

**CAN WE
REVERSE
OVARIAN
AGING?**

Manon Murdeu

**CAN WE
REVERSE
OVARIAN
AGING?**

OVARYOUTH

stem cells

pharmacological

POF

ovarian aging

menopause

Mean age of women at birth of first child

2017



#EUWomen

eurostat 

W
H
Y
?

OVARYOUTH

stem cells

pharmacological

POF

ovarian aging

**WHAT IS
MANOPAUSE?**

menopause

OVARYOUTH

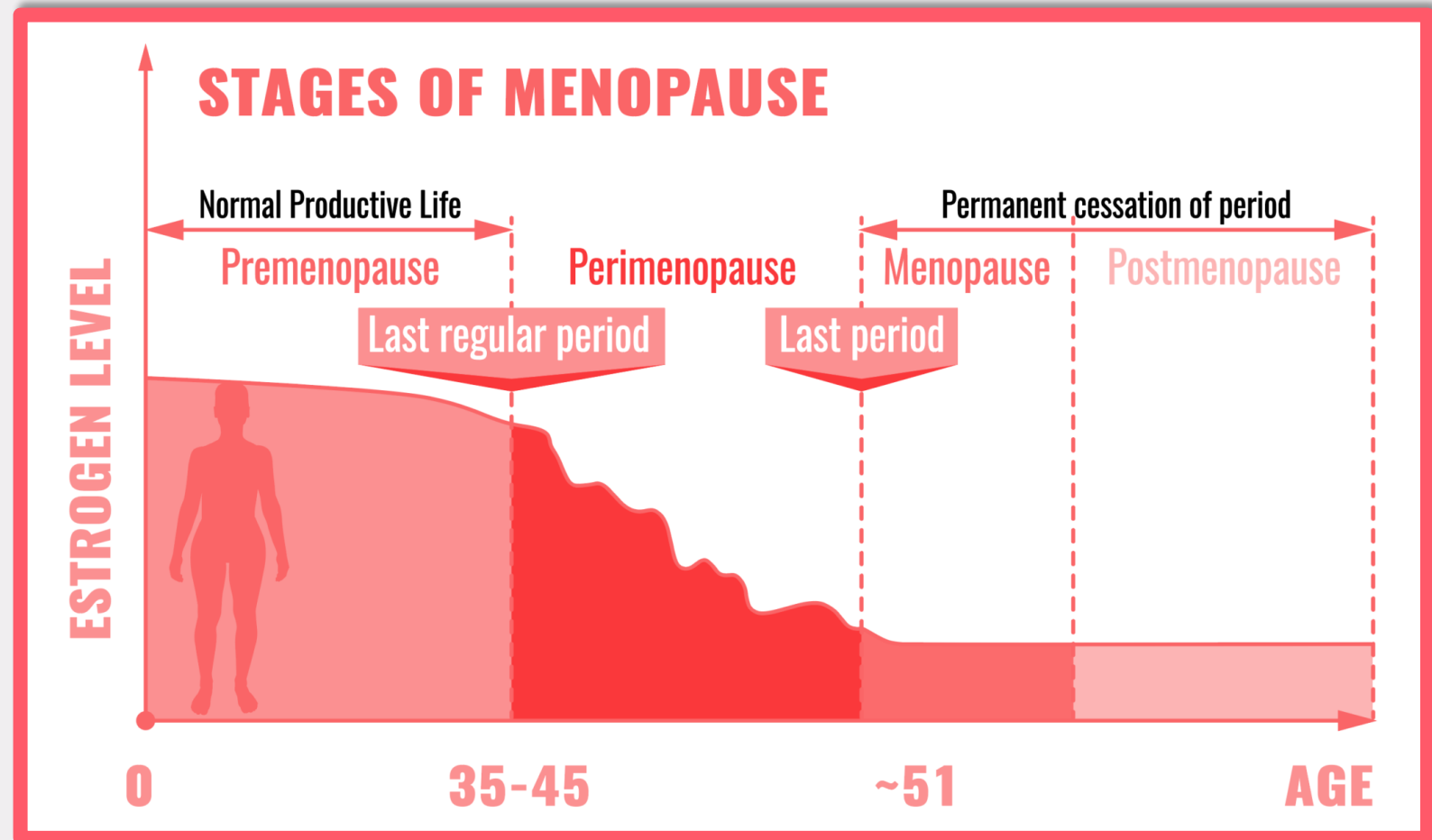
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ovarian aging

It is the final cessation of menstruation for 1 year, originating from estrogen deficit.



menopause

OVARYOUTH

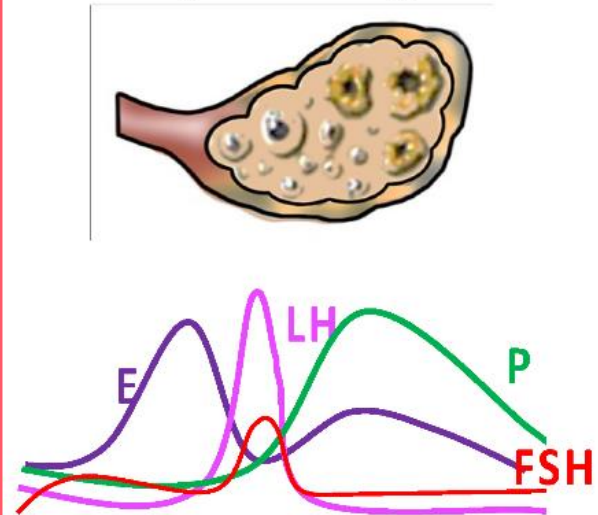
stem cells

pharmacological

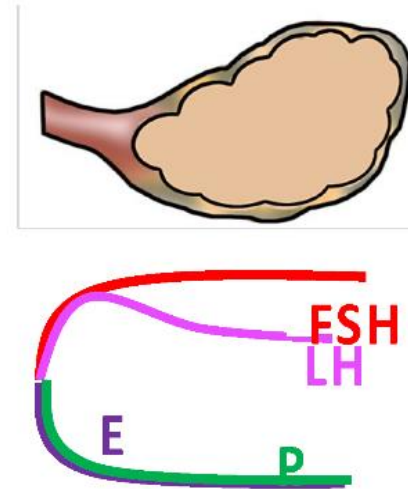
POF

ovarian aging

A. Reproductive age



B. Post-menopausal



It is accompanied by increased levels of gonadotropins in serum

menopause

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POF

ovarian aging

M
E
C
H
A
N
I
S
M

Perimenopause

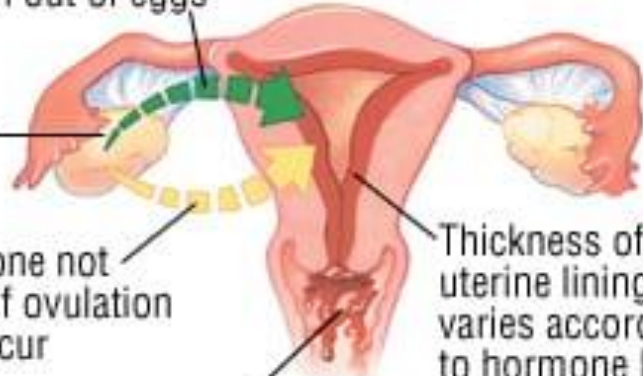
Estrogen decreases as ovaries run out of eggs

Ovulation becomes irregular

Progesterone not produced if ovulation doesn't occur

Periods become irregular

Thickness of uterine lining varies according to hormone level



Postmenopause

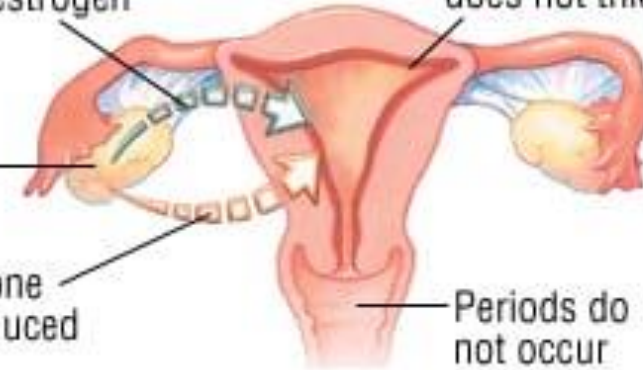
Very little estrogen released

Ovulation does not occur

Progesterone is not produced

Uterine lining does not thicken

Periods do not occur



menopause

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**WHAT IS
OVARIAN
AGING?**

ovarian aging

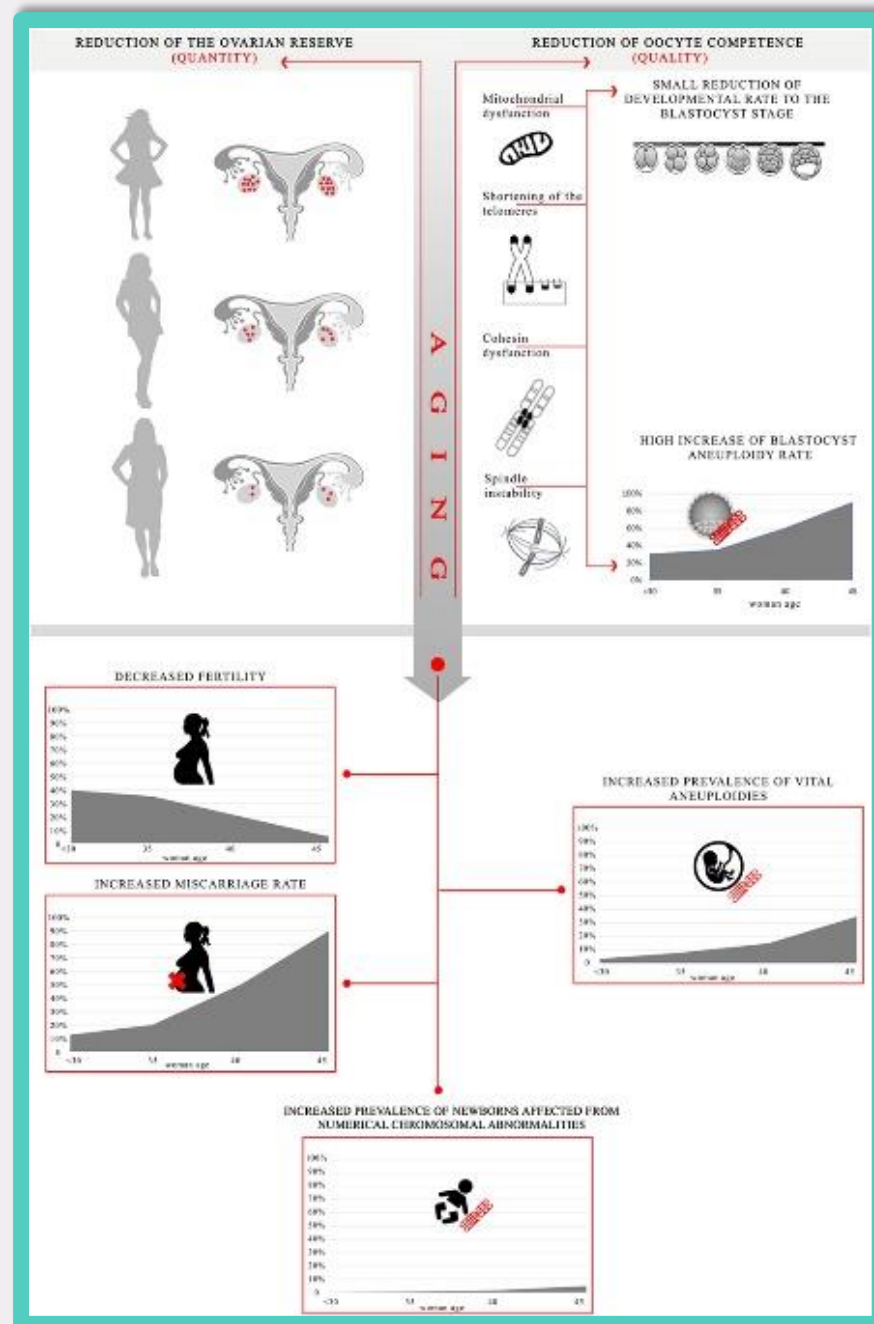
menopause

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It is characterized by gradual declines in ovarian follicle quantity and quality, ending with menopause.

ovarian aging

menopause

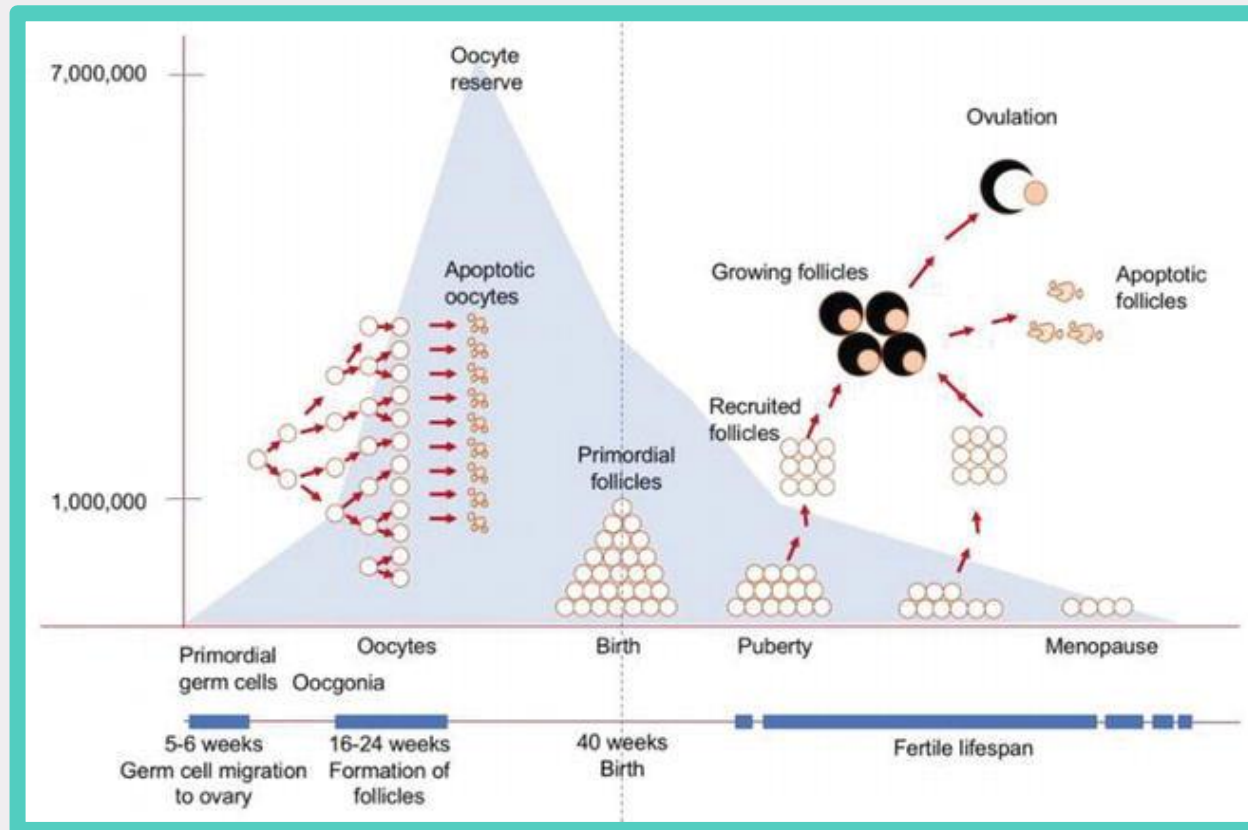
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OVARIAN RESERVE



ovarian aging

menopause

Fetal life
6-7 millions



Birth
1-2 millions



Puberty
300/400.000



Menopause
>1000

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Dysregulation
of GnRH pulse
pattern.

Rise of FSH.



Low inhibin

Acceleration
of follicle
depletion.

ovarian aging

menopause

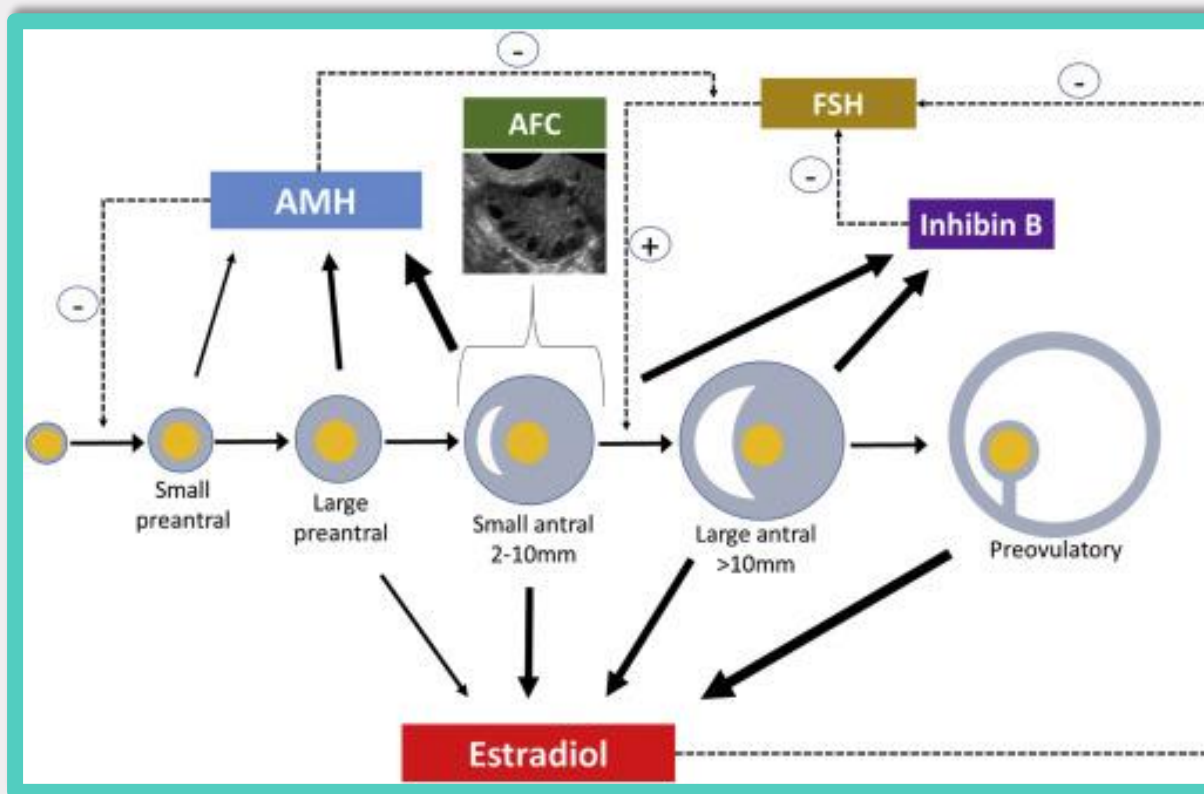
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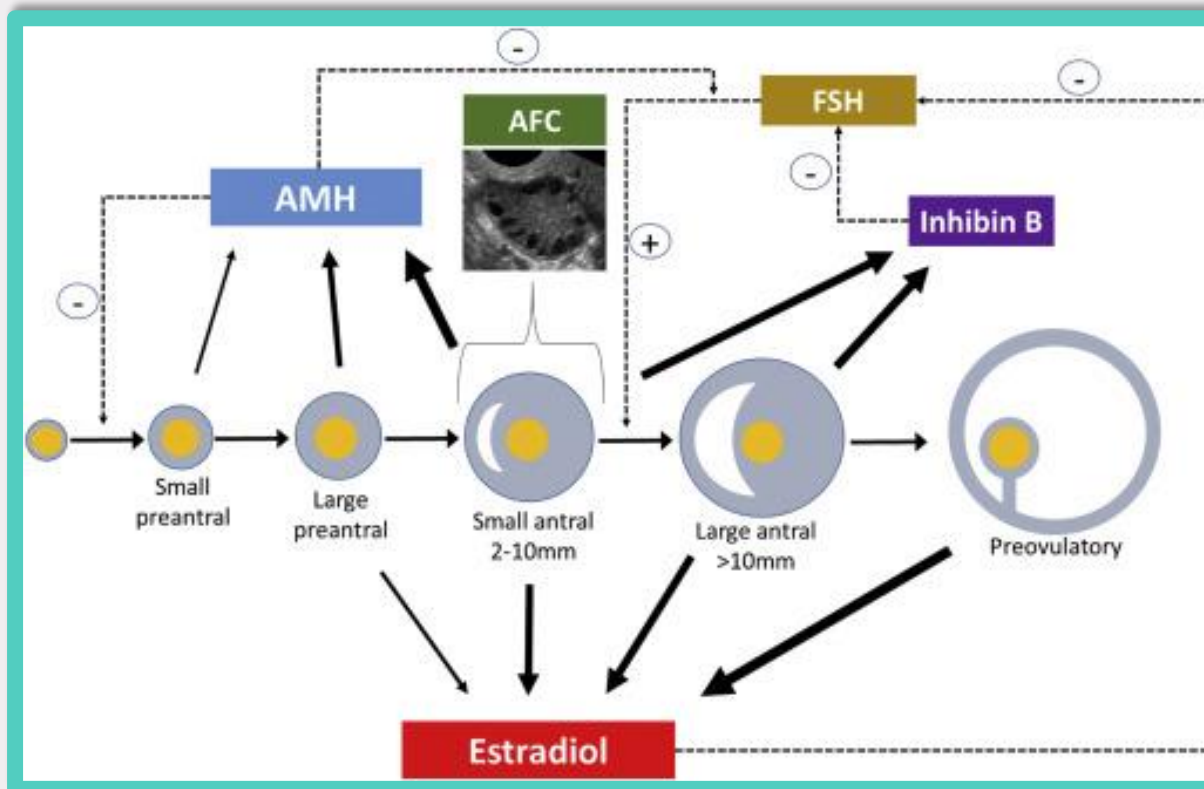
HOW WE CAN EVALUATE IT?



ovarian aging

menopause

menopause



INHIBIN B

Its concentration decline in early follicular phase before an increase in FSH level

EFFORT

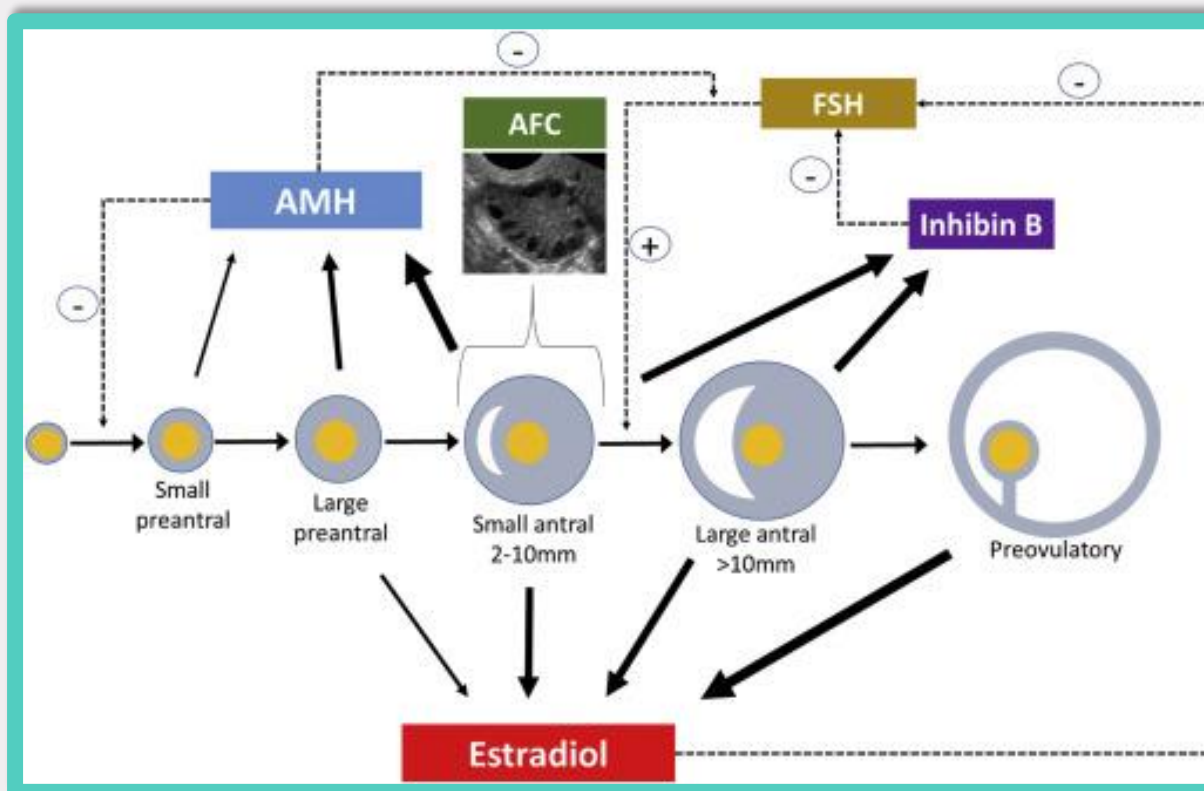
Measurement of FSH and E2 following the FSH administration

GAST

the assessment of serum E2 following application of GnRH agonist

CCCT

CC is administered daily from day 5 to day 9 of the cycle. FSH and E2 levels are measured



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WHAT IS

PREMATURE OVARIAN FAILURE PHENOMENA

1/250
IN WOMEN

< 35
YEARS



1/100
IN WOMEN

< 40
YEARS

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menopause

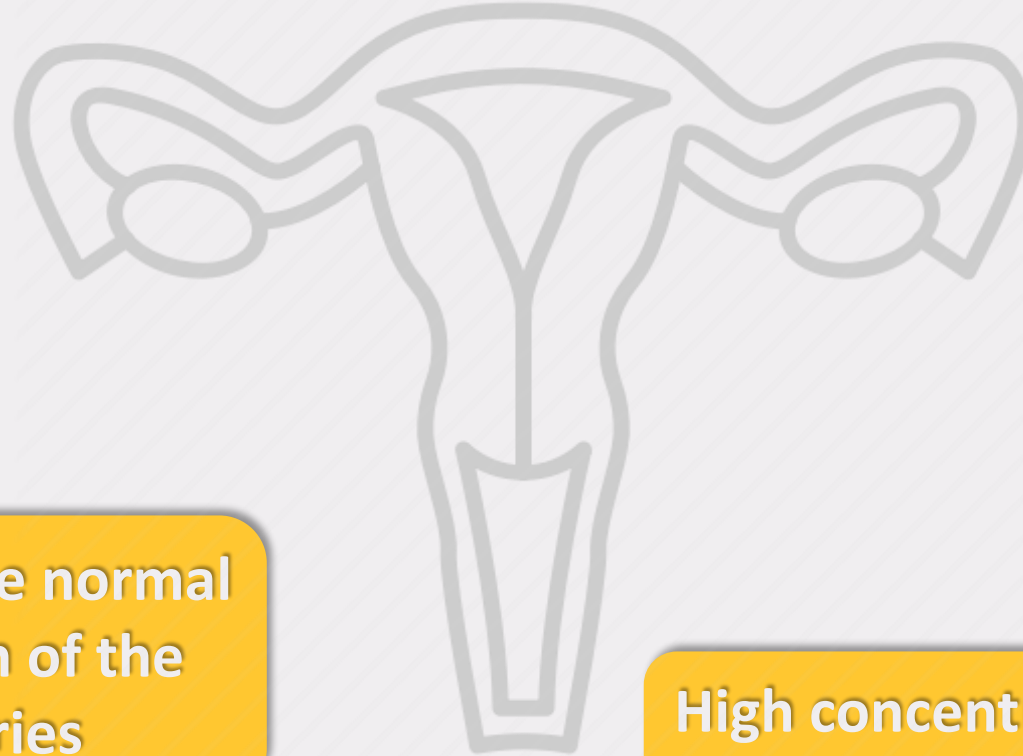
CHARACTERISTICS:

Oligo-amenorrhea

Hypoestrogenism
before the age of 40

Loss of the normal
function of the
ovaries

High concentration
of FSH



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Genetic disorders

Idiopathic

**Autoimmune
disorders**

**Radiation or
chemotherapy**



CAUSES:

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menopause

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**HOW WE CAN
TREAT IT ?**

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ANTIOXIDANTS

VITAMIN C

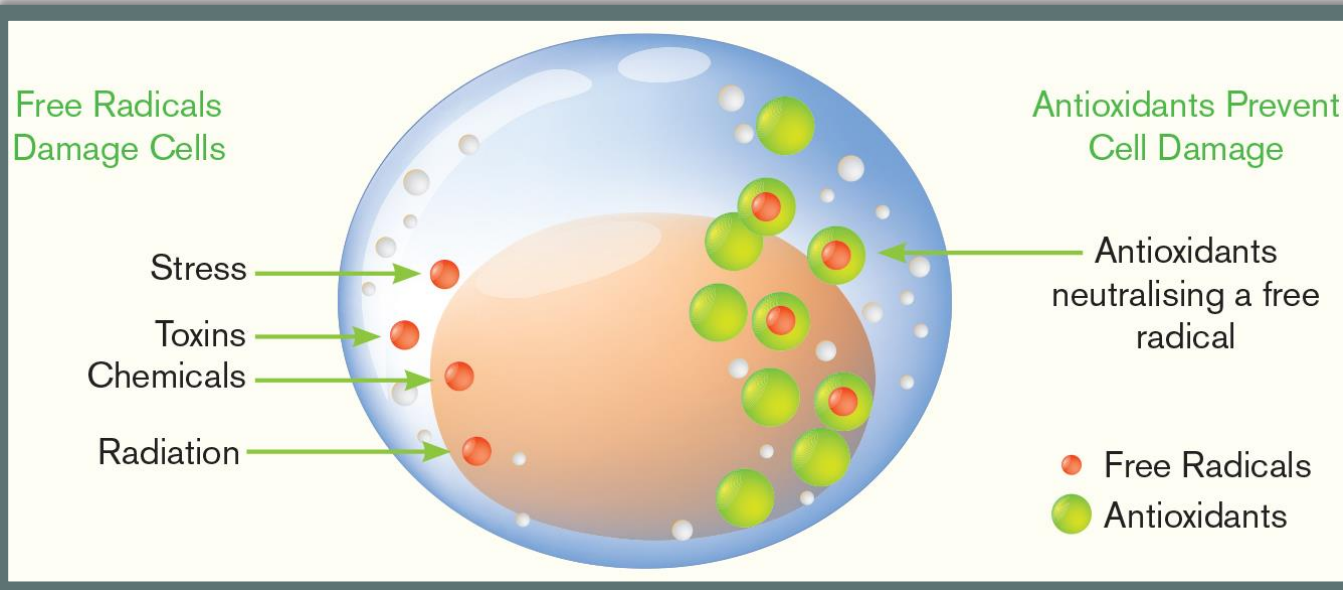
reduce a-tocopheroxyl radicals and level of low-density lipoprotein.

N-ACETYL-L-CYSTEINE

reduces oxidative stress-induced telomere shortening, telomere fusion and chromosomal instability in oocytes, improves oocyte and early embryo development.

CURCUMIN

protect ovarian reserve and ovarian function from tissue injuries.



ANTIOXIDANTS

COENZYME Q10

Inhibit lipid peroxidation, protein, and DNA oxidation.

PROANTHOCYANIDIN

a phenolic compound exists in fruits, vegetables, nuts, seeds, wines and tea.



POLYPHENOLS

Quercetin increases the antioxidant capacity of the ovary by upregulating the expression of some oxidative stress-related genes.

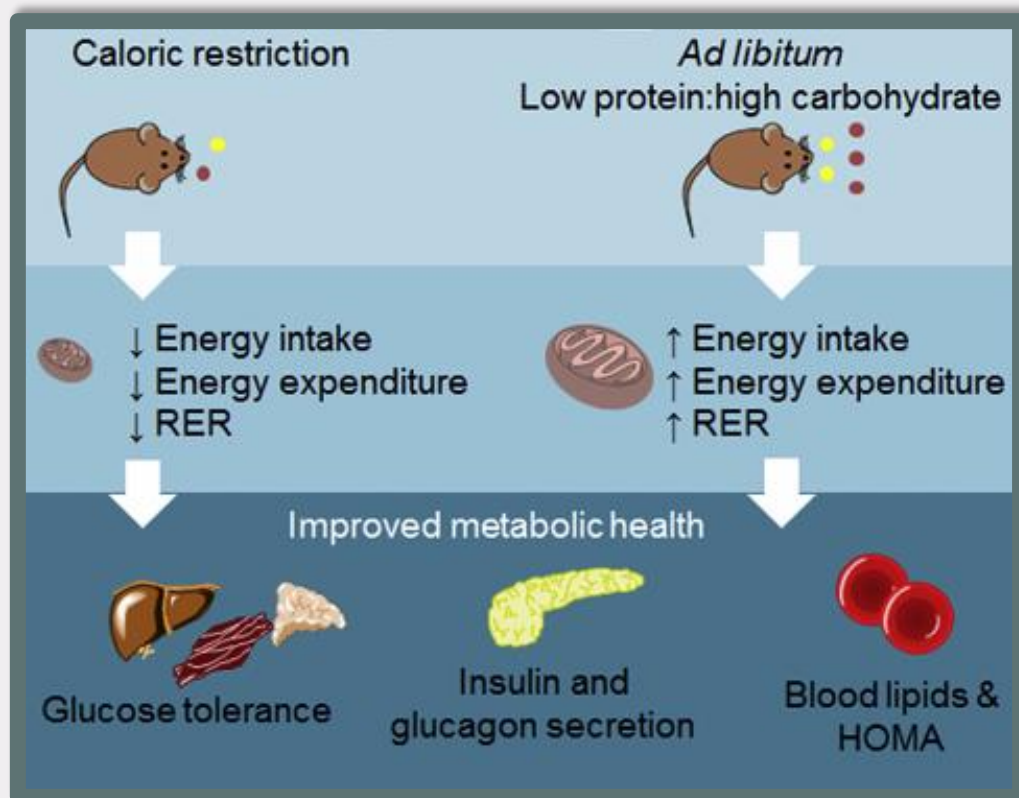
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CALORIC RESTRICTION MIMETIC



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CALORIC RESTRICTION MIMETIC



Regulators of glycolytic metabolism:

METFORMIN

- used for the treatment of type 2 diabetes
- More investigation for ovarian functions are needed

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CALORIC RESTRICTION MIMETIC

Inhibitors of insulin/IGF-1 signal pathway:

- 2-DEOXY-GLUCOSE
- TAMOXIFEN (inhibitor of estrogen receptor)

Inhibitors of mTOR pathway:

- RAPAMYCIN

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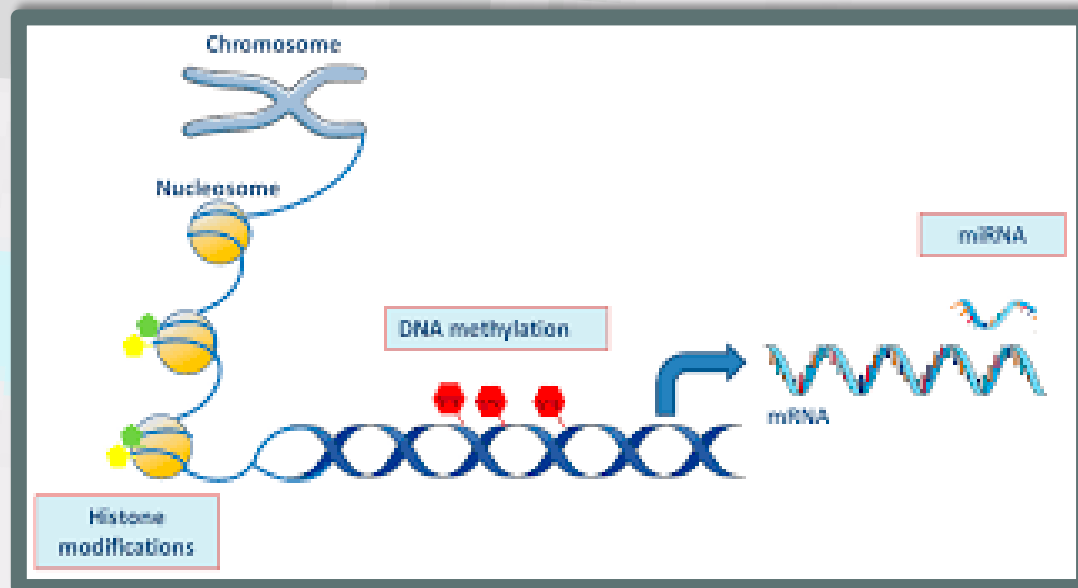
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EPIGENETIC REGULATORS

SIRTUIN ACTIVATORS AND
RESVERATROL

MICRO RNAs



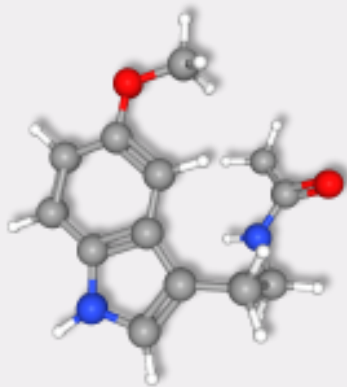
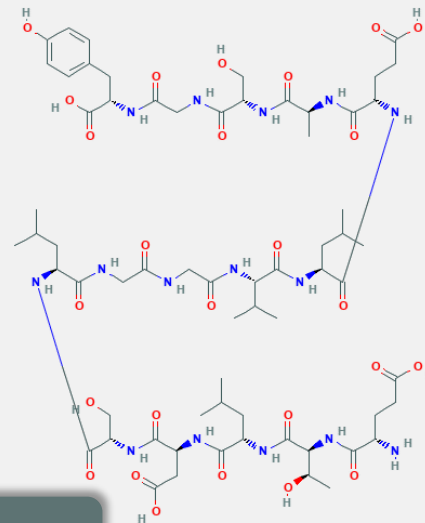
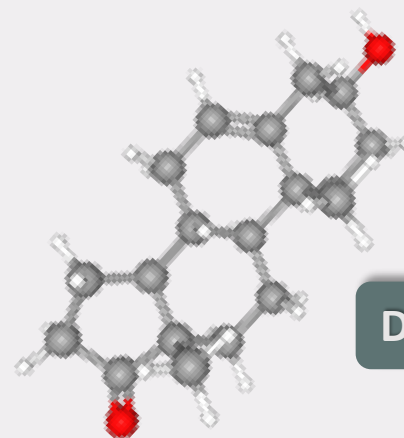
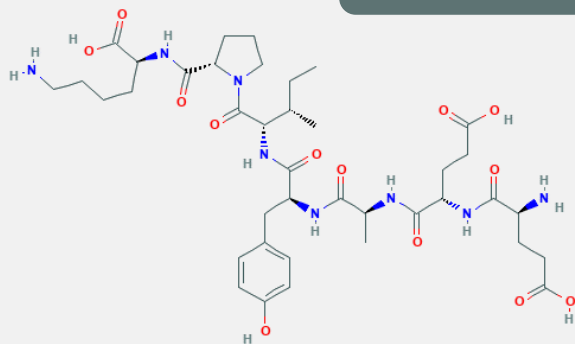
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HORMONES

**MELATONIN****LEPTIN****GROWTH HORMONE****DHEA**

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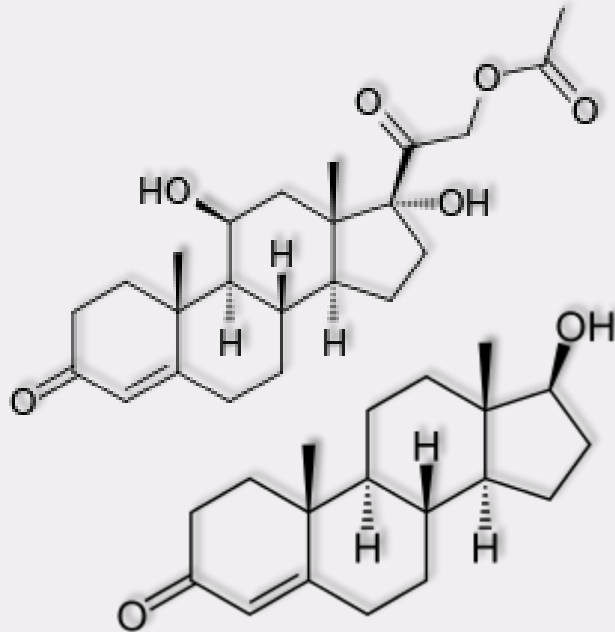
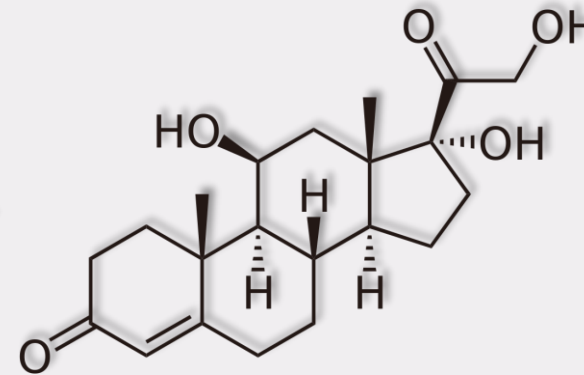
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IMMUNOMODULATORS

Immunosuppressive agents, such as GLUCOCORTICOID can resume ovulation and pregnancy.



Treatment with CORTICOSTEROIDS and TESTOSTERONE can improve the general condition of POF mice models by reducing the levels of lymphocytes, immune globulins, and related antibodies.

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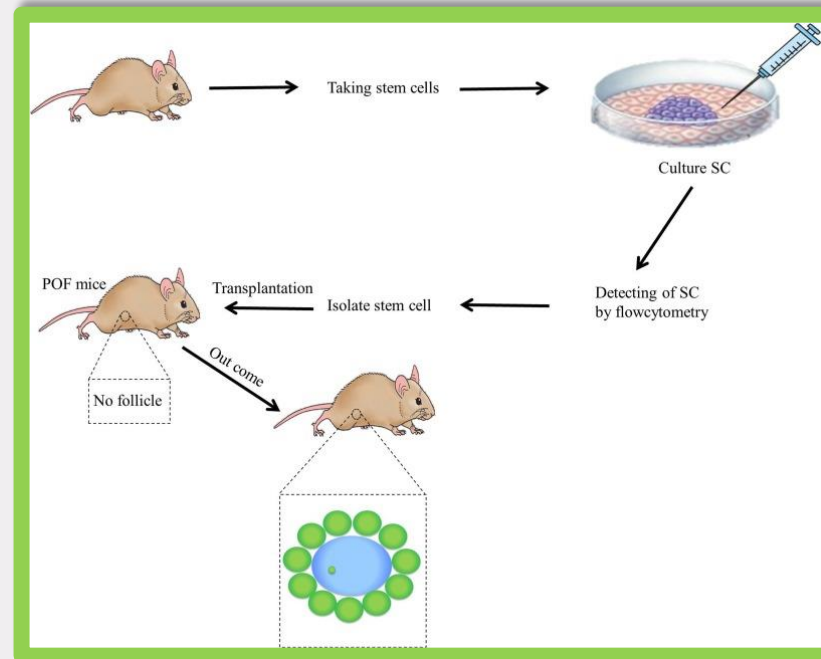
menopause

IPSC induced pluripotent stem cells

Human MSCs can be also considered as a potential treatment against follicles early atresia

BM-MSCs can secrete growth factors to help the restoration of ovaries

ADSC are multipotent adult stem cells that can simplify the proliferation of granulosa cells after ovarian failure.



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NEW

A NEW PROJECT TO RESTORE FERTILITY IN PATIENTS WITH OVARIAN FAILURE



THROUGH THE RECOVERY OF THE ENDOCRINE FUNCTION OF THE OVARY



USING LASER CO2, PRP AND A SUBSEQUENT DOUBLE OVARIAN STIMULATION

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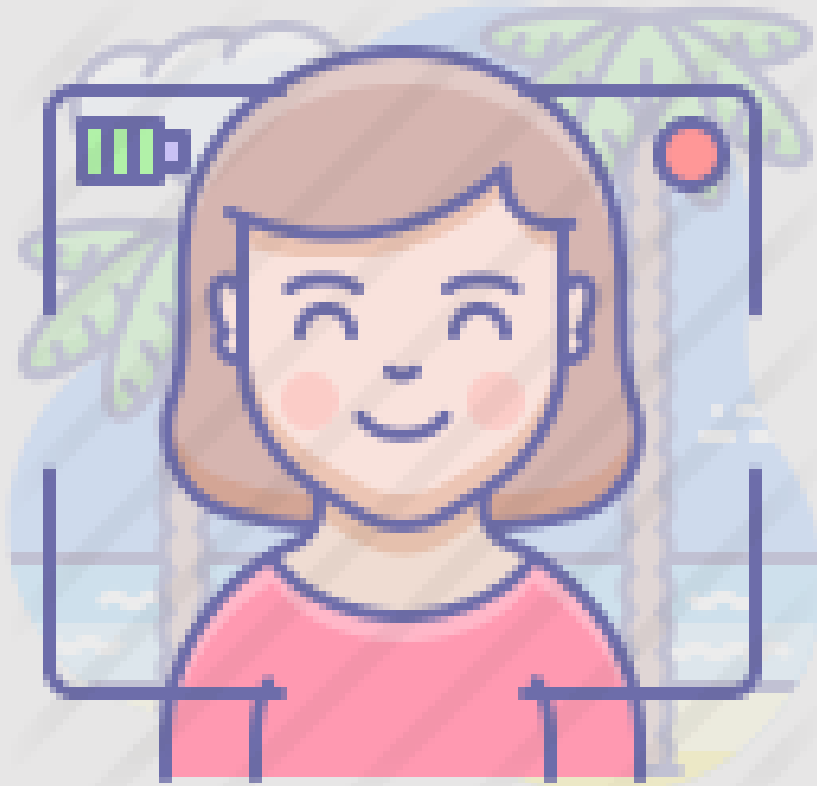
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THE ABSOLUTE FANTASTIC VIDEO INTERVIEW



LOL

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PRP:

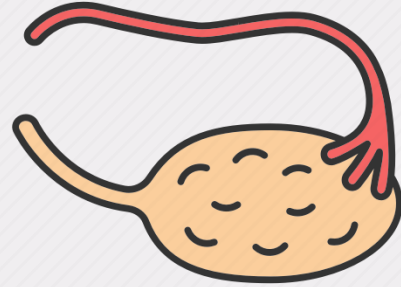
Alpha granules

Growth factors

LASER CO2

Vaginal walls

Ovarian tissue



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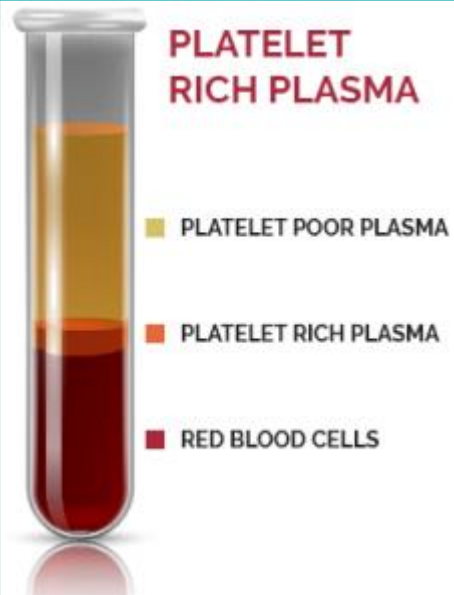
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TRY AGAIN DOC

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THANKS FOR THE
ATTENTION

