

Joshua D. Habiger

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Degrees

August, 2010	Ph.D., Statistics, University of South Carolina
May, 2006	M.S., Statistics, Kansas State University
May, 2004	B.S., Mathematics, Kansas State University
May, 2004	Minor, Statistics, Kansas State University

Experience

2021 - present	Professor , Department of Statistics, Oklahoma State University
2016 - 2021	Associate Professor , Department of Statistics, Oklahoma State University
2016 - 2017	Associate Professor , Department of Biostatistics, Kansas Univeristy Medical Center
2010 - 2016	Assistant Professor , Department of Statistics, Oklahoma State University

Major Areas of Current Research Interest

False Discovery Rates; Categorical Data; High Dimensional Data; Foundational Issues in Statistics; “omics” Applications

Refereed Publications

- Zhang W, Ma Z, Yen-Yi H, Yang S, **Habiger J**, Hsin-Hsiung H and Huang Y (2025). Multi-omics Integrative Analysis for Incomplete Data Using Weighted p-value Adjustment Approaches. *Journal of Agricultural, Biological, and Environmental Statistics* 30(6)
- Nascimento DM, Bodaghi S, Wang H¹, Ribeiro-Junior MR, Campos R, Dang T, Osman F, **Habiger J**, Espindola A, Vidalakis G, and Cardwell K (2025). Development and validation of a suite of e-probes for Electronic Diagnostic Nucleic Acid Analysis (EDNA) for 20 graft-transmissible pathogens of citrus using MiFi® and blind ring testing among novice users. *PhytoFrontiers* 5(2)
- Mosquera-Yuqui F, Ramos-Lopez D Hu X, Yang Y, Mondoza J, Asare E¹, **Habiger J**, Hurtado-Gonzales O and Espindola A. (2025). A comparative template-switching cDNA approach for HTS-based multiplex detection of three viruses and one viroid commonly found in apple trees. *Nature Scientific Reports*, 1657(15)
- Zheng S, McLain A, **Habiger, J**, Rorden C and Fridriksson J (2024). False Discovery Rate Control for Lesion-Symptom Mapping With Heterogeneous Data via Weighted p-Values. *Biometrical Journal*, 66(6)
- Lepping RJ, Yeh H, McPherson B, Brucks M, Sabati M, Karcher R, Brooks W, **Habiger J**, Papa V and Martin L (2023). Quality control in resting state fMRI: the benefits of visual inspection. *Frontiers in Neuroscience*(17)
- Frank K, Ramanathan R, Hartson S, Rogers J, **Habiger J** and Mafi G (2023). Integrative proteomics and metabolomics profiling to understand the biochemical basis of beef muscle darkening at a slightly elevated pH. *Journal of Animal Science* (101)
- Dang T, Wang H¹, Espindola A, **Habiger J**, Vidalakis G and Cardwell K (2023). Development and statistical validation of e-probe diagnostic nucleic acid analysis (EDNA) detection assays for the detection of citrus pathogens from raw high throughput sequencing data. *PhytoFrontiers* 3(1)
- Hossein Javid A, Bulut R and Habiger J (2023). Estimating Van Genuchten Diffusivity Parameter of Undisturbed Soils in Oklahoma. *Selected Papers from the International Airfield and Highway Pavements Conference*,(2)
- Habiger J** and Liang Y (2022). Publication Policies for Replicable Research and the Community-Wide False Discovery Rate. *The American Statistician* 76(2), 131-141 .
- Fornah A, Anderson M and **Habiger J** (2021). The Relationship Between Rhizobacteria Auxin Production and Wheat Biomass is Negative. *Communications in Soil Science and Plant Analysis*, 52(9)

¹PhD student advisee

- McCann M and **Habiger J** (2020). The Detection of Nonnegligible Directional Effects with Associated Measures of Statistical Significance. *The American Statistician*, 74(3)
- Habiger, J** (2019). Discussion of “Covariate-Assisted Ranking and Screening for Large-scale Two-sample Inference by Cai, Sun and Wang.” *Journal of the Royal Statistical Society Series B*, 81(2), 226-227.
- Espindola A, **Habiger J** and Cardwell K (2019). Metagenome sequence calculator for effective pathogen detection. *Proceedings of the Plant Health*, 109 (textbfS2.138)
- Gupte R, Christina S, Keselman P, **Habiger J**, Brooks W and Harris J (2019). Evaluation of Taurine Neuroprotection in Aged Rats with Traumatic Brain Injury. *Brain Imaging and Behavior*, 13(2).
- Watts D¹ and **Habiger J**(2018). A Multiple Testing Protocol for Exploratory Data Analysis and the Local Misclassification Rate. *Communications in Statistics*, 27(15)
- Liang Y, **Habiger J** and Min X. (2017). The Influence of Misspecified Covariance on False Discovery Control when Using Posterior Probabilities. *Statistical Theory and Related Fields*, 1(2)
- Habiger, J** (2017). Adaptive False Discovery Rate Control for Heterogeneous Data. *Statistica Sinica*, 27(4)
- Habiger J, Watts D¹** and Anderson M (2017). Multiple Testing with Heterogeneous Multinomial Distributions. *Biometrics*, 73(2)
- Habiger J** (2015). Multiple Test Functions and Adjusted p-Values for Test Statistics with Discrete Distributions. *Journal of Statistical Planning and Inference*, 167(Dec.)
- Peña, E., **Habiger, J.** and Wu, W. (2015). Classes of Multiple Decision Functions Strongly Controlling FWER and FDR. *Metrika*, 78(5)
- Habiger J** and Adekepdjou A. (2014). Optimal Rejection Curves for Finite False Discovery Rate Control. *Statistics and Probability Letters*, 94 (Nov)
- Habiger J** and Peña E (2014). Compound p-Values for Multiple Testing Procedures. *Journal of Multivariate Analysis*, 126(2)
- Robbins M, Ghosh S and **Habiger J** (2013). Imputation in High Dimensional Economic Data: An Introduction and Comparison of Methods as Applied to the Agricultural Resource Management Survey. *Journal of the American Statistical Association*, 108(501)
- Habiger J**, McCann M and Tebbs J (2013). On Optimal Confidence Sets for Parameters in Discrete Distributions. *Statistics and Probability Letters*, 83(1)
- Anderson M, **Habiger J** (2012). Characterization and Identification of Productivity Associated Rhizobacteria in Wheat. *Applied and Environmental Microbiology*, 78(12)
- Habiger J** (2012). A Method for Modifying Multiple Testing Procedures. *Journal of Statistical Planning and Inference*, 142(7)
- Habiger, J** and Peña, E. (2011). Randomised p-Values and Nonparametric Procedures in Multiple Testing. *Journal of Nonparametric Statistics*, 23(3)
- Peña E, **Habiger, J.** and Wu W (2011). Power-enhanced Multiple Decision Functions Controlling Family-wise Error and False Discovery Rates. *Annals of Statistics*, 39(1)
- Cui X, Jin Y, Hofseth A., Peña E, **Habiger J**, Chumanevich A, Nagarakatti M, Nagarakatti P, Singh U and Hofseth H. (2010). Mechanistic Insight Into the Ability of American Ginseng to Suppress Colon Cancer Associated with Colitis. *Carcinogenesis*, 31(10)
- Cui X, Jin Y, Hofseth A, Peña E, **Habiger J**, Chumanevich A, Nagarakatti M, Nagarakatti P, Singh U and Hofseth H (2010). Resveratrol Suppresses Colitis and Colon Cancer Associated with Colitis. *Cancer Prevention Research*, 3(1)
- Lauter N, Mosco M, **Habiger J** and Moose S (2008). Quantitative Genetic Dissection of Shoot Architecture in Maize: Towards a Functional Genomics Approach. *The Plant Genome*, 1(2)

Submitted Methods Articles

Habiger J and Rudra P (2026). Minimally Discrete and Minimally Randomized p-values. Available at arxiv.org/abs/2602.18656

Cao T, Yi S and Habiger (2026). Sensitivity Analysis for False Discovery Rate Estimation with Published p-Values. Available at arxiv.org/abs/2603.00410

Funded Grants and Contracts

Improving Causal Inferences in Child and Family Behavioral Research, 2022 - 2024 (Co-PI). NIH R03, PI: Bob Larzelere

Oklahoma State University, College of Arts and Sciences FY2016 ASR + 1 Supplemental Program: Statistical Inference Methods for Big Data

Oklahoma State University, College of Arts and Sciences FY2014 Fall Travel Grant: Multiple Test Functions.

Southern Regional Council on Statistics Travel Award, 2014

President's Cup Award for Interdisciplinary Research, Oklahoma State University, 2013

Oklahoma State University, College of Arts and Sciences FY2013 Fall Travel Grant: Optimal Confidence Sets with Flexible Criterion in Discrete Data Analysis

Oklahoma State University, College of Arts and Sciences FY2013 Deans Incentive Grant: The revision of "Bridging the Gap Between Statistical Significance, Practical Significance, and Replication"

Oklahoma State University, College of Arts and Sciences FY2012 ASR + 1 Supplemental Program: Compound Distribution-free Test Statistics in Multiple Testing

Oklahoma State University, College of Arts and Sciences FY2012 Dean's Incentive Grant: Robust and Efficient p-Value Statistics for Multiple Testing Procedures

Oklahoma State University, College of Arts and Sciences FY2012 Spring Travel Grant: Presentation of Nonparametric Procedures in Multiple Testing at the Eighth Annual Graybill Conference.

Bioinformatics and Entangled Genomes Workshop Faculty Scholarship Award, Oklahoma State University, 2012

Journal of Nonparametric Statistics Travel Award, 2011

Dean's Award for Excellence in Graduate Study at the University of South Carolina, 2010

James D. Lynch Graduate Student Researcher of the Year Award, University of South Carolina, 2009

Applied Statistics in Agriculture Conference Travel Award, 2009

Graduate Student Travel Award, University of South Carolina, 2009

Southern Regional Council on Statistics Travel Award, 2009

Graduate Student Travel Award, University of South Carolina, 2008

Southern Regional Council on Statistics Travel Award, 2008

Invited Presentations

False Discovery Rate Methods and Me. University of South Carolina Department of Statistics 40th Anniversary Conference, 2026

A Gentle Introduction to False Discovery Rate Multiplicity Adjustment Methods with R: Illustrations on a Wheat Microbiome Data Set. OSU Institute for Biosecurity and Microbial Forensics PaCoM seminar series, 2026

Statistical Methods for HD Count Data. Invited Presentation. Oklahoma Conference on Statistics, Biostatistics and Data Science, 2025

Publication Policies for Replicable Research: Addressing the False Publication Rate. Oklahoma Conference on Statistics, Biostatistics and Data Science, 2022

Policies for Replicable Research and the Community-Wide False Discovery Rate. International Conference on Advances in Interdisciplinary Statistics and Combinatorics, 2021

Multiple Testing with Heterogeneous Multinomial Distributions. International Chinese Statistical Association Canada Chapter Symposium, 2017

Exact Interval Estimation and Hypothesis Testing for Discrete Data. Innovations in Design, Analysis, and Dissemination Annual Symposium, ASA Kansas-Western Missouri Chapter of the ASA, 2017

Heterogeneity in Next Generation Sequencing Data: A Finite Mixture Model Approach. Second Annual Midwest Bioinformatics Conference, 2017

High Dimensional Multiple Testing: What if My Data are Dependent, Discrete, or Heterogeneous? Kansas State University, Department of Statistics, 2017

On the Multiplicity Effect: Current Solutions and Open Problems, University of Kansas Medical Center, Department of Biostatistics, 2017

Multiple Testing with Heterogeneous Multinomial Distributions, University of Kansas Medical Center, Department of Biostatistics, 2016

Towards More “Significant” Discoveries in High Dimensional Data Analysis. Iowa State University, Department of Statistics, 2016

Weighted Adaptive Multiple Decision Functions for False Discovery Rate Control. Oklahoma State University, Department of Statistics, 2013 and SRCOS, Galveston, TX, 2014

Optimal Confidence Sets with Flexible Optimality Criterion in Discrete Data Analysis. Oklahoma State University, Department of Statistics, 2012

Randomized p-Values and Nonparametric Procedures in Multiple Testing. Eighth Annual Graybill Conference on Modern Nonparametric Statistics, Colorado State University, 2011

R: A Practical and Powerful Statistical Software Package. Oklahoma State University, Department of Computer Science, 2010

p-Values in Multiple Testing. Oklahoma State University, Department of Statistics; Kansas State University, Department of Statistics; University of Clemson, Department of Mathematical Sciences; University of Kentucky, Department of Statistics; University of Miami Ohio, Department of Statistics; University of Michigan, Department of Biostatistics, 2010

A Generalized BH Procedure. University of South Carolina, Department of Statistics, 2008

Other Research Presentations

The Statistical Methods for Limit of Detection. Presented at the NIMMFAB annual meeting, 2020

Determining Limit of Detection of High Throughput Sequencing Diagnostics with MiFi. Poster presented by Wang¹ at Plant Health 2020 online and co-authored with Espindola, Cardwell, Dang, Vidalakis, Roy

Metagenome Sequence Calculator for Effective Pathogen Detection. Poster presented by Espindola at Plant Health 2019, Cleveland, Oh and coauthored with Cardwell

Multiple Hypothesis Testing with Minimally Discrete P-Values. Joint Statistical Meetings, Denver, Co., 2019

High Dimensional Multiple Testing of Dependent, Discrete and Heterogeneous Data. Joint Statistical Meetings, Boston, MA., 2014

Statistical Challenges in High Dimensional Multiple Testing as Motivated by the Characterization of the Productivity Associated Microbiome in Wheat. Applied Statistics in Agriculture Conference, Kansas State University, 2014

Productivity Associated Microbiome of Wheat. MCBIOS XI: Annual Bioinformatics and Computational Biology Conference, Oklahoma State University, 2014 (with Michael Anderson)

On Nonrandomized, Randomized, and Fuzzy p -values in Multiple Hypothesis Testing: A Unified Approach. Joint Statistical Meetings, Montreal, Canada, 2013

On Optimal Confidence Sets for Parameters in Discrete Distributions. Joint Statistical Meetings, San Diego, CA, 2012

Statistical Methods for Identifying Root Bacteria Associated with Shoot Biomass Productivity. Oklahoma State University, Department of Plant and Soil Sciences, 2012 (with Michael Anderson)

Compound p -Values for Multiple Testing Procedures. Joint Statistical Meetings, Miami Beach, FL, 2011

An Assessment of Imputation Methods for the USDA's Area Resource Management Survey. Joint Statistical Meetings, Vancouver, Canada, 2010

Randomized p -Values in Multiple Testing. Joint Statistical Meetings, Washington D.C., 2009

Robust p -Values for Multiple Testing Procedures. Southern Regional Council on Statistics, Jekyll Island, GA, 2009

Nonparametric Randomized p -Values in Microarray Analysis. Applied Statistics in Agriculture Conference, Kansas State University, 2009

Optimal Sizes for Marginal False Discovery Rate Control. Souther Regional Council on Statistics, Charleston, SC, 2008

Nonparametric Confidence Intervals for Quantitative Trait Loci. Annual Bioinformatics Symposium, Iowa State University, 2006

Teaching

Oklahoma State University

- STAT 2013 Elementary Statistics²
- STAT 2023 Honors Business Statistics
- STAT 4033 Engineering Statistics
- STAT 5053 Time Series Analysis
- STAT 4463/5063 Multivariate Methods (applied)
- STAT 4463/5063 Statistical Machine Learning with $R^{2,3}$
- STAT 5002 Applied Masters Creative Component^{2,3}

²Course offered online

³Course developed

- STAT 5093 Computational Statistics
- STAT 4191/5191/4193/5193 R Programming^{2,3}
- STAT 5513 Multivariate Analysis (theory)
- STAT 6010 Statistics Literature Review
- STAT 6113 Advanced Probability

At Other Universities

- BIOS 872 Mathematical Statistics II (University of Kansas Medical Center)
- STAT 110 Introduction to Descriptive Statistics (University of South Carolina)
- STAT 320 Statistics for the Social Sciences (Kansas State University)
- STAT 350 Statistics for Business and Economics Majors (Kansas State University)

Current Advisees

Huizi Wang (PhD): Efficient Classification Methods for Sparse High-Dimensional Count Data with Model Selection as Motivated by Microbe Finder

Mehedi Hasan (PhD) - co advise with Rudra: On Mixture Models for Multiple Testing with Count Data

Srikar Ghovardhana (PhD): TBD

Prantosh Neupane (PhD): TBD

Former Advisees

Emmanuel Asare (PhD), 2025: A Multiple Testing Procedure for Count Data Based on the Local False Discovery Rate

Tianyu (Chase) Cao (PhD), 2024: False Discovery Rate Estimation with Publication Bias

Gbenga Akingbulere (Co advisor Sanyoon Yi) (MS), 2024. Comparison of Marginal Analysis and Debiased LASSO for Identifying Bacterial Associations with Shoot Biomass

Haruna Owgwea (MS), 2024: On log linear vs logistic regression models

Amir Javid (MS), 2022: Estimating van Genuchten Diffusivity Parameter of Undisturbed Soils in Oklahoma.

Tina Shi (MS), 2019: On Statistical Methods for Next Generation Sequencing Data

David Watts (PhD), 2017: A New Multiple Testing Protocol and the Local Misclassification Rate

Tamanna Hossein (MS), 2014: Temporal Dependence Structures for Functional Magnetic Resonance Imaging Data

Anna Tehrani (McNair), 2012: Exact Tests for Multinomial Models

Zhesi Chen (MS), 2012: A Jackknife Approach for Empirical Bayes Parameter Estimation in Multiple Testing

Other Advisee for Applied Stat MS 2017: Christina Harrington, Kurt Scheurmann, Anna Tehranni

Professional Service

Referee, 2010 - Present. The American Statistician (2 articles), Annals of Statistics (3 articles), Annals of the Institute of Statistical Mathematics, Bernoulli, Biometrical Journal (5 articles), Biometrics (3 articles), Biometrika, BMC Bioinformatics (2 articles), Computational Statistics and Data Analysis (2 articles), Electronic Journal of Statistics (3 articles), Entropy, Journal of Applied Statistics, Journal of the Korean Statistical Society, Journal of the American Statistical Association (4 articles), Journal of Multivariate Analysis, Journal of the Royal Statistical Society Series B (5 articles), Journal of Statistical Planning and Inference (4 articles), Revistá Mathematica Complutense, Nature (3 articles), Nature Scientific Reports, STAT, TEST (2), Statistics in Medicine (5 articles), Statistics and Probability Letters (2 articles)

External reviewer for 3 applications for promotion to Associate Professor with tenure, 2019 - present

Associate Editor: The American Statistician, 2017 - 2025

NSF Statistics Panel, 2022

Secretary: American Statistical Association Council of Chapters Governing Board, 2015 - 2017

President: Oklahoma Chapter of the American Statistical Association, 2014 - 2015

Reviewer: American Mathematical Society, 2012 - 2019

Session Chair: Joint Statistical Meetings in Vancouver, Canada, 2010

University Service

Outside committee member on about 15 PhD student committees, 2010 - present

College of Arts and Science Sabbatical Leave Committee, 2025

OSU Science and Engineering Fair judge, 2024, 2025

College of Arts and Science Faculty Council (Rer 2019, Vice Chair 2020, Chair 2021)

College of Arts and Science Faculty Council Vice Chair, 2020 - 2021

College of Arts and Sciences Faculty Council Representative, 2019

Referee for President's Cup Award for Interdisciplinary Research, 2017

Group III Graduate Faculty Vice Chair, 2016

Group III Graduate Faculty Secretary, 2015

Faculty Advisor for the Tennis on Campus Club, 2015 - 2016

Judge at the 23rd Annual OSU Research Symposium and Research Scholar Conference, 2012

Faculty Advisor for the Bioinformatics and Entangled Genomes Summer Workshop, 2012

Departmental Service

Assessment Coordinator, 2025- present

Graduate Coordinator, 2019 - 2025

Committee Membership

- Graduate Committee, 2010 - present (Chair, 2019 - 2025)
- Personnel Committee, 2013 - present (Chair, 2017 - 2018 and 2025-current)
- Curriculum, 2013 - present (Chair 2013 - 2019 and 2025-current)
- Hiring Committee, 2017 - present (Chair, 2017 - 2019)
- Colloquium Committee 2010 - 2013 (Chair, 2010 - 2013)

Other Service

- Member on more than 50 statistics graduate student MS or PhD committees, 2010 - present.
- Faculty mentor for Sangyoon Yi, 2024 - present
- Faculty mentor for Pratyaydipta Rudra, 2017 - present
- Faculty mentor for Ye Liang, 2021 - 2025

Professional Societies

American Statistical Association