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## Resolution of Respect

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Robert Rueven Sokal  
1926–2012

Distinguished Professor Emeritus Robert R. Sokal of the Department of Ecology and Evolution at Stony Brook University passed away Monday, 9 April 2012 at the age of 86. Dr. Sokal was one of the founding members of the Department and received many honors and accolades during his remarkable career. His colleagues and students from the Department of Ecology and Evolution at Stony Brook and all over the world will miss his insights, support, and friendship. Professor Sokal published 12 books (five translated into other languages) and 206 articles. His papers appeared in *Science*, *Nature*, *PNAS USA*, and many other scientific journals. His publications have been cited tens of thousands of times. Professor Sokal's scientific publications span the fields of entomology, ecology, evolution, anthropology, geography, statistics, and systematics, and seven different decades. He was fluent in six languages.

Robert Sokal made contributions in several different disciplines. Perhaps most notable was establishing, with Peter Sneath, a new field—then called numerical taxonomy—that revolutionized the discipline of systematic, and more broadly evolutionary theory, by introducing the concepts and methodology of numerical, computationally based classification of species. Numerical taxonomy was enormously controversial and challenged the reigning establishment in evolutionary biology. This work promoted statistical methods for classification and was controversial both because it advocated abandonment of traditional evolutionary systematics and also led to the debate between the advocates of phenetic

and cladistic methods. Sokal and Sneath pioneered the use of rigorous, objective statistical methods and the employment of computers in systematics, and these innovations were the original stimulus for subsequent developments in the field.

Robert's influence pervaded much of modern ecology, evolutionary biology, human evolutionary genetics, and anthropology. The textbook that he wrote with F. James Rohlf, *Biometry*, can be found in one of its four editions on the bookshelves of scientists in every college and university in the world, and has been cited over 20,000 times (Google Scholar). The fourth edition was completed less than a year before his death. *Biometry* fundamentally changed biology by introducing statistical rigor to the science and providing a philosophy of approach and methodological guidelines to tens of thousands of practicing biologists, becoming an essential part of the training of biologists in both fundamental research as well as practical and applied disciplines. His work was likewise influential in contemporary quantitative anthropology. His publications on the history of European populations, inferred from genetic and linguistic data and based on sophisticated and innovative spatial statistical methodology, pioneered (with Luca Cavalli-Sforza) modern approaches to uncovering the relationships among ethnic groups at large geographic scales.

Dr. Sokal also had a remarkable personal history. He was born on 13 January 1926 in Vienna, Austria, the only child of Klara and Siegfried Sokal. He witnessed Kristalnacht and the conquest by the Nazis, and his family managed to flee Austria in 1939. They settled in Shanghai, China, the only place in the world that allowed them entry without a visa, and which became the refuge for tens of thousands of European Jews during World War II. Robert attended secondary school and university in Shanghai, receiving his Bachelor of Science degree there from St. John's University in 1947. There he also met a Chinese fellow student, Julie, who subsequently became his wife and lifelong love. A book entitled *Letzte Zuflucht Schanghai (Final Refuge Shanghai)* by Stefan Schomann (2008) in German and translated into Chinese chronicled Robert's flight from Vienna, his family's refuge in Shanghai, and the start of his life with Julie before he came to the United States for his graduate education.

Robert Sokal left China after the war for graduate study at the University of Chicago, where he earned his Ph.D in Zoology in 1952 under the direction of renowned entomologist, ecologist, and evolutionary biologist Alfred E. Emerson. At Chicago he also was influenced by ecologists W. C. Allee and Alfred E. Thomas Park, and the evolutionary luminary Sewall Wright. He went on to a faculty position in entomology at the University of Kansas in 1951 as an instructor, and rose rapidly through the academic ranks to Professor of Statistical Biology in 1961. He was recruited by Lawrence B. Slobodkin to the fledgling Department of Ecology and Evolution at the State University of New York at Stony Brook in 1968, where he spent the remainder of his career.

Professor Sokal served as Chairman of the Department of Ecology and Evolution at Stony Brook University for three years, from 1980 to 1983, and as Vice Provost for Research and Graduate Studies from 1981 to 1982. He was named Leading Professor in 1972 and Distinguished Professor in 1991, retiring in 1995, but still remaining very active in scientific research. Bob has also served in many other prestigious capacities, including president of the Society for the Study of Evolution, the American Society of Naturalists, the Classification Society, and the International Federation of Classification Societies (the last of which he helped found). He was recognized with numerous high honors, including both the Fulbright and Guggenheim Awards, the Charles R. Darwin Award for Lifetime Achievement of the

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American Association of Physical Anthropologists, an honorary doctorate from the University of Crete, and as a Fellow at the Center of Advanced Study in the Behavioral Sciences at Stanford University. He was elected a Fellow of the American Academy of Arts and Sciences and of The American Association for the Advancement of Science, and he was a member of the National Academy of Sciences.

He is survived by his wife of 64 years, Julie Sokal, children David Sokal and Hannah Sokal-Holmes, and four grandchildren. He will be greatly missed by his family, many friends, students, and colleagues.

#### Robert R. Sokal selected publications

- Sokal, R. R., and I. Huber. 1963. Competition among genotypes in *Tribolium castaneum* at varying densities and gene frequencies (the sooty locus). *American Naturalist* 97:169–184.
- Sokal, R. R., and P. H. A. Sneath. 1963. *Principles of numerical taxonomy*. W. H. Freeman, San Francisco, California, USA.
- Sokal, R. R., and R. L. Sullivan. 1963. Competition between mutant and wild-type house-fly strains at varying densities. *Ecology* 44:314–322.
- Camin, J. H., and R. R. Sokal. 1965. A method for deducing branching sequences in phylogeny. *Evolution* 19:311–326.
- Sokal, R. R., and F. J. Sonleitner. 1968. The ecology of selection in hybrid populations of *Tribolium castaneum*. *Ecological Monographs* 38:345–379.
- Sokal, R. R. 1970. Senescence and genetic load: evidence from *Tribolium*. *Science* 167:1733–1734.
- Sokal, R. R., and T. J. Crovello. 1970. The biological species concept: a critical evaluation. *American Naturalist* 104:127–153.
- Sneath, P. H. A. and R. R. Sokal. 1973. *Numerical taxonomy: the principles and practice of numerical classification*. W. H. Freeman, San Francisco, California, USA.
- Sokal, R. R., and K. Fujii. 1973. The effects of genetic background on the ecology of selection in *Tribolium* populations. *Evolution* 26:489–512.
- Sokal, R. R. 1974. Classification: purposes, principles, progress, prospects. *Science* 185:1115–1123.
- Sokal, R. R., and N. L. Oden. 1978. Spatial autocorrelation in biology. 1. Methodology. *Biological Journal of the Linnean Society* 10:199–228.
- Sokal, R. R. 1979. Testing statistical significance of geographic variation patterns. *Systematic Zoology* 28:227–232.
- Sokal, R. R., and B. Riska. 1981. Geographic variation in *Pemphigus populitransversus* (Insecta: Aphididae). *Biological Journal of the Linnean Society* 15:201–233.
- Sokal, R. R., and P. Menozzi. 1982. Spatial autocorrelation of HLA frequencies in Europe support demic diffusion of early farmers. *American Naturalist* 119:1–17.
- Sokal, R. R. 1988. Genetic, geographic, and linguistic distances in Europe. *Proceedings of the National Academy of Sciences USA* 85:1722–1726.
- Sokal, R. R., and G. M. Jacquez. 1991. Testing inferences about microevolutionary processes by means of spatial autocorrelation analysis. *Evolution* 45:152–168.
- Sokal, R. R., N. L. Oden, and C. Wilson. 1991. Genetic evidence for the spread of agriculture in Europe by demic diffusion. *Nature* 351:143–145.
- Sokal, R. R., N. L. Oden, and B. A. Thomson. 1992. Origins of the Indo-Europeans: genetic evidence. *Proceedings of the National Academy of Sciences USA* 89:7669–7673.

- Sokal, R. R., N. L. Oden, and B. A. Thomson. 1997. A simulation study of microevolutionary inferences by spatial autocorrelation analysis. *Biological Journal of the Linnean Society* 60:73–93.
- Sokal, R. R., N. L. Oden, J. Walker, and D. M. Waddle. 1997. Using distance matrices to choose between competing theories and an application to the origin of modern humans. *Journal of Human Evolution* 32:501–522.
- Sokal, R. R., and F. J. Rohlf. 2012. *Biometry: the principles and practice of statistics in biological research*. Fourth edition. W. H. Freeman, New York, New York, USA.
- Rohlf, F. J., and R. R. Sokal. 2012. *Statistical tables*. Fourth edition. Freeman, New York, New York, USA.

Total number of papers

Number of papers by discipline: Physical Anthropology (40), Biometry (44), Numerical Taxonomy (68), Resistance (9), Ecological Genetics (25), FA (6), Miscellaneous (3).

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