Flournoy Shines with Two Prestigious Awards

By Melody Galen

As of Oct. 1, 2012, Professor Nancy Flournoy became Curators’ Professor of Statistics Nancy Flournoy. And she kind of likes that. She appreciates that the University of Missouri has recognized her accomplishments. “You can even put it at the bottom of your e-mail, and it tells people that the university thinks you’re special,” says Flournoy.

The Curators’ Professorship is the university’s highest and most prestigious rank, recognizing exemplary service, research, and contributions to MU. Outstanding scholars with established reputations are considered for the appointment.

Professor Jianguo (Tony) Sun nominated Flournoy because of her research and service to the department and university. She was department chair from 2002 to 2011. “I believe she has made a name in statistics for MU,” says Sun.

Not only has MU shone a spotlight on her endeavors, but she also received the Janet L. Norwood Award from the University of Alabama at Birmingham (UAB) in September 2012. Flournoy knew Norwood when they worked in Washington, D.C., at the same time—Flournoy at American University and Norwood as the first female commissioner of the U.S. Bureau of Labor Statistics. The award honors achievement by an internationally recognized woman in the statistical sciences. Flournoy received an honorarium and gave a distinguished lecture at UAB.

Flournoy is probably best known for her research in a field she pioneered—adaptive sequential design, which utilizes accruing information on treatment assignments and subjects’ responses to improve the efficiency and the ethics of an experiment. Her statistics work has largely been based in medical problems for the past 30 years or so. During that time she worked at the Fred Hutchinson Cancer Research Center in Seattle, there she designed and managed large integrated, multidisciplinary data collection operations before the advent of helpful commercial software and supervised a staff of computer scientists. She might have had 80 clinical trials going on at any one time, and after years of this, she felt that the only way to extricate herself and be able to work in the area she was truly interested in—adaptive sequential design—was to move on to another job.

At the National Science Foundation (NSF) she become the first female program director in statistics. “One thing I learned at the NSF was that if one wants to be successful, one needs a community,” Flournoy says. If she wanted to have an impact in her new field, she had to surround herself with others who were also interested in it. She immediately began running workshops and conferences—doing everything she could to gather together those who were interested in adaptive design. Apparently the plan worked. The field has morphed to encompass many things, and Flournoy’s interests haven taken her into inference for adaptive designs, where classical theory for testing hypotheses does not apply. She is revealing where and why new theory is needed and, together with her graduate students, developing appropriate new methods.

“I would like to thank my graduate students for their inspiration and stimulation,” says Flournoy. “I am proud of them all.”
Dear Alumni and Friends:

My second year as department chair was even more interesting than the first. I have many things to share.

We began the fall 2012 semester with a new tenure-track assistant professor, Tieming Ji. She earned her PhD from Iowa State University in summer 2012. I am sorry to report that Professor Min Yang resigned for family reasons and joined the faculty at the University of Illinois at Chicago. However, we are delighted that Xianyang Zhang has joined us as a tenure-track assistant professor this fall. He has a fresh PhD from the University of Illinois at Urbana–Champaign.

Distinguished Professor Noel Cressie, from the University of Wollongong School of Mathematics and Applied Statistics and the National Institute for Applied Statistics Australia, has joined our department as an adjunct professor beginning this past spring.

Subharup Guha was promoted to associate professor with tenure and Suhwon Lee was promoted to associate teaching professor, both effective September 2013. Congratulations!

Our faculty has been very active this past year, as you will see in our Faculty Kudos, Page 6. As of October 2012, Nancy Flournoy became the department’s first ever Curators’ Professor of Statistics. She also received the Janet L. Norwood Award from the University of Alabama at Birmingham in September 2012 (read more on Page 1). Sounak Chakraborty and Marco Ferreira both took research leaves last year, and Scott Holan took a 12-week family leave in the spring semester. We thank Bert Winemiller for his donation of $20,000 to launch an awards program for our faculty, especially for those with serious salary inequities. With a match from the dean of Arts and Science, we will start the new faculty awards program this fall.

Our undergraduate student enrollment has steadily increased, and this past year, 17 seniors graduated. We again thank Bert Winemiller for providing us an additional $15,000 for both 2013 and 2014 Winemiller Undergraduate Scholarships. Four students received the scholarships this year.

The new master of statistics applied track program has been a great success! We enrolled 31 new students in the program in fall 2012. The total number of graduate students whose primary home is in the Department of Statistics grew to 95 in the 2012–13 academic year, an increase of more than 50 percent over our previous enrollments! With 280 applicants to the graduate program this year, our incoming class of first-year graduate students for 2013–14 is 47 students.

The total number of statistics graduate students has doubled in two years! We now have one of the largest statistics graduate programs in the nation. We are able to accommodate such a large group mainly because of the launch of our new applied track master’s degree program. This program gives students the opportunity to earn their master’s degrees by completing 30 hours of graduate work and a comprehensive master’s exam but no thesis.

The Department of Statistics and the Division of Biological Sciences submitted a successful joint proposal to Mizzou Advantage (http://mizzouadvantage.missouri.edu) for a position in stochastic modeling. We invite applications for a joint assistant or associate professor tenure-track position. We are particularly interested in candidates who use Bayesian approaches to model biological problems. The successful candidate will establish a research program that complements each department’s existing strengths in statistics and biology and builds links across campus with groups in the College of Agriculture, Food, and Natural Resources.

Sincerely,

Dongchu Sun
Professor Christopher Wikle, Sarah Kang, Nathan Berliner, Gregory Zajac, William Borgmeyer, Sidney Billstein, and Jordan Stevens. Not pictured: Dana Lardner.

2012 Winemiller Undergraduate Scholarship Recipients

Nathan Berliner
Sidney Billstein
William Borgmeyer
Sarah Kang
Dana Lardner
Jordan Stevens
Gregory Zajac

Graduate Travel Supported by the Katti Family Endowment

The following students received travel support from the Katti Family Endowment during 2012–13.

**Eastern North American Region of International Biometric Society Conference in Orlando, FL, March 2013**
- Ran Duan, Na Hu, Yang Li, and Yue Qi

**International Workshop on Bayesian Model Selection in Shanghai, China, Jan. 2013**
- Cheng Dong, Sifan Liu, and Xiaojun Tong

**Design and Analysis of Experiment, Athens, Ga., Oct. 2012**
- Greg Piepmeyer

**Joint Statistical Meeting, San Diego, July 2012**
- Rima Dey, William Leeds, Guohui Wu, and Wen Hsi Yang

Recent Bachelor of Science Graduates

**May 2012**
- Ming-Ern Huang
- Dmitriy Karpman
- Sheela Lal
- Clark Oelrichs
- Amanda Strickland
- Yu Yie
- Jon Zimmerman

**August 2012**
- Patrick McDermott

**December 2012**
- Taha Hameduddin
- Lu Han
- Peppei Qian

**May 2013**
- Nathan Berliner
- Daniel Berry
- Andrew Bien
- Sidney Billstein
- Clayton Borgmeyer
- William Borgmeyer
- Brandt Parker
- Andrick Payen Diaz De La Vega
- Jason Petrofsky
- Krystle Pickler
- Darren Sill
- Jorden Stevens
- Bradley Vien
- Gregory Zajac
## 2013 Extramural Grant Awards

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<tr>
<th><strong>Harvard University</strong></th>
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<tbody>
<tr>
<td>Subharup Guha</td>
<td>Statistical Informatics for Cancer Research</td>
<td>13,348</td>
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<tr>
<th><strong>Missouri Department of Conservation</strong></th>
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<tr>
<td>Zhuoqiong He</td>
<td>Simultaneous Estimators for Species Richness and Abundance</td>
<td>28,088</td>
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<tr>
<td>Zhuoqiong He</td>
<td>Statistical Internship in Wildlife Conservation–Cooperative Agreement 208</td>
<td>248,734</td>
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<tr>
<th><strong>National Institute of Statistical Science</strong></th>
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<tr>
<td>Scott Holan</td>
<td>National Institute of Statistical Sciences Memorandum of Agreement for Dr. Scott Holan</td>
<td>6,000</td>
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<tr>
<th><strong>National Institute of Health</strong></th>
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<tr>
<td>Jianguo Sun</td>
<td>Treatment Comparisons and Estimation of Relative Risks with Failure Time Data</td>
<td>590,514</td>
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<tr>
<td>Jianguo Sun</td>
<td>Predoctoral Research Training in Biostatistics at the University of Missouri</td>
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<tr>
<th><strong>National Science Foundation</strong></th>
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<tr>
<td>Sounak Chakraborty</td>
<td>Bayesian Variable Selection and Grouping</td>
<td>121,279</td>
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<tr>
<td>Marco Ferreira</td>
<td>Bayesian Optimal Sequential Design for Random Function Estimation</td>
<td>92,336</td>
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<tr>
<td>Subharup Guha</td>
<td>Bayesian Mixture Models: Unified Theoretical Frameworks and MCMC Methods</td>
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<tr>
<td>Scott Holan</td>
<td>NCRN-MN: Improving the Interpretability and Usability of the American Community Survey through Hierarchical Multiscale Spatio–Temporal Statistical Models</td>
<td>3,253,766</td>
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<tr>
<td>Athansios Micheas</td>
<td>Hierarchical Bayesian Random Sets with Applications to Growth Models</td>
<td>106,419</td>
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<td>Dongchu Sun</td>
<td>Collaborative Research: Bayesian Analysis and Applications</td>
<td>187,315</td>
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<tr>
<td>Jianguo Sun</td>
<td>Statistical Techniques for Regression Analysis of Censored Data</td>
<td>101,817</td>
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<tr>
<td>Dongchu Sun</td>
<td>Bayesian Methodology for Assessing Invariance in Behavioral Data</td>
<td>340,000</td>
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<tr>
<td>Dongchu Sun</td>
<td>Collaborative Research: Bayesian Analysis and Applications</td>
<td>150,000</td>
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<tr>
<td>Dongchu Sun</td>
<td>Bayes Factor Methods for Model Comparison in the Social Sciences</td>
<td>150,000</td>
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<tr>
<td>Chris Wikle</td>
<td>Type 1: Collaborative Proposal: Hierarchical Bayesian Climate</td>
<td>159,359</td>
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<tr>
<td>Chris Wikle</td>
<td>Collaborative Research: Estimating Ecosystem Uncertainties in Pan-regional Syntheses and Climate Change Impacts on Coastal Domains of the North Pacific Ocean</td>
<td>163,867</td>
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<td>Min Yang</td>
<td>CAREER: Optimal Design of Experiments for Generalized Linear Models</td>
<td>214,097</td>
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<th><strong>Office of Naval Research</strong></th>
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<tr>
<td>Chris Wikle</td>
<td>Bayesian Hierarchical Model Characterization of Model Error in Ocean Data Assimilation and Forecasts</td>
<td>131,346</td>
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<th><strong>United States Geological Survey</strong></th>
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<td>Scott Holan</td>
<td>Development of Population and Survival Estimates for Pallid Sturgeon in the Lower Missouri River</td>
<td>420,013</td>
</tr>
<tr>
<td>Chris Wikle</td>
<td>Characterizing Uncertainty in the Impact of Global Climate Change on Large River Fishes: Missouri River Sturgeon Example</td>
<td>167,020</td>
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By Paul Speckman

This fall, the department has 135 graduate students in statistics, which ranks us in the top five of all statistics graduate programs nationwide. With an average of approximately 60 graduate students for almost a decade, we have more than doubled enrollment in the past two years. The dramatic increase is due almost entirely to our new applied-track master’s degree.

Responding to a change in graduate school requirements that made a non-thesis option possible, the department created the applied track as a vehicle to accept highly qualified applicants who previously were rejected because of limited faculty time. Working closely with George Justice, the former dean of the Graduate School, the program was brought online within a remarkably short period and admitted the first class of students in fall 2012. The program is especially attractive to Asian students, who represent a large untapped market for graduate education in the U.S. All of these students pay out-of-state tuition. With Dean Justice’s help, the department negotiated with the provost’s office to get a portion of the tuition back to the department, which, in turn, funds another two faculty positions.

Last academic year, the department matriculated 31 applied track graduate students out of an incoming class of 45. With more marketing this year, there are 39 new applied-track students and an incoming class of 47 students. Applications for graduate admission have grown from approximately 130 per year to 280. Of these, 119 were accepted this year, and almost 50 chose to enroll. The applied-track program has also become a vehicle for attracting students to the doctoral program. This past spring, two outstanding students were recruited from the first-year class to begin doctoral study next spring.

Kudos to all the faculty members who have worked very hard to accommodate the increased enrollment while faculty searches are conducted. In particular, Chong He has done an amazing job as director of graduate admissions in recruiting these first two classes. In addition, Chris Wikle and Paul Speckman taught the core data analysis probability/statistics courses with record enrollment.

The first year was wildly successful, and the department looks forward to an equally inspiring second year.

Students in the applied-track program. Front: Wencheng Zhu, Peiran Yu, An-qi Song, Yang Li, Jie Liu, Qian Huang, Moyi Zhang, Weixuan Wang, Enda Zhu, Ming Lei, Zhantao Lin, Shabo Liu, and Zhinan Lin; back, Peng Sun, Qiweng Wu, Zhijie Zhao, Mou Cheng, Jei Hou, and Dongyan Yan.
Sounak Chakraborty has been elected president of the ASA Mid-Missouri Chapter for 2013. He received funding from the NSF and NIH and spent the 2012 academic year on research leave, working on developing "Bayesian Machine Learning Models for Regression, Classification, and Survival Analysis." He has publications in the Journal of Multivariate Analysis, Computational Statistics and Data Analysis, Handbook of Statistics, Volume 28: Bioinformatics, Bayesian Theory and Applications (A tribute to Sir Adrian Smith), Bayesian Analysis, and Journal of Biosensors and Bioelectrónica. With his collaborators, Chakraborty created the R package "psbcGroup," which fits penalized semi-parametric Bayesian Cox (PSBC) models with shrinkage and grouping priors for very high-dimensional data. The package is publicly available from CRAN (http://cran.r-project.org/web/packages/psbcGroup/). He is also a member of an NSF-funded working group to solve problems in model selection and phylogeny in mixed multi-factor meta-analysis at the National Evolutionary Synthesis Center in Durham, N.C. He also organized a topic-contributed session on Bayesian bioinformatics at the Joint Statistical Meeting, Montreal, in August.

Subha Guha was promoted to associate professor in June 2013. He continues to teach, mentor students, and work with collaborators in statistics, biomedical, and epidemiological sciences, with whom he has several papers in progress or under submission.

Zhuoqiong (Chong) He is supported by both NIH R01 and MDC grants for her research. She publishes papers in various statistics journals. She and Sounak Chakraborty developed and taught a new course, Introduction of Statistical Customized Pricing, in 2012 and 2013. She has served as director of the graduate admissions committee since 2012.

Leonard Hearne is developing statistical techniques for mapping between phenotypic and genotypic domains in maize, funded in part by an NSF grant. Topics addressed include computation of minimum entropy (minimum absolute difference) density estimates, and many to many mappings between linked high-dimensional spaces where the sets are of unknown cardinality. He has given talks at ENAR and IMS and has refereed proceedings from the 2012 Information Technology Interfacess conference in Croatia.

Scott Holan received a $400,000 supplemental grant (with Chris Wikle) from the National Science Foundation and U.S. Census Bureau as part of an ongoing research node initiative that had initial funding in 2011 of 2.85 million dollars (for five years). He also received funding from USGS. He had publications in Journal of Agriculture, Biological and Environmental Statistics (JABES); Applied Stochastic Models in Business and Industry; Statistical Science; Statistica Sinica; Computational Statistics and Data Analysis; Statistics and Its Interface; Environmetrics; and Geoderma. During 2012, he was a guest editor for JABES’ special issue on big data in ecology (with Mevin Hooten and Chris Wikle). Holan was the program chair for the business and economics section of the American Statistical Association’s 2012 Joint Statistical Meetings, and he served on three editorial boards (JABES; Journal of Nonparametric Statistics; and Journal of Time Series Analysis). Additionally, he served on the National Academy of Science (CNSTAT) Addressing Priority Technical Issues for the Next Decade of the American Community Survey panel. Finally, he gave eight invited talks, and he co-edited a volume on economic time series and is currently co-editing a handbook on discrete-valued time series, both to be published by Chapman and Hall.

Tieming Ji joined the faculty as an assistant professor in fall 2012. Prior to her arrival at MU, she was a doctoral student at Iowa State University working on statistical genomics. She has published articles in Statistical Applications in Genetics and Molecular Biology, Science, and PLoS Genetics.

Jing Qiu came back from research leave and continued with her research, teaching, and consulting responsibilities. She taught Applied Multivariate Analysis and Theory of Linear Models in 2012–13 and continued to provide consulting services to the College of Agriculture, Food, and Natural Resources. She supervised one doctoral student and two master’s students in the last year and published papers in Environmetrics, PLoS ONE, and Science.

Lawrence D. Ries continues to serve as associate chair and lower-division coordinator for the department. In fall 2012, he oversaw the full implementation of the Statistics 1200 course-redesign project. As part of this project, which was funded by a $38,749 internal university grant, Ries participated in several panel discussions and campus forums about course redesign. The redesign has allowed the enrollment in the class to increase by over 100 students per semester without increasing costs, which resulted in the course-record spring 2013 enrollment of nearly 1,100 students.

Michael Robbins has had a successful two years with the department teaching and doing research. He has received funding with the Department of Agriculture to work on the improvement of the Agricultural Resource Management Survey. He also received funding from an MU Research Board Grant. Robbins is currently on leave with RAND Corporation.

Dongchu Sun has three active NSF grants: one from SES with Paul Speckman, of statistics, and Jeffery Rouder, of psychological sciences, for assessing the invariance in behavioral data, and he has another from DMS studying priors in spatial and temporal models. Sun, Speckman, and Rouder have just received another grant from SES for investigating the properties of Bayes factors for linear and nonlinear models. He has published articles in the Journal of the American Statistical Association, Canadian Journal of Statistics, Journal of Statistical Planning and Inference, Annals of the Institute of Statistical Mathematics, Statistics & Probability Letters, and Journal of Multivariate Analysis.

Jianguo (Tony) Sun is continuously supported by both NIH R01 and NSF grants for his research on biostatistics, and he is also the principal investigator for an NIH biostatistics training grant that supports doctoral students in the department. He advises several doctoral students and two postdoctoral fellows, and one of his doctoral students graduated in 2012 and joined the Department of Biostatistics at Harvard University as a postdoctoral fellow. In addition to publishing papers in various top statistics journals, he published one book, Interval-Censored Time-to-Event Data: Methods and Applications, with Chapman and Hall together with Din Chen and Karl Peace Hall in 2012. He also is working on another book on panel count data.

Lori Thombs begins her tenth year as director of the Social Science Statistics Center. To date, this universitywide consulting and education center has worked with over 1200 researchers at MU, contributing to the publication of hundreds of doctoral dissertations, manuscripts, and grant proposals. She is very grateful for the valuable contributions of Lada Micheas and Ray Bacon, who are the other full-time staff members of the SSSC. Thombs collaborates with Charles Sampson, of the Truman School of Public Affairs, and Teresa Lever, from the Department of Biomedical Sciences, with publications currently submitted and under review.

Chris Wikle received a $400,000 supplement to his NSF Census Research Node grant (with Scott Holan), bringing the total funding for this project to $3.25 million. In addition, he is supported by a research grant from the NSF to study Bayesian hierarchical climate prediction, a grant from NSF to study the interaction of the lower tropic ocean ecosystem with the physical ocean, an Office of Naval Research grant to characterize uncertainty in model error for ocean data assimilation, and a U.S. Geological Survey grant to study the potential impact of climate change on endangered fish species in the Missouri river. He has published in a wide variety of subject matter and statistics journals over the past year, including Applied Stochastic Models for Business and Industry; Ecological Modeling; Environmetrics; Journal of Agricultural, Biological and Environmental Statistics; Journal of Applied Statistics; STAT; Statistical Methodology; Statistical Science; and WIREs Computational Statistics. In addition, he published several book chapters, discussions, an editorial, and a forward in a monograph. He gave 14 invited talks this past year, including plenary talks at the French Statistical Society Meeting in Brussels and the Conference of the Statistical Society of Australia in Adelaide. He also gave a number of workshops on his recent book (co-written with Noel Cressie) Statistics for Spatio–Temporal Data, which received the 2011 PROSE Award for excellence in the mathematics category from the Association of American Publishers. He continues to advise several doctoral and master’s students as well as nearly 80 undergraduate students. In 2012, he was awarded an Outstanding Graduate Faculty Award by the University of Missouri Graduate School and Graduate Student Association in honor of superior research, teaching, service, and mentoring to graduate students.

Xianyang Zhang received his doctorate in statistics from University of Illinois at Urbana–Champaign in August 2013. His research interests include functional data analysis, econometrics, time-series analysis, spatial statistics, and resampling methods.
Statistics celebrated its 50th anniversary with a conference Sept. 19–21, 2013. The conference, Frontiers in Methodological and Applied Statistics: A Celebration of 50 Years, was held on the MU campus. Two and a half days of sessions highlighted research and accomplishments, with talks by five distinguished plenary speakers and 25 alumni. In addition, a reception featured a poster session for current students and a banquet.

Each of the five sessions was highlighted with a plenary talk. The five principle speakers were James O. Berger and Mike West, of Duke University; Noel Cressie, of University of Wollongong, Australia; Jack Kalbfleisch, of University of Michigan; and MU’s own Farroll T. Wright.

Besides the plenary talks, the conference featured five invited sessions with papers by graduates of the department. The first was a memorial session on biostatistics in honor of John Klein, PhD ’80, who recently passed away. See his obituary notice on Page 5. Session titles for the remaining talks were Ecology and Biostatistics, Space and Time, Biostatistics and Sequencing (Health), and General Methods.

Organizers of the conference were Paul Speckman, Chris Wikle, Dongchu Sun, Marco Ferreira, and Tony Sun.