

WE'VE CRACKED THE "Code of Life"

WHAT DOES THE FUTURE HOLD?



This year we celebrate the 50th anniversary of Watson and Crick's "discovery of the secret of life" when they proposed a helix structure (similar to a twisted ladder) for the chemical ingredients of our genes, DNA.

It was the beginning of an exciting new level of our understanding of how living things work. Now scientists could understand how DNA copies itself so that the genetic codes are continued from one generation to the next, as well as how DNA codes for making proteins that are essential for life to continue.

Thousands of scientists worldwide, also in South Africa, are now working in the field of modern biotechnology to explore a wide range of new and exciting applications in fields such as medicine, agriculture, forestry and food technology.

We have a responsibility to use this powerful new technology in an ethical, safe way to ensure maximum benefit and minimum risk.

The Department of Science and Technology has launched a PUBLIC UNDERSTANDING OF BIOTECHNOLOGY programme to ensure a clear, balanced understanding of the scientific principles and potential of biotechnology, while promoting dialogue around its applications. Read more at www.pub.ac.za

If you have questions or concerns about biotechnology, let's hear from you at speakup@pub.ac.za or fax (012) 320-7803.



**PUBLIC UNDERSTANDING OF
BIOTECHNOLOGY**

BIOTECHNOLOGY – Cutting Edge Science of Life

WHAT IS DNA?

DNA stands for

"deoxyribonucleic acid".

It is a strand-like molecule in the shape of a double helix, which through its orderly make-up contains the codes required for life to continue.

WHAT IS A GENE?

A gene is a piece of DNA that carries the information for a specific protein, such as the production of insulin.

WHAT IS A CHROMOSOME?

Chromosomes are tight coils of DNA protected by packaging proteins found in all living cells. Different organisms have different numbers of chromosomes. Humans have 23 pairs of chromosomes.

WHAT IS BIOTECHNOLOGY?

Biotechnology is the use of living things (bio) to create useful tools and products (technology).

WHAT IS GENETIC ENGINEERING?

Genetic engineering is the movement of single genes from one organism to another to change specific characteristics. In this way the human gene for insulin was inserted into bacteria and now these bacteria produce human insulin that can be used by diabetics.

WHAT IS CLONING?

Cloning is making exact copies of genes, cells or living things, including exact copies of whole organisms.

THE HUMAN GENOME PROJECT

Scientists around the world are working together to make detailed maps of about 30 000 genes within the human genetic make-up.

This new knowledge could revolutionise the prevention and treatment of genetic disorders.



DEPARTMENT OF
SCIENCE AND TECHNOLOGY