Honors Biology Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
NDHS Per: \_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_  
  
**Mutations and Genetic Disorders**

**\_\_\_\_\_\_\_\_\_\_\_\_**: Change in the  of an organism

**Types**:  
1.  – changes to  in a gene – alters the expression of the gene’s protein and can affect the cell

2.  – changes due to , usually meiosis that alters the  in a cell

**Gene Mutations**:

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: changes in  nucleotide – typically a  error
   1. – the change in the nucleotide still brings in the  so the protein remains
   2. – the change in the nucleotide brings in a  altering the

**Ex:**

* 1. – the change in the nucleotide results in a  being produced  in the mRNA – causes the protein to stop .

1. : the  in the DNA results in a shift of the .

* Causes all of the .

**Chromosomal mutations**

1. : loss () or gain () of a chromosome. Due to . Results in an uneven distribution of chromosomes in the gametes.   
    Ex:
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: Gain of  of chromosomes in a gamete;

* Result is an embryo with
* Can benefit
* **:** occurs in simpler animals such as worms, and in insects, fish, and amphibians

1. -  – results in extra or missing information

**Problems with Mutations**

* Changes the
* Changes the
* Changes the
* Leads to a  – problem due to the misinformation

**Environmental Causes of Mutations:**

– environmental factors that result in a

– environmental factors that result in a mutation that leads to ­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
 - change the genetic structure of the cell causing

**Types of Mutagens/Carcinogens:**1.   
2.  – over  known carcinogens  
3.  – sunlight and tanning beds (extra concentrated)  
4.  – radon gas, nuclear waste  
5.