*Evaluate the contributions made by both Louis Pasteur and Robert Koch to our present understanding of the causes and possible prevention of infectious diseases.*

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**Louis Pasteur was a French biologist, microbiologist and chemist from the mid 1800s. He served as a Dean in the faculty of Science at a university in Lille, France. It was during this time that he investigated as wine-makers’ complaint that some of the wine became contaminated during the fermentation process. The science world at this time believed in the idea of *Spontaneous Generation* - that life arose from inorganic matter. Pasteur’s work disproved this.**

**Pasteur examined both a sample of contaminated and a sample on non-contaminated sugar beet ferment and identified globules of yeast visible in the contaminated liquid. He proposed that contamination was the direct result of microorganism activity.**

**This theory was proved correct in Pasteur’s famous experiment involving S-bend Flasks where both liquids were boiled or sterilised. One was allowed air and the other was retained in the S-bend. The one that was allowed air became contaminated while the S-Bend flask did not. This was because the air-borne pathogens had become trapped and were not able to contaminate the liquid.**

**This discovery lead to the development of the ‘Germ Theory of Disease’ and disproved the theory of Spontaneous Generation. Pasteur deducted that microorganisms that caused disease were present in the air. He also discovered that heating products, such as milk, removed any present pathogens. This process became known as *Pasteurisatio*n and is still used to treat milk products today to ensure they can safely be consumed. Pasteurisation has saved many millions of lives.**

**Robert Koch was a German physician from the late 1800s and is considered one of the founders of microbiology.** **His famous Anthrax experiment involved inoculating 25 out of 50 sheep with a weakened strain of *Bacillius Anthrasis* bacteria. The left the other 25 sheep unvaccinated, as a control sample. He hypothesised that the 25 sheep who had been vaccinated would survive after he inoculated all 50 sheep with a virulent strain of the Anthrax pathogen. He was proved correct. The 25 sheep not inoculated with the weakened strain died while the others survived. He developed a set of four rules called Koch’s Postulates designed to establish a causal relationship between a microbe and a disease. These were designed to help prevent infection. He also developed vaccines for Chicken Cholera and Rabies.**

**The important contributions made by Pasteur and Koch fundamentally changed our understanding of the causes of disease. Their contributions helped to identify pathogens, how they are transmitted and how they could be eliminated. Ultimately their contributions have led to our modern medicine’ vaccination program. This has helped to eradicate diseases such as Small Pox and Polio saving millions of lives annually.**