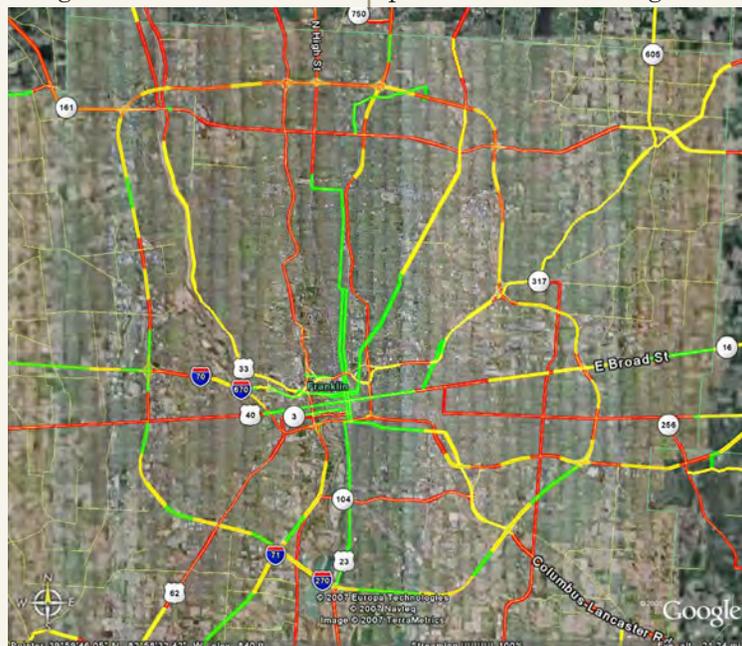


# DEPARTMENT of STATISTICS NEWS

## Consulting Service Helps Keep Ohio Highways Safer

Christopher Holloman, Director of the Statistical Consulting Service, has been working with the Ohio State Highway Patrol (OSHP) to develop statistical models aimed at keeping Ohio's roadways safer. The models he has developed quantify the risk of serious and fatal crashes on most of Ohio's interstates, US routes, and state routes. Currently, the Highway Patrol is using the model's forecasts of risk to allocate resources for preventing crashes on major holidays. The model's output has been integrated with Google Earth providing an efficient means of communicating road risk information to officers throughout the state.

The project began in the spring of 2006 when the OSHP and the SCS signed an agreement to create risk models for five major cities: Cincinnati, Cleveland, Columbus, Dayton, and Toledo. Model development required extensive exploration of the OSHP's crash database, a series of linked data tables containing information about crashes investigated by the Highway Patrol and local police organizations between January, 2001, and December, 2005. During this exploration, crashes were linked geographically to roadways, and patterns were found both spatially and temporally in the data. The information obtained in the exploration was then used to build a statistical model that predicts the risk of a crash on any one-mile segment



of roadway as a function of the time of day, day of the week, month of the year, driver age, driver intoxication status, weather conditions, and speeding status. The forecasts for the five cities were used to position officers for the July 4th holiday weekend in 2006.

Based on the utility demonstrated by the model over that weekend, the OSHP asked the SCS to expand the model to cover as many roadways in the state as possible. To obtain the computing power necessary to fit a model on the expanded scale, Holloman contacted the Ohio Supercomputing Center (OSC). The OSC generously provided the SCS a grant of computer time for executing SAS code on a large scale.

The forecasts of crash risks across the state were used to position officers over the Thanksgiving and Christmas/New Year's holidays in 2006/2007. One of the greatest challenges of the project was to find an efficient way to communicate to officers the volumes of risk forecasts produced by the model. To solve this problem, the model output was integrated with Google Earth, a free geographic software tool that allows users to manipulate a birds-eye view of the earth. Crash risk levels

are superimposed on the roadways using red (high risk), yellow (moderate risk), and green (low risk) lines. Officers can quickly view maps at different scales to narrow down the most dangerous locations in their districts.

Several local and national media outlets have filed reports on the crash forecasting model. Some of the initial television and newspaper reports can be found on the SCS website at <http://www.scs.osu.edu/projects.html>. In addition, Holloman will be presenting the project at the 2007 State & Provincial Police Planning Officers Section Conference, which will be attended by Highway Patrol representatives from several states.

The SCS and OSHP are currently discussing the possibility of updating the model using crash records from the 2006 calendar year. These new data will provide an opportunity to make adjustments to the model, such as accounting for the impact of reallocation of officers, and provide an opportunity to assess the performance of the model when its forecasts were used to guide officer placement during the last half of 2006.

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# 2007: Cruisin'... on a Sunny Afternoon

by Doug Wolfe

Except for a substantial number of budgeting issues, this has been a year of relative calm in the Department of Statistics—but the operative word is “relative”. We had been building steam and adding personnel at such a rate over the previous half dozen years that a year with no new faculty additions and only a few staff changes made it seem like we were on cruise control.



Doug Wolfe

But don't take that to mean that we are in a slow down mode—we are talking about cruise control at the maximum speed allowed by statistical law.

Our external research funding continues to be impressive, as we led the way across the entire College of Mathematical and Physical Sciences in increased research support last year. In fact, we were the only department in the college that maintained a positive slope in external funding revenues this past year. Congratulations to our faculty!! As usual, we highlight a few of these funded projects elsewhere in the Newsletter.

### Faculty Awards and Honors—Kudos

Our faculty members continue to receive important honors and awards. Steve MacEachern and Bill Notz were elected to membership in the International Sta-

tistical Institute. Shili Lin was chosen to give the prestigious 2007 Distinguished Lecture for Women in the Mathematical Sciences at Iowa State University. Elizabeth Stasny received the 2006 Harlan Hatcher Memorial Award for academic excellence from the Colleges of Arts and Sciences. Michael Browne was selected as the recipient of the 2006 Fred Brown Research Award by the Department of Psychology. Please join me in congratulating Steve, Bill, Shili, Elizabeth, and Michael on their well-deserved awards!

### Personnel Changes—Calmer in Columbus

Breaking from the recent tradition, this was a rather quiet year with regard to personnel changes in our Department. Justin Kubatko did decide to leave us after only one year to undertake an exciting new business adventure in sports statistics. This has always been one of Justin's passions and now he will have the opportunity to pursue it full time. We all wish Justin the very best in this endeavor and hope that it stays as much fun when it is work as it was when only an avocation. Thanks, Justin, for doing a great job teaching for us this past year. To take over Justin's undergraduate teaching duties, we welcome another alumnus, Peter Sprangers, back to the Department. All of us who know Peter realize that this is certain to be a lively transition year for the Department!! :) Tailen Hsing is leaving us to take a faculty position of leadership in the Department of Statistics at our friendly neighbor up north, the University of Michigan. We thank Tailen for the contributions that he has made to our Department during his time at Ohio State and wish him the best as a statistical (but not sports!) Wolverine.

There has also been a bit of restructuring of the Statistical Consulting Service (SCS). Tom Bishop stepped down as Director of the SCS to devote more of his time to teaching our own graduate students about consulting and graduate students across the university about what it means to design and conduct quality research studies. Chris Holloman has moved from his current Associate Director position to become the new Director of the SCS. We thank Tom for his extremely valuable contributions in making the SCS once again a place where our graduate students want to work and where both internal and external clients can obtain timely and expert statistical advice. We look forward to Tom's continued contributions to the Department in his expanded teach-

### Department of Statistics News

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ing role and to Chris' new leadership of the SCS.

Finally, this will be a transition year for the administration of the Department. Mike Fligner will step down as Vice Chair, effective this September, and Bill Notz will bring his substantial previous administrative experience to that position. We have

convinced Mike to stay on to help Bill with the transition and to devote more time to teaching our graduate classes (who else could teach the wildly popular SAS sequence!). Thanks, Mike, and welcome, Bill.

#### Update on Space/GoodSpace—Progress at Last!

Like Don Quixote, we continue our quest for adequate quality space to house our faculty, staff, and graduate students. Unlike the Don, however, we are making some progress. We have FINALLY received a commitment from the University to put a new roof on Cockins Hall. That may not seem like much of a victory, but it was an absolute necessity before we could make any serious attempts to renovate our beloved CH without the concern of having it undone by additional leaks in the roof.

With regard to sufficient space for our thriving graduate program, we have, indeed, received the two additional classrooms mentioned in last year's Newsletter and are making good use of them. We are also hopeful that we will soon have additional contiguous space so that we can finally, for the very first time in our history, accommodate all of our department personnel in one busy, synergistic well-defined Department of Statistics 'home'—but it is a bit too soon to be more specific as the negotiations are still



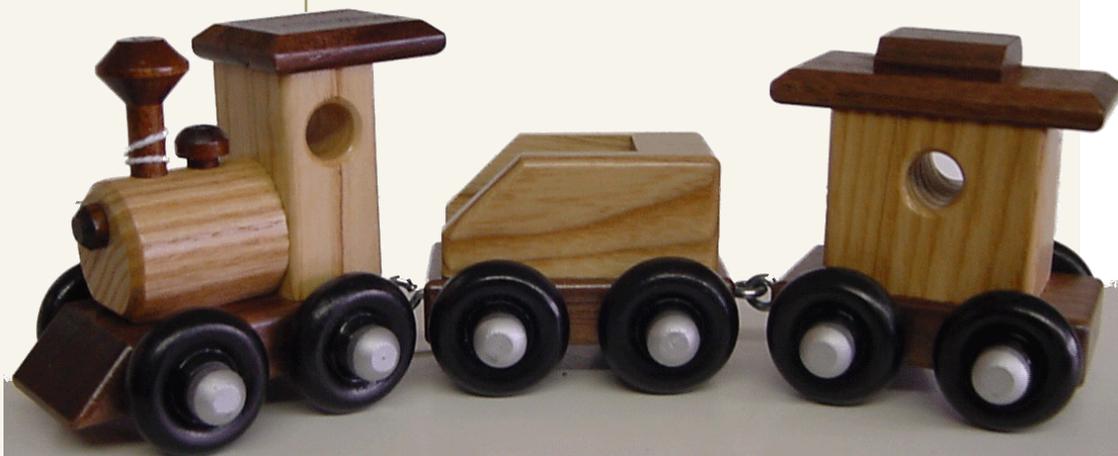
at a critical stage. Once this has been resolved satisfactorily, we will be able to concentrate on modernizing all aspects of our very own facilities (that sounds SO good!), including the restrooms, meeting rooms, and student, staff, and faculty offices.

Clackity Click,  
Clackity Click,  
Moving Fast,  
We Must be  
Quick

As usual, all of the credit for

the many good things that continue to happen in our Department of Statistics goes directly to the outstanding and dedicated faculty, staff, and graduate students in our program and all of the blame for anything that does not belong into this "good things" category falls squarely on the shoulders of our exiting Vice Chair! :)

Cruising at the legal limit,  
Filled with promise, fully in it.  
Faculty, staff, and students, too,  
Don't they shine at what they do!  
See it run so smooth and sleek,  
All it needs is little tweaks.  
Time to go, be on our way,  
Until we meet another day.  
Clackity, clackity, clackity, click,  
Hope you don't detest this shtick!!



# Designing Microarrays and Microarray Experiments, Statistically, Under Northern Lights

Jason C. Hsu

in collaboration with

Jane Chang, Tao Wang, Youlan Rao, Yoon Lee,  
Eiríkur Steingrímsson, Magnús Karl Magnússon,  
Kristin Bergsteinsdóttir

Ah, an invitation to tell stories, even if the audience is not quite captive ... (usual FDA-like disclaimer: I apologize in advance for any unintentional insult).

It was dark when I arrived in Iceland, one January morning in 2004. My host (my 2nd PhD student) Gunnar Stefansson took me from the airport to the apartment, and went skiing in the Alps with his family (slight exaggeration). The next day, it snowed. To forage for food, I used a large cast iron skillet to dig myself out of the apartment.

I went to Iceland as a Fulbright Scholar. Some Fulbright Scholars go there to paint, some go there to write. As a mere statistician, I went there to help University of Iceland to develop a Statistics curriculum.

But, secretly, I hoped to connect with scientists working on genomics in Iceland. I had noticed much of the reported findings in bioinformatics do not seem reproducible. Is the promised pot of gold at the end of the -omics rainbow a myth? (see Fig. 1) Iceland is technologically advanced, especially in the genomics area. The company called deCODE Genetics is in the news all the time. Perhaps I can find the answer in Iceland.

Personally, I believe a major reason for the irreproducibility of bioinformatic results is a lack of basic statistical

considerations in the design of such experiments. I have had experience with pharmaceutical clinical trials since 1998. Results from those trials are highly reproducible. There is no doubt that a main reason for the reproducibility is that these trials are designed and executed according to statistical design principles (randomization, replication, blocking) set forth in the international guidance ICH E9. If one were to follow the same principles in designing microarray experiments, one would randomize the placement of the probes and the samples on the microarrays, take replicate samples from each patient, and hybridize samples from different groups to be compared in blocks. Such design considerations have hardly penetrated the realm of microarray experiments.

Most stock microarrays allow only one biological sample to be placed on each array. With one patient's sample per array, it is impossible to separate array to array variability from patient to patient variability. In comparing expression levels of low risk and high risk patients, the observed differences due to patients belonging to different risk groups are completely confounded with potential differences due to array processing.

Iceland is small: the majority of the Icelandic population lives in Reykjavik, and the majority of the Reykjavik population can comfortably fit into the Ohio Stadium. Small size + High tech = Flexibility, so perhaps such designs are more possible in Iceland. As an independent academic, I would go to the end of the earth to prove my point. In this case, it was the beginning of the earth I went to: in the novel *Journey to the Center of the Earth* by Jules Vern, the journey starts in Iceland.

With few properly trained biostatistician who can talk multiple testing and pretend to talk -omics in Iceland, I readily connected with scientists at deCODE and a small rival genomic company called Urður, Verðandi, Skuld (UVS). One day, as I was leaving UVS, I noticed it shared its building and laboratory with a company called NimbleGen Iceland! Surfing the web that night, I found NimbleGen to be a maker of microarrays that allow flexible designs. As I walked back to my apartment, under Northern Lights, I thought "This has possibilities."

Making a possibility a reality is tough. To prove statistical concepts, ideally one conducts experiments with known answers. For example, one can place titrated RNA samples on microarrays to compare the results from statistical designs versus haphazard designs. Typical funding agency reaction upon receiving such a proposal is why it would fund an experiment with known answers.

Fortunately, we were able to get the Icelandic Government to fund a series of proof-of-concept microarray experiments, designed

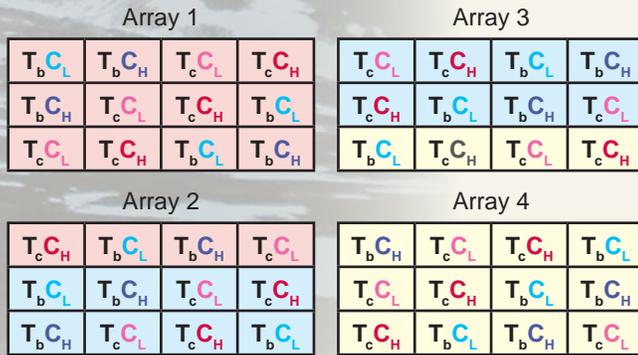
Figure 1: Skógarfoss, Iceland  
(Legend has it there is a treasure chest behind the waterfall.)



and analyzed by Ohio State and Bowling Green statisticians, with microarrays synthesized by NimbleGen, and samples prepared and hybridized by UVS.

Our experiments utilized microarrays with mini-microarrays on them, 12 mini-microarrays on each array. Figure 2 demonstrates a Latin Square design to compare high concentration (CH) with low concentration (CL) RNA samples from breast cancer cell line (Tb) and colon cancer cell line (Tc). Each microarray serves as a block, with equal numbers of samples from each group to be compared on each microarray. Such a design not only avoids confounding with array effects, it enhances the sensitivity of group comparisons as well. To avoid bias due to position of the probes, the placement of the probes is randomized for each microarray when it is synthesized, separately for each mini-microarray. To avoid bias due to position of the samples, the rows and columns of the Latin Squares are randomized before hybridization.

Figure 2. Example of Latin Square Design of Microarray Experiment



To conduct studies that have not been done before is to develop new techniques and software. It is learning to communicate and to appreciate different views. I am grateful to all my collaborators for their efforts and their willingness to risk failure with me.

The result of the first of our experiments was published in Hsu et al (2007). It demonstrates that statistical design of microarrays and microarray experiments can enhance sensitivity and specificity. Figure 3 shows, for the breast cancer cell line, whereas the statistically designed microarray study found all 200 genes to be differentially expressed between high and low concentrations, haphazard designs found fewer genes to be differentially expressed.

In the meantime, microarray experiments are moving from for “discovery” only toward “clinical use”. In 2005, the FDA issued its Voluntary Pharmacogenomic Data Submission (VGDS) guidance (FDA 2005), which couples the development of a drug for a subgroup of the patient population with the development of a device (e.g., a microarray) that can accurately predict which patients will be responders to the drug. We have conducted a proof-of-concept experiment appropriate for VGDS, which my collaborators and I are in the process of documenting.

The second evening I was in Iceland, I went alone to a Math Department party, in a house next to a large

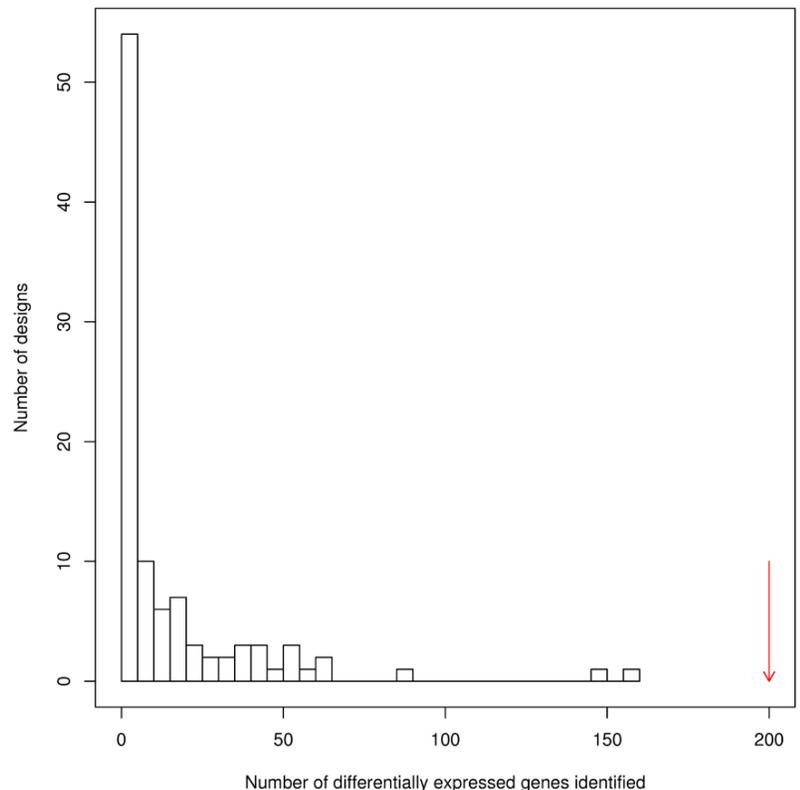
cemetery. Walking past its inhabitants after the party (after schnapps), I thought how fitting a description of that party would be as an ending to my story, should I get to tell it. It is a play on a typical Prairie Home Companion radio broadcast ending:

“So that’s the story from Reykjavik, Iceland, where at math parties all the men (math professors) stay in one room, all the women (wives of professors) stay in another room, and all the children (students) stay in a 3rd room and have a good time.”

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Figure 3. Number of genes inferred differentially expressed breast cancer cell line Haphazard Design vs. Statistical Design



## Joseph Kupresanin



Hello newsletter readers! I recently graduated from the department with the Master of Applied Statistics degree and will be heading to Maryland to begin teaching undergraduate mathematics and statistics at Cecil College this fall. Let's step back

a moment and walk our way through the events that led me to the fortunate position I'm in today.

Back in the late 1990s, I attended OSU in the Fisher College of Business. After bouncing around a few majors, I finally settled on marketing and graduated with honors in June 2000. At this time, totally unsure of my decision, I took a job as a cigarette salesperson in Akron, Ohio for Philip Morris USA. My hesitancy stemmed not from the nature of the industry, but rather from the choice of becoming a territory sales manager; needless to say, I averaged eighty hours each week and felt I was not utilizing my full arsenal of skills. Nearly three years later, I made the decision to follow my dream and become a teacher.

The path I took to earn the MAS degree was by no means direct. My post-baccalaureate career began slowly, since I never had even taken one calculus course during my undergraduate studies. I attended a few schools near Cleveland, one of which was a community college, to prepare for a graduate program in statistics. My time at Cuyahoga Community College as a calculus student firmed up my career goals: I wanted to teach at a community college rather than at a high school.

With prerequisites in hand, I joined the department in June 2005. During my time here, I worked for Deb Rumsey and Jackie Miller, teaching both Statistics 133 and Statistics 145. I learned much from both coordinators, and each played a crucial role in my development as a teacher. Along the way, I completed the requirements for the Graduate Interdisciplinary Specialization in Teaching and served the department as student Co-President with the hard-working and talented Soma Roy. Might I gloat and say that our graduate student newsletter, namely the Central Moments of our Lives, brought happiness and entertainment to the department during our tenure at the helm.

I move forward, approaching thirty years on earth, with my degree and job opportunity in hand. I couldn't be more excited as teaching brings me great satisfaction and the flexibility in a career that I am seeking. The OSU Statistics Department has been quite supportive during my two years here. I am quite happy to say that I came to OSU with a specific goal in mind, and the fantastic people in the department have helped me achieve this goal.

## Cheryl LeSaint



When I think about it, I must have always loved numbers. Through grade school and high school, Math was my favorite subject. Therefore it was natural for me to declare Mathematics as my major for college. Only I felt as though I didn't really want to stay there. I knew I wanted to do

something involving Math, but in a more applied setting. I looked into Engineering and Actuarial Science, but felt that neither fit me very well. It wasn't until my junior year of college that I found Statistics. I knew I didn't want to take the required theoretical courses in Mathematics and learned that I could substitute graduate-level Statistics courses for these instead. At this point, I had taken only one Statistics course and thought it was interesting. So I decided I would spend the last two years of college taking Statistics courses.

My original intention was to stop when I received my bachelor's degree. I expressed this to a professor of mine, so he decided it would be good for me to get some experience in the work force before I graduated. I had just taken a SAS programming course from him, so he helped me land a job as a SAS programmer at Proctor and Gamble towards the end of my junior year. It was while I was working there that I realized I couldn't do that for the rest of my life. I knew I needed more and became convinced that I needed to go to graduate school. I looked around and found that I couldn't turn down the offer the Statistics Department at The Ohio State University had given me.

I originally came to the Statistics Department at OSU with the intent of a Master's degree. Since I had never planned to go to graduate school, I certainly did not plan to stay there for more than two years. I did, strangely enough, decide to sign up for the MS program and not the MAS program. This was mostly because I felt I already had taken a lot of the courses for the MAS degree from my undergraduate work and felt I would be bored too much. Looking back, I certainly picked the route that was not boring.

My first two years at OSU were some of the most humbling, yet rewarding years of my life. Always having easily excelled in every single math class I had ever taken did not prepare me for graduate school. While the graduate work was hard, doing well and enjoying what I was doing was what motivated me. I tried my hardest, sometimes succeeding and sometimes not. I could never have done it, though, without the help of my professors and classmates.

When it was time to decide whether or not I was go-

*(continued on page 8)*

## Hongfei Li



After receiving my B.S. in applied mathematics and M.S. in quantitative economics in China, I was still not completely satisfied. When analyzing financial data, I felt restricted in my ability. I realized that statistics was an important tool to understand the fundamentals of the world,

but I was not aware of the essence of statistics at that time. I decided to study abroad and pursue my PhD in statistics. Luckily, I got four offers with a fellowship from universities in the United States and Canada. After careful consideration, I chose the Department of Statistics at The Ohio State University. It turns out that I made the right decision. This is the place where my dream came true.

Although the United States of America was a new country to me, I did not feel strange when I first stepped on this land. Of course, one reason is that there were a lot of Chinese students around me. The other reason is that I was studying and living in a friendly department and with many friendly classmates. I still remember how my American classmates invited me to their study group on the second day of 602. I enjoyed questioning and answering not only statistical issues but also everything else.

Time went fast. I immersed myself in course work during the first two years. I tried to take as many courses as possible so that I could be exposed to various areas of statistics. It was a great way to broaden my knowledge. At the end of the second academic year, I took reading courses from Dr. Catherine Calder and Dr. Noel Cressie. I really liked this one-to-one learning process. They had a talent to encourage me to think independently while guiding me in the right direction. After I passed my second qualifier exam, I chose them as my co-advisors. My research interest was in the area of spatial statistics applied to environment, ecology, public health, etc. When I was working on financial problems five years ago, I never thought I could apply statistics to these areas. It turns out that statistics is a powerful universal tool. At least that is what I believe and that is why I like it so much.

Working on my dissertation and working as a research assistant for Dr. Cressie and Dr. Calder were the two focuses of my last three years. I really appreciated their great help and relentless patience to train me to be a real statistician. Beyond purely statistical matters, they also gave me great advice on my job search and provided me opportunities to practice my presentation skills.

Another aspect of the department I enjoyed very much was that I could receive encouragement and support anytime and anywhere. My name showed up in

*(continued on page 8)*

## Liang Liu



I could not get to sleep the night Dr. Stasny sent me the congratulations email after my success in defending my dissertation. There are no words to describe what I felt when I saw the compliment to “Dr Liu” on the very first line. I had been dreaming about this moment since I

came all the way across the Pacific Ocean from China to the United States. When it finally came, I could not believe it happened. Five years had passed and I had been transformed from a young man, to a “doctor” and a father of a 16-month old boy. During this long tough journey, I was lucky to have so many wonderful people who were always there to help me and encourage me.

I can still feel the excitement and happiness that possessed me when I got off the plane and stood on the American ground 5 years ago. Unfortunately, the first chapter of my American life became unpleasant as I rushed to the baggage claim for my bags. I was shocked when a United airlines officer told me that they could not find my luggage. All my belongings were gone. My friend drove me to the place that I had already rented. Poor, I had to sleep without a quilt and sheet on the bed for my first night in America. I was disappointed even though United airlines finally found my bags and sent them to my apartment three days later. My American trip had started with an awful beginning.

Two months later, I got in even bigger trouble. I failed the midterm of a statistics course taught by Dr Wolfe, the Department Chair. When he handed back my paper, he turned it around and quickly stuck it into my hand with a mysterious expression in his eyes that I can never forget for the rest of my life. I found the exam score at the end of the front page written in a small black font which could not be seen without an exhaustive search. Although the score was not good, I laughed and was touched by Dr. Wolfe’s thoughtfulness. He, apparently did not want somebody else to see my score. I started to understand “his mysterious emotion” that was full of concern, trust and encouragement. Please do not try to read somebody’s score by observing whether or not Dr. Wolfe turns around the paper. He has probably changed his trick. After one month of hard studying, I easily passed the course in the final.

My wife was in Chicago while I was studying statistics at the Ohio State University in 2001. We hoped that she could come to Columbus as a PhD student in our department. At that time, the applications for our department were extremely competitive. Besides, it was near Christmas and most people on the recruitment commit

*(continued on page 8)*

## Cheryl LeSaint (continued from page 6)

ing to leave with my Master's degree or continue on for the Ph.D., I had to do a lot of soul searching. Most people I spoke with encouraged me to at least try for the Ph.D. It took a while, but I finally decided that it was now or never. In the end, I am so happy I stayed. I truly don't believe I could be where I am right now had I not stayed. I learned so much in the years that followed about computing and Bayesian methods, both of which helped me succeed at my fellowship with SAS last summer.

At the end of my fellowship, SAS offered me a full-time job. Getting a job at SAS was one of the most exciting moments for me. I had always loved programming in SAS (as some of my classmates can tell you) and dreamed someday of working there. After my fellowship, I knew that this was my dream job. I love the people I work with, the work I do, and the company I work for.

I can only hope the same happens for everyone who enters the Statistics Department at OSU. This department is truly a special place, where you can learn so much and make some lifelong friends in the process. Now that I'm removed from this, I realize how much I truly miss it. Enjoy it while you can!

## Hongfei Li (continued from page 7)

our graduate student newsletter once because I got my truck driver license in China. This made me feel special. At the times when I passed my Candidacy exam, when I gave birth to my baby, and when I presented a seminar talk, I received many congratulations and encouragement from our faculty members and classmates. I will never forget those moments.

## STATCOM at OSU

In Spring 2007, graduate students Jeff Pan and Chris Sroka started Statistics in the Community (STATCOM) at OSU. STATCOM is a group of volunteers that provides limited, free, statistical consulting services to the local community. STATCOM serves government and non-profit organizations that do not have the funds available to hire a professional statistical consultant, yet have information to collect or data to analyze that would help them in making



Chris Sroka, Soma Roy, Jeff Pan and Gang Han

After five years of graduate study at Ohio State, I will graduate this summer and I have found that Ohio State has equipped me well for a new life away from school. I am proud to be an OSU-trained statistician.

## Liang Liu (continued from page 7)

tee were on vacation. I flew to Chicago to spend the holiday with my wife and on the night of my arrival, I received an email from Dr. Stasny, saying that my wife had been accepted as a PhD student in our department. Wow! It was the best holiday we ever had because of this exciting news. After I got back from Chicago, I looked desperately for financial support for my wife. While I was on my way to the Biochemistry Department in which there might be a RA position opening, I came across Dr. Wolfe. He said "Liang, we will try to support your wife as soon as possible". I looked gratefully at him and said "Thank you". He smiled and walked away. After a few months, the department issued a TA position to my wife.

I am afraid that the biggest achievement I have ever had was becoming a father in 2005 when my son, Ricky, was born. Lots of friends from the department came to congratulate us and bought him all kinds of gifts. The most impressive gift was the quilt made by Jessica. She made it by herself! My son is covered by this lovely quilt every night. It seems that he is unable to sleep without the quilt now.

I have to move to Boston in September. As the date of leaving Columbus approaches, I am sad about losing so many friends here. Well, I believe I will never lose them since they are always in my heart and I know they care about me and my family too. I feel I am the luckiest man in the world for having been a member of this warm, thoughtful, family-like department. I would like to wish the best to the faculty, staff, and graduate students in the Department of Statistics. Take care.

more informed decisions about their operations. The idea for STATCOM came from graduate students at Purdue University, where a similar program has been operating since 2001.

Advice and assistance are offered on a wide variety of statistical issues including (1) the use of data to improve decision making processes, (2) survey/sample design and analysis, (3) design and analysis of studies and experiments, (4) graphical methods of summarizing and gaining meaning from data, and (5) the use of data to detect trends and make predictions and projections. Since starting STATCOM at OSU, Jeff, Chris, and fellow graduate students Soma Roy and Mansen Wang have helped two local non-profit organizations with their statistical needs.

If you are involved with an organization that could use the services of STATCOM, feel free to contact Chris Sroka at [csroka@stat.osu.edu](mailto:csroka@stat.osu.edu) (614-292-6038) or Jeff Pan at [xpan@stat.osu.edu](mailto:xpan@stat.osu.edu) (614-292-5373). Jeff and Chris can meet with you to discuss what type of assistance is available.

## POWERS TEACHING AWARDS

The Thomas and Jean Powers Teaching Awards are presented each year in two categories to (1) the best TAs teaching either recitations or lectures, and (2) an outstanding professor in the Department. These awards were instituted in 1986 through a generous gift to the Statistics Development Fund by Tom and Jean Powers.



**Bill Darnieder receiving an Outstanding TA award from Mike Fligner.**

The Department is lucky to have a large number of excellent Graduate Teaching Associates. The selection of the best TAs is never an easy task, and there are always a number of extremely good teachers who are runners-

up for the award. In 2006-07, the awards for best TA were presented to William Darnieder, Stephanie Jones, Jared Schuetter and Michael Sonksen. Each of these TAs made an outstanding contribution to the teaching mission of the Department. The faculty award was presented to Professor Steve MacEachern.

## WHITNEY AWARDS

In 1992, Professor Emeritus Ransom Whitney and his wife Marian Whitney made a generous gift to the Statistics Development Fund to institute several awards for graduate students. In 2006-07, the winner of the best consultant in the Statistical Consulting Service was Xueliang (Jeff) Pan. The award for the best research associate was given to Jie Ding. The award for best research leading to the Ph.D. was awarded to Lixin Lang. We congratulate these students and thank them for their hard work.

## CRAIG COOLEY MEMORIAL PRIZE

The Craig Cooley Memorial Prize for 2006-07 was awarded to Hongfei Li. Each year this award is presented to a graduate student in the department demonstrating exceptional scholarly excellence and leadership abilities. Craig embodied these two qualities throughout his graduate career. Tragically, he was killed just before receiving his Ph.D. in 1996. To honor his memory the department created the Craig Cooley Memorial Prize. For additional information about contributing to this fund, please see below.

## UNIVERSITY AND COLLEGE FELLOWSHIPS

Single year University Fellowships were awarded to Aliesha Keegan, R. Michael Salwan, Bonnie Shook, Joanne Sklodowski, Joshua Svenson, and Lili Zhuang. Two-year Distinguished University Fellowships were awarded to Kathryn McFarland and Jennifer Sinnott.

## INDUSTRIAL FELLOWSHIPS

Each year the Department of Statistics is able to offer special recruitment Fellowships to some of the very best new applicants to our graduate programs. These Fellowships are funded through the generous support of sponsoring industrial organizations, for which the Department is always grateful. The sponsoring organizations, their Fellowship stipend amounts and the 2006-07 student recipients are as follows:

### Lubrizol Foundation Fellowships

Four awards in the amount of \$2,500 each are provided by the Lubrizol Foundation. The 2006-07 recipients were Mary Hickey from University of Dayton, R. Michael Salwan from University of Illinois-Urbana-Champaign, Joshua Svenson from Baldwin-Wallace College, and Jennifer Williams from Wittenberg University.

### Battelle Fellowship

An award in the amount of \$3,000 is provided by Battelle. The 2006-07 recipient was Jennifer Sinnott from Harvard University.

### Capital One

An award in the amount of \$3,000 is provided by Capital One. The 2006-07 recipient was Kathryn McFarland from The Ohio State University.

### Merkle Fellowship

An award in the amount of \$3,000 is provided by Merkle. The 2006-07 recipient was D. Joseph Hutchings from Brigham Young University.

### Wyeth-Ayerst Fellowship

An award in the amount of \$3,000 is provided by Wyeth-Ayerst. The 2006-07 recipient was Bonnie Shook from Marshall University.

We appreciate all the support from the Lubrizol Foundation, Battelle, Capital One, Merkle, and Wyeth-Ayerst.

## CHAIR FELLOWSHIPS

Single year awards in the amount of \$1,500 are provided through the Department as Chair's Fellowships. The 2006-07 recipients were incoming students Adam Dallas from George Mason University, Adam Lundgren from Millersville University, and Brian Schnitker from Indiana University-Purdue University-Fort Wayne.



**Chris Holloman, Director of the SCS, presents Jeff Pan with the Outstanding Consultant award.**

Crime is up in Cockins Hall! Several faculty members and students have gotten into crime in a big way (or at least with big data sets). They find that crime does pay (through grant support), but it's not necessarily very organized.

Prof. Kate Calder and graduate student Hongfei Li are collaborating with researchers from the Criminal Justice Research Center (CJRC) at OSU to study the patterns and potential causes of spatial variability in crime rates within and across major U.S. cities. A primary objective of this interdisciplinary study is to explore the implications of local residential segregation on the amount of criminal activity in a neighborhood. Local residential segregation can be thought of as the potential for interaction between neighborhood

residents and individuals residing in other areas of a city. While previous studies have demonstrated a link between crime rates and the concentration of disadvantaged and minority residents within neighborhoods, this study seeks to quantify the extent to which the segregation of such groups influences crime. Additionally, the potentially

protective effects of segregation for more advantaged and White communities are being explored. The study draws on sophisticated geographic information system technologies to compute measures of local segregation that account for transportation networks and physical barriers between neighborhoods (such as railroads, highways, rivers), which are then incorporated into hierarchical statistical models for crime. Additional members of the research team include faculty from the Departments of Sociology (Chris Browning, Lauren Krivo, and Ruth Peterson) and Geography (Mei-Po Kwan), as well as graduate students Reggie Byron from Sociology and Jae Young Lee from Geography. The project is funded by a grant from the National Science Foundation.

Prof. Peter Craigmile, Prof. Elizabeth Stasny, and graduate student Clint Roberts are working to impute for missing data in the Uniform Crime Reports (UCR). The UCR, collected and published by the United States' Federal Bureau of Investigation (FBI) since 1930, is one of the largest and oldest sources of social data. It consists, in part, of monthly counts of crimes for over 18,000 police agencies throughout the country, for seven major types of crime as well as sub-categories. The seven index crimes are the following: murder, rape, robbery, aggravated assault, burglary, larceny, and vehicle theft. Although it is a voluntary reporting system – no agency is required to report its data to the FBI – most agencies do comply and transmit their crime data to the FBI.

For various reasons, however, agencies may miss reporting occasional months, strings of months, or even whole years. The goal of the research is to develop and test imputation methods for the longitudinal UCR data and to develop variance estimates for the imputed data. The proposed method uses three different models

for crime counts depending on an agency's average monthly crime count for a particular crime. For small crime counts, the method uses mean imputation, assuming the data are Poisson to permit variance estimation. For large crime counts, the method uses a time series SARIMA (Seasonal Auto-Regressive Integrated Moving Average) model. For intermediate crime counts, the method uses a Poisson Generalized Linear Model (GLM). Further research is focusing on using hierarchical Bayesian models for crime counts. Prof. Mike Maltz from the Department of Sociology is the criminology expert for the team. The project received funding from the Bureau of Justice Statistics and the American Statistical Association's Committee on Law and Justice Statistics.

### Commercial Land Use and Total Crime Rate





Laura Kubatko

Many research areas in the biological sciences, particularly genetics, have recently been revolutionized by technological advances in our ability to rapidly collect data. University researchers are presented with many challenges in coping with this data, from developing appropriate methodologies for analysis to training the next generation of students to take up careers in these fields. The Department of Statistics is working with the College of Biological Sciences (CBS) at OSU to embrace these challenges. The academic year 2006-2007 was a productive one in this regard, with several developments in both education and collaborative research.

## Education

An undergraduate course in “Statistics for the Life Sciences” was taught for the first time in Spring Quarter 2007. This course builds on the increased levels of quantitative training that the approximately 2,300 undergraduate students at OSU majoring in biological sciences will be receiving. The course received positive feedback in its first offering in the spring, and we hope to increase enrollment in the next offering in Spring Quarter 2008.

The Department of Statistics is also participating in the development of a new major in Computational Physical and Biological Sciences to be offered by the College of Mathematical and Physical Sciences. The proposed major will contain four possible “tracks”, two of which will focus on computational problems in the biological sciences and will include coursework in statistics. Finally, several interdisciplinary seminars which included participants from Statistics were held during this academic year, including a course in Coalescent Theory offered during Winter Quarter and a Phylogenetics Discussion Group, which met throughout the academic year.

The educational efforts in CBS have also extended beyond the OSU community. This summer, the first North American Workshop in Cladistic Methods will be held at OSU. The workshop is a combination of lecture and hands-on computer labs designed to give participants experience in estimating evolutionary relationships using genetic data. The final day of the workshop will be devoted to statistical methods for analyzing nucleotide sequence data, including maximum likelihood and Bayesian techniques, and will be taught by Statistics faculty member Laura Kubatko. The workshop, sponsored by the Willi Hennig Society, received twice as many applicants as available spaces this year, and it is anticipated to grow in the coming years.

## Collaborative Research

Several new collaborative research activities have begun between Statistics and CBS as well. For example, a project in conjunction with Dr. Paul Fuerst of the Department of Evolution, Ecology, and Organismal Biology (EEOB) involves the evolutionary analysis of genome-wide data for nine species of the genus *Rickettsia*. The *Rickettsia* are insect- and tick-borne parasites that cause diseases such as typhus and Rocky Mountain spotted fever in humans. Their evolutionary history is of interest because of numerous historical shifts in their host organism. Traditional evolutionary

analyses of this group have relied on one or a handful of genes. In contrast, this study includes data on entire genomes -- resulting in a total of approximately 800 genes. The statistical challenges in inferring evolutionary relationships from genome-wide data involve the development of appropriate models for the relationship between the evolutionary histories for each gene and for the organisms as a whole. For example, the common assumption that genes are sampled independently throughout the genome cannot be made, because adjacency of genes along a chromosome induces a correlation between their histories.

A second project in collaboration with Dr. Lisle Gibbs of EEOB involves the phylogeographic analysis of *Sistrurus rattlesnakes* in North America. Phylogeography is a relatively new field in which statistical techniques are used to study the biogeography of a group of organisms via comparison of their estimated evolutionary relationships with their current geographic distributions. These relationships are of particular importance for the *Sistrurus rattlesnakes*, because of implications of the observed pattern of venoms in this group on the evolution of proteins involved in venom production.

## MBI

Several activities at the Mathematical Bioscience Institute during 2006-2007 included participants from CBS and Statistics. Alexandros Stamatakis of Ecole Polytechnique Federale de Lausanne presented a two-day tutorial of his software RAxML, which provides computationally efficient methods for obtaining maximum likelihood estimates of evolutionary relationships for samples which include thousands of organisms. In addition, EEOB faculty member Elizabeth Marschall was a co-organizer of a workshop titled “Over the Fence: Mathematicians and Biologists Talk About Bridging the Curricular Divide” that focused on educational issues in the interdisciplinary areas of mathematical and statistical biology. Finally, with MBI support, Statistics faculty member Dennis Pearl hosted a visit by Drs. Elizabeth Allman and John Rhodes of the University of Alaska-Fairbanks, during which John Rhodes gave a seminar on “Identifiability of Phylogenetic Substitution Models”.

## Conclusions

The quantitative focus of the College of Biological Sciences at OSU is likely to rise in the future, and we look forward to increasing levels of interaction with students and faculty members in CBS in the coming years. Already on the agenda for next year is a seminar course co-taught by Lisle Gibbs (EEOB) and Laura Kubatko (Statistics) on “Statistical Analysis of Population Genetic Data”. Concurrent with the course, EEOB and Statistics will co-sponsor a seminar visit by Dr. Mary Kuhner of the Department of Genome Sciences at the University of Washington, who is a leader in the development of MCMC methods for estimation in population genetic settings.



**Elizabeth A. Stasny**

### This Year's Ph.D. Graduates

We are proud to have another excellent group of Statistics and Biostatistics Ph.D. graduates this year. Below are the titles of these graduates' dissertations and the positions they have accepted:

#### Ph.D. in Biostatistics:

**Lili Yu** – "Variable Selection in the General Linear Model for Censored Data", Assistant Professor, Department of Biostatistics, Georgia Southern University.

**Yanxing Zhao** – "Parametric Inference from Window Censored Renewal Process Data", Statistician, Novartis Pharmaceuticals, NJ.

#### Ph.D. in Statistics:

**Qinying He** – "Inference on Correlation from Incomplete Bivariate Samples", Assistant Professor of Statistics, Research Institute of Economics and Management, Southwestern University of Finance and Economics, China.

**Parthena Katsaounis** – "Equivalence of Symmetric Factorial Designs and Characterization and Ranking of Two-Level Split-Lot Designs", Lecturer, Mathematics Department, OSU Mansfield.

**Yongku Kim** – "Bayesian Multiresolution Dynamic Models", Postdoctoral Fellow, SAMSI.

**Hongfei Li** – "Approximate Profile Likelihood Estimation for Spatial-Dependence Parameters", Postdoctoral Fellow working on Environmental Statistics, IBM.

**Shiling Ruan** – "Poisson Race Models: Theory and Application in Conjoint Choice Analysis", Consulting Statistician, William E. Wecker Associates, Inc., Novato, CA.

**Yiping Sun** – "Rank-Sum Test for Two-Sample Location Problem under Order Restricted Randomized Design", Senior Statistician, Forest Research Institute, a division of Forest Laboratories, Inc., Jersey City, NJ.

**Shuyan Wan** – "Likelihood-Based Procedures for Obtaining Confidence Intervals of Disease Loci with General Pedigree Data", Biometrician, Merck and Company, Rahway, NJ.

**Jian Zhang** – "Loss function approaches to predict a spatial quantile and its exceedance region", Economist, Credit and Prepayment Modeling, Freddie Mac, McLean, VA.

### Our Winning Students

Two of our graduate students won national student paper competitions this year. **Clint Roberts'** paper, "Imputing Missing Data in the FBI's Uniform Crime Reports," was selected as a winner of the student paper competition jointly sponsored by the Government Statistics, Social Statistics, and Survey Research Methods sections of the ASA. **Shiling Ruan's** paper, "The Dependent Poisson Race Model and Modeling Dependence in Conjoint Choice Experiments," was a student paper competition winner for the ASA Section on Bayesian Statistical Science. Both Clint and Shiling received travel support to present their papers at the 2007

Joint Statistical Meetings in Salt Lake City this summer.

**Jennifer Sinnott** was selected by the ASA and the Caucus for Women in Statistics as a 2007 winner of the prestigious Gertrude M. Cox Scholarship. This scholarship was established in 1989 to encourage more women to enter statistically oriented professions. Jennifer was honored at the Joint Statistical Meetings as winner of this award.

**Hongfei Li** was a winner of a prestigious IMS Laha Travel Award to attend the Joint Statistical Meetings/IMS Annual Meeting in Salt Lake City. The Laha Award recipients are welcomed and honored at the Presidential Address during the meetings.

Five students won travel awards to present their research at the Design and Analysis of Experiments Conference in Memphis, TN, last fall. They are: **Danel Draguljic, Arun Kumar, Eric Lam, Hyejung Moon, and Soma Roy.**

At the local level, **Shari Modur** won a summer research award as an OSU Survey Research Fellow to do original survey research. Shari's research, using the National Longitudinal Surveys of Youth, is on "Hierarchical Bayes Models for Obesity Growth Curves: A Study on the Effect of TV Viewing Hours on Childhood Obesity." **Soma Roy** was won travel support from the OSU Ray Travel Award to attend the 2007 Joint Statistical Meetings. **Lai Wei's** talk, "Spectral-Based Tests for Periodicities," took third place in the OSU Edward Hayes Graduate Research Forum competition.

### Internships

Once again our graduate students found a variety of exciting summer (and other quarter) internships this year.

**Dianne Bautista** and **Gang Han** spent the Fall Quarter of 2006 at SAMSI in Durham, NC. They worked with Prof. Tom Santner as assistant researchers and graduate fellows for the SAMSI program, Design and Analysis of Complex Computer Models.

**Zhenhuan Cui** received a SAS summer fellowship to work as a technical student in the Statistical Applications R&D Department.

**Adam Dallas** spent the summer in Ogden, UT, working as a statistical intern for ATK Launch Systems Group.

**Danel Draguljic** stayed close to home with a summer statistics intern position at Battelle.

**Catherine Lucas** had a summer internship as an actuarial intern with Mercer HR Consulting here in Columbus.

**Youlan Rao** and **Yonggang Yao** headed to Australia for their summer (but Australian winter) internships in the Division of Mathematical and Information Sciences at CSIRO. Youlan's project was "Exploring Alternatives for Making the Assumption that Gene Expression Values are Uncorrelated" and Yonggang worked on "Predictor Selection in Models for Spatial Extreme Rainfall."

**Clint Roberts** accepted a summer internship position working on a project with time series data at Capital One in McLean, VA.

**Jen Sinnott** worked as a graduate research assistant on the Physicians' Health Study with the Harvard School of Public Health / Brigham and Women's Hospital.

**Kimberly Walters** went to the National Institutes of Health in Bethesda, MD, to complete a Cancer Research

Training Fellowship under the tutelage of Dr. Ram Tiwari at the National Cancer Institute.

**Jennie Williams** spent the summer as statistical intern in the Quality Control Department for Boehringer-Ingelheim's Roxane Labs here in Columbus.

Student Presentations at the JSM

We again had a spectacular graduate-student representation at this summer's Joint Statistical Meetings with 22 of our students presenting their work in Salt Lake City. This is a great showing for OSU Statistics/Biostatistics! Thanks to all the presenters for helping us show what impressive students we have.

**Dianne Bautista:** "Determining the Pareto Frontier for Multiobjective Optimization of Black Box Functions"

**Candace Berrett:** "Characterizing the Dependence Structure of Space-Time Processes Using Computer-Model Output and Sparse Observations"

**Nader Gemayel:** "Optimal Ranked Set Sampling Estimation Based on Medians from Multiple Set Sizes"

**Gang Han:** "Simultaneous Calibration and Tuning of Computer Experiments"

**Lei Kang:** "Spatial Statistical Analysis of Doctors' Prescription Amounts by Region"

**Jessica Kohlschmidt:** "Optimal Allocation in the Presence of Missing Data"

**Dongmei Li:** "Small Sample Behavior of Resampling Methods"

**Hongfei Li:** "Exploratory Spatial Data Analysis Using APLE Statistics"

**Yi Liu:** "Adjusting for Missing Covariates Using the EM-Algorithm for Logistic Regression Models: A Study of the Effect of Childhood Overweight on the Age of Onset of Menses"

**Shannon Markiewicz:** "Order-Restricted Randomized Designs for Linear Models Using L1 Norm"

**Xueliang Pan:** "Spatial Location-Dependent Substitution Models and Their Application to Phylogenetics"

**Rajib Paul:** "Demographic and Behavioral Modifiers of Arsenic Exposure Pathways: A Bayesian Hierarchical Analysis of NHEXAS Data"

**Youlan Rao:** "Microarray Experiments for Pharmacogenomics"

**Shiling Ruan:** "The Dependent Poisson Race Model and Modeling Dependence in Conjoint Choice Experiments"

**Clint Roberts:** "Imputing Missing Data in the FBI's Uniform Crime Reports"

**Soma Roy:** "Estimating Percentiles in Computer Experiments"

**Amber Shoecraft:** "Education by Nation: A Multivariate Statistical Analysis"

**Chris Sroka:** "Optimal Allocation for Unbalanced Stratified Ranked Set Sample"

**Kimberly Walters:** "Giving Treatment to Controls: When Is It a Good Idea?"

**Ke Wang:** "Distribution Theory of Order Statistics of Concomitants Subsets and Applications"

**Zhen Wang:** "Bayesian Inference for a Distribution-Valued Stochastic Process"

**Lai Wei:** "Spectral-Based Tests for Periodicities"

In addition, **Candace Berrett** was co-leader of a roundtable discussion on "Learning to Teach Statistics: Challenges and Suggestions".

$E[(Lives - \mu)^{STAT}]$

Central Moments of Our Lives

The highlight of many weeks this past year was the arrival on Thursday afternoons of the weekly email newsletter, the *Central Moments of Our Lives* (also known by the formula given above or as "CMOOL", which is pronounced "shmool"). CMOOL was the creative outlet of graduate student co-Presidents, **Soma Roy** and **Joe Kupresanin**. It featured student, staff, and faculty profiles, original poetry, semi-serious news, and announcements. Thanks to CMOOL we learned many interesting facts about members of the Department, some of which are provided below.

Some statistics faculty members are acquainted with the rich and famous. Angela Dean was an extra in the film "Juggernaut" and met Anthony Hopkins. Chris Hans appeared on stage with Drew Barrymore and also had dinner with Anthony Hopkins. Elly Kaizar has shaken hands with Muhammad Ali, Conan O'Brien, and Mr. Rogers. Jackie Miller's holiday decorations became famous in a New York Times article about the Picktown Lights which stated, "The display includes one Jewish couple's house with an inflatable menorah and blue-and-white lights."

The top non-statistical interests among members of the Department are sports and travel, with music and reading not too far behind. But we learned many other interesting tidbits as well. Jie Ding's favorite tree is the ginkgo with its beautiful fan-shaped leaves. Eric Drake makes, sells, and teaches people to make honey wine, which is more properly known as mead. Bill Notz enjoys woodworking, especially turning pens. Chris Sroka not only appeared in Jeopardy! (see last year's newsletter) but also appeared on C-SPAN in 1993 for a competition called Citizen Bee (think spelling bee



**Marian Frazier (The Victor) and Joe Kupresanin - illustrating the value of applied probability**

with American history, civics, and geography). Clint Roberts participated in a taste-testing experiment at Wendy's Research and Development tasting onion rings. Shari Modur's Indian classical dance group performed at Ohio Governor Ted Strickland's inauguration. Josh Svenson, a graduate of Baldwin-Wallace College in Berea, Ohio, writes that some other notable Baldwin-Wallace alumni include Harrison Dillard (the only male so far to win Olympic titles in both sprinting and hurdling events), OSU football coach Jim Tressel, and world-famous Statistics 135 TA Jeremy Christman.

Finally, we learned about academic ancestors. It turns out that Doug Wolfe and Elizabeth Stasny are both (academic) great-great-great-grandchildren of Henry Rietz. As Nader Gemayel explains, "It started at the University of Iowa in 1931 when Prof. Henry Rietz graduated two Ph.D. students, Allen T. Craig and Samuel S. Wilks. Craig stayed at Iowa and Wilks went to Princeton. Wilks was Frederick Mosteller's advisor, who was Steve Fienberg's advisor, who in turn was Stasny's advisor. Robert Hogg got his Ph.D. in 1950 under Allen Craig. Hogg in turn was Wolfe's advisor." Check out the following site to see who your grand-advisors and great-grand-advisors are: <http://genealogy.math.ndsu.nodak.edu/html/search.phtml>. We encourage our Ph.D. graduates to add their own entries in the genealogy.

You can read more CMOOL articles (keep your tongue firmly in cheek!) through the Department website at <http://www.stat.osu.edu> under the News section. Tune in next year to learn about the creative activities of the new graduate student co-Presidents, Candace Berrett and Jingyuan Yang!

### Student Seminar Series

Thanks to the continuing energy and enthusiasm of fifth-year student Kimberly Walters, the Department's graduate student seminar series continued this year. According to Kimberly, "The purpose of the student seminar series is to give the graduate students a chance to practice our talks and share information among our peers in a constructive, non-threatening environment". The following students, and special guests, spoke in this year's Statistics Student Seminar Series:

#### October 2006

**Clint Roberts:** "Filling Gaps in the Uniform Crime Reports"

**Yi Liu:** "Adjusting for Missing Covariates using the EM-Algorithm for Logistic Regression Models: a Study of the Effect of Childhood Overweight on the Date of Onset of Menses"

#### November 2006

**Jacob Reidhead:** "A Novel Bayesian Classifier Framework for Universal Language Processing with Applications for Multi-Lingual Text Analysis and Spam Detection"



**Joanne Sklodowski solving one of life's great mysteries.**

**Lei (Emily) Kang:** "Choosing Smoothing Parameters for Spline Prediction Models with Correlated Errors"

#### January 2007

**Special Guest, Prof. Joe Verducci:** "Finding the Needle in a Haystack: A Statistical Approach to Discovery"

#### February 2007

**Arun Kumar:** "Calibration of Computer Models"

#### April 2007

**Gang Han:** "Modelling Computer Experiments Having Qualitative and Quantitative Input Variables" and "Simultaneous Calibration and Tuning"

#### May 2007

**Rajib Paul:** "Bayesian Hierarchical Modeling Approach to Glacier Dynamics"

### Alumni News

**Liming Cai** (MAS 1996) writes, "I have been working at National Center for Health Statistics since 1998 doing both substantive and methodological research on population aging. In the substantive area, I am interested in analyzing the trends in health among the elderly and its impact on health care financing and delivery. In the methodological area, I have been seeking to improve the common demographic methods (e.g., multi-state life table model) with methods in event history analysis and other stochastic models such as the semi-Markov process model."

**Mario A. Davidson** (MS 2002) received his Ph.D. in Education this Spring. His research was on Understanding the Burdens of Race at a Predominantly White University: The Experiences of Underrepresented Students in an Introductory Statistics Course. Mario is currently employed as a Research Specialist at OSU's James Cancer Center.

**Andrew Kerr** (MAS 2005) recently moved into a new position working as a Ballistics Engineer for Armor Holdings, a company in Fairfield, OH.

**Kati Maharry** (MAS 1998) writes, "I am a cancer statistician at the OSU Comprehensive Cancer Center. I am married to John Cogan, a faculty member here at OSU in the Department of Biochemistry. We're trying to raise four children."

**Bidisha Mandal** (MS 2003) received her Ph.D. in Agricultural, Environmental and Development Economics in Spring 2007. She has accepted an Assistant Professor position (Health Economics) in the School of Economic Sciences at Washington State University.

**Bernhard Renard** (MS 2005) writes that he has "started working on a Ph.D. in a joint program of Heidelberg and ETH/SFIT Zurich. My thesis research is on error tolerant protein search strategies. Considering that my first advisor is a computer scientist in Heidelberg, my second advisor a statistician from the Swiss Federal Institute of Technology, and my third advisor a systems biologist from Harvard Medical School, I guess, it is a truly interdisciplinary and international project. I notice all the time how much I benefit from my studies at OSU."

**Michael Schumacher** (MAS 2005) lives in Wisconsin

and works for Mattel Inc. (American Girl). He writes, "I've had success at American Girl, including being promoted to a Senior Level Quantitative Analyst in spring of 2007. My primary responsibility is performing statistical analyses of business problems to facilitate fact-based decision-making in our organization. This includes web, print, and mass marketing measurement, customer segmentation and also ad hoc analyses. It's a fascinating application of statistics! My MAS degree is still my proudest accomplishment. I am very fortunate to have had the opportunity to attend OSU and benefit from the fantastic faculty, program, and fellow students."

**Yi Zhang** (MAS 2006) has a summer position with Grange Insurance here in Columbus. He is working on business capacity analysis for the Claims Department.

**Mark Zabel** (MS 1995) recently launched a new business enterprise, Straight Line Performance Solutions (SLPS). SLPS ([www.straightlineps.com](http://www.straightlineps.com)) provides education, consulting, and automation software to businesses to enable all employees to use statistical and other analytical techniques soundly with little or no training. SLPS offers both off-the-shelf and custom-developed solutions for its customers.

#### New Arrivals

**Jerry Butler** (MAS 2006) and wife Tricia welcomed a new addition to their family on August 22, 2007. Nathan Jeremiah Butler weighed in at a healthy 8 pounds, 4 ounces and was 20 inches long. Mom and baby are doing great; big sisters Elizabeth (age 5) and Juliann (age 2) were thrilled. Nathan was born on the first day of kindergarten for Elizabeth! Jerry is employed by the First Bank of Omaha, NE, as a Statistical Modeler.

In addition to preparing for Qualifier I this summer, **Bill Darnieder** is also learning the joys of being a new dad. Bill and wife Melisa welcomed Emily Margaret Darnieder on Friday, July 13. Emily was a healthy 6 pounds 14 ounces and 19 inches long.

**Cheryl A. Dingus** (Ph.D. 2005) announced the early arrival of Audrey Jane "Peanut" Dingus on April 30, 2007 at 2:06 p.m. Audrey was 6 pounds 10 ounces and 20 inches long with dark hair and blue eyes. The proud mom reports Audrey is healthy, very happy and very good.

**Nicole Kelbick** (Ph.D. 2003) reported that Ryan Geoffrey Kelbick was born on March 11, 2006 at 1:03 a.m. weighing in at 8 pounds, 11 ounces and measuring 20 inches. According to Nicole, "Babies sure are time-consuming little buggers..."

Current student **Dongmei Li** gave birth to a son, Matthew Xie, on April 1, 2007. Matthew weighed in at 7 pounds, 15 ounces and was 21.2 inches long.

**Hongfei Li** (Ph.D. 2007) and **Shang Zhao** (M.S. 2005) became the proud parents of Colin Liyuan Zhao on September 29, 2006. Colin arrived at 2:03 a.m. weighing 7 pounds, 6 ounces.

#### Sincere Thanks to Our Donors

We wish to recognize those alumni and friends who have helped us financially over the past year. Your donations make it possible to continue to attract, train, and reward

our excellent graduate students. Many thanks to the following donors:

#### **Craig Cooley Award Fund**

Mary Ellen Smircich Frustaci

#### **Rustagi Memorial Lecture-ship Fund**

Jagdish and Kamla Rustagi

#### **Statistics Support Fund**

Hal Bogart

Howard Kaplan

Bo Lu

Mehmet Ozcomak

Jagdish and Kamla Rustagi

Keith Schleicher

Craig Shirk

Donna Stockrahm

Jerome Stockrahm

James Sullivan

Woon Huey Toh

Sharon Repik Zielinski

#### **Thomas E. and Jean D. Powers Award Fund**

Robert Abel

Daniel Cotton IV

#### **Whitney Endowed Fund**

Walter Hoy

Maria-Belen Ines Pangilinan

Charles Locke Jr.

Not listed above are the members of the faculty and staff who donated to the Department this year, as that would almost require giving a complete roster of the Department. Those gifts are evidence of the commitment of the faculty and staff to the Department and are also greatly appreciated.

#### Supporting Current and Future Students

As you can tell from the reports in this newsletter, we have a spectacular group of graduate students in the Department. To continue to attract and support these students is, of course, expensive. For example, the Department matches any travel support that students receive, up to the actual cost of travel. We recognize excellence in teaching, research, consulting, and service by graduate students through annual awards. We pay for outstanding potential students to come visit the Department. We ask you to consider helping to support our current and future students through a contribution to one of the Departmental funds for graduate students:

**Graduate Fellow Fund #06940-310567**

**Statistics Support Fund #06940-307669**

**Craig Cooley Fund #06940-601434**

**Powers Award Fund #06940-605898**

**Whitney Scholarship Fund #06940-607689**

This is an excellent way for alumni to give something back to the Department. Your gift, in any amount, is important and appreciated.



**Jeremy Christman after his tryout for American Chopper.**

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## CONGRATULATIONS TO OUR GRADUATES!!

The following students earned degrees in 2006-07.

### Master of Applied Statistics

#### SUMMER 2006

Minxing Chen  
Ananth Devulapalli  
Dale Allan Rhoda  
Hu Wei  
Sumei Zhang

#### AUTUMN 2006

Jeremiah M. Butler  
Zhongzhan Chi  
Weisong He  
Kyle Raymond Hostetler  
Xiaopeng Li  
Joel M. Martin  
Lin Sun  
Jue Wang  
Yu Wang  
Jie Yao  
Bo Zhang  
Yi Zhang

#### WINTER 2007

Jianjun Huang  
Haixia Ji  
Vikas Khanna  
Jianfang Liu  
Somnath Sinha  
Daoqin Tong  
Donald R. Turchany  
Xu Xing  
Shanggen Zhou  
Ying Zhou

#### SPRING 2007

Lauren Anne Hoffmann  
Stephanie Lynn Jones  
Minjung Kim  
Joseph Jerald Kupresanin  
Haihui Zhu  
Jing Zhu

### Master of Science

#### SUMMER 2006

Hongshu Chen  
Xiao Lin

#### AUTUMN 2006

Peter Erling Sprangers

#### WINTER 2007

Fangzhou Hu  
Chih-Lin Li  
Wei Lin  
Yi Liu

#### SPRING 2007

Tison Wade Bolen  
Parul Gulati  
Lori A. Hoffman  
Kelsi Brianne Kim Holland  
Lixin Lang  
Mahin Salmani

### Doctorate

#### SUMMER 2006

Joseph Stephen Kosler  
Bin Li  
Liang Liu  
Qing Liu  
Qingzhao Yu

#### AUTUMN 2006

Parthena Ipsilantou Katsaounis  
Shuyan Wan  
Yanxing Zhao

#### WINTER 2007

Shiling Ruan  
Lili Yu  
Jian Zhang

#### SPRING 2007

Qinying He  
Yong Ku Kim  
Yiping Sun