Wendell Roelofs Receives Kenneth A. Spencer Award

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CONTACT: Linda McCandless, llm3@cornell.edu, 315-787-2417

by Linda McCandless

GENEVA, NY: Wendell L. Roelofs, Liberty Hyde Bailey Professor of Insect Biochemistry at Cornell University, received the Kenneth A. Spencer Award for Outstanding Achievement in Food & Agricultural Chemistry on Feb. 28. The award is presented annually by the American Chemical Society's (ACS) Kansas City Section to encourage those engaged in research, education, and industry to continue the quest for excellence in their fields.

Dr. Wendell Roelofs

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Upon receiving the award, Roelofs delivered a lecture titled "Defining Sex Signals in Moths and Mammals," in which he reviewed some of the interesting techniques used in characterizing the various chemical signals employed by insects and their use in pest control systems.

"It was a particularly special honor for me," noted Roelofs, "because the chemistry department at Indiana University *[where Roelofs received his Ph.D. in chemistry]* nominated me for the award and it was given out by a section of the American Chemical Society. This is unusual because I am mostly involved with entomology and pretend to be one of them. To get recognition as a chemist is a surprising honor."Roelofs went on to say that he considers the Spencer award "recognition for all the researchers who are in the lab group and have been in the group throughout the last three and a half decades."

"We have managed to incorporate chemistry and biochemistry into the research

on insects and this has been a particularly exciting and interesting journey in the world of chemical communication systems in insects," he said. "I view my role in this as mainly a coach who has to get together a good team and then helps it be competitive and productive. I have been lucky to have had all-star players through the years who make me look good," said Roelofs. "They should all be in the Entomology/Chemistry Hall of Fame."

Roelofs was born in 1938 in Orange City, Iowa. He obtained a B.S. degree in chemistry in 1960 from Central College, in Pella, Iowa, and a Ph.D. in organic chemistry in 1964 from Indiana University in Bloomington. He went on to The Massachusetts Institute of Technology as a postdoctoral fellow in chemistry for one year, and then was hired as an assistant professor at Cornell in the entomology department at the New York State Agricultural Experiment Station, where he currently serves as chairman of the entomology department.

Roelofs was the first chemist to join the entomology department at Geneva. He successfully brought together the disciplines of chemistry and biology to characterize new sex pheromone structures and to confirm biological activity with behavioral flight-tunnel assays and field tests.

In hindsight, the employment of a chemist to conduct research on insect sex attractants was a wise interdisciplinary decision on the part of then department chairman Paul Chapman.

Under Roelofs' leadership, research on insect sex attractants has led to innovative techniques to isolate and define host odors, including the use of gas chromatography, electroantennogram detection, solid phase microextraction, and wind tunnel behavioral analysis. His team has identified the pheromone blends of more than 50 major agricultural pests, including moths, beetles, cockroaches, and scales. This has led to the development of sex pheromone lures for use in monitoring traps and mating disruption. In addition, Roelofs has been instrumental in many basic behavioral, physiological and biochemical advances in insect chemical communication.

Techniques such as the coupling of solid-phase microextraction and gas chromatography with electroantennogram detection have enabled Roelofs' laboratory to sample the head space of various fruits and determine key volatile compounds used by related maggot fly species to find their specific host fruit. This research is important for understanding the genetics of sympatric speciation among these fly populations and has application in monitoring for these pests.

For three decades, Roelofs and his research team have been on the cutting edge of one of the most promising non-pesticidal, sustainable pest management technologies to emerge from the twentieth century. Worldwide, the pheromone industry is worth over $100 million and growing.

Of the numerous awards received by Roelofs, the most prestigious are the Alexander von Humbolt Award in 1977, the $100,000 Wolf Foundation Prize in Agriculture in 1983, the National Medal of Science in 1985, his election to the National Academy of Sciences in 1985, and his recognition as a Liberty Hyde Bailey Professor in 1978. In 1990, he received the Silver Society Medal of the International Society of Chemical Ecology for his "ground-breaking investigations on the chemical structures, biosynthesis, and ecological implications of pheromones." He has also received the Sterling B. Hendricks Award of the ACS Division of Agrochemicals (1994). He has received honorary doctorate degrees from four universities, and is the author or co-author of over 320 papers between 1973 and 1999.

The Kenneth A. Spencer award consists of a medal and an honorarium of $5,000. The award has been presented annually since 1955, and includes such past winners as Dr. William Doane, Dr. William Bowers, and Dr. Howard Bachrach.

Kenneth A. Spencer (1902-1960), was president of the family-owned Spencer Chemical Company, whose products were distributed in 43 states, Canada and many foreign countries. Spencer believed, "There is no field of human endeavor so enduringly important to man's welfare as the field of agricultural and food chemistry. Men of vision in agricultural chemistry have always labored to improve on life's necessities by providing more nourishing foods, better shelter and better clothing. If man is to continue to have an improved standard of living, these endeavors must make vigorous progress. Therefore, I have long felt that the efforts in industry, research and education by chemists who toil for better living through better agriculture and better foods should be rewarded."

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