

# HOMEOSTASIS REGULATION

*The adjusting of systems within a cell is called homeostatic regulation. Because the internal and external environments of a cell are constantly changing.*

A deviation from a normal set point acts as a stimulus to a receptor, which sends nerve impulses to a regulating center in the brain. Angiotensin I circulates in the blood and is then converted into angiotensin II in the lungs. It is increased by thyroid hormone and decreased by thyroid hormone lack. Each hormone has an effect on one or more target tissues. The most important example is the hypothalamus, a region of the brain that controls everything from body temperature to heart rate, blood pressure, satiety fullness, and circadian rhythms sleep and wake cycles. Since tissues consume oxygen and produce carbon dioxide and acids as waste products, when the body is more active, oxygen levels fall and carbon dioxide levels rise as cells undergo cellular respiration to meet the energy needs of activities. To identify and example of two organ systems working together to maintain homeostasis. Regulating centers are located in the central nervous system, consisting of the brain and spinal cord. Hypo-osmolality results in very low plasma ADH levels. Temperature receptors are found in the skin, the great veins, the abdominal organs and the hypothalamus. The effects of PTH are to raise blood levels of calcium. Specialized cells in the kidneys found in the juxtaglomerular apparatus respond to decreased blood flow by secreting renin into the blood. Baroreceptors and thermoreceptors exist within the system and provide the value of the pressure or temperature to the regulatory mechanism. In general, the sympathetic system brings about those results we associate with emergency situations, often called fight or flight reactions, and the parasympathetic system produces those effects necessary to our everyday existence. This happens primarily in the kidneys. A positive feedback example is blood platelet accumulation and aggregation, which in turn causes blood clotting in response to an injury of the blood vessels. Angiotensin II also stimulates the thirst center in the hypothalamus, so an individual will likely consume more fluids, again increasing blood volume and pressure. Convection currents of air remove heat from the surface of dry skin as the air passes over it. Positive feedback speeds up the direction of change, which leads to increasing hormone concentration, a state that moves further away from homeostasis. Endothermic animals are defined by their ability to utilize both vasoconstriction and vasodilation to maintain internal body temperature. To achieve this, a series of events initiates a cascading process that builds to increase the effect of the stimulus. For example, a mouse endotherm must consume food every day to sustain high its metabolism, while a snake ectotherm may only eat once a month because its metabolism is much lower. The respiratory system also helps the lymphatic system by trapping pathogens and protecting deeper tissues within. No system of the body works in isolation, and the well-being of the person depends upon the well-being of all the interacting body systems. Hair on the skin guards entrance into the nasal cavity or other orifices, preventing invaders from getting further into our bodies. Thank you for joining us. Moreover, they do not always use consistent visual representations of the concept. Renin-Angiotensin-Aldosterone Mechanism The renin-angiotensin-aldosterone mechanism has a major effect upon the cardiovascular system Figure 3.