

ITHACA, N.Y. – Bob Foote, the Cornell University animal scientist whose pioneering research led to *in vitro* fertilization in agricultural livestock, animal cloning and a discovery that female mammals are born with a finite inventory of eggs, died of lung failure in Ithaca on Oct. 27. He was 86.

Foote's research has prominently contributed to modern livestock breeding techniques and an improved understanding of mammalian reproduction, including humans. Most of his work focused on four areas of research: *in vitro* fertilization, culture and micromanipulation of embryos; oogenesis, superovulation and embryo transfer; extenders for semen and sperm cryopreservation; and spermatogenesis.

In 1958, the Lalor Foundation and the National Institute of General Medical Sciences awarded Foote his first grants to study DNA in rabbits. This work later would be used as a model for DNA research on other domestic animals and would serve as the foundation for animal and human fertilization techniques and as an early step in the scientific route toward animal cloning.

Foote was among the earliest researchers to monitor animal testicular function and to harvest sperm for the artificial breeding of agricultural animals. Foote discovered that using a combination of penicillin, streptomycin and ploymyxin, used to treat bull semen, helped wipe out *Vibrio fetus*, a disease that causes abortions in livestock, and until then had cost the cattle industry hundreds of millions of dollars.

He also performed the research that established that all eggs in rabbits are formed as oocytes in the fetal ovary. Today it is well understood, as a result of Foote's research, that a female is born with all the eggs she will ever have, with the store depleted throughout her reproductive life by degeneration and ovulation.

In 1996, when scientists at the Roslin Institute in Edinburgh, Scotland announced the sheep clone Dolly, media outlets sought Foote to understand the impact. Soon after, fearing that labs would pursue human cloning, state

legislatures began introducing bills to ban the cloning research. In 1997, Foote warned the New York State Senate against passing such narrow bills, telling them that media hype has contributed to public misunderstanding. The bills never passed.

In 1998, Chicago-area scientist Richard Seed announced that he would soon clone humans. Foote received national attention denouncing Seed's proposition. "We're not ready technically or ethically to go ahead with these studies in humans," Foote said.

Born on a dairy farm in Gilead, Conn., on Aug. 22, 1922, Robert Hutchinson Foote graduated from Windham High School, Willimantic, Conn., in 1939. He earned a bachelor's degree from the University of Connecticut, Storrs, in 1943. He earned both his master's degree (1947) and his doctorate (1950) from Cornell University. Foote joined the Cornell faculty as an assistant professor in 1950 and became a professor in 1963.

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, or Japanese-Americans. The 442nd suffered high casualty rates and became among the most decorated units in the war. The group would be commemorated in the 1951 Hollywood film, "Go for Broke!," starring Van Johnson.

While Foote and his troops were repelling German soldiers, near Bruyères, France, the shrapnel from a German mortar shell pierced his back and legs, leaving him badly injured in Oct. 1944. His men carried him out of harm's way. Foote served as a lieutenant in that unit because Japanese-Americans were not allowed to be officers in the U.S. Army at the time. Foote received a Bronze Star and a Purple Heart.

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

A celebration of his life will be held on Nov. 2 at Kendal at Ithaca at 2 p.m., while a memorial service will be held at the First Congregational Church, 309 Highland Road, Ithaca, N.Y., on Nov. 9 at 3 p.m. In lieu of flowers, memorial donations may be made to the Robert H. Foote Outreach Fund at the First Congregational Church; the Kendal at Ithaca Rainy Day Fund; or the charity of one's choice.