

Sympathetic Nuclei

The **sympathetic nuclei** are clusters of neuronal cell bodies located in the **central nervous system**, specifically within the **intermediolateral cell column (IML)** of the **spinal cord**.

Location

- Found in the **lateral horn** of the spinal cord gray matter
- Present from **T1 to L2/L3 spinal cord segments**
- Also referred to as the **thoracolumbar outflow**

Function

- Contain **preganglionic sympathetic neurons**
- Axons exit via **ventral roots**, then enter the **sympathetic chain ganglia** (paravertebral) or **prevertebral ganglia**
- Postganglionic neurons project to target organs:
 - Heart (↑ rate and contractility)
 - Pupils (dilation)
 - Skin (sweating, vasoconstriction)
 - Gastrointestinal tract (↓ motility)

Organization

Region	Spinal Levels	Role
Intermediolateral Nucleus	T1–L2	Origin of preganglionic sympathetic neurons
Paravertebral Ganglia	Along vertebral column	Relay to postganglionic neurons
Prevertebral Ganglia	Abdomen (e.g., celiac, mesenteric)	Control of abdominal viscera

Clinical Relevance

- **Horner Syndrome:** Damage to the sympathetic pathway causes ptosis, miosis, and anhidrosis
- **Spinal cord injuries** above T1 can interrupt sympathetic output
- **Autonomic dysreflexia** in spinal lesions above T6

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Last update: **2025/07/01 11:01**

