



Scientifically accurate drawing of an antibody

How big is an antibody? -- Around 10,000 would fit across the width of a human hair!



Scientifically accurate drawing of a B cell

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. \searrow



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.
- 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.







Scientifically accurate drawing of coronavirus

How big is a virus? -- Around 1,000 coronaviruses if lined up would fit across the width of a human hair.

How do we catch viruses?

-- It depends on the virus; for the coronavirus mostly through droplets in the air but it can also be caught through touch which is why masks and hand sanitizer help cut down risk.

Fold a virus

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. \searrow



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!
- 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.







