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| Unit 4Genetics |

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| What are Traits?  |

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| Image result for genetics traits**Traits:** Brainstorm with a partner – **Where** do traits come from? **Who** and **What** are responsible for these traits?  |

Watch: <http://learn.genetics.utah.edu/content/basics/traits/>

Define the following terms:

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| **Genetics** |  |
| **Inherited traits** |  |
| **Non-inherited traits** |  |
| **Heredity** |  |
| **Genome** |  |

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| How is Genetic Material Inherited?  |



* Inheritance describes how genetic material is passed on from \_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_.
* We get one copy of our \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from each of our parents.
* Most of our cells contain two sets of \_\_\_\_\_ chromosomes? (they are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_).
* An exception to this rule are the sex cells (egg and sperm), also known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which only have one set of chromosomes each (they are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_).
* However, in sexual reproduction the sperm cell combines with the egg cell to form the first cell of the new organism in a process called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* This cell (the fertilized egg) has two sets of \_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(diploid) and the complete set of instructions needed to make more cells, and eventually a whole person.
* This passing down of genetic material is evident if you examine the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of members of the same family, from average height to hair and eye colour to nose and ear shape, as they are usually similar.

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| Structure and Function of DNA (Review from Grade 9)  |

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| **Check Background Knowledge:** What do we remember about the structure & function of DNA? |

**DNA carries the master set of instructions for cell function**

* DNA stands for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_
* Stores the \_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an organism
* Genetic information determines how an organism \_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



**DNA: Structure**

* Two long strands shaped like a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Consists of many copies of four different chemical building blocks called *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*: adenine (A), thymine (T), cytosine (C), guanine (G)
* DNA sequence: The specific order of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; the “code” that holds the genetic information.

 **Use the image at the right to complete the follow:**

 **Circle a nucleotide.**

**Label the sugar and phosphate.**

**Label the bases that are not already labeled.**

**DNA: Function**

* Stores the \_\_\_\_\_\_\_\_\_\_\_   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  of an organism
* An organism’s DNA is stored in each of its \_\_\_\_\_\_\_\_\_\_\_\_\_.
* DNA molecules coil and compact into a condensed form called *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* to fit into the cells
* Just before reproduction: DNA condenses further into structures called *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*
* During reproduction: Copies of chromosomes (and therefore DNA) are transferred the    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Watch: <https://www.youtube.com/watch?v=xUrlreMaUrs>

Label the diagram below using the terms: ***chromosome***, ***DNA*** and ***chromatin***



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| Protein Synthesis |

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| Image result for dna rna protein traitA \_\_\_\_\_\_\_\_\_\_\_ is a segment of DNA that codes for a specific \_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occurs in two phases.Phase 1: **Transcription** in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Phase 2: **Translation** in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 | Image result for transcription translation cell |

