Our immune system protects us from illness. Most bacteria are not harmful and help us in so many ways such as helping to digest food in our guts.

Some bacteria that can make us unwell are caught from other people. When we are young our immune system is only just starting to get good at spotting intruders. If our white blood cells are unable to destroy an intruder fast enough, we can quickly become unwell and need help. A vaccine contains a safe form of the bacteria to encourage our body to make antibodies. Once exposed to the bacteria from the vaccine our immune system ‘remembers’. This means our body is ready to recognise the bacteria and destroy it before it can make us unwell. This means you will have immunity to this bacteria.

**What is diphtheria?**

This bacteria (*Corynebacterium diphtheriae*) can be caught from other people who have it through touch or coughs. Most of the time we would never know about this illness as we are protected by our immune system. When young our immune system is only just learning and without a vaccine we can become unwell. Symptoms include high temperatures, difficulty breathing and swallowing, ulcers and it can even cause death. With bacteria, antibiotics can help but the best way to protect ourselves is through a vaccine so our immune system is prepared. In 1990 about 8,000 people worldwide died from diphtheria who were mostly children. By 2015 this was down to 2,100 due to more vaccines being available.

Take a look at the drawing to see the surprising beauty of diphtheria. Bacteria are smaller cells than our own. The inside of a couple of bacteria can be seen with their own nuclei. The line is a scale and represents a tenth of a micrometre (ten thousandths of a millimetre). Around 30 diphtheria bacteria cells lined up lengthwise would fit across the width of a human hair.