Japanese research

Companies go for basics

Tokyo

A BUILDING boom for basic research laboratories is under way in Japan — but neither the government nor the universities can take credit. Instead it is large private corporations that have begun to invest in academic research.

The latest is Meiji Milk Products, whose brand-new Institute for Basic Research in the Life Sciences, located in Odawara City, some 80 km from Tokyo, will be completed in the next few weeks. The initial outlay has run to 5,000 million yen (\$21 million). Around 50 scientists will be employed, together with 50 support staff, to carry out research in eight divisions spanning the whole of molecular biology.

Before Meiji Milk came onto the scene, some fifteen other companies had opened basic research facilities this year alone. The biggest surge has come for the life sciences, with six new laboratories — and a demand for researchers that has sent head-hunters in search of Japanese working in US and European laboratories. Close behind come laboratories for new materials and electronics. Famous names include robot-builders Fanuc, whose factory, where robots build robots, was toured by Mrs Margaret Thatcher, the British Prime Minister, and Toshiba, with a new very large scale integrated circuit research laboratory. Almost all the new high-technology fields are represented: artificial intelligence, molecular memories and conducting polymers all have their new facilities.

At Meiji Milk's Meiji Institute of Health Science (which bears an "MIH" logo reminiscent of a certain US laboratory) there is no pressure at all to perform applied research for company products, according to Norio Nakatsuji, until recently at the MRC Mammalian Development Unit in London and now head of the new institute's developmental biology division. He also points out that recruiting highly qualified staff has proved easier than expected — some have given up tenured positions at universities to join the institute where, with new facilities (including four P2 and two P3 biological containment research laboratories) and generous budgets, there will be no limits on research.

The basic laboratory boom is a very recent phenomenon — only one such laboratory was set up in 1982 and seven in 1983 — but it seems likely to continue. Fifteen companies have already announced plans to set up basic facilities in the near future.

What exactly is the thinking behind the boom and why are corporations prepared to spend huge sums of money to set up these laboratories? Financial analysts admit to finding the trend quite puzzling. Increased prestige is one factor they all cite,

adding that prestige is often reflected in higher stock market prices when plans for basic research facilities are announced. But the real factor seems to be an underlying feeling that Japanese corporations have drawn level with or passed their Western competitors in mastering applications of current technology, and must now look for the seeds of new technology in their own basic research rather than continuing to import ideas or to look for ideas in their own universities.

Barriers between universities and industry are said to be just too high for

effective research cooperation, and the new laboratory boom has not been accompanied by a boom in either university endowments or research contracts at universities. Instead, corporations seem intent on giving select groups of their own researchers the kind of freedom that they would enjoy in universities.

Given this trend, it is likely that the difference between Japan, where industry pays two thirds of the total research and development bill, and countries like the United States, where it pays only 40 per cent, is likely to increase — and Japanese university laboratories will have finance, equipment and technical support far inferior to those of their industrial counterparts.

Alun Anderson

Virus diseases

Immunogen for herpes, AIDS?

A DRUG developed as long ago as the early 1970s is now being hailed by its makers, Newport Pharmaceuticals of California, as a possible "new hope in herpes and AIDS". Unlike the recently introduced drug acyclovir, the "new" drug (inosine pranobex, new UK trade name Immunovir) acts by stimulating the patient's immune system, not directly against the virus.

Going by the results so far, however, it is either too early or too optimistic to welcome Immunovir as a major weapon against either genital herpes or AIDS (acquired immune deficiency syndrome, linked with human T-cell leukaemia virus type III). Clinical tests, carried out by Dr R.D. Miller and co-workers at the University of California's Irvine Medical Center, have indeed shown an effect on recurrence rate in genital herpes. In 35 patients given Immunovir tablets, 18 (51 per cent) had only 0 to 1 recurrence during the six-month study, compared with 8 of 41 (19 per cent) on placebo. The relatively high apparent response to placebo, inevitable when considering symptoms that recur at unpredictable intervals, makes it impossible to assess the efficacy of Immunovir until more clinical trials have been completed.

But the initial clinical trials do suggest that Immunovir significantly reduces viral shedding — the number of viruses present in the body's secretions. This raises the hope that the spread of herpes might be controlled by treating infected individuals. The US Center for Disease Control (CDC) estimates that there are between 5 and 20 million cases in the United States, with some 300,000 new cases each year. Herpes is not a notifiable disease in the United States, hence the uncertainty of CDC estimates. Dr Miller's own estimate is as high as 30 million cases.

Whatever the true figure, there is clearly a place for a drug that would both reduce discomfort (number of recurrences) in those with the disease and reduce the possi-

bility of them passing it on. The makers of Immunovir claim that it is cheap enough (compared with extremely expensive antivirals) and safe enough to be used in such a role. No side effects have yet been found, it is claimed, although the drug is metabolized to uric acid so cannot be used in patients with gout or kidney disorders. For treating primary herpes, with the aim of a cure that would mean no further need for treatment, it seems likely that an antiviral drug such as acyclovir will be necessary.

Immunovir has not yet been used to treat patients with AIDS, although Dr Joyce Wallace and Dr J.G. Bekesi of Mount Sinai Hospital and the AIDS Medical Foundation, New York, have treated patients with "pre-AIDS". That condition is characterized by depression of the immune system and lymphadenopathy, and may or may not develop into AIDS as defined by CDC. In these patients, as in others given Immunovir, the number and activity of natural killer cells in the blood and the number of (antibody-stimulating) T-helper cells were increased.

Improvements in laboratory tests of immune function may not always be accompanied by a clinical response. But in the 16 pre-AIDS patients with significantly improved immune responses (of 20 treated), 5 reported a subjective improvement in symptoms and were well a year after the study. Clearly, as Dr Wallace stresses, it is too early to say whether Immunovir is likely to revolutionize the treatment of AIDS and pre-AIDS, although she is encouraged to carry out further trials, and a new trial is due to begin in London later this year.

Although publicity for Immunovir has centred mainly on herpes and AIDS, the drug has shown some promise in a variety of virus diseases — hepatitis, mumps, subacute sclerosing spindylitis and influenza among them. Initial results, however, seem to suggest that amelioration of symptoms is more likely than a complete cure.

Charles Wenz