MONOCLONAL ANTIBODY TECHNOLOGY

ELISA KITS TO DIAGNOSE FISH DISEASE

EDINBURGH, Scotland—Furunculosis, bacterial kidney disease, and enteric redmouth are three of the infections that fish farmers will be able to detect more quickly than ever before by using dipstick tests to be marketed shortly by Aquabio Ltd. Based on highly specific monoclonal antibodies married to an enzyme-linked immunosorbent assay (ELISA) system, the kits were developed by Brian Austin of Heriot-Watt University, together with scientists at other institutions in Edinburgh. These include Bioscot Ltd., which was established by Heriot-Watt and Edinburgh universities in 1983 with financial support from the Scottish Development Agency. Bioscot has now launched Aquabio in collaboration with Aquaculture Vaccines Ltd. of Bishop's Stortford in England, which received £200,000 from Managed Technology Investors recently to enable it to become the first British company to make and market fish vaccines commercially.

Austin traces the origin of his technique to work by Patrick Smith, reported in *Developments in Biological Standardisation* (47:97, 1981). Al-

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REASONS

though beginning with a more laborious approach using cuvettes, Smith showed that an ELISA technique was capable of detecting as few as 100 bacterial cells per ml in the case of furunculosis. This suggested to Austin that it might be possible to evolve simple but robust pond-side kits for the rapid diagnosis of this and other fish diseases. In a paper to appear shortly in the *Journal of Fish Diseases*, he reports sensitive and specific reactions against several pathogens, including *Aeromonas salmonicida* and *Yersinia ruckeri*.

Choosing plastic sticks as the solid phase for the attachment of antibodies, Austin experimented at first with infected rainbow trout, inserting his ELISA probes into the abdominal

cavities of dead and moribund fish. Later tests were conducted on a rainbow trout farm that was experiencing losses attributable to enteric redmouth or furunculosis. Strong positive reactions from clinically diseased fish (combined with a lack of interference from the tissues of healthy fish or water or sediment from their tanks) confirmed Smith's earlier pointer that ELISAs might provide a convenient way of diagnosing bacterial infections in the field.

The Aquabio method does not require sophisticated equipment such as a spectrophotometer. It takes just 25 minutes, uses ambient temperatures for incubation, and needs only tap water for the washing steps.

—Bernard Dixon

INTERNATIONAL ISSUES

CONCERTATION VITAL FOR EUROPEAN BIOTECH

WASHINGTON, D.C.—Concertation efforts for biotechnology in Europe focus on decreasing costs while increasing the coalescence of capital, management, and technical know-how. Each country's R&D budget is limited, so the forces for concertation (Europe's rubric for international cooperation) are overwhelming. But differing tax laws, patent protection measures, and public perceptions could mean that concertation may not bear fruit for quite some time. These were some of the take-home messages of the 1986 Washington International Conference on Biotechnology, co-sponsored by *Inside E.P.A. Weekly Report* and the Center for Energy and Environmental Management.

International regulations are evolving, albeit slowly, pointed out Frank Young, U.S. Food and Drug Administration commissioner. He reported on the completion of an Organization for Economic Cooperation and Development (OECD) document offering a tentative set of international safety standards. According to the OECD report, "no scientific basis exists for new legislation, guidelines or rules specific to recombinant DNA containing organisms; when possible,

low risk microorganisms should be used industrially according to 'Good Industrial Large-Scale Practices' (GILSP); and that methods for testing, monitoring and controlling old biotechnology products are applicable to those of new biotechnology as well." Based on a thorough survey of currently accepted safety guidelines in developed countries, The United Nations Industrial Development Organization (UNIDO) also recently adopted safety guidelines for research at its International Centres for Genetic Engineering and Biotechnology in New Delhi and Trieste (Italy).

Continued commercial development in Japan, France, and the U.K. were described at the meeting as predictable. While the U.K. is having problems financing its traditionally excellent basic science efforts, technology transfer to the private sector is improving. The U.K. Department of Trade and Industry is providing incentives in the form of direct cash support to joint public/private ventures to encourage "privitization." In France, biotechnology remains on the slow road despite a new stock exchange specializing in small- and medium-sized companies, and a more

vigorous venture capital climate. According to a recent paper submitted by the U.S. International Trade Commission, France still lacks the entrepreneurial and technical management to overcome commercial strategies limited to local markets. By contrast, Japan has demonstrated a rise in basic research. Historically a leader in microbial screening, this country is moving successfully into recombinant protein expression in *Escherichia coli* and yeast.

International barriers to trade involve both commercial aspects of technology transfer to U.S. competitors, as well as potential export and re-export to U.S. adversaries. Increased export regulation could heighten awareness and concern about foreign regulation and restrictions imposed by countries against U.S. companies doing business abroad. It may well be that international efforts to harmonize biotechnology standards offer a formula to avoid trade barriers, take advantage of economies of scale, and build public trust.

—Hedy Sladovich

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