An Overview of Mouse Antibody

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Abstract

Mouse antibody types

It is same as human beings that there are five antibody isotypes, including IgA, IgD, IgG and IgM, from mice. Different isotype has different heavy chain. IgG and IgM are produced by native B cells, which will produce one of IgG or IgM isotypes and subclasses through isotypic switching.

Each heavy chain consists of variable and constant regions which have been designated as distinct genes although they only form part of the immunoglobulin heavy chain. As a side note, a number of monoclonal antibody therapeutics are human IgG4. And compared to IgG1-3, IgG4 Fc does not activate complete cascade and bind to Fc receptor with intermediate affinity. Its unique structural properties have been identified. Additionally, increased concentrations of human serum IgG4 are associated with specific diseases.

Mouse antibody molecular weight

Two heavy chains and two light chains are part of an immunoglobulin molecule. They are linked together with intrachain and interchain disulfide bonds. Heavy chains for IgA, IgD, and IgG have a constant region with three immunoglobulin (Ig) domains, however, other types of heavy chains may have a different number of immunoglobulin domains. It is studied that heavy chains for IgE and IgM have a constant region with four immunoglobulin domains. Mouse IgM heavy chain constant region has 475 amino acids. Heavy chains from all isotypes have a variable region with a single immunoglobulin domain.

Mouse antibody production

It is known that mouse is the predominant animal host for monoclonal mice antibody production and also a host for polyclonal antibody generation. Although typical mouse antibody production involves immunizing mice with foreign antigens, mouse monoclonal hydridoma can also be got directly by fusion of unimmunized spleen cells from a specific mouse strain with auto-antibodies.

Anti-mouse gene antibodies

Mouse is also a widely used research model, and many antibodies against mouse genes are available. As of May 22, 2018, Labome antibody database lists monoclonal antibodies against 6588 mouse genes, and polyclonal antibodies against 210 mouse genes. Most of monoclonal antibodies are generated in mice. It is common to use anti-mouse secondary antibodies. Labome

survey on secondary antibodies indicates that goat anti-mouse secondary antibodies are the most common choices. On the right panel of this webpage, you can see links to secondary antibodies against different mouse isotypes and light chains.

One of the important methods for generating humanized antibodies is through the immunization of transgenic mice with part of a human immunoglobulin genomic sequence. Most recently, the entire human immunoglobulin variable-gene repertoire has been inserted into the mouse genome, enabling the generation of monoclonal antibodies with fully humanized variable regions.

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