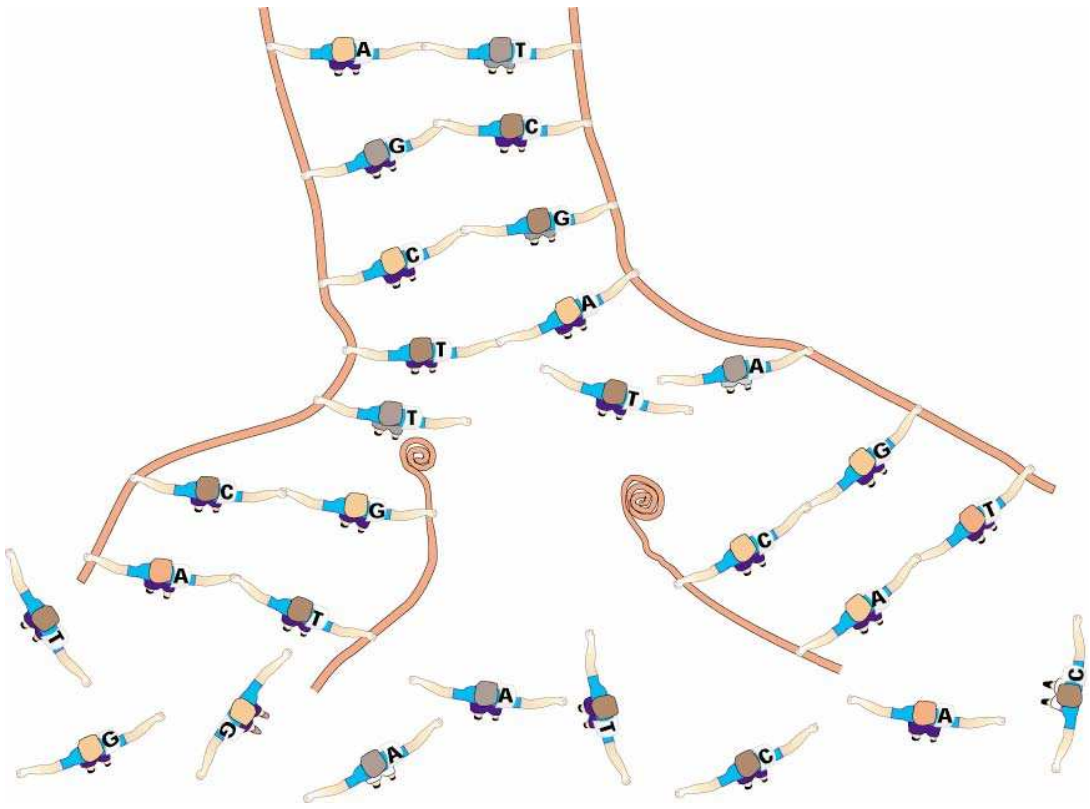
DNA line dancing

In this activity you will assume the role of a base in the DNA chain. Together with the rest of the class, you will model the process of DNA replication.



You will need:

- four pieces of rope (each 7 metres long) to represent the sugar and phosphate sides of the DNA molecule
- file cards or paper sheets, each with one of the letters A, G, C or T in equal numbers (eg 8 each of A and T and 7 each of G and C for a class of 30). One letter is needed for each class member.

What to do:

1. Ask one-quarter of your class (eg 7 students) to form a line and hold one of the pieces of rope with their left hand.
2. Have each person holding the rope display clearly the letter they have been assigned (for example, the line may form the sequence A–G–G–C–T–A–T).
3. Repeat Step 1 with another one-quarter of the class. These students hold the rope in their right hand and make sure that they have the correct letters in the sequence to match the line already formed (to match the example above, this is T–C–C–G–A–T–A).
4. Have the people in the second line stand parallel to the people in the first line.
5. Ask the people in the second line to join hands with their matching base pair. The two joined lines have now formed a very short DNA molecule.
6. To ‘copy’ the DNA molecule, ask the base pairs to ‘unzip’ (let hands go), one base pair at a time.
7. Ask the correct base partners from the previously unused bases to approach each of the newly unzipped bases and to pick up the end of one of the unused ropes with their free hand. This starts the production of two new strands of DNA from the one original strand.
8. Repeat Step 7 with each newly unzipped base pair.
9. Students should note that at the end of the process, one DNA molecule has become two identical molecules.