THE RAINBOW FLAG AWARD CLASSROOM

Helping you to deliver an LGBT+ INCLUSIVE CURRICULUM

Subject: Science

Key Stage: 4

REPRODUCTIVE HORMONES

Original 'The Classroom' concept developed by Schools OUT UK

classroom
We embrace diversity and bring OUT the best in everyone

Schools OUT UK
The LGBT Education Charity
Charitable Incorporated Organisation Number1156352

Title: Reproductive Hormones

Curriculum links:
This resource links to '***Hormones*** in human reproduction' which can be found under 'Coordination and Control' of the ***Science programmes of study: key stage 4***, National Curriculum of England.

Relevant to the KS4 science courses outlined by ***AQA, OCR*** and ***Edexcel.***

LIs:
State the changes that occur during puberty.
Describe the function of the different reproductive hormones.
Apply your understanding of hormones to the pregnancy of the Seahorse Dad.
Debate the accessibility of hormones on the NHS.

Instructions for use:

Most tasks have been differentiated to three levels with the orange boxed task being the easier of the three and the grey being the more challenging.

For mixed ability classes we suggest keeping all tasks and directing your students towards their appropriate level. For setted classes you can delete the tasks you feel are not appropriate.

Throughout we have added questions in orange that can be used to prompt conversation, draw further information from your students and deepen their understanding.

Please feel free to edit the order of the slides so this lesson is consistent with your approach.

Additional information can be found in the notes section of each slide.

STARTER

What changes usually happen to bodies during puberty?

Why do these changes occur?

How can these changes be beneficial?

Suggest why puberty may be a difficult part of some people's lives.

Think socially, mentally and economically.

Progress...

STARTER

Bodies assigned male at birth	Bodies assigned female at birth
• The penis, testes and scrotum will increase in size • Pubic hair will grow • Increase in height • Hair will grow under the arms, on the face and on other parts of the body • The testes will begin to produce sperm • The larynx (Adam's apple) becomes more obvious • The voice becomes deeper	• Breast development • Increase in height • Hips widen • Pubic hair will grow • Underarm hair will grow • Periods/menstruation starts

ASK: Do only physical changes occur during puberty?

Progress...

STARTER

The hormones (chemical messengers) being produced by your body are responsible for these changes.

During puberty a person's reproductive organs mature. The testes and ovaries will begin to produce gametes (sex cells) meaning, in the future, many people can reproduce and have biological children.

ASK: Can you name any of the hormones involved?

Things to think about:

How might trans and non-binary people feel during puberty?

Should sanitary towels and tampons be free?

How might people's self-confidence change during this time?

ASK: Why have Always removed the gender symbol for women from their sanitary product packaging?

LEARNING INTENTIONS

Title: Reproductive Hormones **Date: Monday, 05 February 2024**

States the changes that occur during puberty

Describe the function of the different reproductive hormones

Apply your understanding of hormones to the pregnancy of the Seahorse Dad

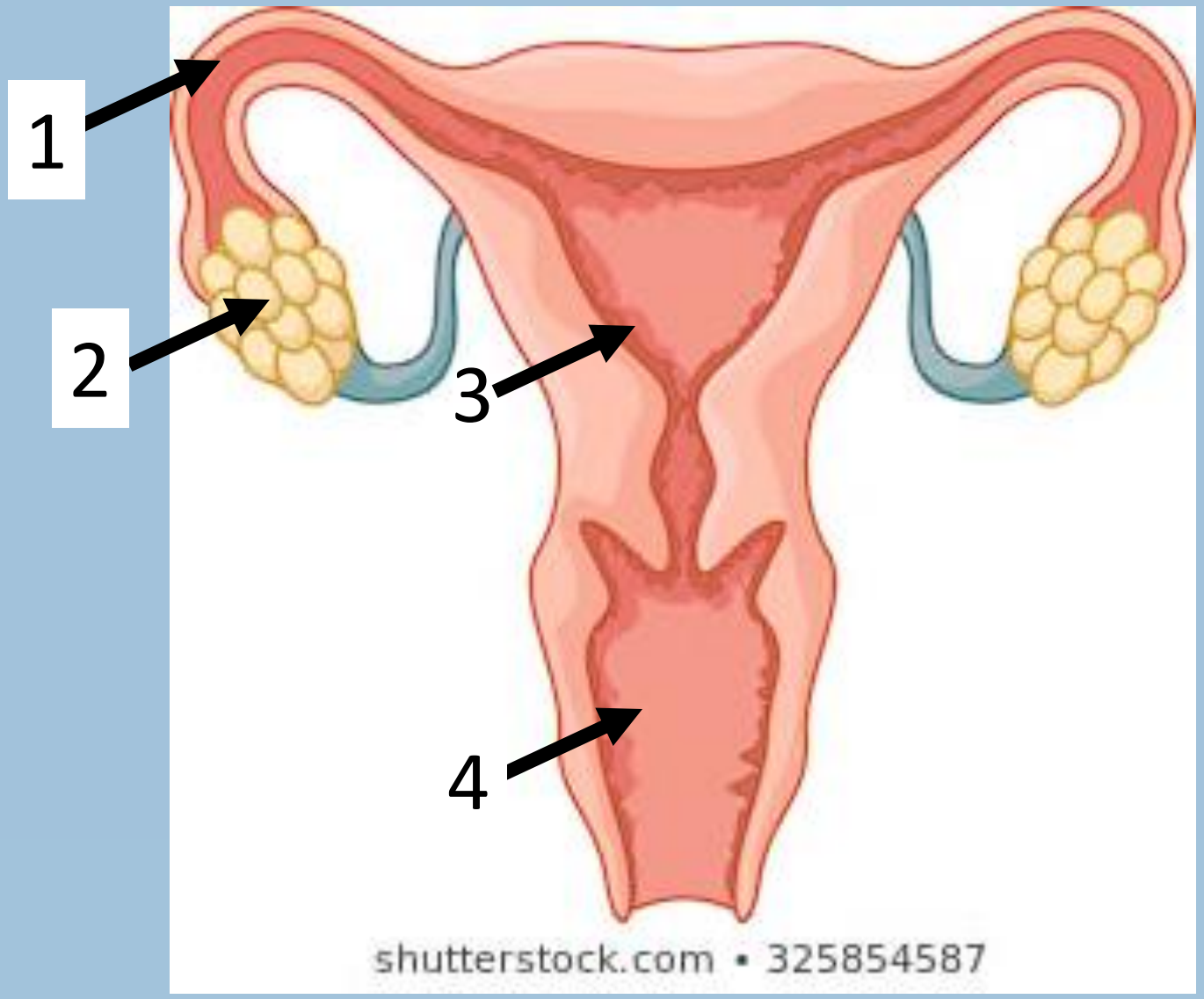
Debate the accessibility of hormones on the NHS

BIG PICTURE

Seahorse: The Dad that Gave Birth

How was this possible?
Which hormones were involved?

NEW MATERIAL



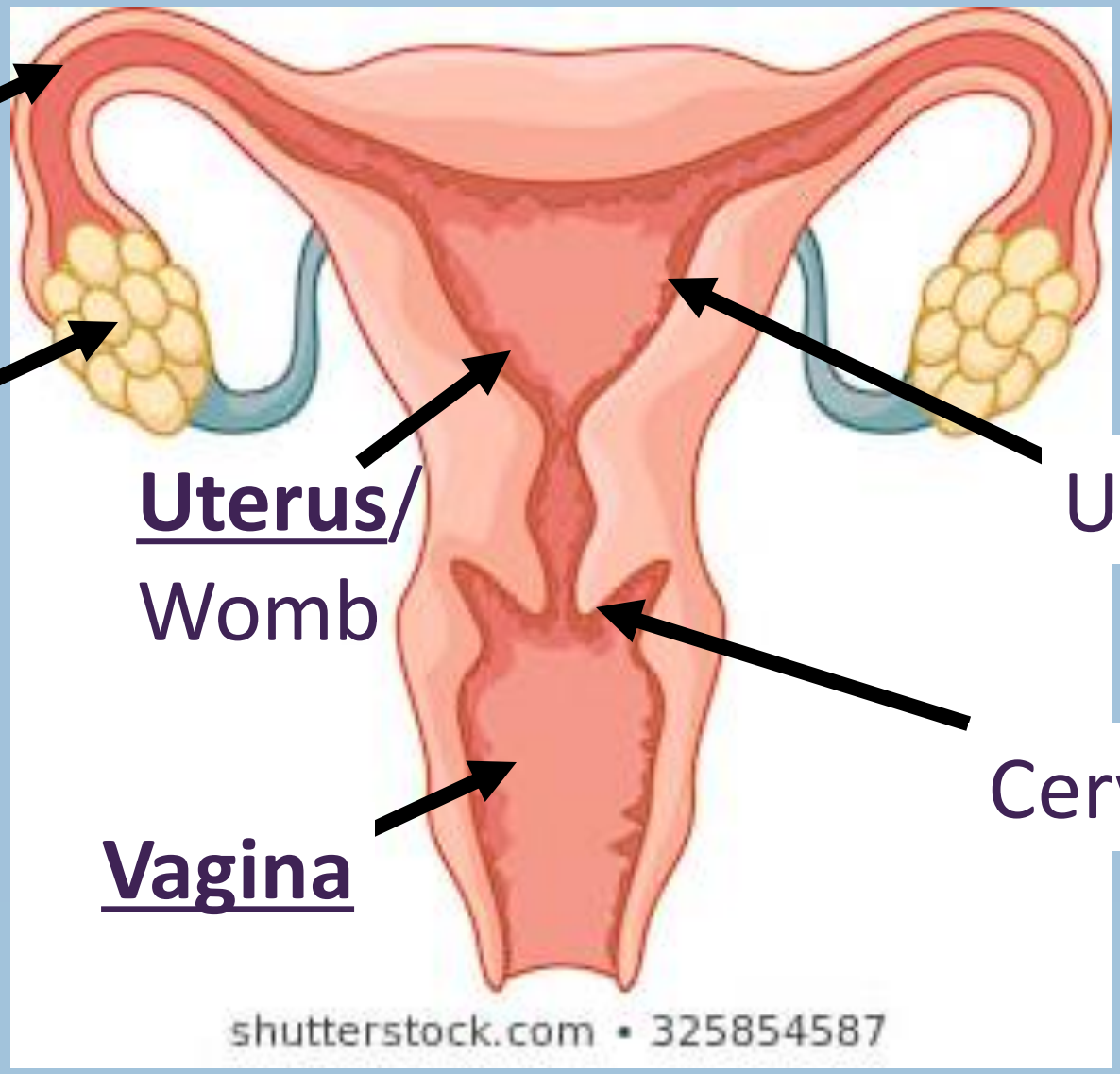
“Female” reproductive system

Identify the uterus, vagina, oviduct and ovary in the diagram

Extension:
Can you identify any of the other parts of the female reproductive system?

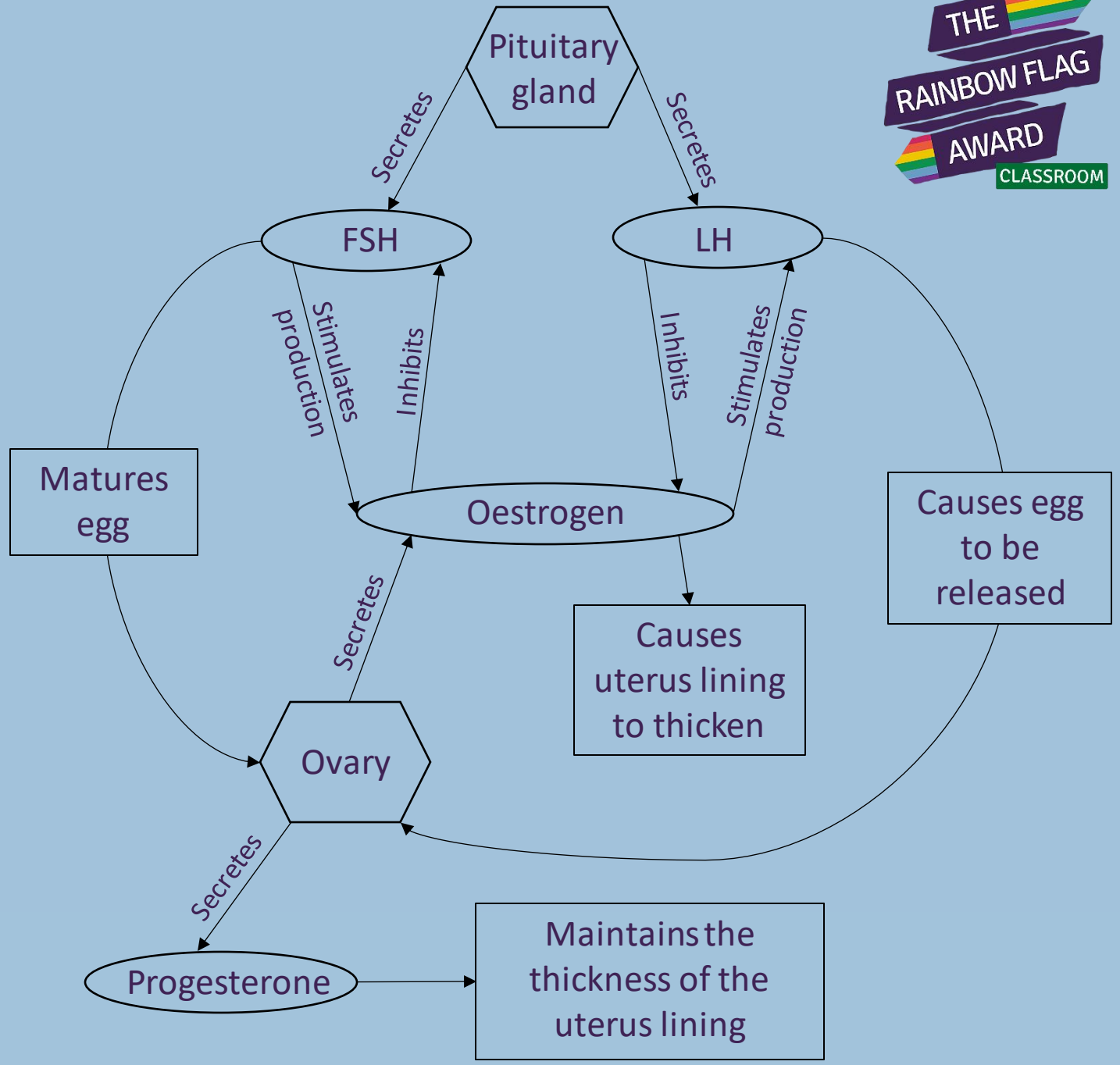
Progress...

NEW MATERIAL



NEW MATERIAL

Use the diagram to complete the table



Hormone	Secreted by	Function
		1. Stimulates the production of oestrogen 2. Causes an egg to mature in the ovary
	Pituitary gland	1. 2.
Oestrogen		1. 2. 3.
	Ovary	1.
Testosterone		1. Causes secondary male sex characteristics

Progress...

Hormone	Secreted by	Function
FSH	**Pituitary gland**	1. Stimulates the production of oestrogen 2. Causes an egg to mature in the ovary
LH	Pituitary gland	**1. Inhibits the production of oestrogen** **2. Causes an egg to be released from the ovary**
Oestrogen	**Ovaries**	**1. Inhibits the production of FSH** **2. Stimulates the production of LH** **3. Causes the uterus lining to thicken**
Progesterone	Ovaries	**1. Maintains the thickness of the uterus lining**
Testosterone	Testes	1. Causes secondary male sex characteristics

REVIEW AND REFLECT

Mini quiz

Which gland secretes testosterone?

1	Pituitary
2	Testes
3	Ovaries

REVIEW AND REFLECT

Mini quiz

Which gland secretes testosterone?

1	Pituitary
2	Testes
3	Ovaries

REVIEW AND REFLECT

Mini quiz

FSH causes…

1	An egg to mature
2	The uterus lining to thicken
3	An egg to be released

REVIEW AND REFLECT

Mini quiz

FSH causes…

1	An egg to mature
2	The uterus lining to thicken
3	An egg to be released

REVIEW AND REFLECT

Mini quiz

Which gland secretes LH?

1	Ovaries
2	Pituitary
3	Uterus

REVIEW AND REFLECT

Mini quiz

Which gland secretes LH?

1	Ovaries
2	Pituitary
3	Uterus

REVIEW AND REFLECT

Mini quiz

Which hormone causes an egg to be released from the ovary?

1	FSH
2	Oestrogen
3	LH

REVIEW AND REFLECT

Mini quiz

Which hormone causes an egg to be released from the ovary?

1	FSH
2	Oestrogen
3	LH

DEEPEN YOUR UNDERSTANDING

Freddy, a trans man, knew he wanted to have a child. He had taken testosterone for many years and had female reproductive organs:

Watch: https://www.youtube.com/watch?v=0MUtJJDaDPk

Freddy took testosterone before beginning his journey to parenthood.

Describe the function of testosterone and the effect it had on his body.

Suggest which hormones he may have taken to help get pregnant and carry his child.

Suggest the impact this journey had on Freddy's health.

Progress...

DEEPEN YOUR UNDERSTANDING

Testosterone causes the secondary sex characteristics: facial hair, voice deepening, larynx becoming more noticeable, etc.

FSH to mature his eggs and LH to release his eggs.

The more mature eggs released, the greater chance he had of getting pregnant.

Freddy's body will have changed, some of his friends and family may not have agreed with his decision and members of the public may have stared/commented as seeing a pregnant man is unusual. All of these events could have negatively impacted Freddy's mental health.

Should hormone treatment be free on the NHS?

CHALLENGE

You are an endocrinologist. You have been awarded £1 million to provide free hormone therapy to people needing IVF, those seeking relief from the symptoms of menopause, and those transitioning. How will you split the funding? Justify your answer.

Cost of hormones

Some hormones are available on prescription on the NHS. A prescription costs around £9, but many drugs are heavily funded by the NHS so the cost can be much higher.

During IVF a person may have to have progesterone injections. A vile of the drug costs around £8. A person may have to take between 20 to 50.

Hormones and IVF

In 2016 over 20,000 children were born through IVF. Many people choose IVF after they have struggled to have a baby for over two years.

Hormones are taken during the treatment to increase the chances of a successful pregnancy.

Hormones and menopause

Menopause can cause night sweats, difficulty sleeping, headaches, memory problems, mood changes, aches and pains.

Oestrogen can be taken to reduce the symptoms of menopause.

Risks of taking hormones

Symptoms can include: nausea, constipation, diarrhoea, hair thinning, weight gain, blood clots, and increased chances of some cancers.

Hormones and gender identity

Trans people have a gender identity that differs from the sex they were assigned at birth. If wanted, medical assistance and the use of hormones can help to align their secondary sex characteristics with their gender identity.

Hormones can help a trans person, if wanted, to develop physical characteristics that are more typically

Hormones and animal rights

To better understand the role of hormones in our body we have used animals in testing. We share some hormonal similarities with dogs and calves so can use their bodies in research.

Any new drug that is developed will be tested on animals before being tested on humans and licensed for sale.

REVIEW AND REFLECT

What am I?

A.

What am I?

I am secreted by the ovaries. I stimulate the lining of the uterus wall to build up ready for pregnancy. I also inhibit the production of more of the hormone FSH.

B.

What am I?

I am secreted by the pituitary gland. I am responsible for the maturation of an egg. I stimulate the production of oestrogen.

C.

What am I?

I am secreted by the pituitary gland. My release is stimulated by the production of oestrogen. I cause the release of a mature egg.

D.

What am I?

I am secreted by the ovaries after the release of an egg. My role is to maintain the thick uterus lining in case the egg is fertilised and needs to be implanted into the lining. My levels stay high throughout pregnancy.

Progress...

REVIEW AND REFLECT

What am I?

A.

What am I?

I am secreted by the ovaries. I stimulate the lining of the uterus wall to build up ready for pregnancy. I also inhibit the production of more of the hormone FSH.

OESTROGEN

B.

What am I?

I am secreted by the pituitary gland. I am responsible for the maturation of an egg. I stimulate the production of oestrogen.

FSH

C.

What am I?

I am secreted by the pituitary gland. My release is stimulated by the production of oestrogen. I cause the release of a mature egg.

LH

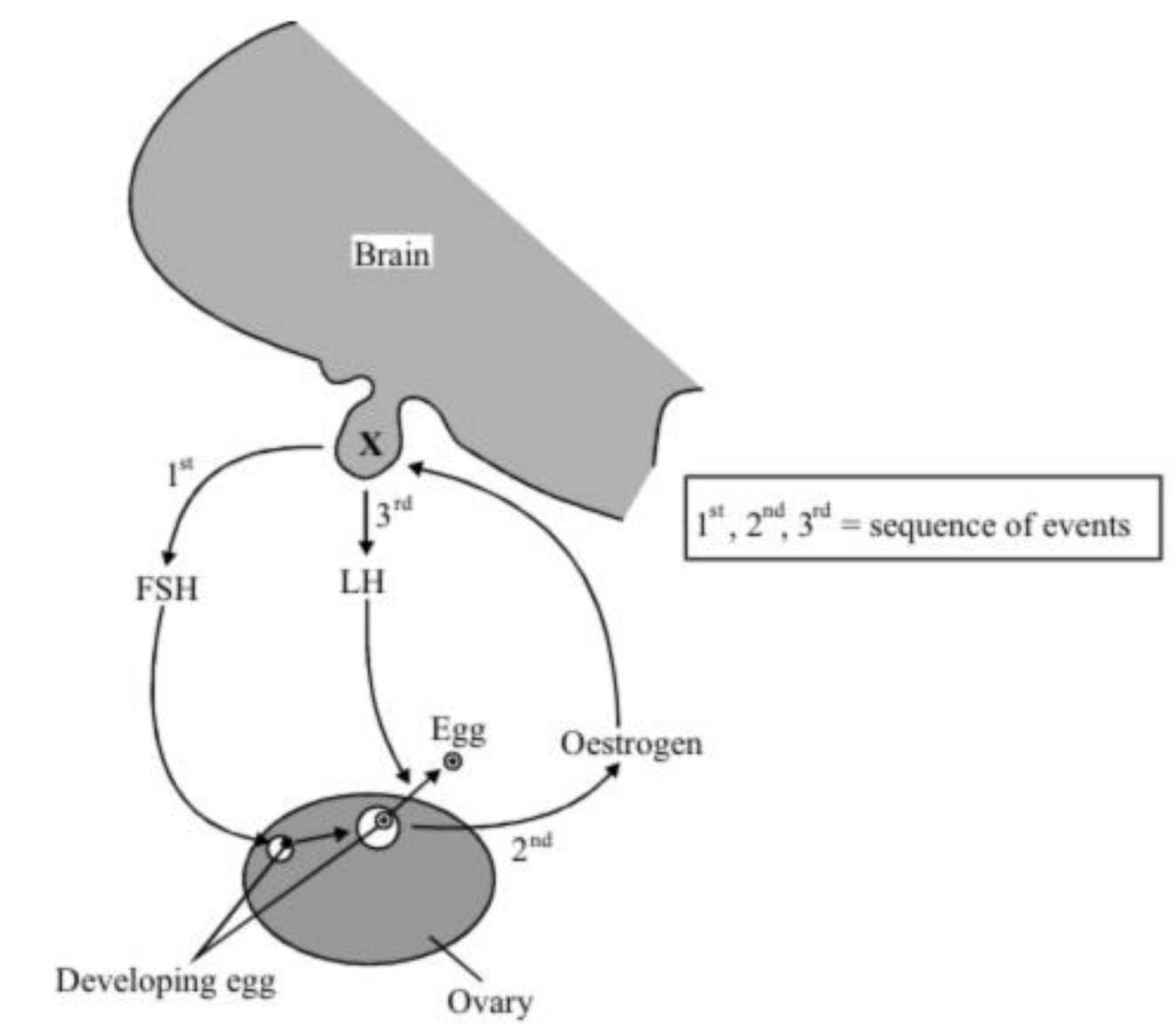
D.

What am I?

I am secreted by the ovaries after the release of an egg. My role is to maintain the thick uterus lining in case the egg is fertilised and needs to be implanted into the lining. My levels stay high throughout pregnancy.

PROGESTERONE

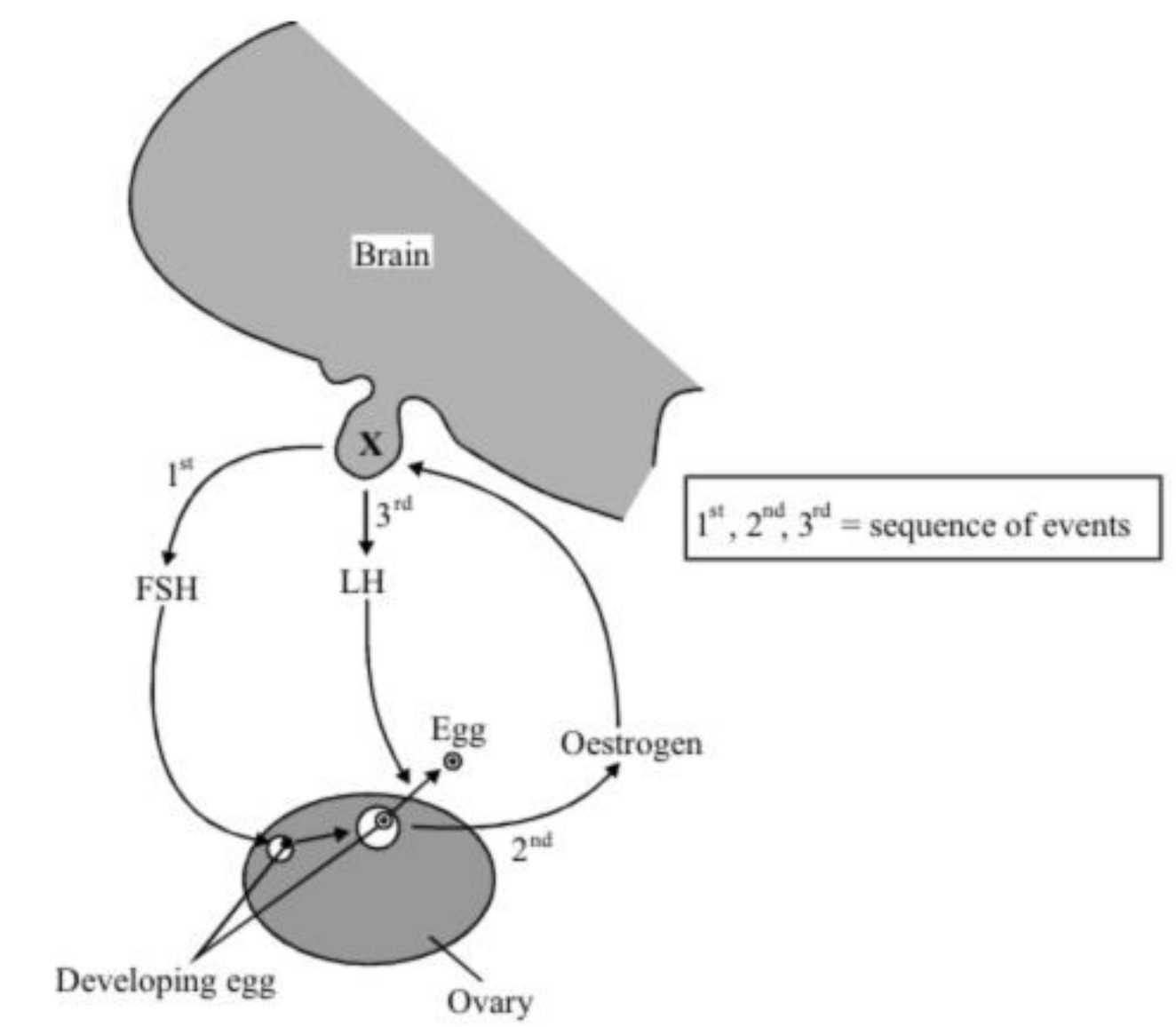
REVIEW AND REFLECT



Using the image, describe how the hormones FSH, LH and oestrogen are involved in the menstrual cycle (3)

Progress...

REVIEW AND REFLECT



FSH stimulates oestrogen production/egg maturation/egg ripening (1)
Ignore production/development of egg

Oestrogen inhibits FSH/stimulates LH/causes the build up of the uterus lining (1)

LH stimulates egg/ovum release/causes ovulation. LH inhibits oestrogen (1)

FINAL THOUGHTS

How could we change the language we use surrounding puberty and sex hormones to be more inclusive of others?