James E. Johndrow

Contact Information

Ph.D. Candidate
Department of Statistical Science
Duke University
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Research Interests

Statistical methods for high-dimensional data: High-dimensional statistics, Bayesian nonparametrics, Markov chain Monte Carlo and scalable Bayesian computation, Bayesian large sample theory, extremes of stochastic processes. Applications in biology, e-commerce, economics/marketing, and human rights.

Education

Duke University, Durham, NC

Ph.D., Statistical Science, Expected spring 2016

- Advisor: David Dunson
- Committee: Sayan Mukherjee, Robert Wolpert, Jonathan Mattingly

Amherst College, Amherst, MA

B.A., Chemistry, May 2003

- *Summa cum Laude*
- Thesis in Chemistry: Better Inhibitors of Protein Tyrosine Phosphatases Through Engineering the Protein-Small Molecule Interface

Data Science and Statistical Consulting

Human Rights Data Analysis Group, San Francisco, CA

Statistical Consultant, 2014-

- Contact: Patrick Ball
- Methods for population estimation, applications to casualty estimation.

Treasure Data, Inc, San Jose, CA

Data Science Consultant, 2015-

- Contact: Luca Candela
- Create synthetic data and demos of machine learning product features.

eBay Inc, San Jose, CA

Data Science Consultant, 2014-2015

- Contact: Azadeh Moghtaderi, PhD
- Work with small team developing large-scale anomaly detection system

DataPad Inc, San Francisco, CA

Advisory board member, 2013-2014

- Contact: Wes McKinney
- Advised on product features for cloud-based big data analysis/visualization platform

NERA Economic Consulting, Boston, MA

Consultant, Environment and Climate Change Practice, 2006-2013

- Supervisor: David Harrison, PhD
- Specialization: Econometric methods and mathematical modeling for environmental and energy economics.

Prior research positions

University of California, San Francisco, San Francisco, CA

Research Technician II, UCSF Tetrad Program, 2005-2006

- PI: Professor Jeff Cox
- Area of Research: *Mycobacterium tuberculosis* host-pathogen interactions.

Fred Hutchinson Cancer Research Center, Seattle, WA

Research Technician II, Division of Basic Sciences, 2003-2005

- PI: Susan Parkhurst, PhD
- Area of Research: *Drosophila melanogaster* Developmental cell biology.

Published Manuscripts

Johndrow JE, Bhattacharya A, Dunson DB. Tensor decompositions and sparse log-linear models. *Annals of Statistics*, to appear. arXiv preprint 1404.0396. Winner of 2014 ASA-SBSS student paper award.

Liu, I. A., **Johndrow, J. E.**, Abe, J., Lüpold, S., Yasukawa, K., Westneat, D. F., and Nowicki, S. Genetic diversity does not explain variation in extra-pair paternity in multiple populations of a songbird. *Journal of Evolutionary Biology*, 28(5), 1156-1169. 2015.

Johndrow JE, Lum K, Dunson DB. Diagonal orthant multinomial models. *Proceedings of the 16th International Conference on Artificial Intelligence and Statistics (AISTATS)* 2013. JMLR preprint. Selected as a Notable Paper (2.6% of submissions were selected as notable).

Liu R, Woolner S, **Johndrow JE**, Metzger D, Flores A, Parkhurst SM. Sisyphus, the Drosophila myosin XV homolog, traffics within filopodia transporting key sensory and adhesion cargos. *Development*. 135(1):53–63. 2008.

Stanley SA, **Johndrow JE**, Manzanillo P, Cox JS. The Type I IFN response to infection with Mycobacterium tuberculosis requires ESX-1-mediated secretion and contributes to pathogenesis. *Journal of Immunology*, 178(5):3143–52. 2007.

Verdier V, **Johndrow JE**, Betson M, Chen GC, Hughes DA, Parkhurst SM, Settleman J. Drosophila Rho-kinase (DRok) is required for tissue morphogenesis in diverse compartments of the egg chamber during oogenesis. *Developmental Biology*, 297(2):417–32. 2006.

Johndrow JE, Rosales-Nieves AE, Keller LC, Magie CR, Pinto-Santini DM, Parkhurst SM. Coordination of microtubule and microfilament dynamics by Drosophila Rho1, Spire and Cappuccino. *Nature Cell Biology*, 8(4):367–76, 2006.

Machado FS, **Johndrow JE**, Esper L, Dias A, Bafica A, Serhan CN, Aliberti J. Anti-inflammatory actions of lipoxin A4 and aspirin-triggered lipoxin are SOCS-2 dependent. *Nature Medicine*, 12(3):330–4, 2006.

Hoffman HE, Blair ER, **Johndrow JE**, Bishop AC. Allele-specific inhibitors of protein tyrosine phosphatases. *Journal of the American Chemical Society*, 127(9):2824–5, 2005.

Johndrow JE, Magie CR, Parkhurst SM. Rho GTPase function in flies: insights from a developmental and organismal perspective. *Biochemistry and Cell Biology*, 82(6):643–57, 2005.

Submitted Manuscripts and Preprints

Johndrow JE, Mattingly J, Mukherjee S, Dunson DB. Approximations of Markov chains and high-dimensional Bayesian inference. arXiv preprint 1508.03387.

Johndrow JE, Bhattacharya A. Optimal Gaussian approximations to the posterior for log-linear models with Diaconis-Ylvisaker priors. arXiv preprint 1511.00764

Manuscripts in Preparation

Johndrow JE, Wolpert R. Tail waiting times and extremes of stochastic processes.

Johndrow JE, Smith A, Pillai N, Dunson DB. Poor mixing of latent variable Gibbs sampling in large samples.

Johndrow JE, Lum K, Manrique-Vallier, D. Population estimation in the presence of capture heterogeneity.

Johndrow JE, Lum K. Bayesian spatial population estimation for estimating conflict mortality.

Software

`R` package DGA: *Capture-Recapture Estimation using Bayesian Model Averaging.*

Conference Presentations

Invited talk – Special session on frontiers in computational mathematics, AMS Central Sectional Meeting, October, 2015.

Contributed talk – 10th Conference on Bayesian Nonparametrics, June, 2015.

Contributed talk – SBSS student paper award session, Joint Statistical Meetings, 2014.

Invited talk – International Society for Bayesian Analysis, Twelfth annual world meeting. Cancún, Mexico. July, 2014.

Invited talk – International Society for Business and Industrial Statistics (ISBIS) annual meeting. Durham, NC. June, 2014.

Invited participant – SAMSI-CANSSI LDHD (low-dimensional structure in high-dimensional data) closing workshop. Toronto, Canada. May, 2014.

Invited talk – Bayesian Nonparametrics Section. European Research Consortium for Informatics and Mathematics 2013. London, UK. December, 2013.

Notable paper presentation. 16th International Conference on Artificial Intelligence and Statistics (AISTATS) 2013. Scottsdale, AZ. May, 2013.

Platform Talk, 45th Annual International Drosophila Research Conference (Genetics Society of America), Washington, D.C., Cooridnated regulation of microtubules and microfilaments by the formin homology protein cappuccino during Drosophila oogenesis, March, 2004.

Poster Presentation, FASEB Summer Research Conference Biology of Small GTPases. Regulation of adhesion and cytoskeletal remodeling by Rho1 and its effectors during Drosophila Development. July, 2004.

Teaching

TA for Statistics 711: *Probability and Measure*, Duke University, 2013. This is the first year Ph.D. probability course.

TA for Statistics 732: *Statistical Inference*, Duke University, 2013. This is the first year Ph.D. inference course.

Guest lecturer for Statistics 601: *Bayesian and Modern Statistics*, Duke University, 2014.

Guest lecturer for Statistics 711: *Probability and Measure*, Duke University, 2013.

Professional service	Reviewer for *Bayesian Analysis*
	Reviewer for *Journal of the Royal Statistical Society, Series B: Statistical Methodology*
	Reviewer for *AISTATS*
	Panelist for Duke Women in Science and Engineering, 2013-2014
	Duke University Scholars program Graduate Mentor, 2013-2014
Fellowships, Awards and Honors	American Statistical Association Section for Bayesian Statistical Science (SBSS) student paper award, 2014.
	AISTATS 2013 Notable Paper Award
	University Scholars Graduate Fellow, Duke University (2010)
	James B. Duke Graduate Fellow, Duke University (2010)
	Rhodes Scholarship Finalist (2003)
	Marshall Scholarship Finalist (2003)
	Phi Beta Kappa, Amherst College (2003)