Fun DNA

HOW TO CREATE YOUR ELEMENTS

Disclaimer: If students intend to eat the candy after the experiment, be sure they thoroughly clean their hands before creating the model. Plastic wrap or aluminium foil can be placed over desktops to create a clean surface.

STORAGE

Depending on the size of your DNA model, you could store it in a shoebox or use it as a decoration in your classroom.

CRAFT THE ELEMENTS (Sequence 1)

To craft a DNA model, you need the following:

- Twizzlers or liquorice sticks (for the sugar-phosphate backbone)
- Gummy bears or marshmallows (for the nitrogenous bases)
- Toothpicks or skewers (to connect the candies)

Instructions:

1. Start by cutting the Twizzlers or liquorice sticks in two different lengths-one for the sugar-phosphate and another for the base pairs.
2. The longer Twizzler pieces represent the sugar-phosphate backbone of the DNA molecule. Lay them out in a straight line to form the backbone.

3. Take the shorter Twizzler pieces to represent the base pairs (adenine, thymine, cytosine, and guanine). Attach the gummy bears or marshmallows to the backbone using toothpicks or skewers to create the base pairs.

4. Remember that in DNA, adenine pairs with thymine and cytosine pairs with guanine, so make sure to connect them accordingly.

5. Continue adding base pairs along the length of the DNA model until you have completed the double helix structure.

6. Once your 3D DNA model is complete, you can twist it slightly to represent the spiral shape of DNA.

This hands-on activity allows kids to visualise the structure of DNA and understand how the base pairs pair up to form the double helix. It's a creative and tasty way to learn about genetics and molecular biology.
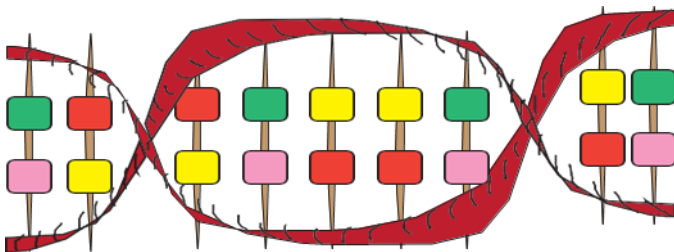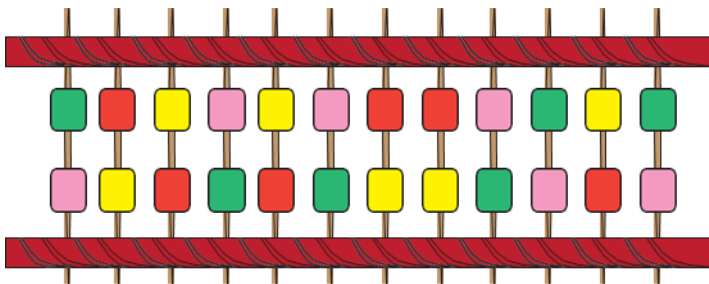
ALTERNATIVE (Sequence 2)

Extensions:

For advanced students, introduce Punnett squares to explore the probability of trait inheritance.

A Punnett square is like a grid that helps us see all the different combinations of letters (or traits) that their offspring could have. The grid is divided into rows and columns. Here's how it works:
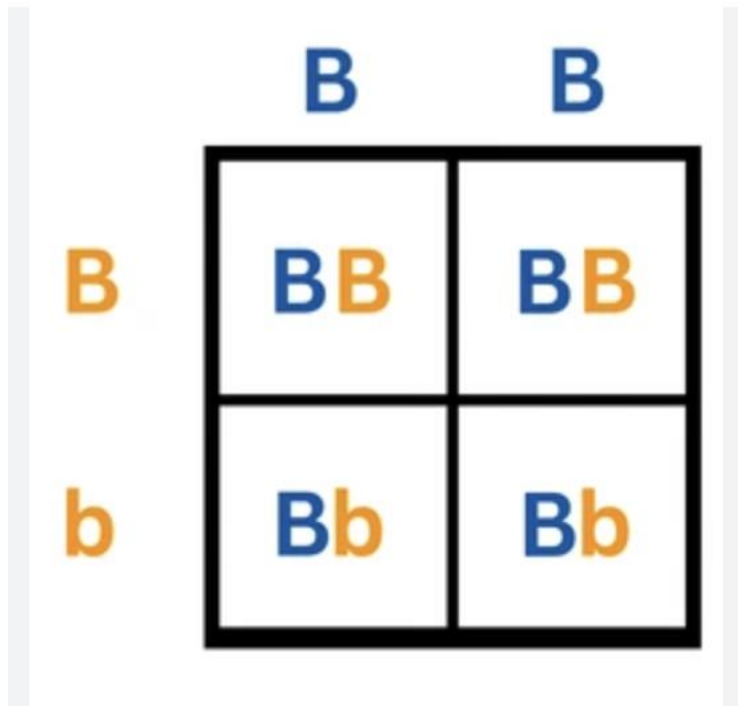
1. Draw a square and divide it into four equal parts with two rows and two columns.

2. Write the letters representing one parent's traits along the top row of the grid. For example, if the first parent has brown eyes, we would write "B" and "B" across the top.

3. Write the letters representing the other parent's traits along the left column of the grid. For example, if the second parent has blue eyes, we would write "b" and "b" down the left side.

4. Now, fill in the squares with the combinations of letters from each parent. For example, in the top left square, you'd have "B" from the first parent and "b" from the second parent so that it would be "Bb". Repeat this process for each square.

5. The combinations inside the squares represent the possible genetic combinations that their offspring could inherit. In our example, "Bb" means the offspring would have one brown-eye gene from one parent and one blue-eye gene from the other parent.

6. To find out what traits the offspring will actually have, you can look at the letters in the squares and see which ones are dominant. Dominant traits are usually

expressed over recessive traits. For example, "B" for brown eyes is dominant over "b" for blue eyes, so if an offspring has "Bb", they will have brown eyes because the "B" is dominant.