GENE POOL :-

A gene pool is the collection of different genes within an interbreeding population. Gene pool usually refers to the sum of all the alleles at all of the loci within the genes of a population of a single species. It includes both genes that are expressed and those that are not.

A population that has a large and diverse gene pool tends to have increased biological fitness and is usually able to adapt to and survive throughout pressures caused by rapid changes in environmental conditions or other stress situations. Although individuals may die in such situations, but the population contains enough genetic variation so that there will be an availability of suitable genes that are necessary for survival.

On the other hand, a population with a narrow gene pool containing low diversity is more likely to suffer from reduced fitness when affected by stresses and is more likely to face extinction. This is either due to low availability of alleles that are necessary for an organism to survive under certain conditions or due to the consequences of interbreeding. When there is less variation between available alleles, there is a greater probability that a harmful allele which causes a disease or deformity will increase in frequency.

The size may increase when a gene mutation occurs and survives and decrease when alleles are removed. Over time, the size of any gene pool can change through natural selection, gene flow and genetic drift.

There can be several variations of each allele for each gene, some of which are dominant alleles and some are recessive. Within genes, each allele variant occurs at a particular frequency at a particular time. When small changes to allele frequency occur this is known as microevolution, large changes or an accumulation of small changes results in macroevolution both of which can result in speciation. The genetic variation with in population is characterized by differences in allele frequency and determines the relative frequency of each phenotype displayed in a population. The phenotype of an individual is determined by its genotype.

eg. Every human being on earth is able to interbreed with one another as a single species. The human gene pool is therefore made up of every allele variant of the approx. 19,000-20,000 human genes within our DNA.