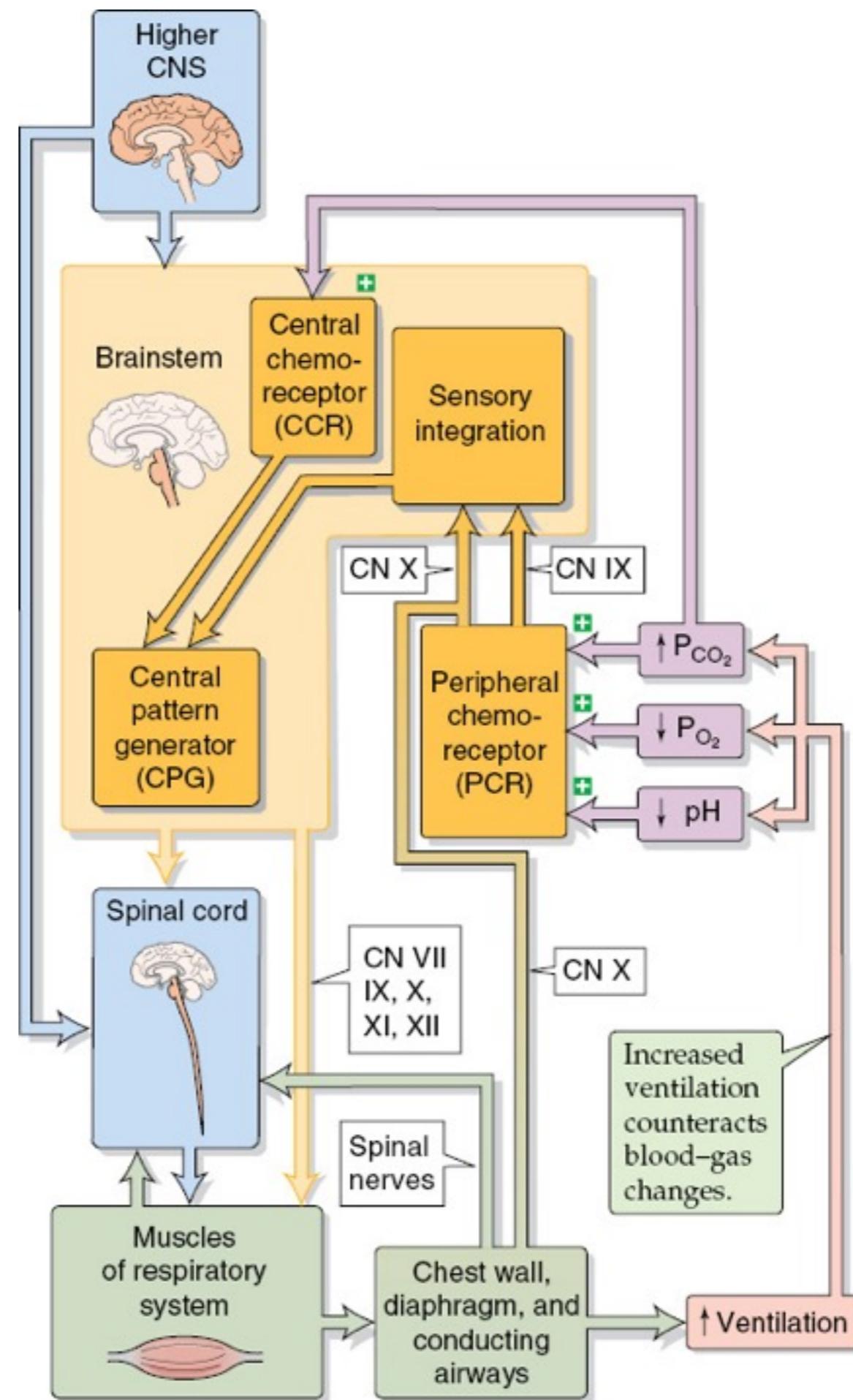
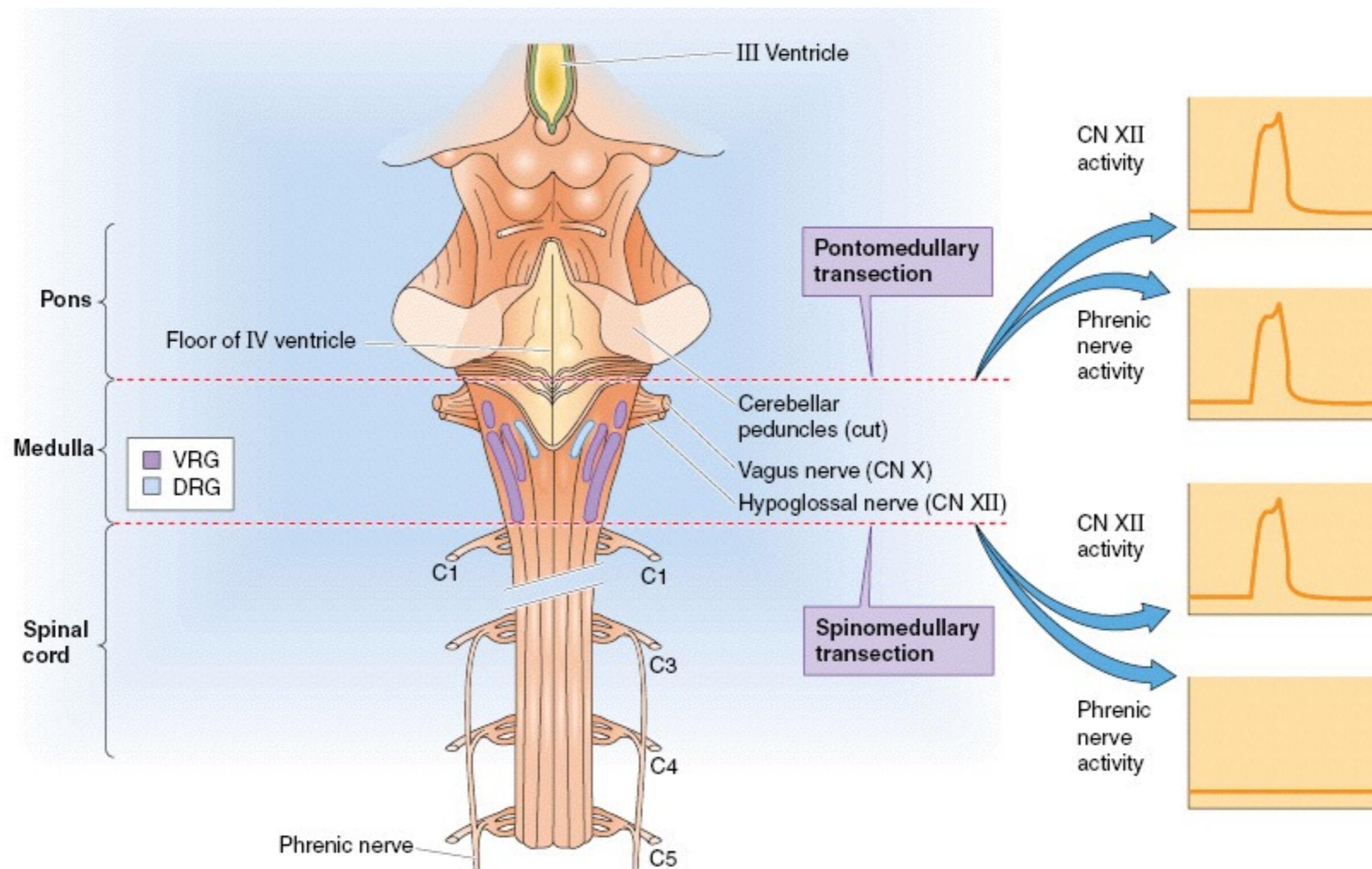


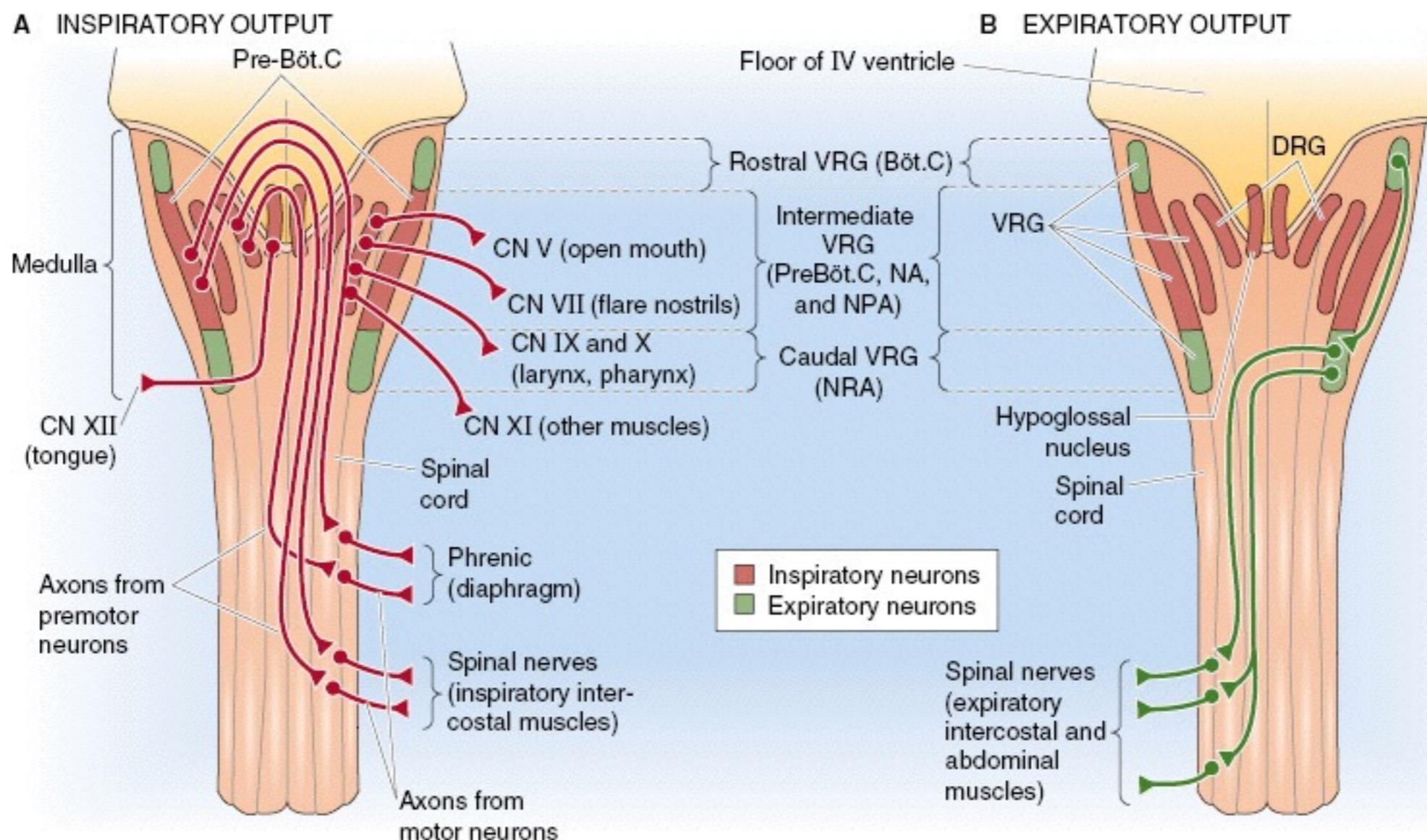
# Ventilación

Control



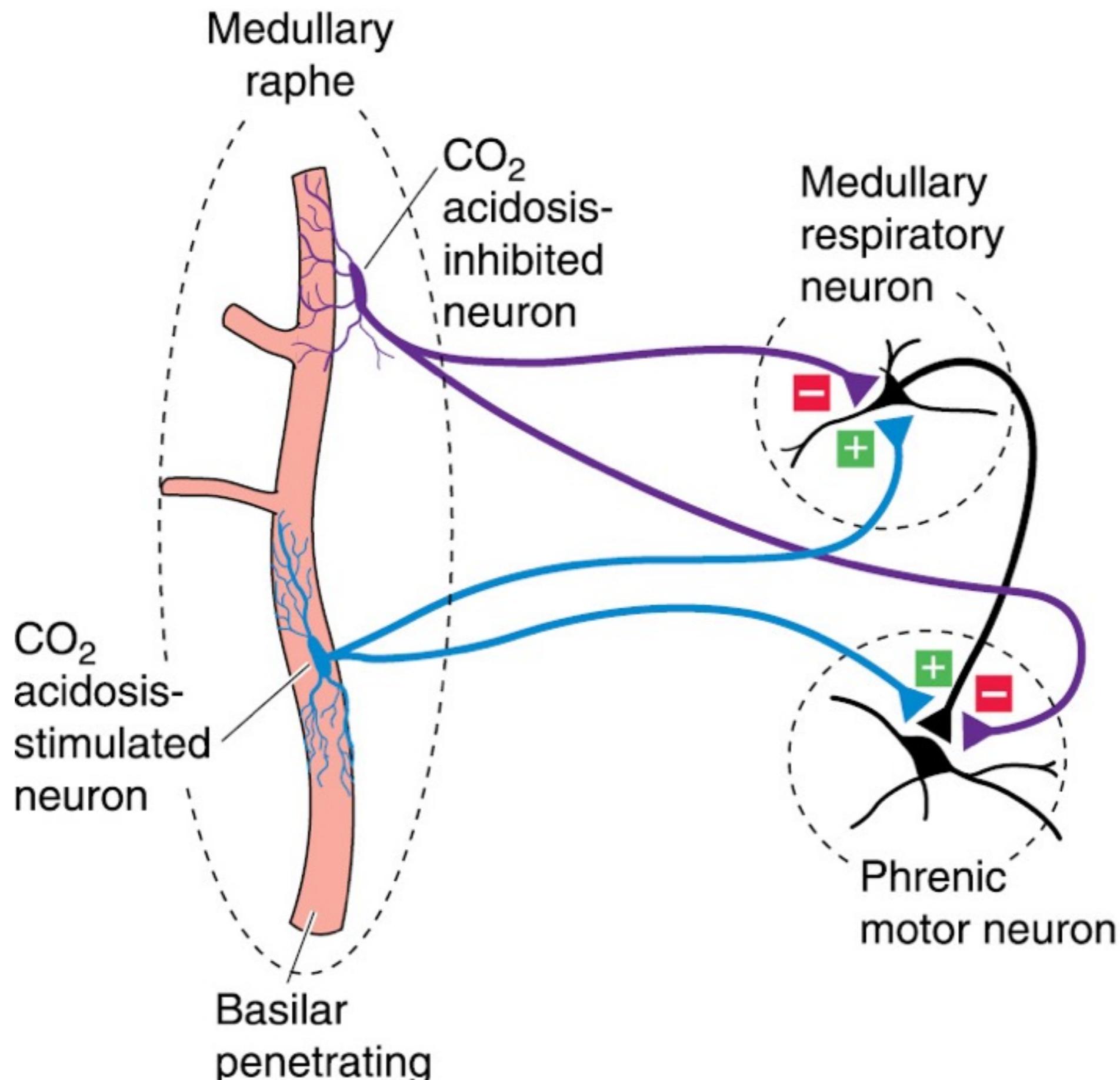


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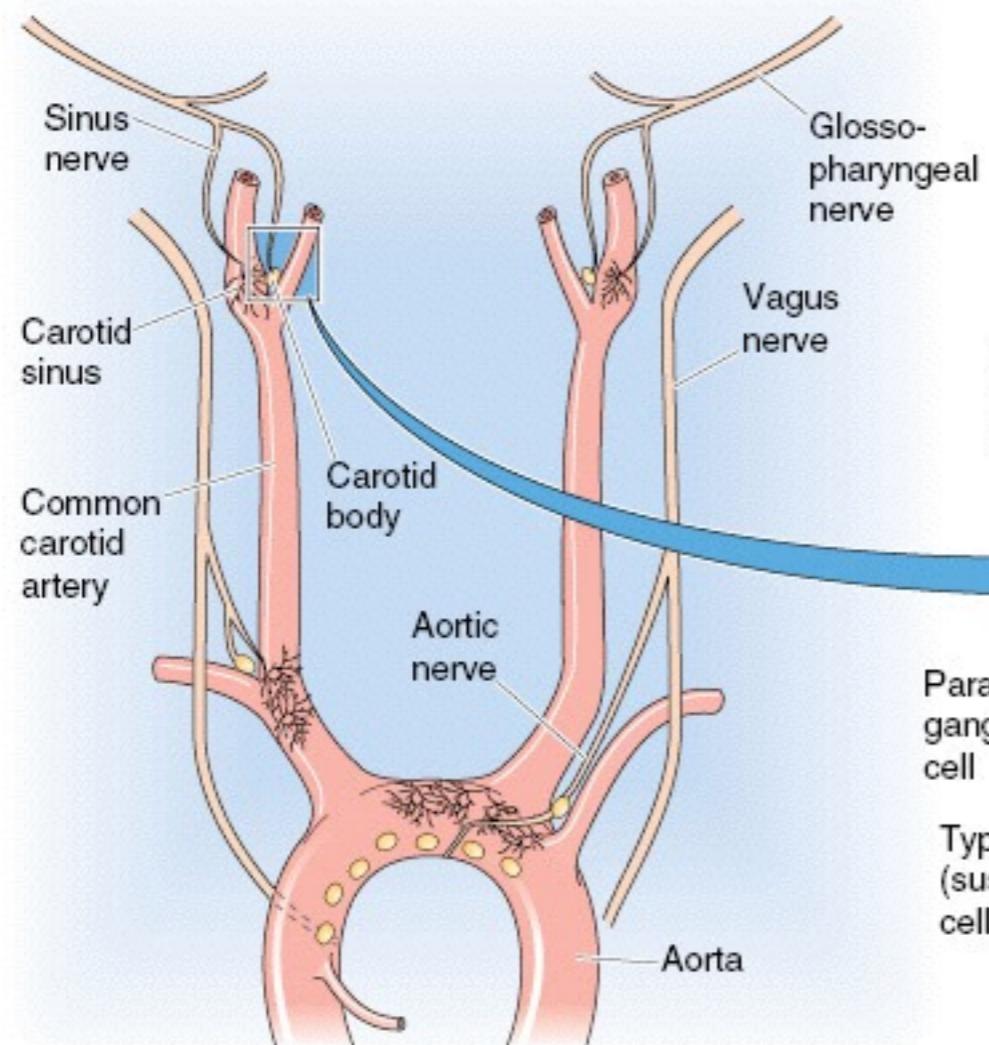


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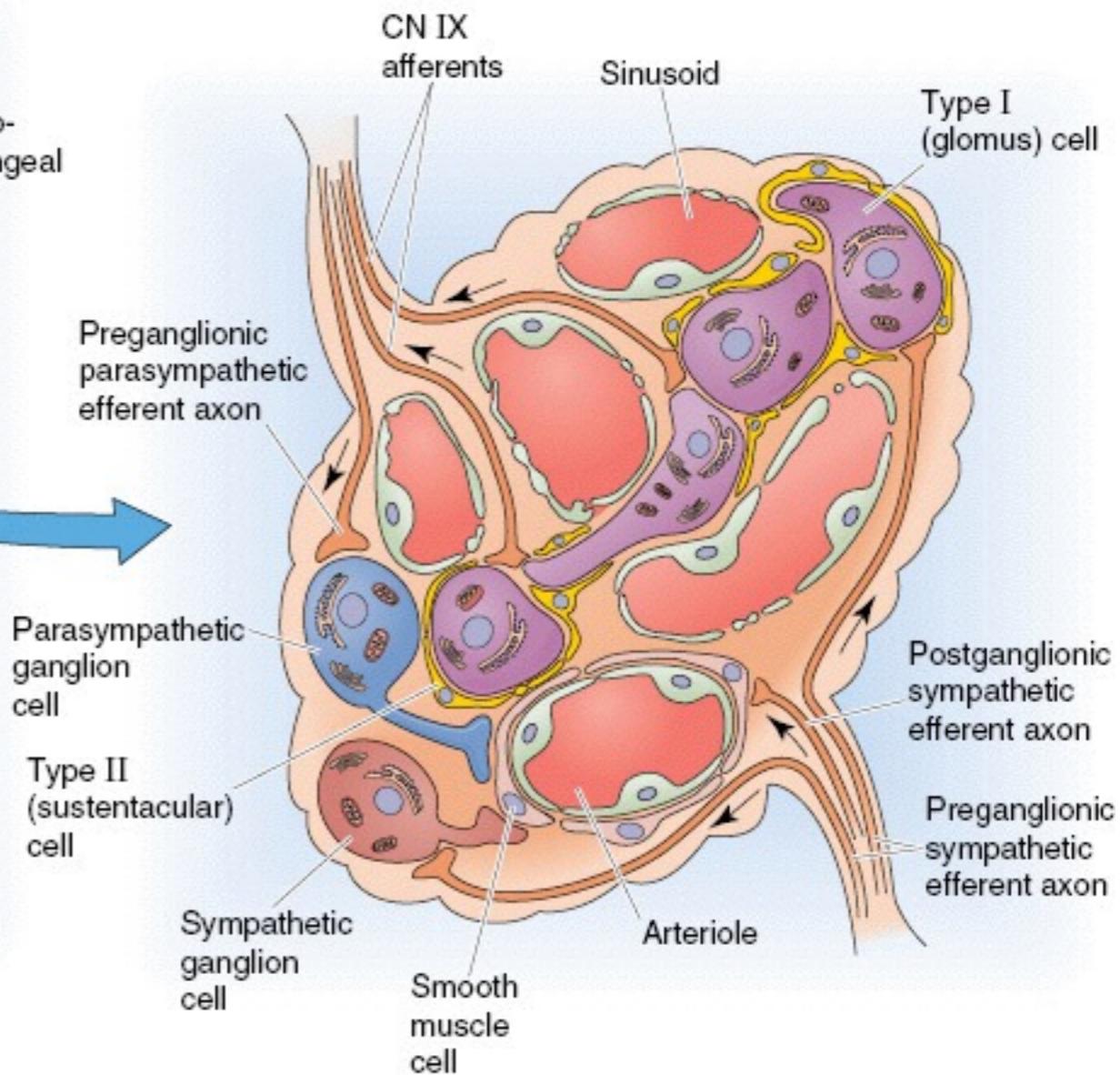
### C RECIPROCAL CONTROL OF RESPIRATORY NEURONS



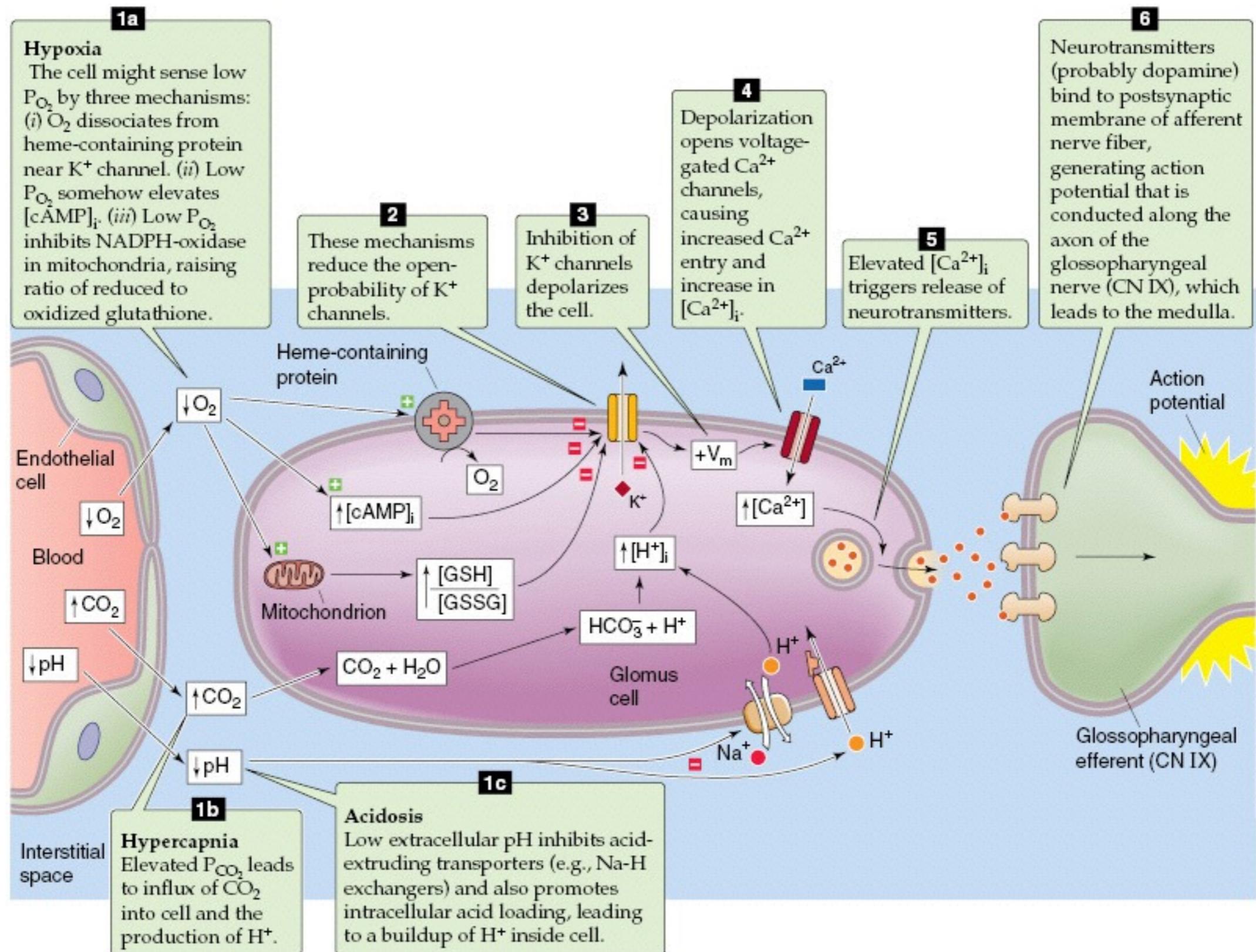
### A LOCATION OF CAROTID AND AORTIC BODIES



### B MICROSCOPIC ANATOMY OF CAROTID BODY



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**Table 32-2** Properties of the DRG and VRG

Property	DRG	VRG		
		Rostral	Intermediate	Caudal
Location	Dorsal medulla	Midway between dorsal and ventral surfaces of medulla		
Major component	Nucleus tractus solitarius (NTS)	Nucleus retrofacialis (NRF) or Bötzinger complex	Pre-Bötzinger complex, nucleus ambiguus (NA), and nucleus para-ambigualis (NPA)	Nucleus retroambigualis (NRA)
Dominant activity	Inspiratory	Expiratory	Inspiratory	Expiratory

DRG, dorsal respiratory group; VRG, ventral respiratory group.

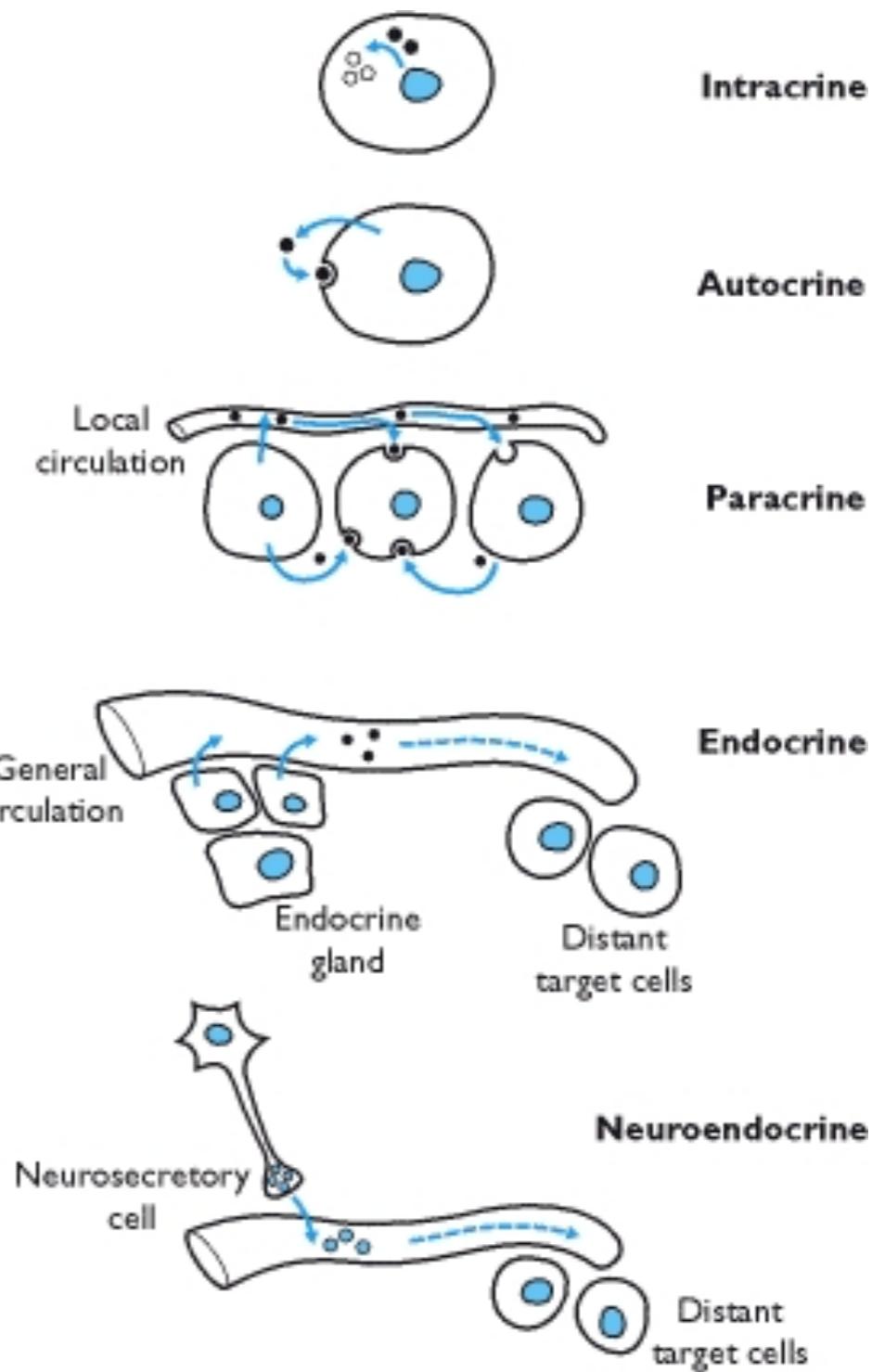
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# Endocrino

## Fisiología

# Señalización celular

## Tipos



# Hormanas

## Clasificación

**Table 47-1** Chemical Classification of Selected Hormones

### Peptide Hormones

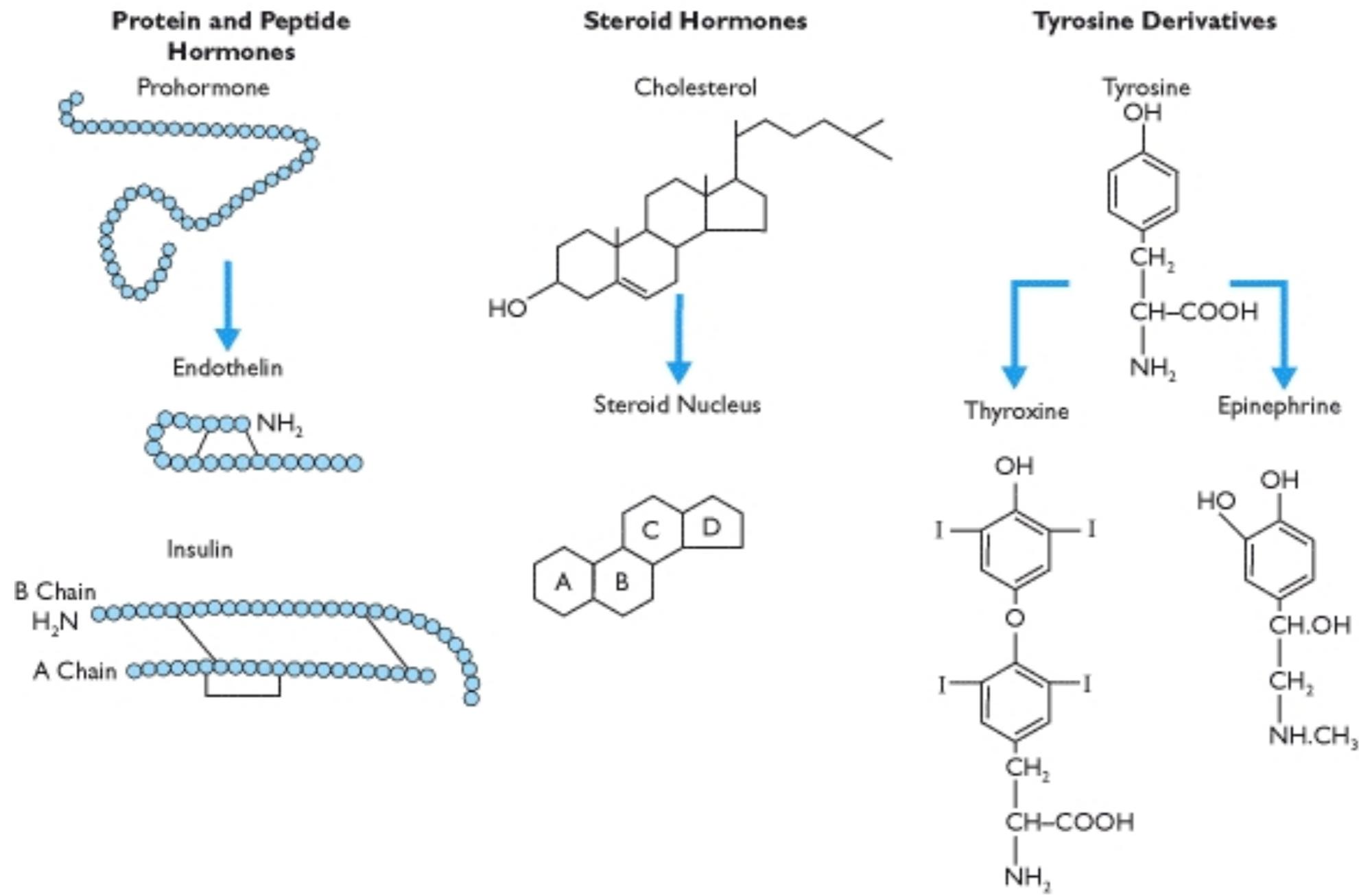
ACTH  
Atrial natriuretic peptide (ANP)  
AVP (ADH)  
Calcitonin  
Cholecystokinin (CCK)  
CRH  
FSH  
Glucagon  
GnRH  
GH  
GHRH  
Inhibin  
Insulin  
IGFs  
LH  
Oxytocin  
PTH  
PRL  
Secretin  
Somatostatin  
TSH  
TRH  
Vasoactive intestinal peptide (VIP)

### Amino Acid-Derived Hormones

DA  
Epinephrine (adrenaline)  
Norepinephrine (noradrenaline)  
Serotonin (5-HT)  
 $T_4$   
 $T_3$

### Steroid Hormones

Aldosterone  
Cortisol  
Estradiol (E2)  
Progesterone  
Testosterone

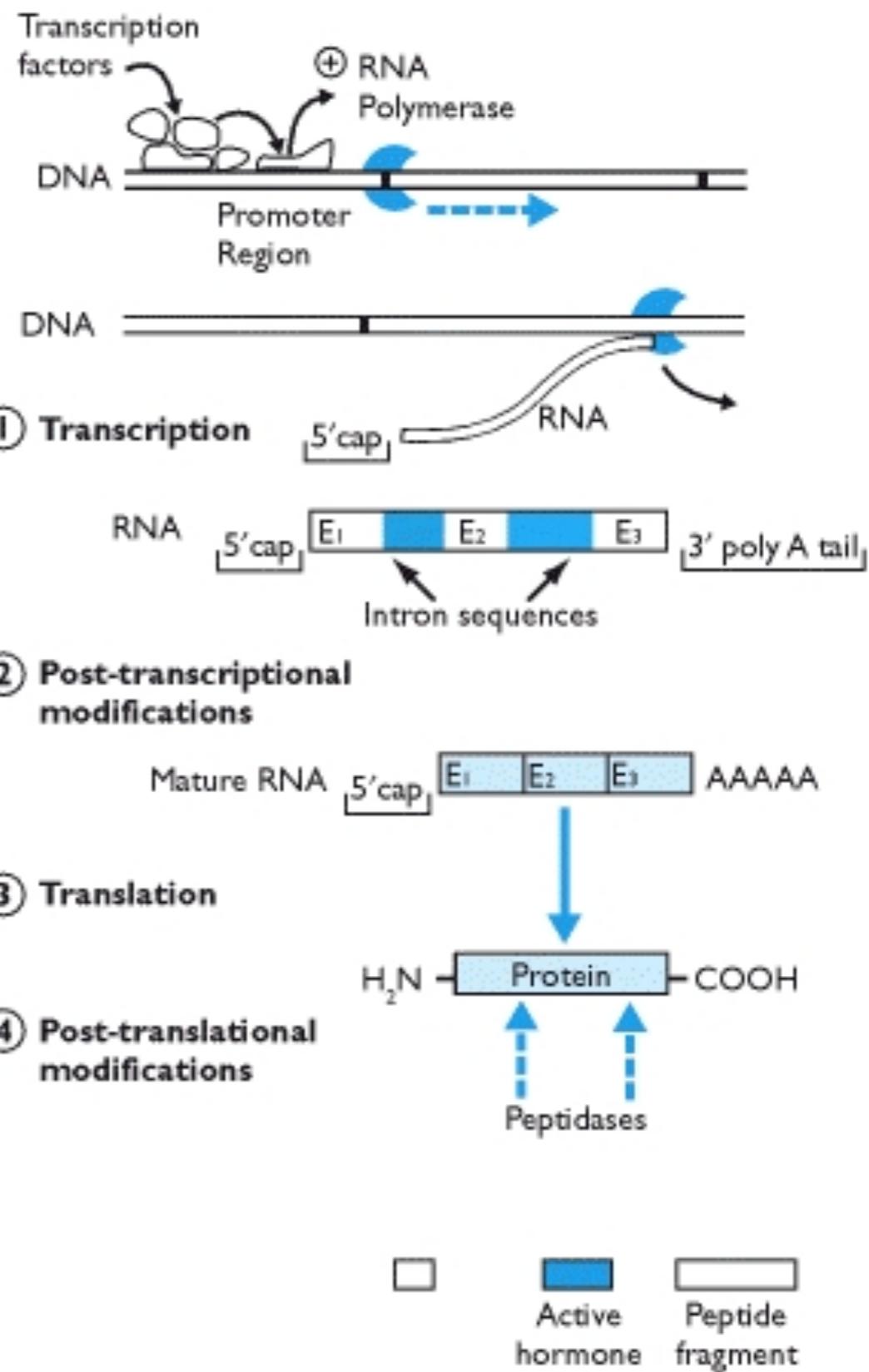


# Hormonas

Estructuras Químicas

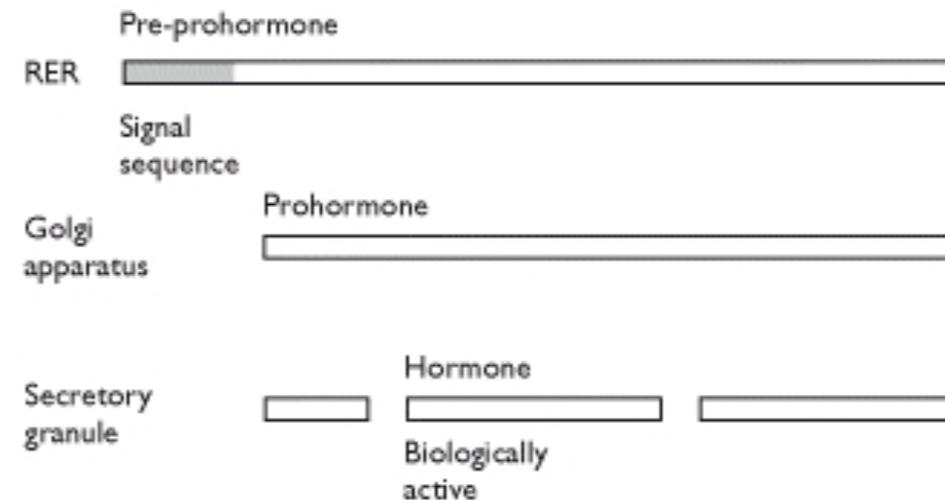
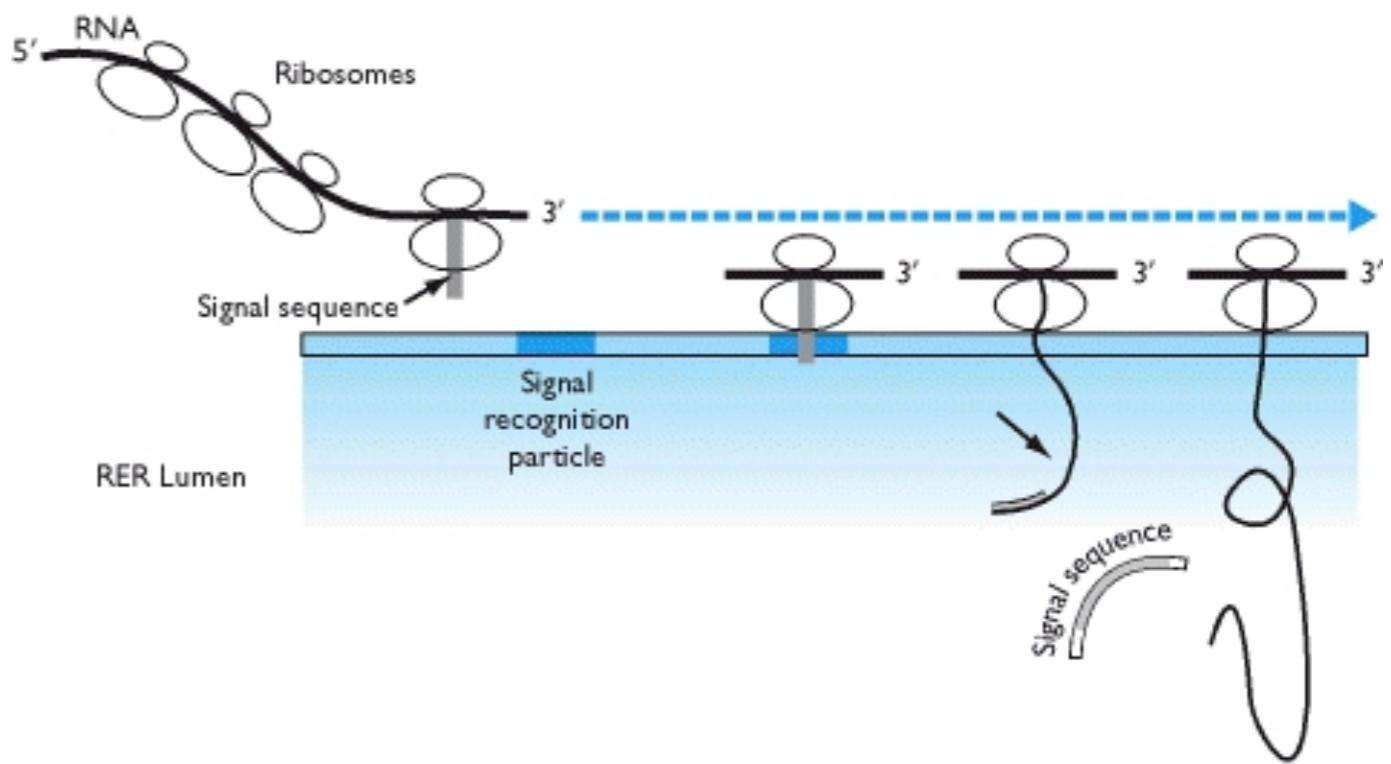
# Hormona Peptídica

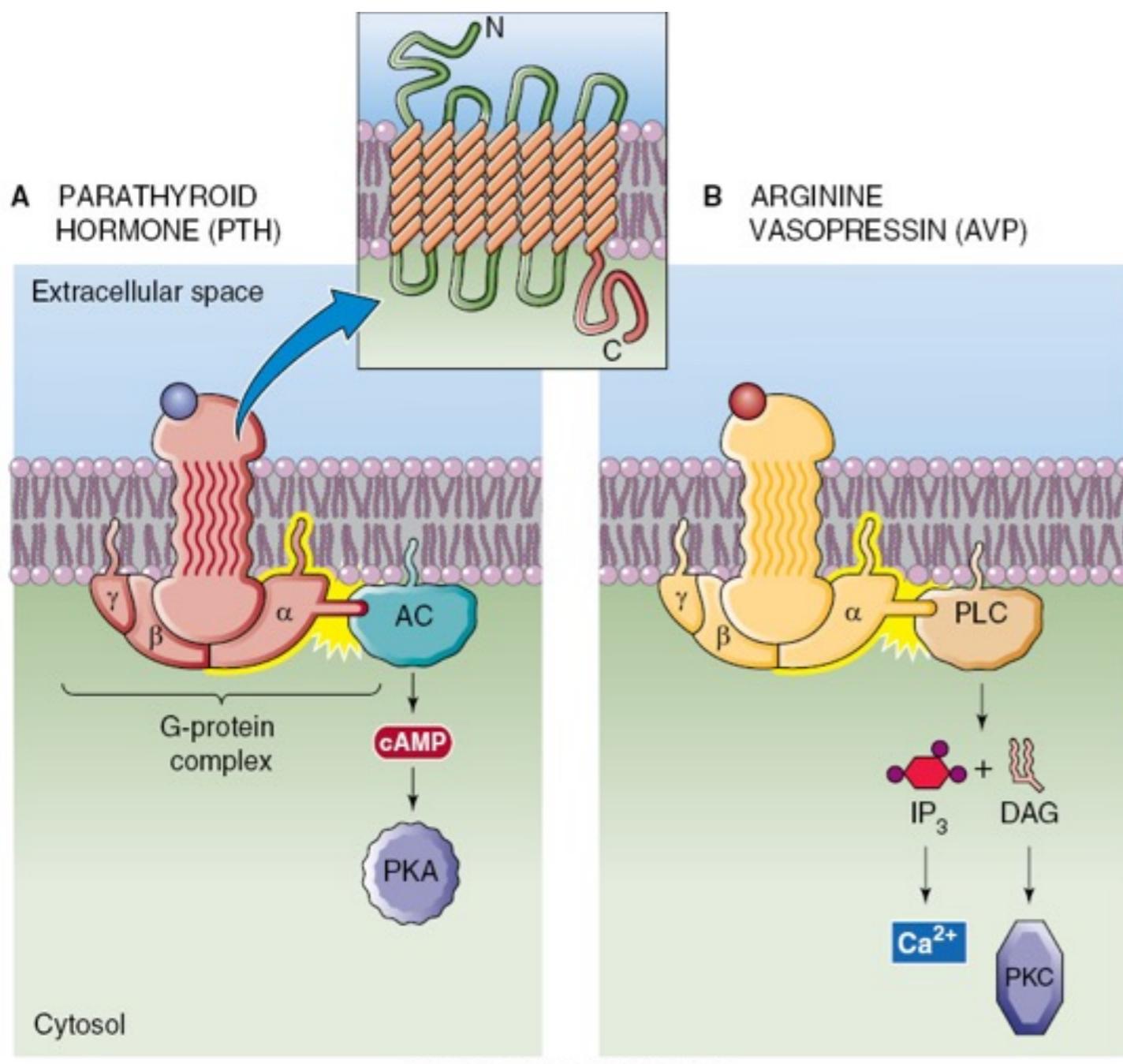
## Síntesis



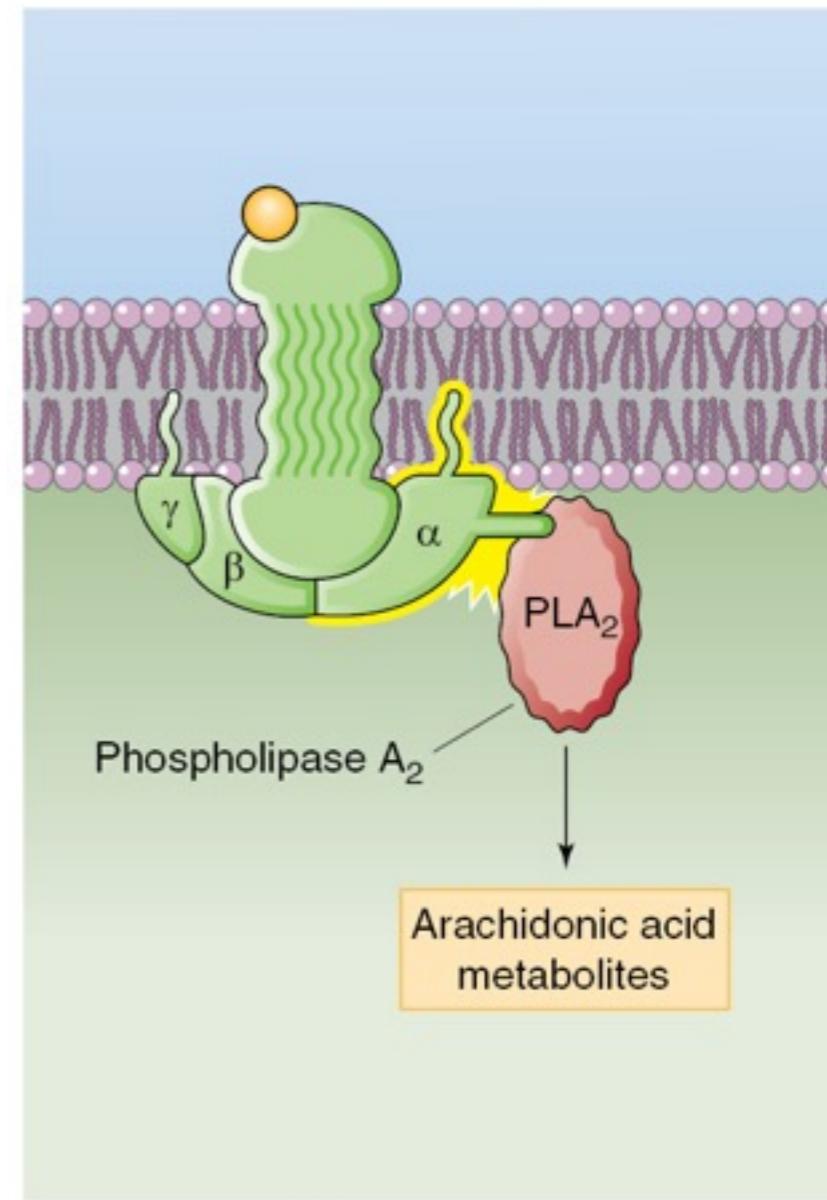
# Hormona Peptídica

## Síntesis





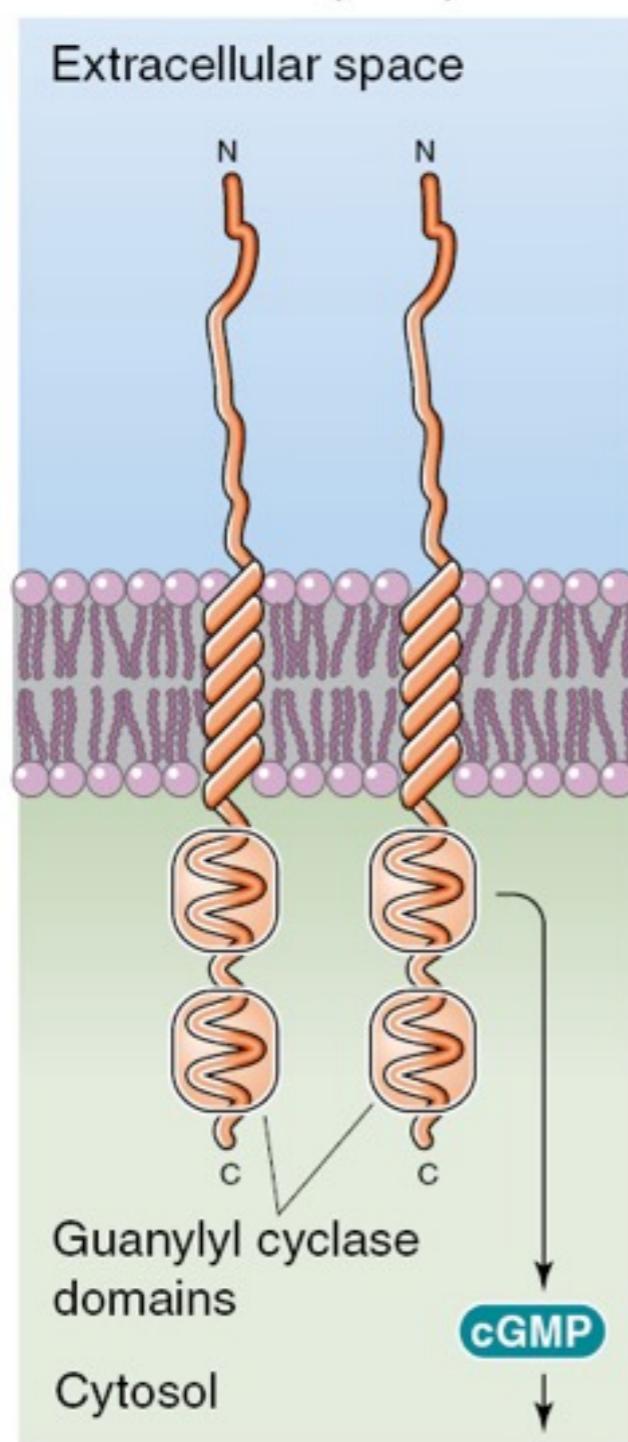
**C THYROTROPIN-RELEASING HORMONE (TRH)**



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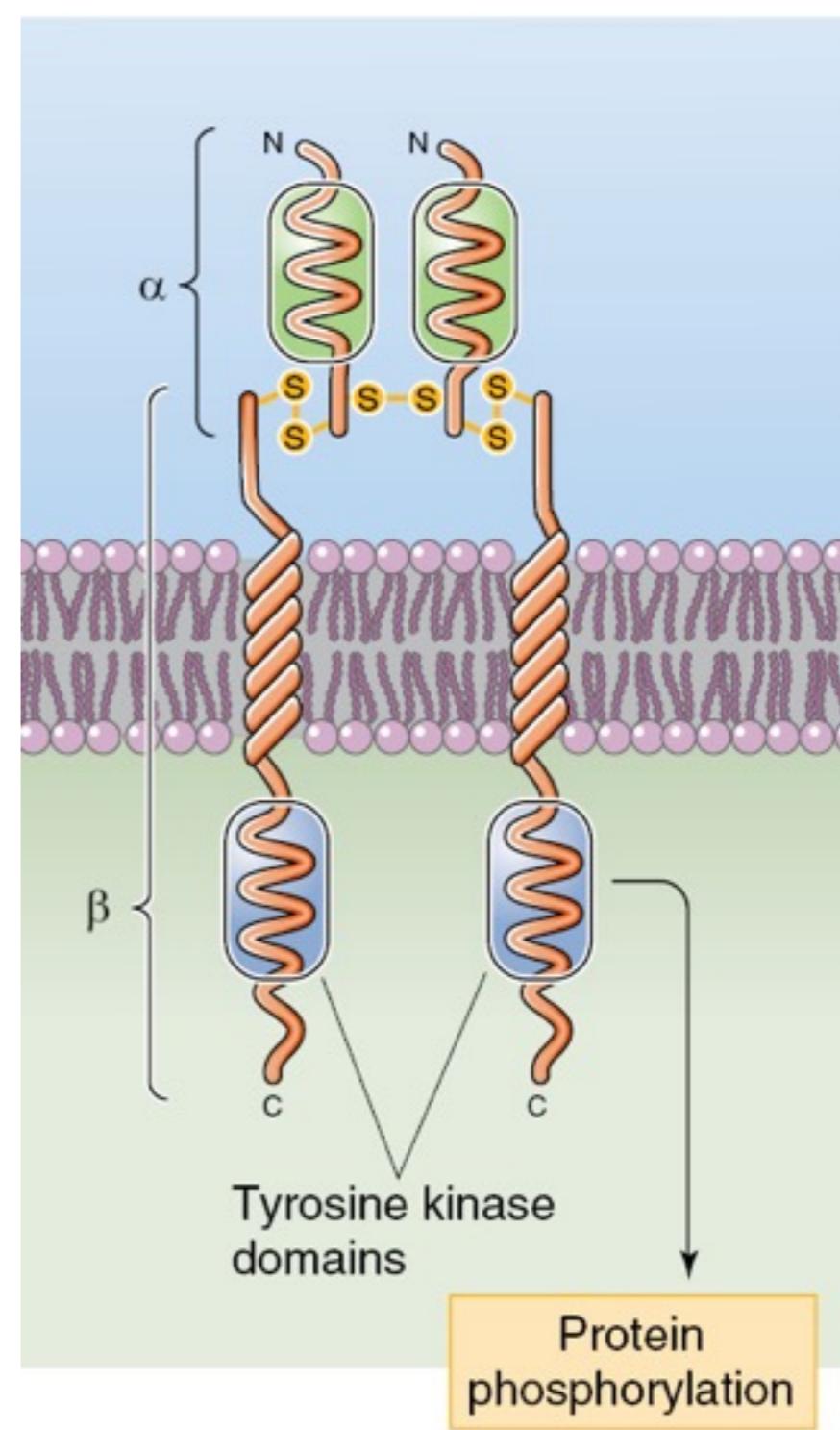
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**D ATRIAL NATRIURETIC PEPTIDE (ANP)**

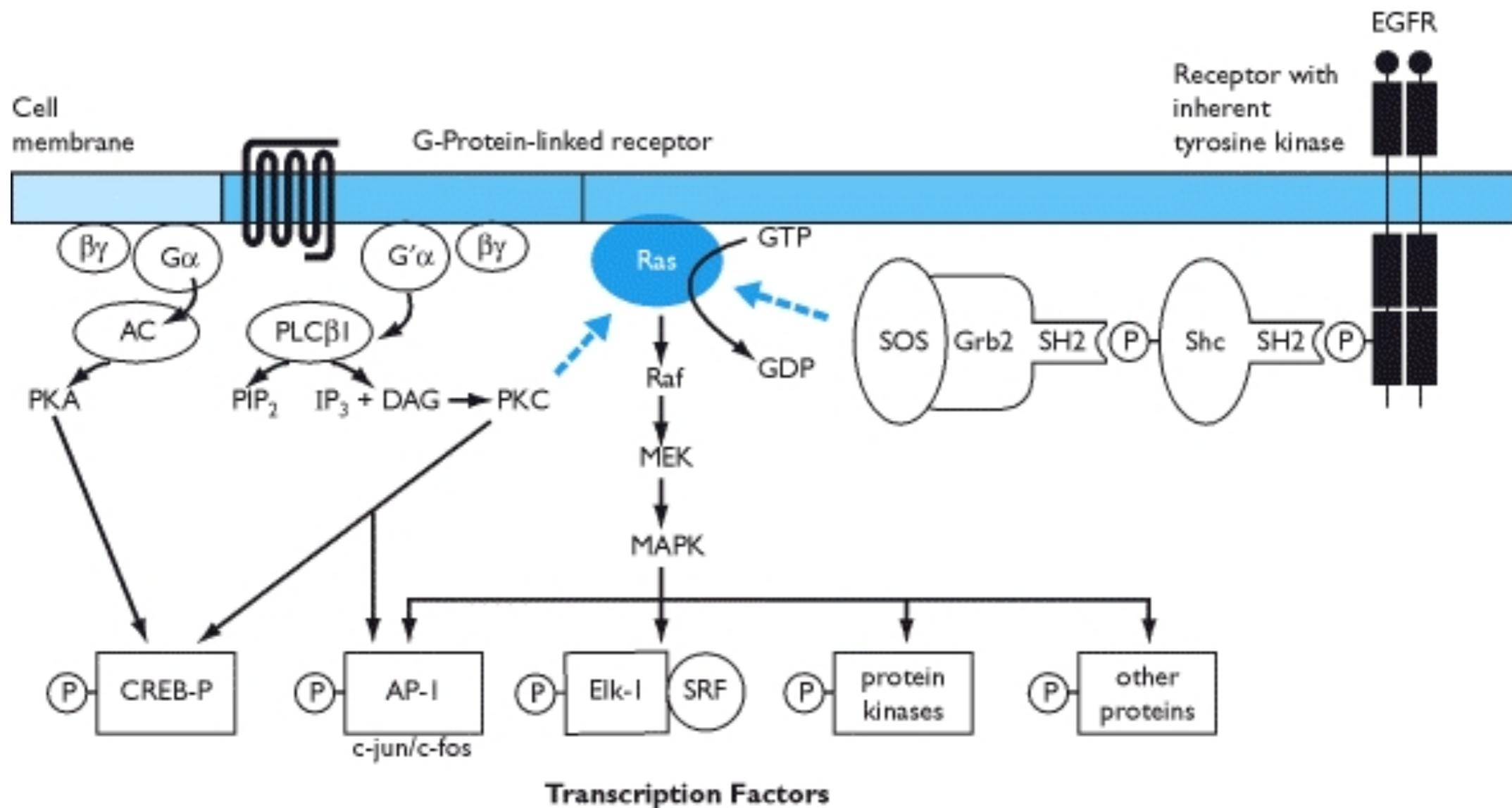


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**E INSULIN**



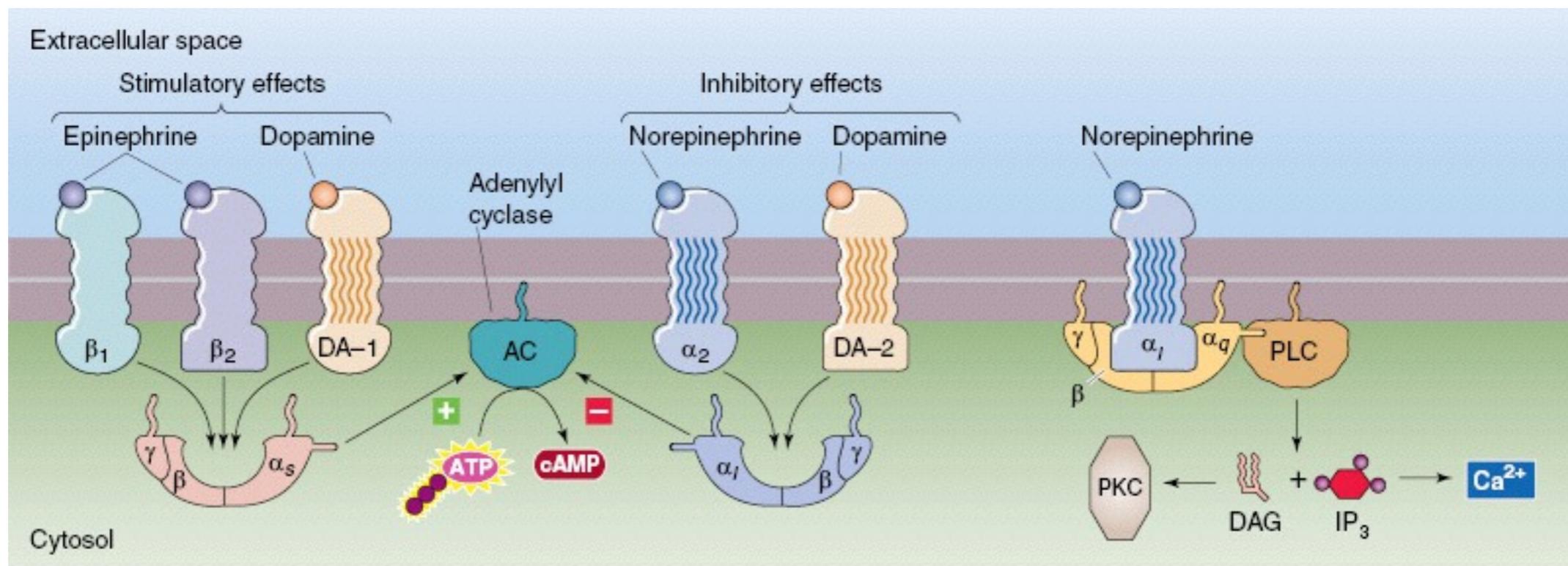
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**Table 47-3** Peptide Hormones and Their Signal Transduction Pathways

Agonists	Receptor	Linked Enzyme	Second Messenger
PTH	Coupled to $G\alpha_s$	Adenylyl cyclase	cAMP
ANG II	Coupled to $G\alpha_i$	Adenylyl cyclase (inhibited)	cAMP
AVP, ANG II, TRH	Coupled to $G\alpha_q$	PLC	$IP_3$ and DAG
ANG II	Coupled to $G/G\beta\gamma$	PLA <sub>2</sub>	Arachidonic acid metabolites
ANP	Guanylyl cyclase	Guanylyl cyclase	cGMP
Insulin, IGF-1, IGF-2, EGF, PDGF	Tyrosine kinase	Tyrosine kinase	Phosphoproteins
GH, erythropoietin, LIF	Associated with tyrosine kinase	JAK-STAT family of tyrosine kinases	Phosphoproteins

ANG II, angiotensin II; ANP, atrial natriuretic peptide; EGF, epidermal growth factor; JAK-STAT, Janus kinase/signal transducer and activator of transcription; LIF, leukemia inhibitory factor.



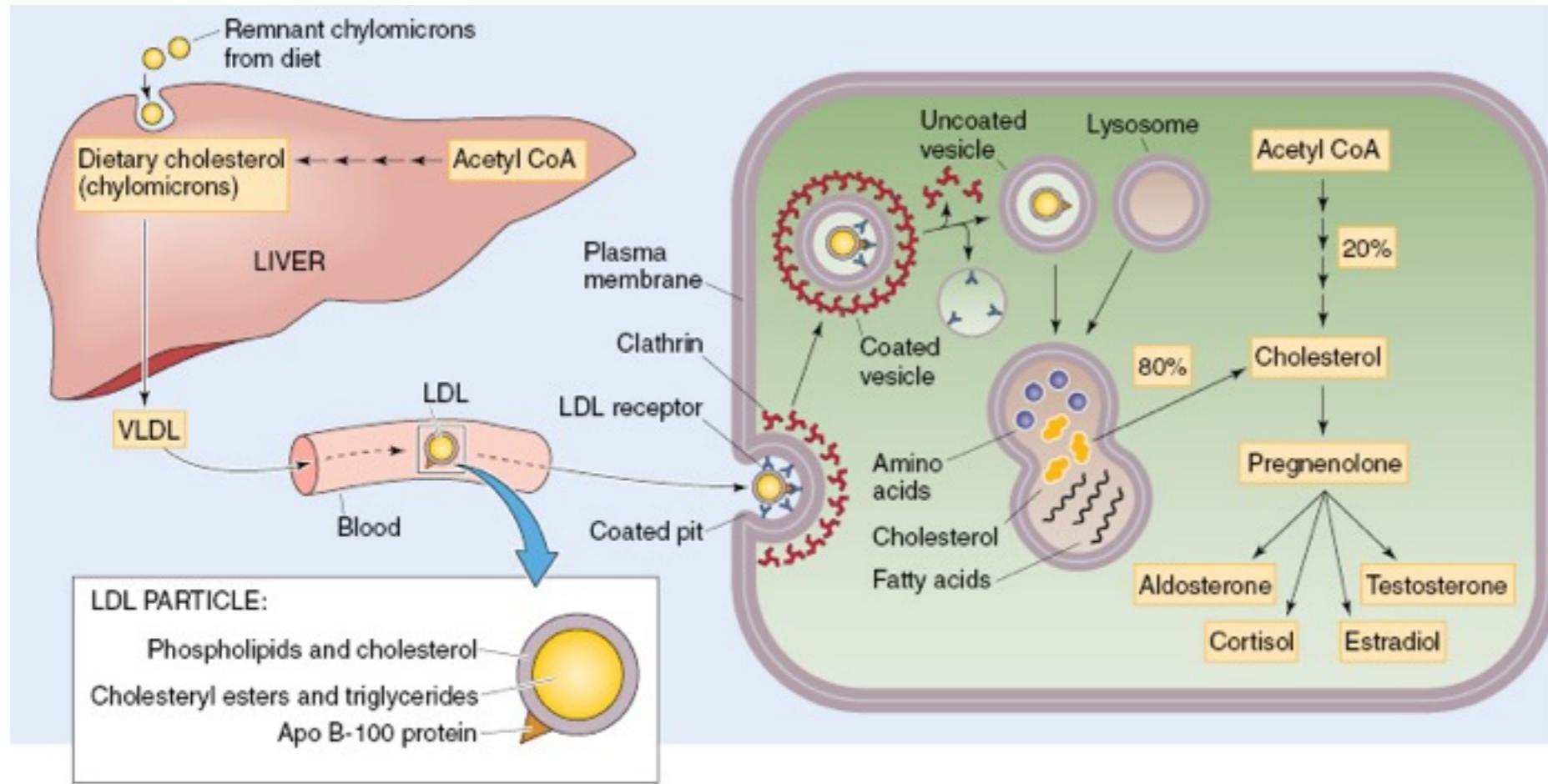
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# Hormonas

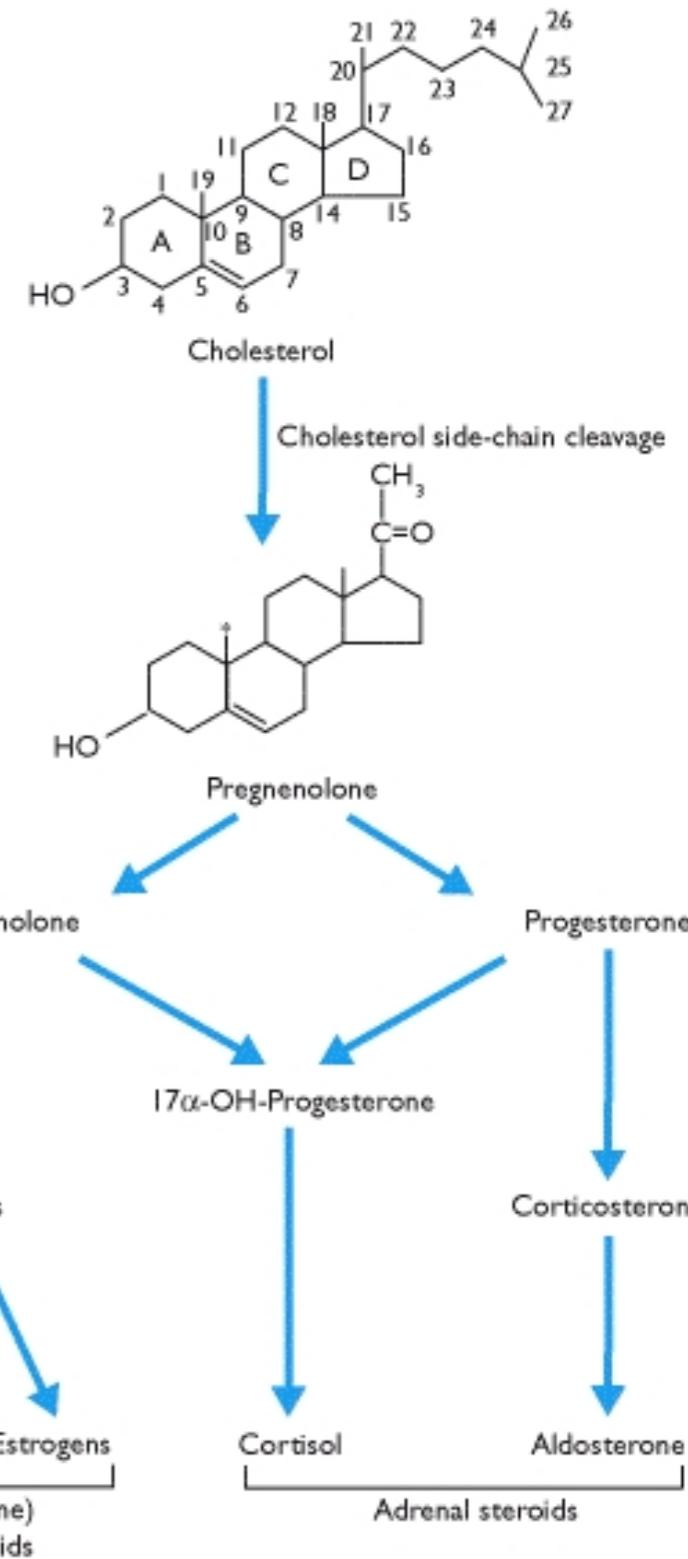
## Aminas/Receptores

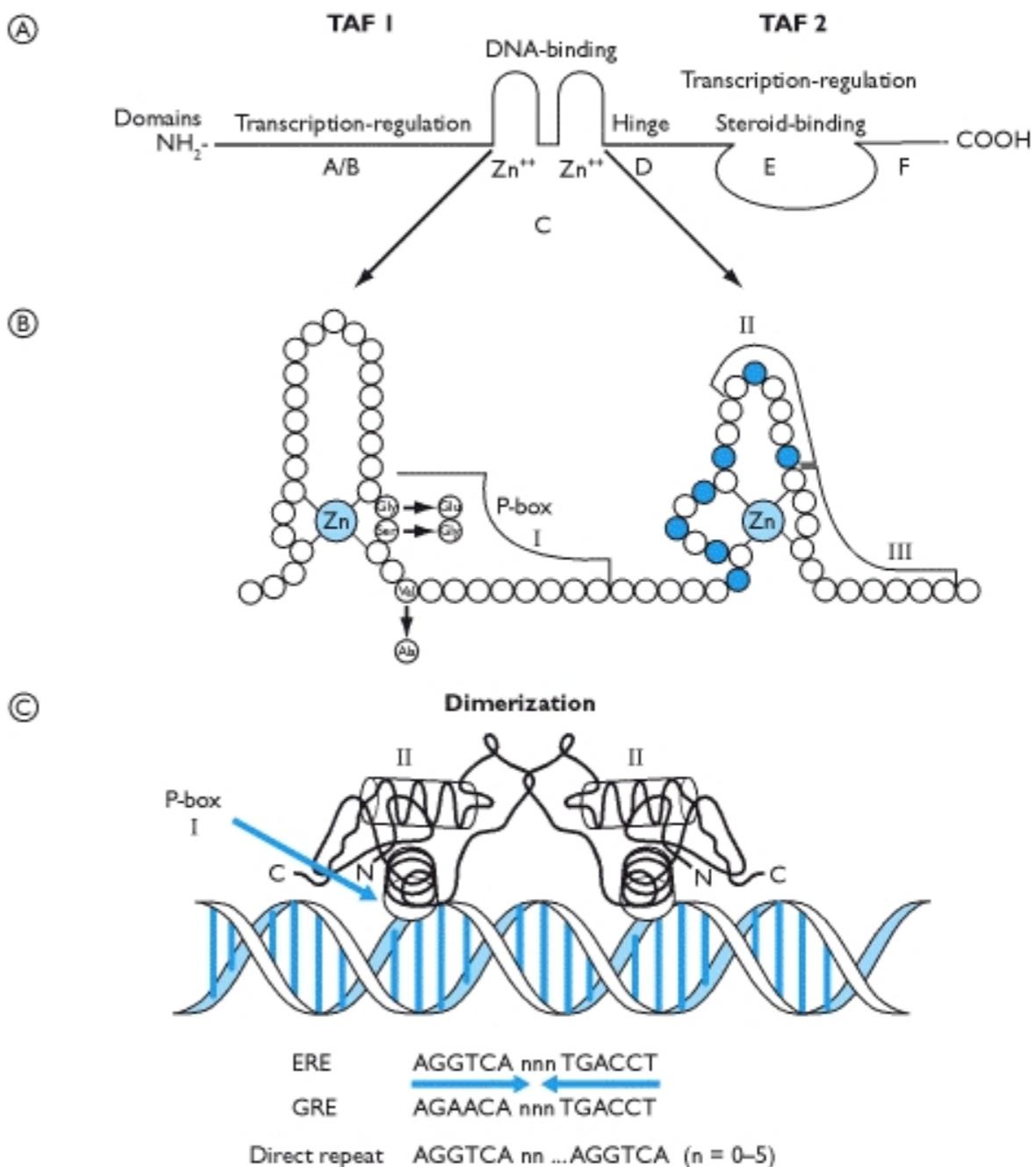
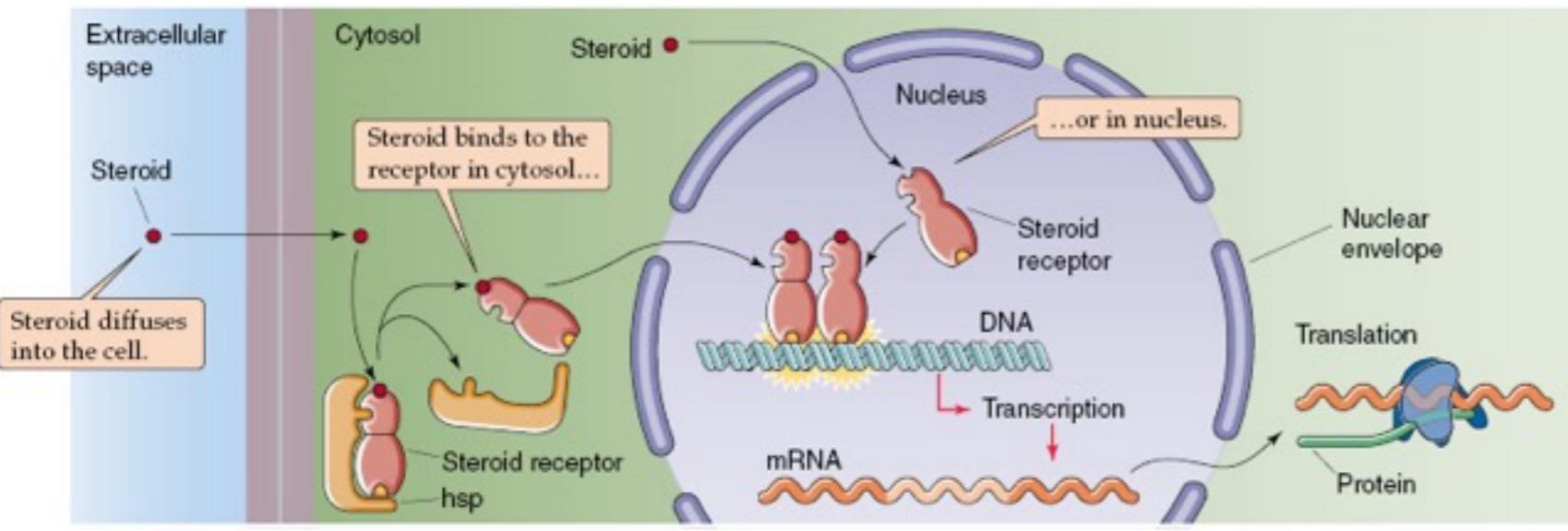
# Hormonas esteroideas

Efecto



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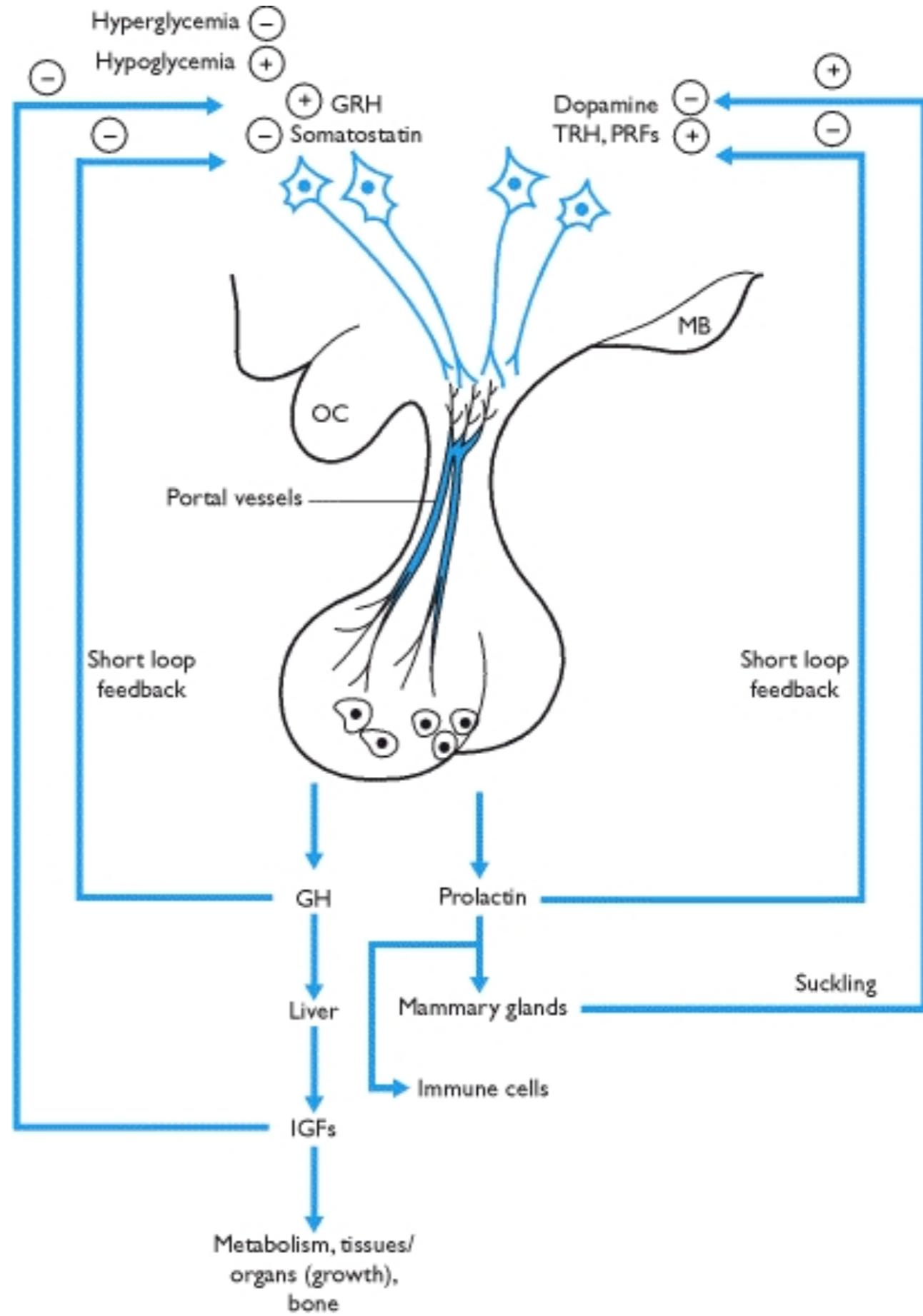




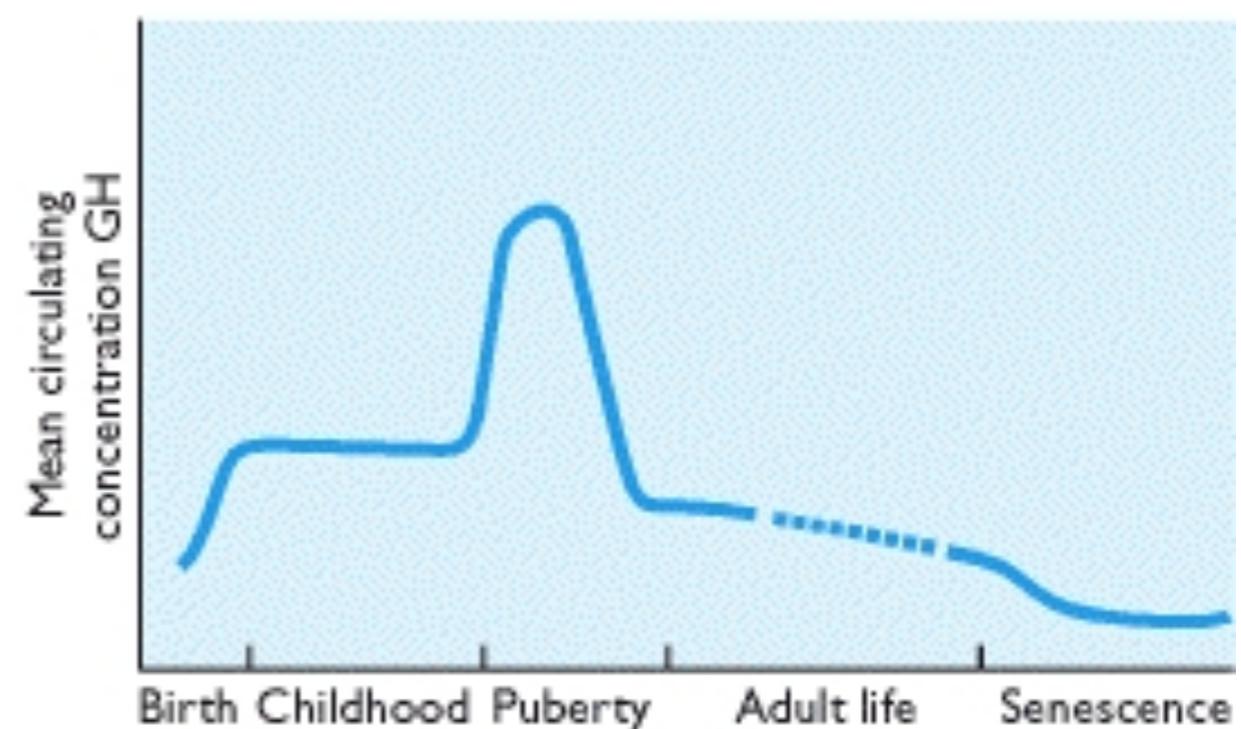
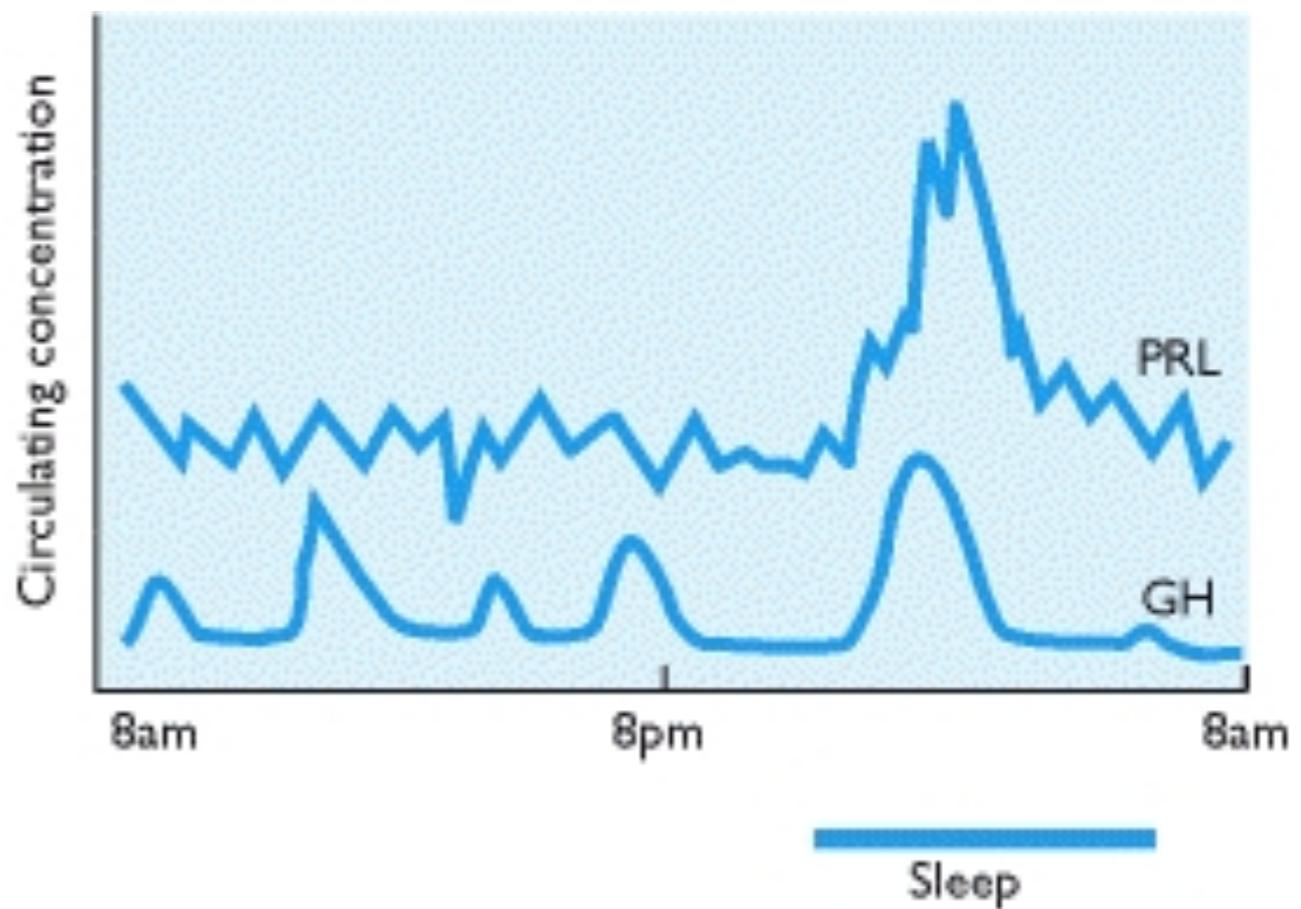
# Hormona del Crecimiento

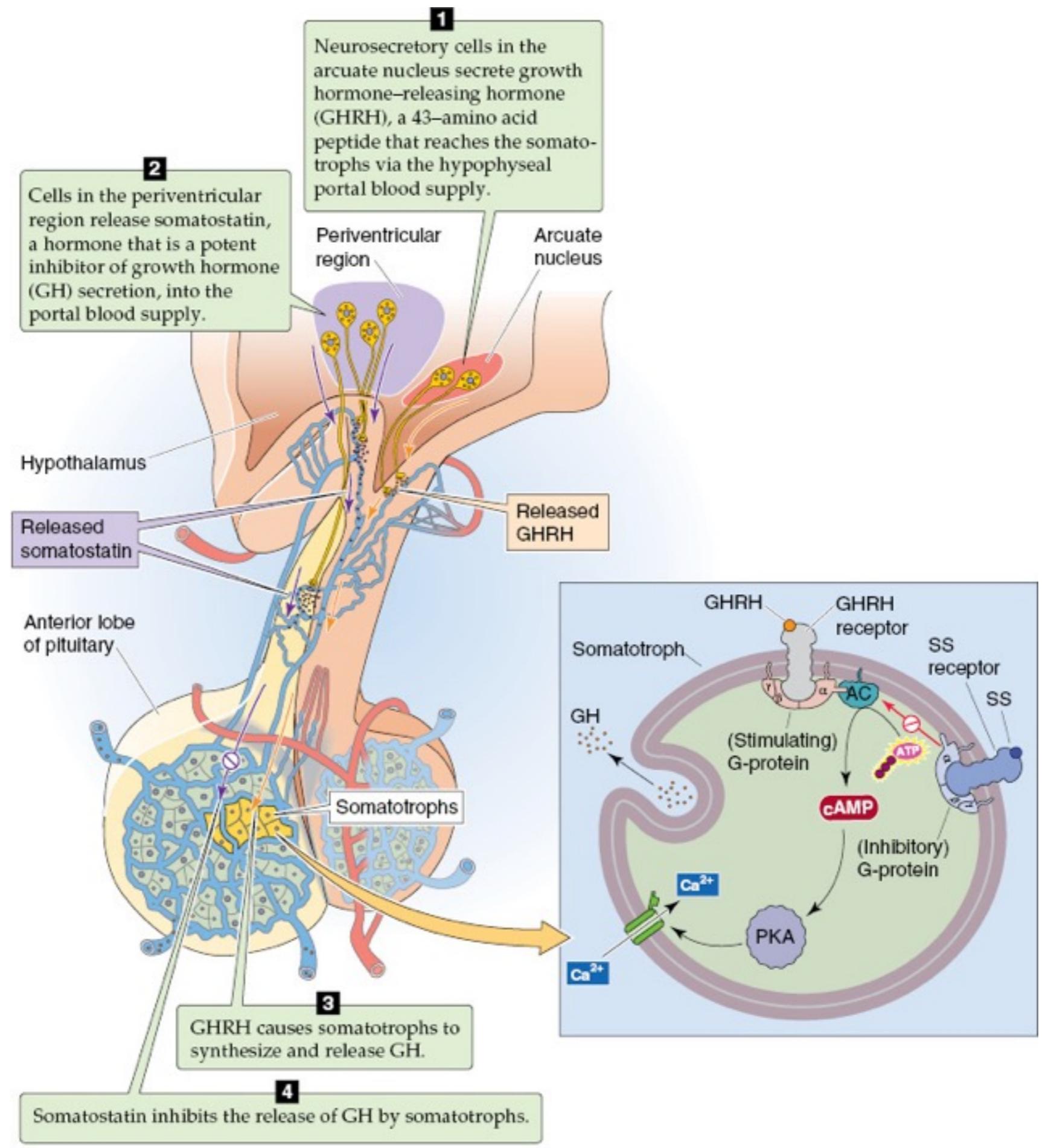
# HC

## Regulación



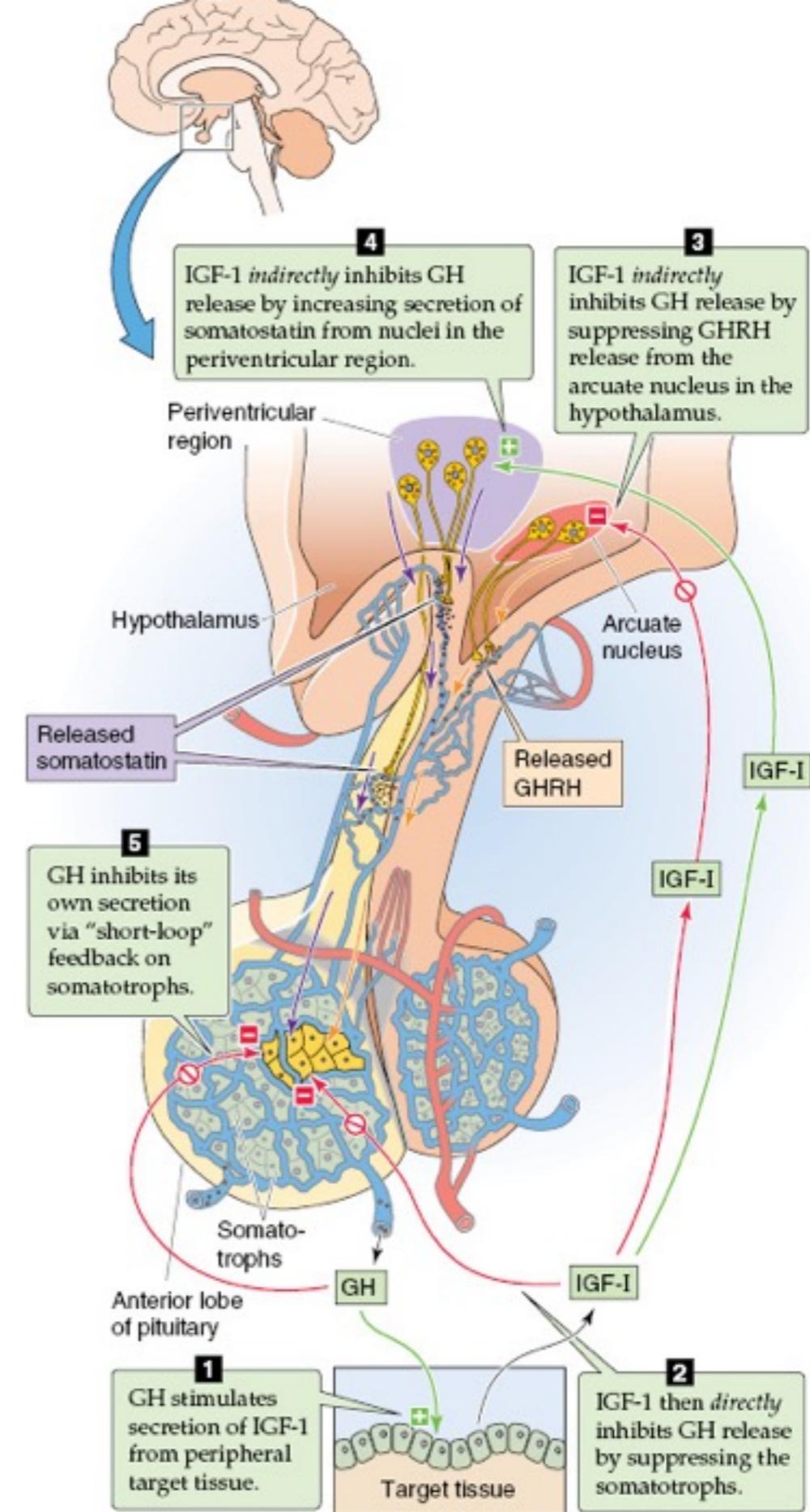
HC  
Secreción

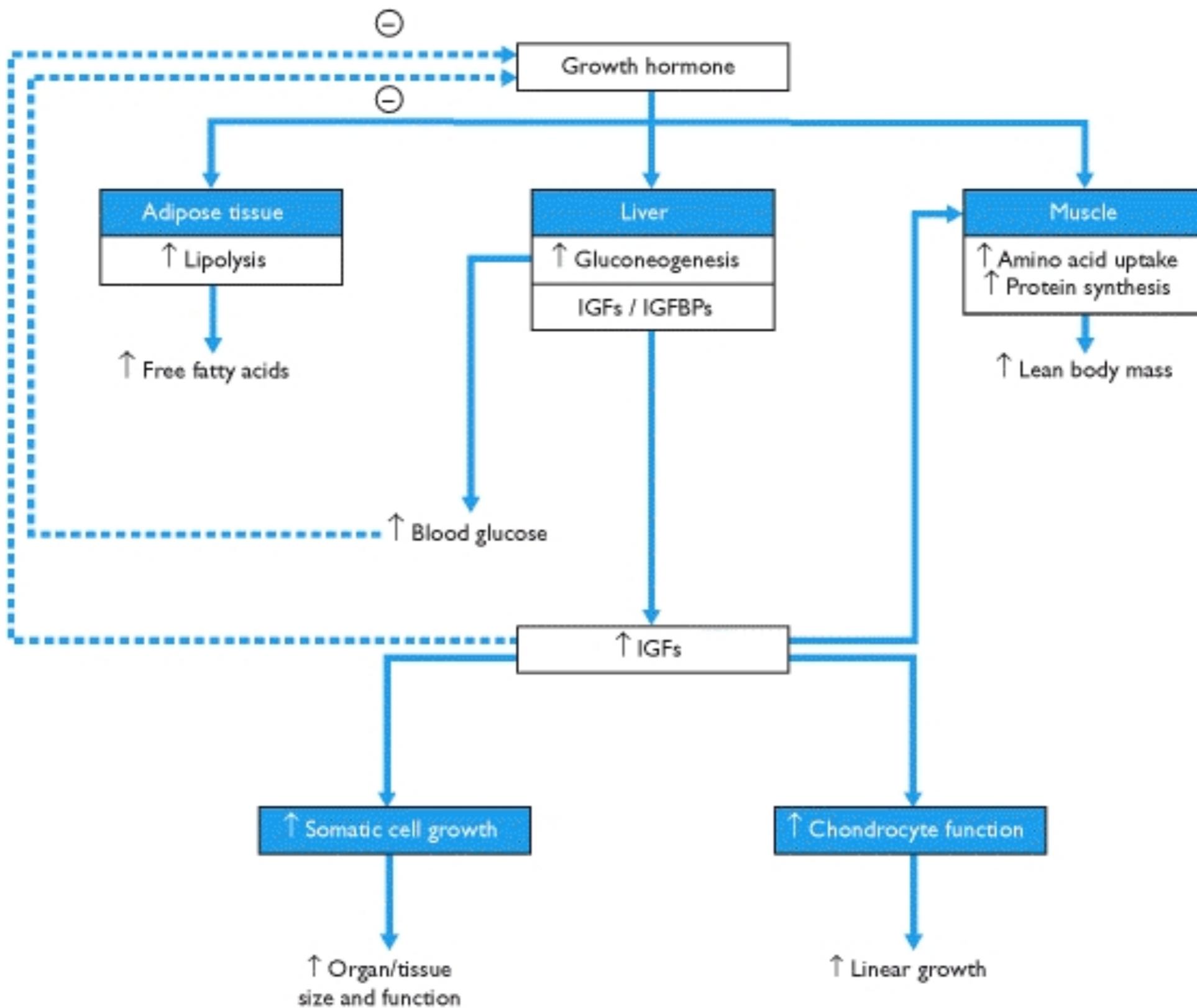




# GH/IGF-1

## Círculo de Retroalimentación negativo



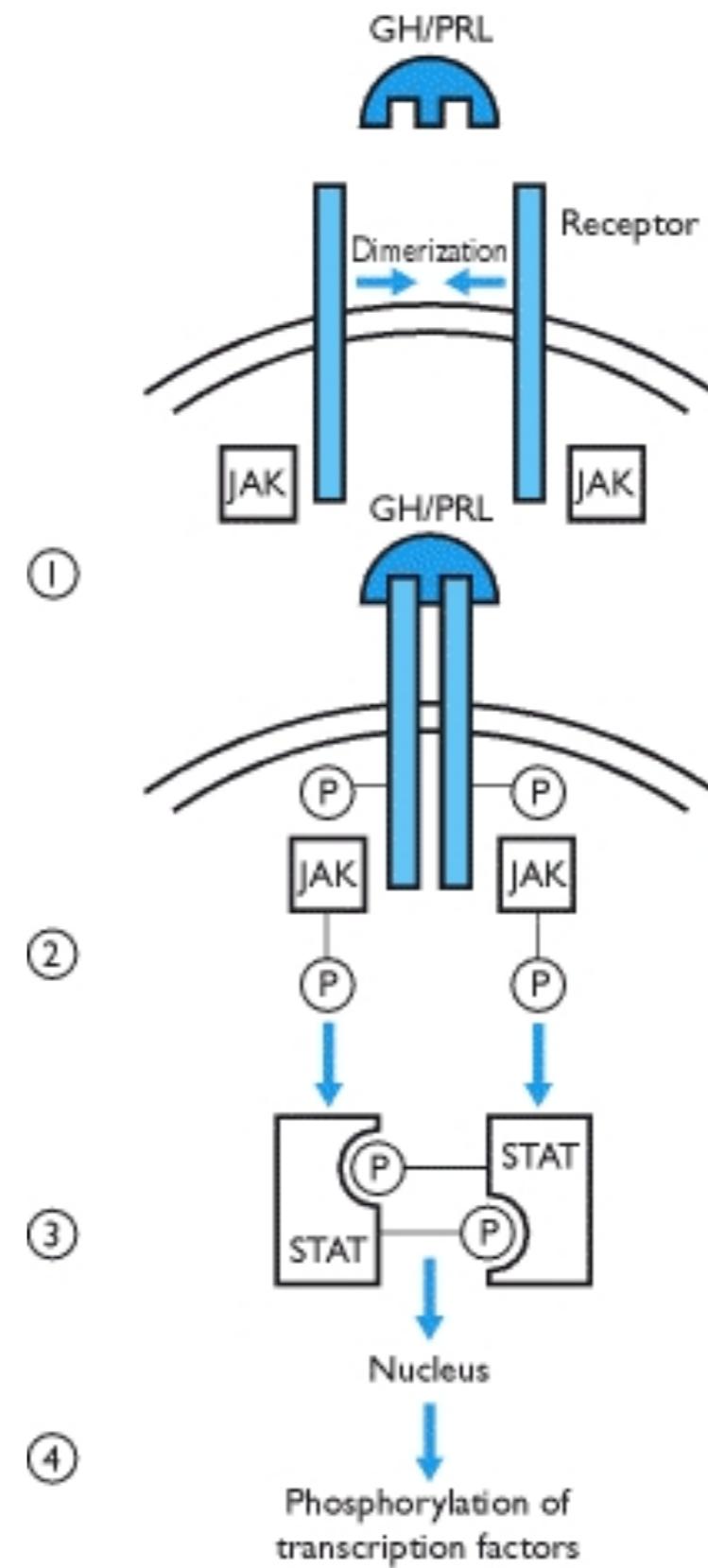


**Table 48-2** Diabetogenic Effects of Growth Hormone

Target	Effect
Muscle	↓ Glucose uptake
Fat	↑ Lipolysis
Liver	↑ Gluconeogenesis
Muscle, fat, and liver	Insulin resistance

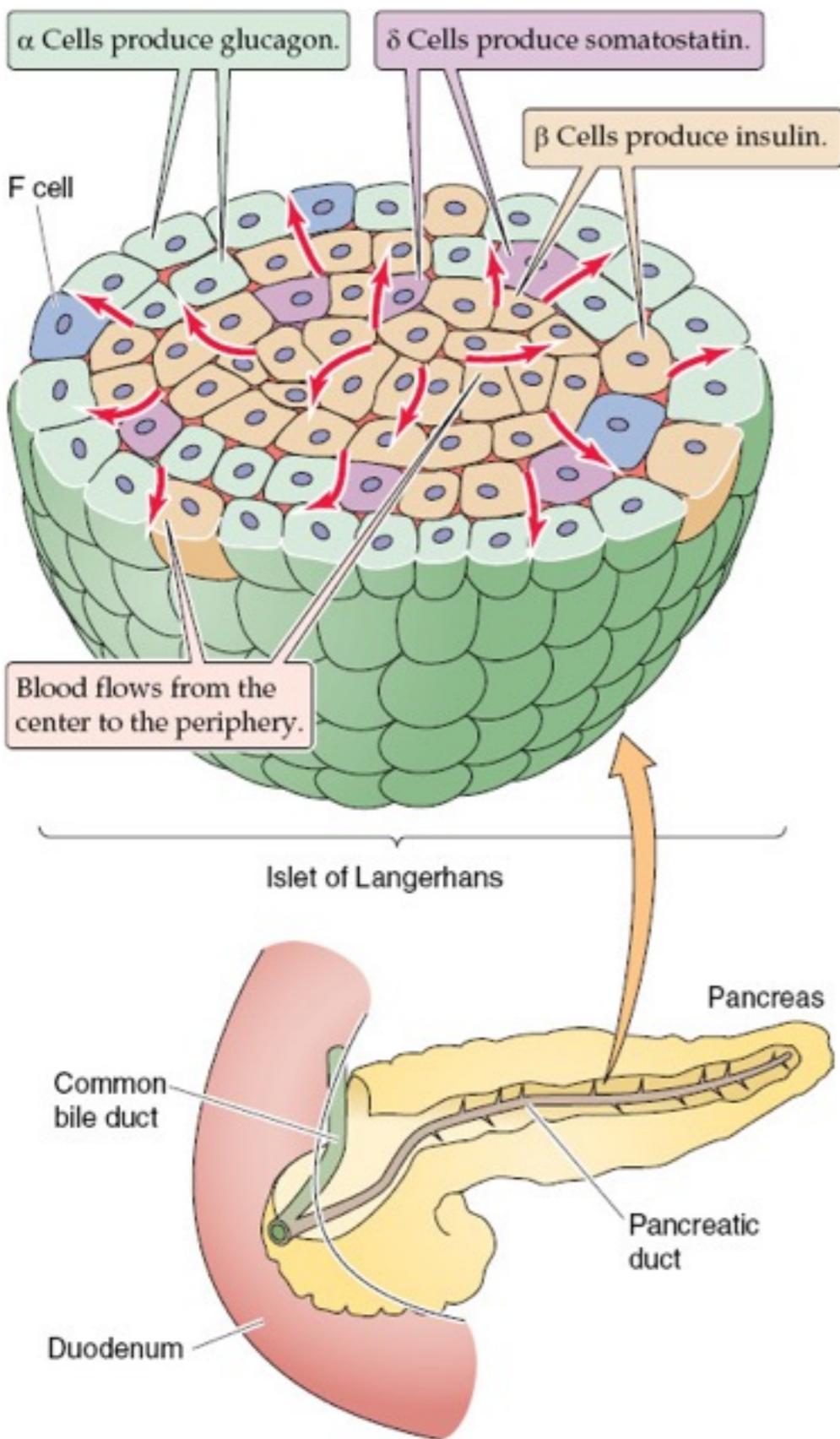
# Señalización

GH



# Insulina

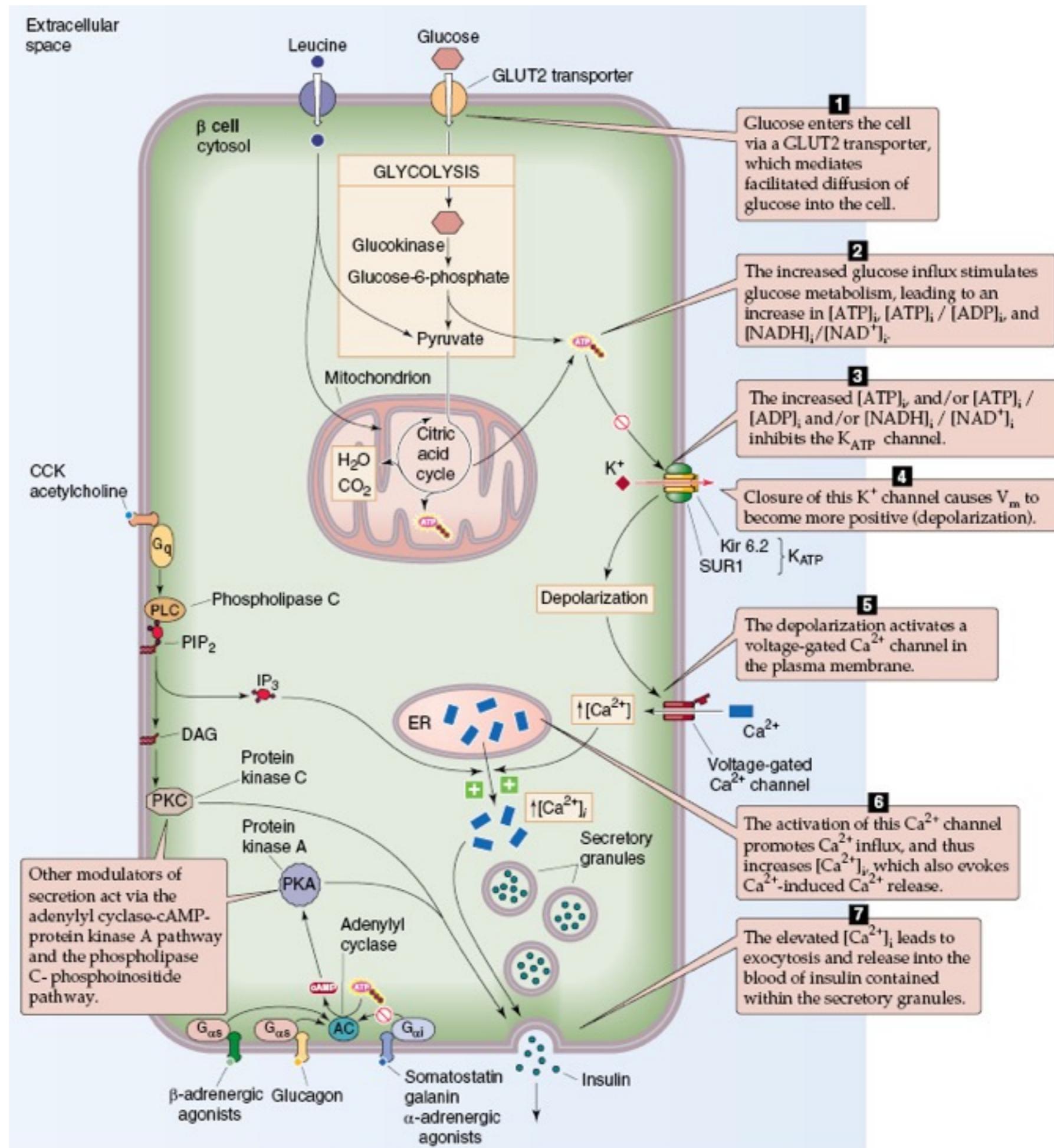
Pancreas Endocrino



**Table 51-1** Products of Pancreatic Islet Cells

Cell Type	Product
α	Glucagon
β	Insulin Proinsulin C peptide Amylin
δ	Somatostatin
F	Pancreatic polypeptide

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# Factores que influyen en la secreción

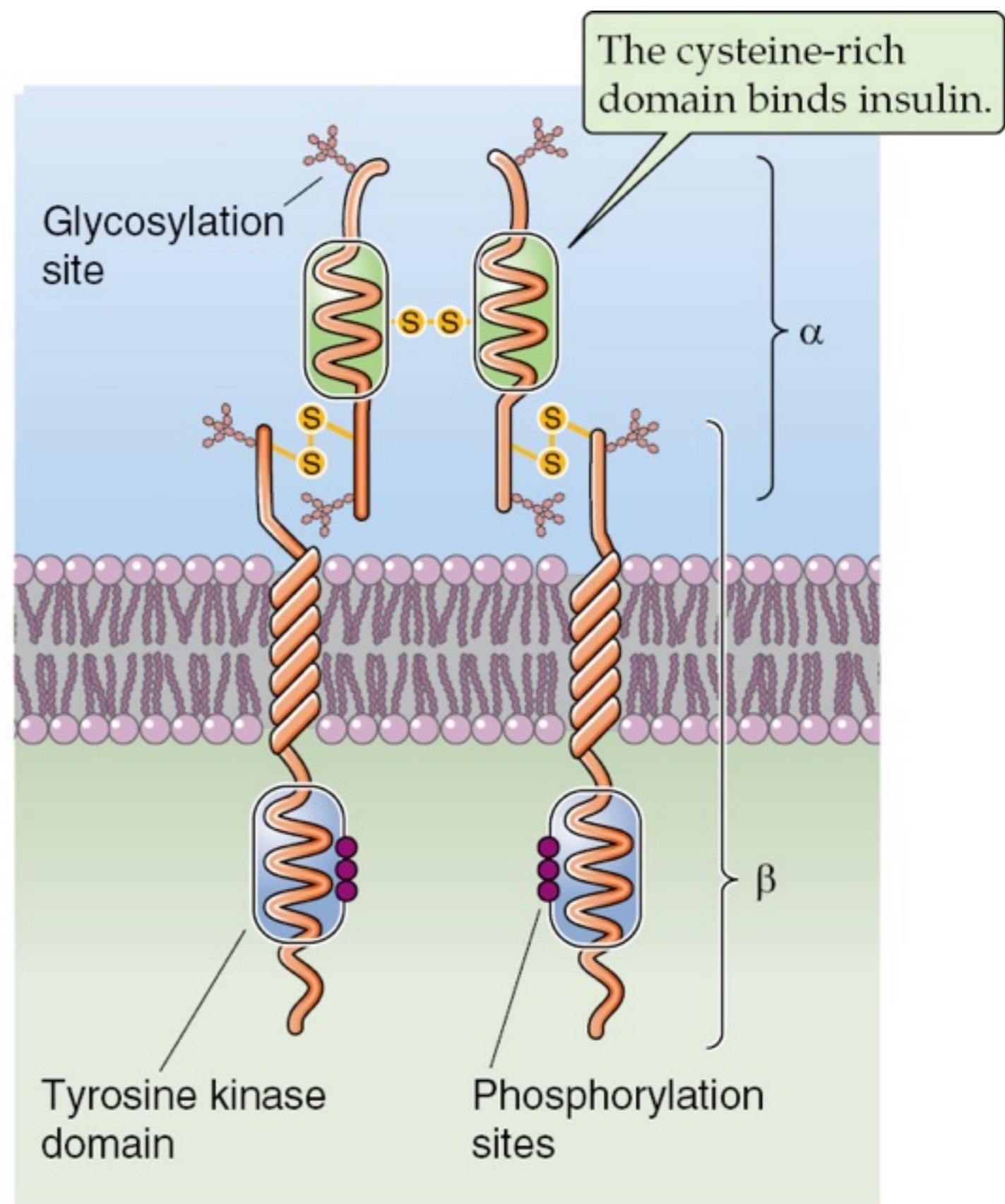
<b>Nutrients</b>	<b>Gastrointestinal hormones</b>	<b>Hormones</b>	<b>Autonomic nerves</b>
+ Glucose	+ Gastrin	+ Growth hormone	+ Cholinergic
+ Amino acids	+ CCK	- Adrenaline	+ $\beta$ adrenergic
(+) Keto acids	+ GIP	- Cortisol	- $\alpha$ adrenergic
(+) Triglycerides/fatty acids	+ GLP-1	+ Glucagon*	
	+ Secretin	- Somatostatin*	
		- Other peptides*†	

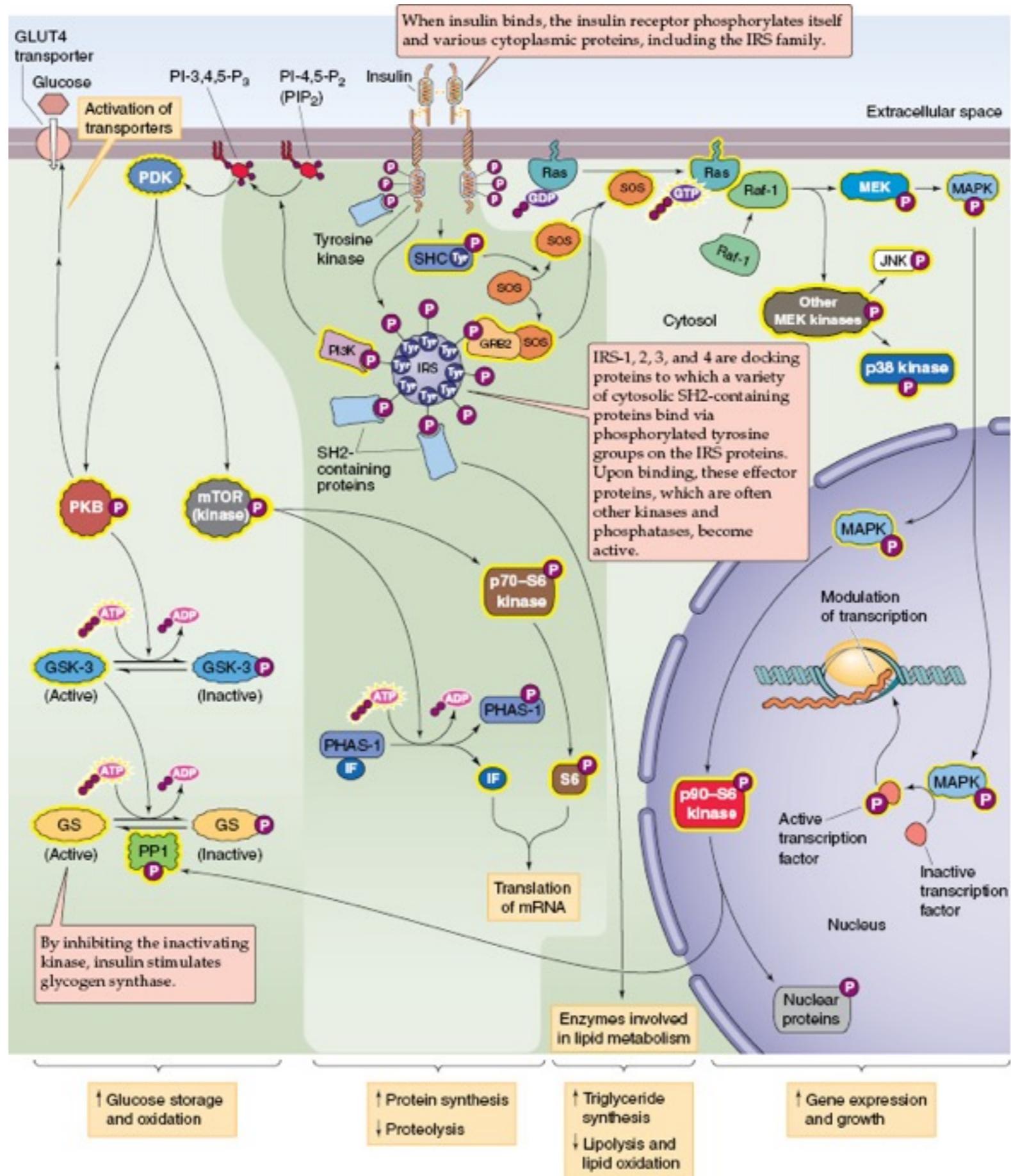
\* Paracrine signals;

† neurocrine signals

CCK = cholecystokinin; GIP = gastrointestinal inhibitory peptide; GLP-1 = glucagon-like peptide

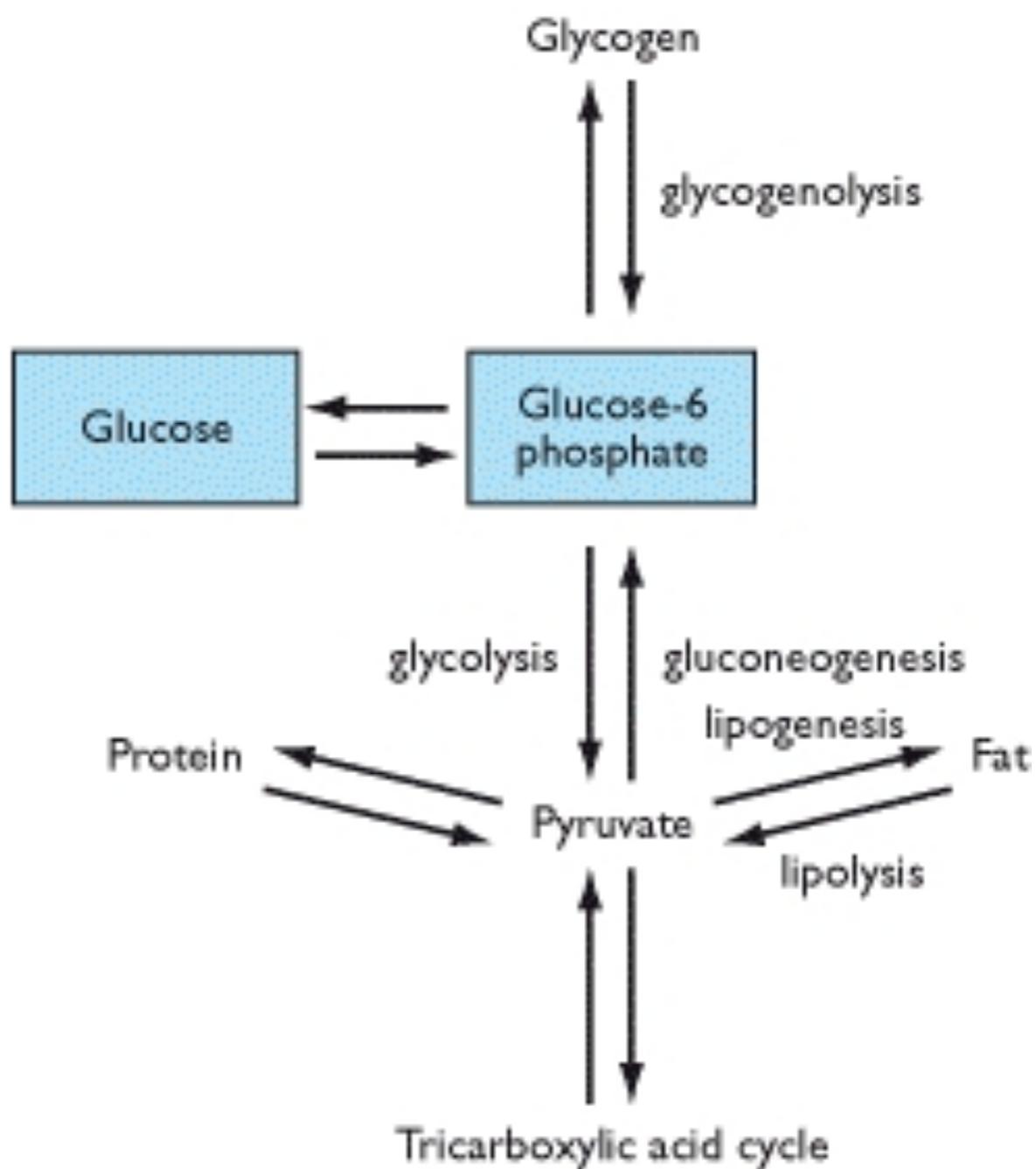
# Insulina Receptor

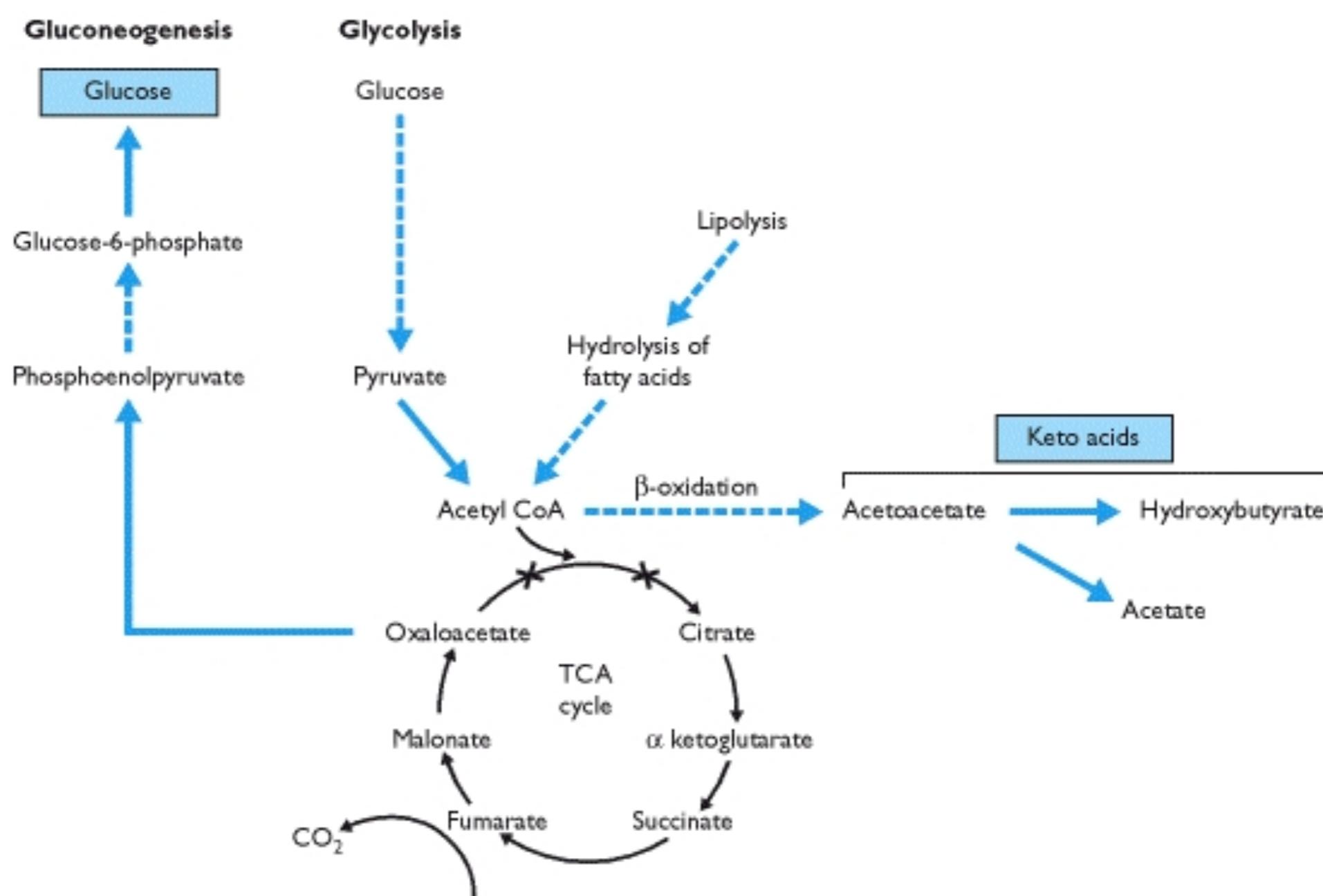


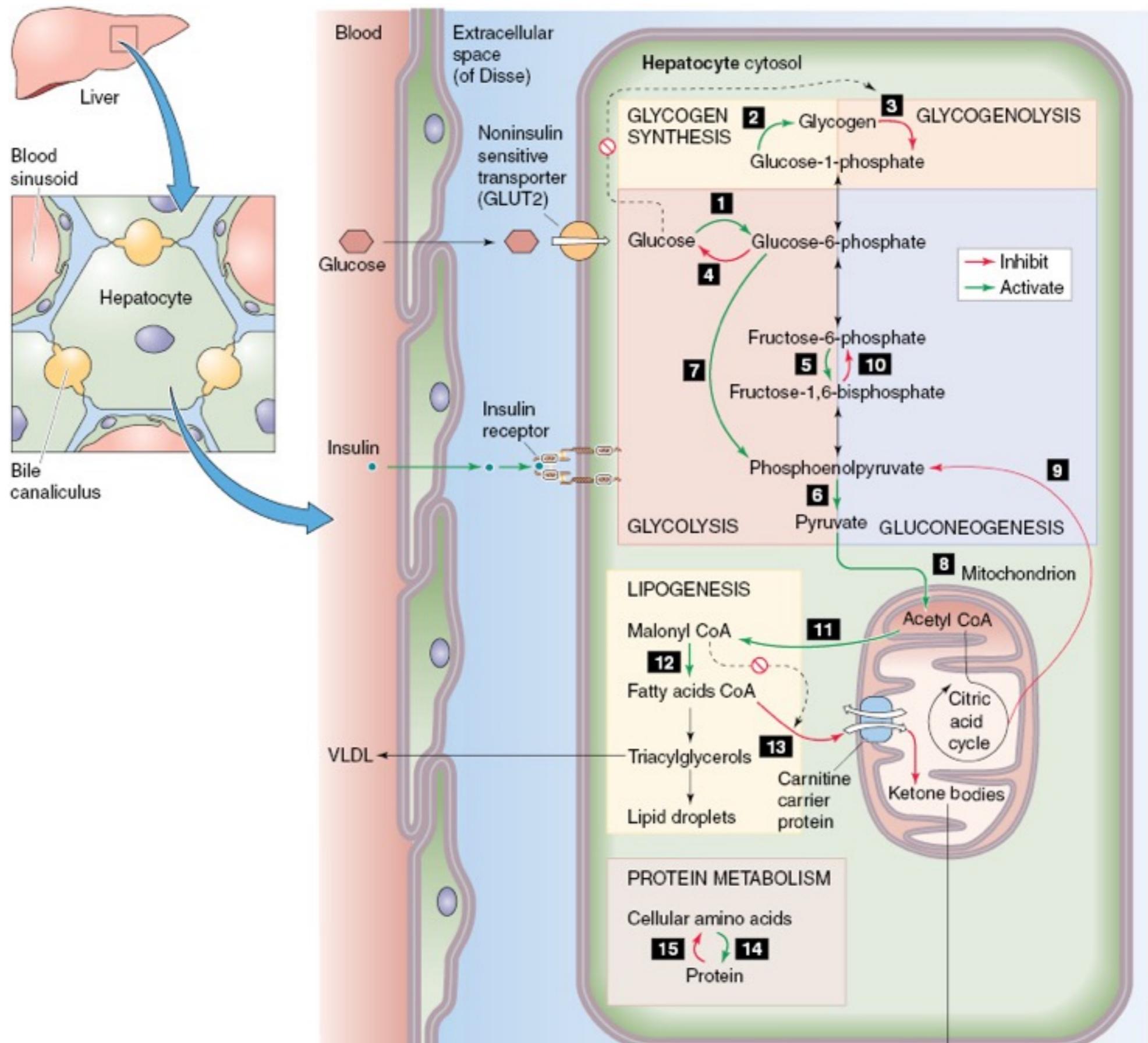


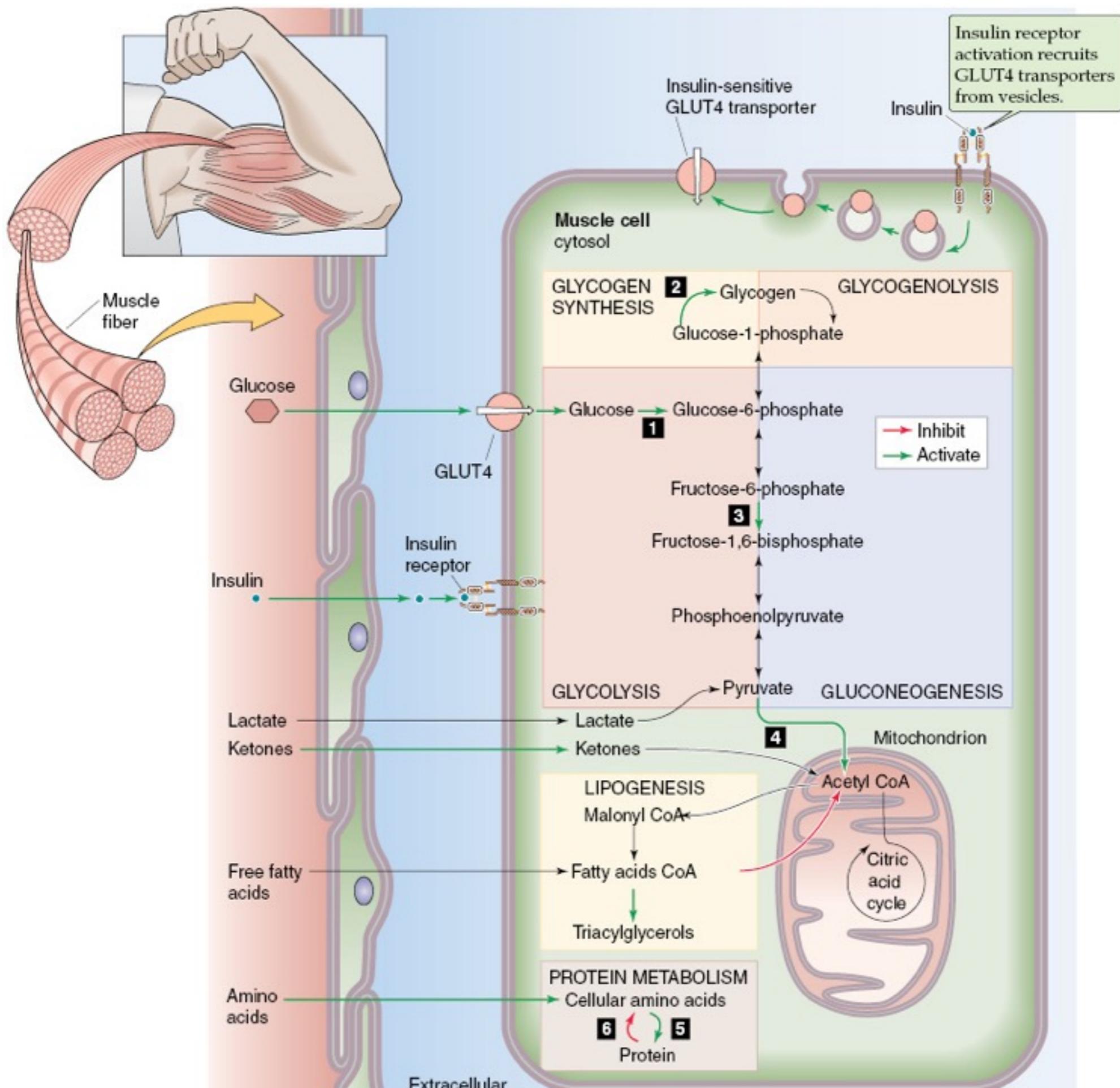
# Glucosa

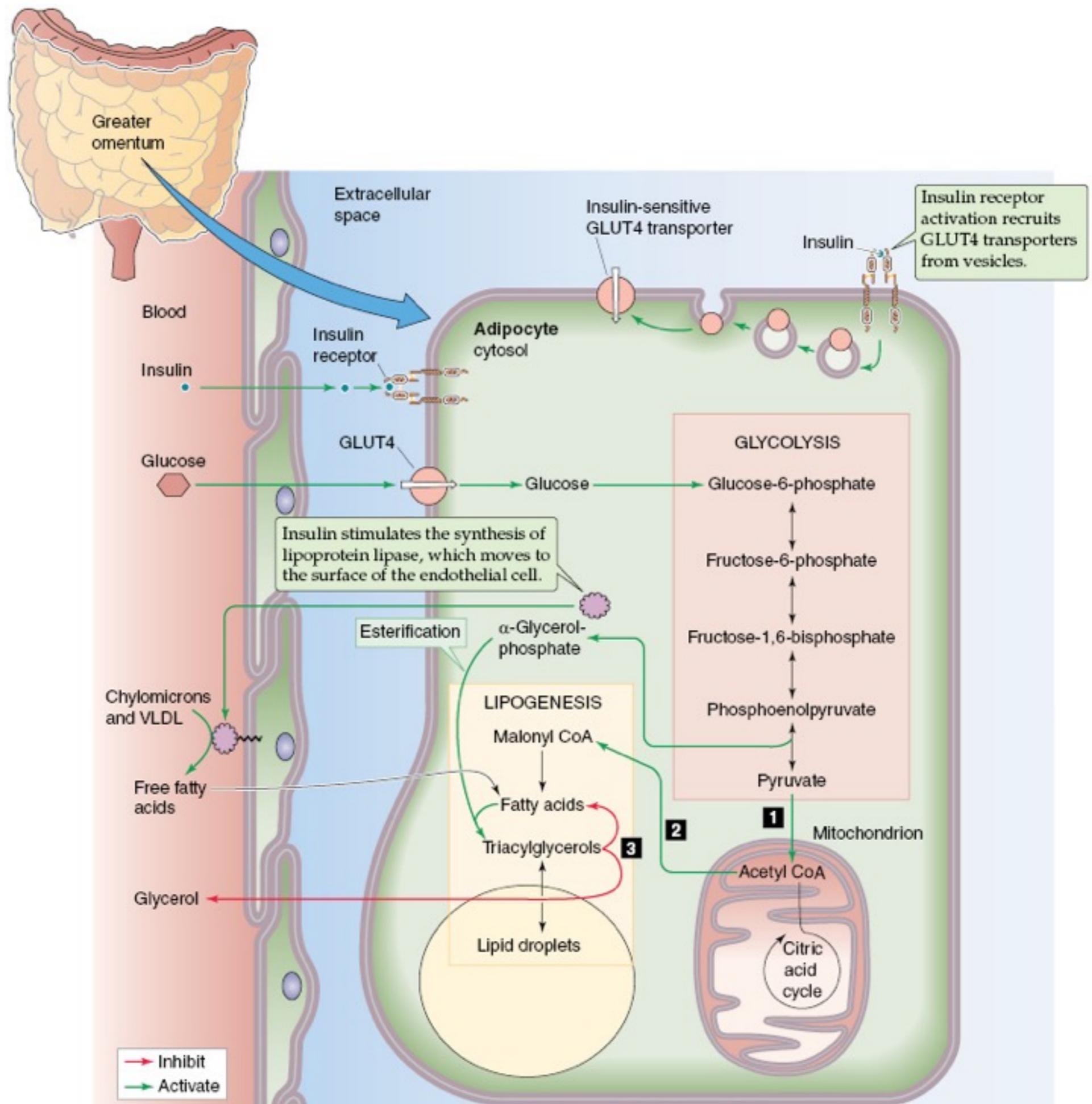
Vía metabólica



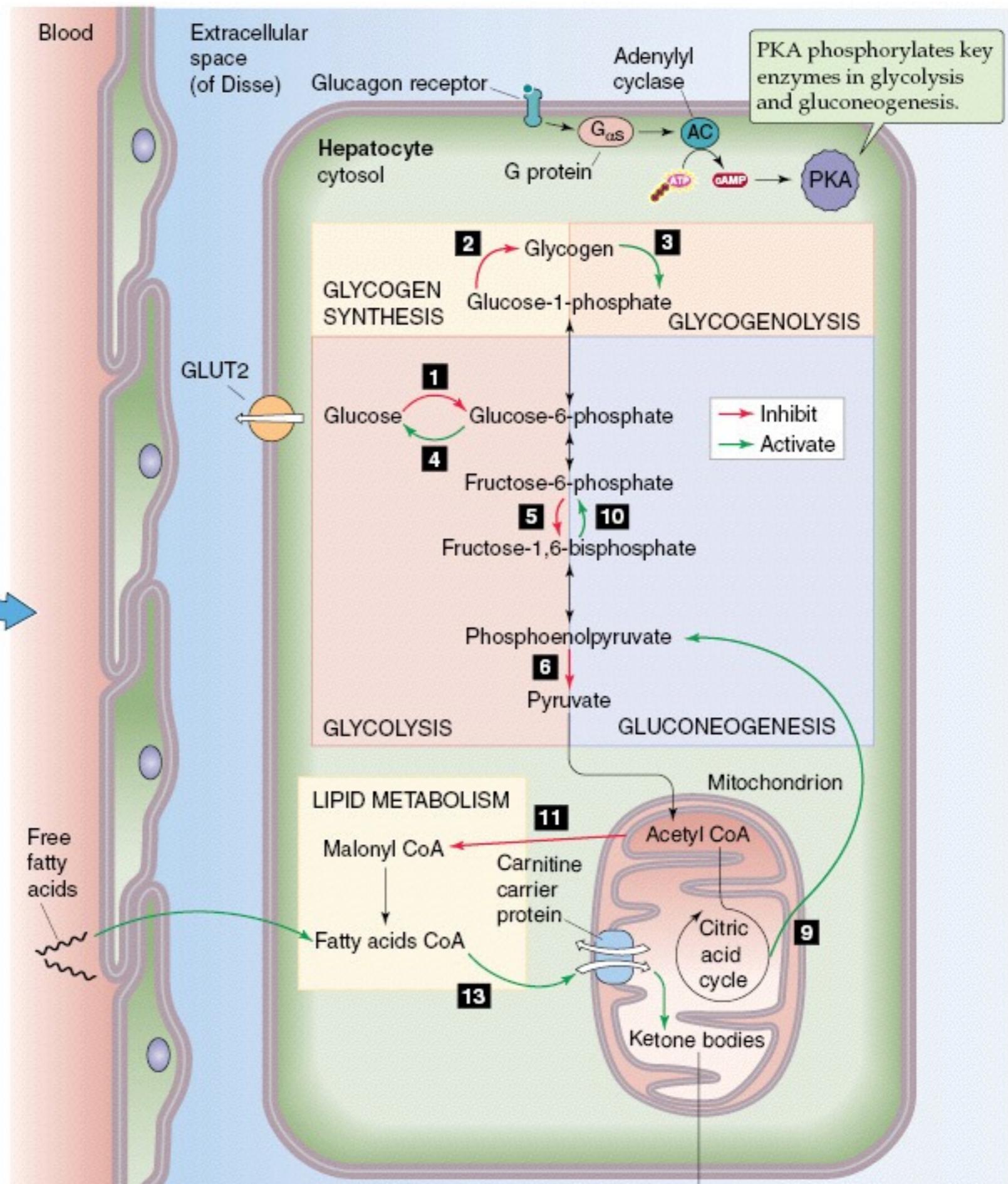
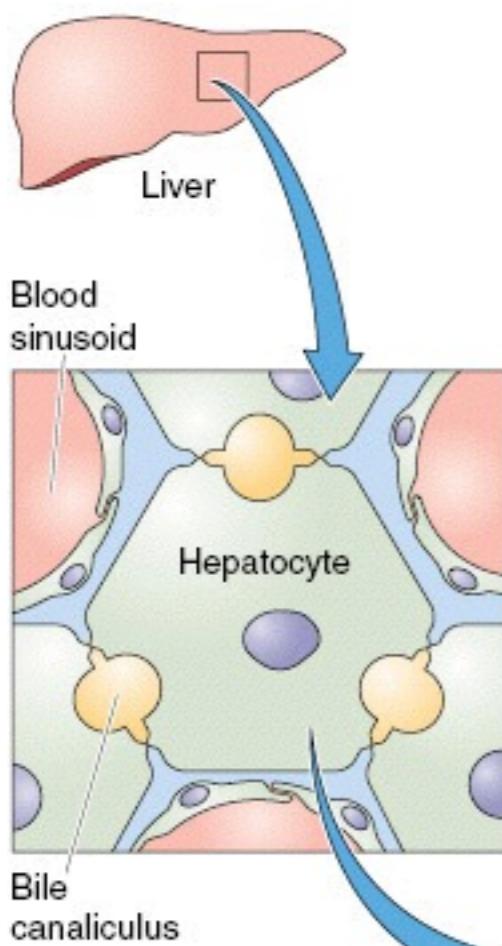








# Glucagon



# Control de Secreción

<b>Nutrients</b>	<b>Gastrointestinal hormones</b>	<b>Hormones</b>	<b>Autonomic nerves</b>	<b>Environment</b>
+ Hypoglycemia	+ Gastrin	+ Growth hormone	+ Cholinergic	+ Exercise
+ Amino acids	+ CCK	+ Adrenaline	+ Adrenergic	+ Stress
(Arginine/alanine)	+ GIP			+ Starvation
- Free fatty acids	- GLP-1	- Insulin*		
	- Secretin	- somatostatin*		

\* Paracrine signals

CCK = cholecystokinin; GIP = gastrointestinal inhibitory peptide; GLP-1 = glucagon-like peptide

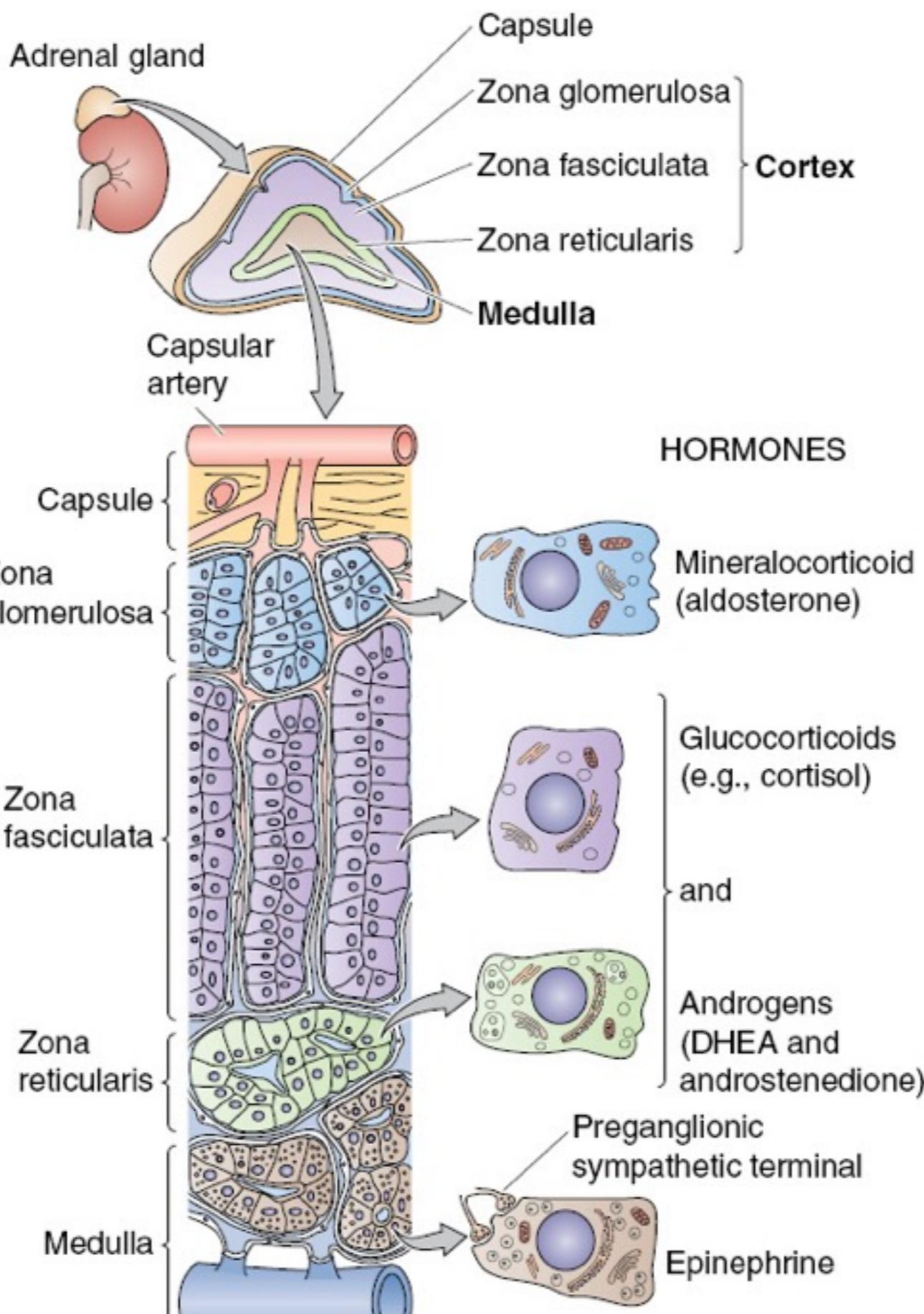
	<b>Liver</b>	<b>Muscle</b>	<b>Adipose tissue</b>
Insulin	+ glycogen synthesis	+ glucose uptake	+ glucose uptake
	+ glycolysis	+ amino acid uptake	+ free fatty acid uptake
	- glycogenolysis	- proteolysis	- lipolysis
	- gluconeogenesis		
	- ketogenesis		
Glucagon	+ glycogenolysis	minimal action	minimal action
	+ gluconeogenesis		
	+ ketogenesis		
Cortisol	+ glycogenolysis	- amino acid uptake	+ lipolysis
	+ gluconeogenesis	+ proteolysis	- insulin action
		- insulin action	
Growth hormone	+ gluconeogenesis	+ amino acid uptake	+ lipolysis
	+ IGFs/IGFBP	- glucose uptake	- glucose uptake
Epinephrine	+ glycogenolysis	+ glycogenolysis	+ lipolysis
	+ gluconeogenesis	- insulin action	- insulin action
	+ ketogenesis		
Thyroid hormones	+ gluconeogenesis	+ proteolysis	+ lipolysis

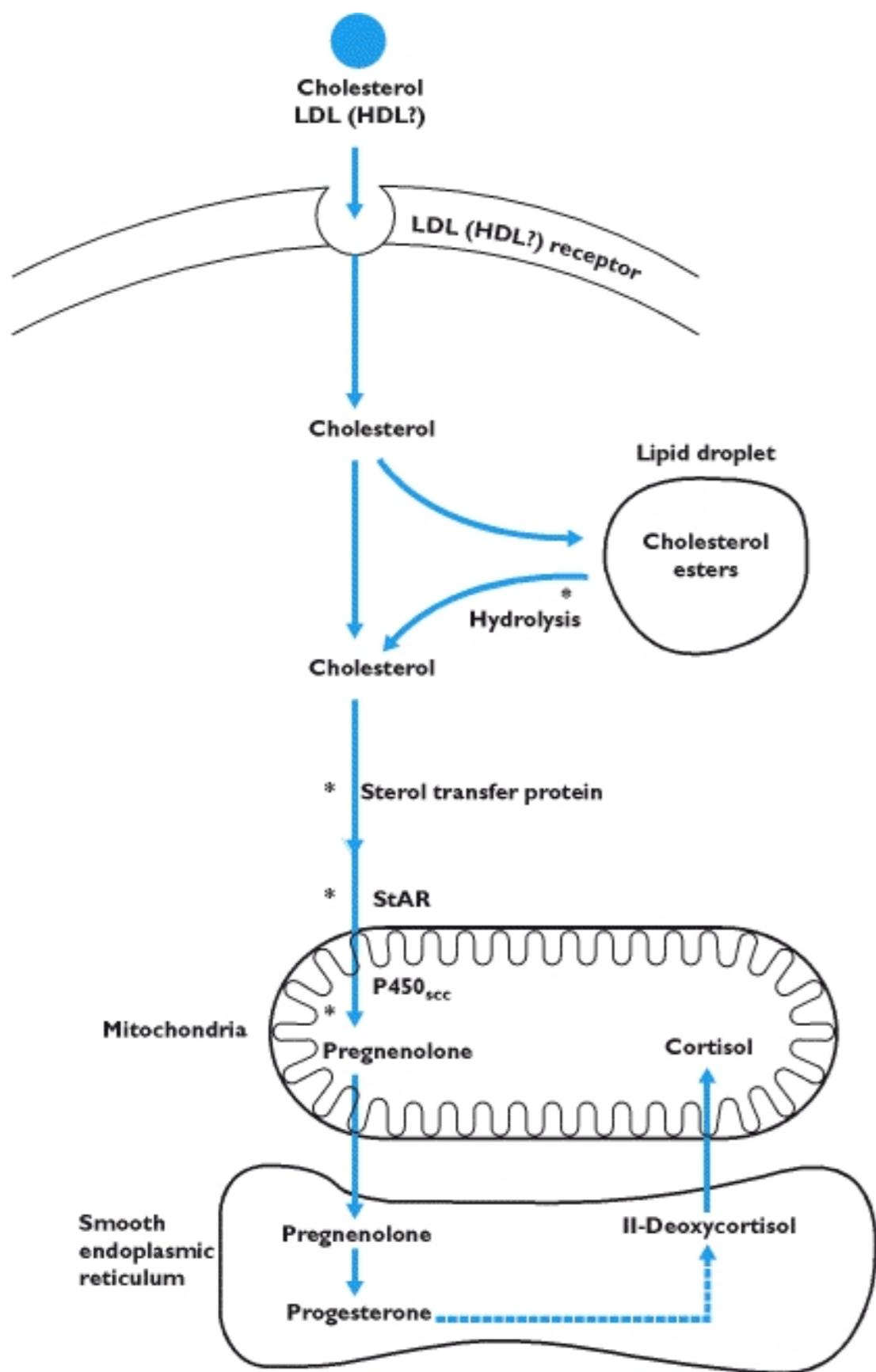
+ stimulates

- inhibits

# Medula Adrenal

## Esteroides





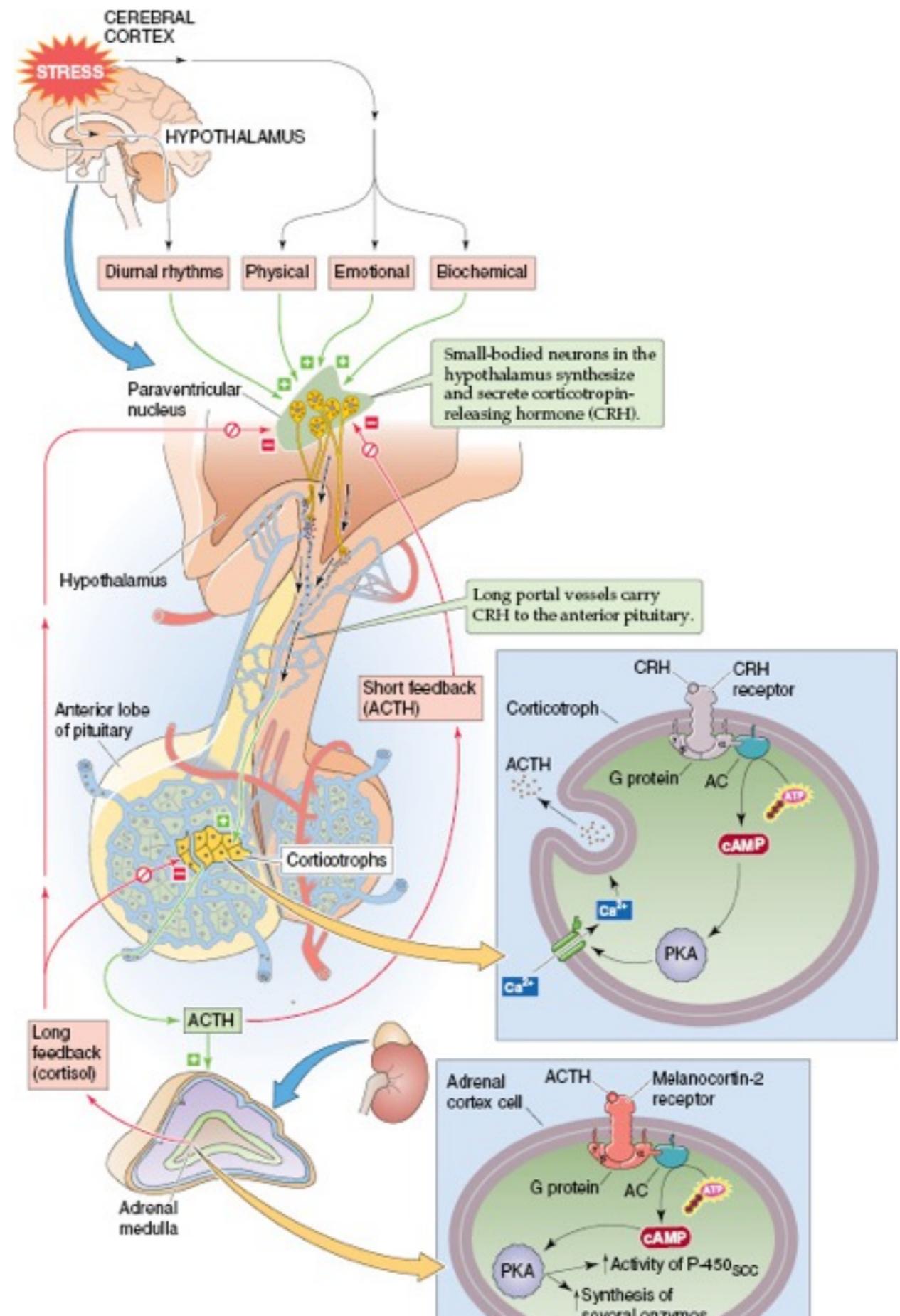
**Table 50-2** Cytochrome P-450 Enzymes Involved in Steroidogenesis\*

Enzyme	Synonym	Gene
Cholesterol side chain cleavage	P-450 <sub>ssc</sub>	CYP11A1
11 $\beta$ -Hydroxylase	P-450 <sub>c11</sub>	CYP11B1
17 $\alpha$ -Hydroxylase	P-450 <sub>c17</sub>	CYP17
17,20-Desmolase	P-450 <sub>c17</sub>	CYP17
21 $\alpha$ -Hydroxylase	P-450 <sub>c21</sub>	CYP21A2
Aldosterone synthase	P-450 <sub>aldo</sub>	CYP11B2
Aromatase	P-450 <sub>arom</sub>	CYP19

\*P-450<sub>arom</sub> catalyzes a reaction essential for the production of estrogens (see Chapter 55).

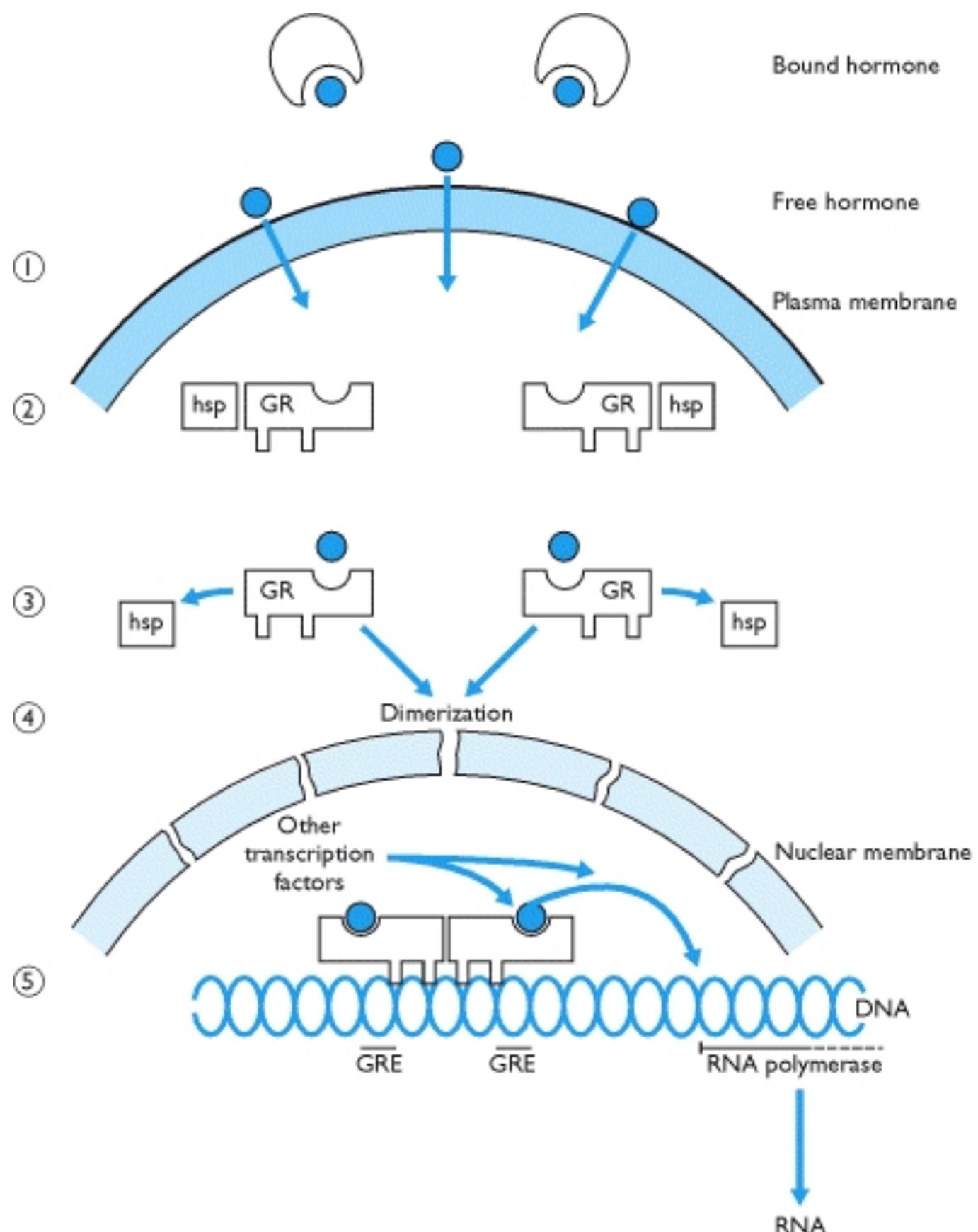
# Esteroides

## Eje

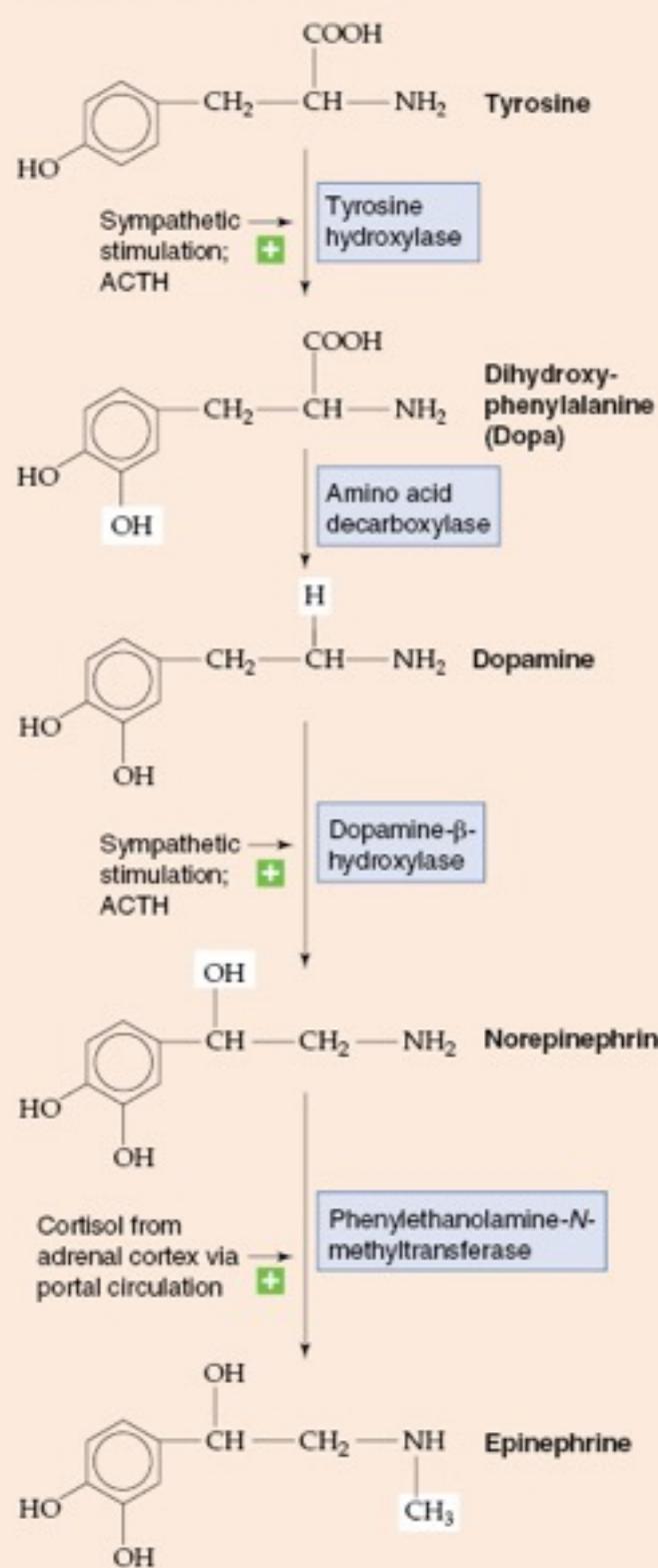
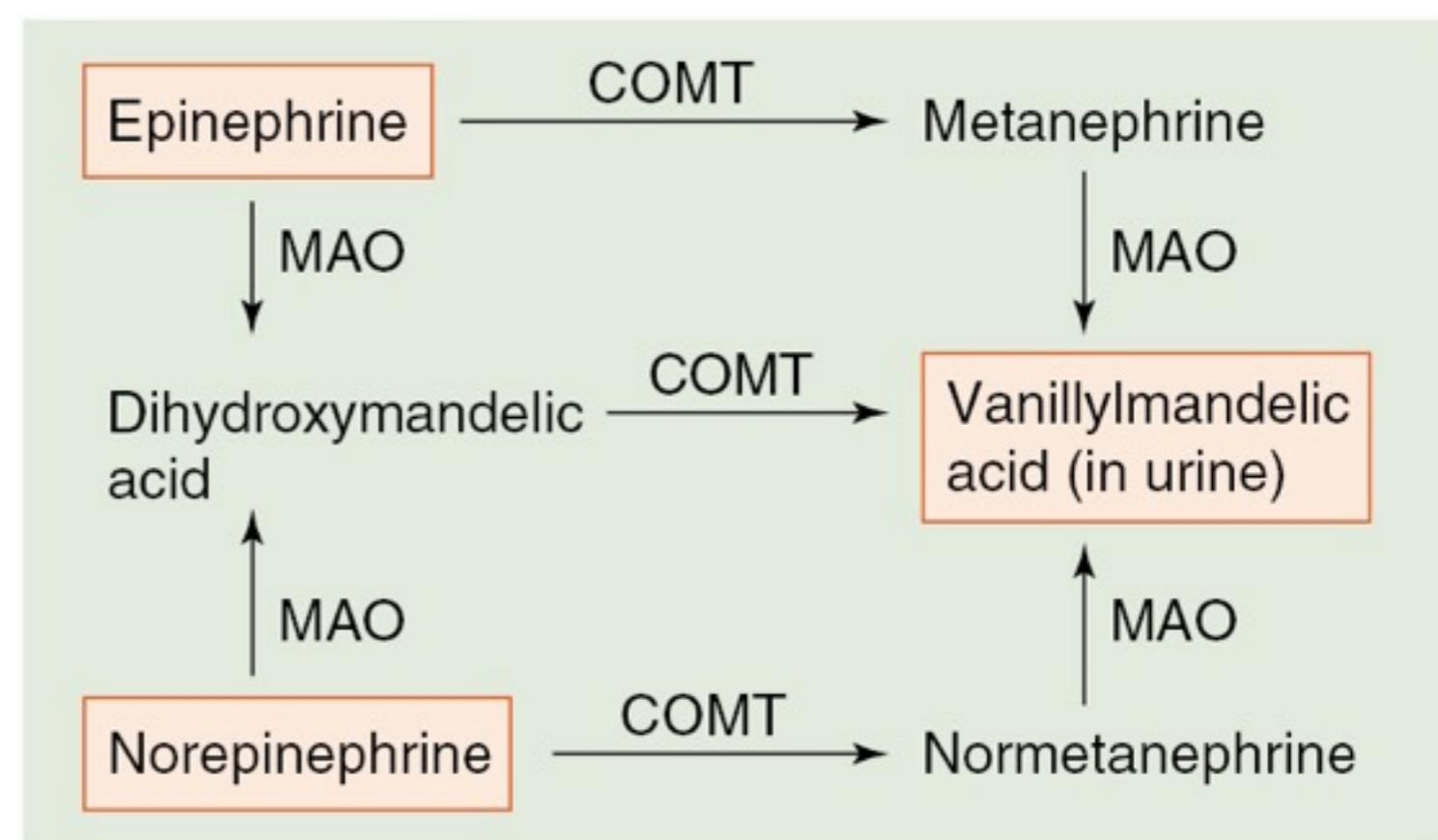


# Cortisol

## Efecto



# Catecolaminas

**A CATECHOLAMINE SYNTHESIS****B DEGRADATIVE METABOLISM OF CATECHOLAMINES**

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