TABLE 2-11 COMPARISON OF THE STEPS IN MEIA AND CMIA METHODS

TECHNOLOGY	SOLID PHASE	SEPARATION STEP	LABEL	DETECTION TECHNOLOGY
MEIA	Latex Microparticle	Glass Fiber Matrix	Alkaline Phosphatase Enzyme	Fluorescence Detector
CMIA	Magnetic Microparticle	Magnet	Chemiluminescent Compound	Chemiluminescence Photomultiplier Tube

Chapter 2 Summary

THERE ARE FIVE METHODS OF IMMUNOASSAY THAT WERE SUMMARIZED IN THIS CHAPTER.

- **Radioimmunoassay (RIA)**: Antibody or antigen is labeled with radioactivity, and used in a noncompetitive or competitive format.
- **Enzyme Immunoassay (EIA)**: Antibody or antigen is labeled with an enzyme that converts a substrate to a product with a resulting signal that is measured, such as a change in color.
- **Fluorescence Polarization Immunoassay (FPIA)**: Typically antigen is labeled with fluorescent label and competes with unlabeled antigen from the specimen. The relatively slow rotation of large molecules as well as the ability of slow-moving particles to polarize light are utilized to obtain a measure of the number of large antibody-antigen-fluorescein particles in solution. In this competitive format, the concentration of analyte present is indirectly proportional to the amount of signal measured.
- **Microparticle Enzyme Immunoassay (MEIA)**: A solid phase microparticle is coated with antibodies against an antigen of interest, and is used to capture the analyte. The antibody for detection is labeled with an enzyme as in the EIA. The concentration of analyte is proportional to the amount of signal measured. A noncompetitive sandwich format yields results that are directly proportional to the amount of analyte present.
- **Chemiluminescent Magnetic Immunoassay (CMIA)**: A chemiluminescent label conjugated to the antibody or antigen, and it produces light when combined with its substrate. This method is very similar to MEIA, though the chemiluminescent reaction offers high sensitivity and ease of measurement. A noncompetitive sandwich format yields results that are directly proportional to the amount of analyte present.

Quiz questions for Chapter 2

Circle the correct answer or fill in the blank.

1. List four immunoassay detection technologies

a. _____

b. _____

c. _____

d. _____

2. In the FPIA technology...

a. measured signal is directly proportional to analyte concentration.
b. the Ag-Fluorescein molecule rotates rapidly and emits polarized light
c. both labeled analyte and unlabeled specimen analyte compete for antibody binding sites.
d. All of the above

3. FPIA technology is applied using which of the following:

a. homogeneous assay
b. noncompetitive format
c. MEIA
d. heterogeneous assay

4. MEIA utilizes what type of solid phase:

a. magnetic microparticles
b. microtiter plates
c. latex microparticles
d. 1/4 inch beads

5. Which of the following typically represent the most sensitive label?

a. chemiluminescence
b. enzyme
c. fluorescence
d. microparticle