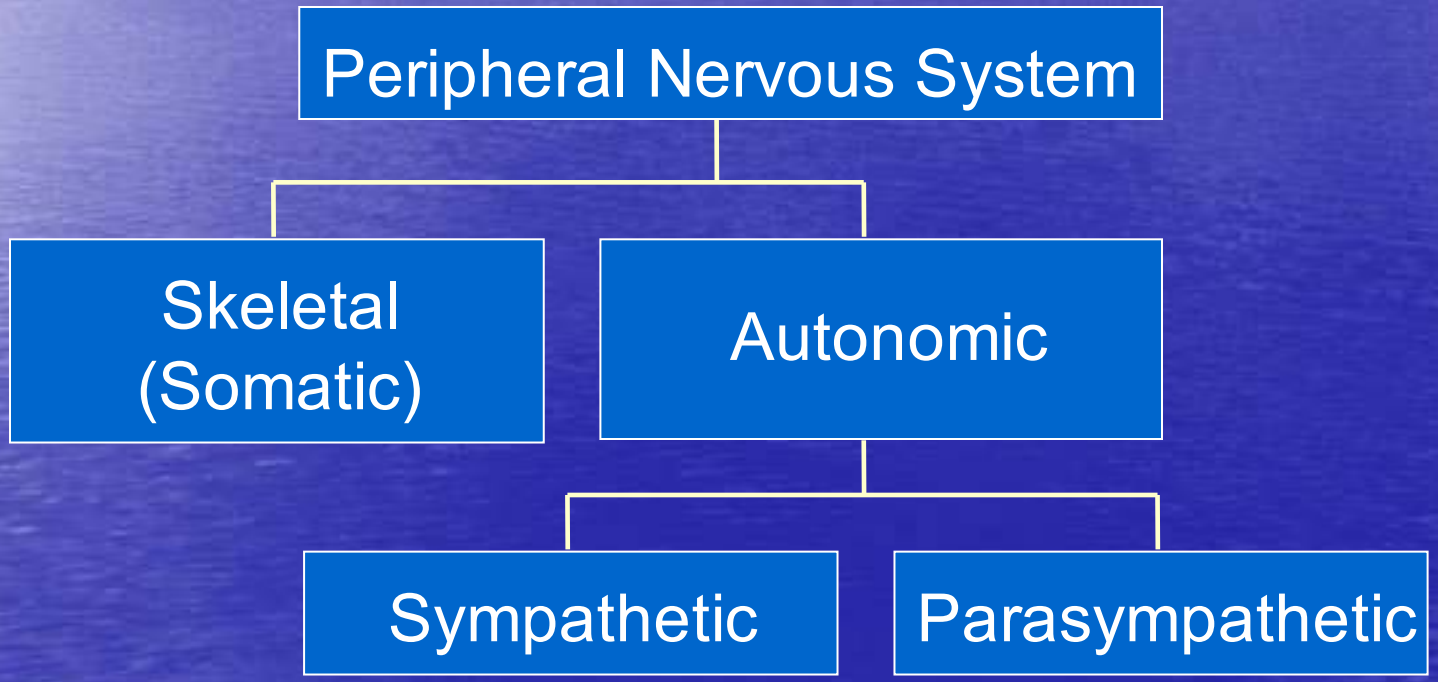
# Peripheral Nervous System

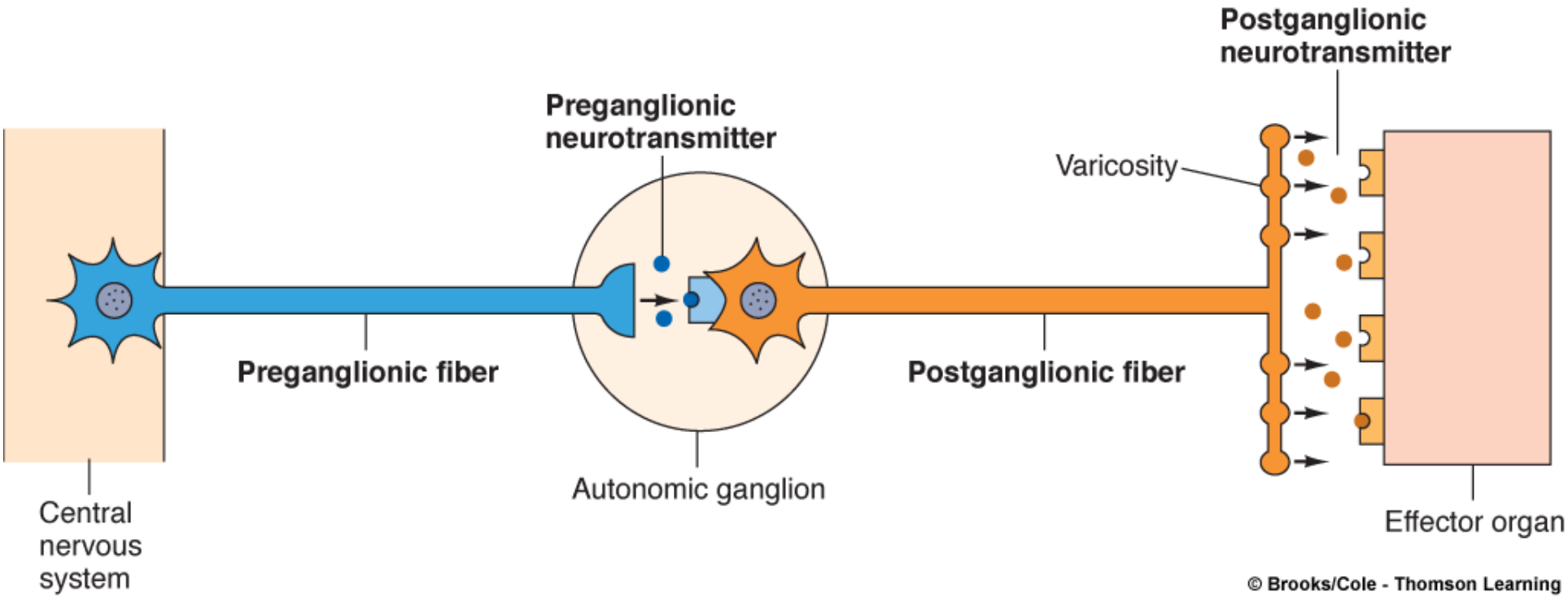


# AUTONOMIC NERVOUS SYSTEM

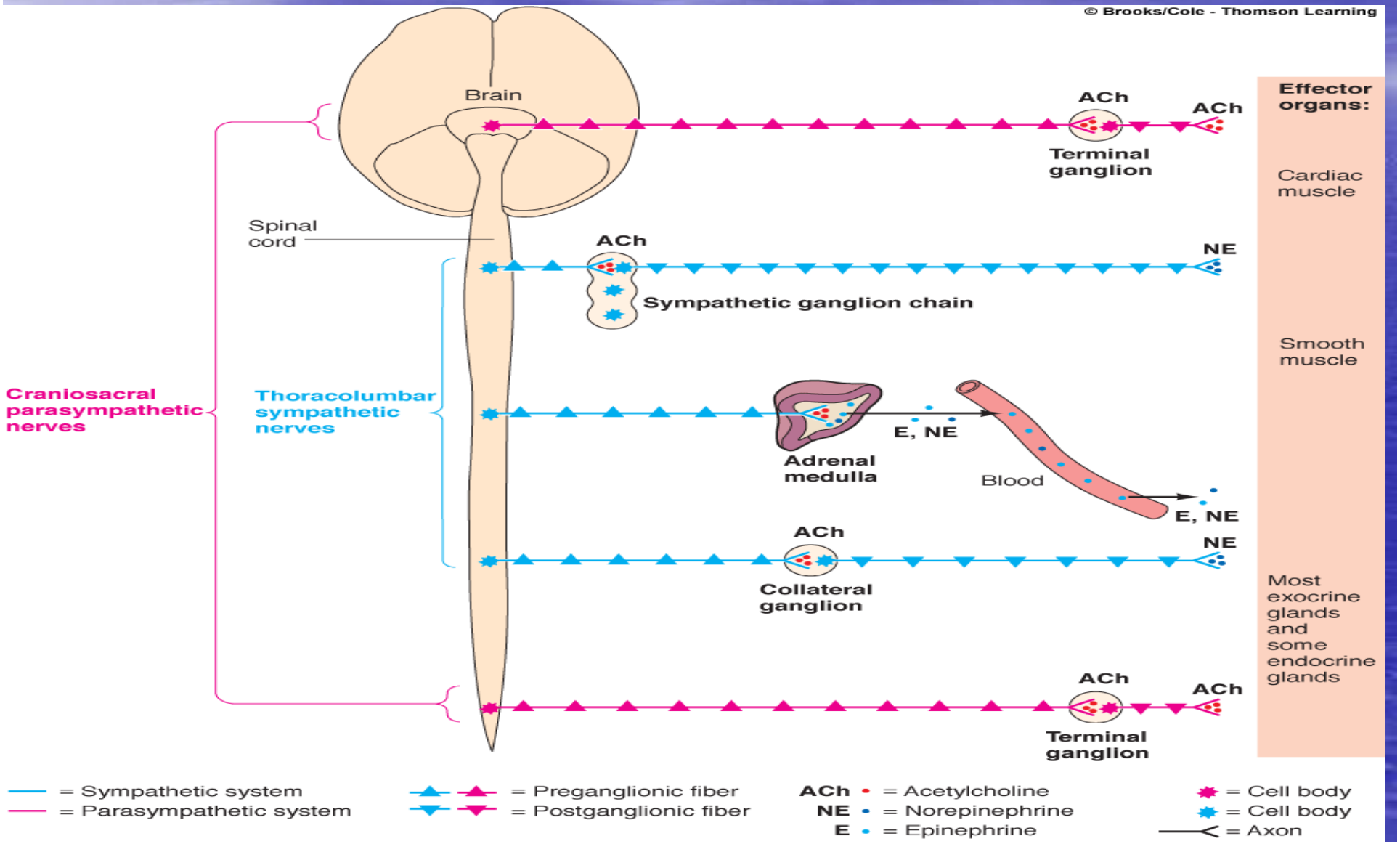
**innervates cardiac, smooth muscle, exocrine glands/some endocrines**

**releases neurotransmitters: acetylcholine and norepinephrine.**

Sympathetic NS – thoracolumbar outflow, ganglia near CNS
Parasympathetic NS –CranioSacral outflow, ganglia near effector organs.

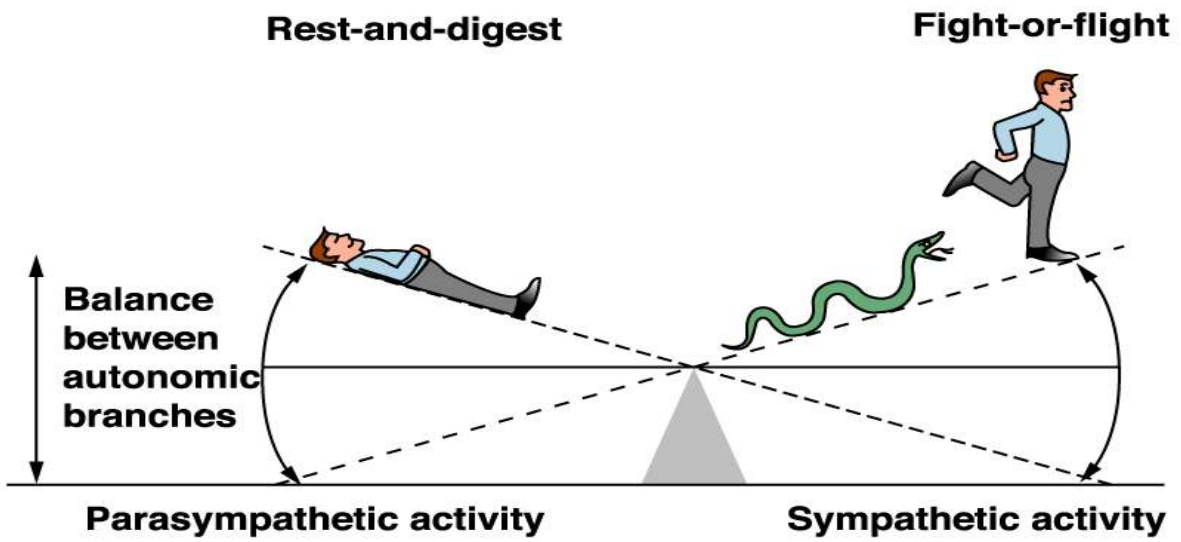


The preganglionic fibers of both branches of the ANS release Ach.
Parasympathetic postganglionic fibers release ACh.
Sympathetic postganglionic fibers release noradrenalin



# Autonomic Nervous System

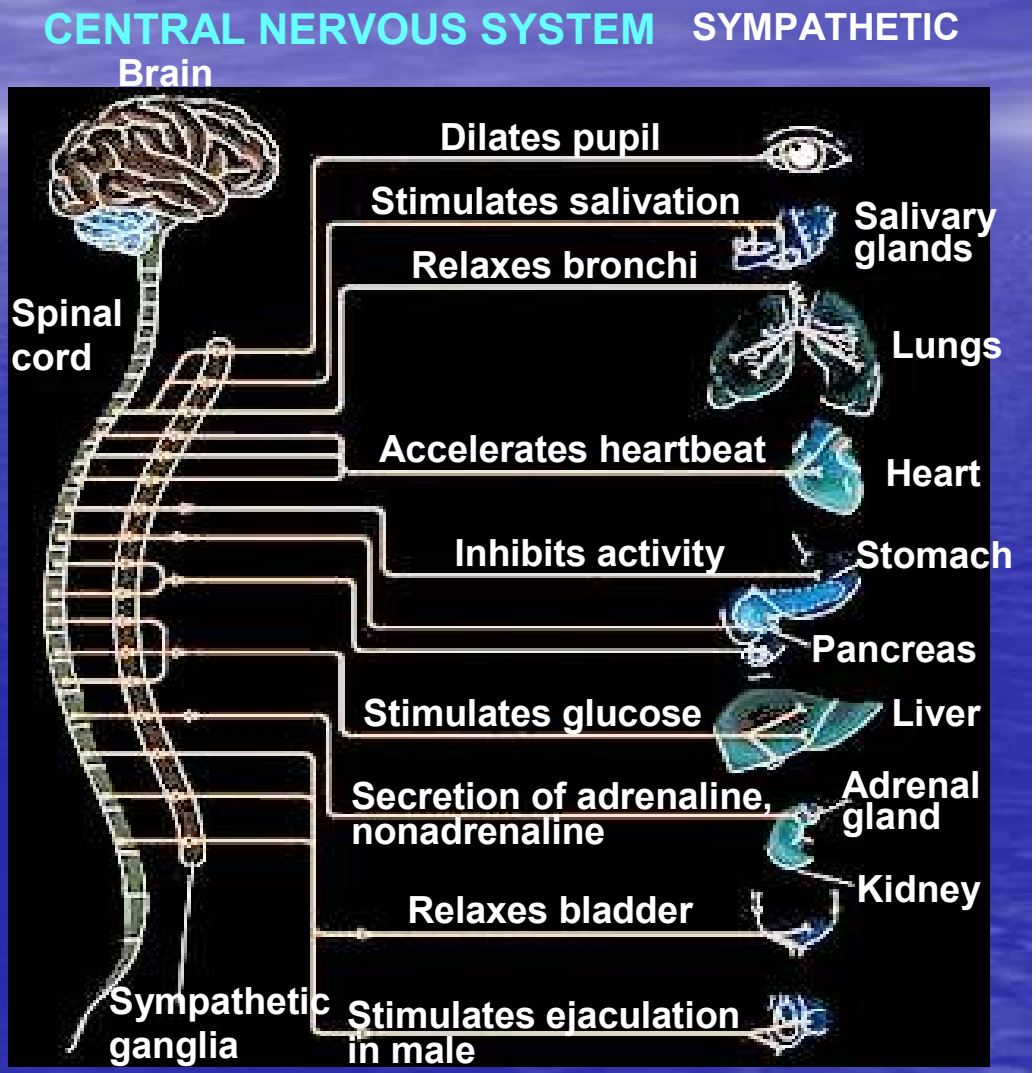
- Can be divided into:
  - Sympathetic Nervous System
    - "Fight or Flight"
  - Parasympathetic Nervous System
    - "Rest and Digest"
- Control involuntary functions
  - heartbeat
  - blood pressure
  - respiration
  - perspiration
  - digestion




- *Maybe influenced by thought and emotion*

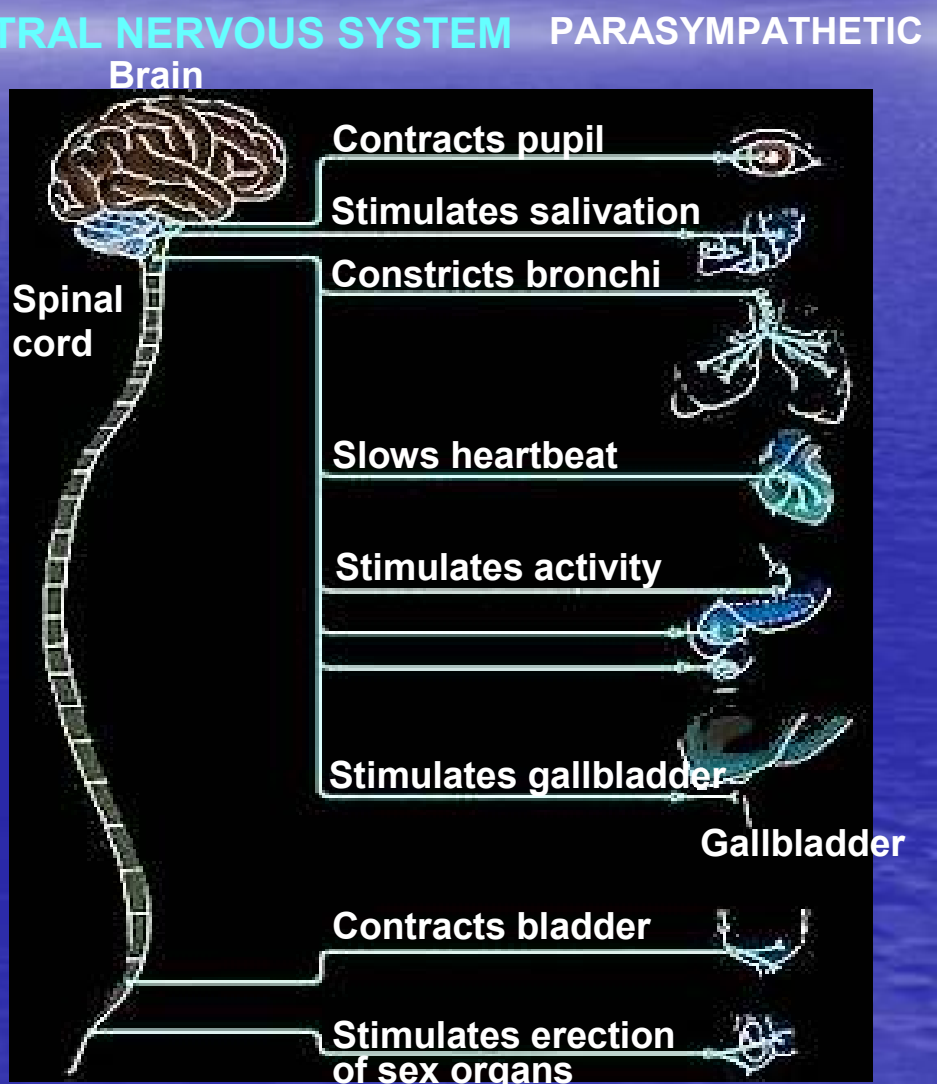
# Sympathetic

- " Fight or flight" response
- Release adrenaline and noradrenaline
- Increases heart rate and blood pressure
- Increases blood flow to skeletal muscles
- Inhibits digestive functions



# Parasympathetic

- " Rest and digest " system
- Calms body to conserve and maintain energy
- Lowers heartbeat, breathing rate, blood pressure

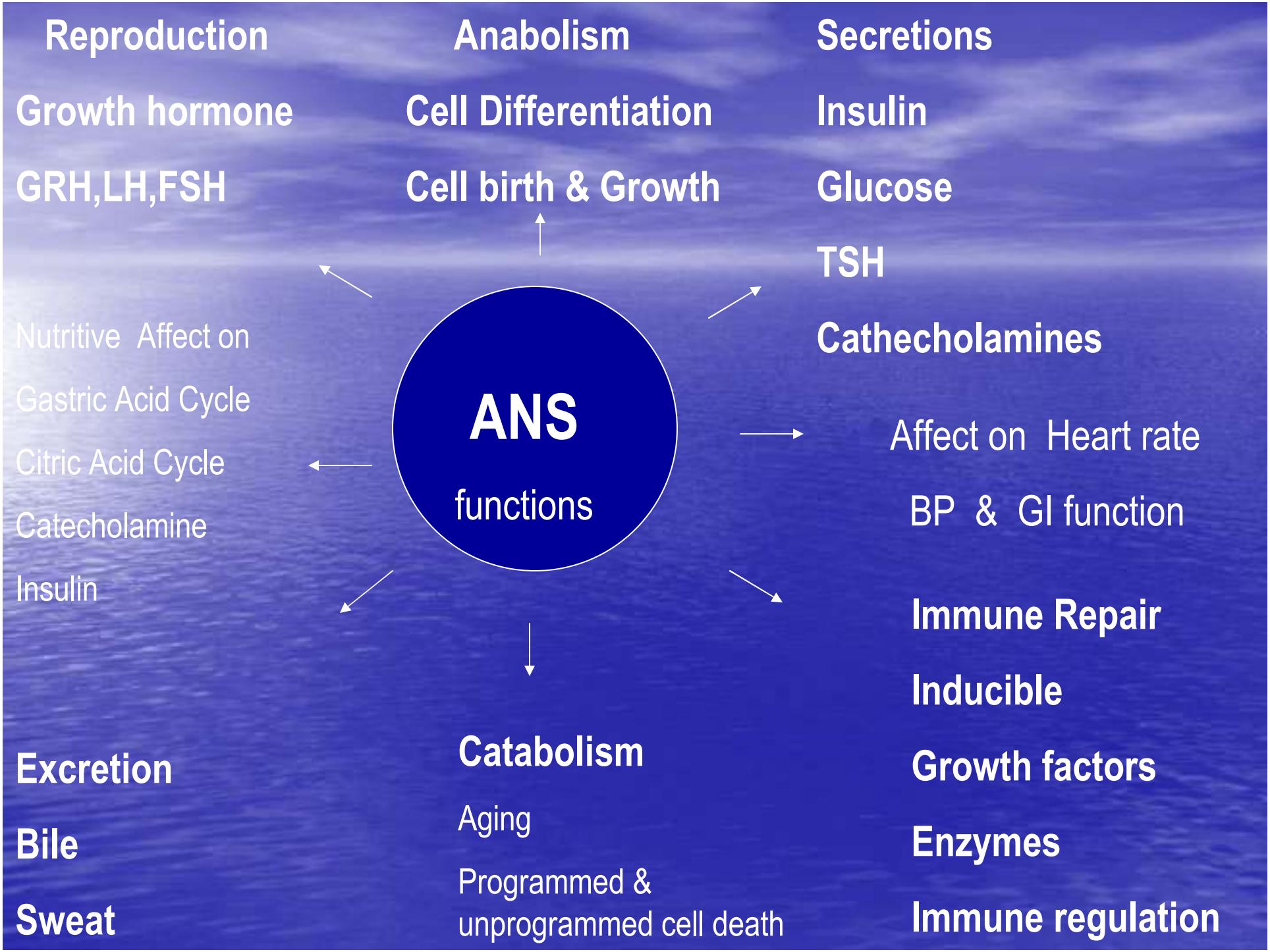


# Sympathetic Vs Parasympathetic

- Sympathetic
  - Prepares for “fight or flight” response
  - Increases blood flow to skeletal muscles
  - Chained ganglia
- Parasympathetic
  - Calming effect
  - Increases blood flow to organs
  - Cell bodies near organ innervated

| | Parasympathetic | Sympathetic |
|---|---|---|
| Pupil of the eye | Constricts; reduces light to retina | Dilates; increases light to retina |
| Skin blood vessels | Dilates; skin warm | Constricts; skin cool |
| Salivary glands | Stimulate saliva secretion | Inhibit saliva secretion |
| Bronchial airways | Constricts reducing air intake | Relaxes or increases air intake |

| | PARASYMPATHETIC | SYMPATHETIC |
|---|---|---|
| Heart beat | Inhibits reducing blood pressure | Stimulates increasing blood pressure |
| Adrenal gland | No effect | Stimulates release of adrenaline (increase heart beat and blood sugar) |
| Stomach, pancreas, small & large intestines | Stimulates activities | Inhibits activities |
| Urinary bladder | Stimulate urination | Inhibit urination |
| Sexual Activity | Causes Arousal | Causes Orgasm |


Reproduction
Growth hormone
GRH,LH,FSH
Anabolism
Cell Differentiation
Cell birth & Growth
Secretions
Insulin
Glucose
TSH
Cathecholamines
Nutritive Affect on
Gastric Acid Cycle
Citric Acid Cycle
Catecholamine
Insulin
ANS
functions
Affect on Heart rate
BP & GI function
Excretion
Bile
Sweat
Catabolism
Aging
Programmed &
unprogrammed cell death
Immune Repair
Inducible
Growth factors
Enzymes
Immune regulation

- **The visceral organs receive dual innervation. They are signaled by both subdivisions of the ANS. Responses range from circulation and digestion to sweating and urination.**