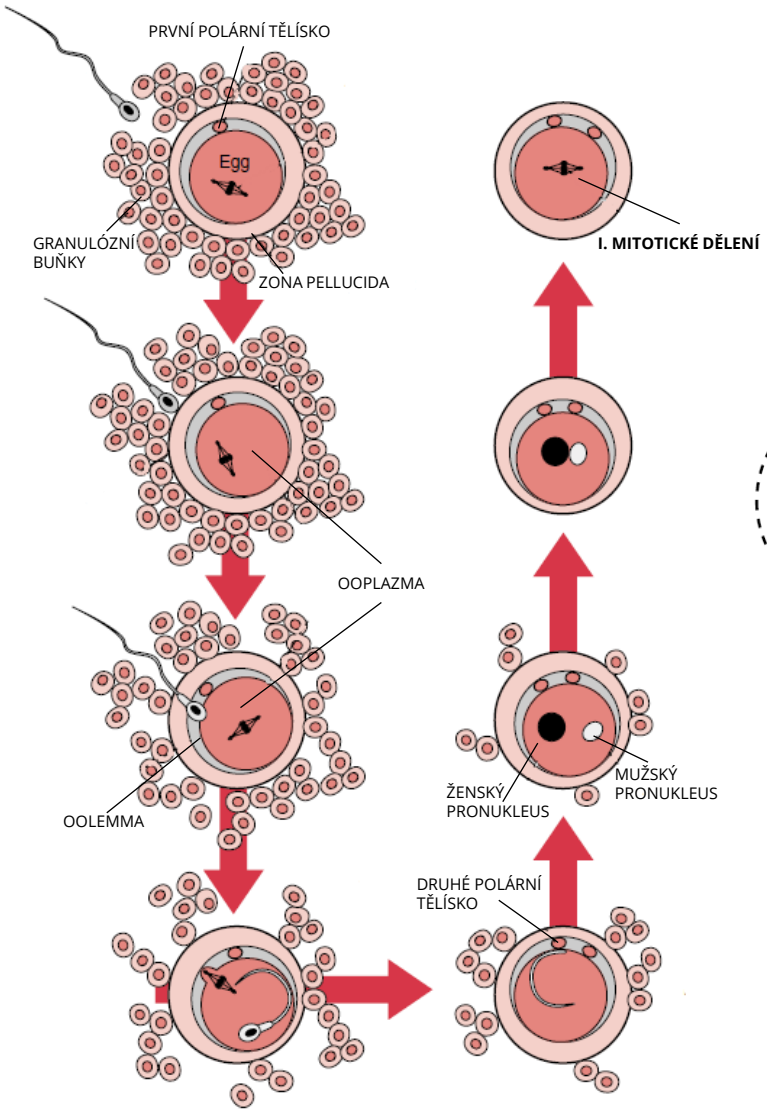
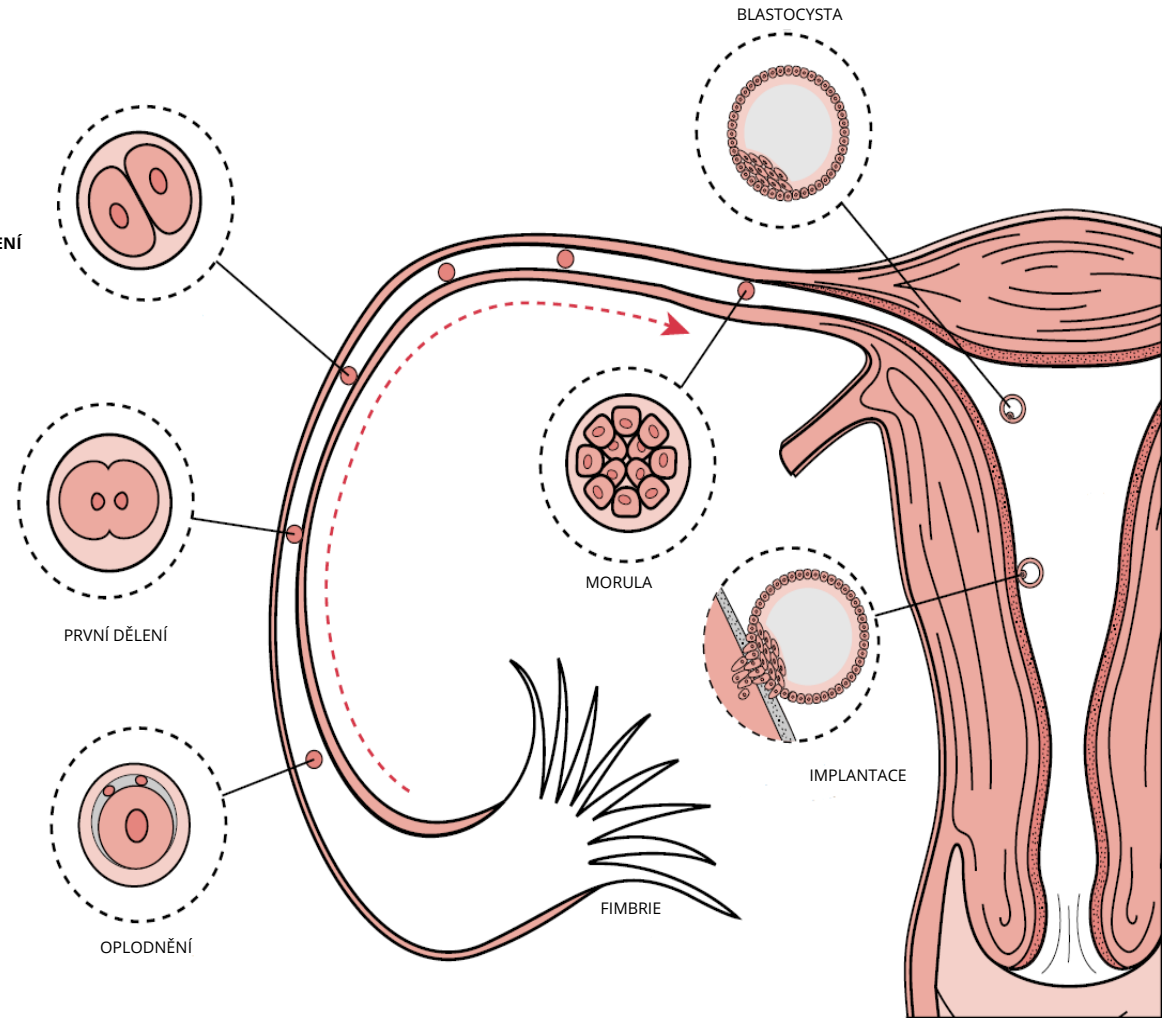
PHYSIOLOGY OF REPRODUCTION

FERTILIZATION





PLACENTAL FUNCTION

I. Transport and metabolism

a. Transfer of respiratory gases
b. Transport and metabolism of carbohydrates
c. Transport and metabolism of amino acids
d. Transport and metabolism of lipids
e. Transfer of water, inorganic ions, minerals and vitamins

II. Endocrine functions

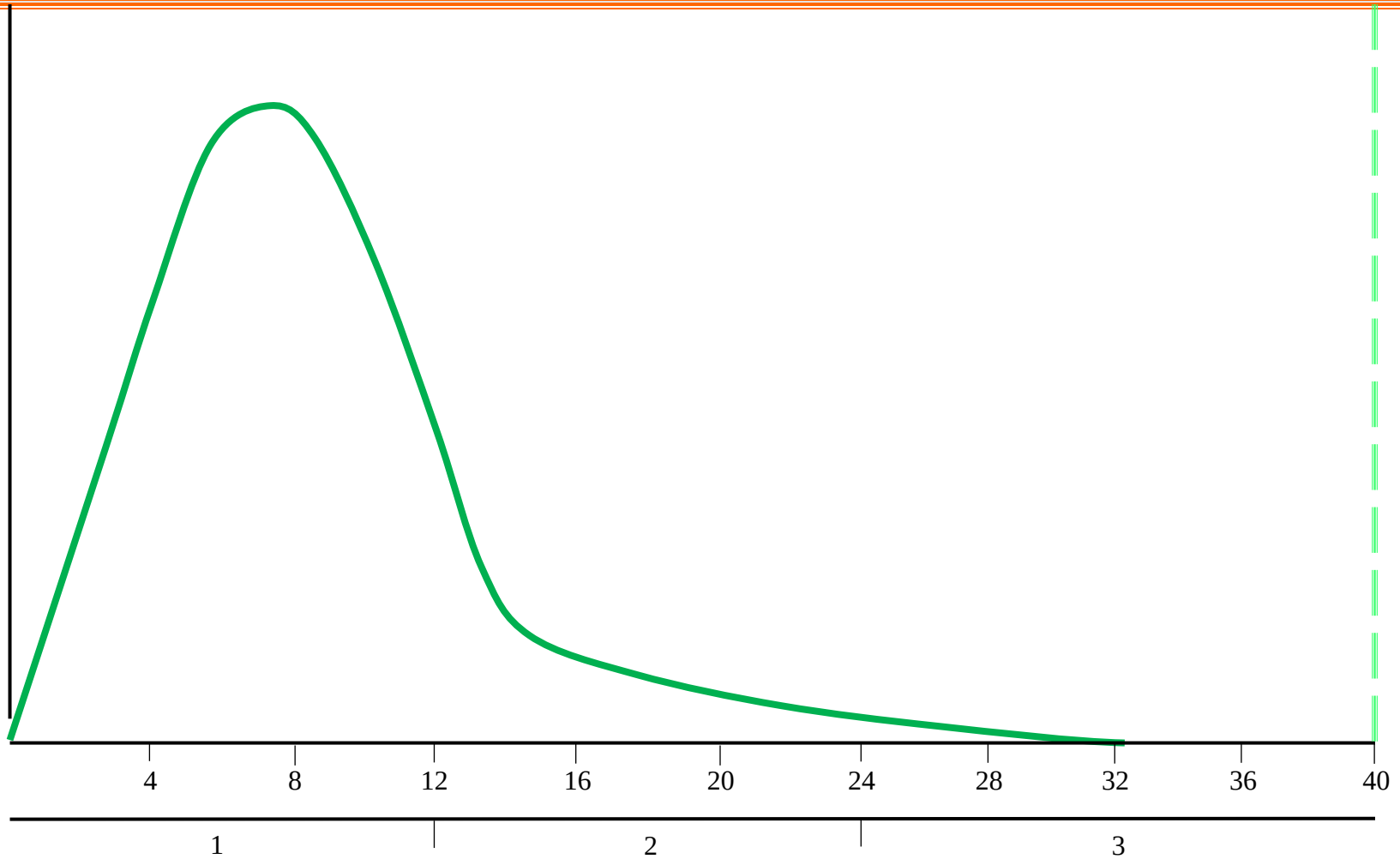
a. Oestrogens
b. Progesterone
c. Chorionic gonadotrophin
d. Placental lactogen
e. Placental growth factors

III. Protektivní funkce

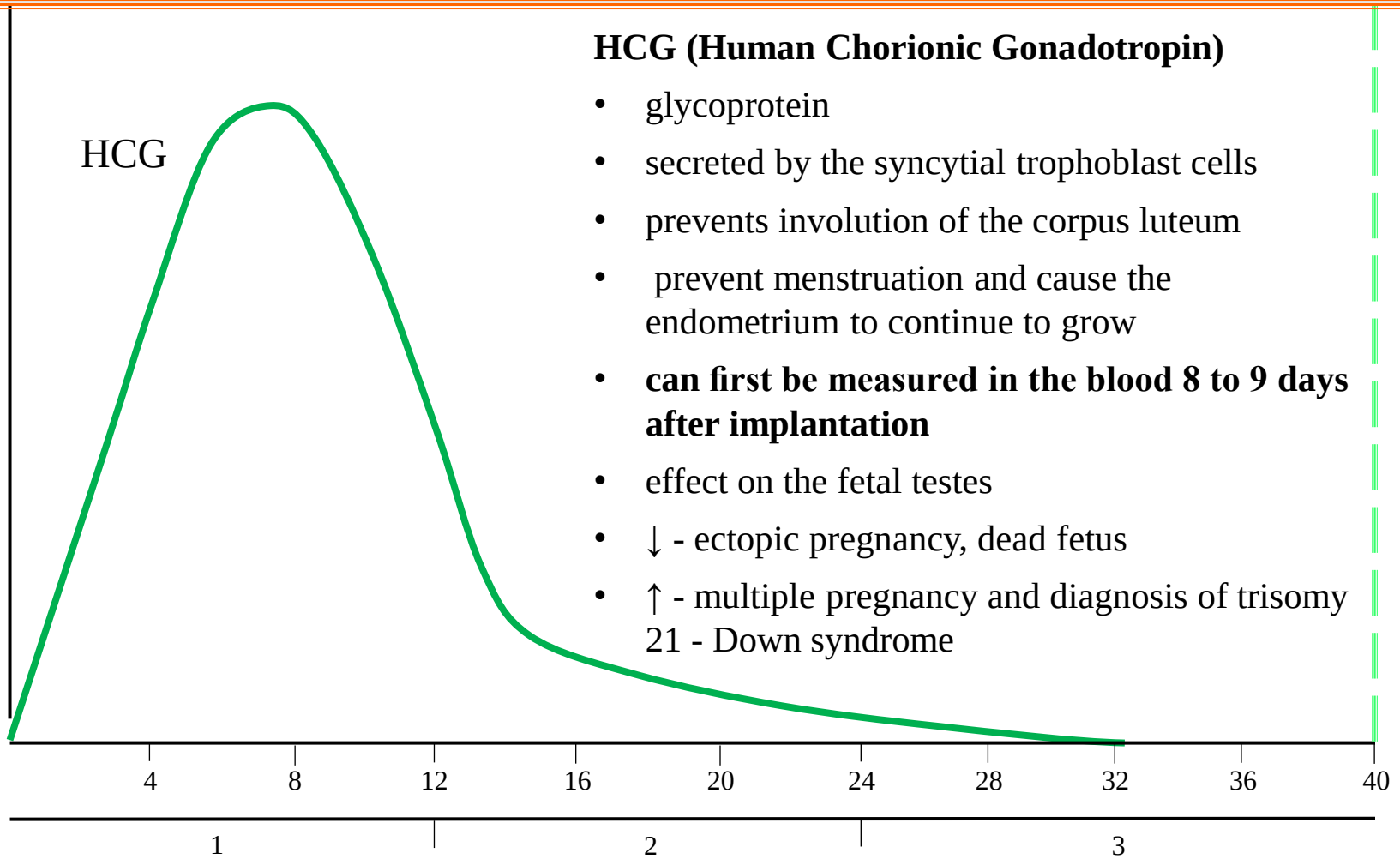
a. Cytochrome P450 (xenobiotics)
b. A barrier against transmission of many bacteria

!!! IgG

HORMONAL PROFILE OF PREGNANCY



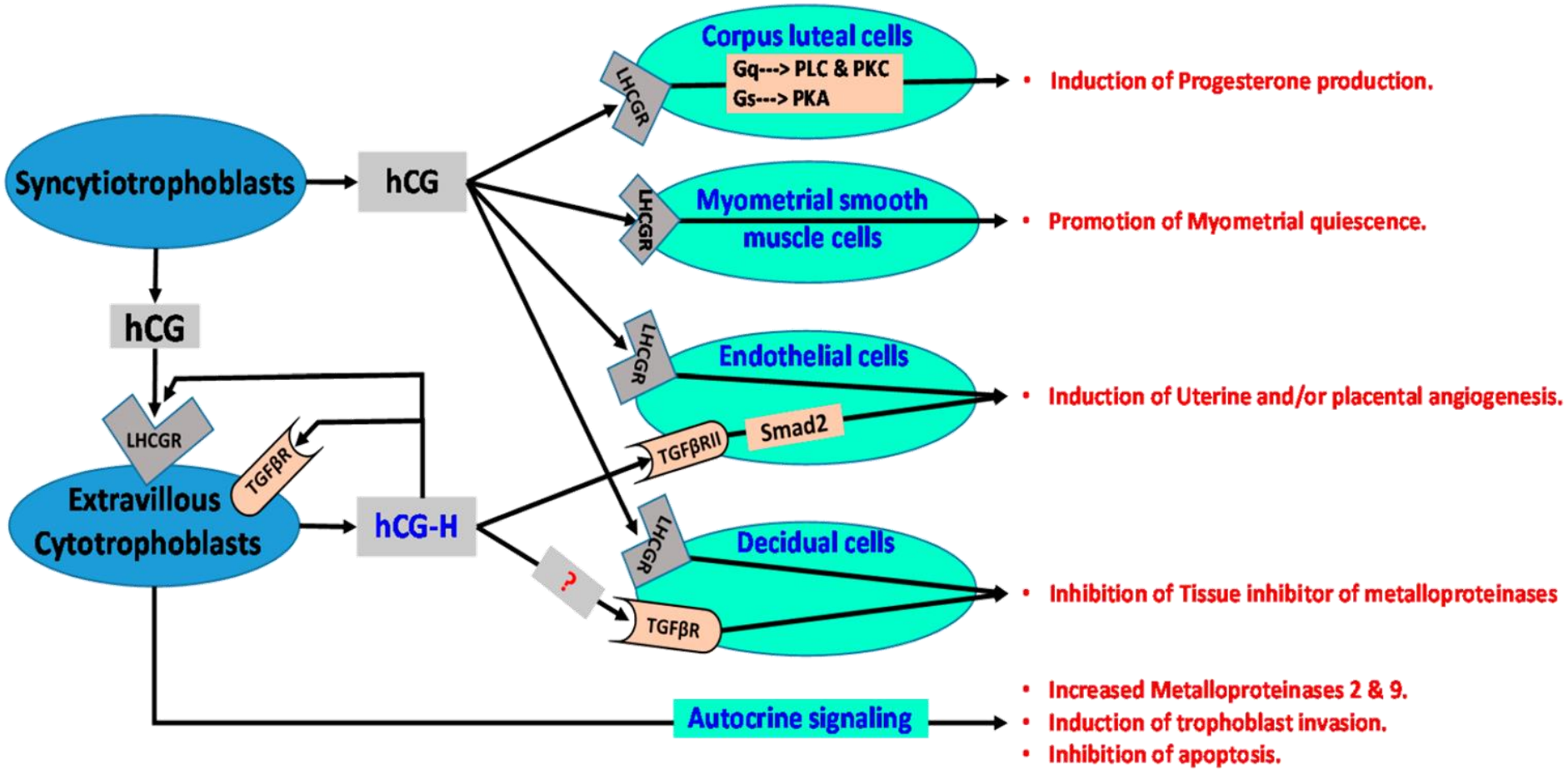
HORMONAL PROFILE OF PREGNANCY



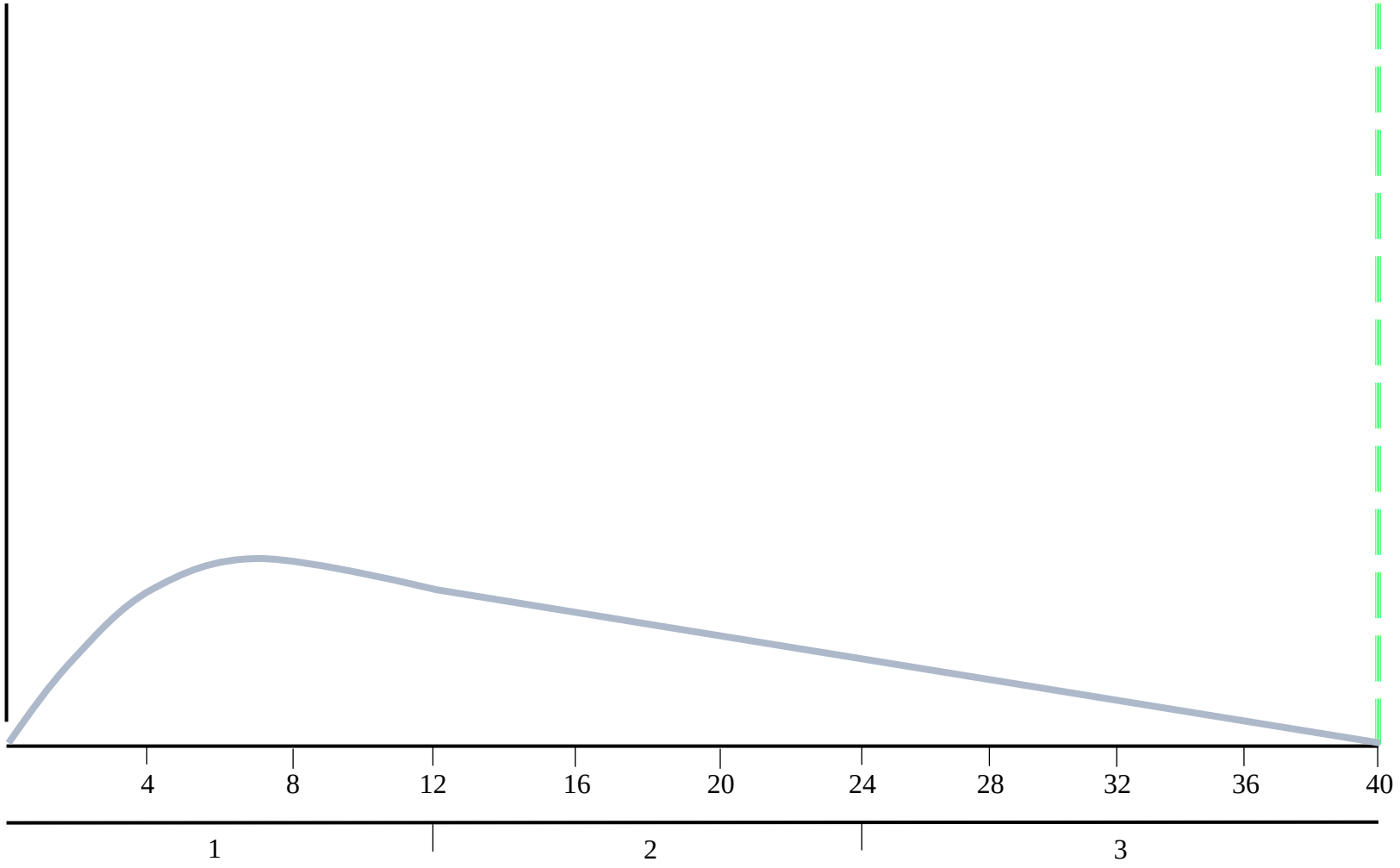
HCG (Human Chorionic Gonadotropin)

- glycoprotein
- secreted by the syncytial trophoblast cells
- prevents involution of the corpus luteum
- prevent menstruation and cause the endometrium to continue to grow
- **can first be measured in the blood 8 to 9 days after implantation**
- effect on the fetal testes
- ↓ - ectopic pregnancy, dead fetus
- ↑ - multiple pregnancy and diagnosis of trisomy 21 - Down syndrome

HORMONAL PROFILE OF PREGNANCY



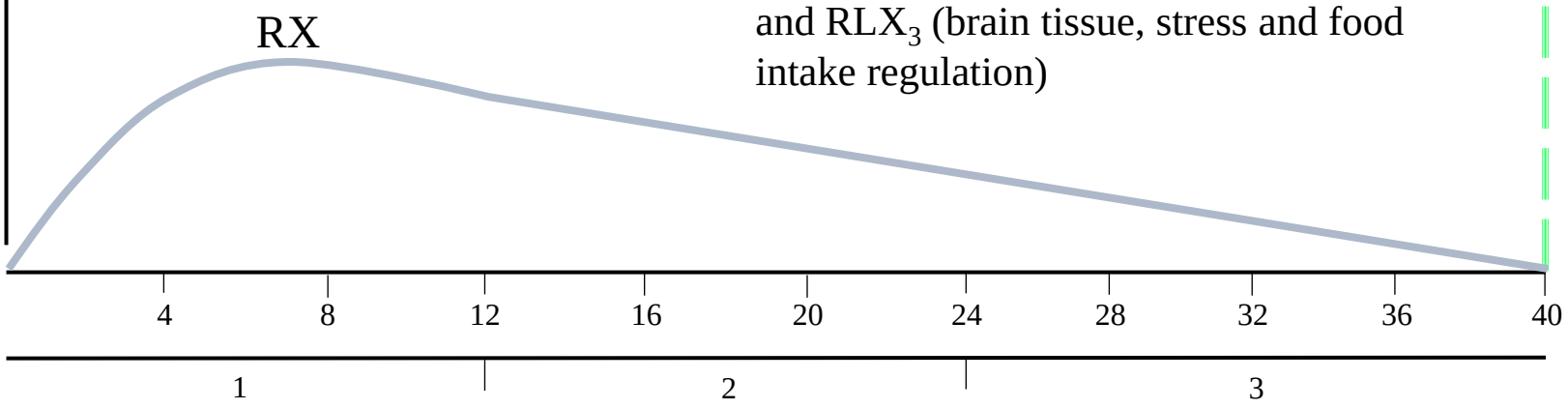
HORMONAL PROFILE OF PREGNANCY



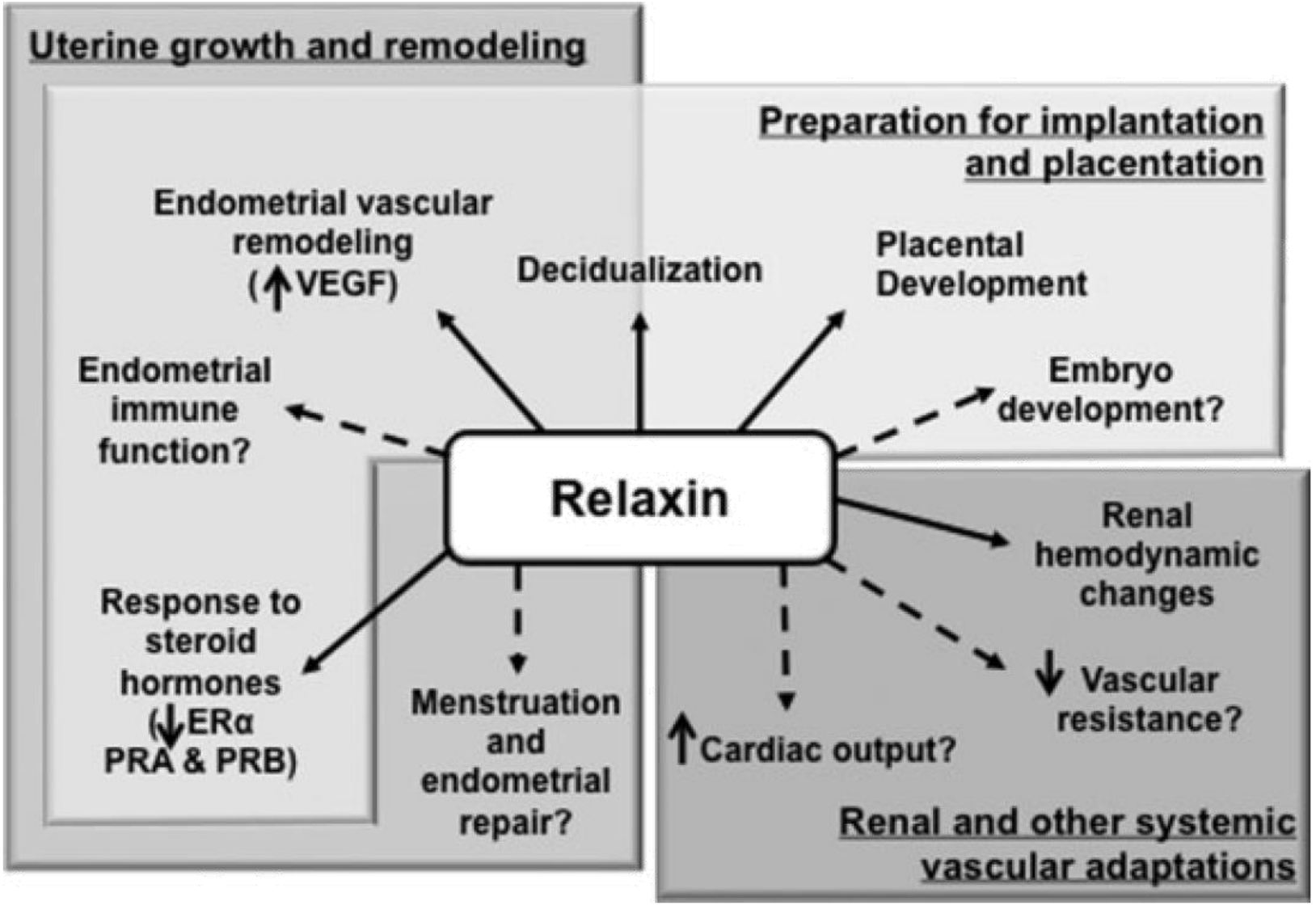
HORMONAL PROFILE OF PREGNANCY

RX (Relaxin)

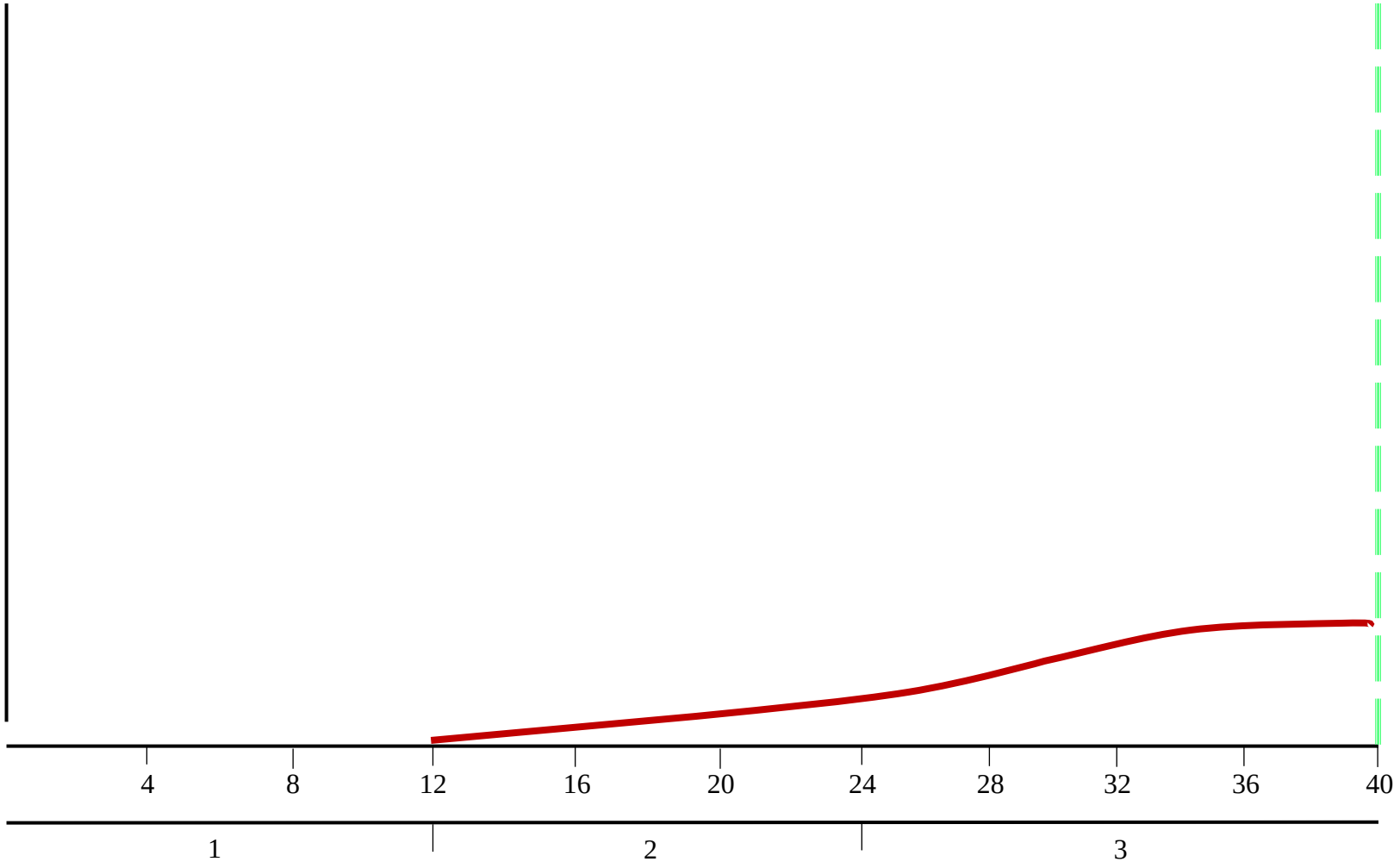
- relaxes the pubic symphysis and other pelvic joints and softens
- dilates the uterine cervix
- mediate hemodynamic changes (pregnancy)
- RLX_1, RLX_2 (organs of reproduction) and RLX_3 (brain tissue, stress and food intake regulation)



HORMONAL PROFILE OF PREGNANCY



HORMONAL PROFILE OF PREGNANCY

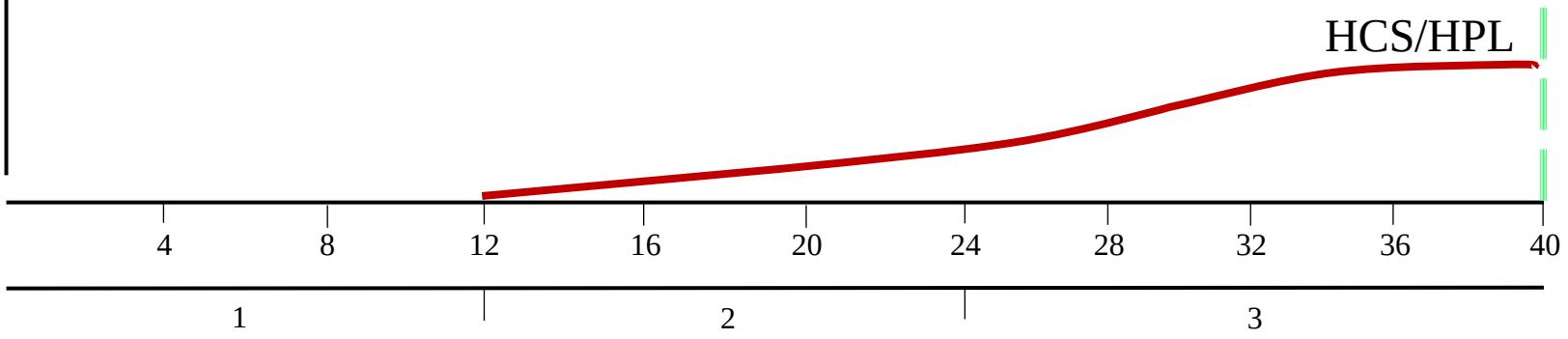


HORMONAL PROFILE OF PREGNANCY

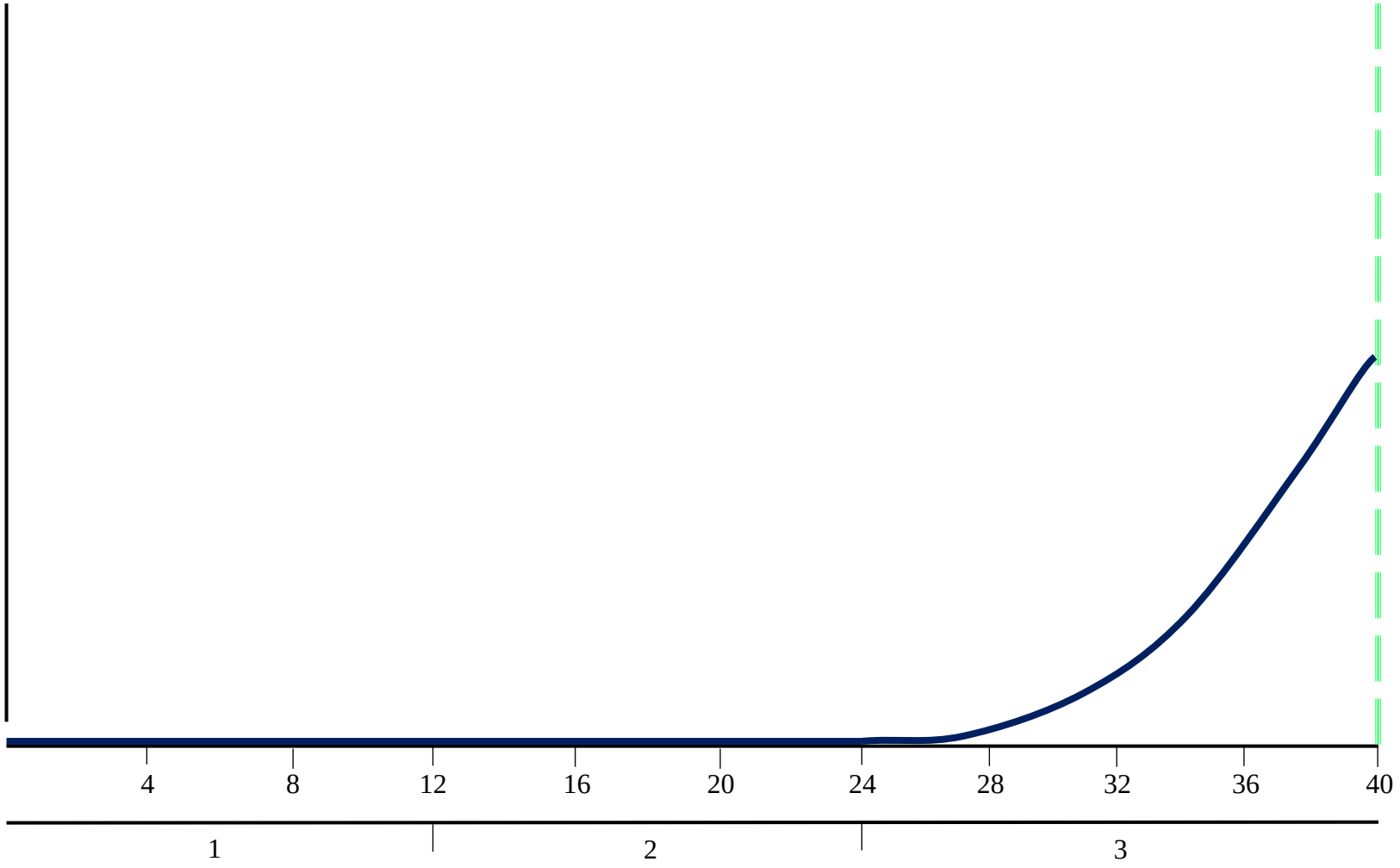
HCS (Human Chorionic Somatomammotropin)

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



HORMONAL PROFILE OF PREGNANCY

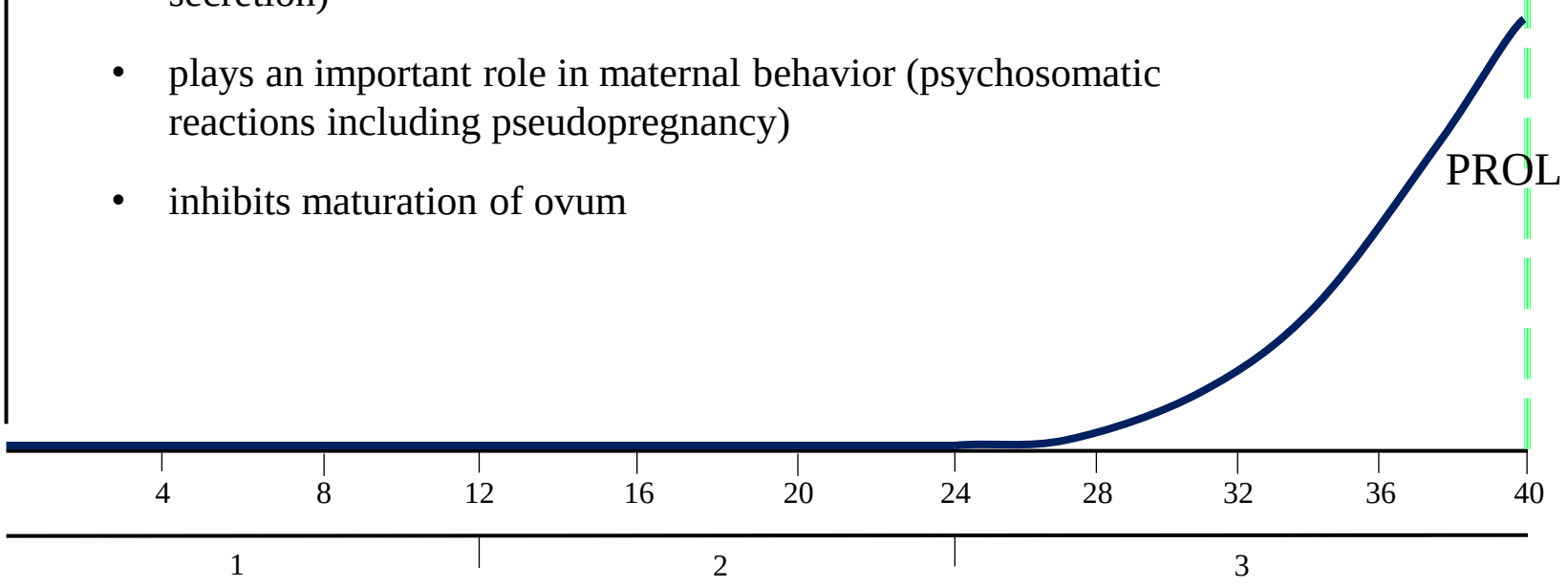


HORMONAL PROFILE OF PREGNANCY

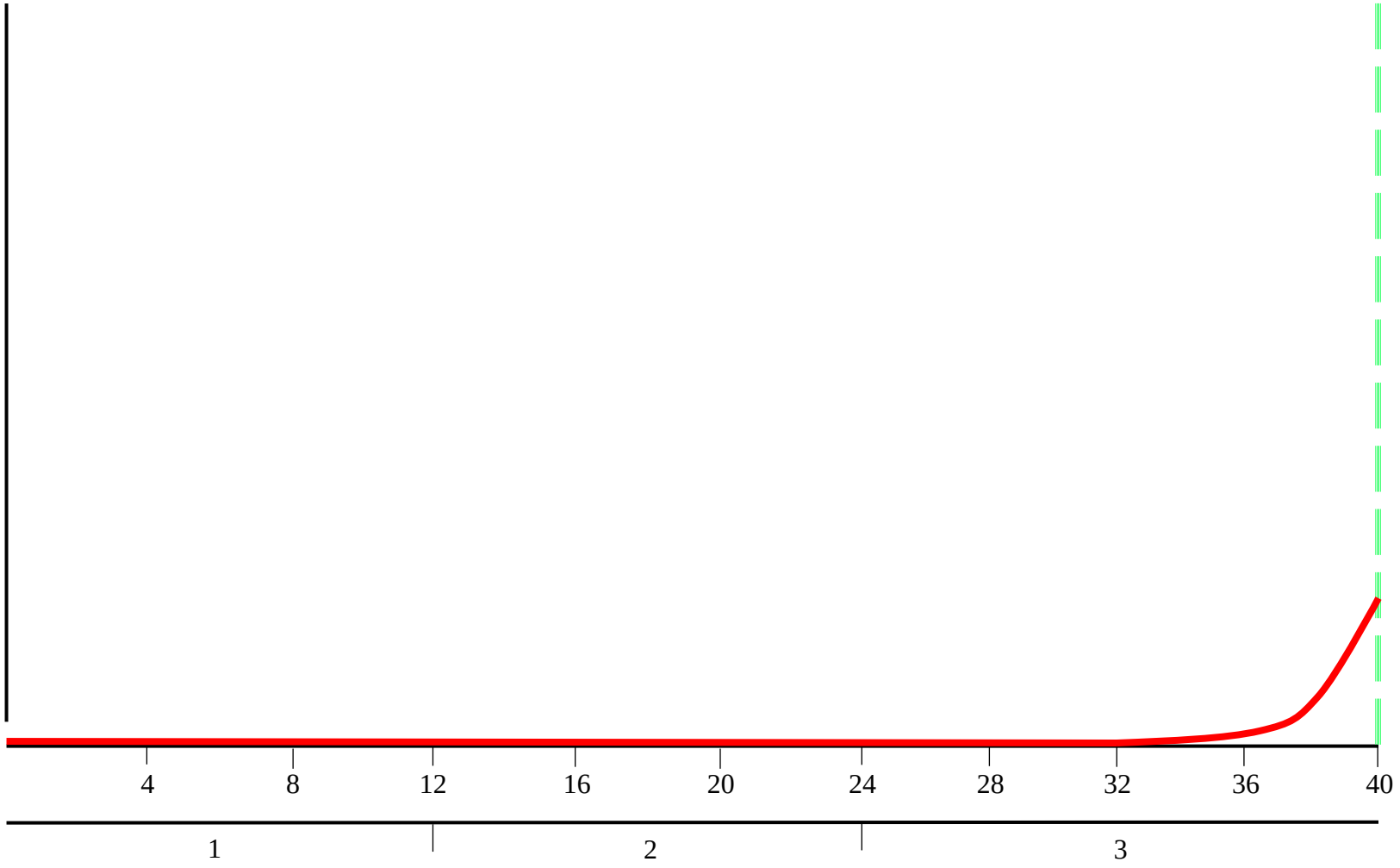
PROL (Prolactin)

luteotropic hormone or luteotropin

- stimulates the mammary glands to produce milk (lactation)
- “luteotrophic” action of prolactin (enhanced progesterone secretion)
- plays an important role in maternal behavior (psychosomatic reactions including pseudopregnancy)
- inhibits maturation of ovum



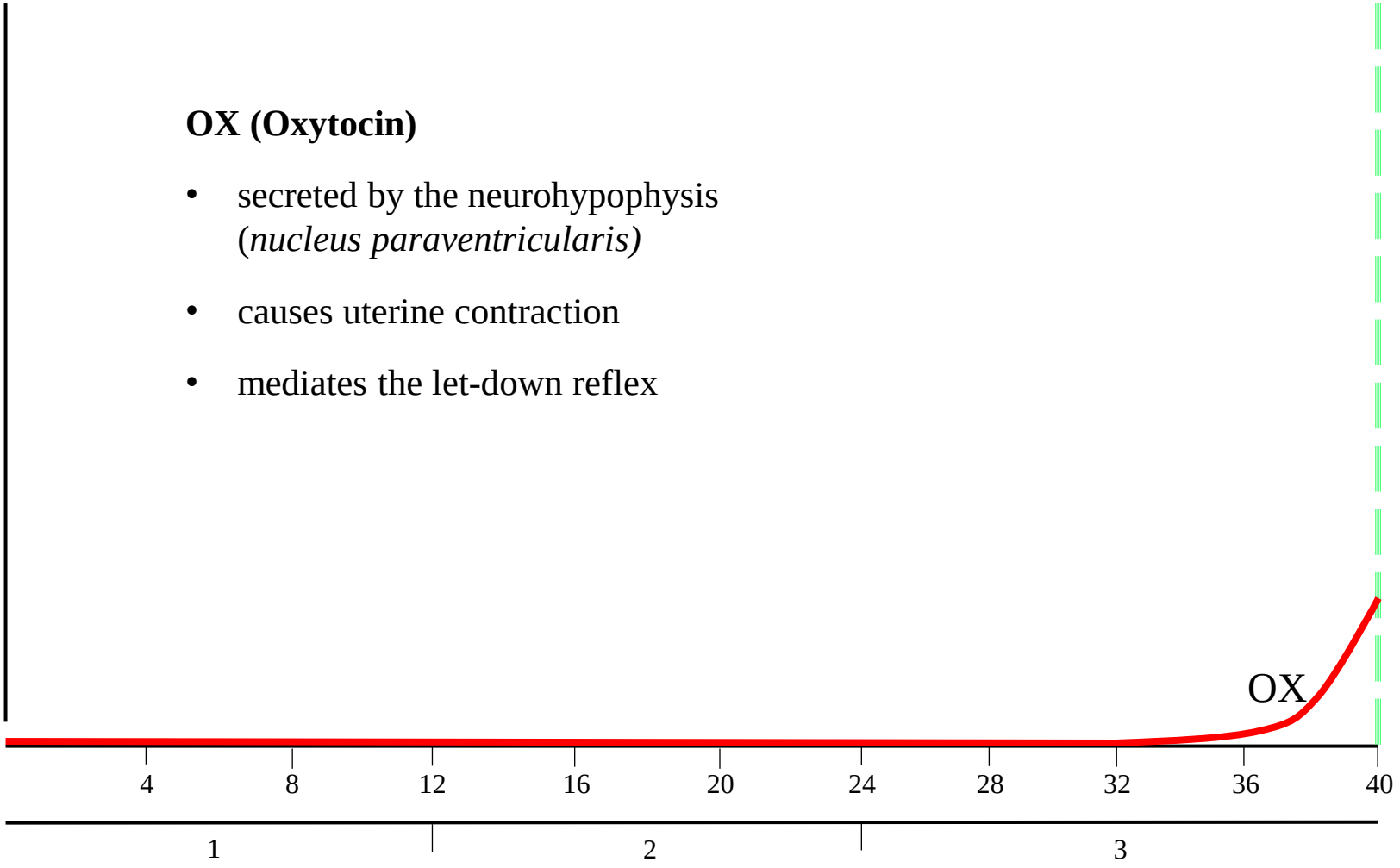
HORMONAL PROFILE OF PREGNANCY



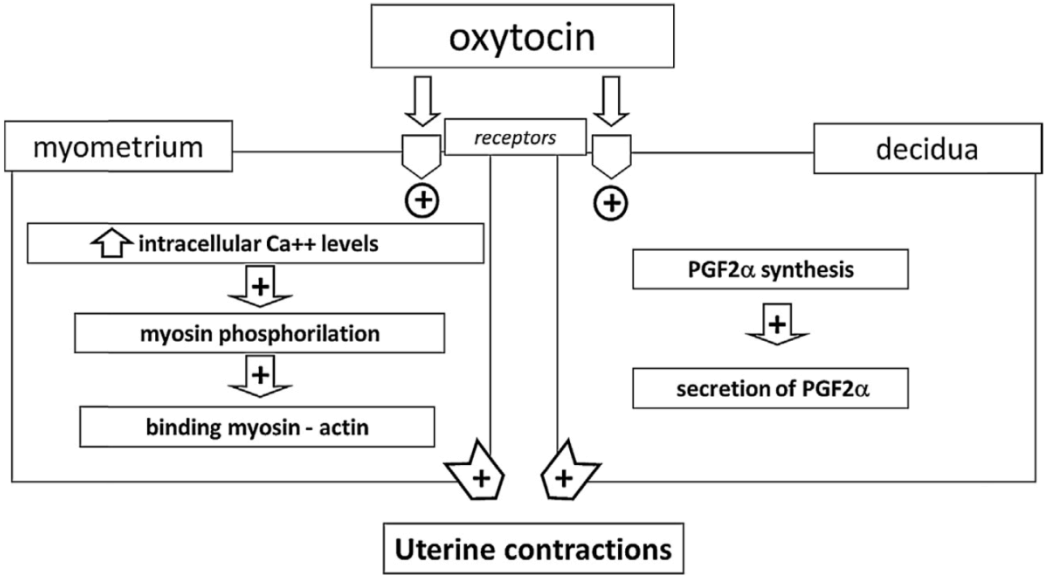
HORMONAL PROFILE OF PREGNANCY

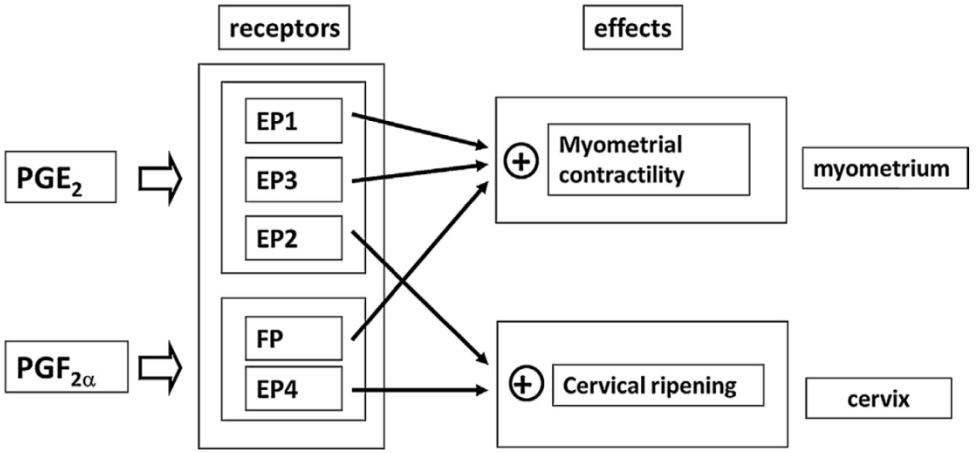
OX (Oxytocin)

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

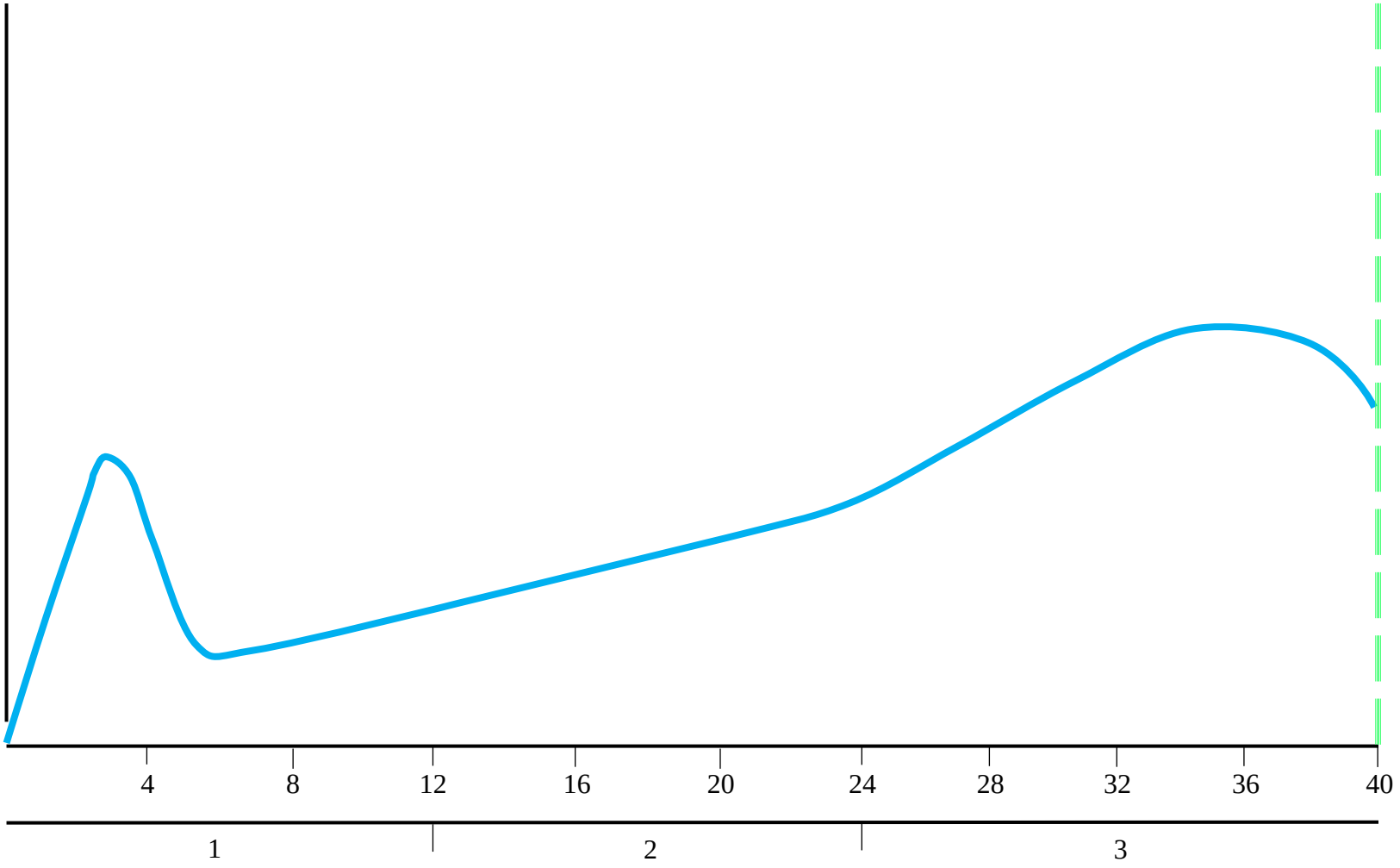


HORMONAL PROFILE OF PREGNANCY





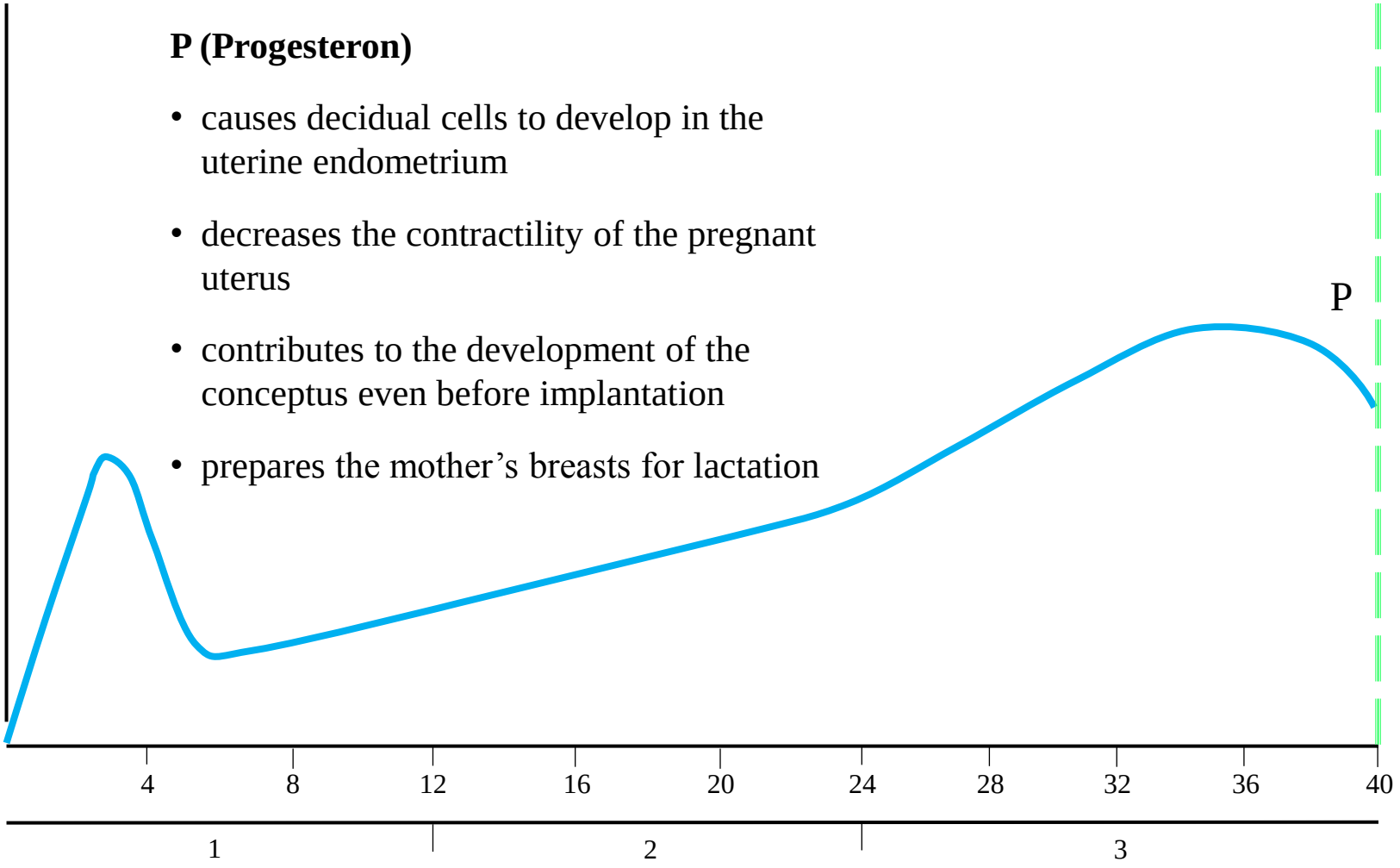
HORMONAL PROFILE OF PREGNANCY



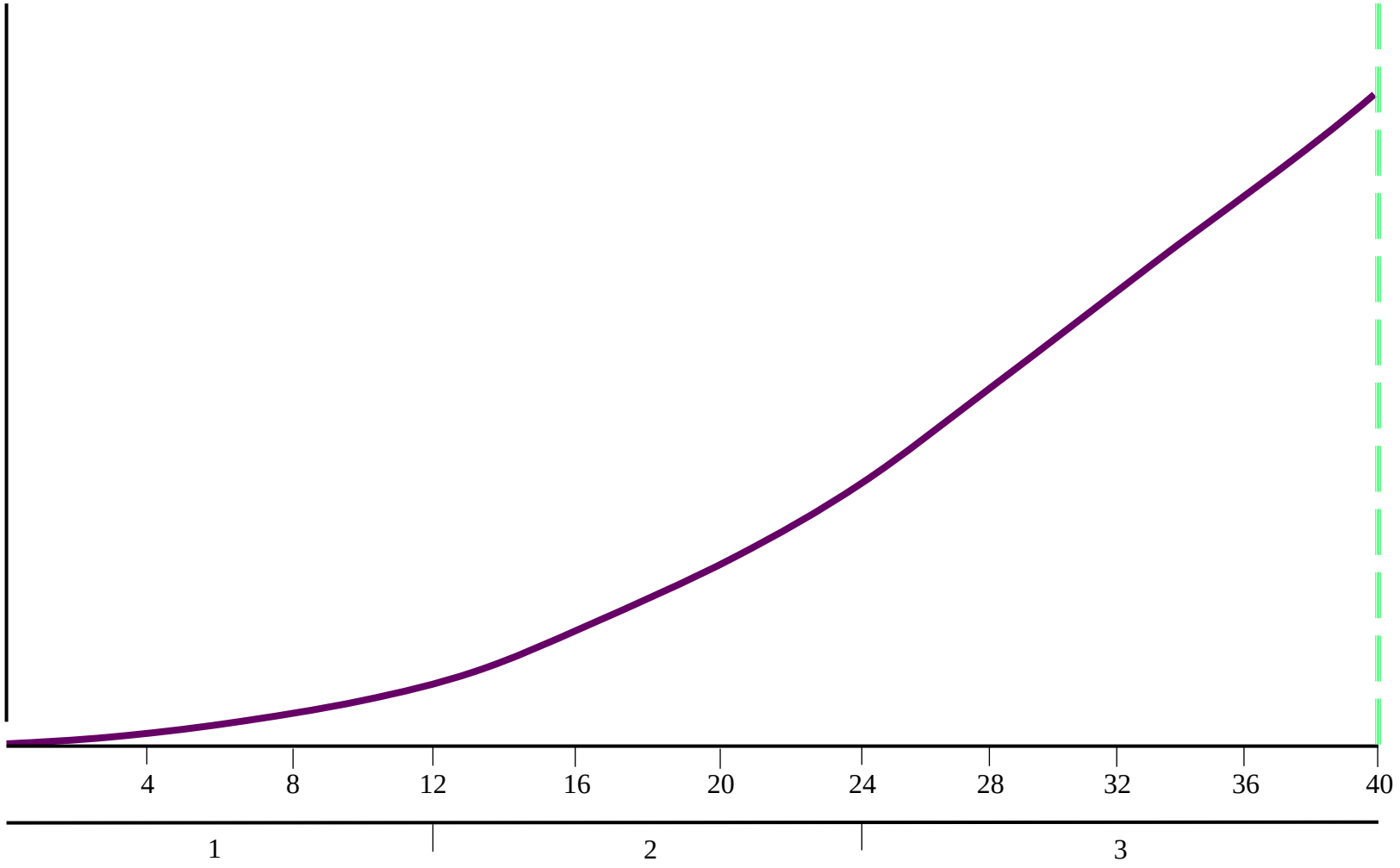
HORMONAL PROFILE OF PREGNANCY

P (Progesteron)

- causes decidual cells to develop in the uterine endometrium
- decreases the contractility of the pregnant uterus
- contributes to the development of the conceptus even before implantation
- prepares the mother's breasts for lactation



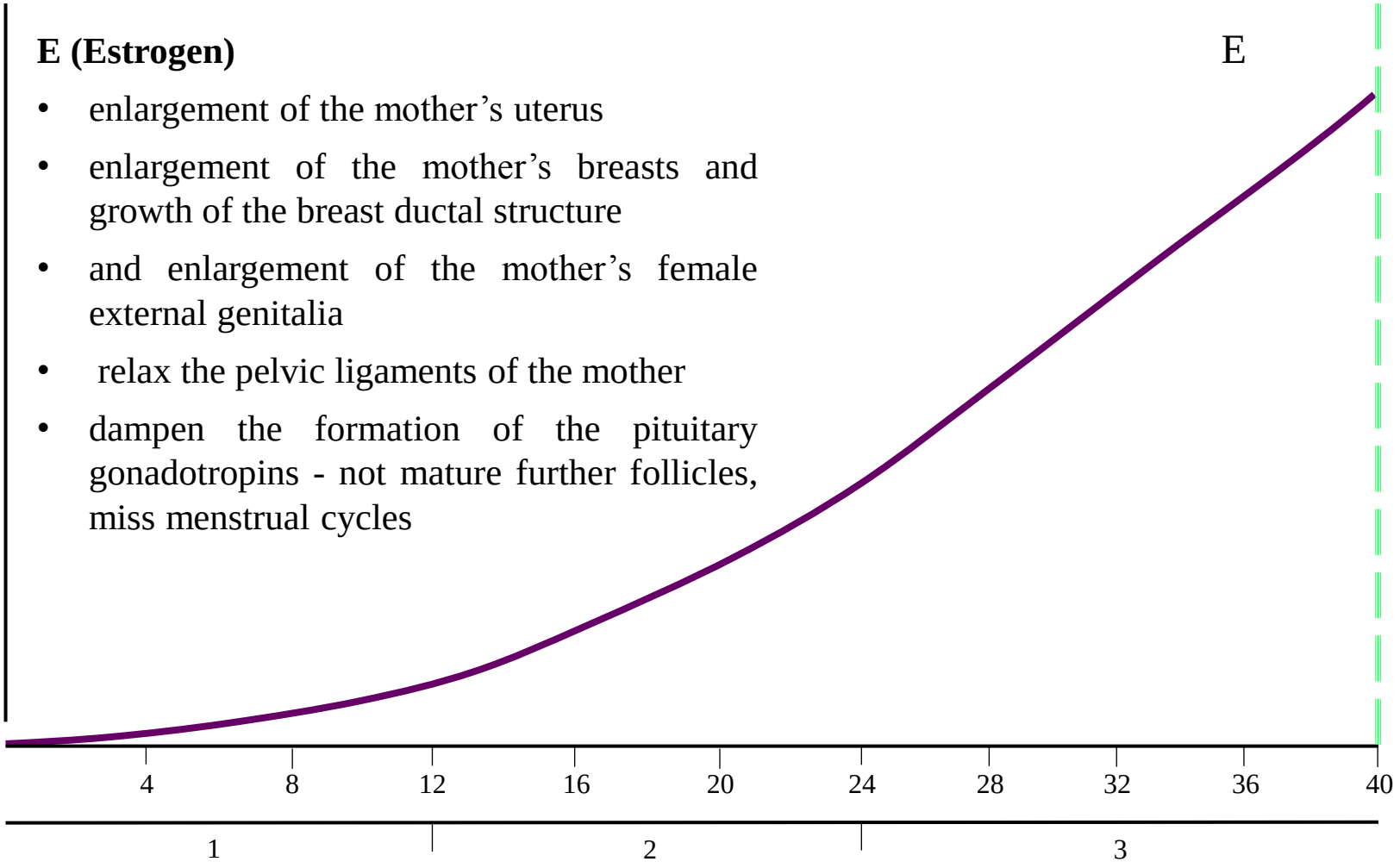
HORMONAL PROFILE OF PREGNANCY



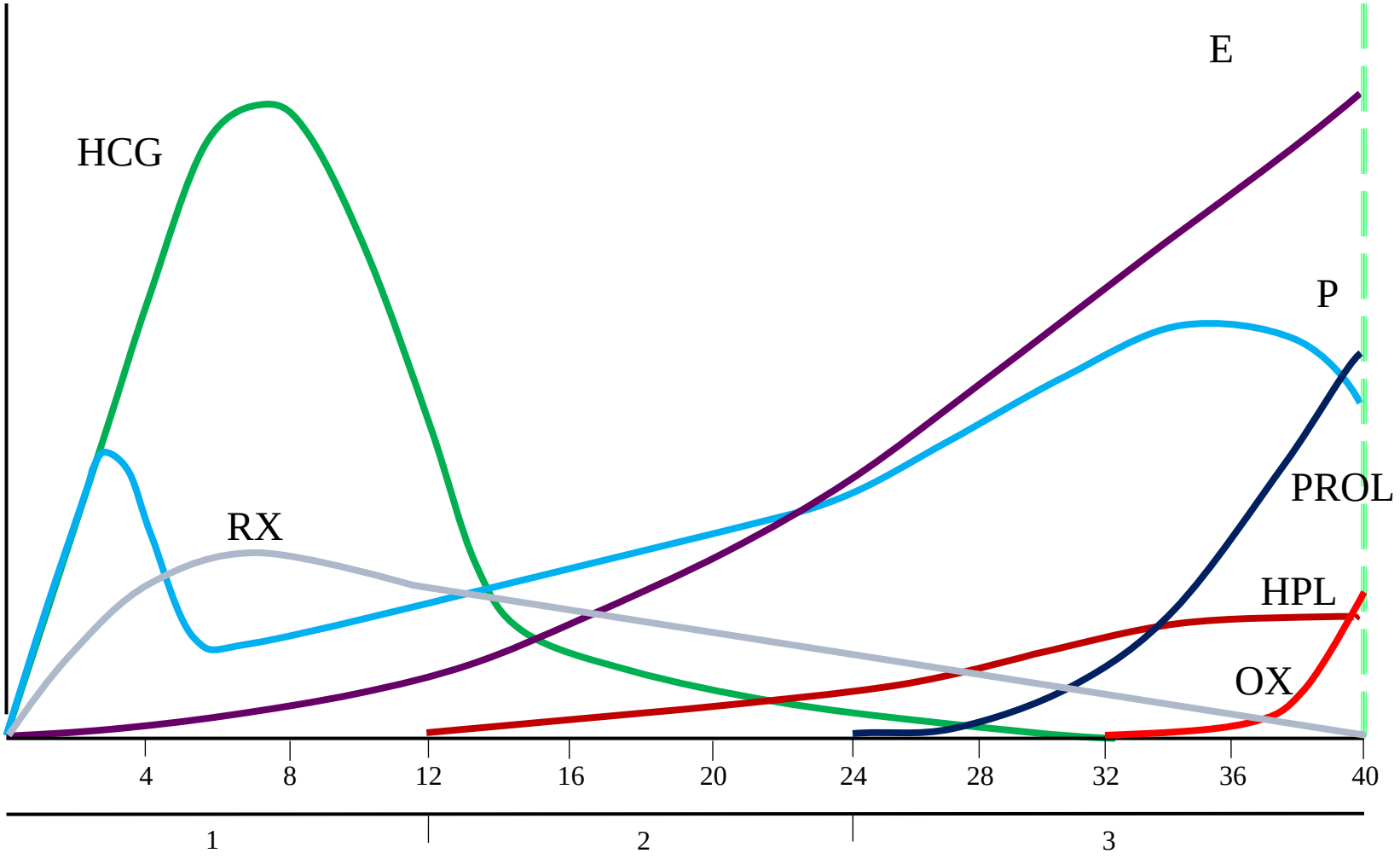
HORMONAL PROFILE OF PREGNANCY

E (Estrogen)

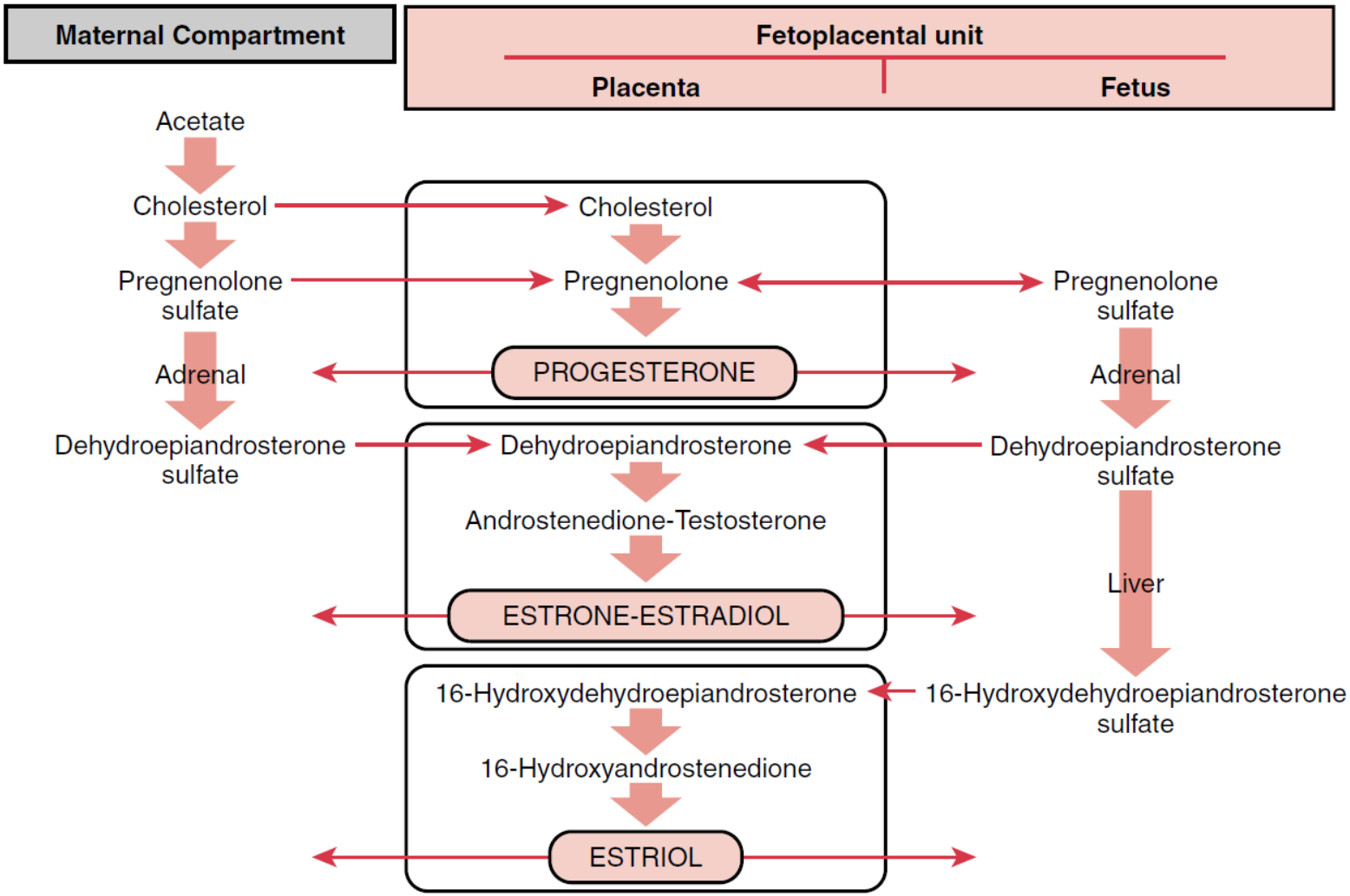
- enlargement of the mother's uterus
- enlargement of the mother's breasts and growth of the breast ductal structure
- and enlargement of the mother's female external genitalia
- relax the pelvic ligaments of the mother
- dampen the formation of the pituitary gonadotropins - not mature further follicles, miss menstrual cycles



HORMONAL PROFILE OF PREGNANCY



FETOPLACENTAL UNIT



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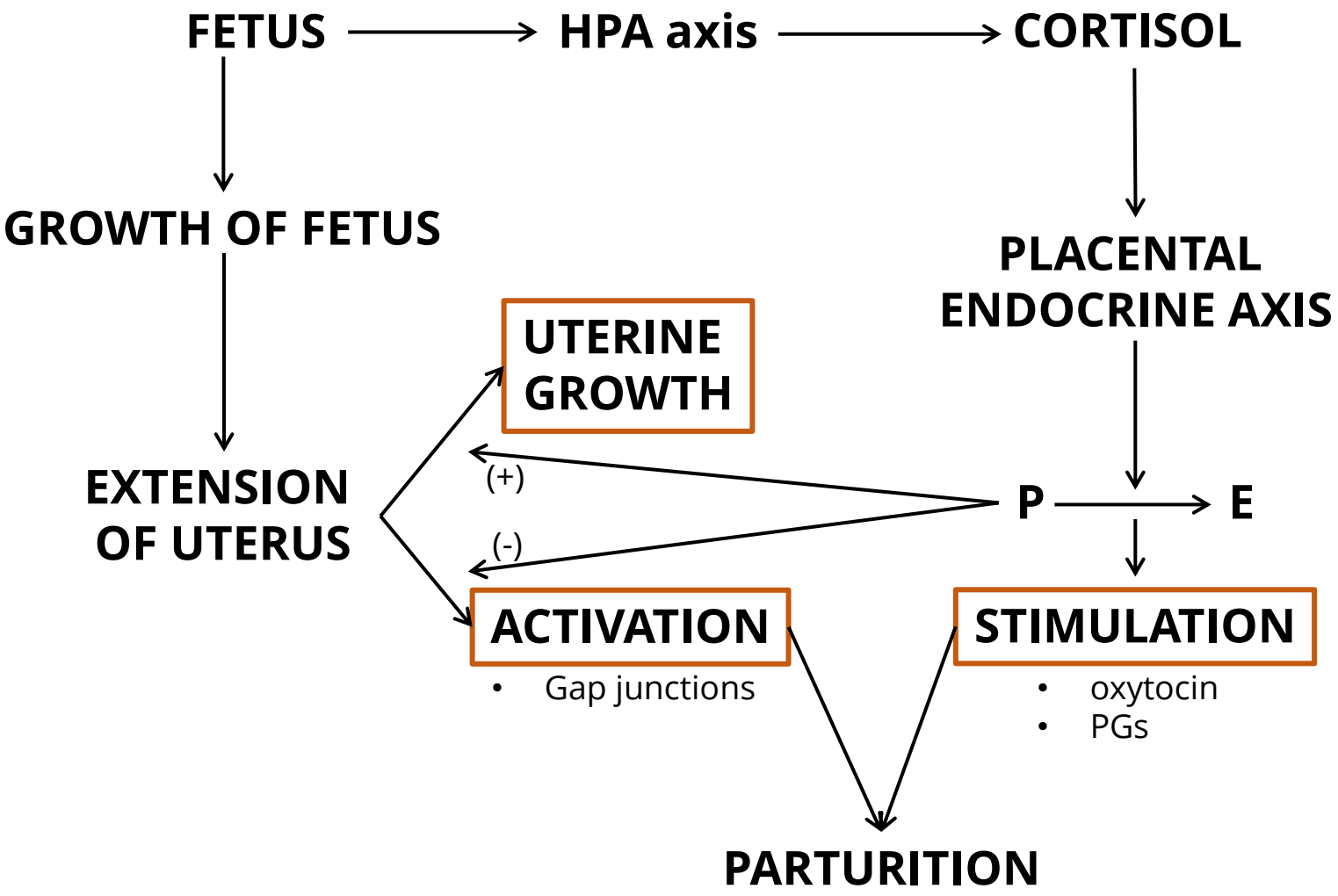
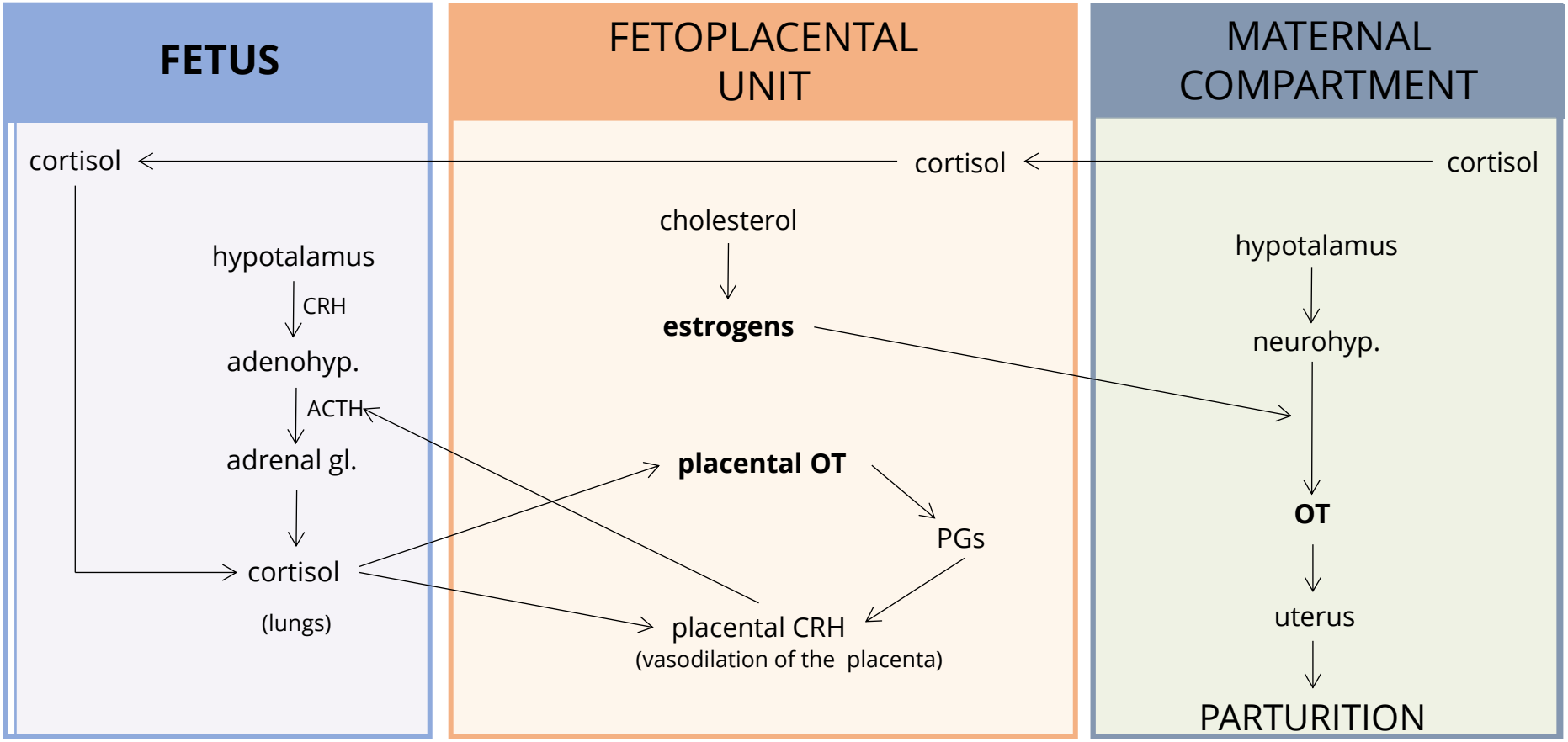
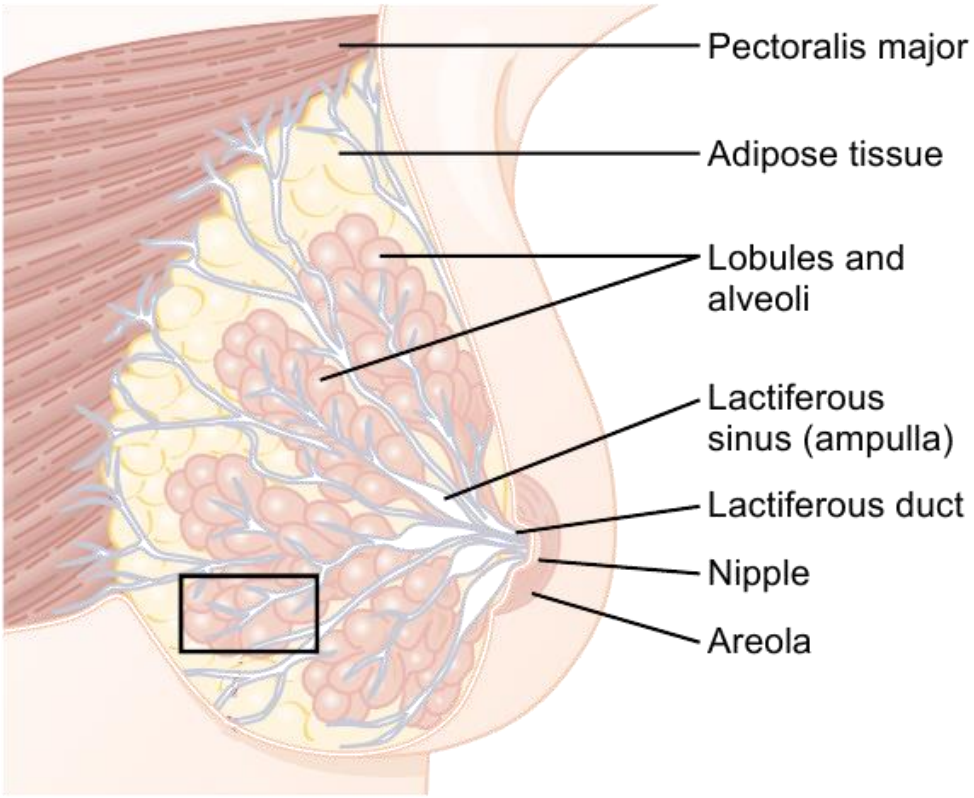
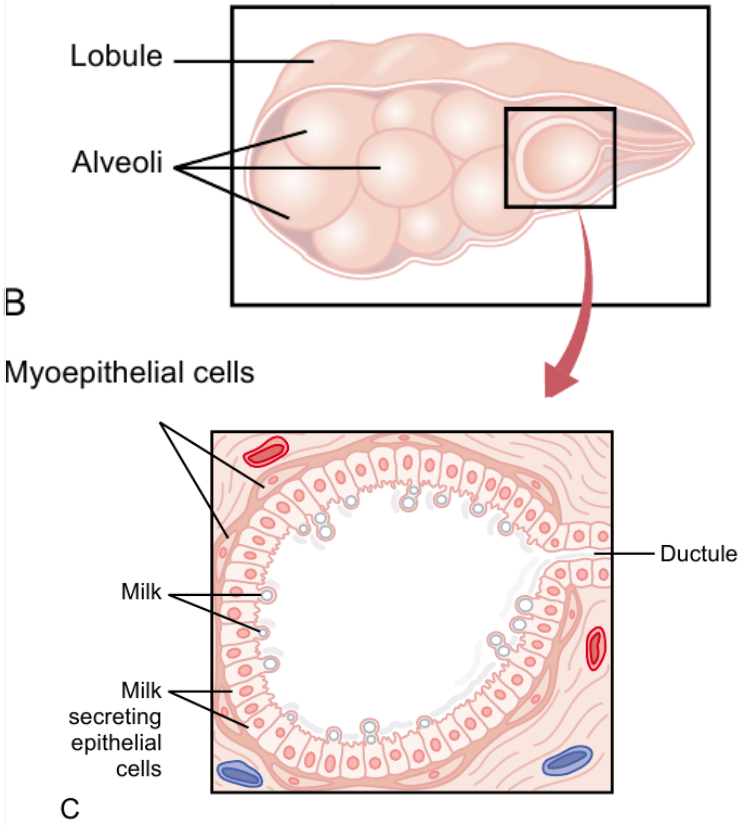


PARTURITION

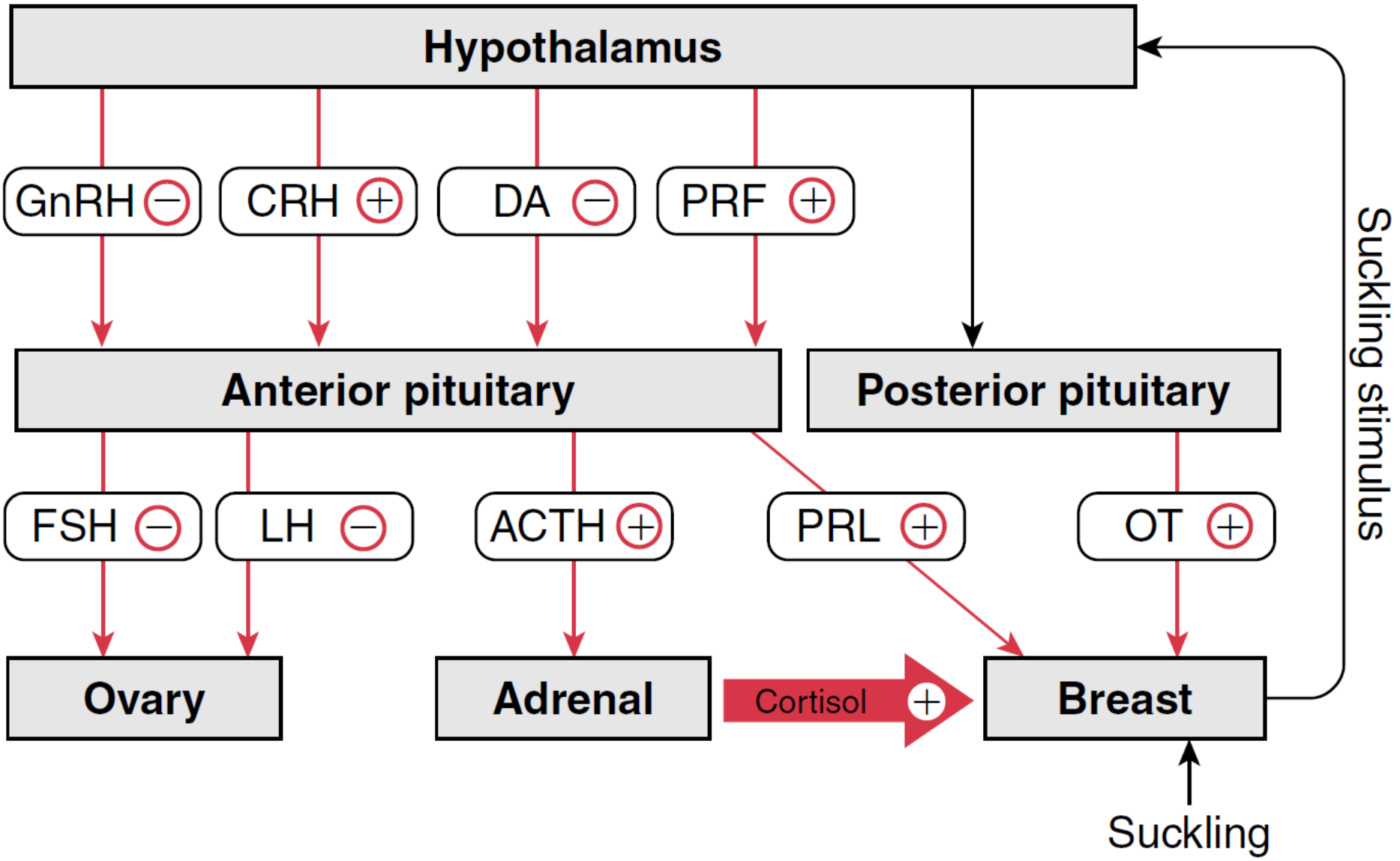


LACTATION

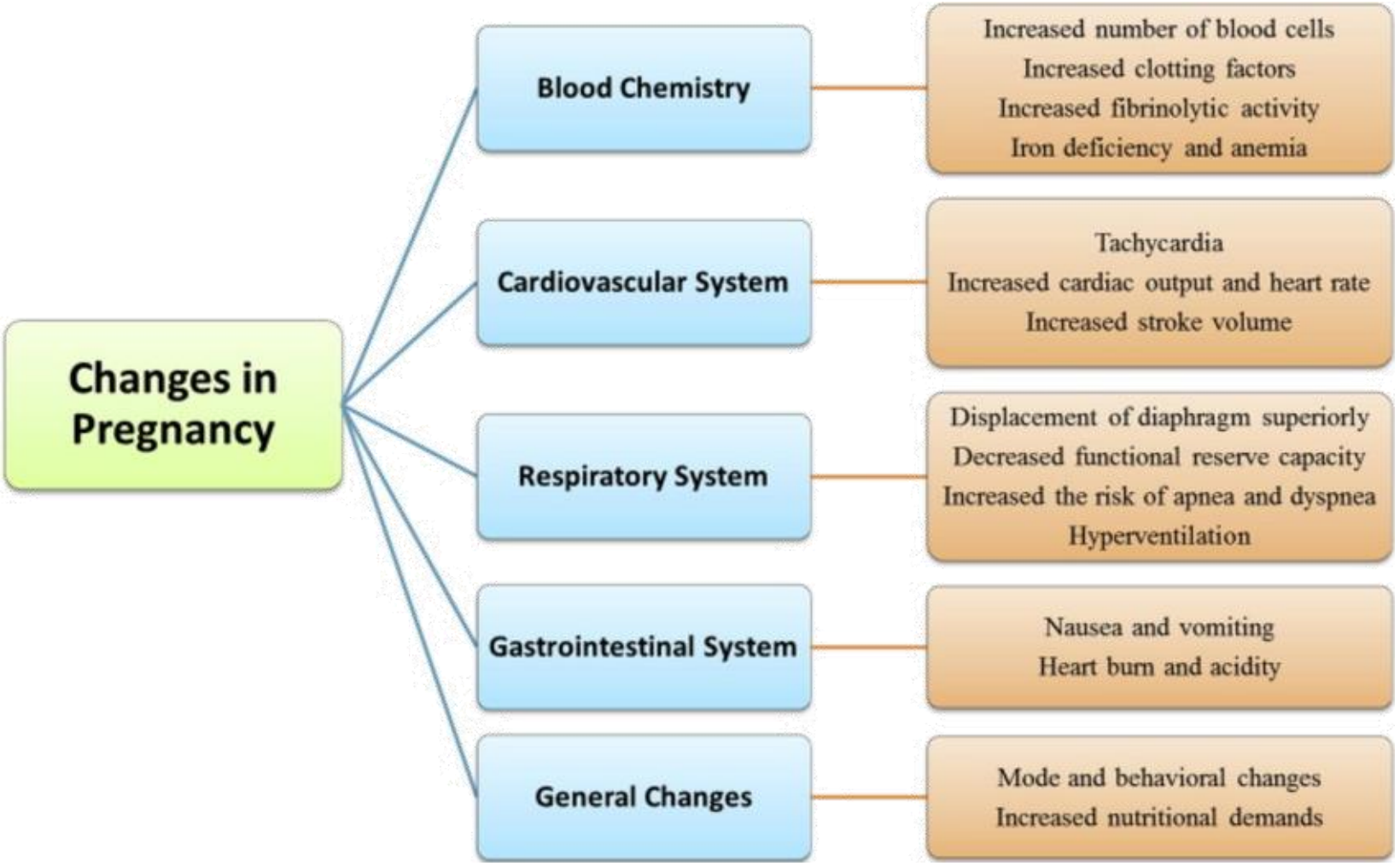

Pectoralis major
Adipose tissue
Lobules and alveoli
Lactiferous sinus (ampulla)
Lactiferous duct
Nipple
Areola


Lobule
Alveoli
B
Myoepithelial cells
Ductule
Milk
Milk secreting epithelial cells
C

LACTATION


Hypothalamus
GnRH ⊖
CRH ⊕
DA ⊖
PRF ⊕
Anterior pituitary
Posterior pituitary
FSH ⊖
LH ⊖
ACTH ⊕
PRL ⊕
OT ⊕
Ovary
Adrenal
Cortisol ⊕
Breast
Suckling stimulus
Suckling

PHYSIOLOGICAL CHANGES DURING PREGNANCY



THANK YOU FOR YOUR ATENTION