



Origami DNA Helix

Create a DNA sequence of your own design in the form of an origami masterpiece! Invent your own sequence or search the internet for a string of DNA belonging to an animal, bacteria, virus, etc of your choice.

A combination of four amino acids make up DNA. The amino acids act as building blocks to form the characteristic double helix of our DNA!

You will need to follow the rules of base pairing to construct your sequence - A (Adenine) always pairs with T (Thymine) and C (Cytosine) always pairs with G (Guanine).

You will need:

- Coloured pens or pencils
- Printout of the blank DNA template



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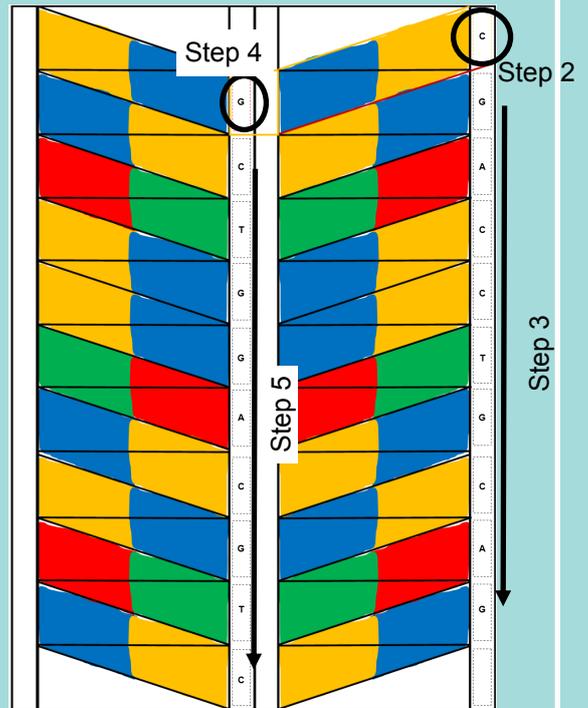
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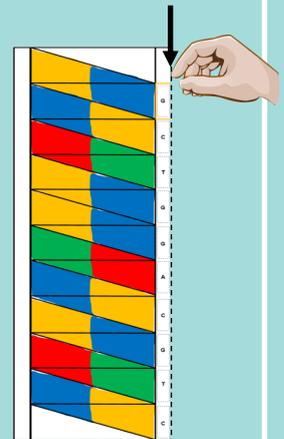
How to Prepare your DNA:

1. Print out a copy of the blank template.
2. Starting in the top right hand corner, write the first letter of your DNA sequence (A, C, G or T).
3. Continue filling in all the letters of your sequence down the column.
4. Moving to the column highlighted as "Step 4," write the corresponding complementary amino acid for the first base in your sequence. Remember: A pairs with T and C pairs with G!
5. Continue filling in the complementary amino acids down the column.
6. Once complete, colour in your DNA. Each base should have its own colour.
7. Now you can move onto the folding instructions to create your origami.

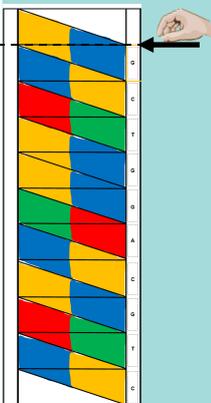


Folding your Origami Helix:

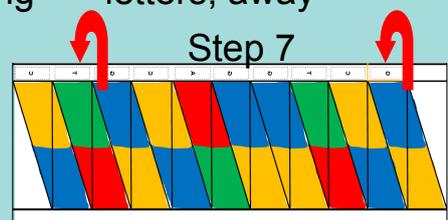
1. Fold your DNA sequence in half, lengthwise. Crease along the dotted line (see right) with your fingernail.
2. Ensure that the first base in your sequence is at the top.
3. Fold the top segment down one base pair, crease the fold and unfold. Repeat this procedure for each horizontal line in the sequence.
4. Turn the paper over.
5. Fold along the first diagonal line highlighted in yellow, crease and unfold. Repeat this procedure for all the diagonal lines in your sequence.
6. Fold the white edges, containing no letters, upwards.
7. Fold the white edges, containing letters, away from you.
8. Continue to twist the paper until it collapses into a disc.
9. Release your grip and watch the DNA helix spring to life!



Step 1

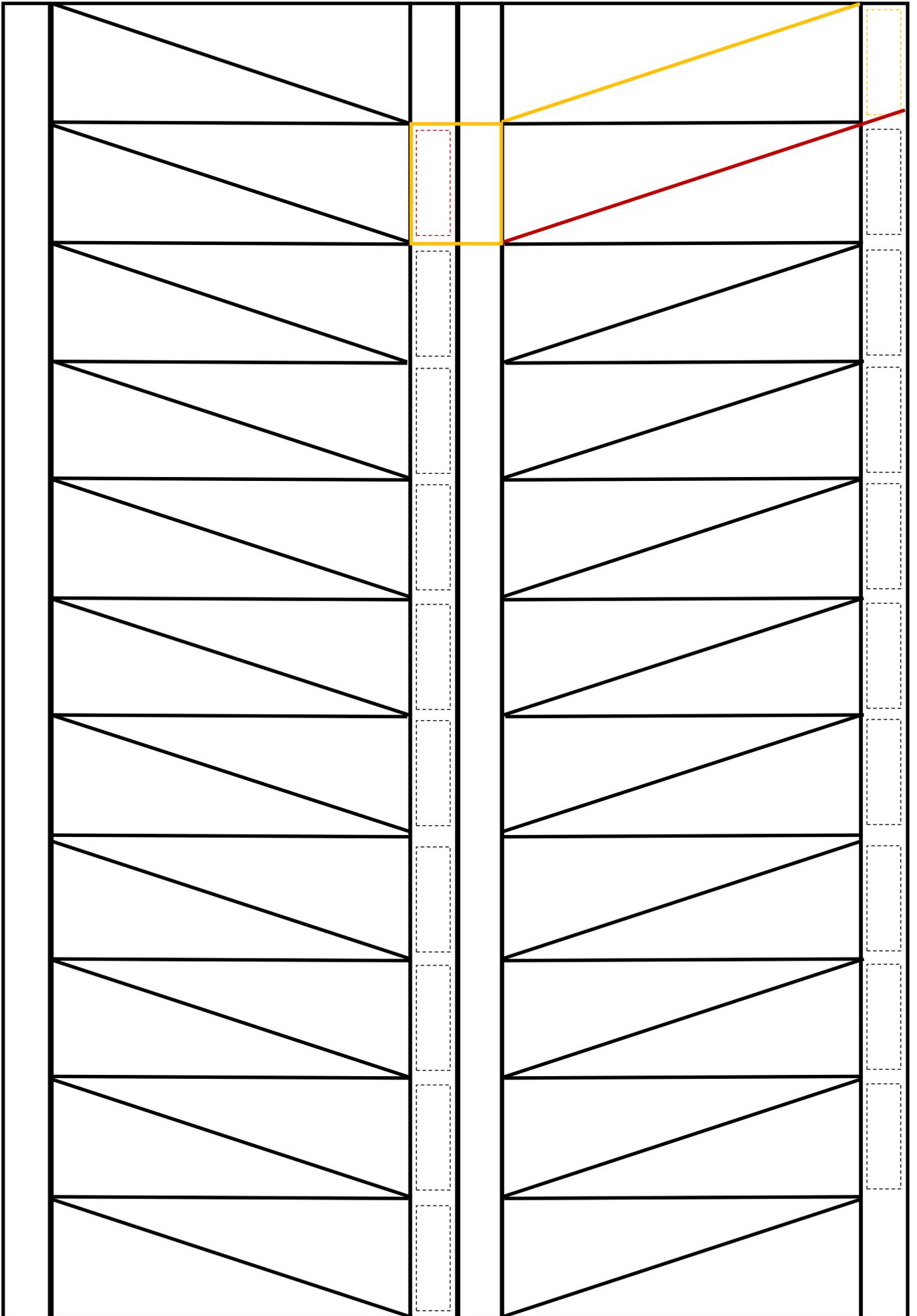


Step 3



Step 6

Blank Template for DNA Origami





Wearable DNA Helices

Create a DNA sequence of your own design in the form of a bracelet. Invent your own sequence or search the internet for a string of DNA belonging to an animal, bacteria, virus etc. of your choice!

You will need to follow the rules of base pairing to construct your sequence - A (Adenine) always pairs with T (Thymine) and C (Cytosine) always pairs with G (Guanine).

You will need:

- Coloured beads
- Elastic or string
-  Scissors



Parental Supervision is Required



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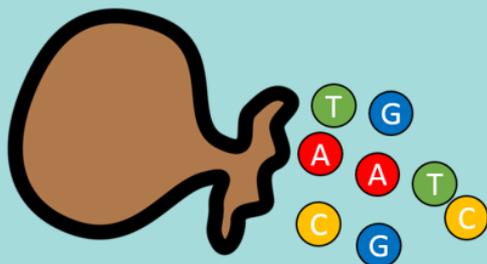
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How to Prepare your DNA Bracelet:

1. Choose or create a DNA sequence.
2. Cut two lengths of elastic/string to 30 cm each.  Parental Supervision is Required
3. Tie a knot at one end to attach the two lengths together.
4. Look at the first letter in your sequence and select the correct colour bead for that base and thread it onto Length 1.
5. To Length 2, thread on the corresponding, complementary base using the rules.
6. Continue to thread beads onto the two lengths of elastic until you have completed your sequence and the complementary bases.
7. Knot the other end to hold the beads in place.
8. Tie the two ends together to create your DNA bracelet!

Step 1

A-G-C-T-C-G-T-A-A-C-T-G-G-A-G-T-T



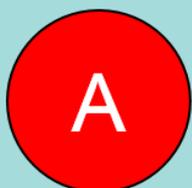
Step 2



Steps 3-7



Remember the base pair rules!



pairs with



pairs with





Edible DNA Helices

Create a DNA sequence of your own design in the form of a sweet treat. Invent your own sequence or search the internet for a string of DNA belonging to an animal, bacteria, virus *etc.* of your choice!

You will need to follow the rules of base pairing to construct your sequence - A (Adenine) always pairs with T (Thymine) and C (Cytosine) always pairs with G (Guanine).

You will need:

- Coloured jelly sweets
- Cocktail sticks
- Jelly snakes or liquorice



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How to Prepare your DNA Sweet Treat:

1. Choose or create a DNA sequence.
2. Work out the base pair sequence for your chosen DNA sequence.
3. Align the two coloured jellies side-by-side and place onto a cocktail stick.
4. Repeat Step 3 until all letters in your DNA and base pair sequences have been completed.
5. Attach the sticks, containing your jelly base pairs, to two long pieces of liquorice or jelly snakes. This will create a ladder-rung effect.
6. Twist your edible structure for the distinctive helix structure!

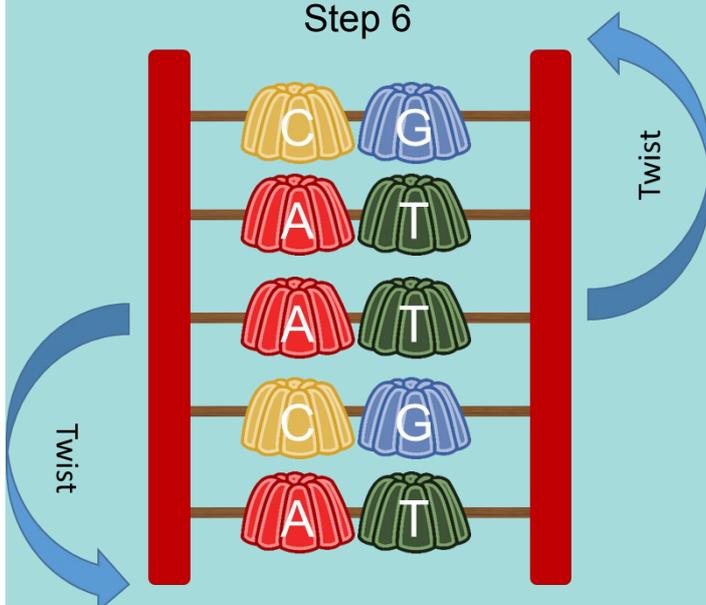
Step 3



Step 5



Step 6



Remember the base pair rules!

