

NISS

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Jerome Sacks Award for Cross-Disciplinary Research

Elizabeth Thompson, 2001 Recipient



By action of the Board of Trustees of NISS, the inaugural *Jerome Sacks Award for Cross-Disciplinary Research* has been presented to Professor **Elizabeth Thompson**, of the Department of Statistics at the University of Washington, in recognition of her outstanding research bridging statistics and genetics. The presentation took place on August 6, 2001, at the NISS Reception at JSM 2001 in Atlanta.

Thompson receives a check for \$1,000 and a certificate, shown below. A plaque in the NISS Building will list the names of all recipients of the award, with her name first.

Award Citation

The 2001 Jerome Sacks Award for Cross-Disciplinary Research is given to Elizabeth Thompson of the University of Washington for her cross-disciplinary contributions to genetics and statistics. Professor Thompson has developed statistical methods for the analysis of family genetic data, relating genotypes and phenotypes within pedigrees. These are very hard problems for non-trivial pedigrees, and progress has often involved genuinely novel and important statistical ideas, in addition to a deep understanding of the science. Until her work, there was no comprehensive method for approaching pedigree data. The resulting statistical models, algorithms, and methods help to support current work in human gene mapping.

Professor Thompson's research has also enriched statistical science. The subfield of Monte Carlo likelihood estimation was given impetus by her research and collaborations.

In addition to her scientific contributions, Professor Thompson has an impressive record in training students who have gone on to positions within academic statistics, statistical genetics and commercial

biotechnology. The development of high throughput molecular technology has generated staggering amounts of data, but there are still far too few statisticians trained to tackle these problems. Professor Thompson's leadership role has been very influential in structuring training programs to attract more people into this essential field.

Professor Thompson's achievements are cross-disciplinary, innovative, and sustained over an illustrious career. It is fitting that she be honored as the first recipient of this award.

Statement by Elizabeth Thompson

The mission of NISS is to identify, catalyze and foster high-impact cross-disciplinary research involving the statistical sciences. Thus, I am truly honored to have been selected as the first recipient of this award for sustained interdisciplinary research, established by NISS to honor its founding Director, Jerry Sacks. The award is a recognition that cross-disciplinary collaborative work in a science area, while immensely rewarding, takes prolonged commitment and time. I am only sorry I cannot be with you all today to celebrate this occasion.

I started in Genetics at the same time I started in Statistics, as a beginning graduate student in 1970, when I requested Genetics as my applied project area for the Cambridge one-year graduate course in Mathematical Statistics. So indeed my Statistical Genetics work has been career-long, and my first acknowledgement must be to Professor Anthony Edwards, University of Cambridge, my supervisor for that applied project and thereafter my Ph.D. advisor. I am grateful to him for his advice and support though those early years, when many other more senior statisticians (with genuine concern) questioned the wisdom of my commitment to this single research area.

Not least, I am grateful to Dr. Edwards for introducing me to the two other people I must acknowledge by name today. I did a postdoctoral year in the Department of Genetics at Stanford University – an undertaking I think some of those senior mathematicians and statisticians felt would cure me of what they considered my over-enthusiasm for the subject. Instead, I was hooked for good, and for that I must thank Professor Luca Cavalli-Sforza for hosting me in that postdoctoral year, for the stimulating environment of his research group, and for flexibility he allowed me to establish research collaborations with others in Utah and in Michigan. That postdoctoral year, is, I believe, key for any developing scientist, and for me it determined my career path, even down to my first brief but memorable visit to the University of Washington in 1975.

The third person I would like to acknowledge by name today was also a Geneticist, Dr. James V. Neel (1915 - 2000), the founder in 1956 at the University of Michigan of the first academic department of Human Genetics in this country, and its chair for 25 years. He has been called the father of the field of human genetics, a pioneer and thinker, ahead of his time. To me, Jim Neel was a mentor and colleague. I first visited him in 1975, and that visit initiated almost 25 years of intermittent but immensely stimulating collaboration. He was always interested in ideas, and always willing to argue, to criticize constructively. We published our first joint paper in 1977, our last in 1997, but that does not do justice to the impact he had on me. More than anyone, he confirmed in me the necessity to address the real scientific questions, and to view any theory and to assess any scientific evidence with a critical but open mind. He had a respect for mathematical models as a tool to address scientific questions, but also an appreciation, rare both among statisticians and among scientists, for how huge is the variance of biological and demographic processes. I miss him.

Sustained cross-disciplinary research is not possible without supportive colleagues in both disciplines. There are of course many other colleagues and collaborators, both in the Mathematical and the Biological Sciences, both in North America and overseas without whom I would not be receiving this award. I cannot acknowledge you all individually, but I do thank you, not least for 30 years of research enjoyment. I must, however, take a moment to acknowledge the Department of Statistics at the University of Washington. This department, from its earliest inception, has had a respect for and an appreciation of interdisciplinary work that were ahead of their time. For that reason, I joined the Department at the

end of 1985, and that move gave me professionally the happiest years of my career (so far). In that department, I have had the freedom to be myself, in my research and in my teaching. As an academic, one cannot ask for more.

Last but not least, the students. Over the last 14 years I have had a truly wonderful sequence of students and postdocs, all with an appreciation of the importance of the science, many of them also making their a commitment to an interdisciplinary career. To them I say not only thank you, but that this award is for you too. I could not have achieved what I have without the whole hearted support and enthusiasm of my students. Our PhD students are the future of our discipline. Not everyone needs to be, or should be, interdisciplinary, but everyone does need to appreciate that interdisciplinary scientific work is a valid statistical endeavor. The more outstanding statistics students who choose to make their careers in interdisciplinary research, the sooner we shall achieve that recognition for us all.

Departments and Universities are changing; but sometimes there is more lip-service paid to interdisciplinary work than true appreciation; appreciation of what it takes from and what it returns to both the individual and their department. May there be more departments like UW-Statistics and organizations like NISS, that truly foster interdisciplinary research while valuing also the foundations of our discipline in the mathematical sciences. To all students or more junior colleagues who are making the commitment, I will say. Yes, it is hard. Yes, it takes time. Yes, you will sometimes feel your work is unappreciated, by your statistical colleagues and by your scientific colleagues. But, if you love the science, it is worth it. Statistics, at least, is changing: and the founding of this award is an outward sign of this wave of change. I cannot imagine an award I am happier to receive.

