



There once was a cow called Blossom...

Objects in 'A History of Pathology in 50 Objects' this resource links to:

Blossom the Cow www.rcpath.org/the-college/50th-anniversary/50-objects/Objects+21-30/object-26-blossom-the-cow

Learning Objectives

- ◆ Learning about the history of vaccines and Blossom the cow
- ◆ Understanding the process of vaccination
- ◆ Understanding health, diet, drugs and disease
- ◆ Exploring contemporary and historical scientific developments and how they have been communicated
- ◆ Understanding scientific theories, observations and experiments

Materials required

- ◆ Access to computers/whiteboard for viewing of cartoon clip and game (optional)
- ◆ Two test tubes per group in a test tube rack (with a person label)
- ◆ **Vinegar:** Distilled malt vinegar (colourless) neat from the bottle. You will need one small beaker per group containing 1M vinegar, label as 'Cowpox Pus'
- ◆ **Bicarbonate of soda:** Add 2 heaped teaspoons to a beaker of water and mixed until dissolved. You will need one small beaker per group containing 1M bicarbonate of soda, label as 'Smallpox'

- ◆ Plastic pipettes
- ◆ **Bromothymol blue:** Add about 2ml to a beaker of water. Label as 'Indicator' (or a pH indicator of choice)
- ◆ Marker pen to label test tubes and beakers

Time taken: 15-20 minutes

Picture link

Ask the students what they think is the link between a steak and a boy receiving a vaccine?

Show the slide of Blossom the Cow.

A Gloucester cow, Blossom is famous for being the animal used by Edward Jenner in his vaccination against smallpox.



Practical activity:

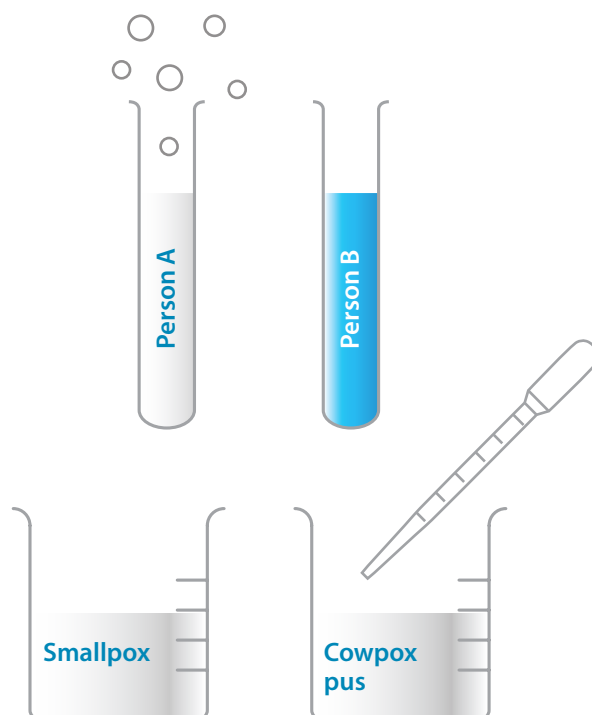
Vaccination simulation

This activity uses a simple acid-alkali practical activity to simulate vaccination.

- ◆ Ask students to get into groups of 2-3
- ◆ Each group is given a set of two test tubes, two small beakers containing vinegar and bicarbonate of soda **respectively as mentioned above and labelled appropriately**, and a **beaker/bottle of bromothymol blue** (pH indicator)
- ◆ These test tubes can be given actual names, as these represent two people. **Only one** of these 'people' will be vaccinated against smallpox (i.e. given some cowpox pus), **but both 'people'** will be then infected with smallpox

Directions:

- ◆ Ask each group to label two test tubes with names or 'Person A' and 'Person B'
- ◆ Using a pipette they are going to vaccinate 'Person A'. Ask them to add 1cm³ from the beaker marked 'Cowpox Pus' (which is vinegar)
- ◆ Now both 'Person A' and 'Person B' are going to be subjected to smallpox. Ask students to add 1cm³ from the beaker marked 'Smallpox' (which is bicarbonate of soda) to both people
- ◆ 'Person A' will have started fizzing (i.e. something is working with the vaccine!).**Add 1cm³ of pH indicator solution (which is bromothymol blue) to indicate who is still healthy and alive, and who is infected and likely to die
- ◆ 'Person A' test tube should remain colourless, whereas 'Person B' will turn blue, indicating that 'Person B' has got smallpox and will die



Explain to students that this simulates what Edward Jenner did when he came up with the smallpox vaccine. By adding a small amount of the disease-causing microbes (cowpox pus) which cause a mild reaction in healthy people, it made these people less likely to suffer the consequences of smallpox, and they would survive.

You can follow this up with the cartoon of *The Edward Jenner story*.

Useful links

YouTube cartoon, *The Edward Jenner Story*
(2 min 30 secs):

www.youtube.com/watch?v=jJwGNPRmyTI

History of Vaccines:

www.historyofvaccines.org/content/educators