DNA Structure and Replication

DNA: The Double Helix

Recall that the nucleus is a small spherical, dense body in a cell. It is often called the "control center" because it controls all the activities of the cell including cell reproduction, and heredity. How does it do this? The nucleus controls these activities by the chromosomes. Chromosomes are microscopic, threadlike strands composed of the chemical DNA (short for deoxyribonucleic acid). In simple terms, DNA controls the production of proteins within the cell. These proteins in turn, form the structural units of cells and control all chemical processes within the cell.

Chromosomes are composed of genes. A gene is a segment of DNA that codes for a particular protein, which in turn codes for a trait. Meanwhile, DNA is the chemical that genes and chromosomes are made of. It stands for deoxyribonucleic acid. DNA is called a nucleic acid because it was first found in the nucleus. In 1953, James Watson and Francis Crick established the structure of DNA. The structure is a double helix, which is like a twisted ladder. The sides of the ladder are made of alternating sugar and phosphate molecules. The sugar is a monosaccharide called deoxyribose. Color all the phosphates pink (one is labeled with a "P"). Color all the deoxyriboses blue (one is labeled with a "D"). The rungs of the ladder are pairs of 4 types of nitrogen bases. Two of the bases are purines - adenine and guanine. The pyrimidines are thymine and cytosine. The bases are known by their coded letters: A, G, T, and C. These bases always bond in a certain way: A with T and C with G. This is known as the Base-Pair Rule. The bases can occur in any order along a strand of DNA. The order of these bases is the code that contains the instructions. For instance, ATGCACATA would code for a different gene than AATTACGGA. A strand of DNA contains millions of base pairs. (For simplicity, the image only contains a few.) Note that the bases attach to the sides of the ladder at the sugars and not the phosphate. Find your copy of the DNA strand and color it according to the following color scheme.

Color the thymines orange.	Color the adenines green.	_ <
Cotor are alymines orange.	Contactine admines green.	
Color the guanines purple.	Color the cytosines yellow.	

Note that the bases attach to the sides of the ladder at the sugars, not the phosphate. The combination of a single base, a deoxyribose sugar, and a phosphate make up a <u>nucleotide</u>. DNA is actually a molecule of repeating nucleotide monomers/subunits. Examine the nucleotides closer. Two of the bases are purines - adenine and guanine. The pyrimidines are thymine and cytosine. Note that the pyrimidines are single ringed and the purines are double ringed. Color the nucleotides using the same colors as you colored them in the double helix. The two sides of the DNA ladder are held together loosely by <u>hydrogen bonds</u>. Color the dotted lines between the base pairs representing the hydrogen bonding gray.

DNA: The Blueprint of Life

Every cell in your body has the same "blueprint" the same DNA. Like the blueprints of a house tell the builders how to construct a house, the DNA "blueprint" tells the cell how to build the organism. Yet, how can a heart be so different from a brain if all the cells contain the same instructions? Although much work remains in genetics, it has become apparent that a cell has the ability to turn off most genes and only work with the genes necessary to do a particular job. We also know that a lot of DNA does not code for anything at all. These regions of DNA that do not code for proteins are called "introns." The sections of DNA that do actually code from proteins are called "exons."

DNA Replication

Each time a new cell is made, the cell must receive an exact copy of the parent cell DNA. The new cells then receive the instructions and information needed to function. The process of copying DNA is called <u>replication</u>. Replication occurs in a unique way – instead of copying a complete new strand of DNA, the process "saves" or conserves one of the original strand. For this reason, replication is called semi-conservative. When the DNA is ready to copy, the molecule "unzips" itself and new nucleotides are added to each side.

Dna And Replication Study Guide Answer Key

Kerry Hull

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Been Down So Long It Looks Like Up to Me hilarious, chilling, sexy, profound, maniacal, beautiful and outrageous all at the same time," in an introduction to the paperback version of Been Down.... Been Down So Long It Looks Like Up to Me (Penguin ... The book is about young adults in their formative years, presumabley intelligent but preoccupied with the hedonistic degeneracy of criminal underclass. Even ... Been Down So Long It Looks Like Up to Me A witty, psychedelic, and telling novel of the 1960s. Richard Fariña evokes the Sixties as precisely, wittily, and poignantly as F. Scott Fitzgerald ... Richard Farina - Been Down so Long it Looks Like Up to Me Sing a song of sixpence, pocket full of rye, Four and twenty blackbirds, baked in a pie, When the pie was opened, the birds began to sing Wasn't ... Richard Fariña's "Been So Down It Looks Like Up to Me" ... Apr 29, 2016 — Richard Fariña's Been Down So Long It Looks Like Up to Me turns fifty. ... I am gazing, as I write, at a black-and-white photograph of Richard ... Been Down So Long It Looks Like Up to Me (film) Been Down So Long It Looks Like Up to Me is a 1971 American drama film directed by Jeffrey Young and written by Robert Schlitt and adapted from the Richard ... Been Down So Long It Looks Like Up to... book by Richard ... A witty, psychedelic, and telling novel of the 1960s Richard Fari a evokes the Sixties as precisely, wittily, and poignantly as F. Scott Fitzgerald captured ... Been Down So Long It Looks Like Up to Me - Richard Farina Review: This is the ultimate novel of college life during the first hallucinatory flowering of what has famously come to be known as The Sixties. Been Down ... Bontrager's Textbook of Radiographic Positioning and ... Get the information and guidance you need to become proficient in positioning with Bontrager's Textbook of Radiographic Positioning and Related Anatomy, ... Bontrager's Textbook of Radiographic

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