## **Disease causing micro-organisms**

### **Microbes**

- Microbes are not the enemy!
- Less then 1% can directly make us ill
- Microbes that cause disease are called pathogens
- When pathogenic microbes enter the body and reproduce this is an infection
- When the infection cause damage to an organisms function or systems then this is referred to as disease
  - You can have an infection without a disease
- However many microbes can cause other secondary disease such as;
- Gastric cancer (Helicobacter pylori bacteria),
- Cervical cancer (human papilloma virus),
- Liver cancer (hep C virus)
- Myocarditis and pericarditis (bacteria or virus causing the heart or surrounding tissue to swell)

## **History**

- Pre 1800's: Widely accepted that disease was caused by supernatural forces.
- 1835: Agostino Bassi proved a fungus was causing disease in silkworms
- 1845: M. J. Berkeley proved that the potato blight was caused by a fungur
- 1861: Louis Pasteur has debunked the idea of spontaneous gelection and documented how to keep solution sterile
- 1876: Robert Koch published evidence shown relationship between anthrax and bacteria (Bacillus anthracis)
- 1881: Louis Pasteur develops first vaccine

# Germ the profession ase

- Microorganisms can cause disease
- Microorganism= tiny unseen organism
- Louis Pasteur (Dec 1822 Sep 1895) French chemist
- Pasteurization (milk, wine)

### Koch's Postulates

Robert Heinrich Herman Koch (Dec 1843 – May 1910) German microbiologist

Identified specific causative agents of tuberculosis, cholera, anthrax

Four generalized principles demonstrating microorganisms cause disease

- 1. The microorganism must be found in abundance in all organisms suffering from the disease, but should not be found in healthy organisms.
- 2. The microorganism must be isolated from a diseased organism and grown in pure culture.
- 3. The cultured microorganism should cause disease when introduced into a healthy organism.
- 4. The microorganism must be re-isolated from the inoculated, diseased experimental host and identified as being identical to the original specific causative agent.