Statistical Laboratory

established 1933

Annual Report

July 1, 1999 to June 30, 2000

IOWA STATE UNIVERSITY

OF SCIENCE AND TECHNOLOGY

Index

BIOINFORMATICS

AT IOWA STATE UNIVERSITY

A significant development during the tail end of the millenium is the data explosion in the biological sciences. Data are generated as part of the sequencing projects that uncover the genetic code for a number of animal and plant species (including humans, of course) and during studies of the expression levels for the thousands of genes and proteins that bring the genetic code to life. The flood of data has led to the creation of a new discipline called bioinformatics.

Iowa State University (ISU) and the Department of Statistics have become actively involved in this new area through the Laurence H. Baker Center for Bioinformatics and Biological Statistics, a part of the Plant Sciences Institute at ISU.

The Baker Center was formed in the fall of 1999 thanks to a generous gift from Norma Baker, the widow of Laurence H. Baker. Baker received a B.S. degree in genetics and a minor in statistics in 1954 from ISU. He developed an appreciation for the contributions of statistical methods and wanted to foster their application to biological problems.

More than 60 faculty members at ISU from 14 departments in four colleges have affiliated with the Center. The academic departments involved include:

- Agronomy
- Animal Science
- Biochemistry, Biophysics & Molecular Biology
- Botany
- Chemical Engineering
- Computer Science
- Plant Pathology
- Electrical & Computer Engineering
- Mathematics
- Physics
- Statistics
- Veterinary Microbiology & Preventive Medicine, and
- Zoology & Genetics.

Members of the Statistics Department involved in bioinformatics activities include Hal Stern, Kenneth Koehler, Philip Dixon, Alicia Carriquiry and Dianne Cook.

In addition, the department has hired Dan Nettleton to begin July 1, 2000 and Karin Dorman to begin January 2001. Both Nettleton and Dorman have a great deal of bioinformatics expertise and should add to the department's presence in this area.

Hal Stern, interim director, Laurence H. Baker Center for Bioinformatics and Biological Statistics

In addition, Hal Stern will replace Jim Cornette, Mathematics, who is retiring as director of the Baker Center. Stern will

serve as interim director of the Center beginning August 2000.

The Role of Statistics in Bioinformatics

There are a number of interesting research areas in bioinformatics, including sequence alignment and gene annotation, protein structure analysis, and metabolic network modeling. We'll try to explain the work of a number of statistics faculty involved in a multi-disciplinary group studying metabolic networks.

A group of plant scientists, statisticians, mathematicians and computer engineers are trying to develop a suite of informatics tools that will be useful to biological researchers at ISU and elsewhere. One goal is to allow plant scientists to visualize a metabolic pathway in order to understand the role of genetic factors, e.g., visualize the glycolysis pathway by which carbohydrates (like glucose) are converted to chemical products (like pyruvate or lactic acid) and chemical energy stored in phosphate bonds.

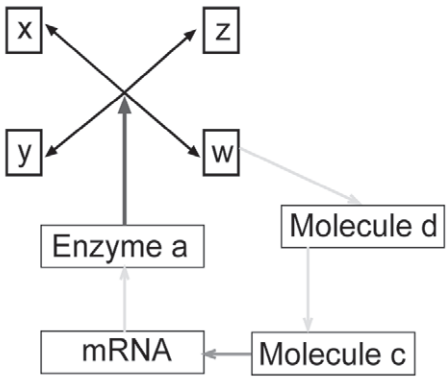

Figure 1 - A graphical representation of a metabolic pathway.

A second goal is to provide statistical and other analysis tools for the data generated by the new technologies. Dianne Cook, associate professor of statistics, is actively working with this group on developing visualization methods.

The key to developing visualization software is to allow for researchers to access multiple views of their data. In the context of metabolic pathways, one view might be a view of a representation of the metabolic network (as in Figure 1).

A second view might be an image of a DNA microarray with its visual display of gene expression levels (as in Figure 2).

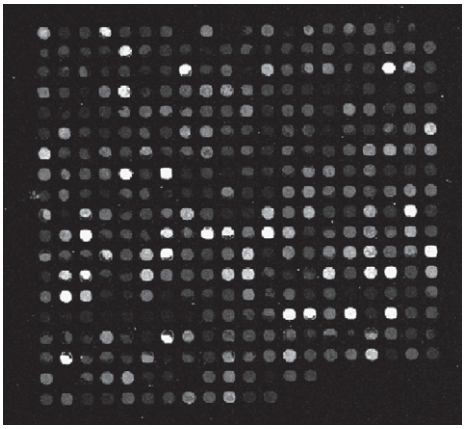

Figure 2 - A portion of a cDNA microarray image from an experiment comparing gene expression in wild type and transgenic Arabidopsis plants. At each spot on the array are thousands of copies of a specific DNA sequence representing a gene. Messenger RNA sequences are extracted from biological samples, converted to more stable cDNA, and tagged with a flourescent dye.

The tagged cDNA sequences are allowed to hybridize to their corresponding DNA sequences on the array. An abundance of cDNA at a particular spot (indicated by high levels of fluorescene in the image) suggests that the gene corresponding to that spot is highly expressed in the biological samples.

Ideally, information from subject matter experts could be used to link the two displays so that, by identifying one part of the DNA microarray, a researcher would

be shown the part of the metabolic network affected by the gene or genes identified. Additional views might include scatterplots comparing expression levels under two biological scenarios, displays of protein expression data, etc. The linking of views provides a way for researchers to see more than just a two-dimensional representation of part of the system.

In addition, this group is researching clustering algorithms for extracting new information from gene expression level data.

Future Work

As this report is being prepared in the fall of 2000, Dan Nettleton and Hal Stern have become actively involved in the design and analysis of gene expression studies. Modern technology has made it possible for biologists to obtain measurements of expression levels for thousands of genes for each of two biological specimens using a single microarray chip or slide. Genetic material from the two specimens, perhaps a diseased plant and a normal one, are labeled (one with red fluorescent dye and one with green fluroescent dye), combined, and applied to a slide containing complementary DNA for thousands of genes arrayed in a matrix. Special readers can then detect the relative activity levels in the green and red channel.

Nettleton collaborated with a faculty member in the animal science department on the analysis of a small study comparing the expression levels of around 5,000 genes in two different rat lines (three rats from each line were used). Note that essentially 5,000 different tests are performed to compare the two lines — talk about multiple comparisons!!

More recently Nettleton has been actively involved with the metabolic networks group concerning the design of the gene expression aspects of a research study. The goal is to compare five different soybean seed lines, some with low protein seed content and some with high protein seed content. All of the seed lines share a large portion of the genome, so the project focuses on identifying which of the genetic differences are responsible for the change in protein content. The lines are to be compared at eight different time points. This calls for the application of traditional experimental design ideas to this new technology.

Stern and Nettleton are also working to develop Bayesian hierarchical models that might be useful in the analysis of data from gene expression studies.

Cook, Nettleton and Stern are all participants in a large multi-disciplinary team preparing to submit a large NSF Genomics grant proposal to pursue the soybean study.

The Statistics Department has a long history of working with plant and animal researchers by developing statistical tools to advance scientific research. Bioinformatics is the newest frontier on which this collaboration is developing.

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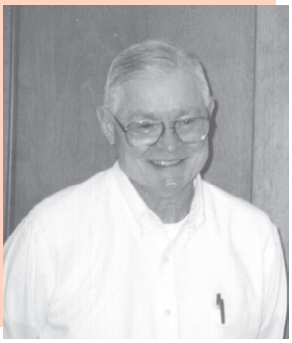
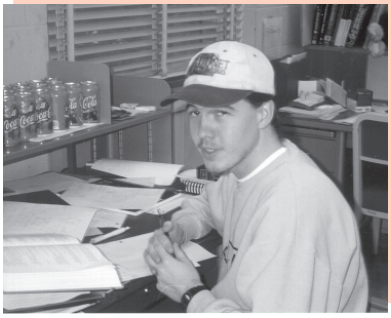
ON THE LIGHTER SIDE



Dick Groeneveld's retirement party was held in April, 2000.



Erik Cover, research assistant for the Stat Computing, studying between SAS® questions.

Graduate students Gabriela Borgognone and Soledad Fernandez show off their toothy grins and toothpaste costumes at a Halloween party!

Jan Seagrave, data technician for the Survey Section, retired May 31, 2000.

Ed Pollak, left, shown here with Ted Bailey, retired at the end of Spring semester, 2000.

Grad students enjoying a friendly game of volleyball. Both teams are from the Statters Club.

Everyone in the Survey Section looks forward to Wayne Fuller's birthday and his strawberry shortcake treats, including Chuck Peterson and Dianne Anderson.

PUBLICATIONS 1999-2000

Refereed Publications 1999-2000

Bhandari N. and **D. K. Rollins**. (2000) Superior semi-empirical dynamic predictive modeling that addresses interactions. *IASTED, Proceeding of Intelligent Systems and Control*, Santa Barbara, California, October, 1999, 316-321.

Bonett, D. G. and T. A. Wright. (2000) Sample size requirements for estimating Pearson, Kendall and Spearman correlations. *Psychometrika*, **65**, 23-28.

Breidt, F. J. and **W. A. Fuller**. (1999) Design of supplemented panel surveys with application to the National Resources Inventory. *Journal of Agricultural, Biological, and Environmental Statistics*, **4**, 391-403.

Breidt, F. J. and **A. L. Carriquiry**. (2000) Highest density gates for target tracking. *IEEE Transactions on Aerospace and Electronic Systems*, **36**, 47-55.

Budihardjo, I. and **H. T. David**. (1999) Expected waiting time rankings in extended machine-repair models. *Naval Research Logistics*, **46**(7) 864-870.

Carlin, B. P. and **H. S. Stern**. (1999) Designing a college football playoff system, *Chance*, **1**(3) 21-26.

Carriquiry, A. L. (1999) Assessing the prevalence of nutrient inadequacy. *Public Health Nutrition,* **2**, 23-33.

Chai, F.-S. and **J. Stufken**. (1999) Trend-free block designs for higher order trends. *Utilitas Mathematica*, **56**, 65-78.

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Lay, D. C., Jr., M. F. Haussman, H. S. Buchanan and **M. J. Daniels**. (1999) Danger to piglets due to crushing can be reduced by the use of a simulated udder. *Journal of Animal Science*, **77**, 2060-2064.

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Yang, Yuhong. (2000) Mixing Strategies for Density Estimation. *Annals of Statistics*, **28**, 75-87.

Books 1999-2000

Bardes, B. A., **M. C. Shelley II** and S. W. Schmidt, eds. (2000) *American Government and Politics Today: The Essentials*. 1999-2000 edition. (Belmost, CA: West/Wadsworth) xxii + 588 pp.

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Cressie, N., **M. S. Kaiser, M. J. Daniels, J. Aldworth,** J. Lee, **S. N. Lahiri** and L. H. Cox. (1999) Spatial analysis of particulate matter in an urban environment. *geoENV II - Geostatistics for Environmental Applications*, J. Gomez-Hernandez, A. Soares and R. Froidevaux, editors. (Dordrecht: Kluwer Academic). No pages given.

Meeker, W. Q. and L. A. Escobar. (1999) Accelerated Life Tests: Concepts and Data Analysis. *A Systems Approach to Service Life Prediction of Organic Coatings*, D. R. Bauer and J. W. Martin, editors. (Washington: American Chemical Society), no pages listed.

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Non-Refereed Publications 1999-2000

Amemiya, Y. and E. M. Paterno. (1999) Estimation for the random coefficient regression model with errors in variables. *1998 Proceedings of Business and Economic Statistics Section, American Statistical Association*, (Alexandria, VA: American Statistical Association), 258-263.

Athreya, K. B. (1999) Growth rates of lines of descent in a branching process may differ, Technical Report M99-12, ISU Math Dept.

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Desai, U., **M. C. Shelley II** and D. Feldman. (1999) Policy studies journal editors' report, 1998-99. *Policy Studies Journal*, **27**(3) 611-616.

David, H. A. (2000) A 1-credit course on the history of Statistics. *Section on Statistical Education, ASA Proceedings for 1999*, 245-248.

Doganaksoy, N., G. J. Hahn and **W. Q. Meeker**. (2000) Product life analysis: A case study. *Quality Progress*, **33**, 115-122.

Hahn, G. J., N. Doganaksoy and **W. Q. Meeker.** (1999) Reliability improvement–Issues and tools. *Quality Progress*, **32**, 132-139.

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Reber, D. L., **H. S. Stern** and P. J. Berger. (1999) Bayesian analysis of the mixed linear model with applications to selection in animal breeding. *1998 Proceedings of the Section on Bayesian Statistical Science, American Statistical Association*. (Alexandria, VA: American Statistical Association), 48-53.

Schuckers, M. E. and **H. S. Stern**. (1999) A hierarchical Bayesian approach for analyzing a polychotomous response from a cluster sample. *1998 Proceedings of the Section on Survey Research Methodology, American Statistical Association*. (Alexandria, VA: American Statistical Association), 387-391.

Shelley, M. C. II, P. W. Dail and S. T. Fitzgerald. (1999) Estimating the homeless population: unduplicated enumeration in the presence of massively missing data from institutional surveys. *1998 Proceedings of the Section on Survey Research Methods of the American Statistical Association* (Alexandria, VA: American Statistical Association), no pages given.

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Wall, M. M. and **Y. Amemiya**. (1999) Fitting nonlinear structural equation models. *1998 Proceedings of Social Statistics Section, American Statistical Association*, (Alexandria, VA: American Statistical Association). 180-185.

Comments, Letters, Book Reviews, Software, etc. 1999-2000

Amemiya, Y. (1999) Book Review of "A First Course in Multivariate Statistics" by B. Flury. *Journal of American Statistical Association*, **94**, 337-338.

Athreya, K. B. and R. Maddux. (1999) On the distribution and abundance of species. *Science*, **286(5445) 1647a.**

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Shelley, M. C. II. (1999) Political activists in America: The identity construction model of political participation, by Nathan Teske, *Perspectives on Political Science*, **28**(1) 53-54.

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Stufken, J. (2000) Design and analysis of experiments, by Angela Dean and Daniel Voss. *Journal of the American Statistical Association*, **95**, 679.

Vardeman, S. B. (2000) Introduction to two classics in statistical process control, 40th Anniversary Issue, *Technometrics*, **42**(1) 95-96.

Dissertations 1999-2000

Abbitt, Pamela. Ph.D. *Quantile estimation using auxiliary information with applications to soil texture data.* Major Professors: F. Jay Breidt and Sarah Nusser

Barnet, Barbara Dombroski. Ph.D. (Co-major: Education) *A comparison of the effects of using interactive WWW simulations versus hands-on activities on the conceptual understanding and attitudes of introductory statistics students.* Major Professors: W. Robert Stephenson and Janet Sharp

Chiang, Kok-Leung. Ph.D. *Confidence intervals for functions of variance components.* Major Professor: Steve Vardeman

Dodd, Kevin Wayne. Ph.D. *Estimation of a distribution function from survey data.* Major Professors: Alicia Carriquiry and Wayne Fuller

Dubinin, Thomas Michael. Ph.D. *Likelihood-based inference in some partially non-regular exponential families.* Major Professor: Steve Vardeman

Gabrosek, John George. Ph.D. *The effect of locational uncertainty in geostatistics.* Major Professor: Noel Cressie

Goyeneche, Juan Jose. Ph.D. *Estimation of the distribution function using auxiliary information.* Major Professor: Wayne Fuller

Hawkins, Richard Edmund. Ph.D. (Co-major: Economics) *Numerical optimization of recursive systems of equations with an application to optimal swine genetic selection.* Major Professors: Wolfgang Kliemann and Jack Dekkers

Kwon, Sun-Hee. Ph.D. *Clustering in multivariate data: Visualization case and variable reduction.* Major Professor: Dianne Cook

Lewin-Koh, Sok-Cheng. Ph.D. *Heteroscedastic factor analysis.* Major Professor: Yasuo Amemiya

Peternelli, Luiz Alexandre. Ph.D. (Co-major: Agronomy) *Genetic covariances between inbred progenies and their testcrosses.* Major Professors: Ted Bailey and Arnel Hallauer

Reber, Deanne Lynne. Ph.D. *Inference for extremes with applications to animal breeding and disease mapping.* Major Professor: Hal Stern

Roy, Anindya. Ph.D. *Estimation for autoregressive processes.* Major Professor: Wayne Fuller

Schuckers, Michael Edward. Ph.D. *Bayesian analysis of hierarchical models for polychotomous data from a multi-stage cluster sample.* Major Professor: Hal Stern

Tsao, Ling-ling Claire. Ph.D. *Statistical methods for count data from designs with nested structure.* Major Professor: Ken Koehler

Wright, Kevin Douglas. Ph.D. *Application of interval analysis to selected topics in statistical computing.* Major Professor: Bill Kennedy

Zheng, Zugeng. Ph.D. (Co-major: Industrial & Manufacturing Systems Engineering) *Studies in heavy traffic and in production systems.* Major Professor: H. T. David and Steve Vardeman

EDITORSHIPS 1999-2000

Yasuo Amemiya - associate editor for *Journal of Business and Economic Sciences*

Yasuo Amemiya - associate editor for *Statistics and Probability Letters*

Krishna Athreya - associate editor for *Letters in Probability and Statistics*

Krishna Athreya - associate editor for *Journal of Statistical Planning and Inference*

Krishna Athreya - associate editor, Sankhya, *Indian Journal of Statistics*

Krishna Athreya - associate editor, Resonance, *Journal of Science Education*

Krishna Athreya - associate editor, *Indian Academy of Sciences Journals*

F. Jay Breidt - associate editor for *Journal of Forecasting*

Doug Bonett - editorial advisory board for *the Journal of Applied Business Research*

Alicia Carriquiry - editor for *Statistical Science*

Dianne Cook - associate editor for *The American Statistician*

Dianne Cook - editorial board of the *Journal of Statistical Software*

Mike Daniels - corresponding editor for the IMS bulletin

Philip Dixon - editorial collaborator for *Environmental and Ecological Statistics*

Philip Dixon - associate editor for quantitative methods for *Conservation Biology*

William Duckworth - associate editor of *Education for Amstat Online* (the ASA's web site)

Wayne Fuller - associate editor for *Survey Methodology*

Mark Kaiser - associate editor for *Journal of the American Statistical Association*

Kenneth Koehler - associate editor for *Plant Ecology*

Frederick O. Lorenz - associate editor for *Rural Sociology*

Frederick O. Lorenz - associate editor for *TESOL Quarterly* (Teaching English to Students of Other Languages)

Mervyn Marasinghe - associate editor for *Journal of Computational and Graphical Statistics*

William Meeker - associate editor for *International Statistical Review* (through December 1999)

Max Morris - associate editor for *Technometrics*

Max Morris - editorial statistical consultant for *Radiation Research*

Sarah Nusser - associate editor for *Biometrics* (through December 1999)

Edward Pollak - editorial board of *Mathematical Biosciences*

Jean Opsomer - associate editor for *Journal of Computational and Graphical Statistics*

M. C. Shelley II - co-editor of the *Policy Studies Journal*

Peter Sherman - editorial Board for *Mechanical Systems and Signal Processing*

Peter Sherman - guest editor for special issue of *Mechanical Systems and Signal Processing*

W. Robert Stephenson - associate editor for *STATS: The Magazine for Students of Statistics*

John Stufken - associate editor for *The Journal of Statistical Planning and Inference*

John Stufken - associate editor for *Communications in Statistics*

Hal Stern - editor for *Chance Magazine*

Stephen Vardeman - associate editor for *The American Statistician*

AWARDS & RECOGNITIONS 1999-2000

PROMOTIONS & APPOINTMENTS:

Alicia L. Carriquiry - appointed to half-time position of Associate Provost.

Mack C. Shelley - named Coordinator of Research, Research Insititute for Studies in Education, College of Education.

UNIVERSITY TITLES:

W. Robert Stephenson - to University Professor.

UNIVERSITY AWARDS:

Derrick K. Rollins - Presidential Service Award.

Mack C. Shelley - Louis Thompson Distinguished Undergraduate Teaching Award.

Alicia L. Carriquiry - International Service Award.

Dianne Cook - University Foundation Award for Early Excellence in Research.

GENERAL MOTORS OUTSTANDING DISTANCE LEARNING FACULTY AWARD:

W. Robert Stephenson - 1999-2000 General Motors Outstanding Distance Learning Faculty Award.

ASSOCIATION AWARDS:

Alicia L. Carriquiry - elected a Fellow of the American Statistical Association.

Hal S. Stern - Statistics in Sports Award, ASA Section on Statistics in Sport, 1999.

John Stufken - elected a Fellow of the Institute of Mathematical Statistics.

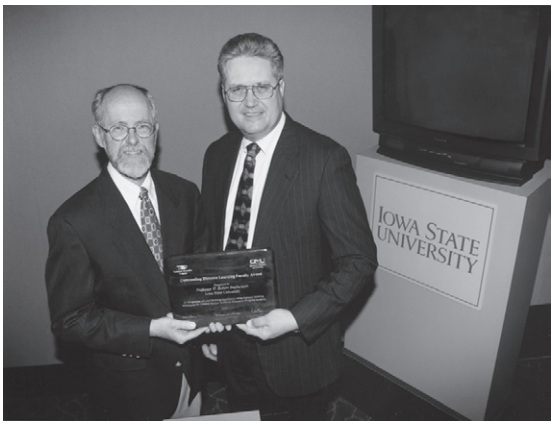
OTHER:

William Q. Meeker - Meeker's paper, co-authored with L.A. Escobar and C. J. Lu, Accelerated degredation tests: Modeling and analysis. *Technometrics*, **40**, pp. 89-99 (1998) won the W. J. Youden prize for the best expository paper in *Technometrics* in 1998. This award was announced in October 1999.

John Stufken - named 1999-2000 Teacher of the Year by Stat-ers.

Roger Heimbuch (right), director of GMNA Materials & Fastening Engineering Center, is shown presenting W. Robert Stephenson the 1999-2000 General Motors (GM) Outstanding Distance Learning Faculty Award.

This award is presented to a faculty member who has taught a course in the past year through GM's distance learning technology. It came with a $5,000 award and a commendation plaque. Over 150 instructors from many different universities were considered for this one award.



ATLANTIC RICHFIELD COMPANY

Cook, Dianne, PI, *Immersive Dynamic Statistical Exploration of Geophysical Data*, for the period of 7/01/99 - 6/30/00: *$50,435.*

DEPARTMENT OF AGRICULTURE, ARS

Isaacson, Dean, PI, for the period of 10/1/98 - 9/30/99: *$10,000.*

DEPARTMENT OF AGRICULTURE

Koehler, Kenneth, Co-PI (with Plant Pathology), for the period of 6/15/98 - 5/31/00: *$33,106.*

Koehler, Kenneth, Co-PI (with Plant Pathology), for the period of 6/15/98 - 5/31/00: *$32,720.*

Nusser, Sarah, Co-PI (with Economics), *What is Happening to Food Stamp Program Exiters?,* for the period of 9/24/98 - 4/30/00: *$400,000.*

Nusser, Sarah, Co-PI (with Economics), *Improving measurement of food security and hunger,* for the period of 8/26/98 - 9/30/01: *$200,000.*

Nusser, Sarah, Co-PI (with HDFS and Economics), *Survey design considerations for evaluating welfare programs, USDA Economic Research Service and Department of Health & Human Services,* for the period of 9/01/99 - 9/30/00: *$70,000.*

Fuller, Wayne, PI, *Multiple Phase Estimation and Times Series*, for the period of 6/15/97 - 6/14/01: *$76,500.*

DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE

Nusser, Sarah, PI. Co-PI's: **W. A. Fuller**, **F. Jay Breidt**, **J. Opsomer**, *Methods Development for Natural Resource Surveys, Natural Resources Inventory and Analysis Institute*, for the period of 10/1/97 - 9/30/99: *$373,780.*

Nusser, Sarah, PI. Co-PI's: **W. A. Fuller, F. J. Breidt, J. Opsomer**, *Survey Methods and Statistical Research Support for the Natural Resources Inventory,* for the period of 10/1/98 - 9/30/00: *$2,190,000.*

Nusser, Sarah, PI. Co-PI's: **W. A. Fuller**, **F. Jay Breidt**, *Soils Databases and Statistical Methods for Soil Surveys*, for the period of 10/1/98 -9/30/00: *$938,000.*

DEPARTMENT OF ENERGY

Morris, Max, PI, for the period of 8/1/99 - 9/30/00: $170,000.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Carriquiry, Alicia, PI, for the period of 9/8/98 - 10/29/99: *$83,105.*

DEPARTMENT OF LABOR, BUREAU OF LABOR STATISTICS

Breidt, Frank J., PI, *Consumer Expenditure Survey*, for the period of 6/15/99 - 8/15/99: *$16,172.*

FEDERAL AVIATION ADMINISTRATION

Meeker, William, Co-PI (with the Center of Nondestructive Evaluation), for the period of 9/30/98 - 9/30/03: *$2,839,000.*

GENERAL MOTORS CORPORATION

Isaacson, Dean, PI, *Master's Degree Program in Statistics*, for the period of 7/01/99 - 6/30/00: *$30,043*.

IOWA WORKFORCE DEVELOPMENT

Nusser, Sarah, PI, for the period of 1/1/99 - 12/31/99: *$7,020*.

JOHN DEERE & COMPANY

Cook, Dianne, PI, for the period of 8/11/96 - 9/9/99: *$145,000*.

JOHN DEERE FOUNDATION

Vardeman, Stephen, PI, for the period of 8/11/98 - 9/9/01: *$2,500*.

MAYO FOUNDATION

Isaacson, Dean, PI, *Master's Degree Program in Statistics*, for the period of 7/01/99 - 6/30/00: *$16,700*.

NATIONAL INSTITUTE FOR DRUG ABUSE

Spoth, R. L. (Psychology), PI Co-PI's: C. R. Redmond (Rural Health Center), **Y. Amemiya**, *Rural Family and Community Drug Abuse Prevention Project*, for the period of 9/01/99 - 7/31/00: $594,310.

NATIONAL INSTITUTE OF MENTAL HEALTH

Birt, Diane Feickert (Food Science & Human Nutrition), Co-PI: **K. J. Koehler**, *Energy Restriction, Cell Signaling, and Cancer Prevention,* for the period of 5/1/00 - 4/30/01: *$250,443*.

NATIONAL SCIENCE FOUNDATION

Nusser, Sarah, PI. Co-PI's: G. F. Covert, P. Siegel (Computation Center), *A Framework for the Dissemination, Use and Storage of Geospatial Images for Field Data Collection*, for the period of 8/1/99 - 7/31/00: *$40,000*.

Cook, Dianne, PI. Co-PI's: V. G. Honavar, L. L. Miller (Computer Science), *Interactive Dynamic Visual Overviews of Large Multi-Dimensional Data*, for the period of 10/15/99 - 9/30/02: *$350,000*.

Isaacson, Dean, PI. Co-PI's: **K. Koehler**, **S. Vardeman**, for the period of 9/1/97 - 8/31/99: *$66,954*.

Kaiser, Mark, PI. Co-PI's: **M. J. Daniels** and **S. Lahiri**, for the period of 9/1/98 - 8/31/01: *$299,998*.

Rollins, Derrick, Co-PI (with Chemical Engineering), for the period of 10/1/98 - 9/30/99: *$100,000*.

NATIONAL SECURITY AGENCY

Yang, Yuhong, PI, *Adaptive Nonparametric Regression for Correlated Data*, for the period of 1/13/99 - 1/12/01: *$17,479*.

NATIONAL INSTITUTE OF HEALTH

Koehler, Kenneth, Co-PI (with Food Science & Human Nutrition), for the period of 5/1/99 - 4/30/00: *$239,662*.

Stern, Hal, PI, for the period of 7/1/99 - 6/30/00: $35,992.

PRATT & WHITNEY

Meeker, William, Co-PI (with Center of Nondestructive Evaluation), for the period of 1/26/99 - 11/7/99: *$170,942*.

PUBLIC HEALTH SERVICE

Nusser, Sarah, PI, *Voice Disorders in Teachers and General Population* (subcontract with University of Iowa), for the period of 4/1/97 - 3/31/00: *$315,756*.

SHELL OIL COMPANY FOUNDATION

Isaacson, Dean, PI, *Departmental Grant Support*, for the period of 7/1/99 - 6/30/00: *$10,000*.

UNIVERSITY OF GEORGIA

Dixon, Philip, PI, *Predicting the Fate of Cesium in Ponds: Sensitivity and Uncertainty Analyses and Verification of a Model*, for the period of 7/1/99 - 6/30/00: *$12,708*.

UNIVERSITY OF TEXAS-AUSTIN

Meeker, William, Co-PI (with the Center of Nondestructive Evaluation), for the period of 9/1/98 - 8/31/99: *$44,465*.

U. S. POULTRY AND EGG ASSOCIATION

Xin, Hongwei (Agricultural & Biosystems Engineering), PI. Co-PI: **A. L. Carriquiry**, *Cooling Laying Hens by Partial Surface Wetting*, for the period of 7/01/00 - 7/01/01: *$24,000*.

3M

Isaacson, Dean, PI, *Master's Degree Program in Statistics*, for the period of 7/01/99 - 6/30/00: *$26,052*.

GRADUATES 1999-2000

B.S.

Lisa Catherine Renze
Nicholas James Sales

M.S.

Sau-Kum Lydia Chang
Hwei-Chun Chou
Dorin Drignei
Brooke Leann Fridley
Osman Kubilay Gursel
Jennifer L. Heldt Hellrung
Ying Huang
Hyung-Woo Kim
Anissa Esther Kuenneth
Li Li
Yunfeng Li
Fang Liu
Yun Liu
Enhua Ma
Scott William McKane
Kui Meng
Takehiro Misawa
Susan Ofner
Xiaoting Qi (Co-major with Econ)
Kari Gayle Rabe
Dewi Rahardja
Zhaohui Wu
Wei Wu
Shuyu Zhang
Yan Zhang

Ph.D.

Pamela Joy Abbitt
Barbara Dombroski Barnet (Co-major: Education)
Kok-Leong Chiang
Kevin Wayne Dodd
Thomas Michael Dubinin
John George Gabrosek
Juan Jose Goyeneche
Richard Edmund Hawkins (Co-major: Economics)
Sun- Hee Kwon
Sok-Cheng Lewin-Koh
Luiz Alexandre Peternelli (Co-major: Agronomy)
Deanne Lynne Reber
Anindya Roy
Michael Edward Schuckers
Ling-Ling Claire Tsao
Kevin Douglas Wright
Zugeng Zheng (Co-major: Industrial & Manufacturing Systems Engineering)

SCHOLARSHIPS 1999-2000

GRADUATE

Procter and Gamble Scholar
Matthew Schmidt

Shell Fellow
Dean DeCock

Shell Scholars
Andrew Balazs
Tanya Hoskins
Susan Schulte

Vera David Award
Ying Huang
Brooke Fridley

Holly C. & Beth Fryer Award
Jens Eickoff

E. C. Bryant Award
Jae-kwang Kim

Bancroft Award
Yan Zhang

Vince Sposito Award
Stephen Weigand

Snedecor Award
Dan Nordman
Sandip Sinharay

Emil Jebe Award
Michael Case

Miller Fellows
Carsten Botts
Dan Nordman
Matthew Puumala

Rebecca J. Klemm Fellowship
Michael Eraas

Richard Kleber-St. Olaf Scholarship
Matthew Puumala

Team-Stat Scholarship
Scott McKane
Kari Rabe

Departmental Awards for Scholastic Achievement/Leadership

Research Excellence:
Kok-Leong Chiang

Teaching Excellence:
Brooke Fridley
Kari Rabe
Scott McKane

Vince Sposito Computing Excellence:
Erik Colver

Dan Mowrey Consulting Excellence:
Dean DeCock
Dan Nordman

UNDERGRADUATE

Procter and Gamble Scholar
Elizabeth Brei

Sampson Scholarship
Elizabeth Brei

Snedecor Award
Jason Legg

CURRENT FACULTY

FACULTY

Yasuo Amemiya, Professor

Krishna Athreya, Distinguished Professor, *joint appointment with Department of Mathematics*

Theodore B. Bailey, Professor

Yannis Bilias, Assistant Professor

Doug Bonett, Professor, *joint appointment with Department of Psychology*

F. Jay Breidt, Associate Professor

Volker Brendel, Associate Professor, *Department of Zoology & Genetics, faculty status in Department of Statistics*

Alicia L. Carriquiry, Associate Professor

Dianne Cook, Associate Professor

Michael Daniels, Assistant Professor

Philip M. Dixon, Associate Professor

William M. Duckworth II, Assistant Professor

Wayne A. Fuller, Distinguished Professor, *faculty status in Department of Economics*

Dean L. Isaacson, Director and Head; Professor

Mark S. Kaiser, Associate Professor

William J. Kennedy, Jr., Professor

Kenneth J. Koehler, University Professor

Soumendra N. Lahiri, Professor

Frederick O. Lorenz, Professor, *joint appointment with Department of Sociology*

Mervyn G. Marasinghe, Associate Professor

William Q. Meeker, Jr., Distinguished Professor

Max Morris, Professor, *joint appointment with Department of Industrial & Manufacturing Systems Engineering*

Sarah M. Nusser, Associate Professor

Jean D. Opsomer, Assistant Professor

Carl W. Roberts, Associate Professor, *joint appointment with Department of Sociology*

Derrick Rollins, Associate Professor, *joint appointment with Department of Chemical Engineering*

Mack C. Shelley II, Professor, *joint appointment with the Department of Educational Leadership and Policy Studies*

Peter Sherman, Associate Professor, *joint appointment with Department of Aerospace Engineering & Engineering Mechanics*

Jeff Sloan, Assistant Professor, *Mayo Clinic Collaborator*

W. Robert Stephenson, University Professor

Hal S. Stern, Professor

John Stufken, Professor

Shashikala Sukhatme, Associate Professor

Terry M. Therneau, Professor, *Mayo Clinic Collaborator*

Stephen B. Vardeman, Professor, *joint appointment with Department of Industrial & Manufacturing Systems Engineering*

Huaiqing Wu, Assistant Professor

Yuhong Yang, Assistant Professor

RETIREMENTS & RESIGNATIONS

Richard Groeneveld, University Professor *(Retired May 2000)*

Edward Pollak, Professor *(Retired May 2000)*

FACULTY (continued)

EMERITUS

C. Philip Cox, Professor Emeritus
David F. Cox, Emeritus University Professor
Herbert A. David, Emeritus Distinguished Professor
Herbert T. David, Emeritus University Professor
David A. Harville, Professor Emeritus
Roy D. Hickman, Professor Emeritus
Paul Hinz, Emeritus University Professor
Donald, K. Hotchkiss, Professor Emeritus
David V. Huntsberger, Professor Emeritus *(July 22, 1917-September 7, 2000)*
Oscar Kempthorne, Emeritus Distinguished Professor *(January 31, 1919- November 15, 2000)*
Robert F. Strahan, Professor Emeritus
LeRoy Wolins, Professor Emeritus

For more information, please contact:

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Dean Isaacson, Head and Director