

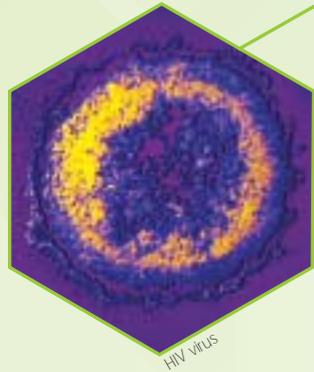
polymerase chain reaction

new horizons in medicine

The Polymerase Chain Reaction (PCR) has revolutionised molecular biology and DNA technology. Invented in the 1980s by Kary B Mullis, it enables us to produce large quantities of DNA from very small samples in a remarkably short time. This in turn makes it possible for us to analyse tiny samples of DNA and unravel the mysteries of the individual genes.

Infection detection

Amplifying the DNA from a single bacterium or virus using PCR can provide a speedy and accurate diagnosis for serious infections, where getting the right treatment quickly can mean the difference between life and death. PCR is already used in the diagnosis of AIDS, viral meningitis, TB and an ever-growing number of other infections.



HIV virus

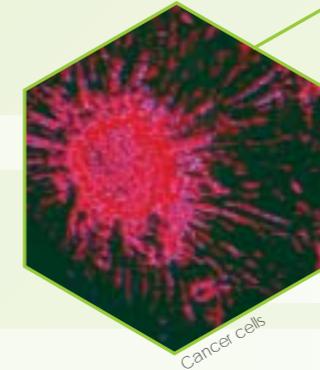
Genetic testing

PCR makes it easier to identify individuals who carry the genes which can cause problems like cystic fibrosis and muscular dystrophy. In the future it may be used to develop tests for the genetic variations which give an increased risk of heart disease or cancer, and so help everyone to plan a healthy lifestyle.



Cancer warning

Using PCR to amplify the DNA, scientists are developing tests to pick up the genetic changes which take place in cancerous cells very early in the development of the disease. PCR has already made it possible to detect bowel cancer from the DNA of cells extracted from the faeces – an easy, quick and non-intrusive way of making a diagnosis which gives the treatment a much better chance of success.



Cancer cells

Tissue matching

In organ transplants, a close tissue match between the donor and the recipient reduces the chances that the new organ will be rejected. PCR technology is leading to increasingly sophisticated levels of tissue matching at the DNA level – and more successful transplants.



Forensic medicine

The ability to amplify the tiniest fragment of DNA found at a crime scene, even years after the event, has resulted in amazing developments in identifying and eliminating suspects. In crimes ranging from murder and rape to theft, PCR, along with DNA fingerprinting, has provided a major breakthrough for the police and forensic teams in the fight against crime.

