1. Fluorescent immunolabeling (Immunofluorescent)
2. ELISA (Enzyme-linked immunosorbent assay)
3. Immunomagnetic separation assay
4. Western immunoblotting assay
5. Immunoprecipitation assay

1. Fluorescent Immunolabeling

- Fluorescent signal molecules are conjugated to antibodies
- The signal when reacting with antigen produces fluorescent light
- The sample antigen is attracted microscopic slide and a fluorescent-antibody conjugated specific antigen is added
- This is then viewed under the microscope equipped with fluorescent light
- The labeled antibody appears light-green against dark background
- The assay is commonly used to detect protozoa parasites in water

2. ELISA

- A biochemical technique used mainly in immunology
- The most basic test to determine if an individual is positive for a selected pathogen, such as HIV or other virus
- 8 cm x 12 cm plastic plate which contains an 8 x 12 matrix of 96 wells, each of which are about 1 cm high and 0.6 cm in diameter

ELISA detects the presence of an antibody or an antigen in a sample

Antigen: Any substance or compound which stimulates the immune system to produce antibodies

Antigens may be:
- Proteins
- Polysaccharides - sugars such as mannose
- Lipoproteins - conjugates of lipids (fats) with proteins

Epitope: a specific configuration on the protein surface
- One or more epitopes may be present on the antigen

Applications of ELISA

- Serum antibody concentrations
- Detecting potential food allergens (milk, peanuts, walnuts, almonds and eggs)
- Disease outbreaks - tracking the spread of disease e.g. HIV, bird flu, common colds, cholera
- Detection of antigens e.g. pregnancy hormones, drug allergen, GMO, mad cow disease