

Robert Hutchinson Foote

August 20, 1922 — October 27, 2008

Dr. Robert H. (Bob) Foote, Jacob Gould Schurman Professor of Physiology at Cornell University and preeminent reproductive physiologist, is acknowledged for major contributions to his field through basic and applied research, innovative teaching, mentoring trainees, and professional service. His research significantly impacted diverse areas of gamete and embryo biology and related reproductive technologies for over 50 years beginning with his pioneering efforts in the development and use of semen extenders that were critical to the early success and commercial use of artificial insemination in dairy cattle.

Born on a dairy farm in Gilead, Connecticut, Foote graduated from Windham High School, Willimantic, Connecticut in 1939. He graduated with Honors and a Bachelor's degree in Animal Husbandry from the University of Connecticut, Storrs, in 1943.

World War II interrupted his academic career when Foote served as a lieutenant in the famed "Go For Broke" 442nd Regimental Combat Team, a unit formed of Nisei. The 442nd became among the most decorated units in the war. Lt. Foote was awarded a Bronze Star and a Purple Heart for heroic actions in France where he was seriously wounded, yet he returned later in the war to lead his unit again.

After the war, Foote earned his Master's degree (1947) and his doctorate (1950) at Cornell in the field of animal breeding and physiology and was appointed Assistant Professor in Animal Science, where his illustrious career began. Bob rose through the ranks of Associate Professor, Fulbright Scholar, and Professor, and was named the Jacob Gould Schurman Professor of Physiology in 1980.

Bob's early work in sperm physiology and cryopreservation was extended to many domestic, companion, and exotic animals. His first laboratory and cold room facility were within the semen-processing laboratory of the New York Artificial Breeding Cooperative (predecessor to Eastern A.I. Cooperative and Genex Cooperative, Inc.) in Ithaca, New York, an organization with which he maintained a close working relationship throughout his career. An important early discovery was that treating bull semen with a combination of antibiotics controlled bacterial growth and ultimately helped to wipe out *Vibrio fetus*, a disease that causes abortions in livestock, and until then had cost the cattle industry millions of dollars. He developed effective procedures for use of non-frozen semen by formulating Cornell University Extender, which was later refined for cryopreservation of bull semen and continues to be the basis for successful semen preservation protocols for many mammalian species. Numerous

other aspects of semen processing and cryopreservation now in routine use throughout the world have their basis in Dr. Foote's research.

Bob's research interests expanded to related areas in male reproductive physiology, including qualitative and quantitative aspects of spermatogenesis, semen quality measurements, evaluation of male fertility, and sperm capacitation. He also made major contributions to female reproduction, with the early observation that germ cell content of the mammalian ovary was finite. Improvements in the detection of estrus and the importance of insemination of cattle at the optimum time were investigated. Dr. Foote continued to work closely with the animal breeding industry, especially with cattle, using well-designed field trials and tens of thousands of artificial insemination records to effectively evaluate factors affecting semen quality and fertility in cattle.

As in vitro fertilization and other assisted reproductive technologies began to emerge in laboratory animals and human medicine, Foote's efforts included studies on in vitro oocyte maturation, fertilization, and early embryo development, with emphasis on optimizing culture media and other in vitro techniques. Later, he recognized the potential of cloning in livestock and provided an impetus for research that was a prelude to somatic cell cloning in domestic animals.

Bob was a stickler for attention to experimental design, detail and analysis, and he insisted on expedient publication by his students and trainees. He was driven by an exceptional work ethic and highly competitive nature, which perhaps originated in his early childhood or war experiences, and seemed to demand that he exceed the physical limits of most mortals. It was not, for example, unusual for him to be seen at work in his office or laboratory until 1:00 a.m. and back on the job at 6:00 a.m.; and he frequently extended his workweek to seven days. As a result of his diligence, Bob was the author or coauthor of more than 500 peer-reviewed articles as well as numerous book chapters, and he contributed many invited reviews.

Bob inspired, encouraged, and supported hundreds of trainees at various levels from undergraduate research and Honor's students to research associates and visiting scholars. He mentored over 100 Ph.D. and post-doctoral trainees from the United States and internationally. In addition to his research accomplishments, Dr. Foote was also recognized as an exceptional teacher and mentor of thousands of students and trainees. He taught a variety of courses in the animal and biological sciences, but is best remembered for his very popular animal reproductive physiology course (known by students as "Barnyard Sex"), which he offered for over 30 years. His courses in animal breeding techniques and, later, embryo technology were very popular.

Beyond his extraordinary commitment to and achievements in research and teaching, Bob is recognized for his exceptional professional service throughout his career. He was actively engaged in at least 13 professional or honor societies, serving in leadership positions on many committees and as president of the Society for the Study of Reproduction. In addition, Dr. Foote served on the editorial boards of five major journals and served as program manager, panel member, ad hoc reviewer, and advisor for innumerable agencies and organizations related to the field of reproductive physiology.

For his pioneering research, excellence in advisement and teaching, and his extensive professional service, Foote's local, national, and international awards spanning 4 decades are "legion", including the American Association of Animal Science Animal Physiology and Endocrinology Award and L.E. Casida Award, American Dairy Science Association Upjohn Physiology Award, American Society of Andrology Outstanding Andrologist Award, Society for the Study of Reproduction Hartman Award, IETS Pioneer Award (A.I., E.T. and cloning), Pioneer Award from National Dairy Shrine, National Animal Breeders Association Research Award, S.U.N.Y. Chancellor's Award for Excellence in Teaching, and the Edgerton Lifetime Teaching Award at Cornell University.

In spite of his extraordinary dedication and demanding schedule, Bob was extremely generous and always found time to entertain students and staff in his home, acknowledge birthdays with cake and ice cream, keeping in touch with former members of his program, and offer assistance whatever the need.

Perhaps Bob's greatest legacy was his investment of time, energy, and resources in those he taught and trained, who have emerged as leaders in their own right to further advance the areas of reproductive research that he championed for over half a century. Certainly a titan in the field of animal reproduction has passed from our midst.

Dr. Foote was predeceased by his first wife, Ruth Parcells. He is survived by his sons, Robert W., of Connecticut, and Dale, of Philadelphia and by his second wife, Barbara Johnson Foote.

John E. Parks, Chairperson; W. Ronald Butler, J. Murray Elliot