Reproduction

Living organisms must be able to reproduce or else they would no longer exist.

Most animals carry out sexual reproduction. Many plants can reproduce by asexual reproduction.

Sperm and Egg Cells

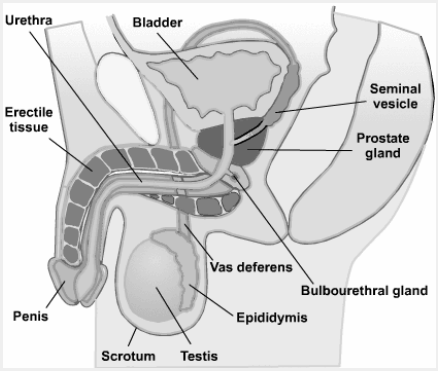
Sperm and egg cells are called gametes (sex cells). Being haploid cells means they only have half the number of chromosomes that normal body cells have. Human cells generally have 46 chromosomes, therefore, sperm and egg cells only have 23.

Both sperm and egg cells are by meiosis. When an egg cell and sperm cell combine during fertilisation the normal number of chromosomes (diploid) is restored.

Sperm cells are produced in the testes under the influence of the hormone testosterone. They have adapted to their role by having a pointed head, a sac full of enzymes to digest egg and a tail for swimming (steamlined)

Egg cells (ova) are larger than sperm cells and are produced in the ovaries under the influence of female hormones.

Male System



Male System

The male reproductive system makes sperm and is adapted to deliver sperm into the female reproductive system.

Urethra - Carries both urine and semen to penis (cannot both happen at same time)

Penis - Transfers semen to female reproductive system and must be erect to do so

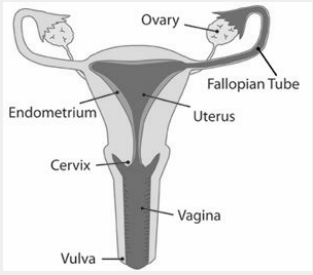
Scrotum - Holds testes outside body to regulate temperature and keep cool for sperm production

Prostate Gland - Adds liquid to sperm to make semen (for sperm to swim in)

Sperm tube - Transports sperm from testes to penis.

Testes - Produces sex cell sperm.

Female System



Female System

The female reproductive system makes and releases eggs. It also protects and nourishes the embryo (which grows and becomes known as the foetus) until birth.

Ovary - Inside body and produces eggs (ova)

Cervix - Opening of uterus (circular muscle) which controls opening to uterus and is 10cm during dilation.

Oviduct - Transports egg to uterus. Where fertilisation occurs.

Uterus/Womb - Will receive and support a fertilised egg by developing a thick blood lining.

Fertilisation

Following sexual intercourse, the male sperm cell is able to swim through the cervix and uterus. If a sperm cell and an egg meet and fuse in an oviduct then fertilisation will result.

Fertilisation is the fusing of the haploid nuclei of the sperm and egg, thereby restoring the diploid number. The fertilised egg becomes the first cell of the new individual, a zygote. This single cell then divides by mitosis and grows into a ball of cells as it travels down the oviduct. The ball of cells becomes an embryo which implants itself in the wall of the uterus. The embryo is nourished and held in position by the thick lining that has developed on the uterus wall.

The placenta and umbilical cord begin to develop in the uterus lining at the point where the embryo has attached. A protective membrane called the amnion develops around the embryo. It contains amniotic fluid within which the embryo develops and grows. The amniotic fluid cushions and protects the developing embryo. After a few weeks the embryo is referred to as a foetus as it becomes more recognisable as a baby.

A baby cannot breathe when in the amniotic fluid, so during pregnancy useful materials pass from the mother to the foetus through the placenta and umbilical cord. Waste excretory materials pass from the foetus back to the mother.

The mother passes oxygen and glucose to the foetus whilst the foetus will pass carbon dioxide and waste back to the mother.

Placenta & Umbilical Cord

The placenta is an exchange surface temporarily created in the body during pregnancy, as an exchange surface it has a lot in common with the lungs.

Placenta is very rich in maternal blood vessels. The mother's blood is rich in oxygen and other nutrients. The umbilical cord contains an umbilical artery which carries waste materials from the baby to the mother and an umbilical vein which carries nutrients from the mother to the foetus.