

Bitesize

Vaccinations

SEREN Here Toby. Fetch!

Aw Toby? You really must be sick.

Eurgh! Erm...

Alfred? Can you catch a cold from a dog?

ALFRED Good question. In 1796, Edward Jenner noticed that the milk maids who caught cowpox from milking the cows, didn't catch the much more serious illness smallpox which can kill you. To test this he deliberately infected eight-year-old boy James Phipps with cowpox.

SEREN What a nice thing to do.

ALFRED It was. After a few days of being sick James Phipps was fine. Edward Jenner then deliberately infected him with smallpox.

SEREN How kind.

ALFRED It all happened for the best because nothing happened. He didn't get smallpox. He was immune.

All cells have antigens on their surface, which are like markers that are used for recognition. When a pathogen with foreign antigens enters the body, white blood cells called lymphocytes respond to the intrusion by releasing antibodies. These antibodies are made to kill these specific foreign cell's antigens.

However, because the body hasn't encountered the pathogen before, it isn't prepared, which means your body gets the symptoms of the illness.

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However, lymphocytes then produce memory cells, which makes your body remember a specific antigen and how to deal with the illness. This means that the next time your body encounters that same pathogen, the lymphocytes recognise it and can produce antibodies to destroy it so quickly that you don't get any symptoms.

SEREN To know your enemy, you must become your enemy. 'Art of War'. Wise words.

ALFRED In vaccinations, a dead or inactive pathogen that has specific antigens is injected into the body. The lymphocytes, sensing a threat, will produce antibodies and memory cells. Because the pathogen is dead, you won't get sick. But because the body is now used to that pathogen, when your body encounters a live version of that pathogen, your body is prepared to deal with it. That's how vaccinations work.

But in this case, I don't think you'll need a vaccination. Toby's virus is specific to dogs, and can't survive in humans.

SEREN Okay... I'll take your word for it.

Hmm, I could do with a new phone actually.

Fetch! Good boy.