

Sanat K. Sarkar

Cyrus. H. K. Curtis Professor and Chair

Department of Statistical Science

Temple University

<http://sites.temple.edu/sanat/>

<https://scholar.google.com/citations?user=FtID5t0AAAAJ&hl=en>

https://www.researchgate.net/profile/Sanat_Sarkar

Experience

ACADEMIC

- | | |
|-------------|---|
| 2016 - | Full Professor, Department of Statistical Science,
Temple University, Philadelphia, PA |
| 1994 - 2016 | Full Professor, Department of Statistics,
Temple University, Philadelphia, PA |
| 1988 - 1994 | Associate Professor, Department of Statistics,
Temple University, Philadelphia, PA |
| 1983 - 1988 | Assistant Professor, Department of Statistics,
Temple University, Philadelphia, PA |
| 1982 - 1983 | Adjunct Assistant Professor, Department of Statistics,
Temple University, Philadelphia, PA |
| 1980 - 1982 | Research Associate, Department of Mathematics and Statistics,
University of Pittsburgh, Pittsburgh, PA |
| 1976 - 1980 | Lecturer, Department of Statistics,
Calcutta University, Calcutta, India |

NON-ACADEMIC

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|--------------|--|
| 2019- | Member, Advisory Board, Prosoft Clinical and LogEcal Data Analytics, Wayne, PA |
| 2008 | Member, Scientific Advisory Committee, Merck Research Labs, |
| 2007 | Statistical Consultant, Novartis Pharmaceuticals |
| 2006 | Statistical Consultant, Cephalon Inc. |
| 1991 - 2000 | Statistical Consultant, Merck Research Lab, Blue Bell, PA |
| Summer, 1991 | Senior Biometrician, Merck Research Lab, Blue Bell, PA |
| Summer, 1986 | Visiting Scientist, Epi-Stat Research Lab, Fox Chase Cancer
Research Center, Philadelphia, PA |

Professional Societies

- Calcutta Statistical Association (Life member)
- International Indian Statistical Association (Life member)
- Institute of Mathematical Statistics (Fellow)
- American Statistical Association (Fellow)
- International Statistical Institute (Elected)

Honors and Recognitions

- High Achievements in Sponsored Projects, Fox School of Business Management, Temple University, 2014, 2015, 2016, 2017.
- Elected Fellow, Institute of Mathematical Statistics, 2007
- The Musser Award for Excellence in Leadership for Research, Fox School of Business Management, Temple University, 2000
- Elected Member of Research Roundtable, Fox School of Business Management, Temple University, 1999
- Elected Fellow, American Statistical Association, 1999
- Annual Research Honor Roll, Fox School of Business Management, Temple University, 1999, 2003, 2005, 2007, 2009, 2010, 2011 and 2015.

Grants and Fellowships

- National Science Foundation, "Collaborative Research: New Directions for Research on Some Large-Scale Multiple Testing Problems", 2013-2017 (\$126,575), Principal Investigator.
- National Science Foundation, "Bayesian Decision Theoretic Methods for Some High-Dimensional Multiple Inference Problems," 2012-2015 (\$174,975), Co-Principal Investigator.
- National Science Foundation, "Collaborative Research: Constructing New Multiple Testing Methods," 2010-2013 (\$167,659), Principal Investigator
- Summer Research Fellowship, Temple University, 2010 (\$7,000.00)
- Grant-In-Aid for Research, Temple University, 2010 (\$3,000.00)
- National Science Foundation, "Multiple Testing: Further Development of Theory and Methodology," 2006-2009 (\$170,000.00), Principal Investigator
- National Science Foundation, "New Problems in Multiple Hypotheses Testing," 2003-2006 (\$234,000.00), Principal Investigator:
- Summer Research Fellowship, Temple University, 2003 (\$4,500.00)
- Alumni Summer Distinguished Fellowship, Temple University, 1987 (\$4,500.00)
- National Security Agency, "Some Problems in Multiple Comparisons", 2001-2003 (\$40,000.00), Principal Investigator:
- NSF-CBMS Regional Conference in Mathematical Sciences: New Horizons in Multiple Comparison Procedures, August 13-17, 2001 (\$25,000.00), Principal Investigator:
- Temple University Research Incentive Fund Grant, 1998 (\$2,000.00)

Teaching

Taught variety of courses, including many key ones, both at graduate and undergraduate levels. Was nominated for Lindback Award by statistics graduate students.

GRADUATE

Stat 8001-8002 (Probability and Statistics Theory I & II):

This is a two-semester sequence of core courses for MS students in Statistics and some Ph.D. students in Business Administration. It covers basic statistical theories related to problems such as estimation, testing of hypotheses, analysis of variance, and regression.

Stat 8104 (Mathematics for Statistics)

This course is designed to provide beginning graduate students in statistics with the basic results on advanced calculus and matrix theory that appear in various statistical methods.

Stat 8108 (Applied Multivariate Analysis I):

This is an applied course on multivariate analysis that covers several standard statistical techniques used in analyzing multivariate data.

Stat 8166 (Categorical Data Analysis):

This course covers standard statistical methods used in analyzing categorical data.

Stat 9001-9002 (Statistical Inference I & II):

This is a two-semester sequence of core courses for Ph.D. students in Statistics. Advanced statistical theories on estimation and testing of hypotheses are covered in these courses. ***I redesigned these courses and have been teaching over the last many years.***

Stat 9108 (Multivariate Analysis II):

This is an advanced theory course covering multivariate statistical inference problems. I've taught this course in a number of semesters.

Stat 9180-9190 (Seminar Topics):

These courses cover different advanced research topics, which I taught a number of times. In the most recent such courses, I discussed recent advances in multiple testing procedures that become increasingly important as Big Data statistical tools in modern scientific investigations.

UNDERGRADUATE

Stat 1001 (Pre-Calculus for Business)

Stat 1102 (Calculus for Business)

Stat 2101 (Statistical Methods and Concepts)

Stat 2102 (Selected Statistical Applications)

Stat 2103 (Business Statistics)

Stat 2512 (Intermediate Statistics)

INDEPENDENT STUDY

Supervised many independent study courses.

SHORT COURSE/TUTORIAL/WORKSHOP

Presented a short-course on *Issues in Multiple Comparisons*, Jointly with Yosef Hochberg, Tel Aviv University, Israel, mainly for statisticians in pharmaceutical companies, in Philadelphia in July 1999.

Presented a three-hour tutorial on *Stepwise Procedures in Multiple Testing* at the 55th Annual Deming Conference on Applied Statistics, Atlantic City, December, 1999

Presented a short-course on *Modern Multiple Testing* at the Probability and Statistics Day, University of Maryland at Baltimore County, Maryland, April 24, 2009.

Presented a one-hour lecture on *Modern Techniques for Testing Large Number of Hypotheses* at the workshop "Statistical Methodology in Medicine and Biological Sciences", MERB 219, Health Sciences Campus, Temple University, organized by the Center for Statistical Analysis, Department of Statistics, Temple University, October 21, 2011.

Presented a one-hour lecture (jointly with a PhD student) on *High-dimensional Multiple Testing* at Temple "Big Data" Symposium, Shusterman Hall, Liacouras Walk, Temple University, PA, May 21, 2012.

Service

At Temple University

DEPARTMENT LEVEL

Presently serving as

Department Chair, 2012-

Served before as

Chair, Recruiting Committee, 2009-2012

Member, Personnel Committee, 2011-2012

Chair, Department Executive Committee, 2009-2012

Vice Chair, Department Executive Committee, 2008-2009

Member, Graduate Affairs Committee (1987 - 2012)

Director, Graduate Programs in Statistics, 1991-1994

Member, Recruiting Committee, 2006-2008

Colloquium Organizer, 2005-2009

Member, Personnel Committee, 2003-2005

Chair, Stat 21 Common Final Exam Committee, Spring, 2001

Member, Personnel Committee, 1999-2001

Member, Graduate Affairs Committee, 1987-1991

Member, Personnel Committee, 1989-1992

Member, Recruiting Committee, 1989-1990

Colloquium Organizer, 1989-1991

Advisor, Undergraduate Statistics, 1986-1987

Ph.D. Advisory Committee

Primary Advisor

1. Nazeer Khan (1988). "Maximum Likelihood Classification Criterion for Mixed Binary and Continuous Variables"
2. Dror Rom (1989). "Further Contributions to the Theory of Association Models in the Analysis of Contingency Tables"
3. Albert Cheung (1991). "Bivariate Extension of Wang-Ryzin Smoothing Procedure in Discrete Density Estimation"
4. Alaka Chakravarty (1992). "On Bayesian Analysis of Bivariate Contingency Tables Using Prior Information of Association"
5. Tom Dobbins (1993). "Probability Inequalities for Certain Multivariate Distributions"
6. Kalyan Ghosh (1994). "Estimation of Ordered Parameters With Applications."
7. Wenjin Wang (1995). "Some New Results on Order Statistics With Applications."
8. Chun-Kuei Chang (1997). "P-Value Adjustment for Positively Dependent Test Statistics."
9. Napoleon Oleka (1997). "Bivariate Extensions of Some Standard Tests for Bioequivalence Assessment."
10. Guoyong Jiang (1997). "Comparing Variabilities of Dependent Multivariate Populations With Applications to Bioavailability Trials."
11. Paulette Ceesay (1998). "Inference Procedures for the Minimum of Normal Means and Variances from a Bayesian Perspective."
12. John Kwagyan (2001). "Further Investigation of the Disposition Model for Correlated Binary Outcomes."
13. Susan Li (2003). "Further Contributions to Fisher's and Simes' Tests"

14. Jie Chen (2003). "Bayesian Approaches to Simultaneous Testing of Multiple Hypotheses."
15. Gengqian Cai (2005). "Further Results on Simes' Test and Benjamini-Hochberg False Discovery Rate Procedure."
16. Tianhui Zhou (2007). "New Results on False Discovery Rate and Related Measures."
17. Zijiang Yang (2008). "New Step Down Procedures for Control of the Familywise Error Rate"
18. Vishwanath Iyer (2010). "An Adaptive Single-Step FDR Controlling Procedure."
19. Fang Liu (2010). "New Results on the False Discovery Rate."
20. Li He (2011). "Incorporating Correlations to Improve Multiple Testing Procedures Controlling False Discoveries."
21. Bhrumori Banerjee (2011). "Multiple Testing in the Presence of Correlations."
22. Jingjing Chen (2012). "Multiplicity Adjustment in Adaptive Design."
23. Nicolle Clements (2013). "Multiple Testing in Grouped Dependent Data."
24. Yiyong Fu (2015). "On Group-Sequential Multiple Testing Controlling Familywise Error Rate."
25. Aiyong Chen (2016). "Multiple Testing Procedures under Group Sequential Design."
26. Yanping Liu (2016). "New Approaches to Multiple Testing of Grouped Hypotheses."
27. Prince Afriyie (2016). "Applications of Procedures Controlling the Tall Probability of the False Discovery Proportion."
28. Yanhui Xu (2019). "Large Scale Multiple Testing for High-Dimensional Nonparanoranal Data."
29. Shinjini Nandi (2019). "Multiple Testing Procedures for One and Two-Way Classified Hypotheses."

Member

1. Khoan Tan Dinh (1983)
2. Annette L. Moore (1983)
3. Juan Ramos (1985)
4. Albert Getson (1987)
5. Margaret D. Copenhaver (1987)
6. Krishnendu Ghosh (1990)
7. Kenneth Goldberg (1991)
8. Hewa Saranadasa (1991)
9. Alex Kouassi (1991)
10. Jose Vergas (1992)
11. Zhigang Sun (1993)
12. Dan Holder (1993)
13. Damaraju Lakshmi (1994)
14. Nandita Biswas (1997)
15. David Grueben (1998)
16. Brian Wein (1998)
17. Chun-Y Peng (1999)
18. Paul DeLucca (1999)
19. Wubao Wang (2000)
20. Radha Railkar (2000)
21. Terry Hyslop (2001)
22. Ohad Amit (2002)
23. Inna Chervoneva (2003)
24. Richard Chen (2005)
25. Yu Ding (2007)
26. Larry Ma (2007)
27. Chuck Miller (2009)
28. Luqiang Wang (April, 2009)
29. Min Fu (2014)
30. Yeil Kwon (2018)

SCHOOL LEVEL

Presently Serving on

Research Round Table

Served before as

Journal Vetting Committee, 2008 - 2018

Named Professor Committee, 2012 -2018

Member, Data Science Group, 2018 - 2018

Member, Sponsored Research Task Force, 2013-2014

Chair, Selection Committee, Musser Award for Excellence in Research, 2015

Member, Reaccreditations Review Task Force Sub-Committee on Doctoral Programs and Leadership, 2007-2008

Member, Selection Committee, Musser Award (Research), 2004

Member, P&T Review Committee, 2002

Member, School P&T Committee, 1998-2001

Member, Ph.D. Review Committee, 1994-1995

Member, Research Committee, 1992- 1993

Member, Graduate Affairs Committee, 1991-1994

Member, Election and Grievance Committee, 1990-1993 (Chaired two sub-committees)

Member, Ph.D. Advisory Committee

Barbara J. Shiarappa (accounting, 1987)

Kathy Dunne (accounting, 1988)

Theresa Robbins (accounting, 1988)

Arvind Parkhe (marketing, 1989)

Dilip Mirchandani (gen. & strategic mgmt, 1993)

Vivek Chowdhury (gen & strategic mgmt., 1995)

George Joseph (accounting, 1997)

Madan Annvarjula (int. bus. admin., 1997)

Shruti Gupta (Marketing, 2002)

Nisreen Bahan (Marketing, 2003)

Joseph Qiu (Risk Management and Insurance, July 2008)

Jong Eun Lee (Accounting, July 2008)

Ke Li (Marketing, April 2013)

Yili (Kevin) Hong (MIS, April, 2014)

OUTSIDE UNIVERSITY

Other University

Members, PhD Committees,

Ms. Minya Xu, Department of Statistics, Rutgers University, April 2008.

Rick E. Blakesley, Department of Biostatistics, University of Pittsburgh,
July 2008

External Mentor

Dr. Xiongzi Chen, Assistant Professor, Department of Mathematics and Statistics
Washington State University, Pullman, WA 99164 (Since Fall 2017)

Service to the Profession

Editorial Service:

Associate Editors: Annals of Statistics (2010 – 2012);
The American Statistician (2006 - 2011),

Co/Associate Editor: Sankyâ, B (2016 - 2021)
Sankyâ, B (2008 - 2011);
Biometrical Journal (Special Volume for MCP 2015)

Member, Advisory Committee, Tenth International Triennial Calcutta Symposium on Probability & Statistics (Celebrating the Birth Centenary of Prof. H. K. Nandi), Kolkata, India, December 27-30, 2018,

Chair, S. N. Roy Memorial Lecture (Speaker: Don Rubin), Tenth International Triennial Calcutta Symposium on Probability & Statistics (Celebrating the Birth Centenary of Prof. H. K. Nandi), Kolkata, India, December 27-30, 2018,

Member, Program Committee, the 11th International Conference on Multiple Comparison Procedures (MCP 2019), Taipei, Taiwan, December 12 – 15, 2019

Member, Organizing/Program Committee, the 10th International Conference on Multiple Comparison Procedures (MCP 2017), Riverside, CA, June 20-23, 2017.

Vice President, Calcutta Statistical Association, 2016 –

Member, Advisory Committee, Platinum Jubilee International Conference on Applications of Statistics, Department of Statistics, University of Calcutta, December 21-23, 2016.

Member, Organizing Committee, the 9th International Conference on Multiple Comparison Procedures (MCP 2015), Hyderabad, India, September 2-5, 2015.

Member, Noether Awards Committee, American Statistical Association, 2013-2018.

Organizer, Invited Memorial Session: Damaraju Raghavarao. 2014 Joint Statistical Meetings, Boston, MA.

Chair, Organizing Committee, Conference on High-Dimensional Statistics, Department of Statistics, Temple University, April 12, 2013.

Member, Board of Directors, Calcutta Statistical Association, 2012 - 2015

Member, Advisory Committee, Eighth International Triennial Calcutta Conference on Probability and Statistics, December 27-30, 2012.

Chair, Session on Statistical Issues in Ecological and Environmental Studies-2, 22nd Annual Conference of the International Environmetrics Society, January 3-6, 2012, Hyderabad, India

Organizer, Session on False Discovery Rate, the 7th International Conference on Multiple Comparison Procedures, August 29 – September 01, 2011, Washington D.C.

Organizer, Session on Multiple Testing, 2011 IISA Conference on Probability, Statistics and Data Analysis, April 21-24, 2011, Raleigh, NC.

Chair, Introductory Overview Lecture: Multiple Testing Using Nonparametric and Semiparametric Models, Joint Statistical Meetings, July 31-August 5, 2010, Vancouver, BC, Canada.

Chair, Closing Panel Discussion, Multiple Comparisons in Clinical Trials, Evaluating Practices and Regulations, January 25-27, 2010, Washington DC.

Member, NSF-CBMS Regional Conferences Review Panel, 2003, 2009

Member, NSF Review Panel, 2008.

Member, Organizing Committee, The 7th International Triennial Calcutta Symposium on Probability & Statistics, Kolkata, India, December, 2009.

Member, Organizing Committee, the 6th International Conference on Multiple Comparisons, March 2009, Tokyo, Japan.

Organizer, Session on Multiple Testing, Platinum Jubilee Conference of the Indian Statistical Association, Kolkata, India, January 1-4, 2008.

Member, Organizing Committee, the 5th International Conference on Multiple Comparisons, July 2007, Vienna, Austria.

Member, Organizing Committee, the 6th International Triennial Statistics Conference, Kolkata, India, December, 2006

Member, Organizing Committee, the 4th International Conference on Multiple Comparisons, August, 2005, Shanghai, China.

Organizer, A session on False Discovery Rate, the 7th Purdue International Symposium on Statistics, West Lafayette, Indiana, June 19-24, 2003.

Co-organizer, NSF-CBMS Regional Research Conference on Multiple Comparisons, Temple University, PA, August 13 -17, 2001.

Chair, Biopharmaceutical Section Best Student Paper Competition Awards Committee, American Statistical Association, 2001 - 2003.

Member, Biopharmaceutical Section Best Student Paper Competition Awards Committee, American Statistical Association, 1999 - 2001.

Member, Organizing Committee of the International Conference on Applied Statistics, Lawrenceville, NJ, May 22-23, 1999.

Organizer, Invited Session on "Statistical Analysis of Combination Drugs." Annual Statistical Meetings, Chicago, August 1996.

Reviewed tenure and promotion cases and wrote expert opinion letter in support of US residency application for faculty in several other universities.

Refereed papers for *Annals of the Institute of Statistical Mathematics*, *Annals of Statistics*, *Biometrical Journal*, *Biometrics*, *Biometrika*, *Calcutta Statistical Association Bulletin*, *Communications in Statistics*, *Computational Statistics and Data Analysis*, *Journal of Biopharmaceutical Statistics*, *Journal of Multivariate Analysis*, *Journal of Statistical Computation and Simulation*, *Journal of Statistical Planning and Inference*, *Journal of the American Statistical Association*, *Journal of the Royal Statistical Society, Sr A*, *Journal of the Royal Statistical Society, Sr B*, *Sankhya Ser A*, *Sankhya Ser B*, *Scandinavian Journal of Statistics*, *Statistica Sinica*, *Statistical Applications in Genetics and Molecular Biology*, *Statistics and Probability Letters*, *Statistics in Medicine*, *Technometrics*, *Test*, *The American Statistician*.

Reviewed grant proposals submitted to National Science Foundation, National Security Agency, Environmental Protection Agency, Israel Science Foundation, Chilean Research Council, The French

National Research Agency, and US-Israel Binational Science Foundation. Reviewed PhD theses for doctoral candidates in university/institute in India and Pakistan

Research

PUBLISHED ARTICLES

1. (1979) "On optimum properties of a likelihood ratio test with additional information." *Sankhya, Ser A*, 41, 207-218.
2. — "A test for mean with additional observations." *Calcutta Statistical Association Bulletin*, 28, 47-56.
3. (1981) "Some multivariate linear regression testing problems with additional observation." *Journal of Multivariate Analysis*, 11, 556-567.
4. (1982) "Unbiasedness of the likelihood ratio test for sphericity with a general pattern of sample." *Calcutta Statistical Association Bulletin*, 31, 97-102.
5. (1983) "Some results of χ^2 and a related distribution." *Sankhya, A*, 45, 253-255.
6. — "Some tests with unbalanced data from a bivariate normal population." *Annals of the Institute of Statistical Mathematics*, 35, 63-75 (with B. K. Sinha and P. R. Krishnaiah).
7. (1984) "Invariant confidence sequences for parameters in a multivariate linear regression model." *Annals of Statistics*, 12, 301-310 (with B. K. Sinha).
8. — "A note on the power of the likelihood ratio test for MANOVA." *Sankhya, Ser A*, 46, 303-308.
9. "On TP_2 and log-concavity." *Inequalities in Statistics and Probability, IMS Lecture Notes-Monograph Series*, Vol. 5, 54-58 (with S. Das Gupta).
10. (1986) "Probability inequalities for ordered MTP_2 random variables." *Sankhya Ser. A*, 48, 119-135 (with W. Smith).
11. (1987) "Simultaneous confidence regions for the frequency analysis of multiple time series." *Journal of the American Statistical Association*, 82, 271-275 (with A. Izenman).
12. — "A continuous bivariate exponential distribution." *Journal of the American Statistical Association*, 82, 667-675.
13. (1988) "The probability integrals of the multivariate normal: the 2^n -tree and the association models." *Proceedings of the 20th symposium on the interface*, 426-431. (with D. Rom)
14. (1989) "On quasi-independence in ordinal triangular contingency tables." *Journal of the American Statistical Association*, 84, 552-557.
15. — "On improving the shortest length confidence interval for the generalized variance." *Journal of Multivariate Analysis*, 31, 136-147.

16. (1990) "Approximating probability integrals of multivariate normal using association models." *Journal of Statistical Computation and Simulation*, 35, 109-119 (with D. Rom).
17. (1991) "Stein-type improvements of confidence intervals for the generalized variance." *Annals of the Institute of Statistical Mathematics*, 43, 369-375.
18. — "On estimating the common mean of several normal populations under the Pitman-closeness criterion." *Communication in Statistics – Theory and Methods, a special volume on Pitman-closeness*, 20, 3487-3498.
19. — "Symmetric multivariate and related distributions" by Fang, Kotz and Ng., Book Review, *Journal of the American Statistical Association*, 86, 1144-1145.
20. (1992) "A generalized model for the analysis of association in ordinal contingency tables." *Journal of Statistical Planning and Inference*, 33, 205-212 (with D. Rom).
21. (1993) "Simultaneous estimation of independent normal mean vectors with unknown covariance matrices." *Journal of Multivariate Analysis*, 47, 329-338 (with K. Krishnamoorthy).
22. — "Handbook of the logistic distribution" by N. Balakrishnan (ed). *Journal of the American Statistical Association*, 89, 362-363.
23. — "On improving the min-test for the analysis of combination drug trials." *Proceedings of the Biopharmaceutical Sections, Annual Joint Statistical Meetings, San Francisco, CA.* (with S. Snapinn and W. Wang)
24. (1994) "Shrinkage domination of some usual estimators of the common mean of several multivariate normal populations." *Journal of Statistical Planning and Inference*, 39, 43-55.
25. — "Probability inequalities for certain dependence structures." *Statistics and Probability Letters*, 21, 85-94 (with T. Dobbins).
26. — "Improved estimators of the smallest variance." *Statistics and Decision*, 12, 245-256. (with K. Ghosh).
27. (1995) "On improving the min-test for the analysis of combination drug trials." *Journal of Statistical Computation and Simulation*, 51, 197-213 (with S. Snapinn and W. Wang).
28. (1995) "A note on the estimation of trough/peak ratio." *Proceedings of the Biopharmaceutical Sections, Annual Joint Statistical Meetings, Orlando, FL.* (with K. Ghosh and B. Thiyagarajan)
29. (1996) "Assessing the superiority of a combination drug with specific alternative." *Journal of Biopharmaceutical Statistics*, 6, 241-251. (with S. Snapinn)
30. — "Some new results on covariances involving order statistics from dependent random variables." *Journal of Multivariate Analysis*, 59, 308-316. (with Z. Bai and W. Wang)
31. (1996) "Comprehensive criteria for population and individual bioequivalence." *Proceedings of the Biopharmaceutical Sections, Annual Joint Statistical Meetings, Chicago, IL* (with K. Ghosh, B. Thiyagarajan and M. Hesney)

32. (1997) "Positivity of the best unbiased L-estimator of the scale parameter with complete or selected order statistics from location-scale distribution." *Statistics and Probability Letters*, 32, 181-188 (with Z. Bai & W. Wang).
33. — "The Simes method for multiple hypothesis testing with positively dependent test statistics." *Journal of the American Statistical Association*, 92, 1601-1608 (with C-K. Chang)
34. (1998) "Probability inequalities for ordered MTP₂ random variables: A proof of the Simes conjecture." *Annals of Statistics*, 26, 494-504.
35. — "Some asymptotic tests for the equality of the covariance matrices of two dependent bivariate normals." *Biometrical Journal*, 40, 1-21 (with G. Jiang).
36. — "Estimation of scale parameter based on a fixed set of order statistics." *Order Statistics and Their Applications, Handbook of Statistics*, Vol 17, Eds. C. R. Rao and N. Balakrishnan, 159 – 181 (with W. Wang).
37. (1999) "Comparing treatment variances in repeated measures bioavailability trials". *Statistics in Medicine*, 18, 1133-1149. (with G. Jiang).
38. — "A likelihood ratio test and its modifications for the homogeneity of the covariance matrices of dependent multivariate normals". *Journal of Statistical Planning and Inference*, 81, 95-111 (with G. Jiang and F. Hsuan).
39. (2000) "Bounds on joint survival probabilities with positively dependent competing risks". *Bioenvironmental and Public Health Statistics, Handbook of Statistics*, Vol 18, Eds. C. R. Rao and P.K. Sen, 783-801. (with K. Ghosh),
40. — "The likelihood ratio test for the homogeneity of the variances in a covariance matrix with block compound symmetry." *Communications in Statistics – Theory and Methods*, 29, 1155-1178. (with G. Jiang).
41. — "A note on the monotonicity of the critical values of a step-up test." *Journal of Statistical Planning and Inference*, 87, 241-249.
42. — "Some results on order statistics arising in multiple testing." *Advances on Methodological and Applied Aspects of Probability and Statistics*, Ed. N. Balakrishnan, 183-191.
43. (2001) "Testing the equality of the intra-subject treatment covariance matrices in a crossover study" *Biometrical Journal*, 43, 677-696 (with G. Jiang).
44. (2002) "Some results on false discovery rate in stepwise multiple testing procedures" *Annals of Statistics*, 30, 239-257.
45. — "Combination tests for the equality of the covariance matrices of two dependent bivariate normals" *Journal of Statistical Computation and Simulation*, 72, 495-505. (with G. Jiang)
46. — "On the power function of the likelihood ratio test for MANOVA." *Journal of Multivariate Analysis*, 82, 416-421 (with D. Bhaumik).
47. — "Recent advances in multiple testing," *Journal of Statistical Studies*, A special volume honoring Prof. M. M. Ali, 293-306.

48. (2004) "Multiple testing of response rates with a control: A Bayesian stepwise approach," *Journal of Statistical Planning and Inference*, 125, 3-16 (with J. Chen).
49. — "FDR-controlling stepwise procedures and their false negatives rates", *Journal of Statistical Planning and Inference*, 125, 119-137.
50. — "On two results in multiple testing," *Recent Developments in Multiple Comparisons*, IMS Lectures Notes- Monograph Series, 47, Eds. Benjamini, Bretz and Sarkar, 89-99.
51. (2005) Bayesian determination of threshold for identifying differentially expressed genes in microarray experiments". *Statistics in Medicine*, 25, 3174-3189. (with J. Chen)
52. (2006) "False discovery and false non-discovery rates in single-step multiple testing procedures." *Annals of Statistics*, 34, 394-415.
53. — "Modified Simes' critical values under positive dependence". *Journal of Statistical Planning and Inference*, 136, 4129-4146. (with G. Cai)
54. (2007) "An adaptive single-step FDR procedure with applications to DNA microarray analysis", *Biometrical Journal*, 49, 127-135. (with V. Iyer).
55. — "Stepup procedures controlling generalized FWER and generalized FDR." *Annals of Statistics*, 35, 2405-2420.
56. (2008) "Generalizing Simes' test and Hochberg's stepup procedure." *Annals of Statistics*, 36, 337-363.
57. — "Controlling Bayes directional false discovery rate in random effects model, *Journal of Statistical Planning and Inference*, 138, 682-693. (with T. Zhou).
58. — "Two stage stepup procedures controlling FDR." *Journal of Statistical Planning and Inference*, 138, 1072-1084.
59. — "Modified Simes' critical values under independence." *Statistics and Probability Letters*, 78, 1362-1368. (with G. Cai)
60. — "A general decision theoretic formulation of procedures controlling FDR and FNR from a Bayesian perspective." *Statistica Sinica*, 18, 925-946. (with T. Zhou and D. Ghosh)
61. — "On the Simes inequality and its generalization." *IMS Collections*, Beyond Parametrics in Interdisciplinary Research: Festschrift in Honor of Professor, Pranab K. Sen, Vol. 1, 231-242.
62. — "A general proof of some known results of independence between two statistics." *American Statistician*, 62, 141-143. (with G. Datta)
63. — "Discussion on: Control of the false discovery rate under dependence using the bootstrap and subsampling by Romano, Shaikh and Wolf" *TEST*, 17, 450-550. (with Ruth Heller)
64. — "On methods controlling the false discovery rate" (with discussion). *Sankhya, Ser A*. 70, Part 2, 135 -168.
65. (2009) An adaptive step-down procedure with proven FDR control." *Annals of Statistics*, 37, 619-629. (with Y. Gavrilov and Y. Benjamini)

66. — “On a generalized false discovery rate.” *Annals of Statistics*, 37, 1545-1565. (with W. Guo)
67. — “Trimmed weighted Simes’ test for two one-sided hypotheses with arbitrarily correlated test statistics,” *Biometrical Journal*, 51, 885-898. (with W. Brannath, F. Bretz, W. Maurer)
68. (2010) “A note on estimating the false discovery rate under mixture model,” *Journal of Statistical Planning and Inference*, 140, 1601-1609. (with Fang Liu)
69. — “Procedures controlling the k-FDR using bivariate distributions of the null p-values.” *Statistica Sinica* 20, 1227-1238. (with W. Guo)
70. — “Controlling false discoveries in multidimensional directional decisions, with applications to gene expression data on ordered categories”, *Biometrics*, 66, 485-492. (with W. Guo and S. Peddada)
- 71 (2011) Simes’ test in multiple testing, *International Encyclopedia of Statistical Science* Ed.: Miodrag Lovric, 1325-1327, Springer.
72. — “A new adaptive method to control the false discovery rate,” *Recent Advances in Biostatistics: False Discovery Rates, Survival Analysis, and Related Topics*, Eds. M. Bhattacharjee, S. K. Dhar and S. Subramanian, *Series in Biostatistics*, 4, 3 – 26, World Scientific, New Jersey (with Fang Liu).
73. — “Adaptive multiple testing procedures under positive dependence.” *Recent Advances in Biostatistics: False Discovery Rates, Survival Analysis, and Related Topics*, Eds. M. Bhattacharjee, S. K. Dhar and S. Subramanian, *Series in Biostatistics*, 4, 27 – 41, World Scientific, New Jersey. (with Wenge Guo and Shyamal Peddada)
74. (2012). “On adaptive procedures controlling the familywise error rate, *Journal of Statistical Planning and Inference*. 142, 65-78. (with W. Guo and H. Finner).
75. — “The multivariate-t distribution and the Simes inequality,” *Statistics and Probability Letters* 83, 227-232. (with H. Block, T. Savits, and J. Wang)
76. (2013). “On Improving some adaptive BH procedures controlling the FDR under dependence.” *Electronic Journal of Statistics* 7, 2683-2701. (with Li He)
77. — “Multiple testing in a two-stage adaptive design with combination tests controlling FDR.” *Journal of the American Statistical Association* 108, 1385-1401. (with J. Chen and W. Guo).
78. — “Astronomical transient detection controlling the false discovery rate”. *Statistical Challenges in Modern Astronomy V*, 286 – 396. Eds. Eric D. Feigelson and G. Jogesh Babu, Springer-Verlag. (with N. Clements and W. Guo)
79. (2014). “Applying multiple testing procedures to detect changes in east African vegetation.” *Annals of Applied Statistics*, 8, 286-308 (with N. Clements, Z. Zhao, and D-Y. Kim).
80. — “Further results on controlling false discovery proportion.” *Annals of Statistics*, 42, 1070-1101. (with H. Li and W. Guo).

81. — “Stepdown procedures controlling a generalized false discovery rate”, *Statistical Science and Interdisciplinary Research: Statistical Paradigms, Volume 14, Recent Advances and Reconciliations*, Eds. A. SenGupta, T. Samanta and A. Basu, World Scientific. Forthcoming. (with W. Guo)
(<http://www.worldscientific.com/worldscibooks/10.1142/8134>)
82. — Multiplicative spatio-temporal models for remotely sensed normalized difference vegetation index data. *Journal of International Energy Policy*, 3(1), 1-14 (with N. Clements and W. W. S. Wei).
83. (2015) “A Bayesian approach to construct multiple confidence intervals of selected parameters with sparse signals. *Statistica Sinica*, 25, 725-741 (with Z. Zhao).
84. — “Capturing the severity of Type II errors in high-dimensional multiple testing.” *Journal of Multivariate Analysis*, 142, 106-116 (with H. Li and Z. Zhao).
85. (2016) “Improving Holm's Procedure using pairwise dependencies,” *Biometrika*, 103, 237-243 (with Y. Fu and W. Guo).
86. — “A new approach to multiple testing of grouped hypotheses,” *Journal of Statistical Planning and Inference*, 179, 1-16 (with Y. Liu and Z. Zhao).
87. (2017). “The control of the false discovery rate in fixed sequence multiple testing,” *Electronic Journal of Statistic*, 11 (2), 4649-4673 (with G. Lynch, W. Guo and H. Finner)
88. (2019). “Group sequential BH and its adaptive versions controlling the FDR,” *Journal of Statistical Planning and Inference*, 199, 219-235 (with A. Chen, L. He and W. Guo).
89. — “On Benjamini-Hochberg procedure applied to mid p-values,” *Journal of Statistical Planning and Inference*, In Press (with X. Chen)
90. — “Adaptive controls of FWER and FDR under block dependence”, To appear in *Journal of Statistical Planning and Inference* (with W. Guo).

ARTICLES UNDER REVIEW

1. “Bonferroni-based gatekeeping procedure with retesting option,” (with Z. Qiu and W. Guo)
2. “Local false discovery rate based methods for multiple testing of one-way classified hypotheses, (with Z. Zhao).
3. “A weighted FDR procedure under discrete and heterogeneous null distributions,” (with X. Chen and R. Doerge)
4. “Large scale multiple testing for dependent nonparanormal data.” (with Y. Xu and X. Han)
5. “Adapting BH to one- and two-way classified structures of hypotheses.” (with S. Nandi and X. Chen)
6. “A grouped, selectively weighted false discovery rate procedure,” (with X. Chen)

BOOK

- (2001) Co-Editor: *Applied Statistical Science V*, Nova Science Publishers, Inc., New York
- (2004) Co-Editor: *Recent Developments in Multiple Comparisons*, IMS Lectures Notes- Monograph Series, Volume 47

INVITED TALKS

1. *International Symposium on Inequalities in Statistics and Probability, Lincoln, Nebraska, October, 1982*
"On TP_2 and Log-concavity." (with S. Das Gupta)
2. *Indian Science Congress, January, 1989*
"Analysis of Some Multiple Models for Two-Way Ordinal Contingency Tables Using Association."
3. *A Conference on Pitman's Measure of Closeness, San Antonio, TX, June, 1991*
"On Estimating the Common Mean of Several Normal Populations Under the Pitman-Closeness Criterion."
4. *The Merck-Temple Conference on Research Topics in Pharmaceutical Statistics, Philadelphia, PA, May, 1992*
"Some Remarks on Statistical Issues in Population PK/PD Modeling."
5. *Indian Science Congress, January, 1995*
"Some New Results on Order Statistics."
6. *Eugene Lukacs Symposium, Bowling Green, OH, April, 1997*
"Probability Inequalities for MTP_2 random variables: A proof of the Simes conjecture."
7. *The Merck-Temple Conference, Philadelphia, PA, September, 1997*
"One Good Drug Deserves Another: The Design and Analysis of Combination Drug" (with S. Snapinn)
8. *Meeting of the Princeton-Trenton Local Chapter of the ASA, December, 1997*
"Some Results on the Simes Test for Multiple Hypothesis Testing"
9. *Spring Meeting of the International Biometric Society/ENAR, Pittsburgh, PA, March, 1998*
"Some Thoughts on Estimation of Ratio"
10. *International Conference of International Indian Statistical Association, McMaster, Canada, October, 1998*
"Some Results on Order Statistics with Applications to Multiple Hypothesis Testing"
11. *Mid-Atlantic Probability and Statistics Day, Baltimore, Maryland, November 13, 1999*
"The False Discovery Rate in Stepwise Multiple Testing Procedures"
12. *Sixth International Conference on Statistics, Combinatorics and Related Areas, University of South Alabama, Mobil, AL, December, 1999*
"On the Power Function of the Likelihood Ratio Test for MANOVA" (with D. Bhaumik)

13. *The 46th Colloquium of the German Region of the International Biometric Society, Rostock, Germany, March, 2000.*
"Asymptotic tests for some hypotheses related to covariance matrices of two dependent random vectors"
14. *Statistical Workshop Honoring Professor John W. Tukey's 85th Birthday, Princeton, N.J., June, 2000,*
"Stepwise Multiple Testing Procedures with Dependent Test Statistics"
15. *Fourth International Triennial Symposium on Probability and Statistics, Calcutta, India, December 2000*
"Some Results on False Discovery Rate in Stepwise Multiple Testing Procedures."
16. *NSF-CBMS Regional Research Conference on Multiple Comparisons, Temple University, Philadelphia, PA, August, 2001*
"Stepwise Multiple Testing Procedures and Some Results on False Discovery Rate"
17. *Fall Meeting of the Philadelphia Chapter of the American Statistical Association, October, 2001*
"False Discovery Rate: Some Theoretical Insights"
18. *MCP2002: The 3rd International Conference on Multiple Comparisons, Bethesda, MD, August, 2002*
"Recent Results on False Discovery Rate"
19. *10th Merck-Temple Conference on Research Topics in Pharmaceutical Statistics, Philadelphia, PA, October, 2002*
"FDR-Controlling Stepwise Procedures in Multiple Testing"
20. *7th Purdue International Symposium on Statistics, West Lafayette, IN, June, 2003*
"False Discovery Rates in Single-Step Multiple Testing Procedures"
21. *Department of Statistics, Calcutta University, Calcutta, India, June 2005*
"False Discovery and False Non-Discovery Rates in Single-Step Multiple Testing Procedures"
22. *Indian Statistical Institute, Calcutta, India, June 2005*
"Generalized Simes' Test"
23. *Department of Biostatistics, University of Illinois at Chicago, November, 2005*
"Two-Stage Stepup Procedures Controlling False Discovery Rate (FDR)"
24. *Department of Statistics, East China Normal University, August, 2005*
"Generalizing Simes' Test"
25. *Bechhofer-Gupta-Sobel Memorial Symposium on Ranking and Selection and Multiple Comparison Procedures Methodologies, Twelfth International Conference on Statistics, Mathematics and Applications, Auburn University, Auburn, Alabama, December, 2005*
"Generalizing Holm's and Hochberg's stepwise procedures for multiple hypothesis testing"
26. *International Biometric Society, Eastern North American Region, Tampa, FL, March, 2006.*
"Controlling False Discoveries and False Non-Discoveries in Microarray Analysis"

27. *Kickoff Workshop for the 2006 Summer Program on Multiplicity and Reproducibility in Scientific Studies, SAMSI, Chapel Hill, July 2006*
"Generalizing Some FWER and FDR Procedures"
28. *The Annual Meeting the Institute of Mathematical Statistics, Rio de Janerio, Brazil, August, 2006.*
"Generalized False Discovery Rate"
29. *Department of Biostatistics, University of Pittsburgh, October, 2006.*
"Generalizing the False Discovery Rate in Multiple Testing."
30. *The Sixth International Triennial Statistics Conference, Kolkata, India, December, 2006.*
"Roy's Union-Intersection Principle and Multiple Testing" (**Plenary Talk**).
31. *The Sixth International Triennial Statistics Conference, Kolkata, India, December, 2006.*
"Generalizing Error Rates in Multiple Testing of Large Number of Hypotheses"
32. *Department of Mathematics, New Jersey Institute of Technology, October, 2007.*
"Generalizing the False Discovery Rate."
33. *International Conference on Statistical Paradigms – Recent Advances and Reconciliations, Platinum Jubilee celebration of the Indian Statistical Institute, Kolkata, India, January 1-4, 2008.*
"Generalizing the False Discovery Rate"
34. *Department of Mathematics and Statistics, University of Maryland at Baltimore County, Catonsville, MD, March 28, 2008.*
"A Note on Estimating the False Discovery Rate."
35. *Department of Statistics, University of Florida, Gainesville, FL, April 2008*
"A Review of Results on False Discovery Rate."
36. *The 2nd Annual Probability and Statistics Day, University of Maryland at Baltimore County, Catonsville, MD, April 2008*
"New Results on the False Discovery Rate in Multiple Testing."
37. *International Indian Statistical Association Conference on Frontiers of Probability and Statistical Science, University of Connecticut, CT, May 22-25, 2008.*
"Some New Results on Controlling False Discoveries in Multiple Testing" (**Named Lecture**)
38. *International Chinese Statistical Association 2008 Applied Statistics Symposium, Piscataway, NJ, June 4-7, 2008*
"On Generalizing the False Discovery Rate."
39. *7th World Congress in Probability and Statistics, Singapore, July 14-19, 2008*
"Generalized Weighted Simes' Test"
40. *Department of Probability and Statistics, Michigan State University, East Lansing, MI, September 16, 2008*
"A Review of Current Results on False Discovery Rate."
41. *The Delaware Chapter of the American Statistical Association Dinner Meeting, September 18, 2008*
"Techniques of Modern Multiple Testing."

42. *The 3rd Annual Probability and Statistics Day, University of Maryland at Baltimore County, Catonsville, MD, April 2009*
"Modern Multiple Testing" (**Featured Speaker**)
43. *Frontiers in Applied and Computational Mathematics, NJIT, Newark, NJ, June 2009*
"On Storey's q-Value Method for Small-Scale Multiple Testing."
44. *17th Temple Conference, Plymouth Meeting, October 16, 2009*
"Recent Advances in Multiple Comparisons: What Error-Rate Will Serve Your Goals?"
(with Yoav Benjamini),
45. *Department of Statistics, Texas A & M University, November 12, 2009*
"Controlling Different Error Rates in Multiple Testing: Some Recent Developments"
46. *Seventh International Triennial Calcutta Symposium on Probability & Statistics, December 28-31, 2009.*
"Control of the Familywise Error Rate Using Adaptive Multiple Testing Methods"
47. *Joint Statistical Meetings, Vancouver, BC, Canada, July 31-August 5, 2010*
"Adaptive Multiple Testing Procedures Controlling the Familywise Error Rate"
48. *International Conference on Probability, Statistics and Data Analysis, April 21-24, 2011, Raleigh, NC.*
"Adaptive BH Procedures Controlling the FDR under Positive Dependence and with Improved Power"
49. *Statistical Challenges in Modern Astronomy V, Center for Astrostatistics, Penn State University, June 13-17, 2011.*
"Astronomical Transient Detection using Grouped p-Values and Controlling the False Discovery Rate"
50. *International Chinese Statistical Association 2011 Applied Statistics Symposium, New York, NY, June 26-29, 2011*
"Control of Generalized False Discovery Proportion"
51. *The 7th International Conference on Multiple Comparison Procedures, August 29 – September 01, 2011, Washington D.C.*
"Controlling the False Discovery Rate in Two-Stage Combination Tests for Multiple Endpoints"
52. *The 22nd Annual Conference of The International Environmetrics Society, January 3-6, 2012, Hyderabad, India*
"Detecting Changes in East African Vegetation using Multiple Testing Methods"
53. *Department of Statistics, University of Calcutta, India, January, 2012*
"Astronomical Transient Detection Controlling the False Discovery Rate"
54. *Frontiers in Applied and Computational Mathematics, NJIT, Newark, NJ, May 18-20, 2012.*
"Capturing the Severity of Type II Errors in High-Dimensional Multiple Testing."
55. *Eighth International Purdue Symposium on Statistics, June 20-24, 2012.*
"Capturing the Severity of Type II Errors in High-Dimensional Multiple Testing."
56. *Eighth World Congress in Probability and Statistics, Istanbul, Turkey, July 9-14, 2012.*
"Further Results on Controlling the False Discovery Proportion."

57. *Joint Statistical Meetings, Montreal, Canada, August 3-8, 2013*
"High-Dimensional Multiple Testing in a Two-Stage Adaptive Design Setting."
58. *Department of Statistics, James Mason University, November 22, 2013*
"Multiple Testing in a Two-Stage Adaptive Design with Combination Tests Controlling the False Discovery Rate"
59. *Bayesian and Interdisciplinary Research Unit, Indian Statistical Institute, Kolkata, India, January 2, 2014.*
"Controlling False Discovery Rate in Two-Stage Multiple Testing"
60. *ENAR 2014 Spring Meeting, March 16-19, 2014*
"Adaptive Controls of FWER and FDR Under Block Dependence"
61. *Frontiers of Hierarchical Modeling in Observational Studies, Complex Surveys and Big Data: A Conference Honoring Professor Malay Ghosh, College Park, May 29-31, 2014.*
"Multiple Testing of Grouped Hypotheses: A Decision Theoretic Approach (**Plenary Talk**)"
62. *2014 IMPACT Symposium III, Durham/Research Triangle, NC, November 20, 2014.*
"Improving Holm's procedure using pairwise dependencies,"
63. *The 9th International Triennial Calcutta Symposium on Probability & Statistics, Kolkata, India, December 28-31, 2015.*
"Multiple Testing of Grouped Hypotheses,"
64. *The 2016 Probability & Statistics Day, A Celebration of Professor Bimal Sinha's 70th Birthday, May 20-21, 2016.*
"Improving Holm's Procedure using Pairwise Dependencies."
65. *Joint Statistical Meetings, Baltimore, MD, July 29- August 3, 2017*
"New Approaches to Multiple Testing of Grouped Hypotheses"
66. *Beijing International Center for Mathematical Research, Beijing, China, July 2, 2018*
"Local False Discovery Rate Based Methods for Multiple Testing of One-Way Classified Hypotheses"
67. *Biostatistics and Research Decision Science Center, Merck Sharp & Dohme (China), Beijing, China, July 3, 2018*
"Group Sequential BH and its Adaptive Versions Controlling the FDR"
68. *School of Management, Fudan University, Fudan, China, July 4, 2018*
"Local False Discovery Rate Based Methods for Multiple Testing of One-Way Classified Hypotheses"
69. *School of Statistics and Management, Shanghai University of Finance and Economics, Shanghai, China, July 5, 2018*
"Group Sequential BH and its Adaptive Versions Controlling the FDR"
70. *School of Statistics and Data Science, Nankai University, Nankai, China, July 6, 2018*
"Local False Discovery Rate Based Approach to Grouped Hypotheses Testing"

71. *Symposium in Honor of Prof Yoav Benjamini's 70th Birthday & 10th Conference of the Eastern Mediterranean Region of the International Biometrics Society (EMR-IBS), Jerusalem, Israel, December 17-20, 2018*
"Controlling False Discoveries in Testing One-Way and Two-Way Classified Hypotheses"
72. *Tenth International Triennial Calcutta Symposium on Probability & Statistics (Celebrating the Birth Centenary of Prof. H. K. Nandi), Kolkata, India, December 27-30, 2018*
"Group Sequential BH and its Adaptive Versions Controlling the FDR" (**Special Lecture**)
73. *Joint Statistical Meetings, Denver, Colorado, July 27- August 1, 2019*
"Adapting to One- and Two-Way Classified Structures of Hypotheses While Controlling False Discoveries"