

THE DEVELOPMENT OF VACCINES AND THE FIGHT AGAINST GERMS.

EIGHTEENTH CENTURY.

JENNER.

What did he discover ?

He discovered the first vaccine.(smallpox).

Why did he make this discovery at this time ?

He was a trained chemist and so believed in experimentation. He encouraged the careful observation and recording of results.

Jenner had observed cowpox when transmitted to milkmaids made them resistant to smallpox.

A young boy was injected with smallpox, later he was injected with smallpox. He could not repeat the experiment but he knew it worked.

Why was the discovery so important ?

It was the first vaccine.

However he did not understand what caused the disease or how the vaccine worked.

The process only developed one vaccine and conservatism meant there was great resistance to people being immunised.

NINETEENTH CENTURY.

Louis Pasteur.

Louis is very important in the development of vaccines. Before he worked on vaccines he paved the way for future development by developing a new explanation on how disease is caused.

Pasteur proved his theory with a simple experiment.

Why did he make this discovery at this time?

He was a trained scientist(chemist).

There was a need in the brewery industry(also a general need).

Improved technology meant better microscopes and research facilities. Made possible by the industrial and chemical revolutions.

Importance of discovery .

The explanation of what caused disease is central to all future work on disease, it was a gateway to future work on vaccination .

Robert Koch.

What did he discover ?

He developed the new science of **BACTERIOLOGY.**

He developed a method for dying microbes and as a result was able to photograph them and identify different types.

He discovered the germs-Anthrax

T.B.

Blood poisoning.

Why was he able to make this discovery at this time ?

He was a trained doctor.

The development of the science of chemistry.

Carried on the work of Pasteur.

National rivalry with France, led the government to fund the research.

Act of genius.

Need to identify germs.

Why was this discovery so important ?

Development of a new science.

Discovery helped in the development of vaccines, as it is important to identify germs if you are to develop a vaccine against them.

Led to future discoveries, major step forward towards magic bullets and chemotherapy.(If you can attach a dye maybe you could attach a poison to kill the germ).

Louis Pasteur's work on Vaccines.

Pasteur tried to build on the work of Koch. Spurred possibly by professional rivalry and jealousy. National rivalry with Germany. Possible personal motivation death of 3 daughters.

Chicken Cholera.

Why was this discovery made at this time ?

There was a need in the French farms. This led to state and private funding which allowed Pasteur to have a large research team. Pasteur was able to build on the work of Jenner and Koch.

Having a large team meant he could test many vaccines.

The vaccine itself was discovered by **CHANCE**.

An assistant by mistake injected a chicken with an old cholera culture. When the bird didn't die it was thought a mistake had been made. Pasteur injected the bird again but it survived. By his genius he realised the weakened dose worked as a vaccine. He had created a vaccine.

He thought this was important and unlike Jenner felt he could create more vaccines.

Anthrax Vaccine.

Major problem in French farming. Killed 9% of sheep and 7% of cows. This created a need. As before funding came from government and industry.

Pasteur used the same method as in producing chicken cholera. He weakened the germs by exposure to air.

He used an experiment to prove his work.

Why was this discovery so important ?

Proved the importance of experimentation.

Cut deaths by Anthrax by 90%.

Proof of the genius of Pasteur.

Rabies Vaccine.

First human vaccine after Jenner. Experiments on animals followed by test use on a boy dying from Rabies.

Paul Ehrlich.

What he discovered ?

He discovered **Salvasan 606(the first magic bullet)**.

The discovery was made in 1906. It was a cure for syphilis.

Why was this discovery made at this time ?

Need-people were dying from the illness.

He was funded by the chemical industry.

Built on the work of Koch. If stains stick to microbes then surely a toxin would kill the germ. It would seek and destroy.

Funding provided a large team.

LUCK. Dr. Hata retested some compounds, previously thought ineffective.

Why was this discovery so important ?

Cure for syphilis.

First magic bullet, opens the way for future bullets.

Principles lead to chemo-therapy.

Antitoxins.

Germs cause illness by producing toxins. Germs are killed by the body with antitoxins. In 1891, a child was cured of diphtheria, using an antitoxin, a discovery made by Behring.

Gerhard Domagk.

A second magic bullet. In 1932, he discovered a dye that could kill the germs of several diseases without harming the human body.

French scientists discover the **sulphonamide drugs**. They attacked a large range of germs but not all. Sulphonamide soon found to cure many infectious diseases such as pneumonia and scarlet fever.