Puberty and Menstrual cycle

Puberty

- Puberty is the stage in life when a child's body develops into an adult's body. The changes take place gradually, usually between the ages of 10 and 16.
- During puberty, reproductive hormones cause secondary sex characteristics to develop:

  - Testosterone - produced by the testes - is the main male reproductive hormone and it stimulates sperm production.
  - Oestrogen - produced by the ovaries - is the main female reproductive hormone. At puberty, eggs begin to mature and one is released approximately every 28 days. This is called ovulation.

The Menstrual Cycle

- The menstrual cycle can be broken down into 4 stages:

Stage 1: Days 1-5 - Menstruation
Stage 2: Days 5-12 - Building uterus lining
Stage 3: Days 12-15 - Ovulation
Stage 4: Days 15-28 - Maintenance of uterus lining

Stage 1: Menstruation:

For the first 5 days all four hormones are at a pretty constant level as the uterus lining is shed - this is known as the period or menstruation.

Stage 2:Preparing for ovulation:

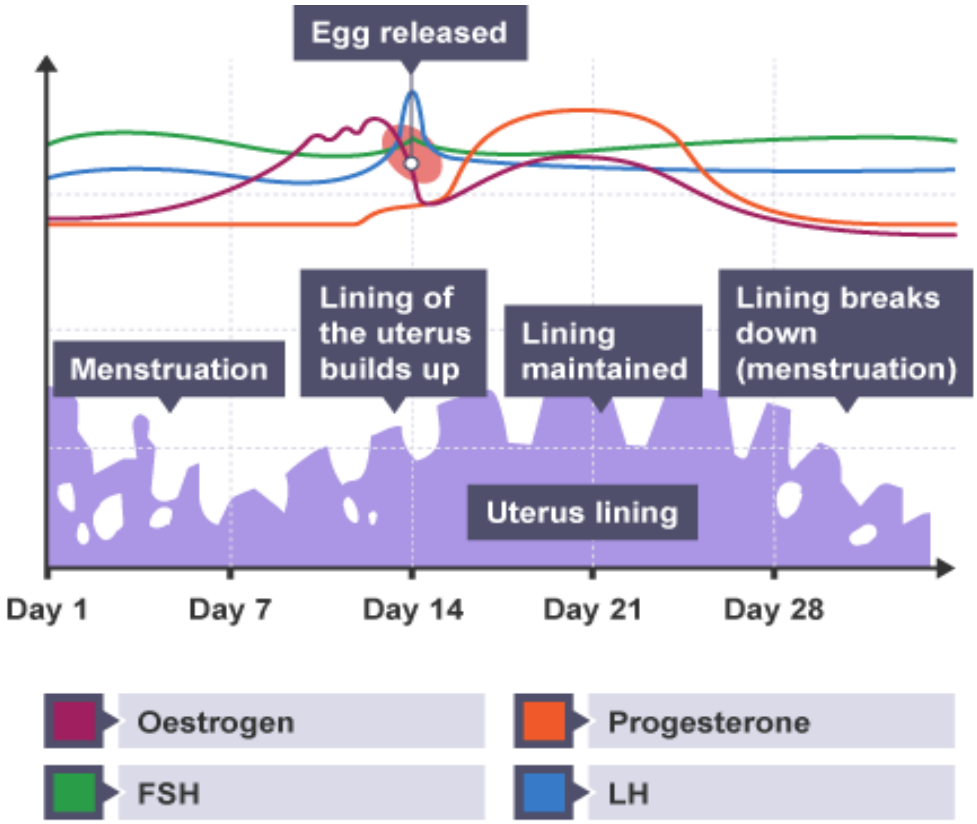
During this time, FSH levels increase causing an egg to mature in the ovary. Meanwhile, oestrogen begins to rise on approximately day 7, reaching a peak on day 12. This builds the uterus lining, meaning that if the egg is fertilised it can be embedded in the uterus

Stage 3:Ovulation:

As oestrogen begins to fall on day 12, the next stage of the cycle starts. FSH and LH begin to sharply rise, because they are no longer inhibited by oestrogen, peaking on day 14, before sharply dropping again on day 15. It is this rise in LH which causes the egg to be released.

Stage 4: Maintenance of uterus lining:

After the egg is released, LH and FSH fall back to their original levels - oestrogen level has fallen back to its original level. Oestrogen level gradually rise again when progesterone level increases. They both maintain the uterus lining at the day 21 until day 28. The spongy lining starts to break down and the whole cycle start again.



Hormones that control menstrual cycle

- There are four hormones produced constantly, which control the menstrual cycle.
- These hormones are not produces the same amount all the time, at some points in the cycle some will increase in level, while others will drop.

1. Oestrogen
2. Progesterone
3. Follicle stimulating hormones (FSH)
4. Luteinising hormone (LH)

1. Oestrogen

Oestrogen causes the development of secondary sexual characteristics.It also has a key role in the menstrual cycle.

Effect: Oestrogen thickens, repairs and maintains the uterus lining. It also inhibits the release of LH and FSH.

Where is it produced: In the ovaries.

2. Progesterone

Effect: Progesterone maintains the uterus lining so that if the egg is fertilised it can embed in the uterus lining.

Where is it produced: In the ovaries.

3. Follicle Stimulating Hormone (FSH)

Effect: FSH causes the egg to mature in the ovary. It also stimulates the ovaries to release oestrogen.

Where it is produced: In the pituitary gland.

4. Luteinising Hormone (LH)

Effect: LH stimulates the release of the egg.

Where it is produced: In the pituitary gland.

Hormone	Source	Effects
Oestrogen	Ovaries	Development of secondary sexual characteristics Repairs, maintains & thickens uterus lining Inhibits release of LH & FSH
Progesterone	Ovaries	Maintains uterus lining
Follicle Stimulating Hormone	Pituitary Gland	Causes egg to mature Stimulates ovaries to release oestrogen
Luteinising Hormone	Pituitary Gland	Causes egg to be released