

Paranganglia Encyclopedia Article

Paranganglia

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Contents

Paraganglia Encyclopedia Article.....	1
Contents.....	2
Paraganglia.....	3

Paraganglia

Paraganglia are groups of cells that originate from the neural crest tissues. They are described as two different types. One type is found inside the adrenal medulla and is responsible for the secretion of **epinephrine** and norepinephrine. The other type is located outside the adrenal glands and has an entirely different function. It is believed the second type is responsible for the detection of oxygen and carbon dioxide levels in the **blood**.

Other paraganglia are found in small pockets or groups mostly in the head and neck region. Several types have been identified. Type I are cells called "true paraganglia" and are the type located along nerve fibers or near ganglia of the **central nervous system**. Type II are "free paraganglia" and are found within **adipose tissue** of the **heart**. They do not show any definite connection to specific structures. Type III, the "interganglionic paraganglia" are located within the ganglia themselves. Finally, the type IV are the "Intramyocardic paraganglia" which are immunoreactive cells that lie near the myocardiocyte bundles (excitable myocardiocyte cell fibers that transmit action potentials).

One of the most interesting functions of the paraganglia is their role in triggering signals to the **brain** via the vagus nerve. When a person is sick, macrophages (a type of **immune system** cell) releases cytokines that let the hypothalamus part of the brain stimulate an immune reaction. The cytokines are too big to pass the blood-brain barrier, but, instead, they attach to pockets of paraganglion cells located along the vagus nerve. The paraganglionic cells have receptors for interleukin-1, one of the types of cytokines carried by the blood. In turn these cells release **neurotransmitters** the vagus nerve and help send the signal to the brain to stimulate the body's immune response.