

- The gene prevents the development of the immune system
 - Since 2000, gene therapy has successfully cured 22 children with inborn SCID
 - Unfortunately, three of the children developed leukemia, and one of them died
- DNA Profiling and Forensic science
 - DNA technology has rapidly revolutionized the field of forensics
 - Forensics is the scientific analysis of evidence from crime scenes
 - **DNA fingerprinting** can be used to determine whether or not two samples of genetic material are from a particular individual
- Murder, Paternity, and Ancient DNA
 - DNA Fingerprinting
 - Has become a standard criminology tool
 - Has been used to identify victims of the WTC attack and hurricane Katrina
 - Can be used in paternity cases
 - Is also used in evolutionary research
 - To study ancient pieces of DNA such as that of cheddar man
 - A direct ancestor of a local schoolteacher
- Gel electrophoresis
 - Can be used to separate the DNA fragments obtained from different sources
 - The DNA fragments are visualized as "bands" on the gel
- Safety and Ethical Issues
 - As soon as scientists realized the power of DNA technology they began to worry about potential dangers such as:
 - The creation of hazardous new pathogens
 - The transfer of cancer genes into infectious bacteria and viruses
 - Strict laboratory safety procedures have been designed to protect researchers from infection by engineered microbes
- The controversy of Genetically Modified foods
 - Advocated of a cautious approach have some concerns:
 - Crops carrying genes from other species might harm the environment
 - GM foods could be hazardous to human health
 - Negotiators from 130 countries agreed on a Biosafety Protocol
 - The protocol requires exporters to identify GMOs present in bulk food shipments
 - Several US regulatory agencies evaluate biotechnology projects for potential risks
 - Department of Agriculture
 - FDA
 - EPA
 - National Institutes of Health
- Ethical Questions raised by DNA Tech