

# JAPAN ROUNDUP

Mitsubishi Kasei (Tokyo) has developed a new anti-human immunodeficiency virus (HIV) compound in cooperation with universities located in Japan, Belgium, and England. The compound, a 6-substituted acyclo-pyrimidine nucleoside, has an AZT (azidothymidine)-equivalent effect *in vitro*; in animal experiments (rats and dogs) it also exhibited far fewer side-effects than AZT during a two-week testing period. Since the compound can be administered orally, it is expected to lessen patient pain now associated with AZT treatment regimens.

Mitsubishi Kasei has submitted related patent applications in several countries and plans to start clinical trials in the U.S. before the fall of 1990.

Bristol-Myers Squibb (New York) started clinical trials in Japan of dideoxyinosine (ddI), an anti-HIV drug with a higher therapeutic index than AZT. The U.S. National Cancer Institute (Bethesda, MD) evaluated ddI (along with AZT, ddA, and several other nucleosides) as an anti-HIV compound in 1984 and licensed it to Bristol-Myers.

The U.S.-based firm submitted a clinical trial application to the Japanese Ministry of Health and Welfare in January and will organize a research group soon. Phase I and II trials will be combined. At present only AZT (Wellcome's [London] Retrovir) has been approved as an anti-HIV drug in Japan.

NKK Corporation (Tokyo) will enter the pharmaceutical business by setting up a new pharmaceutical R&D division this spring and a new drug sales company next year. The company has already collaborated with Sanwa Chemical Institute in the development of three drugs including a nitroglycerin angina drug (currently in Phase III clinical trials).

Initially, the company decided that the short-term target of its new business should be biotechnology, but recently it has changed its policy and accelerated its entry into pharmaceuticals.

Last December, Sumitomo Pharmaceuticals (Osaka) completed domestic clinical trials and submitted an application for approval to produce genetically engineered human tissue

plasminogen activator (t-PA) as a thrombolytic drug. Sumitomo obtained an exclusive license for t-PA from Wellcome in 1985.

Sumitomo's Ehime Bioplant, where alpha-interferon is being produced, also houses facilities for t-PA production.

Three joint venture groups—Asahi Chemical Industry/Kowa; Mitsubishi Kasei/Kyowa Hakko Kogyo; and Toyobo/Daiichi Seiyaku—have already submitted applications for production of t-PA in Japan. Sumitomo is the fourth to do so.

Sumitomo is already marketing alpha-interferon (Sumiferon) and human growth factor (Genotropin).

Kikkoman (Noda) scientists have developed an enzyme-based diagnostic Luciferase Kit, which is expected to have many uses for food producers and semiconductor makers. Kikkoman is planning to market a few diagnostic kits for use in medical institutions this year.

The Luciferase Kit uses an enzyme normally extracted from firefly lanterns, which hydrolyzes ATP, emitting light. The amount of light produced is proportional to the number of microorganisms present in the test material. Therefore, conventional culture tests will not be necessary.

Similar kits are already available in the U.S. and the Netherlands, but they use a natural extract from the firefly and hence the costs are very high (10 thousand yen/mg). Kikkoman's luciferase is mass-produced by recombinant technology and should be much less expensive.

The Kirin Brewery/Sankyo group and Chugai Pharmaceutical Co. (Tokyo) have obtained approvals from the Japanese Ministry of Health and Welfare for the production of genetically engineered erythropoietin (EPO) (Espo from Kirin/Sankyo—the first medical drug from Kirin—and Epogen from Chugai).

These are the first approvals in Japan for a drug production system that uses recombinant animal cells.

Suntory (Osaka) has submitted an application for approval to produce Bipten (r-tetrahydrobiopterin), which is the first therapeutic compound for treating autism. No equivalent therapeutic is currently available.

Suntory has already submitted appli-

cations for Biogamma (gamma-interferon) and Sunrhythm (anti-arrhythmic drug). Suntory developed Biogamma in collaboration with Schering-Plough (Madison, NJ).

The Japanese Ministry of Agriculture, Forestry, and Fisheries has completed a draft for renewing the present Variety Registration System. The draft is based on discussions held by the Research Committee for Biotechnology Products Protection.

The draft recommends: 1) adding a Multiplication Right amendment for the developer; 2) introducing a Tentative Protection System; and 3) extending the current 15-year protection period to 20 years.

The Multiplication Right amendment will concern mainly cloning plants in tissue culture. The draft constrains variety buyers from multiplying plants by this means.

A right of "parent variety" developer will also be admitted if a small portion of a gene of one variety is modified to produce an analogous variety. This is due to the recent development of gene technology which has made such modification easier.

The Tentative Protection System includes the publication of a new variety at the time of application and retroactive protection when the variety is approved. Further, the range and level of variety registration will be broadened to include plant cells and all plant species.

Japan's Science and Technology Agency plans to initiate a three-year research program on the biology of deep-sea life. It plans to establish research facilities in 1990.

Many organisms—especially microbes—have been discovered near hydrothermal vents (black smokers) on the ocean floor. This deep-sea ecosystem consists of organisms and microorganisms with unique chemosynthetic capabilities—such as metabolizing sulfide and hydrocarbons.

The planned facilities consist of a high-pressure transportation system for submarine-gathered samples, as well as a laboratory in the submarine itself where microbes can be isolated and cultured.

*Prepared by Mutsumi Yoshida, Bio/Technology Japan, Kyoikusha Publishing Company, Shinjuku Hourai Building, 20, Nishishinjuku-1, Shinjuku-ku, Tokyo 160.*