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Opinion

A Brief Discussion on Chromosome

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DESCRIPTION

Chromosomes are thread-like structures that can be found in both animal and plant cells' nuclei. Protein and a single molecule of deoxyribonucleic acid make up each chromosome (DNA). DNA is passed along from parents to children and carries the precise instructions that distinguish each living creature. The word "chromosome" is derived from the Greek terms "Chroma" and "body" (soma). Because chromosomes are cell structures, or bodies, that are heavily stained by several colourful dyes employed in the study, scientists gave them this name. In the late 1800s, scientists studying cells under a microscope discovered chromosomes for the first time. However, the nature and function of these cell structures were unclear. Humans have 46 chromosomes, which are divided into 23 pairs. Each plant and animal species has a specific number of chromosomes. A fruit fly, for example, has four pairs of chromosomes, compared to 12 in a rice plant and 39 in a dog. Thomas Hunt Morgan's pioneering studies in the early 1900s helped researchers get a far better grasp of chromosomes. Morgan demonstrated that the X chromosome is related to gender and eye colour in fruit flies, establishing a relationship between chromosomes and inherited features. Chromosomes have a unique structure that maintains DNA firmly wrapped around spool-like proteins called histones. DNA molecules would be too lengthy to fit inside cells if they were not packaged in this way. For example, all DNA molecules in a single human cell would extend 6 feet if untied from their histones and placed end-to-end. Cells must constantly divide to make new cells to replace old, worn-out cells for an organism to grow and operate effectively. DNA must stay intact and equally distributed among cells during cell division. In the cell divisions, chromosomes are a crucial part of the process where DNA is accurately copied and distributed. Even yet, mistakes do happen from time to time. Chromosome number or shape changes in nascent cells might cause crucial difficulties. It's also critical that reproductive cells like eggs and sperm have the right number of chromosomes and that the structure of those chromosomes is accurate. If this is not done, the kids may not develop normally. People with Down syndrome, for example, have three copies of chromosome 21, rather than the two copies common in the general population. Living things have different numbers and shapes of chromosomes. One or two circular chromosomes are found in most bacteria. Linear chromosomes like those seen in other animals and plants are organized in pairs within the nucleus of the cell. The only human cells without chromosome pairs are reproductive cells, or gametes, which have only one copy of each chromosome. When two reproductive cells fuse, a single cell with two copies of each chromosome is formed. This cell divides repeatedly, and its descendants divide as well, eventually forming a mature human with a complete set of paired chromosomes in nearly all of its cells. In addition to the linear chromosomes found in the nucleus, human and other complex organisms' cells contain a much smaller type of chromosome similar to those found in bacteria. This circular chromosome can be found in mitochondria, which are powerhouse structures located outside of the nucleus. Scientists believe mitochondria were formerly free-living microorganisms capable of converting oxygen into energy. When these bacteria infected cells that lacked the ability to tap into the power of oxygen, the cells kept them, and the bacteria transformed into modern-day mitochondria throughout time.

CONCLUSION

The bacterial genome is usually found in the cytoplasm, in the shape of a circular chromosome. Genetic material is contained in the nucleus and firmly bundled into linear chromosomes in eukaryotes.

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