

MARINA VANNUCCI

Department of Statistics, MS 138
 Rice University
 6100 Main Street
 Houston, TX 77251-1892
 USA

E-mail: marina@rice.edu
Phone: (713)348-6132
Fax: (713)348-5476
URL: <http://www.stat.rice.edu/~marina/>

PERSONAL

Born in Prato, Italy, on July 23, 1966. Dual Citizen: Italy & USA

RESEARCH INTERESTS

Theory and Methods: Bayesian modeling, Variable selection, Nonparametric Bayes, Statistical computing, Wavelets.
 Applications: Large-scale high-throughput data, Structural Bioinformatics, Chemometrics and Engineering.

EDUCATION

- 1996 Ph.D., Statistics, University of Florence, Italy
 Thesis title: *On the Application of Wavelets in Statistics* (in italian)
 S.I.S. (Italian Statistical Society) prize *Best Doctoral Thesis in Statistics*
 Advisor: Prof. Antonio Moro
- 1992 Laurea (B.S.), Mathematics, University of Florence, Italy

EXPERIENCE

- 2007- Professor, Department of Statistics, Rice University, TX.
- 2007- Adjunct Professor, Department of Biostatistics, UT M.D. Anderson Cancer Center, TX.
- 2007- Director, Interinstitutional Graduate Program in Biostatistics, Rice University and UT M.D. Anderson Cancer Center, TX.
- Spring 07 Adjunct Professor, Department of Statistics, Rice University, TX.
- 2005-2007 Professor, Department of Statistics, Texas A&M University, TX.
- 2005-2007 Program Coordinator, Training Program in Bioinformatics, Texas A&M University
- 2005-2007 Director, Bioinformatics, Biostatistics and Bioinformatics Facility Core, NIEHS Center for Environmental and Rural Health (CERH), Texas A&M University
- 2003-2005 Associate Professor, Department of Statistics, Texas A&M University, TX.
- 1998-2003 Assistant Professor, Department of Statistics, Texas A&M University, TX.
- 1996-1998 Research Fellow, Institute of Mathematics and Statistics, University of Kent at Canterbury, UK

VISITING POSITIONS

- Department of Statistics, University of Florence, Italy (Summers 2005-2008)
- Department of Statistics, Rice University, TX (Fall 2006)
- Biostatistics Department, Columbia University, NY (Fall 2004, Sabbatical leave)
- Department of Statistics, Stanford University, CA (Summer & Fall 2001, Junior leave)
- Institute of Mathematics, Statistics & Actuarial Science, University of Kent at Canterbury, UK (Summer 1999)
- Department of Statistical Science, Duke University, NC (Summer & Fall 1995, visiting Ph.D. student)
- Department of Mechanical Engineering, Rice University, TX (Spring 1995, visiting Ph.D. student)

HONORS

Fellow, Institute of Mathematical Statistics (IMS), elected 2009.

Elected Member, International Statistical Institute (ISI), 2007.

Fellow, American Statistical Association (ASA), elected 2006.

Mitchell Prize, International Society for Bayesian Analysis, 2003.

JASA-Applications and Case Studies Editor's Invited Paper, 2003.

CAREER award, National Science Foundation.

Member, Royal Statistical Society (RSS), elected 1997.

S.I.S. (Italian Statistical Society) award for "Best Doctoral Thesis in Statistics".

Graduate School Fellowship for studies in Statistics, University of Florence, 1992-1995.

IBM Scholarship on "Statistical software evaluation", 1992.

Plenary/Keynote Lectures:

XII LatinAmerican Congress on Probability and Mathematical Statistics, Valparaiso, Chile, 2012

Conference of Texas Statisticians, College Station, TX, 2011

Ninth Valencia International Meeting on Bayesian Statistics, Alicante, Spain, 2010

International Biometric Society, Pisa, Italy, 2007

Workshop on Bayesian Inference in Complex Stochastic Systems, Warwick, UK, 2006

EDITORIAL RESPONSIBILITIES:

Deputy Editor, *Bayesian Analysis* (2005-2009)

Associate Editor:

Journal of the American Statistical Association - *T&M* (2011-)

Journal of the Royal Statistical Society, Series B (2010-2014)

Journal of the American Statistical Association - *A&CS* (2006-2009)

Technometrics (2004-2007)

Chemometrics and Intelligent Laboratory Systems (2001-2006)

GRANTS**NSF:**

- 2010-2013 DMS 1007871 *Bayesian Methods for Variable Selection in Generalized/Nonlinear Models*. Role: PI.
 2006-2010 DMS 0605001 *Wavelet-Based Statistical Modeling and Applications*. Role: PI.
 2001-2006 CAREER award *Some Applications of Wavelets in Statistics*. Role: PI.

NIH:

- 2011-2016 NHLBI 2 P01 HL082798 *Genetic & Physiological Basis of Salt-Induced Hypertension*.
 Role: subcontract-PI (PI: Allen Cowley).
 2007-2013 NCI 2 T32 CA096520 *Training program in Biostatistics for Cancer Research*.
 Role: Director and PI. (2010-2013); Co-Director and co-PI. (2007-2009; Director: Gary Rosner).
 2010-2011 NHGRI 1 R01 HG003319-05S1 (administrative supplement).
Bayesian Methods for Genomics with Variable Selection. Role: PI.
 2005-2011 NHGRI 1 R01 HG003319 *Bayesian Methods for Genomics with Variable Selection*. Role: PI.
 2007-2011 NIGMS R01 GM081631 *Side Chain Driven Refinement of Protein Structure*.
 Role: subcontract-PI (PI: Jerry Tsai).
 2005-2008 NCI Training Program in Bioinformatics (Director: Raymond J. Carroll).
 Role: Co-I., Program Coordinator and Mentor of postdoctoral trainees.
 2005-2007 NIEHS Center for Environmental and Rural Health (Director: Philip Mirkes).
 Role: Leading role in the creation of the Biostatistics & Bioinformatics Facility Core
 and in the hiring of the initial staff members, and first Director of the Core.
 2004-2005 NCI R01 CA107304 *Adaptive Methodology for Functional Biomedical Data*.
 Role: Co-I (year 1; PI: Jeff Morris).

Private Foundations and Education Boards:

- 2011-2013 Collaborative Research Fund, Virginia and L.E. Simmons Family Foundation.
*Novel Approach for Biomarker Discovery in Neurodegeneration: Comparative Genomics,
 Transcriptomics, and Metabolomics*. Role: Co-PI. (with M. Maletic-Savatic and J. Botas).
 2002-2003 Texas Higher Education Advanced Technology. Role: Co-I. (PI: A.L.N. Reddy).
Network Architectures Based on Partial State.
 2000-2001 Texas Higher Education Advanced Research Grant. Role: PI.
Multivariate Wavelet Component Selection in Near-Infrared Calibration Problems.

Other/Travel Awards:

- 2003-2005 Telecommunications and Informatics Task Force at TAMU. Role: Co-PI. (PI: A.L.N. Reddy).
HAIL: High Availability network Infrastructure Laboratory.
 2004 Texas/United Kingdom Collaborative Research Initiative, travel support.
 2003-2004 National co-founded research, MIUR, Italy. Role: Co-I.
 2003 NSF International Travel grant.
 1999-2002 National co-founded research, MURST, Italy. Role: Co-I.
 2001 Texas Transportation Institute, Texas A&M University, support for research.
 1999 International Research Travel Assistant Grant, Texas A&M University.
 1998 Overseas Conference Grant, The British Academy, UK.
 1997 Conference Grant, The Royal Society, UK.
 1996 Fondi ex quaranta%, Italy.

POSTDOCTORAL RESEARCHERS AND CURRENT EMPLOYMENT

- KASSANDRA FRONCZYK (2011-2013) Joint with Michele Guindani.
- FRANCESCO STINGO (2010-2011) *Assistant Professor*, MD Anderson Cancer Center, TX.
- ALEJANDRO VILLAGRAN (2008-2010) *Assistant Professor*, University of Connecticut, CT.
- ANN CHEN (2006-2008) *Assistant Professor*, Moffitt Cancer Center, FL.
- QIANXING (QUINCY) MO (2005-2006) *Assistant Professor*, Baylor College of Medicine, TX.
- MICHAEL SWARTZ (2004-2006) *Assistant Professor*, UT School of Public Health, TX.
- MAHLET G. TADESSE (2002-2004) *Associate Professor*, Georgetown University, Washington D.C.

Ph.D STUDENTS AND CURRENT EMPLOYMENT (when known)

- ALBERTO CASSESE Current
- CHRISTINE PETERSON Current (2010- Keck Fellow)
- BEIBEI GUO (Ph.D. 2010) *Postdoctoral Fellow*, MD Anderson Cancer Center, TX.
- TERRANCE SAVITSKY (Ph.D. 2010) At RAND Corporation, CA.
- COLLEEN KENNEY (Ph.D. 2010) At Edgewood Chemical and Biological Center, MD.
- FRANCESCO STINGO (Ph.D. 2010) *Assistant Professor*, MD Anderson Cancer Center, TX.
Winner of the S.I.S. (Italian Statistical Society) prize *Best Doctoral Thesis in Statistics*.
- JAESIK JEONG (Ph.D. 2008) *Postdoctoral Fellow*, Indiana University, IN.
- SANG HAN LEE (Ph.D. 2007) *Research Scientist*, N.S. Kline Institute, NY.
- SINAE KIM (Ph.D. 2006) *Assistant Professor*, UMDNJ-School of Public Health, NJ.
Winner of the 2005 E. Parzen Fellowship Award, Texas A&M University.
- DEUKWOO KWON (Ph.D. 2005) *Associate Scientist*, University of Miami, FL.
- KYUNGDUK KO (Ph.D. 2004) *Associate Professor*, Boise State University, ID.
- CHUN GUN PARK (Ph.D. 2003)
- FRANCESCO GABBANINI (Ph.D. 2002) *Research Fellow*, National Research Council, Italy.
- NAIJUN SHA (Ph.D. 2002) *Associate Professor*, University of Texas at El Paso, TX.
- LEONARDO FABBRONI (Ph.D. 2001)
Winner of the S.I.S. (Italian Statistical Society) prize *Best Doctoral Thesis in Statistics*.

OTHER STUDENTS/FELLOWS I HAVE WORKED WITH

- RICKY FLORES (2010-) Keck Fellow
- MISHA KOSHELEV (Ph.D. 2011) Currently MD student at Baylor College of Medicine, TX.
Awarded a 2-year pre-doc Keck Fellowship, Gulf Coast Consortia, TX.
- KRISTIN LENNOX (Ph.D. 2010) At Lawrence Livermore National Laboratory, CA.
Winner of the 2009 E. Parzen Fellowship award, Texas A&M University.
Co-winner of the 2007 W.S. Connor award, Texas A&M University.
- ALEJANDRO CRUZ-MARCELO (Ph.D. 2010) At Capital One, Dallas, TX.
- HONGXIAO ZHU (Ph.D. 2008) *Postdoctoral Fellow*, Duke University, NC.

MASTER STUDENTS: ADARSH JOSHI (M.S. 2006); CHANGFU XIAO (M.S. 2005); ANU RAMANATHAN (M.S. 2002); JEROME F. BENNETT (M.S. 1999); ANNE K. FUEHRBOETER (M.S. 1996); VERONIQUE DELOUILLE (M.S. 1998); ANDREW SHARKEY (M.S. 1998).

PUBLICATIONS

Books:

1. Do, K.-A., Mueller, P. and Vannucci, M. (2006). *Bayesian Inference for Gene Expression and Proteomics*. Edited Volume. Cambridge University Press.
2. Do, K.-A., Qin, Q., Vannucci, M. (2013). *Advances in Statistical Bioinformatics: Models and Integrative Inference for High-Throughput Data*. Edited Volume. Cambridge University Press. (In preparation)

Theory and Methods

1. VANNUCCI, M. and VIDAKOVIC, B. (1997). Preventing the Dirac disaster: Wavelet based density estimation. *Journal of the Italian Statistical Society*, **6(2)**, 145–159.
2. BROWN, P.J., VANNUCCI, M. and FEARN, T. (1998). Multivariate Bayesian variable selection and prediction. *Journal of the Royal Statistical Society, Series B*, **60(3)**, 627–641.
3. BROWN, P.J., FEARN, T. and VANNUCCI, M. (1999). The choice of variables in multivariate regression: a non-conjugate Bayesian decision theory approach. *Biometrika*, **86(3)**, 635–648.
4. VANNUCCI, M. and CORRADI, F. (1999). Covariance structure of wavelet coefficients: Theory and models in a Bayesian perspective. *Journal of the Royal Statistical Society, Series B*, **61(4)**, 971–986.
5. BROWN, P.J., FEARN, T. and VANNUCCI, M. (2001). Bayesian wavelet regression on curves with application to a spectroscopic calibration problem. *Journal of the American Statistical Association*, **96**, 398–408.
6. VANNUCCI, M. and LIÒ, P. (2001). Non-decimated wavelet analysis of biological sequences: Applications to protein structure and genomics. *Sankhya, Series B*, **63(2)**, 218–233.
7. BROWN, P.J., VANNUCCI, M. and FEARN, T. (2002). Bayes model averaging with selection of regressors. *Journal of the Royal Statistical Society, Series B*, **64(3)**, 519–536.
8. VANNUCCI, M., BROWN, P.J. and FEARN, T. (2003). A decision theoretical approach to wavelet regression on curves with a high number of regressors. *Journal of Statistical Planning & Inference*, **112(1-2)**, 195–212.
9. MORRIS, J.S., VANNUCCI, M., BROWN, P.J. and CARROLL, R.J. (2003). Wavelet-based nonparametric modeling of hierarchical functions in colon carcinogenesis (with discussion). *Journal of the American Statistical Association*, **98**, 573–597. *JASA-A&CS Editor's Invited Paper* AND WINNER OF THE *Mitchell Prize*.
10. SHA, N., VANNUCCI, M., TADESSE, M.G., BROWN, P.J., DRAGONI, I., DAVIES, N., ROBERTS, T.C., CONTESTABILE, A., SALMON, N., BUCKLEY, C. and FALCIANI, F. (2004). Bayesian variable selection in multinomial probit models to identify molecular signatures of disease stage. *Biometrics*, **60(3)**, 812–819.
11. GABBANINI, F., VANNUCCI, M., BARTOLI, G. and MORO, A. (2004). Wavelet packet methods for the analysis of variance of time series with application to crack widths on the Brunelleschi dome. *Journal of Computational and Graphical Statistics*, **13(3)**, 639–658.
12. TADESSE, M.G., SHA, N. and VANNUCCI, M. (2005). Bayesian variable selection in clustering high-dimensional data. *Journal of the American Statistical Association*, **100**, 602–617.
13. TADESSE, M.G., IBRAHIM, J.G., VANNUCCI, M. and GENTLEMAN, R. (2005). Wavelet thresholding with Bayesian false discovery rate control. *Biometrics*, **61**, 25–35.

14. PARK, C.G., VANNUCCI, M. and HART, J.D. (2005). Bayesian Methods for wavelet series in single-index models. *Journal of Computational and Graphical Statistics*, **14(4)**, 770–794.
15. KIM, S., TADESSE, M.G. and VANNUCCI, M. (2006). Variable selection in clustering via Dirichlet process mixture models. *Biometrika*, **93(4)**, 877–893. WINNER OF THE *ASA-SBSS Student Paper* COMPETITION.
16. KO, K. and VANNUCCI, M. (2006). Bayesian wavelet analysis of autoregressive fractionally integrated moving-average processes. *Journal of Statistical Planning and Inference*, **136(10)**, 3415–3434.
17. LEE, S., LIM, J., VANNUCCI, M., PETKOVA, E., PRETER, M. and KLEIN, D.F. (2008). Order-preserving dimension reduction test for the dominance of two mean curves with application to tidal volume curves. *Biometrics*, **64(3)**, 931–939.
18. DAHL, D.B., MO, Q. and VANNUCCI, M. (2008). Simultaneous inference for multiple testing and clustering via a Dirichlet process mixture model. *Statistical Modelling: An International Journal*, **8(1)**, 23–39.
19. SWARTZ, M., MO, Q., MURPHY, M.E., TURNER, N., LUPTON, J., HONG, M.Y. and VANNUCCI, M. (2008). Bayesian variable selection in clustering high dimensional data with substructure. *Journal of Agricultural, Biological and Environmental Statistics*, **13(4)**, 407–423.
20. LENNOX, K.P., DAHL, D.B., VANNUCCI, M. and TSAI, J.W. (2009). Density estimation for protein conformation angles using a von Mises distribution and Bayesian nonparametrics, *Journal of the American Statistical Association*, **104**, 586–596. Correction in **104**, 1728. WINNER OF THE *ASA-SBSS Student Paper* COMPETITION.
21. KO, K., QU, L. and VANNUCCI, M. (2009). Wavelet-based Bayesian estimation of partially linear regression models with long memory errors. *Statistica Sinica*, **19(4)**, 1463–1478.
22. KIM, S., DAHL, D.B. and VANNUCCI, M. (2009). Spiked Dirichlet process prior for Bayesian multiple hypothesis testing in random effects models, *Bayesian Analysis*, **4(4)**, 707–732.
23. ZHU, H., VANNUCCI, M. and COX, D.D. (2010). A Bayesian hierarchical model for classification with selection of functional predictors. *Biometrics*, **66(2)**, 463–473. WINNER OF THE *ASA-SBSS Student Paper* COMPETITION.
24. LENNOX, K.P., DAHL, D.B., VANNUCCI, M., DAY, R. and TSAI, J.W. (2010). A Dirichlet process mixture of hidden Markov models for protein structure prediction. *Annals of Applied Statistics*, **4(2)**, 916–942.
25. STINGO, F.C., CHEN, Y.A., VANNUCCI, M., BARRIER, M. and MIRKES, P.E. (2010). A Bayesian graphical modeling approach to microRNA regulatory network inference. *Annals of Applied Statistics*, **4(4)**, 2024–2048.
26. SAVITSKY, T. and VANNUCCI, M. (2010). Spiked Dirichlet process priors for Gaussian process models. *Journal of Probability and Statistics*, **2010**, Article ID 201489, 14 pages.
27. VANNUCCI, M. and STINGO, F.C. (2011). Bayesian Models for Variable Selection that Incorporate Biological Information (with discussion). In *Bayesian Statistics 9*, J.M. Bernardo, M.J. Bayarri, J.O. Berger, A.P. Dawid, D. Heckerman, A.F.M. Smith and M. West (Eds.). Oxford: University Press, 659–678.
28. STINGO, F.C., CHEN Y.A., TADESSE, M.G. and VANNUCCI, M. (2011). Incorporating Biological Information into Linear Models: A Bayesian Approach to the Selection of Pathways and Genes. *Annals of Applied Statistics*, **5(3)**, 1978–2002.
29. SAVITSKY, T., VANNUCCI, M. and SHA, N. (2011). Variable Selection for Nonparametric Gaussian Process Priors: Models and Computational Strategies. *Statistical Science*, **26(1)**, 130–149.

30. KWON, D.W., LANDI, M.T., VANNUCCI, M., ISSAQ, H.J., PRIETO, D. and PFEIFFER, R.M. (2011). An efficient stochastic search for Bayesian variable selection with high-dimensional correlated predictors. *Computational Statistics and Data Analysis*, 55(10), 2807-2818.
31. BROWNLEES, C. and VANNUCCI, M. (2011). A Bayesian Approach for capturing daily heterogeneity in intradaily durations time series: The mixed autoregressive conditional duration model. *Studies in Nonlinear Dynamics and Econometrics*, invited revision.
32. STINGO, F.C., VANNUCCI, M. and DOWNEY, G. (2012). Bayesian Wavelet-based Curve Classification via Discriminant Analysis with Markov Random Tree Priors. *Statistica Sinica*, to appear.

Methods & Applications: Neuroscience

33. KOSHELEV, M., LOHRENZ, T., VANNUCCI, M. and MONTAGUE, P.R. (2010). Biosensor Approach to Psychopathology Classification. *PLoS Computational Biology*, 6(10), e1000966.

Methods & Applications: Genetics, Genomics and Proteomics (High-Throughput Data)

34. SHA, N., VANNUCCI, M., BROWN, P.J., TROWER, M.K., AMPHLETT, G. and FALCIANI, F. (2003). Gene selection in arthritis classification with large-scale microarray expression profiles. *Comparative and Functional Genomics*, 4(2), 171-181.
35. LEE, K.E., SHA, N., DOUGHERTY, E., VANNUCCI, M. and MALLICK, B.K. (2003). Gene selection: A Bayesian variable selection approach. *Bioinformatics*, 19(1), 90-97.
36. TADESSE, M.G., VANNUCCI, M. and LIÒ, P. (2004). Identification of DNA regulatory motifs using Bayesian variable selection. *Bioinformatics*, 20(16), 2553-2561.
37. DAVIES, N., TADESSE, M.G., VANNUCCI, M., KIKUCHI, H., TREVINO, V., SARTI, D., DRAGONI, I., CONTESTABILE, A., ZANDERS, E. and FALCIANI, F. (2004). Making sense of molecular signatures in the immune system. *Journal of Combinatorial Chemistry and High Throughput Screening*, 7(3), 231-238.
38. SHA, N., TADESSE, M.G. and VANNUCCI, M. (2006). Bayesian variable selection for the analysis of microarray data with censored outcome. *Bioinformatics*, 22(18), 2262-2268.
39. KWON, D.W., TADESSE, M.G., SHA, N., PFEIFFER, R.M. and VANNUCCI, M. (2007). Identifying biomarkers from mass spectrometry data with ordinal outcome. *Cancer Informatics*, 3, 19-28.
40. KWON, D.W., VANNUCCI, M., SONG, J.J., JEONG, J. and PFEIFFER, R. (2008). A novel wavelet-based thresholding method for the pre-processing of mass spectrometry data that accounts for heterogeneous noise. *Proteomics*, 8(15), 3019-3029.
41. CRUZ-MARCELO, A., GUERRA, R., VANNUCCI, M., LI, Y., LAU, C. and MAN, C. (2008). Comparison of algorithms for pre-processing of SELDI-TOF mass spectrometry data. *Bioinformatics*, 24(19), 2129-2136.
42. ORTEGA, F., SEMEITH, K., TURAN, N., COMPTON, R., TREVINO, V., VANNUCCI, M. and FALCIANI, F. (2008). Models and computational strategies linking physiological response to molecular networks from large-scale data. *Philosophical Transactions of the Royal Society A*, 366, 3067-3089.
43. GUO, B., VILLAGRAN, A., VANNUCCI, M., WANG, J., DAVIS, C., MAN, T.K., LAU, C. and GUERRA, R. (2010). Bayesian Estimation of Genomic Copy Number with Single Nucleotide Polymorphism Genotyping Arrays. *BMC Research Notes*, 3:350.

44. STINGO, F.C. and VANNUCCI, M. (2011). Variable Selection for Discriminant Analysis with Markov Random Field Priors for the Analysis of Microarray Data. *Bioinformatics*, **27(4)**, 495–501.
45. TREVINO, V., TADESSE, M.G., VANNUCCI, M., AL-SHAHROUR, F., ANTCZAK, P., DURANT, S., BIKFALVI, A., DOPAZO, J., CAMPBELL, M.J. and FALCIANI, F. (2011). Analysis of normal-tumour tissue interaction in tumours: Prediction of prostate cancer features from the molecular profile of adjacent normal cells. *PLoS ONE*, **6(3)**, e16492.
46. SWARTZ, M., PETERSON, C., LUPO, P., WU, X., FORMAN, M.R., SPITZ, M.R., HERNANDEZ, L.M., VANNUCCI, M. and SHETE, S. (2011). A pathway approach to detecting genetic and nutritional risk factors for lung cancer related to folate metabolism. , submitted.

Methods & Applications: Biology and Biochemistry

47. LIÒ, P. and VANNUCCI, M. (2000). Wavelet change-point prediction of transmembrane proteins. *Bioinformatics*, **16(4)**, 376–382.
48. LIÒ, P. and VANNUCCI, M. (2000). Finding pathogenicity islands and gene transfer events in genome data. *Bioinformatics*, **16(10)**, 932–940.
49. LIÒ, P. and VANNUCCI, M. (2003). Investigating the evolution and structure of chemokine receptors. *Gene*, **317**, 29–37.
50. KIM, S., TSAI, J.W., KAGIAMPAKIS, I., LIWANG, P. and VANNUCCI, M. (2007). Detecting protein dissimilarities in multiple alignments using Bayesian variable selection. *Bioinformatics*, **23(2)**, 245–246.
51. DAHL, D.B., BOHANNAN, Z., MO, Q., VANNUCCI, M. and TSAI, J.W. (2008). Assessing side-chain perturbations of the protein backbone: A knowledge based classification of residue Ramachandran space. *Journal of Molecular Biology*, **378**, 749–758.
52. KAGIAMPAKIS, I., JIN, H., KIM, S., VANNUCCI, M., LIWANG, P.J. and TSAI, J.W. (2008). Conservation of unfavorable sequence motifs that contribute to chemokine quaternary state. *Biochemistry*, **47**, 10637–10648.
53. SWANSON, R., VANNUCCI, M. and TSAI, J.W. (2009). Information theory provides a comprehensive framework for the evaluation of protein structure predictions. *Proteins: Structure, Function, and Bioinformatics*, **74(3)**, 701–711.
54. DAY, R., LENNOX, K.P., DAHL, D.B., VANNUCCI, M. and TSAI, J.W. (2010). Characterizing the regularity of tetrahedral packing motifs in protein tertiary structure. *Bioinformatics*, **26(24)**, 3059–3066.
55. JOO, H., CHAVAN, A.G., DAY, R., LENNOX, K.P., SUKHANOV, P., DAHL, D.B., VANNUCCI, M. and TSAI, J.W. (2011). Near-Native Protein Loop Sampling using Nonparametric Density Estimation Accommodating Sparsity. *PLOS Computational Biology*, **7(10)**, e1002234.

Methods & Applications: Chemometrics and Engineering

56. BROWN, P.J., VANNUCCI, M. and FEARN, T. (1997). Multivariate Bayesian wavelength selection for NIR spectra applied to biscuit dough pieces. *Proceedings of the 5^a Journées Europeennes Agro-Industrie et Methodes Statistique*, 19.1–19.11. (refereed volume).
57. BROWN, P.J., VANNUCCI, M. and FEARN, T. (1998). Bayesian wavelength selection in multicomponent analysis. *Journal of Chemometrics*, **12(3)**, 173–182.

58. SPIEGELMAN, C., BENNETT, J., VANNUCCI, M., MCSHANE, M.J. and COTÈ, G. (2000). A transparent tool for seemingly difficult calibrations: The parallel calibration method. *Analytical Chemistry*, **72**(1), 135–140. Correction in **72**(8), p. 1944.
59. KIM, S.S., REDDY, A.L.N. and VANNUCCI, M. (2004). Detecting traffic anomalies through aggregate analysis of packet header data. In *Proceedings of the 3rd IFIP-TC6 Networking conference*. Mitrou, N. et al. (Editors), Lecture Notes in Computer Science, vol. 3042, Springer Verlag, 1047–1059 (refereed volume, 103/539=19.1% acceptance rate).
60. KIM, S.S., REDDY, A.L.N. and VANNUCCI, M. (2004). Detecting traffic anomalies using discrete wavelet transform. In *Proceedings of the International Conference on Information Networking*. Kahng, H.K. and Goto, S. (Editors), Lecture Notes in Computer Science, vol. 3090, Springer Verlag, 951–961 (refereed volume, 104/341=30.5% acceptance rate).
61. VANNUCCI, M., SHA, N. and BROWN, P.J. (2005). NIR and mass spectra classification: Bayesian methods for wavelet-based feature selection. *Chemometrics and Intelligent Laboratory Systems*, **77**, 139–148.
62. FABBRONI, L., VANNUCCI, M., CUOCO, E., LOSURDO, G., MAZZONI, M. and STANGA, R. (2005). Wavelet tests for the detection of transients in the VIRGO interferometric gravitational wave detector. *IEEE Transactions on Instrumentation and Measurement*, **54**(1), 151–162.
63. KWON, D.W., KO, K., VANNUCCI, M., REDDY, A.L.N. and KIM, S. (2006). Wavelet methods for the detection of anomalies and their application to network traffic analysis. *Quality and Reliability Engineering International*, **22**, 1–17.
64. KO, K. and VANNUCCI, M. (2006). Bayesian wavelet-based methods for the detection of multiple changes of the long memory parameter. *IEEE Transactions on Signal Processing*, **54**(11), 4461–4470.
65. GARDONI, P., TREJO, D., VANNUCCI, M. and BHATTACHARJEE, C. (2009). Probability models for the modulus of elasticity of self consolidated concrete: A Bayesian approach. *ASCE Journal of Engineering Mechanics*, **135**, 295–306.

Collaborative

66. ALHAMAD, M.N., STUTH, J. and VANNUCCI, M. (2007). Biophysical modeling and NDVI time series to project near-term forage supply: Spectral analysis aided by wavelet denoising and ARIMA modeling. *International Journal of Remote Sensing*, **28**(11), 2513–2548.
67. DI MARTINO, A., GHAFARI, M., CURCHACK, J., PHILIP REISS, P., HYDE, C., VANNUCCI, M., PETKOVA, E., KLEIN, D.F. and CASTELLANOS, F.X. (2008). Decomposing intra-subject variability in children with attention-deficit/hyperactivity disorder. *Biological Psychiatry*, **64**(7), 607–614.
68. JAYARAMAN, A., MAGUIRE, T., VEMULA, M., KWON, D.W., VANNUCCI, M., BERTHIAUME, F., and YARMUSH, M.L. (2009). Gene expression profiling of long-term changes in rat liver following burn-injury. *Journal of Surgical Research*, **152**(1), 3–17.
69. POPOVIC, N., BRIDENBAUGH, E.A., NEIGER, J.D., HU, J.J., VANNUCCI, M., MO, Q., TRZECIAKOWSKI, J., MILLER, M.W., FOSSUM, T.W., HUMPHREY, J.D. and WILSON, E. (2009). Transforming growth factor beta signaling in hypertensive remodeling of porcine aorta, *American Journal of Physiology: Heart and Circulatory Physiology*, **297**, 2044–2053.

70. SMALL, C.M., CARNEY, G.E., MO, Q., VANNUCCI, M. and JONES, A.G. (2009). A microarray analysis of sex- and gonad-biased gene expression in the zebrafish: Evidence for masculinization of the transcriptome, *BMC Genomics*, **10**:579.
71. ZREIK, T.G., MAZLOOM, A., CHEN, Y., VANNUCCI, M., PINNIX, C.C., FULTON, S., HADZIAHMETOVIC, M., ASMAR, N., MUNKARAH, A.R., AYOUB, C.M., SHIHADDEH, F., BERJAWI, G., HANNOUN, A., ZALLOUA, P., WOGAN, C. and DABAJA, B. (2010). Fertility Drugs and the Risk of Breast Cancer: A Meta-Analysis and Review. *Breast Cancer Research and Treatment*, **124**(1), 13–26.
72. PRETER, M., LEE, S.H., PETKOVA, E., VANNUCCI, M., KIM, S. and KLEIN, D.F. (2011). Controlled cross-over study in normal subjects of naloxone-preceding-lactate infusions; respiratory and subjective responses: relationship to endogenous opioid system, suffocation false alarm theory and childhood parental loss. *Psychological Medicine*, **41**(2), 385–394.
73. CHO, Y., KIM, H., TURNER, N.D., MANN, J.C., WEI, J., TADDEO, S.S., DAVIDSON, L.A., WANG, N., VANNUCCI, M., CARROLL, R.J., CHAPKIN, R.S. and LUPTON, J.R. (2011). A chemoprotective fish oil/pectin diet temporally alters gene expression profiles in exfoliated rat colonocytes throughout oncogenesis. *Journal of Nutrition*, **141**(6), 1029–35.
74. FLORES, R.J., LI, Y., YU, A., SHEN, J., LAU, S.S., VANNUCCI, M., LAU, C.C. and MAN, T.K. (2012). A Systems Biology Approach Reveals Common Metastatic Pathway in Osteosarcoma. *BMC Systems Biology*, invited revision.

Book Chapters

75. VANNUCCI, M. and CORRADI, F. (1999). Modeling dependence in the wavelet domain. In *Bayesian Inference in Wavelet based Models*. (Eds P. Müller and B. Vidakovic), New York: Springer-Verlag, 173–186.
76. VANNUCCI, M., BROWN, P.J. and FEARN, T. (2001). Predictor selection for model averaging. In *Bayesian methods with applications to science, policy and official statistics*. (Eds E.I. George and P. Nanopoulos), Eurostat: Luxemburg, 553–562.
77. TADESSE, M.G., SHA, N., KIM, S. and VANNUCCI, M. (2006). Identification of biomarkers in classification and clustering of high-throughput data. In *Bayesian Inference for Gene Expression and Proteomics*, Kim-Anh Do, Peter Mueller and Marina Vannucci (Eds). Cambridge University Press, 97–115.
78. KWON, D.W., KIM, S., DAHL, D.B., SWARTZ, M., TADESSE, M.G. and VANNUCCI, M. (2006). Identification of DNA regulatory motifs and regulators by integrating gene expression and sequence data. In *Bayesian Inference for Gene Expression and Proteomics*, Kim-Anh Do, Peter Mueller and Marina Vannucci (Eds). Cambridge University Press, 333–346.
79. JEONG, J., VANNUCCI, M., DO, K.-A., BROOM, B., KIM, S., SHA, N., TADESSE, M.G., YAN, K. and PUSZTAI, L. (2010). Gene selection for the identification of biomarkers in high-throughput data. In *Bayesian Modeling in Bioinformatics*, Dipak K. Dey, Samiran Ghosh and Bani Mallick (Eds). Chapman & Hall/CRC press, 233–254.

Discussions and Book Reviews

80. SHA, N. and VANNUCCI, M. (2002). Contribution to the discussion of “A statistical framework for expression-based molecular classification in cancer”, *Journal of the Royal Statistical Society, Series B*, **64**(4), 737.

81. KIM, S. and VANNUCCI, M. (2007). Invited discussion of “Detecting selection in DNA sequences: Bayesian Modelling and Inference”, *Bayesian Statistics 8*, edited by J.M. Bernardo, M.J. Bayarri, J.O. Berger, A.P. Dawid, D. Heckerman, A.F.M. Smith and M. West. Oxford University Press, 322–323.
82. VANNUCCI, M. (2009). Review of “Bayesian Bounds for Parameter Estimation and Nonlinear Filtering/Tracking”, edited by Harry L. van Trees and Kristine L. Bell. *Journal of the American Statistical Association*, **104**, 1290.

Theses

83. VANNUCCI, M. (1992). Automatic evaluation of generating function coefficients (in italian). *Bachelor Thesis*, Dipartimento di Matematica “U.Dini”, University of Florence, Italy.
84. VANNUCCI, M. (1996). On the Application of Wavelets in Statistics (in italian). *Doctoral Thesis*, Dipartimento Statistico “G.Parenti”, University of Florence, Italy. AWARDED WITH THE S.I.S. (ITALIAN STATISTICAL SOCIETY) PRIZE *Best Doctoral Thesis in Statistics*, Italy.

INVITED PRESENTATIONS

I have given more than 110 invited presentation, since 1995. Those from the last few years include:

- 2008 Workshop on Bayesian Model Selection and Objective Methods, University of Florida, FL.
- 2008 9th Brazilian Bayesian Meeting, San Paulo, Brazil.
- 2008 Department of Statistical Methods, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil.
- 2008 Statistical Sciences Group, Los Alamos National Laboratory, Los Alamos, NM.
- 2008 Department of Mathematics and Statistics, University of New Mexico Albuquerque, NM.
- 2008 Department of Decision Sciences, Bocconi University, Milano, Italy.
- 2008 International Society for Bayesian Analysis, 9th World Meeting, Hamilton Island, Australia.
- 2008 Department of Statistics, Carnegie Mellon University, PA.
- 2009 TMC Proteomics Meeting, Baylor College of Medicine, Houston, TX.
- 2009 Invited Lecturer, mini-course on wavelets, Rice University, Houston, TX.
- 2009 Department of Statistics, University of Florence, Italy.
- 2009 Department of Statistics, University of Perugia, Italy.
- 2009 JSM Joint Statistical Meetings, Washington, D.C.
- 2009 Department of Statistics, Columbia University, NY.
- 2010 Workshop on Frontier of Statistical Decision Making and Bayesian Analysis, San Antonio, TX.
- 2010 ENAR Spring Meetings, New Orleans, LA.
- 2010 Department of Mathematical Sciences, University of Texas at El Paso, TX.
- 2010 Workshop on Functional Data Analysis, Utah State University, Logan, UT.
- 2010 Conference on Nonparametrics Statistics and Statistical Learning, Columbus, OH.
- 2010 Ninth Valencia International Meeting on Bayesian Statistics, Benidorm, Alicante, Spain.
- 2010 JSM Joint Statistical Meeting, Vancouver, Canada.
- 2010 Department of Statistics, University of Missouri-Columbia, MO.
- 2010 Department of Biostatistics and Bioinformatics, Emory University, Atlanta, GA.
- 2010 The Eighth ICSA International Conference: Frontiers of Interdisciplinary and Methodological Statistical Research, Guangzhou University, China.
- 2010 Department of Mechanical and Automation Engineering, the Chinese University of Hong Kong.
- 2010 Department of Applied Mathematics, Shanghai Normal University, Shanghai, China.
- 2010 Shanghai Institute of Foreign Trade, Shanghai, China.
- 2010 Department of Statistics, Fudan University, Shanghai, China.
- 2011 ENAR Spring Meetings, Miami, FL.
- 2011 Conference of Texas Statisticians, College Station, TX. (Keynote Speaker).
- 2011 Department of Biostatistics, UT School of Public Health, Houston, TX.
- 2011 JSM Joint Statistical Meetings, Miami Beach, FL.
- 2011 Department of Physiology, Medical College of Wisconsin, Milwaukee, WI.
- 2011 Learning in the Context of Very High Dimensional Data, Schloss Dagstuhl, Germany.
- 2011 Department of Statistics, Rice University, TX.
- 2011 Department of Biostatistics, Harvard University, Boston, MA.

2011 Department of Biostatistics, University of Michigan, Ann Arbor, MI.

2011 Workshop on Current Challenges in Statistical Learning, the Banff Centre, Alberta, Canada.

TEACHING EXPERIENCE

Short-Courses:

<i>Wavelets and Statistical Applications</i>	Continuing Education course, JSM (Salt Lake city, UT, 2007) (with Brani Vidakovic) Department of Economics, Central Bank of Venezuela (Caracas, Venezuela, March 3-4, 2008)
<i>Bayesian Methods for High-Dimensional Data</i>	Ph.D. Program in Statistics, University of Florence, Italy (Summer programs, 2005-2008) Ph.D. Program in Statistics, University of Rome, Italy (Summer program, 2009) PASI: Cutting-edge Topics in Theoretical Statistics and Applications in Genetics and Bioinformatics. (CIMAT, Mexico, April 27-29, 2010)

Rice University:

STAT 440 - BIOE 440	<i>Statistics for Bioengineering</i>
STAT 422/622	<i>Bayesian Data Analysis</i>
STAT 522	<i>Advanced Bayesian Statistics</i>
STAT 549	<i>Functional Data and Wavelets</i>

Texas A&M University:

STAT 689	<i>Special Topics: Wavelet-Based Statistical Modeling and Applications</i>
STAT 608	<i>Least Squares and Regression Analysis</i>
STAT 408	<i>Introduction to Linear Models</i>
STAT 212	<i>Principles of Statistics II</i>
STAT 651	<i>Statistics in Research I</i>

University of Kent at Canterbury:

Analysis of Variance (co-taught)
Statistics for Insurance (co-taught)

PROFESSIONAL ACTIVITIES

Memberships: American Statistical Association (ASA); Institute of Mathematical Statistics (IMS); International Society for Bayesian Analysis (ISBA, lifetime member); International Statistical Institute (ISI)

Service for Professional Societies:

ISBA	Prize Committee (founding member 2007-2010, Elected Chair 2008-2009) Savage Fund Trust Committee member (2006-2007) Mitchell Prize Committee member (2005-2007) Savage Award Committee member (2005-2006) Associate Editor, Annotated Bibliography section, ISBA Bulletin (2005-2007) Elected Member of the Board of Directors (2003-2005)
ASA	Section on Bayesian Statistical Science (Program Chair-Elect, 2011; Program Chair, 2012) Noether Awards Committee member (2008-2013) Section on Nonparametric Statistics (Treasurer/Secretary, 2005-2007) Chapter Representative of the Southeast Texas Chapter (2002-2005)
IMS	New Researchers Meeting (panelist, 2012) Travel Awards Committee (member 2004-2007, Chair 2007-2008) New Researchers Committee member (2000-2003)

National and International Service:

NSF	Panelist: Faculty Early Career Development (CAREER) (10/2008) Data Mining & Bioinformatics (04/2008) Statistics and Probability (12/2004, 01/2007, 01/2011)
NIH	Study Section and ad-hoc Reviewer: ARRA Challenge Stage I reviewer (06/2009) NLM Special Panel on Informatics Training Grants (05/2006) MBRS Minority Programs (03/2006) Special Panel on Software Development (06/2005) BDMA (03/2005, 10/2005, 10/2010, 06/2011)
NSA	Outside Reviewer for the AMS (American Mathematical Society) Panel (01/2007)

Other Service:

NIDA R25 Advisory Committee member and Executive Committee member, UT MD Anderson Cancer Center (PIs: S. Chang & S. Shete) (2010-)

Technical Committee member, IEEE World Congress on Computational Intelligence, Hong Kong (2008)

Scientific Committee member, CAMDA07, Valencia, Spain (2007)

Program Committee member, the Tenth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, Seattle, WA (2004)

Chair of the Roundtable Luncheon on *Bayesian Variable Selection*, JSM, San Francisco, CA (2003).

Invited Session Organizer:

Bayesian Bioinformatics, Joint Statistical Meetings, Salt Lake City, UT (2007)

Integrating Multiple Sources of Genomic Data, Joint Statistical Meetings, Minneapolis, MN (2005)

Bayesian Methods in Genomics, ENAR Spring Regional Meeting, Pittsburgh, PA (2004)

Statistical Modeling with Wavelets, ISBA World Meeting, Viña del Mar, Chile (2004)

Rice University Service:

Departmental:

NSF VIGRE PFUG on “Bayesian Integrative Bioinformatics” coordinator (Spring 2012)
 Faculty Search Committee member (2008-2009)
 External member, Methods Search Committee, Department of Political Science (2008-2009)
 Graduate Student Recruitment/Admissions Committee member (2007-2011)
 NSF VIGRE PFUG on “Imaging” coordinator (2007-2008)

Collegiate:

Promotion and Tenure Committee member (2007-2009)

University:

Graduate Council Committee member (2011-2012)
 Dean of Engineering Search Committee member (2010-2011)
 Collaborative Advances in Biomedical Computing Seed Grants, reviewer (2011)
 Keck Center for Interdisciplinary Bioscience Training of the Gulf Coast Consortia:
 NLM Training Program in Biomedical Informatics, pre-doc mentor (2009-2012)
 CPRIT Training Program in Computational Cancer Biology, post-doc mentor (2010-2012)
 Century Scholars Program, undergraduate students mentor (2008-2009)
 NSF ADVANCE Program, faculty mentor (2007-2010)

Texas A&M University Service:

Departmental:

Promotion and Tenure Committee member (2006-2007)
 Methods Qualifying Exam Committee member (2005-2007)
 Parametric Inference Cumulative Exam Committee member (2003-2005)
 Faculty Recruiting Committee member (2002-2004, 2005-2006)
 Organizer of the Hartley Memorial Lectures (2001, 2005)
 Colloquium Chair (2000-2001)

Collegiate:

Department Head Search Advisory Committee member (2004-2005)
 College of Science Diversity Committee member (2003-2005)

University:

Bioinformatics Facility Writing Group member (2005)
 Chair of Search Committee, Bioinformatics Facility Core, CERH (2005)

Reviewer (1996-):

Annals of Applied Statistics, Annals of the Institute of Statistical Mathematics, Annals of Operations Research, Applied Statistics, Bayesian Analysis, Bioinformatics, Biometrics, Biometrika, BMC Bioinformatics, Briefings in Bioinformatics, Communications in Statistics, Computational Statistics, Computational Statistics and Data Analysis, IEEE Transactions on Signal Processing, IEEE Transactions on Image Processing, Journal of the American Statistical Association, Journal of Business & Economic Statistics, Journal of Chemical Information and Computer Sciences, Journal of Computational and Graphical Statistics, Journal of Econometrics, Journal of Financial Econometrics, Journal of Intelligent and Fuzzy Systems, Journal of the Italian Statistical Society, Journal of Nonparametric Statistics, Journal of Probabilistic Engineering Mechanics, Journal of the Royal Statistical Society, Series B, Journal of Statistical Computation and Simulation, Journal of Statistical Planning & Inference, Journal of VLSI Signal Processing, Nucleic Acids Research, Sankhya, Signal Processing,

Springer Verlag Book Proposals, Statistics and Probability Letters, Statistics in Medicine, Statistical Methods and Applications, Statistical Science, Technometrics