Modelling DNA

Name: …… Form:……Date:……

Introduction

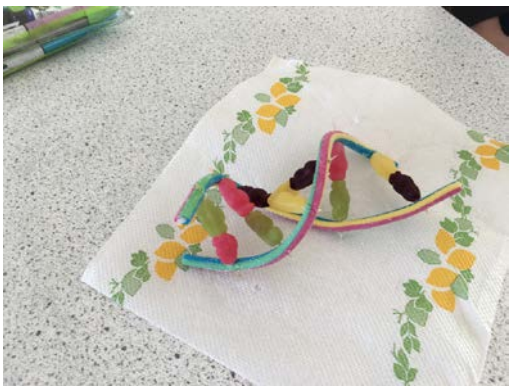
Deoxyribose nucleic acid, or DNA is a very long molecule which contains all the genetic information for an organism. This molecule is a natural polymer and is made of packets of information called genes which are stored in chromosomes in the nucleus of cells.

Aim

To use sweets to model the shape and structure of a strand of DNA.

Equipment

Jelly babies (4 different colours)
Cocktail sticks
Sweet shoe laces



Safety: Be careful not to cut your skin on the sharp point of the cocktail stick. Please be aware of any food allergies.

Method

1. Choose two colours to be complimentary e.g. red and green.
2. Then using a cocktail stick, match all the red and greens into pairs. Holding the sweets in place by carefully putting the cocktail stick through the centre of the sweets.
3. Choose two different colours to be complimentary e.g. purple and yellow.
4. Then using a cocktail stick, match all the red and greens into pairs. Holding the sweets in place by carefully putting the cocktail stick through the centre of the sweets.
5. At equal distances up the shoe lace, push on end of the cocktail sticks. Take a second shoe lace and put on the other end of the cocktail stick.
6. Gently twist the model to form a double helix.

Questions

1. What do the jelly babies represent?

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2. What do the sweet laces represent?

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3. What are the limits to this model?

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Modelling DNA
Teachers Notes

Teaching ideas

Models are a simplification of the observed world which help us understand our observations and make predictions. Using sweets to model DNA allows students to get a greater understanding of the idea of base pairs and the double helix structure of a DNA molecule.

Answers

1. Base pairs
2. Sugar phosphate backbone
3. Does not show the number of interactions between base pairs (GC three interactions and AT two interactions). DNA is about 3 billion base pairs long, so this tiny model is not even a gene's worth of DNA.