Male Reproductive System

The male reproductive system includes several organs that work together to produce sperm (male reproductive cells) and deliver them to the female reproductive system.

1. **Testes (Testicles)**: These are two oval-shaped organs that produce sperm and the hormone testosterone, which is important for male sexual development and reproductive functions.
2. **Scrotum**: This is a sac that hangs below the penis and holds the testes. It keeps the testes at a temperature slightly cooler than the rest of the body, which is necessary for sperm production.
3. **Epididymis**: This is a long, coiled tube attached to the back of each testis. Sperm mature and are stored here until they are ready to be released.
4. **Vas Deferens**: These are two long tubes that carry sperm from the epididymis to the urethra. During ejaculation, the sperm travel through these tubes.
5. **Seminal Vesicles**: These are two small glands that produce a fluid that is mixed with sperm to form semen. This fluid provides energy for the sperm and helps them move.
6. **Prostate Gland**: This gland produces another fluid that is added to the semen. This fluid helps to protect and nourish the sperm.
7. **Urethra**: This is a tube that runs through the penis and carries urine and semen out of the body. During ejaculation, the urethra transports semen.
8. **Penis**: This is the external organ that delivers semen into the female reproductive system. It contains the urethra.

How It All Works Together

1. **Sperm Production**: Sperm are produced in the testes.
2. **Sperm Maturation**: Sperm move to the epididymis where they mature and are stored.
3. **Sperm Transport**: During ejaculation, sperm travel through the vas deferens.
4. **Seminal Fluid Addition**: As sperm pass the seminal vesicles and prostate gland, fluids are added to form semen.
5. **Ejaculation**: Semen is expelled through the urethra and out of the penis.

Key Terms

- **Sperm**: Male reproductive cells.
- **Testosterone**: Hormone produced by the testes, important for male characteristics and reproduction.
- **Semen**: Fluid that contains sperm and other fluids from the seminal vesicles and prostate gland.
- **Ejaculation**: The process of expelling semen from the body through the penis.

Female Reproductive System

The female reproductive system includes several organs that work together to produce eggs (female reproductive cells), support fertilization, and nurture a developing baby.

1. **Ovaries**: These are two small, oval-shaped organs located on either side of the uterus. They produce eggs and the hormones estrogen and progesterone.
2. **Fallopian Tubes**: These are two narrow tubes that connect the ovaries to the uterus. When an ovary releases an egg, it travels through the fallopian tube. Fertilization usually happens here if a sperm meets the egg.
3. **Uterus (Womb)**: This is a hollow, pear-shaped organ where a fertilized egg can develop into a baby. The uterus has a thick lining that provides nourishment for the developing baby.
4. **Endometrium**: This is the inner lining of the uterus. It thickens each month to prepare for a possible pregnancy. If the egg is not fertilized, this lining is shed during menstruation.
5. **Cervix**: This is the lower, narrow part of the uterus that opens into the vagina. It allows menstrual blood to leave the uterus and sperm to enter.
6. **Vagina**: This is a muscular tube that connects the cervix to the outside of the body. It serves as the birth canal during childbirth and allows menstrual blood to leave the body.

How It All Works Together

1. **Egg Production**: Eggs are produced in the ovaries.
2. **Ovulation**: Each month, one ovary releases an egg into the fallopian tube.
3. **Fertilization**: If sperm meets the egg in the fallopian tube, fertilization can occur.
4. **Implantation**: A fertilized egg travels to the uterus and implants itself into the endometrium, where it can develop into a baby.
5. **Menstruation**: If the egg is not fertilized, the endometrium is shed and leaves the body through the vagina as menstrual blood.

Key Terms

- **Egg (Ovum)**: Female reproductive cell.
- **Estrogen and Progesterone**: Hormones produced by the ovaries, important for female characteristics and reproductive functions.
- **Fertilization**: The joining of a sperm and an egg.
- **Menstruation**: The monthly shedding of the endometrial lining when there is no pregnancy.
- **Ovulation**: The release of an egg from an ovary.

Fallopian Tube

The fallopian tubes are two narrow tubes that connect each ovary to the uterus (womb). Their job is to transport eggs from the ovaries to the uterus. If sperm meets the egg in the fallopian tube, fertilization can happen here. After fertilization, the fertilized egg (embryo) travels through the fallopian tube to implant in the uterus for further development.

Endometrium

The endometrium is the inner lining of the uterus (womb). It thickens each month in preparation for a fertilized egg to implant and grow into a baby. If pregnancy doesn't occur, the endometrium sheds, and this is what causes menstruation (period).

Estrogen and Progesterone

Estrogen and progesterone are hormones produced by the ovaries. They play important roles in the female reproductive system:

- **Estrogen** helps regulate the menstrual cycle, promotes the development of female sexual characteristics, and helps maintain a healthy pregnancy.
- **Progesterone** prepares the uterus for pregnancy each month and helps maintain a pregnancy if it occurs.

Gamete Formation

Gametes are reproductive cells—eggs in females and sperm in males. Gamete formation, or gametogenesis, refers to the process by which these cells are produced. In females, eggs (ova) develop in the ovaries through a process called oogenesis. This process starts before birth and continues throughout a woman's reproductive years.

Fertilization

Fertilization is the process where a sperm cell from a male joins with an egg cell from a female. It typically occurs in the fallopian tube. When fertilization is successful, the combined genetic material forms a single cell called a zygote. This zygote eventually develops into an embryo and then a fetus.

Development and Birth

After fertilization, the zygote travels down the fallopian tube to the uterus, where it implants into the thickened endometrial lining. Over approximately nine months, the embryo develops into a fetus within the uterus. When development is complete, the fetus is born through the vagina in a process called childbirth or delivery.