

BiosRhythms

GILLINGS SCHOOL OF GLOBAL PUBLIC HEALTH

THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

Department of Biostatistics

Graduate Students and Scholarly Research Engagement

The Department of Biostatistics is recognized as a worldwide leader in research and practice. Development of state-of-the-art statistical methods to address current pressing issues in medicine and public health is the major focus of the faculty's research. Varied research interests of faculty members create opportunities for graduate students to engage in research in the development of statistical methods and to collaborate with researchers in health sciences. Student research spans the traditional areas of biostatistics (for example, survival analysis, longitudinal data analysis, categorical data analysis or Bayesian analysis) as well as new and emerging fields (such as analysis of neuroimaging, spatial and genetic data, or in the areas of causal inference and personalized medicine). During fall 2013, 63 doctoral students in the department are engaged in the doctoral dissertation work. Ten students are expected to receive their doctoral degree in December 2013. Titles of all recently completed dissertation work can be found on the department website, www.spb.unc.edu/bios/biostatistics. Brief descriptions of a few current or completed works are highlighted here.

Dissertation work by **Yimei Li** and **Ja-An Lin** is in the development of new statistical methods that will improve understanding of neuroimaging data. Neuroimaging studies aim to analyze imaging data with complex spatial patterns in a large number of locations (called voxels) on a two-dimensional surface or in a three-dimensional volume. Conventional analyses of imaging data include two sequential steps: spatially smoothing imaging data and then independently fitting a statistical model at each voxel. However, conventional analyses suffer from the same amount of smoothing throughout the whole image, the arbitrary choice of extent of smoothing and low statistical power in detecting spatial patterns. Li developed a multiscale adaptive regression model framework to integrate the propagation-separation approach with statistical modeling at each voxel for spatial and adaptive analysis of neuroimaging data from multiple subjects.

The multiscale adaptive regression model has three features: spatial, hierarchical and being adaptive. It uses a multiscale adaptive estimation and testing procedure to utilize imaging observations from the neighboring voxels of the current voxel to calculate parameter estimates and test statistics adaptively. Results confirm that the multiscale adaptive regression model significantly outperforms conventional analyses of imaging data. Part of this work was published in the *Journal of Royal Statistical Society: Series B* (Statistical Methodology) in 2011. This publication received the Larry Kupper Dissertation award, which honors the best dissertation-based paper appearing in a prestigious biostatistical journal. Li's work also received an ENAR distinguished paper student award.



Guanbua Chen



David Kessler



Yimei Li



Ja-An Lin



Dustin Long



Naim Rashid

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Message from the Chair



Dr. Michael Kosorok,
Professor and Chair

This year, I am especially appreciative of the many hard-working and talented faculty and staff members, students and alumni who have helped make this past year successful and productive for the department. We, along with many others, continue to face budgetary challenges. Fortunately, as a department, we are doing generally well financially and are thriving in terms of research, teaching, mentoring and funding, and our

future is bright. I will now review some of the highlights of this past year.

In April, Dr. Matthew J. Gurka, who received his PhD from the Department of Biostatistics in 2004, was the 2013 recipient of the James E. Grizzle Distinguished Alumni Award. He is currently associate professor and interim chair of the Department of Biostatistics at West Virginia University and is an expert on design and analysis of observational studies and coordination and analysis of multi-center longitudinal studies. In May, the 2013 Greenberg Lecturer, Professor Trevor Hastie, from Stanford University, gave a series of very interesting lectures on sparse linear models, large-scale singular value decomposition and graphical model selection

This past year was successful for our students and for student recruitment. We welcomed 36 new graduate students and 12 new undergraduate (BSPH) students in fall 2013, bringing our total number of students to 157 graduate students (94 PhD, 24 DrPH, 32 MS and 7 MPH) and 27 undergraduate students. We are thankful for the excellent work of the admissions committees, chaired by Chirayath Suchindran (for graduate admissions) and Jane Monaco (for undergraduate admissions), and also the students and staff members who helped recruit this outstanding group of students.

Congratulations to our department's four winners of the 2013 Eastern North American Region (ENAR) of the International Biometrics Society's Distinguished Student Paper awards. Zakaria Khondker, Ja-An Lin, Dustin Long and Matthew Wheeler were recognized alongside 16 other students at the 2013 ENAR spring meeting in Baltimore. Our department had more recipients of this award than any other department anywhere in the country. Recent alumna Yingqi Zhao, PhD, received the Schoolwide 2013 Greenberg Award for Excellence in Doctoral Research. Students Leann Long and Jing Zhou received travel awards to the Joint Statistical Meetings. Qianchuan He and Leann Long were awarded Young Investigator Awards from the ASA's Statistics in Epidemiology section to attend the Joint Statistical Meetings.

We were very fortunate to have several faculty promotions and new faculty appointments. Dr. David Couper was promoted to clinical professor, Drs. Michael Hudgens and Wei Sun were promoted to the rank of associate professor, with tenure. Dr. Jane Monaco was promoted to clinical associate professor. Drs. Mahbub Latif, from the Institute of Statistical Research and Training, University of Dhaka, Bangladesh, and Kalyan Das, from the University of Calcutta, were selected as 2013 P. K. Sen Distinguished Visiting Professors in Biostatistics. Alumnus Antonio Carlos Pedroso de Lima (PhD, 1995) from the University of Sao Paulo, Brazil, was also a visiting professor in 2013.

Our faculty members continue to be exceptionally productive in research and service. In May, Dr. Jane Monaco, clinical associate professor, received the Schoolwide McGavran Award for Excellence in Teaching. In June, we successfully completed the external review of the Carolina Survey Research Laboratory, co-directed by Dr. Robert Agans and Professor Donglin Zeng. Also in June, the Collaborative Studies Coordinating Center contract for the Hispanic Community Health Study/Study of Latinos, with Professor Jianwen Cai as principal investigator, was renewed for \$22 million over seven years. In July, three of our faculty members and two of our doctoral students co-authored two papers in the *Proceedings of the National Academy of Sciences (PNAS)* on statistical genomics. "Biclustering with heterogeneous variance" was first-authored by student Guanhua Chen and co-authored by me, and "Quantitative trait analysis in sequencing studies under trait-dependent sampling" was first-authored by Professor Danyu Lin and co-authored by Professor Donglin Zeng and student Zhengzheng Tang. It is rare for biostatisticians to be lead authors in *PNAS*. In September we also received word that the UNC Clinical and Translational Sciences Award (CTSA) would be renewed. The biostatistics service in the UNC CTSA, which I am honored to direct, provides biostatistical support for many health researchers on campus and partially funds sixteen faculty members and nine students in the department.

More details on many of these accomplishments as well as many other departmental achievements can be found elsewhere in this newsletter, which I invite you to enjoy.

With warmest regards,

A handwritten signature in black ink that reads "Michael R. Kosorok". The signature is written in a cursive, slightly slanted style.

Message from Student Services

Hello everyone! Thanks for patiently awaiting the arrival of *BiosRhythms*. We are more than happy to provide another year's worth of exciting news for you to enjoy. A lot has been going on around here this year.

We welcomed 48 new students to the department this year, after the admissions committee worked tirelessly to review the more than 300 applications it received. To our alumni, affiliates and friends of the department - your willingness to share your experiences, pride and knowledge with these young people who inquired of you about our department is invaluable, and for that we extend a heartfelt "thank you." We are well-known around the world because of our alumni and friends.

As usual, we will host UNC bios alumni receptions at ENAR and ASA again this year.

ENAR will meet in Baltimore this spring, so save the date – Monday, March 17 – for a departmental reception. This year, we will be doing something a little different. The public health school is celebrating its 75th birthday, and we are inviting all UNC Gillings School of Global Public Health alumni in the Baltimore and surrounding area to join us! This is in the planning stages, and more information will be made available when details are finalized. You won't see us listed in the online program for ENAR. We'll send a reminder email about the reception closer to the date.



Veronica Stallings (left) and Melissa Hobgood

ASA will meet in Boston in August 2014. Plans for this reception also will be posted on the Web when finalized. Visit our website to keep up with all current events and plans (www.sph.unc.edu/bios/biostatistics). These get-togethers are a great way to catch up with friends and colleagues.

Speaking of catching up, be sure to check out alumni news to see who's doing what in the career world, whose family is growing, who's getting hitched and everything else in between. If you have news, we will look forward to printing those tidbits in the next issue. Email them to mbobgood@bios.unc.edu.

While we're on the subject of catching up and keeping in touch, let us remind you to visit our alumni Web page (www.alumniconnections.com/sph.unc.edu) and update your address and professional information. You don't have to be a member to update your information, but you are welcome to join the school's Alumni Association and contribute to the Department of Biostatistics, the School or to UNC.

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If you are interested in donating to the department directly, contact Stephen Couch (stephen_couch@unc.edu). We appreciate all the support from our alumni and friends.

That about does it for us in this issue! You'll hear more from us by email closer to our events. Please feel free to send an email to say "hi." We love to hear from you all. We hope your holidays are joyous and that your new year is a happy and prosperous one.

Warmest regards,

Melissa and Veronica

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Ja-An Lin's dissertation work focused on developing new statistical methods for imaging genetic data. More and more large-scale imaging genetic studies are being widely conducted to collect a rich set of imaging, genetic and clinical data to detect susceptibility genes for complexly inherited diseases, including common mental disorders (e.g., schizophrenia) and neurodegenerative disorders, among many others. However, the development of statistical and computational methods for the joint analysis of complex imaging phenotypes, genetic data and clinical data has fallen seriously behind the technological advances. The aim of this work is to develop three statistical approaches called Projection Regression Method (PRM) and functional mixed effects model (FMEM) for the joint analysis of high-dimensional imaging data with a set of genetic markers. In PRM, it generalizes a statistical method based on the principal component of heritability for association analysis in genetic studies of complex multivariate phenotypes. The key components of the PRM include an estimation procedure for extracting several principal directions of multivariate phenotypes relating to covariates and a test procedure based on wild bootstrap method for testing for the association between the weighted multivariate phenotype and explanatory variables. Simulation studies and an imaging genetic dataset are used to examine the finite sample performance of the PRM. In FMEM, to accommodate the correlation structure of the marker set, Lin modeled the genetic effects as population-shared random effects with a common variance component (VC), whereas to accommodate spatial feature in imaging data, she modeled spatially varying associations between imaging measures in a three-dimensional (3D) volume (or 2D surface) with a set of covariates and the genetic random effects. she also developed a two-stage estimation procedure to spatially and adaptively estimate the varying coefficient functions, while preserving its edges among different piecewise smooth regions. To test the hypothesis of interest, she provided two test statistics with well controlled type I error and better power comparing to traditional voxel-based approach. Simulation studies and a real data analysis of the Alzheimer's disease Neuroimaging Initiative (ADNI) show that FMEM significantly outperforms voxel-based approaches in terms of identification of activation regions. For a paper based on her dissertation work, Lin received the ENAR distinguished student paper award. Professors Hongtu Zhu and Joseph Ibrahim served as faculty mentors of Yimei Li and Ja-An Lin.

Naim Rashid's dissertation work involved developing new statistical methods for the analysis of a wide class of Next Generation Sequencing (NGS) experiments collectively referred to as DAE-seq data, where DAE stands for "DNA after enrichment." In DAE-seq experiments, genomic regions related with certain biological processes are enriched by certain assays and are then sequenced on a high-throughput sequencing platform to determine their genomic positions ("enriched regions"). DAE-seq data can provide important insight into gene regulation, which is crucial to understanding the molecular mechanism of pheno-

typic outcomes, such as complex diseases.

In his first paper, Rashid introduced a three-component mixture regression model called ZINBA (Zero-Inflated Negative Binomial Algorithm) to discover "enriched regions" of the genome, while accounting for the influence of multiple confounding factors. This work was published in *Genome Biology* and was selected as a research highlight by the editors. In his second paper, Rashid developed new methods to account for often-ignored spatial dependence in DAE-seq data, introducing a novel Autoregressive Hidden Markov Model (AR-HMM) to account for state-specific covariate effects and dependence in local DAE-seq signal.

He also has developed an efficient and novel variable selection procedure in the context of Hidden Markov Models to select biological factors related with local DAE-seq signals. This work is currently under review in the *Journal of the American Statistical Association*. Rashid's third paper introduced a statistical model to assess the associations between gene expression and epigenetic marks using NGS data, while explicitly modeling the effects of DNA polymorphisms in either an allele-specific or non-allele-specific manner. The novelty of this work is to assess association of allele-specific signals while accounting genetic effects. Naim applied this method to study the association between gene expression, DNase I Hypersensitive sites, and DNA polymorphisms in HapMap individuals. This work has been submitted to *Biometrics*. Professors Joe Ibrahim and Wei Sun served as faculty mentors of Rashid's research.

Dustin Long's dissertation research involved statistical methods for drawing inference about causal effects of interventions to prevent infectious diseases, in particular human immunodeficiency virus (HIV). In his first dissertation paper, Long considered randomized trials to prevent breast milk transmission of human immunodeficiency virus (HIV) from mother to infant, wherein investigators are often interested in assessing the effect of a treatment or intervention on the cumulative risk of HIV infection by some age, e.g., 6 months, among infants who are alive and uninfected at a certain time-point after randomization. Long developed statistical methods for this setting that circumvent the selection bias issue that plagues more traditional methods of analysis. The proposed methods were applied to a large, recent mother-to-child-transmission trial. This paper appeared in *Statistics in Medicine* in 2012. In his second paper, Long extended the work from his first paper by showing how baseline covariates can be utilized to obtain more efficient inference about an intervention's effect. His second paper is in press at *Biometrics* and garnered Long a 2013 ENAR Distinguished Student Paper Award. Long's third paper considered assessing causal effects of vaccines in pre-clinical, repeated low-dose challenge studies. This work focuses on novel designs of such studies that enable evaluation of surrogates of vaccine protection, i.e., biomarkers measured during the study that are potentially correlated with the primary outcome (infection). Results from his third paper will be presented at an invited talk at ENAR 2014. Professor Michael Hudgens served as Long's faculty mentor.

Dave Kessler's dissertation research focused on developing Bayesian nonparametric methods for large biomedical data sets. His first paper was recently accepted by the highly prestigious *Journal of the Royal Statistical Society, Series B*. Kessler provides a new framework for incorporating prior information into nonparametric Bayes models. Such models are very highly flexible and can characterize a rich variety of complex relationships in real data, but in these models it can be difficult to include available prior information, such as from previous epidemiology studies of the same disease and covariates but with different exposures. Kessler solved this problem by allowing priors to be specified separately for selected functionals, while providing a default prior for the remaining infinite-dimensional part. His approach makes a large practical difference and should have a big impact on the literature. Kessler additionally worked on scaling up and applying flexible conditional distribution models to genomic regression problems involving a quantitative trait and very high-dimensional predictors. He obtained an excellent method that allowed the distribution of a quantitative trait to change nonparametrically with genetic predictors and environmental factors, while allowing interactions and conducting variable selection. A paper on this topic has been submitted to *Bioinformatics*, with another in preparation for *Journal of Computational & Graphical Statistics*. Kessler recently accepted a position at SAS Institute in Research Triangle Park, N.C., and his primary research mentor was Professor David Dunson of Duke University.

Guanhua Chen's dissertation work focuses on statistical learning for biomedical data. The goal is to develop improved methods to classify patients into etiologically and therapeutically relevant subtypes to improve diagnosis and treatment. When no predefined subtypes are available, clustering methods are implemented to find subgroups of homogeneous individuals based on genetic profiles together with heuristic clinical analysis. This means that subjects in a cluster have more similarity to each other than to subjects in other clusters. A notable drawback of the current clustering techniques is that they ignore the possibility that subjects or disease characteristics may display differing magnitudes of volatility in the way genes decode or express genetic information. This heterogeneity of variance of gene expression, if not accounted for, can lead to inaccurate subgroup prediction. In his research, Chen developed and implemented a statistical framework that captures both mean and variance structures in the data. He then demonstrated the strength of his method in simulated and two cancer data sets. Application of the proposed method to cancer data confirmed the hypervariability of methylation levels in cancer patients. The proposed method also identified meaningful subgroup patterns among lung cancer patients. In his dissertation work, Chen further examined the classification problem of predicting

future subgroup types when predefined subtype information is available. Under this scenario, the within-class heterogeneity can still affect the classification results. He used the composite large margin classifier (CLM) to address the issue of classification with latent subclasses. The research demonstrated the competitive performance of CLM compared to several existing methods of classifications through the analysis of simulated data and cancer data. The dissertation also addresses issues in developing methodology for personalized medicine when individual heterogeneity is present. Based on his research, Chen published a paper, "Biclustering with heterogeneous variance," in July 2013 in the *Proceedings of the National Academy of Sciences (PNAS)*, a high-impact top-tier science journal. Michael Kosorok serves as Chen's faculty mentor.

Save the Date!

March 16-19, 2014

Eastern North American Region (ENAR) Spring Meeting
Baltimore, Md.

Thursday, April 10, 2014

46th Annual Fred T. Foard Jr. Memorial Lecture,
Biostatistics Awards Day & Grizzle Alumni Award
Speaker to be announced in early 2014
Chapel Hill, N.C.

May 28-29, 2014

UNC Department of Biostatistics Greenberg Lecture Series
Speaker: Jianqing Fan, PhD

August 2-7, 2014

Joint Statistical Meetings
Boston, Mass.

May 11-12, 2015

UNC Department of Biostatistics Greenberg Lecture Series
Speaker: Susan Murphy, PhD
Chapel Hill, N.C.

Fryer Fellows gather to honor memory of John Fryer



Past and present Fryer Fellows pictured with Diane Fryer Medcalf, clockwise from left: Sayan Dasgupta, Rachel Nethery, Thomas Stewart, Sebastian Teran-Hildago, Alison Wise, and Angel de Jesus Davalos.

In May 2013, students who have benefited from philanthropic support gathered to honor the memory of Dr. John Fryer at a reception hosted by Dean Barbara K. Rimer, Dr. Dennis Gillings and Kenan Distinguished Professor Michael Kosorok. The Fryer Fellowships in Biostatistics were established by Diane Fryer Medcalf in 2003 in memory of her late husband John Fryer. Dr. Fryer was a research professor of biostatistics at UNC and taught in the department for many years before his death in 2001.

Awards & Recognitions

W. Keith Funkhouser III (BSPH, 2013) was inducted into Phi Beta Kappa, the nation's oldest and most honored college honorary society.

Yunro Chung and **Guanhua Chen** are fellowship recipients of the ORISE Training Program with the Food and Drug Administration's Center for Drug Evaluation and Research.

Russell Maxwell was inducted into the Order of the Golden Fleece for his lasting contributions to undergraduate research and unparalleled service with local minority populations. The Order of the Golden Fleece is UNC's oldest and highest honorary society.

Other News

Jonathan and Helen Hibbard welcomed baby Grace on March 22, 2013. Jon and Helen are missing sleep but are enjoying Grace.

Angel Davalos and wife Judith announced the arrival of their beautiful daughter Alina, who weighed in at 9lbs 2oz and 21.5 inches long on January 17, 2013.

Paper Awards

Noorie Hyun was awarded a JSM Travel Award to present her paper "Threshold-Dependent Proportional Hazards Model for Current Status Data with Biomarker Subject to Measurement Error."

Recent graduates **Qianchuan He** (PhD, 2012) and **D. Leann Long** (PhD 2012) received JSM Young Investigator Awards to present "A General Framework for Association Tests with Multivariate Traits in Large-Scale Genomics Studies" and "A Marginalized Zero-Inflated Poisson Regression Model with Overall Exposure Effects."

ICSA student paper awards were presented to **Lan Liu** and **Qiang Sun** to present their papers entitled "Large Sample Randomization Inference of Causal Effects in the Presence of Interference" and "SPReM: Sparse Projection Regression Model."

Several students received Distinguished Student Paper Awards at ENAR this year:

- **Zakaria Khondker**, for "Bayesian Generalized Low Rank Regression Models for Neuroimaging Phenotypes and Genetic Markers";
- **Ja-An Lin**, for "Functional Mixed Effects Models for Imaging Genetic Data";
- **Dustin Long**, for "Sharpening Bounds on Principal Effects with Covariates"; and
- **Matthew Wheeler**, for "Mechanistic Hierarchical Gaussian Processes."

The BSA has a new website!

Visit us at uncbsa.weebly.com.

December 2012, May 2013 & August 2013 Graduates



Pictured above: the 2013 incoming class.

In August 2013, the Department of Biostatistics welcomed 48 new students: 36 graduate students (14 PhD, 4 DrPH, 16 MS, 2 MPH) and 12 BSPH undergraduate students. Graduate students include 26 U.S. and/or permanent residents and citizens of Argentina, China, Ghana and India. A significant majority of graduate students are math and statistics majors. Other undergraduate majors include biology, biochemistry, biomedical engineering, economics, English, history, nursing and Spanish.

Recent Graduates

December 2012 and May and August 2013 graduates of our master's and doctoral programs have taken excellent jobs in all sectors, with employers that include West Virginia University, UC-San Francisco, Quintiles, Novartis, SAS, Merck and Duke University Medical Center. The BSPH students who graduated in May 2013 are doing a variety of things. Many of them are continuing to graduate programs including Harvard, University of Michigan, UNC-Chapel Hill, University of Reading (England), NCSU and University of Colorado. Two students are attending medical school (Johns Hopkins and ECU). Employers of our May 2013 BSPH graduates include Blue Cross Blue Shield, NIEHS, Research Triangle Institute and Epic Health Care Records. Congratulations to all our graduates!

May 2013 BSPH graduates

Allison Briggs
William Funkhouser III
Sheila Gaynor
Abram Graham
Christopher Harvey
Emma Johnson
Rasagna Kosaraju
Michael Lawson
Russell Maxwell
Zachary McCaw
Candice Park
Amanda Piltzer
Andrew Williams
Xingjian Yan
Yu Zhou

Emily Colby Bozenhardt, DrPH
Erica Browne, MS
Naomi Brownstein, PhD
Howard Chen, MPH
Krishna Chotneeru, MPH
Yu Deng, MS
Katelyn (Jundt) Garcia, MS
Michael Hussey, DrPH
Megan Kincade, MS
Danielle Lamy, MS
Dustin Long, PhD
Dorothy Long, PhD
Greg Mayhew, DrPH
Ellen Mir, MS
James Powers, DrPH
Patrick Smith, MPH
Guochen Song, DrPH
Jessie Wang, MS
Matthew Wheeler, PhD
Wei Xue, MPH
Yi (Ian) Zhang, DrPH
Yue Zhao, DrPH
Xin Zhou, MS



Dr. Leann Long (center) and her son Charlie at commencement, pictured with her advisers Drs. Amy Herring and John Preisser Jr.

Impact of giving

The Department of Biostatistics is fortunate to have an array of awards and fellowship funds that help to recruit the best students, invest in those with the greatest potential, and award those with the greatest achievements. Endowed and expendable scholarship funds and special travel awards have helped launch some of our most accomplished graduates. Please join us in congratulating the following who have earned these awards and thanking those who have made these awards possible.

John and Diane Fryer Fellowship in Biostatistics
Michael Lawson

Smith Anderson Biostatistics Fellowship
Jonathan Rosen

Max Halperin Scholarship Award
Adane Wogu

Kaylani Sen award
Neha Joshi

Master's Merit Fellowship (Graduate School)
Carolina Alvarez

Koch Scholar
Neha Joshi

Bernard G. Greenberg Scholarship in Biostatistics
Carolina Alvarez

Gillings Merit Scholarship (School of Public Health)
Avner Halevy

Doctoral Merit Fellowship (Graduate School)
Poulami Maitra

Doctoral Merit Fellowship (Graduate School)
Royster Fellow
Michael Lawson

Annual Fund Scholarship (School of Public Health)
Poulami Maitra
Nicole Butera

Mohberg Family Scholarship
Owen Francis

North Carolina Minority Presence Fellowship
Vito Lorenzo Di Bona

Hardison Scholarship in Bioinformatics
Andrew Garrison

Class of 2013 Scholarship (School of Public Health)
Reuben Adatorwovor

You can support the Department of Biostatistics, our students and the Gillings School in many ways:

1. Talk personally with a member of our staff by calling 919-966-0198.
2. Make a gift in our office at 107 Rosenau Hall.
3. Make a secure gift online at spb.unc.edu/gift/school-donate-now *
4. Mail us your check, payable to the Public Health Foundation, to:
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P.O. Box 309
Chapel Hill, N.C. 27514-0309

Be sure to include "Biostatistics" in the memo line.

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Enter the amount you'd like to give, and click "Add to Cart."

We thank you for your support!

Scenes from Awards Day

The following UNC students received **Koch Travel Awards** and/or other departmental funding to present results of their research at scientific meetings: Elena Bordonali, Guanhua Chen, Ting-huei Chen, Wonil Chung, Jennifer Clark, Sayan Dasgupta, Yu Deng, Min Jin Ha, Erika Helgeson, Beth Horton, Noorie Hyun, Hana Lee, Lan Liu, Qian Liu, Xiaoxi Liu, Dorothy Long, Naim Rashid, Pourab Roy, Qiang Sun, Zheng-zheng Tang, Ran Tao, Jing Zhou, Baiming Zou.



Pictured left to right: Gurka's BIOS adviser, Dr. Lloyd Edwards, Drs. Michael Kosorok, Matthew Gurka and James Grizzle. Gurka's family is pictured at right.

Gurka wins Grizzle Award

Matthew J. Gurka (PhD 2004) is the 2013 recipient of the James E. Grizzle Distinguished Alumni Award. He is currently an associate professor and interim chair of the department of biostatistics at West Virginia University. Gurka is the program director for the West Virginia Clinical and Translational Science Institute's Clinical Research Design, Epidemiology, and Biostatistics program. Gurka presented a lecture following the awards ceremony titled "Biostatistics as a leader in an emerging academic research enterprise."



Doctoral students Xin Zhou (above right), recipient of a Delta Omega award, and Siying Li (at left), recipient of the Master's Paper award, both with Dr. Kosorok.

Delta Omega Awards

Faculty
Dr. Donglin Zeng

Undergraduate Student
Sheila Gaynor

Alumnus
Stuart Gansky (DrPH, 1996)

Graduate Student
Mr. Xin Zhou
Ms. Danielle Lamy
Dr. Mike Hussey

Service
Ms. Elizabeth Koehler

Academic Excellence
Ms. Yu Deng



2013 dissertation awards

Barry H. Margolin Dissertation Award for Excellence in Doctoral Research
Yingqi Zhao

"Estimating Individualized Treatment Rules using Outcome-Weighted Learning"

Larry Kupper Dissertation Publication Award
Yingqi Zhao

"Estimating Individualized Treatment Rules using Outcome-Weighted Learning"

Regina C. Elandt-Johnson Award for Best Master's Paper
Siying Li

"A Multi-stage Analysis Strategy for a Clinical Trial to Assess Successively More Stringent Criteria for a Primary Endpoint with a Low Event Rate"

Department news

JSM Dinner in Montreal

Approximately 40 BIOS alumni, friends, students, and faculty and staff members gathered on the evening of Aug. 5, 2013 at Les Pyrenees Restaurant in Montreal, Quebec, in conjunction with the 2013 Joint Statistical Meetings. In addition to enjoying several courses of fine dining, attendees heard a departmental update from chair Michael Kosorok, and lively conversation indicated a successful evening of reconnecting and networking. The department plans to occasionally host these dinners at future meetings, so be on the lookout for the notifications and make plans to join us!

Biostatistics Summer Undergraduate Research and Education (BSURE) Program

BSURE is an intensive program to attract racial and ethnic minorities into the field of biostatistics, currently led by BIOS associate professor Anastasia Ivanova, PhD. This year, BSURE was a part of Project IMHOTEP, an eleven-week internship designed to increase the knowledge and skills of rising juniors and seniors and recent graduates of an undergraduate institution in biostatistics, epidemiology, or occupational safety and health, which is sponsored by the Centers for Disease Control and Prevention (CDC). In all, 11 IMHOTEP students were hosted by the UNC Gillings School of Global Public Health. Two of the students, Neerali Patel, from N.C. State University, and Jonela Rogers, from Fayetteville State University, were hosted by BIOS. Patel and Rogers learned about careers in public health during the first two weeks of the program and worked on individual research projects during the last eight weeks of the program. Both students participated in research projects under the direction of Dr. Ivanova, which were presented at both UNC-Chapel Hill and the CDC in Atlanta.



Cambridge Visit

In September 2013, a group of BIOS faculty members and one PhD graduate traveled to the University of Cambridge, U.K., to further collaborations with the MRC biostatistics unit by following up on a previous Chapel Hill visit by Cambridge researchers. This collaboration is funded by former biostatistics professor Dr. Dennis Gillings, now executive chairman of Quintiles Transnational. Numerous cross-continental collaborations are now underway in areas including statistical genomics, clinical trials, missing data and analysis of zero-inflated data. The BIOS contingent enjoyed a week of research and entertainment, particularly an evening in which BIOS illustrated why Carolina is better known for basketball than dance!



“The MRC Biostatistics Unit is a phenomenal group, and it is wonderful to have the opportunity to pursue joint research,” remarked Amy Herring, professor and associate chair of biostatistics. “Celebrating their centenary year in 2014, they have an amazing tradition of high-quality research and practice in biostatistical science.”

Pictured above (l-r): BIOS faculty members Drs. Jason Fine, Michael Kosorok and Amy Herring with recent graduate Dr. Leann Long. Pictured at left (l-r): Brian Tom, a senior statistician at the MRC with Drs. Herring, Kosorok and Fine. Tom acted as tour guide of the colleges during the BIOS visit to Cambridge.

Professor Trevor Hastie presents 2013 Bernard G. Greenberg Lecture Series

The Bernard Greenberg Distinguished Lecture Series spotlights excellence in the field of biostatistics. This year’s speaker and award recipient was Dr. Trevor Hastie, professor of statistics at Stanford University. The series took place May 8 and 9, during which time Hastie presented three lectures titled “Sparse Linear Models,” “Matrix Completion and Large-Scale SVD Computations” and “Graphical Model Selection.” A slideshow of the lectures can be viewed at sph.unc.edu/2013-bernard-g-greenberg-distinguished-lecture-series.



The biostatistics department’s annual lecture series honors the first chair of the UNC-Chapel Hill biostatistics department, Dr. Bernard G. Greenberg, who later served with distinction as dean of the School of Public Health from 1972 to 1982.

Collaborative Studies Coordinating Center

Research Updates



The Atherosclerosis Risk in Communities (ARIC) study began in 1985 with two components in four U.S. communities: a community-wide surveillance of heart disease and a prospective cohort study. In addition to the original cardiovascular aims, recent components include hearing loss and the assessment of neurocognitive functioning as the study participants progress into their senior years. In September, the ARIC team, led by principal investigator **David Couper, PhD**, and neurocognitive study co-PI **Lisa Wruck, PhD**, hosted a two-day meeting for more than 50 researchers to plan statistical analyses and manuscripts resulting from the recently completed stage one of the cohort's fifth visit. The next several years will be a prolific time for ARIC, which already has led to more than 1,000 published manuscripts.



In June 2013, the National Heart, Lung and Blood Institute awarded an extension to the flagship study, the Hispanic Community Health Study/Study of Latinos (HCHS/SOL), which the CSCC will continue to coordinate through 2019 under the continued leadership of PI **Jianwen Cai, PhD**, BIOS professor and vice chair, and EPID professor and co-PI Gerardo Heiss. HCHS/SOL began in 2006 and completed enrollment (16,415 participants) in 2011, and seeks to understand the health issues affecting Hispanic/Latino groups in the U.S. The NHLBI extension allows the study to conduct a re-examination of the cohort. The study is releasing a participant data book this December. To date, there are seven funded ancillary studies, including a Youth Study of the participant's children, led by PI **Shrikant Bangdiwala, PhD**. Other prominent contributors include co-investigator **Daniela Sotres-Alvarez, DrPH**, and project director Marston Youngblood. Previous PIs for the original NIH award were Drs. Lloyd (Woody) Chambless and Lisa LaVange.

The CSCC is busy working on a host of other projects including four clinical trials (FAVORIT, RIVUR, ACLAIMS, PROTECT), and the large SPIROMICS study of biomarker, genetic, genomic and clinical outcomes of COPD. We also are refining our in-house data management system, Carolina Data Acquisition and Reporting Tool (CDART), created in conjunction with NC TraCS. You can read about CDART on our website at www2.csc.unc.edu/home/?loc=cdart.

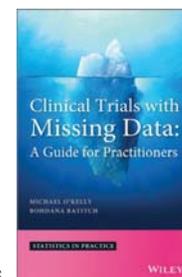
Other News

Ms. Hope Bryan, along with **Shrikant Bangdiwala, PhD**, BIOS research professor, conducted a special five-day workshop titled "Fundamentals of Clinical Data Management" at the Department of Biostatistics of the Christian Medical College (CMC) in Vellore, India, Sept 2-6, 2013. This activity is part of the continued effort of collaboration and support provided by the UNC Department of Biostatistics for capacity building of the Biostatistical Resource and Training Center at CMC, which is now considered as one of the few high-standards academic CROs in India.



Dr. Bangdiwala and Ms. Bryan assisting students in Vellore, India.

This August, **Sonia Davis, DrPH**, Professor of the Practice, passed her one-year anniversary at the helm of the Collaborative Studies Coordinating Center. She began her tenure writing a chapter on mixed models for repeated measures in the book "Clinical Trials with Missing Data: a Guide for Practitioners," co-authored by colleagues from Quintiles, to be published by Wiley in early 2014. Davis has immersed herself in UNC duties by co-instructing BIOS 844, Leadership in Biostatistics, with Dr. Bill Sollecito this fall, and contributing to three CSCC studies (HCHS/SOL, SPIROMICS and PROTECT), and to numerous projects and initiatives within UNC's Clinical and Translational Science Award program NC TraCS. Under Davis' direction, the CSCC is undergoing a "sprucing up" through internal process refinements focused on quality and efficiency, updating of our website, and even much-needed new paint and carpet on our fourth floor!



In March, the CSCC was honored to host visiting scholar Trivellore Raghunathan, PhD, chair of the biostatistics department at the University of Michigan. He gave a talk, "Multiple Imputation for Exploring Sensitivity of Inferences to Missing Data Mechanisms," in our conference room, which filled to capacity with BIOS faculty members and students.

Visit our updated website at www.csc.unc.edu for news updates, project pages and more!

New name, same location: the Bank of America Building is now the CVS Plaza.

Department Research

Selected Grants

Danyu Lin, PhD, Dennis Gillings Distinguished Professor, was awarded a competitive renewal of his grant, Statistical Methods in Chronic Disease Research, by the National Cancer Institute. This grant, which has been awarded to Lin continuously since 2000, develops innovative and high-impact statistical methods for the design and analysis of chronic disease studies with a focus on genomics.

In September 2013, **Haibo Zhou, PhD**, professor, was awarded a competitive renewal of his grant, Statistical Methods for Outcome-Dependent Sampling, by the National Institute of Environmental Health Sciences. This grant develops innovative and cost-effective sampling designs that will enable investigators to sample more informative samples at a fixed budget.



Jianwen Cai



Guanhua Chen



Amy Herring



Michael Kosorok



Danyu Lin



Todd Schwartz



Zhengzheng Tang



Donglin Zeng

Selected Publications

Danyu Lin, PhD, Dennis Gillings Distinguished Professor, Donglin Zeng, PhD, professor, and Zhengzheng Tang, doctoral student, developed a novel approach to analyze genetic traits in large cohorts. Their approach, “Quantitative trait analysis in sequencing studies under trait-dependent sampling,” was published online July 11 in the *Proceedings of the National Academy of Sciences (PNAS)*.

Todd Schwartz, DrPH, research assistant professor, detailed an easy way to use M&Ms to teach introductory one-way ANOVA in the *Journal of Statistics Education*. His article, “Teaching principles of one-way analysis of variance using M&Ms candy,” was followed up by a webinar which can be viewed at: www.causeweb.org/webinar/jse/2013-06.

Guanhua Chen, doctoral student, and **Michael Kosorok, PhD**, Kenan Distinguished Professor and chair of the department, are two co-authors of an article describing the development of a new data-mining tool to improve researchers’ understanding of cancer genetics. The paper, “Biclustering with heterogeneous variance,” was published in the July 8 *Proceedings of the National Academy of Sciences (PNAS)*.

Amy Herring, ScD, professor and associate chair of the department, co-authored two papers published in the *American Journal of Epidemiology* that examined birth defects. One of these publications focused on neural tube and congenital heart defects, and was co-authored by BIOS research assistant professor **Daniela Sotrez-Alvarez, DrPH**.

Faculty Awards & Recognition

Jane Monaco, DrPH, clinical associate professor, was presented at the spring 2013 commencement with the School’s highest award for teaching and mentoring - the McGavran Award for Excellence in Teaching. Monaco, who serves as director of undergraduate studies for the department, received glowing reviews from a wide range of learners, from college students to established professionals returning to school to hone statistics skills.

Amy Herring, ScD, professor and associate chair, was selected by her students for the second year in a row to receive one of the School’s annual Teaching Innovation Awards.

Michael Kosorok, PhD, BIOS professor and chair, was named W. R. Kenan Jr. Distinguished Professor in Biostatistics, effective July 1, 2013.

Kosorok has been selected to present an Institute of Mathematical Sciences Medallion Lecture in 2015.

Several faculty members were promoted within the department this year: **David Couper, PhD**, to clinical professor; **Michael Hudgens, PhD**, to associate professor; **Jane Monaco, DrPH**, to clinical associate professor; and **Wei Sun, PhD**, to associate professor.



Jane Monaco

Xiaoxi Liu, doctoral student, and **Donglin Zeng, PhD**, professor, study variable selection in general transformation models for right-censored data in a recent paper appearing in *Biometrika*, showing that their selection has oracle properties and that the estimator is semi parametric efficient. They apply their new method to data from ARIC, a long-term project of the CSCC. In a second *Biometrika* paper, Zeng worked with BIOS alumna **Dr. Qingxia Chen** and Alumni Distinguished Professor **Joseph Ibrahim** in the BIOS Center for Innovative Clinical Trials to develop an estimation method for time-varying effects for over dispersed recurrent events data with treatment switching.

Alumna **Arpita Ghosh, PhD**, recently published a new method for analyzing genomic data in the *Journal of the American Statistical Association*. Working with BIOS professors **Fei Zou** and **Fred Wright**, she introduced a novel general retrospective likelihood framework for testing in case-control genetic association studies. Ghosh is currently a postdoctoral scholar at NIH.

BIOS professors **Jason Fine, ScD**, and **Young Truong, PhD**, and BIOS research assistant professor **Feng-Chang Lin, PhD**, published new methodology for robust analysis of semi parametric renewal process models in *Biometrika*. They consider partial likelihood-based inference under a semi parametric multiplicative rate model, in which studying the partial likelihood is quite challenging.

Staff Awards & Recognition



Marston Youngblood (second from left) was awarded the 2013 Biostatistics Staff Award for Excellence. Youngblood was nominated for his outstanding work at the CSCC, in particular for his work on the HCHS/SOL project. Star Heels awards also were presented to (l-r): **Lisa Dusenberry**, **Jan Smith** and **Christine Kantner**.

David Hill and **Scott Zentz** were awarded the UNC Information Technology Team Award for their outstanding service to the department, which has more than 300 students and faculty and staff members.

Other News

Dehan Kong joined the department as a postdoctoral research associate, under the direction of Professor Hongtu Zhu.

Several people joined the department in 2013. At the CSCC: Naoko Fulcher, applications analyst; Nathan Gotman, research specialist; Jeremy Holliday, research assistant; Courtney Page, junior biostatistician; Pedro Quibrera and Eunsil Yim, research managers; Christopher Stolte and Lei Liu, applications specialists; and Henguri Sun, senior biostatistician.

The department was excited to welcome three visiting professors in 2013. Kalyan Das, PhD, is a professor in the Department of Statistics, University of Calcutta, India. Mahbub Latif, PhD, is associate professor of applied statistics at the University of Dhaka. Das and Latif were both P.K. Sen Distinguished Visiting Professors. Antonio Carlos Pedroso de Lima, PhD, is an associate professor of statistics at the University of Sao Paulo, Brazil. Pedroso de Lima received a doctoral degree from our department in 1995.

Former faculty members Drs. Fred Wright and Denise Esserman have taken positions at North Carolina State University and Yale University, respectively. Dr. Michael Wu is now an assistant member in the division of public health sciences at the Fred Hutchinson Cancer Research Center.

Climmon Walker retired from the CSCC earlier this year, after 20 years of service to the University.

Service Appreciation

5 Years

Monika Caruso
Joy Cook
Gang Cui
Jason Fine
Natalia Gouskova
Danielle Malone
Neepea Ray
Carl Smalley
Wei Sun

20 Years

Jianwen Cai
Ricky Christian
Melissa Hogbood
Monica Miles
Climmon Walker

25 Years

Deborah Rubin Williams

30 Years

Hope Bryan
Ravi Matthew
Paul Stewart

40 Years

Richard Bilsborrow
Chirayath M. Suchindran

15 Years

Steven Cory
David Couper
William McGee
Haibo Zhou

45 Years

Gary Koch
Pranab K. Sen

Alumni news



Dear fellow BIOS alumni and friends,

I'm pleased to write to you again as president of the biostatistics section of the UNC Gillings School of Global Public Health Alumni Association. As you may know, graduates of the department are automatically members of the School's Alumni Association, which does not charge dues.

The Alumni Association provides benefits to all of us. For example, it underwrites, in part, the production and mailing costs of this newsletter. Also, you will find information on former classmates using our searchable database – Alumni Online Community – found at the Alumni Association's website www.alumniconnections.com/spb.unc.edu. Please take a moment to ensure your contact information contained therein is current and accurate. The department uses email addresses from the alumni database to communicate with alumni during the year, so please make sure your email address is up-to-date. This is an excellent way to be involved with the department's efforts to network our alumni with current students seeking mentoring in various capacities.

I also encourage you to explore the giving options listed at www.spb.unc.edu/annual-fund-2 as a way to support the department at whatever level is comfortable to you. In particular, I would like to highlight the option of supporting the department's Annual Fund Scholarships to provide financial assistance to our exceptional students.

Don't forget to look for us at ENAR and the JSM. These semi-annual gatherings are a great way to reconnect with the department and your friends and colleagues. Be sure to read our announcements carefully, as we have begun to switch up the format of these events between the traditional onsite reception and a nice evening with dinner at a nearby restaurant. On that note, please save the date for our next gathering at the 2014 ENAR meetings in Baltimore, scheduled for Monday, March 17, 2014. This promises to be an extra-special event, as it will be one of the School's premiere events as it prepares to celebrate its 75th Anniversary in 2015. See spb.unc.edu/alumni/75 for additional information.

We also cordially invite you to join us for the Department's Grizzle Lecture. This is scheduled annually in conjunction with the School's Foard Lecture, to be held on April 10, 2014, at the William and Ida Friday Center for Continuing Education in Chapel Hill. See www.spb.unc.edu/alumni-pages/46tb-annual-fred-t-foard-jr-memorial-lecture-and-related-events-4 for additional information.

As always, I value your input, so please feel free to contact me with any comments you might have. Please visit the department's website, www.spb.unc.edu/bios/biostatistics, and check your email inbox for future announcements.

Thank you for all you do for the department!

Todd Schwartz (MS, 1998; DrPH, 2004)
Research Assistant Professor
UNC Department of Biostatistics

2013 ASA Fellows

Elizabeth R. DeLong (PhD, 1979), Duke University Medical Center, Durham, North Carolina

Stuart Lipsitz (MS, 1985), Brigham and Women's Hospital, Boston, Massachusetts

Douglas Schaubel (PhD, 2002), University of Michigan, Ann Arbor, Michigan

Guosheng Yin (PhD, 2003), University of Hong Kong, Hong Kong, China

In Memoriam

William Kenneth Poole (MPH, 1963; PhD, 1968) died on April 6, 2013, at his home in Rougemont, N.C. Poole served as BIOS Alumni Association president in 1996.

Yosef Hochberg (PhD, 1974) died on Dec. 3, 2013. Hochberg was professor of statistics at Tel Aviv University and the seventh president of the Israel Statistical Association. P.K. Sen was his adviser during his time at UNC.



sph.unc.edu/alumni/75

1980s

Bill Sollecito (DrPH, 1982), clinical professor in the School's Public Health Leadership Program (PHLP), was appointed recently to the American Statistical Association's (ASA) Statistical Leadership Workgroup, a national committee empaneled by the ASA president with the goal of assessing leadership education needs and developing leadership education curricula for ASA members. This appointment grew out of an innovative leadership course at UNC (BIOS 844) that was developed by a biostatistics department committee in 2011, taught by faculty from BIOS and PHLP, including Sollecito, and which was the subject of an article in a 2012 issue of the *AMSTAT News*.

1990s

Travis Che Jarrell (BSPH, 1998), MPIA, RAC, is about to celebrate five years of service with the Johns Hopkins University Sidney Kimmel Comprehensive Center as a clinical trials quality assurance manager.

2000s



F. DuBois Bowman (PhD, 2000) has been named incoming chair of the Department of Biostatistics at Columbia University's Mailman School of Public Health and professor of biostatistics, effective Jan. 1, 2014.

Jamie Bigelow Crandall's (MS, 2003; PhD, 2006) family grew by two pink feet on Jan. 30, 2013. Cora Marie "showed up," and Jack is now a big brother!

Amy Kennedy (MS, 2004) joined the Quintiles team as a senior biostatistician in April. She also married Zach Stein on Feb. 23 2013. Congratulations, Amy and Zach!

Eric Teoh's letter to the editor was published in *CHANCE*, a quarterly publication of the American Statistical Association. Teoh's article, "Beware the Ides of March," was in response to an article that examined the relationship of increased stress stemming from filing tax returns to number of people involved in fatal crashes. You can read more at chance.amstat.org/2013/09/letters-to-the-editor-2/.

2010s

Andrew Williams (BSPH, 2013) is pursuing his Master's of Science degree in analytics at N.C. State.

Send your news and photos to
mhobgood@bios.unc.edu.

Whenever you have updates for a future BiosRhythms
or the website, please write to us!

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WE THANK the following individuals, whose donations provide much-needed funds to support biostatistics graduate education. We are very grateful for your help. The names listed represent gifts received from July 1, 2012 - Nov. 30, 2013. If you know of a name we have omitted, please let us know and we will make a correction in the next issue of *BiosRhythms*.

We also thank the SPH Alumni Association, whose members contributed funds for the publication of this issue of *BiosRhythms*.

Anita Ann Abraham (DrPH '08)	George Harris Huntley (BSPH '84)	John Stephen Preisser Jr. (PhD '95)
Keir Davis Adam (BSPH '90, MS '92) & Nazir Ahmed Adam	Joseph G. Ibrahim	Barbara Alison Prillaman (MS '95)
M. Taylor Alexander Jr. (MSPH '80)	Peter Bert Imrey (PhD '72)	Xiang Qin (MS '99)
Barbara Vineyard Alexander (MSPH '78)	Cathy Anne Jenkins (MS '04)	Donald William Reinfurt & Karen Hillix Reinfurt
Nikita Arya (MS '03)	Lynette Keyes-Elstein (MPH '89, DrPH '99) & Kenneth Harris Elstein	Eric Alan Rodgman (MPH '86)
A. John Bailer (PhD '86) & Jennifer Faris-Bailer	Brian Paul Kilgallen (MS '98) & Teresa Kilgallen	Jerald Scott Schindler (DrPH '86) & Sharon M. Schindler
Violette Kasica Barasch (MSPH '80, DrPH '85)	Roy Jung Woo Kim (MD '97, MPH '00)	Todd Andrew Schwartz (MS '98, DrPH '04)
Samuel Isaac Berchuck	Matthew Allen Koch (MS '91, PhD '91) & Lilin Macapayag Koch	Joyce Gyamerawah Semanya (MPH '80) & Kofi Alavi Semanya (PhD '81)
William Cudd Blackwelder (PhD '77)	Michael R. Kosorok & Pamela W. Kosorok	Carol J. Shannon (MSPH '82)
Michael N. Boyd (MS '81, PhD '82)	Kenneth Joseph Koury (PhD '82) & Mary Lou Koury	Chuan-Feng Shih (MS '91)
Edward Carroll Bryant (DrPH '83)	Kelvin K. Lee (PhD '78)	Fraser B. Smith (MS '85, PhD '92)
Jianwen Cai & Haibo Zhou	Kerry Lamont Lee (PhD '76)	Ellen Sim Snyder (MS '84, PhD '93)
Brian Calingaert (MS '97)	Marcia Joanne Levenstein (MS '76)	William Anthony Sollecito (DrPH '83) & Michele Sollecito
L. Douglas Case (MSPH '81, PhD '87)	Danyu Lin	Paula Brown Stafford (BSPH '86, MPH '92) & Gregory Wayne Stafford
Hsing-Yi Chang (MPH '91, DrPH '96)	Lauren E. Lindblad (MS '02)	Seth Michael Steinberg (MS '81, PhD '83)
Mun Hui Chia (MSPH '77)	Stuart Roger Lipsitz (MS '85)	David John Svendsgaard (PhD '77)
Clarence E. Davis Jr. & Sherrilyn E. Davis	Yu Lou (MS '89) & Jun-Guo Zhao (PhD '89)	Gene Dennis Therriault (MSPH '71)
Sonia Kropp Davis (BSPH '88, MS '90, DrPH '94)	William Whiting Lyon (MSPH '74)	Craig David Turnbull (MPH '65, PhD '71) & Patricia Ann Turnbull
Ralph Alphonse DeMasi (MPH '90, PhD '94) & Anita Rao DeMasi	Gretchen Riser Mauney (MS '97) & Joseph Vernon Mauney (BSPH '95, MS '97)	B. Peyton Watson (PhD '82)
Michael A. DeSpirito (MS '06)	Evelyn J. McKee	Victor John Weigman Jr. (PhD '10)
Diane E. Medcalf	Richard Warren McLain (BSPH '82)	Fredrick Seymour Whaley (MSPH '75, PhD '83)
Anca Dana Dragomir (PhD '07) & Gheorghe Luta (MS '96, PhD '06)	Karleen Ruth Meadows (BSPH '10)	Andrew David Williams (BSPH '13)
Brenda Kay Edwards (PhD 1975)	Anne Ruth Meibohm (MS '81, PhD '92)	Erica Lynn Wilmoth (MS 2005)
Michael A. Ellrott (MSPH '71)	Mary Jane Miedlowski (MSPH '75) & William Miedlowski	Wayne Edward Wormsley (MPH '85)
John R. Fieberg (MS '96)	Jane Holland Monaco (MS '98, DrPH '03) & Thomas Joseph Monaco Jr.	Yong Yang (PhD '05) & Xiaolei Zhou (MS '03)
Terry Lynn Flanagan (MPH '89)	Susan Allbritton Murphy (MS '88, PhD '90) & Terrance P. Murphy	Thomas Robison Yerg (MPH '73)
Robert E. Fry (MSPH '72)	Jeanenne Little Nelson (MSPH '77, PhD '96)	Diane Everts Yerg (MSPH '73)
Stuart Gansky (BSPH '88, MS '92, DrPH '96) & Karen L. Gansky	Xumin Nie (PhD '90) & Ming Zhong (MS '94, PhD '00)	Carl Nobuo Yoshizawa (PhD '84)
Jerry Gray Gentry (MSPH '69)	Leonard Oppenheimer (MS '68) & Ruth Zelig	Bin Zou (MS '01)
Lucinda Howell Glover (MPH '88)	Jean Pan (MS '97, PhD 2005) & Feng Ye (PhD '00)	Thomas Robinson Yerg (MPH '73)
Kerry Brent Hafner (MS '84, PhD '89)	Aluisio DeSouza Pinheiro (PhD '97) & Hildete Prisco Pinheiro (PhD '97)	Carl Nobuo Yoshizawa (PhD '84)
Melissa Anne Hays (MPH '95)		Marvin Zelen
Elaine B. Hoffman (MS '94, PhD '98) & Matthew L. Hoffman		Bin Zou (MS '01)
George Howard (MSPH '82, DrPH '87) & Virginia Jackson Howard (MSPH '82)		