**Greatest Achievements**

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| **Koch** | **Pasteur** |
|  | Pasteur noticed that **alcohol** was going **sour**. Studied liquid under his **microscope** and saw **two differently shaped micro-organisms**. From this he concluded that it was the **organism** that was **making** the **alcohol** go **sour**. |
|  | He was then **asked by the government to help the wine and milk industries**. He suggested **that gently heating the liquids (pasteurisation) would kill these organisms or bacteria** making them **safe** to drink. |
|  | After this, he was convinced that the germs in the air were causing liquids to go sour and perhaps caused disease. This then **rejected the idea of Spontaneous generation.** |
|  | His new theory had the **backing of the French Government** who paid for **new equipment** such as a laboratory to carry out experiments. New **technology** made it possible to have much more precisely designed **flasks**. |
|  | In 1864 he carried out a series of experiments to convince scientists that his Germ Theory was correct and that spontaneous generation was wrong. He showed **bacteria were causing decay** – **not being caused by decay**. |
|  | In 1865 he was called in to help the silk industry**. He proved that the disease was being spread by germs in the air**. He proved for the first time that germs were causing disease in animals. |
| In **1865 tragedy struck when his daughter died** of cholera. He took samples of air from a hospital ward but under his **microscope** he could only see a **mass** of **bacteria**. He could not see which one was causing cholera. |
|  | Pasteur was so determined to match his rival’s discoveries that built up a research team to make faster progress. |
|  | Pasteur **found the bacterium causing chicken cholera**. This was something **impossible before Koch’s** work a few years’ earlier. |
|  | In the summer of 1880 Pasteur left one of his team Charles Chamberland to inoculate a **batch of chickens** with the germs but Chamberland forgot and then the lab closed for the summer. When Chamberland came back he finally inoculated the chickens, expecting them to die from cholera. |
|  | Pasteur **worked out that the germs left over the summer had weakened** and were not strong enough to kill the chickens. Just like cowpox and smallpox, they then protected the chickens from a small dose of cholera. Pasteur had studied Jenner’s work in detail and made the link. People accused him of being **lucky**. **He then said…’No! Chance only favours prepared minds’.** |
|  | Pasteur had now understood how **Jenner’s** vaccine had worked. He now could **create other vaccines**. He continued to work on animals, producing a vaccine against anthrax.  After his success with Vaccines, Pasteur turned to human diseases. He investigated rabies testing his **vaccine** on dogs. |
|  | Pasteur tried this out on humans. In 1885 he tested it out on a boy who had been bitten by a rabid dog. His name was **Joseph Meister**. The vaccine worked after 13 injections over two weeks. Joseph survived. Pasteur and other scientists set to work on other vaccines that could prevent other diseases. Between 1896 and 1927 diseases such as Typhoid, TB, Diphtheria and Tetanus **vaccines** were **discovered**. |