

Cell Metabolism

the biochemical reactions that take place within the cell. Reactions are turned on and off or sped up and slowed down according to the cell's immediate needs and overall functions.

Metabolism has two distinct divisions:

1-catabolism, in which the cell breaks down complex molecules to produce energy and reducing power.

2- anabolism, in which the cell uses energy and reducing power to construct complex molecules and perform other biological functions.

Example:

Complex sugars consumed by the organism can be broken down into simpler sugar molecules called monosaccharaides such as glucose.

glucose is broken down to make adenosine triphosphate (ATP).

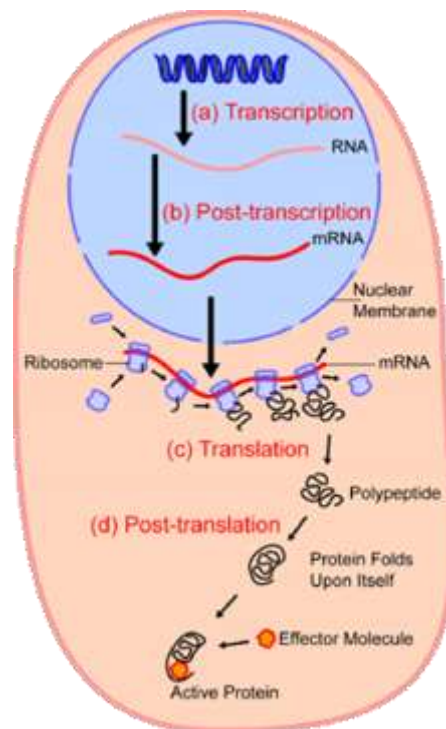
Regulation

The chemical reactions of metabolism are organized into metabolic pathways, in which one chemical is transformed into another by enzymes.

Enzymes are crucial to metabolism and allow the fine regulation of metabolic pathways to maintain a constant set of conditions in response to changes in the cell's environment, a process known as homeostasis.

Protein synthesis

Within the nucleus of the cell, genes (DNA) are transcribed into RNA. This RNA is then subject to post-transcriptional modification and, resulting in a mature mRNA that is then transported out of the nucleus and into the cytoplasm, where it undergoes translation into a protein.



Protein synthesis