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EDITORIAL

Dear Reader,

The fifth number of Antiviral Research carries two small contributions on interferon. G. Adolf et al. describe a NC-37 subline of lymphoblastoid cells that can be used as an alternative to the widely used Namalva line for the production of leukocyte type interferons (α-type interferons). Schellekens et al. describe antiviral effects of human leukocyte interferon in small monkeys.

After almost 20 years of slow but steady progress, the interferon field has suddenly been revolutionized by the advent of the molecular cloning techniques. In less than two years the application of these techniques has led to production systems for human α-type interferon that are about 1000-fold more efficient than the best 'classical' systems and that deliver a product that is molecularly homogeneous as opposed to the mixtures of different interferons produced by classical procedures.

Less than three years ago, interferon workers were amazed and satisfied to learn from a long series of tedious experiments that there are three molecular types of interferons, now called α, β and γ. Less than one year after the first interferon gene had been cloned, it became known that there are no less than 12 different genes for α-type interferon, and now, only two years later, each of the known types of human interferon has been cloned and expressed in prokaryotic systems.

One cannot but ask the question whether the type of study reported by Adolf et al. in this issue does still make sense in the face of the overwhelming superiority of the production by genetically engineered bacteria or yeasts. Many naturally occurring interferons are glycoproteins; the interferons produced by bacteria are unglycosylated. Very little is known about the extent of glycosylation of naturally occurring interferons and its biological significance also remains to be determined. For this reason it may still be useful to develop better systems for production of 'natural' interferon.

The potential clinical application of interferon is undoubtedly the most important stimulus for the zeal with which current cloning work is being performed. How else can one explain the fact that the genetic engineerists have chosen human and not mouse interferon as their first target? If the prime goal would have been to investigate the physiological or pathological role of interferon, mouse interferon would have been a better choice. Controlled experiments can more easily be done on mice than on men. Even investigation on the therapeutic effectiveness would be better served by cloned mouse interferon than by cloned human interferon. At the present time, tests on the therapeutic efficiency of cloned human interferons must of necessity be done on human volunteers without recurrence to previous experience with similar interferons in animals.

Or is there another solution? Natural as well as cloned human interferons are biologically active on cells of certain primate species. It thus seemed logical to develop systems for testing antiviral or antitumoral activity of human interferons in small monkeys. Schellekens et al. found that the rhesus monkey responds quite well to natural interferon and thus might be a suitable experimental animal for studying in vivo activity of cloned human interferons. Marmosets seemed not to respond. This is a rather unfortunate situation as there exist some good tumor model systems in this primate species. Another snag is the fact that human γ-type interferon, when tested on cells cultivated in vitro, is strictly species-specific. Consequently, there is little reason to believe that monkeys can be used to test the in vivo activity of this interferon type, of which it has often been said (without very good reasons) that it probably has a better chance to be active against cancer than α- and β-type interferons.

The current issue also carries its usual contingent of papers on synthetic antiviral substances: the mechanism of action of ribavirin (Malinoski and Stollar), a reconsideration of guanidine and benzimidazole (Herrmann et al.), and the susceptibility of Reoviridae to antiviral agents (Smee et al.). We also welcome a first and significant contribution on the new and promising anti-herpetic drug, bromovinyldeoxyuridine, showing a strong prophylactic and curative effect against varicella virus in primates (Soike et al.)

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