

Brief communication

An on-line computer data bank of monoclonal antibodies that recognize allergens—Invitation for entries

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Monoclonal antibodies that recognize allergens are potentially extremely useful reagents for use in a variety of applications, including highly specific and sensitive assays for the standardization of allergen extracts and the measurement of environmental allergens, epitope mapping of allergens, comparison of IgE-binding determinants, and the immunolocalization of allergens in thin sections. Although monoclonal antibodies have many properties that enable them to be shared internationally, it is difficult to know from the literature what monoclonal antibodies are available and, in some cases, what are the individual characteristics of the antibodies. We are organizing an on-line data base of information about allergen-reactive monoclonal antibodies, which can be accessed by computer with international telecommunications networks. Each record of a monoclonal antibody includes details, if they are known, of allergen source and name, antibody production, complimentary antigenic determinant, names and addresses of the owners, availability of the antibody, and other important information. Investigators who have produced monoclonal antibodies that react with allergens are invited to submit details of the antibodies for inclusion in the data base. (J ALLERGY CLIN IMMUNOL 1988;81:611-14.)

Monoclonal antibodies have the potential to be the most useful secondary standards for allergen standardization, since they themselves are standardized proteins, and can provide the basis of highly specific and sensitive immunoassays.¹⁻⁸ In addition, they have a wide variety of applications, including their use in the determination of environmental allergen concentrations,⁹⁻¹¹ epitope mapping of IgE-binding sites,¹²⁻¹⁷ the study of allergenic cross-reactions by immunoassay^{5, 18, 19} or protein blotting,²⁰⁻²³ the localization of allergens in thin sections,²⁴ affinity purification of allergens,^{2, 11, 18, 25-27} and the identification of cloned determinants.

A further advantage of the use of monoclonal antibodies as standards is that they can be produced in

large quantities as ascites fluid or cell-culture supernatant, and the antibody-producing hybridoma cells can be stored and/or maintained indefinitely. Sufficient quantities of suitably stored monoclonal antibodies can be easily and economically transported anywhere in the world. Although the use of monoclonal antibodies for the standardization of commercial allergen extracts is one important goal, they essentially remain a tool for allergic-disease research, and allergen-specific monoclonal antibodies have not been the target of commercial enterprise, as have many other monoclonal antibody reagents.

Their specificity, portability, potential for use in a wide range of research applications, plus their lack of commercial popularity, make allergen-reactive monoclonal antibodies a suitable vehicle for international collaboration between scientists in different fields of allergic-disease research. However, information on the allergen-specific monoclonal antibodies produced is not readily accessible, and there has been no easy way of knowing what monoclonal antibodies have been produced or what is available to other researchers in the field. Although there is a steadily growing body of work on the production and application of monoclonal antibodies in allergy research, the studies are

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spread throughout the literature from clinical to biochemical journals and in brief form in abstracts. A large body of work no doubt remains unpublished, and most articles take a long time to appear in the literature. Even then, the published information about a monoclonal antibody may often be insufficient for an assessment of its usefulness. This is particularly the case when abstracts only are available. In addition, monoclonal antibodies produced by a laboratory may not have been maintained because of, for example, staff changes or a shift in focus of research in that laboratory.

It would be desirable therefore to establish a centralized repository and registry of all allergen-specific monoclonal antibodies and their cell lines. From such a center, interested investigators could obtain frozen hybrids to produce standard antibodies of known specificity. Although this, hopefully, will be possible in the near future, a more readily achievable objective would be the establishment of an on-line data base, containing details of the allergen-reactive monoclonal antibodies that have been produced worldwide. Such an organization and exchange of information can be easily and rapidly achieved and at very little cost with the available computer-based technologies. Learning from the data base which antibodies are available, it would be up to researchers to come to private arrangements to obtain them from their owners.

The existence of such a data base would thus allow the centralized accumulation of, and international access to, information about monoclonal antibodies to allergens. In addition, it would provide a standardized format for information about each monoclonal antibody and its use. The data base would assist in identifying a group of monoclonal antibodies (probably originating in different laboratories) that could be used for the standardization of important allergens in any particular extract. The existence of the data base would also provide an incentive to maintain valuable cell lines.

Historically, there are precedents for the establishment of collections of antisera for specific purposes, for example, in the IMMLEP and IMMTUB, task forces established by World Health Organization and dedicated to the discovery of vaccines for leprosy and tuberculosis, respectively. There are also catalogs of available antibodies in other data bases (e.g., the CODATA [Committee on Data for Science and Technology]/International Union of Immunological Societies [IUIS] hybridoma data bank) and in publications such as the journal, *Monoclonal Antibody News*, published quarterly by Mary Ann Liebert Publishers, New York. These catalogs are not, however, restricted to monoclonal antibodies for a specific purpose.

In view of this need in the allergy field, the authors are organizing a publically accessible, on-line data base, containing detailed information on available monoclonal antibodies that recognize allergens. Initially, the data base is being run by the Molecular Biological Information Service (MBIS), Commonwealth Scientific and Industrial Research Organization (CSIRO), Division of Molecular Biology, North Ryde, Australia, via CSIRONET, a national packet-switching network that can be accessed throughout Australia, generally for the price of a local telephone call. CSIRONET can be accessed internationally via telecommunications network. Details of the appropriate passwords and telephone numbers to access the data base will be published later this year after as many records as possible have been loaded and checked. Efforts are being made to have the data base run on other dial-up, computer-based information systems in both Europe and the United States to allow local area access. Upgrading of overseas data bases can be carried out regularly with tapes, which is currently done for protein sequence data bases. It is hoped that, if the system proves useful in the period, we can guarantee resources to operate it (that is, up to the end of 1988), and then, its future maintenance and management will be taken over by, for example, the World Health Organization or the IUIS.

Currently, the data base contains records for about 120 monoclonal antibodies. These have generally been obtained from publications but have not yet all been confirmed as correct or complete by correspondence with their owners. It is anticipated that the data base will comprise about 200 records by the end of 1988. At present, searching of the records is performed by sequentially viewing them, and it is intended to have a searching system available soon whereby records of interest can be found rapidly. Each record in the data base consists of a unique file number plus 14 separate headings under which the data is cataloged.

Headings used to catalog available information about each monoclonal antibody in the data bank:

1. Allergen source, the common name(s)
2. Allergen source, genus/species
3. Name(s) of the purified allergen as used in the past
4. Name(s) of the purified allergen with the use of the World Health Organization nomenclature²⁸
5. Name of the monoclonal antibody as used in publications
6. Source of the information (usually a journal or correspondence)

7. Whether the information in the records has been confirmed by the owners
8. Names of owners/authors
9. Name and address for correspondence
10. Details of the antibody (including the antigen used, immunization strategy, fusion partner, selection of clones, stability of production, binding affinity, isotype, optimum storage conditions, and assays in which the antibody has been used)
11. Details of the antigenic determinant (including results of assays used, identity of the determinant in terms of molecular weight and isoelectric point, amino acid sequence, lectin binding, the stability of the determinant in terms of treatment with heat, sodium dodecylsulfate and reducing agents, whether the determinant shares its reactivity with human IgE, and whether similar determinants are found on other species)
12. Supply of the monoclonal antibody
13. References where the monoclonal antibody has been used
14. Final comments

Contributions of information on monoclonal antibodies that react with allergens, particularly those that have not yet been published, are requested for entry into the data base. Details of monoclonal antibodies suitable for inclusion in the data base, suggestions for its organization, or requests for further information can be sent to the address for reprints.

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