

## EDITORIAL

This, dear Reader, is the first issue of a new journal, *Antiviral Research*, which will appear bimonthly and in which we expect to publish review articles and original contributions covering the field of antiviral research in its applied as well as its fundamental aspects.

Epidemiological control, mainly by surveillance and vaccination, was until recently the only effective means of combat against viral diseases in animals and man. Our journal offers a forum for investigators in this traditional sector of antiviral research. Although most of the life-threatening or invalidating viral diseases of man as well as many economically important viral zoonoses can be controlled by current vaccines, it is likely that the formulation of these vaccines will change in the years to come. Each vaccine has its small inconveniences (side-effects, relatively high cost, etc.) or unsurmountable problems (e.g., antigenic drift and shift. The novel forms of bioengineering, manipulation and expression of eukaryotic genes in bacterial vectors, are likely to be able to solve many of the problems that now haunt the design and manufacture of viral vaccines. As a result of the application of the new technology in the viral vaccine field, several developments can be anticipated. The manufacture of inexpensive vaccines is just one of these, and possibly the most important development to be foreseen for the veterinarian field. The production of cleaner vaccines, containing only a single viral protein as the antigenic mass, is another possible development, of great importance in the field of vaccines for human use, where side-effects and safety hazards due to the presence of adventitious agents are traditionally of great concern. The new biotechnology may also allow the design of new strategies for vaccine manufacturers to cope with antigenic drift of naturally occurring viruses: a problem of prime importance in the case of influenza and foot-and-mouth disease viruses. Finally, the new biotechnology may lead to the development of vaccines for those viral diseases for which the causative agent may continue to elude classical isolation attempts. Hepatitis B virus and human papilloma virus are possible candidates in this respect. The editors of *Antiviral Research* hope that the articles published in this journal will witness such exciting new developments in the viral vaccine field.

Understanding of natural and acquired resistance against virus infections is also expected to make further progress in the years to come. Such understanding will be important both for the development of new or better vaccines and for the design of new forms of antiviral therapy or prophylaxis. Elucidation of the relative role of humoral and cellular immunity, and of the part played by individual lymphocyte populations, in host defense mechanisms against virus infections will perhaps provide the basis for an antiviral therapy or prophylaxis through immunomodulatory drugs. The identification of lymphokines and possibly their synthesis through molecular cloning may revolutionize this field,

which has been dormant for many years. Recent developments in the interferon field, notably the demonstration of the existence of multigene families for interferon, exemplify the vastness of this still largely unexplored area of research. Understanding of aspecific resistance against viruses such as that mediated by natural killer cells may also lead to new antiviral strategies. We hope that these exciting new discoveries will also be covered by papers published in this journal.

Serotherapy is a traditional approach to antiviral therapy that has until now been rather unsuccessful. One of the difficulties of this approach lies in the allergic reactions of the host to the injection of immunoglobulins manufactured by immunization of animals. Perhaps we will witness a revival of the serotherapy approach, with possibly greater chances of success, when monoclonal antibodies are available, tailored to neutralize viruses and, at the same time, to be compatible with the recipient's immune system.

Finally, our new journal will cover the most promising area of antiviral research for the immediate future, that of antiviral chemotherapy. With the advent of specific and non-toxic antiherpetics (acycloguanosine, bromovinyldeoxyuridine, a.o.), the widespread scepticism which continued to prevail even after the discovery of the adamantane amines as anti-influenza virus agents has now definitively subsided. The concept of specific antiviral substances has received support from the discovery and extensive characterization of various virus-coded enzymes which differ in several aspects from the analogous enzymes present in uninfected cells, and which may thereby constitute suitable targets for new antiviral chemotherapeutics. So far, only enzyme systems connected with nucleic acid metabolism have received proper attention. A still virgin field, both for fundamental and applied research, is viral carbohydrate metabolism. Interference with normal glycosylation of viral membrane proteins holds a promise for another category of specific antiviral strategies to be discovered.

In covering each of these expansive areas mentioned – vaccines, serotherapy, physiological antiviral mechanisms of the host, and antiviral chemotherapy – our journal will provide a comprehensive overview of information that by tradition has been hitherto spread over disparate journals, each with a more limited scope.

In this first issue you will find a brief review on the role that the natural killer (NK) cell system may play in resistance against virus infection. The advent of hepatitis B virus vaccines is highlighted by an original contribution on the preparation, characterization and testing of a vaccine consisting of viral surface antigens isolated from human serum. Another contribution in the vaccine field is the description of an *in vitro* assay for testing the potency of inactivated poliovaccine that has several advantages over existing techniques. Research on host defense mechanisms is represented by a paper on the regulation of the production by lymphocytes of  $\gamma$ -type (immune) interferon and by a study on the recognition of enveloped viruses by sensitized T cells. In antiviral chemotherapy, this first issue of the journal contains papers describing the inhibition of herpes virus DNA synthesis by foscarnet and of bovine leukemia virus by ribavirin.

The most important arguments for scientists to submit their manuscripts to a particular journal are the high scientific standard of currently published articles and circu-

lation of the journal to a large number of interested readers. As a newcomer, *Antiviral Research* must still build such a reputation. The editors will attempt at achieving both of these goals; in calling for papers they offer their own zeal and devotion, and pledge to publish good manuscripts in all issues.

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