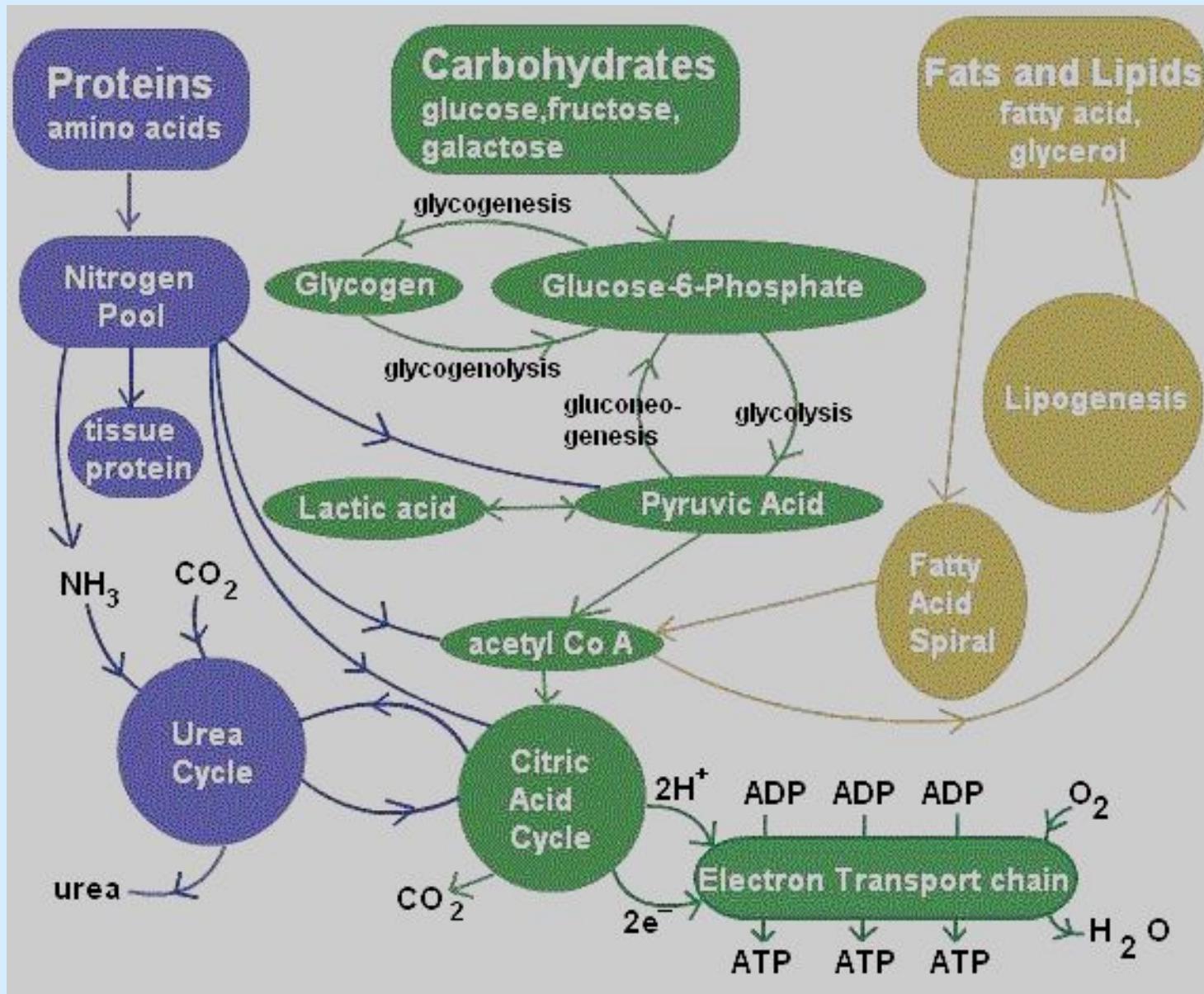


REGULATION OF METABOLISM

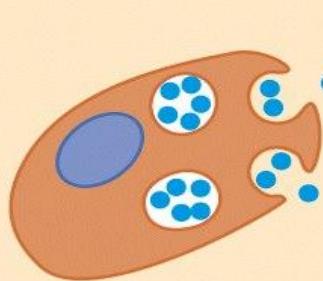


Metabolism



Hormone S

**Circulating
hormone**



**Cell producing
the hormone**

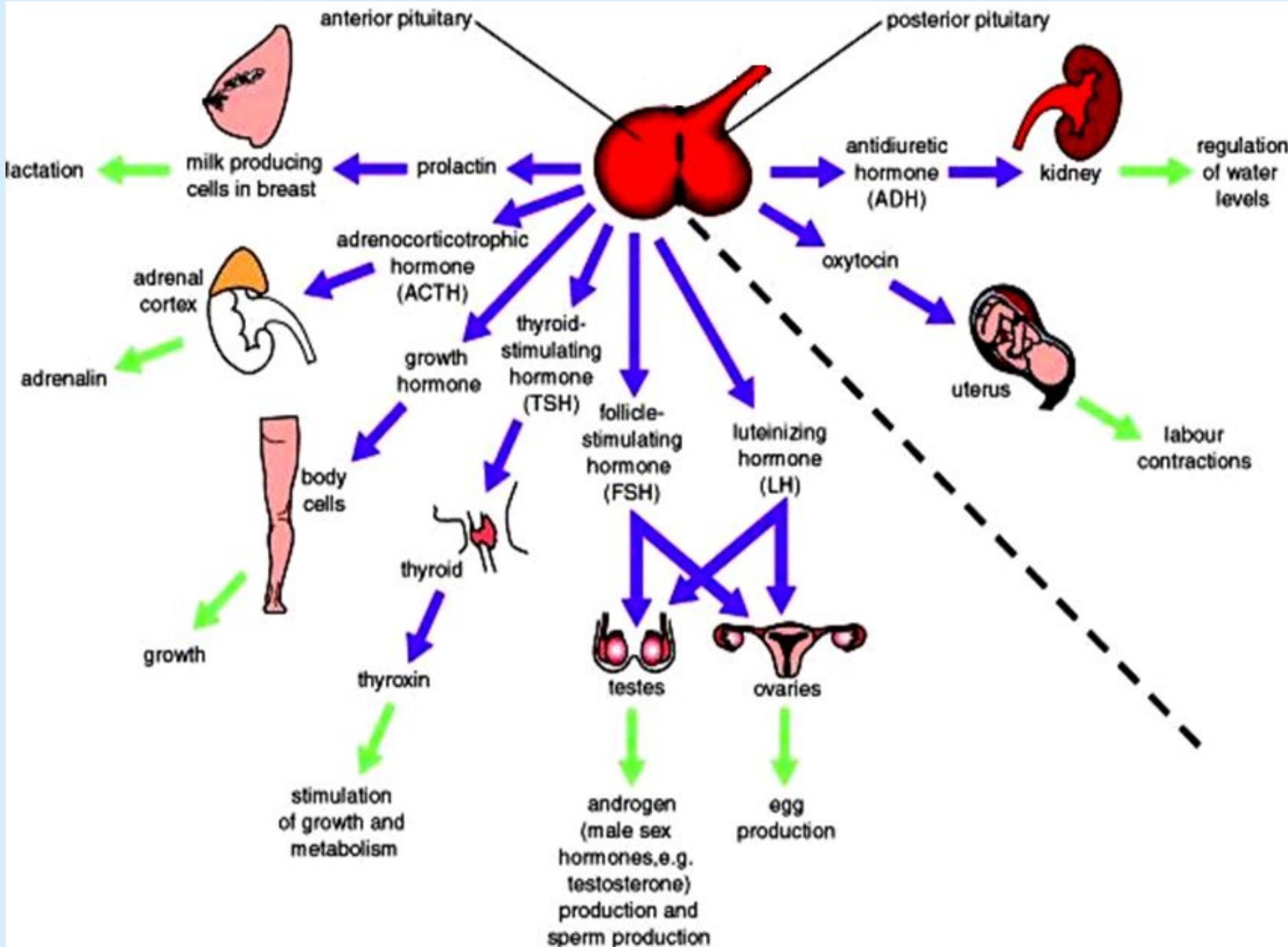
Some hormones exert their effects by binding to a cell surface receptor on the target cell.

**Target
cell**

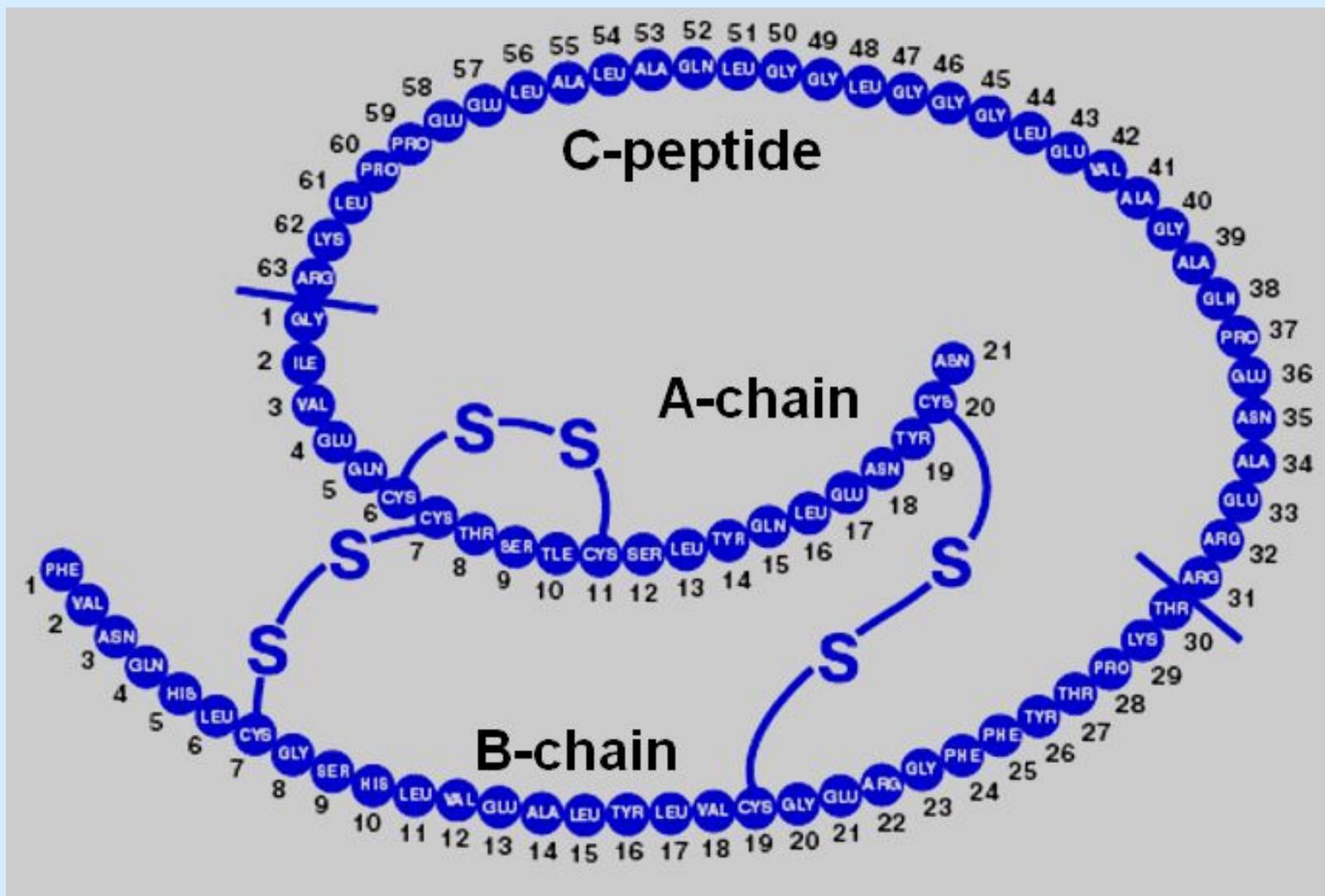
Blood vessel

**Target
cell**

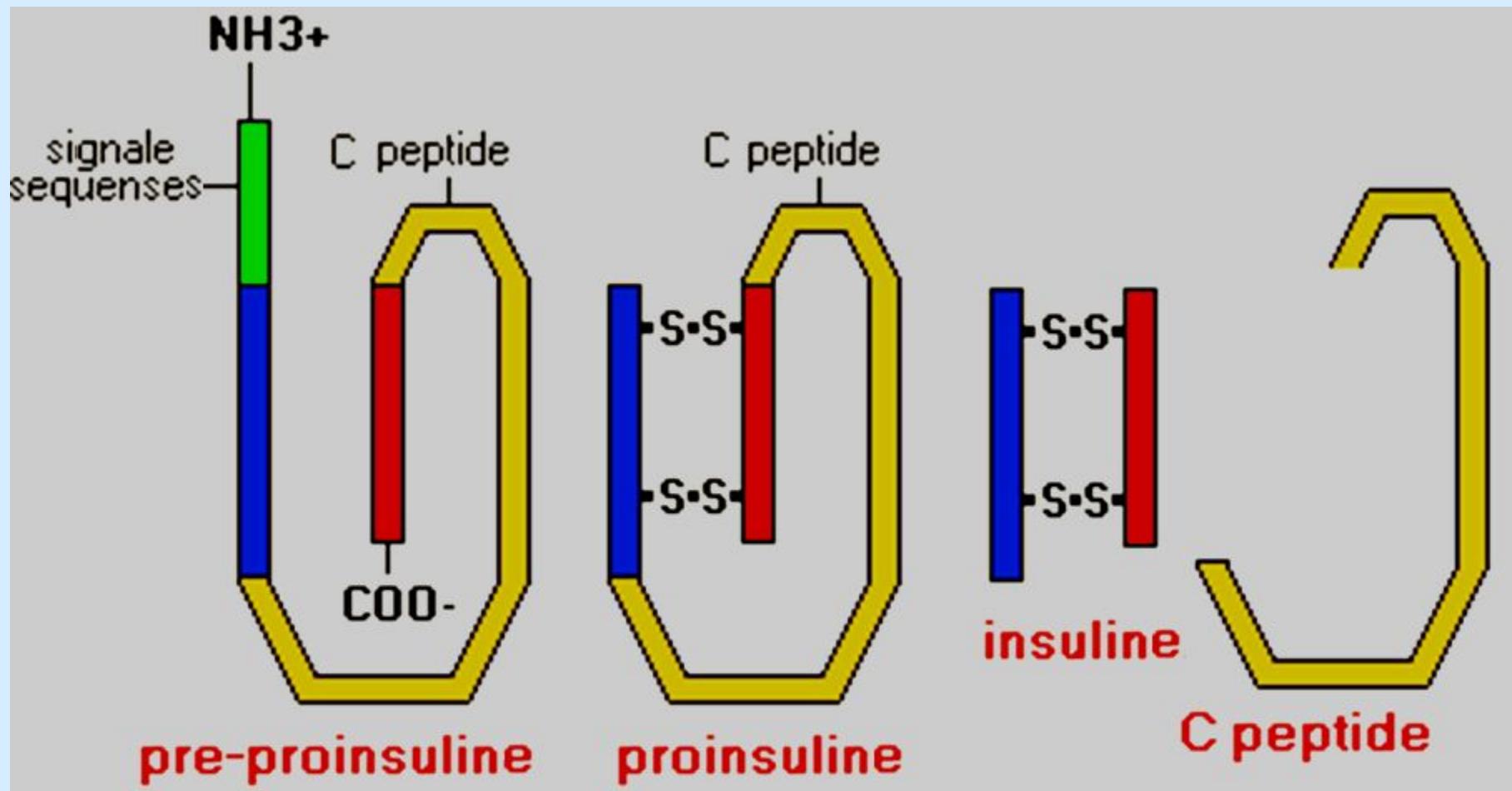
Some hormones cross the plasma membrane and act on receptors inside the target cell.



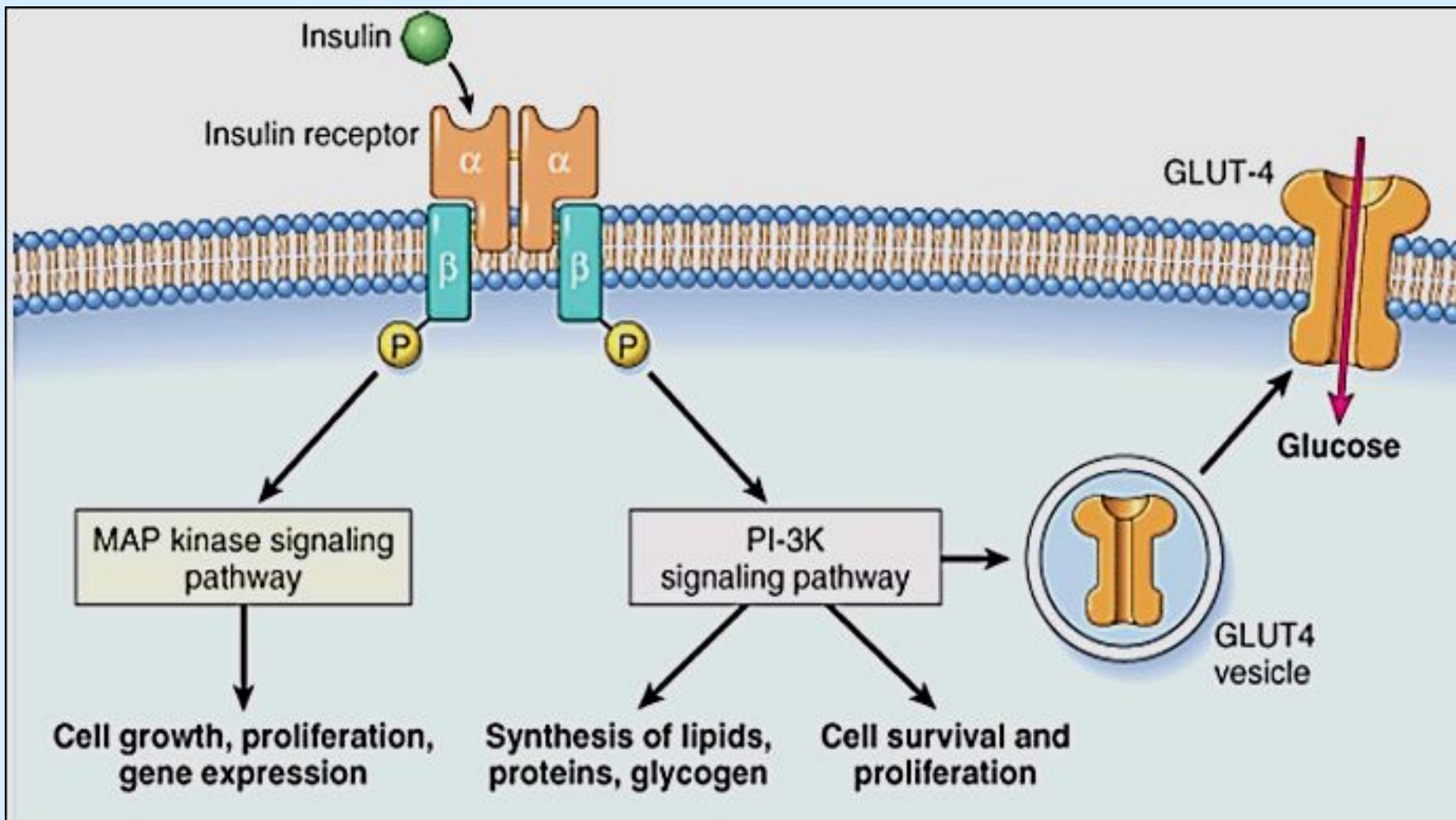
Insuline



The formation of active insulin



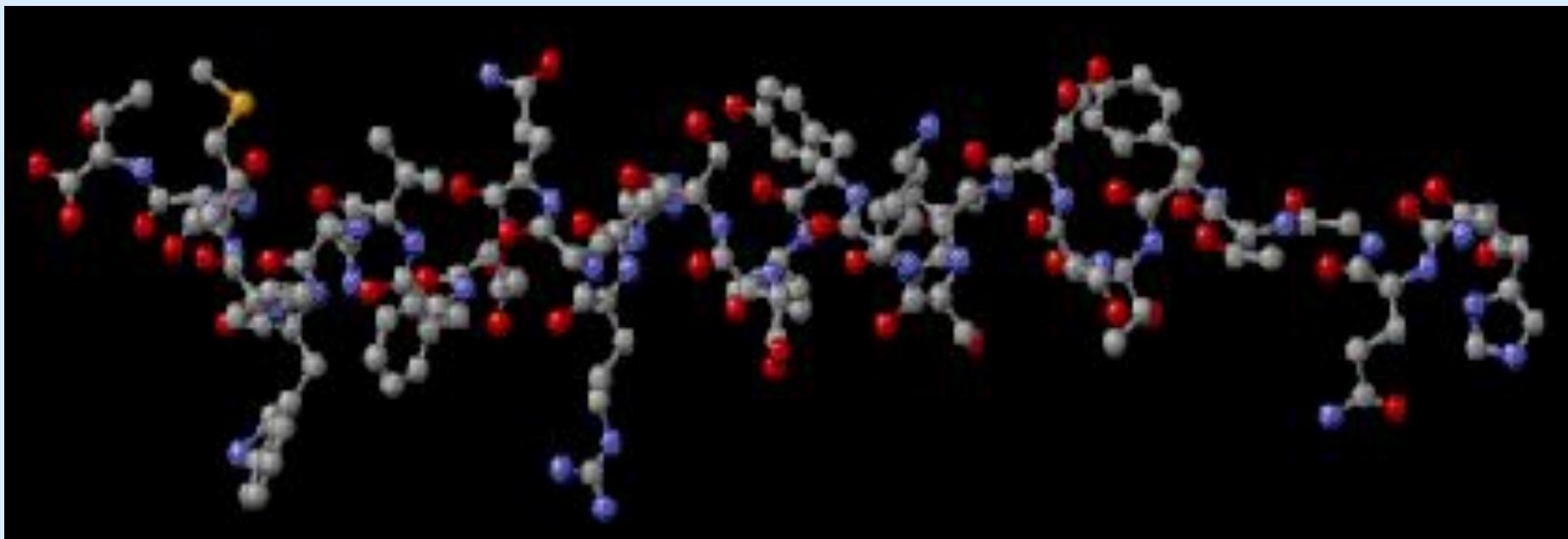
Insulin receptor



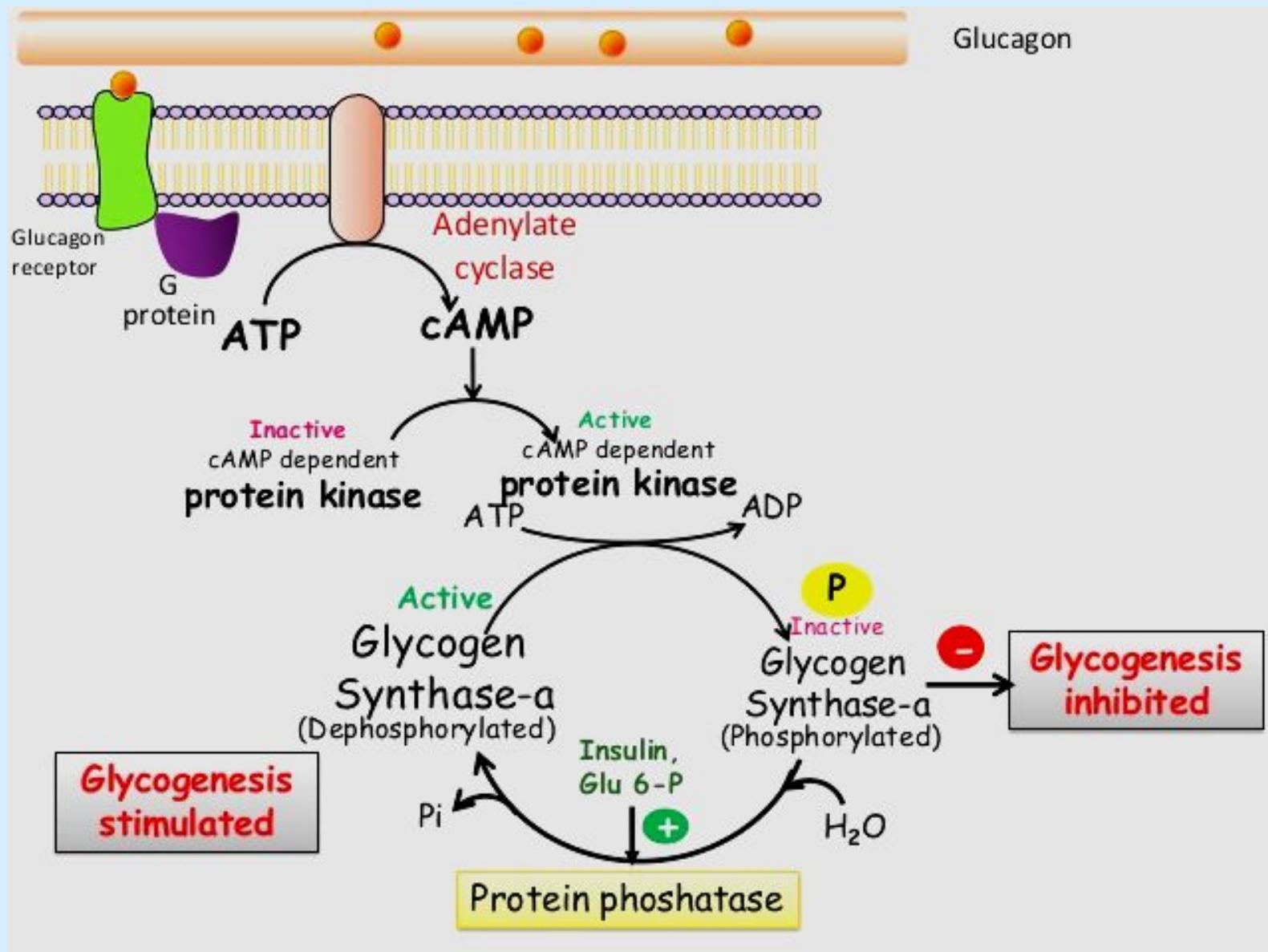
Insulin

The signal for secretion	Target organs	Changes in metabolism in target cells
Increasing the concentration of glucose in the blood	Liver	<ol style="list-style-type: none">1. The acceleration of glycogen synthesis2. The acceleration of protein synthesis3. Inhibition of gluconeogenesis
	Muscles	<ol style="list-style-type: none">1. The acceleration of glycogen synthesis2. The acceleration of protein synthesis3. The acceleration of glucose transport into the cell
	Adipose tissue	<ol style="list-style-type: none">1. The acceleration of fat synthesis from glucose2. The acceleration of glucose

Glucagon



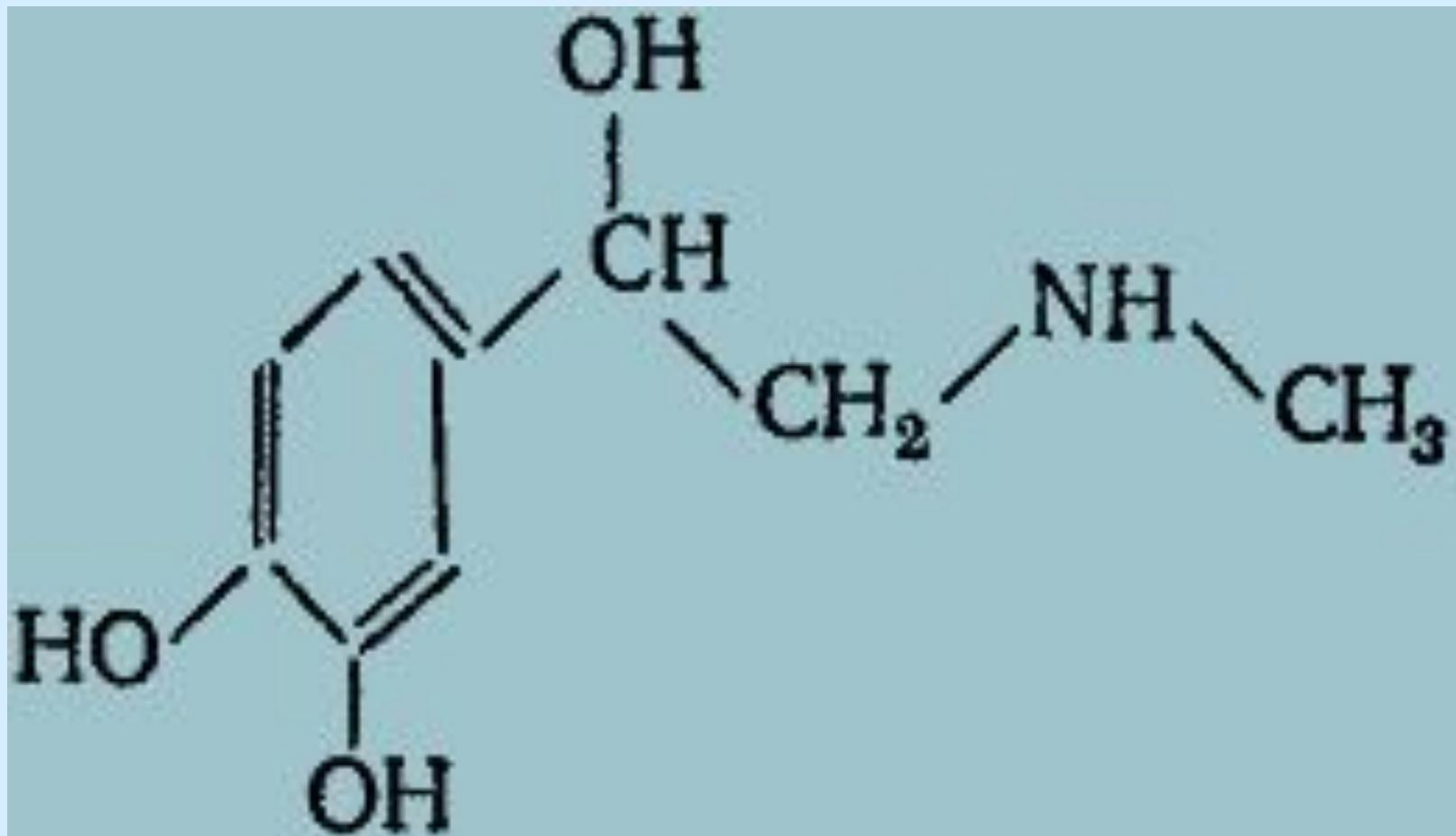
Glucagon receptor



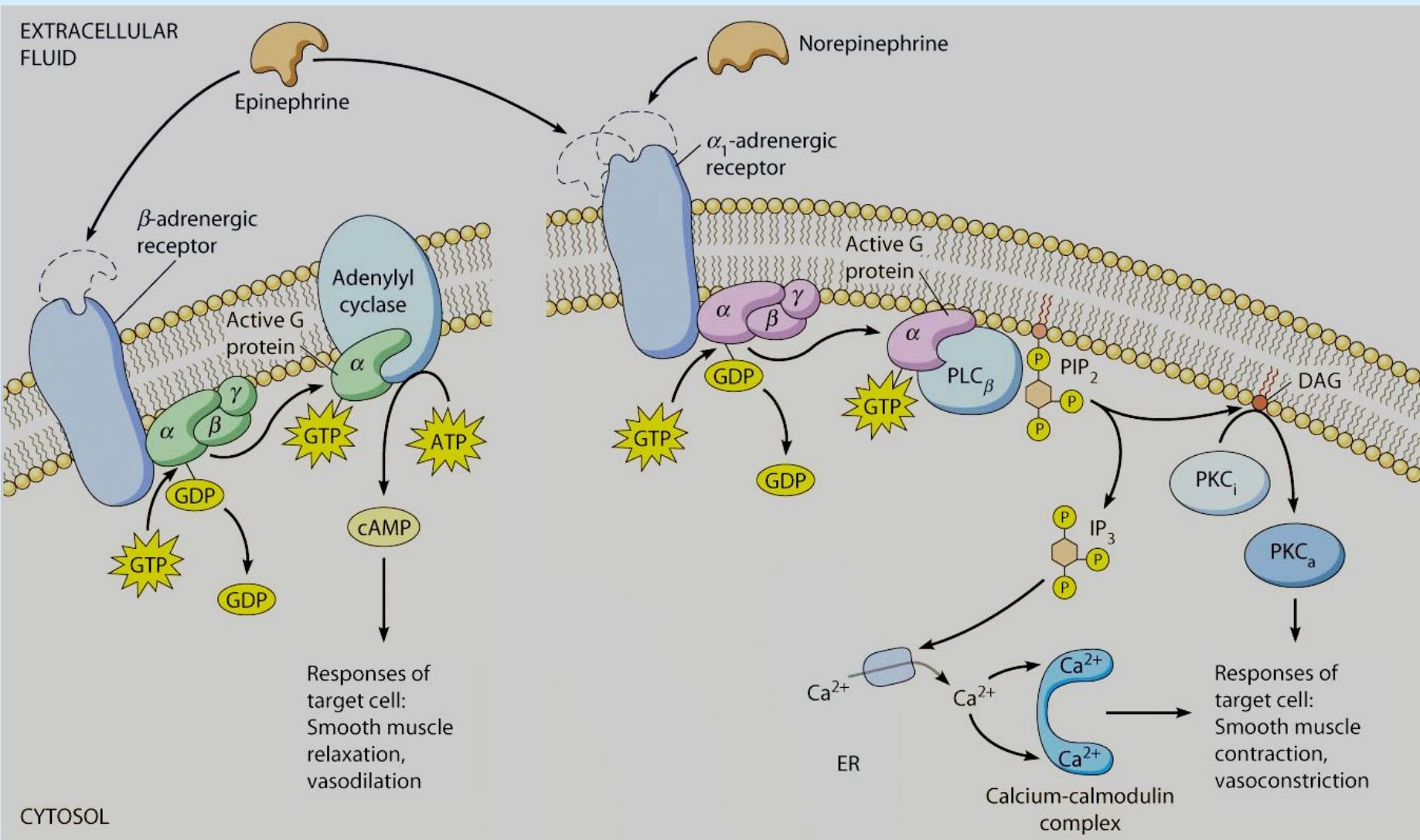
Glucagon

The signal for secretion	Target organs	Changes in metabolism in target cells
Lowering blood glucose levels	Liver	<ol style="list-style-type: none">1. The acceleration of glycogen breakdown2. The acceleration of gluconeogenesis
	Adipose tissue	The acceleration of lipolysis

Adrenaline



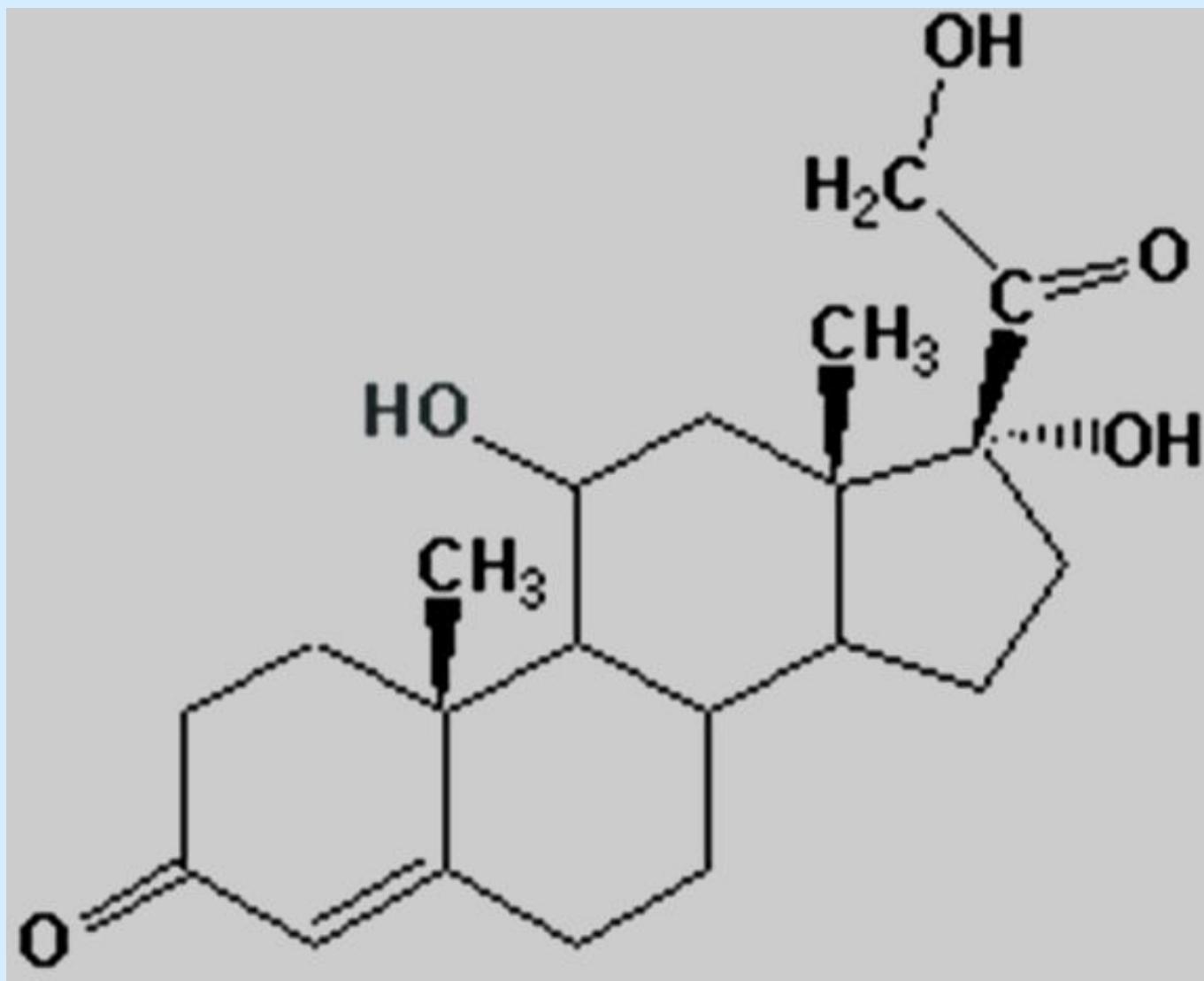
Adrenaline receptors



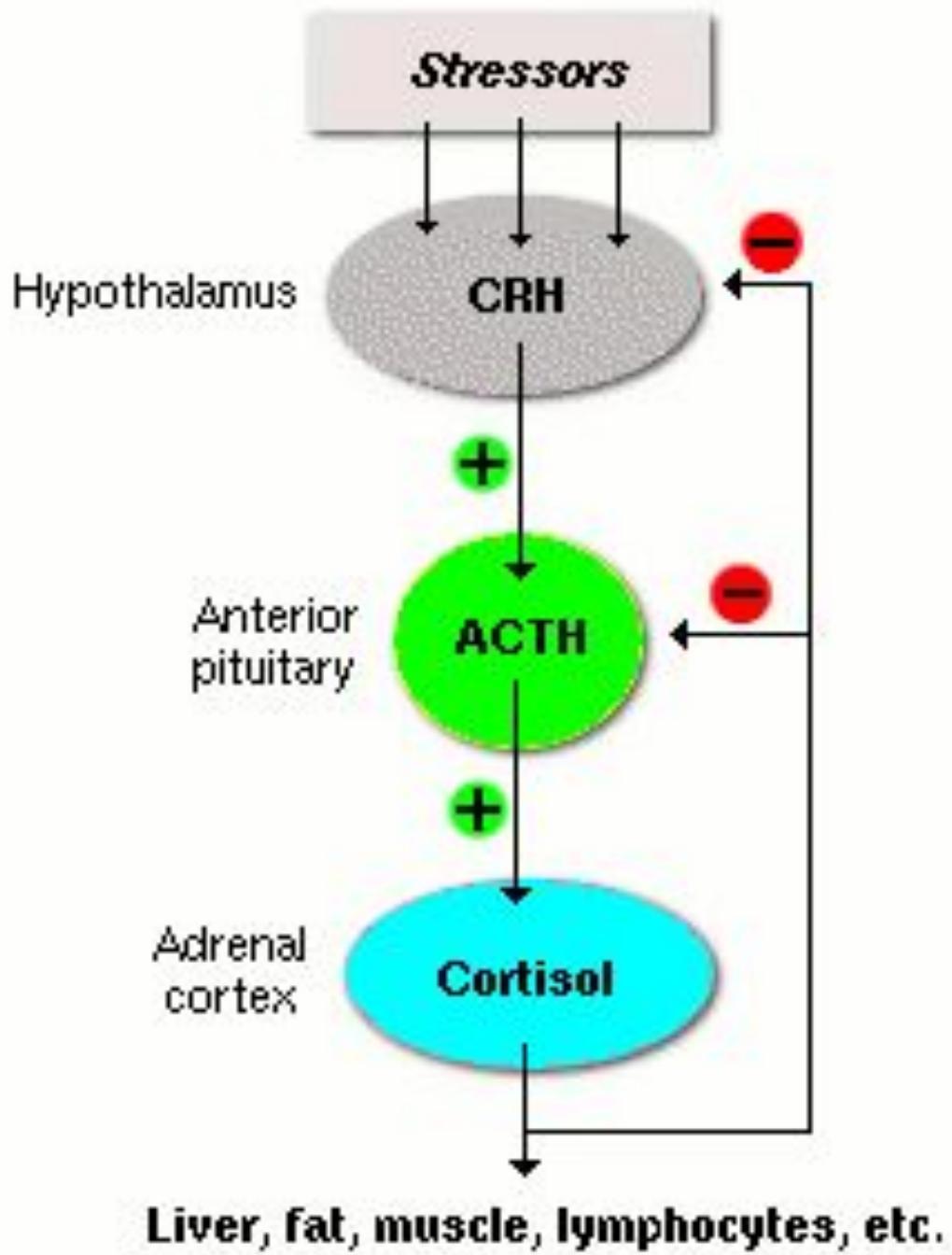
Adrenaline

The signal for secretion	Target organs	Changes in metabolism in target cells
Signal of CNS	Liver	The acceleration of glycogen breakdown
	Muscles	The acceleration of glycogen breakdown
	Adipose tissue	The acceleration of lipolysis

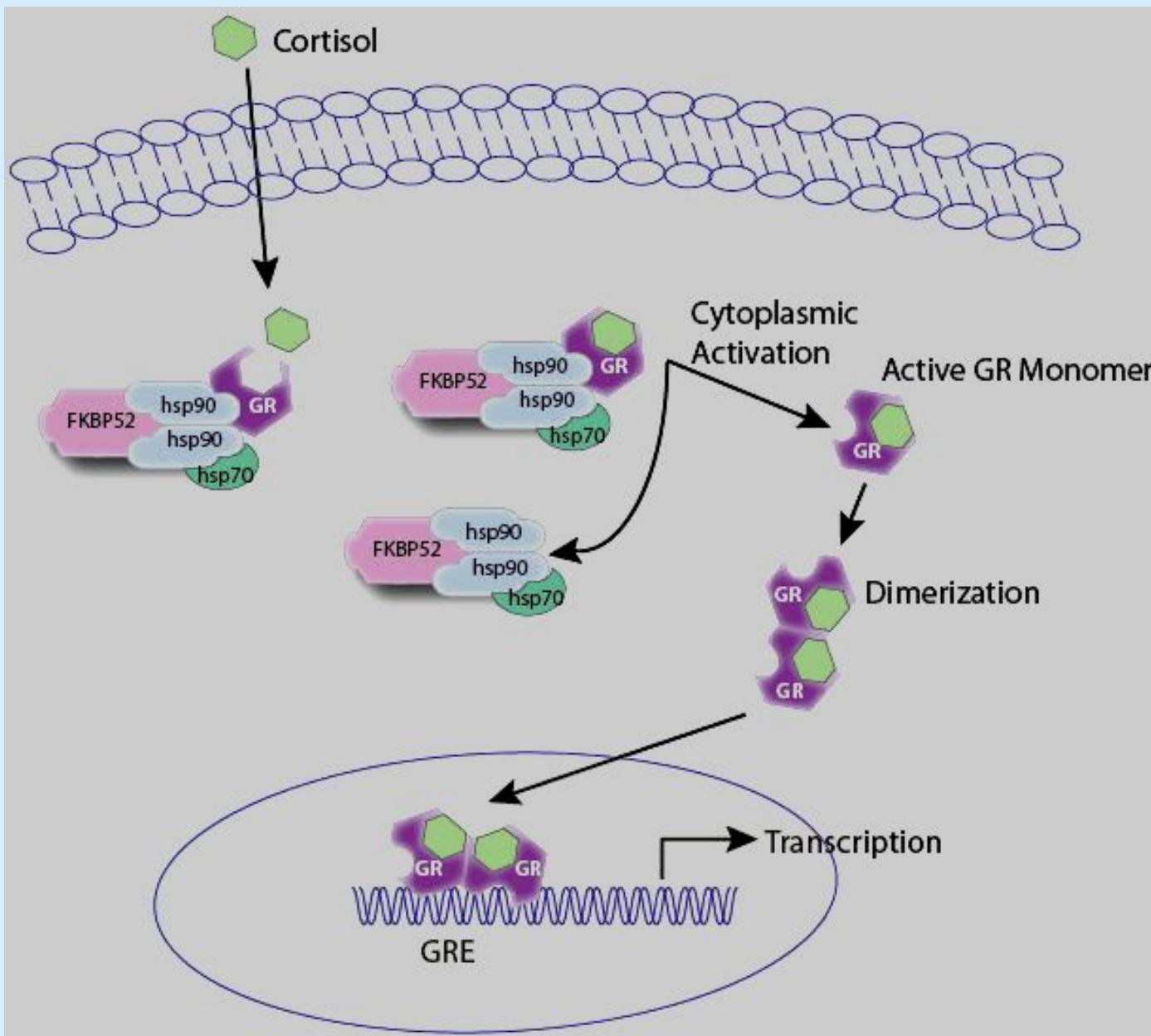
Cortisol



The regulation of cortisol synthesis



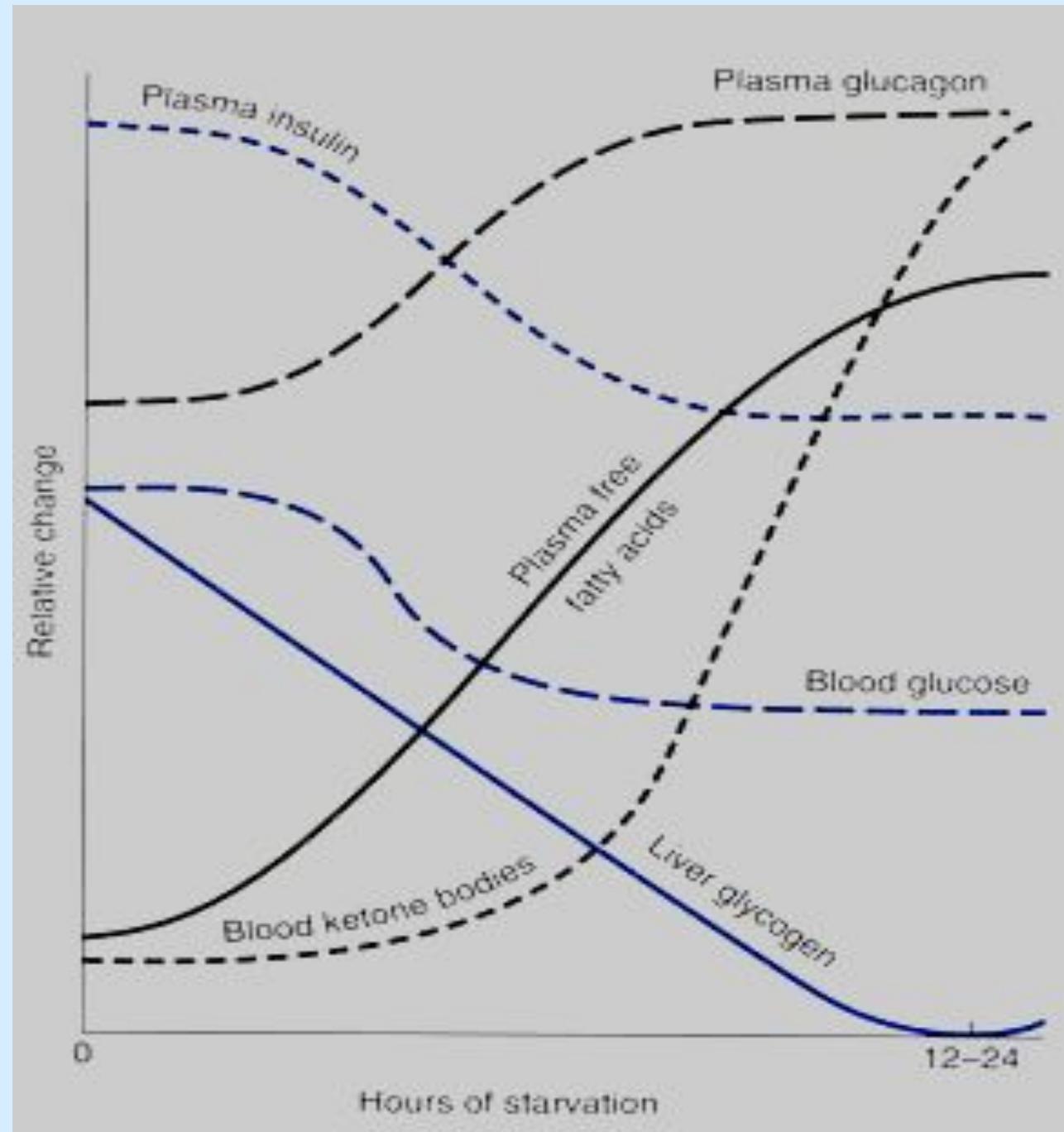
Cortisol receptor



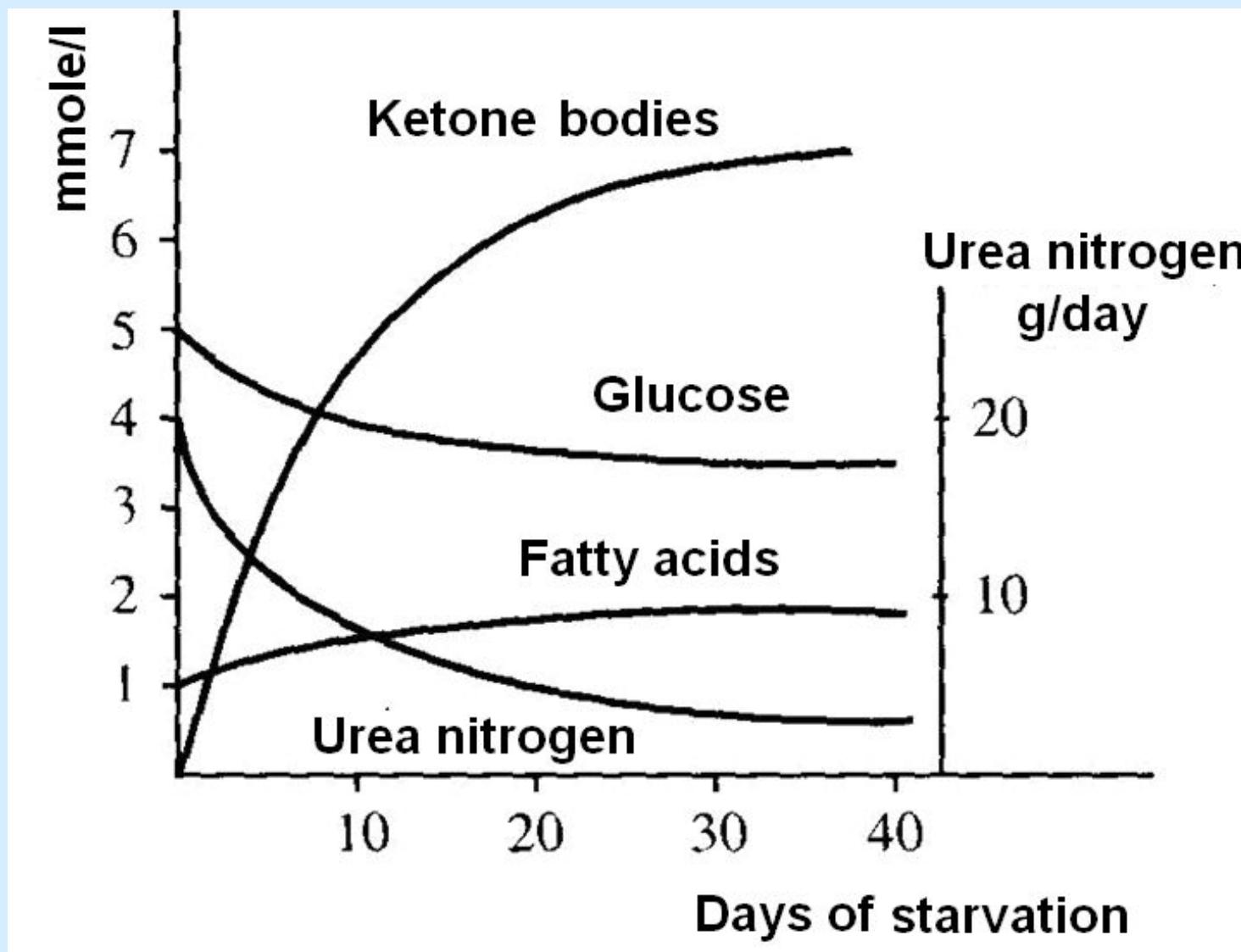
Cortisol

The signal for secretion	Target organs	Changes in metabolism in target cells
<p>The concentration of glucose in the blood mediated by corticotropin</p>	Liver	<ol style="list-style-type: none">1. Acceleration of gluconeogenesis2. Induction of synthesis of the enzymes of gluconeogenesis and amino acids catabolism
	Muscles	<ol style="list-style-type: none">1. The acceleration of the amino acids catabolism2. Reducing the rate of the amino acids transport

Changes in metabolism in starvation



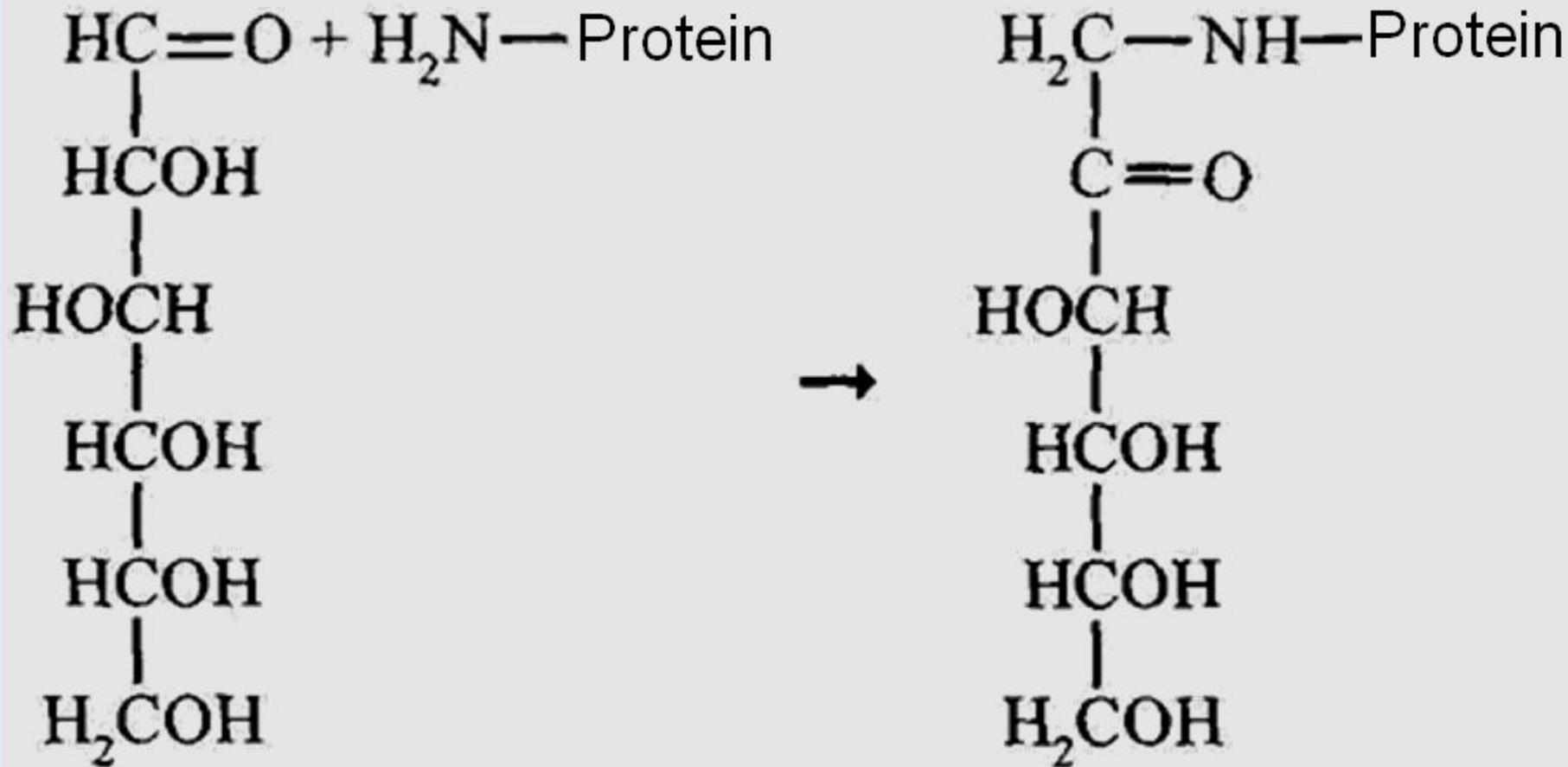
Changes in metabolism in starvation



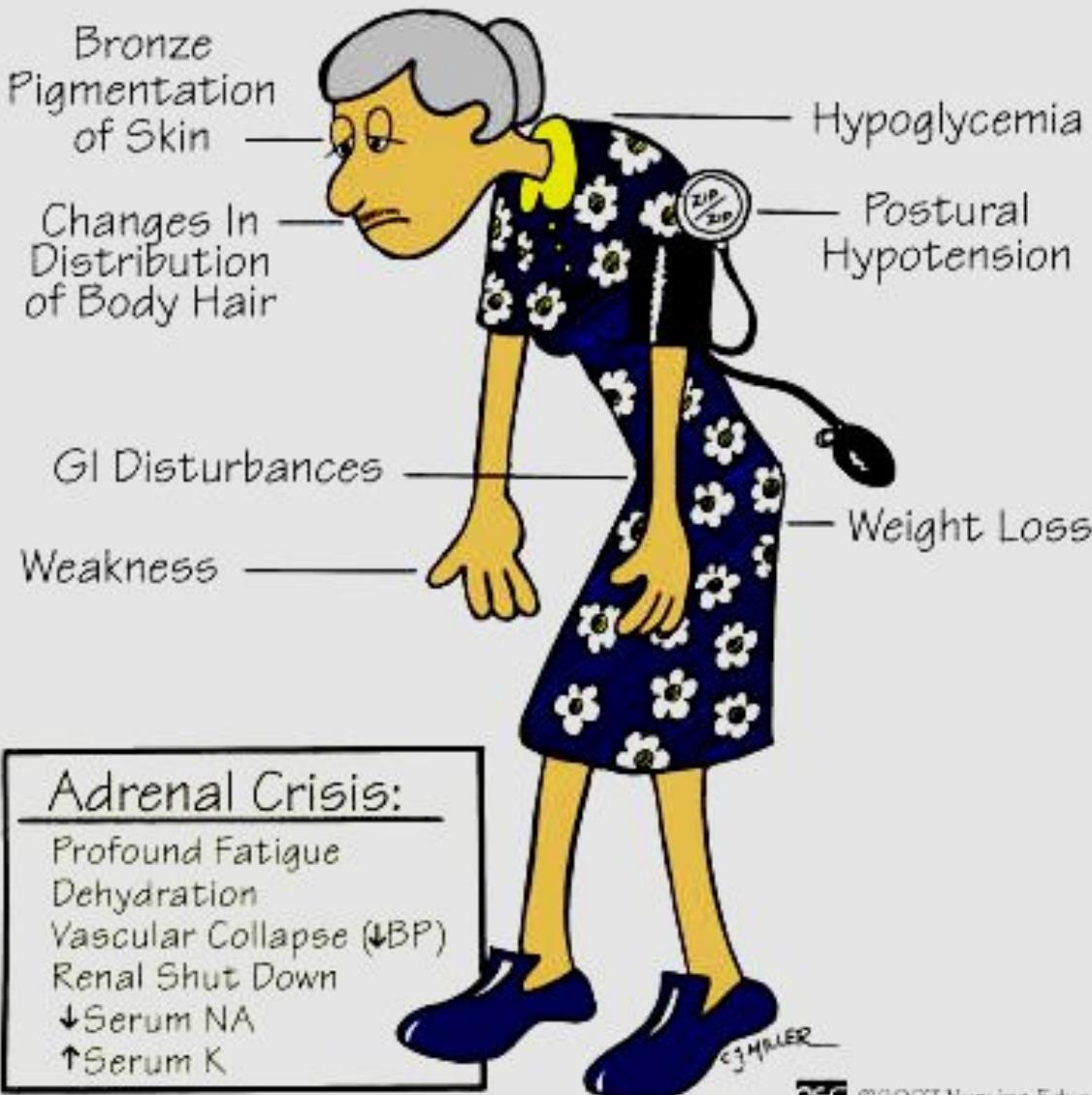
The main manifestations of diabetes

- Decreased synthesis and deposition of glycogen and fat
- Hyperglycemia
- Hyperlipoproteinemia
- Ketonemia
- Azotemia and azoturia
- Polyuria and polydipsia

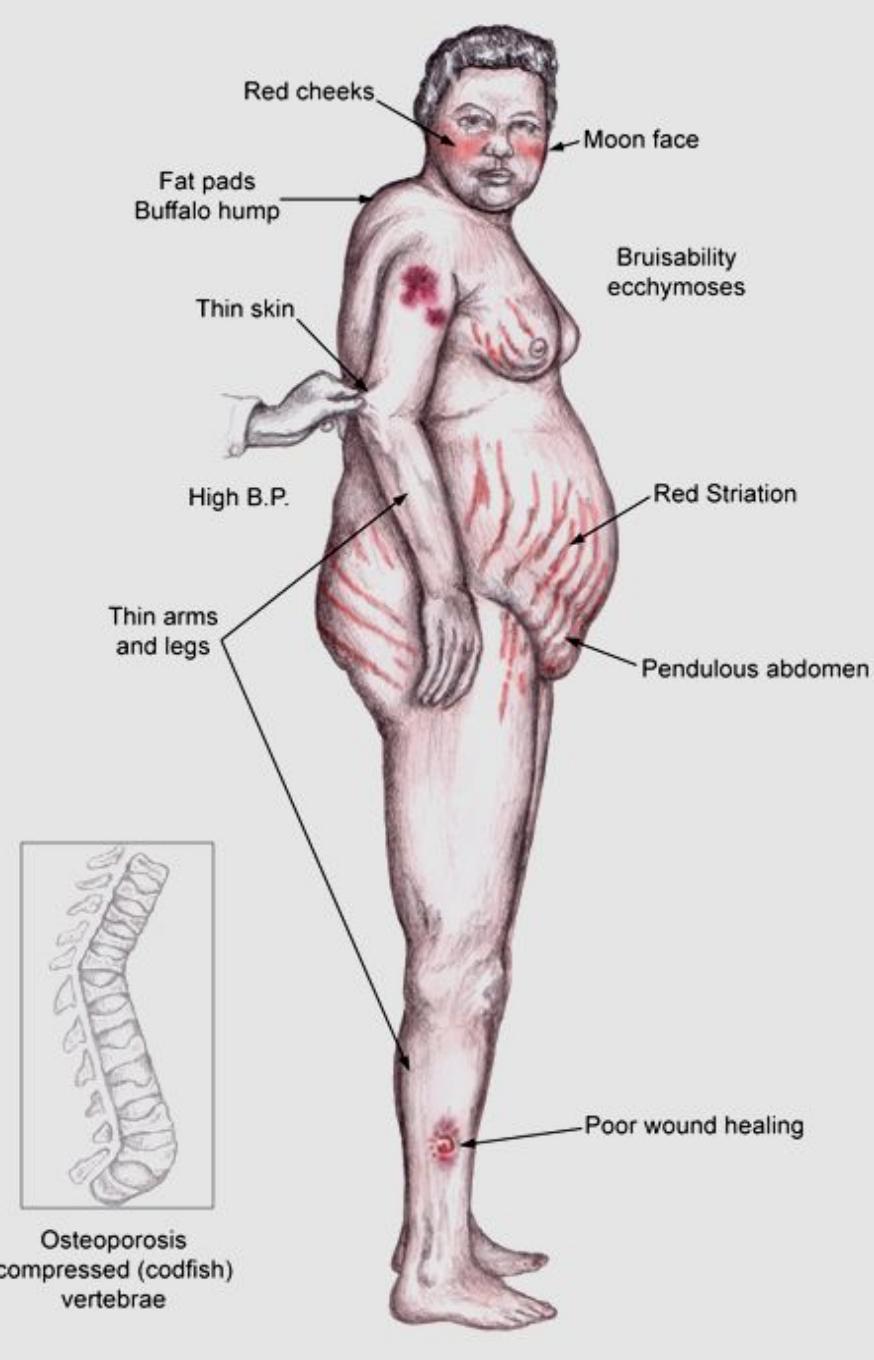
Protein glycosylation



ADDISON'S DISEASE

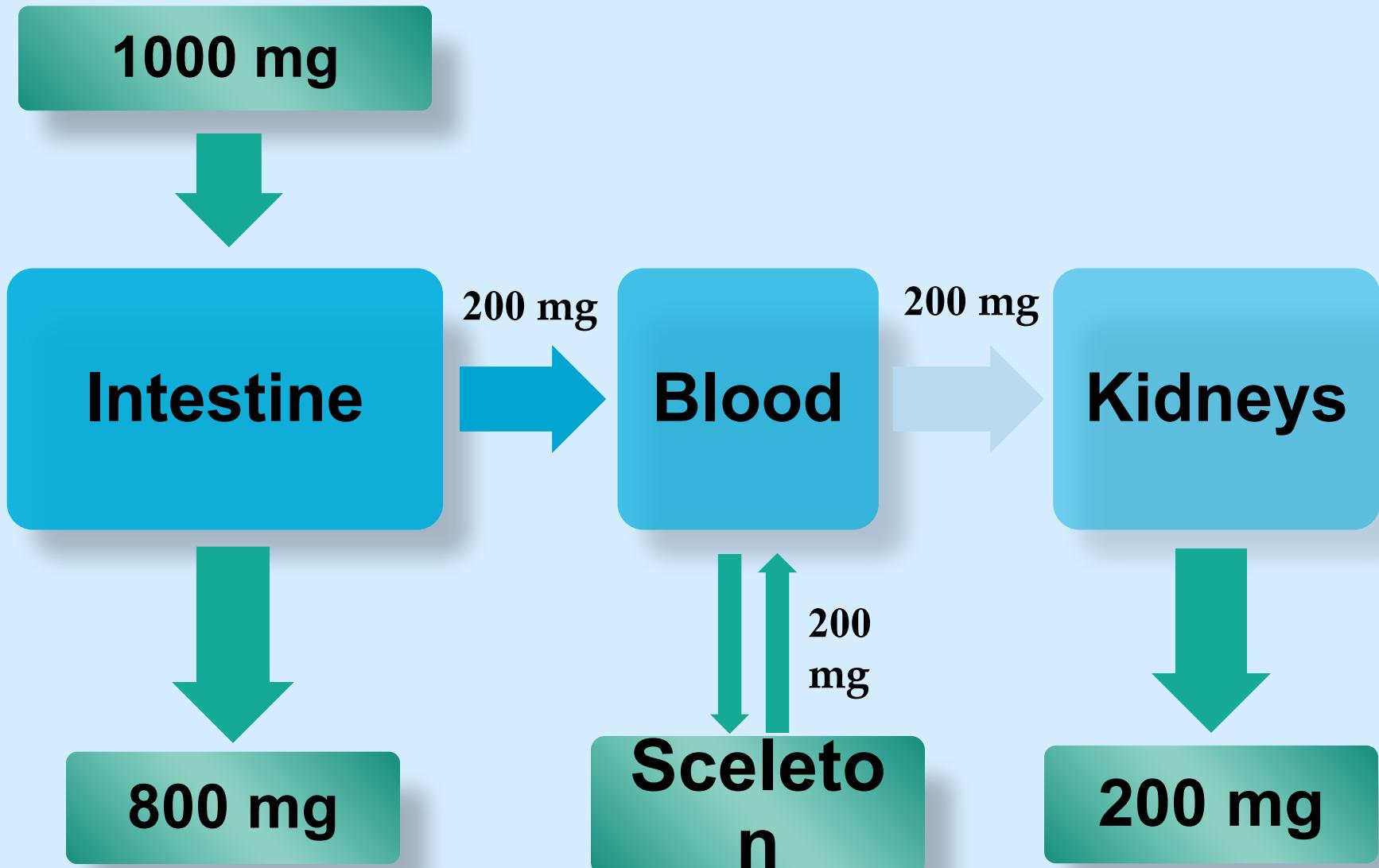


Cushing's disease

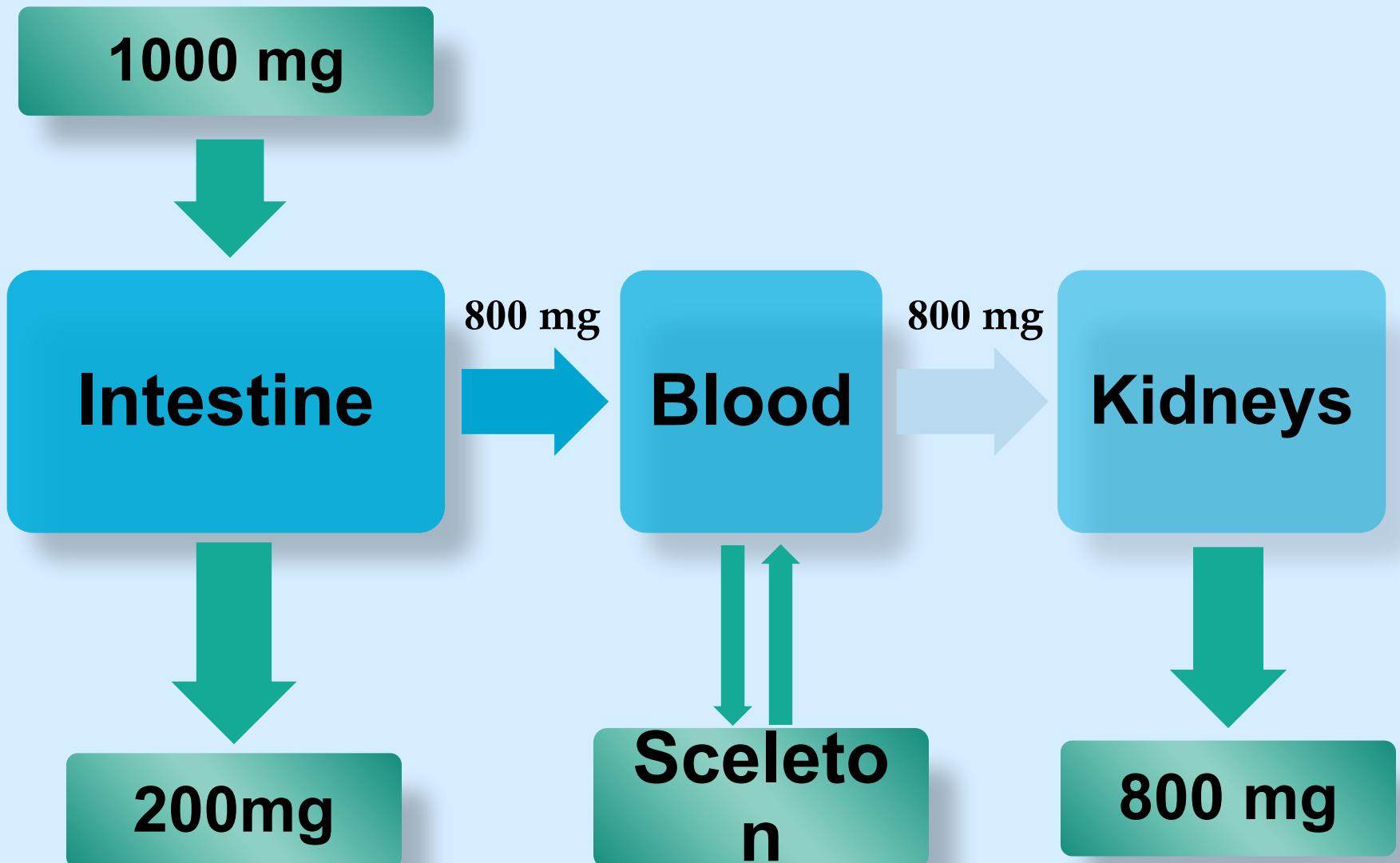


REGULATION OF PHOSPHORUS AND CALCIUM METABOLISM

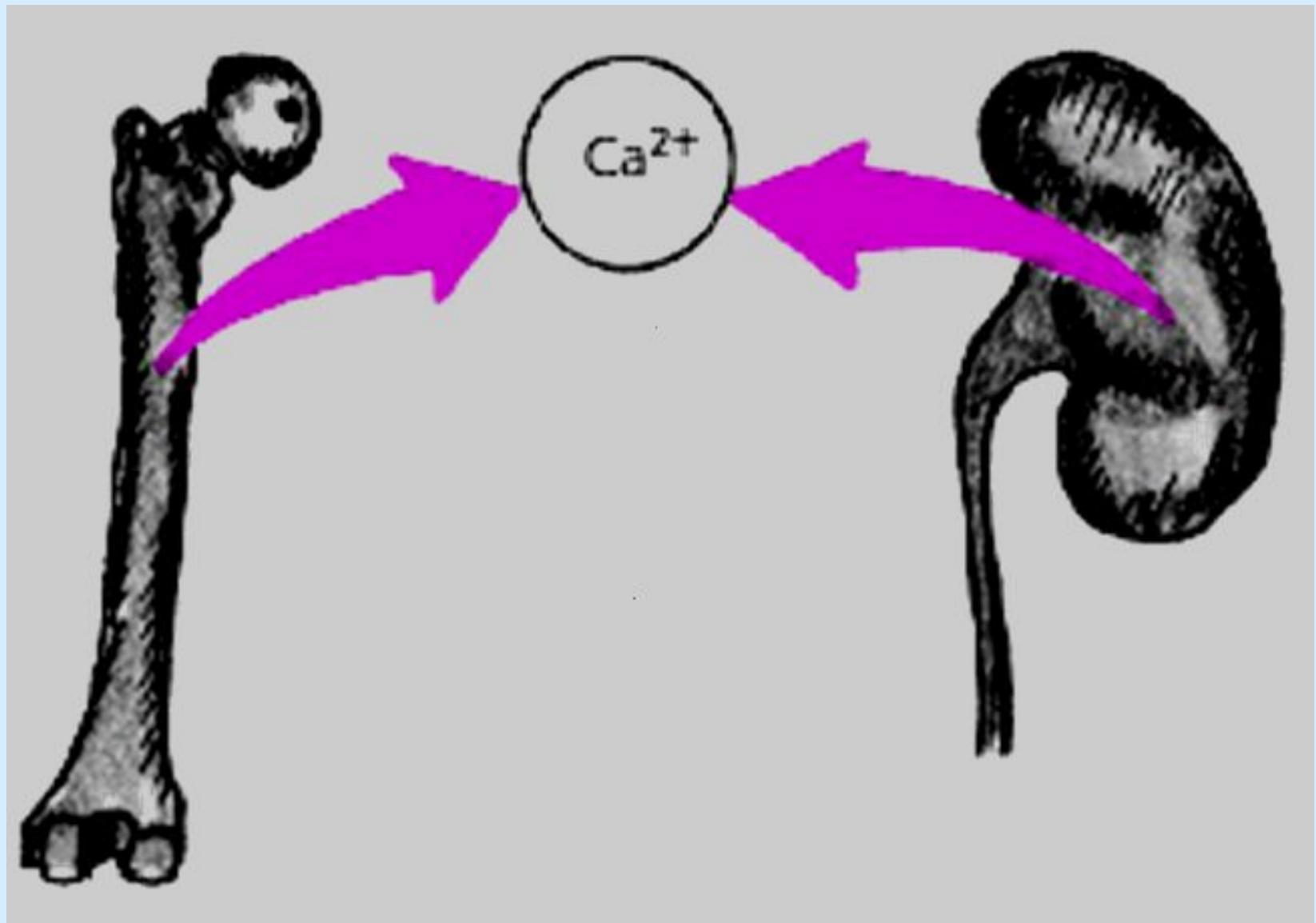
Calcium metabolism



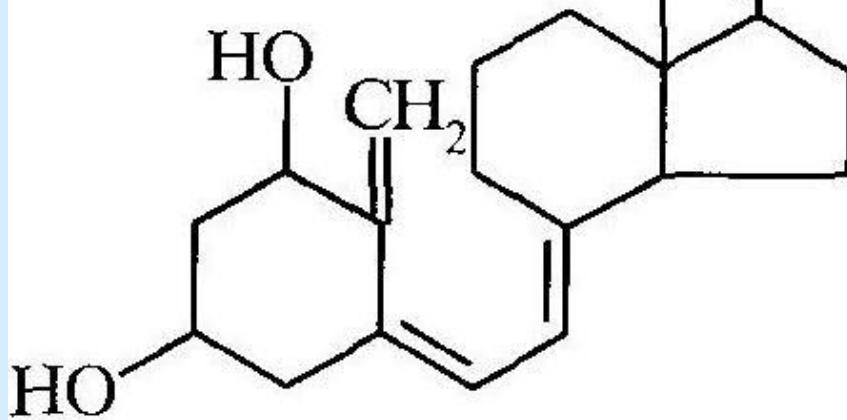
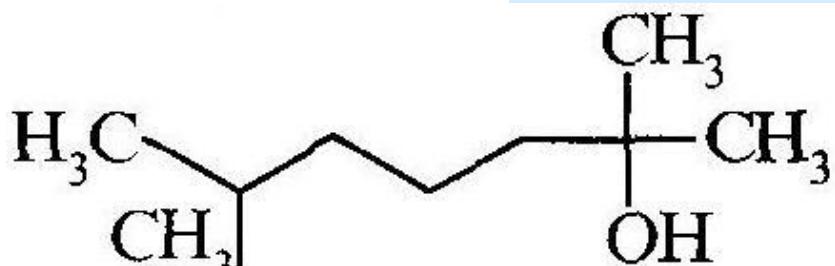
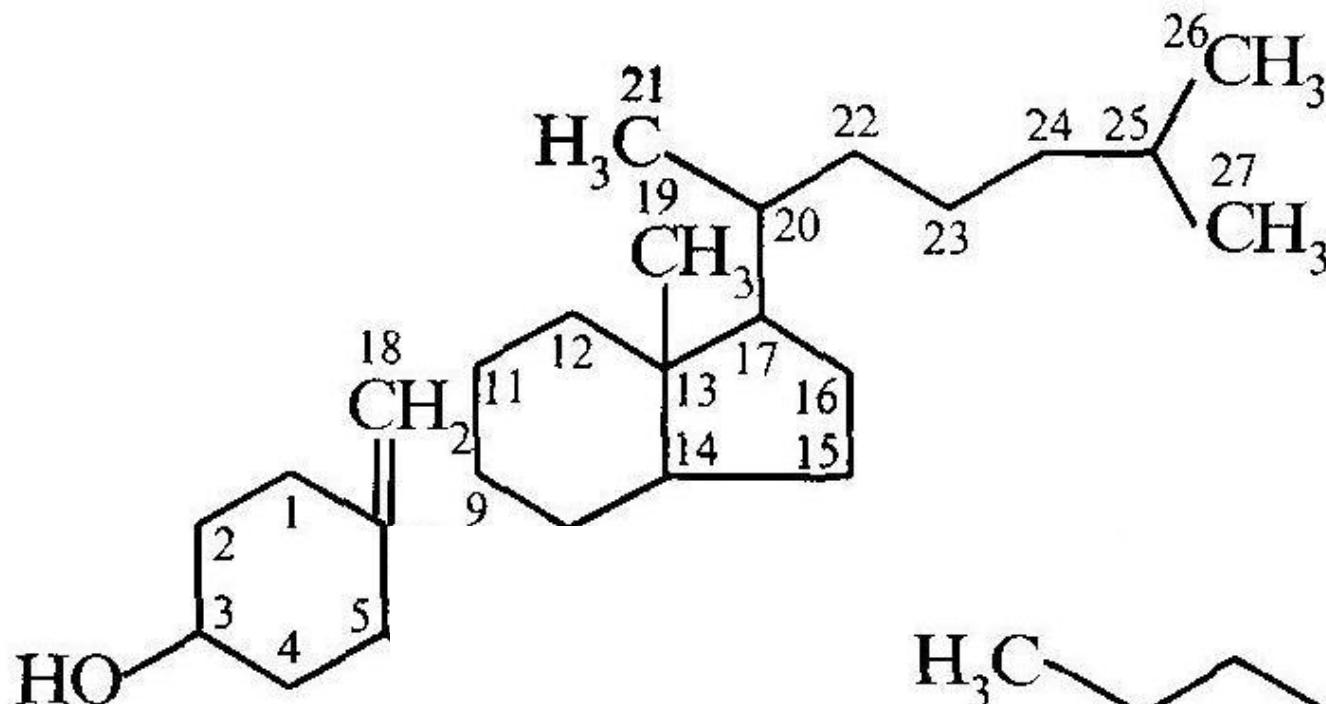
Phosphorus metabolism



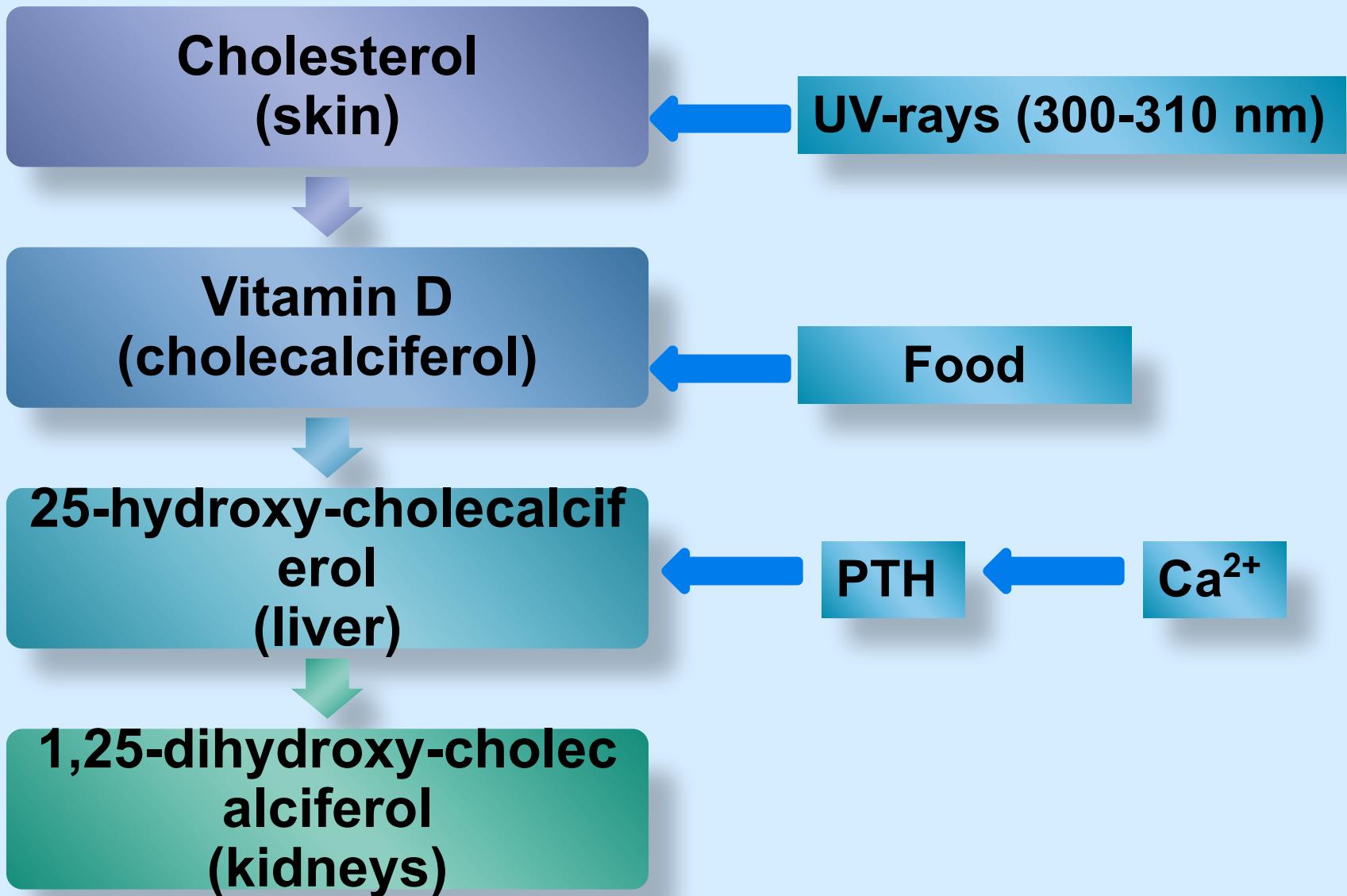
Parathyroid hormone



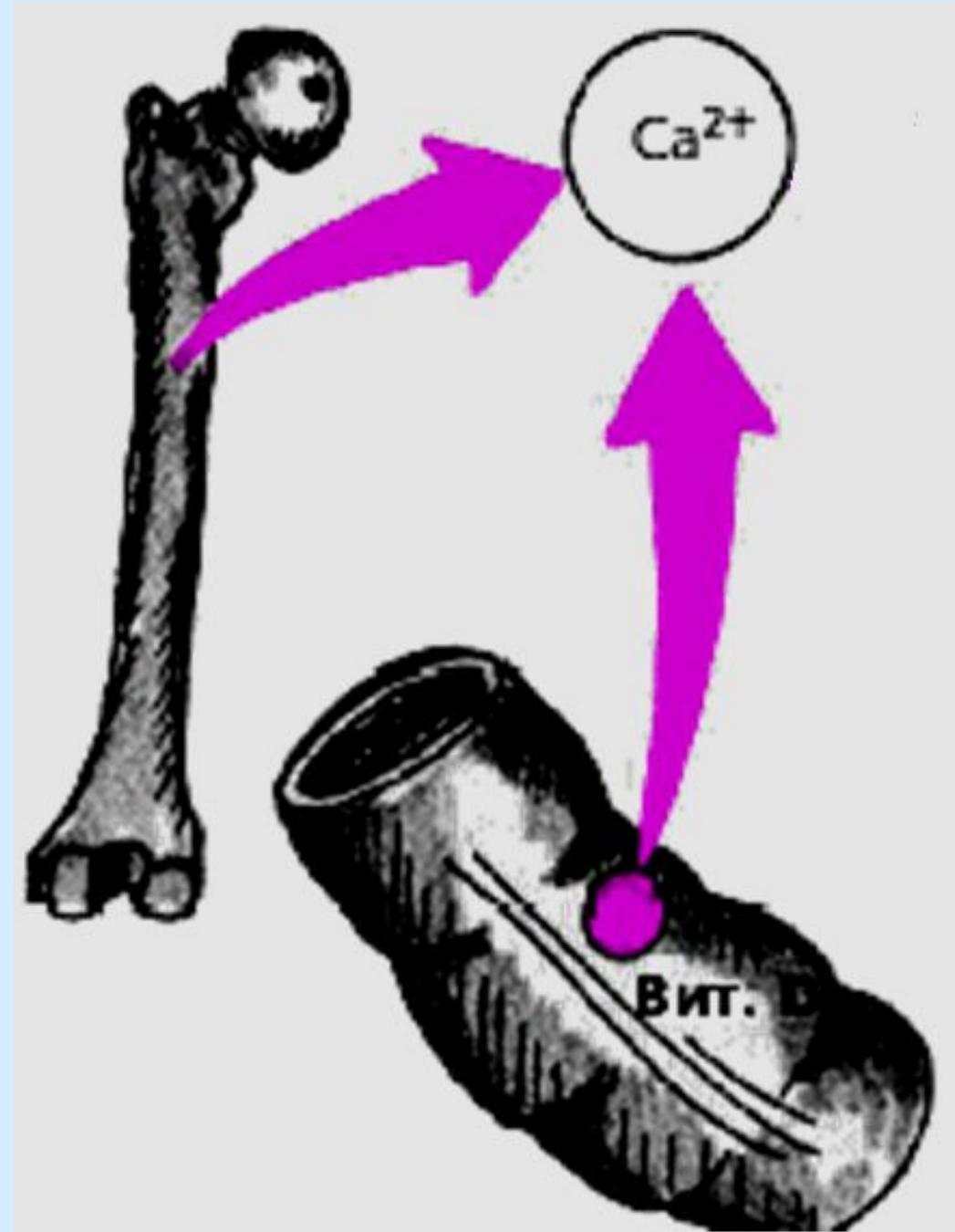
Vitamin



Vitamin D₃ activation



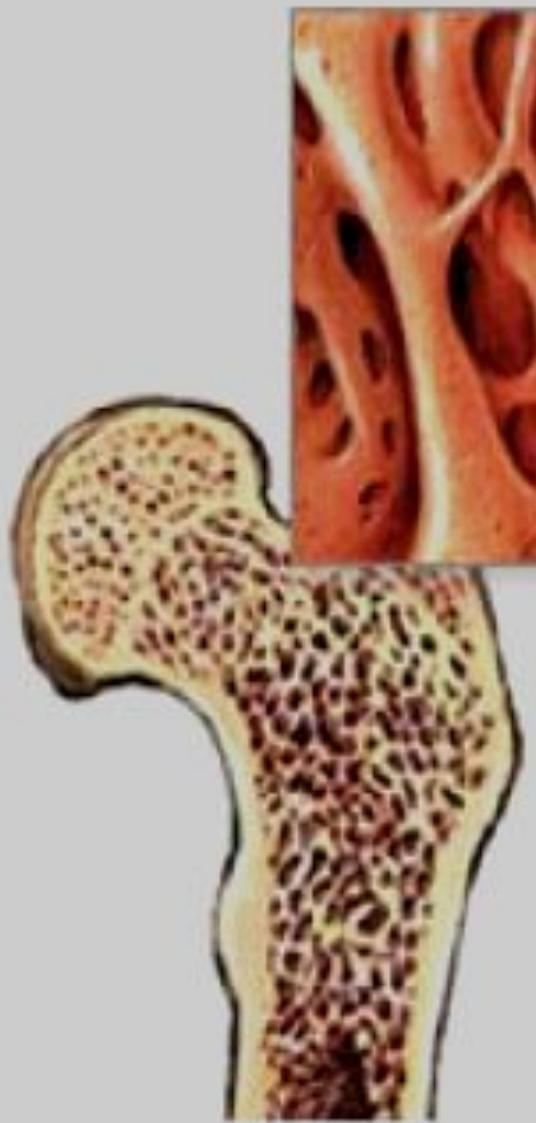
Calcitriol



Rickets



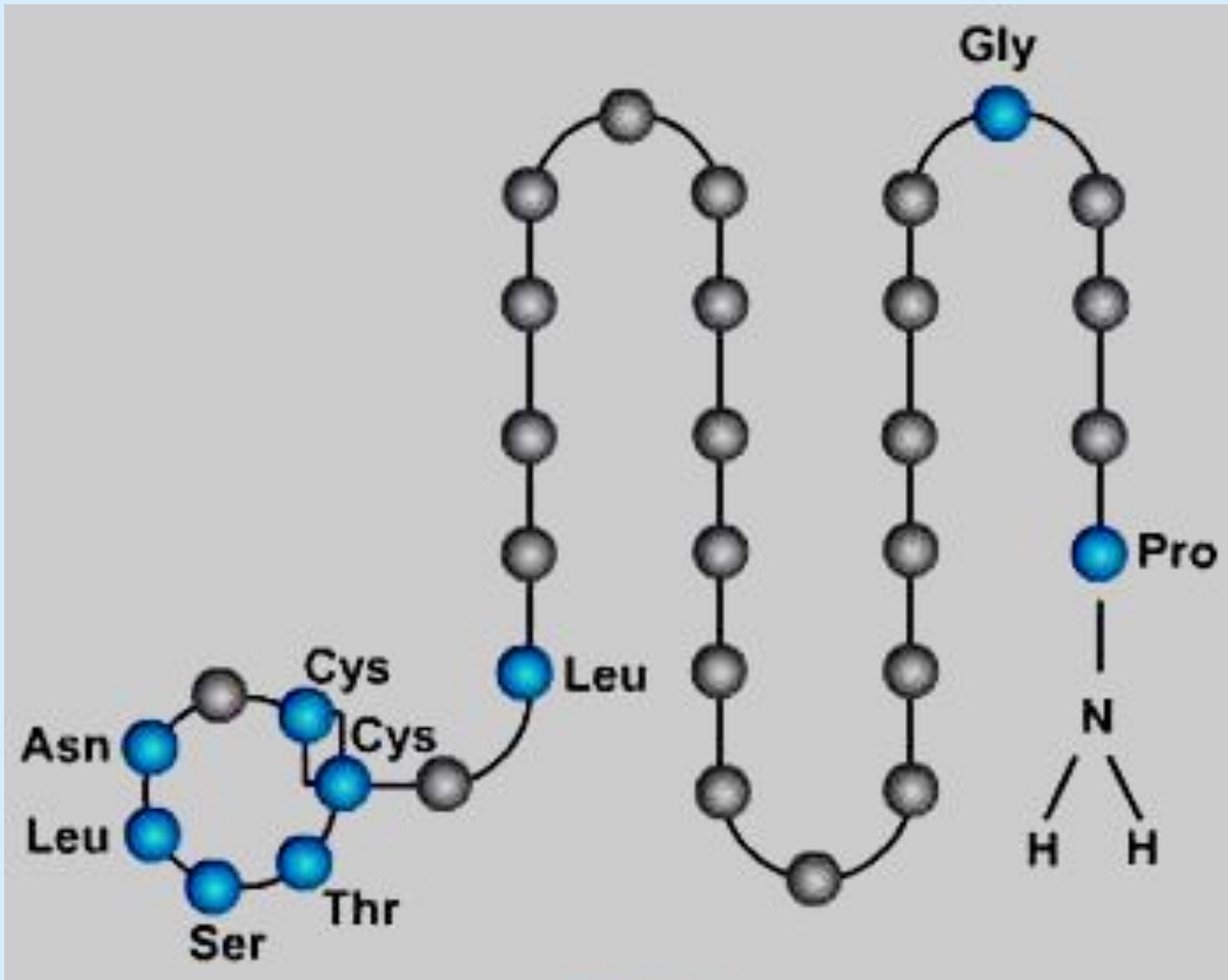
Normal



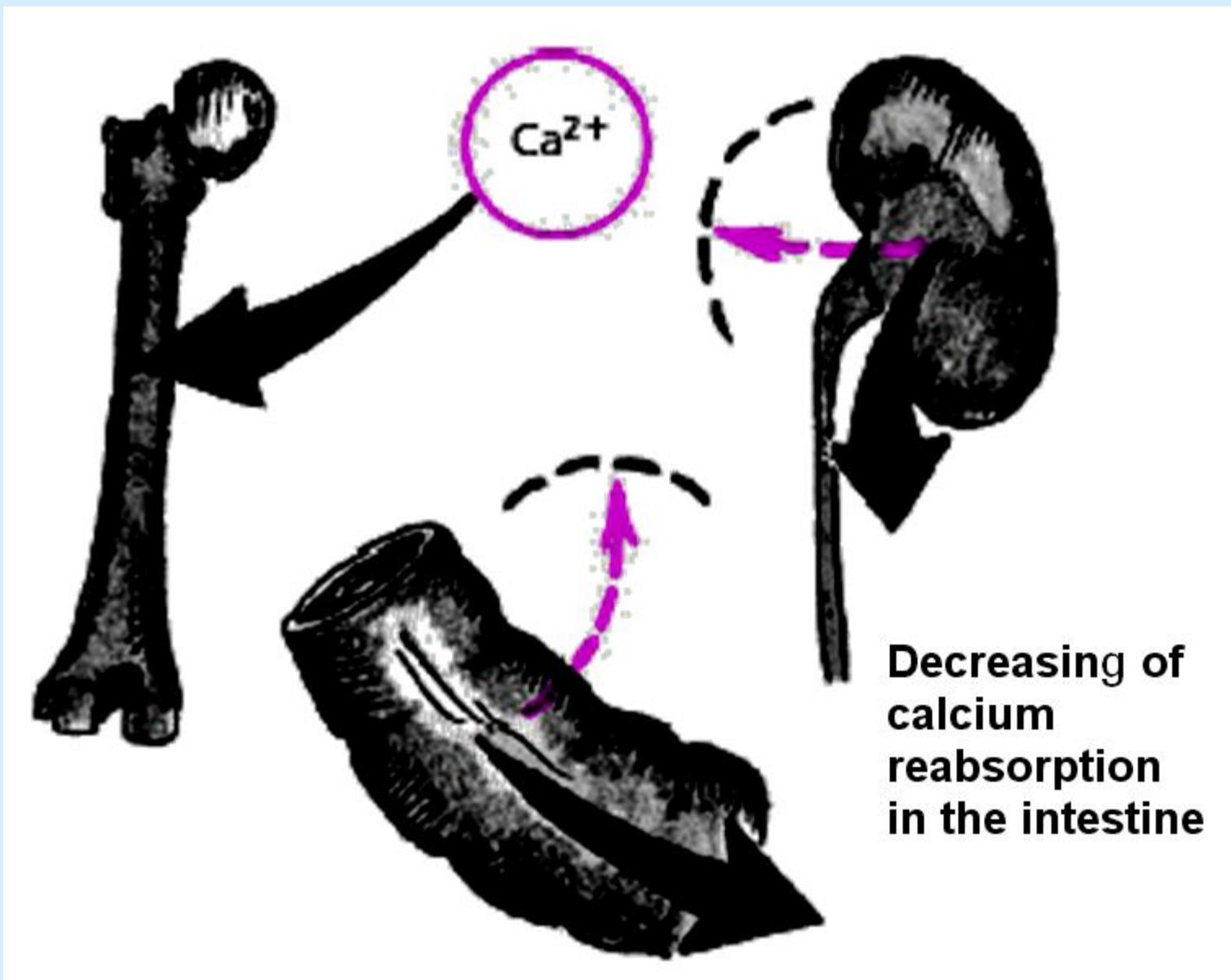
Osteoporosis



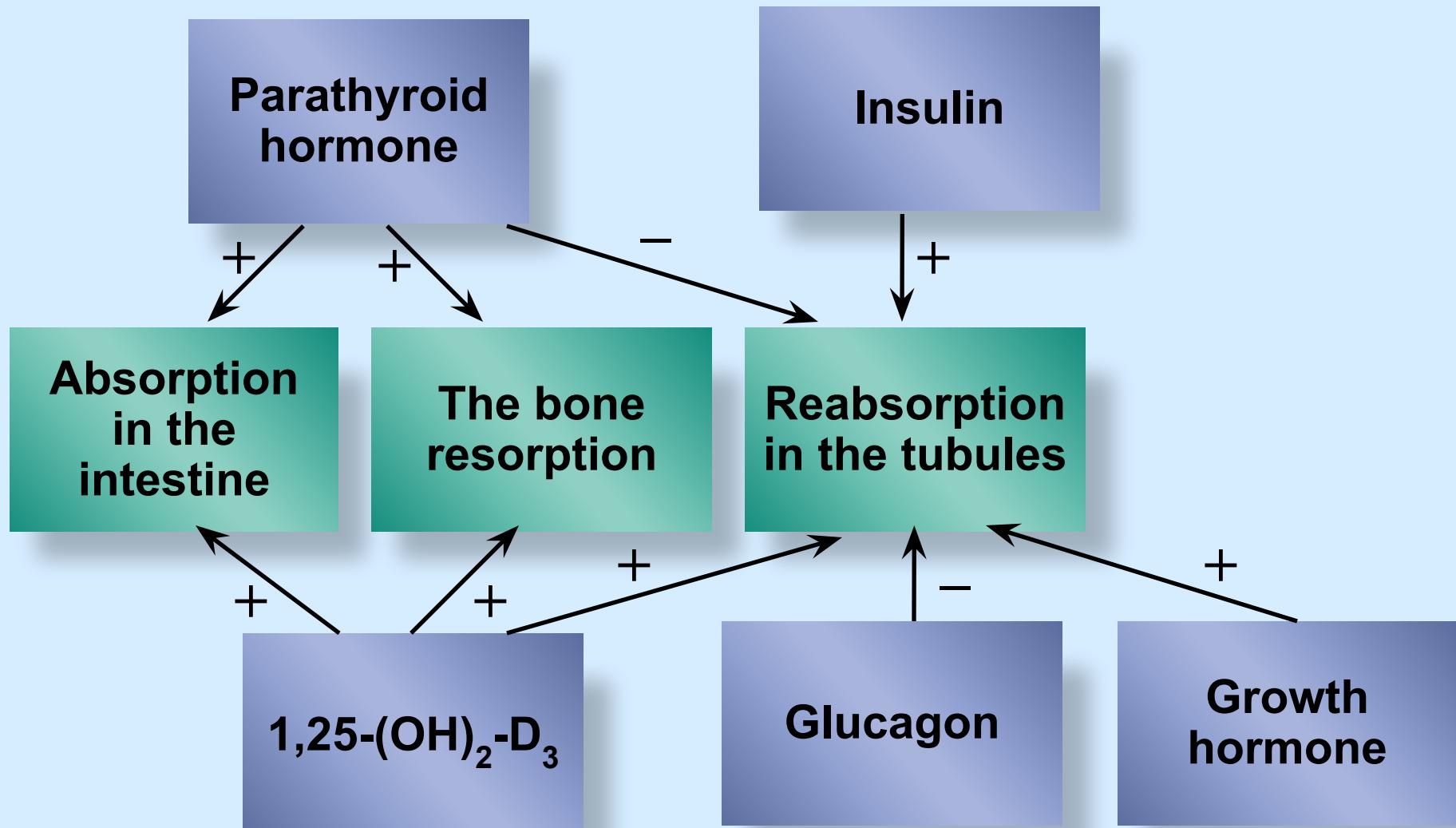
Calcitonin



Calcitonin



Hormonal regulation of phosphates transport

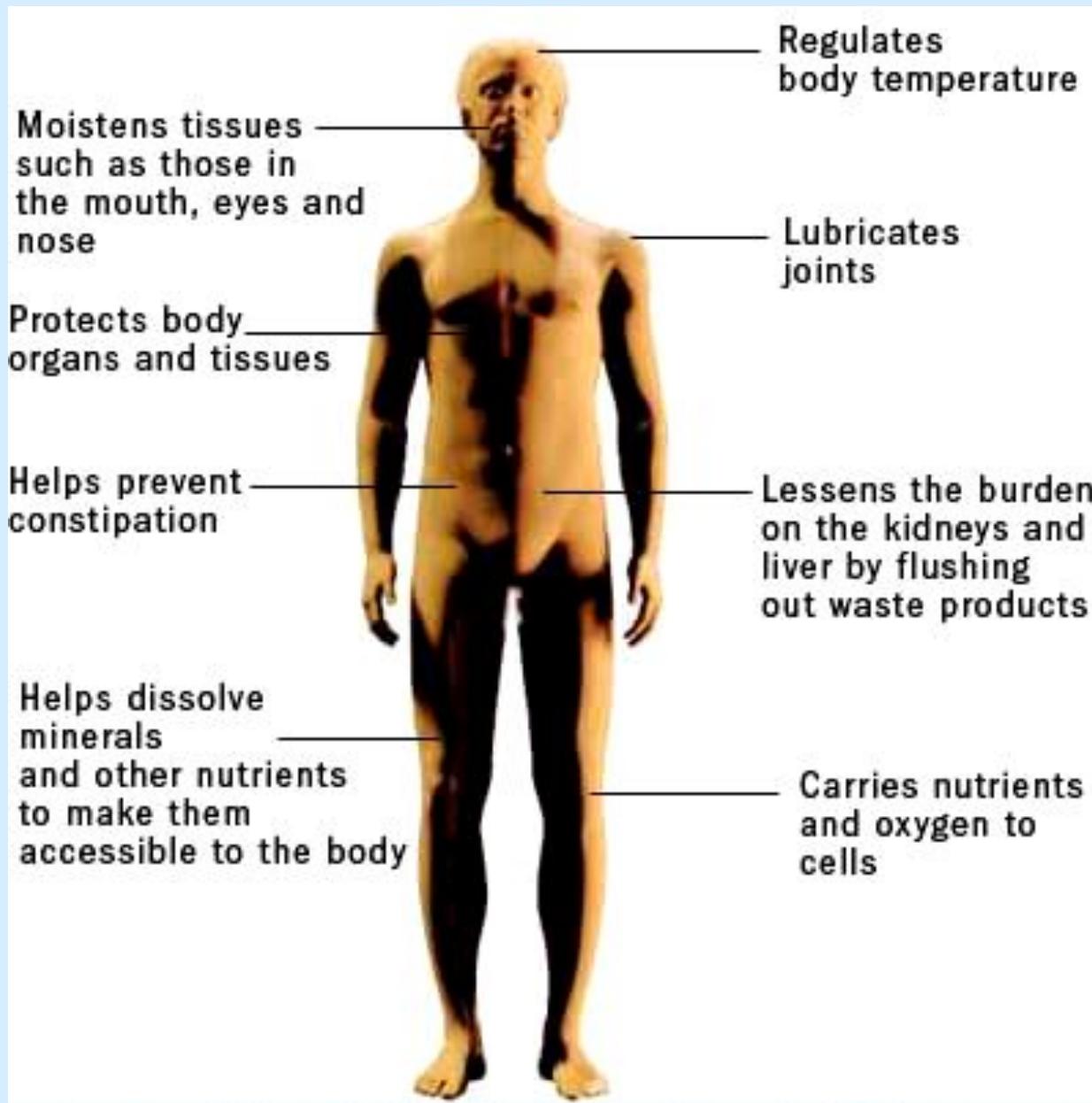


The influence of biologically active substances on the phosphates excretion

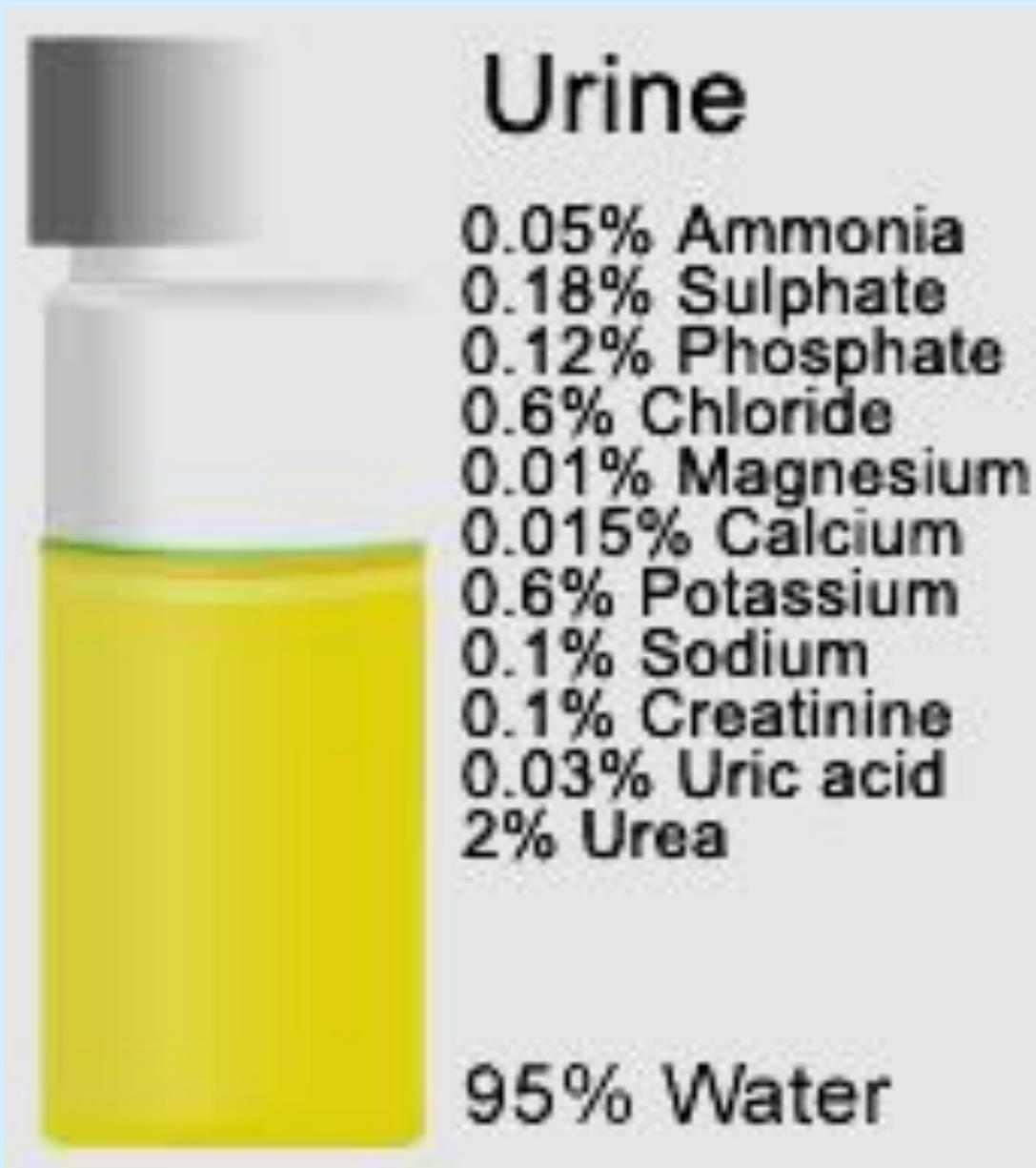
Substance	Phosphates excretion
Glucagon	↓
Glucocorticoids	↓
Thyroxine	↓
Growth hormone	↓
Insulin	↓
Serotonin	↓
Catecholamines	↓

**WATER AND
SALT
METABOLISM
RENAL
BIOCHEMISTRY**

Water functions



Urinalysis





Specific Gravity Densidad Densidade

60 sec/seg.	1.000	1.005	1.010	1.015	1.020	1.025	1.030
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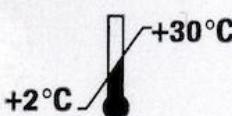
pH

60 sec/seg.	5.0	6.0	6.5	7.0	8.0	9.0
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Leukocytes Leucocitos

60–120 sec/seg.

Blood/Hemoglobin/ Sang(re)(ue)/Hemoglobina 60 sec/seg.	neg.	ca. 15	ca. 75	ca. 125	ca. 500	Leuko/ μ L	ca. 50	ca. 250
	neg.	ca. 5-10	ca. 10	ca. 25	ca. 25	Ery/ μ L	ca. 50	ca. 250



2011-02

23054941



Nitrite/Nitrito/Nitritos 60 sec/seg.

	neg.	+	++
--	------	---	----

Ketones/ C.Cetónicos

60 sec/seg.

	neg.	5 (0.5)	15 (1.5)	50 (5)	150 (15)
--	------	---------	----------	--------	----------

mg/dL (mmol/L)

Bilirubin/Bilirrubina/ 60 sec/seg.

	neg.	+	++	+++
--	------	---	----	-----

Urobilinogen(o)/ Urobilinogênio 60 sec/seg.

	normal	1 (17)	4 (70)	8 (140)	12 (200)
--	--------	--------	--------	---------	----------

mg/dL (μ mol/L)

Protein/Proteinas/ Proteínas 60 sec/seg.

	neg.	15 (0.15)	30 (0.3)	100 (1)	300 (3)
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mg/dL (g/L)

Glucose/Glucosa/ Glicose 60 sec/seg.

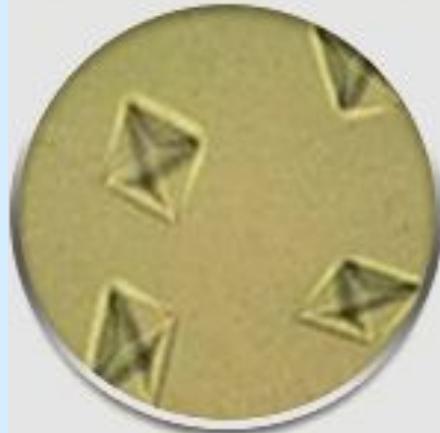
	normal	100 (5.5)	300 (17)	1000 (55)	mg/dL (mmol/L)
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Hematuria



Hemoglobinuria



Calcium Oxalate
Crystals



Uric Acid
Crystals

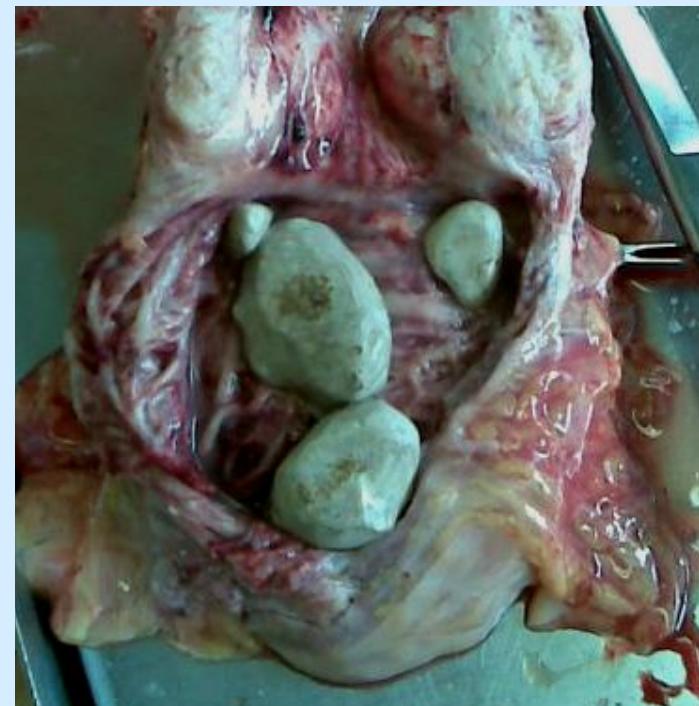


Struvite
Crystals

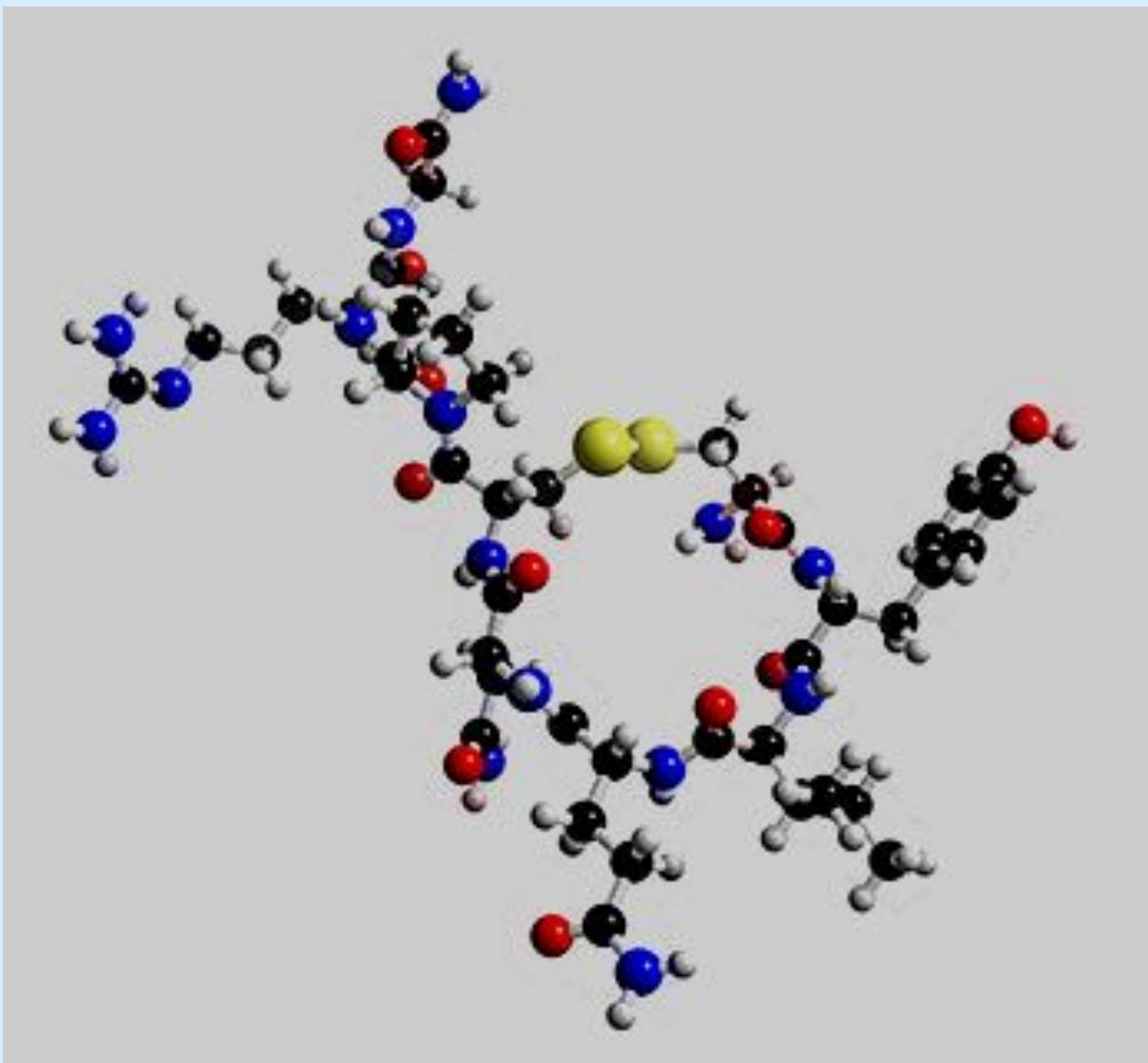


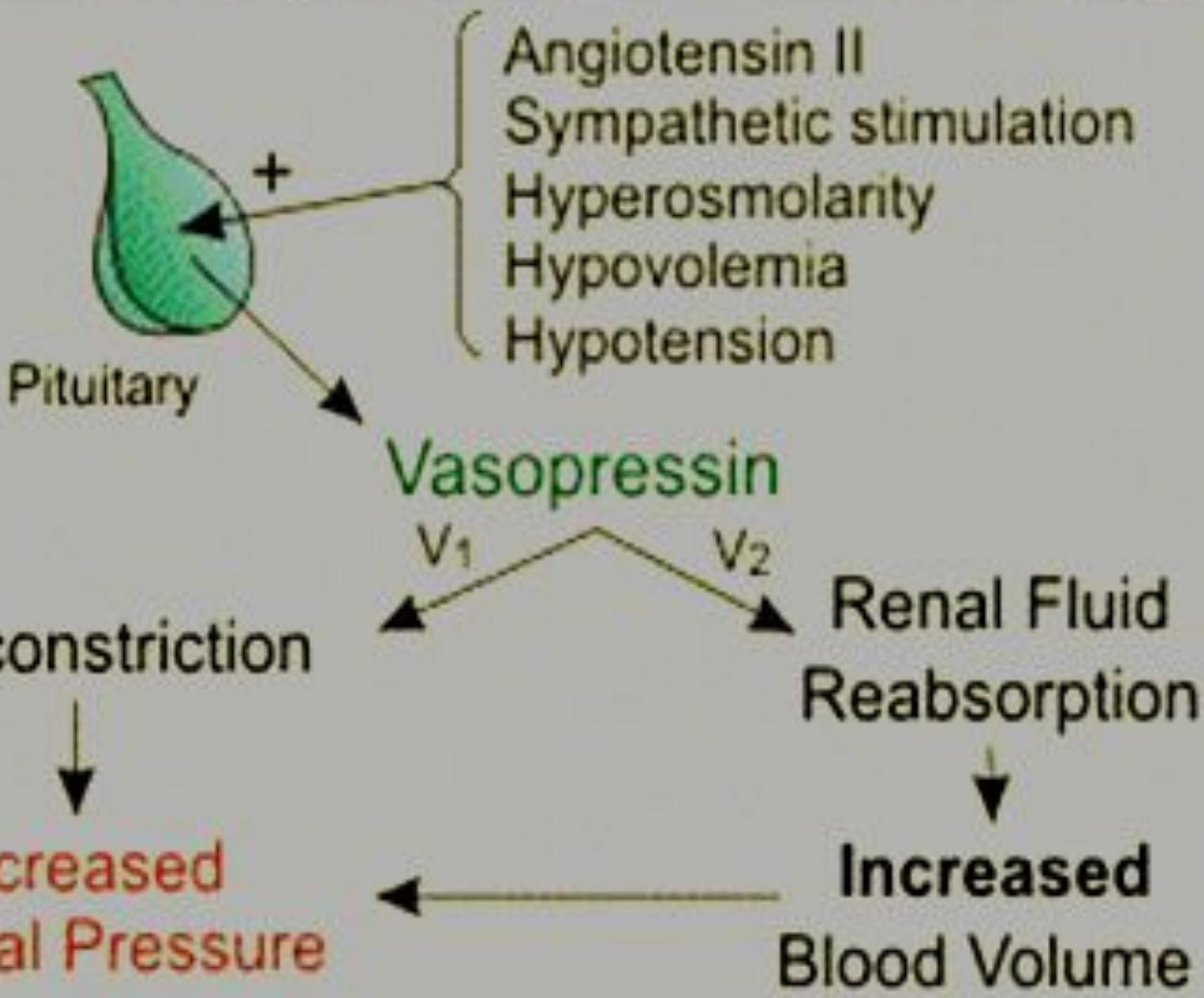
Cystine
Crystals

Urinary stones



Vasopressin





DIABETES INSIPIDUS

History of →



or



or

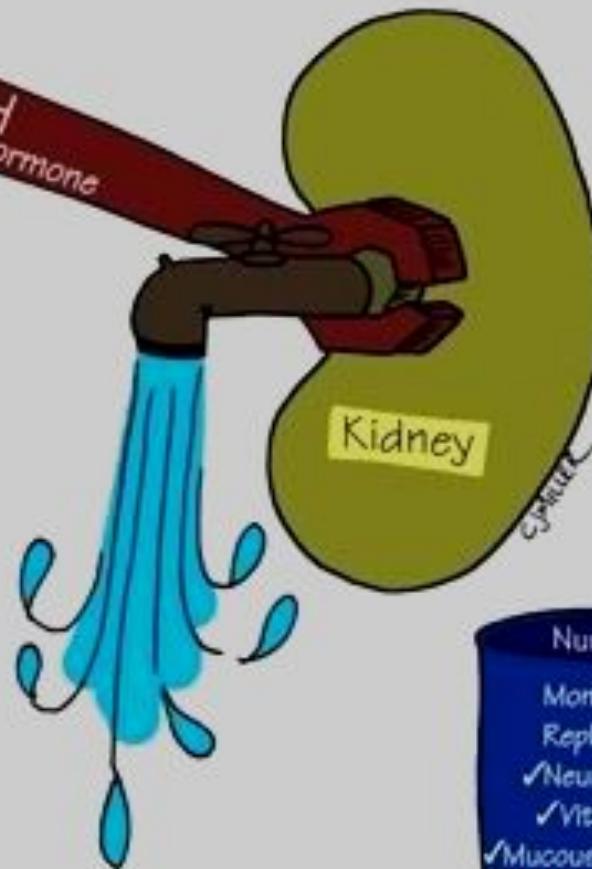


Pituitary
Gland

Rx:

Vasopressin
DDAVP

ADH
Anti-Diuretic Hormone

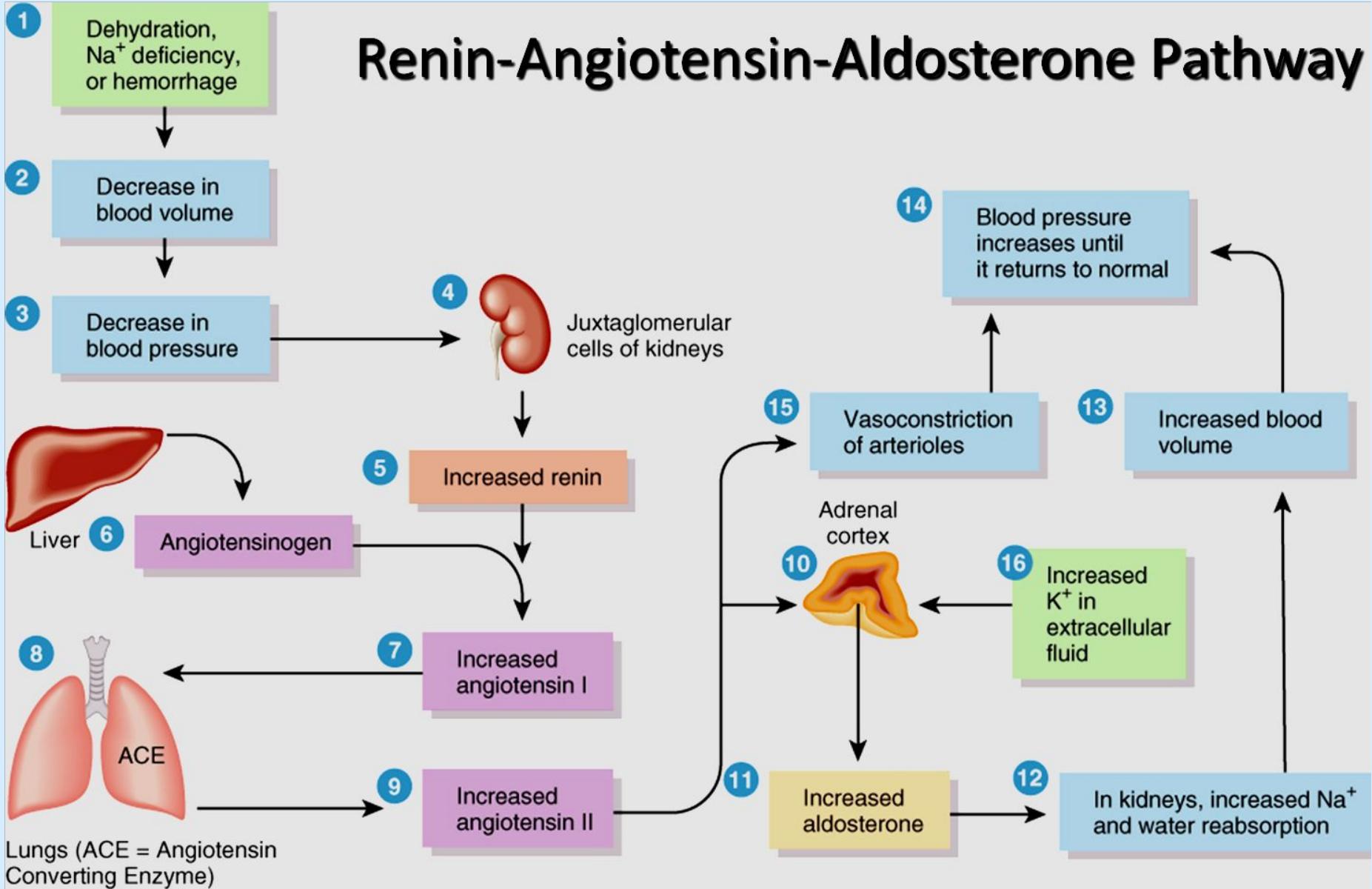


S&S

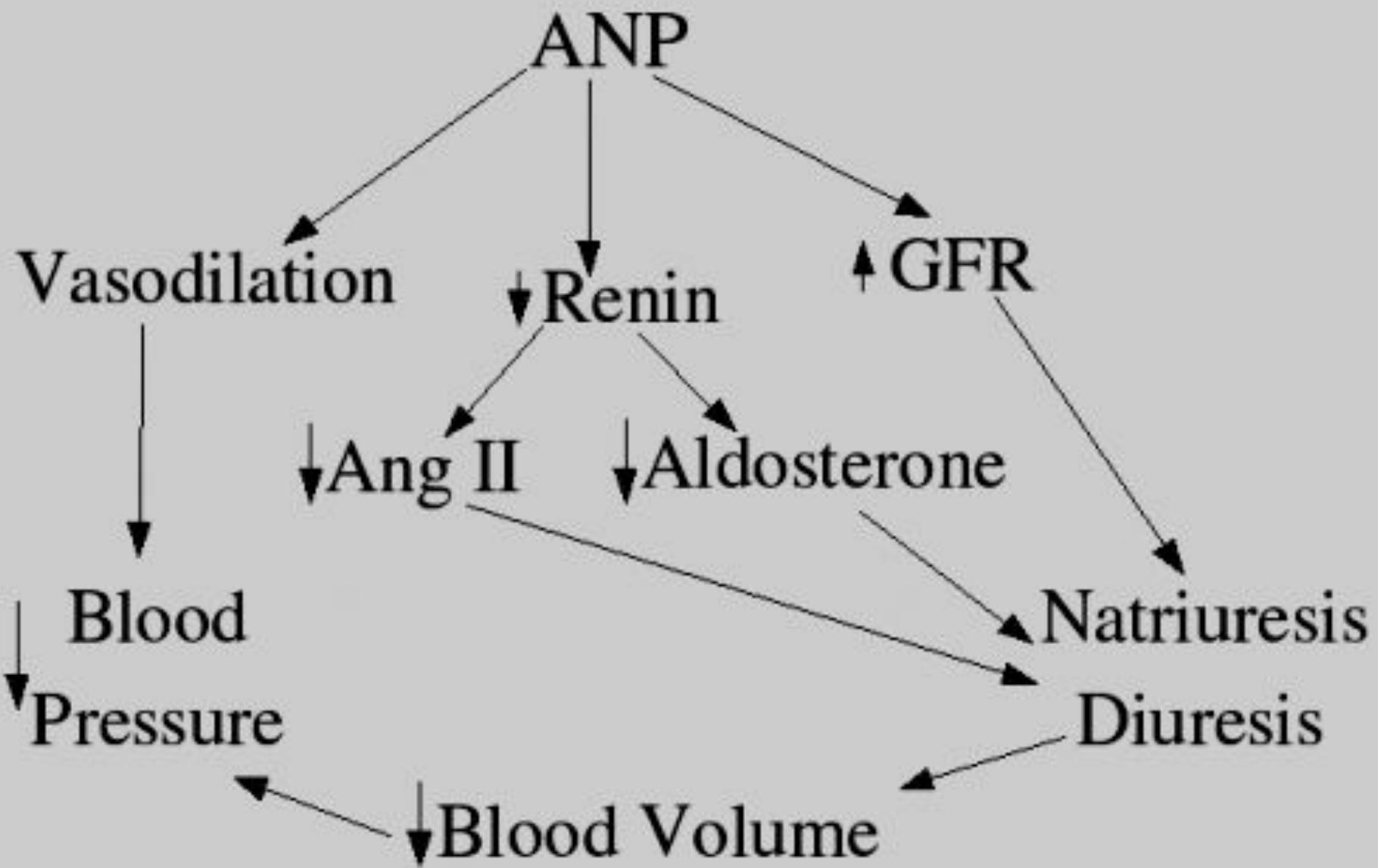
Up to 20L Urine/Day
↓ Specific Gravity
↓ Osmolarity
Hypovolemia
↑ Thirst
Tachycardia
↓ BP

Nursing Care

Monitor Fluids
Replace Fluids
✓ Neuro Status
✓ Vital Signs
✓ Mucous Membranes



Atrial natriuretic peptide (ANP)



Kallikrein-kinin system

