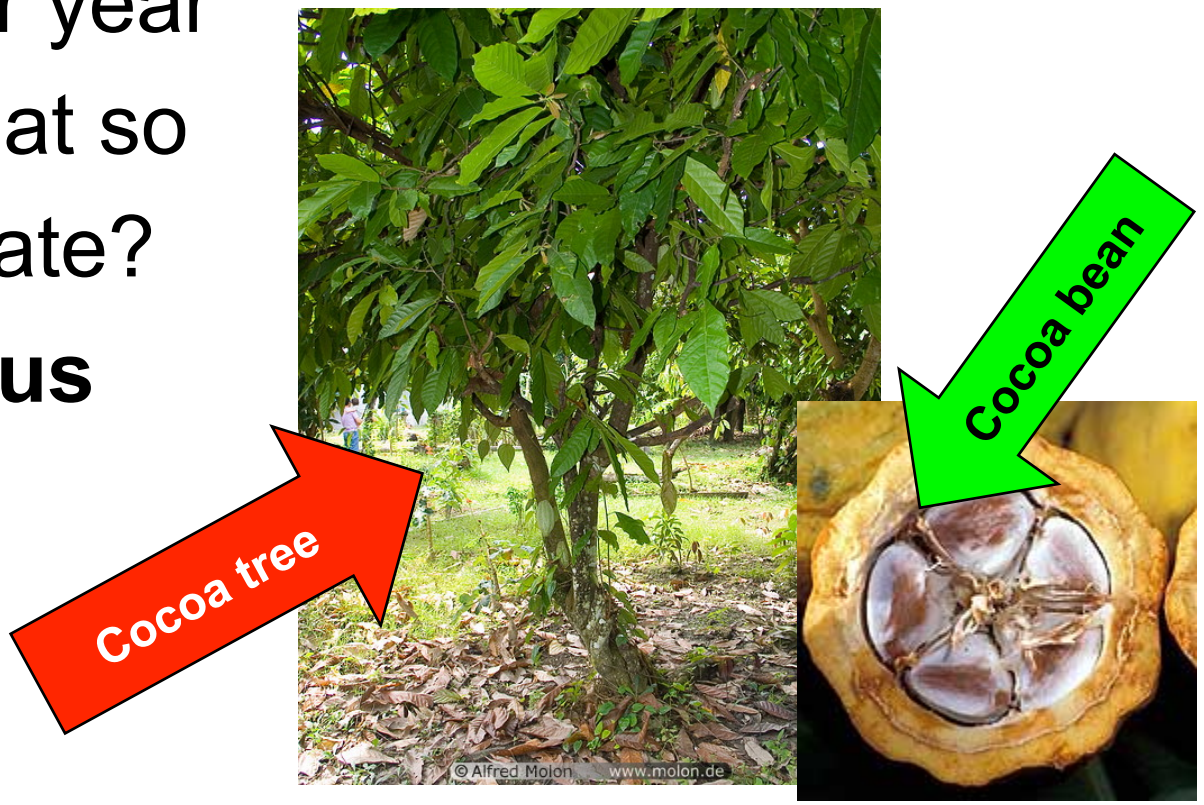
Unit 4: Homeostasis

- **Chocolate** comes from the cocoa bean
- The average person eats **11 pounds** of chocolate per year
- Why do we eat so much chocolate?

It makes us HAPPY!



Why does chocolate make me happy?

- Chocolate contains **380 chemicals**, including theobromine
  - Theobromine is poisonous to dogs and chickens
- Chocolate also cause the production of natural **opiods** in the brain
- **Opiods** (such as opium) produce the feeling of euphoria

Why does chocolate make me happy?

- Chocolate also contains substances that act as **cannabinoids**
  - Cannabinoids are found in marijuana
  - This causes an increase in **dopamine** (neurotransmitter) production
  - Also **anandamides** stay in the brain longer without being broken down

So can you get high off chocolate?

You would have to eat 25lbs of chocolate to get the same effects of marijuana!

Homeostasis

Similar

Balance

Homeostasis is a process that allows a constant internal environment to be maintained despite changes in the external environment.

Ex. Body temperature (37^{oC})
Blood glucose
Electrolytes (Cl^-, Na^+, K^+)
Blood gasses (O_2, CO_2)

Homeostasis

For your internal environment to remain constant you must have a

1. **Monitor** to detect the problem
2. **Control** to fix it

This is like the thermostat in a house.

If room temperature is set to 21°C, then the thermostat continuously checks to see if the temperature has gone down.

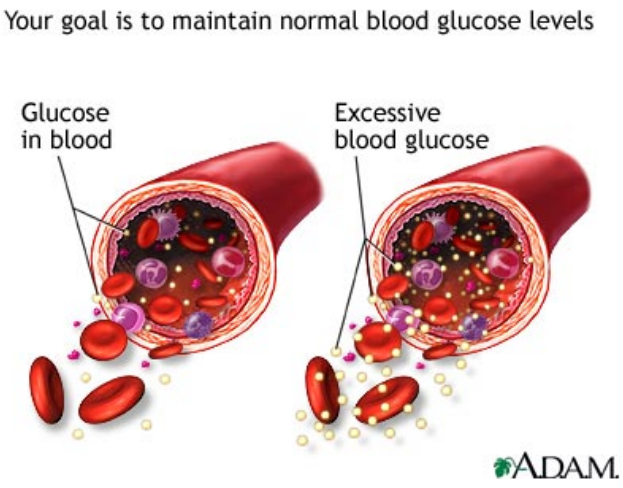
If the temperature drops below 21°C, then the thermostat turns on the furnace, which blows hot air into the house, heating it. Once the temperature is above 21°C, then the furnace is shut off.

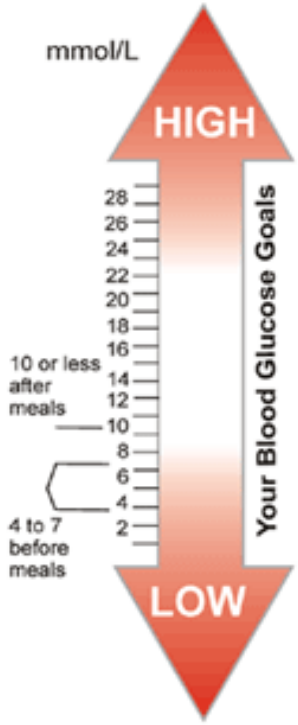
Homeostasis

You have a control mechanism like this in your body for blood sugar levels.

If your blood sugar is too high, then the pancreas(monitor) detects it and secretes insulin, which stimulates the liver (control) to store glucose, which decreases blood sugar levels.

Once your blood sugar levels are normal, then the pancreas stops releasing insulin.





Homeostasis

This controlling method is called NEGATIVE FEEDBACK or FEEDBACK INHIBITION

How do our bodies maintain homeostasis?

The endocrine system, along with the nervous system, functions in the regulation of body activities.

1. Nervous System – brain, spinal cord and neurons

2. Endocrine glands and hormones that they secrete