

# HONGJIAN ZHU

Department of Biostatistics and Data Science      Email: hongjian.zhu@uth.tmc.edu  
University of Texas Health Science Center at Houston      Phone: (713) 500-9580  
1200 Pressler Street, RAS W922  
Houston, TX, 77030

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## Education

- **Ph.D. in Statistics**, University of Virginia      May 2010  
Advisor: Dr. Feifang Hu
- **B.S. in Statistics**, Zhejiang University, China      Jul 2005  
Member of Mixed Honors Class in Chu Kechen Honors College

## Professional Experience

- **Associate Professor**      Sep 2018-present  
Department of Biostatistics and Data Science, Coordinating Center for Clinical Trials  
University of Texas Health Science Center at Houston School of Public Health
- **Assistant Professor**      Jul 2012-Aug 2018  
Department of Biostatistics and Data Science, Coordinating Center for Clinical Trials  
University of Texas Health Science Center at Houston School of Public Health
- **Postdoctoral Associate**      Jun 2010-May 2012  
Yale University
- **Research Assistant**      Aug 2006-May 2010  
Department of Statistics, University of Virginia

## Publications (\* denotes corresponding author, \*\* denotes my students)

### Statistical theory and methodology papers

1. **Zhu, H.** and Hu, F. (2018). Sequential Monitoring of Covariate-Adaptive Randomized Clinical Trials. *Statistica Sinica*. Accepted.
2. **Zhu, H.\*** (2017). Statistical inference for response adaptive randomization procedures with adjusted optimal allocation proportions. *Journal of Biopharmaceutical Statistics*. 1-9.
3. Wang, L.\*\*, Chen, Y. and **Zhu, H.\*** (2017). Implementing Optimal Allocation in Clinical Trials with Multiple Endpoints. *Journal of Statistical Planning and Inference*. 182, 88-99.
4. Song, J., Carey, M., **Zhu, H.**, Miao, H., Ramirez, J. C., and Wu, H. (2017). Identifying the dynamic gene regulatory network during latent HIV-1 reactivation using high-dimensional ordinary differential equations. *International Journal of Computational Biology and Drug Design*. Accepted.

5. **Zhu, H.**, Lai, D. and Johnson, N.P. (2016). Agreement between two diagnostic tests when accounting for test-retest variation: Application to FFR versus iFR. *Journal of Applied Statistics*, 43, 1673-1689.
6. Hu, J., **Zhu, H.** and Hu, F. (2015). A Unified Family of Covariate-Adjusted Response-Adaptive Randomization Based on Optimization and Ethics. *Journal of the American Statistical Association*, 110, 357-367.
7. **Zhu, H.\*** (2015). Covariate Adjusted Response Adaptive Designs Incorporating Covariates with and without Treatment Interactions. *Canadian Journal of Statistics*, 43, 534-553.
8. Hu, F., Hu, Y., Ma, W., Zhang, L. and **Zhu, H.** (2015). Statistical inference of adaptive randomized clinical trials for personalized medicine. *Clinical Investigation*, 5, 415-425.
9. Chen, Y., Liu, Y., Ning, J., Nie, L., **Zhu, H.** and Chu, H., (2014). A composite likelihood method for bivariate meta-analysis in diagnostic systematic reviews. *Statistical methods in medical research*, p.0962280214562146.
10. Li, G and **Zhu, H.** (2013). Genetics Study: The Linear Mixed Models in Genome-Wide Association Studies. *The Open Bioinformatics Journal*, 7,(Suppl-1, M2) 27-33.
11. **Zhu, H.**, Hu, F. and Zhao, H. (2013). Adaptive Clinical Trial Designs to Detect Interaction of Treatment and a Dichotomous Biomarker. *Canadian Journal of Statistics*, 41, 525-539.
12. **Zhu, H.** and Hu, F. (2012). Interim Analysis of Clinical Trials Based on Urn Models. *Canadian Journal of Statistics*, 40, 550-568.
13. **Zhu, H.** and Hu, F. (2010). Sequential Monitoring of Response-Adaptive Randomized Clinical Trials. *The Annals of Statistics*, 38, 2218-2241.
14. **Zhu, H.\*** and Hu, F. (2009). Implementing Optimal Allocation for Sequential Continuous Responses with Multiple Treatments. *Journal of Statistical Planning and Inference*, 139, 2420-2430.

### Clinical papers

1. Akosile, M.\*\*, Zhu, H.\*\*, Zhang, S., Johnson, N. P., Lai, D. and **Zhu, H.\*** (2018). Reassessing the Effectiveness of Right Heart Catheterization (RHC) in the Initial Care of Critically Ill Patients using Targeted Maximum Likelihood Estimation. *International Journal of Clinical Biostatistics and Biometrics*. 4:018. doi.org/10.23937/2469-5831/1510018.
2. Gould, K. L., Johnson, N. P. Roby, A. E., Nguyen, T., Kirkeeide, R., Haynie, M., Lai, D., **Zhu, H.**, Patel, M. B., Smalling, R., Arain, S., Balan, P., Nguyen, T., Estrera, A., Sdringola, S., Madjid, M., Nascimbene, A., Loyalka, P., Kar, B., Gregoric, I., Safi, H., McPherson, D. (2018) Regional Artery Specific Thresholds Of Quantitative Myocardial Perfusion By PET Associated With Reduced MI and Death After Revascularization In Stable CAD. *Journal of Nuclear Medicine*. jnumed-118..

3. Cardenas, J.C., Wade, C.E., Cotton, B.A., George, M.J., Holcomb, J.B., Schreiber, M.A. and White, N.J., **on behalf of the PROPPR Study Group**. (2018) Teg Lysis Shutdown Represents Coagulopathy in Bleeding Trauma Patients: Analysis of the Proppr Cohort. *Shock* (Augusta, Ga.).
4. Cardenas, J.C., Zhang, X., Fox, E.E., Cotton, B.A., Hess, J.R., Schreiber, M.A., Wade, C.E., Holcomb, J.B. **on behalf of the PROPPR Study Group**. (2018) Platelet transfusions improve hemostasis and survival in a substudy of the prospective, randomized PROPPR trial. *Blood Adv.* 2(14), 1696-1704.
5. Taylor III, J.R., Fox, E.E., Holcomb, J.B., Rizoli, S., Inaba, K., Schreiber, M.A., Brasel, K., Scalea, T.M., Wade, C.E., Bulger, E. and Cotton, B.A., **for the PROPPR Study Group** (2018). The hyperfibrinolytic phenotype is the most lethal and resource intense presentation of fibrinolysis in massive transfusion patients. *Journal of Trauma and Acute Care Surgery*, 84(1), 25-30.
6. Kitkungvan, D., Lai, D., **Zhu, H.**, Roby, A.E., Johnson, N.P., Steptoe, D.D., Patel, M.B., Kirkeeide, R. and Gould, K.L., (2017). Optimal Adenosine Stress for Maximum Stress Perfusion, Coronary Flow Reserve, and Pixel Distribution of Coronary Flow Capacity by KolmogorovSmirnov Analysis. CLINICAL PERSPECTIVE. *Circulation: Cardiovascular Imaging*, 10(2), p.e005650.
7. Fox, E.E., Holcomb, J.B., Wade, C.E., Bulger, E.M., Tilley, B.C. and **PROPPR Study Group**, (2017). Earlier endpoints are required for hemorrhagic shock trials among severely injured patients. *Shock*, 47(5), 567-573.
8. Meyer, D.E., Vincent, L.E., Fox, E.E., O'keeffe, T., Inaba, K., Bulger, E., Holcomb, J.B., Cotton, B.A. and **PROPPR Study Group** (2017). Every minute counts: Time to delivery of initial massive transfusion cooler and its impact on mortality. *Journal of Trauma and Acute Care Surgery*, 83(1), 19-24.
9. **Zhu, H.\***, Fox, E.E., Baraniuk, S., Holcomb, J.B., Wade, C.E., Del Junco, D.J., Tilley, B.C. and PROPPR Study Group, (2016). Assessing protocol adherence in a clinical trial with ordered treatment regimens: Quantifying the pragmatic, randomized optimal platelet and plasma ratios (PROPPR) trial experience. *Injury*, 47(10), 2131-2137.
10. Vahidy, F.S., Rahbar, M.H., **Zhu, H.**, Rowan, P.J., Bambhroliya, A.B. and Savitz, S.I., (2016). Systematic Review and Meta-Analysis of Bone MarrowDerived Mononuclear Cells in Animal Models of Ischemic Stroke. *Stroke*, 47(6), 1632-1639.
11. Safavi-Naeini, P., Zafar-Awan, D., **Zhu, H.**, Zablah, G., Ganapathy, A.V., Rasekh, A., Saeed, M., Razavi, J.E.M. and Razavi, M., (2016). Accuracy of Voltage Signal Measurement During Radiofrequency Delivery Through the SMARTTOUCH Catheter. *Journal of cardiovascular electrophysiology*. 28, 51-55.
12. Holcomb JB, Tilley BC, Baraniuk S, Fox EE, Wade CE, Podbielski JM, del Junco DJ, Brasel KJ, Bulger EM, Callcut RA, Cohen MJ, Cotton BA, Fabian TC, Inaba K, Kerby JD, Muskat P, O'Keeffe T, Rizoli S, Robinson BR, Scalea TM, Schreiber MA, Stein DM, Weinberg JA, Callum JL, Hess JR, Matijevic N, Miller CN, Pittet JF, Hoyt DB, Pearson GD, Leroux B, van Belle G; **for the PROPPR Study Group**. (2015)

Transfusion of Plasma, Platelets, and Red Blood Cells in a 1:1:1 vs a 1:1:2 Ratio and Mortality in Patients With Severe Trauma: The PROPPR Randomized Clinical Trial. *The Journal of the American Medical Association*. 313, 471-482

13. Johnson NP, Tth GG, Lai D, **Zhu H**, Aar G, Agostoni P, Appelman Y, Arslan F, Barbato E, Chen SL, Di Serafino L, Domnguez-Franco AJ, Dupouy P, Esen AM, Esen OB, Hamilos M, Iwasaki K, Jensen LO, Jimnez-Navarro MF, Katritsis DG, Kocaman SA, Koo BK, Lpez-Palop R, Lorin JD, Miller LH, Muller O, Nam CW, Oud N, Puymirat E, Rieber J, Rioufol G, Rods-Cabau J, Sedlis SP, Takeishi Y, Tonino PA, Van Belle E, Verna E, Werner GS, Fearon WF, Pijls NH, De Bruyne B, Gould KL. (2014) Prognostic value of fractional flow reserve: linking physiologic severity to clinical outcomes. *Journal of the American College of Cardiology*. 64(16), 1641-1654.

### Book Chapter

1. Hyun, S.Y., Huang, T. and **Zhu, H.\*** (2015). Efficient and Ethical Adaptive Clinical Trial Designs to Detect Treatment-Covariate Interaction. *Chapter 14, Modern Adaptive Randomized Clinical Trials: Statistical and Practical Aspects. CRC Press*.
2. Huang, T. and **Zhu, H.** (2015). Longitudinal Covariate-Adjusted Response-Adaptive Randomization: Impact of Missing Data. *Chapter 15, Modern Adaptive Randomized Clinical Trials: Statistical and Practical Aspects. CRC Press*.

### Book Review

1. **Zhu, H.\*** (2016) Book review of “Dynamical Biostatistical Models”, *The American Statistician*. 70, (4), 424.

### Poster and abstracts at medical and bigdata conferences

1. Callcut R. A., Weinberg, J. A., Holcomb, J. B., Cohen, M. J., Tilley, B. C., **Zhu, H.**, Robinson, B. B., Muskat, P., Cotton, B., Schreiber, M. A., Stein, D., Brasel, K., Simpson, K., Fox, E. E. and Fabian, T. (2015) Timing & Incidence of Major Complication From the Pragmatic Randomized Optimal Platelet And Plasma Ratios (PROPPR) Trial. *2015 AAST Annual Member Meetings*
2. Hai Zhu\*\*, Derek Brown, Vahed Maroufy, Laila Gindy Bekhet, George Williams, David Aguilar, Jose-Miguel Yamal, Hulin Wu and **Zhu, H.\*** (2018) Applying Targeted Learning to Assess the Effect of Vasopressors on Reducing Mortality of SAH Patients. *The 4th International Conference on Big Data and Information Analytics*
3. Jose-Miguel Yamal, Derek Brown, Hai Zhu\*\*, Helen Engle, Stacia DeSantis, **Zhu, H.**, Michael Swartz, George Williams, Vahed Maroufy, Laila Gindy Bekhet, David Aguilar, Luis Leon Novelo, Ashraf Yaseen and Hulin Wu (2018) A Retrospective Analysis of Nationwide EHR Data for Evaluating Vasopressor Effects on the Outcome of Subarachnoid Hemorrhage Patients: Causal Inference Approaches for High-Dimensional EHR Confounding Factors. *The 4th International Conference on*

## *Big Data and Information Analytics*

### Grant Support

#### **a. Current Funding**

- Title: Dejian Lai Century Health Project  
Funding source: Weatherhead Century Grant  
Role: Co-investigator (30%)  
Subcontract Direct Cost: \$475,500  
Subcontract PI: Dejiang Lai  
PI: K.Lance Gould  
Institution: UTHealth  
Duration: 01/01/2015-02/29/2019

#### **b. Completed Funding**

- Title: AMS-Simons Travel Grant  
Funding source: American Mathematical Society and the Simons Foundation  
Role: Awardee  
Duration: 07/01/2014-06/30/2016  
Amount Funded: \$4000 for the awardee and \$800 for the department.
- Title: Prospective, Randomized Optimal Platelets & Plasma Ratios (PROPPR)  
Identification Number: 5U01HL077863-11  
Funding source: University of Washington / NIH  
Role: Co-investigator (20%)  
Direct Cost: \$3,833,254  
PI: Barbara C. Tilley  
Duration: 09/16/2014-12/31/2015
- Title: Dejian Lai Century Health Project  
Funding source: Weatherhead Century Grant  
Role: Co-investigator (20%)  
Subcontract Direct Cost: \$475,500  
Subcontract PI: Dejiang Lai  
PI: K.Lance Gould  
Institution: UTHealth  
Duration: 09/01/2013-12/31/2014
- Title: Prospective, Randomized Optimal Platelets & Plasma Ratios (PROPPR)  
Identification Number: 5U01HL077863-11  
Funding source: University of Washington / NIH  
Role: Co-investigator (10%)  
Direct Cost: \$3,833,254  
PI: Barbara C. Tilley  
Duration: 04/16/2013-09/15/2014
- Title: Dejian Lai Century Health Project  
Funding source: Weatherhead Century Grant

Role: Co-investigator (10%)  
Subcontract Direct Cost: \$475,500  
Subcontract PI: Dejiang Lai  
PI: K.Lance Gould  
Institution: UTHealth  
Duration: 04/01/2013-08/31/2013

## **Presentations**

### **Invited Presentations**

- Biostatistics Innovation Research Summer School, Renmin University of China, Beijing, China, July 2018
- The 8th International Forum on Statistics, Renmin University of China, Beijing, China, July 2018
- Session 107, ICSA Applied Statistics Symposium, Chicago, IL. Jun 2017.
- Session 35, ICSA/Graybill Joint Conference, Fort Collins, CO. Jun 2015
- Session SS018, The Ninth ICSA International Conference: Challenges of Statistical Methods for Interdisciplinary Research and Big Data, Hongkong. Dec 2013
- International Conference on Recent Advances in Experimental Designs, Guangzhou, China. Dec 2013
- Statistical Modeling, Theory & Application Conference, Shanghai, China. Oct 2013
- IMS-China International Conference, Chengdu, China. July 2013
- Poster, Design and Analysis of Experiments Conference, Athens, Georgia. Oct 2012
- ICSA Applied Statistics Symposium, Boston, MA. Jun 2012

### **Invited Seminar Presentations**

- School of Medicine, Virginia Commonwealth University, Richmond, VA 2018
- School of Mathematics, Zhejiang University, Hangzhou, China. June 2017.
- Shanghai University of Finance and Economics, Shanghai, China. June 2017.
- School of Public Health, Fudan University, Shanghai, China. June 2017.
- Department of Mathematics, Texas A&M University-Kingsville, Kingsville, TX. April 2017.
- Department of Biostatistics, UTHealth at Houston, Houston, TX. Nov 2014
- Shanghai University of Finance and Economics, Shanghai, China. Oct 2013
- Center for Clinical and Translational Sciences, UTHealth at Houston, Houston, TX. Nov 2012
- Department of Statistics, Oklahoma State University, Stillwater, OK. Dec 2011
- Department of Math, Central Michigan University, Mt. Pleasant, MI. Nov 2011
- University of Texas School of Public Health, Houston, TX. Nov 2011
- Department of Statistics, University of Virginia, Charlottesville, VA. Apr 2011

### Topic Contributed Presentations

- Session 635, Joint Statistical Meetings, Seattle, WA. Aug 2015
- Session 443, Joint Statistical Meetings, Boston, MA. Aug 2014
- Session 498, Joint Statistical Meetings (Supported by Society of Fellows Travel Award, Graduate School of Arts and Sciences, University of Virginia), Vancouver, BC. Aug 2010

### Contributed Presentations

- Joint Statistical Meetings, Montreal, Canada. Aug 2013
- Spring Meeting of Eastern North American Region (ENAR), Orlando, FL. Mar 2013
- Joint Statistical Meetings, Miami, FL. Jul 2011
- Joint Statistical Meetings (Supported by SIE Graduate Student Awards, ASA), Washington, DC. Aug 2009
- IMS-China International Conference on Statistics and Probability, Hangzhou, China. Jun 2008
- Eastern North American Region (ENAR), Washington, DC. Mar 2008

### Honors and Awards

- Society of Fellows Travel Award, Graduate School of Arts and Sciences, U.Va 2010
- Ph.D. Academic Award, Department of Statistics, U.Va 2010
- Graduate Teaching Award Honorable Mention, Department of Statistics, U.Va 2010
- SIE Graduate Student Awards, American Statistical Association 2009
- Scholarships for Academic Excellence, Zhejiang University 2003, 2004
- Scholarship for Social Activities, Zhejiang University 2002
- 1st Prize of the National Mathematics Contest, China 2000

### Teaching Experience

At UTSPH (Sole instructor for all these courses.)

- PH1911 Theory of Biostatistics II Spring 2017  
**Student Evaluation 4.3/5.0**
- PH1951 Stochastic Processes in Biostatistics II Fall 2016  
**Student Evaluation 5.0/5.0**
- PH1998 Large Sample Theory in Biostatistical Inferences Spring 2016  
**Student Evaluation 4.7/5.0**
- PH1690 L Foundations of Biostatistics Fall 2015  
**Student Evaluation 4.4/5.0**
- PH1690 L Foundations of Biostatistics Spring 2015  
**Student Evaluation 4.1/5.0**

- PH1690 L Foundations of Biostatistics Fall 2014  
**Student Evaluation 4.3/5.0**
  - PH1951 Stochastic Processes in Biostatistics II Summer 2014  
**Student Evaluation 4.6/5.0**
  - PH1821 Applied Statistical Analysis II Spring 2014  
**Student Evaluation 4.3/5.0**
  - PH1998 Large Sample Theory in Biostatistical Inferences Summer 2013  
**Student Evaluation 5.0/5.0**
- At U.Va (Sole instructor for all these courses.)
- Course: Introduction to Biostatistics Spring 2010  
**Student Evaluation 4.62/5.0**
  - Course: Introduction to Biostatistics Fall 2009  
**Student Evaluation 4.44/5.0**

### Students Supervised

- Charee Robe, MS, expected graduation May 2019.
- Patrick Chang, MS, expected graduation May 2019.
- Mengxi Wang, MS, expected graduation May 2019.
- Hai Zhu, PhD candidate, completing qualifying exams. (Thesis advisor, Academic advisor)
- Lu Wang, PhD candidate, completing qualifying exams. (Thesis advisor)
- Yufeng Zhang, PhD candidate, completing qualifying exams. (Thesis advisor)
- Weiwei Shan, MS. (Thesis advisor)
- Paula Lopez-Gamundi, MS. expected graduation Aug 2018. (Thesis advisor)
- Huzhang Mao, PhD, 2017. (Academic advisor) Thesis title: Propensity Score Approach to Treatment Effect Evaluation
- Jefferey Lin, first year PhD (MS. and PhD Academic advisor)
- Wen Li, PhD (MS. and PhD Academic advisor)
- Mary A Akosile, MS, 2018 (Thesis advisor)
- Maxine M Olefsky, MS. 2017. (Thesis advisor) Thesis title: Investigating Type I Error Rate of Clinical Trials After Using Stratified Permuted Block Randomization and the Permutation Test.
- Wenfang Li, MS. 2015 (Academic advisor) Thesis title: Statistical Analysis of TCGA Whole Transcriptome Sequencing Data (RNA-SEQ)
- Farhaan S. Vahidy, PhD in Epidemiology. 2014 (Minor advisor) Thesis title: Translational Potential of Bone Marrow Mononuclear Cells for Ischemic Stroke.



- Yining Du, PhD. 2014 (Academic advisor) Thesis title: Response adaptive randomization and biomarker-based trial designs for addressing patient heterogeneity in personalized medicine
- Yaping Wang, PhD. 2014 (Academic advisor, Thesis Committee Chair.) Thesis title: Variable Selection, Response-Adaptive Randomization, and Covariate-adjusted Response-adaptive Randomization for Personalized Medicine
- Fangqian Ouyang, MS. 2013 (Academic advisor)

### **Referee Service**

- Annals of Statistics
- Biometrika
- Journal of the American Statistical Association
- Biometrics
- BMC Bioinformatics
- BMC Medical Genomics
- Canadian Journal of Statistics
- Computational Statistics and Data Analysis.
- CRC book chapter
- CRC book proposal
- International Journal of Biostatistics
- Journal of Biometrics and Biostatistics
- Journal of Biopharmaceutical Statistics
- Journal of Probability and Statistics
- Model Assisted Statistics and Applications
- Statistical Methods in Medical Research
- Statistics and Its Interface
- Science China Mathematics
- Scientific Reports
- Statistica Sinica
- Test

## Academic Service

- **Member of Review Panel** for NIH/NIAAA 2018
- **Member of Organization Committee/Local Committee** of “2020 ICSA Applied Statistics Symposium” 2017-present
- **Co-chair of Student Admission Committee** of Department of Biostatistics, UTSPH 2017-2018
- **Member of the Practice Council**, UTSPH 2018-present
- **Alternate Member of the Practice Council**, UTSPH 2016-2017
- **Organizer of invited session “Innovative Clinical Trial Designs”** at “ 2017 ICSA Applied Statistics Symposium”, Chicago, IL
- **Member of Faculty Search Committee** of Department of Biostatistics, UTSPH 2017
- **Member of Student Admission Committee** of Department of Biostatistics, UTSPH 2014-2017
- **Member of Review Committee** of UTSPH Front Of The Envelope (FOTE) award. 2016
- **Member of Review Committee** of UTSPH Department of Biostatistics Students Scholarship 2016
- **Member of Program Committee** of “ 2016 ICSA Applied Statistics Symposium”, Atlanta, Georgia 2015-2016
- **Organizer of invited session “Innovative Methods for Clinical Trial Designs”** at “ 2016 ICSA Applied Statistics Symposium”, Atlanta, Georgia
- **Member of PH 1690/1700 Development Committee** of Department of Statistics, UTSPH 2015
- **Session Chair** of “Recent Advances in Disease Risk Prediction Methods Using Genetic and Genomic Data ” at Joint Statistical Meetings, Montreal, Canada. Aug 2013
- **Session Chair** of “Clinical Trials ” at the Spring Meeting of Eastern North American Region (ENAR), Orlando, FL Mar 2013
- **Session Chair** of “Sparse Estimation and Testing ” at Joint Statistical Meetings, Vancouver, BC Aug 2010
- **Session Chair** of “Methodology Development for High Dimensional Data ”, at The Ninth ICSA International Conference: Challenges of Statistical Methods for Interdisciplinary Research and Big Data, Hongkong Dec 2013

## Public Service

- **President**, Chinese Students and Scholars Society, U.Va 2007-2008
- **Publicity Chair**, Chinese Students and Scholars Society, U.Va 2006-2007
- **Volunteer**, Hangzhou-Beijing International Summer Schools, China 2004
- **Volunteer**, International Conference in Memory of A.Borel, China 2004

## Membership

- American Statistical Association
- Institute of Mathematical Statistics
- International Chinese Statistical Association