

BIOTECHNOLOGY PART. II: Analysis techniques (14H)

Program :

1. Introduction
 - 1.1. Reminders of basic concepts
 - 1.2. Safety in the laboratory
 - 1.3. Biological, chemical and radioactive contamination
2. Cellular analysis
 - 2.1. Cell culture
 - 2.2. Cellular factories
 - 2.3. Maintenance of cell lines
 - 2.4. Quantification of living cells
 - 2.5. Cellular analysis
 - 2.6. Cellular therapy
3. Separation and purification of biomolecules
 - 3.1. Subcellular fractionation
 - 3.2. Purification of proteins by precipitation
 - 3.3. Chromatography
 - 3.4. Quality of protein samples
 - 3.5. Extraction and purifications of nucleic acids
 - 3.6. Electrophoresis
4. Analysis of biomolecules
 - 4.1. Denaturation and hybridization of nucleic acids
 - 4.2. Nucleic acid amplification : PCR
 - 4.3. Quantitative analysis of gene expression by qRT-PCR
 - 4.4. Detection of nucleic acids and proteins: the "blots"
 - 4.5. Study of molecular interactions by microcalorimetry
5. Immunological analysis techniques
 - 5.1. Immunological agglutination
 - 5.2. Immunological precipitation
 - 5.3. Immunological neutralization
 - 5.4. Immunofluorescence immunostaining
 - 5.5. Radioimmunoassay and immunoenzyme immunoassay
6. Enzymatic
 - 6.1. Michaelian kinetics
 - 6.2. Enzyme inhibitions
 - 6.3. Enzymatic activity
 - 6.4. Enzymatic determination of substrates
7. Bioinformatics
 - 7.1. Search for genes of interest
 - 7.2. « Blast » research
 - 7.3. Alignment
 - 7.4. Phylogenetic trees
 - 7.5. Prediction of protein structure