpartum Follow-Up in a Low-Income Community. Contributed Poster. *Reproductive Sciences*.

Hu, F., Strohbach, A., Martinez, N., Hajjar, N., Simon, M., and Yee, L. 2017. Patient and Provider Evaluation of a Postpartum Patient Navigation Program to Improve Postpartum Care Among Publicly Insured Women. Contributed Poster. *Reproductive Sciences*.