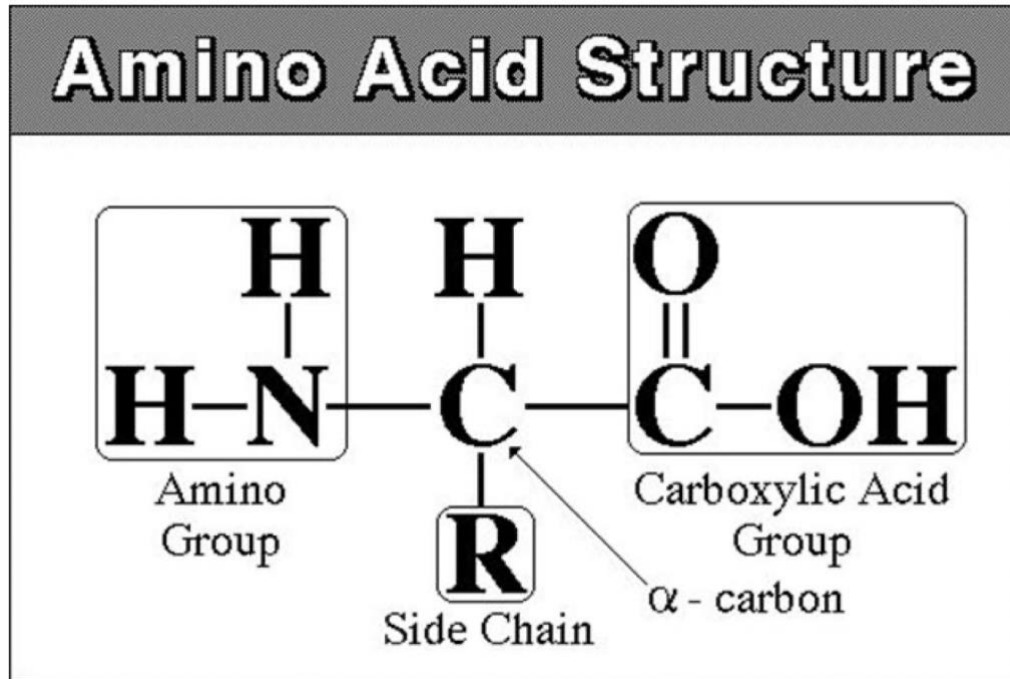


3-1-M FRQ

Campbell Biology: Concepts & Connections 9E (Taylor et al.)

Amino Acid Structure (구조 외우기)

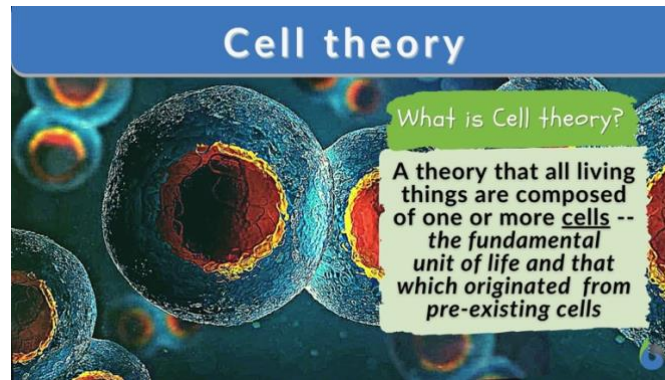


Nucleic Acids and Their Functions

- Nucleic acid is a nucleotide polymer.
- Functions
 - Genetic material (DNA & RNA)
 - Through the Central Dogma, the gene's instructions, written in "nucleic acid language," are translated into "protein language," which is the amino acid sequence of a polypeptide.
 - An organism's genes determine the proteins and thus the structures and functions of its body.
 - Energy currency (ATP)
 - 구조가 비슷 (Nucleotide 에서 Phosphate Group 이 두 개 더 붙음)
 - Secondary messenger (cAMP, cGMP) for cell signaling
 - cyclic AMP 와 cyclic GMP 가 세포 내에서의 우편 배달부 역할을 수행한다.
 - AMP 와 GMP 는 Nucleotide 의 구조이다.

Cell Theory

- All living organisms are composed of one or more cells
- Cells are the smallest units of life.
- New cells come only from pre-existing cells by cell division. (= All cells come from other cells.P)



Chapter 5 Review Question

A biologist performed two series of experiments on lactase, the enzyme that hydrolyzes lactose to glucose and galactose. First, she made up 10% lactose solutions containing different concentrations of enzyme and measured the rate at which galactose was produced (grams of galactose per minute). Results of these experiments are shown in Table A below. In the second series of experiments (Table B), she prepared 2% enzyme solutions containing different concentrations of lactose and again measured the rate of galactose production.

Table A. Reaction Rate and Enzyme Concentration

Lactose concentration	10%	10%	10%	10%	10%
Enzyme concentration	0%	1%	2%	4%	8%
Reaction rate	0	25	50	100	200

Table B. Reaction Rate and Substrate Concentration

Lactose concentration	0%	5%	10%	20%	30%
Enzyme concentration	2%	2%	2%	2%	2%
Reaction rate	0	25	50	65	65

- Graph and explain the relationship between the reaction rate and the enzyme concentration.
- Graph and explain the relationship between the reaction rate and the substrate concentration. How and why did the results of the two experiments differ?