2017 AWARDS

AMERICAN SOCIETY FOR REPRODUCTIVE MEDICINE

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DISTINGUISHED RESEARCHER AWARD
DAVID K. GARDNER, PH.D.

The 2017 recipient of the ASRM Distinguished Researcher Award is **David K. Gardner, Ph.D.**, Professor, School of BioSciences, University of Melbourne, Australia. Dr. Gardner's accomplishments as a clinical scientist, leader, inventor, mentor, and citizen to the scientific community have been outstanding, leading to the development and clinical introduction of blastocyst culture that has transformed how the majority of human in vitro fertilization cases are performed. This transition has facilitated the move to single embryo transfer that has reduced the incidence of multiple gestations.

Dr. Gardner received his undergraduate and graduate degrees from the University of York, UK. The early part of his career was associated with developing means of assessing the physiology of the preimplantation embryo. This included the development and use of novel fluorometric technologies capable of measuring the nutrient utilization of individual embryos. Using this approach, he was not only able to noninvasively monitor the nutrient uptake by individual embryos through their development, but determine how embryos interacted with their immediate environment in vitro. He identified several sources of metabolic stress, and was the first to show that induction of aberrant metabolic processes during the preimplantation period had downstream consequences for subsequent fetal and placental development. Studies on the nutrient gradient in the human female reproductive tract paved the way for media based on the composition of the human oviduct and uterus (which later became known as G1 and G2 for Gardner 1 and 2). These media were the world's first physiologically based for the development of human embryos. A further major breakthrough in the development of improved embryo culture systems came through his laboratory's pioneering work on the role of amino acids in regulating embryo development and viability. His analysis of embryo metabolism in vitro determined that there are major changes in energy metabolism throughout development; loss of ability to regulate metabolism culminates in a reduction in embryo developmental potential. His group was the first to detect the appearance of ubiquitin and several other embryo-specific proteins in the culture medium. Gene expression, the embryonic proteome, the metabolism of the embryo, and its subsequent viability are all affected by oxygen concentration. As a result, many in vitro fertilization (IVF) laboratories are utilizing reduced oxygen for embryo culture. The significance of Dr. Gardner's work can be assessed by the number of papers and the impact his work has had. He has authored 5 of the 100 most cited papers in reproductive medicine and biology, ranking him as #3 in the world for impact in this field. In total, he has published over 175 peer-reviewed papers and 58 book chapters, and been an editor of 15 books. His total number of citations is >11,500 by ISI Web of Knowledge and >19,500 by Google Scholar, making him one of the most highly cited scientists in reproductive medicine. His commitment to reproductive biology and education is reflected in his work as a member of the Executive Board and President Elect of the Alpha (Scientists in Reproductive Medicine), which is an international society for clinical embryology. Dr. Gardner is an innovative and world-leading researcher at the very top level internationally. His animal research laid the foundation for his subsequent human clinical developments. His work on human embryo development and his specialized/improved culture media made it possible to isolate human embryonic stem cells. His research on embryonic biomarkers is facilitating the identification of the best embryos for transfer and for cryopreservation. Thus, a significant amount of his research has now been translated into current human IVF procedures used around the world, and equally remarkable, his work on the analysis of embryo viability holds great promise for the future. In recognition of his scientific achievement, he was named a Fellow of the Australian Academy of Sciences in May 2017.

ASRM 2017 Scientific Congress & Expo

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