Feedback

Homeostasis	set of conditions under which living things can successfully survive
Negative feedback/-feedback inhibition	turning itself off using the end product of the pathway.
positive feedback	further stimulates the pathway, for example more and more X is made

The Cell Cycle

G0	temporarily nondividing until they get a signal to reenter the normal cell cycle.
Interphase (G1, S, G2)	not yet started to divide, regular activities
	S phase: replicates its genetic material, single chromosome in the nucleus is duplicated. **sister chromatids** held by **centromere**.
	G1 and G2: growth, performs metabolic reactions and produces organelles, proteins, and enzymes.
	These three phases are highly regulated by checkpoints and special proteins called **cyclins** and **cyclin-dependent kinases (CDKs)**. To induce cell cycle progression, an inactive CDK binds a regulatory cyclin, the complex is activated, the cell cycle continues. To inhibit cell cycle progression, CDKs and cyclins are kept separate.
	losing control of the cell cycle, such as mutation in a protein, may cause **cancer**. Mutated genes that induce cancer are called **oncogenes**.
	Tumor suppressor genes produce proteins that prevent the conversion of normal cells into cancer cells, also can trigger apoptosis.
Mitosis	cell divides into two genetically identical daughter cells + maintaining the proper number of chromosomes from generation to generation

The Cell Cycle (cont)

1. **Prophase**: chromatin condenses
2. **Metaphase**: chromosomes align in the middle.
3. **Anaphase**: chromatids are pulled apart.
4. **Telophase**: the cell completes splitting in two. **cytokinesis** : split along a cleavage furrow (animal)/ cell plate (plant)

* Mitosis is involved in growth, repair, and asexual reproduction, so not happen in sex cell.

Cell Communication in plants

plants do not have a nervous system but can produce several proteins found in animal nervous systems, such as certain neurotransmitter receptors.

response to environmental stimuli, link environmental cues to biological processes, communicate with nearby plants.

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