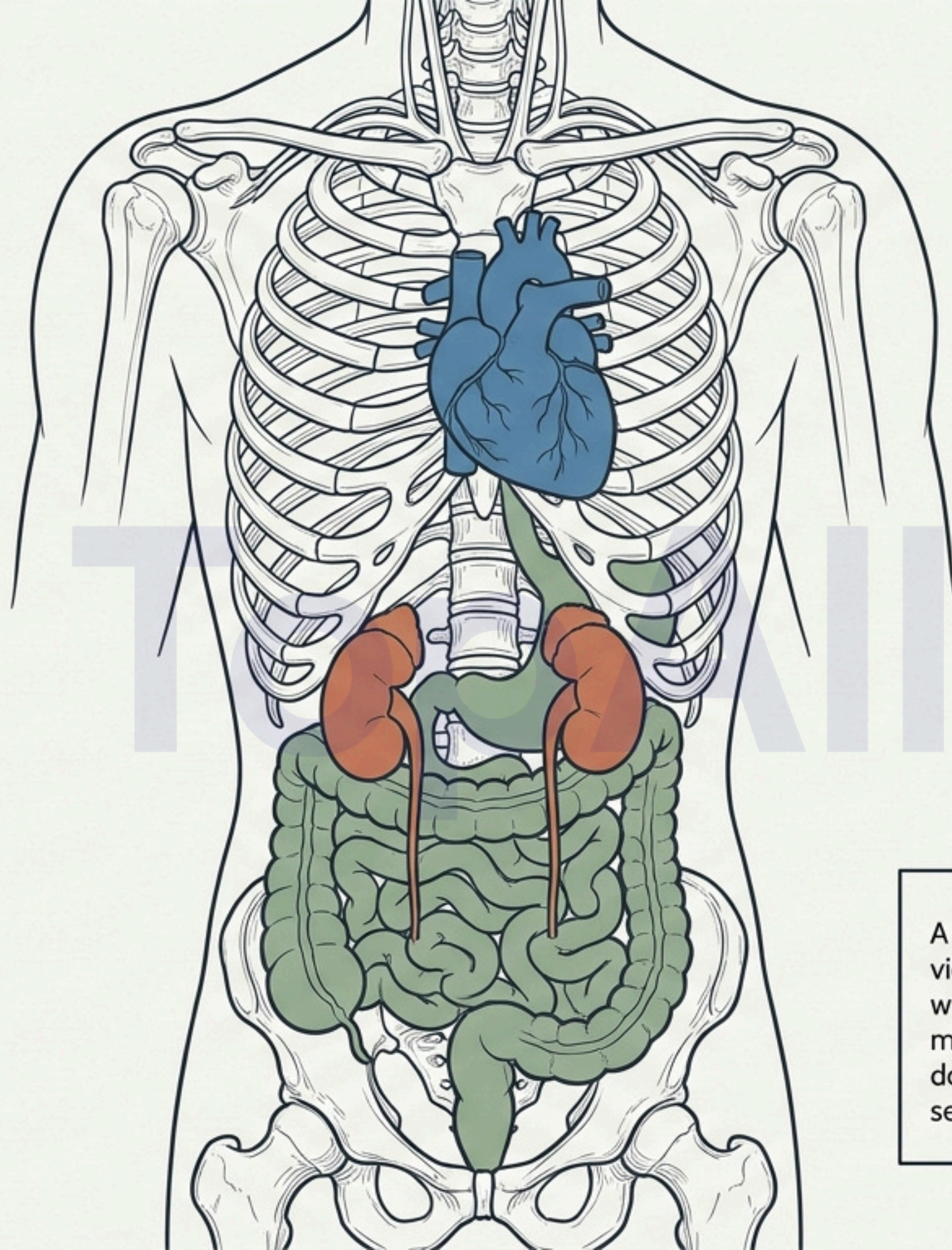
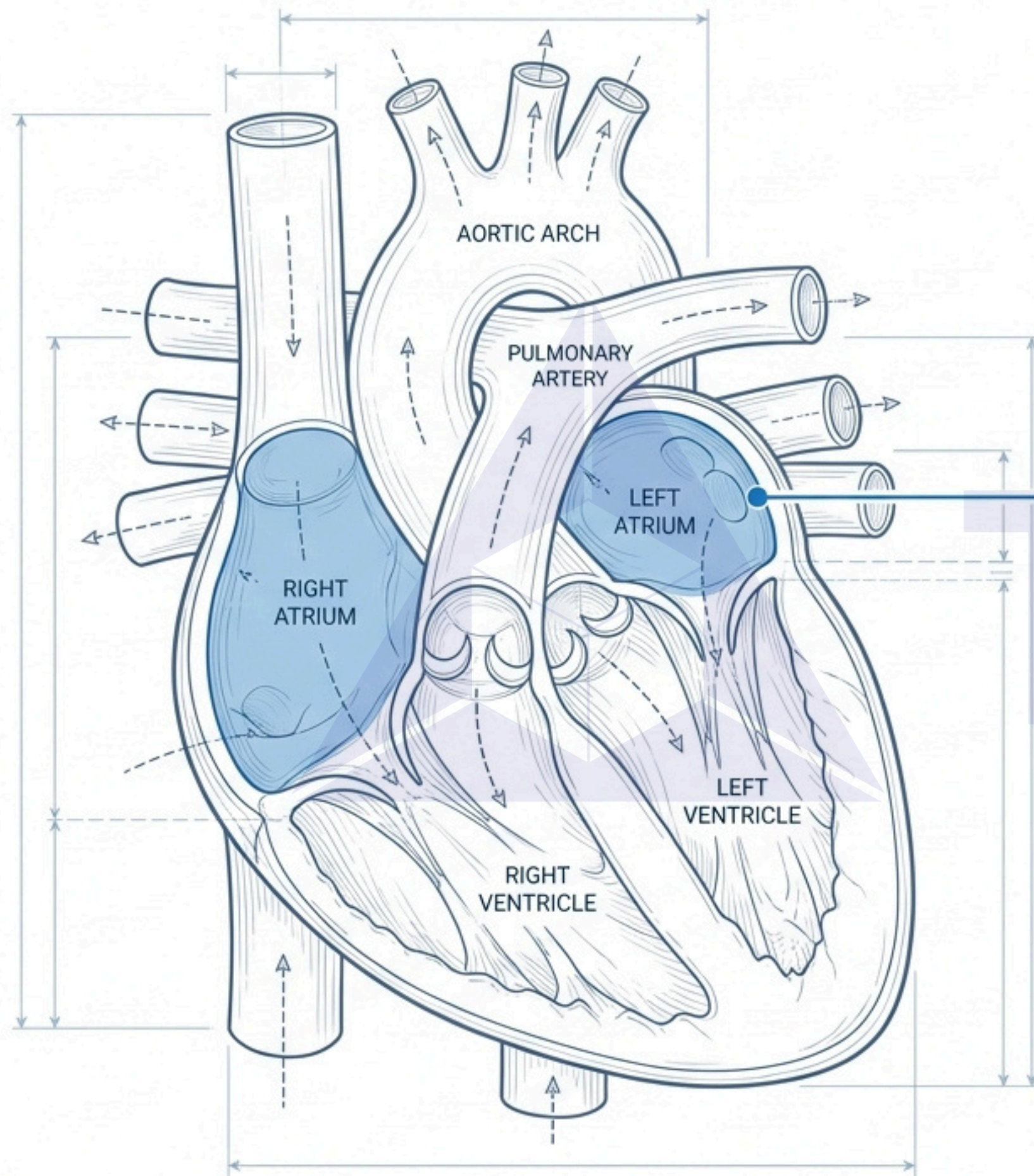


Heart, Kidney and Gut Hormones

The Hidden Endocrine Network: Chemical Messengers Beyond the Classical Glands



A modern, integrated view of physiology where major mechanical organs double as endocrine secretors.



The Heart's Chemical Voice

The Atrial Wall & Atrial Natriuretic Factor (ANF)

Organ Function

Primarily a mechanical pump, but possesses a critical chemical autoregulatory mechanism.

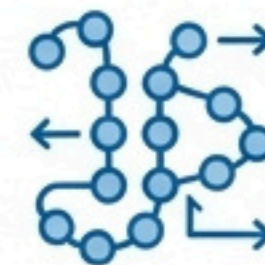
Source Tissue

Atrial wall (the upper chambers of the heart).

The Messenger

Atrial Natriuretic Factor (ANF).

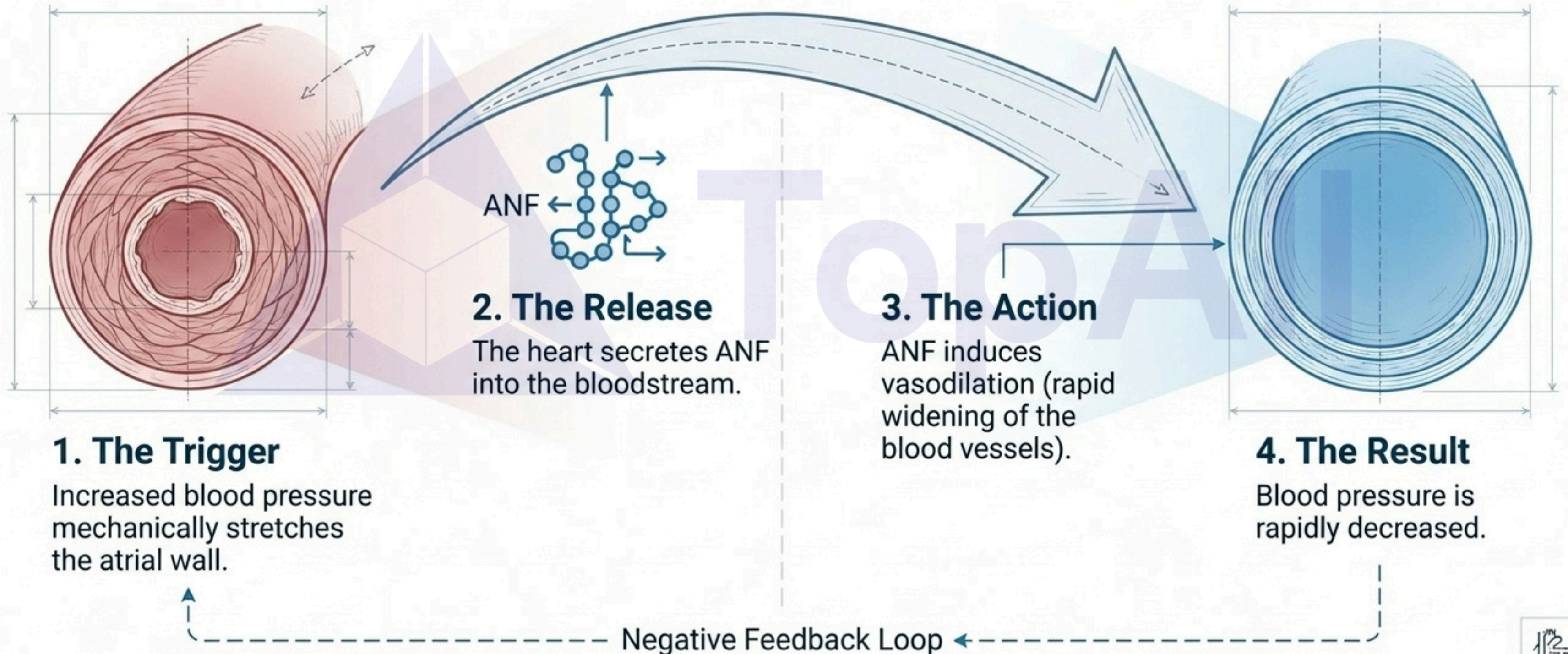
Chemical Nature



Peptide hormone.

The ANF Mechanism

How the heart autoregulates cardiovascular pressure





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Key Highlights

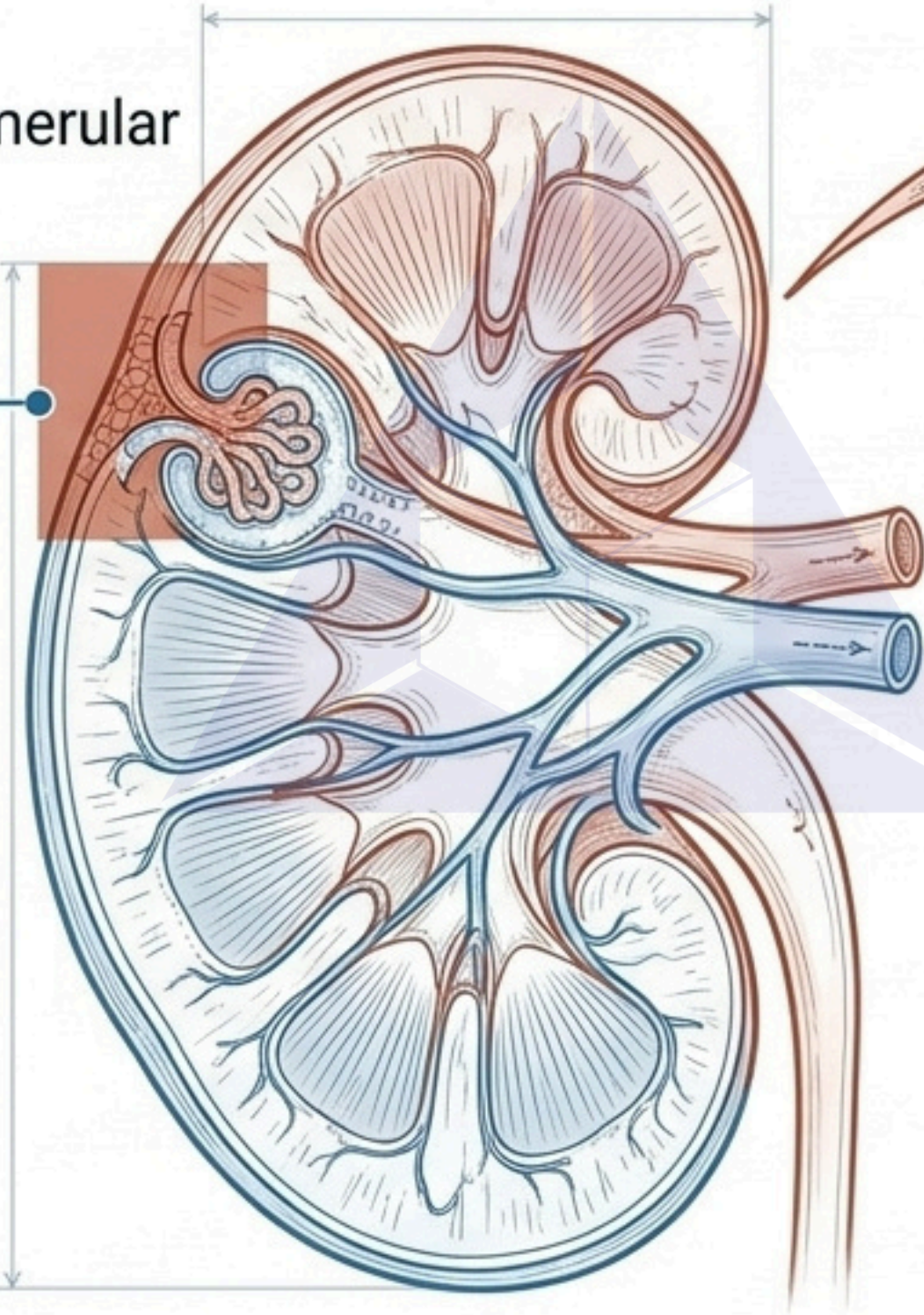
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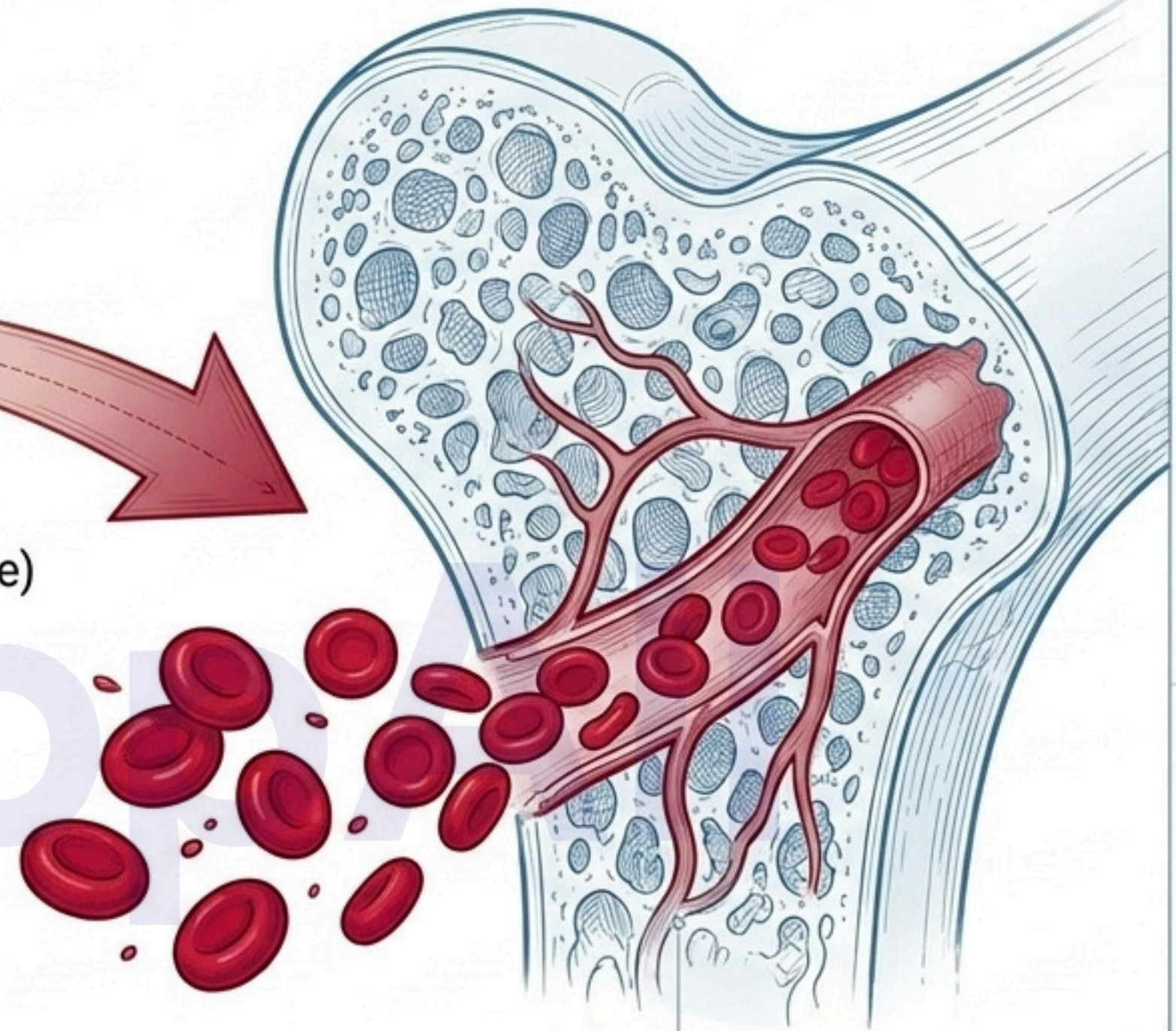
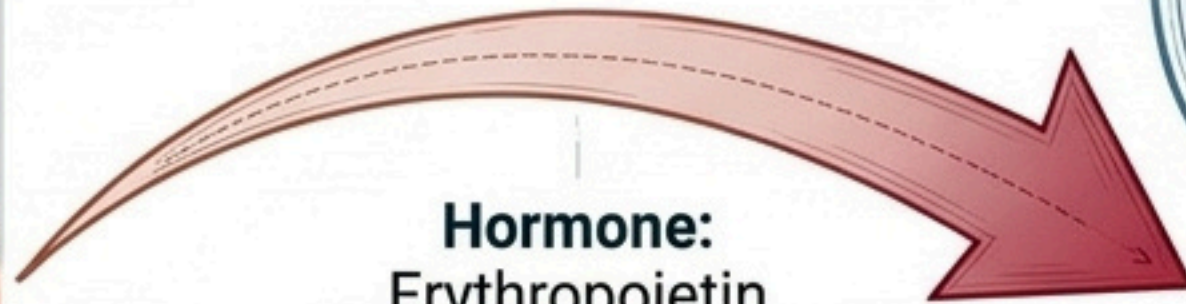
The Kidney's Dual Role

Juxtaglomerular Cells & Erythropoietin (EPO)

Juxtaglomerular
Cells



Hormone:
Erythropoietin
(Peptide hormone)



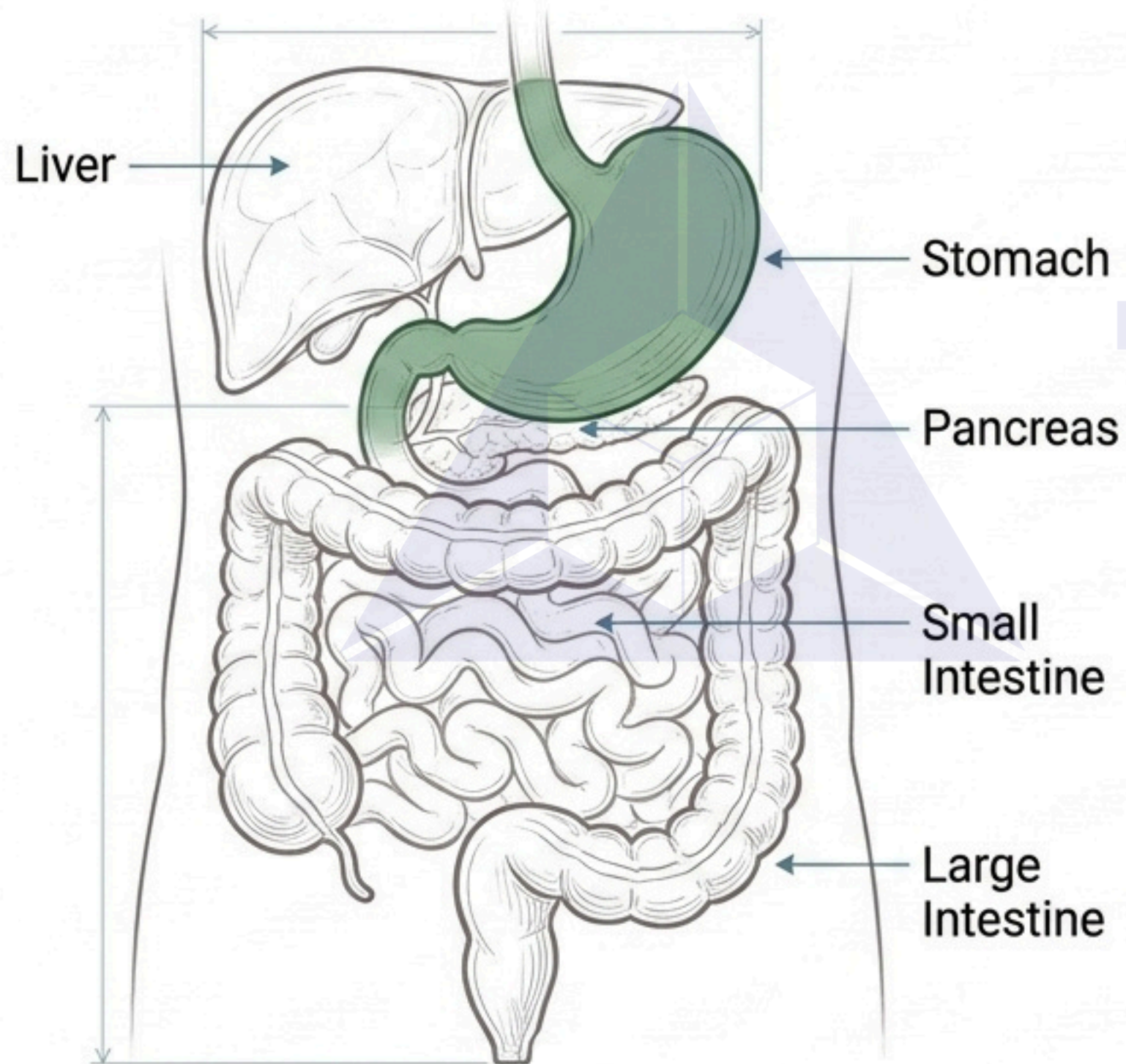
Action Mechanism:
Stimulates Erythropoiesis.

Outcome:
Drives the formation of new
Red Blood Cells (RBCs).

Erythropoiesis: From
Greek erythro (red) +
poiesis (to make).

Gastrointestinal Tract: The Stomach

Gastrin: The Acid Activator



Origin: Endocrine cells in the gastrointestinal tract.

Target: Gastric Glands (Stomach lining).

Secretion Stimulated:



- Hydrochloric Acid (HCl)



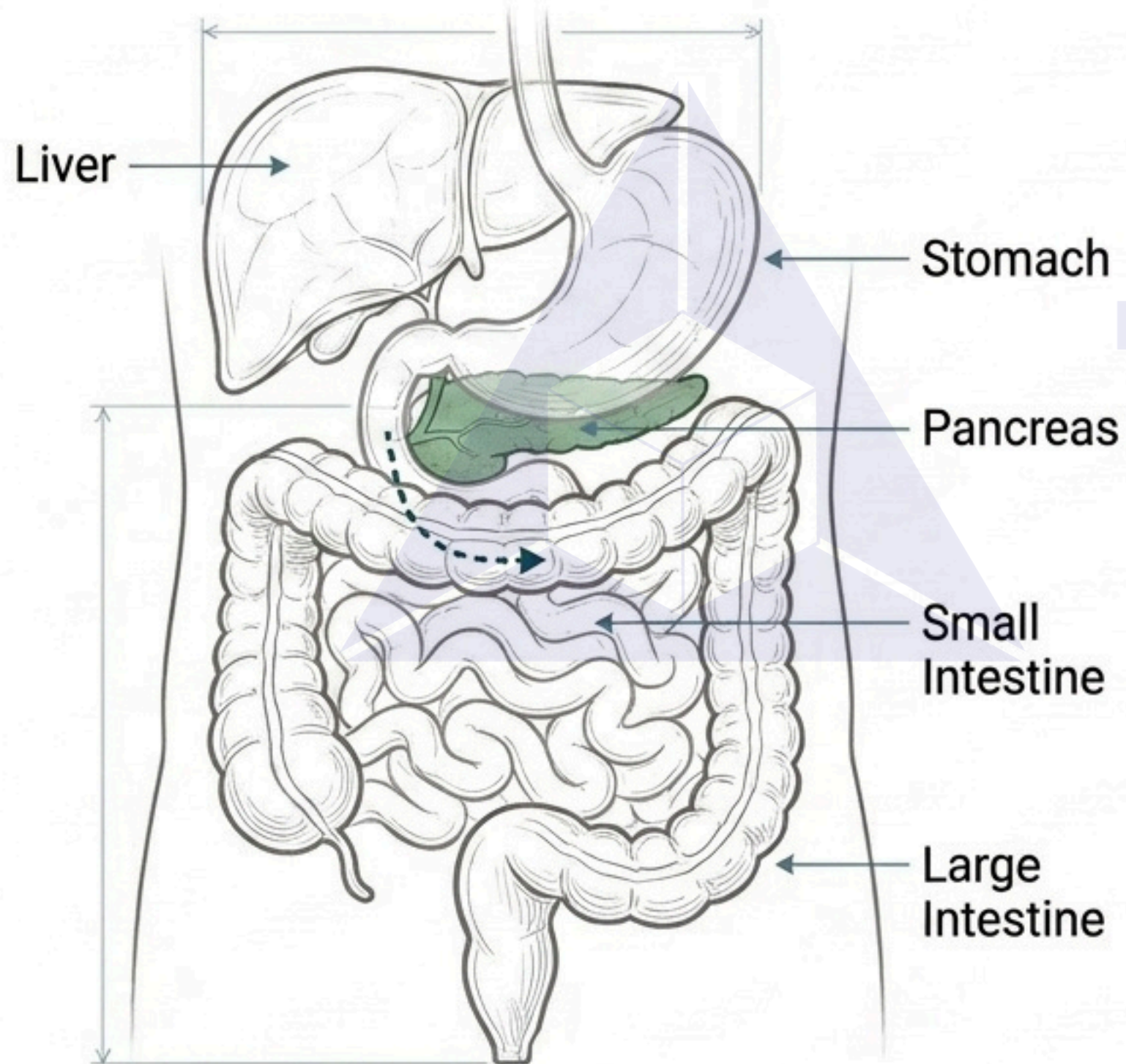
- Pepsinogen

Gastrin triggers the release of the essential chemical components required to break down food and digest proteins.



Gastrointestinal Tract: The Pancreas

Secretin: The Neutralizer



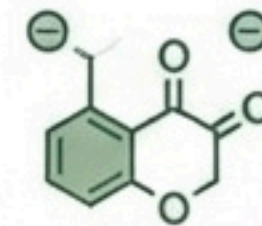
Origin: GI Endocrine cells.

Target: Exocrine Pancreas.

Primary Action: Stimulates the secretion of:



- Water (H_2O)



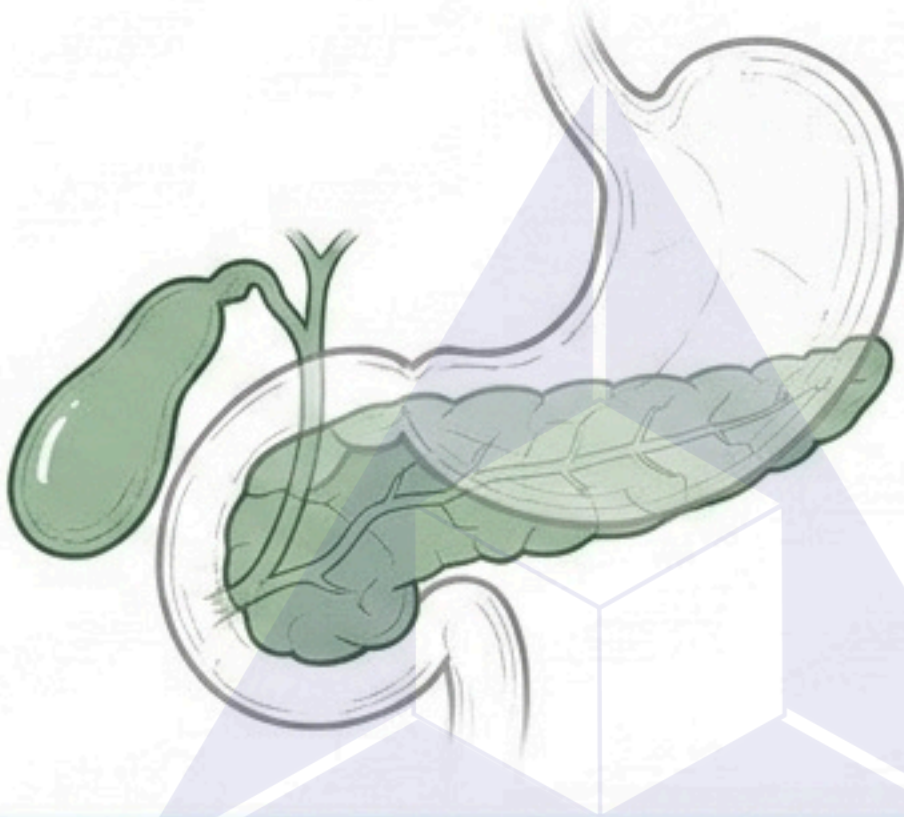
- Bicarbonate Ions (HCO_3^-)

Secretin acts as a chemical neutralizer, protecting the small intestine from the highly acidic chyme arriving from the stomach.

Gastrointestinal Tract: Digestion & Inhibition



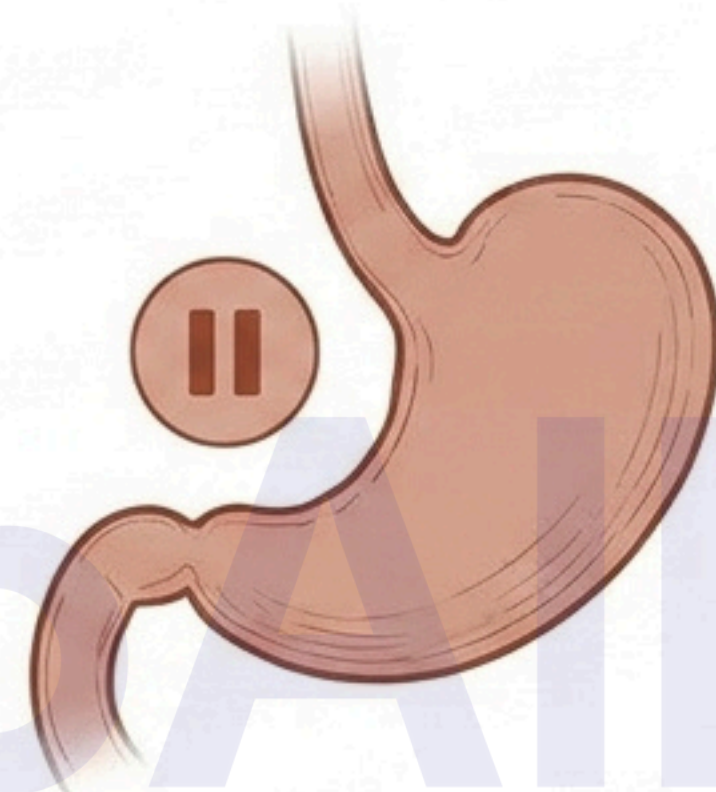
Cholecystokinin (CCK) & Gastric Inhibitory Peptide (GIP)



CCK (The Digester)

Targets: Pancreas & Gall Bladder.

Action: Stimulates the secretion of pancreatic enzymes and bile juice respectively.



GIP (The Brake)

Target: Stomach.

Action: Inhibits gastric secretion and actively slows gastric motility.



Synthesis: The Non-Endocrine Messengers



Chemical Coordination Beyond the Classical Glands

Organ	Source Tissue	Hormone	Primary Action
Heart	Atrial Wall	ANF	Dilates blood vessels to decrease blood pressure
Kidney	Juxtaglomerular Cells	Erythropoietin	Stimulates the formation of red blood cells
Gut	GI Endocrine Cells	Gastrin	Stimulates secretion of HCl and pepsinogen
Gut	GI Endocrine Cells	Secretin	Stimulates secretion of water and bicarbonate
Gut	GI Endocrine Cells	CCK	Stimulates pancreatic enzymes and bile juice
Gut	GI Endocrine Cells	GIP	Inhibits gastric secretion and motility

Growth Factors: Beyond specific organs, several non-endocrine tissues secrete highly localized hormones known as growth factors. These are essential for the normal growth of tissues, ongoing cellular repair, and regeneration.





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