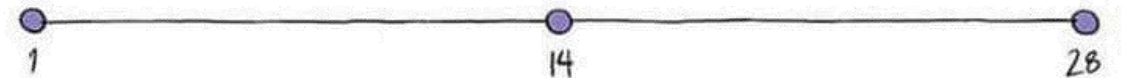
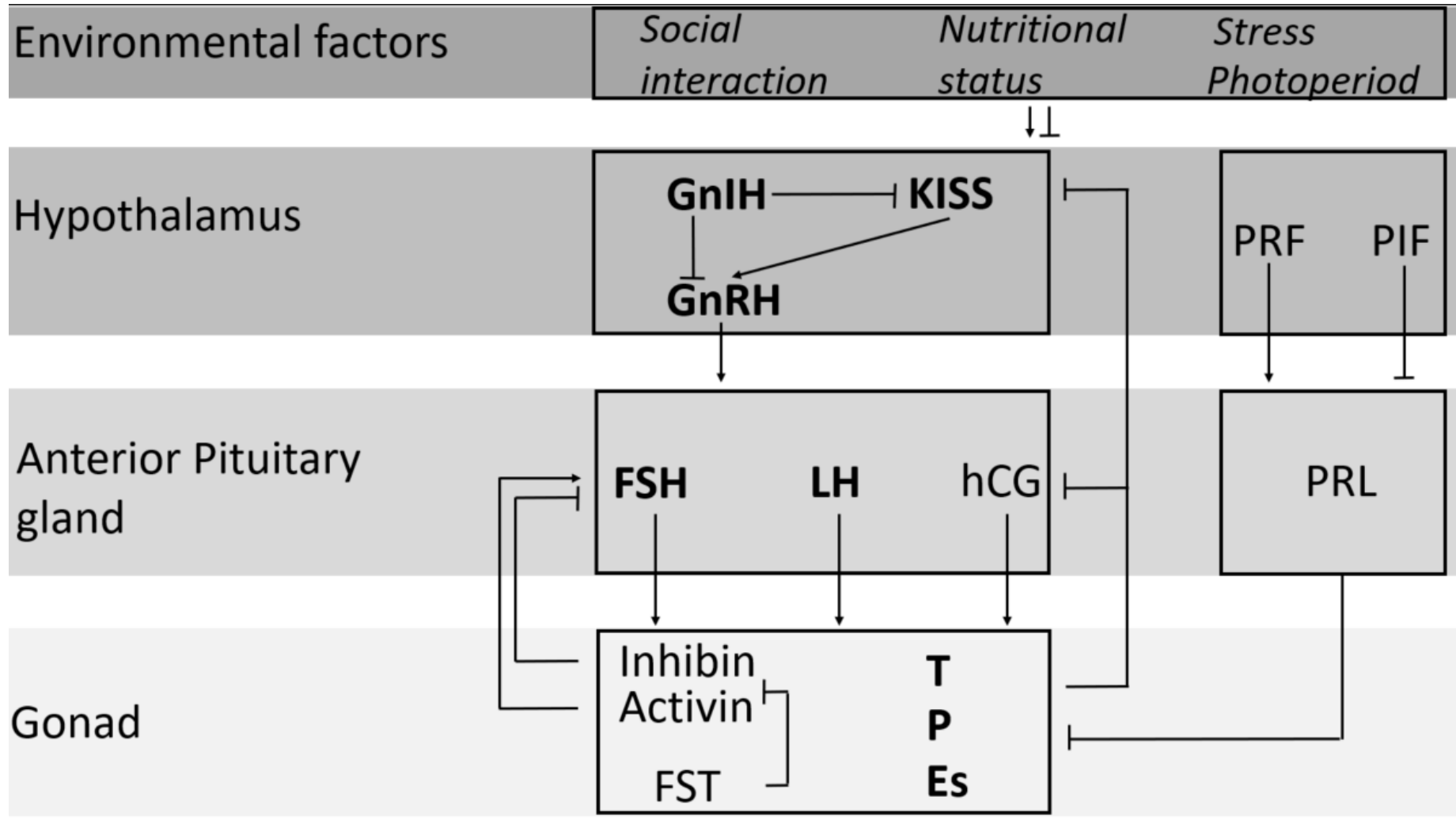


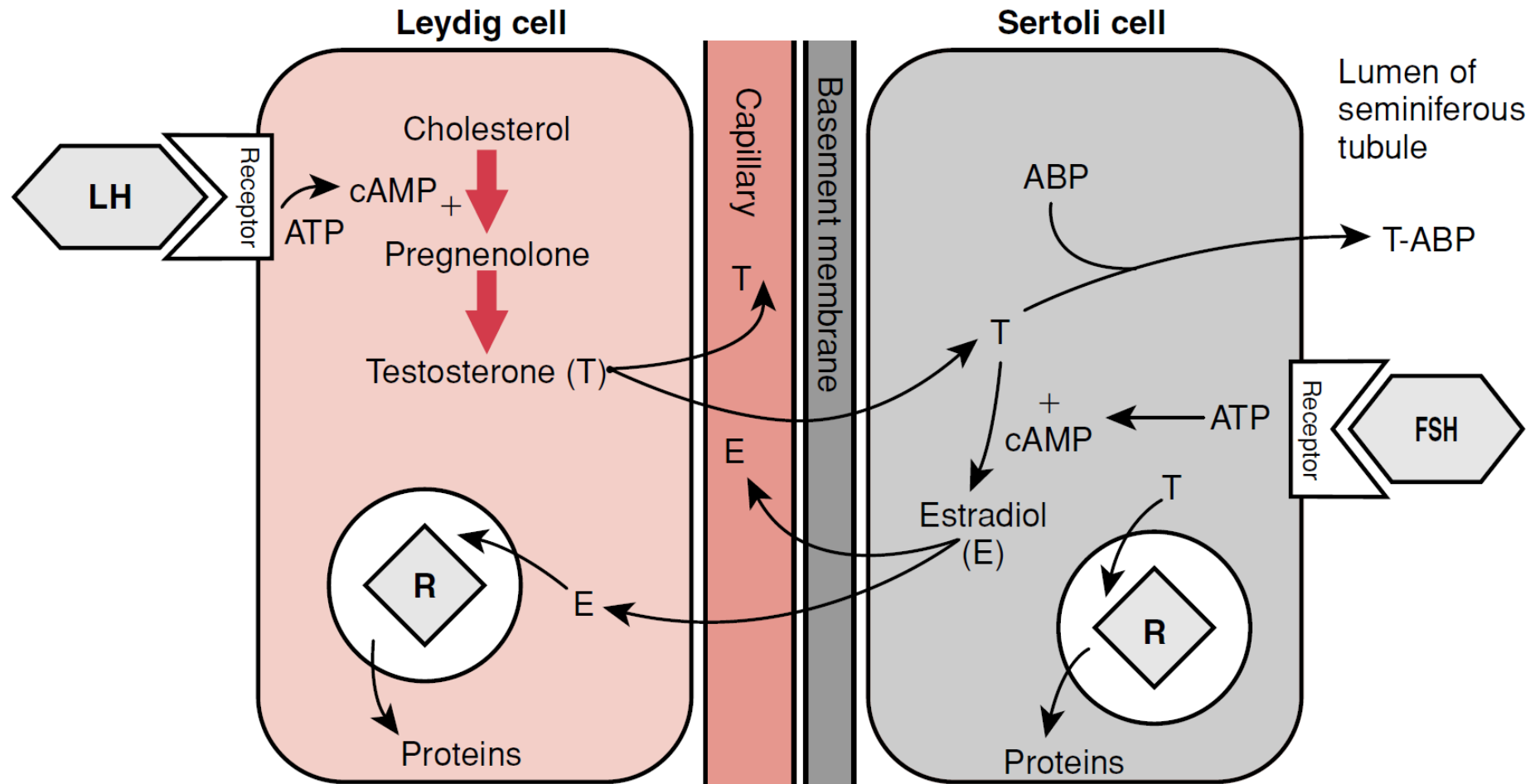
Physiology of reproduction.



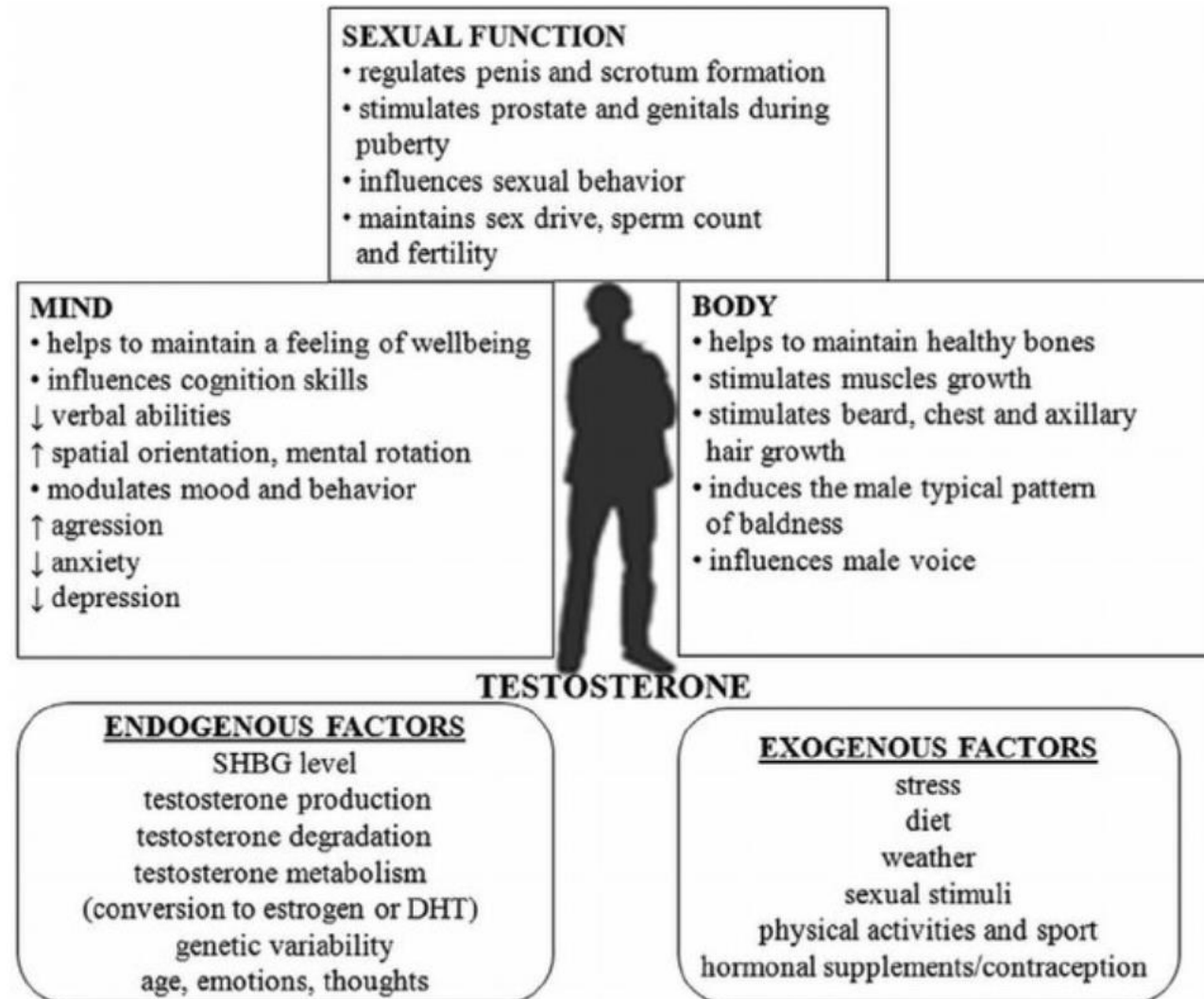
Hypothalamus – hypophysis – gonads



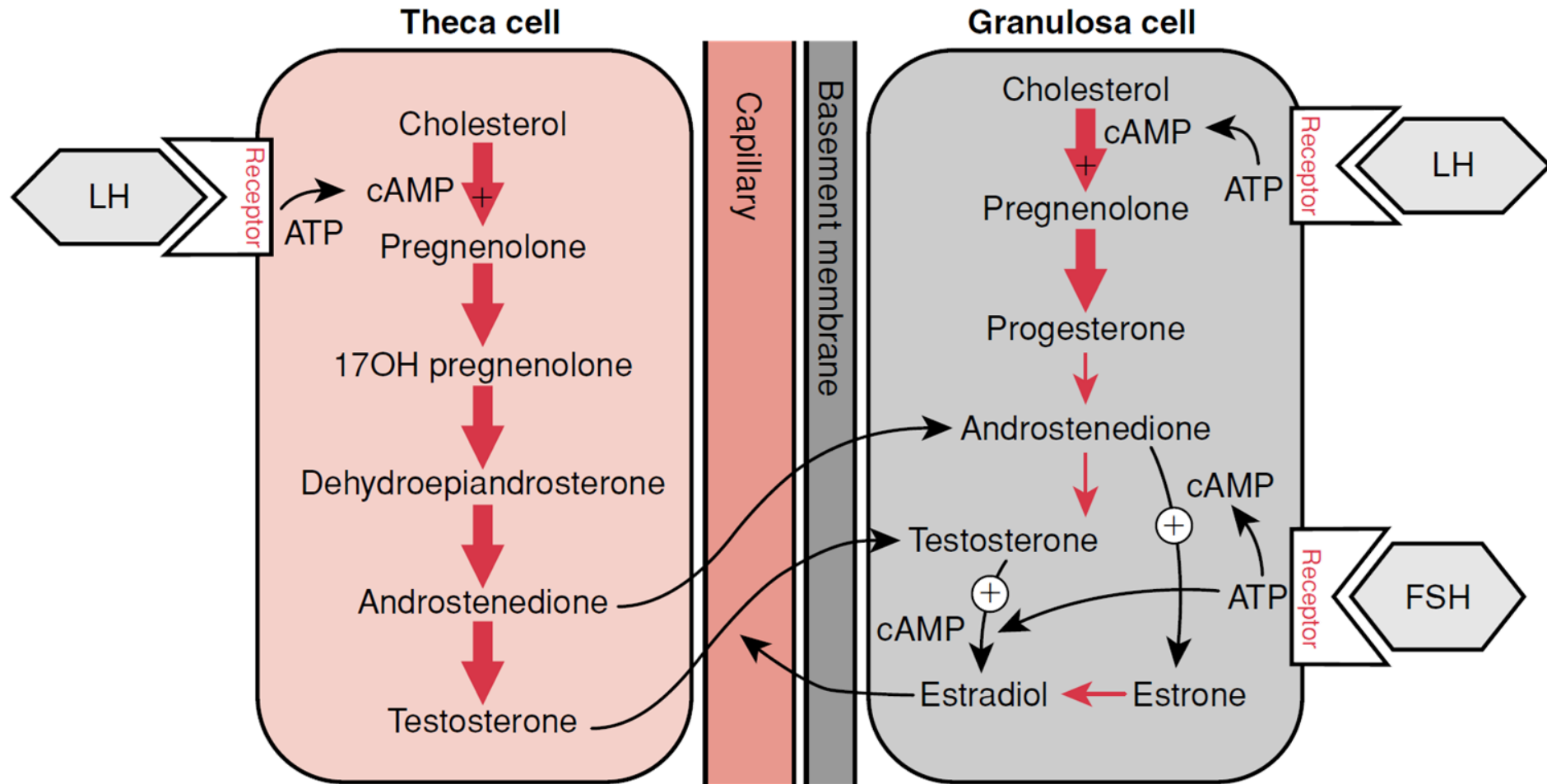
Hypothalamus – hypophysis – gonads



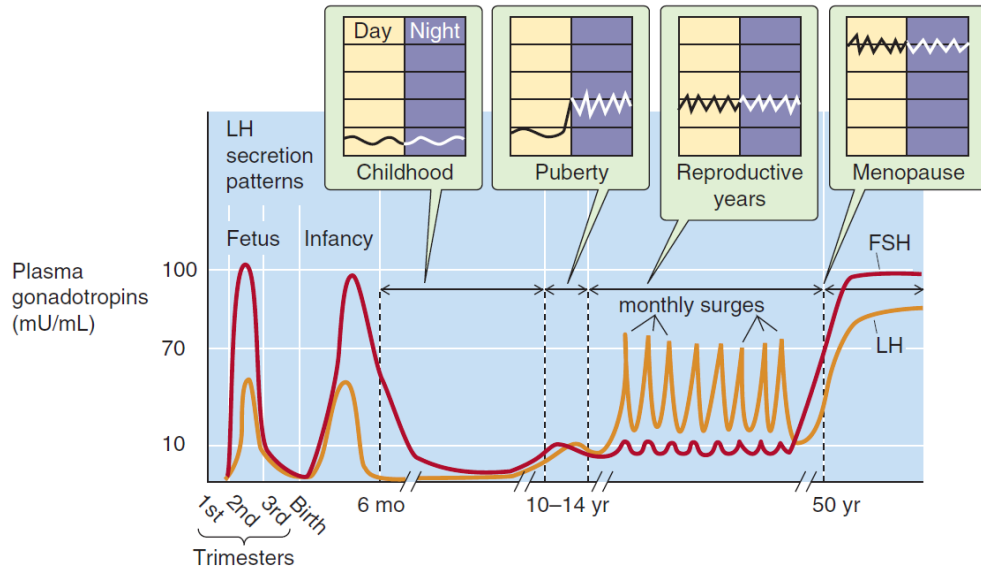
Testosterone functions



Hypothalamus – hypophysis – gonads



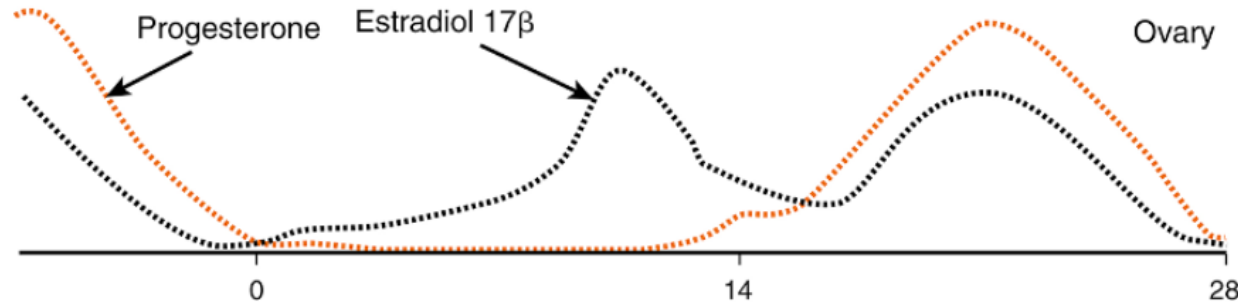
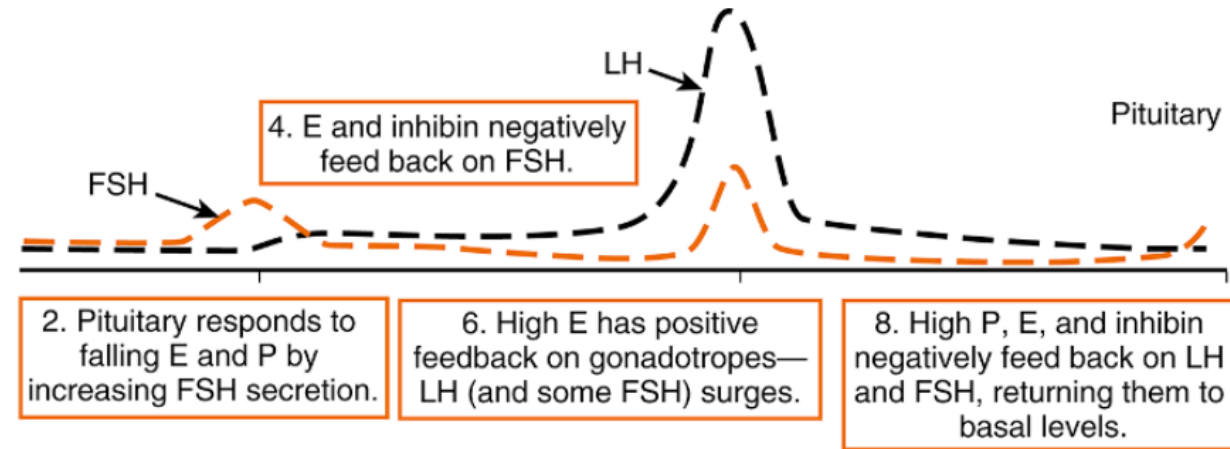
Puberty



Summary of the key events and associations during growth and puberty.

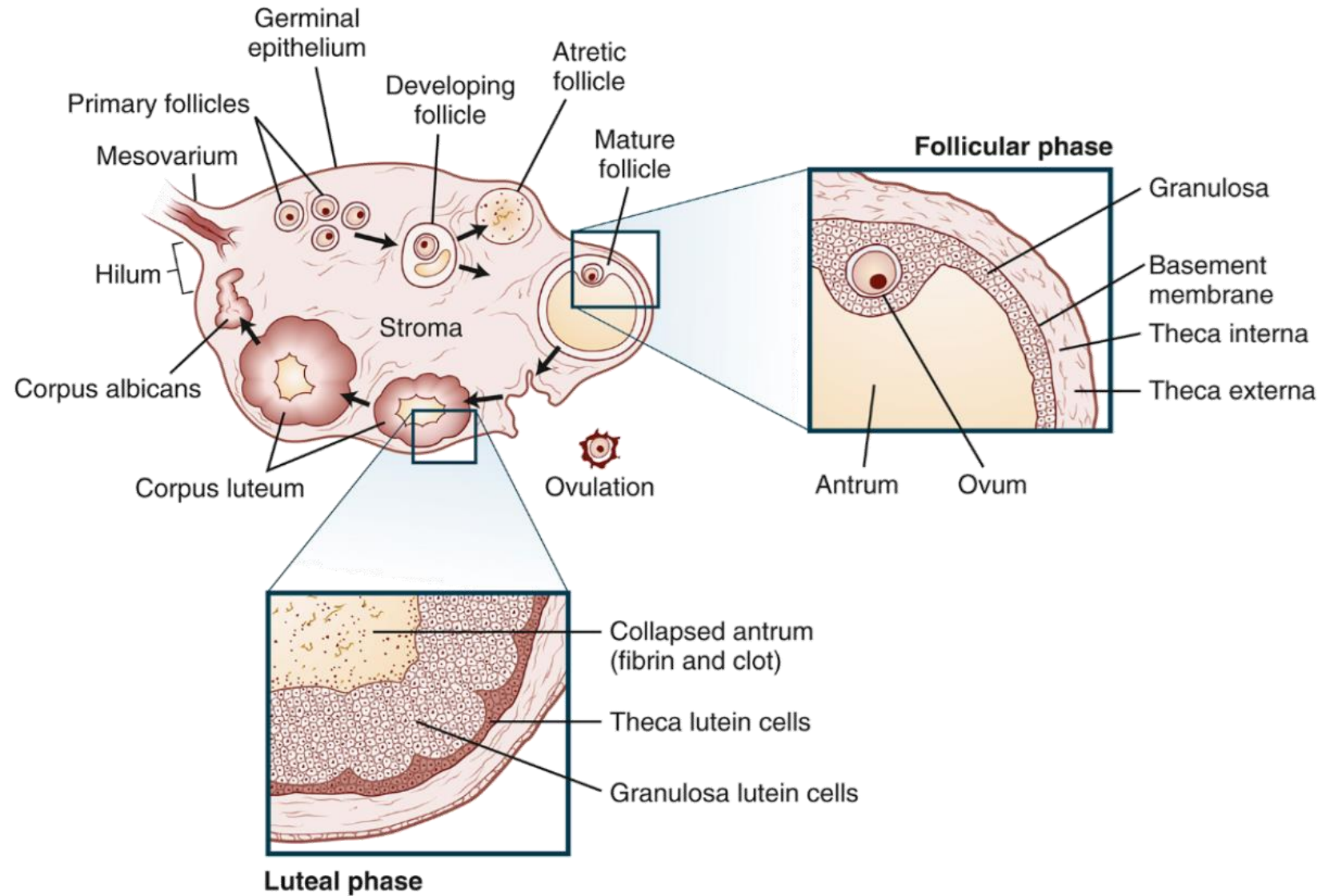
	What happens	When	Factors involved
Mini-puberty	Gn and sex steroid levels rise after nadir at birth. Facilitates testicular descent in M and gonadal cell populations mature	2–3 months of age	T levels in M reach mid-pubertal levels. Oestradiol levels similar in M and F.
Adrenarche	'Awakening of adrenal gland' causes development of body odour, oily skin and hair, pubic hair (pubarche)	Usually begins at 6–8 years of age and is independent of true central puberty- usually precedes gonadarche by approx. 2 years	Production of androgens by adrenal cortex including DHEA, DHEAS and androstenedione
Thelarche (F)	Onset of female breast development, or budding (Tanner stage 2), usually first sign of puberty in girls	Usually occurs after 8 years of age (mean 10–11, range 8–13 years)	Rising oestrogen levels
Gonadarche	Growth of ovaries and testes and increased sex steroid production (true central puberty).	Testicular enlargement in M usually signals pubertal development. Ovarian growth can't be directly seen but usually coincides with thelarche	Activation of gonads by LH and FSH to increase T and oestrogen levels
Pubarche	Development of first pubic hair	First pubic hair occurs at adrenarche (can be transient) and then again at Tanner stage 3. In F usually 6 m after thelarche.	Rising levels of androgens (during adrenarche) and sex steroids during central puberty
Growth spurt	Peak growth velocity seen in childhood after infancy. Occurs shortly before final height is reached.	Usually occurs at Tanner stage 2 in F and 3–4 in M. Always occurs before menarche in F.	Multiple hormones involved. Rising Oestrogen levels cause GH secretion and act directly at GP. Occurs later in M as T needed in higher conc to convert to oestradiol via aromatase
Spermarche (M)	Development of sperm in the testicle and first ejaculation	Usually coincides with development of secondary sexual characteristics in mid-puberty	Increased T levels from Leydig cells and nocturnal LH surge
Menarche (F)	Onset of menstruation (Often thought of as culmination of pubertal development in F)	Usually occurs 2 years after thelarche and soon after growth spurt	Oestrogen stimulated growth of uterus and vascularity of endometrium, leading to sloughing of part of the lining. Most menstrual cycles are initially anovulatory.

Menstrual cycle

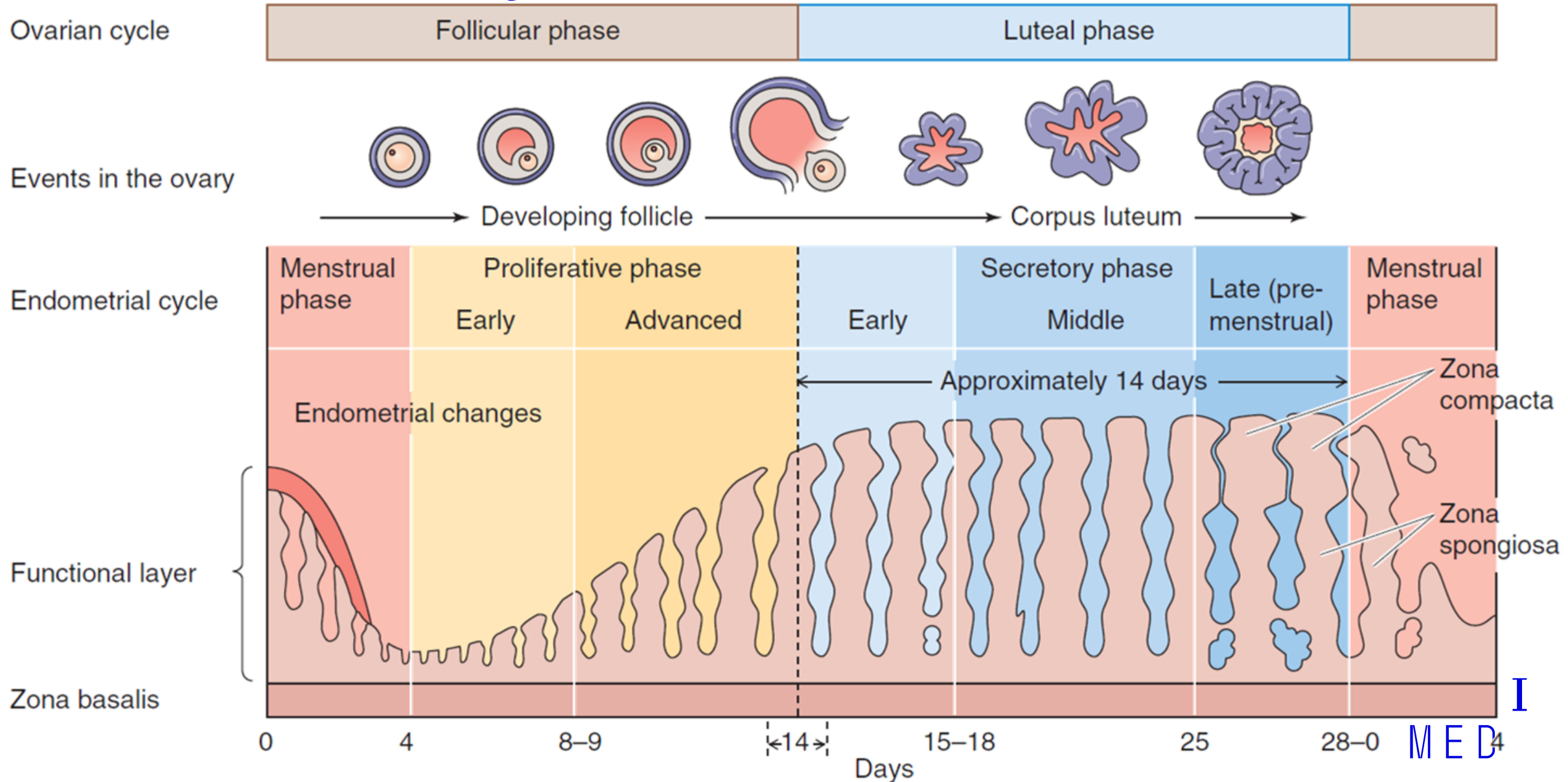


- 3. FSH recruits a cohort of large antral follicles to enter rapid growth phase. Follicles secrete low amounts of E and inhibin.
- 7. LH surge induces meiotic maturation, ovulation, and luteinization. The corpus luteum produces high P, along with E and inhibin.

Ovarian cycle



Endometrial cycle



Contraceptives

BARRIER CONTRACEPTIVES:

- condoms
- contraceptive sponges with spermicide
- diaphragms
- cervical caps

HORMONAL:

- oral pills
- implants under the skin
- injections
- patches
- IUDs
- vaginal ring

INTRAUTERINE DEVICES:

- copper IUDs
- IUD with levonorgestrel

BEHAVIORAL:

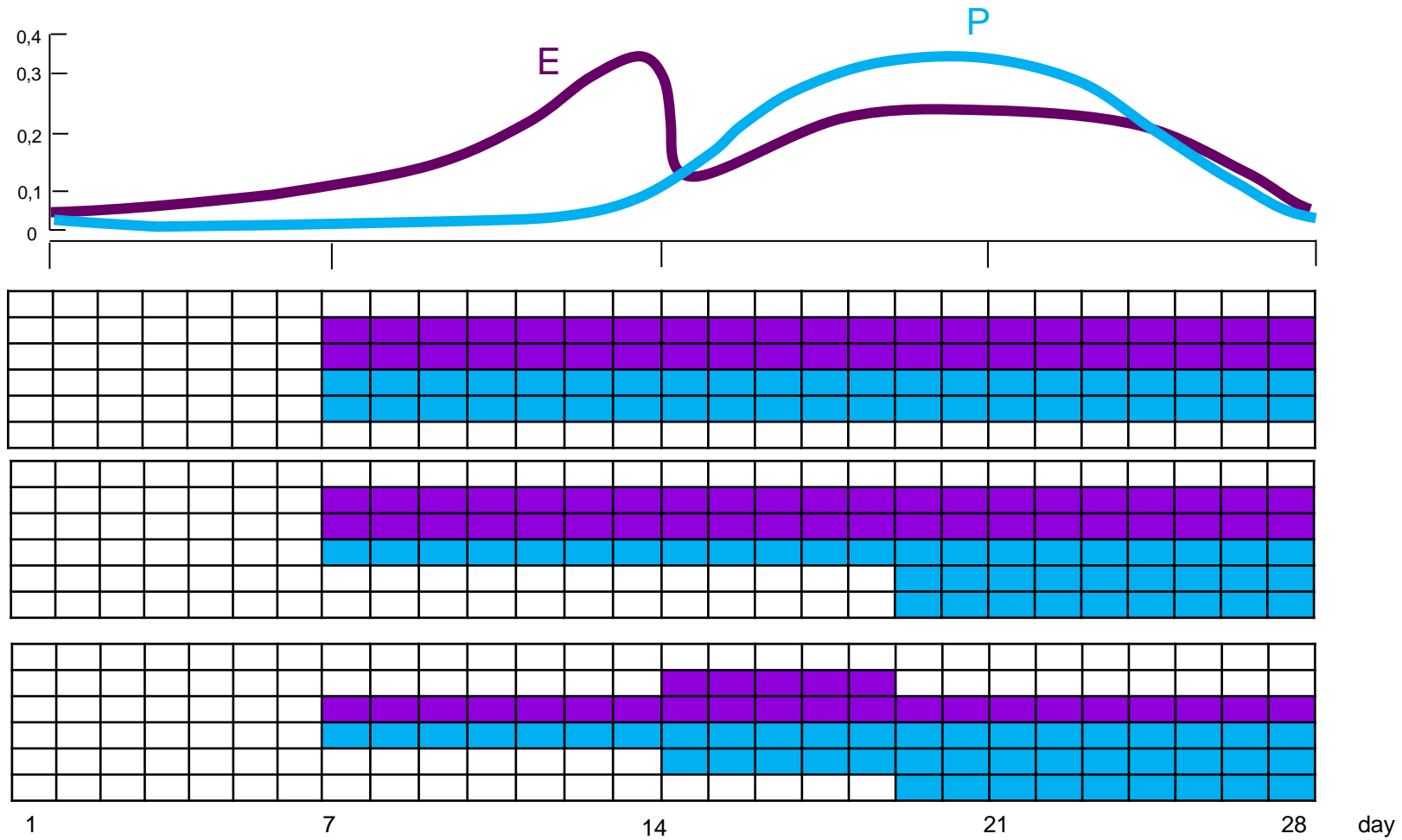
- fertility awareness methods
- coitus interruptus
- lactation



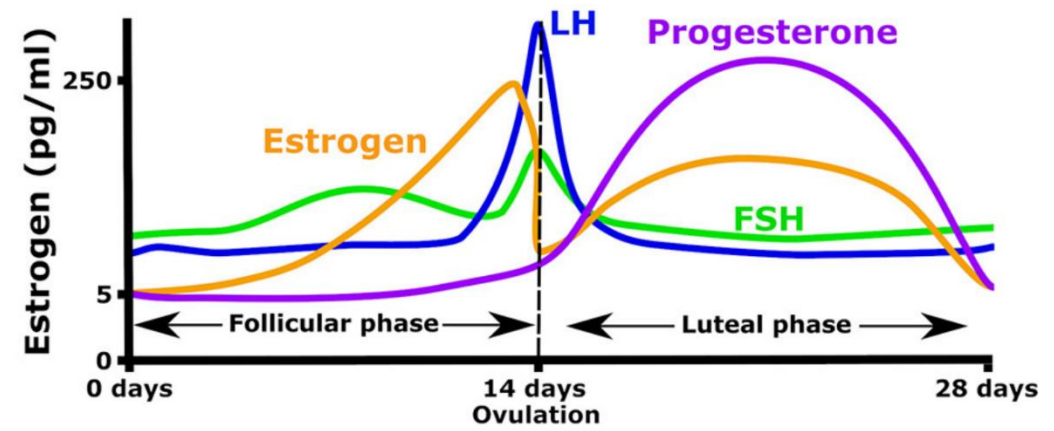
STERILIZATION:

- tubal ligation
- vasectomy

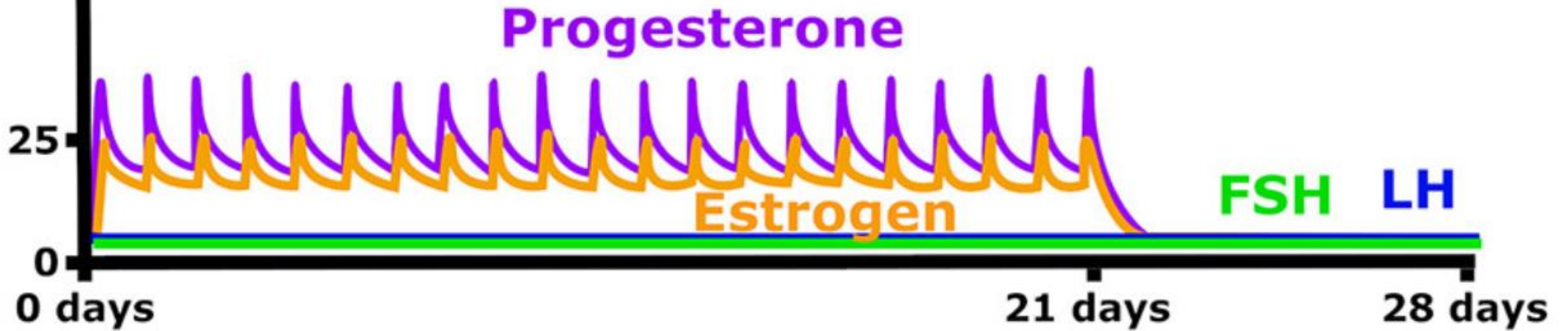
Oral pills



Oral pills



Estrogen (pg/ml)



Oral pills

– Inhibition of Ovulation

- Estrogen suppresses the secretion of follicle-stimulating hormone (FSH) from the pituitary gland. This prevents the development of dominant follicles in the ovaries.
- Progestin suppresses luteinizing hormone (LH) secretion, blocking the LH surge necessary for ovulation.

– Thickening of Cervical Mucus

- Progestin increases the viscosity of cervical mucus, making it difficult for sperm to penetrate through the cervix and reach the egg.

– Endometrial Alteration

- Progestin induces changes in the uterine lining (endometrium), making it thinner and less receptive to implantation of a fertilized egg.

– Slowing Tubal Motility

– pH changes

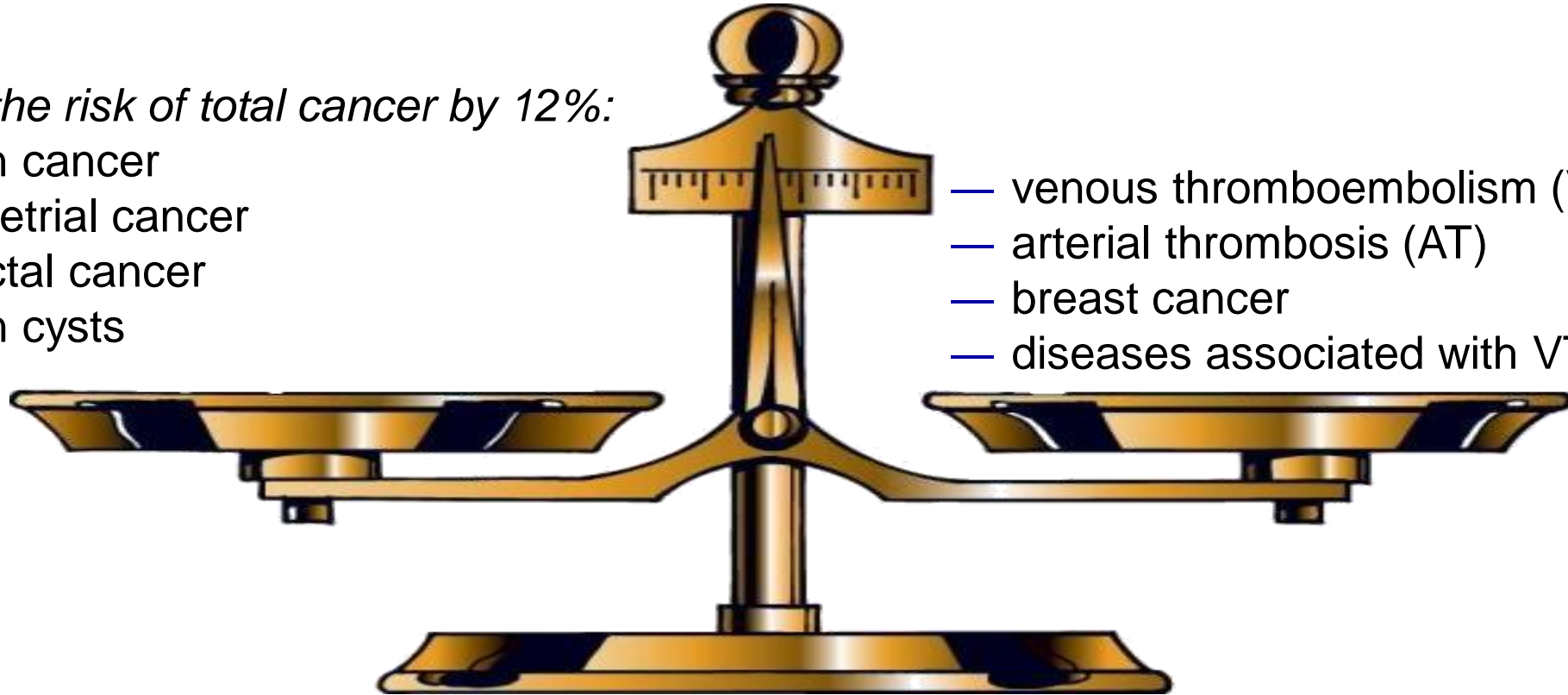
- Alteration of Cervical Mucus Composition:
- Impact on Vaginal Microbiota (lactobacilli)

Benefits and risks of HC

reducing the risk of total cancer by 12%:

- ovarian cancer
- endometrial cancer
- colorectal cancer
- ovarian cysts

acne



- venous thromboembolism (VTE)
- arterial thrombosis (AT)
- breast cancer
- diseases associated with VTE and AT

Functions of the PLACENTA

– TRANSPOR function

- Respiratory gases
- transport and metabolism of sacharides
- transport and metabolism of aminoacods
- transport and metabolism of fat
- transport of H₂O, minerals and vitamines

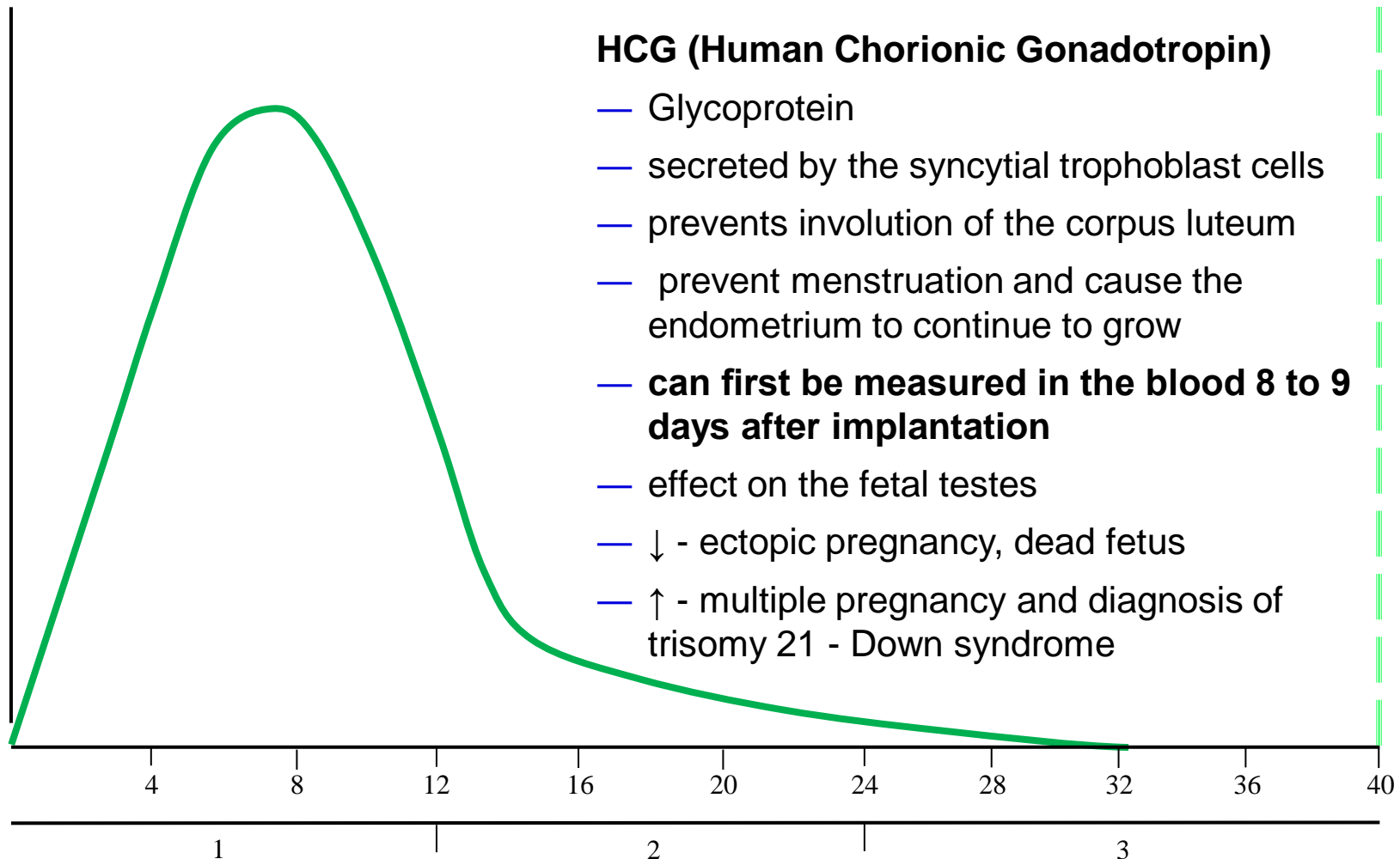
– ENDOCRIN function

- Estrogens
- Progesteron
- HCG
- HPL
- Growth factors (epidermal and insulin-like growth factors)

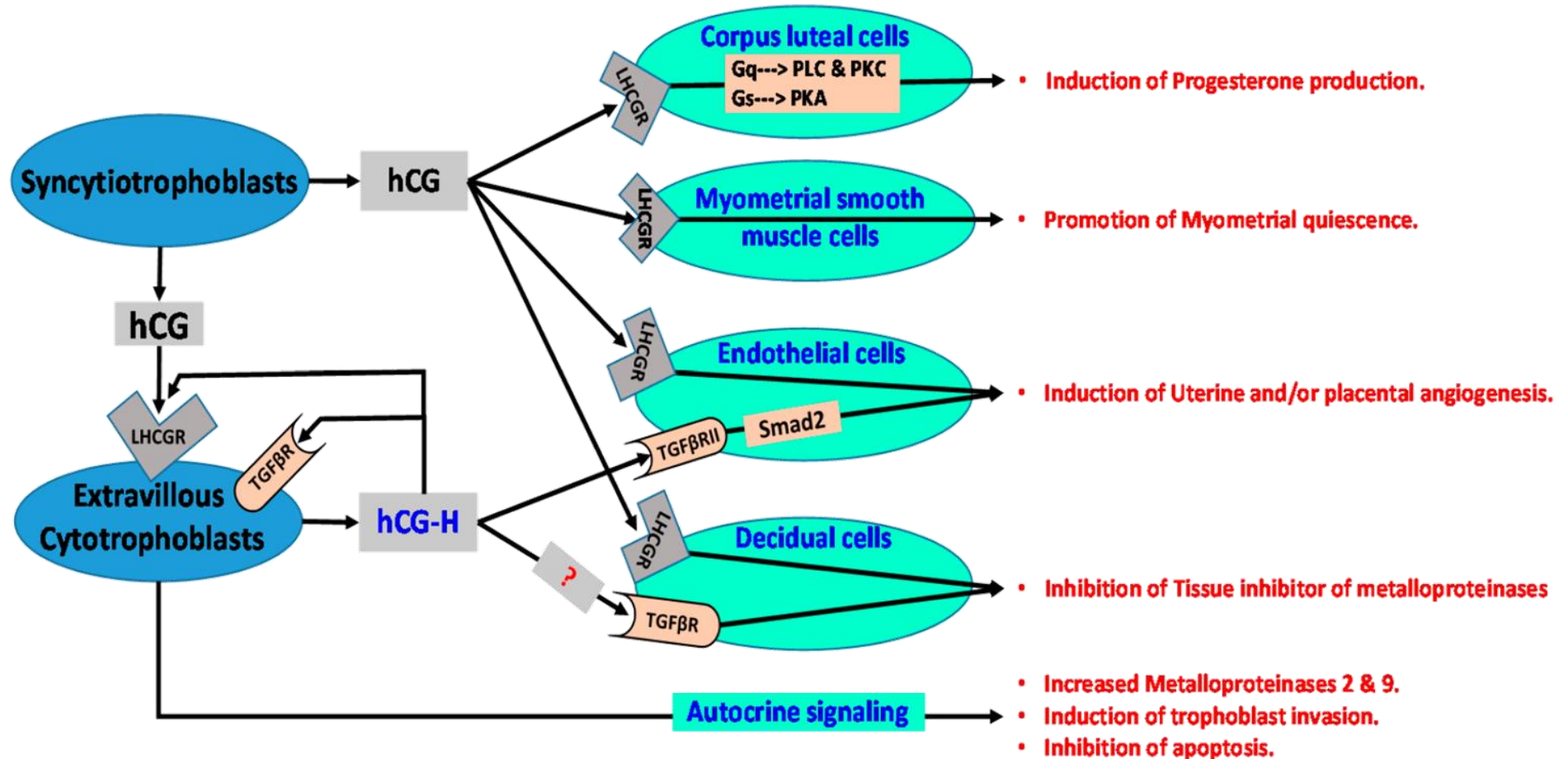
– PROTECTIV function

- Cytochrom P450
- Pinocytosis (IgG)
- Barrier against bacterias, virus etc.

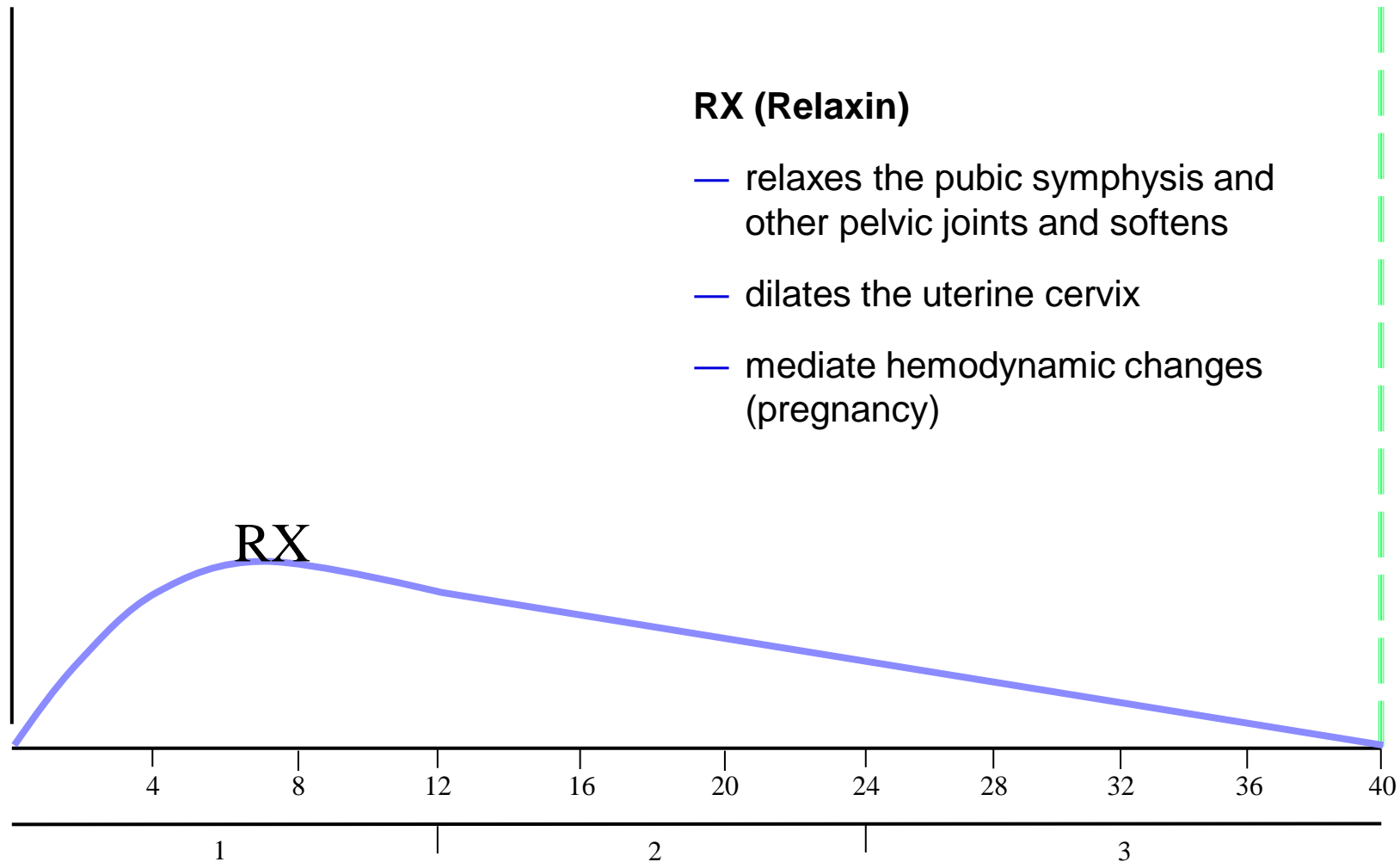
HCG



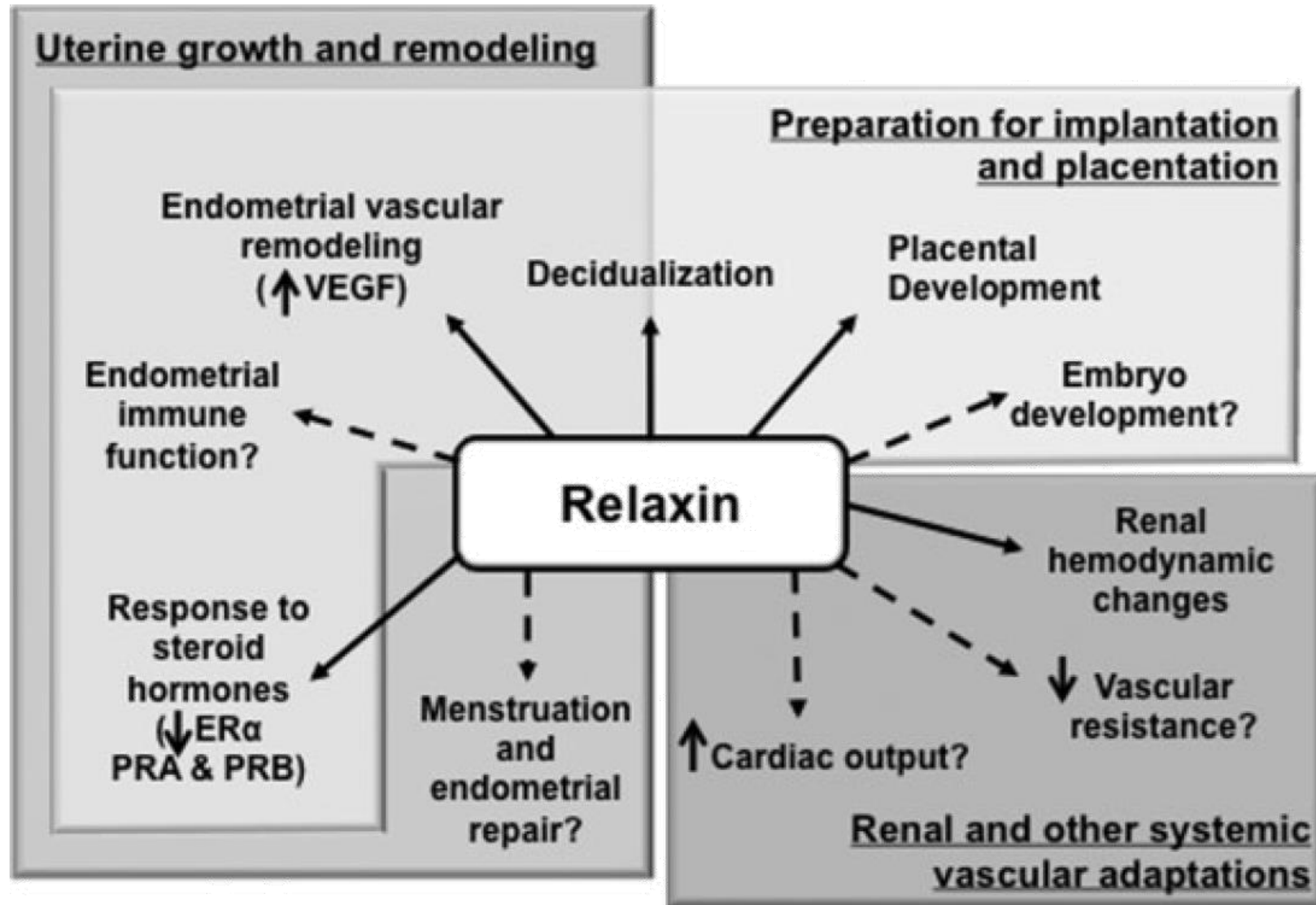
HCG



RX



RX

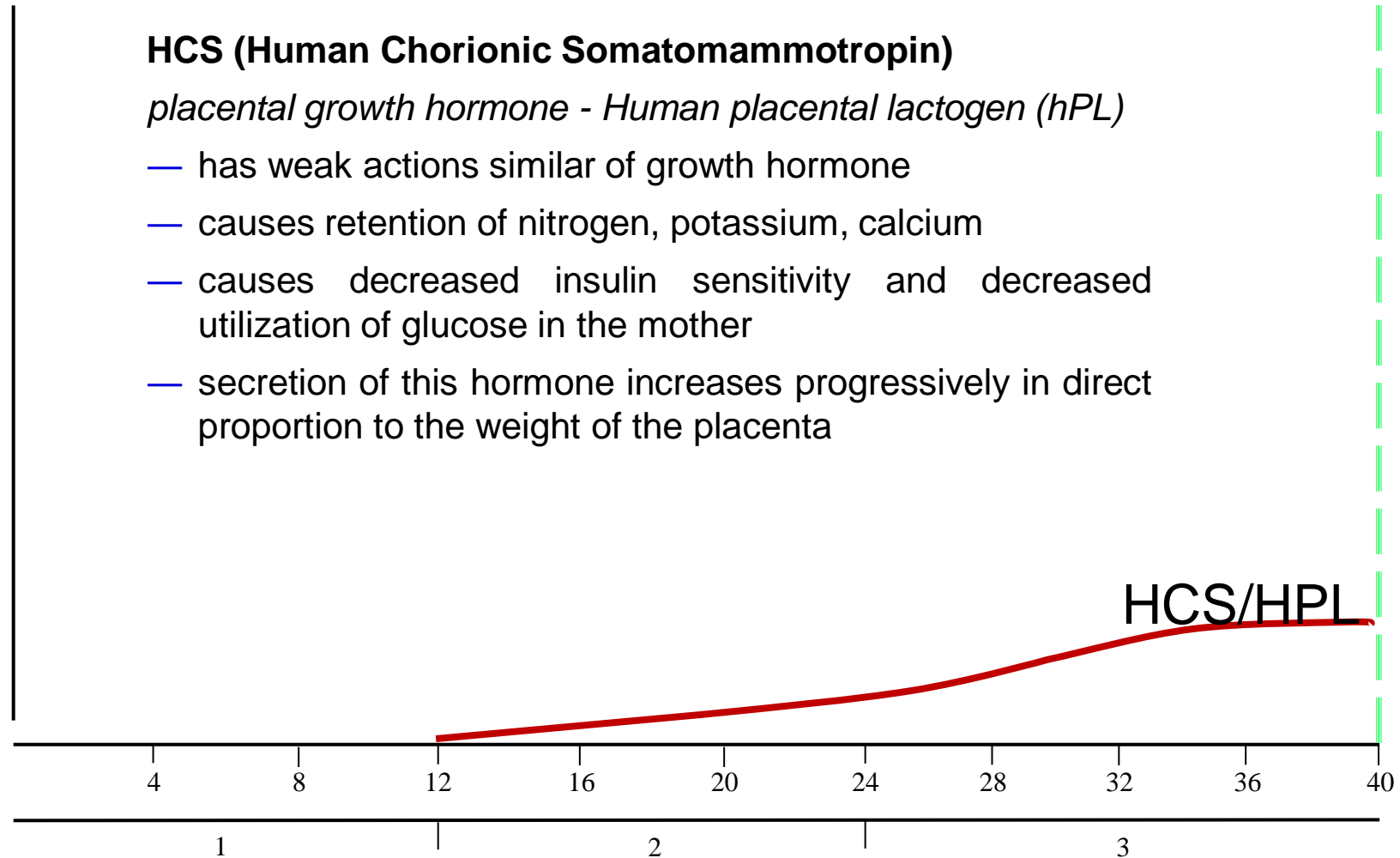


HCS/HPL

HCS (Human Chorionic Somatomammotropin)

placental growth hormone - Human placental lactogen (hPL)

- has weak actions similar of growth hormone
- causes retention of nitrogen, potassium, calcium
- causes decreased insulin sensitivity and decreased utilization of glucose in the mother
- secretion of this hormone increases progressively in direct proportion to the weight of the placenta

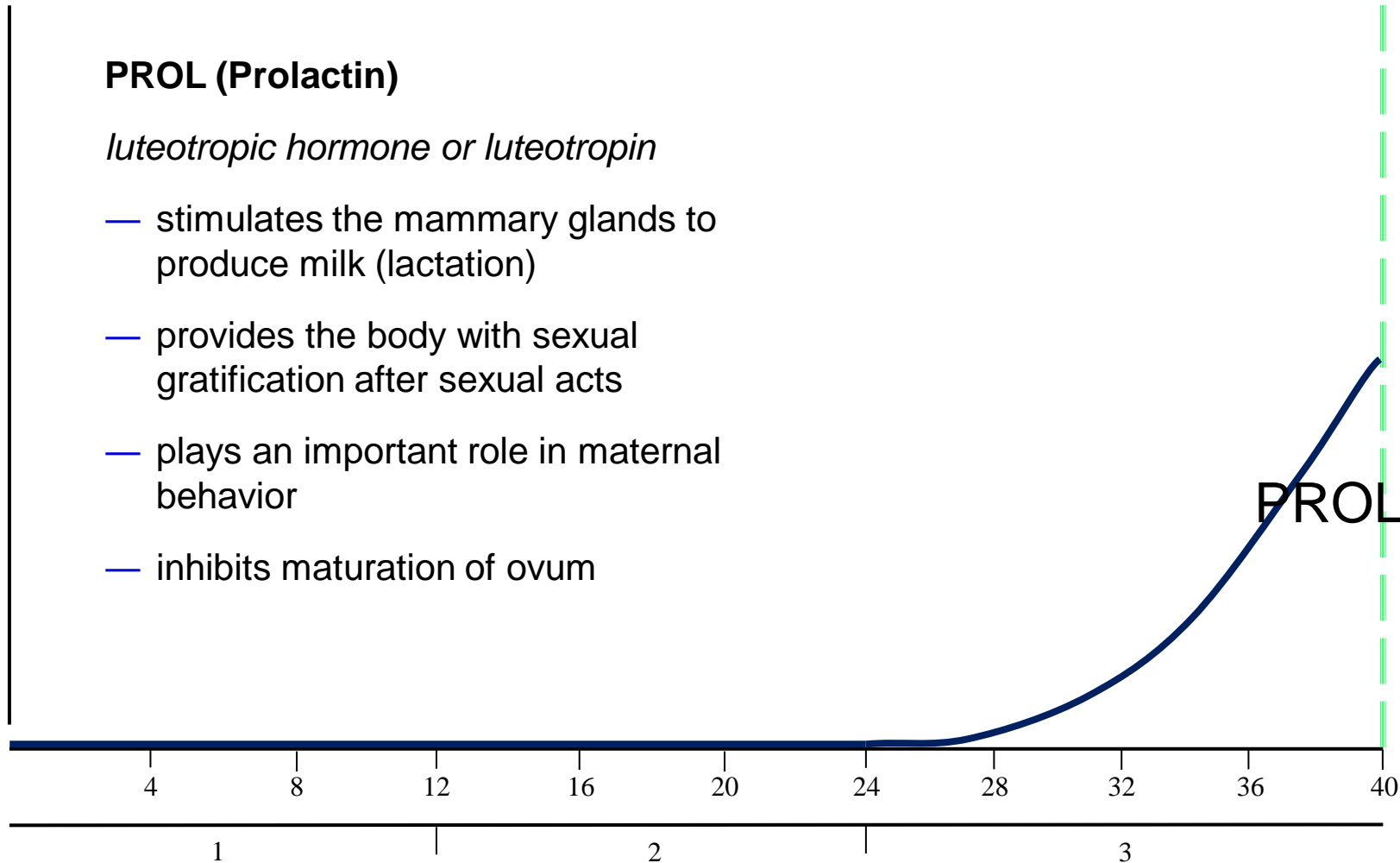


PROL

PROL (Prolactin)

luteotropic hormone or luteotropin

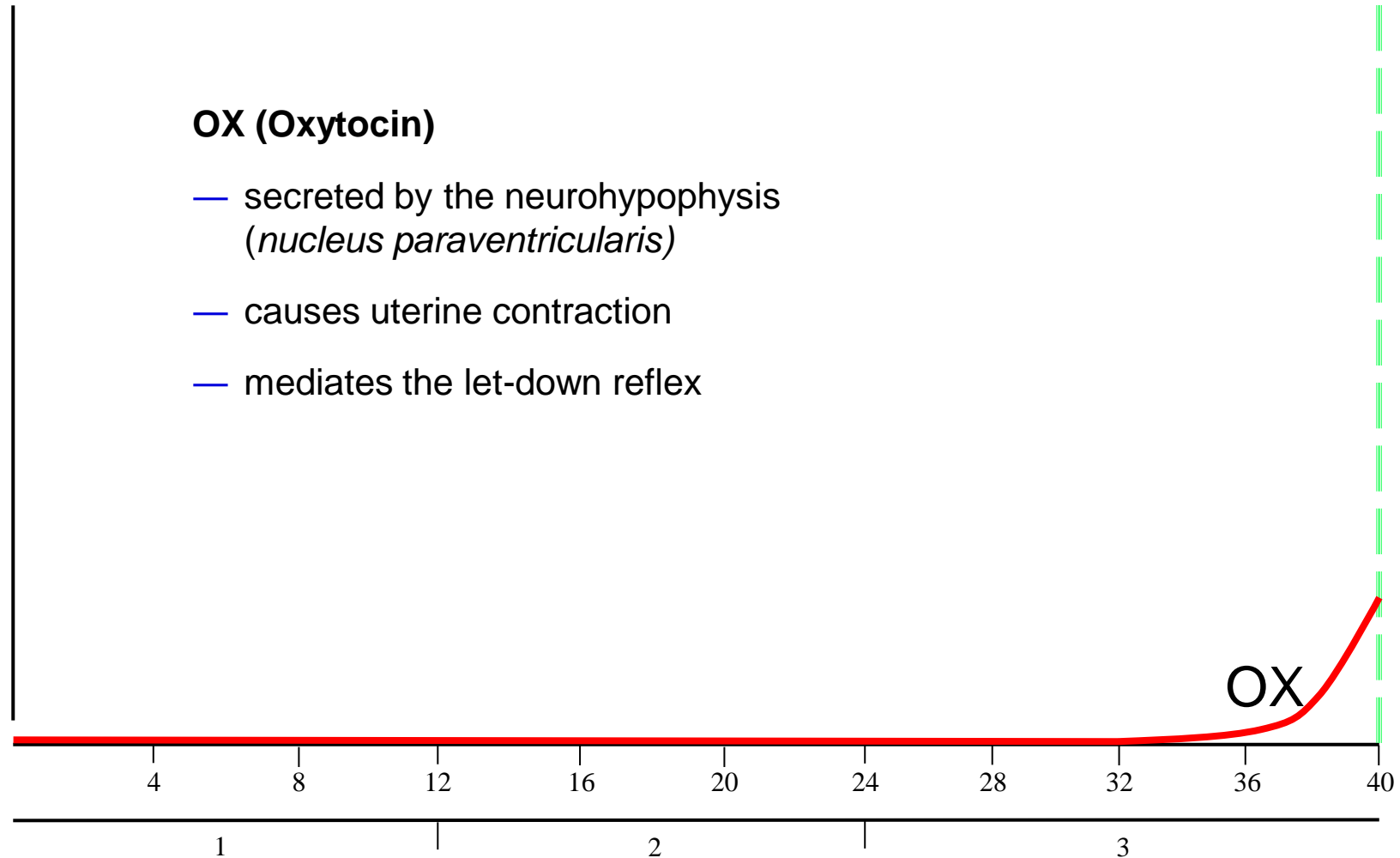
- stimulates the mammary glands to produce milk (lactation)
- provides the body with sexual gratification after sexual acts
- plays an important role in maternal behavior
- inhibits maturation of ovum



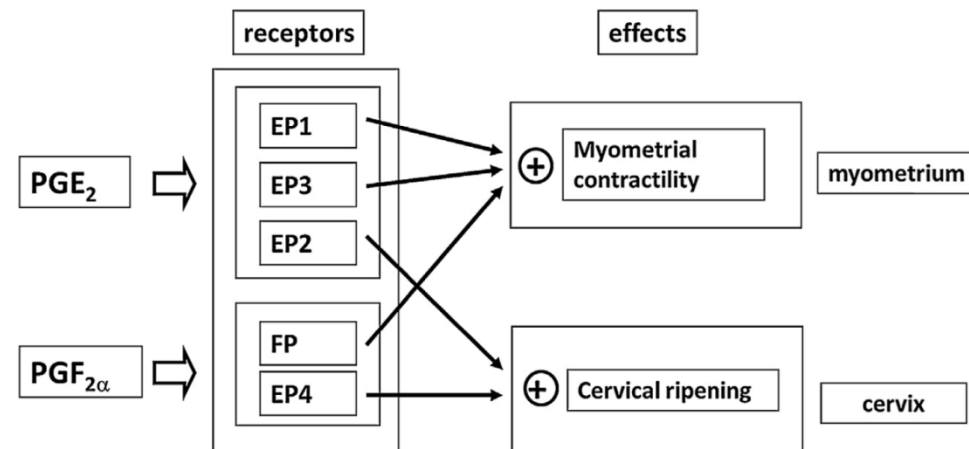
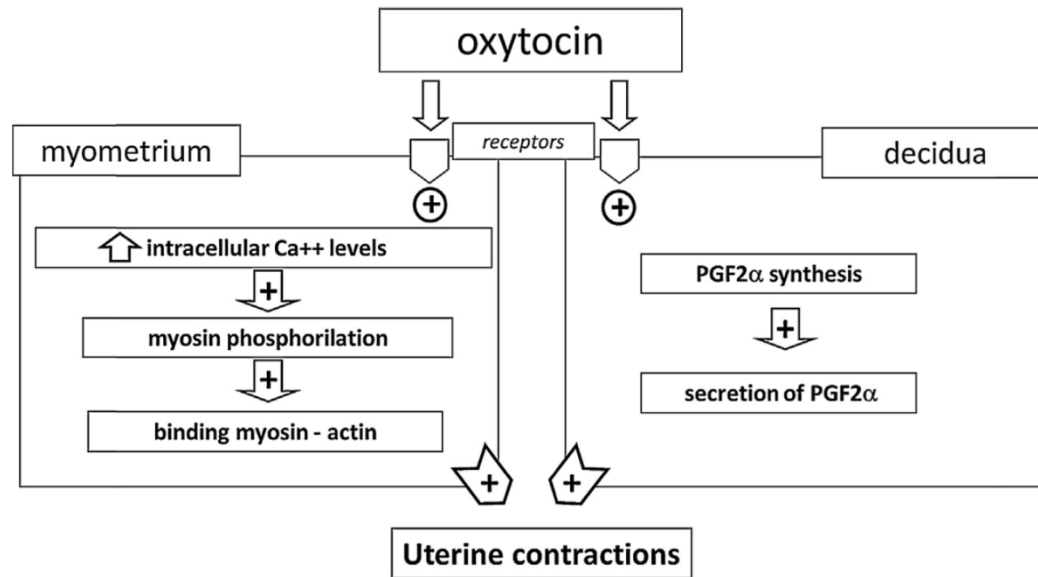
OX

OX (Oxytocin)

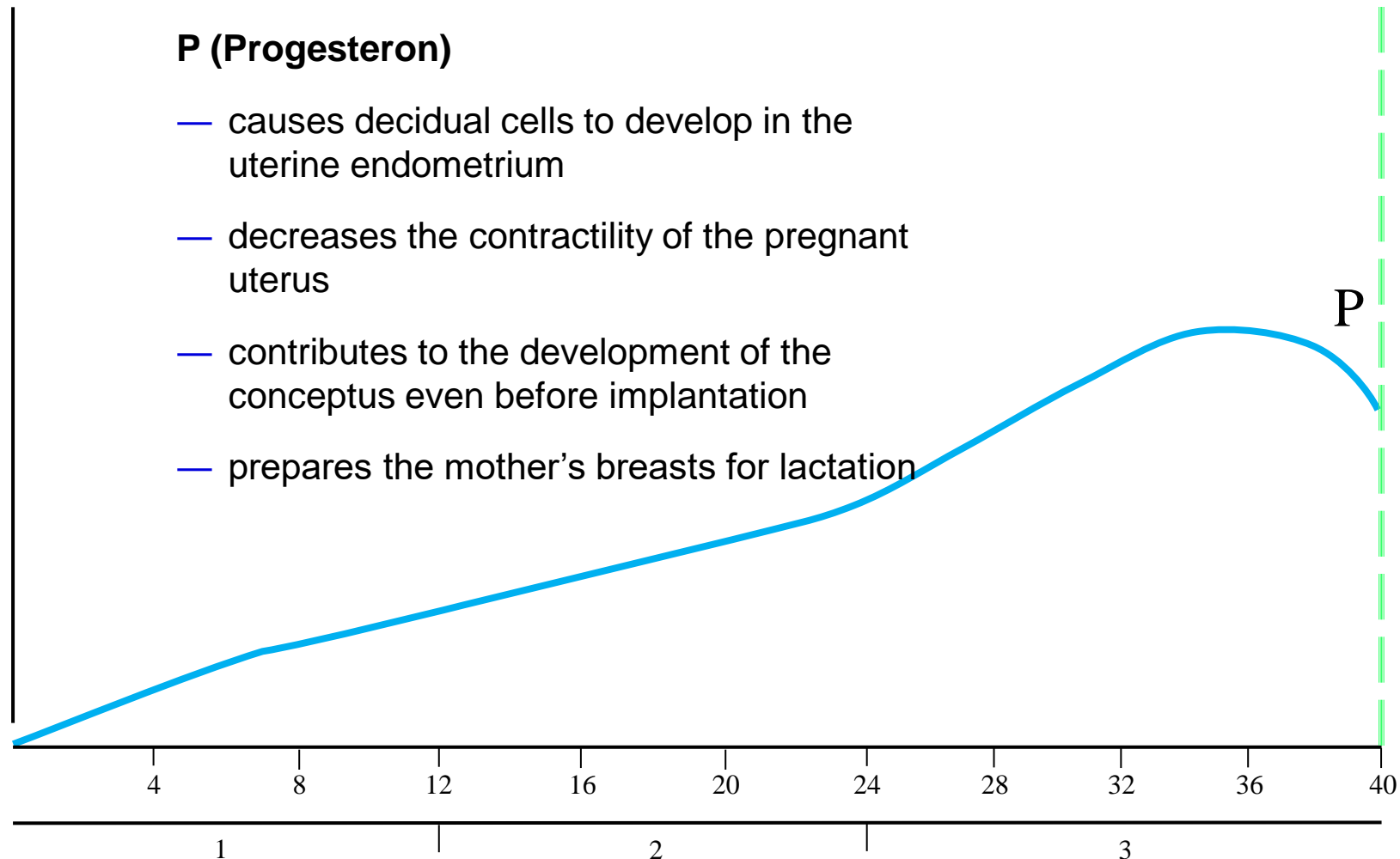
- secreted by the neurohypophysis (*nucleus paraventricularis*)
- causes uterine contraction
- mediates the let-down reflex



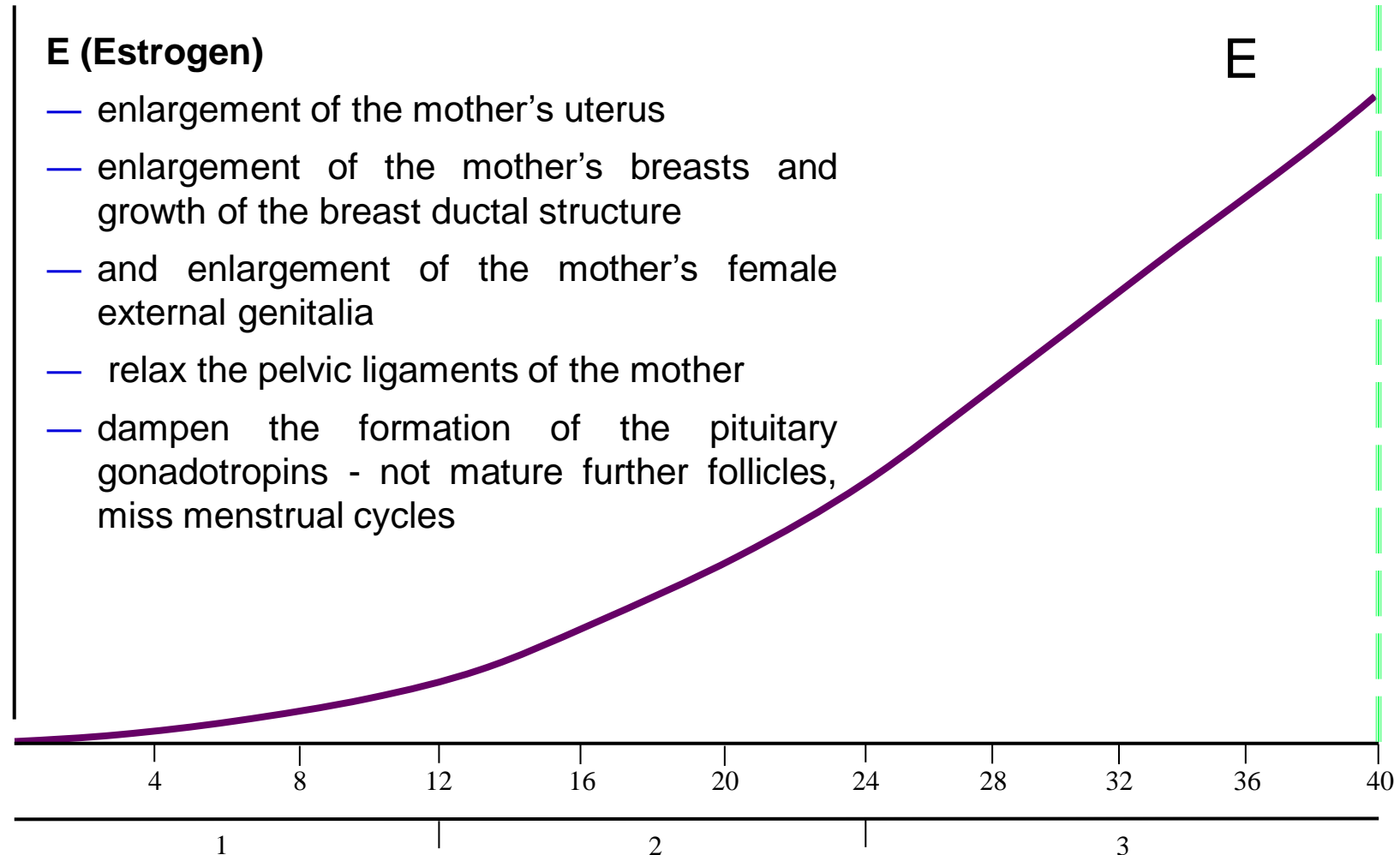
OX

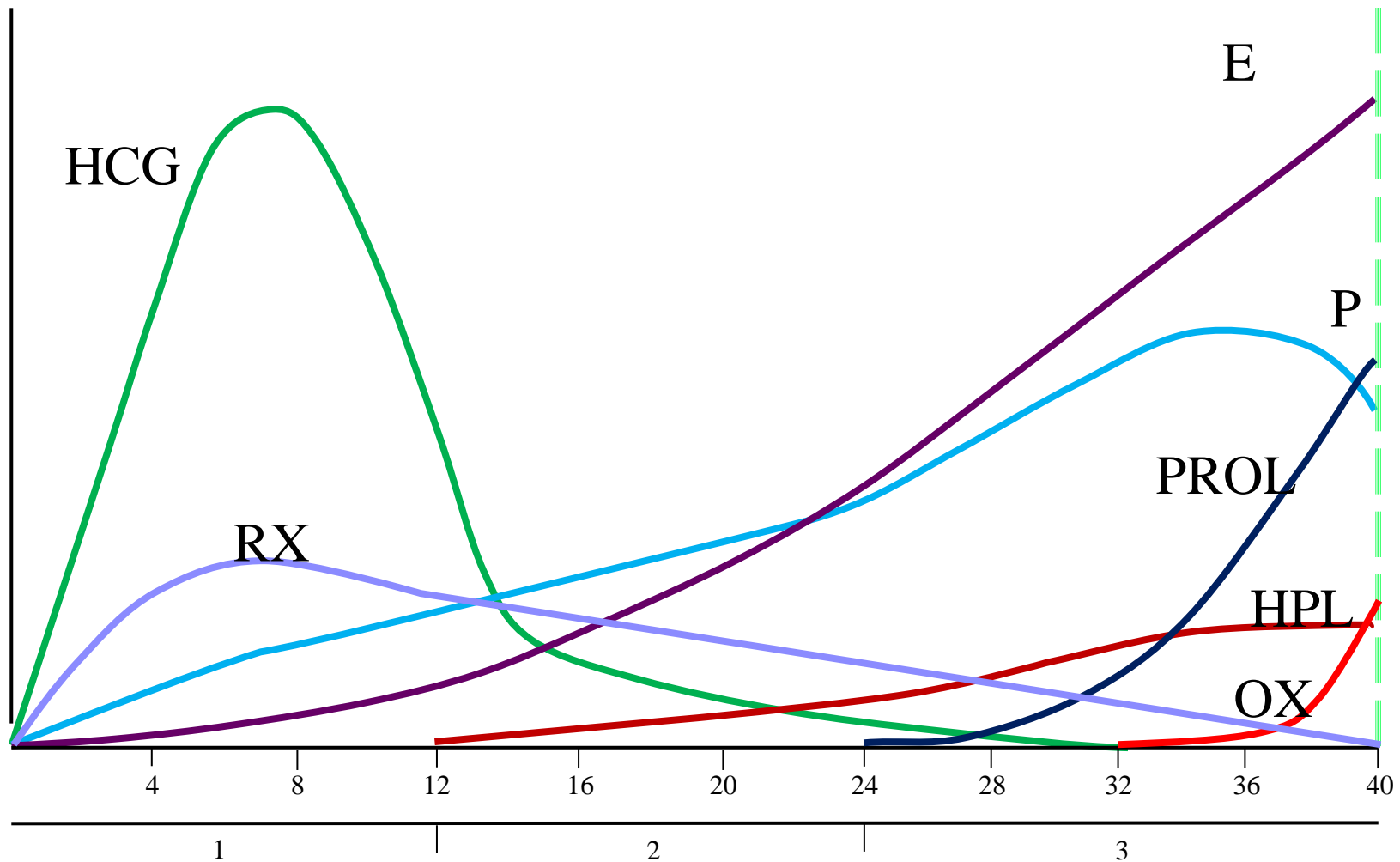


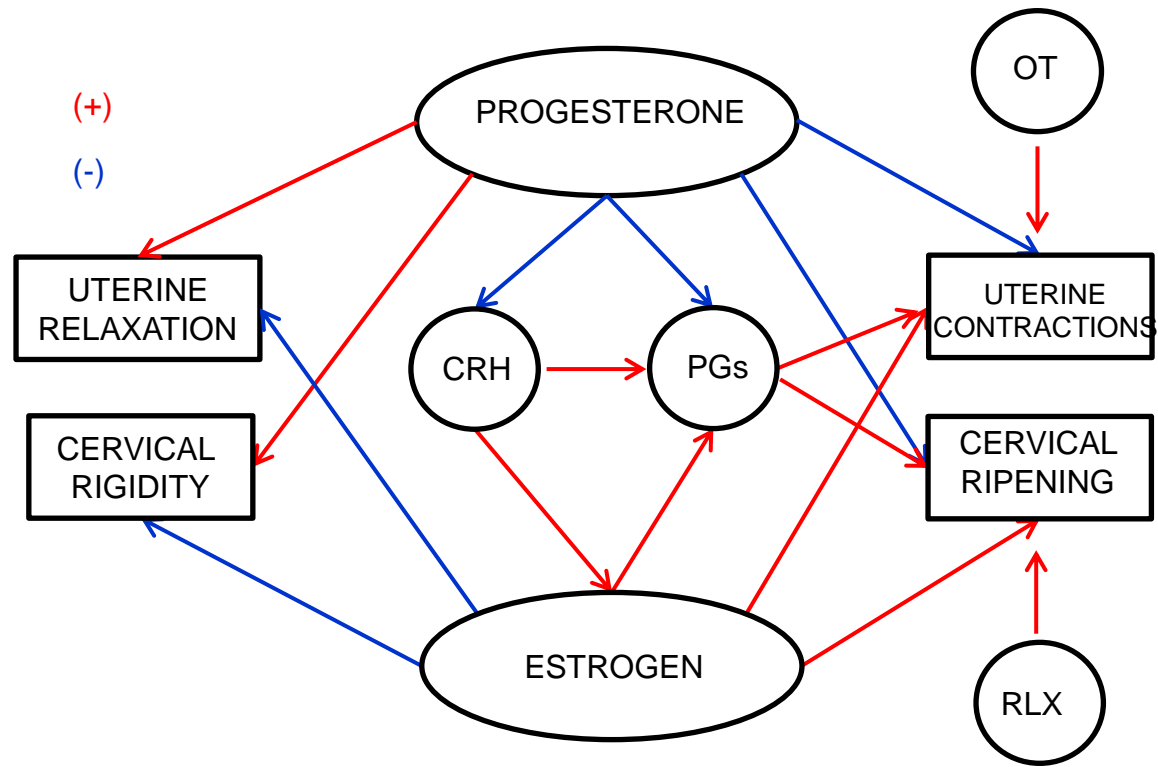
Progesteron

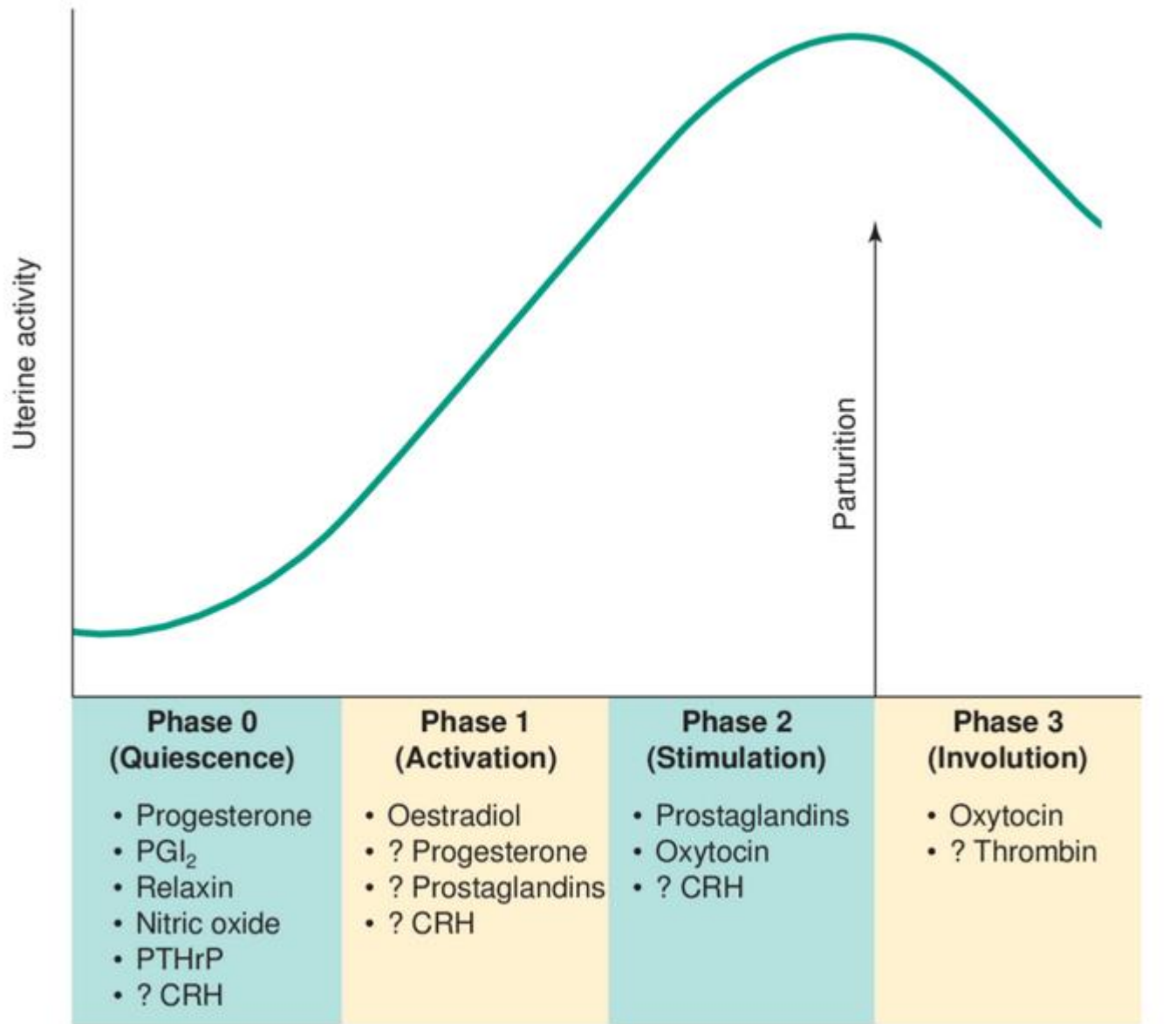


Estroen







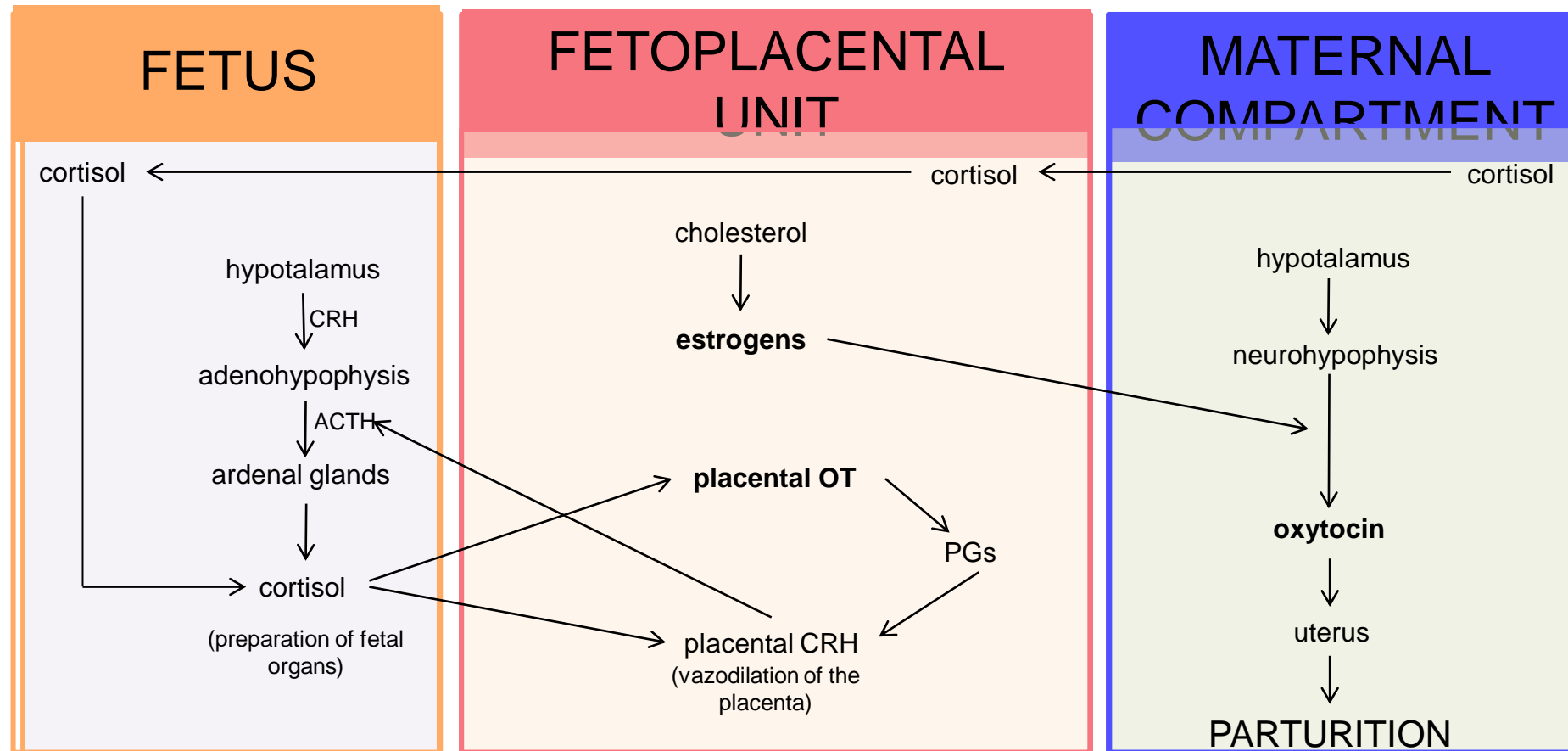


Phases of uterine activity.

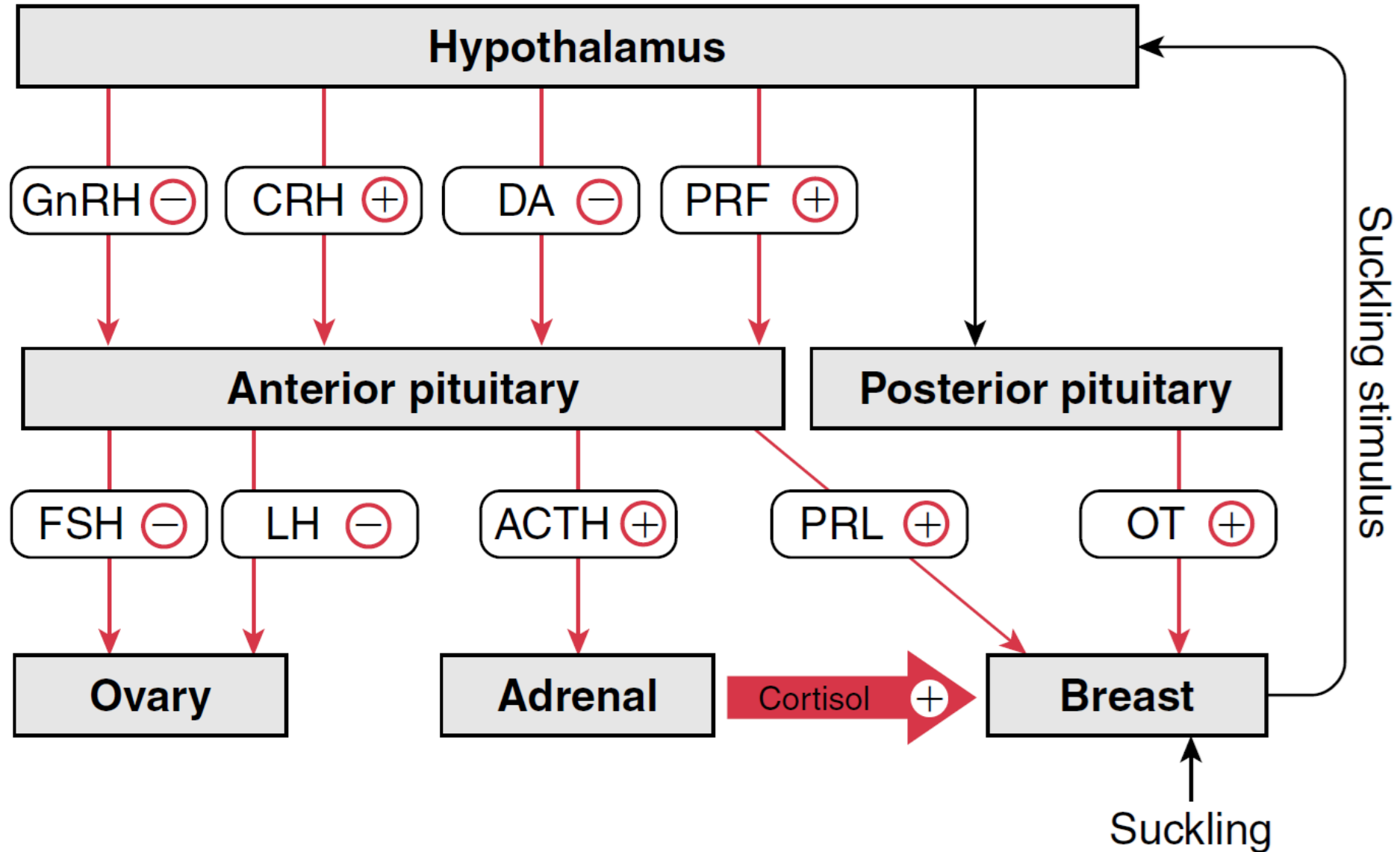
A listing of the various agents involved during: quiescence (phase 0), activation (phase 1), stimulation (phase 2) and involution (phase 3) of the uterus during pregnancy are represented.

PGI₂: prostacyclin; PTHrP: parathyroid hormone related peptide; and CRH: corticotrophin-releasing hormone.

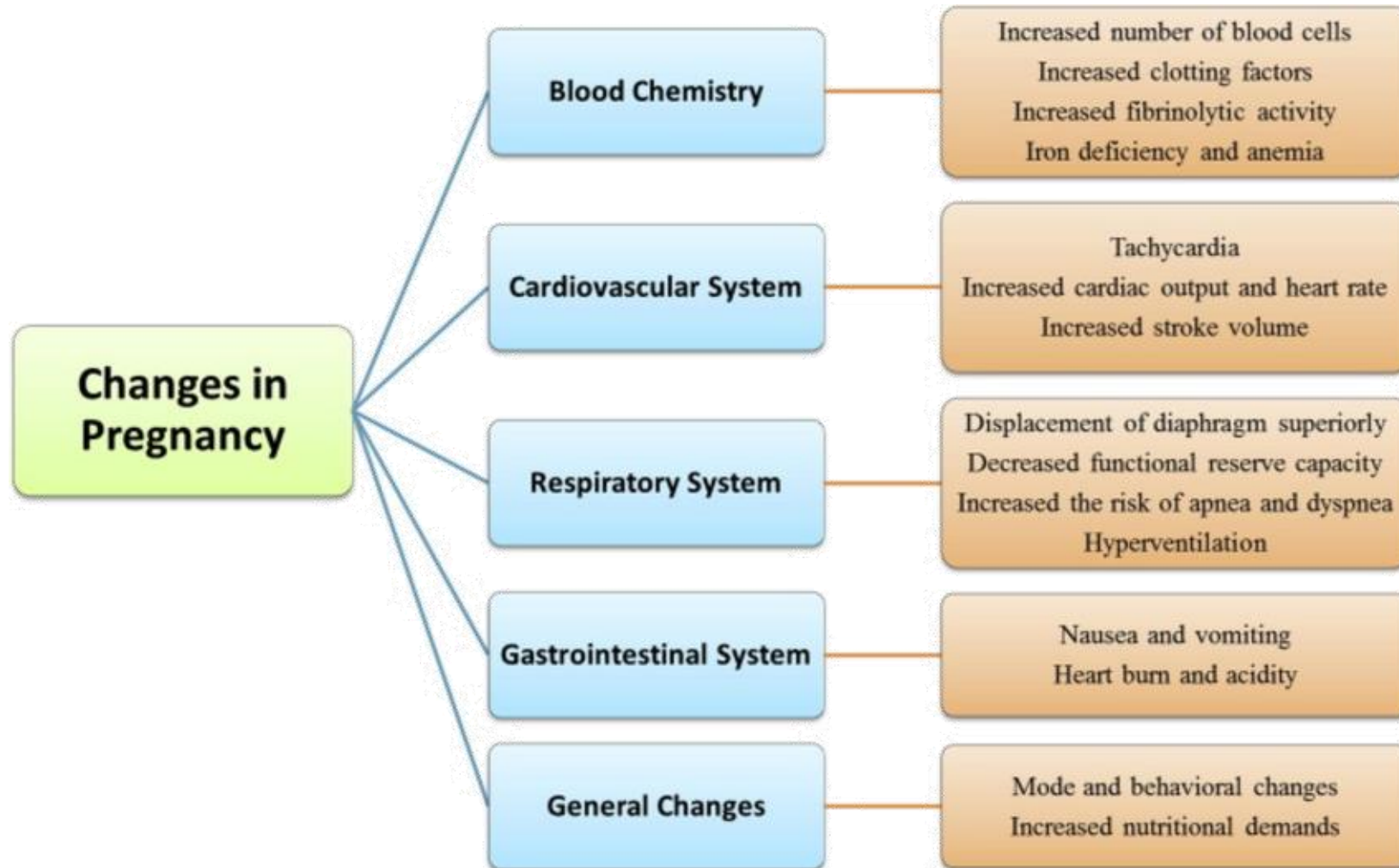
Fetoplacental unit



Lactation



Physiological changes during pregnancy



THANK YOU FOR YOUR ATTENTION