

ENDOCRINE PHYSIOLOGY

PROF. ABDULMAJEED AL-DREES

ANTERIOR PITUITARY GLAND

2

ANTERIOR PITUITARY GLAND

- **Hormones:**

1- TSH

2- FSH

3- LH

4- GH

5- PROLACTIN

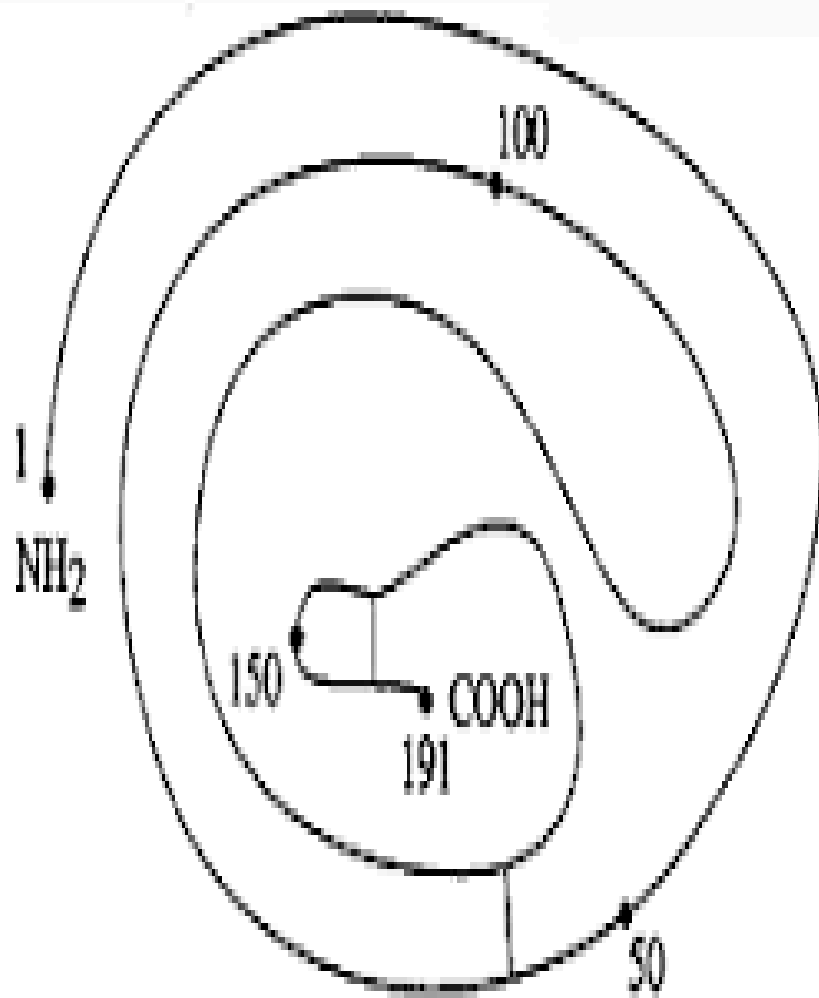
6- ACTH.

Table 11.6 | Anterior Pituitary Hormones

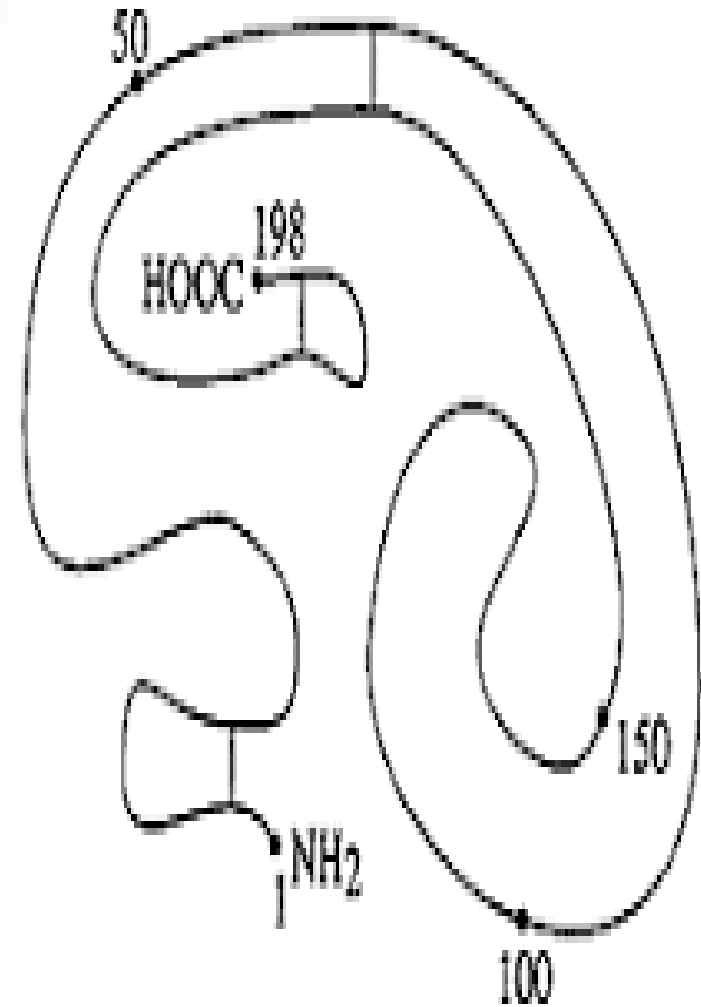
Hormone	Target Tissue	Principal Actions	Regulation of Secretion
ACTH (adrenocorticotrophic hormone)	Adrenal cortex	Stimulates secretion of glucocorticoids	Stimulated by CRH (corticotropin-releasing hormone); inhibited by glucocorticoids
TSH (thyroid-stimulating hormone)	Thyroid gland	Stimulates secretion of thyroid hormones	Stimulated by TRH (thyrotropin-releasing hormone); inhibited by thyroid hormones
GH (growth hormone)	Most tissue	Promotes protein synthesis and growth; lipolysis and increased blood glucose	Inhibited by somatostatin; stimulated by growth hormone-releasing hormone
FSH (follicle-stimulating hormone)	Gonads	Promotes gamete production and stimulates estrogen production in females	Stimulated by GnRH (gonadotropin-releasing hormone); inhibited by sex steroids and inhibin
PRL (prolactin)	Mammary glands and other sex accessory organs	Promotes milk production in lactating females; additional actions in other organs	Inhibited by PIH (prolactin-inhibiting hormone)
LH (luteinizing hormone)	Gonads	Stimulates sex hormone secretion; ovulation and corpus luteum formation in females; stimulates testosterone secretion in males	Stimulated by GnRH; inhibited by sex steroids

PROLACTIN

- **Lactotrophs.(15%)**
- **198 AA.**
- **Related to GH.**

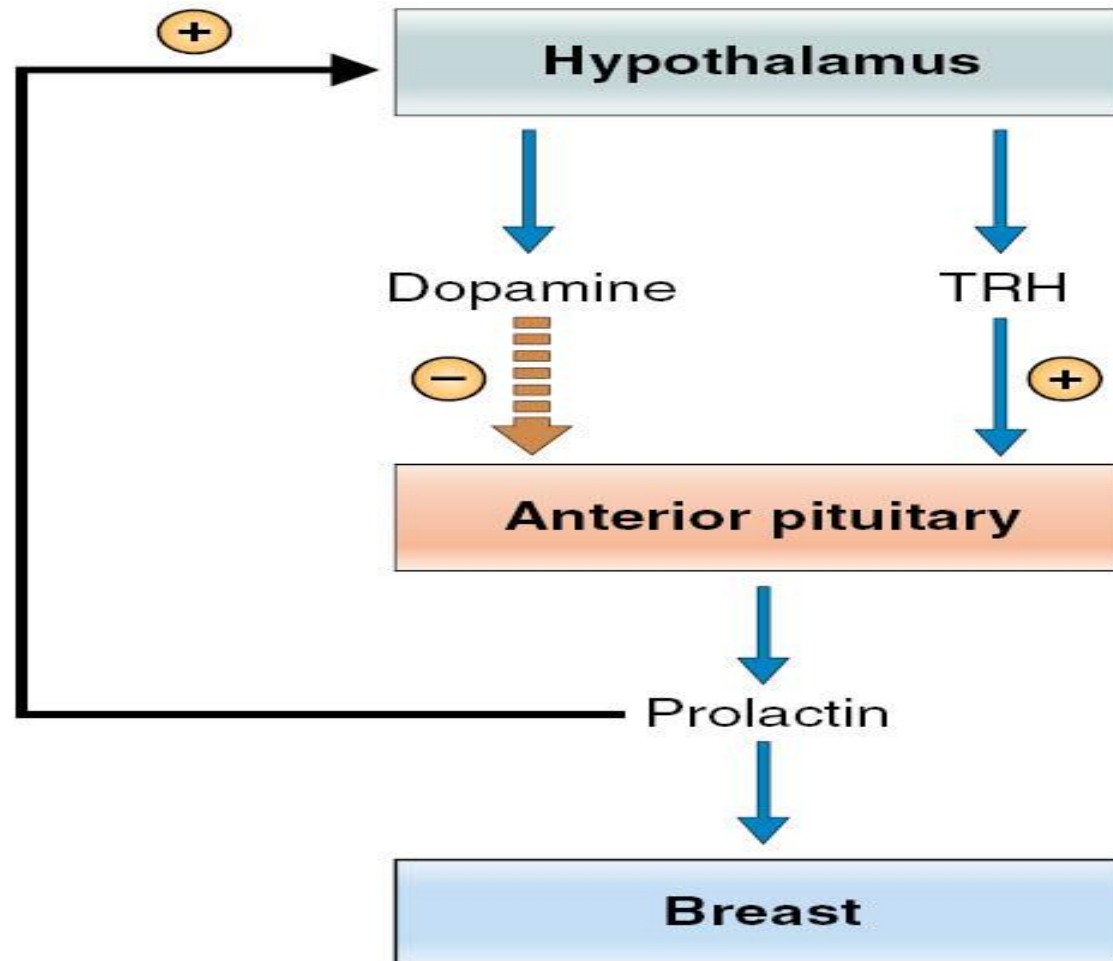


Human growth hormone



Prolactin

REGULATION OF SECRETION



SOURCES OF DOPAMINE

- 1- Dopaminergic neurons in the hypothalamus (major).
- 2- Dopaminergic neurons in the posterior pituitary.
- 3- Nonlactotrophs cells of the anterior pituitary (very small amount)

Table 9-5 Factors Affecting Prolactin Secretion

Stimulatory Factors

Pregnancy (estrogen)

Breast-feeding

Sleep

Stress

TRH

Dopamine antagonists

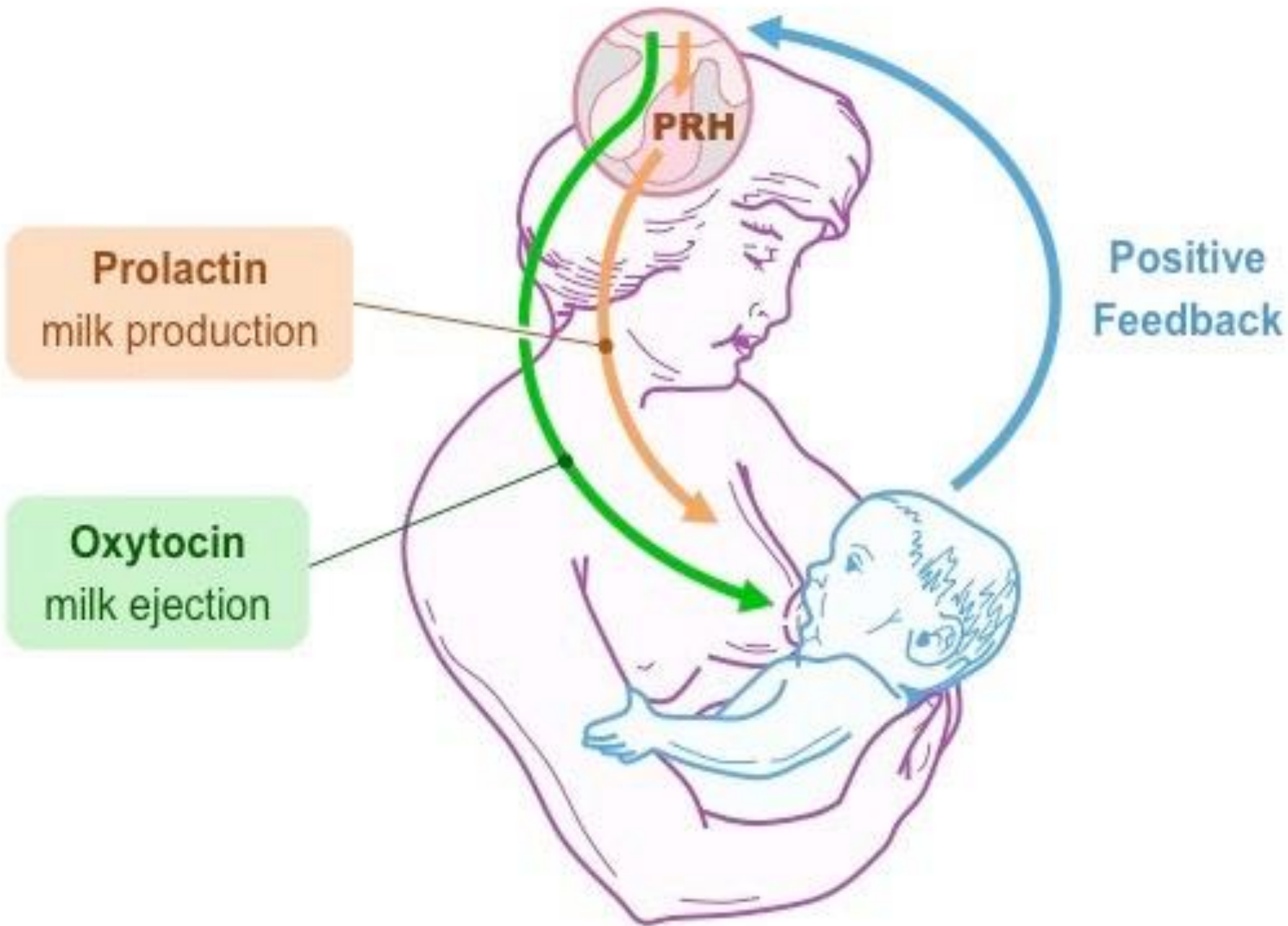
Inhibitory Factors

Dopamine

Bromocriptine (dopamine
agonist)

Somatostatin

Prolactin (negative feedback)



Prolactin
milk production

Oxytocin
milk ejection

**Positive
Feedback**

ACTION

1- Breast development.

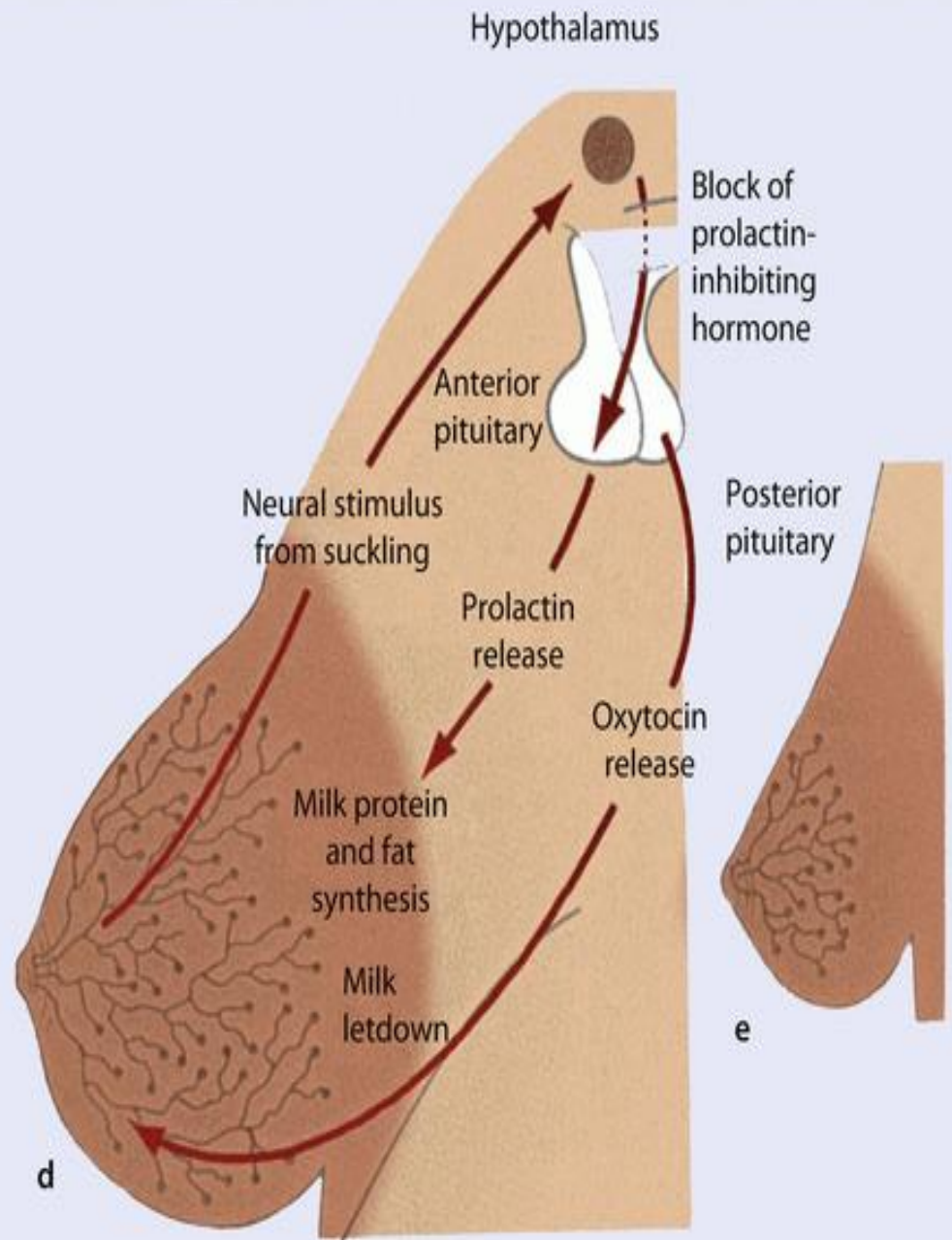
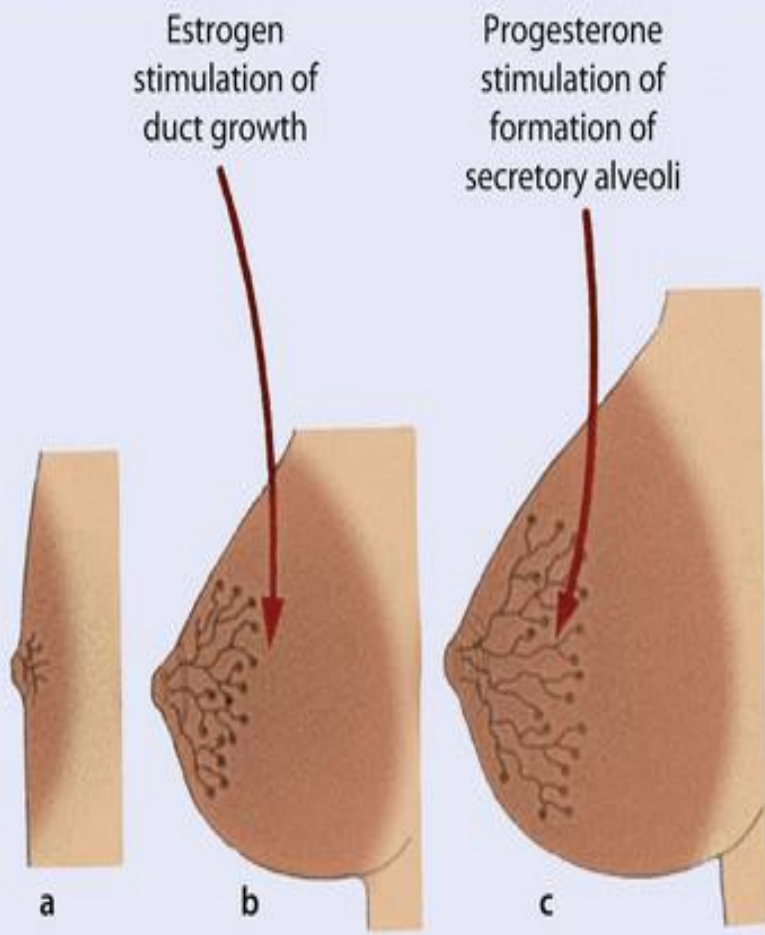
2- Lactogenesis.

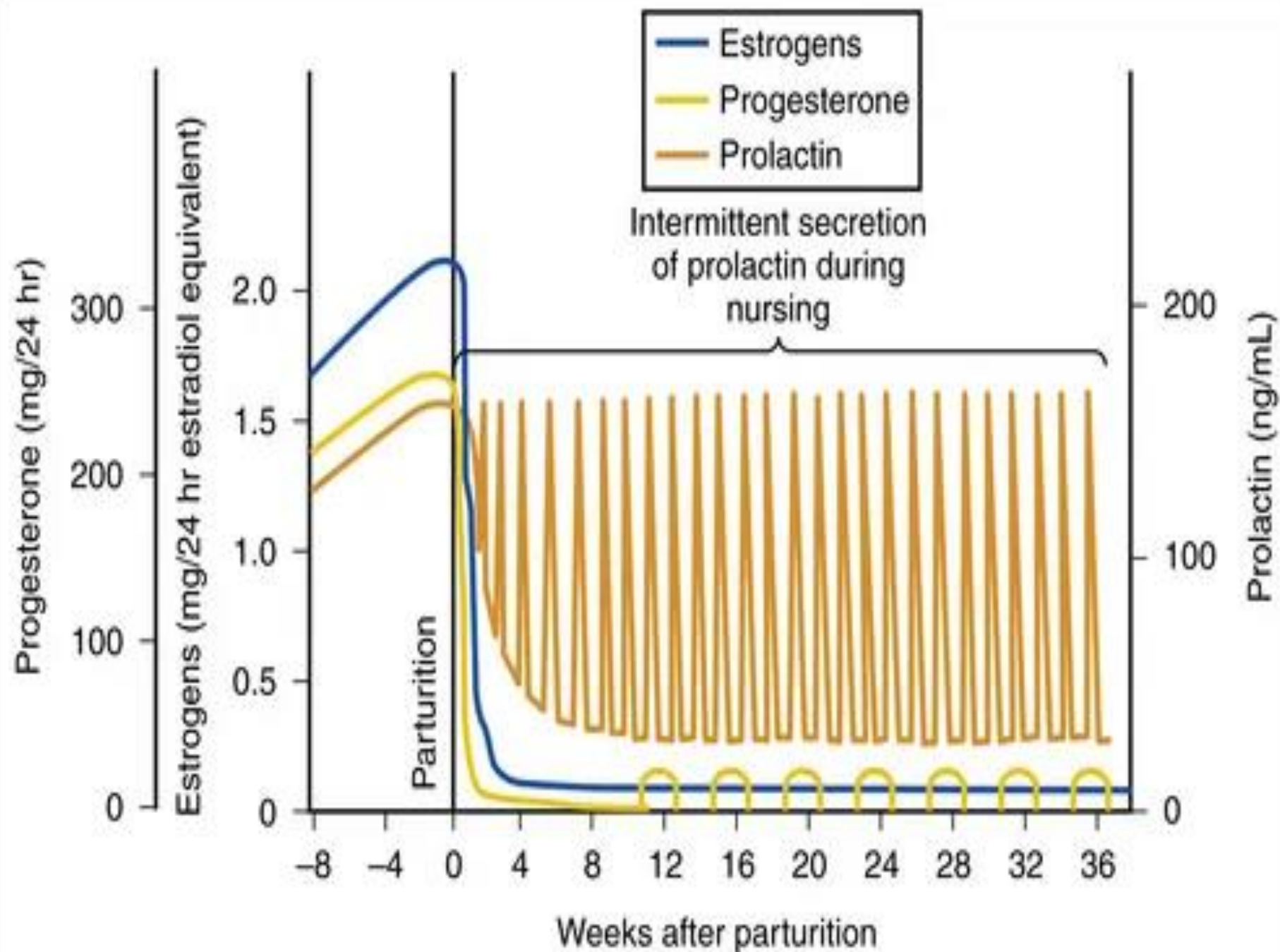
(Lactose, lipid, casein)

Parturition.

3- Inhibition of ovulation.

GnRH





ABNORMALITIES

1- Prolactin deficiency.

Failure to lactate.

2- Prolactin excess.

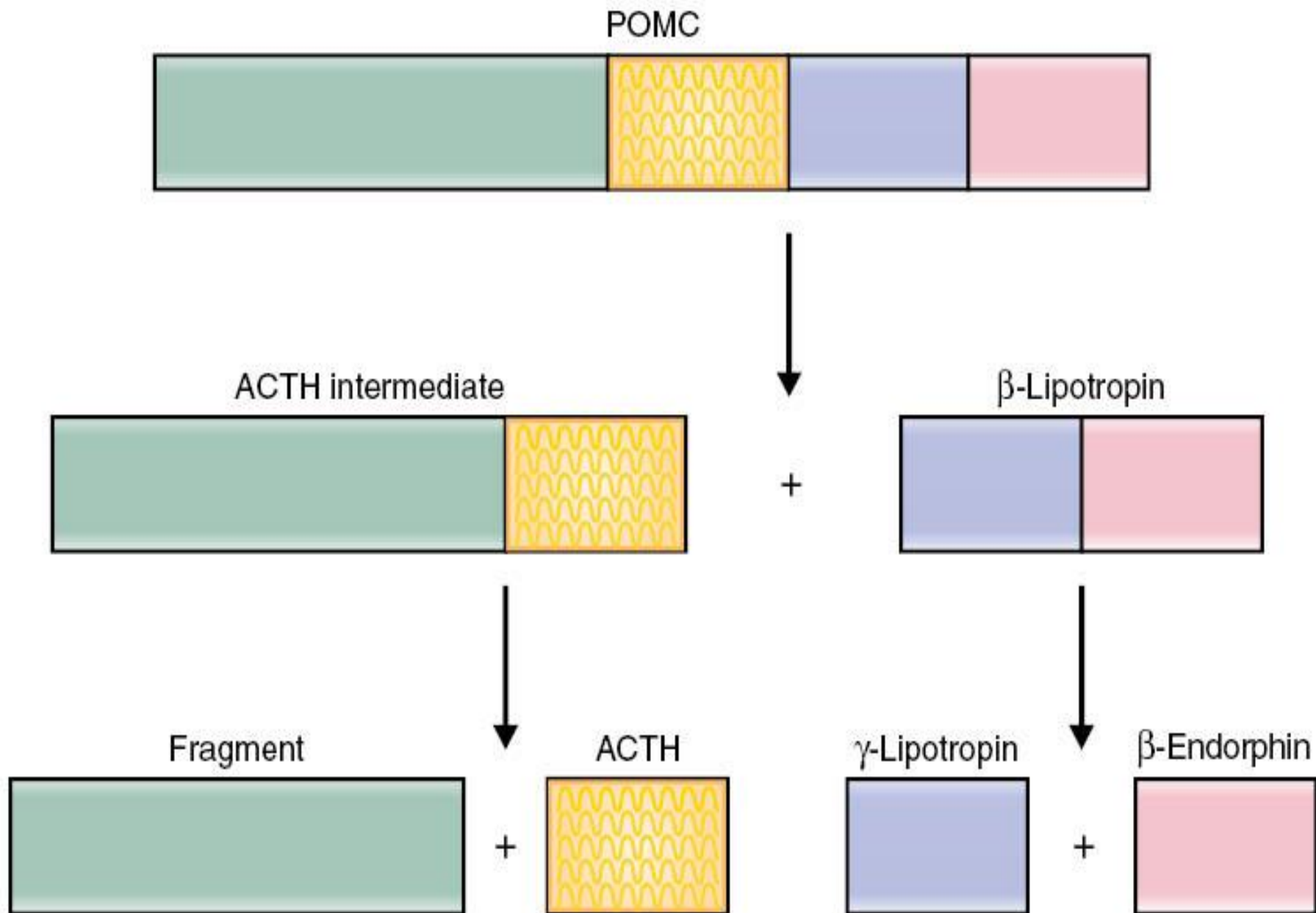
Galactorrhea.

Infertility.

Bromocriptine.

ACTH

- Corticotrophs.(15%)
- ACTH, MSH, β -endorphin.
- Preproopiomelanocortin (POMC).



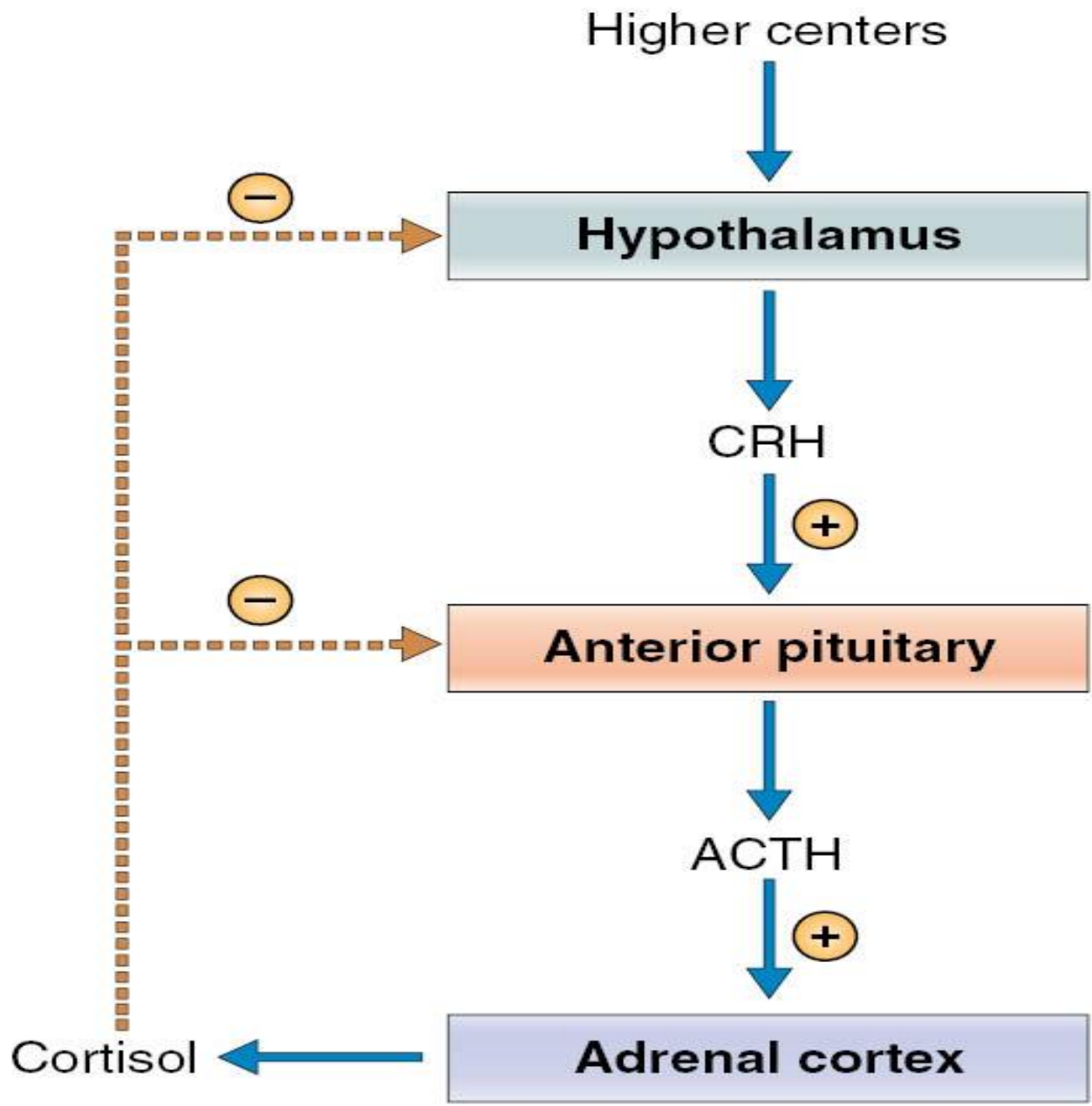


Table 9-10 Factors Affecting ACTH Secretion**Stimulatory Factors**

Decreased blood cortisol levels

Sleep-wake transition

Stress; hypoglycemia; surgery; trauma

Psychiatric disturbances

ADH

α -Adrenergic agonists

β -Adrenergic antagonists

Serotonin

Inhibitory Factors

Increased blood cortisol levels

Opioids

Somatostatin

ACTION

- **Stimulate synthesis and secretion of adrenal cortical hormones.**

Thank you