STAGES OF CATABOLISM

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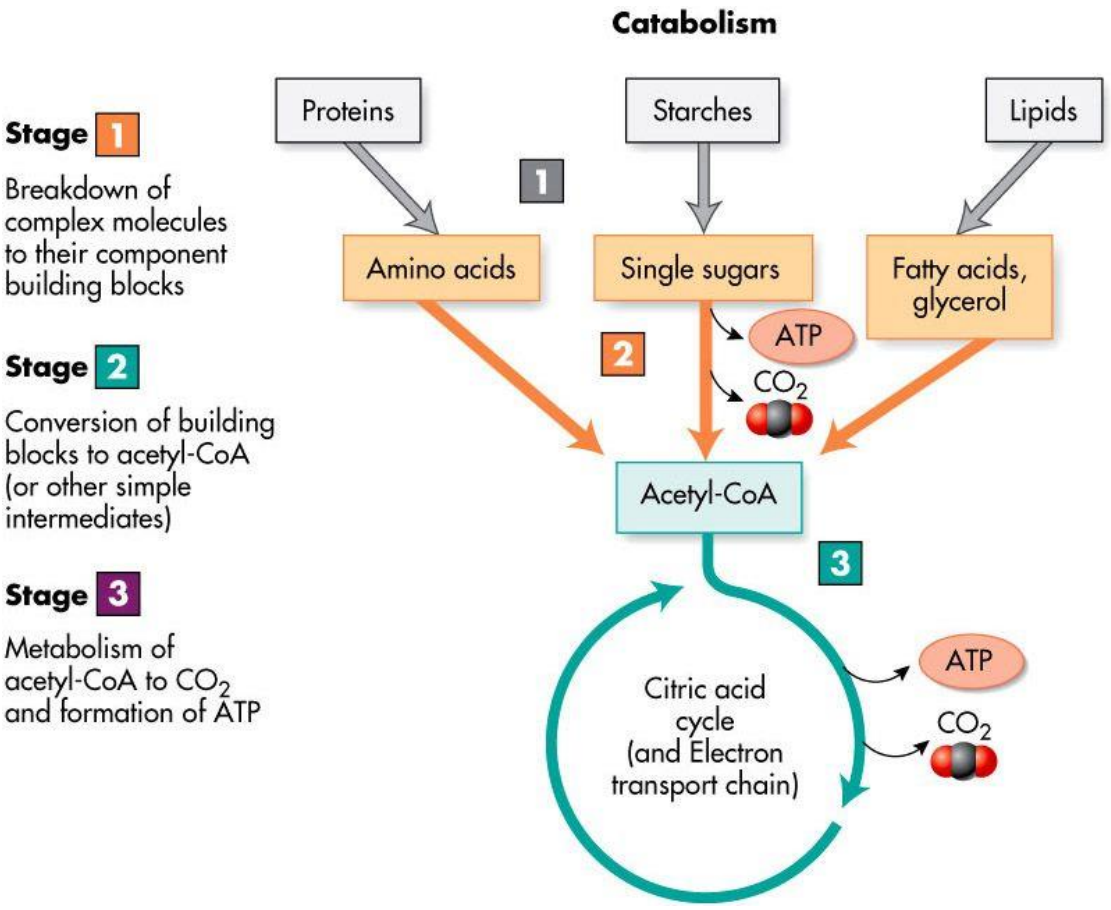
CATABOLISM:

It is the degradative process concerned with the breakdown of complex molecules to simpler ones with release of energy.

Catabolism is not a single step process occurring in a cell. It is important to understand where catabolism occurs. The part of the cell where catabolism primarily occurs is mitochondria. It is a multistage process.

There are three main stages of catabolism:



STAGE I: Conversion of complex molecules into their building blocks

Complex organic molecules like proteins, lipids, and polysaccharides are catabolized to their smaller components or monomers, outside cells. These complex molecules are unabsorbable in their complex state and hence, for their absorption, it is essential that these basic and essential molecules break down into easily absorbable and smaller monomers. Polysaccharides are broken down to monosaccharides, lipids to free fatty acids and glycerol, proteins to amino acids

STAGE II: Formation of simple intermediate

The building blocks produced in stage I are degraded to simple intermediates such as pyruvate and acetyl CoA. These intermediates are not readily identifiable as carbohydrates, lipids or proteins. A small quantity of energy (as ATP) is captured in stage II

STAGE III: Final oxidation of acetyl CoA

Acetyl CoA is completely oxidized to CO_2, liberating NADH and $FADH_2$ that finally get oxidized to release large quantity of energy (as ATP). Krebs cycle (or citric acid cycle) is the common

metabolic pathway involved in the final oxidation of all energy-rich molecules. This pathway accepts the carbon compounds (pyruvate, succinate etc.) derived from carbohydrates, lipids or proteins