

Keren Xu

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EDUCATION

University of Southern California, Department of Preventive Medicine, Los Angeles, CA Expected 2023
Doctor of Philosophy in Epidemiology current GPA: 3.9

- Focus on epidemiological modeling, variant discovery in high-throughput sequencing data, and (epi)genome-wide association analysis for investigating genetic and epigenetic risk factors of acute lymphoblastic leukemia
- Relevant Coursework: Cancer Epidemiology, Data Analysis, Research Methods in Epidemiology, Spatial Statistics, Machine Learning for the Health Sciences, Advanced Statistical Computing
- Advisor: Dr. Adam de Smith

Columbia University, Mailman School of Public Health, New York, NY May 2017
Master of Public Health in Epidemiology with certificate in Advanced Epidemiology GPA: 3.8

- Relevant Coursework: Genetic Epidemiology, Cancer Epidemiology, Latent Variable Analysis, Longitudinal Data Analysis, Applied Regression, Categorical Data Analysis
- Thesis: Perceived Future Epilepsy Risk among Unaffected Members of Multiplex Epilepsy Families: Modeling the Impacts of Numbers of Affected Relatives and Perceived Chance of Having Epilepsy-Related Mutation. Advisor: Dr. Ruth Ottman

East China University of Science and Technology (ECUST), School of Pharmacy, Shanghai, China July 2015
Bachelor of Science in Pharmaceutical Sciences, Minor in English GPA: 3.7

- Thesis: Pluripotent Stem Cells Culture and ICOSL Gene Knockout. Advisor: Dr. Jianwen Liu

RESEARCH EXPERIENCE

University of Southern California, Research Assistant, Los Angeles, CA May 2020-Present

- Investigate epigenetic and genetic risk factors of childhood acute lymphoblastic leukemia by performing Poisson regression analysis, epigenome-wide association analysis, and DNA methylation quantitative trait loci analysis, with R packages from CRAN and Bioconductor project
- Perform exome-sequencing analysis of germline DNA from Hodgkin's lymphoma patients to detect rare variants
- Draft manuscripts and present study results

University of Southern California, Research Fellow, Los Angeles, CA Aug. 2018-Aug. 2019

- Finished first-year core curriculum required by the Epidemiology PhD Program at USC
- Successfully passed the PhD student screening exam

Dartmouth-Hitchcock Medical Center, Research Assistant, Lebanon, NH July 2017-June 2018

- Performed various quantitative analysis using R programming, focusing on the impact of shared decision making between clinicians and patients with structural heart diseases, on patient centered outcomes
- Successfully organized stakeholder group meeting including 4 clinicians and 8 patients, and collected the feedback from stakeholders as part of grant application
- Collaborated with medicine fellow to write study proposal and received 2018 Cardiovascular Medicine Fellowship Research Award of \$15,000
- Conducted a study to validate an EHR-integrated decision support tool for patient with atrial fibrillation who is considering stroke prevention, including cluster RCT study design, focus group study design, IRB submission, survey design, patient recruitment, etc.
- Contributed to manuscript writing, abstract submission and protocol preparation

Columbia University Medical Center, Research Assistant, New York, NY May 2016-July 2017

- Created and maintained three-year database in Access and SPSS to efficiently track project outcomes
- Performed various quantitative analysis in SAS and SPSS, such as multinomial logistic regression, multilevel modeling, and structural equation modeling
- Analyzed child emotional and behavioral health, parent acculturation and engagement to evaluate, revise and further develop parent intervention to improve child development
- Drafted reports and summaries to Heising-Simons Foundation
- Communicated with coworkers to work effectively in cross-functional team

Columbia University Medical Center, Master's Thesis Researcher, New York, NY Aug. 2016-May 2017

- Performed analysis of family and genetic linkage study survey data using SAS macro and R package, including causal inference analysis, and Poisson regression with generalized estimating equation
- Formulated specific thesis topic and conducted literature review focusing on psychosocial impacts of diseases and causal inference mediation analysis

- Performed manuscript writing, and generated tables and graphs to present analysis results

School of Pharmacy, ECUST, Undergraduate Research Assistant, Shanghai, China Mar. 2013-July 2015

- Conducted biological research techniques in cells culture, gene knockout and animal tumor model establishment in order to evaluate drug efficacy
- Wrote successful research protocol to apply for Shanghai City Undergraduate Innovation Project Funding and received \$5,000 for research tools funding
- Collaborated with research assistants as team leader to track project timeline and status
- Presented research plan to internal and external stakeholders as part of grant application

TEACHING EXPERIENCE

Automatic Reports with RMarkdown, R Bootcamp for Scientific Computing 2020, Los Angeles, CA Aug. 2020

- Topics covered markdown languages, creating RMarkdown documents (i.e. html, pdf, word, slides), and an overview of various RMarkdown related R packages including citr, Xaringan, xaringanExtra, pagedown, vitae, posterdown, and blogdown
- Led one-hour long workshop to go over RMarkdown related topics and teach how to use RMarkdown through several small exercises with new MPH/MS/PhD students in the Department of Preventive Medicine at USC

Draw fractals from root finding iteration in R, LA R Users Group, Los Angeles, CA April 2020

- Topics covered applying NewtonRaphson root finding algorithm to drawing fractals for Complex functions in R
- Led half hour workshop to present how to draw fractals from root finding iteration in R to audiences with from entry- to advanced- level R knowledge from academic or industry background

Data Analysis, USC, Teaching Assistant, Los Angeles, CA Jan. 2020-May 2020

- Topics covered statistical methods for analysis of categorical data including dichotomous, ordinal, multinomial and count data, using Stata and SAS packages
- Led weekly discussions to review assignments and instructional labs in the use of statistical software
- Held weekly office hour to address ongoing student questions

Principles of Epidemiology, USC, Teaching Assistant, Los Angeles, CA Jan. 2020-May 2020

- Covered terminology/uses of epidemiology and demography; sources/uses of population data; types of epidemiologic studies; risk assessment; common sources of bias in population studies; principles of screening
- Evaluated students' assignments and exams
- Assisted in preparing and developing lecture materials, exams, and team-based learning exercises

Building a Personal Website Using Blogdown, R-Ladies Pasadena, Los Angeles, CA Nov. 2019

- Covered concepts of generating personal website via Blogdown and Hugo, deploying website from Github to netlify, and requesting domain
- Led two-hour long workshop to present how to create a personal website by using R package Blogdown to audiences from diverse background

Introduction to Biostatistics, USC, Teaching Assistant, Los Angeles, CA Aug. 2019-Dec. 2019

- Covered concepts of biostatistics; appropriate uses and common misuses of health statistics; practice in the application of statistical procedures; introduction to statistical software including EXCEL, SPSS, nQuery
- Led weekly discussions to review assignments and instructional labs in the use of statistical software
- Held weekly office hour to address ongoing student questions

Chronic Disease Epidemiology, USC, Teaching Assistant, Los Angeles, CA Aug. 2019-Dec. 2019

- Covered overview of causative factors and demographic distribution of major chronic diseases in the western world, epidemiologic concepts, methods and research design as applied to chronic disease prevention
- Evaluated students' assignments and exams
- Assisted in preparing and developing lecture materials, exams, and team-based learning exercises

Research Methods in Epidemiology, USC, Teaching Assistant, Los Angeles, CA Aug. 2019-Dec. 2019

- Covered study design, ascertainment of study objects, questionnaire development, various methodological issues in study design and interpretation including bias, measurement error, confounding and effect modification
- Evaluated students' assignments and exams
- Assisted in preparing and developing lecture materials, exams, and team-based learning exercises

ViaX Online Education, Online instructor, Beijing, China Aug. 2019-May 2020

- Tutored a high-school student on R statistics, Epidemiological study design and academic writing

- Led weekly two-hour long lectures for a total of 20 hours

HONORS AND AWARDS

- University of Southern California Graduate Student Fellowship (08/2018)
- Shanghai City Outstanding Graduate (07/2015)
- Jiang Hualiang (Dean) Scholarship First Prize (01/2014), Third Prize (12/2012)
- Shanghai City Undergraduate Innovation Project (09/2013)
- ECUST Integrated Curriculum First Prize (09/2013, 09/2012)
- ECUST Social Work Prize Level A (09/2013), Level B (09/2012)
- ECUST Outstanding Student (09/2013, 11/2012)
- ECUST Outstanding Student Leader (09/2013)
- Third Prize in the Fourth National Undergraduate Mathematical Competition (Shanghai) (11/2012)

PUBLICATION

- Stacey L. Schott, Julia Berkowitz, Shayne E. Dodged, Curtis L. Petersen, Catherine H. Saunders, Navjot Kaur Sobti, **Keren Xu**, Megan Coylewright. A Personalized, EHR-integrated Decision Aid for Stroke Prevention in Atrial Fibrillation: Pilot Cluster Randomized Trial and Qualitative Analysis of Efficacy and Acceptability. *Circulation: Cardiovascular Quality and Outcomes*, 2021. (in press).
- Megan Coylewright, Elizabeth O'Neill, Ariel Sherman, Megan Gerling, Kaavya Adam, **Keren Xu**, Stuart W. Grande, Harold L. Dauerman, Shayne E. Dodge, Navjot Kaur Sobti, Catherine H. Saunders, Stacey L. Schott, Glyn Elwyn, Marie-Anne Durand. The Learning Curve for Shared Decision-making in Symptomatic Aortic Stenosis. *JAMA cardiology*, 2020.
- Megan Coylewright, Jon G. Keevil, **Keren Xu**, Shayne Dodge, Dominick Frosch, Michael E. Field. Pragmatic Study of Clinician Use of a Personalized Patient Decision Aid Integrated into the Electronic Health Record: An Eight-year Experience. *Telemedicine and e-Health*, 2019.

MANUSCRIPT IN DEVELOPMENT

- **Keren Xu**, Shaobo Li, Todd P. Whitehead, Priyatama Pandey, Alice Y. Kang, Libby M. Morimoto, Scott Kogan, Catherine Metayer, Joseph L. Wiemels, Adam J. de Smith. Epigenetic Biomarkers of Prenatal Tobacco Smoke Exposure are Associated with Gene Deletions in Childhood Acute Lymphoblastic Leukemia. (under review).
- Megan Coylewright, Ariel Sherman, Stuart W. Grande, **Keren Xu**, Gerard Dillon, John Kirk, Elizabeth O'Neill, Glyn Elwyn. Implementing a Telehealth "Virtual Consult" with Subspecialists, Referring Clinicians and Patients to Promote Shared Decision Making: A Feasibility Study". (under review).

ABSTRACT

- Stacey L. Schott, **Keren Xu**, Julia Berkowitz, Curtis Petersen, Catherine Saunders, Navjot Sobti, Megan Coylewright. Timing of Electronic Health Record Integrated Decision Aid (IDEA) for Stroke Prevention in Atrial Fibrillation Matters. American College of Cardiology Scientific Sessions, 2019.
- Megan Coylewright, Ariel Sherman, Stuart W. Grande, **Keren Xu**, John Kirk, Gerard Dillon, Elizabeth O'Neill, Glyn Elwyn. Does a Telehealth "Virtual Consult" Including Referring Physicians, Specialist Physicians and Patients Increase Shared Decision Making for Patients with Heart Disease? Quality of Care and Outcomes Research Scientific Sessions, 2018.
- Megan Coylewright, Elizabeth O'Neill, Ariel Sherman, Megan Gerling, Kaavya Adam, **Keren Xu**, Stuart Grande, Harold L. Dauerman, Glyn Elwyn. A Learning Curve for Shared Decision Making: The Impact of Physician Experience on Decision Aid Efficacy in Severe Aortic Stenosis. American College of Cardiology Scientific Sessions, 2018.
- Maria Marti Castaner, **Keren Xu**, Kelsey Repka, Lisa Gennetian, Joy Kennedy, Helena Duch. A Multi-Dimensional Approach to Parent Engagement. Results from An Integrated School Readiness Intervention. Society for Research in Child Development, 2017 Biennial Meeting.
- **Keren Xu**, Maria Marti Castaner, Helena Duch. A Multi-Dimensional Approach to Parent Engagement. Results from an Integrated School Readiness Intervention. Mailman School of Public Health. EPI Masters Student Day, 2016. Poster Presentation.

PRESENTATION

- Individuals with Common Diseases but with a Low Polygenic Risk Score Could be Prioritized for Rare Variant Screening. Center for Genetic Epidemiology Journal Club, Nov. 2020. Journal Club Presentation.
- Does DNA Methylation Mediate the Genetic Risk Factors for Childhood Acute Lymphoblastic Leukemia. PM570 Statistical Methods in Human Genetics, Nov. 2020. Final Project Presentation.
- Partitioning Heritability of Regulatory and Cell-Type-Specific Variants across 11 Common Diseases. PM570 Statistical Methods in Human Genetics, Oct. 2020. Journal Club Presentation.

- Molecular Basis of ETV6 Mediated Predisposition to Childhood Acute Lymphoblastic Leukemia. The Wiemels and de Smith Laboratory Weekly Meeting, Oct. 2020. Journal Club Presentation.
- Automatic Reports with RMarkdown. R Bootcamp for Scientific Computing 2020: day 3. August 2020. University of Southern California. <https://www.youtube.com/watch?v=-dtl1LD4b-0>
- In utero tobacco smoke exposure and gene deletions in childhood ALL. The Integrative Cancer Research (ICARE) Group Monthly meeting, June 2020. Project Presentation.
- Correlates of DNA methylation at three CpG sites and total number of common gene deletions in childhood acute lymphoblastic leukemia. The Wiemels and de Smith Laboratory Weekly Meeting, May 2020. Project Presentation.
- Draw fractals from root finding iteration in R. LA R Users: April Meeting, 2020. Zoom due to Pandemic. <https://www.youtube.com/watch?v=dFA4qsJulVs>
- Building a Personal Website Using Blogdown. R-Ladies Pasadena, 2019. November Meetup. Sherman Fairchild library at Caltech. <https://www.meetup.com/rladies-pasadena/events/265962563/>
- Introduction to Statistical Significance in Epidemiology. ALI270 Advanced Oral Communication for International Teaching Assistants, 2019. Mini Lesson Presentation.
- Investigating COPD and Lung Cancer in a Multiethnic Population. PM559 Cancer Epidemiology, 2018. Final Proposal Presentation.
- Understanding the Gender Disparity of Developing Urothelium Carcinoma. PM517a Research Methods in Epidemiology, 2018. Final Project Presentation.

PROJECT INVOLVEMENT

- Whether DNA Methylation Mediates Genetic Risk Factors for Childhood Acute Lymphoblastic Leukemia? University of Southern California.
- Germline Variant Calling from Exome-sequencing Data for Hodgkin's Lymphoma. University of Southern California.
- Epigenetic Biomarkers of Prenatal Tobacco Smoke Exposure and Gene Deletions in Childhood Acute Lymphoblastic Leukemia. University of Southern California.
- Investigating COPD and Lung Cancer in a Multiethnic Population. University of Southern California.
- Testing the Efficacy of an EHR-integrated Health Decision Aid for Atrial Fibrillation (**2018 Cardiovascular Medicine Fellowship Research Award**). Dartmouth-Hitchcock Medical Center.
- Clinician Use Patterns and Feedback of a Decision Aid Integrated into the Electronic Medical Record. Dartmouth-Hitchcock Medical Center and University of Wisconsin-Madison.
- Can Telehealth be Used to Improve Implementation of Shared Decision Making in Patients with Heart Valve Disease? Dartmouth-Hitchcock Medical Center and The Dartmouth Institute for Health Policy and Clinical Practice.
- Defining the Learning Curve for Use of a Decision Aid by Cardiovascular Proceduralists with Elderly Patients: Aortic Stenosis Choice. Dartmouth-Hitchcock Medical Center and the University of Vermont Medical Center.
- Getting Ready for School. Columbia University Medical Center and New York University.
- Psychosocial Impact of Genetics in Epilepsy. Columbia University Medical Center.
- Pluripotent Stem Cells Culture and ICOSL Gene Knockout. ECUST.
- Establishment of a Mice Tumor Model and Research on the Lung Cancer Drug Pharmacological Evaluation (**Shanghai City Undergraduate Innovation Project**). ECUST.

COMMUNITY INVOLVEMENT

- LA East R Users Group, Co-organizer**, Los Angeles, CA Oct. 2019-Present
- Facilitate the monthly meet up
- The Graduate Students in Biostatistics and Epidemiology, Volunteer**, Los Angeles, CA Sept. 2019-Present
- Peer Mentorship Program: Guided two first year PhD students in Epidemiology and Biostatistics who need mentoring transition successfully
- Palliative Care Volunteer Program, Volunteer**, Lebanon, NH Jan. 2018-June 2018
- Received approximately 12 hours of specialized training
 - Visited with nearly 50 patients to offer reassurance to people who may feel anxious or isolated
- New York State Psychiatric Institute, Class project**, New York, NY Feb. 2017-May 2017
- Approached and consented households in Washington Heights, and conducted surveys to collect mental and physical health data
 - Formulated specific research question, conducted literature review and wrote study protocol focusing on the suicide in native men, ages 15-25 in Alaska, USA, by using field methods of epidemiology
- Children of China Pediatrics Foundation, Volunteer**, New York, NY July 2016
- Translated for Visiting Doctors from diverse backgrounds to share techniques and build partnership with

New York Presbyterian Hospital Ped Crt Cre

Publicity Center, School of Pharmacy, ECUST, Director, Shanghai, China

Sept. 2012-July 2013

- Communicated with student organizations to provide support in graphic design, digital display design, poster and banner distribution, and coordination with on and off campus outlets for promoting events
- Collaborated with team members to perform stage design for University Anniversary Celebration

ECUST Volunteer Center, Volunteer, Shanghai, China

Sept. 2011-July 2013

- Took part in the Care for the Elderly Project: Provided companionship and support for elderly people in local community
- Tutored an 8-year-old child on weekends to achieve academic progress

SKILLS AND INTERESTS

- Computer: R, Linux/Unix, Bash, Git, SAS, STATA, SPSS, Microsoft Office, EndNote, Zotero, Final Cut Pro, Adobe Photoshop, Adobe Lightroom
- Languages: Wu (Native), Mandarin (Native), English (Full professional working proficiency)
- Certifications: SAS Certified Advanced Programmer for SAS 9, R Programming by Johns Hopkins University on Coursera, Data Scientist with R Track on DataCamp, Data Analyst with R Track on DataCamp, Predict Consumer Decisions with Choice-Based Conjoint on Udemy, National Computer Rank Examination C Programming Level 2, American Language Institute Certified International Teaching Assistant