Basic Molecular Biology: Nucleic Acid Extraction

Organic Extraction

Organic extraction is a method used to separate nucleic acid and other cellular components based on their differential solubility. This method uses a mixture of organic solvents, phenol and chloroform, to extract unwanted cellular components from nucleic acid.

Add the organic mixture consisting of trizol and chloroform directly to a cell lysate and mix thoroughly to generate a biphasic emulsion. After mixing, centrifuge the sample until two distinct layers of liquid form. At this stage different cellular components partition into two phases based on their solubility.

The lower phase is the organic solvent phase that contains lipids, denatured proteins, and other cellular components. The upper phase is the aqueous phase that contains only nucleic acid. The two phases are physically separated, and nucleic acid is subsequently recovered from the aqueous phase by a method known as “alcohol precipitation.”

Link to video job aid: Basic Molecular Biology: Nucleic Acid Extraction – Organic Extraction | OneLab REACH (cdc.gov)