

Monoclonal Antibodies: Principles and Practice : Production and Application of Monoclonal Antibodies in Cell Biology, Biochemistry and Immunology - Academic Press, 1986 - 1986 - James W. Goding - 9780122870217

A monoclonal antibody (mAb or moAb) is an antibody made by cloning a unique white blood cell. All subsequent antibodies derived this way trace back to a unique parent cell. Monoclonal antibodies can have monovalent affinity, binding only to the same epitope (the part of an antigen that is recognized by the antibody). In contrast, polyclonal antibodies bind to multiple epitopes and are usually made by several different antibody secreting plasma cell lineages. Bispecific monoclonal antibodies can also be produced. The production of monoclonal antibodies by the hybrid cells is referred to as hybridoma technology. Principle for Creation of Hybridoma Cells: The myeloma cells used in hybridoma technology must not be capable of synthesizing their own antibodies. The monoclonal antibodies produced by using mice are quite suitable for in vitro use. However, their administration to humans is associated with immunological complications, since they are foreign to human body. Production of human monoclonal antibodies is preferred. However, it is difficult to produce human MAbs by conventional hybridoma technology. The wide range of applications of MAbs is described later. Limitations of Monoclonal Antibodies: Hybridoma technology is laborious and time consuming. Monoclonal antibodies (mAb) are defined as the antibodies derived from a single clone of plasma cell; all having the same antigen specificity, i.e. produced against a single epitope of an antigen. Contents. 0.0.1 Polyclonal vs Monoclonal Antibodies. Principle. A clone of B cell stimulated against a single epitope of antigen (i.e. antibody-producing plasma B cell) is fused with malignant antibody-producing myeloma cell to produce a hybridoma cell. This hybridoma cell has two unique properties: Produces monoclonal antibody of same antigen specificity (due to B cell component). Multiplies indefinitely producing a clone of identical cells (due to immortal myeloma cell component). Procedure.