

# Genetic Mapping

The **human genome** is a collection of all the DNA information in the cell.

## Human Genome Mapping Project

Project started in the Laboratory of Los Alamos and Lawrence Livermore Laboratory in 1983, when it began to create a library of *DNA clones*. The basis of the research was the random sequencing of the genomes of volunteers. It was necessary to find an ethnically diverse group. Individual sequences obtained were then propagated in the appropriate vector (especially *E.coli*) to several million copies – and formed the so-called bacterial *artificial chromosomes*.

The scientists got a sample sequence that arises, however, its individual parts weren't in the appropriate order. This order was subsequently determined using algorithms using very powerful computers. They processed many millions of data and by comparing different parts of human genome have identified the sequence of base pairs. They answered the final of all **23 chromosomes**.

The first sequenced human chromosomes were chromosome 16 and 19, it did so in 1995. Two years later (1997) has been sequencing the complete genome of *E.coli*. The international co-operation of research teams have been relatively "quick" in mapping of the human genome. In 2000 it was announced the completion of a working version of the complete human genome – *research lasted 17 years*. The project described on 80 000 human genes.

During folding, and genome sequencing was used at 300 sequencers. Technical demands on computer equipment is now considered as one of the most demanding electronic transactions at all.

Even today it is a project that raises many doubts in the ethical and moral. The most common fears associated with the abuse of information on the genomes of individual people. In fact these are also encoded in many diseases and disabilities vectors (the problem of insurance companies, employers ,..). Most concerns related to the possibilities of using the project.

## Use of Genetic Mapping

- **In future** - to early diagnosis of various genetic diseases and to find the conditions to them.
- To prepare the individual drugs for each patient in order to not harm.
- Improvement of the estimation of health risks mutagenic or cancerogenic substances.
- Better identification in forensic medicine.

## HUGO (HUMAN Genome Organisation)

The Human Genome Organisation was founded in April 1988, at *the first meeting of genome mapping and sequencing*. Its existence was necessary for the **international coordination** of research in individual countries. Although it originally was an organization with membership for all persons connected with the research of the human genome, then it changed into the academic structure and membership is now limited.

### What are the aims of the organisation?

- *To examine the nature, structure, function and interaction of genes, genetic elements and the genomes of humans and pathogenic organisms.*
- *To characterize the nature and evolution of genetic variation in humans and other organisms.*
- *To study the influence of genetic variability and environmental characteristics, causes, treatment and prevention of diseases.*
- *To promote interaction, coordination and dissemination of information and technology among the general public in the field of genomics, proteomics, bioinformatics, systems biology and clinical sciences by promoting quality education.*
- *To sponsor dialogues on the social, legal and ethical issues associated with genetic and genomic information.*

## Links

### Related articles

- Genome

### External links

- HUGO (<http://www.hugo-international.org/index.php>)
- Mapování lidského genomu dokončeno (<http://natura.baf.cz/natura/2000/8/20000803.html>)

