

# Autonomic Nervous System

## Encyclopedia Article

### Autonomic Nervous System

The following sections of this BookRags Literature Study Guide is offprint from Gale's For Students Series: Presenting Analysis, Context, and Criticism on Commonly Studied Works: Introduction, Author Biography, Plot Summary, Characters, Themes, Style, Historical Context, Critical Overview, Criticism and Critical Essays, Media Adaptations, Topics for Further Study, Compare & Contrast, What Do I Read Next?, For Further Study, and Sources.

(c)1998-2002; (c)2002 by Gale. Gale is an imprint of The Gale Group, Inc., a division of Thomson Learning, Inc. Gale and Design and Thomson Learning are trademarks used herein under license.

The following sections, if they exist, are offprint from Beacham's Encyclopedia of Popular Fiction: "Social Concerns", "Thematic Overview", "Techniques", "Literary Precedents", "Key Questions", "Related Titles", "Adaptations", "Related Web Sites". (c)1994-2005, by Walton Beacham.

The following sections, if they exist, are offprint from Beacham's Guide to Literature for Young Adults: "About the Author", "Overview", "Setting", "Literary Qualities", "Social Sensitivity", "Topics for Discussion", "Ideas for Reports and Papers". (c)1994-2005, by Walton Beacham.

All other sections in this Literature Study Guide are owned and copyrighted by BookRags, Inc.

# Contents

<a href="#">Autonomic Nervous System Encyclopedia Article.....</a>	<a href="#">1</a>
<a href="#">Contents.....</a>	<a href="#">2</a>
<a href="#">Autonomic Nervous System.....</a>	<a href="#">3</a>



# Autonomic Nervous System

The autonomic nervous system (ANS) is the specialized component of the nervous system that functions to regulate the activities of cardiac muscle, **smooth muscle**, **endocrine glands**, and exocrine glands. The ANS functions involuntarily and reflexively in an automatic manner without conscious control.

The ANS achieves its ability to either excite or inhibit activity via a dual innervation of target tissues and **organs**. The ANS achieves this control via two divisions of the ANS, the **sympathetic nervous system** and the **parasympathetic nervous system**.

The ANS is the mediator of visceral reflex arcs. In contrast to the somatic nervous system that always acts to excite muscles groups, the autonomic nervous systems can act to excite or inhibit innervated **tissue**. The autonomic nervous system also differs from the somatic nervous systems in the types of tissue innervated and controlled. The somatic nervous system regulates **skeletal muscle** tissue, while the ANS services smooth muscle, cardiac muscle, and glandular tissue.

The involuntary ANS is controlled in the **hypothalamus** while the somatic system is regulated by other regions of the **brain** (cortex). In contrast, the somatic nervous system may control motor functions by neural pathways that contain only a single axon that innervates an effector (e.g., a target) muscle. The ANS is comprised of pathways that must contain at least two axons separated by a ganglia (clusters of neural cells outside of the brain and **spinal cord** of the **central nervous system**) that lies in the path between the axons.

ANS reflex arcs are stimulated by input from sensory or visceral receptors. The signals are processed in the hypothalamus (or regions of the spinal cord) and target effector control is then regulated via myelinated preganglionic **neurons** (cranial and spinal nerves that also contain somatic nervous system neurons). Ultimately, the preganglionic neurons terminate in a neural ganglion. Direct effector control is then regulated via unmyelinated postganglionic neurons.

The principal **neurotransmitters** in ANS synapses are acetylcholine and norepinephrine.