

Interferon roundup: γ -form and yeast

Of the three types of interferon produced by human blood cells, γ -interferon, the most difficult to obtain, has given rise to the highest hopes among medical scientists investigating anti-viral and anti-cancer activity. Now university researchers from San Francisco and Milwaukee report what they believe is the first direct evidence that γ -interferon isolated from blood cells has a different effect than the other interferons on cell function. And scientists from Genentech, Inc., announce production of potentially limitless amounts of γ -interferon in genetically engineered bacteria. The Genentech scientists also report an advance in using yeast to produce and release all three forms of human interferon.

When either α -interferon, which is derived from blood cells called leukocytes, or β -interferon, derived from cells called fibroblasts, are applied to human cells growing in laboratory culture, they induce production of a dozen types of amino acid chains not detectable in untreated cells. Gamma-interferon induces those twelve new chains, or polypeptides, and in addition stimulates four other new polypeptides and increases the production of eight that are present in untreated cells. Among the polypeptides induced by all three interferons, there are quantitative differences between the effect of γ -interferon and the other two. "The results reported here are consistent with IFN- α and IFN- β having a common receptor that differs from that of IFN- γ ," say Jon Weil and colleagues at the University of California at San Francisco and J. James Dedmak and colleagues at Medical College of Wisconsin in the Feb. 3 NATURE. "The IFN- γ -specific effects on polypeptide induction further suggest that IFN- γ may have unique biological functions as yet undiscovered."

Isolation of the gene for human γ -interferon was described by Genentech's David V. Goeddel in Philadelphia at the Third Annual Congress for Recombinant DNA. Goeddel and colleagues have moved the gene into bacteria, where it gives 1,000 times the yield of stimulated blood cells. "Twenty to 25 percent of the total [bacterial] cell protein is γ -interferon at the end of a fermentation run," he says. In anti-tumor activity they find γ -interferon "a little better" than α -interferon at decreasing cell growth, and as in previous studies with blood-derived interferons, it acts in a strongly synergistic manner with the other forms. Because γ -interferon is species specific, the scientists have also isolated the mouse gene to produce material for studies in mice. This γ -interferon is now being manufactured in bacteria, "so we should have plenty of material for further experi-

Commentary

Throwing out the Баби with the Bathwater?

Now that the Soviet psychiatrists have picked up their bat and ball and gone home, the question remains: Who won and who lost as a result of the Russians' recent decision to quit the World Psychiatric Association (SN: 2/19/83, p. 116)? The answer: Everyone lost.

The rest of the world's psychiatrists lost the opportunity for further dialogue with their Soviet counterparts at the upcoming World Congress of Psychiatry in Vienna in July. This may have been moot since many Western psychiatric leaders have been poised for several years to effect the expulsion of The Soviet All-Union Society of Psychiatrists and Neuropathologists at the Vienna meeting. But psychiatric conventions are like political conventions; in fact — especially in this case — they *are* political conventions. And once the chemistry of face-to-face interaction materializes, anything can happen. This is no longer possible.

Even in the highly charged atmosphere of the last world congress, in Honolulu in 1977, there *was* an exchange of ideas. A defiant Soviet delegation, led by chief psychiatrist Edward Babayan, got the message in the form of a secret ballot vote to officially condemn the USSR and several other countries for "the systematic abuse of psychiatry for political purposes." Surprisingly, however, a large number of WPA delegates appeared to have sided (or at least sympathized) with Babayan, because the condemnation passed by only two votes. (The vote of individual delegates was actually in favor of the Russians, 33 to 19, but, as in the electoral college, each delegate carried a weighted number of votes, depending on the size of his or her country's membership in the association.)

Now the Soviets have lost the chance to further whatever inroads they might have made six years ago with the rest of the world's psychiatrists. The Russian resignation from the World Psychiatric Association could be taken as a signal of a renewed crackdown on political dissenters such as mathematician Leonid Plyushch, who was confined to a mental hospital for two years after being prohibited from attending his own trial. Plyushch, Zhores Medvedev, Vladimir Bukovsky and others were diagnosed as having "sluggish schizophrenia" — a rather nebulous ailment that seems to strike a disproportionate number of dissidents; the diagnosis, which the Soviets say is characterized by a number of subtle symptoms, has no counterpart in Western psychiatry.

However, one suspects that no such expanded crackdown is imminent. Rather, the Soviet withdrawal from WPA appears to be more a matter of political pride. In this sense, the Russians cannot be totally blamed — they chose to withdraw at their own initiative rather than risk public humiliation in July at the hands of their peers. Already, some American and other Western psychiatrists have expressed regrets that they may have driven the Soviets to premature action.

Sadly, this situation sets the stage for the biggest loss of all: that of Soviet psychiatrists and their patients. Scientists isolated from other scientists exist in a vacuum. It has been said that the public position of Russian psychiatry is that of the government; that Soviet psychiatrists themselves have grave reservations about the use of the sluggish schizophrenia diagnosis and other questionable practices. Perhaps, but the chances of ever finding out for sure have now been greatly diminished.

And what of the emotionally disturbed individuals who genuinely need expert psychiatric help? Even in the United States, psychiatrists acknowledge that diagnosing mental illness can be an imprecise, sometimes impossible, process.

Only through the open exchange of research data and ideas has the level of precision improved, albeit slowly, in the past decade. Compared with other scientific disciplines, though, psychiatry remains in its infancy. One can only hope that by quitting the World Psychiatric Association, the Soviets have not sacrificed their own child.

—Joel Greenberg

ments," Goeddel says. Preliminary work shows a protective effect against leukemia in mice.

In other work at Genentech, scientists are investigating use of yeast, rather than bacteria, as host microorganisms for producing polypeptides. Human interferon genes normally have a signal sequence, which codes for an initial (signal) stretch of amino acids thought to be clipped off as the polypeptide is excreted from the cell. Goeddel and colleagues find that

yeast will secrete interferon made from transplanted human genes only if the signal peptide portion of the gene is intact. Goeddel reports that about two-thirds of the interferon released by yeast and one-third remaining within the cells has the signal sequence correctly removed. He and colleagues conclude in the Feb. 11 SCIENCE, "These results show that a lower eukaryote, such as yeast, can utilize and process a human signal sequence."

—J. A. Miller