Abbas: Cellular and Molecular Immunology, 9th Edition

Antibodies and Antigens

Test Bank

Matching

Questions 1-5
Match each of the descriptions in questions 1-5 with the correct lettered antibody isotype (A-E). (Answers may be used more than once.)
A. IgA
B. IgD
C. IgE
D. IgG
E. IgM

1. The secreted form of this isotype forms pentamers around a J chain

ANS: E. IgM is secreted as a J chain–linked pentamer.

2. The most abundant Ig isotype in the blood

ANS: D. The blood IgG concentration is about 3.5 mg/mL and includes four subtypes (IgG1 to IgG4).

3. The isotype only found in membrane-bound form on naive B cells

ANS: B. Very little IgD is secreted, and in membrane form is only on the surface of naive B cells. Its function is not well understood.

4. The isotype found predominantly in mucosal secretions
ANS: A. IgA accounts for almost two thirds of the 3 g of antibody produced each day by an adult, most of which is produced in the gastrointestinal associated lymphoid tissues and secreted into the gut lumen.

5. The isotype most closely associated with immediate hypersensitivity (allergic) disease

ANS: C. Most IgE that is secreted is bound to mast cells, and it plays a role in the activation of mast cells during allergic reactions.

Questions 6-10

Match each description in questions 6-10 with the appropriate lettered term (A-I).
A. Conformational determinant

B. Linear determinant
C. Neoantigenic determinant
D. Hinge region
E. Immun complex
F. Fab
G. Fc
H. Tail piece
I. Hapten

6. A proteolytic fragment of an antibody molecule that contains an intact antigen-binding site

ANS: F. Fab fragments, derived from enzymatic cleavage of Ig molecules, are composed of one intact light chain covalently linked to the N-terminal region of one heavy chain and include a single intact antigen-binding site.

7. A three-dimensional shape, formed by a portion of a macromolecule, to which an antibody binds

ANS: A. Conformational determinants will usually be destroyed by physicochemical disruption of macromolecules, such as by denaturation or proteolysis of proteins.

8. A small chemical group recognized by an antibody that is attached to a larger macromolecule

ANS: I. Although haptens can be recognized by antibodies, they are not, by themselves, able to stimulate an antibody response (i.e., they are not immunogens). Antibody responses to haptens can be induced when the hapten is attached to a macromolecule, called a carrier.

9. The proteolytic fragment of an antibody molecule that contains the heavy chain constant region

ANS: G. The Fc fragment, generated by proteolytic cleavage of an antibody molecule, is composed of the C-terminal end of the heavy chain and lacks the antigen-binding region. This region of an intact Ig molecule, which can interact with Ig receptors and complement, is called the Fc region.

10. A region of an antibody molecule that permits bivalent binding of antibodies to pairs of surface epitopes varying in distance from one another

ANS: D. The hinge region, located between the two N-terminal Ig domains of the heavy chains of most isotypes, is flexible, permitting variations in the distance between the two antigen-binding sites.