

JAPAN ROUNDUP

Researchers at Tokyo Institute of Technology, Nitto Electric Industrial Co., and RIKEN (The Institute of Physical and Chemical Research) have developed a new, efficient method for cultivating mold fungi by adding a urethane foam to the culture medium. The new method may have pharmaceutical and industrial uses.

Hitachi, Ltd. will launch intensive research and development in a Basic Research Laboratory to be constructed. Some 200 scientists will perform R&D on equipment needed for the commercialization of biotechnology, and on bio-electronics, including biosensors and biochips. NEC Corp. and Matsushita Electric Industrial Co. are also doing similar work.

Paint resins utilizing a biologically active polymer are being developed for commercialization by Nippon Shokubai Kagaku Co. Specifically, the company is working on an anti-corrosive resin paint that prevents algae adhesion.

Daicel Chemical Industries, Ltd. has opened a 400 million yen test facility at its Arai factory (Niigata Prefecture) for development and low-cost mass production of drug and farm chemical intermediates using biotechnology.

The rigidity of the Japanese agricultural administration weakened education and research systems in the field of biotechnology, according to Keizo Kojima, the president of Japan

Industrial Location Center. Kojima led the Japan Committee for Economic Development to advance a proposal for "Biotechnology Innovation and the Future Course of Rural Districts." Among the report's conclusions: the gap between the industrialization of agriculture and the agriculturalization of industry needs to be bridged by biotechnology; a strong effort must be made to improve the breadth and availability of related courses in Japanese universities so that talented students need not go overseas; the country must improve inventory and detection research; seeds (specifically first generation crossbreeds) must be preserved; and Japan should establish three or four genealogy and resource centers.

Excerpted from Japan Chemical Week

CHRONICLE

Monsanto Agricultural Products Co. (St. Louis, MO) has notified the U.S. Environmental Protection Agency (EPA) that it intends to begin field testing a recombinant bacterium—perhaps as early as April. The organism—a strain of corn-root-colonizing *Pseudomonas fluorescens*—has been modified to produce *Bacillus thuringiensis* endotoxin, a potent insecticide for lepidopteral pests.

Under regulations promulgated by EPA in mid-October under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), Monsanto filed an 800-page report outlining its techniques, safety analysis, and test plans for what could become the first federally sanctioned field-test of a recombinant organism. The company has no plans to seek approval from the National Institutes of Health's Recombinant DNA Advisory Committee (RAC).

Researchers inserted the endotoxin gene in the *P. fluorescens* genome via a proprietary transposon vector system, according to Robert J. Kaufman, Monsanto's director of plant sciences research. The recombinant bacterium may be freeze-dried and coated directly onto seeds before planting, or it may be sprayed onto the fields.

Field experiments with naturally

marked wild-type *P. fluorescens* and laboratory tests with recombinant microbes indicate that populations of the insect-killing strain remain active for only eight to fourteen weeks. Then they dissipate. The microbes do not over-winter and have no long-term effect on soil populations.

Monsanto officials emphasize that the current strain of recombinant *P. fluorescens* is a "prototype product," with too narrow a range to serve as a commercial insecticide. Salable products could appear between 1988 and 1990.

Novo Industri (Bagsvaerd, Denmark) is becoming increasingly interested in expanding its activities outside its two main business areas—insulin and enzymes—in order to lessen its vulnerability to attack from competitors. Bent Vabø, manager of new business planning, says the firm examined some 70 project ideas over the last year (a fifth generated in-house), of which a dozen looked interesting and a further 20 are still being evaluated.

Novo has also been screening acquisition candidates with little success—none have met all its criteria. Two minor purchases have been made though: the yeast firm Alfred

Jørgensen, and the process control company Chr. Rovsing (which was a joint purchase with the Danish fertilizer firm, Superfos). Although the search for products goes on, Vabø emphasizes that Novo is not examining its customers' business areas.

Eli Lilly (Indianapolis, IN) is hedging its bets on suppliers of monoclonal antibodies. Lilly has signed a \$600,000 agreement with Bio-Response (Hayward, CA) for monoclonal antibody production using Bio-Response's mass culturing technique, and it also placed an order with Damon Biotech (Needham Heights, MA) for production of initial quantities of several monoclonals via Damon's Encapcel™ system. Damon also recently won a production contract for monoclonal antibodies from Serono Diagnostics Ltd.-U.K.

The home-use ovulation test developed by Monoclonal Antibodies (Mountain View, CA) has received marketing clearance from the U.S. Food and Drug Administration. Called the OvuStick™ Self-Test, this diagnostic uses a dipstick coated with monoclonal antibodies to detect luteinizing hormone in women's urine samples.