

PURPOSE

To expand students' knowledge of the process of ovulation and the production of hormones. To introduce the concept that ovulation is a sign of health.

LEARNING OBJECTIVES

By the end of the lesson students will be able to:

1. Understand the basic process of ovulation that takes place in the ovary.
2. Know that the ovary produces the hormones estrogen and progesterone.

MATERIALS & RESOURCES

- **Lesson 2 teenFEMM** powerpoint
- **Two Truths and A Lie Activity Cards: What Am I?** (preparation needed)+ Teachers' Answer Key
- **Worksheet: Drawing Anatomy** (preparation needed)

VOCABULARY

- **Female Reproductive System:** The group of organs in the lower belly/pelvis that work together to mature an egg (the female cell of reproduction) and to develop a growing baby.
- **Egg:** The female cell of reproduction, stored in the ovaries.
- **Follicle:** The tissue that surrounds an egg as it matures in the ovary.
- **Ovulation:** When a mature egg is released from the ovary.
- **Hormones:** Chemical signals that travel in the bloodstream, directing the activity of every system. The body has many different hormones, produced in different parts of the body.
- **Estrogen** and **Progesterone** are the 2 main female hormones. They are produced in the ovaries.

- **Estrogen:** The hormone produced by the growing egg/follicle. After the egg is released from the ovary, the empty follicle changes (recycles) into a new tissue.
- **Progesterone:** The hormone produced, after ovulation, by the changed follicle/new tissue.

PREPARATION

- ☐ Print and cut out the **Two Truths and a Lie Activity Cards**.
- ☐ Print the **Drawing Anatomy Worksheet** for each student.

PROCEDURE

Step 1 (5 minutes): Two Truths and A Lie Activity

Hand out the cards for students to read to the class. The rest of the students will guess: first, which body system or anatomy part the statements are talking about, and second, which of the three statements is false.

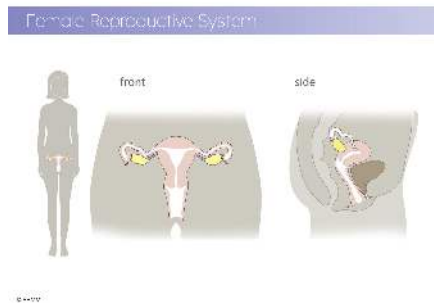
*Check answers using the **Teachers' Answer Key** provided in the materials.*

Step 2 (5 minutes): Review the anatomy parts and how they all work together.

Understand Your Health

To understand your health,
it's important to know the basic parts
of your reproductive system.

Last class, we went over the female reproductive anatomy. Let's review these important parts of the body!



The **ovaries** are the two small organs on either side of the uterus that contain a woman's eggs. They are shown here in yellow. They are each about the size of an almond. They are small but mighty! In the ovary, an egg (a cell about the size of a pinhead) develops and is released from the ovary into the fallopian tube. This process is called ovulation. This process is not just necessary for reproduction, but it's also a sign of hormonal health. We'll learn about this in the coming lessons.

The **fallopian tubes** are the two thin tubes attached to either side of the uterus. *Fun fact: as we learned in the previous activity, the fallopian tubes are about the size of a piece of spaghetti!*

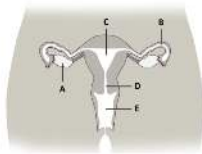
The **uterus**, also called the womb, is where all of us begin and grow. It's an organ that can expand for pregnancy from the size of a lemon to the size of a watermelon. The lining of the uterus thickens during each cycle to prepare the body so that someday it can support a pregnancy. Without a pregnancy, the lining sheds in menstruation. This is what is known as a "period." This process is normal and healthy for your body.

The **cervix** is the lower portion of the uterus, a narrow canal opening into the vagina.

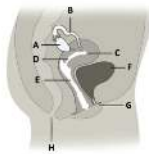
The **vagina** is the canal that connects the uterus to the outside of the body. It's the entrance to the reproductive organs and exit for menstrual bleeding and the delivery of a baby.

Have students identify the labeled anatomy on the Female Anatomy Quiz slide, by answering aloud in class. Then show the Answers slide once students have had a chance to respond.

Female Anatomy Quiz

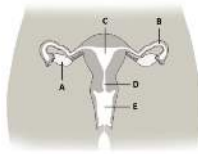


____ Cervix
____ Ovary
____ Bladder
____ Vagina
____ Fallopian Tube
____ Uterus

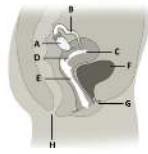


____ Anus
____ Urethra

Female Anatomy Quiz Answers



D Cervix
A Ovary
F Bladder

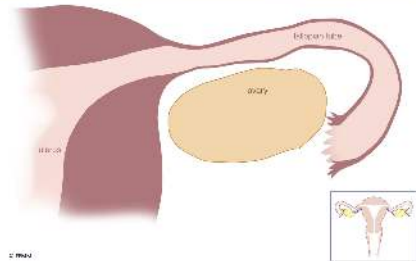


E Vagina
B Fallopian Tube
C Uterus
H Anus
G Urethra

Step 3 (15 minutes): What happens in the ovary?

All of the activity of the female reproductive system begins in the ovary.

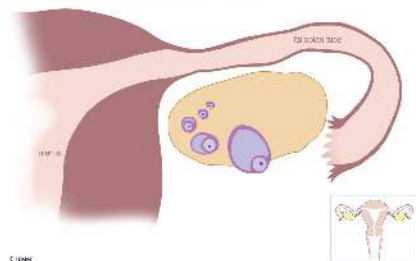
What happens in the ovary?



The ovary is responsible for developing and releasing an egg. An egg is the female cell of reproduction. An egg is no bigger than the point of a pin, but every egg in your ovary contains all of your DNA! That's a lot of amazing information in one tiny egg!

As of the onset of puberty, **every month** an egg starts to grow and develop in the ovary.

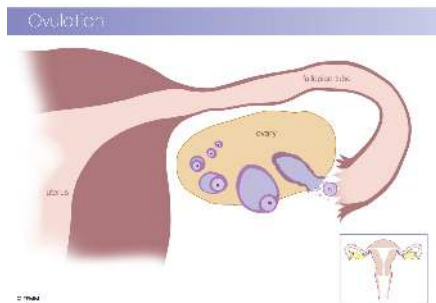
Ovulation



This egg is surrounded by a special, protective tissue, called a follicle (*point out the small egg and the follicle, in the image*). The egg in the follicle grows together (*point out the egg and follicle mid-size*).

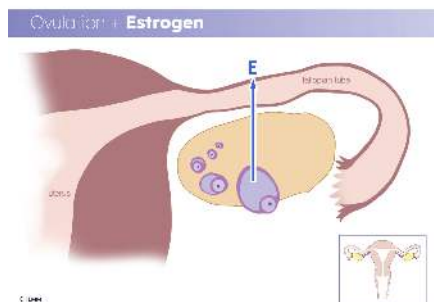
When big enough, the egg is released from its follicle (*point out the mature egg being*

released from the follicle). This is called **ovulation**.



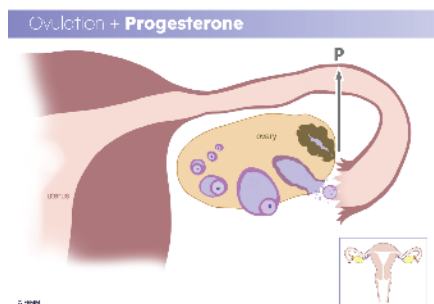
Ovulation takes place in the ovary every month. Something else happens ...

The process of ovulation is what makes the 2 main female hormones: estrogen and progesterone.



The growing egg and follicle produce the hormone estrogen. The bigger and more mature the egg and follicle get, the more estrogen they make (*point out the growing egg/follicle*). This seemingly small event in the ovary releases estrogen to every part of your body: brain, bones, skin, etc!

When the egg is ready, it is released from its follicle -- *this is called OVULATION (point out the empty follicle)* -- into the fallopian tube.



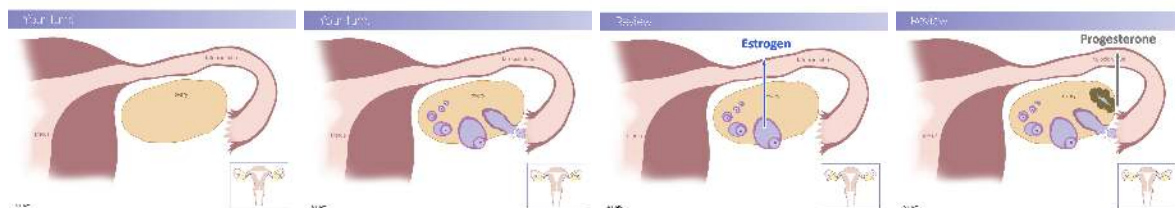
After ovulation, the empty follicle in the ovary is turned into a new tissue that now **makes the hormone progesterone**. This tissue is called the **corpus luteum**.

Fun fact: corpus is the Latin word for 'body' and luteum comes from the word 'lutum' which is a plant that was used to dye cloth yellow. Under the microscope the corpus luteum tissue is yellowish in color. Hence the name, "yellow body".

Step 4 (10 minutes): Drawing Anatomy Worksheet



Hand out the **Drawing Anatomy Worksheet** for students to complete. Give students a few minutes to complete their drawing and then click through the following four slides to illustrate the growth of the egg and follicle in the ovary and the estrogen and progesterone produced.



1. Now it's your turn to describe what happens in the ovary each month.

What happens to the egg? What happens to the follicle?

Have the students describe the ovulation cycle to the best of their ability. Other students can add or correct statements. Prompt what has not been addressed by the students.

2. What is OVULATION and where in the body does it happen?

Ovulation is the bursting of the mature egg from the follicle; it happens in the ovary.

3. What are the 2 main jobs of the ovary that happen together?

- a) Develop and ovulate an egg.
- b) Produce the 2 main female hormones.

4. What are 2 main female hormones made by the ovary?

Estrogen and Progesterone.

CONCLUSION

Amazing work today! You are becoming so informed about the science of your body! We need the right amounts of estrogen and progesterone in our bodies to be at our best, physically and mentally. Next class we'll learn more about our hormones and health.

REFERENCES

- Brown, J.B. (2011). Types of ovarian activity in women and their significance: the continuum (a reinterpretation of early findings), *Human Reproduction Update*, 17(2), 141-158. <https://10.1093/humupd/dmq040>
- Vigil, P., Lyon, C., Flores, B., Rioseco, H. & Serrano, F. (2017). Ovulation, a sign of health. *The Linacre Quarterly*, 84, 1-13. <https://10.1080/00243639.2017.1394053>

FEMM Teacher Training Course, Sessions 1 & 2