Curriculum Vitae

Sunil Mathur, Ph.D.

Chair and Professor

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Research Interests:

Dr. Mathur's training is in biostatistics and he works in the area of epidemiology and public health. He is the PI of two clinical/observational studies: childhood obesity and dementia. Dr. Mathur's research interests focus on both biostatistical applications and methodological development of biostatistics. His research interests include **childhood obesity, memory loss, epigenetics, cancer research, public health, nonparametric statistics, genomics, big data, and epidemiology**.

In the area of pediatric obesity, the number of children who are overweight and obese is increasing rapidly worldwide, and the World Health Organization has declared obesity as one of the largest epidemics of modern times. In order to combat the epidemic of childhood obesity, there is a pressing need to understand the association among different factors (genetic and non-genetic) and childhood obesity. He is working to establish the association of several factors and obesity among children and examine the moderating role of factors during pregnancy. Dr. Mathur is working in the area of lung cancer that is a second most common cancer among men and women (American Cancer Society, 2017), making it as a leading cause of death in the Unites States. He is exploring the association of lung cancer perception and other factors. In genomics, his application work is motivated by the recent developments in the analysis of genomic data where the sample sizes are usually very small and it is hard to make any distributional assumptions regarding the underlying data. Through his application work, he has found solutions to some of the complex problems in genomics. The test procedures developed by him are efficient as compared to their competitors. One of the unique qualities of these procedures is that they can be applied even when the sample size is small or distribution is unknown. A new generation of sequencing technologies and technological advances in other areas have led to the exponential growth of data and escalation in the detail of information, leading to big data problem. Dr. Mathur is developing methods to overcome statistical and computational challenges present in the big data. Dementia (memory loss) caused by damage to brain cells affects the ability of brain cells to communicate with each other altering thinking, behavior and feelings. Dr. Mathur's study will help in determining whether some particular factors have a role in dementia. In the nonparametric inference, he has been working on bivariate and multivariate location problems. In some of the papers, he proposed new methodologies for analyzing bivariate data using nonparametric procedures. He gives importance to setting up successful collaborations, and always welcomes new collaboration opportunities.

Awards/Fellowships:

- Elected Member, International Statistical Institute
- MomentUM Helping Hands Award, University of Mississippi, 2007
- Faculty Research Fellow Award, University of Mississippi, 2006, and 2007
- First Prize, Sigma Xi Research Poster Competition, University of Mississippi, 2007
- Nominated by the students for the award of "Best Teacher in Liberal Arts", 2005
- CSIR-UGC Junior Research National Fellowship Award, India, 1989-1992

Editing and Refereeing Activities:

- Associate Editor, *Journal of Applied Statistics*
- Academic Editor, *PLOS ONE*
- Associate Editor, *International Journal of Statistics and Systems*
- Associate Editor, *Global Journal of Pure and Applied Mathematics*
- Editorial Board Member, *Austin Journal of Public Health and Epidemiology*
- Editorial Board Member, *Global Journal of Medicine and Public Health*
- Editorial Board Member, *Journal of Collaborative Healthcare and Translational Medicine*
- Referee for international journals
- Reviewer for the undergraduate journal *QuaesitUM*

Professional Society Memberships:

- Elected Member, International Statistical Institute
- Mississippi Public Health Association
- International Biometric society
- American Statistical Association
- International Indian Statistical Association, USA

Data and Safety Monitoring Board:

- **Study Title**: A Placebo-Controlled, Observer-Blinded, Crossover Study to Evaluate the Safety and Effectiveness of a Single, Autologous, Cord Blood Stem Cell Infusion for the Treatment of Cerebral Palsy in Children, Role: Member, Agency: NIH

- **Study Title**: An Open Label, Multi-Center Study to Investigate the Safety of Cannabidiol, Role: Member, Agency: State of Georgia

Grant Proposal Review Panel:

- Lung Cancer Research Program MDP peer review panel, US Army Medical Research and Material Command
- Executive Agency for Higher Education, Research, Development, and Innovation Funding, Romania
- Multiple Sclerosis Society, UK

Post-Doctoral Supervision:

Dr. Deepak Sakate, PhD, Model Selection in Generalized Linear Modeling, July, 2015-June, 2016

Dissertations directed:

Ph.D. dissertations directed to completion

1. Sam Dolo, **Ph.D.**, title: **A Nonparametric Test for Scale in Univariate Population Setup**, University of Mississippi, **completed** in May 2006.
2. Pam Smith, **Ph.D**., title: **An Efficient Nonparametric Test for Bivariate Two-Sample Location Problem**; University of Mississippi, **completed** in July 2006.
3. Sankar Bokka, **Ph.D**., title: **Statistical Tests for the Identification of Differentially Expressed Genes,** University of Mississippi, **completed** in August 2006.

Publications:

Books:

Statistical Bioinformatics with R, *Academic Press***,** USA, January 2010**.**

Research Papers (Selected):

A. Papers:

- Williams, L., Bourgault, A.B., Valenti, M., and **Mathur, S. K.** (2017). Factors Associated with Nursing School Satisfaction, NCLEX Success and Intent to Pursue Advanced Education Among Underrepresented Minority Accelerated Nursing Students. *Journal of Nursing Education*, in press.
- **Mathur, S.K., and** Sakate, D.M. (2017). A new test for two-sample location problem based on empirical distribution function. *Communications in Statistics – Theory and Methods*. In press. http://dx.doi.org/10.1080/03610926.2017.1295158
- Williams LB, Howie M, **Mathur S**, Valenti M. (2017). Eighteen Nurse Researchers Receive Funding to Study Impact of the New Careers in Nursing Program. *Journal of Professional Nursing*, 33(1), 3-4.
- Mathur, S., Pollock, J., **Mathur S.K.**, Harshfield, G., Pollock, D. (2017). Relation of Urinary Endothelin-1 to Stress-Induced Pressure Natriuresis in Healthy Adolescents. *Journal of the American Society of Hypertension*, in press.

- **Mathur, S.K.,** Sakate, D.M, and Datta, S. (2016). New Scale-Invariant Nonparametric Test for Two-Sample Bivariate Location Problem with Application. *The Proceedings of the International Conference on Robust Rank-Based and Nonparametric Methods* (Refereed paper). Editors: McKean and Liu, Pages 219-231.
- Stansfield, B., Wise, L., Ham, B., Patel, P., Parman, M., Wall, D., Burdette, C., Dudley, D., Parker, P., Curry, E., **Mathur, S.,** & Bhatia, J. (2017). Outcomes Following Routine Antithrombin III Replacement during Neonatal Extracorporeal Membrane Oxygenation, *Journal of Pediatric Surgery*, 52(4), 609-613.
- Devos, H Backus, D., Ranchet, M., **Mathur, S.**, Neal, E., Akinwuntan, AE (2017). Determinants of Determinants of On-road Driving in Multiple Sclerosis. *Archives of Physical Medicine and Rehabilitation*, 98s (7), 1332-1338.
- **Mathur, S.K.,** and Sadana, A. (2015). Finding Differentially Expressed Genes in High Dimensional Data: Rank Based Test Statistic via a Distance Measure. *Statistical Methods in Medical Research*, 24 (6), 968-979.
- Rojiani MV, Ghosal-Gupta S, Kutiyanawalla A, **Mathur S.K.**, Rojiani AM (2015). TIMP-1 Overexpression in Lung Carcinoma Enhances Tumor Kinetics and Angiogenesis in Brain Metastasis. *Journal of Neuropathology & Experimental Neurology*, 74 (4), 293–304.
- Stewart, DL, Dong, Y, **Mathur, S.K.**, Sullivan, J., Webb, C., McCarthy, C., Ergul, A., Harshfield, GA. (2015). Effects of Behavioral Stress and Angiotensin II Receptor Inhibition on Damage-Associated Molecular Patterns. From Cells to Community and Back, *American Psychosomatic Society*, 103, 51, A2752.
- Harshfield, G., Hanevold, C., Stewart, D., Dong, Y., **Mathur, S.K.** (2015). Impact of Angiotensin Receptor Blocker on Stress-Related Salt Sensitivity in African-Americans, *Council on Hypertension, 358,* P641.
- Gauthier, T, Suda, K. J., **Mathur, S.K.**, Harriman, D., Pham, J., Aragon, L, Abbo, L., and Hooton, T. (2015). Free antibiotic and vaccination programs in community pharmacies of Miami-Dade County, Florida, USA. *Journal of Antimicrobial Chemotherapy***,** 70 (2): 594-597.
- **Mathur, S.K.**, Singh, N., Suda, K.J. (2014). Association of Risk Perception and Information Provided on the Labels of Over-the-Counter Drugs: Role of Race, Education, Age and Income. *Epidemiology, Biostatistics and Public Health* (formerly *Italian Journal of Public Health*), DOI: http://dx.doi.org/10.2427/9159.
- Suda, K., Sterling, J.M., Guirguis, A.B. and **Mathur, S.K**. (2014). Academic Performance after Implementation of a Blended Learning Approach to a Drug Information and Literature Evaluation Course. *Currents in Pharmacy Teaching and Learning,* 6(3), 367-372.
- **Mathur, S.K**., and Levy, M. (2013). Lung cancer risk perception and distress: difference by smoking status, and role of physical activity and race among US population. *Epidemiology Biostatistics and Public Health* (Formerly *Italian Journal of Public Health*), **10**(2), DOI: 10.2427/8839**.**
- **Mathur, S.K**., Levy, M., and Stafford, M.B.R (2013). The Role of Cancer Information Seeking Behavior in Developing and Disseminating Effective Smoking Cessation Strategies: A Comparison of Current Smokers, Former Smokers and Never Smokers. *Journal of Communication in HealthCare*, **6**(1), 61-70.

- Haron, M.H., Avula, B., Walker, L.A., Khan, I.A., **Mathur, S.K.,** Dasmahapatra, A.K. (2013). Modulation of Ethanol Toxicity by Asian Ginseng (Panax Ginseng) in Japanese Ricefish (Oryzias latipes) Embryogenesis. *Comparative Biochemistry and Physiology Part C: Toxicology & Pharmacology*, **157**, 287–297.
- **Mathur, S. K.** and Sepehrifar, M. (2013). A New Signed Rank Test Based on Slopes of Vectors for Bivariate Location Problems. *Statistical Methodology*, Volume 10, Issue 1, 72–84.
- **Mathur, S.K.,** and Sadana, A. (2011). A Rank Based Test for Detecting a Shift in Location with Applications to Genomics. In *Some Recent Developments in Statistical Theory and Applications*, *Proceedings of the International Conference on Recent Developments in Statistics, Econometrics and Forecasting, (Peer Reviewed article),* Sydney Australia, Kuldeep Kumar and A. Chaturvedi (Editors), 110-119.
- **Mathur, S.K.** (2010). A Nonparametric Bayesian Test for Detecting the Difference in Location Parameters. *American Institute of Physics Proceedings (Peer Reviewed article)* of 29th International Conference on Bayesian Inference and Maximum Entropy Methods in Science and Engineering, 382-389.
- **Mathur, S. K.** (2009). A Run based Procedure to Identify Time-lagged Gene Clusters in Microarray Experiments. *Statistics in Medicine*, **28 (2)**, 326-337.
- **Mathur, S.K.** (2009). A New Nonparametric Bivariate Test for Two-Sample Location Problem. *Statistical Methods and Applications*, **18** (3), 375-388.
- **Mathur, S.K.**, and Smith, P.F. (2008). An Efficient Nonparametric Test for Bivariate Two-Sample Location Problem, *Statistical Methodology,* **5 (2)**, 142-159.
- **Mathur, S.K**. and Dolo, S. (2008). A new Efficient Statistical Test for Detecting Variability in the Gene Expression Data, *Statistical Methods in Medical Research*, **1**7, 405-419.
- **Mathur, S.K**. and Dolo, S. (2007). A Nonparametric Test for Scale in Univariate Population Setup, *Model Assisted Statistics and Applications,* **2(3)**, 145-152.
- Bokka, S. and **Mathur, S.K**. (2006). A Nonparametric Likelihood Ratio Test to Identify Differentially Expressed Genes from Microarray Data. *Applied Bioinformatics*, **5(4)**, 267-276.
- Doke, A, **Mathur, S.K**. and Sadana, A. (2006). Fractal Analysis of Heart-Related Compounds, *Journal of Receptors and Signal Transduction*, **26**, 337-351.
- **Mathur, S.K**., Doke, A. and Sadana, A (2006). Identification of Hair Cycle-Associated Genes from Time-Course Gene Expression Profile using Fractal Analysis. *International Journal of Bioinformatics Research and its Applications,* **2**(3), 249-258.
- **Mathur, S.K.** (2005). A Robust Statistical Method for Identification of Differentially Expressed Genes, *Applied Bioinformatics,* **4**(4), 247-252.
- **Mathur, S.K**. and Wang, S. (2005). On the Power of a Test Statistic, *Model Assisted Statistics and Applications,* **1(**2**)**, 131-136.
- **Mathur, S.K**. (2004). A Nonparametric Test for Two-Sample Location Problem, *Journal of Statistical Research*, **38(2)**, 121-134.
- Sen, K. and **Mathur, S.K**. (2002). A Bivariate Test for Two Sample Location Problem, *Recent Advances in Statistical Research (Peer Reviewed book article),* Editors M. Agarwal and K. Sen, Narosa Publications, 365-375.

- Sen, K. and **Mathur, S.K**. (2000). A Test for Bivariate Two Sample Location Problem, *Communications in Statistics, Theory and Methods*, **29(2),** 417-436.
- Sen, K. and **Mathur, S.K**. (1997b). A Two Sample Signed Rank Test for Location, *Journal of Statistical Studies*, **17**, 50-58.
- Sen, K. and **Mathur, S.K**. (1997a). A Bivariate Signed Rank Test for Two Sample Location Problem, *Communications in Statistics, Theory and Methods, Theory and Methods*, **26(12)**, 3031-3050.
- Sen, K. and **Mathur, S.K**. (1996). Signed Rank Test for Two Sample Location Problem, *Journal of Statistical Studies*, **16**, 17-24.

Conference/ Session Organized/Chaired:

- **Session organizer and Chair:** *International Indian Statistical Association (IISA): From Data to Knowledge, Working for a Better World*, May 17- 20, 2018.
- **Session organizer and Chair:** *International Conference on Advances in Interdisciplinary Statistics and Combinatorics - October 6-8, 2018*.
- **Session organizer and Chair: 2017** *Joint Statistical Meeting*, American Statistical Association, Baltimore, July 29- August 3, 2017
- **Local Organizing Committee Chair:** ASA-Chapter Meeting, Augusta University, February 10, 2017
- **Joint Statistical Meeting, American Statistical Association**, Chicago, July 30- August 4, 2016
  Mathur, Sunil: **Discussant**: Recent Statistical Developments in Cancer Research
  Mathur, Sunil: **Chair**: Biomedical Applications of Nonparametric Methods
- **Session organizer and Chair: 2016** International Indian Statistical Association (IISA) Conference on "Statistical and Data Sciences: A key to healthy people, planet and prosperity" Oregon State University, USA, August 18–21, 2016
- **Session organizer and Chair:** *International Conference on Mathematics and Statistics (ICOMAS-2012), University of Memphis, May 15-18, 2012.*
- **Session organizer and Chair:** *International Conference on Advances in Interdisciplinary Statistics and Combinatorics, North Carolina*, October 5-7, 2012
- **Session organizer and Chair:** *International Conference on Interdisciplinary Mathematical & Statistical Techniques*
  IMST 2008 / FIM XVI, 15 May - 18 May 2008, Department of Mathematical Sciences, University of Memphis, Tennessee.
- **Session organizer and Chair:** *International Conference on Advances in Interdisciplinary Statistics and Combinatorics*, October 12-14, 2007, University of North Carolina, Greensboro, NC.
- **Session organizer and Chair:** *Joint Statistical Meeting and International Conference on Statistics, Probability and Related Areas*, Jan 2- 5, 2007, Cochin, India.
- **Session organizer and Chair:** *12th International Conference on Statistics, Combinatorics, Mathematics and Applications*, December 2-4, 2005, Auburn, Alabama, organized and chaired four sessions, totaling 12 lectures.

Workshops Attended:

- **Regression Modeling Strategies**, International Biometric Society, ENAR Spring Meeting, Washington DC, April 1-4, 2012.
- **Numerical Methods for Hyperbolic Equations with Applications to Shallow Water Flows,** National Center for Computational and Hydroscience, The University of Mississippi, Jul 15-17, 2009.
- **Genetic and Microarray Data Analysis,** Joint Statistical Meetings, Denver, August 3-7, 2008**.**
- **Semiparametric Theory and Missing Data,** International Biometric Society, ENAR Spring Meeting, Atlanta, March 11-14, 2007.
- **Writing Statistical Grants**, International Biometric Society, ENAR Spring Meeting, Atlanta, March 11-14, 2007.
- **Introduction to Microarray Technology**, Experimental Design and Data Analysis, International Biometric Society, ENAR Spring Meeting, Tampa, Florida, March 23-26, 2006.
- The Second Two-days **Workshop on Monte Carlo Methods**, Department of Statistics, Harvard University, August 2004.
- **Seventh Annual Winter Workshop** on Longitudinal Data Analysis, Department of Statistics, University of Florida, January 6-8, 2005.
- American Statistical Association Workshop, **NONPARAMETRIC STATISTICS: FRONTIER**, Department of Statistics, Texas A&M University, January 14 and 15, 2005.
- **BLAST Quick Start,** LocusLink/Entrez Gene, Map Viewer Quick Start, Making Sense of DNA and Protein Sequences, two days workshop organized by NCBI (NIH) at University of Mississippi, July 2004.