

# Diagramming Regulatory Systems

## Objective:

To construct two flow charts applying the concept of homeostasis to physiological processes of your choosing, include the internal condition, receptors, set point, controllers, effectors, responses, and feedback, at the level of 85% proficiency for each student.

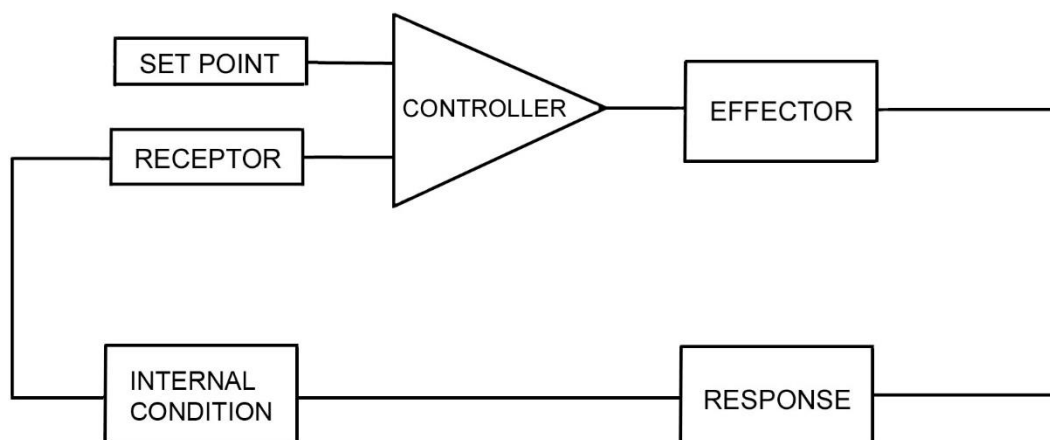
In order to achieve this objective, you will need to be able to:

1. Define Internal Condition, Receptor, Set point, Controller, Effector, Response and Feedback
2. Determine what internal condition is being regulated.
3. Determine how an internal condition is detected by sensory receptors to provide sensory input.
4. Determine how the sensory input is evaluated in relation to a set point by a controller.
5. Determine what effectors are involved.
6. Determine what responses are produced
7. Determine how the responses change the internal condition and how receptors provide feedback.

## Background:

In a homeostatic regulatory system an internal condition is measured by receptors and evaluated by a controller. The controller, in turn, controls (*has command of*) effectors that produce responses. The responses, in turn, regulate (*normalize*) an internal condition within a specific range. Additional information can be found in chapter 1a of the Synopsis of Physiology.

The organization of a generic homeostatic regulatory system is shown below. Definitions of terms are listed on the next page

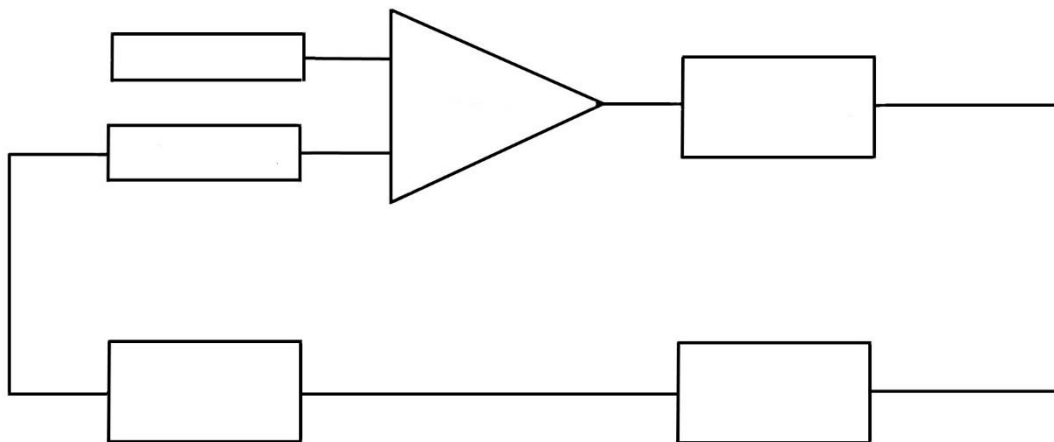


- **Internal Condition** – the variable to be maintained within an acceptable range
- **Receptor** (Sensor) – measures the internal condition
- **Set Point** – the optimal value for the internal condition
- **Controller** (Integrating center) – determines the difference between the measured value of the internal condition and the set point. The controller *has command of* the effectors that produce responses to regulate an internal condition within a specific range.
- **Effector(s)** – produces relevant responses
- **Response(s)** – assists in maintaining the internal condition near the optimal value

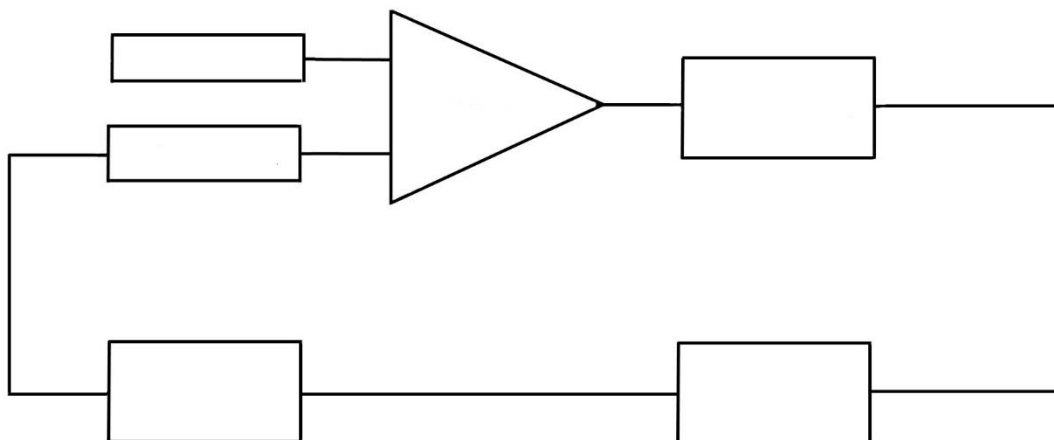
## Methods:

Construct two (2) flow charts applying the concept of homeostasis to physiological processes of your choosing.

Regulatory System # 1



Regulatory System # 2



## Discussion:

1. Explain or speculate why the body requires regulatory systems.
2. Why is it important to have sensors to measure what is being regulated?
3. Why is it important to have a controller?
4. Why is it important to have effectors that produce responses?