WORKSHEET: GENES AND CHROMOSOMES

Name_____ Year and Section_____ Score_____

Teacher_____School_____Date_____

Objectives:

- Define the terms 'Gene' and 'Chromosome'
- Identify where chromosomes are found in the body
- Describe the basic structure and features of a chromosome •

BIG IDEAS:

You can think of the DNA content of a cell as a cookbook that contains recipes describing the living organism right down to the tiniest detail. The recipes are the genes. A gene is a fragment of DNA that accounts for a specific characteristic, such as hair colour, ability to digest dairy or any other information pertaining to the organism's appearance or functioning. It is made up of a very precise sequence of nitrogenous bases (ACTGTTAGC...), the building blocks of a DNA molecule. When decoding the sequence of a particular gene (the recipe), a cell can manufacture a specific protein. A gene can have several different forms, with one or more different nitrogenous bases. These variant forms of a gene are called alleles. In the case of eye colour, for instance, you can have alleles that contain information for brown, blue, green or grey pigment.

Prepared by: Ronaliza Atiagan Marcos HS

Source: http://sonhank.com/wp-content/uploads/2015/10/Genes-and-Chromosomes-worksheet.pdf

http://www.genomequebec-education-formations.com/education-concept-genes-chromosomes-en

DNA containing our genes is located in the nucleus of the cell. It is bound to proteins to form a material known as chromatin. When a cell divides, it must start by organizing this whole mess. Chromatin then takes on a more compact form: chromosomes. Humans have 23 pairs of chromosomes; they look like 46 little rods. Cellular biologists have given each of the pairs a number. The first 22 pairs of chromosomes are called autosomes. The 23rd pair of chromosomes is different: it holds the sex chromosomes. In humans, there are two types of sex chromosomes: X and Y, which each contains information on the development of female and male genders. In females, the 23rd pair has two X chromosomes. In males, it has one X chromosome and one Y.

Procedure: Refer to the PowerPoint on this topic to answer the following questions:

1. What is a gene?

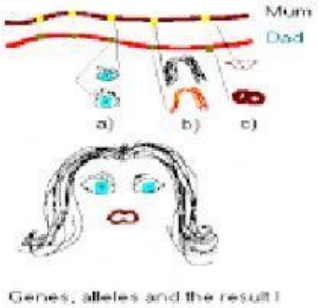
_____

2. What are genes made of and what do they do?

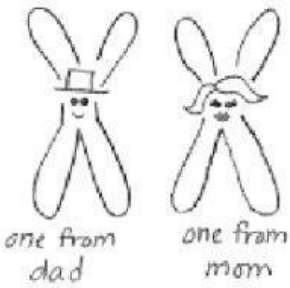
_____

3. Every person has two copies of each gene, one inherited from each parent. These two, almost identical genes are called _____ allele.

4. _____alleles are forms of the same gene with small differences in their sequence of DNA bases because they come from two different people – your parents.



Genes, alleles and the result



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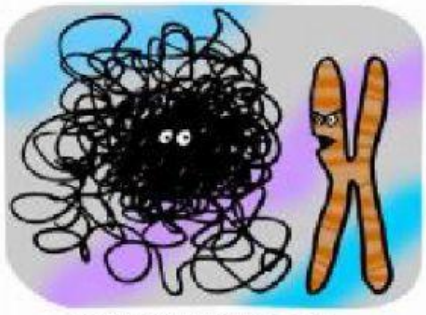
5. The physical appearence of an organism, the organisms traits such as size, shape, colour or behaviour is called a _____.



7. Phenotype describes the physical characteristics that we can see when we look at an organism, _____type is hidden inside the cells, inside the cells' nucleus, and can only be seen with a microscope.

8. Chromosomes are thread-like structures made up of_____ .

They are located inside the nucleus of animal and plant cells and can ONLY be seen under the microscope when the cells.

This can happen during: _____ and _____ . –

9. In human body cells (except gametes – egg and sperm) there are _____chromosomes arranged in _____pairs. 10.

Do all species have the same numbers of chromosomes in their cells? (Yes/No)

_____

11. If each species has a different arrangement (make up) of chromosomes, how do these vary or how are they different?

_____

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12. In the diagram below fill out the missing words in the squares provided.

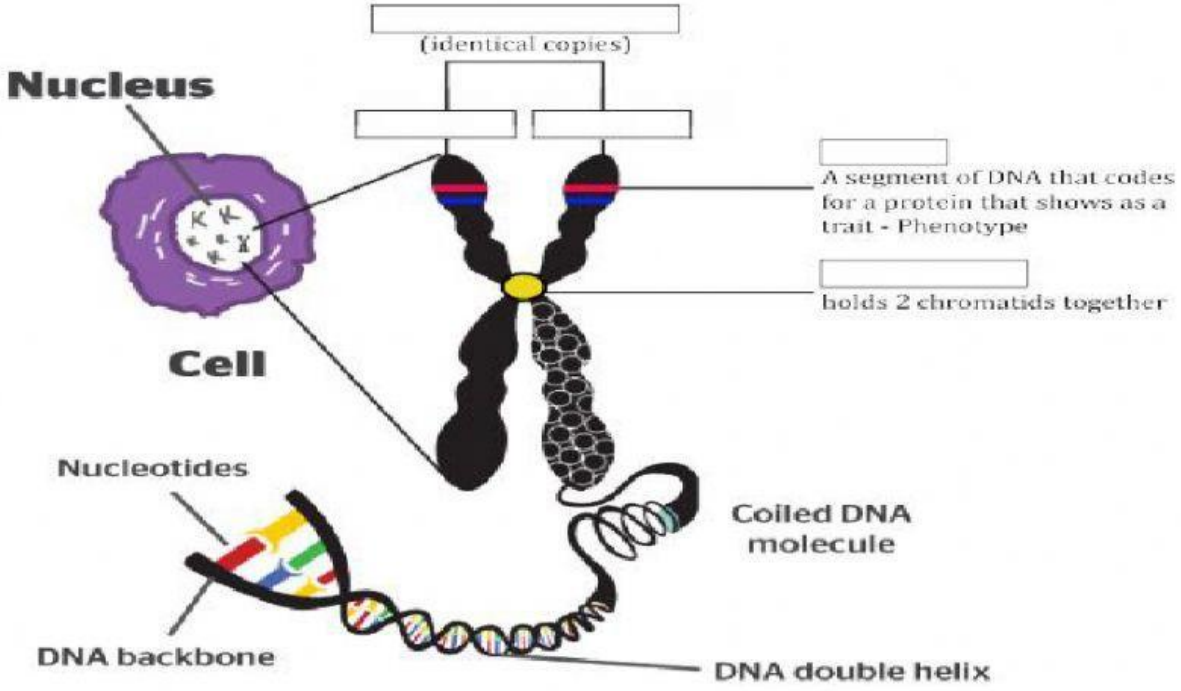

Figure: Credits to the owner (link cannot find)

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13. We already know that chromosomes come in pairs...

14. In what part of a cell would you find a chromosome?

_____

15. All humans have pairs of non-sex chromosomes called _____, and _____pair of sex chromosomes.

16. The combination of sex chromosomes distinguishes (tells apart) females from males. There are 2 types of sex chromosomes _____and _____ .

17. In females the sex chromosomes are the same/different (circle one). Females have _____chromosomes.

18. In males the sex chromosomes are same/different (circle one). Males have an _____ and _____chromosomes.

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