

## Reproductive Biology and Disease

Reproductive Biology is the study of the biochemistry, physiology, endocrinology, cell biology, genetics and molecular biology of a wide range of biological processes involved in reproduction. These processes include gametogenesis and germ stem cell biology, fertilization, embryo development, implantation, pregnancy, sexual differentiation, and mechanisms by which the reproductive organs develop, differentiate, age and incur disease. Research in reproductive biology has broad applications in public health, medicine, and agriculture, including contraception, infertility, reproductive toxicology, animal science, and oncology. The discipline of reproductive biology includes studies of basic mechanisms involved in normal function of reproductive cells and tissues, as well as regulation of reproductive functions in health and disease. Knowledge of reproductive systems in humans can be used both to enhance fertility and to develop safe, effective and acceptable forms of contraception. As the world population continues to grow at alarming rates, it is imperative that efficient, high quality food production is maintained. However, fertility in some agriculturally important animals has declined steadily in recent years, having a negative impact on the economy of food production. Therefore, the ability to manage reproduction is critical to the survival of the human species. Reproductive health is crucial to successful conception, pregnancy and delivery. It is also a key

determinant of wellbeing in adulthood. The cellular and molecular mechanisms underlying the physiological processes involved in male and female reproduction are poorly understood with rates of infertility, miscarriage, stillbirth and preterm birth remaining relatively unchanged in recent decades. The combination of rapid developments and clinical translation in assisted reproductive technologies has undoubtedly transformed the lives of previously childless couples.