Carl G. Hartman Award *(sponsored by Johnson & Johnson Pharmaceutical Research & Development, L.L.C.)* The 2004 recipient of the Carl G. Hartman Award is Dr. Fuller W. Bazer. Dr. Bazer's many years of outstanding scholarly contributions to the field of reproductive biology, his leadership as a colleague and mentor, and his extraordinary service to the SSR make him a most deserving candidate for this prestigious award.

Dr. Bazer is one of the most eminent reproductive biologists in the world; his remarkable contributions span the fields of animal agriculture, biotechnology, reproductive biology, and human and veterinary medicine. His work over a period of 24 years at the University of Florida and the past 11 years at Texas A&M University has focused primarily on the interactions between the maternal environment of the uterus and the developing conceptus. At the University of Florida, Dr. Bazer carried out productive collaborations with colleagues, notably Drs. R. Michael Roberts and William H. Thatcher, by integrating biochemistry and physiology to define the spatial/temporal patterns, endocrine control, and function of numerous secretory products of uterine origin identified as transport proteins, regulatory molecules, growth factors and enzymes, collectively termed histotroph, that are necessary for embryo survival and development in domestic animals and humans. Uteroferrin is one of the first proteins identified and characterized by Dr. Bazer's group that is produced by pig endometrium under the control of steroid hormones and responsible for iron transport to the conceptus. This purple acid phosphatase was subsequently shown to be a hematopoetic growth factor that influences neonatal survival. The identification and characterization of other uterus-derived factors such as retinol, riboflavin, and other vitamins that are secreted at specific times during pregnancy have led to changes in the way that animals are fed to enhance pregnancy rate and embryo survival.

Dr. Bazer and colleagues also conducted similar studies to identify proteins and other factors produced by the conceptus that exert direct effects on the uterus including the signal for maternal recognition of pregnancy, which is obligatory for prolonging progesterone production by the corpus luteum and thereby maintaining pregnancy. These investigations have led to an appreciation that the signals for maternal recognition of pregnancy in domestic animals are antiluteolytic, and thus differ from the luteotrophic signals in primates and rodents. Dr. Bazer and colleagues discovered that estrogen, in combination with prolactin, is the pregnancy recognition signal in pigs and functions by redirecting luteolytic pulses of prostaglandin F2a, from an endocrine to an exocrine pathway, thereby preventing its delivery to the corpora lutea.

A seminal discovery was that interferon tau (IFNτ, originally referred to as ovine trophoblast protein-1) is produced for a short period of time by ruminant conceptuses and acts to block regression of the corpus luteum. Dr. Bazer's group subsequently investigated a number of interferon- induced genes in the uterus and established that the physiologic roles and signal transduction events responsible for the function of IFNτ as a pregnancy recognition signal involves inhibition of estrogen receptor and oxytocin receptor genes. They have identified spatial and temporal patterns of a variety of receptors, adhesion molecules, matrix proteins, cytokines and growth factors involved in autocrine and paracrine signaling at the uterine-conceptus interface that contribute to fetal survival and development.

Throughout his career, Dr. Bazer has demonstrated remarkable insight by effectively catalyzing links between animal agriculture and human health. Although the focus of his work has been on reproductive processes, recognition of the unusual properties of IFNτ led Dr. Bazer and others to consider therapeutic uses of recombinant ovine IFNτ for treatment of a variety of viral diseases, certain cancers, and multiple sclerosis. The hematopoetic growth factor properties of uteroferrin are also being examined for use in the treatment of diseases such as leukemia and osteoporosis.

Dr. Bazer is the author or co-author of over 370 publications in refereed journals, more than 40 chapters and review articles, and four books. According to *Science Citation Index* data, Dr. Bazer's work has been cited over 1,000 times in this decade, 17 of his papers have been cited over 100 times, and several others have been cited over 200 times. More than 60 graduate students and postdoctoral fellows have been mentored in his laboratory. He has had significant impact upon trainees, fellows, and colleagues who have made their own authoritative contributions to the field of reproductive biology.

Dr. Bazer's research program, which has been continuously funded since 1970 by major funding agencies including NIH, NSF, and USDA as well as by industry and foundation sources, reflects the confidence of peers who have scrutinized his hypotheses and experimental designs. He has served on the editorial boards of *Biology of Reproduction, Journal of Animal Science, Domestic Animal Endocrinology, Theriogenology, Endocrine, Journal of Reproductive Endocrinology,* and *Oxford Reviews in Reproductive Biology.* As a reviewer of NIH grants for the Reproductive Biology Study Section and a number of USDA competitive grants programs, he has influenced the direction of research in reproductive biology.

The innovation and scholarship in his work is reflected in the diversity of awards he has accumulated over the years. While the individual awards are too numerous to list, several convey the respect with which the biomedical and agricultural research communities view his scholarship. He has been named the Goding Lecturer by the Australian Society for Reproductive Biology and Fertility (1988) and Sir John Hammond Lecturer by the Society for the Study of Fertility and Societe Francaise pour le Etude de la Fertilite (1991). He received the American Society of Animal Science Physiology and Endocrinology Award (1980), Society for the Study of Reproduction Research Award (1990), Biotechnology 94 Award (1994), American Society of Animal Science L.E. Cassida Award for Graduate Education (1995), Gamma Sigma Delta International Distinguished Achievement Award in Agriculture (1996), Society for the Study of Reproduction Distinguished Service Award (2000), and the Alexander von Humboldt Foundation Award (2000). This last award is presented annually to a person judged to have made the most significant contribution to American agriculture during the previous five years. More recently, he and Dr. R. Michael Roberts shared the 2002/2003 Wolf Prize in Agriculture ''for discoveries of interferon-tau and other pregnancy-associated proteins, which clarified the biological mystery of signaling between embryo and mother to maintain pregnancy, with profound effects on the efficiency of animal production systems, as well as human health and well-being.''

Dr. Bazer's visionary leadership has impacted the SSR and the institutions with which he has been affiliated. As a Director and as President he influenced the vitality of the SSR. His leadership in strategic planning has contributed to development of a long-range plan for the financial health of the society, to the timely and decisive move to electronic publication of *Biology of Reproduction,* and the use of the internet. As a member of the Editorial Board and as Editor-in-Chief he contributed to the growth and current stature of *Biology of Reproduction.* He was a Co-founder in 1971–1972, Vice-Chair, and Chair of a Gordon Conference now known as Reproductive Tract Biology.

Dr. Bazer has a long record of fostering interdisciplinary research in reproductive biology beginning at the University of Florida and continuing at Texas A&M University. At both institutions he has been an intellectual leader of interdisciplinary research teams in reproductive biology and animal biotechnology by merging the talents of researchers from a variety of disciplines. Soon after his arrival at Texas A&M in 1992, he was appointed Director of the Center for Animal Biotechnology, organized an Interdisciplinary Faculty of Reproductive Biology, and provided colleagues in this Center a core surgical support and animal care resource for sheep and pig research in reproductive efficiency. A few years later the center was renamed the Center for Animal Biotechnology and Genomics to reflect the growth and expanded research in all aspects of animal biotechnology. It has also evolved to provide strong programmatic linkages between scientists from Texas A&M University, the Texas Agricultural Experiment Station (TAES), Texas A&M University System Health Science Center, and other institutions within the Texas A&M University System. Through his contacts at several institutions within the Texas Medical Center in Houston, Dr. Bazer created synergies that enhance research in both the agricultural and biomedical sciences. He organized a flourishing Texas Women's Reproductive Health Consortium which fosters interactions among basic and clinical scientists at the Texas Medical Center (University of Texas Health Science Center at Houston, Baylor College of Medicine, MD Anderson Cancer Research Institute, USDA/ARS Children's Nutrition Research Center, and Institute of Biosciences and Technology Houston), University of Texas Medical Branch at Galveston, Prairie View A&M University, Texas A&M University, Texas A&M University at Kingsville, and TAES.

To the dismay of many of his colleagues who benefited from daily interactions, his effectiveness as a scientist and vision as a leader has caused him to be pressed into considerable administrative service as the Director of the Institute of Biosciences and Technology as well as Director and Interim Vice President for Research and Dean of the Graduate School of Biomedical Sciences, Texas A&M University System Health Sciences Center. He currently serves as Executive Associate Dean, College of Agriculture and Life Sciences, Associate Vice Chancellor for Agriculture and Life Sciences, and Associate Director Texas Agricultural Experiment Station. However, his colleagues are grateful for his influence in defining the importance and shaping the future direction of reproductive biology and animal biotechnology research at the Texas A&M University and System levels.

There are few scientists who have had such an impact on the field of reproductive biology as a visionary researcher, mentor, and administrator. Dr. Bazer has effectively communicated the research findings of his laboratory and the interdisciplinary research teams he has assembled to expand our understanding of reproductive biology as well as extended the application of this knowledge to animal biotechnology as well as animal and human health.