**Make antibodies**

**About this activity:** If you’re infected with a virus your body is ready to fight using antibodies. Special white blood cells called B cells detect viruses and make specific shaped antibodies that stick to the virus and encourage other immune cells to attack and destroy. Our bodies make new antibodies during an infection with a virus or after vaccination, which uses a harmless form of a virus to train your immune system. Fold an antibody and celebrate your amazing body.

**What you’ll need:** Any square paper! To make a square from A4: take a top corner down to line up with the bottom to make a sharp point and remove the rectangle.

**Instructions:** Origami takes time and patience. Look carefully at the pictures and think of this as a puzzle. If you’re stuck, watch our video.

1. Fold your square in half, open it and fold the outsides to meet the line you created, like double doors.
2. Keeping the ‘doors’ closed, repeat – fold in half, open and bring outsides to the middle to make a square.
3. Open one side, make two diagonal folds from the centre of the inner square to the corners. Flatten down to make points. Repeat on other side.
4. Fold over opposite points to make a ‘windmill’.
5. Turn the ‘windmill’ over to the smooth square. Fold along the diagonal and flip out the top and bottom ‘windmill’ arms to make a ‘Pac man’.
6. Crease the four points, open them up and tuck into the pocket between the folds.
7. You’ve made an origami antibody!

**Where are antibodies made in the body?**

-- In a B cell which is a type of white blood cell. When the B cell detects a virus it is activated to grow and make lots of specific antibodies. When an antibody sticks to a virus it alerts other immune cells, including ‘killer’ T-cells which destroy the virus and stop the infection so you feel better.
About this activity: Viruses can make us unwell. They are tiny and have a spiky outside and instructions inside to make more viruses (their genetic material; DNA). Thankfully our immune system makes antibodies to stop viruses. Vaccines use a harmless form of a virus to train our immune system to make lots of antibodies so you can be protected from future infection.

What you’ll need: Any square paper! To make a square from A4: take a top corner down to line up with the bottom to make a sharp point and remove the rectangle.

Instructions: You can build amazing virus-like sculptures with origami. Look carefully at the pictures and think of this as a puzzle. If you’re stuck, watch our video.

1. Fold your square in half, open and fold the outsides to the middle, like double doors.
2. Open the right ‘door’, fold the top right corner down to the quarter crease to make a triangle.
3. Bring the left ‘door’ down to meet the triangle and close the right side.
4. Bring up the bottom right corner to the line.
5. Open and a ‘tongue’ appears - tuck it underneath.
6. Take the bottom right and slide it under.
7. Fold up to make ‘bunny ears’.
8. Take the smooth side and fold the top point down.
9. Turn over and repeat.
10. Open to reveal a zig-zag shape with two pockets in the middle. You have made one unit for building!
11. You can now get building! The point of one will plug into the pocket of the next. Three units connect to form a strong triangle. Different numbers of units create different shapes. Many viruses look like the final one with pentagons on each side.
1. [Instructions for folding a cube with 3 units.]

2. [Instructions for folding an octahedron with 6 units.]

3. [Instructions for folding an icosahedron with 12 units.]

4. [Instructions for folding a larger octahedron with 12 units.]

5. [Instructions for folding a larger icosahedron with 30 units.]

6. [Instructions for folding a triangular prism with 3 units.]

7. [Instructions for folding a tetrahedron with 6 units.]

8. [Instructions for folding a smaller triangular prism with 3 units.]

9. [Instructions for folding a tetrahedron with 6 units.]

10. [Instructions for folding a smaller tetrahedron with 6 units.]

11. [Instructions for folding a larger tetrahedron with 30 units.]

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