

## Japan launches new life-science initiatives

Japan's Ministry of Economy, Trade, and Industry (METI; Tokyo) is about to launch several new initiatives to support the development of biodevices and research instrumentation for the life sciences sector. At the center of METI's activities is a three-year program to support industry research on devices that link information technology and biology, such as genotyping equipment or protein sequencers. Other programs are aimed at innovative nanoscale devices and automated equipment for the synthesis and structural analysis of glycoproteins—an overly ambitious task, according to some industry observers, who say the initiative is badly designed and unlikely to foster innovation.

In total, the ministry plans to spend approximately \$65 million on various projects during 2003, while industry contributions are expected to total around \$25 million. Funding for the following years remains uncertain but is likely to be in the same range.

At around \$1.8 billion, the Japanese market for life sciences instrumentation is second only to that of the US. However, US companies dominate the Japanese research equipment market, especially in such areas as genomics and proteomics. This fact is illustrated by the awarding of the 2002 Nobel Prize in chemistry to Koichi Tanaka, an engineer with the analytical instrumentation manufacturer Shimadzu (Kyoto), for his work on the principles of matrix-assisted laser desorption ionization (MALDI) mass spectrometry. Despite the pioneering work by Tanaka, Shimadzu is only a minor player in proteomic instrumentation, having created a dedicated division to market equipment to life sciences customers just two years ago.

Japanese firms have extensive experience in miniaturization and the 'packaging' of devices and are used to meeting the highest quality standards. Applied Biosystems (Foster City, CA) now manufactures its most advanced sequencers in Japan under an agreement with the engineering conglomerate Hitachi (Tokyo). Masamitsu Saito, senior manager for business development with Applied Biosystems Japan, argues that the alliance has "paid off for all parties involved," including the company's users.

However, some observers point out that much of the added value of the equipment sold by Applied Biosystems is not with the hardware but with the highly proprietary reagents used with the hardware. It is not clear how the new initiatives, which are explicitly aimed at improving the competitiveness of Japanese firms in the field of research instrumentation for the life sciences and biodevices, will address this issue.

Companies in Japan say they welcome the new initiatives but many are quick to add that, in reality, government funding comes with too many limitations. For example, the amount for personnel expenses that can be budgeted under government contracting rules is highly restricted and must be calculated on the basis of salaries for government employees, which are much lower than those in the corporate sector. In practice,

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this often means that using government funding is attractive for equipment purchases only—a fact that turns away many small companies that would rather put the money to other uses.

Keiji Takita, director general of the biotechnology development department of the New Energy Development Organization (Tokyo), a METI-affiliated organization that manages R&D projects for the ministry, says he is aware of these limitations and that steps

have been taken to improve government contracting rules and make them more favorable toward small and mid-sized enterprises. Takita concedes that the new initiatives are only a start, and that eventually the new projects will need to give way to initiatives that are more focused on specific applications, such as systems for high-throughput screening.

According to METI officials, the long-term goal of many of the new projects is not with research instrumentation but with the much larger medical equipment market. Despite its comparatively large size, the Japanese market for R&D equipment in the life sciences is hardly attractive to large companies, which are usually the beneficiaries of government R&D support in Japan.

Meanwhile, although scientists in the public sector may in principle still participate in the new initiatives through cooperation agreements with companies, many of the new projects require recipients to match government funding. According to Yutaka Akiyama, director of the Computational Biology Research Center (Tokyo) at the National Institute of Advanced Industrial Science and Technology, this practically rules out active participation by universities or public sector research centers.

While Akiyama says the initiatives are a step in the right direction, he argues that a more balanced design with funding for both the public sector and industry, more emphasis on fundamental research, and a clearer focus on target applications would have greatly enhanced the new initiatives. He says, "The danger now is that some companies will not come forth with any innovative proposals, but rather apply for funding for projects that they have been working on already for some time."

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### Large-scale projects see increased spending in Japan's budget

Despite a severe budget crisis, research funding for life sciences and biotechnology in Japan is increasing by around 5% at most ministries, with the exception of the Ministry for Agriculture, Forestry, and Fisheries (Tokyo), whose budget for rice genome research has been severely cut. At the Ministry of Education, Culture, Sports, Science, and Technology (Tokyo) and the Ministry of Economy, Trade and Industry (METI; Tokyo) hundreds of millions of dollars in additional funding—most of it for facilities and equipment—will be made available through the 2002 end-of-the-year supplementary budget.

And, judging from the budget statement for 2003 by the Japanese Ministry of Finance, large-scale projects are back in fashion, with several new initiatives to be launched this year. While new METI initiatives are mainly focused on biodevices and research instrumentation, the Ministry of Education expects to spend some \$400 million over the next few years on two strategic initiatives to accelerate the translation of research in clinical genetics and tissue engineering into usable products or therapies. A large clinical genetics project likely to be led by Yusuke Nakamura at the University of Tokyo will receive \$85 million this year. The ambitious goal of the project is to link single-nucleotide polymorphism information and the clinical data of some 300,000 people. Other new projects at the education ministry include a new \$75 million initiative to develop databases and software tools for whole-cell simulations.

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