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STATISTICS

UNBROKEN TIES

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Statistics Department celebrating 25 years

On July 1, 1979, the Department of Statistics at the University of Washington was formed. The first year had chair Michael Perlman, professors Ron Pyke and Galen Shorack, and visitor Piet Groeneboom. Michael, Galen and (frequently) Piet are still around the department!

We will celebrate our twenty-fifth anniversary by holding a symposium September 23–24, 2004. The following speakers have confirmed their attendance, and we are pursuing two more:

Charlie Geyer (MS 1987, PhD 1990), University of Minnesota

Michael Newton (MS 1988, PhD 1991), University of Wisconsin

Daryl Pregibon, AT&T Laboratories

Joseph Felsenstein, University of Washington

In addition, we will have a party at the Burke museum on the evening of September 23. All department alumni and friends are invited to participate. On the evening of September 24, there will be an informal barbeque. For more information, see <http://www.stat.washington.edu/celebration>

UW Math Sciences receive \$4M grant for vertical integration

The National Science Foundation recently awarded a five-year continuation of our current VIGRE (Vertical Integration of Research and Education) grant, joint between Applied Mathematics, Mathematics and Statistics.

The project is headed by Doug Lind of Mathematics, with the three department chairs as co-PIs. The main new emphasis of the grant will be interactions with the western Canada universities through PIMS, the Pacific Institute of Mathematical Sciences. We will be able to bring down to Seattle prominent

visitors to the Banff International Research Station, and allow our graduate students and postdocs to spend time at Canadian universities.

The grant will also strengthen our recent emphasis on undergraduate research experiences, fund outreach efforts in local schools, develop a new 5-year BS/MS degree program, and help recruit top undergraduates into mathematical sciences in a variety of ways.

In addition, the grant funds 4 postdocs and 22 graduate fellows per year (6 in Statistics).

What the chair has to say



*Peter Guttorp,
Department Chair*

"...other statistics departments around the country are starting to use our department as a model"

I am nearing the end of my second year as chair. It is an interesting job. Sometimes it takes all my waking hours (and my sleep), other times weeks can go by without any major issues to deal with. I am enjoying seeing how other statistics departments around the country are starting to use our department as a model: building contacts across disciplines, using scientific problems as the reason for methodological innovation, and at the same time digging deep into theory to support these innovations. While viewing us as a model is flattering, it also indicates that we must continue building in new directions.

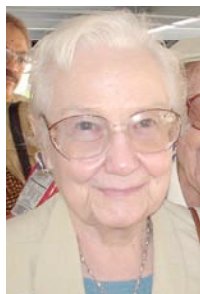
One of the directions in which we are trying to move is machine learning/data mining, on the interface between statistics and computer science. For example, a new telescope, still in planning stages, will be producing daily sky surveys at an unprecedented depth. The UW Astronomy department is particularly interested in looking at changes between these surveys. Since each survey contains terabytes of data, the need for new methods to handle rapid analysis of very large data sets is

clear.

Over the last several years, we have built new links to the social sciences (through the Center for Statistics and the Social Sciences (see p.5) and the Center for Studies in Demography and Ecology, both of which have Statistics as a major partner). There is substantial collaborative work in environmental sciences, ecology, and environmental epidemiology. The Statistical Genetics group (see p. 3) interacts with genome sciences and biology. We also have longstanding interactions with researchers doing atmospheric science, hydrology, computer science, etc. Our goal is to keep building these links, solving interesting and important scientific problems while maintaining a strong research program in the theoretical core of our science.

There are always limitations in the university environment. Space is a severely limiting factor—we really need a mathematical sciences building! Stat funding is decreasing, and we are working hard on finding new approaches to funding our department's activities. We are grateful for any new ideas, and any help you can come up with!

New Statistics endowments to fund professorship and graduate students



Dorothy M. Gilford

Statistics is on its way towards getting its first endowed chair, the **Dorothy M. Gilford** Chair in Mathematical Statistics. Mrs. Gilford got her BS (1940) and MS (1942) at UW in Mathematics under Bill Birnbaum. She later became director of the Division of Mathematical Sciences at the Office of Naval Research, worked for the Office of Educational Statistics and for the National Research Council.

The late **Bill and Hilde Birnbaum** provided funding for the Birnbaum Memorial Research Fellowship Fund in Statistics (and a similar one in Mathematics) in their will. We will use the funds to recruit strong graduate students. Bill Birnbaum was the "Father of Statistics in the Northwest", and the department's first emeritus professor.



*Z. W. Birnbaum
1903-2000*

Statistical Genetics is established and growing

In 1999, the Departments of Statistics and Biostatistics jointly initiated new educational opportunities in the area of statistical genetics. By fall of 2001, we had officially established PhD pathways in Statistical Genetics within the Statistics and Biostatistics PhD programs, and an Interdisciplinary Certificate program open to all other matriculated graduate students of the University of Washington. In 2003, we had our first graduates of the program, with three students completing PhD's (2 in Statistics, **Solly Siebert** and **Amy Anderson**, 1 in Biostatistics), and three others officially registering their completion of the Certificate Program (2 PhD students from Computer Sciences and from Epidemiology, and a Biostatistics M.S. student.)

The statistical genetics initiative has grown, in terms of faculty, postdocs, students and courses. Currently, in winter 2004, our faculty roster includes two regular faculty in Statistics, **Matthew Stephens** and **Elizabeth Thompson** (Elizabeth is the coordinator of the program), three in Biostatistics, with 5 other participating faculty from Medical Genetics and Genome Sciences. The core statistical genetics 3-quarter sequence (STAT/BIOST 550/551/552) attracts about 15 students each year, with about 2/3 being from Statistics or Biostatistics. Additionally students who do not already have a genetics background take two undergraduate courses in Genetics, and graduate courses in Population Genetics and in Computational Molecular Biology. There are an increasing number of active seminar and discussion groups. The Statistical Genetics journal-club seminar, which has been run continuously since 1989, has become the official seminar of the pathways and certificate program.

We work closely with our sister-program in Computational Molecular Biology, an interdisciplinary program involving multiple departments, but focused in

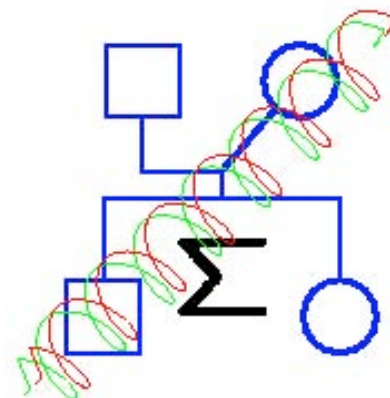
Genome Sciences and Computer Science. Jointly, the two programs have organized two workshops in Statistical Genetics and Computational Molecular Biology, one in 2001 and the second in 2003. These successful workshops have attracted senior undergraduate and beginning graduate students in the mathematical sciences from universities and colleges in the western U.S. and Canada, and shown the wide range of exciting research opportunities open to mathematically oriented students with an interest in genomics and bioinformatics.

With the rapidly changing nature of genetic and genomic data, increased computing power, and the greater variety of faculty and students in Statistical Genetics, the range of current research within the UW Statistical Genetics group is also growing. While we continue research in the areas of pedigree and genetic linkage analysis, collaborations of Statistics faculty and postdocs with the UW Genome Center and with Genome Sciences faculty provide access to new data across genomes and across populations. In Biostatistics, the focus has been on gene expression and microarray data, including innovative work in the genetics of gene expression. Together, we are involved in the development of new statistical methodology for the analysis of genomic and transcriptional variation.

Further information is available at the UW Statistical Genetics web pages at <http://depts.washington.edu/statgen/> We welcome comments from past students, and especially updates and corrections to information on our alumni.



MathGen group in Statistics Spring 03
Back row: Ting-Yuan Liu, Amy Anderson, Paul Scheet, Caroline Cutting, Solveig Sieberts, Matthew Stephens, Na Li, Anne-Louise Leutenegger
Front Row: Elizabeth Thompson, William Stewart, Saonli Basu, Myrna Jewett, Oliver Will



Computational Finance –a multidisciplinary certificate program

*"The certificate ...
will prepare
students for
careers in finance,
insurance, and
energy markets"*

The needs of the modern finance, risk and insurance industries demand a broad interdisciplinary and computationally oriented approach to educating the next generation of financial researchers, analysts, risk managers and financial information technology professionals. The Computational Finance program addresses these needs by leveraging faculty expertise in a number of departments to integrate education and research across the following key areas:

- finance concepts and theory;
- mathematics, statistics and econometric modeling and analysis methods needed to model, analyze and predict the behavior of financial assets;
- computer science and information systems tools needed to implement modeling and analysis methods in finance industry organizations.

The goal of the Computational Finance Graduate Certificate (CFC) program is to

provide education, research and qualification in Computational Finance to University of Washington graduate students in the departments of Economics, Finance, Mathematics and Statistics, and in other departments that provide a high degree of analytical training such as Computer Science, Electrical Engineering, Industrial Engineering and Management Science. Students will receive training in the application of computer programming, applied mathematics and statistical methods necessary for the computational modeling and analysis in finance. This will prepare them for career paths in the finance, insurance and energy markets industries, and as educators and researchers in quantitative finance academic programs.

The program is directed by Doug Martin in Statistics, and has a steering committee consisting of assistant director Eric Zivot, Economics, Jim Burke, Mathematics, and Avraham Kavara, Finance.

Bike to work month

Mid-May to mid-June is bike to work month in Seattle. Statistics entered two teams in the 2003 competition. The *Random Normal Deviates* came in eighth out of 233 teams in terms of total number of trips.

In 2004 the department entered one team, called *Random stats in a robust*



state, which cycled 1350.2 miles and did 124.5 round-trips. Out of 371 teams we came in 27th for round-trips and 61st in mileage. For the second straight year, the University of Washington came in first for number of teams. The department bike to work effort is coordinated by Cheryl Bissett.

Statistician among the hottest jobs in King County

The computer and mathematical profession—research statisticians and similar work—has the third most vacancies in King County, according to the Seattle PI business section, February 9, 2004. Office and administrative support

had the most job openings in a King County Employment Security Department survey in May 2003. Health care practitioners and technicians was the second largest category.

Give a gift to Statistics

by contacting the Arts and Sciences Development Office at URL https://secure.gifts.washington.edu/common_new/gift.asp?page=funds&source_typ=2&source=ECC

Center for Statistics and the Social Sciences

The Center for Statistics and the Social Sciences started in 1999, with funding from the University Initiatives Fund. It is the first center in the nation devoted to this interface, with the triple mission of galvanizing collaborative research between social scientists and statisticians, developing a menu of new graduate courses for social science students, and putting together an innovative case-based undergraduate statistics sequence for the social sciences. After an initial four-year trial period, the Center became a permanent unit of the University in 2003.

Research collaboration is fostered in a variety of ways, through seminars, seed grants, the consulting program, the working papers series, and the collaborative work of our core faculty. The CSSS seminar series meets on Wednesdays at 12:30pm in Savery 209 and is run by CSSS Seminar Director Katherine Stovel. This features a great deal of interaction and discussion, and is highly interdisciplinary in terms of both speakers and audience.

Seed grants have been awarded to jump start 13 interdisciplinary projects featuring teams of investigators from Biostatistics, Demography, Economics, Linguistics, Political Science, Sociology, and Statistics. Several of these have already led to funded research grants from federal agencies, and to other interactions. For example, last year Patrick Heagerty (Biostatistics) and Mike Ward (Political Science) won the Miller Prize for the best article published in *Political Analysis*, the leading political methodology journal. The prize was awarded for their article *Windows of Opportunity: Window Subseries Empirical Variance Estimators in International Relations*. The work was funded by a CSSS seed grant, and this is the first known collaboration between a political scientist and a biostatistician; as such, it exemplifies the goals of CSSS.

The Statistical Consulting Service for the Social Sciences has been helping clients from across the social sciences on campus and beyond, including the State's HEC Board, and United Way. It is run by CSSS Consulting Director Peter Hoff. Forty-one working papers have now been published, and further submissions are invited.

This year, CSSS is offering a rich menu of graduate courses in quantitative methods for social science students. These include loglinear modeling and logistic regression, applied regression, event history analysis, social network analysis, sample survey methods, Bayesian statistics for the social sciences, and causal



The original CSSS core faculty: (l-r) Adrian Raftery, Peter Hoff, Martina Morris, Kevin Quinn, Elena Erosheva and Mark Handcock

modeling, as well as a review of mathematics for social scientists. Three new PhD tracks are available based on CSSS courses: one in each of the Political Science, Sociology and Statistics departments.

At the undergraduate level, CSSS offers a sequence of courses on the evaluation of evidence and statistical methods for the social sciences (CS&SS 320, CS&SS 321). This is taught in a case-based way, a radical departure from the traditional first statistics course.

This is all made possible by the CSSS core faculty and CSSS faculty affiliates. CSSS core faculty have recently achieved considerable national and international recognition. CSSS Director Adrian Raftery was ranked as the world's third most cited mathematical scientist during the period 1993-2003 by the Institute for Scientific Information, and was recently elected as a Fellow of the American Academy of Arts and Sciences. CSSS Associate Director Ross Matsuoda was just elected a Fellow of the American Society of Criminology. Mark S. Handcock and Martina Morris were awarded the Richard A. Lester Prize for the Outstanding Book in Labor Economics and Industrial Relations for their book *Divergent Paths*. Peter Hoff won the Leonard J. Savage Award for the best dissertation in Bayesian statistics.

Elena Erosheva joined the core faculty in 2002 with a joint appointment in Statistics and Social Work, the first such appointment in the nation. This opens up exciting possibilities for collaboration between these two disciplines. Sibel Sirakaya has just joined the faculty with a joint appointment in Statistics and Economics, and is interested in computational economics and statistical modeling for applied microeconomics. Chris Adolph will join us this coming year as an Assistant Professor of Political Science; he is interested in political methodology and understanding what drives the policies of central banks.

Alumni News



Sam Prins

Samantha (Bates) Prins (MS 1998, PhD 2001) is assistant professor at Virginia Polytechnic University. She married Rob Prins on March 6, 2004.

Peter Craigmile (PhD 2000) is assistant professor at Ohio State University. He has a recent family addition: Ailsa Hade Craigmile was born 15th July, 2003.

Eric Howell (MS 1993) is working for Salomon Smith Barney, in investment banking. He graduated from business school (UVA) in 2001, after spending 4 years in the former Soviet Union leading privatization projects.

David Kerr (MS 1994) has been working for Axio (formerly SERC, "Statistics and Epidemiology Research Corporation") for over 8 years now. Axio is a Contract Research Organization (CRO) that works mainly with biotech and pharmaceutical clients, many of them local to Seattle. Axio does protocol design, data entry, data management, statistical reporting, etc. of clinical trials, all in the effort to demonstrate to the FDA that the product in question is safe and efficacious.



Ken Newman

Hannah Payne (MS 1993) and **Steve Lines** (MS 1993) still live in New Jersey, where they've been since they graduated from UW. They have two children (Aidan, 4 and Owen, almost 2). They had brunch with Eric Howell and his wife Inna last fall at his home in Chappaqua, NY and are planning a vacation in Puerto Rico with the Givens/Hoeting family in November.

On the career front, Steve left AT&T in 2000 after 7+ years and is currently working at Health Products Research Inc., a small consulting company, doing analysis and consulting work to help clients (large and mid-size pharmaceutical companies) maximize their promotional return-on-investment.

Hannah is currently working at Novartis Pharmaceuticals in the Marketing Science

group, which is part of a larger analytics group that supports Sales and Marketing. The type of work she does might be termed analytic strategic consulting in support of the company's sales, marketing and senior management.

Guyle Wilson (MS 1988) is working as an actuary for Mercer. He works on all aspects of retirement plans, designs funding, etc., mainly with corporate clients in the Northwest. He has completed the Society of Actuaries examinations.

Rod Tjoelker (MS 1989) is currently the "Data Mining Technology Lead" for the "Mathematics & Computing Technology" group in the Phantom Works research division of Boeing. As such, he coordinates several research projects as well as consulting projects with other business units inside Boeing. There are about a dozen people involved to various degrees in these projects that cover diverse areas from manufacturing and engineering data to airline data and air traffic management.

Ken Newman (PhD 1993) spent a sabbatical year at St Andrews in Scotland. He enjoyed it so much that he is now a Senior Lecturer of Mathematics, Statistics and Computer Science there, working at the Centre for Research into Ecological and Environmental Modelling. He has two children, Zachary (7) and Meghan (5).

Keith Knight (MS 1984, PhD 1986, is currently Chair of the Department of Statistics at the University of Toronto. He recently wrote a book, *Mathematical Statistics*, which is published by Chapman & Hall/CRC. It is intended for a first-year graduate course.

Steve Edland (MS 1986) obtained a PhD from the UW Dept of Epidemiology in 2000, and is now at the Mayo Clinic supporting cohort studies and genetic epidemiologic studies of Alzheimer's disease.

JoRean Sicks (MS 1990) and **Mike Kahn** (PhD 1990) moved east to Massachusetts after many years in Minnesota. JoRean works at Brown University Center for Statistical Sciences (in Providence RI) while Mike teaches at Wheaton College. They have three children, Levi, Aidan and Jared.



JoRean Sicks

Erin Sullivan (MS 2000) is currently the Director of Business and Finance for Eye Care Services at Kaiser Permanente Northwest in Portland, OR. She does all the budgeting, monitors finances, analyzes costs, revenues, etc., has input into the rate-setting process for member health care costs, advises the Optical group leaders on the financial and business aspects of the operation, and handles many other tasks as they arise.

Daijin Ko (PhD 1985) spent many years at Virginia Commonwealth University, but moved recently to the University of Texas at San Antonio, where he is Professor of Management Science and Statistics. His wife Myung is Assistant Professor of Management Information Systems.



Daijin Ko

Ying Zhang (PhD 1998) is moving from the University of Central Florida (Orlando) to the Department of Biostatistics at the University of Iowa.

Beatrix Jones (MS 1997, PhD 2000) and **Danny Walsh** (MS 1997, PhD 2000) are moving from Research Triangle to Massey University in New Zealand.

Recent PhD dissertations

The genetic structure of related recombinant lines by **Amy Anderson**, now postdoc at NC State Bioinformatics. Advisor: Elizabeth Thompson

Joint relationship inference from three or more individuals in the presence of genotyping error by **Solly Sieberts**, now postdoc at DeCode Genetics, Iceland. Advisor: Elizabeth Thompson

Personal characteristics and covariate measurement error in disease risk estimation by **Elizabeth Sugar**, now postdoc at Johns Hopkins Biostatistics. Advisors: Ross Prentice and C.Y. Wang

Model based and hybrid clustering of large datasets by **Jeremy Tantrum**, now postdoc at CSDE, UW. Advisor: Werner Stuetzle

Iterative conditional fitting for Gaussian ancestral graph models by **Mathias Drton**. He will be a postdoc in Mathematics and Biostatistics at UC Berkeley, while on leave from an assistant professor position at University of Chicago Statistics. Advisors: Michael Perlman and Thomas Richardson

Nonparametric estimation of a k -monotone density: a new asymptotic distribution theory. by **Fadoua Balabdaoui**. She will be a postdoc at the Institute of Mathematical Stochastics in Göttingen, Germany. Advisor: Jon Wellner

Graduate student awards

Marloes Maathuis received one of the ASA Statistical Computing/Graphics section student awards for her paper *Reduction Algorithm for MLE for the Distribution Function of Bivariate Interval Censored Data*, to be given at the Joint Statistical Meetings in Toronto in August 2004. Marloes works with Jon Wellner.

Saonli Basu received one of the ENAR Student Awards at the 2004 Spring meeting in Pittsburgh for her paper *Efficient algorithms for allele sharing methods to detect linkage using extended pedigrees*. Saonli works with Elizabeth Thompson.

Raphael Gottardo won the prize for best poster for *Bayesian modeling of cell-cycle gene expression data* (joint work with Dave Higdon) at the Royal Statistical Society Conference in Belgium 2003.

Faculty news



Julian Besag

Julian Besag has been elected Fellow of the Royal Society.

Paul Sampson has been elected Publications Officer of the International Environmetrics Society 2004–2006. He and Sandy recently adopted Sasha, a 10-year old boy from Russia.

Matthew Stephens has been promoted to Associate Professor with tenure.

Thomas Richardson is spending six months of sabbatical leave at the Institute for Advanced Studies in Social Sciences in Palo Alto, CA. He and Mihaela have a son, Radu, born 6 September 2003.

Peter Guttorp has been appointed the Environmental Research Professor of the Swedish Union of Graduate Engineers. He will be spending the academic year 2004-05 in Sweden. Werner Stuetzle will be acting chair during his absence.

June Morita has been elected to represent the Council of Chapters on the American Statistical Association Board of Directors. Her term is January 2005–December 2007.

New tutor and study center for service course students

“Going through the homework was not simply asking for the answer and receiving it, but instead a process of developing an understanding for concepts behind the problem,” says Thomas Mera, Stat 390 student using the Statistics Tutor and Study Center. Since Spring quarter 2003, the Statistics department has been operating this center for undergraduate students of elementary statistics (be it in Statistics or elsewhere). The center was the brainchild of UW Teaching Award recipients June Morita and Rebecca Nugent. It operates four days a week in the library of McCarty Hall (an undergraduate dorm).

Tutoring services are provided by graduate students. Teaching assistants hold their office hours in the center, and other graduate students are paid hourly for working at the center. This enables students who like teaching, but are working as RAs, to get in a little one-on-one teaching on the side.



June Morita



Rebecca Nugent

The McCarty Library is set up with several tables, one for each of the main classes using the center. A student can sit down at the class table and interact with other students from the class working there. They can also put their names on a whiteboard list if they have specific questions. A tutor goes to each of the names on the list in turn. Quite frequently several students from the class have similar questions, and the class table idea helps to optimize the use of the tutors' time.

“Whether it is because the study center is a more neutral, safer environment than an office, or because it allows the students to simply sit and work on their homework and ask questions as they arise, rather than having questions prepared in advance, there has definitely been a drastic increase in the number of students who come to me for help this quarter,” said McLean Slougher, TA for STAT 311 during the first quarter of the operation of the center.

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