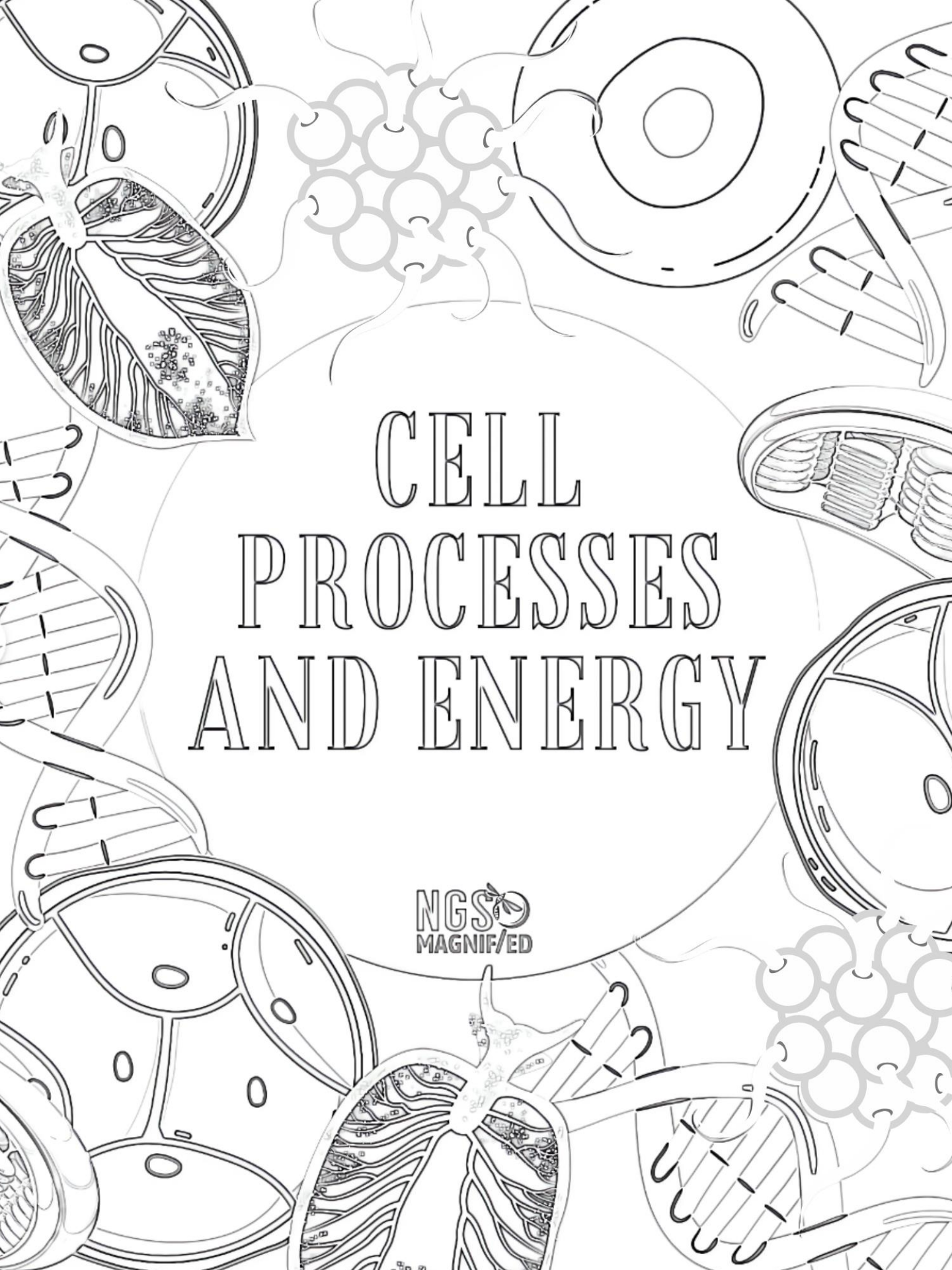


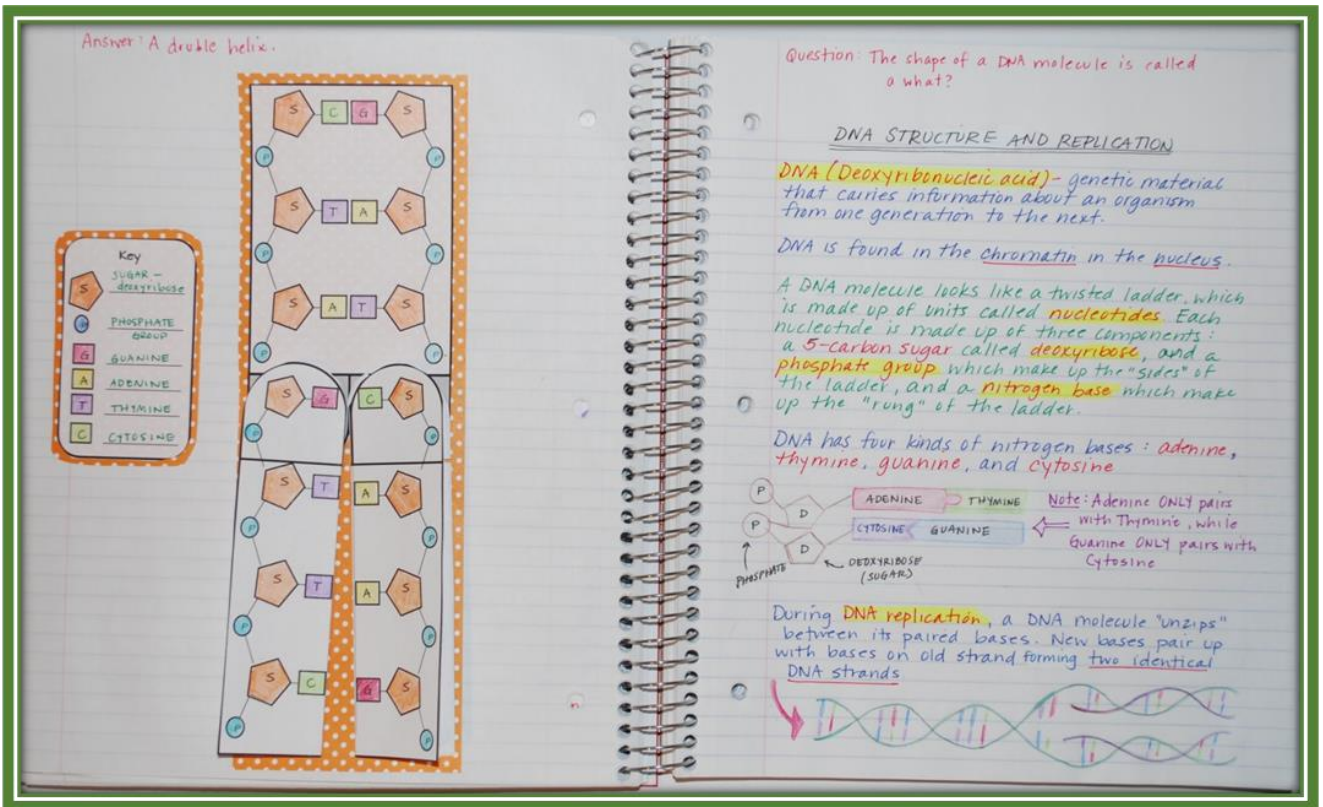
CELL PROCESSES AND ENERGY

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CELL PROCESSES AND ENERGY

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Instructions:

Students will first identify the molecules that make up a nucleotide. Then they will assemble a paper model of DNA that will actually "un-zip" to reveal new base pairings. This paper model will illustrate how DNA replication forms two identical DNA strands and also give students practice at nitrogen base pairings.

Included are the templates for the paper model, visual instructions on how to assemble and a mini-quiz.



Diagram A

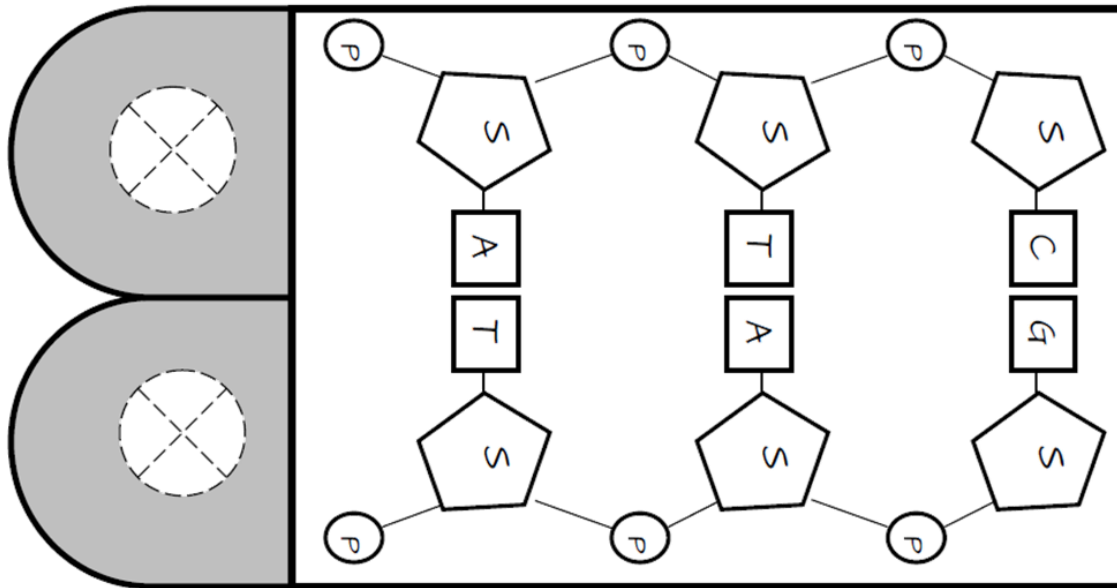


Diagram B

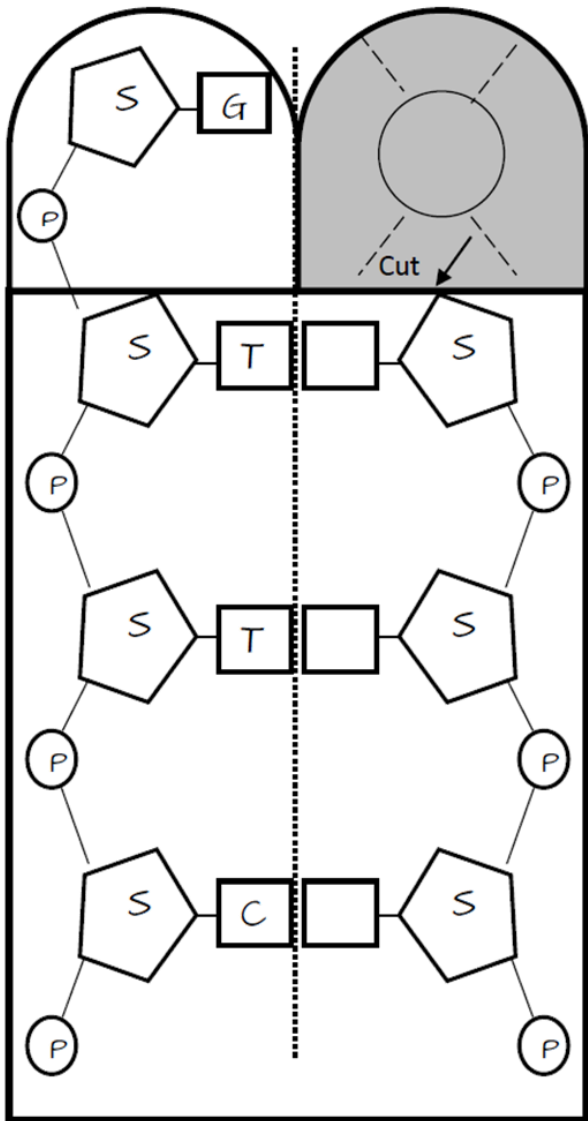
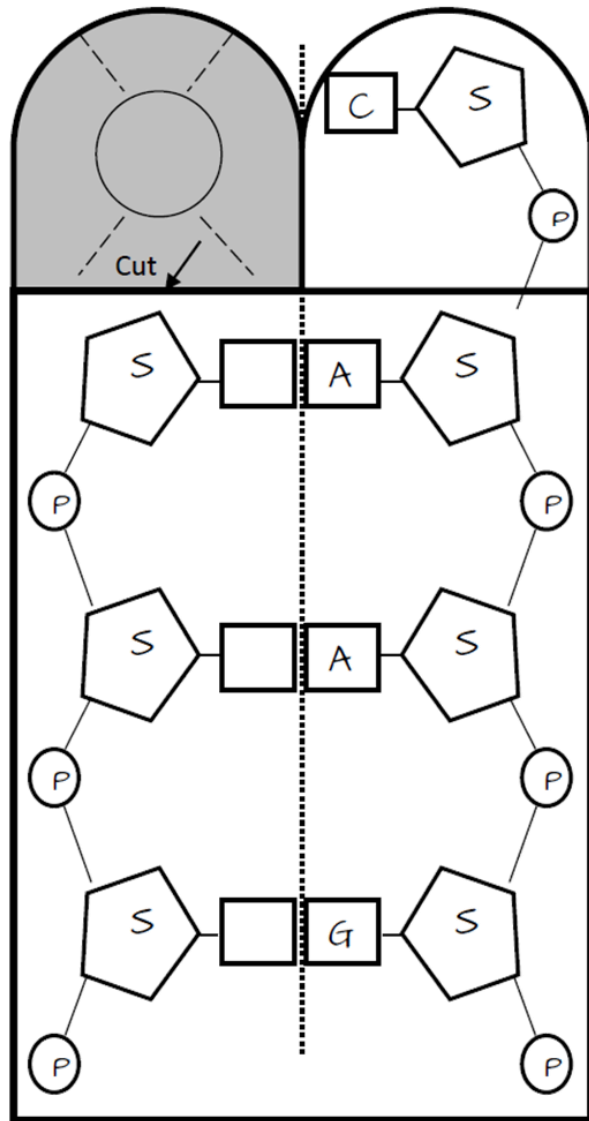
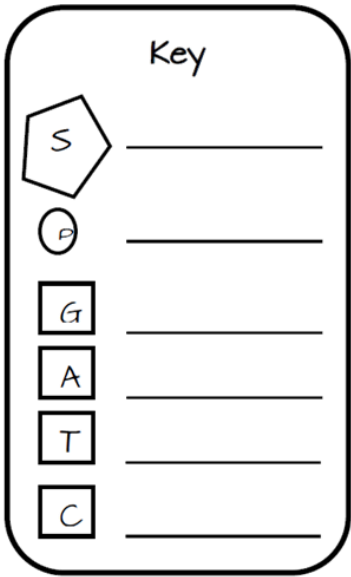


Diagram C



Directions:

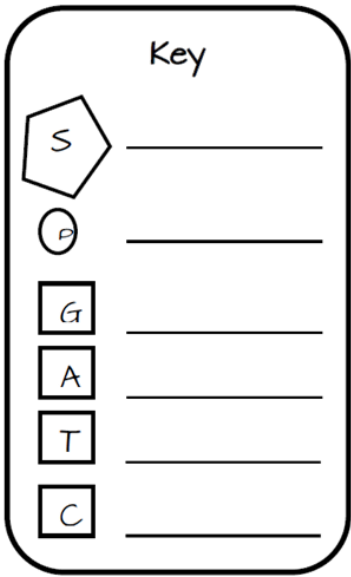
1. Cut out Diagram A along with the crossed-out circles on the shaded tabs of the diagram.
2. Cut out Diagram B and fold along dotted line. On the shaded tab ONLY, cut the solid, horizontal line marked "cut." Then cut the four dashed lines making sure NOT to cut into the circle. Fold back the tabs that were made from the cut. Repeat with Diagram C.
3. Insert tabs from Diagram B into the left hole of Diagram A. Repeat with Diagram C, this time inserting tabs into right hole of Diagram A. Both pieces should now rotate easily.
4. Using the key below, identify and color each structure of the DNA molecule. Color your DNA molecule according to the colors used in your key. Cut out key and paste into Science Interactive Notebook.
5. "Unzip" the strands of the DNA molecule and unfold each strand revealing the "new" strand created from "replication". Using your knowledge of nitrogen base pairings, fill in the blank nitrogen bases and color accordingly.
6. Paste completed DNA molecule into your Science Interactive Notebook by gluing down Diagram A.



DNA Replication

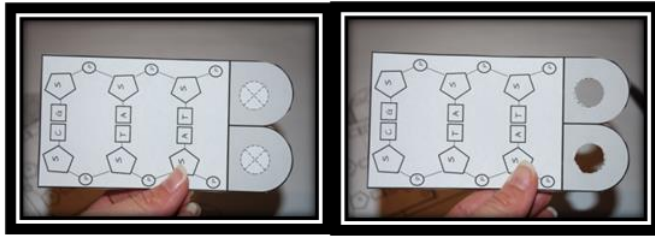
Directions:

1. Cut out Diagram A along with the crossed-out circles on the shaded tabs of the diagram.
2. Cut out Diagram B and fold along dotted line. On the shaded tab ONLY, cut the solid, horizontal line marked "cut." Then cut the four dashed lines making sure NOT to cut into the circle. Fold back the tabs that were made from the cut. Repeat with Diagram C.
3. Insert tabs from Diagram B into the left hole of Diagram A. Repeat with Diagram C, this time inserting tabs into right hole of Diagram A. Both pieces should now rotate easily.
4. Using the key below, identify and color each structure of the DNA molecule. Color your DNA molecule according to the colors used in your key. Cut out key and paste into Science Interactive Notebook.
5. "Unzip" the strands of the DNA molecule and unfold each strand revealing the "new" strand created from "replication". Using your knowledge of nitrogen base pairings, fill in the blank nitrogen bases and color accordingly.
6. Paste completed DNA molecule into your Science Interactive Notebook by gluing down Diagram A.

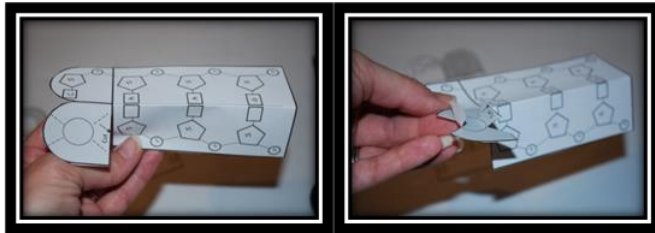


DNA Replication Model Assembly Instructions

1. Cut out Diagram A and circles identified with an "X".



2. Cut out Diagrams B and C, fold on dotted line. Next, cut dashed lines on shaded tab along with solid line marked "cut".



3. Insert tabs from pieces B and C into the holes in piece A – this will now give you a rotating pivot to allow DNA molecule to "unzip".



4. DNA molecule should now be assembled and ready for coloring.

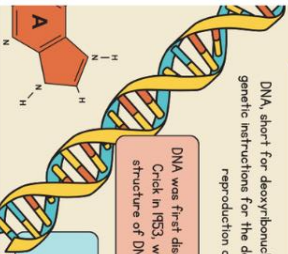


DNA

DEOXYRIBONUCLEIC ACID

DNA, short for deoxyribonucleic acid, is a molecule that contains genetic instructions for the development, functioning, growth, and reproduction of all living organisms.

DNA was first discovered by James Watson and Francis Crick in 1953, who proposed the famous double helix structure of DNA, which resembles a twisted ladder.



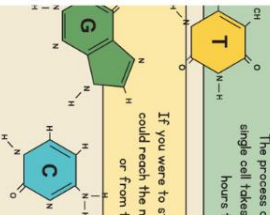
A single cell can contain from 6 to 9 feet of DNA.

The process of copying DNA in a single cell takes approximately eight hours to complete.

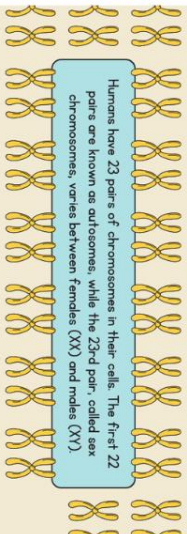
If you were to stretch out all the DNA in your body, it could reach the moon and back more than 6,000 times or from the Earth to the Sun 30 times.



DNA is made up of four nucleotide base: adenine (A), cytosine (C), guanine (G), and thymine (T).



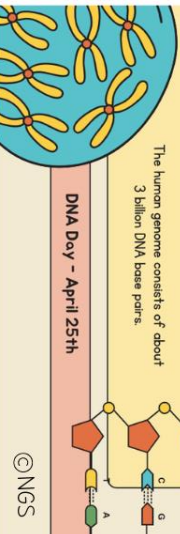
Humans have 23 pairs of chromosomes in their cells. The first 22 pairs are known as autosomes, while the 23rd pair, called sex chromosomes, varies between females (XX) and males (XY).



A single gram of DNA can store up to 215 million gigabytes of data, making it a potential data storage solution for the future.

The human genome consists of about 3 billion DNA base pairs.

DNA Day - April 25th



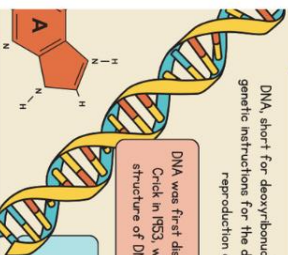
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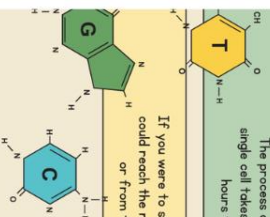
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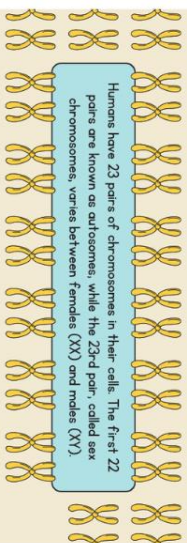
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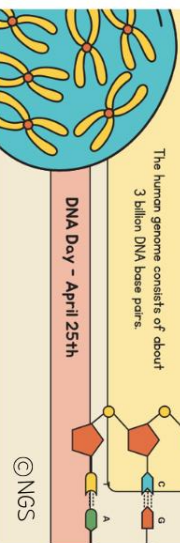
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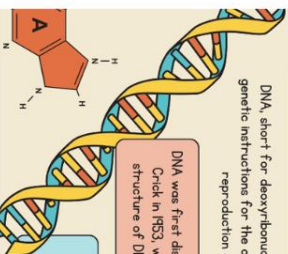
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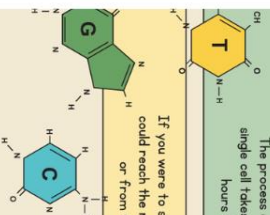
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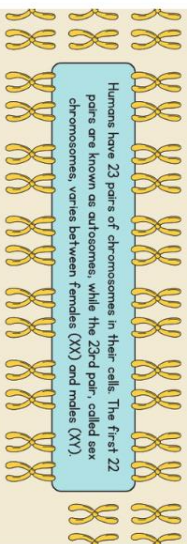
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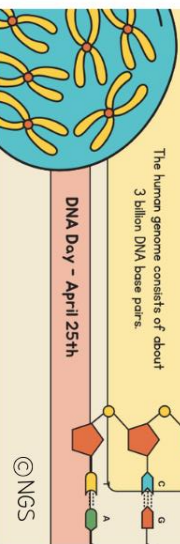
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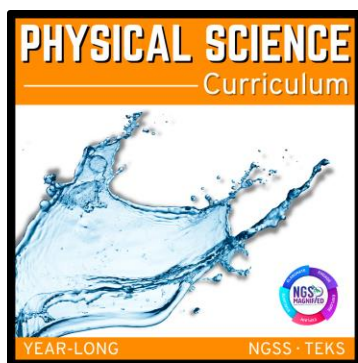
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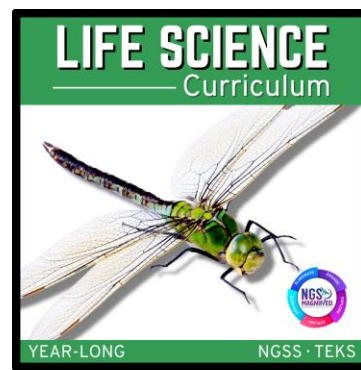
Physical Science



Earth Science



Life Science





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