

DNA Worksheet - Answers

1. Deoxyribonucleic acid
2. Variable Number Tandem Repeats
3. A segment of a DNA or RNA molecule containing information coding for a protein or peptide sequence.
4. A segment of a DNA or RNA molecule that does not code for proteins and interrupts the sequence of genes.
5. Some DNA sequences encode important information for the cell.
6. Cells that contain quite a bit of DNA that doesn't encode anything.
7. The specific location of a gene or DNA sequence or position on a chromosome
8. The genetic information donated by his or her parents.
<http://www.forensicindia.com/fingerprint/vntrs.html>
9. Eye color, hair color, skin color, propensity to be over-weight, propensity of medical conditions... etc
10. Skin, semen, saliva, hair, and every other part of the anatomy
11. Everything that lives has DNA.
12. No. Mature red blood cells and cornified cells in the skin, hair, and nails contain no nucleus.
13. from the top (called the 5' or "five prime" end) to the bottom (called the 3' or "three prime" end). In a double helix, the strands go opposite ways
14. adenine, guanine, cytosine and thymine
15. Adenine (A) will only bond with thymine (T), and guanine (G) will only bond with cytosine (C)
16. C-T-A-T-C-C-A-G-A-T-C-T-T-G-A
17. Paternity and Maternity , Criminal Identification and Forensics and Personal Identification
18. Nothing about DNA fingerprinting is 100% assured. The term DNA fingerprint is, in one sense, a misnomer: it implies that, like a fingerprint, the VNTR pattern for a given person is utterly and completely unique to that person. Actually, all that a VNTR pattern can do is present a probability that the person in question is indeed the person to whom the VNTR pattern (of the child, the criminal evidence, or whatever else) belongs. Given, that probability might be 1 in 20 billion, which would indicate that the person can be reasonably matched with the DNA fingerprint; then again, that probability might only be 1 in 20, leaving a large amount of doubt regarding the specific identity of the VNTR pattern's owner.
<http://www.forensicindia.com/fingerprint/problems.html>
19. The only difference between people (or any animal) is the order of the base pairs.
20. They are able to determine whether two DNA samples are from the same person, related people, or non-related people. Scientists use a small number of sequences of DNA that are known to vary among individuals a great deal, and analyze those to get a certain probability of a match. (<http://www.forensicindia.com/fingerprint/problems.html>)
21. Chromosomes are complete molecules of DNA and its attached proteins.
22. RFLP (Restriction Fragment Length Polymorphism), PCR (Polymorphism Chain Reaction), STR (Short Tandem Repeat), and mtDNA (Mitochondrial DNA Analysis).

23. Generally, RFLP analysis requires large amounts of DNA and the DNA must be un-degraded. PCR testing often requires less DNA than RFLP testing and the DNA may be partially degraded. However, PCR still has sample size and degradation limitations. PCR tests are extremely sensitive to contamination at the crime scene and within the laboratory. STR is one of the newer and more flexible DNA techniques. It has the advantage of being able to analyze degraded and broken pieces of DNA. The fourth test type, mtDNA, is used to examine samples which can not be analyzed by other methods by looking at the DNA in a cell's mitochondrion (as opposed the DNA in the cell nucleus).
24. No, Because VNTR patterns are inherited genetically, a given person's VNTR pattern is more or less unique. The more VNTR probes used to analyze a person's VNTR pattern, the more distinctive and individualized that pattern, or DNA fingerprint, will be.
(<http://www.forensicindia.com/fingerprint/problems.html>)
25. There is not one specific answer, do your best.

