HONGMEI ZHANG

University Address

Robison 224
Division of Epidemiology, Biostatistics, and Environmental Health
3825 DeSoto Ave.
Memphis, TN 38111
Phone: 901-678-4707
Email: hzhang6@memphis.edu
https://www.memphis.edu/sph-archive/people/faculty_profiles/zhang.php

Education

2003	Ph.D.	Statistics	Iowa State University, Ames, IA
2001	M.S.	Statistics	Iowa State University, Ames, IA
1999	M.S.	Mathematics	Truman State University, Kirksville, MO
1997	M.S.	Electronic Engineering	Nanjing Research Institute of Technology, Nanjing, China

Professional Experience

2017 – present	Professor (tenured) and Bruns Endowed Professor Division of Epidemiology, Biostatistics, and Environmental Health Sciences, University of Memphis, Memphis, TN
2016 – present	Division Director, Division of Epidemiology, Biostatistics, and Environmental Health Sciences, University of Memphis, Memphis, TN
2013 – present	Program Coordinator (Biostatistics), Division of Epidemiology, Biostatistics, and Environmental Health Sciences, University of Memphis, Memphis, TN
2017 – present	Professor, Department of Mathematical Sciences, University of Memphis, TN (affiliated faculty)
2017– present	Professor, Bioinformatics in the Department of Biology, University of Memphis, TN (affiliated faculty)
2013 – 2017	Associate Professor (tenured) Division of Epidemiology, Biostatistics, and Environmental Health Sciences, University of Memphis, Memphis, TN
2013 – 2017	Associate Professor, Department of Mathematical Sciences, University of Memphis, TN (affiliated faculty)
2013 – 2017	Associate Professor, Bioinformatics in the Department of Biology, University of Memphis, TN (affiliated faculty)
2012 – 2013	Associate Professor (tenured) Department of Epidemiology and Biostatistics, University of South Carolina, Columbia, SC
2007 – 2012	Assistant Professor Department of Epidemiology and Bio-statistics, University of South Carolina, Columbia, SC
2003 – 2007	Assistant Professor Department of Mathematics and Statistics, University of West Florida

	Pensacola, FL
2003 – 2007	Statistical consultant
	Department of Mathematics and Statistics, University of West Florida
	Pensacola, FL
2001– 2002	Research Assistant, Laurence H. Baker Center in Biological Statistics
	Ames, IA
1999 – 2001	Research Assistant, Statistical Computing Section,
	Department of Statistics, Iowa State University, Ames, IA.
1990 – 1994	Technician, Nanjing Research Institute of Electronic Technology,
	Nanjing, China

Recent Memberships and Professional Services

Memberships
2004 – 2005	Mathematical Association of America (MAA)
1999 – present	American Statistical Association (ASA)

Professional Services
2017 – present	Supervise newly elected ASA West Tennessee Chapter Officers
2009 – 2013	Secretary/Treasurer of the ASA South Carolina Chapter
2007	Vice president of the ASA Florida Chapter
2005 – 2007	Secretary/Treasurer of the ASA Florida Chapter
2016 – 2017	Funder and Organizer of the Division of Epidemiology, Biostatistics, and Environmental Health Colloquium. University of Memphis, Memphis, TN
2014	Section Chair of the "Bayesian Nonparametric Methods and Some Applications" at the 2014 Joint Statistical Meeting, Boston MA
2012	Organizer of the ASA South Carolina Chapter 2013 Meeting
2007 – 2010	Organizer of the BIOS Forum, University of South Carolina
2007	Chair of the ASA Florida Chapter 2005 Meeting organizing committee
2006	Section Chair of the "Bayesian Statistics" at the International Conference, Statistics, Mathematics, and Related fields, Hawaii
2005	Section Chair of the "DNA Data and Microarray Measurements" at the 2005 Joint Statistical Meeting, Minneapolis, Minnesota.

Referee/Reviewer for funding agencies
2008	Reviewer for the 2008 Arnold School of Public Health Seed Grant Applications
2011	Medical Research Council (MRC), United Kingdom
2012	Health Effects Institute, USA
2013	NIH/NIAID IRAP Research Initiative review panel (temporary)
2015	NIH KNOD Research Initiative review panel (temporary)
2015	NIH/ Children's Environmental Health & Disease Prevention Research Centers (Special panel)
2016 – 2018	NIH KNOD Research Initiative review panel (temporary)
	NIH/NICHD P01 review panel (temporary)
	NIH/NHLDB secondary data analyses review panel (R21) (temporary)
2016 – present	NIH/NIEHS P30 review panel (member)
	NIH/NIEHS Training grants review panel (member)

Reviewer for Journals

Journals in Statistics/Biostatistics: Biometrics; Biostatistics; Journal of Agricultural, Biological, and Environmental Statistics (JABES); Computational Statistics and Data Analysis; Statistics in Medicine; Contemporary Clinical Trials; American Journal of Biostatistics; Environmental and Ecological Statistics, JRSS-C;

Journals in genetic/epigenetic statistics: Mathematical Biosciences; Briefings in Bioinformatics; Bioinformatics; BMC in Bioinformatics; GENE; Journal of Genetics; Proceedings of the National Academy of Sciences (PNAS); Journal of Genetica; The Journal of Applications in Genetics and Molecular Biology; Journal of Evolutional Biology; PLosOne;

Journals in the applied field (allergy, asthma, and immunology): The Journal of Allergy and Clinical Immunology (JACI).

Reviewer for publishers
2017 – present   CRC Press, LCC

Editorial Board
American Journal of Biostatistics (member), Computational and Mathematical Methods in Medicine (guest editor)

Awards and Honors

2018	PI Millionaire
	University of Memphis, Memphis, TN
2010	Promising Investigator Research Award
	University of South Carolina, Columbia, SC
2006	Collaborative Research Award
	University of West Florida, Pensacola, FL
2006	University Summer Research Award
	University of West Florida, Pensacola, FL
2004	University Summer Research Award
	University of West Florida, Pensacola, FL
2003	The George W. Snedecor Award in Statistics
	Iowa State University, Ames, IA
2003	Vince Sposito Computing Excellence Award, Iowa State University, IA
2002	Vera David Fellowship, Iowa State University, IA

Research grant applications

Funded projects (sorted by starting year and ending year):
Active grants:
1) Title: Does epigenetic methylation explain the gender-switch in adolescent asthma?
   PI: Hongmei Zhang
   Funding Source: NIAID/NIH
   Amount funded: $3,036,427
   Duration: 01/01/2016 – 12/31/2020
   Role and % effort: PI (20%)

2) Title: Effect of Prenatal Compounds on Adult Lung Function via Neonatal DNA
   PI: Wilfried Karmaus

Funding Source: NHLBI/NIH
Amount funded: $3,282,776
Duration: 09/01/2016 – 08/31/2021
Role and % effort: Co-I (10% on average)

3) Title: Epigenome-wide association study of childhood asthma
    PIs: Arshad, Peters, Vijay
    Funding Source: NIAID/NIH
    Amount funded: $3,875,019
    Duration: 09/01/2016 – 08/31/2021
    Role and % effort: Co-I (5%)

4) Title: Epigenetics of severe asthma
    PIs: Arshad, Peters, Vijay
    Funding Source: NHLBI/NIH
    Amount funded: $2,712,390
    Duration: 04/01/2017 – 03/31/2022
    Role and % effort: Co-I (3%)

5) Title: Examining Resilience in Youth Exposed to Maternal Intimate Partner Violence, Substance Use, and HI
    PI: Howell
    Funding Source: NICHD/NIH
    Amount funded: $416,009
    Duration: 3/2017 – 2/2020
    Role and % effort: Co-I (5%)

6) Title: Joint patterns of multi-genetic/epigenetic factors via non-parametric clustering and their association with allergic diseases
    PI: Meredith Ray
    Funding Source: NIAID/NIH
    Amount funded: $140,000
    Duration: 01/2018 – 12/31/2019
    Role and % effort: Co-I (3%)

Pending grants:

1) Title: Differential directed networks in allergic diseases
    Co-PIs: Hongmei Zhang, Xanzheng Huang
    Funding Source: NSF
    Amount requested: $402,557
    Duration: 04/01/2020- 03/31/2023
    Role and % effort: Co-PI (15%)

2) Title: Unraveling genetic and epigenetic origins of childhood asthma via integrative clustering and directed network testing
    PI: Hongmei Zhang
    Funding Source: NIAID/NIH
    Amount requested: $373,959
    Duration: 04/01/2020-03/31/2022

Role and % effort: PI (15%)

3) Title: Induced epigenetic inheritance as explanation for increased risks of asthma in offspring of mothers with asthma - analyses of one observational study and two trials
PIs: Wilfried Karmaus, Joerg Mattes
Funding Source: NIAID/NIH
Amount requested: $3,025,094
Duration: 07/01/2020-06/30/2025
Role and % effort: Co-I (10%)

Completed grants:
1) Title: Does epigenetic methylation explain the gender-switch in adolescent asthma?
PI: Hongmei Zhang
Funding Source: Asthma and Allergy Foundation of America
Amount funded: $40,000
Duration: 08/07/2015 – 08/06/2017
Role and % effort: PI (10%)
2) Title: Patterns of infant feeding and child's health at six years of age
PI: Wilfried Karmaus
Funding Source: CDC HRSA R40
Amount funded: $100,000
Duration: 04/01/2016 – 03/31/2017
Role and % effort: Co-I (5%)
3) Title: Phenomics: Joint clustering to associate changes in allergy and asthma over time (R21)
PI: Hongmei Zhang
Funding Source: NIAID/NIH
Amount funded: $372,111.00
Duration: 1/15/2013 – 1/14/2016 (no cost extension)
Role and % effort: PI (25%)
4) Title: Transgenerational epigenetic inheritance of allergy in a multigenerational cohort (R01)
PI: Wilfried Karmaus
Funding Source: NIAID/NIH
Amount funded: $2,676,923.00
Duration: 1/2011–12/2015
Role and % effort: Co-I and lead statistician (20% with a support of graduate assistants for all years and a Post-Doc for years 3 to 5)
5) Title: Vitamin D and Related Genes, Race, and Prostate Cancer Aggressiveness
PI: Susan Steck
Funding Source: DOD
Amount funded: $713,828
Duration: 1/2011–12/2015 (no cost extension)
Role and % effort: Co-I and lead statistician (7% on average. The 3rd year is no-cost extension)
6) Title: South Carolina Cancer Disparities Community Network – II
PI: James Hebert
Funding Source: NIH
Amount funded: $4,778,222.00
Dates: 07/2010 – 06/2015
Role and % effort: Co-I and lead statistician (5% on years 1 to 4, and 15% on year 5)
7) Title: Data analysis on sleep disruption as a risk factor of cancer among veterans
PI: Hongmei Zhang

Funding source: Department of Veteran's Affairs, Health Services Research & Development
Amount funded: $35,000.00
Duration: 09/01//2012 – 08/31/2013
Role and % effort: PI (10%)

8) Title: Use of a Community-University Partnership to Eliminate Environmental Stressors (P50)
PI: Sacoby Wilson
Funding source: NIH
Amount funded: 1,215,541.00
Duration: 9/2009 – 6/2013
Role and % effort: Co-I and lead statistician (10%)

9) Title: Sleep Disruption among Veterans: Implications for Cancer Risk
PI: Jim Burch
Funding source: Department of Veteran's Affairs, Health Services Research & Development
Amount funded: $99,529.00
Duration: 03/2011 – 02/2012
Role and % effort: Co-I and lead statistician (10%)

10) Title: Multiple Modes of Infant Feeding and Trajectories Influencing Infant Health
PI: Wilfried Karmaus
Funding Source: HSRA
Amount funded: $100,000.00
Duration: 02/2010 – 01/2011
Role and % effort: Co-I and lead statistician (10%)

11) Title: Joint Clustering Methods Through Quantile Regression
PI: Hongmei Zhang
Funding Source: Office of Research and Graduate Education, University of South Carolina
Amount funded: $10,000.00
Duration: 4/2010 – 7/2011
Role and % effort: PI (10%, no salary support but with student and local travel support)

12) Title: Measuring gene expression in epithelial duct cells collected from breast milk
PI: Wilfried Karmaus
Funding Source: USC Medical School - The Interdisciplinary Conference on Pregnancy and the Health of Women and Children
Total Amount: $3,000
Dates: 01/2009 – 04/2009
Role and % effort: Co-I and lead statistician (no salary release)

13) Title: Epidemiology of asthma: risk & prognosis in a cohort from birth to adolescence
PI: Wilfried Karmaus (USC subcontract)
Funding source: NIH
Amount funded: $236,000.00
Duration: 6/2009 – 5/2012
Role and % effort: Co-I and lead statistician (20% with support of graduate assistants for all years)

14) Title: Evaluate Micronutrient Effect to The Prevention of South Carolina Neural Tube Defect Accommodating Measurement Errors and Bias
PI: Hongmei Zhang
Funding Source: Research Opportunity Program, University of South Carolina
Amount funded: $9,000.00
Duration: 05/2008 – 08/2009
Role and % effort: PI (10%, no salary support but with student and local travel support)

15) Title: Summer Research on False Positive Quad Screening Tests
PI: Hongmei Zhang

Funding Source: USC Medical School - The Interdisciplinary Conference on Pregnancy and the Health of Women and Children
Total Amount: $3,000
Dates: 05/2008 – 8/2008
Role and % effort: PI (10%, no salary support but with student support)

16) Title: The Influence of Gender on Molecular Signatures of Fibrotic Lung Disease
PI: Hongmei Zhang (MPI with Tara Sabo-Attwood)
Funding Source: NIH
Amount funded: $140,040.00
Duration: 9/2008 – 8/2010 (extended to 8/2011)
Role and % effort: PI (10%)

17) Title: Stress, endocrine disruption, and adverse pregnancy outcomes
PI: Wilfried Karmaus
Funding source: GEAR, EPSCoR/IDeA
Amount funded: $36,000.00
Duration: 12/2008 – 04/2009
Role and % effort: Co-I and lead statistician (2.5%)

18) Title: Combinatorial and Statistical Problems in Genomics
Co-PI: Hongmei Zhang, Rohan Hemasinha
Funding Source: NSF
Total Amount: $110,000.00
Dates: 05/2007 – 08/2008
Role and % effort: Co-PI (10%)

19) Title: Sampling Design in Biological Area and Phylogenetic Analysis in Genetics
PI: Hongmei Zhang
Funding Source: University of West Florida
Amount funded: $6,250.00
Duration: 05/2006 –11/2006
Role and % effort: PI (20%)

20) Title: Future Sampling Plan for Unseen Species with Finite Population
PI: Hongmei Zhang
Funding Source: University of West Florida
Amount funded: $6,250.00
Duration: 05/2004 – 11/2004
Role and % effort: PI (20%)

Publications

**: co-authors are students/post-docs under my supervision, or I was the corresponding author.
Other students/Post-docs as the first author or a co-author are underlined.*

Article accepted or in press

Statistical methods:
1. J Ren, F Zhou, X Li, Q Chen, **H Zhang**, S Ma, Y Jiang, C Wu. *Semi-parametric Bayesian variable selection for gene-environment interactions*. Statistics in Medicine (accepted).

Statistical Applications:

2. <u>Y Shen</u>, **H Zhang**, Y Jiang, F Mzayek, H Arshad, W Karmaus. *Maternal Birth Weight and BMI Mediate the Transgenerational Effect of Grand-Maternal BMI on Grandchild's Birth Weight.* Obesity (accepted).

<u>Article published</u>

Statistical methods:

3. Y Jiang, **H Zhang***, SV Andrews, H Arshad, S Ewart, JW Holloway, MD Fallin, KM Bakulski, W Karmaus. *Estimation of Eosinophil Cells in Cord Blood with References Based on Blood in Adults via Bayesian Measurement Error Modeling.* Bioinformatics. https://doi.org/10.1093/bioinformatics/btz839. **2019**.

4. S Han*, **H Zhang**, W Sheng & H Arshad. *The nested joint clustering via Dirichlet process mixture model,* Journal of Statistical Computation and Simulation, 89:5, 815-830, DOI: 10.1080/00949655.2019.1572756. **2019**.

5. M Ray*, J Kang, and **H Zhang**, *Detecting Spatial Clusters via a Mixture of Dirichlet Processes*, Journal of Probability and Statistics, vol. 2018, Article ID 3506794, 12 pages, **2018.** https://doi.org/10.1155/2018/3506794.

6. **H Zhang**, Y Zou*, W Terry*, W Karmaus, H Arshad. *Joint clustering with correlated variables, The American Statistician, DOI: 10.1080/00031305.2018.1424033.* **2018.**

7. *A Kaushal**, **H Zhang**, W Karmaus, <u>M Ray</u>, MA Torres, AK Smith, S Wang. *Comparison of different cell type correction methods for genome-scale epigenetics studies.* BMC Bioinformatics. Vol. 18, 216. **2017.**

8. W Terry*, **H Zhang**, A Maity, H Arshad, W Karmaus. *Unified Variable Selection in Semi-parametric Models.* Statistical Methods in Medical Research. Dec;26(6):2821-31. **2017**.

9. S Han*, **H Zhang**, W Karmaus, G Roberts, H Arshad. *Adjusting background noise in cluster analyses of longitudinal data.* Computational Statistics and Data Analysis. DOI: 10.1016/j.csda.2016.11.009. **2016.**

10. M Ray*, X Tong*, <u>GA Lockett</u>, **H Zhang**, W Karmaus. *An efficient approach to screening epigenome-wide data.* BioMed Research International. Vol. 2016, Article ID 2615348, 16 pages. **2016**.

11. S Han*, **H Zhang**, R Homayouni, W Karmaus. *An efficient Bayesian approach for Gaussian Bayesian network structure learning.* Communications in Statistics - Simulation and Computation. 10.1080/03610918.2016.1143103. **2016**.

12. M Ray*, J Kang, **H Zhang**, *Identifying Activation Centers with Spatial Cox Point Processes Using FMRI Data*, in IEEE/ACM Transactions on Computational Biology and Bioinformatics, Vol. 13, 1130-1141. **2016**.

13. **H Zhang**, X Huang, J Gan*, W Karmaus, T Sabo-Attwood. *A Two-component G-prior for Variable Selection.* Bayesian Analysis. Vol. 11: 353-80. **2016.**

14. **H Zhang**, A Maity, H Arshad, J Holloway, W Karmaus. *Variable selection in semi-parametric models.* Statistical Methods in Medical Research. Aug;25(4):1736-52. **2016.**

15. S Han*, **H Zhang**, <u>G Lockett</u>, <u>N Mukherjee</u>, J Holloway, W Karmaus*, Identifying heterogeneous transgenerational DNA Methylation Sites via Clustering in Beta Regression.* Annals of Applied Statistics. Vol. 9: 2052-2072. **2015**.

16. X Huang, **H Zhang**. *Variable selection in linear measurement error models via penalized score functions.* Journal of Statistical Planning and Inference. Vol. 143: 2101-2111. **2013.**

17. B Omolo, **H Zhang**, W Karmaus. *Cautions of Using Allele-Based Tests Under Heterosis.* International Journal of Statistics in Medical Research. Vol. 2: 47-54. **2013.**

18. **H Zhang**, J Gan*. *A reproducing kernel-based spatial model in Poisson regression.* International Journal of Biostatistics. Vol. 8, pages 28. **2012**.

19. H He*, **H Zhang**, A Maity, Y Zou, J Hussey, W Karmaus. *Power of a reproducing kernel-based method for testing the joint effect of a set of single-nucleotide polymorphisms.* Genetica. DOI 10.1007/s10709-012-9690-5. **2012**.

20. *H Zhang*, K Ghosh, and P Ghosh. *Sampling designs via a multivariate hypergeometric-Dirichlet process model for a multi-species assemblage with unknown heterogeneity*. Computational Statistics and Data Analysis. Vol. 56: 2562-2573. **2012**.

21. D Rahardja, Y Zhao, and **H Zhang**. *Bayesian credible sets for a binomial proportion based on one-sample binary data subject to one type of misclassification.* Journal of Data Science. Vol. 10: 51-59. **2012**.

22. *J Gan*, **H Zhang**, R Best. *Mixture of measurement errors and their impact on parameter Inferences.* Journal of Statistical Computing and Simulation. Vol. 83: 613-626. **2011.**

23. **H Zhang**, W Karmaus, J Gan*, W Bao*, Y Zhao, D Rahardja, J Holloway, M Scott, and SH Arshad. *Adjusting wheal size measures to correct atopy misclassification*. International Journal of General Medicine. Vol. 4: 597-606, **2011**.

24. M Dey, H Stern, and **H Zhang**. *Information Content in Small and Large Trades.* Economic Notes. Vol. 40: 45-74, **2011**.

25. D Rahardja, Y Zhao, and **H Zhang**. *Maximum Likelihood Estimation of Odds Ratios in Misclassified Binary Data with a Validation Substudy*. Model Assisted Statistics and Applications. Vol. 6: 121-125, **2011**.

26. **H Zhang**[1], and J Zhang[2]. *A Semiparametric Bayesian Estimation Method of the Accelerated Failure Time Model.* Advances and Applications in Statistical Sciences, Vol. 1: 125-143, **2010**. [1,2]Equal contribution.

27. H Luo[1], **H Zhang**[2], RA Long, and R Benner. *Depth Distributions of Alkaline Phosphatase and Phosphonate Utilization Genes in the North Pacific Subtropical Gyre*. Aquatic Microbial Ecology. Vol. 62: 61–69, **2010**. [1,2]Equal contribution

28. **H Zhang**, R Hemasinha, X Gu. A Statistical Model and Algorithm for Genome Phylogeny Accommodating Lateral Gene Transfer, The International Journal of Systems and Synthetic Biology. Vol. 1: 241-253, **2010**.

29. **H Zhang**. *Designing sampling plans to capture rare objects*. Canadian Journal of Statistics, Vol. 37: p417-434, **2009**.

30. **H Zhang**, H Stern. *Sample size calculation for finding unseen species.* Bayesian Analysis, Vol. 4. 763 – 792, **2009**.

31. **H Zhang**, Y Zhong, B Hao, and X Gu. *A Simple Method for Phylogenomic Inference Using the information of Gene-Content of Genomes,* Gene, 441: p163-8. doi:10.1016/j.gene.2008.07.008, **2009**.

32. **H Zhang** and H Stern. *Inferences for genotyping error rate in ancestry identification from simple sequence repeat marker profiles*, JABES, Vol. 14: p170-187, **2009**.

33. **H Zhang**. *Inferences on the Number of Unseen Species and the Number of Abundant/Rare Species*, Journal of Applied Statistics, Vol. 34: 725-40, **2007**.

34. **H Zhang** and H Stern. *Assessment of ancestry probabilities in the presence of genotyping errors*. Theoretical and Applied Genetics, Vol. 112: 472-482, **2006**.

35. **H Zhang** and H Stern. *An investigation of a generalized multinomial model for species data*, J. Statistical Computing and Simulation, Vol. 75: 347-362, **2005**.

36. X Gu and **H Zhang**. *Genome Phylogenetic Analysis Based on Extended gene contents.* Molecular Biology and Evolution, Vol. 21: 1401-1408, **2004**.

37. **H Zhang** and X Gu. *Maximum Likelihood for Genome Phylogeny on Gene Content.* Statistical Applications in Genetics and Molecular Biology, Vol. 3: Article 31, **2004**.

38. **H Zhang**, A Nitzman, and T Royappa. *Statistical Modeling and Sizing Determination Guidelines*. J. TAPPI, Vol. 3: 3-8, **2004**.

Statistical applications:

39. L Han*, **H Zhang**, A Kaushal, FI Rezwan, L Kadalayil, W Karmaus, AJ Henderson, CL Relton, S Ring, SH Arshad, SL Ewart, JW Holloway. *Changes in DNA methylation from pre- to post-adolescence are associated with pubertal exposures*. Clinical Epigenetics. December 1st; Vol. 11: 176. **2019**.

40. J Mathias, **H Zhang**, N Soto-Ramirez, W Karmaus. *The association of infant feeding patterns with food allergy symptoms and food allergy in early childhood.* International Breastfeeding Journal. December 1st, Vol. 14: 43. **2019**.

41. Y Jiang, J Wei, **H Zhang***, S Ewart, FI Rezwan, JW Holloway, H Arshad, W Karmaus, *Epigenome wide comparison of DNA methylation profile between paired umbilical cord blood and neonatal blood on Guthrie cards.* Epigenetics. DOI: 10.1080/15592294.2019.1699983. **2019.**

42. S Ahn, **H Zhang**, KS Berlin, M Levy, R Kabra. *Adverse Childhood Experiences and Childhood Obesity: A Path Analysis Approach*. Children's Health Care. DOI: 10.1080/02739615.2019.1697928. **2019.**

43. SH Arshad, C Hodgekiss, JW Holloway, R Kurukulaaratchy, W Karmaus, **H Zhang**, G Roberts. *Association of asthma and smoking with lung function in adolescence and early adulthood*. European Respiratory Journal. DOI: 10.1183/13993003.00477-2019. **2019**.

44. WB Sherwood, V Bion, GA Lockett, AH Ziyab, N Soto-Ramírez, N Mukherjee, RJ Kurukulaaratchy, S Ewart, **H Zhang**, SH Arshad, W Karmaus, JW Holloway, FI Rezwan. *Duration of breastfeeding is associated with leptin (LEP) DNA methylation profiles and BMI in 10-year-old children.* Clinical Epigenetics (accepted). Vol. 11, p128. **2019.**

45. **H Zhang**, A Kaushal*, SK Merid, E Melen, G Pershagen, FI Rezwan, L Han*, S Ewart, SH Arshad, W Karmaus1, JW Holloway. *DNA methylation and allergic sensitizations, a genome-scale longitudinal study during adolescence*. Allergy. 74: 1166-1175. **2019**.

46. P Losol, FI Rezwan, VK Patil, C Venter, S Ewart, **H Zhang**, SH Arshad, W Karmaus, JW Holloway, *Effect of gestational oily fish intake on the risk of allergy in children may be influenced by FADS1/2, ELOVL5 expression and DNA methylation*. Genes & Nutrition. 14:20. **2019**.

47. W Karmaus, N Mukherjee, V Janjanam, S Chen, **H Zhang**, G Roberts, R Kurukulaaratchy, H Arshad. *Distinctive lung function trajectories from age 10 to 26 years in men and women and associated early life risk factors – a birth cohort study.* Respiratory Research. 20: 98. **2019**.

48. A Ramakrishnan, SE Steck, L Arab, **H Zhang**, …, A Woloszynska. *Association between plasma 1,25(OH)2D and ratio of 1,25(OH)2D to 25(OH)D with prostate cancer aggressiveness.* Prostate. 79: 1117-1124. **2019**.

49. Leanne Küpers, …, **H Zhang**, …, J Felix. *Meta-analysis of epigenome-wide association studies in neonates reveals widespread differential DNA methylation associated with birthweight*, Nature Communications. 10:1893. **2019**.

50. T Everson*, **H Zhang**, GA Lockett, A Kaushal*, M Forthofer, S Ewart, K Burrows, CL Relton, GC Sharp, J Henderson, VK Patil, F Rezwan, H Arshad, JW Holloway, W Karmaus. Epigenome-wide association study of asthma- and wheeze characterizes loci within HK1. Allergy, Asthma & Clinical Immunology. 15:43. **2019.**

51. B Harmon, S Shariff-Marco, Y Yang, **H Zhang**, KC Johnson, MY Martin. *Unpacking our limitations: The complexity of multilevel influences on behaviour*. Eur J Cancer Care, 28: e13041. doi:10.1111/ecc.13041. **2019**.

52. N Mukherjee, TR Sutter, SH Arshad, JW Holloway, **H Zhang**, W Karmaus. *Breastfeeding duration modifies the effect of smoking during pregnancy on eczema from early childhood to adolescence.* Clin Exp Allergy. 48:1688–1697. https://doi.org/10.1111/cea.13294. **2018**.

53. Liu W, Cheung YT, Brinkman TM, Banerjee P, Srivastava D, Nolan VG, **Zhang H**, Gurney JG, Pui CH, Robison LL, Hudson MM, Krull KR. *Behavioral symptoms and psychiatric disorders in child*

and adolescent long-term survivors of childhood acute lymphoblastic leukemia treated with chemotherapy only. Psychooncology. 27:1597-1607. **2018.**

54. AH Ziyab, N Mukherjee, R Kurukulaaratchy, **H Zhang**, S Ewart H Arshad, W Karmaus. Leptin receptor gene polymorphisms and sex modify the association between acetaminophen use and asthma among young adults: results from two observational studies. Respiratory Research. 19: 179. **2018.**

55. C Venter, K Maslin, **H Zhang**, A Kaushal*, W Terry*, VK Patil, T Dean, SH Arshad. *Use of cluster analysis to characterize patterns of sensitization in childhood allergy.* Pediatric Allergy and Immunology. **2018**. May 26.

56. SE Steck, OO Omofuma, LJ Su, AA Maise, A Woloszynska-Read, CS Johnson, **H Zhang**, JT Bensen, ETH Fontham, JL Mohler, and L Arab. *Calcium, Magnesium, and Whole Milk Intake and High-Aggressive Prostate Cancer in the North Carolina-Louisiana Prostate Cancer Project (PCaP).* The American Journal of Clinical Nutrition. 107(5):799-807. **2018.**

57. SH Arshad, JW Holloway, W Karmaus, **H Zhang**, S Ewart, L Mansfield, S Matthews, C Hodgekiss, G Roberts, R Kurukulaaratchy. *A cohort profile: The Isle of Wight whole population birth cohort (IOWBC).* International Journal of Epidemiology. Vol. 47 (4): 1043-1044i. **2018.**

58. **H Zhang**, A Kaushal*, N Soto-Ramírez, et al.. *Acquisition, remission, and persistence of eczema, asthma, and rhinitis in children*. Clinical Experimental Allergy. 00:1–9. https://doi.org/10.1111/cea.13096. **2018**.

59. Y Yang, Y Xu, DA Rodriguez, Y Michael, **H Zhang**. *Active travel, public transportation use, and daily transport among older adults: The association of built environment*. Journal of Transport & Health. https://doi.org/10.1016/j.jth.2018.01.012. **2018**.

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156. X Gu, W Huang, D Xu, and **H Zhang**. *GeneContent: Software for Whole-Genome Phylogenetic Analysis*, Bioinformatics. Vol. 21: 1713-1714, **2004**.

Advising

Post-doctoral fellow
1/2013 – 4/2015   Shengtong Han
2019 –   Yu-Sheng Lee (expect to start, December 2019)

Students (Ph.D.)
Students under supervision at the University of Memphis
2014 – 2017 Akhilesh Kaushal (Epidemiology)
2016 – present Luhang Han (Statistics)
2017 – present Shadia Khan Sunny (Epidemiology)
2018 – present Liang Li (Epidemiology)
2018 – present Rutu Patel (Epidemiology)
2018 – present Aniruddha Rathod (Epidemiology)
2018 – present Farnaz Solatikia (Statistics)
2018 – present Jiajing Wang (Statistics)

Students under supervision at the University of South Carolina
2012 – 2014   Meredith Ray
2011 – 2014   Xin Tong
2010 – 2013   Yubo Zou
2007 – 2010   Jianjun Gan

Students (MS or MPH)
Students under supervision at the University of Memphis
2018 – present   Jiasong Duan (Biostatistics, MS)
2018 – present   Farnaz Solatikia (Biostatistics, MS)
2015 – 2016   Lee Curbo (Biostatistics concentration, MPH)
2014 – 2015   Bilal Mohammed Quraishi (Biostatistics concentration, MPH)
2013 – 2015   Will Terry (Statistics, MS)
2013 – 1/2014 Elliott Cole (Biostatistics concentration, MPH)

Students under supervision at the University of South Carolina (Biostatistics, MSPH)
2011 – 2012   Genevieve Ray
2010 – 2012   Hong He
2010 – 2011   Xin Tong
2008 – 2010   Weichao Bo

Students under supervision at the University of West Florida (Statistics, MS)
2007   Joshua Kelly
2005   Chirstel Chancey
2005   Sue Dickerson

Research Staff supervisions
Research supervision at the University of Memphis
2013-2014   Meredith Ray
2013-1/2014   Wenhui Sheng

Graduate Assistant (GA) supervisions (Hired graduate research assistants. Most were funded by research grants)
GA supervision at the University of South Carolina
2011 – 2013   Ashok Varma Samantapudi
2012 – 2013   Meredith Ray
5/2011 – 2012   Genevieve Ray
2010 – 2013   Xin Tong
2010 – 2011   Yubo Zou
2010 – 2011   He Hong
2007 – 2010   Jianjun Gan
2008 – 2010   Weichao Bao
Fall 2007   Ju Qiu

Academic supervisions (Academic Advisor)
Academic supervision at the University of Memphis
2015-2016 Lee Curbo
2014-2015 Sohely Perven
2017- present Shadia Sunny
2018- present Jiasong Duan, Liang Li, Rutu Patel, Aniruddha Rathod

Academic supervision at the University of South Carolina
2010-2014   Meredith Ray
2010-2013   Yubo Zou
2009-2012   Hong He
2008-2010   Jianjun Gan

Abstracts/Presentations

The first author is the presenter. Only conferences, at which I was the presenter or students under my supervision were the presenters, were included. <u>Presentations, which I was involved as a co-author but I did not participate in the conference, are not included.</u>
<u>Conference/Workshop presentations:</u>

02/2019	J Wang, H Zhang et al., *DNA Methylation Predicts BMI Status Change from Pre-Adolescence to Post-Adolescence*, AAAAI, San Francisco.
07/2018 (Invited)	H Zhang, *Differential Bayesian Network Testing.* ICSA-Qingdao.
12/2017 (Invited)	H Zhang. *From variable selection to differential Bayesian networks*. American Statistical Association Western TN Chapter meeting. Memphis, TN.
08/2017	H Zhang, S Han, W Sheng, W Karmaus, H Arshad. *The joint clustering via Dirichlet process mixture model on longitudinal data.* Joint Statistical Meeting, Baltimore, MD.
06/2017 (Invited)	H Zhang. *Gender and epigenetic differences, from the Isle of Wight study birth cohort and beyond*. NIH/NIAID Asthma Gender Shifting Workshop, Rockville MD.
05/2017	L Han, H Zhang, SP Oggu, A Kaushal, H Arshad, W Karmaus, JW Holloway, S Ewart. *Identifying stable and dynamic CpG sites pre- and post-adolescence transition via a longitudinal genome-scale study.* ATS, Washington DC.
09/2016	Three students presented at the European Respiratory Society (ERS 2016) annual conference held in London, UK. The projects were on association studies between DNA methylation and allergic diseases.
08/2016	H Zhang, X Huang, S Han, W Karmaus. *Bayesian method for testing differential directed acyclic graphs*. Joint Statistical Meeting, Chicago.
12/2015	H Zhang, X Huang, S Han, W Karmaus. *Bayesian method for testing differential directed acyclic graphs*. Singapore.
08/2015	Y Zou, H Zhang, W Terry, W Karmaus, H Arshad. *Joint cluster with correlated variables via a semi-parametric Bayesian model.* Joint Statistical Meeting, Seattle, WA.
02/2015	B Quraishi and A Kaushal both orally presented at the AAAAI (Feb. 20-24, Houston, TX) meeting on applications of random forest and robust regressions in studies related to allergic disease (Quraishi) and arsnic exposure (Kaushal).
10/2014 (Invited)	H Zhang, Y Zou, W Karmaus, G Roberts, H Arshad, *Joint Clustering on Correlated Variables*. West Tennessee ASA Chapter monthly meeting.
08/2014	H Zhang, X Huang, J Gan, W Karmaus, T Sabo-Attwood. *A two-component G prior for variable selection*. Joint Statistical Meeting, Boston, MA.
08/2014	S Han, H Zhang, G Lockett, N Mukherjee, J Holloway, W Karmaus. *Identifying Heterogeneous Transgenerational DNA Methylation Sites via Clustering in Beta Regression*. Joint Statistical Meeting, Boston, MA.
08/2014	M Ray, H Zhang, J Kang. *Clustering fMRI Metadata to Identify Significant Regions of Brain Activation*. JSM annual meeting, Boston, MA.
06/2014	H Zhang, Y Zou, W Karmaus, G Roberts, H Arshad, *Joint Clustering on Correlated Variables*. WNAR annual statistic meeting. Honolulu, HI.

06/2014	H Zhang, S Han, GA Lockett, N Mukherjee, JW Holloway, W Karmaus. *Identifying Heterogeneous Transgenerational DNA Methylation Sites via Clustering in Beta Regression*. The third Joint Biostatistics Symposium. Chengdu, China.
09/2013	H Zhang. *Burden Disparities in Air Toxic Exposure and Cancer Risks*. Charleston Area Environmental Justice and Health Summit.
05/2013	H Zhang, et al. *Interaction Between DNA Methylation And Genotype In Th2 Pathway Genes, Association With Asthma And Adolescent Transition Of Asthma Between Ages 10 And 18 Years*. ATS, Philadelphia.
12/2013	H Zhang. *Bayesian Variable Selection in Linear and Semi-parametric Models*. The 9th ICSA International Conference: Challenges of Statistical Methods for Interdisciplinary Research and Big Data. Hong Kong, China.
09/2012 (Invited)	H Zhang. *Methylation data, pre-processing, data mining and analysis*. International Society for Environmental Epidemiology, Columbia, SC.
08/2012	H Zhang, X Huang, J Gan, W Karmaus, T Sabo-Attwood. *Variable adaptive calibration and variable selection in linear models with mis-measured covariates*. Joint Statistical Meeting, San Diego, CA.
06/2012 (Invited)	H Zhang, K Ghosh, P Ghosh, *Capturing species at a certain abundance level in a multi-species assemblage with unknown heterogeneity*. Southern Regional Council of Statistics, Jekyll Island, GA.
05/2012 (Invited)	H Zhang. *Mis-measurement model*. Bioinformatics and Biostatistics Workshop. Atlanta, GA.
08/2011	Y Zou, H Zhang, W Karmaus, and H Arshad, *A Bayesian Approach for Joint Clustering Through a Dirichlet Process*. Joint Statistical Meeting, Miami, FL.
03/2011	H Zhang, X Huang, W Karmaus, J Gan, T Sabo-Attwood. *Bayesian Adaptive Calibration and Variable Selection in Linear Models with Mis-measured Covariates.* Eastern North American Region (ENAR) conference, FL.
12/2010 (invited)	H Zhang, H Stern. *Inferences for the Genotyping Error Rate from Ancestry Identification Data.* The 25th International Biometric Conference, Brazil.
06/2010	H Zhang, W Karmaus, W Bao, J Gan, M Scott, SH Arshad. *Correcting Atopy Misclassification through Wheal Size Adjustment* (poster)*.* The 29th Congress of the European Academy of Allergy and Clinical Immunology, UK.
04/2010	J Gan, H Zhang. *Semi-parametric Measurement Error Modeling in Logistic Regression, with application to Survey Data.* American Statistical Association South Carolina Chapter meeting, SC.
04/2010	W Bao, H Zhang. *Clustering Analysis of Zernike Coefficients from High Order Aberration Patient.* American Statistical Association South Carolina Chapter meeting, SC.
03/2010	H Zhang, K Ghosh, P Ghosh. *Bayesian Species Clustering via DP and Sampling Designs via Monte Carlo.* Eastern North American Region conference, LA.
03/2010	J Gan, H Zhang. *Semi-parametric Measurement Error Modeling in Logistic Regression.* Eastern North American Region conference, LA.
03/2009	J Gan, H Zhang. *Impact of Multi-level Measurement Errors in Survey Data.* Eastern North American Region conference, TX.
05/2008 (invited)	H Zhang, H Stern. *An Approximated Likelihood Approach for Genotyping Error Rate Estimation When Assessing Ancestry Probabilities.* International Conference on BioMedical Engineering and Informatics, China.
03/2008	H Zhang. *Joint Effect from Environmental and Behavior Risk Factors to Cancer Death Rates using Bayesian Multi-level Modeling.* Eastern North American Region conference, TX.
02/2007 (invited)	H Zhang, H Stern. *Future Sampling Designs to Capture Animals from Rare Species.* American Statistical Association Florida Chapter meeting, FL.

02/2006	H Zhang, X Gu. *Inference on the Number of Unseen Species and the Number of Abundant/Rare Species.* American Statistical Association Florida Chapter meeting, FL.
01/2006	H Zhang. *Inferences on the Number of Species and the Number of Abundant/Rare Species.* Hawaii International Conference on Statistics, Mathematics and Related Fields, Honolulu, HI.
08/2005	H Zhang. *Inferences on the Number of Species and the Number of Abundant/Rare Species.* Joint Statistical Meeting, Minneapolis, MN.
03/2005	H Zhang. *Genome Phylogenetic tree Analysis Based on Extended gene contents.* Eastern North American Region conference, Austin, TX*.*
02/2005	H Zhang. *Inferences on the Number of Species and the Number of Abundant/Rare Species.* American Statistical Association Florida Chapter meeting, FL.
05/2004	H Zhang, X Gu. *Genome Phylogenetic tree Analysis Based on Extended gene contents.* Interface 2004: Computational Biology and Bioinformatics, Baltimore, MD.
02/2004	H Zhang, H Stern. *Sample size calculation for finding unseen species.* American Statistical Association Florida Chapter meeting, FL.

Seminars/Symposiums at institutions

11/2019 (invited)	Network Comparisons via Bayesian Inferences. University of Arkansas of Medical Sciences, Little Rock, AK.
04/2019 (invited)	*Bayesian network selection with ordered data.* University of Tennessee Health Science Center, Memphis, TN
11/2018 (invited)	*Analytical methods in transgenerational epigenetics studies, what we have and what we need,* NIH/NIAID workshop, Rockville, MD
02/2018 (invited)	*From variable selection to Bayesian differential networks*, Vanderbilt University, Nashville, TN
04/2015 (invited)	*A two-component G prior for variable selection.* Department of Mathematical Sciences. University of Memphis, Memphis, TN
04/2015 (invited)	*Joint cluster with correlated variables via a semi-parametric Bayesian model.* Bioinformatics seminar, University of Memphis, Memphis, TN.
04/2014 (invited)	*Variable selection in semi-parametric models.* Bioinformatics seminar, University of Memphis, Memphis, TN.
02/2013 (Invited)	*Bayesian variable selection in linear and semi-parametric models.* Medical University of South Carolina, Charleston, SC.
10/2010 (invited)	*Correcting Atopy Misclassification through Wheal Size Adjustment.* Department of Clinical Sciences and Simmons Cancer Center, University of Texas Southwestern Medical Center at Dallas, TX.
09/2010 (invited)	*Capturing Species at A Certain Abundance Level from A Population with Unknown Heterogeneity.* Department of Statistics, University of South Carolina, SC.
10/2009	*The Impact of Risk Factors on Cancer Incidences with Random Spatial Effect Adjusted Using Kernel Machines.* Department of Epidemiology and Biostatistics, University of South Carolina, SC.
01/2008 (invited)	*Ancestry Identification, Genotyping Error, and Its Impact.* Medical University of South Carolina, SC.
10/2007	*Inferences for Genotyping Error Rate in Ancestry Identification From SSR Marker Profiles.* Bioinformatics Group, University of South Carolina.
01/2005	*Constructing Phylogenies.* Department of Mathematics and Statistics, University of West Florida, FL.
03/2004 (invited)	*Sample size calculation for finding unseen species.* Department of Statistics, Florida State University.

11/2003   *Applications of Microarray data.* Department of Mathematics and Statistics, University of West Florida.

Teaching Experience

Courses taught at the University of Memphis
Graduate courses in Biostatistics:
PUBH 7310/8310 Mixed modeling
Textbook: West, B.T., Welch, K.B., and Galecki, A.T. Linear Mixed Models: A Practical Guide Using Statistical Software. Boca Raton: Chapman & Hall/CRC.

PUBH 7153/8153 Biostatistics in Bioinformatics.
Textbooks: 1) Gentleman, V.J. Carey, W. Huber, R.A. Irizarry, S. Dudoit. Bioinformatics and Computational Biology Solutions Using R and Bioconductor.
2) Eija Korpelainen, Jarno Tuimala, Panu Somervuo, Mikael Huss, Garry Wong. RNA-seq Data Analyses, a Practical Approach.

Graduate courses in genetic statistics:
PUBH 7455/8455 Genetic and Epigenetic Epidemiology
Textbook: Andreas Ziegler and Inke König A statistical Approach to Genetic Epidemiology.

Course taught at the University of South Carolina:
Graduate courses in Biostatistics:
BIOS 700 Introduction to Biostatistics.
Textbook: Marcello Pagano and Kimberlee Gauvreau, Principles of Biostatistics (2nd edition).

BIOS 701 Concepts and Methods of Biostatistics.
Textbook: Marcello Pagano and Kimberlee Gauvreau, Principles of Biostatistics (2nd edition).

BIOS 757 Intermediate Biometrics.
Textbook: Kleinbaum, Kupper, Muller, and Nizam, Applied Regression Analysis and Multivariate Methods (4th edition).

BIOS 775 Biostatistical Aspects of Bioinformatics.
Textbooks: 1) Maria Rizzo, Statistical Computing with R.
2) R. by Gentleman, V.J. Carey, W. Huber, R.A. Irizarry, S. Dudoit, Bioinformatics and Computational Biology Solutions Using R and Bioconductor.

Graduate courses in genetic statistics:
EPID 777 Genetic and Epigenetic Epidemiology
Reading material: Andreas Ziegler and Inke König, A statistical Approach to Genetic Epidemiology.

EPID894 Genetic Epidemiology
Textbook: Andreas Ziegler and Inke König, A statistical Approach to Genetic Epidemiology.

Courses taught at the University of West Florida:
Undergraduate courses in Statistics:
Sta2023 Essentials of Statistics.Text book: Essentials of Statistics by *Mario Triola.*
Sta4173 Biostatistics. Text Book: Biostatistical Analysis (4th edition) by *Jerrold Zar*

Graduate courses in Statistics:
Sta5176 Biostatistics.
Text Book: Jerrold Zar, Biostatistical Analysis (4th edition)*.*

Sta5166 Applied Statistics.
Text Book: *McClave and Sincich*, Statistics

Sta5206 Analysis of Variance.
Text Book: Neter,Kutner, Nachtsheim, and Li, Applied Linear Models (5th edition).

Sta5207 Applied Linear Regression Models.
Text Book: Neter,Kutner, Nachtsheim, and Li, Applied Linear Models (5th edition).

Sta6246 Experimental Design.
Text Book: Douglas Montgomery, Design and analysis of experiments (5th Edition).

Sta6507 Nonparametric Data Analysis.
Text Book: W.J. Conover, Practical Nonparametric Statistics (3rd edition).

Courses taught at the Iowa State University:
Stat 227 (2002-2003) Introduction to Business Statistics

Courses taught at the Truman State University:
College Algebra (1999), Summer course for the SEE (Scholastic Enhancement Experience) program

Guest lectures and short courses

2017	Short course to graduate students in the Psychology Department, University of Memphis, Memphis
2014	Guest lecture on semi-parametric variable selection, University of Memphis, Memphis (BINF 7980).
2012	Guest lecture on path analysis, University of South Carolina, Columbia (EPID 845)
2010, 2011	Guest lecture on biostatistician in grant proposal writing (EPID 801), University of South Carolina, Columbia
2010, 2011, 2012	Guest lecture on bioinformatics in public health (EPID 758), University of South Carolina, Columbia
2008, 2009	Guest lecture on gene-gene and gene-environmental interaction, University of South Carolina, Columbia (EPID 801)
Dec., 2008	Guest lecture on measurement error, University of South Carolina, Columbia (EPID 845)
Dec. 14, 2007:	Short course in Statistics to OB/GYN Doctors, University of South Carolina, Columbia