



Genes and their Purposes

A **gene** is a molecular unit of heredity of a living organism. *Genes* hold the information to build and maintain an organism's cells and pass genetic traits to offspring. Living beings depend on genes, as they specify all proteins and functional RNA chains. All organisms

have many genes corresponding to various biological traits, some of which are immediately visible, such as eye color or number of limbs, and some of which are not, such as blood type, increased risk for specific diseases, or the thousands of basic biochemical processes that comprise life.

It is widely accepted by the scientific community as a name given to some stretches of DNA and RNA that code for a polypeptide or for an RNA chain that has a function in the organism. Though, there still are controversies about what plays the role of the genetic material.

It is also possible that genes may get faulty. Variations that make the gene faulty are called mutations. SNPs or single nucleotide polymorphisms are changes in a single base or single letter in the sequence and may code of a different protein altogether making it akin to a genetic mutation.

Mutations in genes that are important for functions in the body can lead to a genetic condition that may affect growth or health of the individual. Some mutations do not directly cause disease but may make a person more susceptible to developing a genetic condition.

In all organisms, there are two major steps separating a protein-coding gene from its protein: First, the DNA on which the gene resides must be ***transcribed*** from DNA to messenger (mRNA); and, second, it must be ***translated*** from mRNA to protein. RNA-coding genes must still go through the first step, but are not translated into protein. The process of producing a biologically functional molecule of either RNA or protein is called **Gene Expression**, and the resulting molecule itself is called a **Gene product**.



Genes and their Purposes Writing Activity

1. What is mutation?

2. Briefly explain the concept of gene.

3. What are the two major steps in separating a protein-coding gene from its protein? Briefly explain.

4. What is the difference between Gene Expression and Gene Product?

