

# Fengling Hu

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## EDUCATION

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### Perelman School of Medicine

*MD-PhD*

- Graduate Group in Biostatistics
- Step 1: 266
- Elective courses: Case Studies in Translational Research; Humanism and Professionalism Through Music; Extreme Noticing: Perception, Awareness, and Writing
- Awards: 2022 Medical Student Research Paper Prize in AI and Informatics in Medicine

Philadelphia, PA  
August 2019 – Present

### Amherst College

*Bachelor of Arts*

- Major: Statistics & Biology
- GPA: 3.98/4.00
- MCAT: 524/528
- Awards: Walker Teaching Award in Statistics, James R. Elster Award in Biology Research, Mu Sigma Rho Statistics Honor Society Member

Amherst, MA  
August 2015 – May 2019

## RESEARCH EXPERIENCE

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### Penn Statistics in Imaging and Visualization Endeavor (PennSIVE)

*PhD student*

- 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.

Philadelphia, PA  
July 2020 – Present

### Amherst College – Jeong Lab

*Research Assistant*

- 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.

Amherst, MA  
July 2017 – May 2019

### Northwestern University – Yee Lab

*Research Assistant*

- 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.

Chicago, IL  
June 2016 – June 2018

### University of Michigan – Big Data Summer Institute

*Student Intern*

- 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.

Ann Arbor, MI  
June 2017 – July 2017

## WORK AND VOLUNTEER EXPERIENCE

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### Graduate Group in Epidemiology and Biostatistics

*Student Representative*

- 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

Philadelphia, PA  
August 2021 – Present

*BSAC Founder, President, and Consultant*

- 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.

August 2022 – Present

*Teaching Assistant*

- Sit-in on 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.

August 2023 – December 2023

- Teaching Assistant* October 2022 – March 2023
- Sit-in on 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 Interviewer, Student Recruitment Coordinator* August 2021 – Present
- 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
- Sit-in on 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.

- Amherst College Statistics Department** Amherst, MA  
*Statistics Fellow and Probability Teaching Assistant* March 2017 – May 2019
- Tutor students in Introduction to Statistics, Intermediate Statistics, and Probability in lecture materials, homework, and R code.
  - Serve as statistical analysts for various on-campus academic and administrative departments and projects.

- Amherst College Emergency Medical Service (ACEMS)** Amherst, MA  
*Emergency Medical Technician – Crew Chief, Director of Recruitment, Director of Business* February 2016 – May 2019
- Serve on the ACEMS Board of Directors to organize continued education training, build community, and conduct quality control for over 50 active members.
  - Organized a three-week, intensive EMT certification course over winter break to fully train thirty students as EMTs.
  - Implement protocols to decrease burnout, increase efficiency, and collect and address member feedback.
  - Lead a three-person EMT crew on biweekly 12-hour shifts to provide emergency 24/7 Basic Life Support services.

- 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.

- Kidney Disease Screening and Prevention (KDSAP)** Amherst, MA  
*Communications Director* February 2016 – February 2018
- Organize and execute kidney disease screenings involving student and nephrologist volunteers in surrounding low-income communities with low access to healthcare.
  - Manage communication between the KDSAP Executive Board and KDSAP members, Amherst College administration, and fellow Amherst College pre-health organizations.

- Northwestern Memorial Hospital** Chicago, IL  
*Anesthesia Technician I* August 2015 – July 2017
- Resupply and decontaminate anesthesia equipment and machines between uses to ensure optimal patient care
  - Provide support to anesthesiologists during routine surgical operations and anesthesia emergencies.

## PUBLICATIONS

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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., Lucas, A., Chen, A.A., Coleman, K., Horng, H., Ng, R.W., Tustison, N.J., Davis, K.A., Shou, H., Li, M., et al. 2023b. DeepComBat: A Statistically Motivated, Hyperparameter-Robust, Deep Learning Approach to Harmonization of Neuroimaging Data. *bioRxiv*.

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. 2023a. 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.

Luo, A., Sydnor, V.J., Pines, A., Larsen, B., Alexander-Bloch, A.F., Cieslak, M., Covitz, S., Chen, A., Esper, N.B., Feczko, E., et al. 2023. Functional Connectivity Development along the Sensorimotor-Association Axis Enhances the Cortical Hierarchy. *BioRxiv* 2023-07.

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., 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., 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*.

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

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 AND POSTER PRESENTATIONS

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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 Poster. *Organization for Human Brain Mapping*.

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*.

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., 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 Talk. *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., 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*.

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 Talk. *Eastern North American Region International Biometric Society*.

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*.