

# Katherine L. Thompson

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Dr. Bing Zhang Department of Statistics  
University of Kentucky  
Room 303 Multidisciplinary Sciences Building  
725 Rose Street  
Lexington, KY 40536-0082

Publication List: [Click here](#)

## Professional Experience

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- 2024–Present Invited Research Fellow, Institute for Computational and Experimental Research in Mathematics, Brown University.
- 2023–Present Predictive Analytics and Data Science Hub Lead, Dr. Bing Zhang Department of Statistics, University of Kentucky.
- 2019–Present Associate Professor, Dr. Bing Zhang Department of Statistics, University of Kentucky.
- 2019–2024 Director of Graduate Studies, Dr. Bing Zhang Department of Statistics, University of Kentucky.
- 2020–2023 Associate Director of the Predictive Analytics and Data Science Hub, Dr. Bing Zhang Department of Statistics, University of Kentucky. (*includes the Applied Statistics Lab*)
- 2013–2019 Assistant Professor, Department of Statistics, University of Kentucky.
- 2009–2013 Graduate Teaching Associate, Department of Statistics, The Ohio State University.

## Education

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- 2013 **Ph.D., Statistics**, The Ohio State University.  
Dissertation Title: Using ancestral information to search for quantitative trait loci in genome-wide association studies  
Advisor: Professor Laura Kubatko
- 2010 **M.S., Statistics**, The Ohio State University.
- 2008 **B.S., Mathematics**, University of Kentucky.  
*magna cum laude*, Departmental Honors in Mathematics, Honors in the Honors Program
- 2008 **B.S., Biology**, University of Kentucky.  
*magna cum laude*, Departmental Honors in Biology, Honors in the Honors Program

## Research Interests

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- **Statistical/Predictive Modeling of Opioid-Related Outcomes:**
  - Developing relevant statistical methods for analysis of large healthcare data sets, in particular healthcare claims data for opioid use disorder prevalence estimation;
  - Deriving interpretable quantities for use in predictive modeling for large sample sizes and/or numbers of variables for health outcomes
- **Phylogenetic Methods:** Developing methods in statistical genetics, in particular methods for phylogenetic analysis with applications in cardiovascular health

## Principal Investigator Funding

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- **IDeA Networks of Biomedical Research Excellence in Kentucky**

The primary objective of the Statistics Core of the KY IDeA Network of Biological Excellence (KY-INBRE) is to improve scientific rigor and reproducibility of researchers at universities in the KY-INBRE network by providing data and statistical support through the Predictive Analytics and Data Science Hub.

- University of Louisville Research Foundation (NIH Funding)
- NIH ID: 2P20GM103436-24
- PI (5/1/2024 - 4/30/2029)
- \$1,741,472

- **University of Kentucky Artificial Intelligence and Machine Learning Hub**

The University of Kentucky Artificial Intelligence and Machine Learning (AI/ML) Hub is a cross-college effort with six partner colleges. The goal of this project is to transform the educational and research capacity of AI/ML work at UK by building a centralized hub connecting AI/ML method consumers, users, and developers.

- University of Kentucky Provost's IMPACT Initiative Award
- Role: Principal Investigator
- 07/01/2023 - 06/30/2025
- \$150,000

- **IDeA Networks of Biomedical Research Excellence in Kentucky**

The primary objective of the Statistics Core of the KY IDeA Network of Biological Excellence (KY-INBRE) is to improve scientific rigor and reproducibility of researchers at universities in the KY-INBRE network by providing data and statistical support through the Predictive Analytics and Data Science Hub.

- University of Louisville Research Foundation (NIH Funding)
- ULRF\_18-0975D-05
- PI (9/16/2023 - 4/30/2024), Co-PI (05/01/2022 - 9/15/2023)
- Role: 05/01/2020 - 04/30/2023
- \$305,235 from 05/01/2022 - 04/30/2023

- **Using Data Science Tools to Analyze Medicaid Claims Data and Better Understand Cardiovascular Disease**

This project focused on (1) developing methods in data science to understand and represent infective endocarditis claims or chronic diseases (e.g., hypertension) from Kentucky Medicaid beneficiaries and (2) producing Medicaid data use cases to develop good practice guidance for handling missing data in claims data analysis.

- Commonwealth of Kentucky, Cabinet for Health and Family Services
- PON2 746 2000004029
- Role: Principal Investigator

- 07/01/2020 - 06/30/2022
- \$389,730

- **SRCOS Summer Research Conference (2024, 2023, 2022, 2021)**

The work in this NSF grant supported the statistics Summer Research Conference to improve the diversity of graduate students in STEM and in particular, the statistical sciences.

- NSF DMS 2426499, NSF DMS 2327635, NSF DMS 2327635, NSF DMS 2230866, NSF DMS 2125524
- Role: Principal Investigator
- 05/01/2024-04/30/2025, 06/01/2023-05/31/2025, 08/01/2022-07/31/2023, 07/01/2021-06/30/2022
- Total awards: \$184,886

## First and Senior Author Publications

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11. Hawk<sup>1</sup>, G. S., & **Thompson, K. L.** (2024). Deriving the Distribution and Exploring the Utility of Partial  $R^2$  in the Era of Big Data. *Journal of Statistical Theory and Applications*, 1-14.
10. Nigam, S. R., Westgate, P. M., Slavova, S., Vickers-Smith, R., & **Thompson, K. L.** (2024). Community-level Factors and their Associations with Changing Opioid Overdose Fatality Rates in Kentucky, 2019–2021. *Journal of Appalachian Health*, 6(1), 92.
9. **Thompson, K.**, Barocas, J. A., Delcher, C., Bae, J., Hammerslag, L., Wang, J., ... & Talbert, J. (2023). The prevalence of opioid use disorder in Kentucky’s counties: A two-year multi-sample capture-recapture analysis. *Drug and alcohol dependence*, 242, 109710.
8. Elliott, C. F., Lambert, J. W., Stromberg, A. J., Wang, P., Zeng, T., and **Thompson, K. L.** (2020). Feasibility as a mechanism for model identification and validation. *Journal of Applied Statistics*, 1-20.
7. Janse<sup>1</sup>, S. and **K.L. Thompson**. 2019. Properties of the number of iterations of a feasible solutions algorithm. In: Diawara N. (eds) *Modern Statistical Methods for Spatial and Multivariate Data*. STEAM-H: Science, Technology, Engineering, Agriculture, Mathematics & Health. Springer, Cham.
6. Gawriluk<sup>2</sup>, T.R., Simkin<sup>2</sup>, J., **Thompson,<sup>2</sup> K.L.**, Biswas, S., Clare-Salzler, Z., Kimani, J.M., Kiama, S.G., Ezenwa V.O., Smith, J.J., and Seifert, A.W. 2016. Comparative analysis of ear-hole closure identifies epimorphic regeneration as a discrete trait in mammals. *Nature Communications*, 7:11164. PMID: 27109826 PMCID: PMC4848467. (Co-First Author)
5. **Thompson, K.L.** and D.W. Fardo. 2016. Comparing performance of non-tree-based and tree-based association mapping methods. *BMC Proceedings*, 10(7):405-410. PMID: 27980669 PMCID: PMC5133494.
4. **Thompson, K.L.**, Linnen, C.R., and L.S. Kubatko. 2016. Tree-based quantitative trait mapping in the presence of external covariates. *Statistical Applications in Genetics and Molecular Biology*, 15(6): 473-490. PMID: 27875322.

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<sup>1</sup>denotes doctoral student co-author

<sup>2</sup>denotes co-first authorship

3. **Thompson, K.** and R. Charnigo. 2015. Parallel computing in genome-wide association studies. *Journal of Biometrics and Biostatistics*, **6**:e131. (*Invited commentary*).
2. **Thompson, K.L.** and L.S. Kubatko. 2013. Using ancestral information to detect and localize quantitative trait loci in genome-wide association studies. *BMC Bioinformatics*, **14**:200. PMID: 23786262 PMCID: PMC3706278.
1. **Thompson, K.L.**, Charnigo, R., and C.R. Linnen. 2013. Using ancestral information to inform analyses of complex data sets. *Journal of Biometrics and Biostatistics*, **4**:e126. (*Invited commentary*).

### First and Senior Authored Publications Submitted or Under Review

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- **K.L. Thompson** and G.S. Hawk<sup>1</sup>. Incorrect model selection using  $R^2$  and Akaike Information Criterion in big data analyses. *Under revision and invited for resubmission*.
- Rusinko, J., Doherty, A., Cai, Y., Straub, S., Boutte, J., Fischebein, M. and **Thompson, K.** Taxa Selection and Species Tree Construction using Quartets Weighted by Bayes Factors. *Resubmitted and under revision*.

### Collaborative Publications

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42. Samet, J. H., Adams, J., Aldridge, A., Angerame, A., Bagley, S. M., Baker, T. J., Beard, D. D., Beers, D., Blevins, D., Brown, J. L., Caldwell, R., Calvert, D., Campbell, A. N. C., Carpenter, J., Chassler, D., Cheng, D. M., Cunningham, C. O., David, J. L., Davis, A.,..., **Thompson, K.L.**, ... Walsh, S. L. (2024). Community-Based Cluster-Randomized Trial to Reduce Opioid Overdose Deaths. *The New England Journal of Medicine*.  
<https://doi.org/10.1056/NEJMoa2401177>
41. Glasgow, L., Douglas, C., Sprunger, J. G., Campbell, A. N., Chandler, R., Dasgupta, A., ..., **Thompson, K.L.**, ... & El-Bassel, N. (2024). Effect of the Communities that HEAL intervention on receipt of behavioral therapies for opioid use disorder: A cluster randomized wait-list controlled trial. *Drug and Alcohol Dependence*, **259**, 111286.
40. White, M. S., Graham, M. C., Janatova, T., Hawk<sup>1</sup>, G. S., **Thompson, K. L.**, & Noehren, B. (2024). Effect of Sampling Rate, Filtering, and Torque Onset Detection on Quadriceps Rate of Torque Development and Torque Steadiness. *Sensors*, **24**(13), 4250.
39. Erickson, L., Hickey Lucas, K., Brightwell, B., Graham, M., Spencer, K., Casadonte, K., ..., **Thompson, K. L.**, ... & Noehren, B. (2024). The Effect of Blood Flow Restriction Training on Quadriceps Strength and Physiological Cross-Sectional Area After Anterior Cruciate Ligament Reconstruction: A Double-Blind, Randomized, Placebo-Controlled Clinical Trial. *International Journal of Sports Physical Therapy*, **19**(6).
38. Graham, M. C., **Thompson, K. L.**, Hawk<sup>1</sup>, G. S., Fry, C. S., & Noehren, B. (2024). Muscle Fiber Cross-Sectional Area Is Associated With Quadriceps Strength and Rate of Torque Development After ACL Injury. *The Journal of Strength & Conditioning Research*, **38**(6), e273-e279.

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<sup>1</sup>denotes doctoral student co-author

37. Owen, M. K., Casadonte, K. R., Thomas, N. T., Latham, C. M., Brightwell, C. R., **Thompson, K. L.**, ... & Noehren, B. (2024). Sex Differences in Quadriceps Atrophy After Anterior Cruciate Ligament Tear. *Sports Health*, 19417381241230612.
36. Wang, J., Doogan, N., **Thompson, K.**, Bernson, D., Feaster, D., Villani, J., ... & Barocas, J. A. (2023). Massachusetts Prevalence of Opioid Use Disorder Estimation Revisited: Comparing a Bayesian Approach to Standard Capture–Recapture Methods. *Epidemiology*, 34(6), 841-849.
35. Brightwell, C.R., Latham, C.M., Keeble, A.R., Thomas, N.T., Owen, A.M., Reeves, K.A., Long, D.E., Patrick, M. Abed, V., Annamalai, R.T., Jacobs, C., Conley, C.E., Hawk<sup>1</sup>, G.S., Stone, A.V., Fry, J.L., **Thompson, K.L.**, Johnson, D.L., Noehren, B., & C.S. Fry. (2023). GDF8 inhibition enhances musculoskeletal recovery and mitigates posttraumatic osteoarthritis following joint injury. *Accepted/In press at Science Advances*.
34. Wen, Y., Latham, C.M., Moore, A.N., Thomas, N.T., Lancaster, B.D., Reeves, K.A., Keeble, A.R., Fry, C.S., Johnson, D.L., **Thompson, K.L.**, Noehren, B., & J.L. Fry. (2023). Vitamin D status associates with skeletal muscle loss after anterior cruciate ligament reconstruction. *JCI Insight*, 8(23).
33. Schuman, D.L., Seals, J., Stromberg, A.J., Hawk<sup>1</sup>, G.S., **Thompson, K.L.**, and S. Brown. (2023). Kentucky Veteran and Nonveteran Suicide, 2010-2019: A Feasible Solution Algorithm Test of Perfect Storm Theory. *Journal of Rural Mental Health*.
32. Conley, C. W., Stone, A. V., Hawk<sup>1</sup>, G. S., **Thompson, K. L.**, Ireland, M. L., Johnson, D. L., ... & Conley, C. (2023). Prevalence and Predictors of Postoperative Depression and Anxiety After Anterior Cruciate Ligament Reconstruction. *Cureus*, 15(9).
31. Abed, V., Lemaster, N. G., Hawk<sup>1</sup>, G. S., **Thompson, K. L.**, Conley, C. E., Mair, S. D., & Jacobs, C. A. (2023). Patients With Depression and/or Anxiety Having Arthroscopic Rotator Cuff Repair Show Decreased Number of Prescriptions and Number of Psychotherapy Sessions in the Year After Surgery. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*.
30. Hoch, M. C., Hertel, J., Gribble, P. A., Heebner, N. R., Hoch, J. M., Kosik, K. B., ..., **Thompson, K.L.**, & Fraser, J. J. (2023). Effects of foot intensive rehabilitation (FIRE) on clinical outcomes for patients with chronic ankle instability: a randomized controlled trial protocol. *BMC Sports Science, Medicine and Rehabilitation*, 15(1), 1-13.
29. Brightwell, B. D., Stone, A., Li, X., Hardy, P., **Thompson, K.**, Noehren, B., & Jacobs, C. (2022). Blood flow Restriction training After patellar INStability (BRAINS Trial). *Trials*, 23(1), 1-8.
28. Liu, R., Pugh, G. H., Tevonian, E., **Thompson, K.**, Lauffenburger, D. A., Kern, P. A., & Nikolajczyk, B. S. (2022). Regulatory T cells control Effector T cell Inflammation in Human Prediabetes. *Diabetes*, 71(2), 264-274.
27. Tanner, B. C., Awinda, P. O., Bishaw, Y., Watanabe, M., **Thompson, K. L.**, Thompson, M. S., ... & Campbell, K. S. (2022). Effects of mavacamten and sarcomere length on the Ca<sup>2+</sup>-sensitivity of permeabilized myocardial strips from patients with heart failure. *Biophysical Journal*, 121(3), 107a. Chicago.

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<sup>1</sup>denotes doctoral student co-author

26. Milburn, G. N., **Thompson, K. L.**, Birks, E. J., & Campbell, K. S. (2022). Correlations between cellular-level contractile properties and echocardiographic-based measurements of cardiac function in organ donors and patients with heart failure. *Biophysical Journal*, 121(3), 398a.
25. Stone, A. V., Murphy, M. L., Jacobs, C. A., Lattermann, C., Hawk<sup>1</sup>, G. S., **Thompson, K. L.**, & Conley, C. E. (2022). Mood Disorders Are Associated with Increased Perioperative Opioid Usage and Health Care Costs in Patients Undergoing Knee Cartilage Restoration Procedure. *Cartilage*, 13(1), 19476035221087703.
24. Fry, J. L., Munson, B. D., **Thompson, K. L.**, Fry, C. S., Paddon-Jones, D., & Arentson-Lantz, E. J. (2022). The T allele of TCF7L2 rs7903146 is associated with decreased glucose tolerance after bed rest in healthy older adults. *Scientific reports*, 12(1), 1-8. Chicago.
23. Milburn, G. N., Moonschi, F., White, A. M., Thompson, M., **Thompson, K.**, Birks, E. J., & Campbell, K. S. (2022). Prior freezing has minimal impact on the contractile properties of permeabilized human myocardium. *Journal of the American Heart Association*, 11(10), e023010.
22. Van Wyngaarden, J. J., Jacobs, C., **Thompson, K.**, Eads, M.; Johnson, D., Ireland, M. L., and Noehren, B. (2021). Quadriceps Strength and Kinesiophobia Predict Long-Term Function After ACL Reconstruction: A Cross-Sectional Pilot Study. *Sports Health*, 13(3), 251-257.
21. Cronin, K. J., Magnuson, J. A., Wolf, B. R., Hawk<sup>1</sup>, G. S., **Thompson, K. L.**, Jacobs, C. A . . . and MOON Shoulder Group. (2021). Male sex, Western Ontario Shoulder Instability Index score, and sport as predictors of large labral tears of the shoulder: A Multicenter Orthopaedic Outcomes Network (MOON) shoulder instability cohort study. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*, 37(6), 1740-1744.
20. Zacharias, A. J., Lemaster, N. G., Hawk<sup>1</sup>, G. S., Duncan, S. T., **Thompson, K. L.**, Jochimsen, K. N., . . . and Jacobs, C. A. (2021). Psychological Healthcare Burden Lessens After Hip Arthroscopy for Those With Comorbid Depression or Anxiety. *Arthroscopy, Sports Medicine, and Rehabilitation*, 3(4), e1171-e1175.
19. Jacobs, C.A., Hawk<sup>1</sup>, G.S., Jochimsen, K.N., Conley, C.E.W., Vranceanu, A.M., **Thompson, K.L.** and Duncan, S.T. 2020. Depression and anxiety are associated with increased health care costs and opioid Use for patients with femoroacetabular impingement undergoing hip arthroscopy: Analysis of a claims database. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*.
18. Jacobs, C.A., Vranceanu, A.-M., **Thompson, K.L.**, and C. Lattermann. 2020. Rapid progression of knee pain and osteoarthritis biomarkers greatest for patients with combined obesity and depression: Data from the Osteoarthritis Initiative. *Cartilage*. **11**(1):38-46. PMID: 29855190 PMID: PMC6921961.
17. Blair, C. A., Brundage, E. A., **Thompson, K. L.**, Stromberg, A., Guglin, M., Biesiadecki, B. J., and Campbell, K. S. (2020). Heart failure in humans reduces contractile force in myocardium from both ventricles. *JACC: Basic to Translational Science*, 5(8), 786-798.

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<sup>1</sup>denotes doctoral student co-authors

16. Walsh, S. L., El-Bassel, N., Jackson, R. D., Samet, J. H., Aggarwal, M., Aldridge, A. P., ... and The HEALing Communities Study Consortium (2020). The HEALing (Helping to End Addiction Long-term SM) Communities Study: Protocol for a cluster randomized trial at the community level to reduce opioid overdose deaths through implementation of an integrated set of evidence-based practices. *Drug and Alcohol Dependence*, 217, 108335.
15. Cronin, K. J., Mair, S. D., Hawk<sup>1</sup>, G. S., **Thompson, K. L.**, Hettrich, C. M., and Jacobs, C. A. (2020). Increased health care costs and opioid use in patients with anxiety and depression undergoing rotator cuff repair. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*, 36(10), 2655-2660.
14. Alnabelsi, T. S., Gupta, V. A., Su<sup>1</sup>, L. C., **Thompson, K. L.**, Leung, S. W., and Sorrell, V. L. (2020). Usefulness of Findings by Multimodality Imaging to Stratify Risk of Major Adverse Cardiac Events After Sepsis at 1 and 12 months. *The American journal of cardiology*, 125(11), 1732-1737.
13. Jacobs, C. A., Vranceanu, A. M., **Thompson, K. L.**, and Lattermann, C. (2020). Rapid progression of knee pain and osteoarthritis biomarkers greatest for patients with combined obesity and depression: data from the osteoarthritis initiative. *Cartilage*, 11(1), 38-46.
12. Erickson, L. N., Lucas, K. C. H., Davis, K. A., Jacobs, C. A., **Thompson, K. L.**, Hardy, P. A., ... & Noehren, B. W. (2019). Effect of blood flow restriction training on quadriceps muscle strength, morphology, physiology, and knee biomechanics before and after anterior cruciate ligament reconstruction: protocol for a randomized clinical trial. *Physical therapy*, 99(8), 1010-1019.
11. Bhavsar, I., Miller, C.S., Ebersole, J.L., Dawson III, D.R., **Thompson, K.L.** and Al-Sabbagh, M. 2019. Biological response to peri-implantitis treatment. *Journal of periodontal research*. **54**(6), 720-728.
10. AlSiraj, Y., Chen, X., Thatcher, S.E., Temel, R.E., Cai, L., Blalock, E., Katz, W., Ali, H.M., Petriello, M., Deng, P., Morris, A.J., Wang, X., Lusic, A.J., Arnold, A.P., Reue, K., **Thompson, K.**, Tso, P., and Cassis, L.A. 2019. XX sex chromosome complement promotes atherosclerosis in mice. *Nature communications*. **10**(1), 2631.
9. Nelson, P.T., Wang, W.-X., Janse<sup>1</sup>, S.A., and **K.L. Thompson**. 2018. MicroRNA expression patterns in human anterior cingulate and motor cortex: A study of dementia with Lewy bodies cases and controls. *Brain Research*. **1678**: 374-383. PMID: 29146111 PMCID: PMC5752138.
8. Lambert, J.W., Liyu, G., Elliott, C., **Thompson, K.L.**, and A.J. Stromberg. 2018. rFSA: An R package for finding best subsets and interactions. *R Journal*. **10**(2).
7. Thrailkill, K., Nyman, J., Bunn, R., Uppuganti, S., **Thompson, K.**, Lumpkin, C., Kalaitzoglou, and J.L Fowlkes. 2017. The impact of SGLT2 inhibitors, compared with insulin, on diabetic bone disease in a mouse model of Type 1 Diabetes. *Bone*. 94:141-151. PMID: 27989651. PMCID: PMC5826569.
6. Gober, M.K., **Thompson, K.L.**, and P. Black. 2017. A microRNA signature of response to erlotinib is descriptive of TGF $\beta$  behaviour in NSCLC. *Scientific Reports*. **7**: 4202. PMID: 28646226 PMCID: PMC5482799.

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<sup>1</sup>denotes doctoral student co-author

5. Ebersole, J.L., Dawson D., Emecen-Huja, P., Nagarajan, R., Howard, K., Grady, M.E., **Thompson, K.**, Peyyala, R., Al-Attar, A., Lethbridge, K., Kirakodu, S., and O.A. Gonzalez. The periodontal war: microbes and immunity. 2017. *Periodontology 2000*. **75**(1):52-115. PMID: 28758303.
4. Pumphrey, A., Zhengshi, Y., Ye, S., Thalman, S., Watt, D., Abdel-Latif, A., Unrine, J., **Thompson, K.**, Fornwalt, B., Ferrauto, G., and Vandsburger, M. 2016. Advanced cardiac chemical exchange saturation transfer (cardioCEST) MRI for *in vivo* cell tracking and metabolic imaging. *NMR in Biomedicine*, **29**(1):74-83. PMID: 26684053 PMCID: PMC4907269.
3. Noehren, B., A. Andersen, P. Hardy, D. Johnson, M. Ireland, **K. Thompson**, and B. Damon. 2016. Cellular and Morphological Alterations in the Vastus Lateralis Muscle as the Result of ACL Injury and Reconstruction. *Journal of Bone & Joint Surgery, American Volume*. **98**(18):1541–1547. PMID: 27655981 PMCID: PMC5026157.
2. Harper, K.E., Bagley, R.K., **Thompson, K.L.**, and Linnen, C.R. 2016. Complementary sex determination, inbreeding depression, and inbreeding avoidance in a gregarious sawfly. *Heredity*, **117**:326-335. PMID: 27381325 PMCID: PMC5061915.
1. Manning J., Yin, G., Kaminski, C., Magyar, J., Feng, H.-Z., Penn, J., Sievert, G., **Thompson, K.**, Jin, J.-P., Andres, D. and J. Satin. 2013. Rad GTPase deletion increases L-type calcium channel current leading to increased cardiac contraction. *Journal of the American Heart Association*, **2**(6):e000459. PMID: 24334906 PMCID: PMC3886777.

## Statistical Publications in Progress

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- Hawk<sup>1</sup>, G.S. and **K.L. Thompson**. Deriving a Confidence Interval for the Coefficient of Partial Determination. *Near submission*.
- Su<sup>1</sup>, L. and **K.L. Thompson**. Performance of Linear Regression Adjustment Methods in the Presence of Interaction Effects. *Near submission*.
- Park<sup>1</sup>, J. and **K.L. Thompson**. Guideline to Produce Confidence Intervals of ED50/LD50 in Binomial GLM for Engineering. *Near submission*.

## Collaborative Funding

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### Active Collaborative Funding (Last updated: 06/2024)

- MAT-2017C2-7842 (Hansen) 08/2018 - 04/2025 10% effort  
 Patient Centered Outcomes Research Institute \$5,316,906  
**The PATH Home Trial: A Comparative Effectiveness Study of Peripartum Opioid Use Disorder in Rural Kentucky**  
 Major Goals: 1) conduct a randomized cluster trial using a ‘hub and spoke’ study design, comparing two active and evidence based elements of our established UK-PATHways program at participating rural regional sites and 2) evaluate the relative effectiveness of each study arm on primary and secondary maternal and neonatal outcomes as compared to the established PATHways program (UK-PATHways: Hub) at the University of Kentucky.  
 - Role: Co-Investigator

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<sup>1</sup>denotes doctoral student co-author



- 5T32NS077889-12 (Saatman) 07/2012 - 06/2027 1% effort  
NIH/NINDS \$1,059,410  
**NRSA T32: Neurobiology of CNS Injury and Repair**  
The goal of this project is to advance training of predoctoral fellows working toward their Ph.D. degrees in the fields of spinal cord injury, traumatic brain injury, or stroke.  
- Role: Co-Investigator
- 1R01AR078316-01A1 (Noehren) 08/2021 - 05/2027 5% effort  
NIH/NIAMS \$3,211,654  
**Sex-based Muscular Adaptations, Capillary Dysfunction and Functional Decline Impact Knee-related Psychosocial Outcomes After Acute Knee Injury (SMACK)**  
This proposal seeks to test the novel hypothesis that following an ACL injury, females experience exaggerated muscle capillary rarefaction and greater muscle fiber atrophy, hindering their recovery of muscle strength, resulting in pronounced deficits in gait mechanics and disproportionately worse psychosocial recovery compared to males.  
- Role: Co-Investigator
- R01AG079525-02 (Nikolajczyk) 08/2022 - 04/2026 4% effort  
NIH/NIA \$2,308,628  
**The Impact of Insulin Sensitivity on the Potential of Metformin to Delay Age-related Inflammation**  
We propose an ancillary study on deidentified samples from a recent NIA-funded trial Antecedent Metabolic Health and Metformin (ANTHEM) that will define traits of healthy people who would benefit from metformin intervention before onset of age-related health risks like chronic inflammation.  
- Role: Co-Investigator
- 899018 (Stone) 11/2021 - 10/2024 5% summer effort  
Arthritis Foundation \$299,968  
**Inflammatory Phenotyping after Meniscus Injury to Identify those at Increased Risk of Rapid Posttraumatic Osteoarthritis Progression and Drugs that can be Repurposed**  
The overarching goals of this project are to determine whether a subset of patients with a dysregulated inflammatory response is at increased risk of symptom and structural PTOA progression, and to identify potential FDA-approved drugs that can be repurposed to alter PTOA progression after meniscus injury.  
- Role: Co-Investigator
- R01CE003360-01-00 (Delcher) 09/2021 - 09/2024 10% effort (ended 09/2023)  
CDC \$1,087,500  
**Research Grants to Develop or Identify Effective Strategies to Prevent Overdose Involving Illicit Stimulants and Polysubstance Use Involving Stimulants (STIMuLINK)**  
Here, we propose the addition of new data sources for KY’s DOFSS to specifically improve existing and new stimulant risk/protective factor ascertainment for drug-related injury surveillance. STIMuLINK’s diverse, multidisciplinary and accomplished team includes epidemiologists, computer scientists, lawyers, statisticians, and behavioral scientists with experience working directly with communities impacted by the current polydrug overdose epidemic.  
- Role: Co-Investigator

- W81XWH2020035 (Hoch) 09/2020 - 09/2024 8% effort  
DOD \$1,732,519  
**Optimizing Clinical Outcomes for Patients with Chronic Ankle Instability Using Foot Intensive Rehabilitation (FIRE)**  
The purpose of this randomized controlled trial is to demonstrate that a novel Foot Intensive Rehabilitation (FIRE) protocol has the potential to create more effective clinical outcomes compared to SOC rehabilitation for patients with chronic ankle instability.  
- Role: Co-investigator
- 1P30GM127211-01 (Cassis, L) 08/2018 - 07/2024 7%–10% effort  
NIH/NIGMS \$5,737,500  
**Center of Research in Obesity and Cardiovascular Disease (Phase III)**  
The major goal of this project is to further develop a critical mass of funded investigators in the COCVD and expand core facilities established during Phase II support.  
- Role: Statistician
- W81XWH-21-1-0273 (Noehren) 08/2021 - 07/2024 10% effort  
DOD \$1,430,476  
**Army Medical Research and Materiel Command Accelerating Recovery Following a Lower-Extremity Fracture Through Speed HIIT**  
The major goal is establish the feasibility and test to see that the Speed HIIT program will lead to significant improvements over baseline in the knee extensor moment, peak ground reaction force, quadriceps muscle strength as compared to standard of care.  
- Role: Co-Investigator
- 1R21DA055028-01A1 (Vickers-Smith) 08/2022 - 07/2024 2.5% effort  
NIH/NIDA \$419,869  
**Covid 19: Dealers, Detectives, and People Who Use Drugs: Triangulating Perspectives to Understand COVID-19’s Impact on the Rural Appalachian Drug Market and Mitigate Downstream Overdose Risk**  
The major goal of this mixed-methods, community-engaged R21 study, led by a scientific team with extensive experience in rural substance use research, is to yield urgently needed local data on harm reduction strategies that could curb the historic spike in fentanyl-related ODs in rural Appalachia.  
- Role: Co-Investigator
- 1R01HL149164-01A1 (Campbell) 07/2020 - 06/2024 5% effort  
NIH \$2,795,537  
**Length-dependent activation in human myocardium**  
This project uses samples from organ donors and patients undergoing cardiac transplant in order to better understand changes in length-dependent activation induced by myocardial stretch.  
- Role: Co-Investigator
- 1R01HL152081-01 (Venditto) 07/2020-06/2025 5% effort  
NIH/NHLBI \$1,517,601  
**Understanding the role of anti-apolipoprotein A-I antibodies in atherosclerotic cardiovascular disease**

This project aims to elucidate the role of ApoA-I/IgG ICs and their functional impact in ASCVD by characterizing the molecular components of ApoA-I/IgG ICs in mouse and patient sera samples and correlating these factors with cellular interactions, functional outcomes and disease progression.

- Role: Co-investigator for Statistical Support

- R305A170574 (Lorch, E) 07/2017 - 12/2024 10% effort  
US Department of Education, IES \$3,237,898

**Efficacy of a narrative comprehension intervention for elementary school children**

This grant studies a proposed intervention for children in elementary school identified as at-risk for attention-deficit hyperactivity disorder.

- Role: Co-Investigator for statistical support

- W81XWH2010449 (Conley) 07/2020 - 06/2024 5% effort  
DOD \$2,889,181

**Altering Posttraumatic Osteoarthritis after Patellar Dislocation: Blood Flow Restriction training, Aspiration, and Intraarticular Normal Saline (BRAINS Trial)**

This randomized clinical trial is designed to see if knee aspiration and saline injection or blood flow restriction training (individually or combined) improve outcomes after patellar dislocation.

- Role: Co-investigator

- 1R01AR071398-01A1 (Noehren, B) 07/2017 - 06/2024 5% effort  
NIH/NIAMSD \$3,060,803

**Mechanistic Assessment of Blood Flow Restricted Training for an ACL Injury**

This project seeks to mechanistically determine the ability of BFRT to address underlying muscle cellular deficits following anterior cruciate ligament reconstruction compared to usual care.

- Role: Co-Investigator for Statistical Support

- 1UM1DA049406 (Walsh, S) 05/2019 - 03/2025 9% effort  
NIH/NIDA \$76,141,115

**Kentucky CAN HEAL (Communities and Networks Helping End Addiction Long-term)**

The Kentucky CAN (Communities and Networks) HEAL (Helping End Addiction Long-term) study is a large-scale, community intervention project submitted in response to the HEALing Communities request for proposals to “test the immediate impact of implementing an integrated set of evidence-based interventions” with the aim of reducing opioid overdose deaths by 40% in three years.

- Role: co-PI for statistical support

- 1R01AR072061-01A1 (Fry, Noehren) 04/2018 – 02/2024 2% effort  
NIH/NIAMS \$1,858,598

**Myostatin alters muscle composition as the result of an ACL injury**

The major goal of this project is to determine the efficacy of myostatin blockade in a mouse model of ACL injury to improve muscle mass, strength and morphology. Additionally, the goal is to determining the contribution of myostatin activation in patients following an ACL injury and reconstruction to underlying muscle cellular deficits that contribute to protracted muscle weakness.

- Role: Co-Investigator

- 5R01AR072061-05 (Fry) 07/2019 - 02/2024 2% effort  
NIH/NIAMS \$1,858,598

### **Myostatin alters muscle composition as the result of an ACL injury**

Our overarching objective is to define the efficacy of a myostatin antibody to restore muscle strength, mitigate subchondral bone loss and prevent the development of post-traumatic knee osteoarthritis following an ACL injury to expedite functional recovery and return to duty. We hypothesize that myostatin represents an critical therapeutic target to rescue cellular and functional deficits after ACL injury to ultimately support operational readiness.

- Role: Co-Investigator

- B3-2021-1 (Stone) 02/2022 - 01/2025 1% effort  
AOSSM \$250,000

### **Role of Immunologically Induced Senescent Cell Activity on the Progression of Post-traumatic OsteoArthritis (RISC-OA)**

The goal of this study is to better understand the role of immunologically induced senescent cell activity on the progression of posttraumatic osteoarthritis.

- Role: Co-investigator

### **Previous Collaborative Funding**

- 18. IN-US-342-4499 (Rosenau) 3/2008 - 11/2023 1% effort  
Gilead Sciences Inc. \$212,857

### **Implementation of Two Novel Interdisciplinary Care Models and the Impact on Hepatitis C Treatment Uptake, Completion and Sustained Virologic Response**

This study aims to increase the treatment uptake of patients referred to UK clinics and to shift parts of the Hepatitis C virus management to the community to increase the impact of Hepatitis C virus specialists.

- Role: Co-investigator effort from 2019–2020

- 17. 651996 (Gensel) 07/2020 - 07/2023 15% Summer effort  
Craig H Neilsen Foundation \$598,115

### **The Role of Lipid Dysfunction in Spinal Cord Injury Pathophysiology**

Individuals with spinal cord injury suffer from cardiovascular disease at higher rates than able-bodied individuals. The objective of this proposal is to determine the role of high-density lipoprotein (HDL) on the pathophysiology of atherosclerosis and secondary injury after spinal cord injury.

- Role: Co-investigator

- 16. 5R01DK113625-03 (Graf, G) 09/2017 - 07/2024 4% effort  
NIH/NIDDK \$2,275,815

### **Contributions of hepatic and intestinal pathways to cholesterol excretion**

The major goals of this project are to determine the impact of biliary cholesterol secretion on intestinal cholesterol secretion rates, II) determine the lipoprotein donors to both the biliary and intestinal pathway under conditions of high and low biliary cholesterol secretion, and III) determine the molecular mechanisms within the intestinal enterocyte that mediate the adaptive response to alterations in biliary cholesterol secretion.

- Role: Co-Investigator for Statistical Support

- 15. 1R34AR079672-01A1 (Matuszewski) 08/2022 - 07/2023 5% effort  
NIH/NIAMS \$369,907

### **The Local Infiltration Therapy (LIT) Trial for Pain Control Following Hip Fracture Fixation**

The major goal of this project is to initiate and complete the planning of a multi-center, double-blind, non-inferiority trial with placebo for effect size determination to test our hypotheses that a pharmacy prepared cocktail is not inferior to a commercially available liposomal bupivacaine, and that local injection therapy can improve pain control following hip fracture fixation.

- Role: Co-Investigator

14. 1R01AR070313-01A1 (Seifert, A) 03/2017-02/2023 2% effort  
NIH/NIAMS \$1,655,500

**Macrophage phenotype orchestrates mammalian tissue regeneration**

The major goals of this are to identify macrophage subtypes that regulate regeneration and manipulate inflammation to stimulate regeneration in response to injury.

- Role: Co-Investigator for Statistical Support

13. PON2 721 2000003082 (Talbert, J) 07/2020 - 06/2022 10% effort  
KY Cabinet for Health and Family Services \$3,803,332

**Research, Data Analytics, & Measurement of Program Outcomes: 1115 Waiver**

This work aims to use predictive analytics to model and predict future overdoses of Kentucky Medicaid beneficiaries using existing Medicaid claims and Kentucky All Schedule Prescription Electronic Reporting (KASPER) data.

- Role: Co-Investigator

12. 4478 (Aneja) 01/2020 - 12/2022 2.5% effort  
Orthopaedic Trauma Association, Inc. \$102,958

**Inflammatory Response to Trauma - Does Early Cytokine Modulation Improve Patient Outcome?**

The present prospective randomized clinical study will test the hypothesis that administering a NSAID (Ketorolac) in low dose for a brief time period will improve the clinical outcomes of orthopaedic trauma patients, leading to shorter hospital length of stay, reduction in post-traumatic complications, and reduction in opioid intake during both inpatient and outpatient settings.

- Role: Co-Investigator

11. 1R56AG069685-01(Nikolajczyk, B) 09/2020 - 08/2021 5% effort  
NIH/NIA \$380,433

**The Biological Mechanisms of Metformin Effects on Aging-Associated Inflammation**

The purpose of this work is to study Metformin effects on age-associated inflammation and to test the hypothesis that metformin must alter only one of two converging pathways, mitochondrial dysfunction/lactate production and non-mitochondrial autophagy, to lower age-related Th17 inflammation.

- Role: Co-Investigator

10. 1R56HL145051-01 (Venditto) 09/2019 - 08/2020 5% effort  
NIH/NHLBI \$268,654

**Understanding the role of anti-apolipoprotein A-I antibodies in atherosclerotic cardiovascular disease**

The major objectives of this study are to characterize the molecular components of the anti-ApoA-I antibody response in mice and patient serum samples and correlate their characteristics with cellular interactions, functional outcomes, and atherosclerosis progression.

- Role: Co-investigator

9. P0N27461800001666 (Talbert, J) 07/2019 - 06/2020 15% effort  
 KY Cabinet for Health and Family Services \$1,308,824  
**Research, Data Analytics, & Measurement of Program Outcomes: 1115 Waiver**  
 This work aims to use predictive analytics to model and predict future overdoses of Kentucky Medicaid beneficiaries using existing Medicaid claims and Kentucky All Schedule Prescription Electronic Reporting (KASPER) data.  
 - Role: Co-Investigator
8. 1R21AR070620-01 (Thraillkill, K) 07/2016 - 06/2019 2% effort  
 NIH/NIAMS \$285,139  
**Effects of sodium-dependent glucose co-transporter 2 inhibition on bone**  
 The objective of this proposal is to utilize several relevant rodent models to investigate potential mechanisms contributing to the adverse effects of SGLT2-inhibitor therapy on the skeleton.  
 - Role: Co-Investigator for Statistical Support
7. Noehren, B 08/2018 - 02/2019 5% effort  
 ICON Health and Fitness Incorporated \$24,127  
**Randomized Trial Testing Alterations in Biomechanics Due to Treadmill Design**  
 This grant aims to understand changes in biomechanics on three treadmill types.  
 - Role: Co-Investigator
6. Subcontract (Thompson, K) 07/2018 - 12/2018 20% effort  
 KY Cabinet for Health and Family Services \$36,166  
**Research, Data Analytics, & Measurement of Program Outcomes: 1115 Waiver**  
 This work aims to use predictive analytics to model and predict future overdoses of Kentucky Medicaid beneficiaries using existing Medicaid claims and Kentucky All Schedule Prescription Electronic Reporting (KASPER) data.  
 - Role: Principal Investigator; expected Funding Start Date: 9/30/18
5. 5P20GM103527-10 (Cassis, L) 09/2008 - 07/2018 2% effort  
 NIH/NIGMS \$1,499,999  
**Center of Research in Obesity and Cardiovascular Disease COBRE**  
 The major goal of this project is to develop a critical mass of funded investigators in the COCVD and expand and develop core facilities established during Phase I support.  
 - Role: Statistician
4. PON2 746 1600000805 (Talbert, J) 07/2016 - 06/2018 1% effort  
 KY Cabinet for Health and Family Services \$1,274,206  
**Research, Data Analytics, & Measurement of Program Outcomes: 1115 Waiver**  
 The overall research objectives identified as the focus for the scope of work are those articulated in the "Triple Aim": 1) Better healthcare for individual Medicaid/KCHIP beneficiaries, 2) Improved healthcare for the population (Medicaid/KCHIP), 3) Financial accountability and value-based decision making for healthcare resources.  
 - Role: Assist in Statistical Support
3. PP-1609-25975 (Stromberg, A) 03/2017 - 02/2018 4% effort  
 National Multiple Sclerosis Society \$39,164  
**Identifying gene or SNP based interactions in multiple sclerosis datasets**

The goal of this study is to use a novel statistical algorithm to perform secondary data analyses of multiple sclerosis data sets in order to identify gene-gene or SNP-SNP interactions that are associated with multiple sclerosis.

- Role: Co-Investigator

2. R305A120171-14 (Lorch, E) 03/2012 - 02/2016 2% effort  
 US Department of Education, IES  
**A Narrative Comprehension Intervention for Elementary School Children At-Risk for Attention-Deficit Hyperactivity Disorder**  
 The goal of this grant is to implement an intervention for children in elementary school identified as at-risk for attention-deficit hyperactivity disorder.  
 - Role: Statistician
  
1. Massarweh, S 04/2008 - 12/2015 2% effort  
 Novartis  
**A Phase II Study of Combined Fulvestrant (Faslodex) and Everolimus in Advanced/Metastatic Breast Cancer After Aromatase Inhibitor Failure**  
 This work aimed to study breast cancer tumors, including before and after particular treatments.  
 - Role: Statistician

## Invited Presentations

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- (*Upcoming*) “Machine learning methods: probability of correct model selection using  $R^2$  or AIC”, 18<sup>th</sup> International Joint Conference CFE-CMStatistics, Computational and Methodological Statistics (CMStatistics 2024), Computational and Financial Econometrics (CFE 2024), December 2024, King’s College London, UK.
- “Phylogenetic methods for quantitative trait mapping with complex data sets”, The Institute for Computational and Experimental Research in Mathematics, Brown University, October 2024, Providence, Rhode Island.
- “Predictive Modeling and Multiple Systems Estimation Methods for Opioid-Related Outcomes”, S<sup>3</sup>: Ingram Olkin Forum on Addressing the Opioid Crisis with Statistical Methodology, National Institute of Statistical Sciences Committee meeting, Virtual Presentation, September 2024.
- “Using  $R^2$ , Partial  $R^2$ , or AIC in Model Selection: What is the Probability of Being Right?”, Department of Mathematics and Statistics, South Dakota State University, Brookings, South Dakota, January 2024.
- “Improved Confidence Intervals for Partial  $R^2$ ”, Southern Regional Council on Statistics Summer Research Conference, Waco, Texas, June 2023. (*Presenter: Gregory S. Hawk*<sup>1</sup>)
- “Methodological Considerations for Prevalence Estimation Using Multiple Systems Estimation in Small Areas”, Eastern North America Spring Meeting, Nashville, Tennessee, March 2023.
- “Probability of Correct Model Choice Using  $R^2$  or AIC in Predictive Model Selection”, University of North Carolina-Asheville, Asheville, North Carolina, October 2022.
- “How to Collaborate with a Statistician”, NIH-funded KY-INBRE Webinar\*, October 2022. (*Co-Presented by Gregory S. Hawk*<sup>1</sup> and Dr. Arnold J. Stromberg)
- “Correct Model Selection in Big Data Analysis”, University of Kentucky Department of

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<sup>1</sup>denotes doctoral student co-author

Mathematics, Lexington, Kentucky, April 2019.

- “Research In the Precision Medicine Platform”, American Heart Association Scientific Sessions, Chicago, Illinois, November 2018.
- “Research Use Case In the Precision Medicine Platform”, American Heart Association Research Leader’s Academy, Salt Lake City, Utah, August 2018.
- “Correct model selection in multiple regression analyses of big data”, Kentucky Biomedical Research Infrastructure Network (KBRIN) Bioinformatics Retreat, Shaker Village, Kentucky, August 2017.
- “Extending phylogenetic methods for quantitative trait mapping for application to complex data sets”, Geometric Phylogenetics Minisymposium, SIAM Life Sciences meeting, Boston, Massachusetts, July 2016.
- “A phylogenetic model for quantitative trait mapping with complex data sets”, The Mathematics of Evolution (Special Session at the Fall Central Sectional Meeting of the American Mathematical Society), Loyola University, Chicago, Illinois, October 2015.
- “Quantitative trait mapping methods for complex data sets”, Department of Biostatistics and Bioinformatics, University of Louisville, Louisville, Kentucky, March 2015.
- “Connecting calculus and statistics using texting and genetics”, Math Club (Department of Mathematics), University of Kentucky, Lexington, Kentucky, March 2015.
- “Searching for genetic differences connected to variation in quantitative traits”, Department of Biology, Eastern Kentucky University, Richmond, Kentucky, February 2015.
- “Quantitative trait mapping in the presence of external covariates”, Kentucky Biomedical Research Infrastructure Network (KBRIN) Bioinformatics core at the University of Louisville, Louisville, Kentucky, November 2014.
- “Detecting genetic differences connected to variation in cardiovascular disease among patients”, University of Kentucky Saha Cardiovascular Research Center, Lexington, Kentucky, October 2014.
- “Tree-based Quantitative Trait Mapping in the Presence of External Covariates”, Kentucky Chapter of the American Statistical Association Meeting, Lexington, Kentucky, April 2014.

## Contributed Presentations

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- “Phylogenetic Derivative: a Tool for Assessing Local Tree Reconstruction”, Joint Statistical Meetings, Denver, Colorado, August 2019.
- “Correct model selection in big data analyses”, Joint Statistical Meetings, Vancouver, Canada, August 2018.
- “Using phylogenetic models for quantitative trait mapping with multiple loci”, Joint Statistical Meetings, Vancouver, Canada, July 2018.
- “Developing and Maintaining Biomedical Collaborations”, Women in Statistics and Data Science, Cincinnati, Ohio, October 2018 (*Panel organizer/moderator*).
- “Correct model selection in multiple regression analyses of big data”, Commonwealth Computational Summit, Lexington, Kentucky, October 2017.
- “Using phylogenetic models for quantitative trait mapping with multiple loci”, Joint Statistical Meetings, Baltimore, Maryland, August 2017.
- “A phylogenetic model for association mapping with multiple loci”, Joint Statistical Meetings, Chicago, Illinois, August 2016.
- “A phylogenetic method for quantitative trait mapping with complex data sets”, Joint Statistical Meetings, Seattle, Washington, August 2015.
- “Tree-Based Quantitative Trait Mapping in the Presence of External Covariates”, Joint



Statistical Meetings, Boston, Massachusetts, August 2014.

- “Population-based Association Analyses”, Genetics Analysis Workshop, Vienna, Austria, August 2014 (*Co-presenter*).
- “Using ancestral information to search for quantitative trait loci in genome-wide association studies”, Joint Statistical Meetings, Montréal, Quebec, August 2013.
- “A robust and efficient statistic for detecting heterogeneous cancer samples”, Joint Statistical Meetings, Miami Beach, Florida, August 2011.

## Poster Presentations

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- “Using the Feasible Solutions Algorithm to Identify Combinations of Genetic Factors Associated with Multiple Sclerosis”, National IDeA Symposium of Biomedical Research Excellence, Washington D.C., June 2018.
- “Probability of Correct Model Choice Using  $R^2$  or  $AIC$  in Model Selection”, Southern Regional Council on Statistics Summer Research Conference, Virginia Beach, Virginia, June 2018.
- “Modeling Interaction Effects in Genomic Data”, Southern Regional Council on Statistics Summer Research Conference, Bentonville, Arkansas, June 2016. (Presenter: Sarah Janse)
- “Tree-based Quantitative Trait Mapping in the Presence of External Covariates”, Women in Statistics Conference, Cary, North Carolina, May 2014.

## Administrative Leadership Experience

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**2023–Present, Predictive Analytics and Data Science (PADS) Hub Lead, Dr. Bing Zhang Department of Statistics, University of Kentucky.**

Major roles and responsibilities include:

- Lead and supervise team of 12-17 members: 2 full-time technical staff, 10-15 research assistants working in the PADS Hub
- Oversee completion of more than 150 projects per year
- Manage existing funded partnerships and pursue new funding opportunities
- Update the PADS Hub organizational structure as needed and to meet current demands, including the creation and elimination of positions
- Fulfill outreach requests for PADS Hub services
- Ensure that funding levels are appropriate for the requested amount of work and adjust partnership statuses as needed
- Also served as associate director from 2019–2023

**2019–2024, Director of Graduate Studies, Dr. Bing Zhang Department of Statistics, University of Kentucky.**

Major roles and responsibilities included:

- Facilitating first major graduate program curriculum and exam structure revision in over 15 years.
- Developing a marketing and recruitment plan for in-class graduate programs, deploying a multi-pronged approach with outreach to partner universities reaching over 100 undergraduate students in its first year.
- Serving as the sole academic advisor for approximately 20-30 MS and PhD students.

- Developing and maintaining infrastructure for two online professional programs (total enrollment: approximately 45-50 students).
- Developing and maintaining infrastructure for MS and PhD programs (total enrollment: approximately 30-50 students).
- Coordinating admissions process for MS and PhD programs among applicants, Graduate School, and Graduate Studies committee.
- Coordinating admissions process for online masters program among applicants, Graduate School, and Master of Applied Statistics committee.
- Overseeing and maintaining graduate certificate program.
- Working with department chair to manage funding for graduate student fellowships and travel support for over 50 MS and PhD students.
- Advising Statistics Graduate Student Association and providing support for networking and community building activities.
- Working as a liason for graduate education among the Graduate School, the College of Arts & Sciences, and International Studnet & Scholar Services
- Maintaining graduate program websites according to faculty feedback.

## Teaching Experience

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### *University of Kentucky:*

Statistics 692: Introduction to Statistical Consulting

- Spring 2024
- Class sizes: 14 students

Statistics 296: Statistical Methods & Motivations

- Fall 2017
- Class size: 124 students

Statistics 570: Basic Statistical Analysis

- Fall 2013, Fall 2014
- Class sizes: 47 students and 76 students, respectively

Statistics 603: Introduction to Linear Models and Experimental Design

- Spring 2014, Spring 2015, Spring 2016, Spring 2018, Spring 2019, Spring 2020, Spring 2021, Spring 2023
- Class sizes: 15 students, 14 students, 15 students, 13 students, 15 students, 11 students, 7 students, 7 students, respectively

Statistics 605: Computational Inference

- Fall 2013, Fall 2014, Fall 2015, Fall 2016, Fall 2017, Fall 2018
- Class sizes: 14 students, 14 students, 17 students, 15 students, 11 students, and 15 students, respectively

Statistics 607: Theory of Statistical Inference II

- Fall 2022, Fall 2023
- Class sizes: 4-7 students

Statistics 645: Introduction to Computational Theory & Data Visualization

- Developed course for new online professional Master of Applied Statistics degree

- Fall 2016, Fall 2019, Fall 2020, Fall 2021
- Class size: 5 students, 14 students, 5 students, 16 students respectively

Statistics 695: Special Topics in Statistical Theory

- Fall 2018
- Class size: 12 students

## Other Teaching Experience

*The Ohio State University:*

### Sole Instructor

- Statistics 4202: Introduction to Mathematical Statistics II (Spring 2013: 75 students)
- Statistics 420/4201: Introduction to Mathematical Statistics I (Autumn 2011: 71 students, Winter 2012: 165 students, Autumn 2012: 55 students)
- Statistics 427: Introduction to Probability and Statistics for Engineering and the Sciences I (Spring 2011: 57 students, Summer 2011: 82 students)
- Statistics 145: Introduction to the Practice of Statistics (Summer 2010: 85 students)

### Lecturer

- Statistics 145: Introduction to the Practice of Statistics (Autumn 2010: 143 students, Winter 2011: 135 students, Spring 2012: 52 students)

### Recitation Instructor

- Statistics 145: Introduction to the Practice of Statistics (Autumn 2009, Winter 2010, Spring 2010: 19 to 27 students)

### Other Teaching Roles

- Facilitator, University Center for the Advancement of Teaching, Summer 2012
- Instructor, Summer Bridge Program, Summer 2012
- Research Associate, Statistics Education, Summer 2012, Winter 2010
- Guest Lecturer, Statistics 603: Teaching of Statistics, Summer 2010, Summer 2011

## Student Supervision

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### Committee Chair

- Victoria Stanton (Statistics) – Passed qualification exam in Spring 2024
- Jiyeon Park (Statistics; co-advised by Arnold Stromberg) – Defended Spring 2024  
*Current Position:* Biostatistician, Medpace
- Lee Park (Statistics; co-advised by Arnold Stromberg) – Defended Spring 2024  
*Current Position:* Senior Associate Data Scientist, Travelers
- Gregory Hawk (Statistics; co-advised by Arnold Stromberg) – (Statistics) – Defended Spring 2022  
*Current Position:* Research Assistant Professor of Collaborative Statistics, Dr. Bing Zhang Department of Statistics Predictive Analytics and Data Science Hub, University of Kentucky

- Leon Su (Statistics) – (Statistics; Committee co-chair: Arnold Stromberg) – Defended Spring 2022  
*Current Position:* Resident Physician (PGY-1) at University of Pittsburgh Medical Center Anesthesiology
- Matthew Rutledge (Statistics; Committee co-chair: Arnold Stromberg) – Defended Fall 2020  
*Current Position:* Data Scientist @ Mayo Clinic
- Sarah Janse (Statistics; Committee co-chair: Arnold Stromberg) – Defended Fall 2017  
*Current Position:* Health, Safety & Wellbeing Insights, Learning & Assurance Manager, Fonterra, Wellington, New Zealand

### **Doctoral Committee Member – Current**

- Daniel Tuyisenge (Statistics)
- Kathryn Hechtel (Mathematics)
- Tianyi Wang (Statistics)
- Pengyuan Chen (Statistics)
- Tatiana Djafar (Rehabilitation and Health Sciences)
- Karalynne Cook (Epidemiology & Biostatistics)
- Jiacheng Xu (Statistics)

### **Doctoral Committee Member – Past**

- Swetalina Maity (Statistics) – Defended Summer 2024
- Shouryya Mitra (Statistics) – Defended Summer 2024
- Leiyue Li (Statistics) – Defended Summer 2024
- Kun Liu (Statistics) – Defended Summer 2024
- Shawn Nigam (Epidemiology & Biostatistics) – Defended Spring 2024
- Aviv Brokman (Statistics) – Defended Spring 2024
- Kathryn Hechtel (Mathematics) – Defended Spring 2024
- Dongying Zhan (Statistics) – Defended Fall 2023
- Changrui Liu (Statistics) – Defended Summer 2023
- Lei Fang (Statistics) – Defended Summer 2023
- Xitong Zhou (Statistics) – Defended Summer 2023
- Courtney George (Mathematics) – Defended Summer 2023
- Angela Hanson (Mathematics) – Defended Spring 2023
- Justin Barhite (Mathematics) – Defended Spring 2023
- Yanxi Li (Statistics) – Defended Spring 2023
- Andrew Anderson (Exercise Science) - Defended Summer 2023
- Margaret Gurtcheff (Doctorate of Musical Arts) – Defended
- Ya Qi (Statistics) – Defended Summer 2022
- Carissa Slone (Mathematics) – Defended Summer 2022
- Derek Hanely (Mathematics) - Defended Spring 2022
- Christine Williamitis (Nursing) – Defended Spring 2021
- Pei Wang (Statistics) – Defended Summer 2021
- Yan Xu (Statistics) – Defended Fall 2020
- Aisaku Nakamura (Statistics) – Defended Fall 2020
- Yue Cui (Statistics) – Defended Spring 2020
- Yuntong Li (Statistics) – Defended Spring 2020
- Tingting Zhai (Statistics) – Defended Spring 2020
- Xu Zhang (Statistics) – Defended Spring 2020

- Alejandro Villasante Tezano (Statistics) – Defended Summer 2019
- Qiwen Kang (Statistics) – Defended Spring 2019
- Zaid Al-Khaledi (Statistics) – Defended Spring 2019
- Amanda Ellis (Statistics) – Defended Fall 2017
- Caihong Li (Quantitative and Psychometric Methods) – Defended Fall 2018
- Jin Xie (Statistics) – Defended Fall 2018
- Isaiah Harney (Mathematics) – Defended Spring 2017
- Woodrow Burchett (Statistics) – Defended Spring 2017
- Rebecca Crouch (Statistics) – Defended Fall 2016
- Hongyuan Wang (Statistics) – Defended Fall 2016
- Hong Wang (Statistics) – Defended Fall 2016
- Grady Weyenberg (Statistics) – Defended Summer 2015

#### **Masters Committee Member**

- Jungjun Bae (Pharmaceutical Sciences) – Defended Spring 2023
- Brittany Camenisch (College of Dentistry) – Defended Spring 2018

#### **Outside Examiner**

- Zhengyan Huang (Epidemiology & Biostatistics) – Defended Spring 2019
- Nathan Pauly (Pharmaceutical Sciences) – Defended Spring 2018
- Jiaqi Liu (Mathematics) – Defended Summer 2017
- Yan Jin (Chemical and Materials Engineering) – Defended Spring 2016
- Carolyn Troha (Mathematics) – Defended Spring 2015
- Nicholas Armenoff (Mathematics) – Defended Spring 2015
- Sema Gunturkun (Mathematics) – Defended Spring 2014

## Professional Service

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### Discipline-wide and National Service

- 2024-Present President-Elect, Southern Regional Council on Statistics
- 2020-Present Grant Reviewer:  
*American Heart Association*  
*National Institutes of Health*  
*National Science Foundation*
- 2021-2024 Member, Strategic Outcomes Subcommittee, American Heart Association
- 2020-2023 Secretary, Southern Regional Council on Statistics
- 2019-2021 Early Career Representative, Bioethics Subcommittee,  
American Heart Association
- 2018-2020 Secretary, Kentucky Chapter of the American Statistical Association
- 2018 Session Chair, Joint Statistical Meetings, Vancouver, Canada
- 2017 Session Chair, KBRIN Retreat, Shaker Village, Kentucky
- 2017 Session Chair, Joint Statistical Meetings, Baltimore, Maryland
- 2016 Session Chair, Women in Statistics and Data Science Conference,  
Charlotte, North Carolina
- 2016 Session Chair, Southern Regional Council on Statistics Summer Research  
Conference, Bentonville, Arkansas
- 2015 Session Chair, Joint Statistical Meetings, Seattle, Washington
- 2014-Present Peer Reviewer:  
*Journal of Biometrics & Biostatistics,*  
*Journal of Molecular Evolution,*  
*Journal of Statistical Software,*  
*Statistical Analysis and Data Mining,*  
*Systematic Biology,*  
*Springer Statistics,*  
*Journal of the Royal Society Interface*

### **Outreach - Pre-College Students**

- 2022 Invited Panelist, Florence Nightingale Day (for ages 13 to pre-college), The Ohio State University, Columbus, Ohio
- 2016 Guest Speaker, Henry Clay High School Women in STEM Club, Lexington, Kentucky
- 2015 Invited Keynote Speaker, High School Mathematics Day for Women, “Genetics, texting, coffee, and sports: connections from statistics”, Department of Mathematics, University of Kentucky, Lexington, Kentucky.

### **Outreach - Undergraduate Students**

- 10/2022 “Graduate School and Career Opportunities in Data-Oriented Fields”, Clemson University Math Club, Clemson, South Carolina.
- 09/2021 “University of Kentucky: Successful Communication with your Program of Interest”, given via Zoom, University of Kentucky, September 2021.
- 01/2020 “Graduate School and Career Opportunities in STEM Fields”, Clemson University Math Club, Clemson, South Carolina.
- 10/2022 Director, Statistics Undergraduate Research Experience (SURE), Jekyll Island, Georgia.
- 10/2021 Director, Statistics Undergraduate Research Experience (SURE), Jekyll Island, Georgia.
- 06/2019 Director, Statistics Undergraduate Research Experience (SURE), Carrollton, Kentucky.

### **College and University Service**

- 2017-Present Member (*ex officio*), Institutional Animal Care and Use Committee (IACUC), University of Kentucky
- 2018-2019 Member, Digital Studies Bachelor of Arts Proposal Committee, College of Arts & Sciences, University of Kentucky
- 2021 Speaker, University of Kentucky Promotion and Tenure Workshop

### **Departmental Service**

- 2024-Present Chair, Department of Statistics Grants and Contracts Committee, University of Kentucky
- 2023-Present Chair, Predictive Analytics and Data Science Hub Committee, University of Kentucky
- 2024-Present Member, Department of Statistics Graduate Studies Committee, University of Kentucky
- 2024-Present, 2015-2019 Member, Department of Statistics Undergraduate Studies Committee, University of Kentucky
- 2022-2024 Member, Vasant P. Bhapkar Graduate Student Travel Award Selection Committee, University of Kentucky
- 2021-2024 Member, Department of Statistics Recruitment Committee, University of Kentucky
- 2019-2024 Chair, Department of Statistics Graduate Studies Committee, University of Kentucky
- 2019-2024 Chair, Department of Statistics Master of Applied Statistics Committee, University of Kentucky
- 2019-2024 Member, Department of Statistics Executive Committee, University of Kentucky
- 2022-2023 Member (*ex officio*), Department of Statistics Undergraduate Studies Committee, University of Kentucky
- 2022-2023 Chair, Department of Statistics Diversity, Equity and Inclusion Committee, University of Kentucky

- 2021-2022 Member, Department of Statistics Diversity, Equity and Inclusion Committee,  
University of Kentucky
- 2019-2023 Member, Applied Statistics Lab Committee, University of Kentucky
- 2018-2019 Co-chair, Department of Statistics Textbook Committee,  
University of Kentucky
- 2015-2019 Chair, Department of Statistics Computations and Technology Committee,  
University of Kentucky

### Conference Leadership

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- 2019 – 2024 Director, NSF-Funded Statistics Undergraduate Research Experience (SURE),  
Southern Regional Council on Statistics, Summer Research Conference
  - 2024: Clemson, South Carolina (16 participants)
  - 2023: Waco, Texas (18 participants)
  - 2022: Jekyll Island, Georgia (25 participants)
  - 2021: Jekyll Island, Georgia (33 participants)
  - 2019: Carrollton, Kentucky (37 participants)
- 2019 Director, Statistics Undergraduate Research Experience (SURE), Southern Regional  
Council on Statistics, Summer Research Conference, General Butler State Park Resort,  
Carrollton, Kentucky (37 participants)

### Workshop Leadership

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- 2024 Instructor, Data Analytics Workshop, Statistics Undergraduate Research Experience,  
Southern Regional Council on Statistics Summer Research Conference, Clemson,  
South Carolina (16 participants)
- 2023 Instructor, Data Analytics Workshop, Statistics Undergraduate Research Experience,  
Southern Regional Council on Statistics Summer Research Conference, Waco,  
Texas (18 participants)
- 2022 Instructor, Data Analytics Workshop, Statistics Undergraduate Research Experience,  
Southern Regional Council on Statistics Summer Research Conference, Jekyll  
Island, Georgia (24 participants)
- 2021 Instructor, Data Analytics Workshop, Statistics Undergraduate Research Experience,  
Southern Regional Council on Statistics Summer Research Conference, Jekyll  
Island, Georgia (33 participants)
- 2020 Instructor, Data Analytics Workshop, University of South Carolina Pi Mu Epsilon and  
Gamecock Math Club, Columbia, South Carolina
- 2020 Instructor, Data Analytics Workshop, University of Tennessee Math Club, Knoxville,  
Tennessee
- 2019 Instructor, Data Analytics Workshop, Statistics Undergraduate Research Experience,  
Southern Regional Council on Statistics Summer Research Conference, Carrollton,  
Kentucky (37 participants)
- 2017 Co-Instructor, Introduction to R Workshop, UT-KBRIN Bioinformatics Summit,  
Montgomery Bell State Park (over 60 participants)
- 2016 Instructor, Introduction to R for Biologists Workshop, College of Agriculture, Food, and  
Environment, University of Kentucky (over 50 participants)



- 2016 Instructor, Introduction to R and R Graphics Workshops, Quantitative Initiative for Policy and Social Research, University of Kentucky (approximately 20 participants)
- 2016 Team Leader, SNP Network Team, National Institutes of Health Genomics Hackathon, Bethesda, Maryland
- 2013 Instructor, R for Biologists Workshop, Department of Biology, University of Kentucky (approximately 25 participants)

### **Honors and Awards**

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- 2019-2020 Inclusion Fellow, College of Arts & Sciences, University of Kentucky
- 2018-2019 Inclusion Fellow, College of Arts & Sciences, University of Kentucky
- 2018 Mike Kutner Faculty Poster Session Winner, Summer Research Conference of the Southern Regional Council on Statistics, Virginia Beach, Virginia
- 2018 Junior Faculty/Isolated Statistician Travel grant, Summer Research Conference of the Southern Regional Council on Statistics, Virginia Beach, Virginia
- 2014 Travel Award, Women in Statistics Conference, Cary, North Carolina
- 2013 Craig Cooley Memorial Prize, Department of Statistics, The Ohio State University
- 2012-2013 Graduate Associate Teaching Award Recipient (university-wide award), The Ohio State University
- 2011 Koch Travel Award, Department of Statistics, The Ohio State University
- 2009-2010 Thomas and Jean Powers Teaching Award for Best Teaching Associate, Department of Statistics, The Ohio State University
- 2008-2009 University Fellowship Recipient, The Ohio State University
- 2008-2009 Battelle Fellowship Recipient, The Ohio State University
- 2006-2007 Gertrude Flora Ribble Research Scholar, University of Kentucky

### **Professional Affiliations**

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- 2018-Present Member, American Heart Association
- 2017-Present Member, Caucus for Women in Statistics
- 2010-Present Member, American Statistical Association