

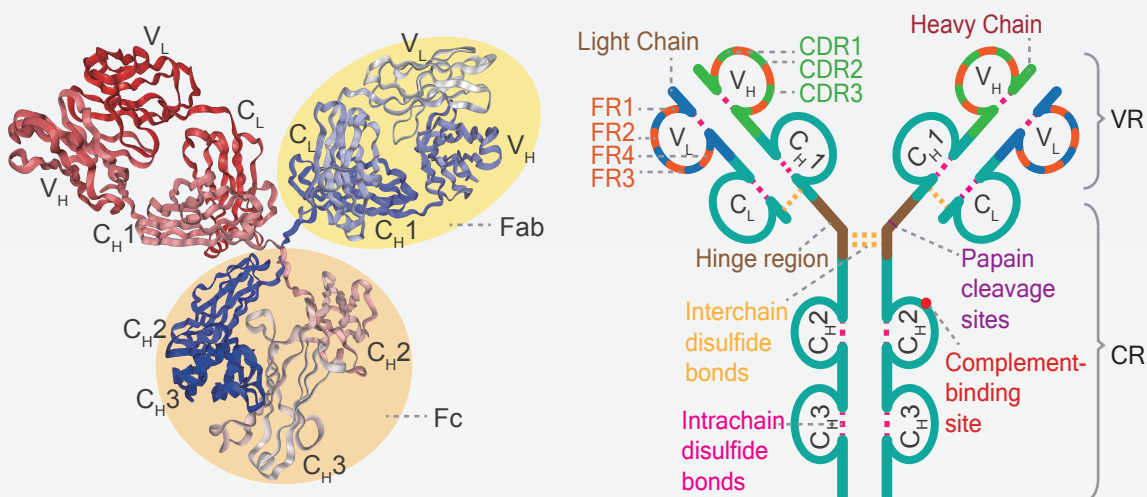
IgG is the most commonly discussed antibody molecule, it is one of the five immunoglobulin isotypes. A typical antibody molecule has 12 domains (VL, CL and VH, CH1, CH2, CH3), arranged in two heavy and two light (H and L) chains, linked through cysteine residues by disulphide bonds so that the domains lie together in pairs. The whole molecule having the shape of a flexible Y. IgG can be cleaved at hinge region site by papain into three separate fragments, two of which are termed antigen-binding fragments (Fab), the third segment is known as a crystal-line fragment (Fc).

In mammals, there are 5 class of heavy chain (α , δ , ϵ , γ , and μ), corresponds to 5 different antibodies (IgA, D, E, G, M) in the human body, which are distributed and function differently. A same Ig class can be divided into subclasses such as IgG1,2,3,4, IgA1,2 and IgM1,2 by the slight differences of the amino acid composition and the number or position of disulfide bonds. Their functional properties are summarized in the table.

The most important biological function of antibody is to recognize and bind foreign antigens with high affinity and mediate the subsequent immune response to eliminate them. It is widely used as a versatile tool in various aspects of life science research as it is simple to produce, easy to modification, and even as a special drug for the treatment of many difficult miscellaneous diseases such as cancer and autoimmune diseases.

Creative Biolabs
Antibody
Discovery & Engineering
Services

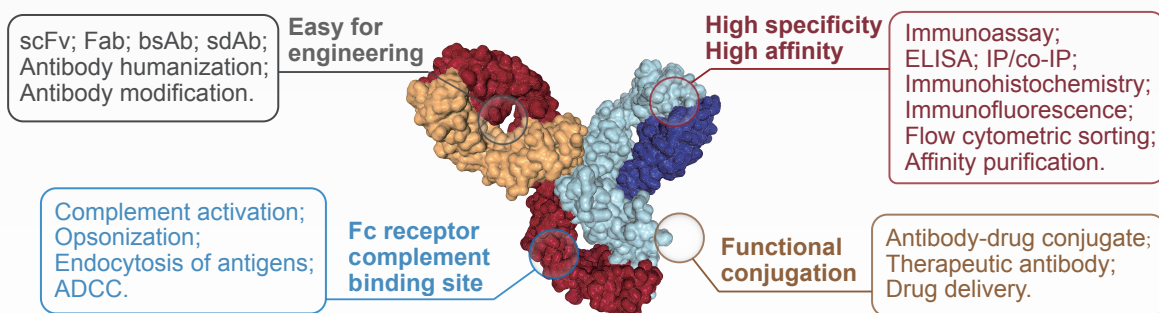
1 Structural composition of an antibody monomer



2 Isotypes of human antibodies

Isotype	IgA1, 2	IgD	IgE	IgG1, 2a, 2b, 3, 4	IgM
Structure	 Monomer, dimer	 Monomer	 Monomer	 Monomer	 Pentamer
Heavy chain designation	$\alpha 1, \alpha 2$	δ	ϵ	$\gamma 1, \gamma 2, \gamma 3, \gamma 4$	μ
Molecular weight	160x2 kDa	184 kDa	188 kDa	146-165 kDa	970 kDa
Percentage in serum	13%	1%	0.002%	80%	6%
Additional properties	Monomer in secretory fluid, active as dimer on epithelial surfaces	Found on surface of mature B cells, signaling via cytoplasmic tail	Mediation of allergic response, effective against parasitic worms	Antibody-dependent cell cytotoxicity	Effective agglutinator of particulate antigens, bacterial opsonization

3 Functional properties of antibodies



WHAT WE DO:

Phage Display & Antibody Library Services
Single Domain Antibody (sdAb) Services
Custom Antibody & Hybridoma Services
Native™ Antibody Discovery Service
In Vitro Display Services

Human or Humanized Antibody Services
Antibody Analysis Services
Antibody Engineering Services
Antibody Labeling Services
Bioconjugation Services