Hormones and Fertility
Hormones and Fertility

- What are hormones?
- The menstrual cycle
- Contraception
- Treating infertility
- Summary activities
Hormones are chemical messengers

**Hormones** are chemicals that act like messengers. They are secreted by endocrine **glands** and carried in the blood from organ to organ. This makes hormonal messages slower than nervous ones.

Cells in different parts of the body recognize the hormones and respond by making changes.

The **pituitary gland** is a pea-sized gland at the base of the brain. It releases many hormones and controls several other glands in the body.
Sex hormones

What parts of the body produce sex hormones?

Press on a body part label to find out more about the hormones that control fertility.

- ovaries (female)
- testes (male)
- pituitary gland
True or false?

Are these statements about hormones true or false?

1. Hormones are chemical messengers used to regulate cells and organs.  
2. Each hormone only affects one type of cell.  
3. Hormones control fertility and the menstrual cycle.  
4. Hormones are secreted by glands, and travel in the bloodstream.  
5. Men and women produce the same sex hormones.
Hormones and Fertility

- What are hormones?
- The menstrual cycle
- Contraception
- Treating infertility
- Summary activities
The menstrual cycle

What happens during the menstrual cycle?

Press "start" to find out.
Can you remember the stages of the menstrual cycle? Drag these sentences into the correct order. The first stage has been completed for you.

Press "start" to begin.

FSH stimulates egg maturation and oestrogen release.
Inside the ovary

What happens in the ovary during the menstrual cycle?

What happens in the ovary during the menstrual cycle?

Press "start" to take a closer look.

start
During the menstrual cycle, the uterus lining becomes thicker with blood vessels and more stable. Why is this important?

A fertilized egg will bury itself (implant) in the uterus lining. The egg needs a plentiful supply of oxygen and nutrients to develop.
Hormone levels during the menstrual cycle

Press each button to see a graph showing hormone levels during the menstrual cycle.

Press "start" to begin.
Menstrual hormones

Which hormone does each statement relate to?

Press "start" to begin.

start
Summary of fertility hormones

What hormones are involved in the menstrual cycle?

Click the brain to start.
Pregnancy

If the egg is fertilized, the uterus lining must not break down otherwise the fertilized egg will not develop.

**Corpus luteum:**
- Continues to produce progesterone and oestrogen.

**Progesterone memo**
- **To:** uterus
- **From:** corpus luteum
- Maintain uterus lining.

**Oestrogen memo**
- **To:** pituitary
- **From:** corpus luteum
- Don’t send FSH.

**Egg fertilized:**
- Uterus lining maintained, egg implanted.
Hormones and Fertility

- What are hormones?
- The menstrual cycle
  - Contraception
  - Treating infertility
- Summary activities
Contraception

Couples can use **contraceptives** to prevent the woman from becoming pregnant. Contraceptive measures include:

- barrier methods, such as condoms
- chemicals such as pills and injections

These can be quickly and easily reversed if the couple decide that they want to have children.

Surgery can also be used to make people permanently unable to have children. This is called **sterilization**.
How does the contraceptive pill work?

Contraceptive pills contain progesterone and need to be taken every day. How do they work?

Contraceptive pills mimic pregnancy, which means that the ovaries do not produce any eggs.

progesterone memo

To: pituitary
From: contraceptive pill
Stop sending FSH.

no FSH received:
no egg maturing
Early contraceptive pills

The contraceptive pill first became available in the 1950s.

Early contraceptive pills contained large amounts of progesterone and oestrogen.

This made them very good at preventing pregnancy, but also caused side effects such as mood swings, weight gain, headaches and tender breasts.

Contraceptive pills today are mainly progesterone, with little or no oestrogen. This is because doctors have realised this can prevent pregnancy without causing so many side effects.
Complete the sentences – fertility

**What are the missing words about fertility?**

1. Hormones from the pituitary and [blue] prepare the uterus for when an egg is released.

2. FSH causes eggs to mature, and is used in [blue] drugs.

3. The ovary releases [blue] which causes the lining to thicken.

4. LH stimulates egg release.

5. The corpus luteum produces [blue], which
Hormones and Fertility

- What are hormones?
- The menstrual cycle
- Contraception
- Treating infertility
- Summary activities
**What is infertility?**

Some couples are unable to conceive naturally. This is called **infertility**. What might be some of the causes of infertility?

<table>
<thead>
<tr>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>ovaries not releasing eggs</td>
<td>low sperm count</td>
</tr>
<tr>
<td>blocked fallopian tubes</td>
<td>poor quality sperm</td>
</tr>
<tr>
<td>blocked fallopian tubes (carry eggs from</td>
<td></td>
</tr>
<tr>
<td>the ovaries to the uterus)</td>
<td></td>
</tr>
<tr>
<td>problems with the uterus lining</td>
<td>blocked or damaged tubes that carry</td>
</tr>
<tr>
<td>hormonal problems</td>
<td>sperm</td>
</tr>
<tr>
<td></td>
<td>hormonal problems</td>
</tr>
</tbody>
</table>
How do fertility drugs work?

Fertility drugs are used to help women who do not produce an egg every month.

There are many different types of fertility drug but they all work by tricking the body into producing more eggs.

Some fertility drugs contain FSH. How do these work?

FSH memo

To: ovary
From: fertility drug
Get another egg ready and start making oestrogen.
What is IVF?

Sometimes, women have problems becoming pregnant even after using fertility drugs. When this happens, they can try *in vitro* fertilization, or IVF.

*In vitro* is Latin for ‘in glass’ so IVF means fertilization that takes place outside of the body and in laboratory glassware.

Babies born by IVF are sometimes called ‘test-tube’ babies. However, fertilization doesn’t take place in test-tubes but in a special dish.
How does IVF work?

Who can have IVF?
IVF is suitable for cases of unexplained infertility, blocked fallopian tubes and for older women.

Press "start" to find out how it works.
IVF and multiple births

Why does IVF increase the chances of multiple births?
Multiple births are more likely with IVF because more than one embryo is implanted into the uterus to increase the chance of a successful pregnancy.

Around 20% of IVF births are twins (compared with 1.25% of normal births) and 0.5% are triplets. The number of triplets was much higher 15–20 years ago because more embryos were implanted at the same time.

Multiple births are the biggest risk of IVF for both the mother and babies. They are more likely to result in premature births, miscarriages and long-term disability and ill health.
The cost of IVF

IVF is expensive – around £3,000 for the treatment itself, plus extra costs for consultation with doctors, drugs and tests. Freezing embryos for further attempts at IVF also costs extra.

Couples may need to try IVF several times (each attempt is called a cycle) before it is successful.

About 25% of IVF treatments are funded by the NHS. Women aged between 23 and 39 years can get one free IVF cycle on the NHS.
Should IVF treatment be free?

Do you agree or disagree with these opinions on whether the NHS should pay for IVF?

How much do you agree with these statements whether the NHS should pay for IVF treatment? Discuss each statement as a class, then drag the marker to the appropriate place on the slider scale.

Press "start" to begin.
Hormones and Fertility

- What are hormones?
- The menstrual cycle
- Contraception
- Treating infertility
- Summary activities
Glossary of keywords: hormones and fertility

**contraceptive** – A measure taken to stop a woman from becoming pregnant. Common contraceptive methods include condoms and the contraceptive pill.

**corpus luteum** – A 'yellow body' inside an **ovary** that is formed from an egg follicle once it has emptied. The corpus luteum produces **progesterone** and **oestrogen**.
Multiple-choice quiz

Will you do ovary well in this quiz? See how much you know about hormones and fertility.

Press "start" to begin.