

The five major classes of immunoglobins in human blood plasma are: IgG, IgA, IgD, IgM, and IgE, of which the IgG globulins are the most abundant and the best understood. Molecular weights of immunoglobulins are about 150 kilodaltons (kD) except for IgM, which has a molecular weight of 900 kD. A *dalton* is a unit of mass equivalent to a hydrogen atom. Immunoglobulins have four polypeptide chains: two heavy (H) chains (about 430 amino acids) and two light (L) chains (about 214 amino acids). These chains are linked together by disulfide bonds into a Y-shaped, flexible structure (Fig. 2.13). The heavy chains contain a covalently bound oligosaccharide component. Each chain has a region of constant amino acid sequence and a variable-sequence region. The Ab molecule has two binding sites for the antigen; the variable portions of the L and H chains

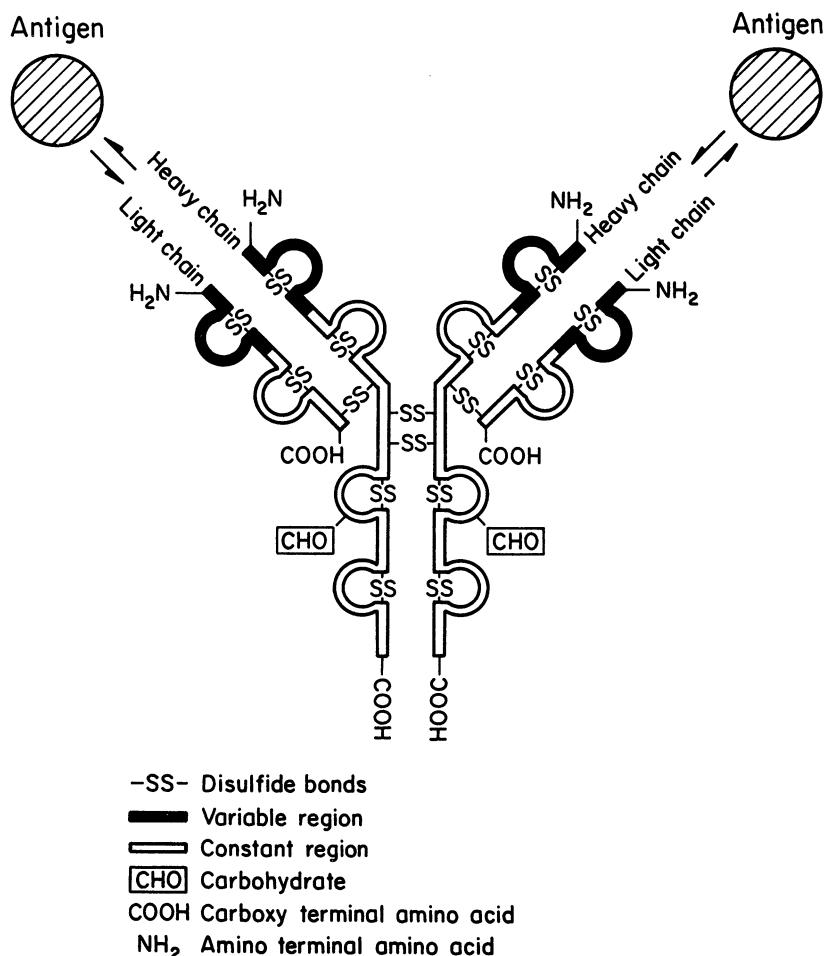


Figure 2.13. Structure of immunoglobulin G (IgG). Structure showing disulfide linkages within and between chains and antigen binding site. (With permission, adapted from T. D. Brock, D. W. Smith, and M. T. Madigan, *Biology of Microorganisms*, 4th ed., Pearson Education, Upper Saddle River, NJ, 1984, p. 524.)