



THE PCOS MENSTRUAL CYCLE: UNDERSTANDING YOUR HORMONES AND OVULATION

Marc Kalan, MD
Pacific Fertility Center, Los
Angeles
drmarckalan@gmail.com
310. 209. 7700

A LITTLE ABOUT ME

Born in Chicago, grew up in Southern California (the valley)

College in Santa Barbara, med school in Chicago, Residency and Fellowship in Los Angeles (USC!!!!!!!)

I live in Agoura Hills, practice in Westwood, Encino and Bakersfield

I love to surf, I have 2 kids, 2 dogs and 1 wife

I recently built my first treehouse!

drmarckalan@gmail.com





PRACTICE PHILOSOPHY



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**Communication is the
most powerful tool in
medicine**

PRACTICE PHILOSOPHY

So Please Ask
Questions

????????????????



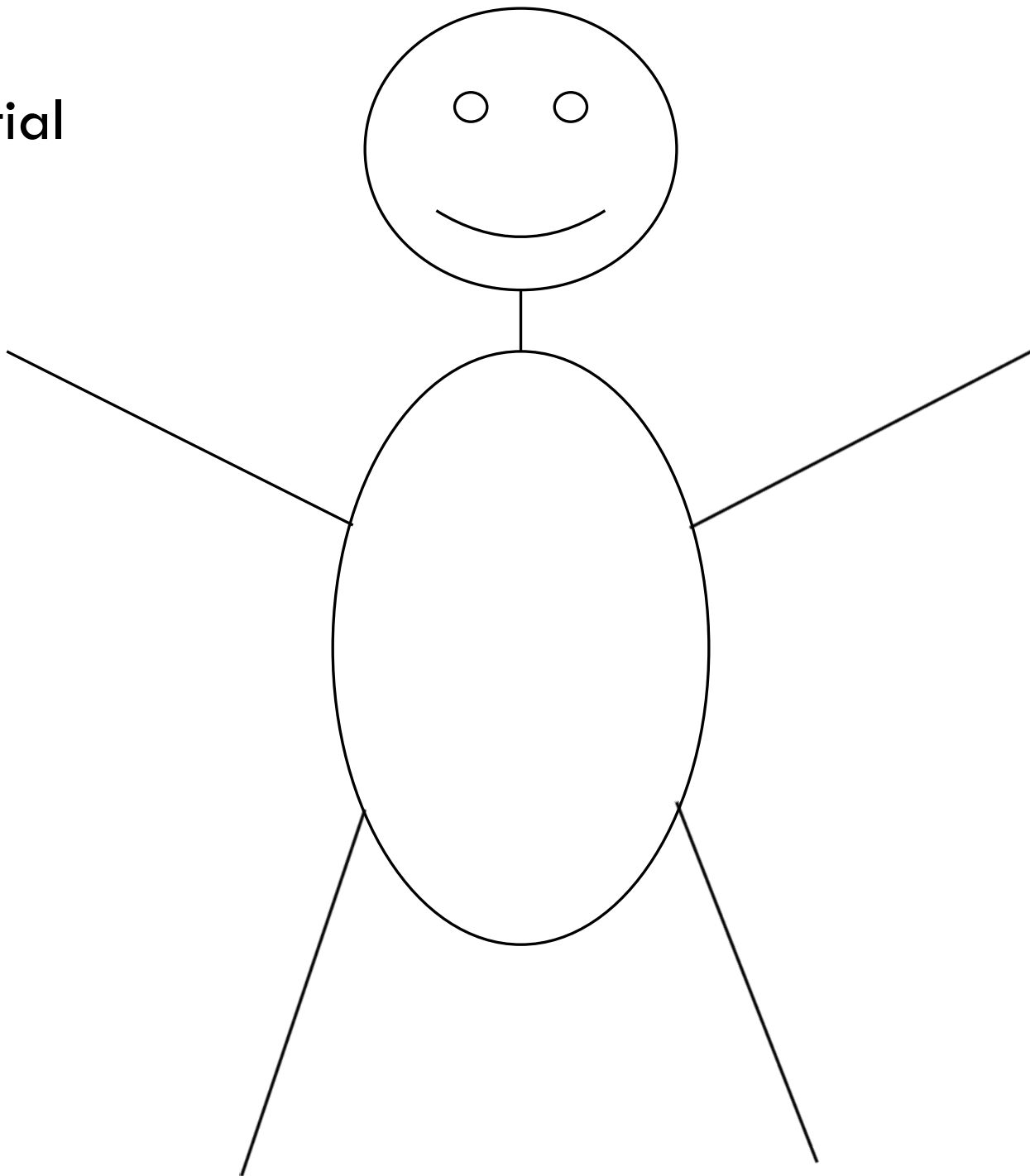
DISCUSSION OUTLINE

“Normal” menstrual cycle

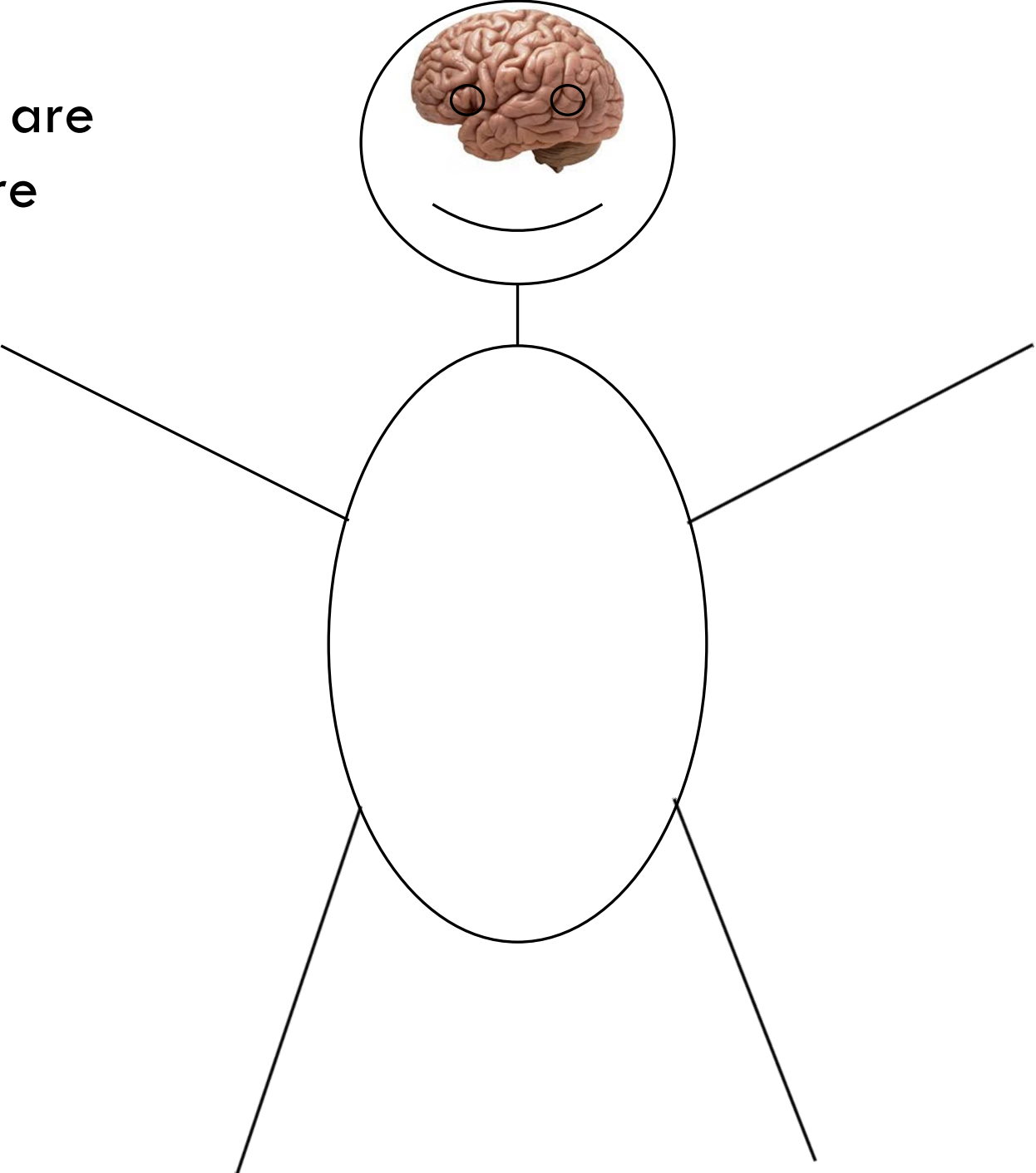
PCOS menstrual cycle

What can we do about it?!?!

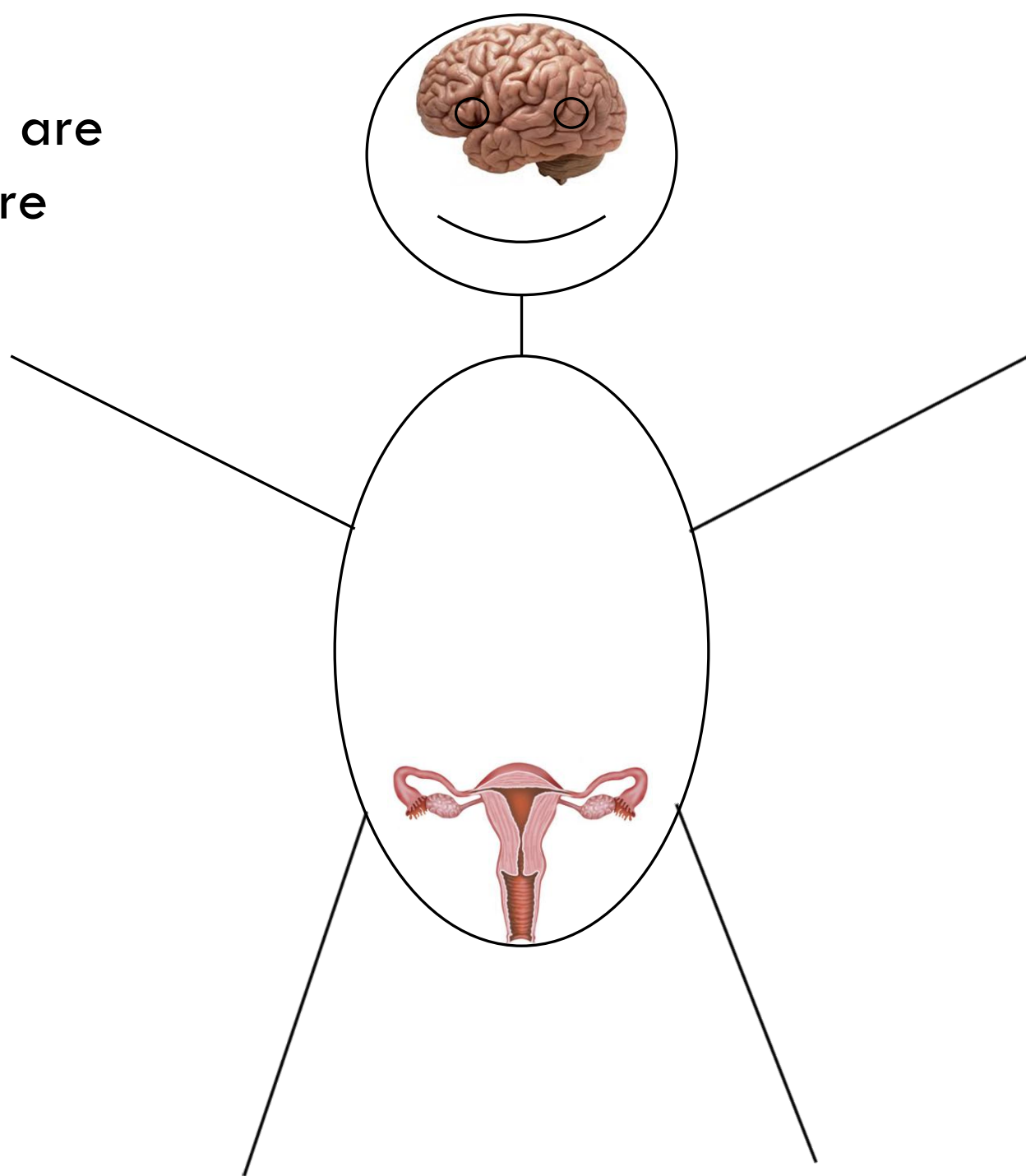
First some spatial
orientation



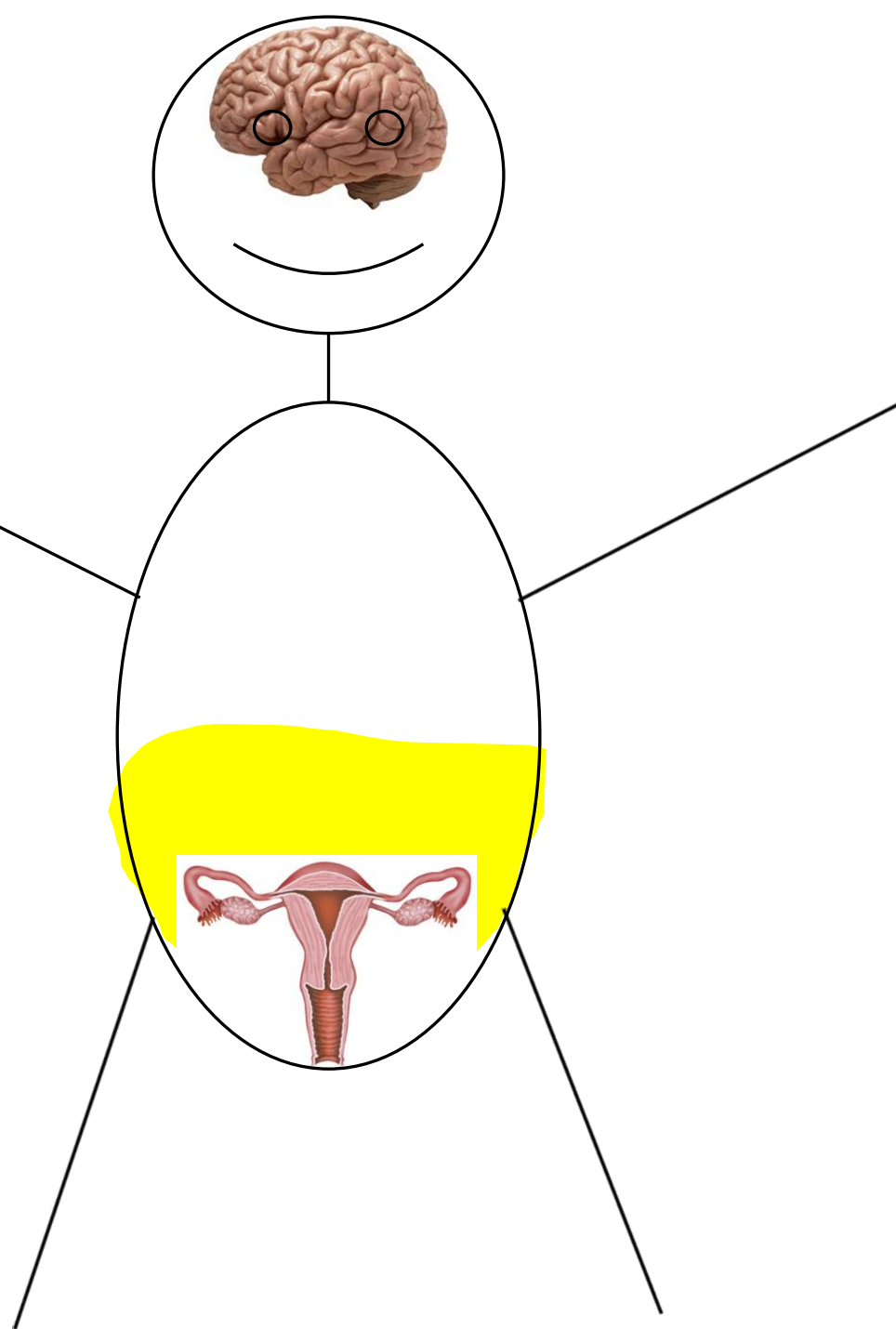
The organs we are interested in are the brain



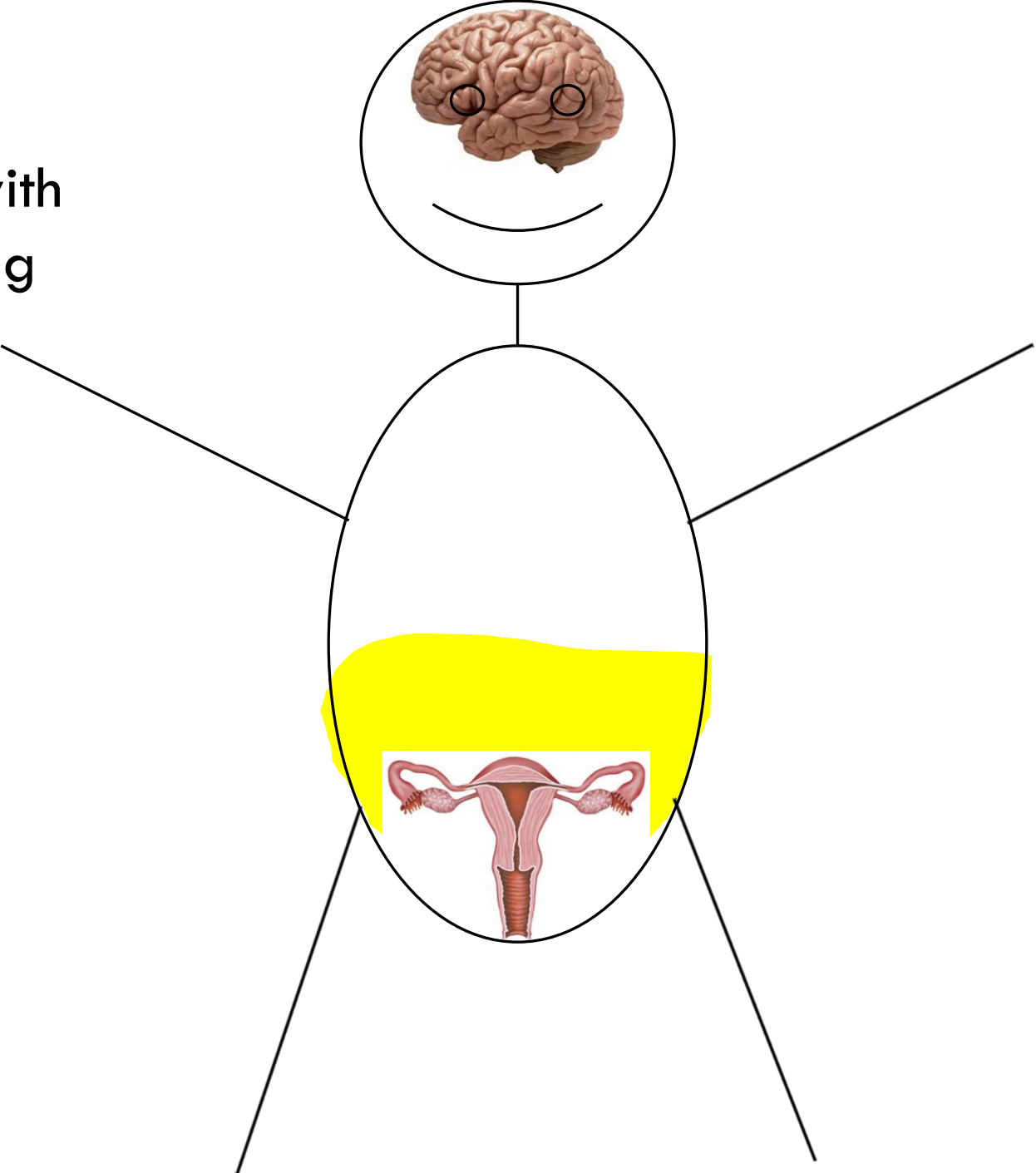
The organs we are interested in are
The uterus and ovaries



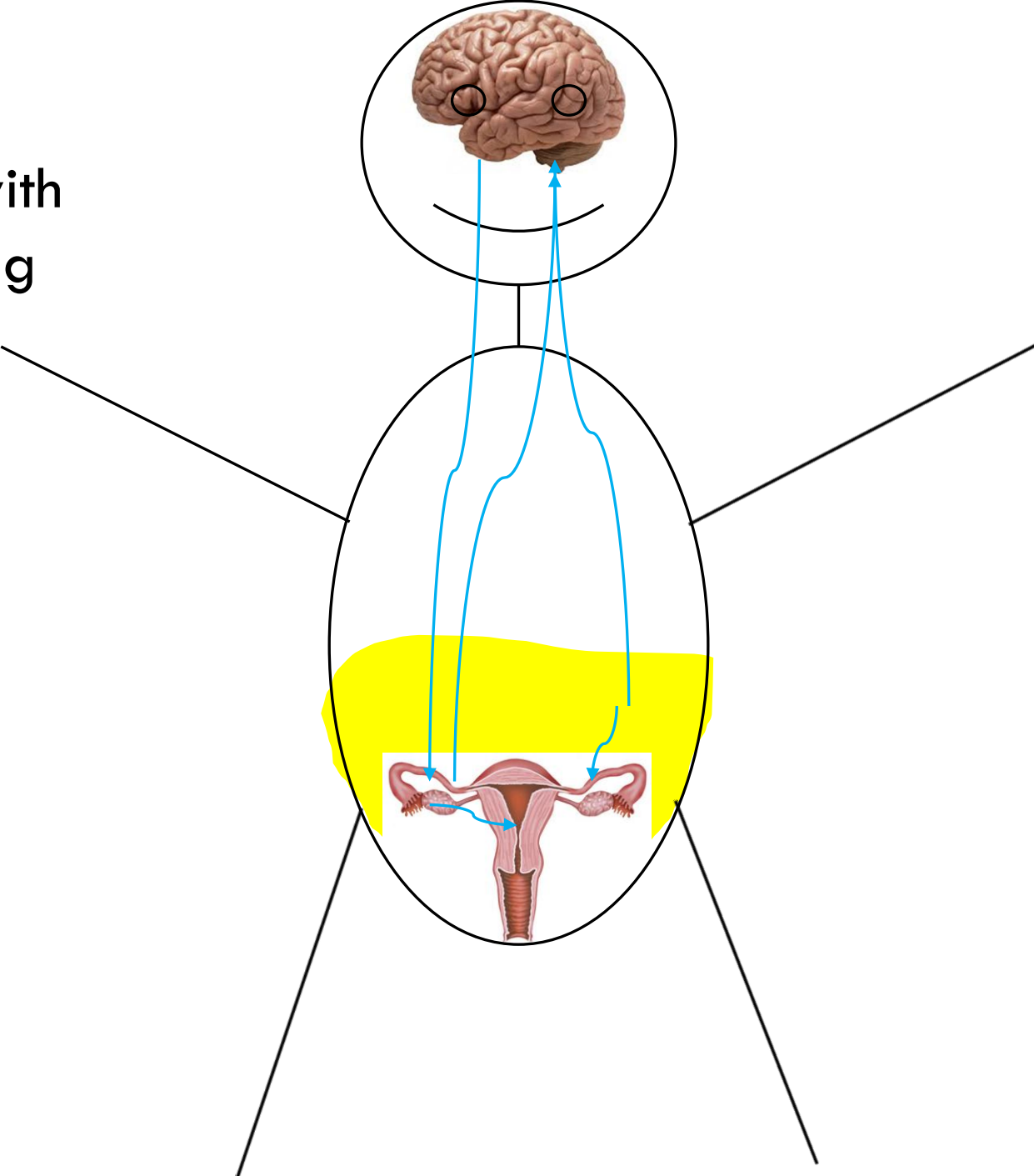
The organs we are
interested in are
And fat cells in the
abdominal cavity



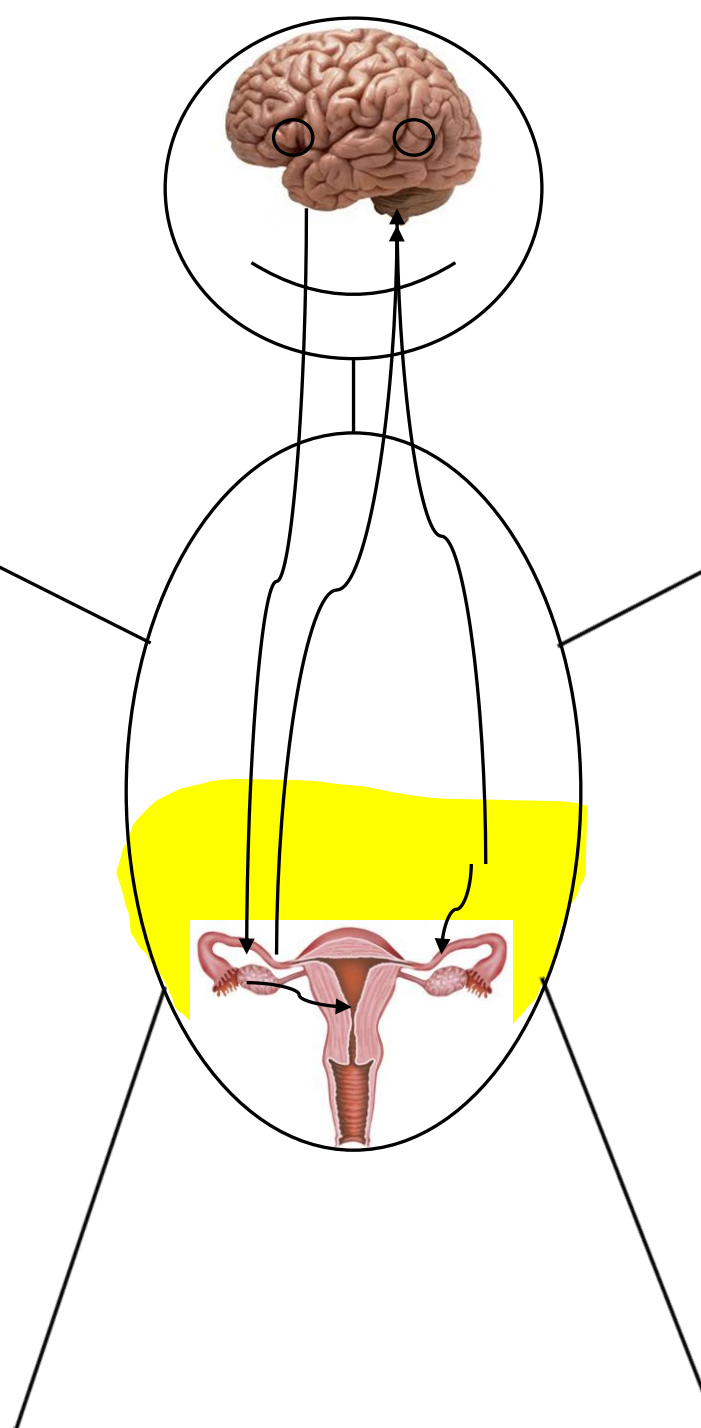
All these
communicate with
each other using
hormones



All these
communicate with
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hormones



All these
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As my 7th grade
health teacher
taught me,
hormones are the
language of the
body

“NORMAL” MENSTRUAL CYCLE

Day 1 (first day of bleeding is day 1 of the cycle)

“NORMAL” MENSTRUAL CYCLE

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The brain

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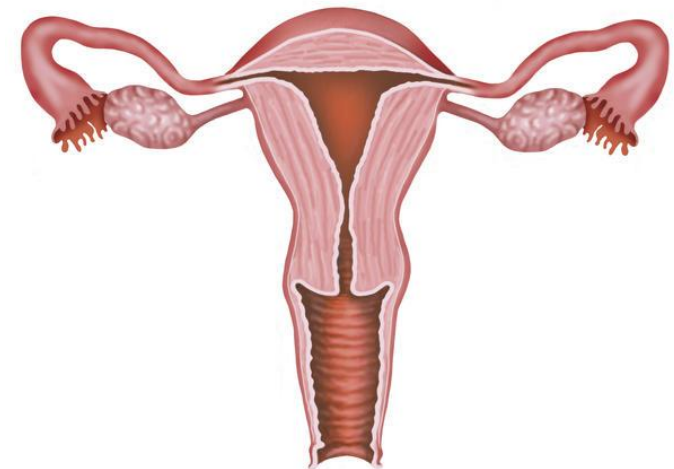


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Day 1 (first day of bleeding is day 1 of the cycle)

The brain

- Sends a signal to the ovaries

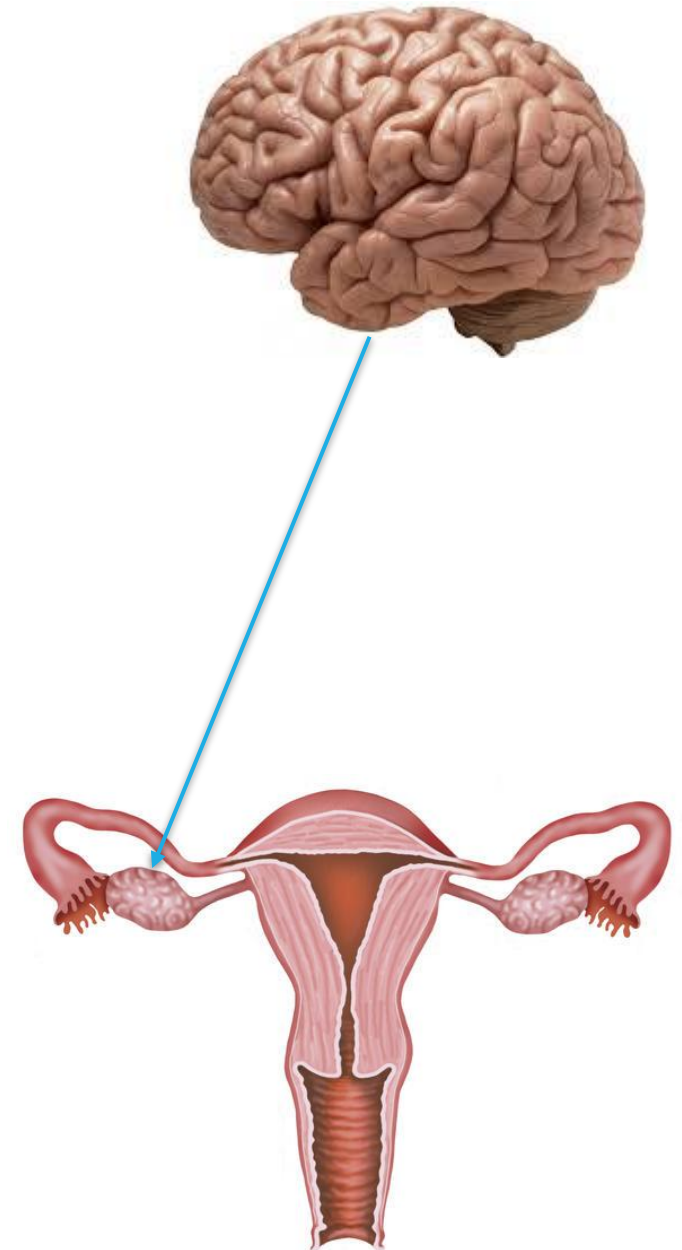


“NORMAL” MENSTRUAL CYCLE

Day 1 (first day of bleeding is day 1 of the cycle)

The brain

- Sends a signal to the ovaries that it is time to choose an egg.



“NORMAL” MENSTRUAL CYCLE

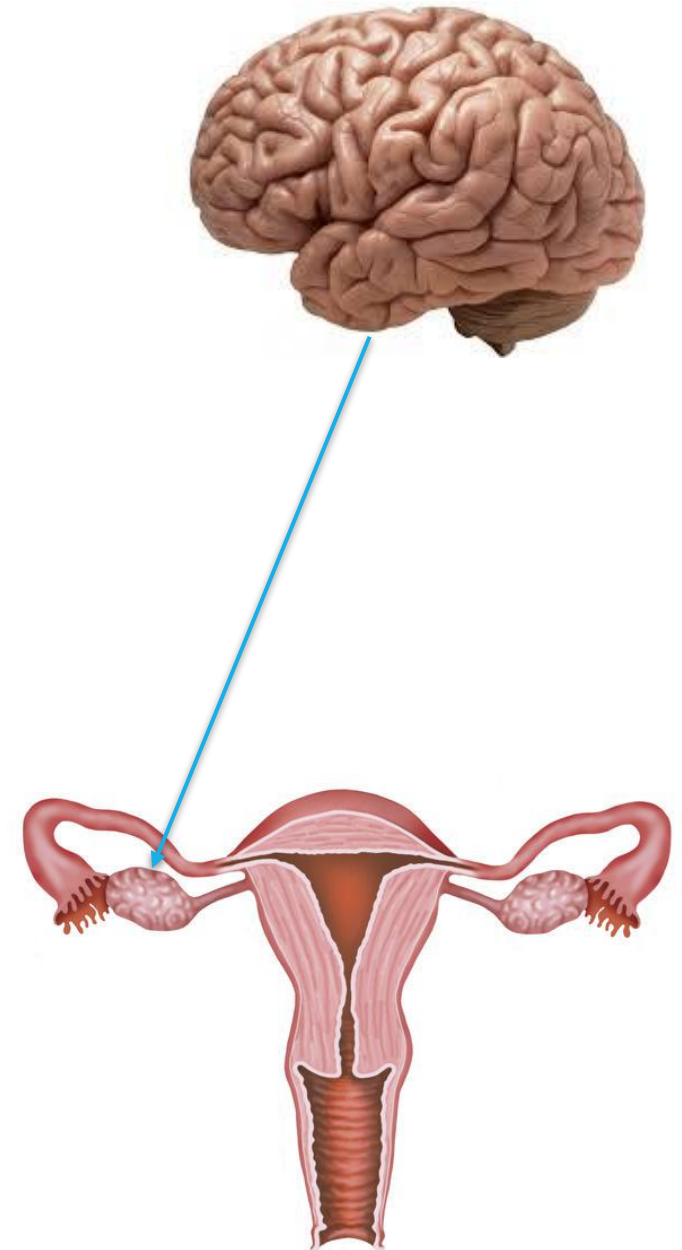
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Now there are somewhere between many hundreds to many thousands of eggs which are potentially available to ovulate every month (the younger we are, the more eggs available).

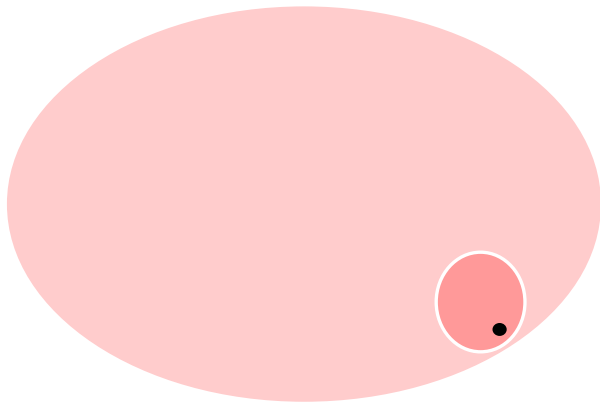


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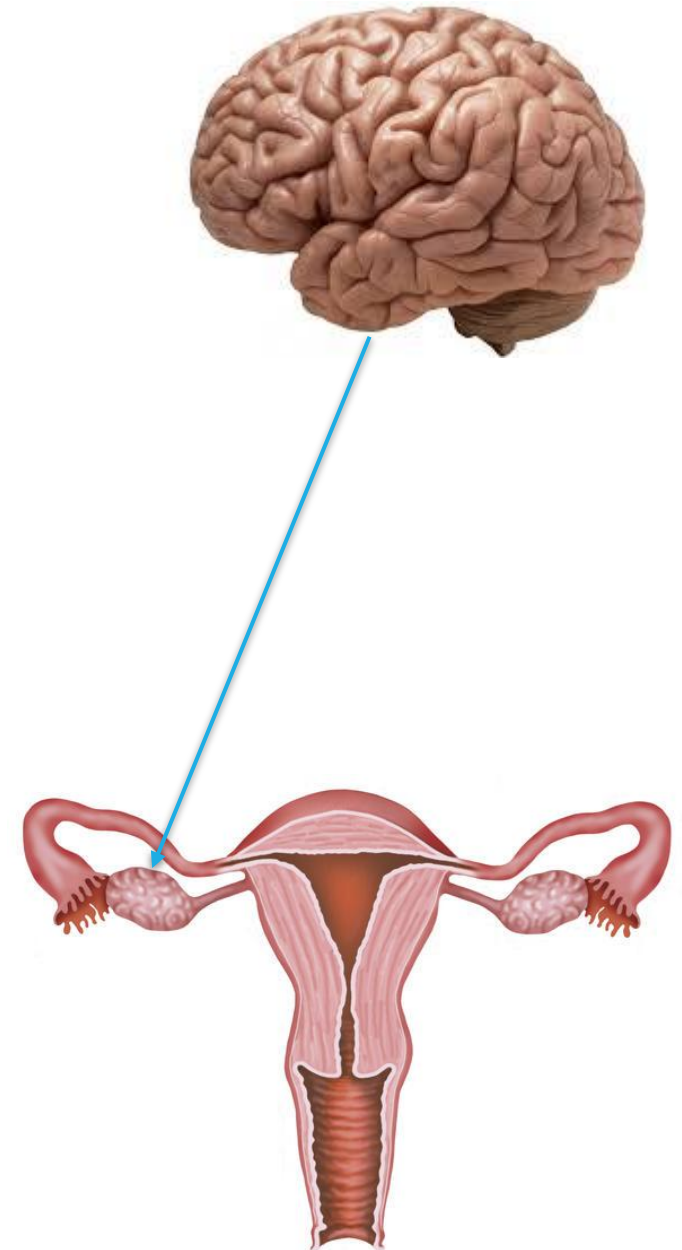
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An egg grows inside a structure called a follicle, which is a fluid filled sphere within the ovary. When we look at the ovary, we can see follicles, but not eggs. Eggs are microscopic.



“NORMAL” MENSTRUAL CYCLE

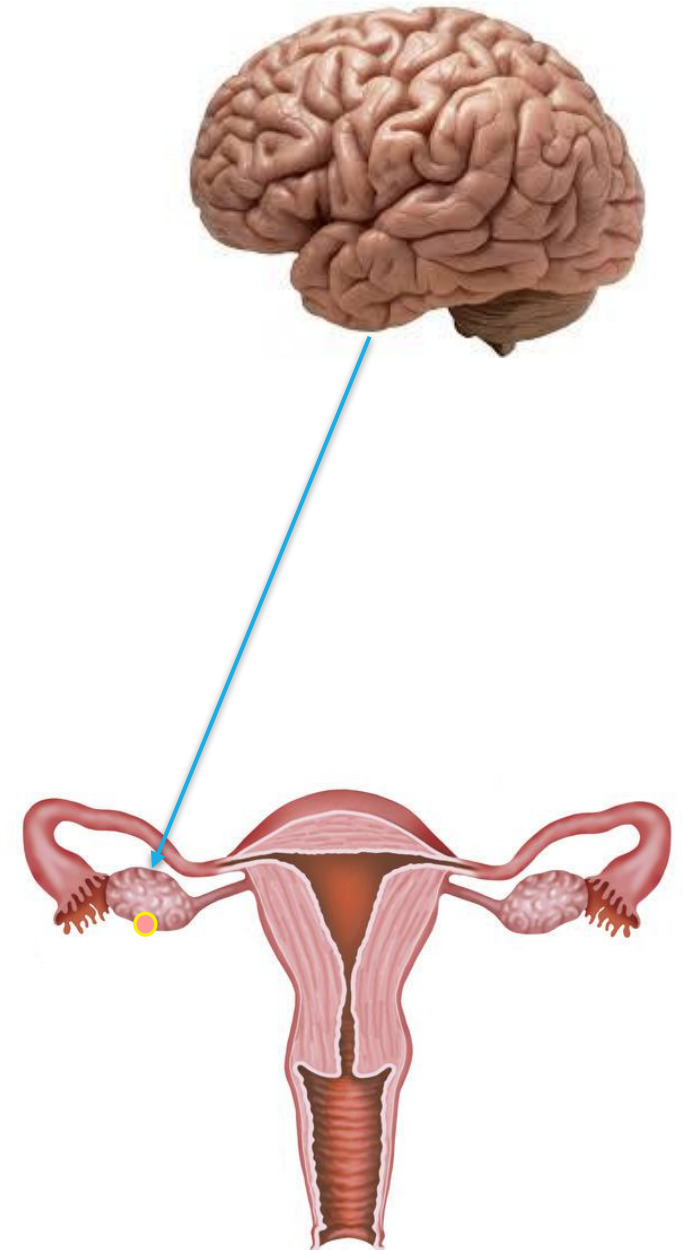
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During a normal menstrual cycle, the brain and ovary send signals back and forth to eventually choose the single egg which will ovulate that month.



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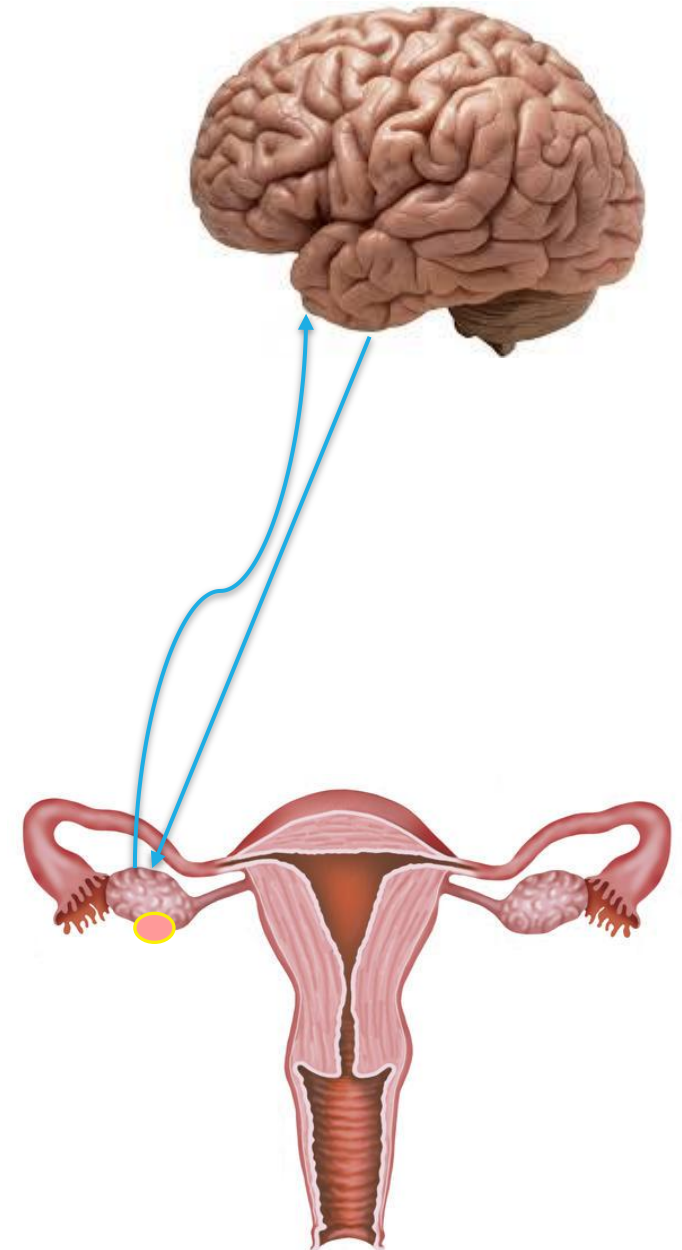
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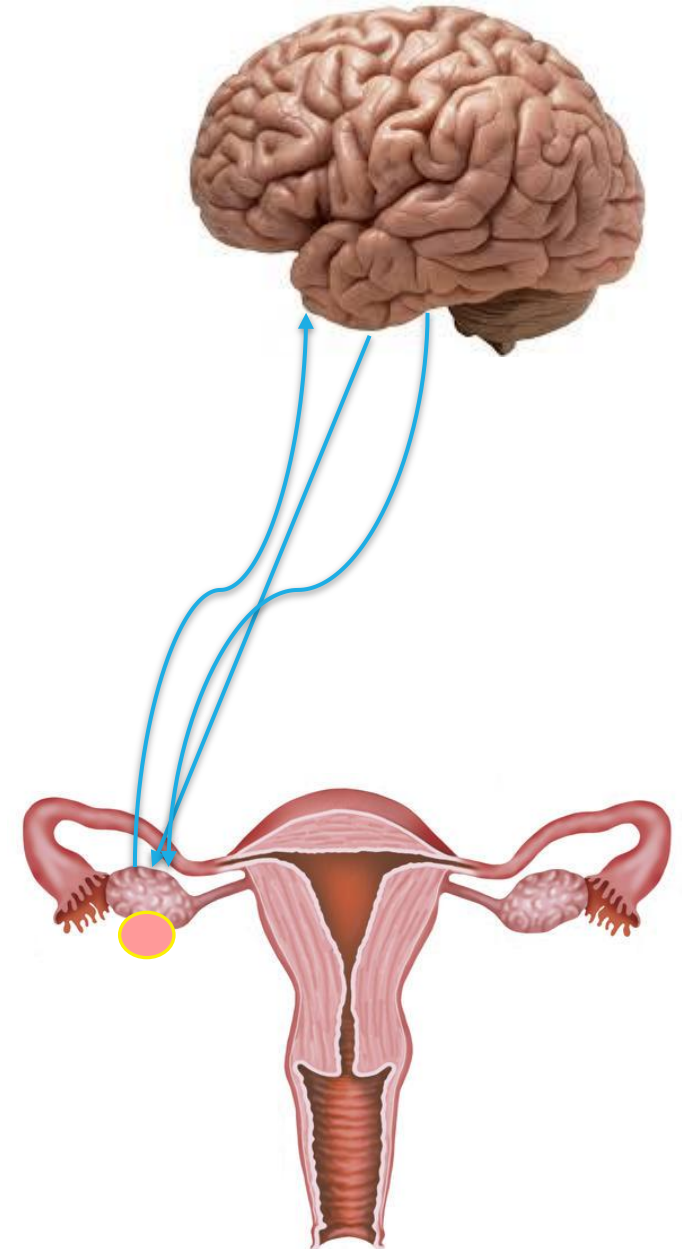
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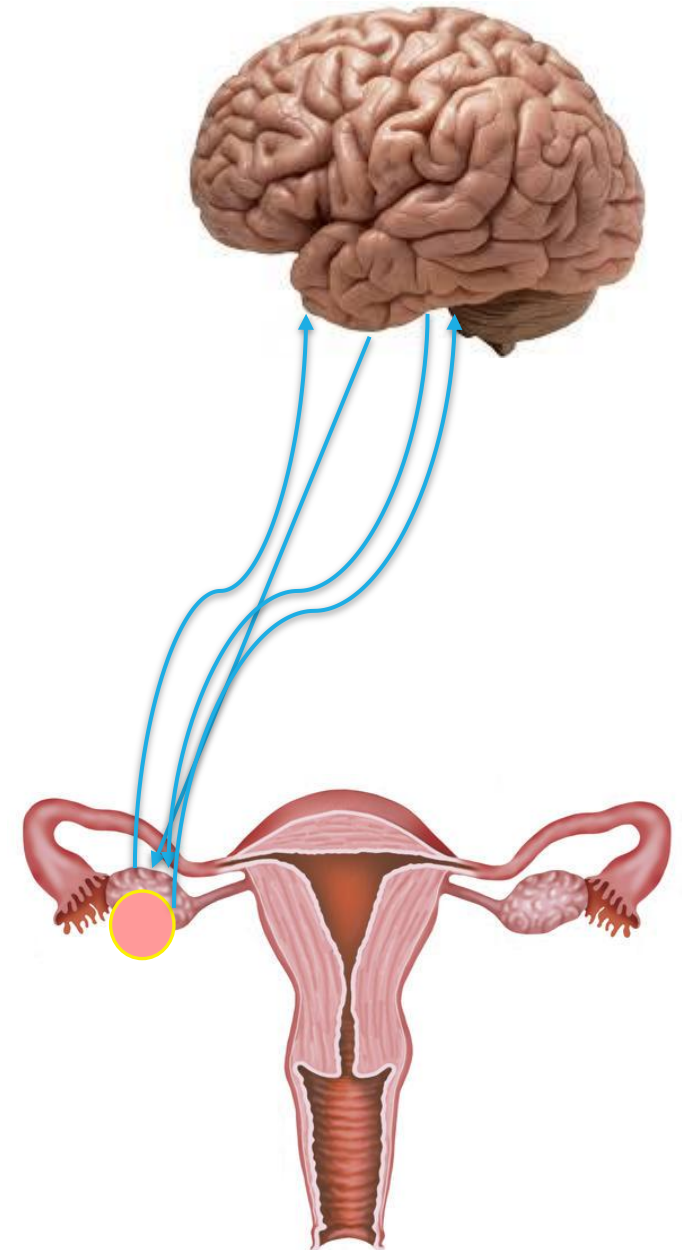
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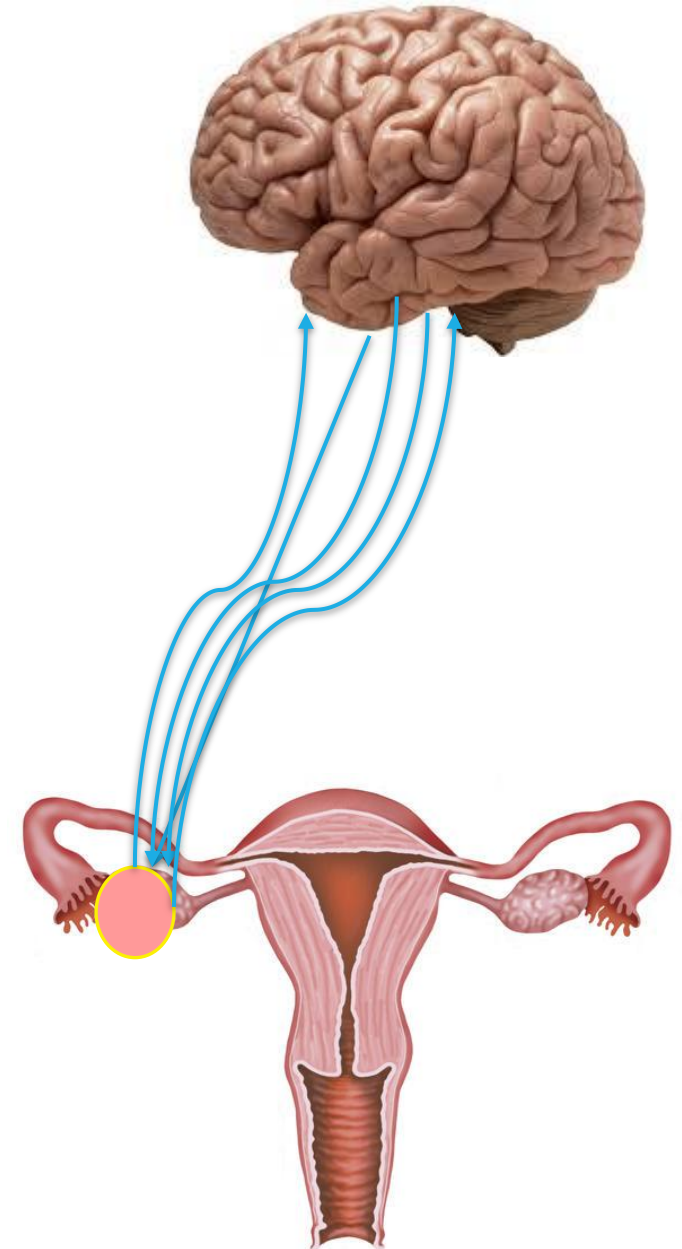
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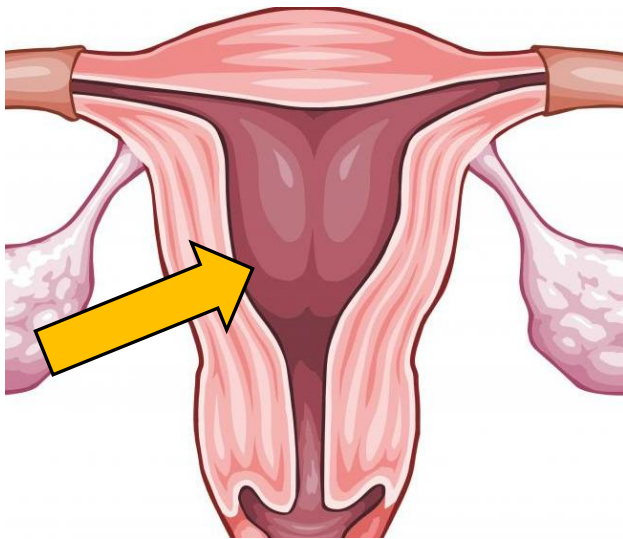
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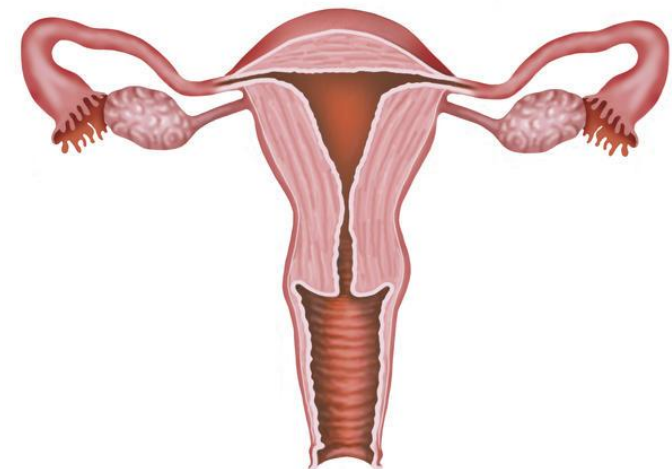
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Over the roughly 14 days that it takes to choose and ovulate the chosen egg, the lining of the uterus proliferates in response to hormones made in the ovaries



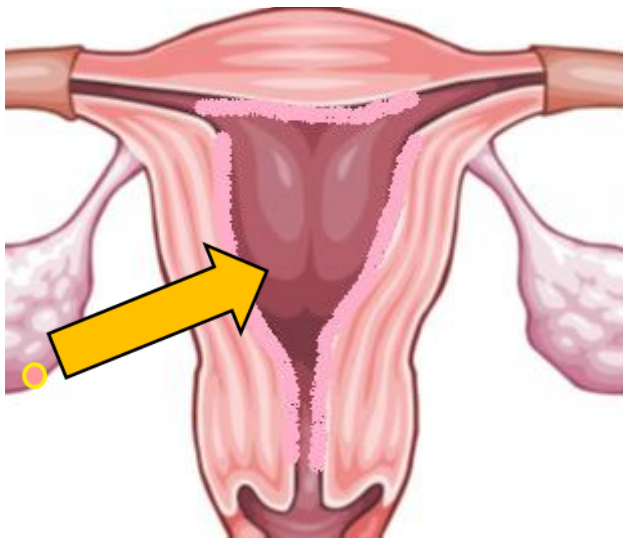
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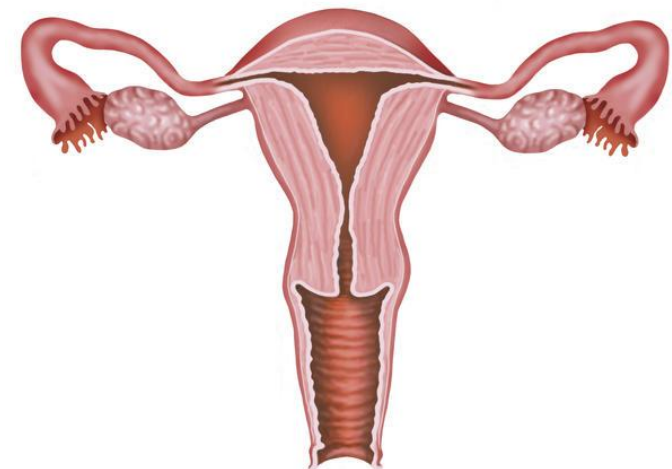
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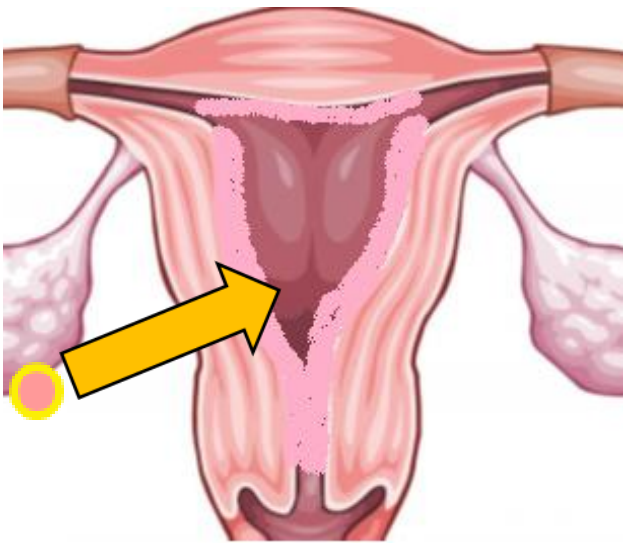
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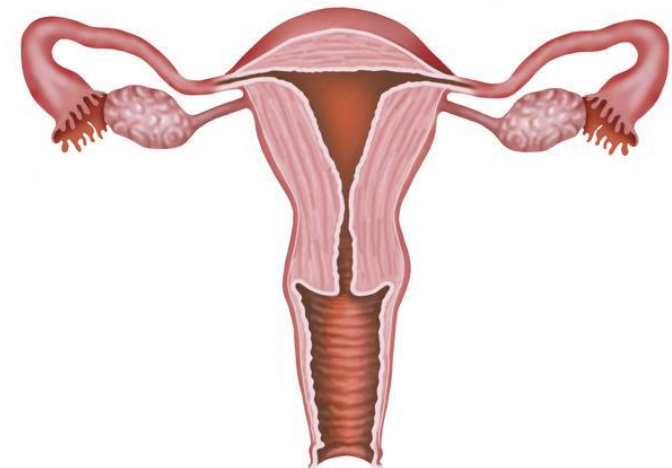
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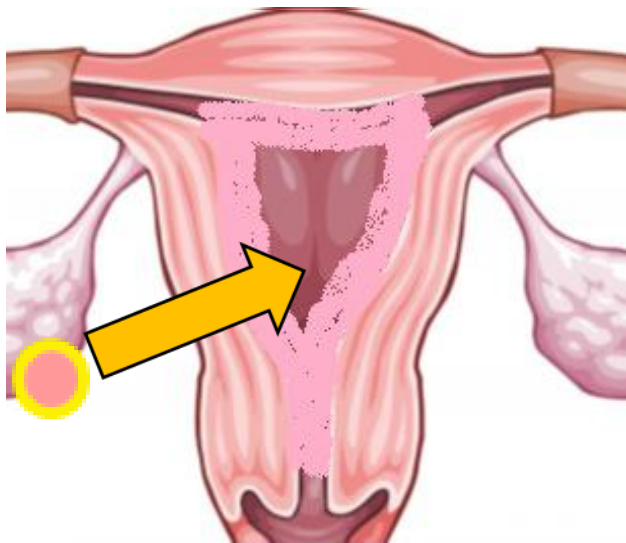
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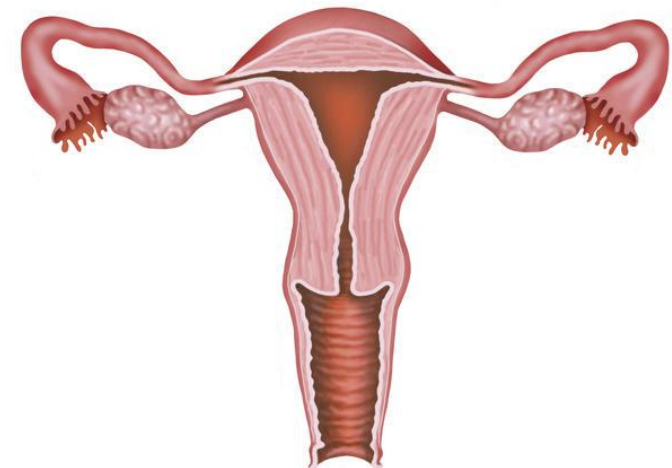
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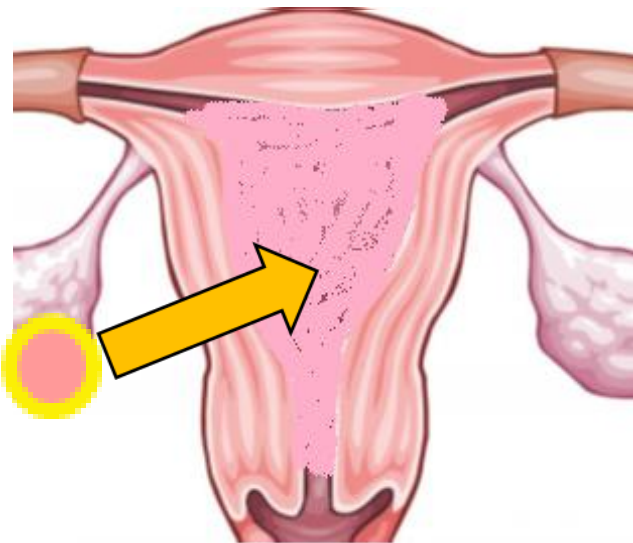
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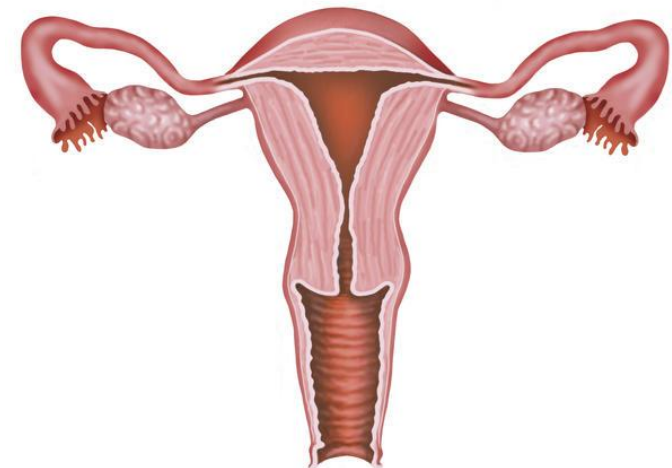
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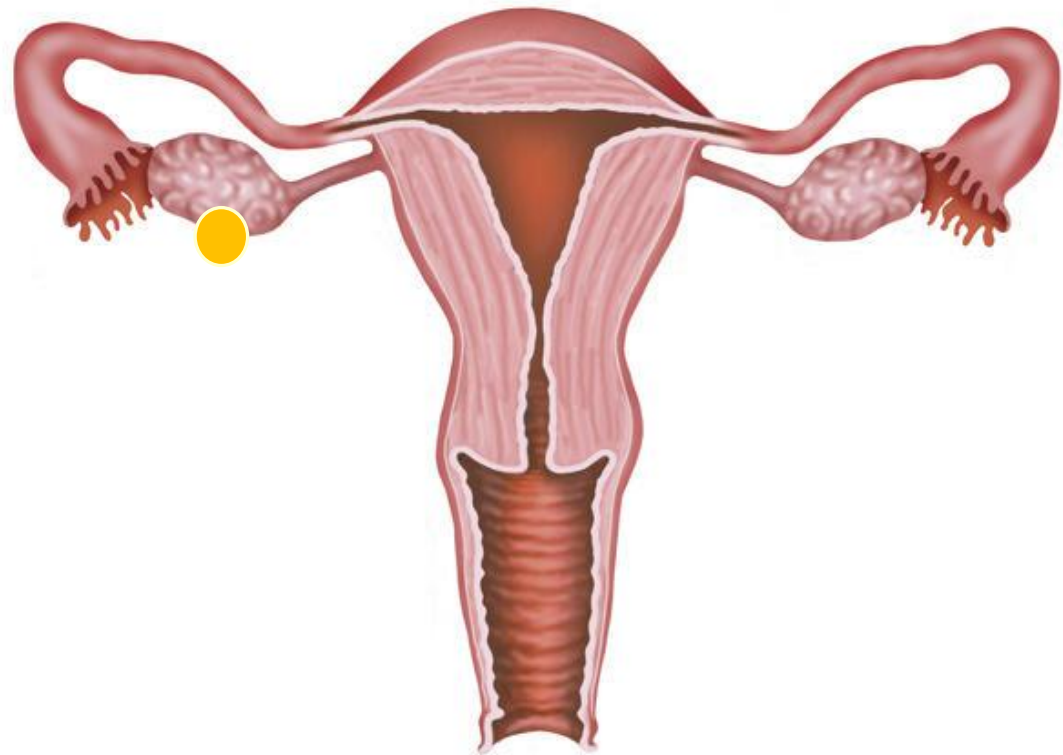


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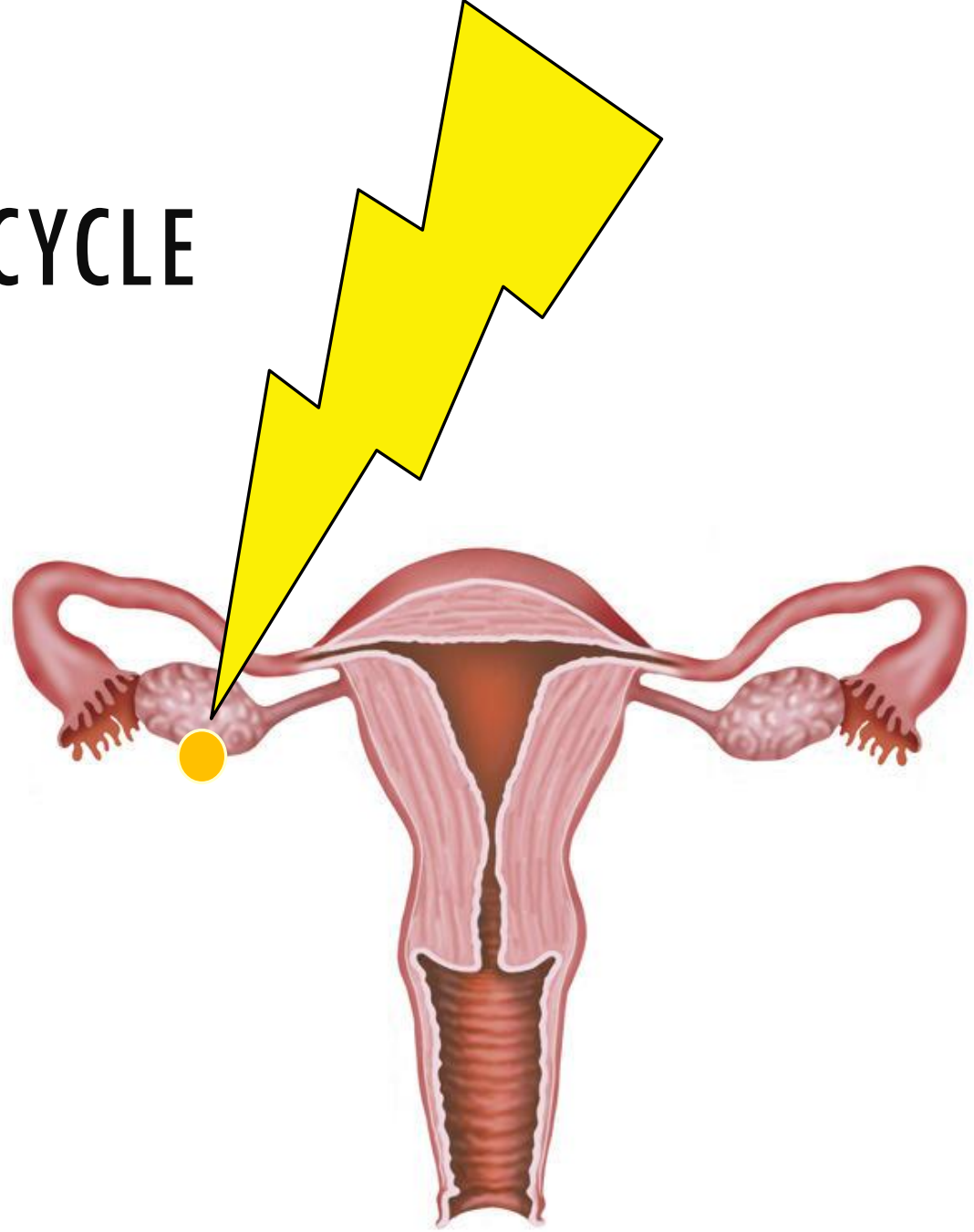
Once the egg has been selected



“NORMAL” MENSTRUAL CYCLE

Once the egg has been selected

A signal comes down from the brain
called the LH surge



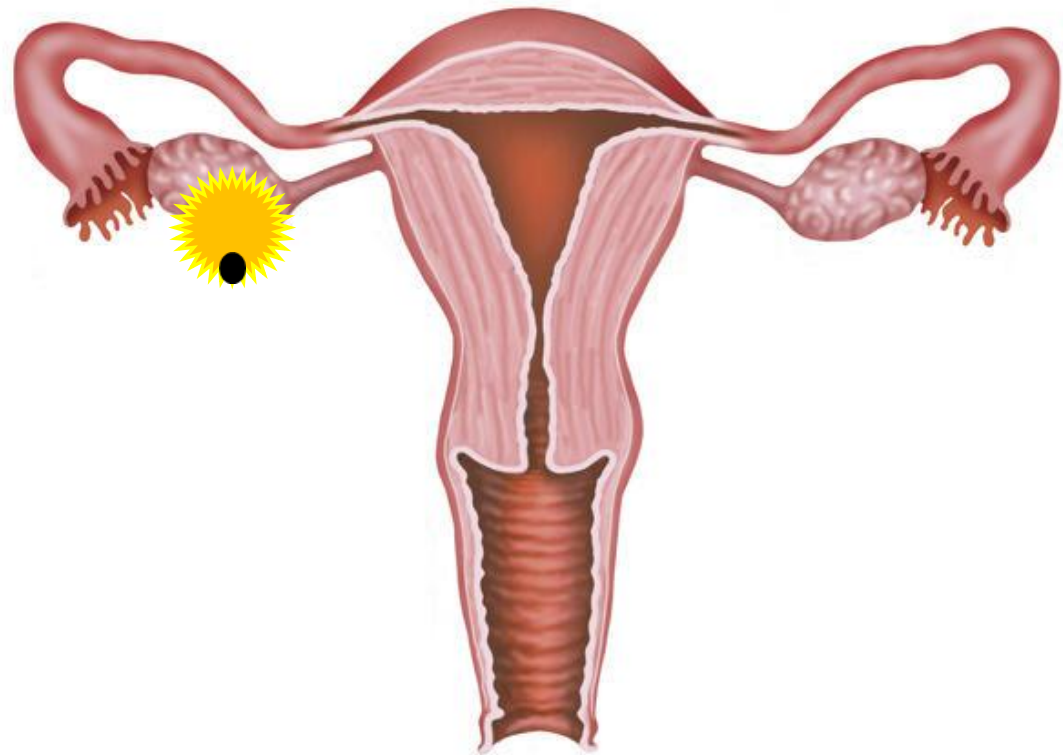
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Which causes ovulation.

- Release of the oocyte (egg)



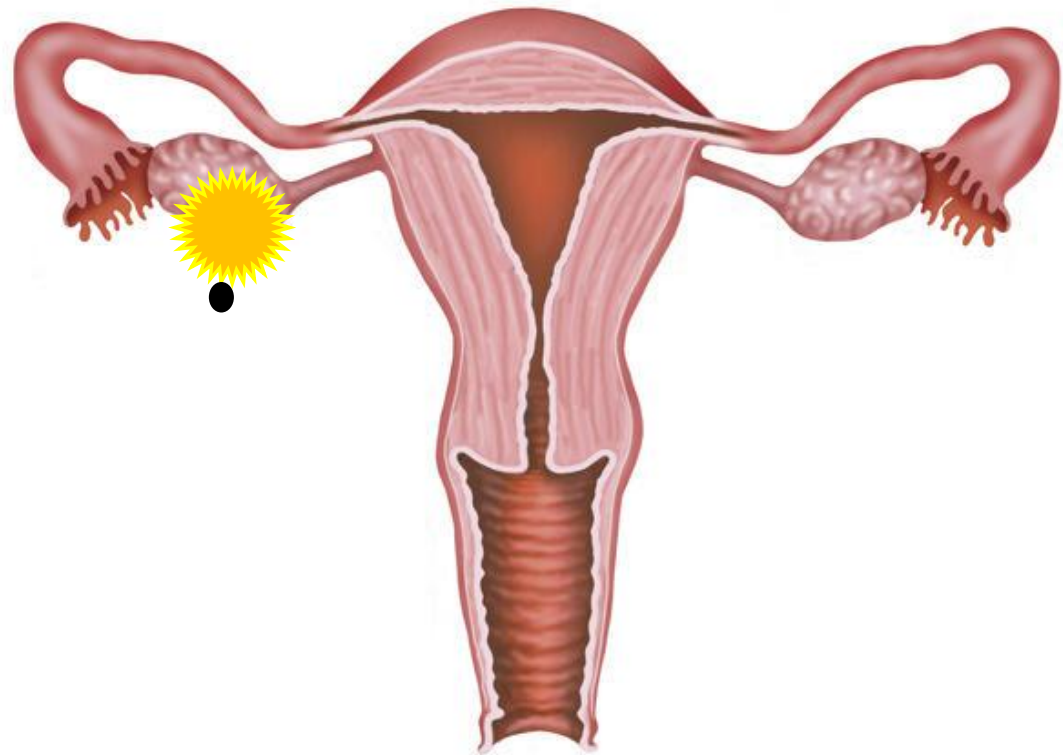
“NORMAL” MENSTRUAL CYCLE

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- The egg then must find it's way into the fallopian tube



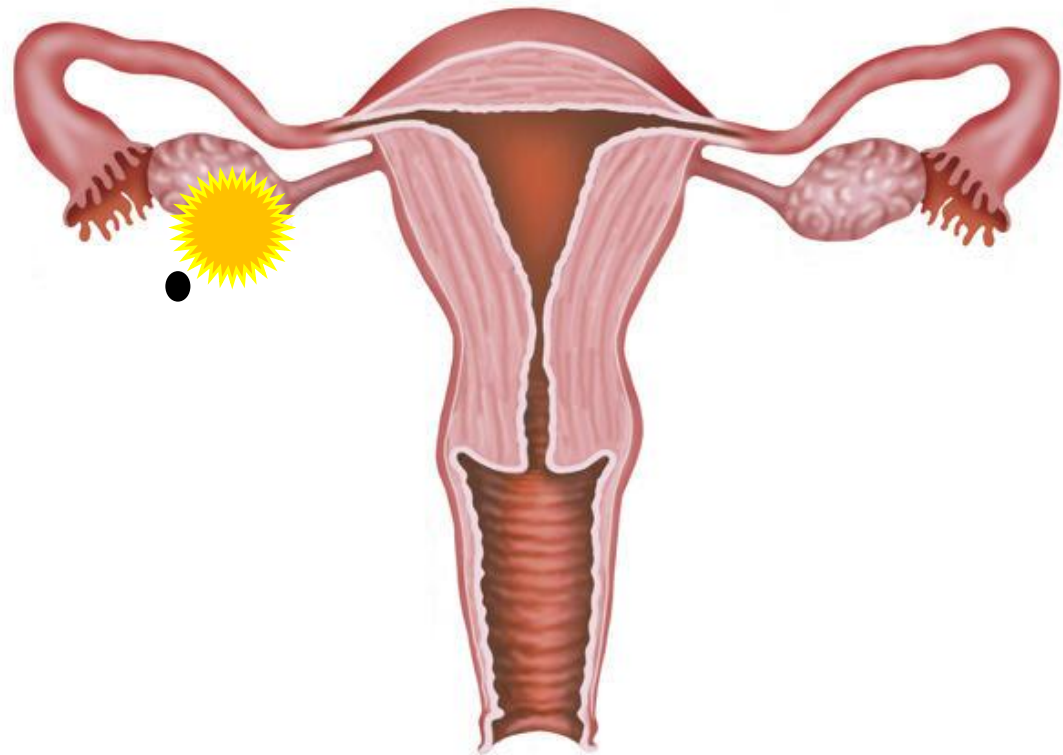
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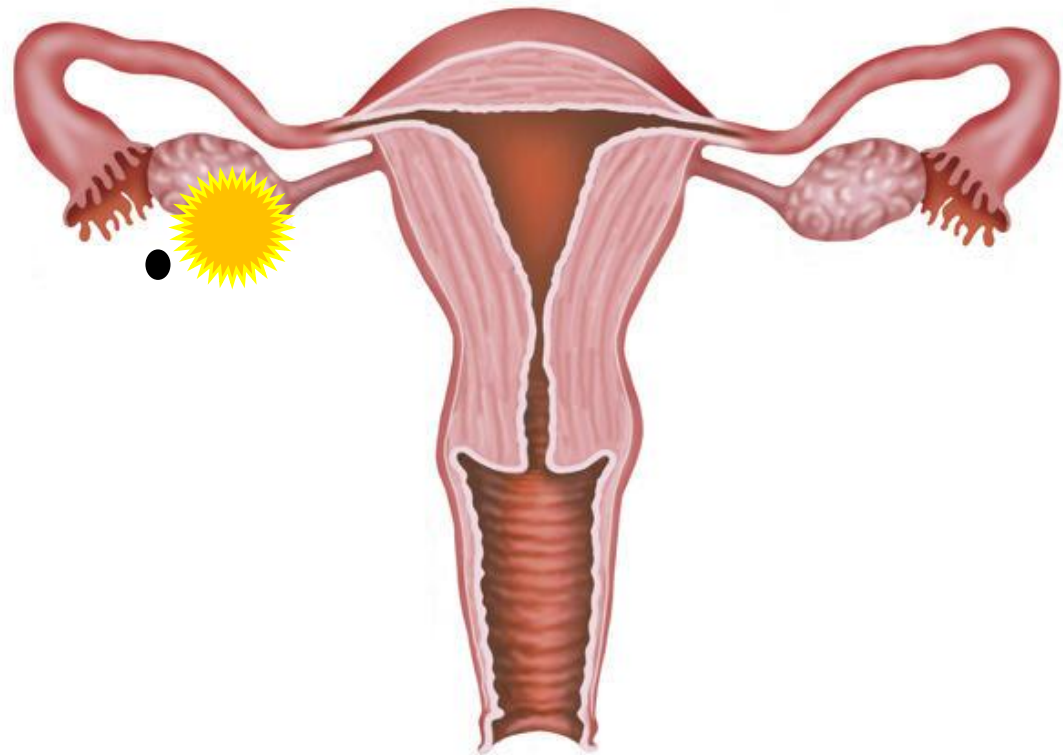
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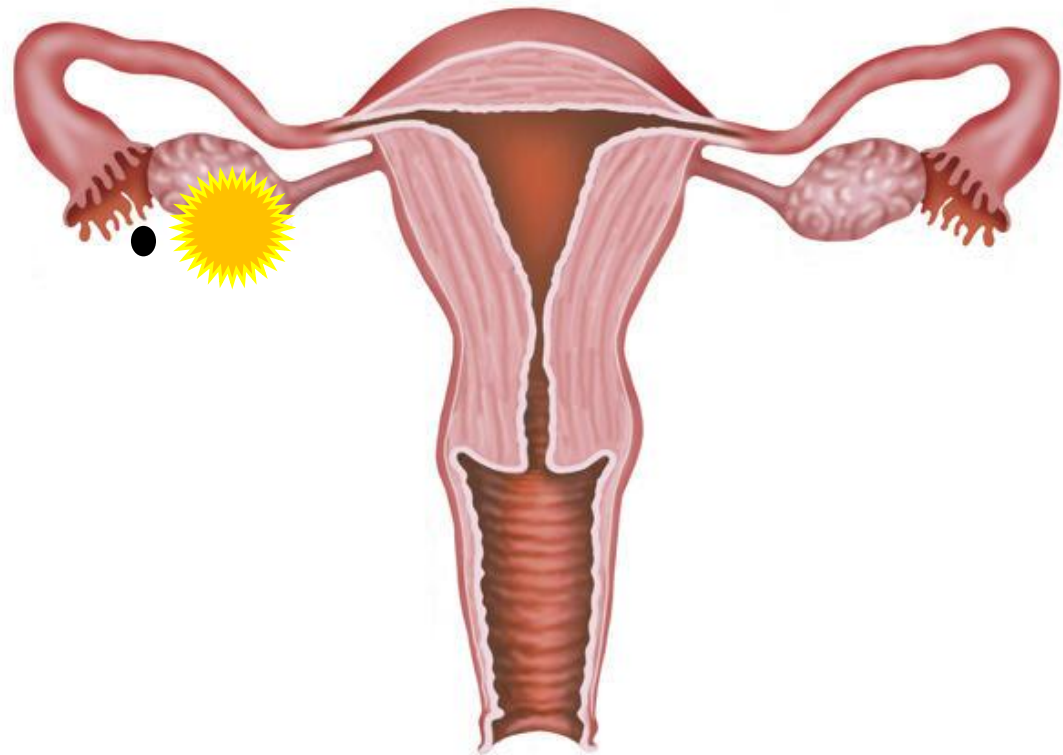
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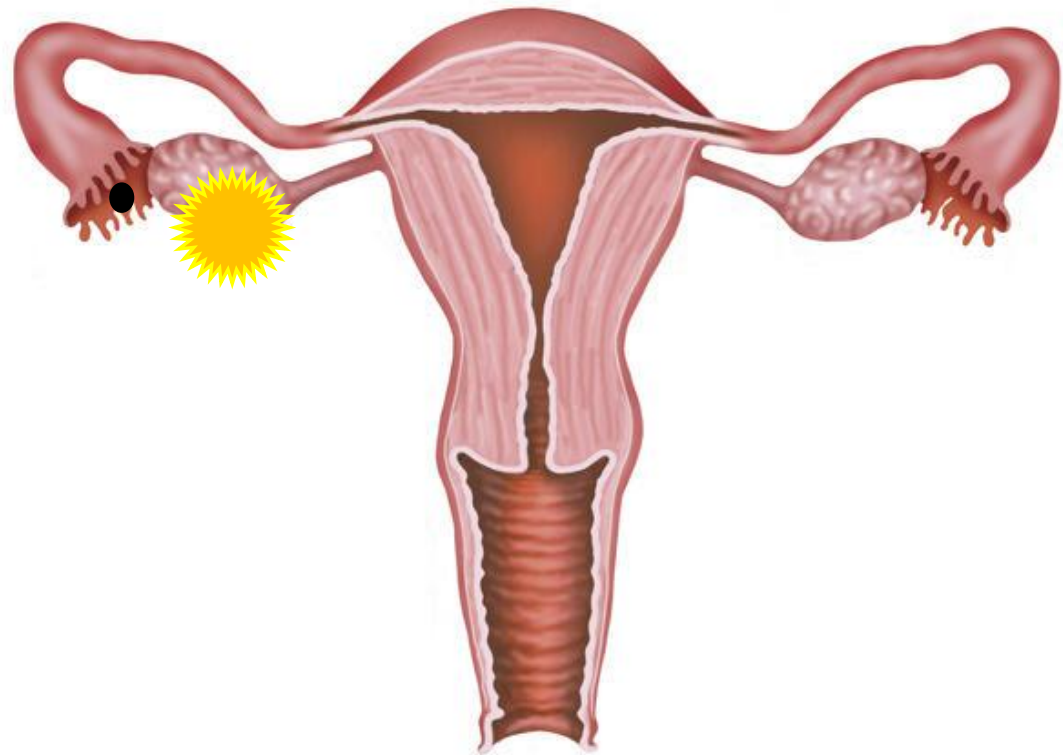
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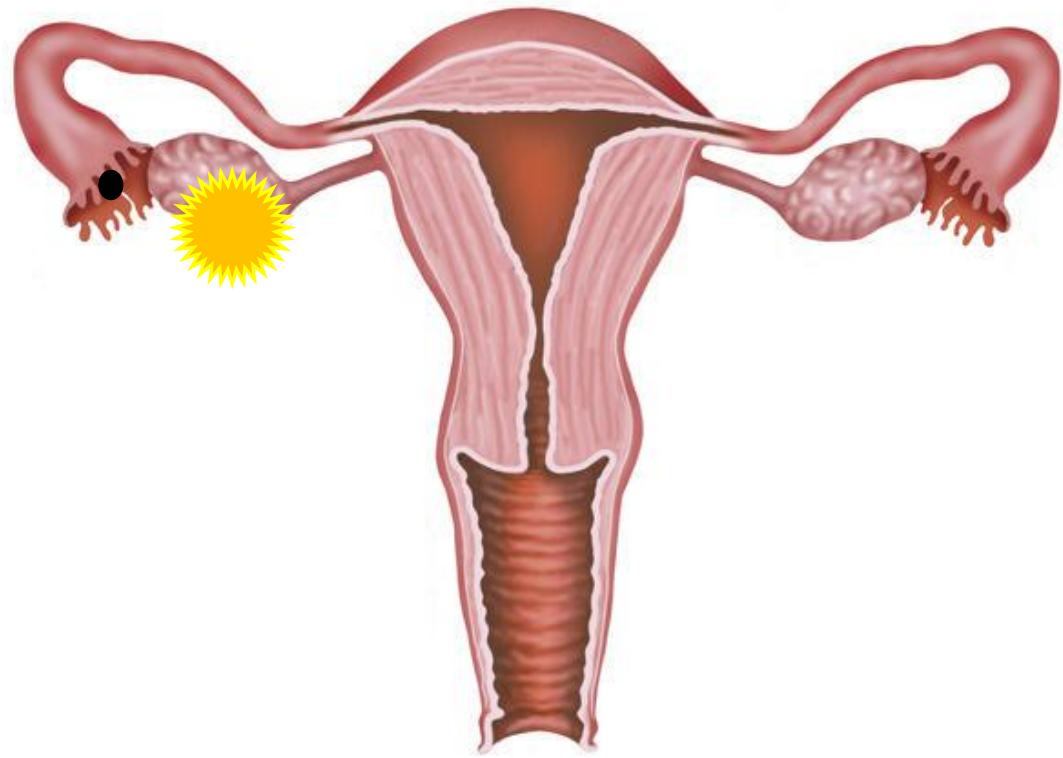
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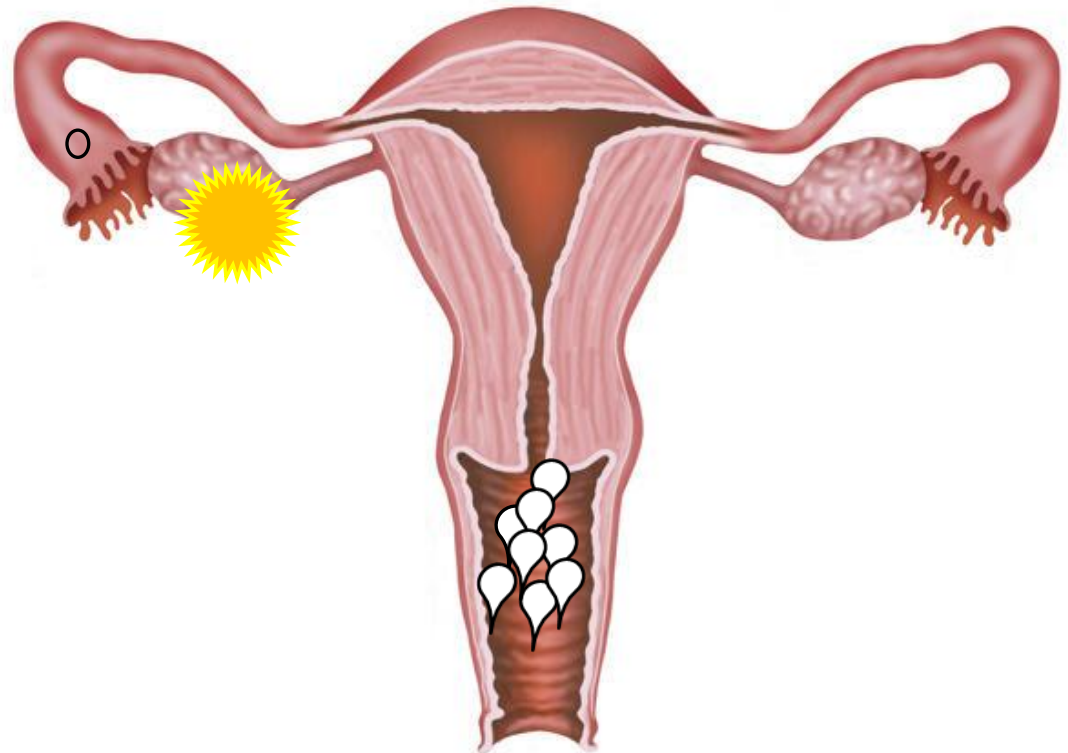
If intercourse is properly timed



“NORMAL” MENSTRUAL CYCLE

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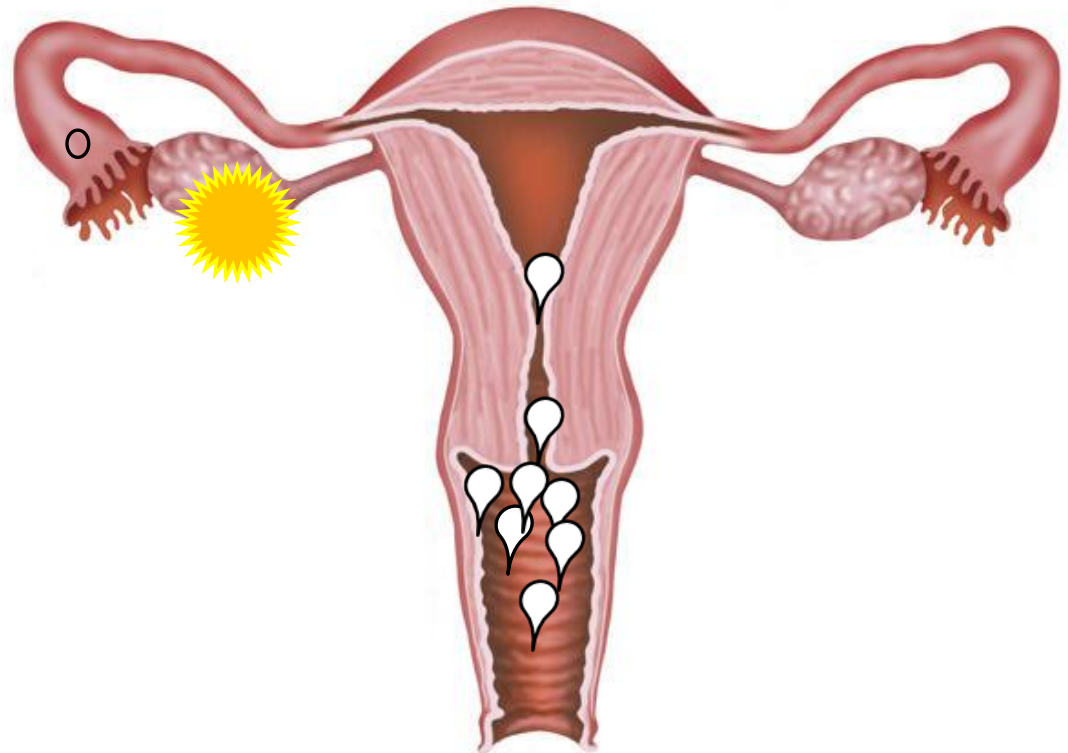
Sperm is deposited in the vagina



“NORMAL” MENSTRUAL CYCLE

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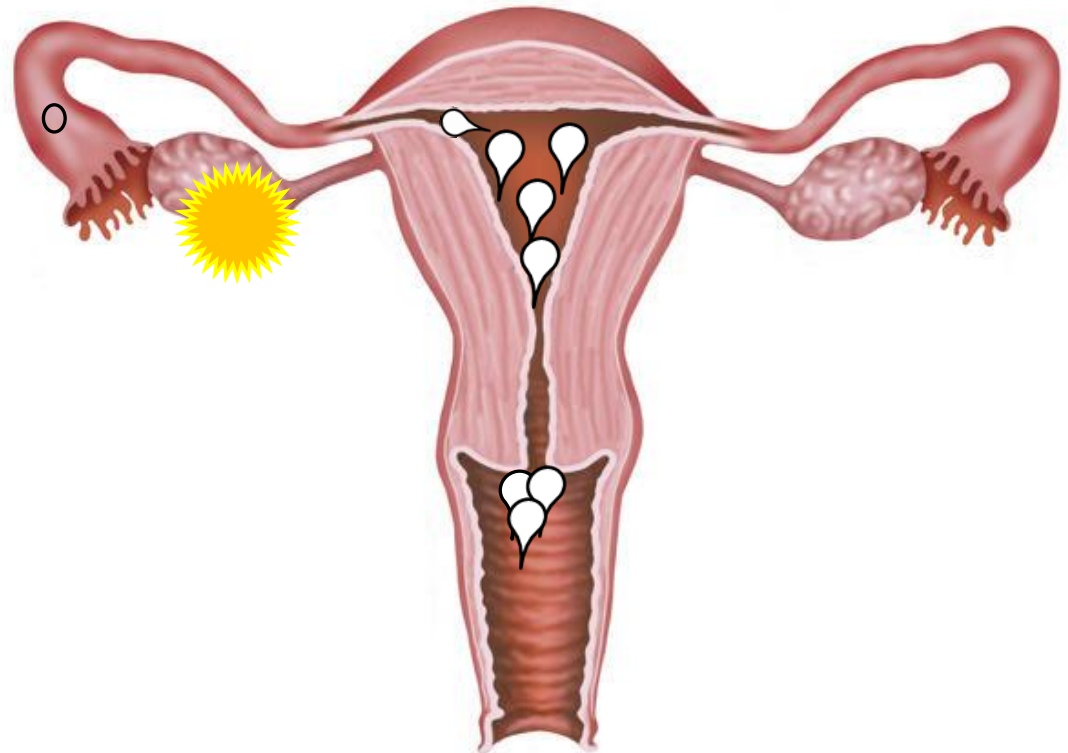


“NORMAL” MENSTRUAL CYCLE

If intercourse is properly timed

Sperm is deposited in the vagina

And the sperm meet the egg in the fallopian tube

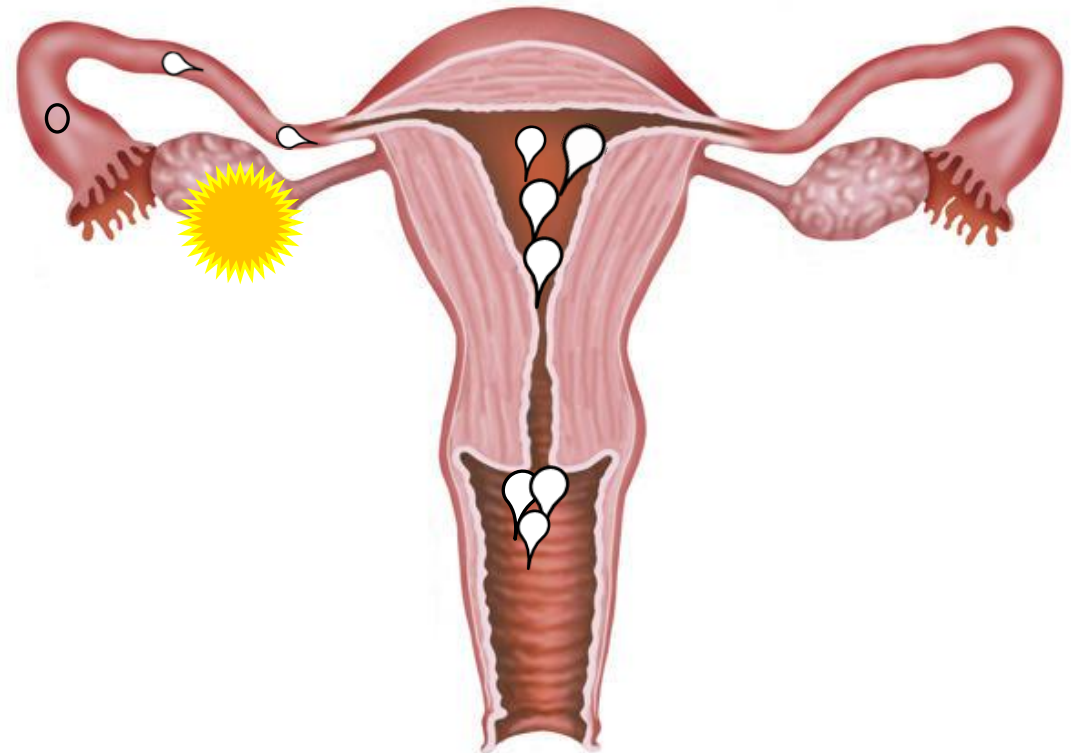


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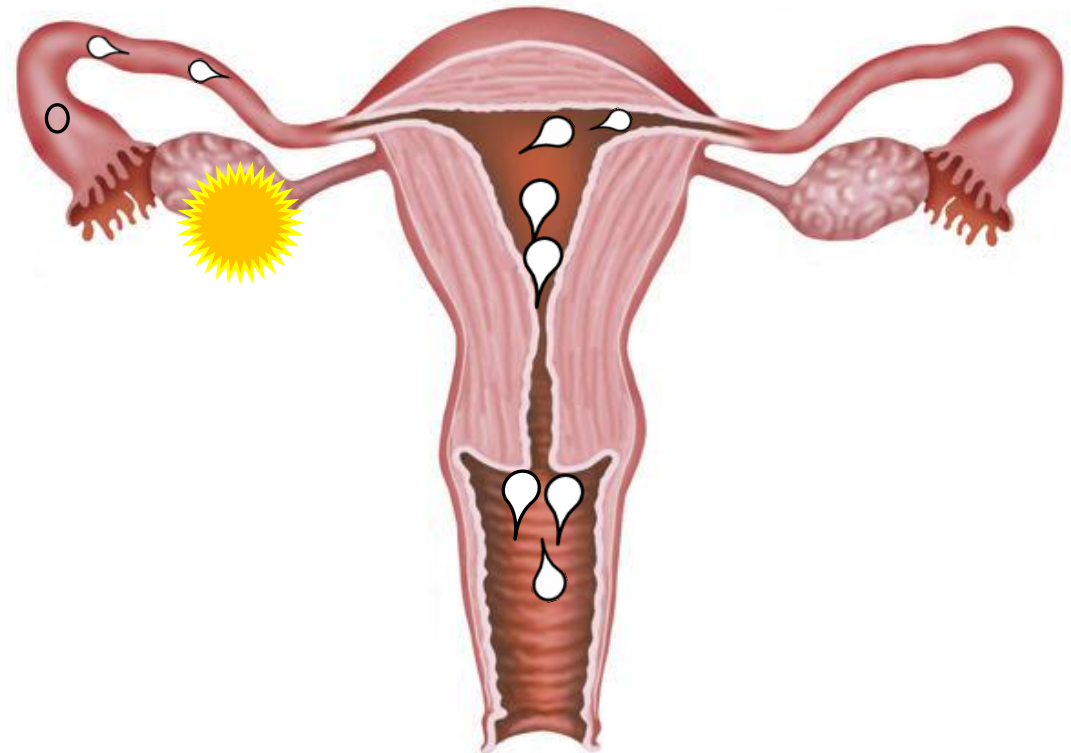


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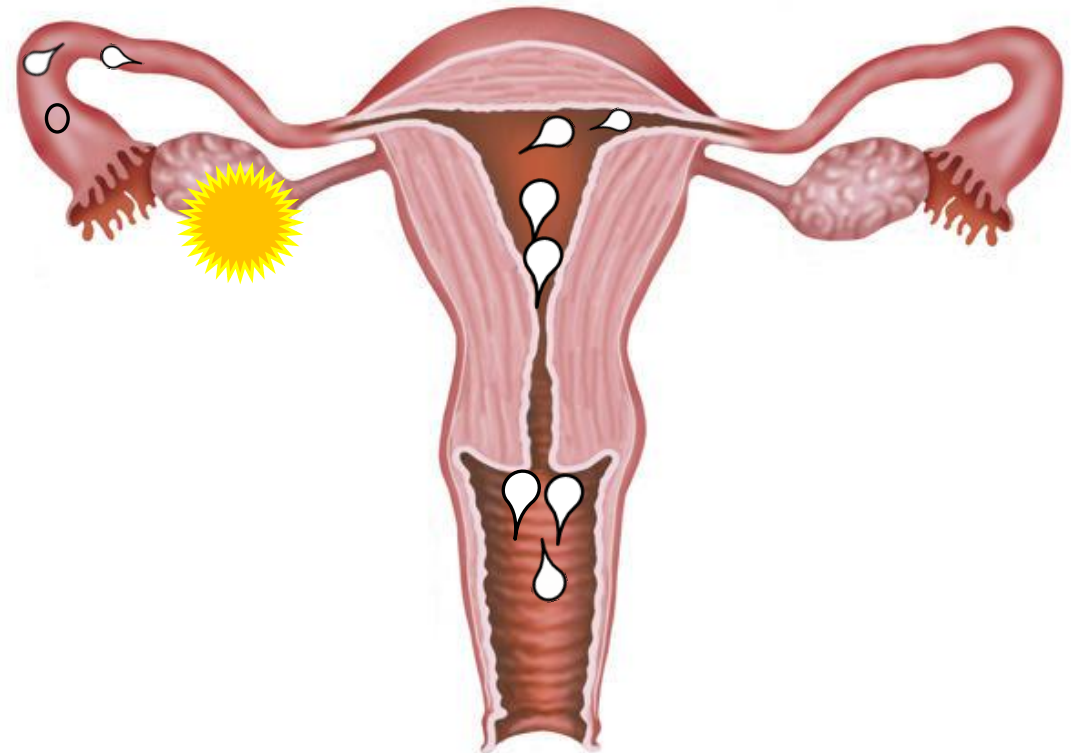


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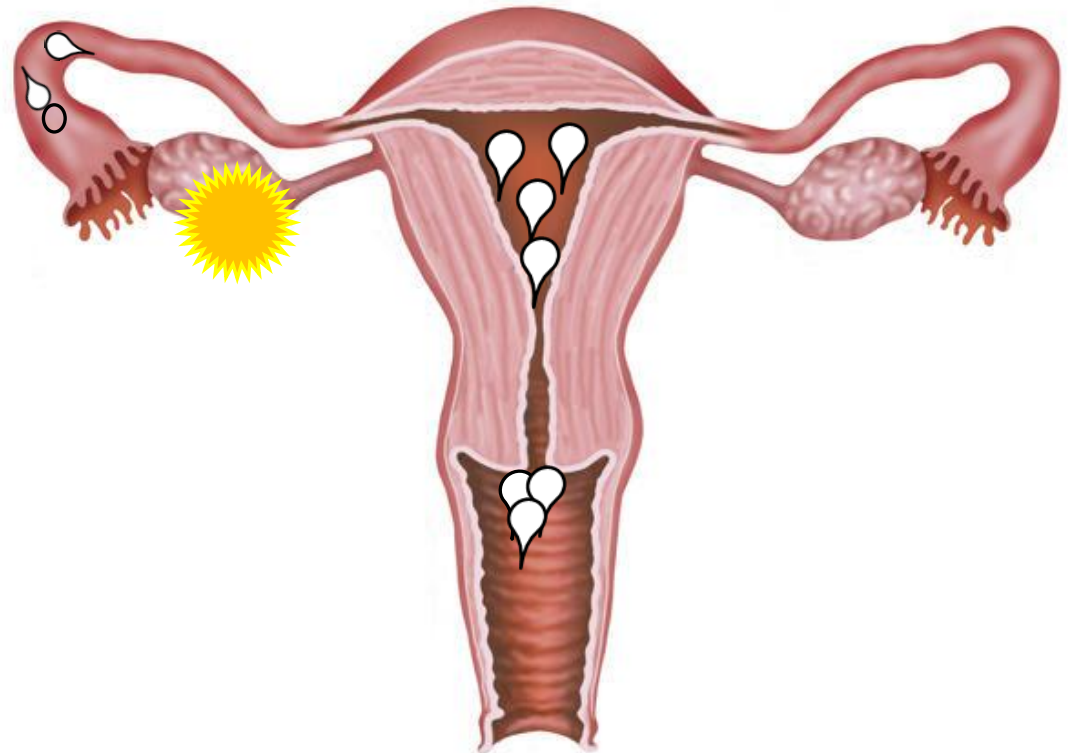


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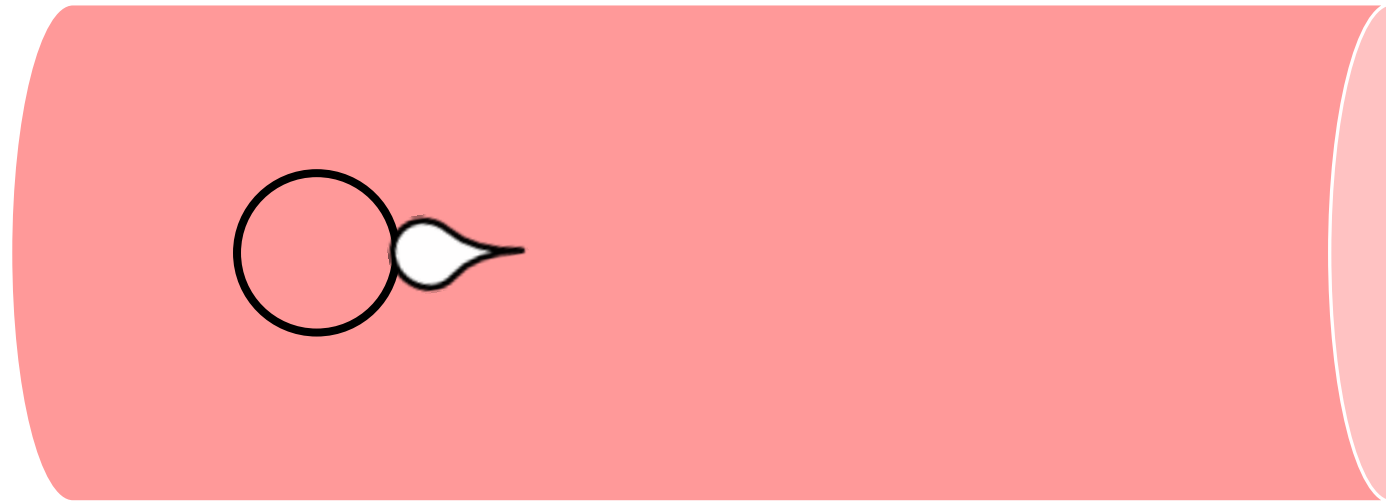
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“NORMAL” MENSTRUAL CYCLE

Fertilization then occurs in the fallopian tube



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Shbang!!!

“NORMAL” MENSTRUAL CYCLE

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“NORMAL” MENSTRUAL CYCLE

Fertilization then occurs in the fallopian tube

And the embryo then moves through the tube towards the uterus



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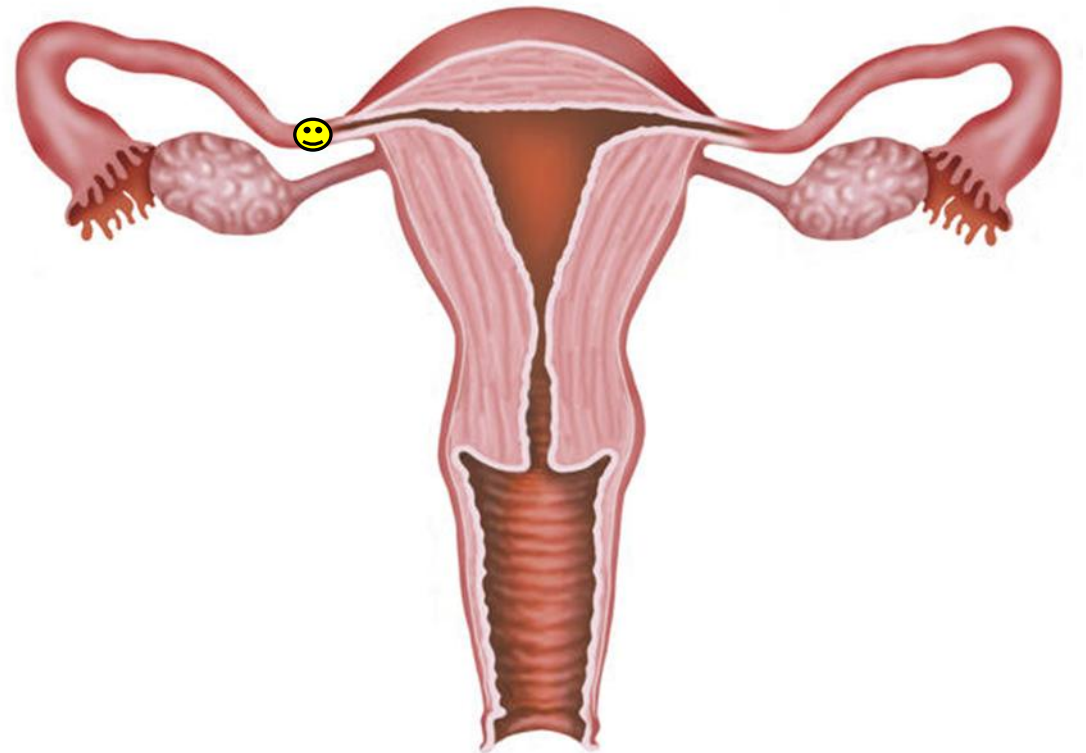
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“NORMAL” MENSTRUAL CYCLE

Fertilization then occurs in the fallopian tube

And the embryo then moves through the tube towards the uterus

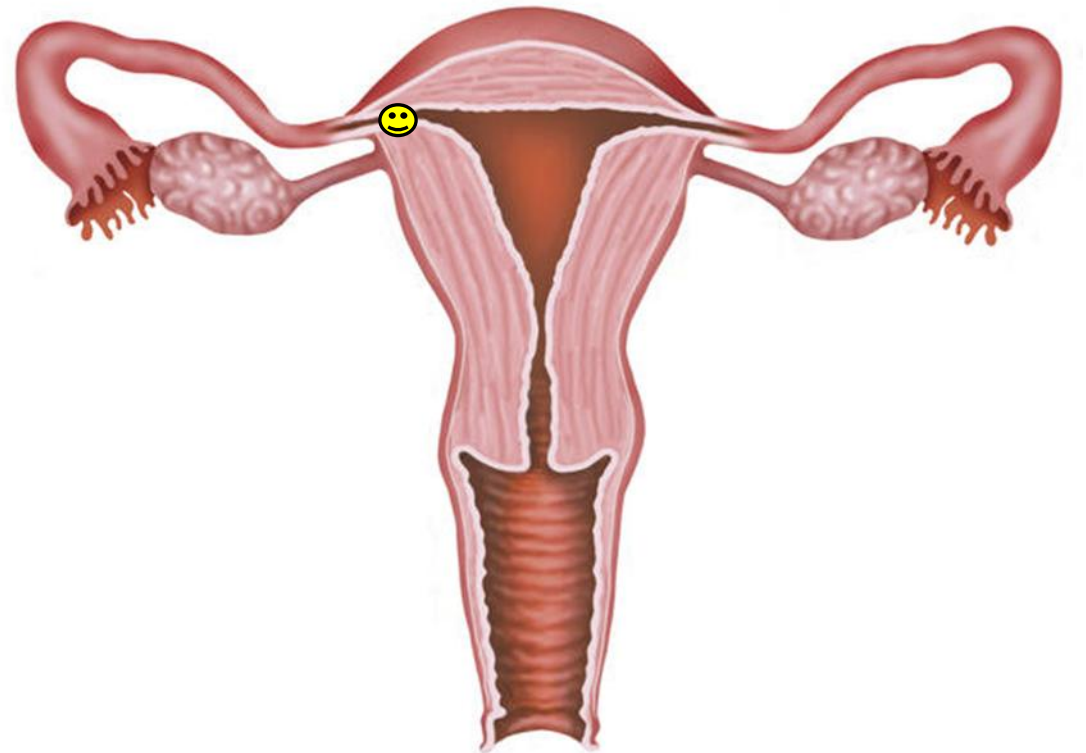


“NORMAL” MENSTRUAL CYCLE

Fertilization then occurs in the fallopian tube

And the embryo then moves through the tube towards the uterus

Where it will implant in the endometrial lining

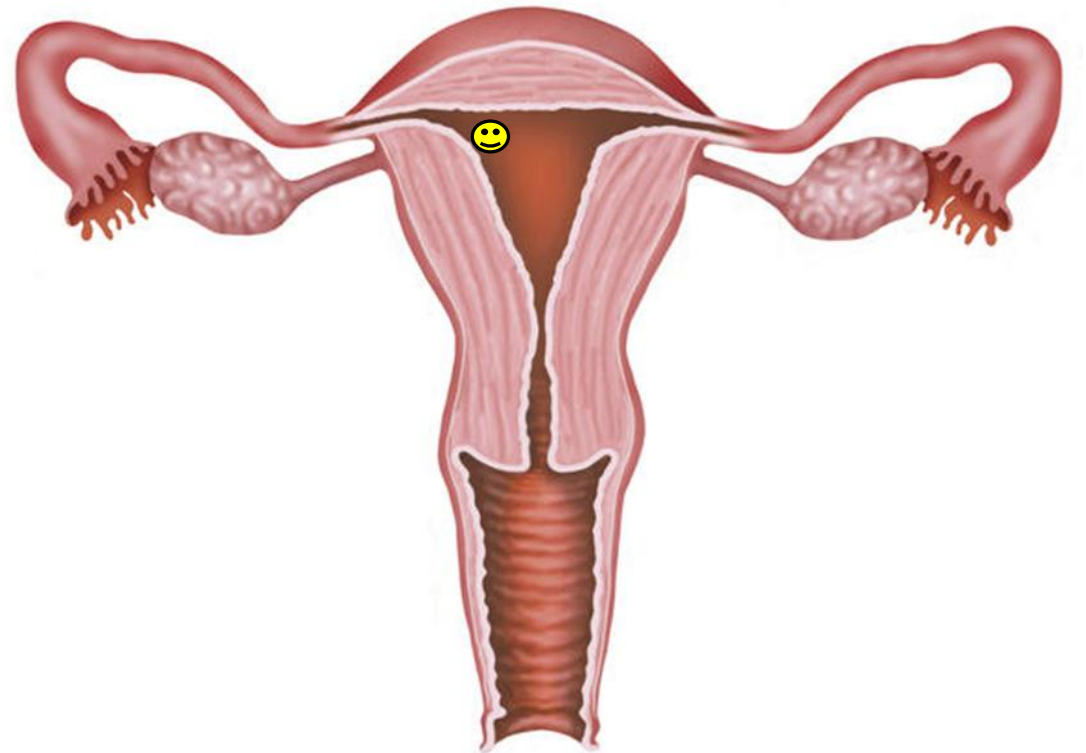


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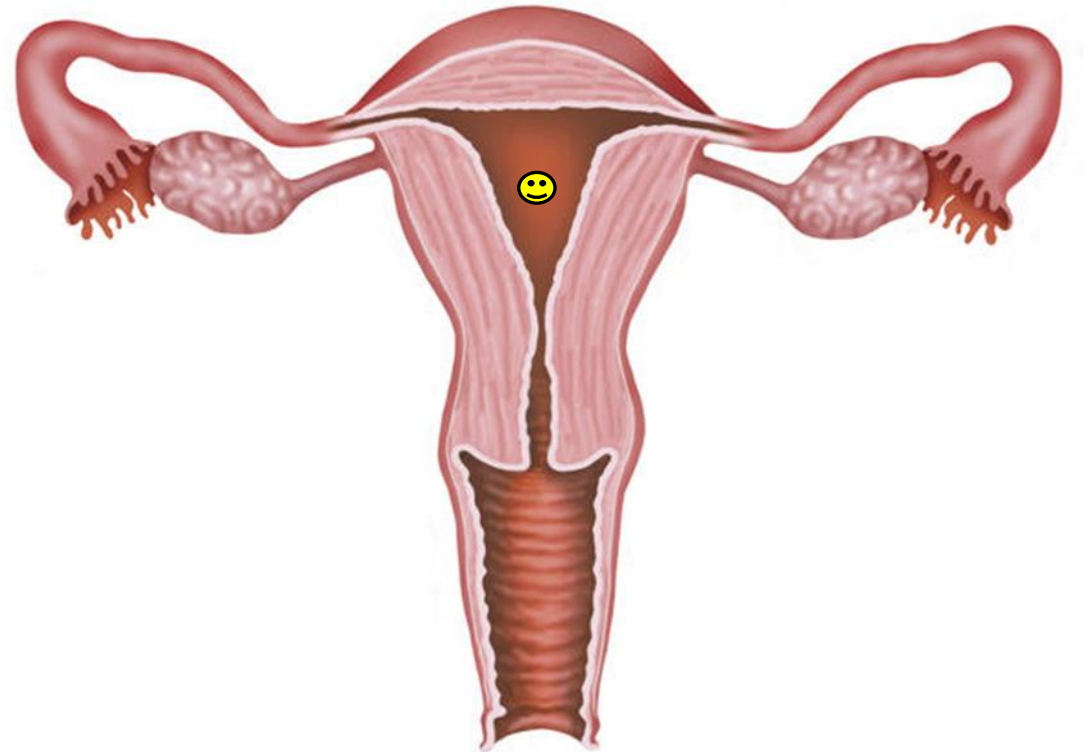


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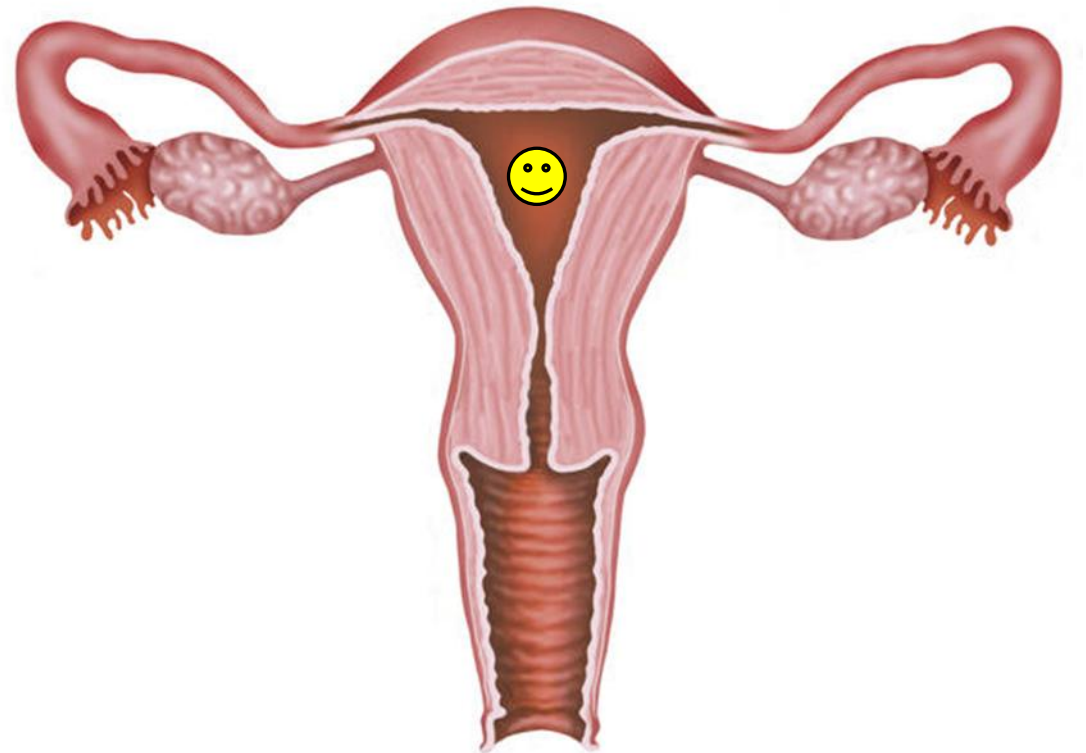
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Fertilization then occurs in the fallopian tube

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Where it will implant in the endometrial lining

And begin to grow



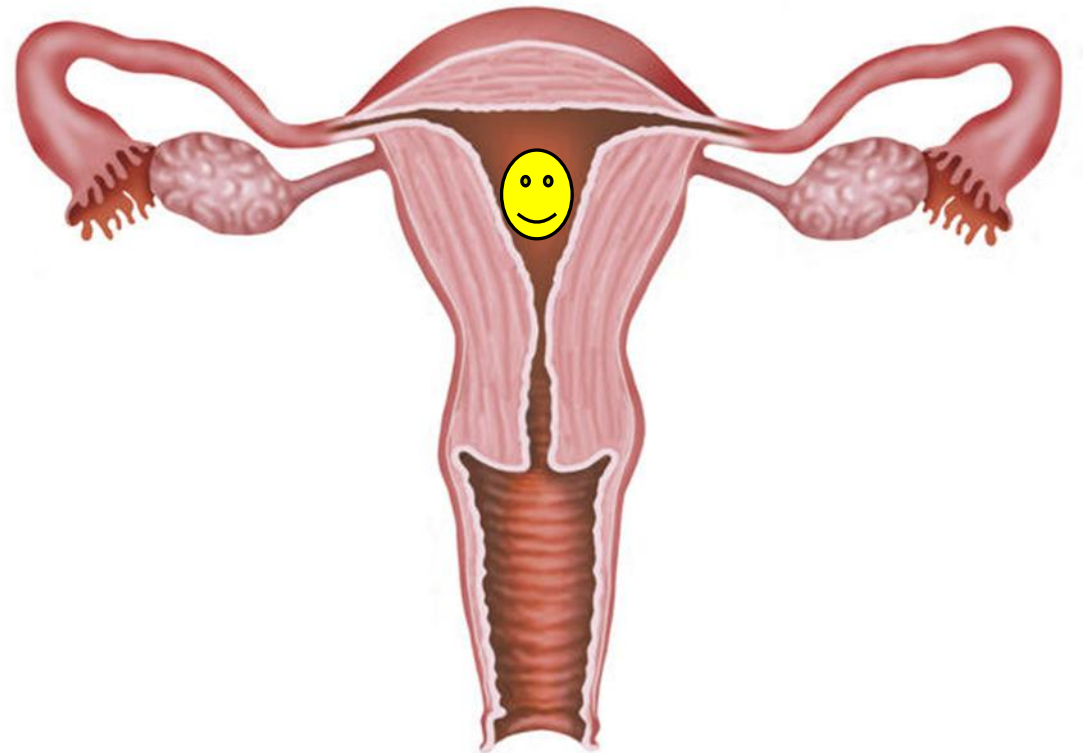
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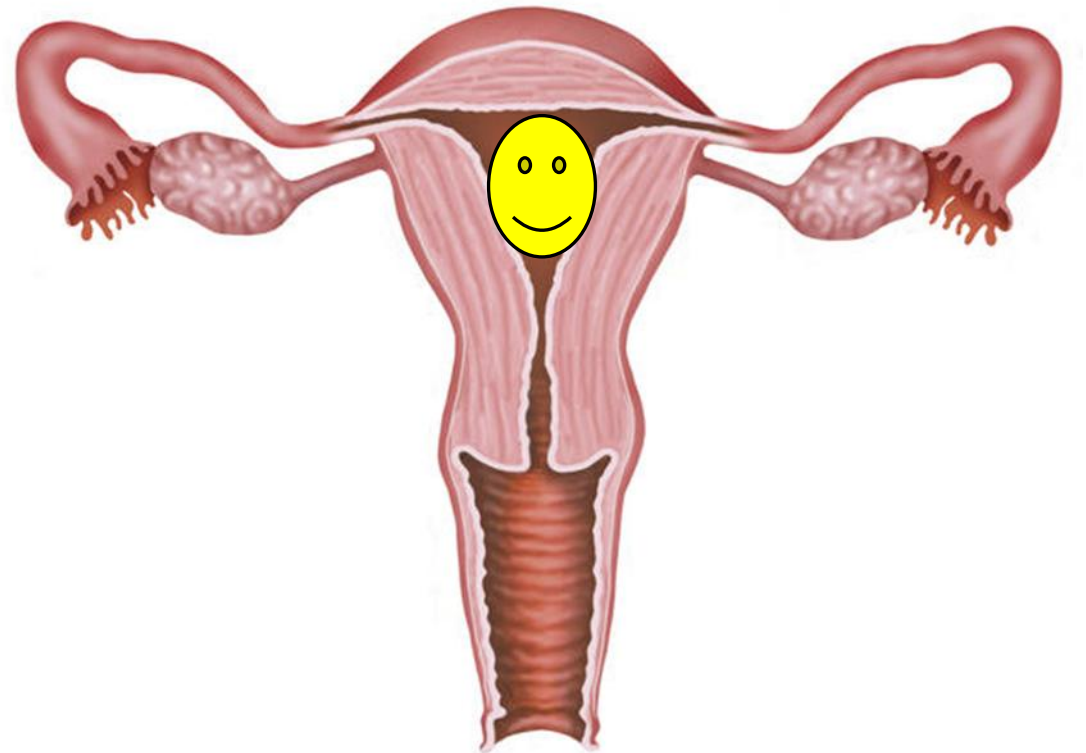
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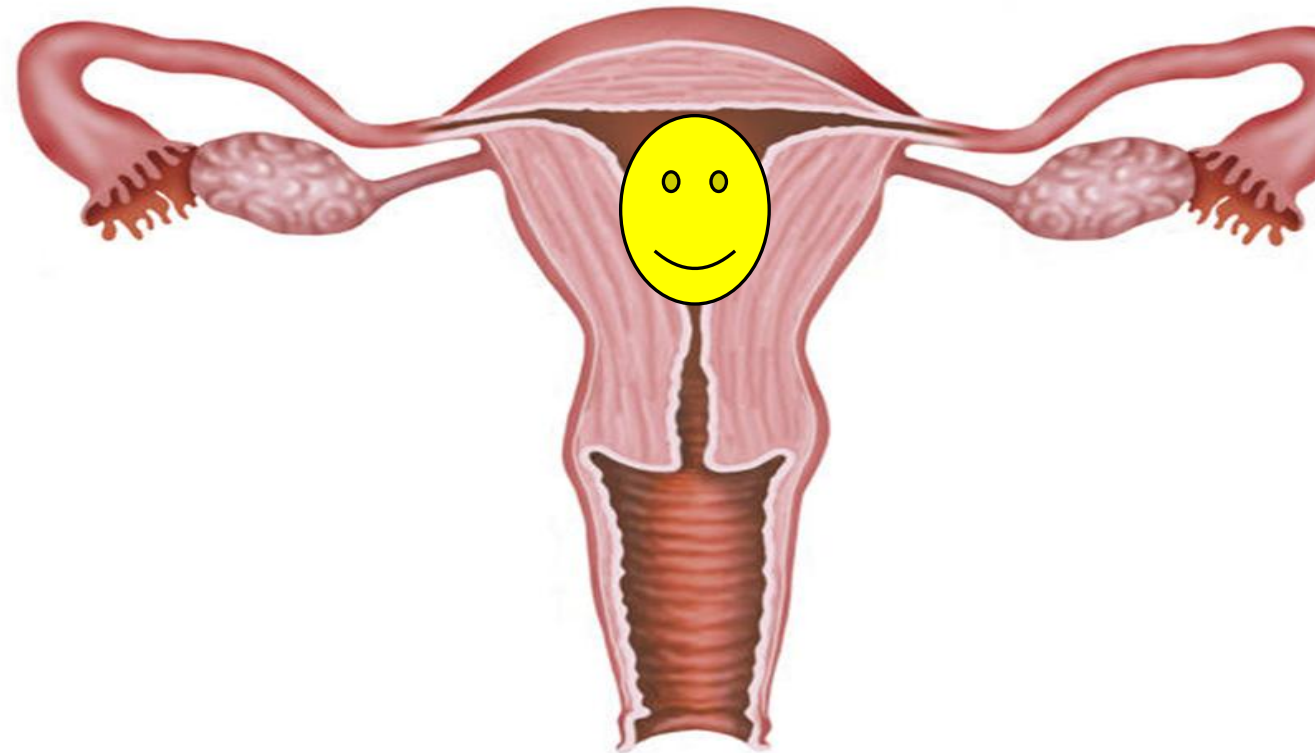
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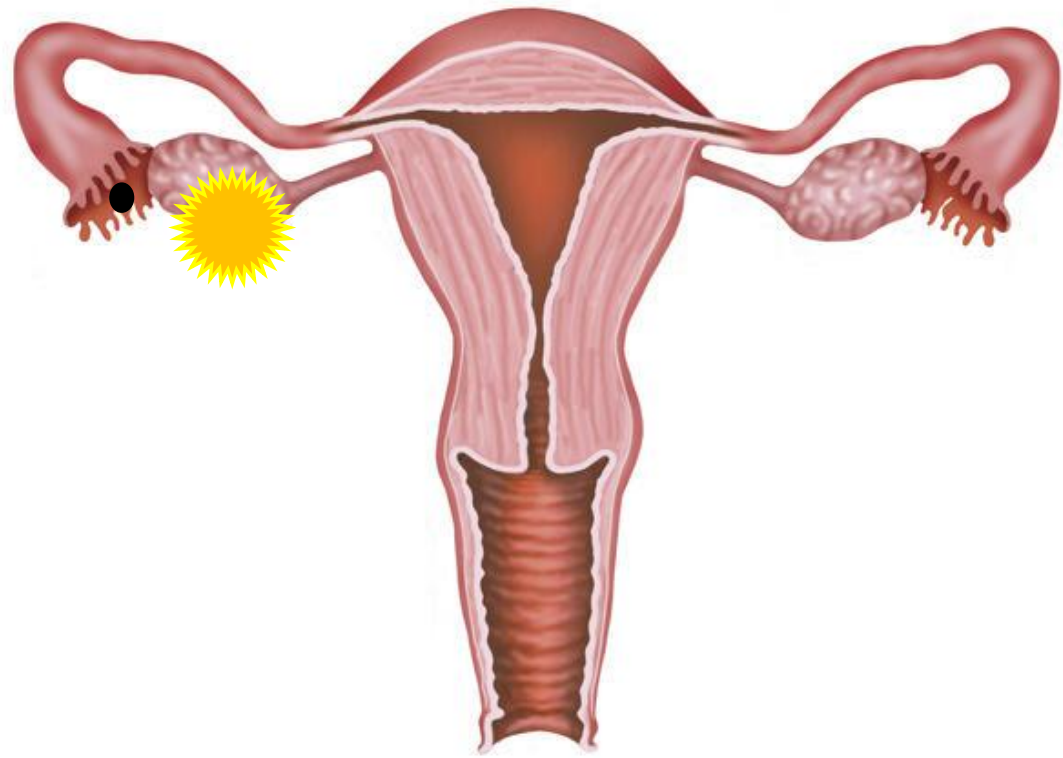
9 MONTHS LATER

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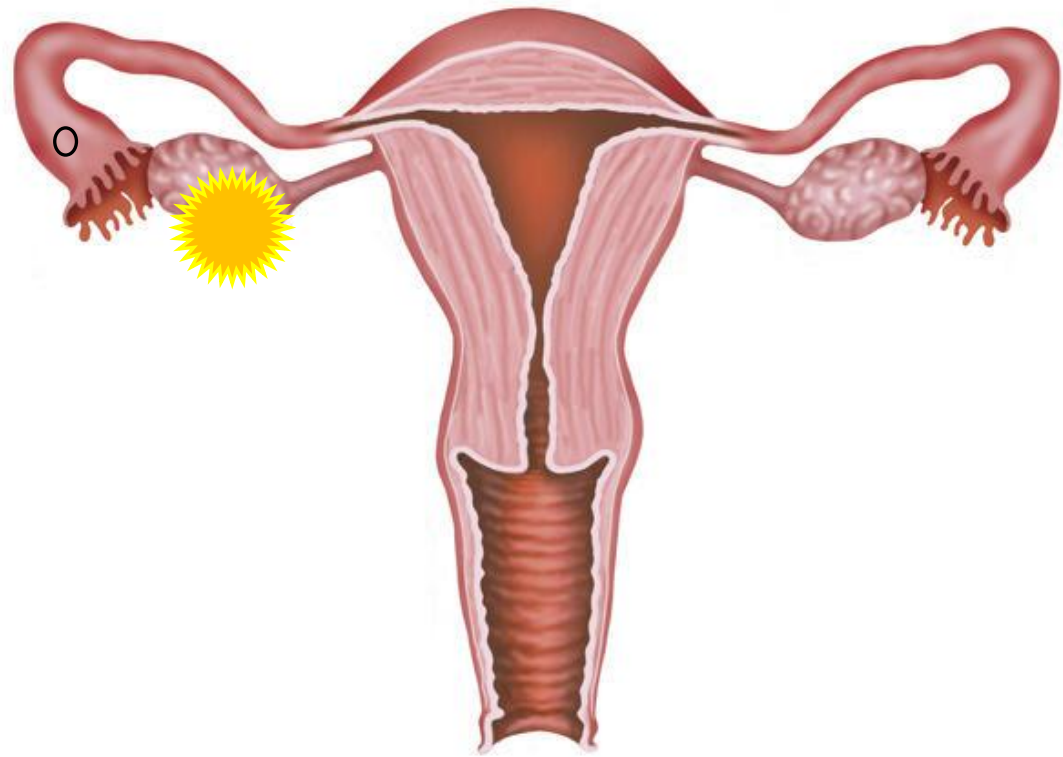
“NORMAL” MENSTRUAL CYCLE

If fertilization does not occur



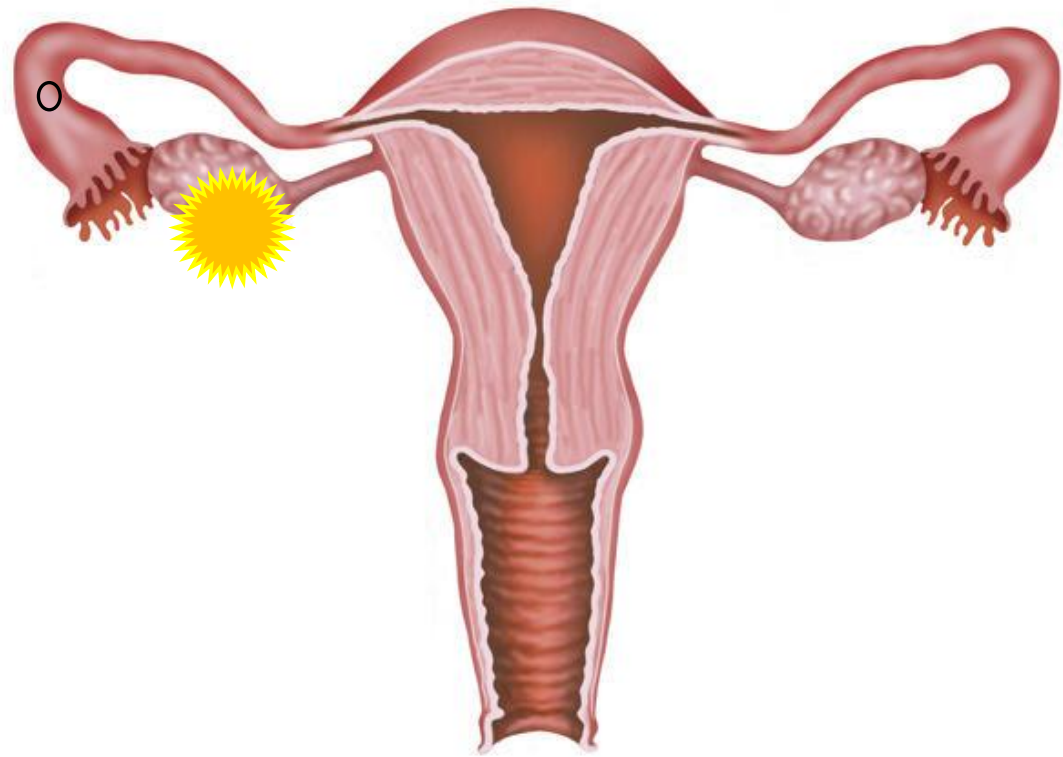
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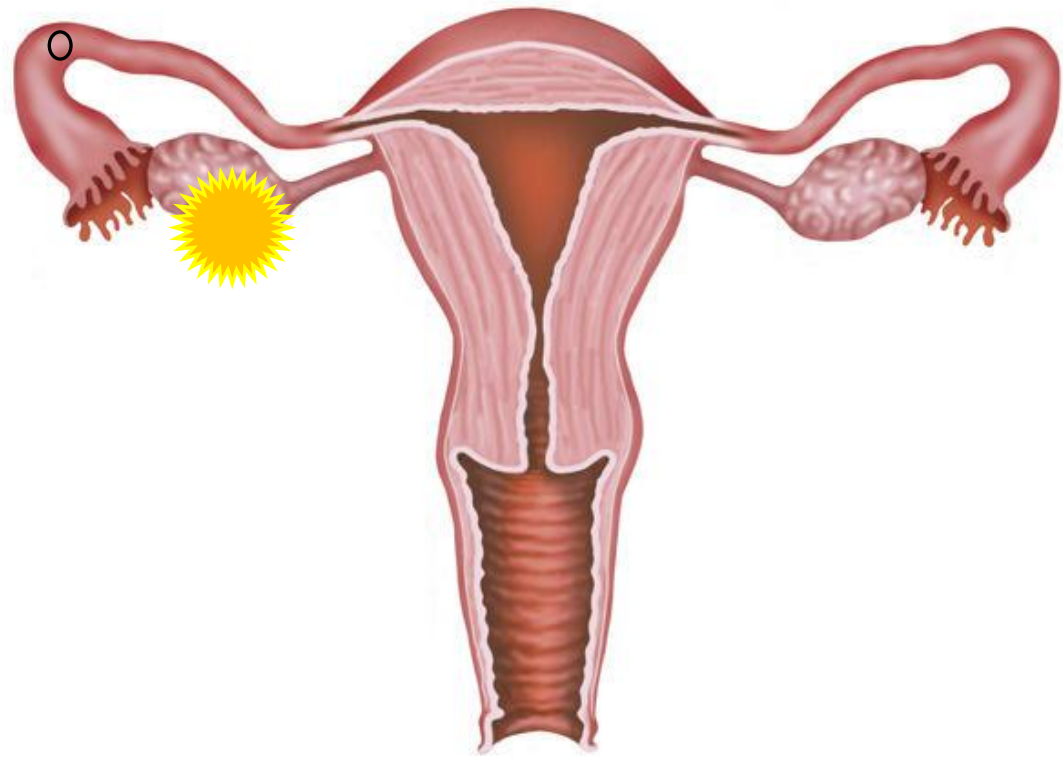
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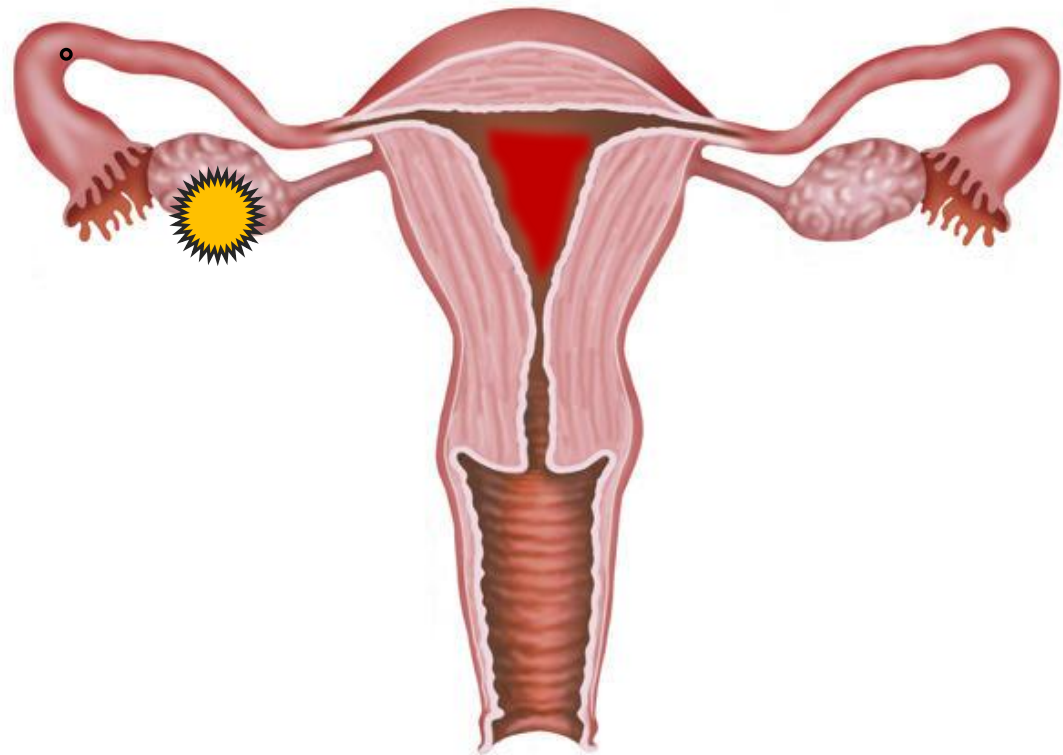
If fertilization does not occur



“NORMAL” MENSTRUAL CYCLE

If fertilization does not occur

There are no hormones from the pregnancy to support the endometrial lining and thus, the endometrial lining breaks down

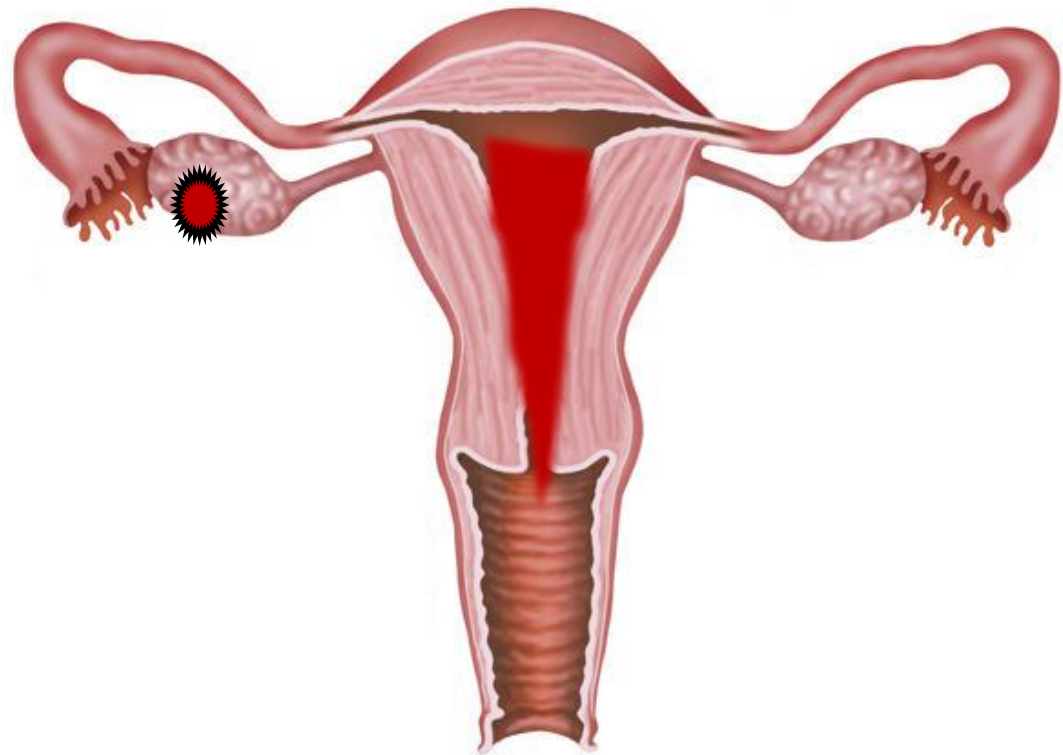


“NORMAL” MENSTRUAL CYCLE

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And eventually comes out as menses

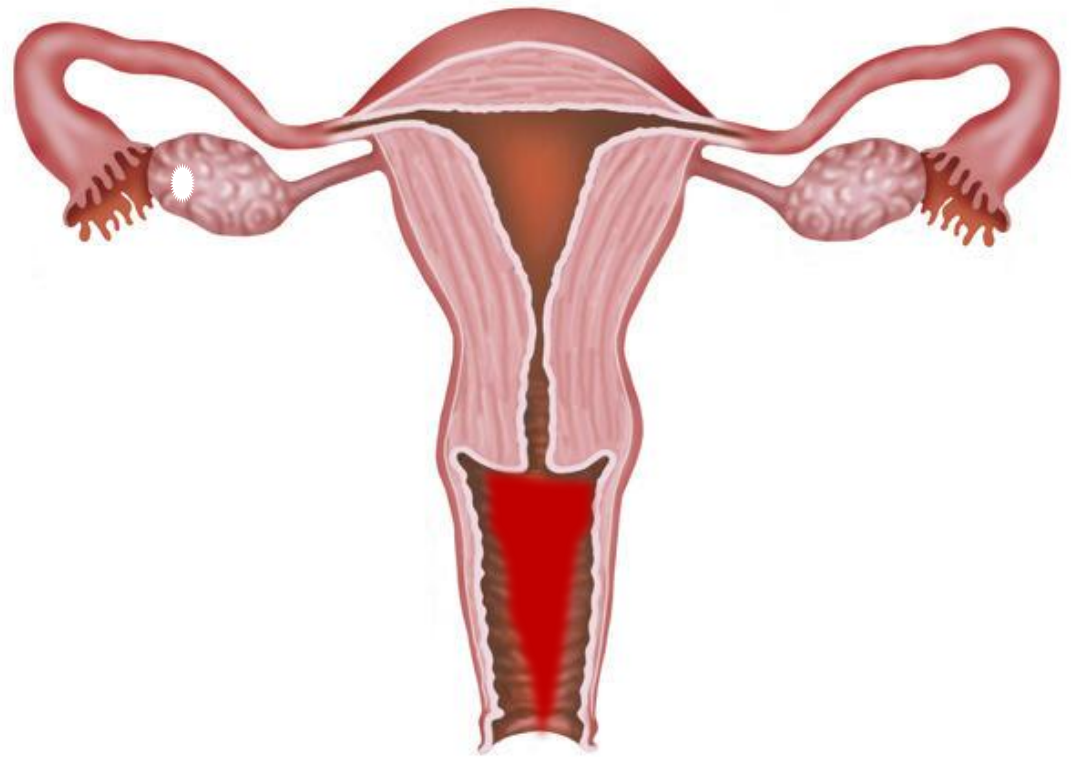


“NORMAL” MENSTRUAL CYCLE

If fertilization does not occur

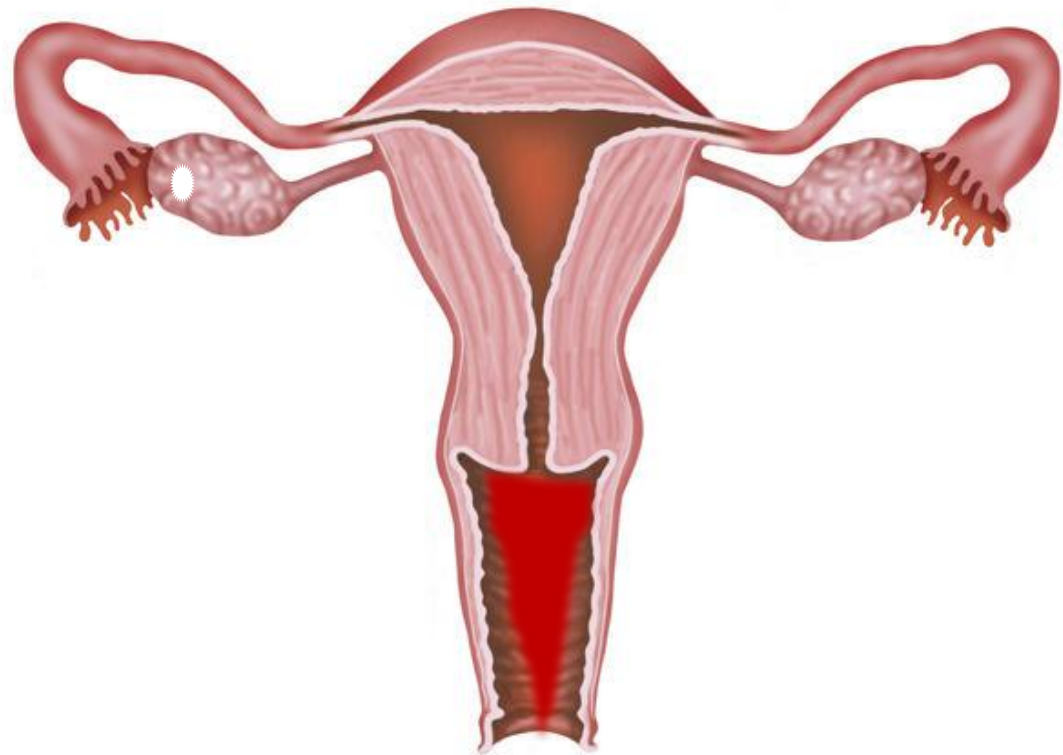
The endometrial lining breaks down

And eventually comes out as menses



“NORMAL” MENSTRUAL CYCLE

Which is now the first day of the next cycle

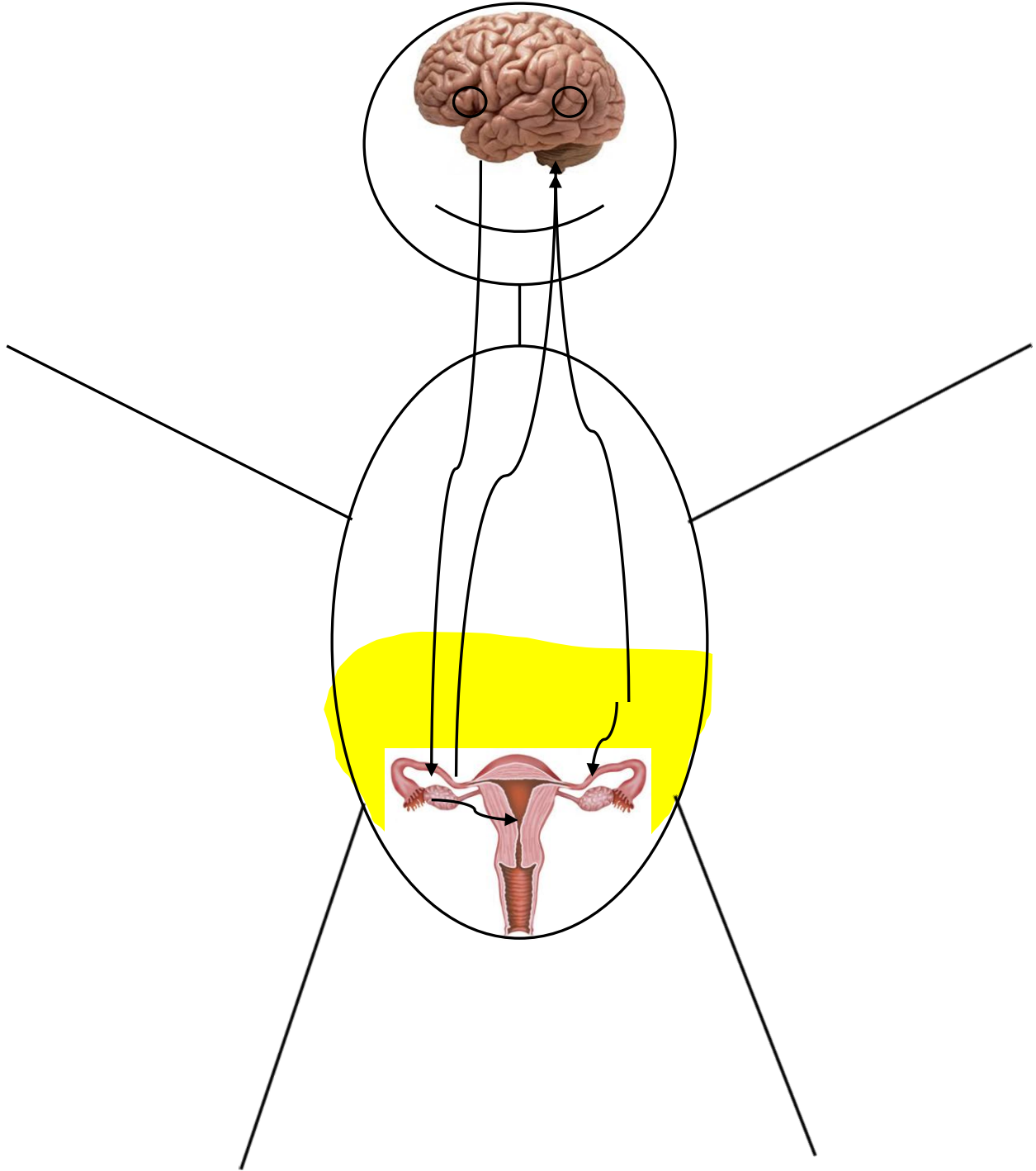




WHAT IS GOING ON IN THE PCOS MENSTRUAL CYCLE?

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Remember that incredibly elegant diagram of communication between the hormone producing organs in the body?



WHAT IS GOING ON IN THE PCOS MENSTRUAL CYCLE?

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Plus several other hormone producing organs including

- Liver
- Pancreas
- Adrenal glands
- Thyroid

WHAT IS GOING ON IN THE PCOS MENSTRUAL CYCLE?

Well it is actually more complex than the diagram depicts.

There is a high degree of precision in the communication process.

Plus several other hormone producing organs including

Liver

Pancreas

Adrenal glands

Thyroid

All of which require highly regulated, rhythmic, pulsatile release of hormones with specific responses of different hormones from the target organs

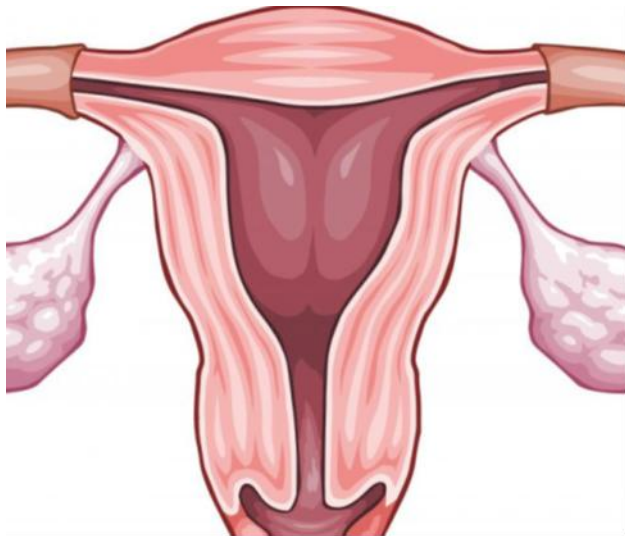
A LOT LIKE JAZZ



PCOS MENSTRUAL CYCLE

In women with PCOS, the communication between the organs is less precise or even absent.

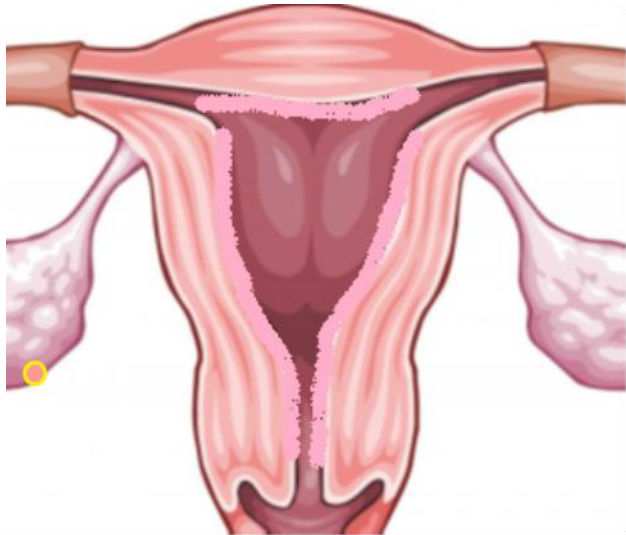
The result is that the synchrony between egg growth and endometrial lining proliferation



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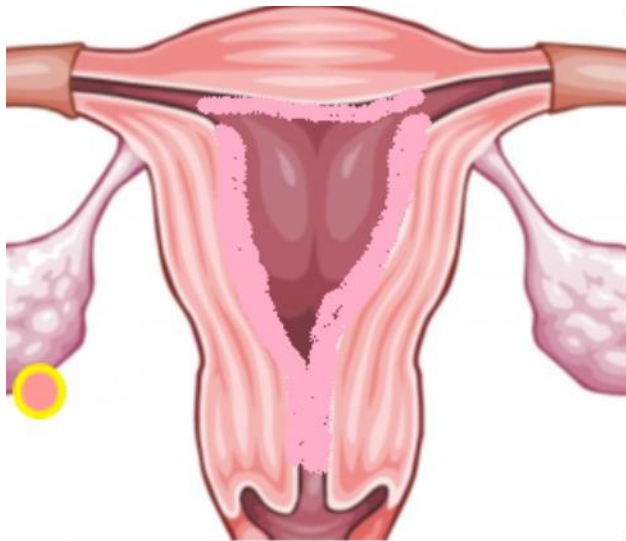
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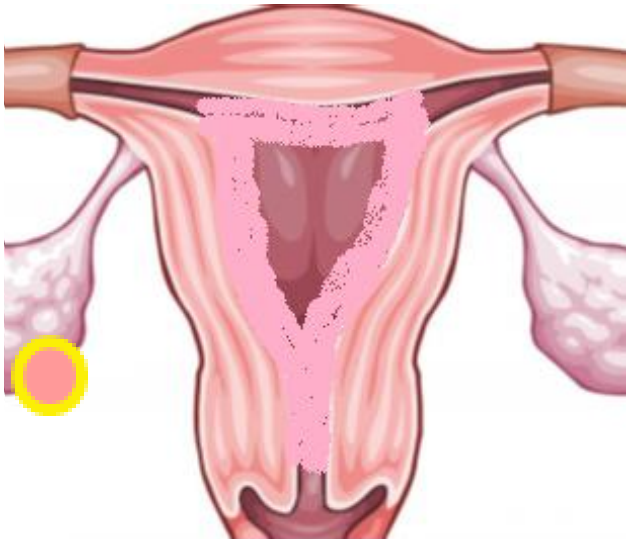
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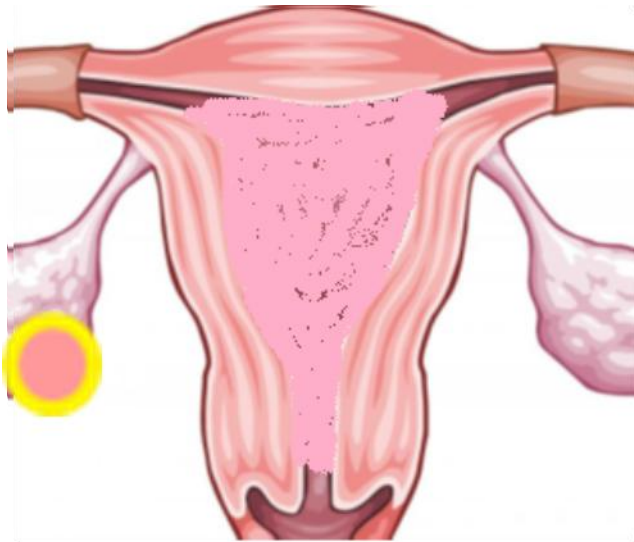
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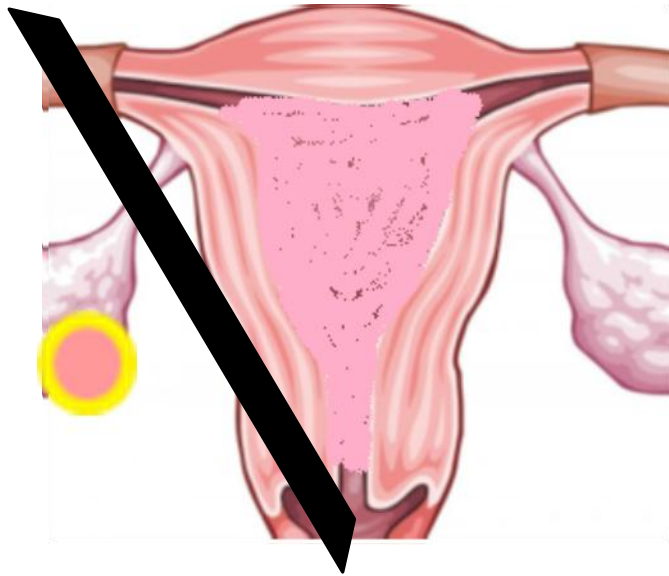
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Breaks down

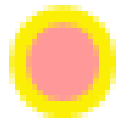
PCOS MENSTRUAL CYCLE

Resulting in eggs that grow and ovulate during some months



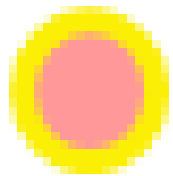
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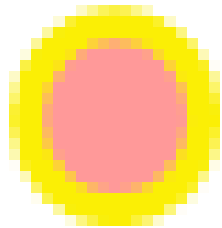
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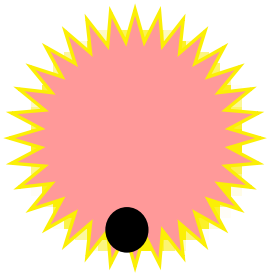
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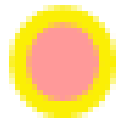
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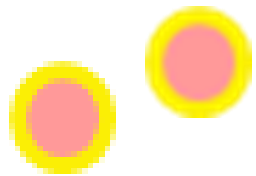
PCOS MENSTRUAL CYCLE

And just smolder during others



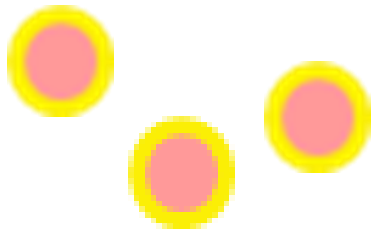
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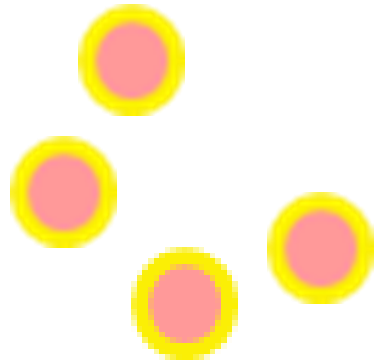
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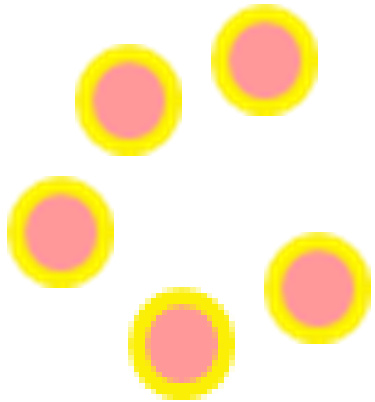
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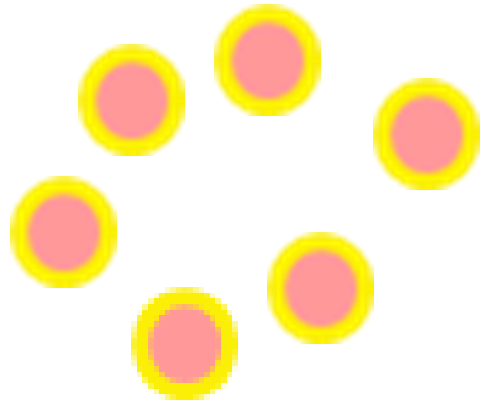
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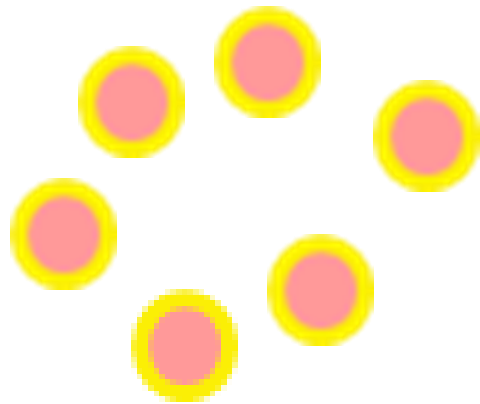
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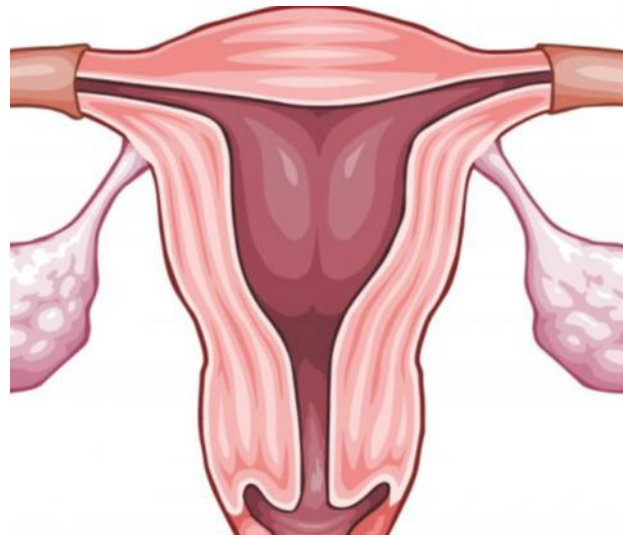
PCOS MENSTRUAL CYCLE

In the meantime.

PCOS MENSTRUAL CYCLE

In the meantime

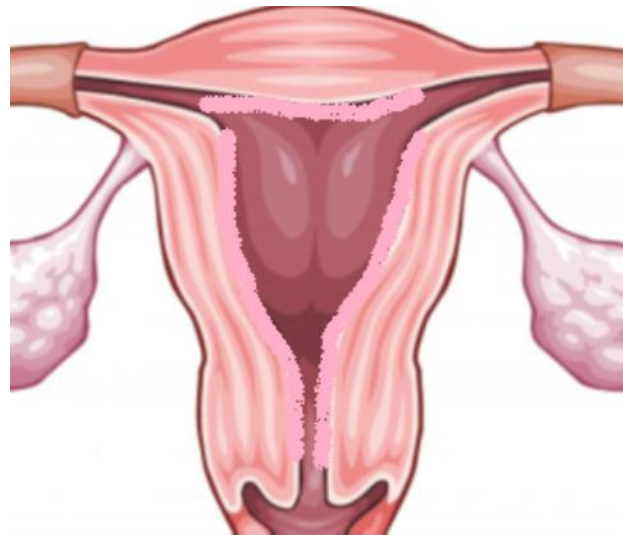
The uterine lining may start to proliferate,



PCOS MENSTRUAL CYCLE

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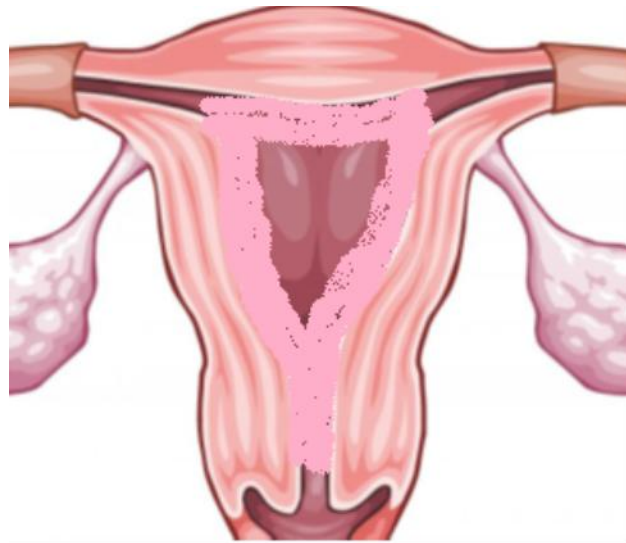
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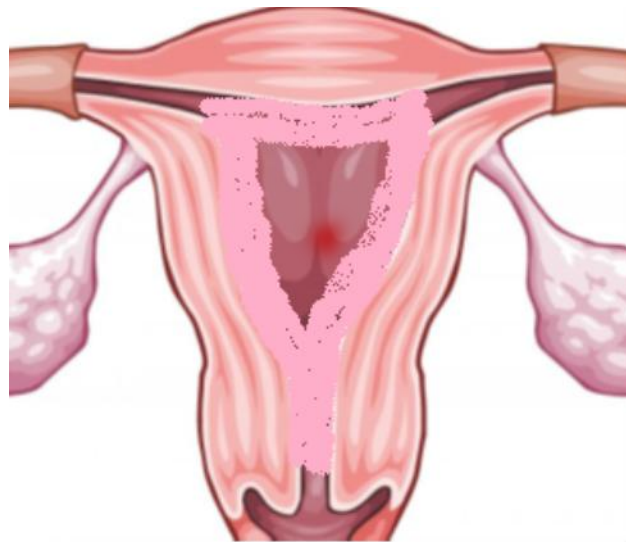


PCOS MENSTRUAL CYCLE

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The uterine lining may start to proliferate, but it never gets the appropriate signals it needs to complete its cycle with eventual shedding

Resulting in an irregular lining that may break off and bleed at unpredictable times

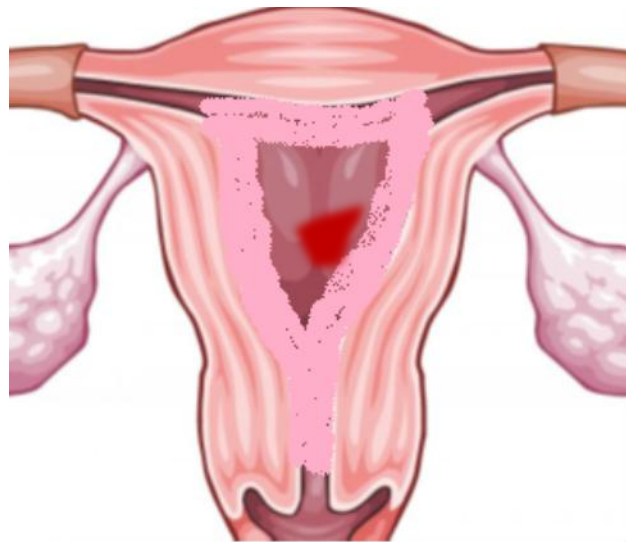


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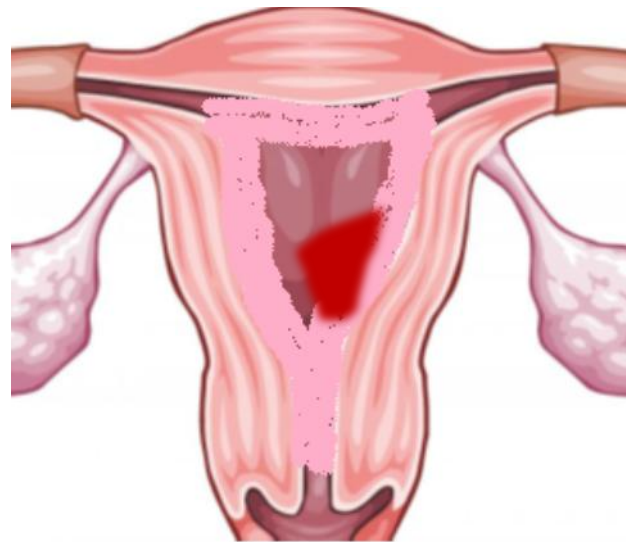


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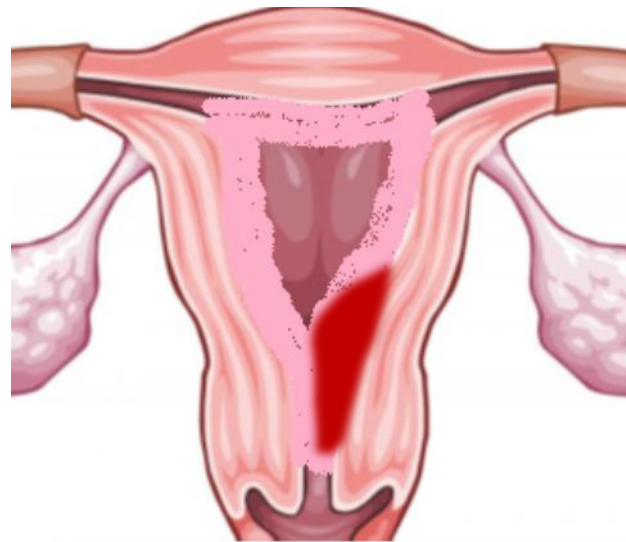


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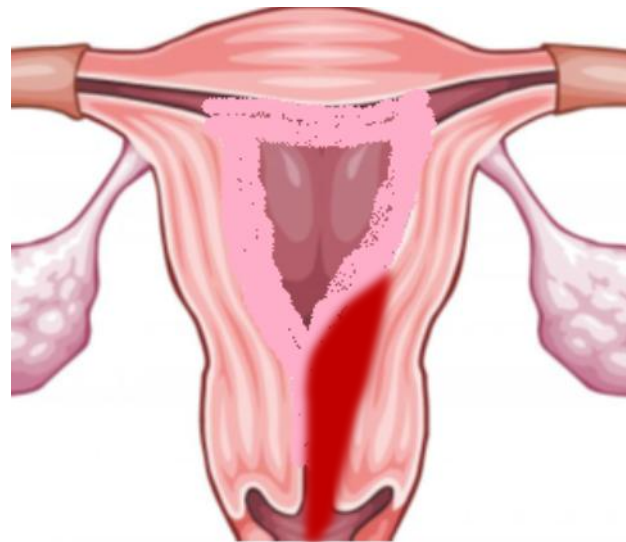



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This is why irregular cycles and oligo-ovulation (infrequent ovulation) are hallmarks of PCOS



SO WHAT CAN WE DO ABOUT THIS?



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It depends on your specific cause for PCOS

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It depends on your specific cause for PCOS

- Because while all women with PCOS have some degree of miscommunication with their hormones. They are not all from the same cause

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- Because while all women with PCOS have some degree of miscommunication with their hormones. They are not all from the same cause

It also depends on your goals

- Some patients are trying to conceive
- While others just want regular cycles and not to conceive.



Ultimately understanding what is
happening in your specific situation

And

Identifying your specific goals



Is the key to answering the PCOS
Challenge



Questions

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