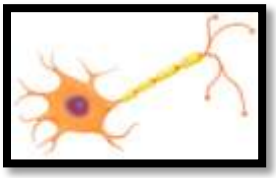
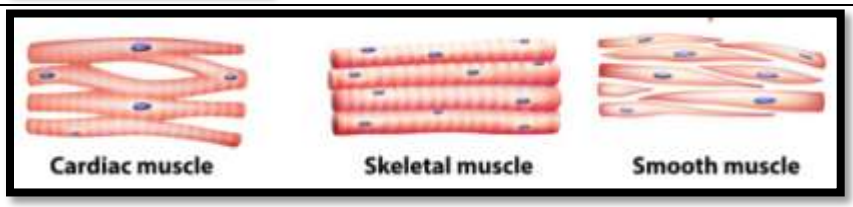
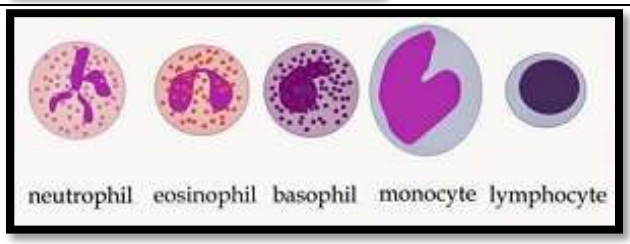
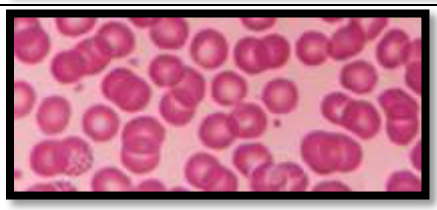
SIMILARITY IN GENES

What are cells and who tells them what to do?

A cell is the building block of an organism.

- Every living thing is made up of a number of cells when they join together
- A group of similar cells makes tissues, tissues make organs, organs make the organ systems and systems make organisms.
- The different types of cells in your body have different special jobs to do. So, they have different shapes and sizes.

CELLS	IMAGE
NERVE CELLS	
MUSCLE CELLS	
SKIN CELLS	
WHITE BLOOD CELLS (WBC)	
RED BLOOD CELLS	
SPERM CELLS	

Every cell has a nucleus, which contains DNA, tells the cells what to do. The DNA is like a computer with loads of information stored about the

- hereditary information
- information to build and maintain an organism

What makes a dinosaur a dinosaur and a mosquito a mosquito?

Their genetic make is responsible for their body characteristics. It is believed that the first form of life which photosynthesised on Earth was blue green algae. Every life form present today evolved from that. The genes regulated, adapted and formed cells which perform different functions. From single celled organisms like amoeba, multicellular complex organisms evolved.

How can you explain DNA to a child? Why is DNA so important and why is it called an instruction manual?

- DNA is the genetic code that determines all the characteristics of a living thing. Basically, your DNA is what makes you!
- We get our DNA from our parents and call it 'hereditary material'. Nobody else in the world will have DNA the same as you, unless you have an identical twin.
- DNA is a record of instructions telling the cell what its job is going to be. DNA is like a set of blueprints for the cell, or computer code telling a PC what to do.
- Unlike a book or computer screen, DNA isn't flat and boring; it is a beautiful curved ladder.
- Think of all the words you can spell. Each word you can spell is made using the same selection of letters. Depending on how we arrange the letters of the alphabet we can make new words.
- The same is true in the four letter alphabet of DNA.
- Each series of words tells a cell to make a special molecule called a protein. These proteins control everything in a cell.

How do genes work?

- The DNA spells out specific instructions – much like in a cookbook recipe – for making proteins in the cell.
- Each of your parents has two copies of each of their genes, and each parent passes along just one copy to make up the genes you have. Genes that are passed on to you determine many of your traits, such as your hair colour, skin colour, eye colour, etc.
- For example, Raima's mother who has one gene for blue eyes and one gene for brown eyes passes the gene of brown eyes to Raima. If her father has two genes for brown eyes and passes one to Raima, Raima will have brown eyes.
- Members of the same family look similar because of the same gene pool they belong to.
- Children look like combinations of their parents because each parent gives half of their genetic material to their children.
- Properties or traits are passed from parents to children and so on.