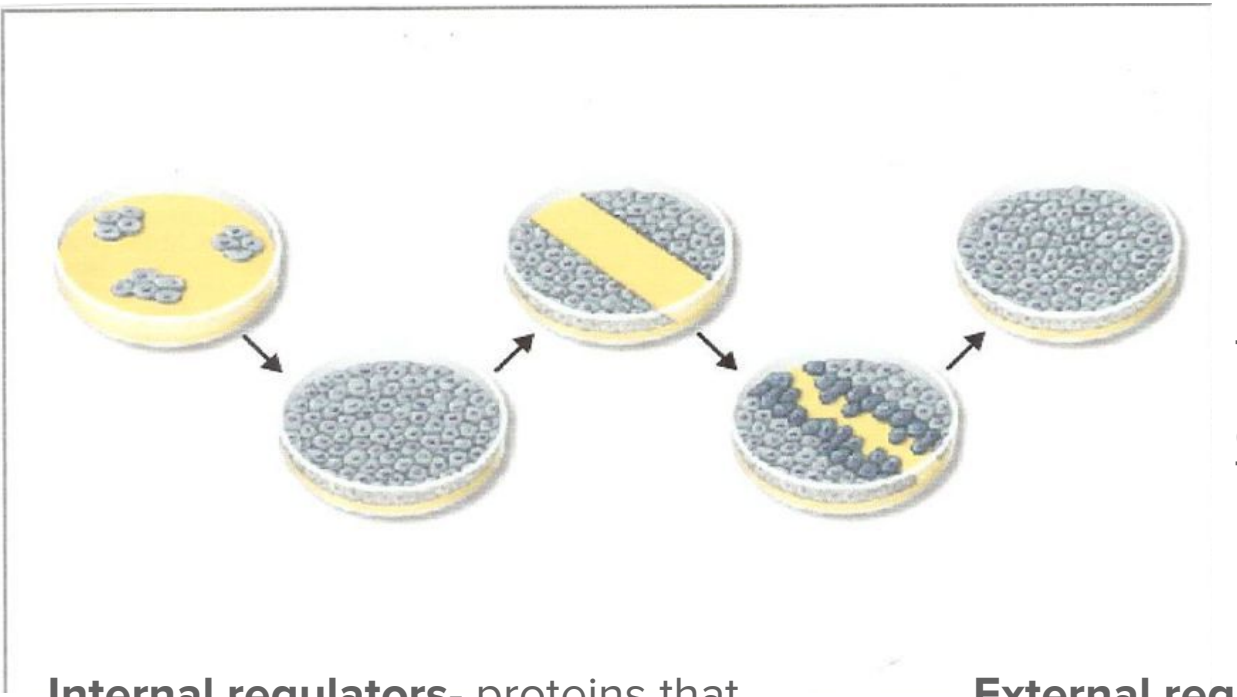
10.3 Controls on Cell Division



In the early 1980's, biologists were able to identify the substance in cells that regulates cell growth.

Cyclin: a protein which regulates the timing of the cell cycle in eukaryotic cells.

Internal regulators- proteins that respond to events happening inside the cells

External regulators- proteins that respond to events happening outside the cells

The health of an organism depends on cells not exceeding their life span.

This is especially true if it is a cell that divides rapidly.

What happens when a cell loses the ability to control its growth?

Cancer: a disorder in which the body's own cells lose the ability to control growth creating tumors.

https://www.youtube.com/watch?v=SGaQ0WwZ_0I

Life Spans of Various Human Cells

Cell Type	Life Span	Cell Division
Lining of esophagus	2–3 days	Can divide
Lining of small intestine	1–2 days	Can divide
Lining of large intestine	6 days	Can divide
Red blood cells	Less than 120 days	Cannot divide
White blood cells	10 hours to decades	Many do not divide
Smooth muscle	Long-lived	Can divide
Cardiac (heart) muscle	Long-lived	Cannot divide
Skeletal muscle	Long-lived	Cannot divide
Neuron (nerve cell)	Long-lived	Most do not divide