



# Prevention of Infection: Vaccinations

**Students use their reading comprehension and creative skills to answer questions on, and act out, the discovery of vaccinations by Edward Jenner.**

## Curriculum Links

### Science

Working scientifically, Living things and their habitats;

### PSHE/RSHE

Health and prevention

### English

Reading and comprehension;  
Spoken language, Writing

## Key Words

Antibody, Antigen, Bacteria, Disease, Immune system, Immunise, Vaccines, Virus, White blood cell (WBC)

## @ Weblink

[e-bug.eu/eng/KS2/lesson/Vaccinations](http://e-bug.eu/eng/KS2/lesson/Vaccinations)

## Learning Outcomes

All students will:

- Understand that vaccines help prevent a range of infections, including the flu.

Most students will:

- Understand that there are not vaccines for all infections.



## Resources Required

### Main Activity: Historic Heroes

#### Per student

- ☐ Copy of SH1
- ☐ Copy of SW1

### Extension Activity: Role Play

#### Per group

- ☐ Copy of SH2

### Extension Activity:

### Vaccinations Quiz

#### Per student

- ☐ Copy of SW2

### Additional Resources

#### Per student

- ☐ Copy of SH3 (available from the e-bug.eu website)
- ☐ Copy of PP1 (available from the e-bug.eu website)

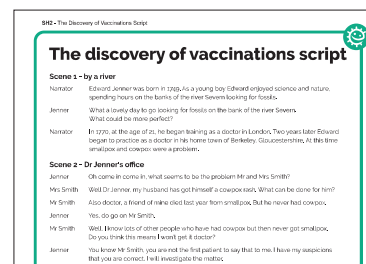
## Fascinating Fact

The word vaccine comes from the Latin word vacca meaning cow, so named because the first vaccine was made from the milder cow pox disease.

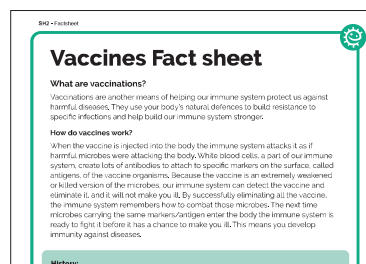
## Supporting Materials



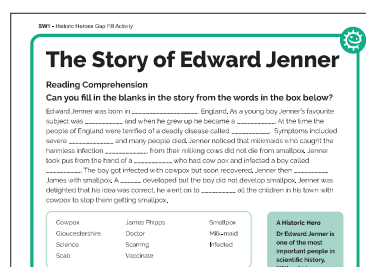
### SH1 Historic Heroes Student Handout



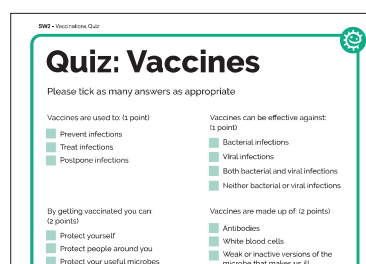
### SH2 The Discovery of Vaccinations Script



### SH3 Vaccines Factsheet



### SW1 Historic Heroes Gap Fill Activity



### SW2 Vaccinations Quiz

# Lesson Plan



## Introduction

1. Begin the lesson by explaining that although there are many harmful microbes that can make us ill, in some cases, there are things we can do to prevent this happening.
2. Explain that vaccinations are a harmless small amount of the microbe (e.g. disease markings or outer coat) that teaches our body how to fight the harmful microbe when or if we get attacked by the disease. Discuss class experiences of vaccinations, which vaccinations they remember getting and when they got them. For example, ask students to raise their hands if they have received the flu vaccination at school.
3. Show the class images in PP1 of the disease and bacteria/viruses which they are likely to have been immunised against. Emphasise that in the 1700s these diseases were extremely common.
4. Highlight that without their vaccinations, many of the students in the class would not have survived past 5 years of age. Explain that diseases like whooping cough, polio and TB are now extremely rare due to vaccinations.
5. Remind students that some microbes change their outer coats like we change our clothes. Some microbes change their markings/coats so quickly that scientists cannot create vaccines for many infections (e.g common cold/sore throat) or they have to make a new vaccine every year, like the flu vaccine.

## Discussion

**What are vaccines?**  
Vaccines protect a person against a particular disease. They are dead or severely weakened versions of the microbe.

**Who discovered vaccines?**  
Edward Jenner discovered vaccines in 1796.

**Check for understanding by asking students:**

**When should vaccines be used?**  
Vaccines should be administered before an illness occurs; vaccines are a preventative measure.

**How does a vaccine work?**  
A vaccine is an extremely weakened or killed version of the microbes. Our body can find the vaccine, learn how to fight against it and kill it so the vaccine will not make you ill.

## Main Activity: Historic Heroes

**1 Read the story of Edward Jenner**

**2 Learn how Jenner created the first vaccine**

**3 Test your understanding by filling in the blanks and answering the questions**



### Main Activity: Historic Heroes

1. Provide each student with a copy of SW1.
2. Read the story of Edward Jenner (SH1) to the class, either show the story to the class on the whiteboard or provide each student with a copy of SH1. The class can then read along with the story.
3. After reading the story, ask the class to fill in the spaces on their worksheet (SW1).
4. Students should also answer the questions at the bottom of the worksheet.

**Students will learn what vaccinations are, how they work, and why they are important.**

### Extension activity

#### Discovery of vaccinations role play activity

Provide groups of 3 or 4 students with a copy of SH2. Students can bring the story of Edward Jenner to life by recreating his story into a play to present to the class.

To expand on this activity, ask students to pretend they are Edward Jenner and write a diary entry for the day he made his discovery.

#### Vaccinations Quiz

Provide groups of 2 or 3 students with SW2 and the team with the most points wins. Answers are available on the e-bug website.

## **Common Vaccination Questions**

### **Q&A discussion**

The following Question and Answer discussion will support student understanding of vaccinations.

#### **Q: What is a vaccination?**

**A:** Vaccinations are another means of helping our immune system protect us against harmful diseases. They use your body's natural defences to build resistance to specific infections and help make our immune system stronger.

#### **Q: Why is vaccination important?**

**A:** Vaccines are a safe and effective way to prevent us from getting ill. Today there are vaccines to protect us from at least 20 diseases including tetanus, influenza, measles, mumps, polio and meningitis. When we get vaccinated, we aren't just protecting ourselves but also the people around us. Vaccines help prevent the spread of infection.

#### **Q: How does a vaccine work?**

**A:** When the vaccine is injected into the body the immune system attacks it as if harmful microbes were attacking the body. White blood cells, a part of our immune system, create lots of antibodies to attach to specific markers on the surface, called antigens, of the vaccine organisms. Because the vaccine is an extremely weakened version of the microbes, our immune system can kill all cells from the vaccine and it will not make you ill. By successfully eliminating all the vaccine, the immune system remembers how to combat those microbes. The next time microbes carrying the same markers/antigen enter the body, the immune system is ready to fight it before it has a chance to make you ill. This means you develop

immunity against diseases.

#### **Q: Why should I get vaccinated?**

**A:** Vaccines have saved millions of lives. Without vaccines, we are at serious risk of illness and disability from diseases like polio and meningitis. Vaccinations protect ourselves from illness and others from getting ill too. Not everyone can be vaccinated, sometimes very young babies, very old people and people with serious illness e.g. certain allergies – these people depend on others getting vaccinated to prevent the spread of infection and protect them.



## \* Modern Vaccine Scientists

As a class discussion or homework activity ask students to consider the following scientists that are making significant discoveries in global vaccine development:

- **Dame Sarah Gilbert**  
Co-Creator of the Oxford/AstraZeneca COVID-19 vaccine.
- **Kathrin Jansen**  
Vaccine lead at Pfizer, co-developer of the COVID-19 Pfizer-BioNTech vaccine.
- **Hanneke Schuitemaker**  
Vaccine lead at Johnson & Johnson's Janssen Vaccines & Prevention.
- **Gagandeep Kang**  
Microbiologist and virologist researching viral infections in children (in particular rotaviral vaccines – rotaviruses are a common cause of severe diarrhoea among young children).

Or ask students to find their own examples.

## ✓ Learning Consolidation

At the end of the lesson, ask the class the questions below as a fact checker

- ☐ What bodily system fights any harmful microbes that may enter our bodies?

Answer: Our immune system

- ☐ Vaccines help prevent a range of infections, for example...?

Answer: i.e. influenza, COVID-19, measles, mumps, rubella, polio, meningitis, whooping cough, TB Or any other example you may have provided

- ☐ True or False: There are vaccines for all infections?

Answer: False

