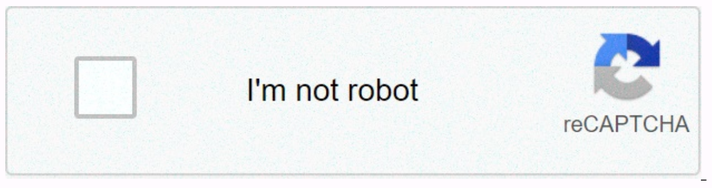

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Coloring dna answer key

Name: ____ The kernel is a small spherical, dense body in a cell. It is often called a control center because it controls all cell activities, including cell reproduction, and heredity. How does he do it? Chromosomes found in the nuclei are microscopic, threaded strands composed of chemical DNA (short for deoxyribonucleic acid). Simply put, DNA controls the production of proteins in a cell. These proteins, in turn, form the structural units of cells and control all the chemical processes in the cell. Chromosomes consist of genes. A gene is a segment of DNA that encodes a specific protein, which in turn encodes for a property. Therefore, you hear it commonly referred to as the baldness gene or the blue eye gene. Meanwhile, DNA is the chemical from which genes and chromosomes are made. This means deoxyribonucleic acid. DNA has been called nucleic acid since it was first found in the nuclei. We now know that DNA is also found in organelles, mitochondria and chloroplasts, although it is the DNA in the nuclei that actually controls the cell's work. In 1953, James Watson and Francis Crick established the DNA structure. The structure is a double spiral, which is like a twisted ladder. The sides of the ladder are made of alternating sugar and phosphate molecules. Sugar is deoxyribosis. Color all phosphates pink (one is labeled p). Color all deoxyribosis (D) blue. Rungs of the ladder are pairs of 4 types of nitrogen bases. Two bases are purines - adenine and guanine. Pyrimidines are thymine and cytosine. The basics are known by their coded letters A, G, T, C. These bases always come together in a certain way. Adenine only connects with thymine. Guanine connects only with cytosine. This is known as the basic pair rule. Bases can occur in any order along the strand of DNA. The order of these foundations is the code contains instructions. For example, ATGCACATA would code for a gene other than AATTACGGA. A strand of DNA contains millions of foundations. (For simplicity, the image contains only a few.) Note that the basics connect to the sides of the ladder for sugars, and not phosphate. Color the basics on the DNA: thyme = orange. adenine = green. guanine = purple. cytosine = yellow. The combination of one base, deoxyribic sugar and phosphate, forms nucleotide. DNA is actually a molecule of repetitive nucleotides. Explore nucleotides more closely. Two bases are purines - adenine and guanine. Pyrimidines are thymine and cytosine. Note that pyrimidines are individual rings and purines are double ringtones. Color nucleotides using the same colors as you color them in a double spiral. Both sides of the DNA ladder are loosely held together by hydrogen bonds. hydrogen bonds gray. Messenger RNA So now we know that the nucleus controls the activity of the cell through chemical DNA, but how? It is a sequence of bases that determine which protein is to be produced. The sequence is like code that we can now interpret. The sequence determines which proteins are melted and the proteins determine which actions will be performed. And so the nucleus is the control center of the cell. The only problem is that the DNA is too big to pass through the nuclear pores. So the chemical is used to read DNA in the nuclei. That chemical is the messenger of RNA. Messenger RNA (mRNA) is small enough to pass through nuclear pores. It takes a message of DNA ribosomes and tells them what proteins to be made. Recall that proteins are the building blocks of the body. Imagine if the code taken on ribosomes says ribosome what is needed - as a recipe. Messenger RNA is similar to DNA, except that it is located a single strand, and does not have thymine. Instead of thymine, mRNA contains the basic Uracil. In addition to this difference, mRNA has sugar ribose instead of deoxyribosis. RNA stands for ribonucleic acid. Color mRNA as you have DNA. Color ribose darker BLUE, and uracil brown. Name: _____Date:__ For each new cell you create, the cell must receive an exact copy of the parent cell's DNA. The new cells will then receive the instructions and information needed to function. The DNA copying process is called replication. Replication occurs in a unique way — instead of copying a complete new part of the DNA, the process saves or stores one of the original strands. Therefore, replication is called semi-

conservative. When the DNA is ready to be copied, the molecule expands and new nucleotides are added to each side. The image showing replication is similar to DNA and mRNA coloration. Note that nucleotides are shown as 2 parts – sugar and phosphate (blue color) and one of the four bases identified by shape, a color the same as on the other model. Life plan Every cell in your body has the same plan or the same DNA. Just as house plans tell builders how to build a house, the DNA plan tells cells how to build an organism. Still, how can the heart be so different from the brain if all cells contain the same instructions? Although much work remains in genetics, it is clear that the cell has the ability to turn off most genes and only work with the genes needed to work. To create the body, the code executed by messenger RNA travels to ribosomes, where three bases in the code (called a codone) specify one amino acid. A long chain of mRNA could contain thousands of these amino acids. If this problem is linked, acids form proteins that form many structures in the body. In this section, color the base and chain of RNA as before. The color of amino acids red. Q1. Why is the kernel called the cell control center?__ What is a gene? _____ 3. Where are the chromosomes in the cell? _____ 4. DNA is found in what organelles? _____ 5. What two scientists created the structure of DNA? _____ 6. Replication is called semi-conservative because half of the original source is __ 7. From what sides of the DNA rankings are they made? _____ 8. Three parts consist of one nucleotide: ____ What are the 4 bases that make up the partitions of the DNA rankings? _____ 10. What sugar is in the DNA? _____ In RNA? _____ 11. How are the foundations combined? Bonds with _____ G bonds with _____ 12. Why does RNA need to act as a messenger? _____ 13. Proteins are made, where in the cell? _____ 14. How is RNA different from DNA? (list of 3 things) ____ The process of copying DNA is called ____ What is the shape of DNA? _____ 17. Proteins are made from what subuuchs? _____ 18. The three bases found on mRNA are called __ How some cells become brain cells and others become skin cells when the DNA in all cells is exactly the same. In other words, if the instructions are exactly the same, how does one cell become a brain cell and the other skin? 20. Why is DNA called the Life Plan? The answer key to the DNA staining worksheet, which is available for free, is at DNA with coloring instructions to guide students through a lesson exploring how the structure of DNA was determined, how messenger RNA is used for proteins, and how DNA replicates. Students color pictures and answer questions. The download contains the answer key to the questions and completed color images. For convenience, the student worksheet is included. 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