Positive and Negative Feedback Loops
Positive and Negative Feedback Loops
Positive and Negative Feedback Loops
Positive and Negative Feedback Loops
Homeostasis

Feedback

Target Set Point

Negative
- Stabilization
- Temperature Regulation

Positive
- Amplification
- Fruit Ripening

Alteration
- Diabetes mellitus
Homeostasis
Negative Feedback

Target Set Point
37.0 °C

Stabilization
Target Set Point
37.0 °C

Negative Feedback
Target Set Point
37.0 °C

Negative Feedback
Target Set Point
37.0 °C

Negative Feedback
Negative Feedback

Target Set Point
37.0 °C
Positive Feedback

Target Set Point

Amplification

Ethylene

Positive Feedback
Positive Feedback
Amplification
Ethylene
Positive Feedback

Amplification

Ethylene

Positive Feedback
Positive Feedback

Amplification

Ethylene

Positive Feedback
Blood Glucose

Insulin

Blood Glucose

Glucagon

Ca^{2+} activates insulin gene expression via CREB (Calcium Responsive Element Binding Protein)

Exocytosis of stored insulin
Blood Glucose

Insulin

Blood Glucose

Glucagon
Main symptoms of Diabetes:

- **Central**
  - Polydipsia
  - Polyphagia
  - Lethargy
  - Stupor

- **Eyes**
  - Blurred vision

- **Systemic**
  - Weight loss

- **Respiratory**
  - Kussmaul breathing (hyper-ventilation)

- **Gastric**
  - Nausea
  - Vomiting
  - Abdominal pain

- **Urinary**
  - Polyuria
  - Glycosuria

*blue = more common in Type 1*
Blood Glucose
Insulin
Glucagon
Acknowledgements
