

INTERNATIONAL COMPETITIVENESS

JAPANESE BIOTECH: THE GOOD WITH THE BAD

NEW YORK—The United States government is investing about nine times as much in biotechnology research projects as are the Japanese. This somewhat surprising statistic came from Sumiko Ito, vice president for investment banking at Nomura Securities International (New York, NY), speaking at a recent executive seminar here on biotechnology strategic management. Other data, compiled by Nomura Research Institute and presented in Table I, show that Japan has spawned only two or three biotech specialty firms (compared to 200 in the U.S.), and that since 1984 Japanese researchers have not received a single patent related to gene operation (compared to 24 for U.S. scientists).

Criticizing Japanese industry is somewhat in vogue these days: *Fortune* magazine recently ran a 22-page special report titled "Japan's Troubled Future." Still, the article pointed to the country's new emphasis on technological creativity—a move that could spell trouble for U.S. biotech dominance. At the meeting, Ito noted that most of Japan's biotechnological activity takes place within its established industry. Interestingly, however, the pharmaceutical companies cannot boast the earliest involvement. Nomura's survey of 145 Japanese firms found that greater than 60 percent of the chemical, textile and pulp, and food companies initiated biotech research prior to 1974. But fully half of Japan's pharmaceutical houses did not enter the field until after 1980.

On the finance side, Ito stressed that U.S. ventures can secure funding from a variety of sources, including venture capitalists, wealthy individuals, large institutional investors, R&D limited partnerships, and America's well-developed public equity markets. In Japan, however, financing young companies is more difficult. Only about 3–5 percent as much venture capital funding is available; Japanese institutional investors are more conservative; and limited partnerships do not exist. Additionally, it is harder for a company to go public: while some 700 firms made initial public offerings in the U.S. last year, only 50 did so in Japan.

Ito said that the sole area where Japan has an advantage over the U.S. is in strategic policies designed to move Japan forward in biotechnology. In general, the Japanese and European governments are more supportive of biotechnology than their

U.S. counterpart, added Nigel Webb, president of the Weston Biotechnology Group (Weston, MA), especially in areas like technology transfer, industrial grants and loans, and risk capital (see Table II). But the Europeans and Japanese are trying to emulate America's venture capital activity, while the U.S. government is moving to stimulate more university-to-industry tech-

concluded Robert Carpenter, president of Integrated Genetics (Framingham, MA). How, then, must the U.S. act to maintain its world leadership in this field? Carpenter termed one possible strategy the "ostrich approach"—bury one's head in the sand and hope the danger goes away. Pioneered by the likes of General Motors, Chrysler, and Ford, he said, this

TABLE I
COMPARISON OF U.S. AND JAPANESE BIOTECHNOLOGY

	U.S.A.	JAPAN
No. of Pure Biotech Firms	200	2-3 (200-500 companies participate as sideline)
No. of Publicly Traded Firms	21,519	1,992
Biotech Employment	5,000-6,000	1,400-1,600
1986 Govt. Assistance for Biotech Research	\$550 mil.	\$65 mil.
Percent of Papers (in two sample molecular biology journals)	38-48%	6-9%
No. of Patents Related to Gene Operation (1984-7)	24	0

Data Courtesy Nomura Research Institute

TABLE II
FINANCIAL SUPPORT FOR BIOTECHNOLOGY

	Europe	Japan	U.S.
PRIVATE SUPPORT			
• Corporations	+	+	+
• Venture Capital	+/-	-	+
• Public Markets	-	-	+
GOVERNMENT SUPPORT			
• Biotech R&D	+	+	+
• Technology Transfer	+	+	-
• Tax Credits	+	+	+
• Industrial Grants/Loans	+	+	-
• Risk Capital	+	+	-

Data Courtesy Nigel Webb

nology transfer. "Everybody is supporting biotechnology in one way or another," Webb concluded.

Japanese firms do provide a number of business opportunities for U.S. companies, Ito stressed, including research funding, sponsoring Japanese clinical trials, marketing and distribution, and joint ventures. On the financial side, Japanese insurance and venture capital firms might participate in second-round financing of U.S. start-ups, and U.S. firms doing public stock offerings could choose to place some shares in Japanese markets.

Both the U.S. and Japan have made major commitments to biotech and are following similar strategies,

technique is bound to fail. Another strategy would be to erect effective trade barriers. Carpenter expressed surprise that so many biotech industry representatives seem to espouse various permutations of this approach, even though "It has about as much chance of success as Star Wars." The only real solution, Carpenter reasoned, is cooperation: gain access to Japanese technology, and share in the industry's growth. "I believe that Japan will be a world power in biotechnology," he said. "I think the most natural approach for a company in the U.S. to take is to structure deals [with the Japanese] that will be advantageous for both parties."

—Arthur Klausner