

### 3-D DNA Model (Online Version)

The thread that binds all living things and is responsible for the unity and diversity for life is DNA. Since we cannot observe DNA directly, you will be tasked in creating a 3-D model of the molecule. DNA is made up of pairs of nucleotides in a specific order. Each base has a complementary pair to ensure that when DNA is copied for a new cell that the information is conserved. Your model should contain the following:

- At least 10 base pairs
- Correct sequence of bases
- Sugar phosphate backbone
- Creativity

#### Some materials you may wish to use are:

- Recycled or found materials
- Construction paper
- Food products (marshmallows, gummy bears, jube jubes, macaroni etc)
- Toothpicks
- Playdough
- Modelling clay
- Pipe cleaners
- Yarn



You will be required to make a video highlighting the model you have created and important information about DNA. Your video can be filmed in any program of your choice and can use the final product or both the process of making your model and the final product. It is up to you how you want to demonstrate your knowledge. Please refer to the rubric to ensure that your submitted work meets all criteria. If you have any questions, please email me.

# DNA Model Grading Rubric

**This rubric will be used with your model.**

## **Description of DNA and Relation to model-**

- 10 base pairs minimum (2 points)
- Complementary Base Pairing (2 points)
- Hydrogen bond between base pairs (2 points)
- Sugar-phosphate backbone, base pairs connect to sugar (2 points)
- Shows correct double helix shape (2 points)

## **Quality of model-**

- DNA model is 3D (2 points)
- Structure is free-standing (2 points)
- Model shows effort, creativity and time invested (4 point)

## **Video of model-**

- Student explains:
  - the structure of DNA (What is it made out of?) (2 points)
  - what complementary base pairing means (show an example) (2 points)
  - what is the function of DNA? Why do we need it? (2 points)
  - What does DNA code for? Give an example. (2 points)
  - Something new you have learned about DNA in your research (4 points)