

**1994 SSR RESEARCH AWARD
WILLIAM W. THATCHER**



The SSR Research Award is sponsored by the Society for the Study of Reproduction. The 1994 recipient of the SSR Research Award is Dr. William W. Thatcher for his work using cattle and other species to elaborate principles of ovarian

follicular development and maternal-embryo interactions and for the development of novel approaches for regulating reproductive function to enhance animal production and health.

Dr. Thatcher received his B.S. in Animal Science from the University of Maryland in 1963. His graduate education was focused on the biology of lactation; he received the M.S. degree from the University of Maryland in 1965 and the Ph.D. degree in Physiology of Reproduction and Lactation from Michigan State University in 1968. Dr. Thatcher joined the faculty of the Dairy Science Department at the University of Florida in 1969. He rose rapidly through the ranks and obtained his current position of Graduate Research Professor in 1988. Additional training was received through sabbaticals at the Physiology of Reproduction Laboratory, Institut National de la Recherche Agronomique at Nouzilly, France, from 1977 to 1978 and during 1985. It was while in Nouzilly that Dr. Thatcher met his wife, Marie-Joelle Duchantre Thatcher, who is also a reproductive physiologist.

Dr. Thatcher is a leading authority on bovine reproduction. His research has concentrated primarily on two windows in the reproductive life cycle of the cow: ovarian follicular development and maternal-embryonic communication during early pregnancy. Dr. Thatcher has also developed a detailed understanding of the role that nutritional status (specifically energy balance and metabolic hormones) and heat stress play in affecting physiological processes controlling ovarian function and embryonic development. Among his early accomplishments, Dr. Thatcher played a critical role in the development of techniques to synchronize estrus in cattle utilizing prostaglandins. Since that effort, Dr. Thatcher has continued to develop new methods of ovulation

control. Key to this effort has been an understanding of the hormonal and physiological events controlling folliculogenesis, luteal regression, and ovulation. Making widespread use of ultrasonography, his group has characterized the pattern of folliculogenesis during the estrous cycle, early pregnancy, and postpartum period; described the role of the dominant follicle in follicular recruitment and atresia; and developed models to study cystic follicle formation and relationships of follicular development to subsequent pregnancy. Dr. Thatcher has applied concepts derived from this research to develop procedures using hCG and GnRH analogues to improve synchronization of estrus, superovulation, and fertility and for treatment of ovarian cysts.

Dr. Thatcher has also become one of the foremost authorities on developing mechanisms to reduce early pregnancy losses. Particular attention has been paid to the process by which the embryo rescues the corpus luteum from luteolysis to allow sustained release of progesterone for pregnancy maintenance. Dr. Thatcher described the secretory patterns of prostaglandins during the estrous cycle and early pregnancy, characterized the pattern of follicular growth as affected by the conceptus, and identified various hormones and proteins produced by the bovine embryo. Dr. Thatcher and his associates were the first to describe and purify the bovine protein called interferon-tau that signals the mother to prevent luteolysis. Based on this knowledge, Dr. Thatcher has developed approaches to improving fertility that involve use of interferons, hCG, GnRH analogues, and supplemental progestins. When work began on maternal recognition of pregnancy, there was little knowledge regarding this area for any species and there was no apparent practical method for improving fertility based on manipulating embryonic signals. Nonetheless, Dr. Thatcher had the vision to recognize the importance of understanding conceptus-maternal interactions for improving pregnancy rate. As a result, there now exist viable approaches for improving fertility based on manipulation of hormonal signals involved in maintenance of the corpus luteum.

Other research accomplishments have been made in understanding how heat stress and nutrition affect reproductive processes in the female. By concentrating on the physiological and cellular effects of heat stress, Dr. Thatcher has

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made significant progress in reducing effects of thermal stress on reproductive function. He has also used his ability to monitor and control follicular dynamics to generate unique insights into the role of energy balance and specific dietary ingredients on the onset of estrous cycles postpartum and on subsequent fertility.

Dr. Thatcher has been exceedingly prolific as a scientist. He has published more than 185 refereed journal articles and 32 book chapters. He has trained 12 M.S. students, 18 Ph.D. students, and 7 postdoctoral associates; 16 scientists have done sabbaticals in his laboratory.

Dr. Thatcher has received many awards including the Upjohn Physiology Award from the American Dairy Science Association in 1981, The American Society of Animal Science Award in Animal Physiology and Endocrinology in 1985, 259 and the Borden Award from the American Dairy Science Association in 1992.

In addition to his scientific contributions, Dr. Thatcher has served as mentor to many young scientists (graduate students, postdocs, and faculty). Importantly, Dr. Thatcher has a well-developed sense of humor that he uses to build rapport and camaraderie with his colleagues and students. In summary, William W. Thatcher possesses virtues that have allowed him to make major discoveries in reproductive biology and to become a role model for young reproductive biologists.