Sc9 Notes **UNIT – REPROUCTION** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Big Idea: Cells are derived from cells***

**THE NUCLEUS & DNA**

* Nucleus is the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of a living cell
* Surrounded by **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (kind of like cell membrane).
	+ Function: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ contents of nucleus
* Inside is membrane-free **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
	+ Function: make **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,** whose job it is to make proteins
* Has small openings in nuclear membrane called **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
	+ Allow certain things in/out of nucleus (ex. Ribosomes).



* The nucleus contains the master set of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** that determines what each cell will become, how it will function, when it will grow and divide, and when it will die
* The instructions in the nucleus are carried in long, **two-stranded** molecules called

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, or **DNA**.

* The DNA molecule looks like a twisted **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* The two strands, or sides, of the DNA ladder wrap around each other in a spiral

shape that scientists call a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* + The word “helix” comes from a Greek word meaning to wrap.
* The sides of the DNA ladder are made of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

* The steps of the ladder are made of four **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** bases, which are represented by the letters: A (adenine),G (guanine), C (cytosine), and T (thymine)
*  

**DNA Arrangement**

* Everything that occurs within a cell is the result of how the bases on the DNA molecule are arranged This arrangement is known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Bases in a DNA molecule always join in a specific way:
	+ A always joins with **\_\_\_\_\_\_**
	+ G always joins with \_\_\_\_\_\_
* However, the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of these bases can vary greatly within the DNA molecule. In humans, a single DNA molecule can be several million base pairs in length.

**How is DNA stored?**

* DNA exists in the nucleus in the form of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
	+ Chromatin is a substance that contains **\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* Within each strand of chromatin is one molecule of DNA
* When a eukaryotic cells is ready to divide, each strand of chromatin coils up into a very compact, X-shaped structure called a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* Chromosomes within the nucleus are found in **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* Most human cells have **\_\_\_\_\_\_ c**hromosomes arranged in **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, including one pair of chromosomes that help determine sex.
	+ *In biological males, the 23rd pair of chromosomes is the* ***\_\_\_\_\_\_\_\_\_\_\_\_*** *pair.*
	+ *In biological females, it is the* ***\_\_\_\_\_\_\_\_\_\_\_\_\_\_*** *pair.*
	+ Every living thing has a characteristic number of chromosomes
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** are small segments of DNA located at specific places on a chromosome
* Genes store the information needed to produce 90 000 to 100 000 different proteins used in the cells of your body.
* The arrangement of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** in a gene will usually be used to produce a specific protein.
* Genes can vary in length from hundreds to thousands of bases.
* Every chromosome carries thousands of genes and therefore contains the information to make thousands of different proteins.