

Biotechnology

On the heels of interleukin-2

A MAJOR step nearer the commercial production of human interleukin-2 is announced today (see p.305) by Dr T. Taniguchi and his colleagues at the Tokyo Cancer Research Institute and the Ajinomoto Company. Production of this material has become the goal of many biotechnology companies, rather as was interferon two years ago.

Formerly known as T-cell growth factor, interleukin-2 can be produced naturally in the body in tiny amounts. When its activity was discovered a few years ago, it was claimed to have an important role in the growth in culture of T cells, the basis of cell-mediated immunity. Since then it has revolutionized laboratory study of T cells.

Commercial interests have, however, been stimulated by evidence that T cells can kill tumour cells and that interleukin-2 can stimulate T-cell killing of tumour cells both in the laboratory and within the body. This anticancer potential could transform the present annual \$1 million laboratory reagent business into a potential multi-million dollar pharmaceutical business. Interleukin-2 may also have potential in diseases such as leprosy in which the immune system is chronically suppressed.

The first essential step to exploitation is the production of a pure product by recombinant DNA technology. Today's description of the sequence and expression in monkey cells of cloned DNA encoding the molecule puts Dr Taniguchi's group narrowly ahead of the competitors and a short step from the goal of expression in bacteria.

Surprisingly, Dr Taniguchi's institute has not yet reached a commercial agreement on the rights to use the cloned molecule and is still discussing it with several companies. Biogen SA, which claims to be close to the stage announced by the Japanese, already has an agreement with Shionogi & Co. Ltd to carry out clinical trials in Japan once its interleukin-2 is available. Biogen's work on the molecule has been carried out by Dr Walter Fierz in Ghent (Belgium).

Sandoz, the pharmaceutical company, has contracted the Genetics Institute in Boston for work on the production of interleukin-2. The project is being carried out by a group under research director Robert Kamen in collaboration with Robert Gallo at the National Institutes of Health, Bethesda, Maryland and Dr Kendall Smith at Dartmouth College, New Hampshire. The group says it is close to having the sequence of the cloned product and is working on two separate sources of the molecule.

Other biotechnology companies in the field include Quidel, a new company in San Diego directed by David Katz, Immunex in Seattle, established largely to exploit the potential of interleukin-2 by Steve Gillis and Chris Henney, and Cetus in San Fran-

cisco. All are close on the heels of Dr Taniguchi's group.

The prospect of several competing producers of recombinant interleukin-2 may raise further problems for the patent authorities in establishing the criteria for claiming priority. One possibility is that the inevitable lengthy delay in reaching a deci-

Anthropologist fired

Stanford plays its China card

Washington

THE ethics and obligations of Western anthropologists working in the People's Republic of China have been highlighted by the dramatic firing by Stanford University's anthropology department of a doctoral candidate, Steven Westley Mosher. The faculty's vote of 11 to 0 against Mosher is apparently unprecedented. Mosher says he will decide in coming weeks whether to sue Stanford for the PhD degree he says he has earned. "I will fight this thing to the end", he said. In the meantime, he is finishing a book, *Broken Earth*, about life in rural China. Stanford's reasons for the dismissal of Mosher as a doctoral candidate are not known, but are contained in a 47-page report by a faculty committee which neither Stanford nor Mosher will make public on the grounds that its contents could hurt "innocent parties".

The controversy revolves around bizarre tales of Mosher's conduct while he lived in an unnamed Chinese village on the Pearl River delta in 1979-80. His stay was sponsored by the respected Committee on Scholarly Communication with the People's Republic of China (CSCPRC).

Mosher's thesis for Stanford was about farming and fishing in Taiwan and he went to mainland China to study rural village life. While there, he became outraged by the practice of forced abortions for women who were seven, eight and nine months pregnant and what he alleged was officially sanctioned infanticide of girl babies in his commune.

Mosher says that in 1980 he informed Vice-Premier Chen Muhua, head of the Chinese birth control programme, about these abuses in the "naive" belief that the authorities would stop them. After leaving China, Mosher published an article about the cruelties of Chinese birth control practices in a popular Taiwan weekly. The article included photographs of women seven or eight months pregnant being prepared for abortions.

"The photographs taken by Mr Mosher during his story", wrote the Chinese authorities to Stanford, as part of the proceedings in the case, "exceeded the scope of his research topic (and) had nothing to do with any conceivable social science research topic". Mosher wrote in rebuttal:

tion would be sufficient, if interleukin-2 proves effective in clinical trials, to exploit the new molecule.

Interest in interleukin-2, however, does not stop at the molecule itself and work is under way to produce synthetic peptides that can substitute for it. Complementary approaches may follow from the recent production of a monoclonal antibody that recognizes the receptor for interleukin-2 (see *Nature*, 300, 267; 1982).

Nigel Williams

"It is a measure of the success of my research that the Chinese Communists are so anxious to discredit it".

When complaints about Mosher's conduct in China reached members of the Stanford faculty, particularly the two anthropology faculty members who had originally endorsed the trip, the department began to investigate. The dissertation committee originally formed to review Mosher's Taiwan thesis disbanded, although Mosher says he has finished his dissertation. "I was three faculty signatures away from the PhD", he says.

Mosher's conduct while in China has also been the subject of much comment, not only by the Chinese, but by other

Victory for Yale

Washington

YALE University has won a round in the continuing fight between universities and the federal government over "effort reporting" by faculty receiving federal research grants.

Under an agreement reached earlier this month, Yale faculty members will no longer be required to complete detailed reports on their allocation of time between teaching, research and administrative duties. Instead, they will simply have to sign a statement verifying that direct charges made to a research grant represent work done on the project.

Indirect costs, or overhead, will be reimbursed at a fixed rate based on the experience of the past few years. Previously, the reimbursement of indirect costs was tied to the amount of time faculty reported spending on departmental administration. Stanford University has a similar arrangement providing for a fixed rate for indirect costs.

The universities have opposed detailed reporting requirements, repeatedly sought by the federal Office of Management and Budget (OMB), arguing that there are no clear lines separating a faculty member's various duties. Yale became a focus of this opposition when Professor Serge Lang of the mathematics department publicly refused to comply with OMB's requirements.

Stephen Budiansky