

Shyamal D. Peddada
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Education

BSc (HONS MATH)	1977	University of Delhi, Delhi, INDIA
MSc	1980	Indian Agricultural Research Institute, New Delhi, INDIA
MA	1981	University of Pittsburgh, Pittsburgh, PA
PhD	1983	University of Pittsburgh, Pittsburgh, PA [Dissertation advisor: Professor C. R. Rao]

Brief Chronology of Employment

1983 – 1986: Assistant Professor, Department of Mathematics, Central Michigan University, MI.

1986 -- 1989: Assistant Professor, Department of Mathematics & Statistics, University of Nebraska, NE.

1989 -- 1993: Assistant Professor, Department of Statistics, University of Virginia, VA.

1993 -- 1999: Tenured Associate Professor, Department of Statistics, University of Virginia, VA.

1999 -- 2004: Tenured Full Professor, Department of Statistics, University of Virginia, VA.

2000 -- 2017: [Tenured Senior Investigator, 2007] Biostatistics Branch, National Institute of Environmental Health Sciences (NIEHS), Research Triangle Park, NC.

2017 – 2020: Professor and Chair, Department of Biostatistics, Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA

2020 – 2022: Senior Investigator and Chief, Biostatistics and Bioinformatics Branch, *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), Bethesda, MD.

2022 -- Present: Senior Investigator and Deputy Chief, Biostatistics and Computational Biology Branch, National Institute of Environmental Health Sciences (NIEHS), Research Triangle Park, NC.

Adjunct Appointments

2004 – 2017: Adjunct Full Professor, Department of Biostatistics, UNC, Chapel Hill, NC

2013 – 2017: Adjunct Full Professor, Department of Statistics, NC State University, Raleigh, NC

Research and Professional Interests

- **Theory and Methods:** Analysis of High Dimensional Data, Bioinformatics, Constrained Inference, Linear & Nonlinear Regression models, Microbiome.
- **Applications:** Cell and Circadian Biology, Environmental Health, Microbiome, Toxicology.

Professional Memberships

American Statistical Association

Awards & Honors

- Statistician of the Year (2019). ASA Pittsburgh Chapter.
- Indian Society of Agricultural Statistics P.V. Sukhatme Gold Medal Award (2013)
- Elected Member of the International Statistical Institute (2006)
- Elected Fellow of the American Statistical Association (2005)

“For broadening the scope of applications in statistics through excellence in consulting and innovative methodological research in order restricted inference, tracking of Arctic sea ice and gene expression microarrays.”

- American Statistical Association’s Outstanding Statistical Application Award (1997)

“For representing excellent statistical work applied to two important natural phenomena, namely, problems of interest to polar scientists investigating the motion of the ice pack in the north pole, questions encountered by geoscientists studying the motion of tectonic plates.”

- Nominated for the Excellence in Teaching Award, Central Michigan University, 1985
- Indian Agricultural Statistics Research Institute, Junior Research Fellow, 1977-1979

Editorial and review work

- Academic Editor (2012 - 2020): *PLOS One*.
- Associate Editor (2013 - 2018): *Test*.
- Associate Editor (2005-2011): *J. Amer. Statist. Assoc. – Theory & Methods*.
- Editorial Board Member (2012-2018): *Toxicologic Pathology*.
- Associate Editor (2008 - 2013): *Statistics and Probability Letters*.
- Associate Editor (2008 - 2018): *Sankhya – Ser. B*.
- Associate Editor (2008 - 2020): *J. Ind. Soc. Ag. Statistics*.
- Guest Editor:
 - (Joint with) Khattree R. (2001). *Commun. in Stats., Theory & Methods*, 30, No. 8-9, 1497-1968.
 - Assistant Guest Editor (2002). *Journal of Statistical Planning and Inference*, 103, No. 1-2, 1-472.
 - (Joint with) Prasad R, Crossa J. (2010). *J. Indian Soc. Ag. Stat.* 64(1).
 - (joint with) Satish Iyengar (2020). *Sankhya Ser. B. C. R. Rao Special volume*
- Book Review Editor (1998- 2000): *Journal of Statistical Planning and Inference*.
- Reviewer of manuscripts:
 - Statistics and mathematics journals: American Mathematical Monthly, American Mathematical Reviews, American Statistician, Annals of Institute of Statistical Mathematics, Annals of Statistics, Biometrics, Canadian Journal of Statistics, Communications in Statistics, Environmetrics, Journal of American Statistical Association, Journal of Indian Soc. of Ag. Stat., Journal of Multivariate Analysis, Journal of Biopharmaceutical Statistics, Journal of Royal Statist. Society- C, Mathematical Methods of Statistics, Metrika, Metron, Sankhya, Statistica Sinica, Statistics and Decisions, Statistics in Medicine, Statistics and Probability Letters.

- Non-statistics journals: Amer. J. Epidemiology, Bioinformatics, BMC Bioinformatics, BMC Systems Biology, Chemosphere, Developmental and Reproductive Toxicology, J. of Biomedical Informatics, J. Proteomics and Bioinformatics, Physiol. Genomics, PLOS-One, Science, Microbiome, Nature Medicine, Nature Communications, PNAS, Toxicologic Pathology.
- Reviewer of research grant proposals submitted to:
 - National Science Foundation (NSF).
 - National Security Agency (NSA).
 - National Science and Engineering Research Council (NSERC) - Canada.
 - Israel Science Foundation.

Other Professional Activities

- Virginia Chapter of the American Statistical Association
 - Vice-President, 1996 – 1997.
 - President, 1997 - 1998.
- Member of the Regional Advisory Board, ENAR, International Biometric Society
January 1, 2006 to December 31, 2008.
- Chairman, Current Index to Statistics Management Committee
January 1, 2011 to December 31, 2013.
- Member of JASA (Theory & Methods) Editor Search Committee (2012)
- Sessional President, Indian Society of Agricultural Statistics
January 1, 2012 to December 31, 2012.
- Conferences and Workshops Organized
 - Co-organizer of an international conference entitled *Statistics: Reflections on the past and visions for the future*, in honor of Professor C. R. Rao on his 80th birthday. San Antonio, TX, 2000.
 - Co-organizer of special invited session and a 2-day workshop on Bioinformatics at the *International Conference on the Future of Statistical Theory, Practice and Education*. This conference was co-sponsored by the American Statistical Association, the Institute of Mathematical Statistics and IISA. Hyderabad, India. December, 2004.
 - Instructional Workshop in Bioinformatics and Drug Discovery at Univ. of Hyderabad, India. December, 2007.
- Invited panelist at the Herrenhausen Symposium on Exploring the Microbiome in Health and Disease, organized by the Editors of Nature Medicine. May 7-8, 2018, Herrenhausen Palace Conference Centre Hanover, Germany.

Trainees

A. Ph.D. dissertation advisees

- Todd A. Smith (University of Virginia, May, 1994). “Statistical Inference in Linear Models under Heteroscedasticity.”
- Robert J. McDevitt (University of Virginia, May, 1996). “Automated Tracking of the Ice Floes Using Nonhomologous Regression and Local Geometric Information.”
 - **Recipient of the American Statistical Association’s Outstanding Statistical Application Award (1997).**

- Juan Zhang (University of Virginia, May, 1997), “Analysis of Nonlinear Fixed and Random Effects Models with Applications to Statural Growth and Hormonal Changes in Boys at Puberty.”
 - **Recipient of ENAR travel Award (1997).**
- Xiaofeng Tan (University of Virginia, May, 1997), “Statistical Inference for Parameters Subject to Order Restrictions.”
- Carol Hoferkamp (University of Virginia, May, 1999), “Analysis of Fixed and Mixed Effects Linear Models under Heteroscedasticity.”
- Katherine Prescott (University of Virginia, May, 2000), “Tests for Ordered Alternatives in Generalized Linear Models.”
- Stephanie Velez (University of Virginia, PhD. May, 2000), “Order Restricted Inference with an Application to Phase I Studies in Oncology.”
- Josh Betcher (University of Virginia, May 2004), “Statistical Inference Under Order Restrictions With Applications.”
- Changwon Lim (University of North Carolina, Chapel Hill, May 2009). “Statistical Theory and Robust Methodology for Nonlinear Models with Application to Toxicology.”
- Laura Farnan (University of North Carolina, Chapel Hill, December 2011), “Estimation and testing of parameters under constraints for correlated data.”
- Siddhartha Mandal (University of North Carolina, Chapel Hill, 2012). “Functional data analytic methodology for dynamic systems governed by differential equations with applications to toxicology.”
 - **Recipient of an ENAR distinguished student paper award (2012).**
- Huang Lin (University of Pittsburgh, Pittsburgh, 2020). Dissertation topic: “Analysis of Compositions of Microbiomes with Applications.”

B. Post-doctoral trainees

- Dr. Wenge Guo (2007-2009).
- Dr. Changwon Lim (2009-2011).
- Dr. Richard White (2011 – 2013): Located in Oslo, Norway. Jointly mentored with Dr. Merete Eggesbo, Department of Genes and Environment, Division of Epidemiology, Norwegian Institute of Public Health, Oslo, Norway.
- Dr. Siddhartha Mandal (2012 – 2015): Located in Oslo, Norway. Jointly mentored with Dr. Merete Eggesbo, Department of Genes and Environment, Division of Epidemiology, Norwegian Institute of Public Health, Oslo, Norway.
- Dr. Casey Jelsema (2013 - 2015).
- Dr. Shuva Gupta (2014 – 2015).
- Dr. Abhishek Kaul (2015 - 2017).
- Dr. Byunngwon Kim (2018 – 2019).
- Dr. Huang Lin (2021 – 2023).
- Dr. Siddharth Rawat (2023 – Present)
- Dr. Sabyasachi Bera (2023 – Present)

C. Summer and other interns

- Mr. Eric Teoh (2005). Graduate student. Department of Biostatistics, University of North Carolina, Chapel Hill, NC.
- Ms. Tammy Greasby (2006). Graduate student. Department of Biostatistics, University of California, Davis, CA.
- Mr. Shashank Kommaraju (2009). Enloe High School, Raleigh, NC.
- Mr. Sai Cheemalapati (2011). Panther Creek High School, Cary, NC.
- Ms. Gaelle Romain (2014). MS student, University of Nantes, Nantes, France.
- Ms. Hannah Back (2023). Graduate student. Department of Statistics, University of Iowa.

Statistical Consulting and Related Activities

- Department of Statistics, University of Virginia (1992-2000).
 - Directed the statistical consulting service and taught courses on statistical consulting during various semesters.
- National Institute of Environmental Health Sciences (2000-present).
 - Statistical consulting service (2000-present).
 - Director of the statistical consulting service (2004 – 2012).
- Member of the Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM) Endocrine Disruptor Peer Review Panel, 2002.
- Statistician on a “Rat uterotrophic assay” conducted by the Organization for Economic Cooperation and Development (OECD), Paris, France, 2000-2002.

Statistical Software

Several software developed in this research program available at:

<http://www.niehs.nih.gov/research/atniehs/labs/bb/staff/peddada/index.cfm>

Some prominent software packages:

- Order Restricted Inference for Ordered Gene Expression (ORIOGEN) for analyzing gene expression data. Programmed by Shawn Harris and John Zaid, SRA.
- R code for Random Periods Model. Programmed by Mr. Sai Cheemalapati, High School Summer Intern.
- Analysis of Composition of Microbiomes (ANCOM) for analyzing microbial compositions. Programmed by Dr. Siddhartha Mandal and Dr. Casey Jelsema. Available through QIIME2
- Constrained Linear Mixed Effects (CLME) for analyzing mixed and fixed models under inequality constraints. Programmed by Dr. Casey Jelsema.
- Analysis of Compositions of Microbiomes with Bias Correction (ANCOM-BC). Programmed by Dr. Huang Lin. Available through QIIME2.

Refereed journal publications

Statistical theory, methodology and applications

Lin, H, **Peddada, SD** (2023). Multi-group Analysis of Compositions of Microbiomes with Covariate Adjustments and Repeated Measures. **Nature Methods**, *Nat Methods* **21**, 83–91.

Rahman G, McDonald D, Gonzalez A, Vázquez-Baeza Y, Jiang L, Casals-Pascual C, Hakim D, Dillmore AH, Nowinski B, **Peddada S**, Knight R. (2023). Determination of Effect Sizes for Power Analysis for Microbiome Studies Using Large Microbiome Databases. *Genes* (Basel). 9;14(6):1239.

Lin, H., Eggesbø, M., **Peddada, SD** (2022). Linear and nonlinear correlation estimators unveil undescribed taxa interactions in microbiome data. **Nature Communications** **13**, 4946. <https://doi.org/10.1038/s41467-022-32243-x>

Yin Q, Xun X, **Peddada SD** and Adibi J (2021). Shape Detection Using Semi-Parametric Shape-Restricted Mixed Effects Regression Spline with Applications. **Sankhya Ser. – B**, 83B, S65-S85.

Lin H, **Peddada SD** (2020). Analysis of microbial compositions: a review of normalization and differential abundance analysis. Nature publication: **npj Biofilms Microbiomes**, **6**, 60. <https://doi.org/10.1038/s41522-020-00160-w>

Lin H., **Peddada SD** (2020). Analysis of compositions of microbiomes with bias correction. **Nature Communications**, **11**, 3514. <https://doi.org/10.1038/s41467-020-17041-7>.

Larriba Y, Rueda C, Fernández MA, **Peddada SD** (2019). Order Restricted Inference in Chronobiology. **Statistics in Medicine** **39** (3), 265-278.

Rueda C, Larriba Y, **Peddada SD** (2019). Frequency Modulated Möbius Model Accurately Predicts Rhythmic Signals in Biological and Physical Sciences. **Scientific Reports** **9** (1), 1-10.

Iszatt N, Janssen S, Lenters V, Dahl C, Stigum H, Knight R, Mandal S, **Peddada SD**, Gonzalez A, Midtvedt T, Eggesbo M (2019). Environmental toxicants in breast milk of Norwegian mothers and gut bacteria composition and metabolites in their infants at 1 month. **Microbiome** **7** (1), 34.

Preterm infants have distinct microbiomes not explained by mode of delivery, breastfeeding duration or antibiotic exposure (2018). Dahl C, Stigum H, Valeur J, Iszatt N, Lenters V, **Peddada SD**, Bjørnholt JV, Midtvedt T, Mandal S, Eggesbø M. **International Journal of Epidemiology** **47** (5), 1658-1669.

Shockley KR, Gupta S, Harris SF, Lahiri SN, and **Peddada SD** (2019). Quality Control of Quantitative High Throughput Screening Data. **Frontiers in Genetics**. [//doi.org/10.3389/fgene.2019.00387](https://doi.org/10.3389/fgene.2019.00387)

Jelsema C, Kwok R, **Peddada SD** (2019). Threshold knot selection for large-scale spatial models with applications to the Deepwater Horizon disaster. **J. Statist. Comp. Simulation**. [//doi.org/10.1080/00949655.2019.1610884](https://doi.org/10.1080/00949655.2019.1610884)

Davidov O, Jelsema CM, **Peddada SD** (2018). Testing for Inequality Constraints in Singular Models by Trimming or Winsorizing the Variance Matrix. **J. Amer. Statist. Assoc.** DOI: 10.1080/01621459.2017.1301258

Larriba Y, Rueda C, Fernandez MA, **Peddada SD** (2018). A Bootstrap Based Measure Robust to the Choice of Normalization Methods for Detecting Rhythmic Features in High Dimensional Data. **Frontiers Genetics**, doi.org/10.3389/fgene.2018.00024.

Kaul A, Mandal S, Davidov O, **Peddada SD** (2017). Analysis of Microbiome Data in the Presence of Excess Zeros. **Frontiers in Microbiology**, doi: [10.3389/fmicb.2017.02114](https://doi.org/10.3389/fmicb.2017.02114).

Weiss S, Xu ZZ, **Peddada SD**, Amir A, Bittinger K, Gonzalez A, Lozupone C, Zaneveld JR, Vázquez-Baeza Y, Birmingham A, Knight R (2017). Normalization and microbial differential abundance strategies depend upon data characteristics. **Microbiome**. DOI: 10.1186/s40168-017-0237-y.

Kaul A, Davidov O, **Peddada SD** (2017). Structural zeros in high-dimensional data with

applications to microbiome studies. **Biostatistics**. doi:10.1093/biostatistics/kxw053.

Mandal S, Godfrey KM, McDonald D, Treuren WV, Bjornholt JV, Midvedt T, Moen B, Rudi K, Knight R, Brantsaeter AL, **Peddada SD**, Eggesbo M (2016). Fat and vitamin intakes during pregnancy have stronger relations with a pro-inflammatory maternal microbiota than does carbohydrate intake. **Microbiome**. DOI: 10.1186/s40168-016-0200-3.

Larriba Y, Rueda C, Fernandez M, **Peddada SD** (2016). Order Restricted Inference for Oscillatory Systems for Detecting Rhythmic Signals. **Nucleic Acids Research**. DOI: 10.1093/nar/gkw771.

Rueda C, Fernandez MA, Barragan S, Mardia KV, **Peddada SD** (2016). Circular piecewise regression with applications to cell-cycle data. **Biometrics**, DOI: 10.1111/biom.12512.

Jelsema C, **Peddada SD** (2016). An R Package for Linear Mixed Effects Models under Inequality Constraints. **Journal of Statistical Software**. DOI: 10.18637/jss.v075.i01.

Grandhi A, Guo W, **Peddada SD** (2016). A multiple testing procedure for multi-dimensional pairwise comparisons with application to gene expression studies. **BMC Bioinformatics**, 17:104 DOI: 10.1186/s12859-016-0937-5.

Mandal S, Van Treuren W, White RA, Eggesbø M, Knight R, **Peddada SD** (2015). Analysis of composition of microbiomes: a novel method for studying microbial composition. **Microbial Ecology in Health and Disease**, 26, 1 – 7.

Barragan S, Rueda C, Fernandez MA, **Peddada SD** (2015). Determination of temporal order among the components of an oscillatory system. **PLOS One**, doi: 10.1371/journal.pone.0124842.

Zhao H, **Peddada SD** and Cui X (2015). Mixed Directional False Discovery Rate Control in Multiple Pairwise Comparisons Using Weighted P-values. **Biometrical Journal**.57, 144-158.

Farnan L, Ivanova A, **Peddada SD** (2014). Constrained Inference in Biological Sciences: Linear Mixed Effects Models Under Constraints. **PLOS One** 9(1) e84778. doi:10.1371/journal.pone.0084778.

Davis BJ, Risinger JI, Chandramouli GVR, Bushel PR, Baird DD, **Peddada SD** (2013). Gene Expression in Uterine Leiomyoma from Tumors Likely to Be Growing (from Black Women over 35) and Tumors Likely to Be Non-Growing (from White Women over 35). **PLOS One** 8(6): e63909. doi:10.1371/journal.pone.0063909. <http://f1000.com/prime/718021284?bd=1>

Davidov O, **Peddada SD** (2013). Testing for the multivariate stochastic order among ordered experimental groups with application to dose-response studies. **Biometrics** 69,982-990.

Barragan S, Fernandez M, Rueda C, **Peddada SD** (2013). isocir: An R Package for Constrained Inference Using Isotonic Regression for Circular Data, with an Application to Cell Biology., **Journal of Statistical Software**, 54(4). <http://www.jstatsoft.org/v54/i04>.

White RA, Bjørnholt JV, Baird DD, Midtvedt T, Harris, JR, Pagano M, Hide W, Rudi K, Moen B, Iszatt N, **Peddada SD***, Eggebo M (2013). Novel developmental analyses identify longitudinal patterns of early gut microbiota that affect infant growth. **PLOS Computational Biology**, 9(5): e1003042. doi:10.1371/journal.pcbi.1003042.

[*: Co-last author and corresponding author]

Lim C, Sen PK, **Peddada SD** (2013). Robust analysis of high throughput screening assays. **Technometrics**, 55, 150-160.

Mandal S, Sen PK, **Peddada SD** (2013). A hierarchical functional data analytic approach for analyzing physiologically based pharmacokinetic models. **Environmetrics**, 24, 172-179.

- Davidov O, **Peddada SD** (2013). The linear stochastic order and directed inference for multivariate ordered distributions. **Annals of Statistics**, **41**, 1-40.
- Guo W, Yang M, Xing C, **Peddada SD** (2012). Analysis of high dimensional data using pre-defined set and subset information, with applications to genomic data. **BMC Bioinformatics**, **13**(1):177. Epub 2012/07/26. doi: 10.1186/1471-2105-13-177.
- Fernandez M, Rueda C, **Peddada SD** (2012) Identification of a core set of signature cell-cycle genes whose relative order of time to peak expression is conserved across species. **Nucleic Acids Research**, **40**,2823-32. Epub 2011/12/03. doi: 10.1093/nar/gkr1077.
- Lim C, Sen PK, **Peddada SD** (2012). Accounting for Uncertainty in Heteroscedasticity in Nonlinear Regression. **J. Statist. Planning and Inf.** **142**, 1047-1062. Epub 2012/02/22. doi: 10.1016/j.jspi.2011.11.003.
- Davidov O, **Peddada SD** (2011) Order restricted inference for multivariate binary data with application to toxicology. **J. Amer. Statist. Assoc.** **106**, 1394-1404.
- Lu J, Kerns RT, **Peddada SD**, Bushel PR (2011). Principal component analysis-based filtering improves detection for Affymetrix gene expression arrays. **Nucleic Acids Research**, doi:10.1093/nar/gkr241.
- Dinse G, **Peddada SD** (2011) Comparing tumor rates in current and historical control groups in rodent cancer bioassays. **Statistics in Biopharmaceutical Research**. **3**, 97-105.
- Lim C, Sen PK, **Peddada SD** (2011). Statistical Inference in Nonlinear Regression under Heteroscedasticity. **Sankhya – Ser. B.** **72**, 202-218.
- Baird D, Garrett T, Laughlin S, Davis B, Semelka R, **Peddada SD** (2010). Short-Term Change in Growth of Uterine Leiomyoma: Tumor Growth Spurts. **Fertility and Sterility**, **95**, 242-246.
- Guo W, Sarkar SK, **Peddada, SD** (2010). Controlling False Discoveries in Multidimensional Directional Decisions, with Applications to Gene Expression Data on Ordered Categories. **Biometrics**, **66**, 485 - 492. Epub 2009/08/04. doi: 10.1111/j.1541-0420.2009.01292.x.
- Peddada, SD**, Harris, S., Davidov, O. (2010). Analysis of Correlated Gene Expression Data on Ordered Categories. **J. Ind. Soc. Agric. Statist.**, **64**, 45-60.
- Rueda C, Fernandez M, **Peddada SD** (2009). Estimation of parameters subject to order restriction on a circle with application to estimation of phase angles of cell-cycle genes. **J. Amer. Statist. Assoc.**, **104**, 338-347.
- Bushel P, Heard N, Gutman R, Liu L, **Peddada SD**, Pyne S (2009). Dissecting the Fission Yeast Regulatory Network Reveals Phase-Specific Control Elements of its Cell-cycle. **BMC Systems Biology**, **3**:93doi:10.1186/1752-0509-3-93.
- Peddada SD**, Umbach D, Harris S. (2009). A response to information criterion-based clustering with order-restricted candidate profiles in short time-course microarray experiments. **BMC Bioinformatics**, **10**:438 doi:10.1186/1471-2105-10-438.
- Betcher J, **Peddada SD** (2009). Statistical inference under order restrictions in analysis of covariance. **Sankhya, Ser. - B**, **71**, 79 - 96.
- Davis B, Haneke K, Miner K, Kowalik K, Barrett J, **Peddada SD**, Baird D (2009). The Fibroid Growth Study: Determinants of Therapeutic Intervention. **J. of Women's Health**, **18**, 725-732.

Peddada SD, Laughlin S, Miner K, Guyon JP, Haneke K, Vahdat H, Semelka R, Kowalik, A, Armao D, Davis B, Baird D. (2008). Growth of Uterine Leiomyomata among Pre-menopausal Black and White Women. **Proc. National Acad. Sci.**, **105**, 19887-19892. Epub 2008/12/03. doi: 10.1073/pnas.0808188105.

Guo W, **Peddada SD** (2008). Adaptive Choice of the Number of Bootstrap Samples in Large Scale Multiple Testing. **Statistical Applications in Genetics and Molecular Biology**, **7** (1), Art. 13.

Dunson DB, **Peddada SD** (2008). Bayesian nonparametric inference on stochastic ordering. **Biometrika**, **95**, 859-874.

Peddada SD, Dinse G, Kissling G (2007). Incorporating Historical Control Data When Comparing Tumor Incidence Rates. **J. Amer. Stat. Assoc.**, **102**, 1212-1220.

Simmons S, **Peddada SD** (2007). Order-restricted inference for ordered gene expression (ORIOGEN) data under heteroscedastic variances. **Bioinformatics**, **1(10)**, 414-419.

Liu D, **Peddada SD**, Li L, Weinberg C (2006). Phase analysis of circadian-related genes in two tissues. **BMC Bioinformatics**, **7**: Art. No. 87.

Peddada SD Haseman J, Tan X, Travlos G (2006). Tests for simple tree order restriction with application to dose-response studies. **J. Royal Statist. Soc., Ser - C**, **55**, 493-506.

Peddada SD, Haseman J (2006). Analysis of nonlinear regression models: A cautionary note. **Dose-Response**, **3**, 342-352.

Peddada SD, Dinse G, Haseman J (2005). A survival-adjusted quantal response test for comparing tumor incidence rates. **J. Royal Statist. Soc., Ser - C**, **54**, 51-61.

Peddada SD, Harris S, Zajd J, Harvey E (2005). ORIOGEN: Order Restricted Inference for Ordered Gene Expression data. **Bioinformatics**, **21**, 3933-3934.

Peddada SD, Dunson DB, Tan X (2005). Estimation of order-restricted means from correlated data. **Biometrika**, **92**, 703-715.

Peddada SD, Kissling G (2006). A Survival-Adjusted Quantal-Response Test for Analysis of Tumor Incidence Rates in Animal Carcinogenicity Studies. **Environmental Health Perspectives**, **114**, 537-541.

Liu D, Umbach D, **Peddada SD**, Li L, Crockett P, Weinberg C (2004). A Random-Periods Model for Expression of Cell-Cycle Genes. **Proc. National Acad. Sci.**, **101**, No. 19, 7240-7245.

Liu D, Weinberg C, **Peddada SD** (2004). A geometric approach to determine association and coherence of the activation times of cell-cycling genes under different experimental conditions. **Bioinformatics**, **20**, 2521-2528.

Conaway M, Dunbar S, **Peddada SD** (2004). Designs for single or multiple agent phase I trials. **Biometrics**, **60**, 661-669.

Peddada SD, Lobenhofer L, Li L, Afshari C, Weinberg C, Umbach D (2003). Gene selection and clustering for time-course and dose-response microarray experiments using order-restricted inference. **Bioinformatics**, **19**, 834-841.

Hoferkamp C, **Peddada SD** (2002). Estimation of parameters in linear models with heteroscedastic variances subject to order restrictions. **J. Multivariate Analysis**, **82**, 65-87.

Peddada SD, Hwang JTG. (2002). Classification of pixels in a noisy greyscale image of polar ice. **IEEE Transactions On Geoscience and Remote Sensing**, **40**, 1879-1884.

Hoferkamp C, **Peddada SD** (2001). Test of Homogeneity of Variances Against Ordered Alternatives in Fixed Effects Linear Models. **Sankhya, Ser. B**, **63**, 311-320.

Peddada SD, Prescott K, Conaway M (2001). Tests for Order Restrictions in Binary Data. **Biometrics**, **57**, 1219-1227.

Tan X, **Peddada SD** (2001). Asymptotic Distribution of Some Estimators for Parameters Subject to Order Restrictions. **Statistics and Applications**, **2**, 7-25.

Dunbar S, Conaway M, **Peddada SD** (2001). On improved estimation of parameters subject to order restrictions. **Statistics and Applications**, **3**, 121-128.

Garren S, **Peddada SD** (2000). Analysis of Multivariate Linear Regression Models Under Repeated Measurements with Missing Data. **Statist. Probab. Letters**, **48**, 293-302.

Smith T, **Peddada SD** (1998). Analysis of Linear Models under Heteroscedasticity. **Statist. Probab. Letters**, **37**, 399-408.

McDevitt RJ, **Peddada SD** (1998). An Automated Algorithm for Cleaning and Ordering the Boundary Points of a One-Dimensional Curve in a Segmented Image. **IEEE Transactions on Geoscience and Remote Sensing**, **36**, 307-312.

Peddada SD (1997). Confidence Interval Estimation of Population Means Subject to Order Restrictions Using Resampling Procedures. **Statist. Probab. Letters**, **31**, 255-265.

Peddada SD, Smith T (1997). Consistency of a Class of Variance Estimators in Linear Models under Heteroscedasticity. **Sankhya, Ser. B**, **59**, 1 - 10.

Peddada SD and Chang TC (1996). Bootstrap Confidence Region Estimation of the Motion of Rigid Bodies. **J. of Amer. Statist. Assoc.**, **81**, 231-241.

Peddada SD, McDevitt RJ (1996). Least Average Residual Algorithm (LARA) to Track the Motion of Arctic Sea Ice. **IEEE Transactions on Geoscience and Remote Sensing**, **34**, 915-926.

Hwang JTG, **Peddada SD** (1994). Confidence Interval Estimation Subject to Order Restrictions. **Annals of Statistics**, **22**, 67-93.

Kirmani S, **Peddada SD** (1993). Stochastic Ordering Approach to Off-line Quality Control Data. **J. Royal Statist. Society, Ser. C – Applied Statist.**, **42**, 271-281.

Peddada SD (1993). Discussion of "Is Pitman Closeness a Reasonable Criterion?" **J. Amer. Statist. Assoc.**, **88**, 67-69.

Hwang JTG, **Peddada SD** (1993). Confidence interval estimation under some restrictions on the parameters with non-linear boundaries. **Statist. Probab. Letters**, **18**, 397-403.

Peddada SD, Patwardhan G (1992). Jackknife Variance Estimation in Linear Models. **Biometrika**, **79**, 654-657.

Peddada SD, Patwardhan G (1992). Qualms about the BCa Confidence Intervals. **Statist. Probab. Letters**, **15**, 77-83.

Lahiri P, **Peddada SD** (1992). Bayes and Empirical Bayes Estimation of the Finite Population Mean Using Auxiliary Information. **Statistics and Decisions**, **10**, 67-80.

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Gottschling BC, Maronpot RR, Hailey JR, **Peddada SD**, Moomaw CR, Klaunig JE, Nyska A (2001). Role of Oxidative Stress in Indium Phosphide-induced Lung Carcinogenesis in Rats. **Toxicological Sciences**, **64**, 28-40.

Zhang J, **Peddada SD**, Malina R, Rogol A (2000). A Longitudinal Assessment of Hormonal and Physical Alterations During Normal Puberty in Boys VI. Modeling of Growth Velocity, Mean Growth Hormone (GH Mean) and Serum Testosterone (T). **Amer. J. of Human Biology**, **12**, 814-824.

Clark P, Clarke W, **Peddada SD**, Reiss A, Langlois C, Nieves-Rivera F, Rogol A (1998). The Effects of Pubertal Status and Glycemic Control on the Growth Hormone - IGF-1 Axis in Boys With Insulin-Dependent Diabetes. **J. Pediatr. Endocrinol. Metab.**, **11**, 427-435.

Roemmich J, Blizzard R, **Peddada SD**, Malina R, Roche A, Tanner J, Rogol A (1997). A Longitudinal Assessment of Hormonal and Physical Alterations During Normal Puberty in Boys IV: Prediction of Adult Height from Bone Age: Comparison of the Bayley-Pinneau, Roche-Wainer-Thissen and Tanner Methods. **Amer. J. of Human Biology**, **9**, 371-380.

Sistrom C, Southall E, **Peddada SD**, Shaffer HA (1993). Factors affecting the Thickness of the Cervical Prevertebral Soft Tissues. **Skeletal Radiology**, **22**, 167-171.

Invited Papers, Book Chapters, Reviews, Letters and Others

Saha A, Putnick DL, Lin H, Yeung E, Sundaram R, **Peddada SD** (2023). Multiple Imputation for Compositional Data (*MICoDa*) Adjusting for Covariates. *Statistical Methods at the Forefront of Biomedical Sciences*. Ed. Y. Larriba, Springer Nature, Switzerland.

Peddada SD (2017). Seasonal change in the gut: The gut microbiome of Hadza hunter-gatherers changes with the season. **Science** 357 (6353), 754-755.

Rueda C, Fernandez M, Barragan S, **Peddada SD** (2015). Recent advances in constrained inference for ordered circular parameters in oscillatory systems. *Festschrift for Kanti Mardia on 'Geometry Driven Statistics'*. Edited by John Kent and Ian Dryden. John Wiley and Sons, In press.

Lim C, Sen PK, **Peddada SD** (2013). Robust nonlinear regression in applications. **J. Ind. Soc. Agric. Statistics**, **67**, 215-234.

Peddada SD (2013). Statistical Analysis of Data from Quantitative High Throughput Screening (qHTS) Assays – Methods and Challenges. **J. Ind. Soc. Agric. Statistics**, **67**, 141-150.

Peddada SD Umbach DM, Harris S (2012). Statistical Analysis of Time-Course and Dose-Response Microarray Experiments. **Handbook of Statistics: Bioinformatics, North Holland, Amsterdam, (eds. C. R. Rao, R. Chakraborty and P. K. Sen), 28**, 39-66.

Guo W, Sarkar SK, **Peddada SD** (2011) Adaptive Multiple Testing Procedures under Positive Dependence, in *Recent Advances in Biostatistics: False Discovery, Survival Analysis and Related Topics - Volume 4*. Series in Biostatistics. Bhattacharjee M, Dhar S, Subramanian S, eds, World Scientific Press, 27-42.

Lim C, Sen PK, **Peddada SD** (2011) M-estimation Methods in Heteroscedastic Nonlinear Regression Models, in *Recent Advances in Biostatistics: False Discovery, Survival Analysis and Related Topics - Volume 4*. Series in Biostatistics. Bhattacharjee M, Dhar S, Subramanian S, eds, World Scientific Press, 169-190.

Baird D, Davis B, **Peddada SD** (2010) Letter regarding "Cellular senescence in usual type uterine leiomyoma." **Fertility and Sterility**, **94**, e43-e44.

Teoh E, Nyska A, Wormser U, **Peddada SD** (2008). Statistical inference under order restrictions on both rows and columns of a matrix, with an application in toxicology. In *Beyond Parametrics in Interdisciplinary Research, Festschrift to P.K. Sen*, Edited by N. Balakrishnan, E. Pena and M. J. Silvapulle. IMS Collections. *Beyond Parametrics in Interdisciplinary Research: Festschrift in Honor of Professor Pranab K. Sen*, **1**, 62-77.

Peddada SD (2003). Review of "A Biologist's guide to Analysis of DNA Microarray Data" by S. Knudsen (Wiley, New York, 2002), **Statistics in Medicine**, **22**, 2385.

Zhang J, **Peddada SD** and Rogol A (2000). Estimation of Parameters in Nonlinear Regression Models. **Statistics for 21st Century, Eds. C. R. Rao and G. Szekely**, 459-483.

Peddada SD (1994). Review of “Pitman's Measure of Closeness: A Comparison of Statistical Estimators” by J. P. Keating, R. L. Mason and P. K. Sen (SIAM, Philadelphia, PA, 1993). **J. Amer. Statist. Assoc.**, **89**, 711.

Peddada SD (1994). Restricted Parameter Space Estimation Problems: Admissibility and Minimality Properties (Lecture Notes in Statistics, Springer, 2006). **J. Amer. Statist. Assoc.**, **103**, 482.

Peddada SD (1993). Jackknife Variance Estimation and Bias Reduction. **Handbook of Statistics, Vol. 9: Computational Statistics, North Holland, Amsterdam, (ed. C. R. Rao) 723-742.**

Invited Lectures Since 2000

Department of Biostatistics, Washington Univ., St. Louis, MO	November, 2023
American College of Epidemiology: Special Session of Climate Change, zoom	August, 2023
Department of Mathematics and Statistics, Washington Univ., St. Louis, MO	March, 2023
Conference of the Society of Statistics, Computer and Applications (SSCA)	February, 2022
Department of Mathematical Sciences, New Jersey Institute of Technology, Newark, New Jersey	November, 2021
Department of Statistics, Florida State University, Tallahassee, FL	October, 2021
JSM, by zoom	August, 2021
BRuSH workshop on oral microbiome, University of Bergen, Bergen, Norway	December, 2020
Department of Statistics, Florida State University	November, 2020
National Institute of Child Health and Human Development Retreat	November, 2020
National Heart Lung Blood Institute	October, 2020
Conference of Texas Statisticians (COTS)	September, 2020
Bioinformatics Core, DIR, NICHD	September, 2020
Division of Intramural Population Health Research, NICHD	August, 2020
BRuSH kick-off seminar Analyses of the human microbiome; challenges and opportunities, University of Bergen, Bergen, Norway.	March, 2019
Translational Neuroscience Program, Center for Neuroscience, University of Pittsburgh, Pittsburgh.	February, 2019
UPMC Hillman Cancer Center Research, University of Pittsburgh, Pittsburgh.	October, 2018
Coffee and Collaboration Hour, Department of Biostatistics, University of Pittsburgh, Pittsburgh.	October, 2018
Workshop Infant gut microbiome, NoMic cohort workshop, Norway	June, 2018
UCSD Conference: Computational Analysis with applications to the microbiome (Keynote speaker)	June, 2018
Symposium on Advances in Genomics, Epidemiology, and Statistics (SAGES) , U. Penn, PA (Keynote speaker)	June, 2018
Health Services Research Seminar Series, University of Pittsburgh	May, 2018
Statistics and Probability Day, University of Maryland at Baltimore (Keynote Speaker)	April, 2018
Microbiome Center, University of Pittsburgh	April, 2018
Department of Statistics, University of Pittsburgh	March, 2018
GSPH 70 th year Celebrations, University of Pittsburgh, Pittsburgh, PA	March, 2018
Department of Biostatistics, University of Pittsburgh	February, 2018
Visiting High School Students, GSPH, University of Pittsburgh, Pittsburgh, PA	December, 2018
Department of Environment and Occupational Health, GSPH, University of Pittsburgh, Pittsburgh, PA	November, 2018
Science 2017, University of Pittsburgh: Big Data, Machine Learning, Statistics, and Artificial Intelligence	October, 2017
Graybill Conference, Colorado State University, Fort Collins, CO	June, 2017

Research Symposium at Digestive Disease Week® (DDW), American Gastroenterology Association, Chicago, IL	May, 2017
Keynote speaker at Statistical Challenges and Opportunities for the Analysis of Microbiome Data, Winnipeg, Manitoba, Canada	May, 2017
Department of Biostatistics, University of Pittsburgh, Pittsburgh PA.	January, 2017
Joint Statistical Meetings, Chicago, IL	August, 2016.
Center for Urban Responses to Environmental Stressors (CURES), Institute of Environmental Health Sciences (IEHS), Wayne State University, Detroit, MI.	May, 2016.
Department of Biostatistics, Ohio State University, Columbus, OH.	December 2015.
Department of Statistics, University of Missouri, Columbia, MO.	October 2015.
Department of Mathematics, Central Michigan Univ., Mt. Pleasant MI.	March, 2015.
Statistical and Applied Mathematical Sciences Institute (SAMSI) Undergraduate Workshop.	October, 2014.
Department of Mathematics, Shanghai Jiao Tong University, Shanghai, China	May, 2014.
Department of Mathematical Sciences, New Jersey Institute of Technology, New Jersey.	April, 2014.
Department of Statistics, Michigan State Univ., East Lansing, MI.	November, 2013.
Department of Statistics, University of South Carolina, Columbia, SC	May, 2013.
Indian Society of Agricultural Statistics, New Delhi, India, Keynote speaker	December, 2012.
C.R.Rao Advanced Institute of Mathematics, Statistics and Computer Sciences, Hyderabad, India	December, 2012
Department of Biostatistics, Virginia Commonwealth Univ., Richmond, VA.	November, 2012.
Joint Statistical Meetings, San Diego, CA.	August 2012.
Department of Biostatistics, Vanderbilt Univ., Nashville, TN.	May 2012.
Department of Biostatistics, Univ. of North Carolina, Chapel Hill, NC.	May 2012.
Department of Statistics, Michigan State Univ., East Lansing, MI.	April 2012.
Univ. of Valladolid, Valladolid, Spain.	December 2011.
European Research Consortium for Informatics and Mathematics, London, UK.	December, 2011.
IISA Conference on Probability, Statistics, Data Analysis, Raleigh, NC.	April, 2011.
Virginia Academy of Sciences, VA.	May, 2010.
Oakland Univ., Rochester, MI.	March, 2010.
Harvard School of Public Health, Harvard, Boston, MA.	February, 2010.
Bioinformatics workshop at Miami Univ., Oxford, OH.	May, 2008.
Instructional workshop in Bioinformatics and Drug Discovery, Hyderabad, India.	December, 2007.
Indian Agricultural Statistics Research Institute, New Delhi, India.	December, 2007.
SAMSI., RTP, NC.	October, 2007.
Department of Biostatistics, Univ. of North Carolina, Chapel Hill.	April, 2007.
Department of Statistics and Operations Research, several seminars Univ. of Valladolid, Valladolid, Spain.	March 26 to 30, 2007.
Department of Mathematics, Univ. of Mississippi, Mississippi, MS.	February, 2007.
Department of Statistics, Univ. of South Carolina, Columbia, SC.	March, 2006.
Department of Mathematics, Central Michigan Univ., Mt. Pleasant MI.	February, 2006.
College of Arts and Science, Central Michigan Univ., Mt. Pleasant MI.	February, 2006.
Center for Genetics and Molecular Medicine,	

Univ. of Louisville, Louisville, KY.	September, 2005.
Univ. of North Carolina, Wilmington, NC.	February, 2005.
Bioinformatics workshop, Center for Cellular and Molecular Biology, Hyderabad, India.	December, 2004.
Department of Biostatistics, Vanderbilt Univ., Nashville, TN.	November, 2004.
International Conference on Analysis of Genomic Data, BCASA, Harvard School of Medicine, Boston, MA.	May, 2004.
Department of Statistics, Penn State Univ., Univ. Park, PA.	October, 2003.
Department of Statistics, Univ. of Virginia, Charlottesville, VA.	October, 2003.
Conference on Statistics of Optimal Dosing, Washington D. C.	October, 2003.
Department of Statistics, Univ. of Virginia, Charlottesville, VA.	September, 2002.
International Biometric Society Conference, Freiburg, Germany.	July, 2002.
Biometrics Society, ENAR meeting.	March, 2002.
Department of Statistics, North Carolina State Univ.	September, 2001.
NIEHS Microarray Center Meeting.	August, 2001.
Research Triangle Institute, Research Triangle Park.	August, 2001.
Statistics: Reflections on the past and visions for the future, an international conference in honor of Professor C. R. Rao, San Antonio, TX.	March, 2000.