

Autonomic Nervous System (ANS)

Somatic nervous system: innervates skeletal muscle

Autonomic nervous system: innervates heart, smooth muscle, glandular tissue and enteric nervous system



(ANS) has two subdivision

1) sympathetic (Fight or Flight) 2) parasympathetic (rest and digest)

→ Which together perform the following functions

1) regulation of the activity of visceral organ system



2) rapid response to specific environmental stimuli :-

This include → light - temperature - Stress

* Two neurons carry impulses of the ANS from the CNS to the effector organs. The first is known as **Preganglionic neuron**

② **Post-synaptic neuron**

Autonomic PNS has long and short nerve (2 nerve)

يوجد إستثناء وين

Note :- Sympathetic → Thoraco Lumber $T_1 - L_3$ بطبع

Parasympathetic → cranial sacral $S_2 - S_4$ بطبع

the cell body is
located in the CNS

Sympathetic :- العصب الأول دقيق والثاني طويل

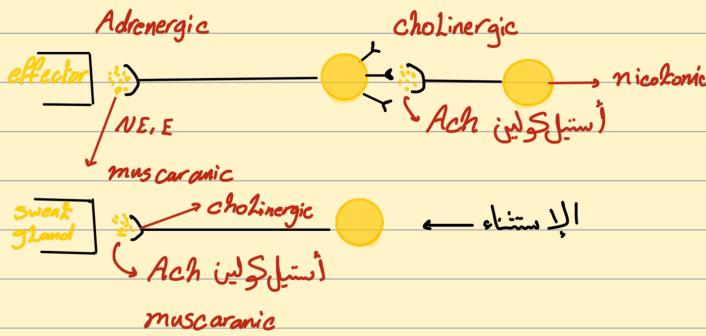
→ Pre :- قصير → Post :- طويل



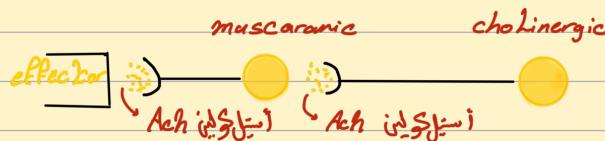
Parasympathetic :-

→ Pre :- طولى → Post :- قصير

* **Sympathetic** :-



* **Parasympathetic** :-



⇒ sympathetic more!



* **Cholinergic**

→ nicotinic
muscarinic ($M_1 - M_5$)

inhibitory

M_2 (heart)

↑ قوات البوتاسيوم

M_4 G_i → ↓ CAMP

Excitatory

$M_{1,3,5}$

G_q → PLC, ↑ IP₃, Ca²⁺

example

Atropine ↴

Muscarinic blocker

* **Adrenergic**

Alpha → α , (BV) α_1 α_2 PLC → IP₃

α_2 (terminal) -ve FB

α_2 (nervous) G_i → ↓ CAMP

Beta

B_1 (heart) G_s → ↑ CAMP

B_2 (lungs) G_q → ↑ PLC

→ B_1 blocker :- يقلل نبضات القلب

→ B_2 agonist :- lungs ↓