

How the trip operation works



Trp Operon is a group of genes that transcribe genetic coding for producing tryptophan or trp which are primarily found in bacteria. Trp operon was discovered in Escherichia Coli by Jacques Monod in 1953. E-coli is a form of bacteria present in the lower intestine of warm blooded organisms that causes food poisoning in human-beings. E-coli can exist outside the body also and therefore are often used as indicators for testing environmental factors.

Trp operon is frequently used to study the regulation mechanisms of genetic transcription. It acts as repressor in the transcription processes and greatly facilitates in the study of DNA and RNA. The operon contains five types of structural genes: Trp A; Trp B; Trp C; Trp D; and Trp E with specific codes and synthesizing properties. The Trp operon regulates its own production through 'negative feedback loop' that promotes repressive affect resulting in non transfer of certain genetic expressions or codes (Oxender et. Al., 1979).

Another important feature of Trp operon is that it has got attenuators and leader peptides comprising of nearly 140 nucleotides that help to dissociate RNA decoding from the DNA encoding and thereby repress the process of transcription. Thus their property of gene regulation becomes the most critical factor to study the highly complex process of hereditary characteristics and genetic behavioral pattern in living organisms. When it is liberated in the operator, the transcription is made possible and promotes genetic transfer of characteristics.

Reference

Oxender, D. L., et al. (1979). Attenuation in the Escherichia coli tryptophan

operon: Role of RNA secondary structure involving the tryptophan codon region. Proceedings of the National Academy of Sciences 76, 5524-5528.