# Genetic algorithm. Phenotype

## What is GA?

A genetic algorithm is a search technique used in computing to find true or approximate solutions to optimization and search problems.

GAs are categorized as global search heuristics.

GAs are a particular class of evolutionary algorithms that use techniques inspired by evolutionary biology such as inheritance, mutation, selection, and crossover.

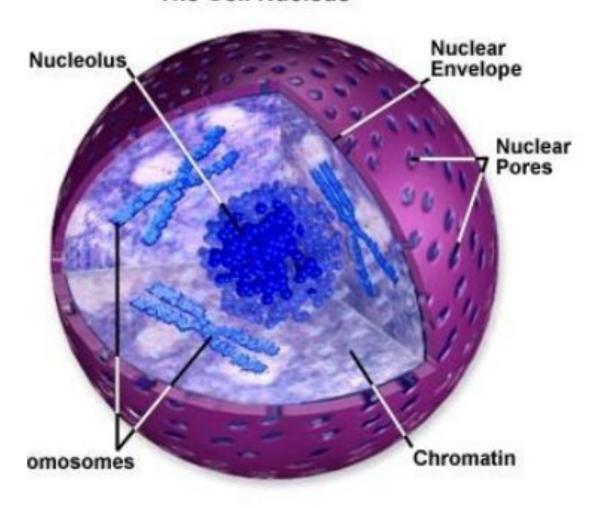
## The cell

Every animal cell is a complex of many small "factories" working together.

The nucleus in the center of the cell.

The nucleus contains the genetic information

#### The Cell Nucleus



### Chromosomes

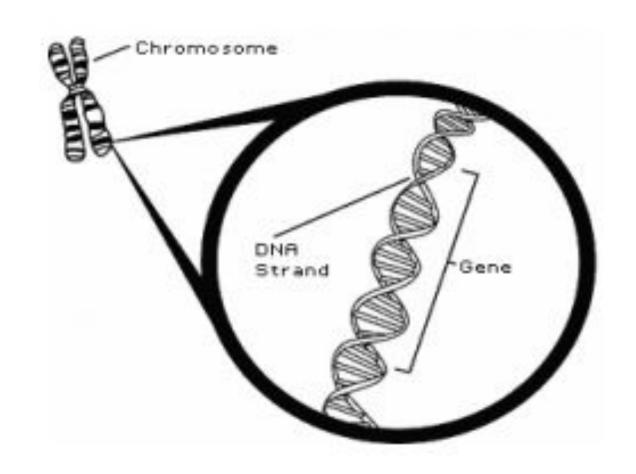
Genetic information is stored in the chromosomes

Each chromosome is built of DNA

Genes are encoded in the chromosomes

Genes code for proteins

Every gene has a unique position on the chromosome



# Genotype and phenotype

Genotype is a set of chromosomes of a given individual. Therefore, genotypes or single chromosomes can be a special population.

A phenotype is a set of values corresponding to a given genotype, i.e. allowed structure or set of task parameters.

# Genotype and phenotype

The entire combination of genes is called genotype

A genotype leads to a phenotype

The phenotype is affected by changes to the underlying genetic code

