**Before you watch the video discuss the question: 'How do vaccines work?'**

**Can you give at least five words that come from the word immune?**

**Watch the video and answer the questions.**

1. When and where was the first patent on the needle and syringe filed?
2. What has increased our life span the most?
3. What are the shortcomings of the vaccines?
4. How many deaths per year take place due to cross-contamination with needlestick injuries?
5. What are the other two shortcomings of vaccines mentioned by Mark?
6. What is the name of the new technology they’ve been working on?
7. What is the key role of the tiny projections on a Nanopatch?
8. How do you apply the Nanopatch to the skin?
9. What are the key advantages of the Nanopatch?
10. What type of cell is the Langerhans cell?
11. Can you lower the cost of the vaccine with the use of the Nanopatch?
12. Which diseases are responsible for about 7 million deaths per year?
13. What is the cold chain?
14. What is the key attribute of their Nanopatch?
15. How long have they stored the dry vaccine at 23 degrees Celsius without any loss in activity?

**Decide if the statements are True or False.**

1. 30 % of the population have needle phobia.
2. There are about 3000 tiny projections on a square of Nanopatch.
3. The technique deep reactive ion etching is borrowed from the semiconductor industry.
4. The release of the vaccine from the Nanopatch takes over a minute.
5. The magenta layer of the skin is full of immune cells.
6. According to Mark, when the vaccine is too warm it breaks down.
7. When the vaccine is dry it still needs refrigeration.