

Read About Genes & Mutations

WHAT ARE GENES & MUTATIONS?

Genes are sections of genetic material that determine the traits of a living thing. Mutations are changes in those genes which can cause traits to change. Some mutations are beneficial, some harmful, and others have no effect.

To better understand genes & mutations...

LET'S BREAK IT DOWN!

Deoxyribonucleic Acid

Deoxyribonucleic acid (DNA) is genetic material found in the cells of all living organisms. DNA contains the code of life and is unique to each organism. DNA is passed from parent to offspring through both asexual and sexual reproduction.



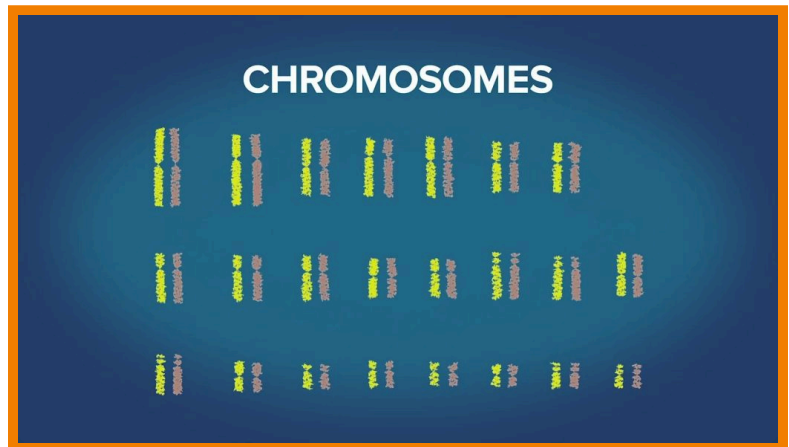
Mutation

Mutations are changes that occur in our genetic material. Changes can occur at any time during an organism's life span. Mutations can be inherited or happen randomly during cell division or be caused by environmental factors, for example, too much Sun exposure.



Chromosomes

Chromosomes are tightly coiled strands of DNA and are found in the cells of living things. All organisms have a specific number of chromosomes, for example, humans have 46 chromosomes (23 pairs). All living things get their chromosomes from their parents. In asexual reproduction, all the chromosomes come from a single parent, and in sexual reproduction each parent contributes equal amounts. In humans, an offspring inherits 23 chromosomes from mom and 23 from dad.



Careers in Science: Forensic Scientist

Forensic science uses biology and chemistry to collect and analyze evidence from crime scenes. Forensic scientists work in the field and are experts in evidence collection, which is important, so the evidence does not get contaminated. They also work in the lab, where they take the evidence and analyze it to help solve the crime.



Careers in Science: Virologist

A virologist studies viruses. Viruses are microscopic particles of genetic material surrounded by a protein coat. Viruses are nonliving particles that can infect plants, animals, and even bacteria. Viruses are different from bacteria because bacteria are living and can reproduce on their own; however, viruses cannot reproduce on their own and need a host cell to reproduce.



GENES & MUTATIONS VOCABULARY

Deoxyribonucleic acid (DNA)

Made from nucleic acid and holds the code that makes up living things.

Chromosome

Tightly coiled strands of DNA found in the cells. All living things have a specific number of chromosomes; humans have 46 chromosomes (23 pairs), and get half from mom and the other half from dad.

Trait

A characteristic belonging to a population or organism.

Gene

Part of a chromosome that is inherited from the parent(s) and determines some of an organism's characteristics.

Protein

Made from a chain of amino acids and sometimes referred to as the building blocks of life. Proteins have specific shapes (structure) and perform different tasks (functions) in the body.

Variation of traits

The differences that occur in the same trait within a population. Variations happen randomly when DNA is passed from parent to offspring and explain why siblings with the same parents do not look exactly alike.

GENES & MUTATIONS DISCUSSION QUESTIONS

What is DNA and why is it important?

DNA is short for deoxyribonucleic acid and it is the genetic material that contains the code that makes an organism.

What are chromosomes and what do they do?

Chromosomes are tightly coiled strands of DNA that are in the cells of all living things.

What are genes and how do we get them?

Genes are sections of DNA that are found in our chromosomes. Genes are passed from parents to offspring.

How are proteins made and what do they do?

Living things make proteins based on their DNA. As proteins are made, they take on different shapes, the shape of the protein (structure) determines what the protein does (function).

Explain how a mutation can happen and give an example.

Mutations are a change in the genetic code, DNA, and can sometimes lead to proteins being made wrong. An example could be a mouse that inherited a gene with a mutation, so it didn't grow any hair.

Give an example of a mutation and explain if the mutation is good, bad, or doesn't change the organism.

An example of a mutation could be if you stay in the Sun too long without sunscreen. Too much Sun can change the DNA in your skin cell, which could make them divide too fast. This could

cause skin cancer.
