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Patents and Literature

Monoclonal Antibodies and Immobilized Antibodies

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ABSTRACT

Antibodies in both their free and immobilized state have been the object of considerable industrial and academic interest. A variety of methods are used for preparing and immobilizing antibodies. Applications for monoclonal antibodies include the preparation of therapeutics, diagnostics, and in affinity fractionation. Recent US patents on monoclonal and immobilized antibodies and scientific literature on monoclonal antibodies are surveyed. A description of these patents and a list of references are given.

INTRODUCTION

The objective of the Patents and Literature Section is to keep readers aware of significant inventions and trade in industrial research, as well as to highlight those areas of research that may lead to new biotechnological opportunities. Three subject areas are being surveyed in 1987: immobilized biocatalysts; monoclonal and immobilized antibodies; and bioassays based on immunological, enzyme, gene probe, and electrochemical methods. The subject of the second Patents and Literature Section of 1987 is Monoclonal Antibodies and Immobilized Antibodies.

PATENTS

This section identifies and gives a brief description of patents from US patent literature from January 1986 to January 1987. The major search

headings were monoclonal antibodies and immobilized (minor search headings included adsorbed, entrapped, encapsulated, microencapsulated, bound, and cross-linked) with the cross-term antibodies. Both patent abstracts and titles were searched. Copies of US Patents can be obtained for $1.50 each from the Commissioner of Patents and Trademarks, Washington, DC 20231.

MONOCLONAL ANTIBODIES

Abell, C. W., and Denney, R. M.
HYBRID CELL LINES PRODUCING MONOCLONAL ANTIBODIES DIRECTED AGAINST NEUROTRANSMITTER-DEGRADING ENZYMES
US 4,571,381, Feb. 18, 1986
Assignee: The University of Texas Board of Regents

A continuous hybrid cell line that produces monoclonal antibody directed against the neurotransmitter-degrading enzyme, monoamine oxidase B (MAO B), has been developed. Monoclonal antibody having specificity for MAO B and no cross-reactivity with MAO A was selected and implemented in a radioimmunoassay technique for the selective measurement of MAO B concentration independent of its catalytic activity.

Altrock, B. W.
MONOCLONAL ANTIBODIES WHICH SPECIFICALLY BIND TO HUMAN IMMUNE INTERFERON
US 4,599,306, July 8, 1986
Assignee: AMGEN

Monoclonal antibodies are described that are specifically reactive with native and recombinant human immune interferon (IFN-gamma) and with polypeptides having amino acid closely related sequences. Antibodies are produced by new mouse–mouse hybridoma tumor cell line ATCC HB 8291. These antibodies, although displaying high affinity for IFN-gamma, do not neutralize antiviral biological activity of the interferon. They are usefully employed in the detection, quantification, and affinity purification of IFN-gamma and IFN-gamma analogs, as well as in investigations relating to the mode of biological action of IFN-gamma.

Auerbach, R.
MONOCLONAL ANTIBODY TO ANGIOTENSION-CONVERTING ENZYME AND METHODS OF PREPARING AND USING SAME
US 4,582,790, Apr. 15, 1986
Assignee: Wisconsin Alumni Research Foundation

A method for preparing a monoclonal antibody of improved cross-species specificity is described. An inoculum antigen is prepared from a first species of animal producing the antigen and then immunizing a selected subject animal with the inoculum antigen. Spleen cells from the immunized subject animal are fused with myeloma cells to produce hybridomas. A test antigen is prepared corresponding to the inoculum antigen, but derived from a second species of animal, distinct from the first species of animal from which the inoculum antigen was prepared. Hybridomas are screened for desired antibody production against the test antigen. The hybridoma-producing antibodies most active against the test antigen are then cultured, and monoclonal antibodies are produced.

Bernal, S. D.
MONOCLONAL ANTIBODY WITH SPECIFICITY TO HUMAN SMALL-CELL CARCINOMA AND USE THEREOF
US 4,585,742, Apr. 29, 1986
Assignee: Dana-Farber Cancer Institute, Inc.

Monoclonal antibody reactive with SCC cells are unreactive with human neuroblastoma cells, human squamous cell carcinoma cells, and human large-cell undifferentiated lung carcinoma cells are described.

Canfield, R. E., Ehrlich, P. H., and Moyle, W. R.
MONOCLONAL ANTIBODY MIXTURES AND USE THEREOF FOR ENHANCED SENSITIVITY IMMUNOASSAYS
US 4,514,505, Apr. 30, 1985
Assignee: The Trustees of Columbia University in the City of New York

Mixtures of monoclonal antibodies that contain at least two monoclonal antibodies that bind to different antigenic sites on the antigen and that can bind simultaneously to an antigen are useful in enhanced sensitivity assays for the antigen. By utilizing such mixtures in diagnostic assays for important antigens, such as the polypeptide human chorionic gonadotropin, enhanced sensitivity can be achieved as compared with assays employing individual monoclonal antibodies.

Chan, T. S.
HYBRIDOMA CELL LINES PRODUCING MONOCLONAL ANTIBODIES DIRECTED AGAINST CERVICAL CANCER CELLS
US 4,618,585, Oct. 21, 1986
Assignee: Board of Regents, the University of Texas System

Continuous hybrid cell lines for producing monoclonal antibodies specific for an antigenic determinant unique to cervical cancer cells have been developed. The hybrid cell lines were established by fusing differentiated lymphoid cells primed with intact human cervical cancer cells with myeloma cells, particularly plasmacytoma cells. The resulting fused

hybrid cells were cultured in HAT tissue culture media that included a small concentration of deoxycytidine. Deoxycytidine was found to enhance the growth of the hybrid cells and subsequent yield of secreted monoclonal antibodies. Hybrid cell lines secreting monoclonal antibodies to antigenic determinants unique for human cervical cancer cells can be maintained indefinitely in culture to produce large amounts of homogenous anticervical cancer cell antibody.

Chang, T.W., and Chang, N. T.
METHOD OF PREPARING MURINE MONOCLONAL ANTIBODIES AGAINST CELL-FREE PRODUCTS OF ACTIVATED HUMAN T LYMPHOCYTES
US 4,596,774, June 24, 1986
Assignee: Centocor, Inc.

A method of preparing simultaneously monoclonal antibodies specific for different cell-free products of activated human T lymphocytes is described. Human T cells are activated in a medium supplemented with mouse serum rather than conventional calf serum. A supernatant prepared from the activated T cells is used to immunize mice. The dominant immunogens in the supernatant are the cell-free products of human T lymphocytes. The yield of hybrid cells that produce products reactive with cell-free products of human T lymphocytes is enhanced by injecting the immunized mice with a supernatant from mitogen-activated murine splenocytes. A radioimmunoadsorbent assay is also described for screening hybrids to detect production of monoclonal antibodies reactive with cell-free products of human T lymphocytes.

Cidlowski, J. A., and Viceps, M. D.
MONOCLONAL ANTIBODIES TO VITAMIN B_6 AND IMMUNOASSAY METHOD
US 4,596,771, June 24, 1986
Assignee: Research Corp.

A continuous hybridoma cell line that secretes recoverable quantities of monoclonal antibodies having specificity against Vitamin B_6.

Cote, R. J., Morrissey, D. M., Houghton, A. N., Beattie, E. J., Jr., Oettgen, H. F., and Old, L. J.
HUMAN MONOCLONAL ANTIBODIES TO CANCER CELLS
US 4,613,576, Sept. 23, 1986
Assignee: Sloan-Kettering Institute for Cancer Research

Hybridomas that produce human monoclonal antibodies are formed by fusing lymphocytes from individuals with various cancers to an immortal

cell line, such as a myeloma, from, e.g., a human cell line or a mouse cell line.

Croce, C. M.
HUMAN HYBRIDOMAS AND THE PRODUCTION OF HUMAN MONOCLONAL ANTIBODIES BY HUMAN HYBRIDOMAS
US 4,608,337, Aug. 26, 1986
Assignee: The Wistar Inst.

A stable, continuous human myeloma cell line that is capable of hybridization with antibody-producing cells of humans and other animals is described. This cell line is a mutant of GM 1500 human B cells and is deficient in hypoxanthine phosphoribosyltransferase. A process for the production of hybrid cells employing the stable, HPRT-deficient human myeloma cell line and for the production of antibodies is also detailed.

Cubicciotti, R. S., Karu, A. E., and Krauss, R. M.
LIPOPROTEIN MARKER FOR HYPERTRIGLYCERIDEMIA
US 4,619,895, Oct. 28, 1986
Assignee: The Regents of The University of California

The detection of a particular low-density lipoprotein that has been found to be a marker for patients suffering from type IV hypertriglyceridemia is described. A monoclonal antibody capable of specifically binding to a characteristic epitopic site on this LDL subspecies can be utilized in a wide variety of immunoassays.

Cullor, J. S.
METHOD AND APPARATUS FOR MONITORING BODY PARTS OF ANIMALS
US 4,491,126, Jan. 1, 1985
Assignee: Smith, W. D., Cullor, J. S., and Cullor, G. W.

A method for adding or removing fluids from a body part or organ of an animal, which minimizes animal trauma and permits rapid, easy, repeated fluid or low-viscosity gels transfers, is described. The apparatus includes a valve assembly having a tubular fluid-conveying element adapted for fixed connection to the animal, along with a fluid conduit connected between the valve element and a specific internal body part or organ, such as a cow's uterus. In use, a syringe is employed to introduce or remove fluids from the body part, through the valve assembly and connected conduit. The invention is especially adapted for introducing and recovering cell lines producing monoclonal antibodies or other biologically active products in large mammals and facilitates monitoring of antibody production as well as administration of nutrients to enhance cell line growth.

Deutsch, A., Brandwein, H., Platt, H., Hunter, D. M., Dubitsky, A., and Durham, S. M.
MONOCLONAL ANTIBODY TO DIGOXIN
US 4,606,855, Aug. 19, 1986
Assignee: Mex Research Associates c/o Leon Reimer

A method of determining the concentration of an antigen in a sample solution by: (a) coating an antigen-protein conjugate onto a solid matrix; (b) conjugating an enzyme to an antibody specific for the antigen; (c) adding to a known quantity of a solution containing the antibody-enzyme conjugate of (b), a specified quantity of a sample containing an unknown amount of the antigen whose content is to be determined; (d) contacting the coated solid matrix of (a) with the solution (c) and incubating so as to effect binding between the antibody and antigen, some of the antigen being that from the sample and some being that on the solid matrix; (e) removing the solid matrix from the solution and washing; (f) immersing the solid matrix in a solution containing a known amount of an enzyme-substrate that is acted upon by the enzyme so as to affect reaction between the enzyme and enzyme-substrate to produce a product, and then separating the solid matrix from the solution of enzyme-substrate; and (g) then measuring the solid matrix and/or the solution of enzyme-substrate with a pre-established standard to indicate the amount of antigen that was in the sample added in (c).

Dolbeare, F. A., and Gray J. W.
FLOW CYTOMETRIC MEASUREMENT OF TOTAL DNA AND INCORPORATED HALODEOXYURIDINE
US 4,585,736, Apr. 29, 1986
Assignee: The United States of America as represented by the United States Department of Energy

A method for the simultaneous flow cytometric measurement of the total DNA content and the level of DNA synthesis in normal and malignant cells is described. The sensitivity of the method allows a study of cell cycle traverse rates for large-scale cell populations as well as single-cell measurements. A DNA stain, such as propidium iodide, is used as the probe for the measurement of total DNA content, and a monoclonal antibody reactive with a DNA precursor, such as bromodeoxyuridine (BrdU), is used as a probe for the measurement of BrdU uptake by the cells as a measure of DNA synthesis.

Dreesman, G. R., and Kendall, C. E.
IMMUNOASSAY EMPLOYING MONOCLONAL HERPES SIMPLEX ANTIBODY AND BIOTIN-AVIDIN DETECTION SYSTEM
US 4,535,057, Aug. 13, 1985
Assignee: AMF Inc.

An immunoassay and kit for determining a viral antigen, such as herpes simplex. The antigen is immunocaptured by an insoluble matrix presenting IgG antibody against the viral antigen. The matrix resulting is subsequently contacted by biotin-labeled monoclonal IgM antibody and labeled avidin.

Egrie, J. C.
ATCC HB8209 AND ITS MONOCLONAL ANTIBODY TO ERYTHROPOIETIN
US 4,558,006, Dec. 10, 1985
Assignee: Kirin-Amgen, Inc.

A new mouse–mouse hybridoma tumor cell line ATCC No. HB8209 is described, which produces a monoclonal antibody immunologically reactive with erythropoietin and with a polypeptide having a similar amino acid sequence. The isolation of erythropoietin by affinity purification and its quantitative detection is described.

Frackelton, A. R., Jr., Eisen, H. N., and Ross, A. H.
PRODUCTION AND USE OF MONOCLONAL ANTIBODIES TO PHOSPHOTYROSINE-CONTAINING PROTEINS
US 4,543,439, Sep. 24, 1985
Assignee: Massachusetts Institute of Technology

A hybridoma cell line is described that secretes monoclonal antibodies that serve as a high titer, reproducible, biological reagent useful for isolating and identifying phosphotyrosine-containing proteins. These antibodies also have potential uses in diagnosis of a variety of diseases, including certain cancers. The antibodies, which have demonstrated affinity for a variety of molecules containing *o*-phosphotyrosine residues, were prepared using a synthetic analog, *p*-azobenzyl phosphonate (ABP), covalently linked to a carrier protein, as the antigen.

Gay, S.
VITRO DIAGNOSTIC METHODS USING MONOCLONAL ANTIBODIES AGAINST CONNECTIVE TISSUE PROTEINS
US 4,628,027, Dec. 9, 1986
Assignee: Molecular Engineering Associates, Ltd.; The Board of Trustees of the University of Alabama

Collagen profiles of human body tissues and fluids are subject to change during certain pathological conditions and during therapeutic regimens for the treatment of such conditions. These changes in collagen profiles can be detected by immunohistological, immunocytological, and immunoserological techniques. In vitro diagnostic methods employing monoclonal antibodies specific for connective tissue proteins are described that can be used for monitoring the results of therapeutic measures taken

against inflammatory diseases, fibrotic diseases, and cancer and for detecting or following the pathogenesis of such diseases.

Geirnaert, G.
FIXATION SUPPORT FOR MICROORGANISMS
US 4,560,660, Dec. 24, 1985
Assignee: Argiles & Mineraux AGS-BMP

A ceramic support for the fixation of microorganisms consisting of a silico-aluminate having 5–25% magnesia and an average grain size of 5–300 μm, with a narrow distribution. This support is obtained by calcining a mixture of kaolinic clay and talc or magnesium carbonate and containing no more than 50% cordierite, then grinding and sintering to the desired distribution of grain size. This support is useful in immobilizing hybridomas to produce monoclonal antibodies or biological catalysts.

Geltosky, J. E.
HYBRIDOMA CELL LINES AND MONOCLONAL ANTIBODIES TO THEOPHYLLINE
US 4,521,510, June 4, 1985
and
US 4,524,025, June 18, 1985
Assignee: E. I. Du Pont de Nemours and Co.

Hybrid monoclonal cell lines are described for the continuous production of monoclonal antibodies to theophylline having less than 5% cross-reactivity with caffeine. These antibodies are useful in a particle-enhanced turbidimetric inhibition immunoassay for theophylline.

Goldberg, E. H.
ATCC HB8116 AND ITS MONOCLONAL ANTI-H-Y ANTIBODY, HYCLONALAN
US 4,511,661, Apr. 16, 1985
Assignee: University Patents, Inc.

A hybridoma tumor cell line and the anti-H-Y antigen monoclonal antibody, "Hyclonalan," it produces are used in immunoselection methodology.

Goldwasser, E., Kavinsky, C., and Weiss, T. L.
MONOCLONAL ANTI-ERYTHROPOIETIN
US 4,558,005, Dec. 10, 1985
Assignee: University Patents, Inc.

Hybridoma tumor cell line (ATCC No. CRL 8164) produces a monoclonal anti-erythropoietin antibody substance, Epoclonalan. Epoclonalan is used in immunological methods for isolation of natural erythropoietin and for quantitative detection of erythropoietin in fluid samples.

Gratzner, H. G.
HYBRIDOMA CELLS SECRETING A MONOCLONAL ANTIBODY SPECIFIC FOR 5-BROMO AND 5-IODOEOXYURIDINE AND REAGENTS FOR MEASURING CELLULAR PROLIFERATION
US 4,529,700, July 16, 1985
Assignee: University of Miami

Cells synthesizing DNA are detected in a rapid, nonradioactive assay using the monoclonal antibody reagent secreted by a hybridoma. The assay is used to study DNA repair in cells that have been exposed to various environmental toxins or chemotherapeutic agents.

Hampar, B., Zweig, M., and Showalter, S. D.
MONOCLONAL ANTIBODIES TO HERPES SIMPLEX VIRUS TYPE I POLYPEPTIDES
US 4,572,896, Feb. 25, 1986
Assignee: The United States of America as represented by the Department of Health and Human Services

A method is described for producing monoclonal antibody reagents against proteins induced by herpes simplex virus type I (HSV-I). The HSV-I antigen populations are prepared by infecting mammalian cells either with HSV-I alone or with HSV-I in the presence of an inhibitor of protein synthesis, allowing virus replication to proceed by reversing the inhibitor action, inoculating the antigen mixture in mice to induce the production of antibodies, fusing the mice spleen cells with myeloma cells to obtain hybrid cells, and screening by radioimmunoprecipitation-polyacrylamide gel electrophoresis. The HSV-I proteins include a DNA-binding protein, an immediate-early protein, and a previously unknown glycoprotein.

Handley, H. H., Glassy, M. C., Hagiwara, Y., and Hagiwara, H.
HUMAN–HUMAN HYBRIDOMA, CLNH5
US 4,618,577, Oct. 21, 1986
Assignee: The Regents of The University of California

A human–human hybridoma (ATCC No. HB8206) is described that secretes IgM monoclonal antibodies specific for cervical carcinomas. The monoclonal antibodies can find use in therapy and diagnosis, both in vitro and in vivo.

Huang, C. M., and Cohen, S. N.
MONOCLONAL ANTIBODY HAVING SPECIFICITY FOR THE DOUBLE-STRANDED CONFORMATION OF NATIVE DNA AND DIAGNOSTIC METHODS USING SAME
US 4,623,627, Nov. 18, 1986
Assignee: Cetus Corp.

Monoclonal antibodies having conformation-dependent specificity for native dsDNA, such as the IgM antibody produced by murine hybridoma (ATCC no. HB 8329). These antibodies are used to detect DNA duplex formation in DNA hybridization tests.

Hughes, J. V., Scolnick, E. M., and Tomassini, J. E.
HEPATITIS A—SUBUNIT ANTIGEN
US 4,614,793, Sep. 30, 1986
Assignee: Merck & Co. Inc.

A surface structural protein of Hepatitis A Virus (HAV) has been isolated from virus grown in tissue culture. This 33 kdalton viral protein (VP-1) reacts with immune HAV sera and monoclonal antibodies that neutralize HAV infectivity. The VP-1 is usable for the preparation of a polypeptide subunit vaccine for HAV. Hybridoma cells were made that produced monoclonal antibodies to HAV or VP-1. These monoclonal antibodies neutralize the infectivity of HAV and compete with polyclonal antibody derived from human HAV immune sera. The monoclonal antibodies are useful for the neutralization of infectious HAV, the detection of antibodies to neutralizing sites on HAV, and the diagnoses of HAV disease in humans and other susceptible hosts.

Jefferis, R., and Steensgaard, J.
IMMUNOPRECIPITATION ASSAY OF IMMUNOGLOBULINS USING MONOCLONAL ANTIBODIES
US 4,618,589, Oct. 21, 1986
Assignee: The University of Birmingham

An antigen/antibody precipitate is obtained using monoclonal antibodies. The antibodies are selected to be specific to two distinct antigenic binding sites on a protein (IgG) in a sample under test. The proportions of subpopulations of immunoglobulins in a sample are determined by reacting the sample with a combination of antibodies both specific to the heavy chains of both subpopulations and reacting the sample with an antibody combination specific to heavy chain and to an antigenic determinant expressed by only one of the subpopulations.

Kaplan, H. S., Teng, N. N. H., Lam, K. S., and Calvo, R. F.
METHODS AND CELL LINES FOR IMMORTALIZATION AND MONOCLONAL ANTIBODY PRODUCTION BY ANTIGEN-STIMULATED B-LYMPHOCYTES
US 4,574,116, Mar. 4, 1986
Assignee: The Board of Trustees of the Leland Stanford Jr. University

Methods are provided for producing fusion partners employing an immortalized human myeloma cell line sensitive to HAT having an additional dominant selectable resistance marker and fusing with a stable immortalized rodent myeloma cell (previously subjected to substantial

chromosome damage) and isolating cells having a complete chromosomal complement of the rodent cell and at least about one chromosome of the human cell having resistance to a selective agent. The resulting heteromyeloma (ATCC nos. CRL8192 and 8193) may be fused with human lymphocytes to produce monoclonal antibodies.

Kass, L.
METACHROMATIC DYE SORPTION MEANS FOR DIFFERENTIAL DETERMINATION OF SUBPOPULATIONS OF LYMPHOCYTES
US 4,615,878, Oct. 7, 1986

Differentiation, identification, and enumeration of subpopulations of lymphocytes, including B and T cells, can now be further discriminated into their subpopulations using basic orange 21 stain to provide distinctive morphologic differences between B cells, T suppressor cells, T helper cells, and natural killer cells without using monoclonal antibodies for their differentiation.

Kettman, J. R., and Norgard, M. V.
HYBRID CELL LINES PRODUCING MONOCLONAL ANTIBODIES DIRECTED AGAINST TREPONEMA
US 4,514,498, Apr. 30, 1985
Assignee: The Board of Regents, The University of Texas System

Continuous hybrid cell lines for producing monoclonal antibodies directed against antigens of *Treponema pallidum* have been developed.

Khazaeli, M. B., Beierwaltes, W. H., and England, B. G.
MONOCLONAL ANTIBODIES SPECIFIC FOR THE UNBOUND BETA SUBUNIT OF HUMAN CHORIONIC GONADOTROPIN
US 4,565,687, Jan. 21, 1986
Assignee: The Reagents of the University of Michigan

Hybrid-myeloma cells that produce monoclonal antibody specific to the BETA subunit of human chorionic gonadotropin and their use is described.

Kung, P. C., and Goldstein, G.
HYBRID CELL LINE FOR PRODUCING COMPLEMENT-FIXING MONOCLONAL ANTIBODY TO HUMAN T CELLS
US 4,515,893, May 7, 1985

and

HYBRID CELL LINE FOR PRODUCING MONOCLONAL ANTIBODY TO HUMAN T CELLS
US 4,515,894, May 7, 1985

and

HYBRID CELL LINE FOR PRODUCING MONOCLONAL ANTIBODY TO HUMAN HELPER T CELLS
US 4,515,895, May 7, 1985

and

HYBRID CELL LINE FOR PRODUCING MONOCLONAL ANTIBODY TO A HUMAN T CELL ANTIGEN, ANTIBODY, AND METHODS
US 4,614,720, Sep. 30, 1986

and

HYBRID CELL LINE FOR PRODUCING MONOCLONAL ANTIBODY TO A HUMAN EARLY THYMOCYTE ANTIGENS, ANTIBODY, AND METHODS
US 4,624,925, Nov. 25, 1986
Assignee: Ortho Pharmaceutical Corp.

Hybrid cell line for production of monoclonal antibody to an antigen found on human T cells. The hybrid is formed by fusing splenocytes from immunized mice with myeloma cells. Diagnostic and therapeutic uses of the monoclonal antibody are also described.

Lanier, L., and Phillips, J.
METHOD FOR MONITORING ACTIVATED CELL SUBPOPULATIONS
US 4,599,304, July 8, 1986

and

Lanier, L., and Warner, N. L.
DIFFERENTIATION OF NATURAL KILLER CELL SUBPOPULATIONS OF CELLS
US 4,607,007, Aug. 19, 1986
Assignee: Becton, Dickinson, and Co.

A method for distinguishing multiple subpopulations of a cell sample using two monoclonal antibodies is described, in which human natural killer cells subpopulations can be monitored.

Larrick, J. W., Raubitschek, A. R., and Truitt, K. E.
HUMAN LYMPHOBLASTOID CELL LINE AND HYBRIDOMAS DERIVED THEREFROM
US 4,624,921, Nov. 25, 1986
Assignee: Cetus Corp.

A 6-thioguanine-resistant subvariant of the EBV-transformed human lymphoblastoid B cell line WI-L2 is described. The subvariant line fused

with human cells produce monoclonal antibodies against tetanus toxin and blood group A.

Lazarus, H., and Schwaber, J. F.
CELL FUSION
US 4,529,694, July 16, 1985
Assignee: The Children's Medical Center Corp.; Dana-Farber Cancer Institute, Inc.

Human hybridomas producing a preselected human monoclonal antibody are prepared by fusing human lymphocytes with a hybrid fusion partner. The hybrid fusion partner is obtained by fusing human lymphocytes with human myeloma cells at least once and the resulting hybrid cell is a functional human fusion partner.

Lewicki, J.
MONOCLONAL ANTIBODIES AGAINST ALVEOLAR SURFACTANT PROTEIN
US 4,562,003, Dec. 31, 1985
Assignee: California Biotechnology, Inc.

Monoclonal antibodies specific for a protein associated with a lung surfactant complex, decreased levels of which are related to respiratory distress syndrome, are described. The antibodies are useful for prediction and diagnosis of respiratory problems in newborns.

Lewis, C. Jr., Olander, J. V., Tolbert, W. R.
METHOD OF ISOLATING MONOCLONAL ANTIBODIES FROM HYBRIDOMA CULTURES
US 4,533,496, Aug. 6, 1985
Assignee: Monsanto Co.

Monoclonal antibodies are isolated from spent culture medium of the in vitro growth of hybridoma cells by treating spent cell culture medium or concentrate with a water-insoluble, cross-linked polyelectrolyte copolymer.

Milford, E. L., Carpenter, C. B., and Paradysz, J. M.
MONOCLONAL ANTIBODIES FOR HUMAN TISSUE CROSS-MATCHING
US 4,517,289, May 14, 1985
Assignee: Brigham and Women's Hospital

Immortal, hybridomally produced clones that produce antibodies that react specifically with human HLA antigens are described, along with methods of using the antibodies in tissue crossing tests.

Mosher, D. F.
MONOCLONAL ANTIBODY TO THROMBOSPONDIN AND METHOD FOR ASSAYING FOR AND ISOLATING THROMBOSPONDIN
US 4,610,960, Sept. 9, 1986
Assignee: Wisconsin Alumni Research Foundation

A mouse monoclonal antibody is described that reacts with human, bovine, and canine thrombospondin, but not with the thrombospondin present in rabbit serum. This antibody is useful in ELISAs by means of immunohistological techniques and also can be used to isolate thrombospondin.

Mulshine, J. L., and Minna, J. D.
MONOCLONAL ANTIBODIES AGAINST NONSMALL-CELL LUNG CANCER
US 4,569,788, Feb. 11, 1986
Assignee: The United States of America is represented by the Department of Health and Human Services

Monoclonal antibodies are described that can detect human nonsmall-cell lung cancer and distinguish it from all other types of lung cancer and normal tissue cells.

Murray, K. A.
ASSAY OF IMMUNOGLOBULIN A PROTEASE AND THE RAPID DIAGNOSIS OF GONORRHEA
US 4,582,699, Apr. 15, 1986
Assignee: Magbon Test Co.

A method for rapid diagnosis of gonorrhea is described, comprising assay of the enzyme immunoglobulin A protease (IgAP). Immunoassays, including radioimmunoassay and enzyme-linked immunoassay with monoclonal antibodies to IgAP, are described that can be used in a kit for early detection of gonorrhea and meningitis.

Neville, D. M., Jr., and Youle, R. J.
PREVENTION OF GRAFT-VERSUS-HOST DISEASE FOLLOWING BONE MARROW TRANSPLANTATION
US 4,500,637, Feb. 19, 1985
Assignee: The United States of America as represented by the Department of Health and Human Services

A monoclonal antibody directed against human T cells is covalently linked to the toxin ricin and used to treat human donor bone marrow before the marrow is infused into a human recipient.

Neville, D. M., Jr., and Youle, R. J.
TREATMENT OF GRAFT-VERSUS-HOST DISEASE USING A MIXTURE OF T-LYMPHOCYTE-SPECIFIC MONOCLONAL ANTIBODY: RICIN CONJUGATES
US 4,520,226, May 28, 1985
Assignee: The United States of America as represented by the Department of Health and Human Services

A reagent and a method for the treatment of Graft-Versus-Host disease is described. Monoclonal antibodies specific for T lymphocytes in human donor bone marrow are covalently linked to separate ricin toxin, combined in a mixture to form a treatment reagent, and combined with bone marrow removed from a human donor. The bone marrow–reagent mixture is then infused into an irradiated recipient eliminating T lymphocyte activity.

Nicolson, M.
HYBRIDOMA TUMOR CELL LINES AND THEIR MONOCLONAL ANTIBODIES TO HUMAN COLONY STIMULATING FACTOR SUBCLASS NO. 1
US 4,504,586, Mar. 12, 1985
Assignee: Amgen

Murine-derived hybridoma tumor cell lines are described that produce monoclonal anti-colony stimulating factor subclass no. 1 (CSF-1) antibody substances. These antibodies are used to isolate natural CSF-1 and for its quantitation.

Pastan, I., Willingham, M. C., and Fitzgerald, D. J.
PSEUDOMONAS EXOTOXIN CONJUGATE IMMUNOTOXINS
US 4,545,985, Oct. 8, 1985
Assignee: The United States of America as represented by the Secretary, Dept. of Health and Human Services

A method of modifying *Pseudomonas exotoxin* (PE) with methyl-4-mercaptobutyrimidate is described so that after conjugating the exotoxin to a monoclonal antibody (ab), such as one to the transferrin receptor (TFR), the PE–ab conjugate becomes a highly potent immunotoxin against human tumor cells. This same method has been used to conjugate PE to epidermal growth factor (EGF) to create a highly potent growth factor–toxin conjugate for use against cells having large numbers of EGF receptors.

Pucci, A., Smithyman, A. M., Slade, M. B., French, P. W., and Wijffels, G.
METHOD AND DIAGNOSTIC AID FOR DETECTING OCCULT FECAL BLOOD

US 4,582,811, Apr. 15, 1986
Assignee: Australian Monoclonal Development Pty. Ltd.

A diagnostic aid for use in detecting occult blood in feces is described. The aid consists of a carrier that is coated with specific monoclonal antihuman antibody and, which upon contact with a fecal liquid suspension, specifically absorbs human hemoglobin. A chemical or an enzymatic assay may then be used to detect the hemoglobin.

Pukel, C. S., Lloyd, K. O., Travassos, L. R., Dippold, W. G., Oettgen, H. F., and Old, L. J.
METHOD FOR DETECTING THE PRESENCE OF G(D3)GANGLIOSIDE
US 4,507,391, Mar. 26, 1985
Assignee: Sloan-Kettering Institute for Cancer Research

A mouse monoclonal antibody is described that has a high degree of specificity for human melanoma cells when tested on viable cultured cells using the PA–MHA serological assay. The G(D3)ganglioside antigen detected by this antibody has been partially characterized. The antibody reacts with authentic G(D3), but not with any other ganglioside tested. A new serological assay, termed glycolipid-mediated immune adherence (GMIA), was devised for assaying the reactivity of AbR(24) with gangliosides. Melanomas were shown to have T(D3) and G(M3) as major gangliosides. Other cells and tissues examined also contained G(D3), but usually only in low amounts. The apparent discrepancy between the ubiquitous presence of G(D3) and the serological specificity of AbR(24) for melanoma cells can be explained in terms of localization and concentration of G(D3) in different cells.

Reckel, R. P., Harris, J. L., Wellerson, R., Jr., Shaw, S. M., and Kaplan, P. M.
METHOD FOR DETECTING IMMUNE COMPLEXES IN SERUM
US 4,595,654, June 17, 1986
Assignee: Immunomedics Inc.

Method and test kit for detecting Clq-containing complexes in human serum containing native serum C1. The method uses a monoclonal antibody that selectively reacts with human Clq in the presence of native human serum Cl. Preparation of hybridomas generating such antibodies is also described. The method is applicable to detection of autoimmune diseases and AIDS.

Reinherz, E. L., Schlossman, S. F., and Meuer, S. C.
MONOCLONAL ANTIBODIES THAT RECOGNIZE HUMAN T CELLS
US 4,550,086, Oct. 29, 1985
Assignee: Dana-Farber Cancer Institute, Inc.

A monoclonal antibody is described that specifically binds to the surface recognition structure of a mature human T cell clone and inhibits the ability of the clone to act as a causative agent in the predetermined autoimmune disease.

Sakamoto, J., Cordon, C. C., Friedman, E., Finstad, C. L., Enker, W. E., Melamed, M. R., Lloyd, K. O., Oettgen, J. F., and Old, L. J.
MONOCLONAL ANTIBODIES TO HUMAN GASTROINTESTINAL CANCERS AND HYBRIDOMA METHOD OF PRODUCTION OF THE MONOCLONAL ANTIBODIES
US 4,579,827, Apr. 1, 1986
Assignee: Sloan-Kettering Institute for Cancer Research

A panel of monoclonal antibodies produced from human gastrointestinal tumors as immunogen is used to diagnose the presence of colon cancer. The antibody panel represents subsets of the human gastrointestinal tract in its reactivity, i.e., esophagus, stomach, small intestine, and colon.

Scannon, P. J., Spitler, L. E., Lee, H. M., Kawahata, R. T., and Mischak, R. P.
HUMAN-MELANOMA-SPECIFIC IMMUNOTOXINS
US 4,590,071, May 20, 1986
Assignee: Xoma Corp.

Conjugates of monoclonal antibodies specific to human melanoma and the A chain of a toxic lectin, such as ricin, are described. The conjugate is synthesized by employing antitoxic lectin B-chain antibodies to remove lectin B-chain impurities and provide a highly purified conjugate that is nontoxic to cells other than melanoma. The conjugates are used to treat human melanoma.

Schlom, J., Colcher, D., Nuti, M., Hand, P. H., and Austin, F.
PROCESS FOR PRODUCING MONOCLONAL ANTIBODIES REACTIVE WITH HUMAN BREAST CANCER
US 4,522,918, June 11, 1985

and

MONOCLONAL ANTIBODIES REACTIVE WITH HUMAN BREAST CANCER
US 4,612,282, Sep. 16, 1986
Assignee: The United States of American as represented by the Secretary of the Dept. of Health and Human Services

Monoclonal antibodies demonstrating a reactivity with human breast cancer are produced by the hybridoma cultures. Screening of immuno-

globulin reactivities and double cloning of cultures yielded 11 monoclonal antibodies that demonstrated activities with the surface of human mammary tumor cells and not with the surface of apparently normal human tissues. These monoclonal antibodies aid in the diagnosis, prognosis, and treatment of human breast cancer.

Shockman, G. D., Jackson, D. E., and Wong, W.
MONOCLONAL ANTIBODIES TO PEPTIDOGLYCAN AND METHODS OF PREPARING SAME
US 4,596,769, June 24, 1986
Assignee: Temple University

Several novel hybridoma cell lines, ATCC HB-8510-8517, produce monoclonal antibody to peptidoglycan, which is a normal structural component of nearly all true bacteria. Each antibody reacts not only with peptidoglycan from the immunizing bacterial strain, but also peptidoglycan from other strains. Certain of the members of the hybridoma panel produce monoclonal antibody that reacts with peptidoglycan from substantially any peptidoglycan-possessing bacterium. Diagnostic and therapeutic uses of the monoclonal antibodies are provided.

Steplewski, Z., Koprowski, H., and Herlyn, M.
LEWIS BLOOD GROUP PHENOTYPE ASSAY
US 4,607,009, Aug. 19, 1986
Assignee: The Wistar Institute

An assay for determining the Lewis blood group of a patient consists of testing a body sample for the presence of Lewis(a) and Lewis(b) antigens. Monoclonal antibodies specific for either of these antigens are employed, which do not cross-react with other related antigens, such as the H blood antigen. Body samples, such as saliva, serum, urine, and paraffin-embedded tissue samples, may be tested.

Strand, M.
DIAGNOSIS AND TREATMENT OF FLUKE INFECTIONS WITH MONOCLONAL ANTIBODIES
US 4,530,908, July 23, 1985
Assignee: The Johns Hopkins University

Antibodies and antigens are described that provide a method of detecting and a method of combating flukes. A diagnostic method for the determination of an active fluke infection in a warmblooded animal is provided, which comprises the testing of body serum or body fluids for the presence of fluke spine glycoprotein or antispine antibodies. Fused cell hybrids ATCC HB-8086-8088 are used to prepare these antibodies.

Trowbridge, I. S.
MONOCLONAL ANTIBODIES SPECIFIC FOR HUMAN HEMATOPOIETIC CELL SURFACE GLYCOPROTEINS
US 4,582,797, Apr. 15, 1986

and

HYBRIDOMAS PRODUCING MONOCLONAL ANTIBODIES SPECIFIC FOR A HUMAN CELL SURFACE GLYCOPROTEIN
US 4,626,507, Dec. 2, 1986
Assignee: The Salk Institute for Biological Studies

Mouse monoclonal antibodies are produced for a family of glycoproteins, which are selectively expressed on the surface of nucleated human hematopoietic cells, but are absent from other normal human cells. Antibodies can be obtained from the culture growth medium or from ascitic fluid of mice bearing the hybridoma tumor and can be used to distinguish lymphomas from carcinomas.

Urdal, D. L., March, C. J., and Dower, S. K.
INTERLEUKIN 2 RECEPTOR
US 4,578,335, Mar. 25, 1986
Assignee: Immunex Corp.

Interleukin receptor derived from normal and malignant cells has been purified by affinity chromotography in conjunction with a monoclonal antibody directed to the receptor. Purification also involves reverse-phased, high-performance liquid chromotography. By these techniques, homogeneous interleukin-2 receptor has been prepared and partially sequenced.

Wands, J. R., and Zurawski, V. R., Jr.
PROCESS FOR PRODUCING ANTIBODIES TO HEPATITIS VIRUS AND CELL LINES THEREFOR
US 4,491,632, Jan. 1, 1985
Assignee: The Massachusetts General Hospital

Cell lines for producing monoclonal antibodies to hepatitis virus are established by immunizing animal lymphocytes with hepatitis antigen to form antibody-producing cells that are then fused with myeloma cells. These clones produce monoclonal antibodies to individual antigenic determinates unique to hepatitis virus.

White, C. A., Dulbecco, R., and Allen, W. R.
MONOCLONAL ANTIBODY SPECIFIC FOR A MAMMARY TUMOR CYTOPLASMIC ANTIGEN

US 4,628,032, Dec. 9, 1986
Assignee: The Salk Institute for Biological Studies

A hybridoma cell line is used to produce monoclonal antibody specific for antigen found almost exclusively in the cytoplasm of human mammary tumor cells and is useful in diagnosing mammary tumors.

IMMOBILIZED ANTIBODIES

Arnold, E. C.
CARBOXYL ANCHORED IMMOBILIZED ANTIBODIES
US 4,560,504, Dec. 24, 1985
Assignee: UOP Inc.

An immobilized antibody system can be made by reacting an animated core support with an antibody in the presence of a condensing agent that promotes the formation of the amide linkage. The immobilized antibody is highly resistant to leaching and may be made incompressible, sterilizable, and pyrogen-free. Such an immobilized antibody system is well suited for repeated use with minimal change in its physical and biochemical properties.

Flasher, M.
PURIFICATION OF MONOCLONAL ANTIBODIES
US 4,604,235, Aug. 5, 1986
Assignee: J. T. Baker Chemical Co.

A method is described for chromatographically separating IgM monoclonal antibodies from mouse ascites fluid. A particular chromatographic packing of silica-gel-bearing, bound polyethylenimine functions is utilized.

Freedman, H. H.
CROSSLINKED GELATIN FOAMS
US 4,530,905, July 23, 1985
Assignee: The Dow Chemical Co.

Gelatins are crosslinked in a nonanhydrous environment to yield water-swellable, insoluble foams. The gelatin is contacted with a polyisocyanate at a pH of 6–8 and subjected to a high rate of agitation and can be employed to immobilize proteins, enzymes, and antibodies.

Heath, T. D., Shek, P., and Papahadjopoulos, D.
PRODUCTION OF IMMUNOGENS BY ANTIGEN CONJUGATION TO LIPOSOMES
US 4,565,696, Jan. 21, 1986
Assignee: The Regents of the University of California

Enhanced immunogenicity is achieved by covalently linking immunogens to liposomes and injecting the membrane-bound-proteins into an appropriate vertebrate host.

Ikeda, M., Sakamoto, S., and Suzuki, K.
MAGNETIC PARTICULATE FOR IMMOBILIZATION OF BIOLOGICAL PROTEIN AND PROCESS OF PRODUCING THE SAME
US 4,582,622, Apr. 15, 1986
Assignee: Fujirebio Kabushiki Kaisha

A magnetic particulate comprised of gelatin, water-soluble polysaccharide, sodium polymetaphosphate, and ferromagnetic substance is used as a carrier for immobilization of biological proteins, such as antigens, antibodies, or enzymes.

Kuboyama, M., Harada, Y., Kawashiri, A., and Takahashi, E.
FINE CARRIER PARTICLES SENSITIZED WITH ACYLATED ANTIBODY FOR ANTIGEN DETECTION
US 4,591,571, May 27, 1986
Assignee: Morinaga Milk Industry Co. Ltd.

Reagents for detecting antigen contained in body fluid or urine by immunological agglutination or agglutination inhibition reaction are described. An antibody is adsorbed on fine carrier particle to be sensitized and is characterized by acylation. Because of such acylation, the reagent can correctly detect antigen without any influence of substance contained in sample that can cause a nonspecific agglutination.

Lee, H. S.
REVERSE IMMUNOAFFINITY CHROMATOGRAPHY PURIFICATION METHOD
US 4,568,488, Feb. 4, 1986

A method is described for the purification of a protein component of a biological fluid in which antibodies are raised to impurities commonly present in crude preparations; an immunoadsorbent complex is prepared by linking antibodies to a solid absorbent suitable for use in column chromatography; processing a preparation of component-containing impurities through a chromatography column containing immunoadsorbent, to selectively absorb of impurities; and recovering purified component from the effluent. Another aspect of this invention is directed to human urinary erythropoietin purified by the above method.

Margel, S.
METAL-COATED POLYALDEHYDE MICROSPHERES
US 4,624,923, Nov. 25, 1986
Assignee: Yeda Research and Development Co. Ltd.

A metal-containing polyaldehyde microsphere composed of a polyaldehyde microsphere to which a transition metal is bound is prepared. The polyaldehyde may be encapsulated in agarose, and the microsphere may be radioactive or magnetic. The microsphere may additionally have a compound having at least one amine group, e.g., a drug, antibody, antigen, enzyme, or other protein, bound to its surface. A transition metal is bound to a polyaldehyde microsphere by contacting the polyaldehyde microsphere with an appropriate salt of the transition metal under conditions causing the salt or acid to be reduced to a lower valence state and to bind to the microsphere. Some salts or acids may thus be reduced to the elemental state, alternatively, a transition metal in elemental form is bound to a polyaldehyde microsphere by contacting the polyaldehyde microsphere with a compound capable of complexing with a salt of the transition metal. This metal-containing microsphere is useful for cell labeling, cell separation, diagnostic methods, catalysis, and coating methods.

Neville, D. M., Jr., and Youle, R. J.
INACTIVATING PROTEIN SYNTHESIS BY INCUBATING ANTI-tHY 1.1-RICIN A-CHAIN MONOCLONAL ANTIBODY HYBRIDS WITH TARGET PROTEIN CELLS
US 4,520,011, May 28, 1985
Assignee: The United States of America as represented by the Department of Health and Human Services

The rate of protein synthesis inhibition is increased by adding excess ricin B-chain to target cells independent of the amount of ricin A-chain bound to the cell surface membrane. Ricin is a known toxin, which contains an A-chain and a B-chain for binding to receptors. Ricin hybrids, such as OX-7-ricin A-chain and 19E12-F(ab) ricin A-chain, were produced by conjugation of the ricin A chains with anti-Thy 1.1 monoclonal antibodies and utilized in pharmaceutical amounts in mice.

Nowinski, R. C., and Hoffman, A. S.
SYNTHESIS OF POLYMERS CONTAINING INTEGRAL ANTIBODIES
US 4,609,707, Sep. 2, 1986
Assignee: Genetic Systems Corp.

The *de novo* synthesis of antibody-containing polymers and the preparation of a class of polymerizable compounds used in the synthesis of such antibody-containing polymers are described. Antibody-containing polymers formed from monomer/antibody conjugates and nonderivatized polymerizable compounds can be varied in formation of the polymer to provide control of: (a) molecular spacing, steric accessibility, and the number of antibody molecules that are incorporated into the polymer backbone; and (b) the chemical and physical structure of the polymer itself, thus enabling specific tailoring of antibody-containing polymers for particular end-use application. A method for the selective removal of a

compound from a solution or suspension using monomer/receptor conjugates is described.

Peterson, J. W.
COLONY BLOT ASSAY FOR ENTEROTOXIGENIC BACTERIA
US 4,617,265, Oct. 14, 1986
Assignee: Board of Regents, University of Texas System

A plate of nutrient medium and agar is inoculated with bacteria from a biological sample. Bacterial colonies are cultured on the plate and are then overlaid with a soft agar layer containing bacterial-lysing agents. A removable sheet with bound first animal antibodies for cholera toxin is used to contact the overlaid lysed colonies. The sheet is then exposed to a second animal antibody to cholera toxin, followed by treatment with a third animal antibody against the second animal antibody. The third animal antibody is coupled to an enzyme capable of generating a chromophoric product. The sheet is then developed by immersion in a substrate and system for the bound enzyme to produce chromophoric products at the sites of enterotoxigenic bacterial colonies.

Platt, K. B., and Reed, D. E.
PURIFIED AND ANTIGENICALLY SELECTIVE VACCINES FOR DOMESTIC ANIMALS
US 4,493,825, Jan. 15, 1985
Assignee: Iowa State University Research Foundation

Purified antigenically selective vaccines for domestic animals are prepared from microorganism cultures containing the immunizing agent by first complexing the immunizing agent with microparticles having bound IgG antibodies specific for the immunizing agent, separating the resulting complex, and preparing a vaccine directly from the antigen–antibody complex. The microparticles have protein A in their outer surfaces for binding to the specific antibodies. The complex-containing vaccines provide effective immunization and are particularly useful in preparing viral and bacterial subunit vaccines.

Real, F. X., Mattes, M. J., Houghton, A. N., Livingston, P. O., Lloyd, K. O., Oettgen, H. F., and Old, L. J.
MELANOMA TUMOR ANTIGEN AND AUTOLOGOUS ANTIBODY
US 4,562,160, Dec. 31, 1985
Assignee: Sloan-Kettering Inst.

Novel immunoprecipitating autologous antibodies that recognize the class 1 gp90 antigen on melanoma cells are described. These antibodies, tagged with a chromophoric or radiolabel and immobilized on an inert support, may be used to recognize and isolate the gp90 antigen from melanoma cell extracts. Monoclonal antibodies to melanoma may be screened with the gp90 antigen for those that recognize epitopes other

than the FD antigenic system. The cell line containing the gp90 antigen, which has been cultured in vitro, is a source of gp90 antigen for generation of monoclonal antibodies that will be useful in analyzing the gp90 antigen for those epitopes that may be of diagnostic value in immunoassay of melanoma.

Rembaum, A., and Yen, R. C. K.
HYBRID MICROSPHERES
US 4,534,996, Aug. 13, 1985
Assignee: California Institute of Technology

Supports, such as inert synthetic organic resin beads or polystyrene sheets, are coated with a covalently bound layer of polyacrolein by irradiating a solution of acrolein with high intensity radiation. Individual microspheres are formed that attach to the surface to form the aldehyde containing layer. The aldehyde groups can be converted to other functional groups by reaction with materials, such as hydroxylamine. Adducts of proteins, such as antibodies or enzymes, can be formed by direct reaction with the surface aldehyde groups.

Rosenstein, R.
IMMUNO-AGGLUTINATION PARTICLE SUSPENSIONS
US 4,582,810, Apr. 15, 1986
Assignee: Becton, Dickinson, and Co.

A suspension of diagnostic particles comprised of antibodies attached to a carboxylate derivatized polymer core for agglutination tests is described. The antibody is linked to the core through an avidin–biotin bridge. Avidin is joined by an amide bond to carboxyl groups on the core, and biotin is linked by an amide bond to amino groups on the antibody molecule. The core-bound antibody is exposed to a mixture of free biotin and biotinylated antibody to attach a controlled amount of antibody that is consistent with suspension stability prior to its use in a test and rapid cross-linking of suspended particles in the presence of antigen.

Schneider, B.
METHOD AND APPARATUS FOR SELECTIVE REMOVAL OF CONSTITUENTS OF BLOOD
US 4,512,763, Apr. 23, 1985
Assignee: Gamma Medical Products, Inc.

A method for removing a constituent, such as immunoglobulins, lymphocytes, or immune complexes, from a component of a patient's blood is described, which consists of: removing blood from the patient; separating the constituent-containing component from the rest of the patient's blood; preparing an antibody; contacting the constituent-containing component with the antibody so that the antibody may adsorb the constitu-

ent from the component; recombining the antibody-contacted, constituent-containing component with the other components of the removed blood; and injecting the combined components of blood into the patient. The adsorbing antibody can be a polyclonal, nonhuman antibody or a monoclonal antibody against selected cells from the constituent-containing component of the patient's blood. General and specific apparatus for effecting the above methods are also disclosed.

Zimmerman, T. S., and Fulcher, C. A.
ULTRAPURIFICATION OF FACTOR VIII USING MONOCLONAL ANTIBODIES
US REISSUE 32,011, Oct. 22, 1985
Assignee: Scripps Clinic and Research Foundation

A method is described for preparing high-purity procoagulant protein by: (a) adsorbing an VIII:C/VIII:RP complex from a plasma or commercial concentrate source of factor VIII onto agarose beads bound to a monoclonal antibody specific to VIII:RP; (b) eluting VIII:C with a salt solution; and (c) adsorbing the eluted VIII:C on an aminohexyl agarose column and eluting the VIII:C with a salt solution.

LITERATURE

This section surveys the literature in the area of monoclonal antibodies published from January 1986 to January 1987. This section is not intended to be all encompassing and lists only major review articles that appeared during this period.

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