Human Reproductive cycles

- Humans can reproduce all year round
- Human males can release sperm at any time
- Human females can have an egg fertilized for only a few days

Females have two monthly cycles: the ovarian and menstrual cycles
- They are controlled by hormones

The ovarian cycle controls the development of the egg in the ovary. The hypothalamus and pituitary gland release hormones that control the maturation and release of the egg.

The hypothalamus monitors the levels of estrogen and progesterone in the blood. When the hormone levels fall below a certain level the hypothalamus releases GRH (Gonadatropin-releasing hormone) this causes the pituitary gland to secrete FSH (follicle stimulating hormone) and LH (luteinizing hormone). **FSH stimulates the follicle (immature egg) to undergo meiosis** and produce the 3 polar bodies and 1 egg we already learned about.

FSH causes the ovary to release estrogen.

As the levels of estrogen rises it causes the hypothalamus to release even more GRH stimulating the pituitary gland to secrete even more LH. This rise in **LH causes the ovary to release the egg** into the fallopian tube.

When ovulation occurs the **egg starts to release estrogen and progesterone**. These hormones cause the body to **prepare for pregnancy, by thickening the blood vessels in the uterine lining** (endometrium).

If there are sperm present in the fallopian tube and they reach the egg they may fuse together to form a zygote.

> **If the zygote implants itself in the uterine lining and starts to release hCG** (human chorionic gonadatropin) that stimulates the continued release of estrogen and progesterone, **keeping the uterine lining plump and nutrient rich**. After the placenta has formed (connects the embryo to the mother's blood supply) the levels of hCG drop off. Pregnancy tests work by detecting the presence of hCG.

If the levels of hormones are not right the implantation of the embryo will not take place, or an implanted embryo will spontaneously abort (miscarriage)

> If the egg is not fertilized it does not release hCG and the hypothalamus causes the pituitary gland to stop producing FSH and LH. This curbs the production of estrogen and progesterone and results in the disintegration of the endometrium. The endometrium sloughs off and exits the body through the vagina (menstrual flow)

The menstrual cycle begins on the first day of menstrual flow. The endometrium then steadily grows thicker over the next 28 days or so. If no embryo implants itself then the lining is shed and the process starts again.