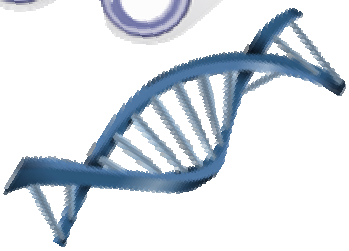
science FRONTIERS



People Pieces
(Human Genome)

Living organisms are made of cells and every cell is designed to perform a specific function in the organism. Humans are made of trillions of cells, and the design and function of each cell, and thus of the organism, is controlled by genes. Each human cell contains 46 chromosomes, which are strands of the approximately 30,000 genes needed to describe a human. Genes are composed of DNA molecules arranged in exact sequences. The genome is the entire DNA of an organism.

In 2003, the Human Genome Project (HGP) was completed. This provided the actual sequence, or spelling, of the human DNA. Research is continuing to understand the actual details of the genes, as well as the function of each gene.

Researchers are able to identify many of the genes and have discovered errors, or mutations, that cause certain diseases or medical problems. One goal of the Human Genome Project is to learn the correct sequence for each gene, which mutations cause which problems, and how to correct the mutations in order to solve the problems.
The genomes of other organisms are also being studied. Agricultural applications include improved animals, as well as plants that are more resistant to disease, perform better, or are adapted to different environments.

Forensic science uses the unique sequences in each individual to identify blood and tissue samples. All humans have identical DNA sequences in most of the genes but there are enough differences to change the way we each look, respond to diseases, and other individual traits. These differences make it possible to compare samples with individuals and know exactly which human provided that sample.

Questions for research:

Share some insights into God's mind that you learned from the genome project.
Why would it be useful to sequence the genome of a fly or a mouse, for example?
How do the courts use genomic data?

Research Ideas

DNA, mutations, genetic sequence