

AWARDS

Carl G. Hartman Award. (*Sponsored by R.W. Johnson Pharmaceutical Research Institute.*) Dr. Robert H. Foote is the recipient of the 2000 Carl G. Hartman Award.



Dr. Foote's education began long before he entered a graduate program at Cornell University. He went to a one-room school with eight grades and one teacher. There he learned a great deal about self-discipline. Lesson 2 was learned in World War II, when as a young army officer he served with a most distinguished group of loyal, dedicated, sharing and caring Americans, the Nisei of the

most highly decorated army unit in our history.

He completed his M.S. and Ph.D. degrees at Cornell with four concentrations: animal breeding, animal physiology, animal nutrition and biochemical genetics. The latter was an "add on," for the fun of trying to figure out how genes worked their magic. Of course this was a fortunate choice, for his research to improve the reproductive efficiency of genetically superior animals was driven both by its importance to animal agriculture, and the hope that someday molecular genetic tools would become available to explain how genes worked their magic. That day has arrived!

Dr. Foote's research on the requirements for preserving bull sperm at 5°C led to the procedures copied throughout the world by major artificial insemination organizations. The use of penicillin, streptomycin and polymyxin B to control transmission of agents causing venereal diseases was worth many billions of dollars to the dairy industry. His development of the Cornell University self-carbonating CUE extender resulted in the highest fertility rate ever reported for a large population of dairy cattle. Later the development of a triscitric acid-glucose-glycerol-egg yolk extender found worldwide use for frozen semen of many species.

With the mission accomplished of enabling artificial insemination of dairy cattle to be established on a sound technical and economically practical basis, Dr. Foote turned to fundamental processes of spermatogenesis. The rabbit was chosen as an experimental model so that enough radioisotopes in the 1950s would be available to track spermatogenic cells, characterize them, and relate them to DNA synthesis, thus providing a fuller quantitative and qualitative understanding of spermatogenesis.

Simultaneously he developed improved techniques for rabbit superovulation and combined this with 3Hthymidine studies of neonatal and adult females. These pioneering studies provided essentially incontrovertible evidence that no oocytogenesis occurred in growing

rabbits, so the stock of oocytes in rabbits and all mammals appeared to undergo only storage and apoptosis throughout postnatal life.

The next major area of accomplishment of Dr. Foote's lab was the first development of a serum-free medium to culture one- and two-cell rabbit embryos into blastocysts. Eventually, this led to equivalent systems for culturing bovine zygotes.

The role of hormones in controlling sexual behavior was of fundamental interest, and also a practical one in artificial insemination. Dr. Foote undertook a series of studies with castrated male and female rabbits and cattle exposed to aromatizable and nonaromatizable androgens and estrogens; results indicated that estrogen was more powerful than androgens in controlling brain responses in males.

Reproductive failure was modeled in rabbits and applied to cattle to improve reproductive efficiency. The rabbit model led to isolation of the effects of pituitary hormones, progesterone, blood flow to the uterus, aging oocytes, and changes in uterine composition with aging, as causes or noncauses of reproductive failure. Dr. Foote was invited to serve on the first Study Section when the NIH Institute of Aging was established. However, he was too busy teaching, advising, and conducting research. Over a period of 35 years, Dr. Foote taught all of the 8,000 students at Cornell who took an undergraduate lecture and laboratory course in reproductive physiology and most of those who took an advanced course in embryo transfer and animal biotechnology. For his teaching efforts, he received all of the most prestigious university and SUNY teaching awards available.

Dr. Foote has served on the NIH Reproductive Biology Study Section, Program Manager of the USDA Competitive Grants, many committees, and Director and President of SSR. He has served on the editorial board of six journals, including "Cloning" at the present time.

His research has resulted in about 500 peer-reviewed full publications. He has been recognized for his research by receiving the New York Farmers' Award for contributions to Northeast Agriculture, National Association of Animal Breeders' Award for Research in A.I. and Physiology of Reproduction, ASAS Animal Physiology and Endocrinology Award, Outstanding Andrologist, Upjohn Physiology Award and L.E. Casida Award for Excellence in Reproductive Physiology.

Dr. Foote has twice been recognized by Japan for his contributions to science, by China Agricultural University as an Honorary Professor, and by The University of Connecticut as a Distinguished Alumnus.

Cornell appointed Dr. Foote to a distinguished professorship in 1980, a position he still holds as professor emeritus. All of this was made possible by the stimulation and dedication of wonderful students and collaborating scholars.