**Lec2. Physical forms in bioseparation**

**Physical forms separated in bioseparation**

**1-Particle-liquid separation**: theseparation of cells from cell culture medium

**2- Particle-particle separation in liquid medium:** the separation of plasmid DNA from chromosomal DNA

**3-Particle-solute separation in liquid medium:** the separation of dissolved antibiotics from cells

**4- Solute-solvent separation:** the removal of dissolved impurities from a liquid product

**5- Solute-solute separation in liquid medium:** the separation of serum albumin from other serum proteins.

**6- Liquid-liquid separation:** the separation of solvents such as acetone and ethanol from an aqueous medium.

**Bioprocessing categories:**

**1- Reactive bioprocessing:** the reactive bioprocessing involves steps such as biocatalyst screening, enrichment, isolation and propagation, cell manipulation by recombinant DNA technology or hybridoma technology, media optimization and formulation**.**

**2- Extractive bioprocessing:** the extractive bioprocessing almost entirely involves bioseparation.

The materials that separated in bioseparation involved:



