

Commentary

# Physiological and Behavioural Alteration of a Wild Rat to Research Facility Conditions

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# DESCRIPTION

Physiology, the study of how living organisms function and maintain homeostasis, is a dynamic and intricate field of biology that unravels the mysteries of the human body's inner workings. In this comprehensive article, we will delve into the world of physiology, exploring its historical roots, its fundamental principles, its various sub disciplines, and its critical role in understanding health and disease. Physiology has deep historical roots that trace back to ancient civilizations. Early scholars and philosophers pondered the fundamental questions of life, the workings of the human body, and the nature of disease. As a result, they laid the foundation for the development of modern physiology. Ancient Greek philosophers, including Hippocrates and Aristotle, made significant contributions to early physiological understanding. Hippocrates is often regarded as the father of modern medicine, emphasizing the importance of observation and the balance of bodily humours in maintaining health. Avicenna's "The Canon of Medicine" was a prominent work that combined the knowledge of Greek, Indian, and Islamic medicine, shaping the study of physiology for centuries. The Renaissance era witnessed a resurgence of scientific inquiry, with figures like Andreas Vesalius and William Harvey making ground breaking contributions to the understanding of human anatomy and the circulatory system, respectively. Physiology is underpinned by several fundamental principles that help explain how living organisms function and adapt to their environments. Homeostasis is the body's ability to maintain stable internal conditions, even in the face of external changes. It involves processes such as temperature regulation, blood pressure control, and maintaining the body's pH balance. At the cellular level, physiological processes involve the study of how individual cells function. This includes cellular respiration, membrane transport, and the regulation of intracellular processes. The human body is a complex system of interconnected systems, including the nervous, cardiovascular, respira-

tory, and digestive systems, among others. Physiology explores how these systems work together to maintain overall health. Feedback mechanisms are vital in regulating physiological processes. Positive feedback amplifies a response, while negative feedback counteracts and stabilizes it. An example of negative feedback is the regulation of blood glucose levels through insulin and glucagon. Physiology examines how living organisms adapt to their environments and how evolutionary processes have shaped physiological systems. Understanding these adaptations provides insights into the diversity of life on Earth. Physiology is a diverse field with numerous sub disciplines, each focusing on specific aspects of physiological function. Neurophysiology investigates the functions of the nervous system, including the transmission of nerve impulses, synaptic communication, and the neural basis of behaviour and cognition. Cardiovascular physiology delves into the functioning of the heart and blood vessels, examining topics such as blood pressure regulation, circulation, and cardiac electrophysiology. Respiratory physiology focuses on the mechanisms of breathing, gas exchange in the lungs, and the control of respiration. It is crucial in understanding conditions like asthma and Chronic Obstructive Pulmonary Disease (COPD). Renal physiology explores the functioning of the kidneys, including the regulation of electrolyte balance, filtration of blood, and the formation of urine. It plays a pivotal role in maintaining fluid and electrolyte balance. Endocrinology is the study of hormones and their impact on physiological processes. This sub discipline covers the endocrine system's role in regulating metabolism, growth, and reproduction.

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## **CONFLICT OF INTEREST**

The author's declared that they have no conflict of interest.

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