

## Molecular Biology Services Section Front Page

Molecular Biology is the study of biology on a molecular level including the structure, function, and makeup of biologically important molecules such as DNA, RNA, and proteins. The field of molecular biology involves many other areas of biology such as biochemistry and genetics.

Several techniques are used in molecular biology such as PCR(polymerase chain reaction)-This is one of the most important techniques used in molecular biology and is basically used to copy DNA. PCR allows a single DNA sequence to be amplified into millions of DNA molecules. PCR can also be used to introduce mutations within the DNA or introduce special restriction enzyme site and also determine whether certain DNA fragments exist in cDNA library.

Expression cloning- This technique helps to understand the protein function. The DNA that codes for a particular protein is cloned or copied using PCR into an expression vector called a plasmid. The plasmid is introduced to either an animal cell or a bacterial cell.

Gel Electrophoresis- It is an important technique used in molecular biology to separate DNA, RNA, and proteins based on their size by applying an electric field as the DNA is run through agarose gel. Macromolecule blotting and probing- Processes such as southern blotting, northern blotting, western blotting and eastern blotting are used to transfer DNA or RNA proteins onto a blotting membrane (often after gel electrophoresis) so they can be stained or radioactively labelled and then visualized.

Arrays – A DNA microarrays or DNA chip is a collection of DNA spots mounted on a solid surface such as a microscope slide that can be used to simultaneously quantify protein expression levels across a large number of genes. The technique can also be used to genotype various different genomic regions

Molecular biology plays important role in understanding formations, actions, regulations of various parts of cells which can be used efficiently for targeting new drugs, diagnosis of disease, physiology of the Cell.