

Homeostasis is the maintenance of a stable internal environment. Homeostasis is a term coined to describe the physical and chemical parameters that an organism must maintain to allow proper functioning of its component cells, tissues, organs, and organ systems.

The difference between homeostasis as a single cell performs it and what a multi-celled creature does derives from their basic organizational plan: a single cell can dump wastes outside the cell and just be done with it. Cells in a multi-celled creature, such as a human or cat, also dump wastes outside those cells, but like the dumpster outside my house, those wastes must be carted away.

The ultimate control of homeostasis is accomplished by the nervous system and the endocrine system (for longer-term responses, such as maintaining the body levels of calcium, etc.). Often this homeostatic control takes the form of negative feedback loops. There are two types of biological feedback: positive and negative. Negative feedback turns off the stimulus that caused it in the first place.

Your house's heater acts on the principle of negative feedback. When your house cools off below the temperature set by your thermostat, the heater is turned on to warm air until the temperature is at or above what the thermostat is set at. The thermostat detects this rise in temperature and sends a signal to shut off the heater, allowing the house to cool off until the heater is turned on yet again and the cycle (or loop) continues.

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