

Dna Replication Modern Biology Study Guide

Molecular lesions can cause structural damage to the DNA molecule, and can alter or eliminate the cell's ability for transcription and gene expression. Other lesions may induce potentially harmful mutations in the cell's genome, which affect the survival of its daughter cells following mitosis... 1116de4b5a This glossary is intended as introductory material for novices (for more specific and technical detail, see the article corresponding to each term). It has been designed as a companion to Glossary of genetics and evolutionary biology, which contains many overlapping and related terms; other related glossaries... 1116de4b5a

DNA into DNA strands during processes such as transcription and DNA replication. Alongside proteins, lipids and complex carbohydrates (polysaccharides), nucleic acids are one of the four major types of macromolecules that are essential for all known forms of life. DNA exists in many possible conformations that include A-DNA, B-DNA, and Deoxyribonucleic acid (; DNA) is a polymer composed of two polynucleotide chains that coil around each other to form a double helix. The polymer carries genetic instructions for the development, functioning, growth and reproduction of all known organisms and many viruses. DNA and ribonucleic acid (RNA) are nucleic acids 1116de4b5a

Glossary of cellular and molecular biology (M-Z) lists terms beginning with the letters M through Z. 1116de4b5a Artificial plasmids are widely used as vectors in molecular cloning, serving to drive the replication of recombinant DNA sequences within... 1116de4b5a

History of biology Although the concept of biology as a single coherent field arose The history of biology traces the study of the living world from ancient to modern times. This ancient work was further developed in the Middle Ages by Muslim physicians and scholars such as Avicenna. During the European Renaissance and early modern period, biological thought was revolutionized in Europe by a renewed interest in empiricism and the discovery of many novel organisms. Prominent in this movement were Vesalius and Harvey, who used experimentation and careful observation in physiology. The history of biology traces the study of the living world from ancient to modern times. Although the concept of biology as a single coherent field arose in the 19th century, the biological sciences emerged from traditions of medicine and natural history reaching back to Ayurveda, ancient Egyptian medicine and the works of Aristotle, Theophrastus and Galen in the ancient Greco-Roman world 1116de4b5a

DNA ligase e. It plays a role in repairing single-strand breaks in

duplex DNA in living organisms, but some forms (such as DNA ligase IV) may specifically repair double-strand breaks (i. DNA ligase is used in both DNA repair and DNA replication (see Mammalian ligases). In addition, DNA ligase has extensive use DNA ligase is a type of enzyme that facilitates the joining of DNA strands together by catalyzing the formation of a phosphodiester bond. Single-strand breaks are repaired by DNA ligase using the complementary strand of the double helix as a template, with DNA ligase creating the final phosphodiester bond to fully repair the DNA. a break in both complementary strands of DNA). bond to fully repair the DNA 1116de4b5a

This page, Glossary of cellular and molecular biology (O-L), lists terms beginning with numbers and with the letters A through L. 1116de4b5a DNA profiling is a forensic technique in criminal investigations, comparing criminal suspects' profiles to DNA evidence so as to assess the likelihood of their involvement in the crime. It is also used in paternity testing, to establish immigration

eligibility, and in genealogical and medical research. DNA profiling has also been used in the study of animal and plant populations in the fields of zoology, botany, and agriculture. 1116de4b5a

Plasmid They are most commonly found as small circular, double-stranded DNA molecules in bacteria and archaea; however plasmids are sometimes present in eukaryotic organisms as well. While chromosomes are large and contain all the essential genetic information for living under normal conditions, plasmids are usually very small and contain additional genes for special circumstances. Plasmids often carry useful genes, such as those involved in antibiotic resistance, virulence, secondary metabolism and bioremediation. used as vectors in molecular cloning, serving to drive the replication of recombinant DNA sequences within host organisms. In the laboratory, plasmids A plasmid is a small, extrachromosomal DNA molecule within a cell that is physically separated from chromosomal DNA and can replicate independently 1116de4b5a

DNA repair A weakened capacity for DNA repair is a risk factor for the development of cancer. dividing cells, unrepaired DNA damage that does not kill the cell by blocking replication will tend to cause replication errors and thus mutation. The DNA repair is a collection of processes by which a cell identifies and corrects damage to the DNA molecules that encode its genome. DNA is constantly modified in cells, by internal metabolic by-products, and by external ionizing radiation, ultraviolet light, and medicines, resulting in spontaneous DNA damage involving tens of thousands of individual molecular lesions per cell per day. DNA modifications can also be programmed 1116de4b5a

History of molecular biology (or DNA), the constituent of genes, and 2) proteins, which are the active agents of living organisms. One definition of the scope of molecular biology therefore The history of molecular biology begins in the 1930s with the convergence of various, previously distinct biological and physical disciplines: biochemistry, genetics, microbiology, virology and physics. With

the hope of understanding life at its most fundamental level, numerous physicists and chemists also took an interest in what would become molecular biology 1116de4b5a

DNA profiling DNA profiling has also been used in the study of animal and plant populations in the fields of zoology DNA profiling (also called DNA fingerprinting and genetic fingerprinting) is the process of determining an individual's deoxyribonucleic acid (DNA) characteristics. DNA analysis intended to identify a species, rather than an individual, is called DNA barcoding. eligibility, and in genealogical and medical research 1116de4b5a

Glossary of cellular and molecular biology (0-L) bidirectional replication A common mechanism of DNA replication in which two replication forks move in opposite directions away This glossary of cellular and molecular biology is a list of definitions of terms and concepts commonly used in the study of cell biology, molecular biology, and related disciplines, including genetics, biochemistry,

and microbiology. It is split across two articles: membrane or in peroxisomes 1116de4b5a

DNA ligase is used in both DNA repair and DNA replication (see Mammalian ligases). In addition, DNA ligase has extensive use in molecular biology laboratories for recombinant DNA experiments (see Research applications). Purified DNA ligase is used...

1116de4b5a In its modern sense, molecular biology attempts to explain the phenomena of life starting from the macromolecular properties that generate them. Two categories of macromolecules in particular are the focus of the molecular biologist: 1) nucleic acids, among which the most famous is deoxyribonucleic acid (or DNA), the constituent of genes, and 2) proteins, which are the active agents of living organisms. One definition of the scope... 1116de4b5a

Philosophy of biology increasing attention to biology, from the rise of Neodarwinism in the 1930s and 1940s to the discovery of the

structure of DNA in 1953 to more recent advances The philosophy of biology is a subfield of philosophy of science, which deals with epistemological, metaphysical, and ethical issues in the biological and biomedical sciences. Philosophers of science then began paying increasing attention to biology, from the rise of Neodarwinism in the 1930s and 1940s to the discovery of the structure of DNA in 1953 to more recent advances in genetic engineering. , Aristotle, Descartes, and Kant), philosophy of biology only emerged as an independent field of philosophy in the 1960s and 1970s, associated with the research of David Hull. g. Although philosophers of science and philosophers generally have long been interested in biology (e 1116de4b5a

The two DNA strands are known as polynucleotides as they are composed of simpler monomeric units called nucleotides. Each nucleotide is composed of one of four nitrogen-containing nucleobases (cytosine [C], guanine [G], adenine [A] or thymine [T]), a sugar called deoxyribose, and a phosphate group... 1116de4b5a

Other key ideas include the reduction of all life processes to biochemical reactions, and the incorporation of psychology...

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Self-replication Self-replication is any behavior of a dynamical system that yields construction of an identical or similar copy of itself. "assisted replication" than "self-replication". Computer viruses reproduce using the hardware and software already present on computers. Any self-replicating mechanism which does not make a perfect copy (mutation) will experience genetic. Self-replication in robotics has been an area of research and a subject of interest in science fiction. Biological cells, given suitable environments, reproduce by cell division. Biological viruses can replicate, but only by commandeering the reproductive machinery of cells through a process of infection. Harmful prion proteins can replicate by converting normal proteins into rogue forms. In 2021 researchers succeeded in constructing a system with sixteen specially designed DNA sequences. During cell

division, DNA is replicated and can be transmitted to offspring during reproduction 1116de4b5a

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