

The female reproductive system is a coordinated group of organs whose primary biological purposes are to produce eggs, allow fertilization, support pregnancy, and regulate reproductive hormones. It is both a reproductive system and an endocrine system. An endocrine system is a hormone-producing system. Hormones are chemical messengers that travel through the bloodstream to control body functions.

The system is divided into two main parts: external structures and internal organs.

The external structures are collectively called the vulva. The vulva includes everything visible on the outside. Many people mistakenly call this the vagina, but the vagina is internal. The vulva includes protective and sensory structures.

The outer folds of skin are called the labia majora. “Labia” means lips. “Majora” means larger. These are the larger outer lips that protect the more delicate inner parts. They contain fatty tissue and hair follicles after puberty.

Inside the labia majora are the labia minora. “Minora” means smaller. These are thinner inner folds of tissue that protect the openings of the urethra and vagina. They vary in size and shape between individuals. Variation is normal anatomy.

At the top of the vulva is the clitoris. The clitoris is a highly sensitive organ containing thousands of nerve endings. Its primary function is sexual pleasure. While not required for reproduction directly, it plays a role in sexual arousal, which can support reproductive behavior.

Below the clitoris is the urethral opening. The urethra is part of the urinary system, not the reproductive system. It carries urine from the bladder out of the body.

Below the urethral opening is the vaginal opening. This is the entrance to the vagina. It allows menstrual blood to exit, allows sexual intercourse, and serves as the passageway for childbirth.

Now we move internally.

The vagina is a muscular canal about 3–4 inches long at rest. It connects the external body to the cervix. It is elastic, meaning it can stretch significantly. It expands during childbirth and returns to its normal size afterward. Its lining maintains an acidic environment to help prevent infections.

At the top of the vagina is the cervix. The cervix is the lower, narrow portion of the uterus. It acts as a gate between the vagina and uterus. It has a small opening called the cervical os, meaning “opening of the cervix.”

The cervix produces cervical mucus. Mucus is a slippery fluid. During ovulation, the mucus becomes thinner and more slippery to allow sperm to travel upward. At other times, it thickens to block bacteria and sperm.

Above the cervix is the uterus. The uterus is a hollow, muscular organ shaped somewhat like an upside-down pear. It is where pregnancy develops.

The uterus has three layers. The outer layer is the perimetrium, a protective covering. The middle layer is the myometrium, which is thick smooth muscle responsible for contractions. The inner layer is the endometrium, which thickens each month to prepare for pregnancy.

If pregnancy does not occur, the endometrium sheds. That shedding is called menstruation, commonly known as a period.

Extending from the upper corners of the uterus are two fallopian tubes. These are narrow tubes that transport eggs from the ovaries to the uterus.

Fertilization usually occurs inside the fallopian tube. Fertilization is when a sperm cell joins with an egg cell to form a single cell called a zygote.

On either side of the uterus are the ovaries. The ovaries are small, almond-shaped organs. They have two major functions: producing eggs and producing hormones.

Females are born with all the immature eggs they will ever have. These immature eggs are stored inside tiny sacs called follicles. Each month, typically one follicle matures and releases an egg. This release is called ovulation.

Ovulation is controlled by hormones from the brain. The hypothalamus and pituitary gland release hormones that signal the ovaries. These hormones include FSH (follicle-stimulating hormone) and LH (luteinizing hormone).

FSH stimulates follicles to mature. LH triggers ovulation.

The ovaries produce two main hormones: estrogen and progesterone. Estrogen promotes development of female characteristics and stimulates the uterine lining to grow. Progesterone stabilizes the uterine lining and prepares it for implantation.

Now let's explain the menstrual cycle.

The menstrual cycle is typically about 28 days but can vary. It has four phases: menstrual, follicular, ovulation, and luteal.

The menstrual phase is when bleeding occurs. The uterine lining sheds because pregnancy did not happen.

The follicular phase overlaps with menstruation. During this phase, FSH stimulates follicles in the ovary to mature.

The ovulation phase occurs mid-cycle. LH surges, and an egg is released from the ovary.

The luteal phase follows ovulation. The empty follicle becomes a structure called the corpus luteum. The corpus luteum produces progesterone. If pregnancy does not occur, progesterone levels fall and menstruation begins again.

If fertilization occurs, the fertilized egg travels to the uterus and implants into the endometrium. Implantation means attaching and embedding into the uterine lining.

Once implantation happens, the body begins forming the placenta. The placenta is a temporary organ that connects mother and fetus, allowing oxygen and nutrients to pass through the bloodstream.

During pregnancy, the uterus expands dramatically. Its muscular wall stretches to accommodate a growing fetus. At childbirth, powerful contractions of the myometrium push the baby through the cervix and vagina.

After delivery, the uterus shrinks back toward its original size. This process is called involution.

Now we address menopause. Menopause is the permanent end of menstruation. It usually occurs between ages 45 and 55. The ovaries gradually stop releasing eggs and produce less estrogen and progesterone. Without these hormones cycling, the uterine lining no longer builds and sheds.

The female reproductive system is interconnected with the endocrine system, nervous system, and circulatory system. Hormonal balance is essential for proper function. Imbalances can lead to irregular cycles, infertility, or other health issues.

Common disorders include fibroids (benign muscle growths in the uterus), endometriosis (uterine-like tissue growing outside the uterus), PCOS (polycystic ovary syndrome) which disrupts ovulation, and cervical or uterine cancers.

At its core, the female reproductive system is a coordinated biological network designed to:

- Produce eggs
- Regulate reproductive hormones
- Allow fertilization
- Support pregnancy
- Enable childbirth

Every structure serves a purpose. The ovaries produce eggs and hormones. The fallopian tubes transport eggs. The uterus supports development. The cervix regulates entry and exit. The vagina provides passage.