bring funding up to U.S. levels. Professors cannot apply for grants from other ministries, such as MITI or the Ministry of Health and Welfare (Koseisho), because Monbusho forbids it.

If Japanese scientists are angered by this lack of support, in the interests of fairness it must be noted that Japanese scientists have not rushed to support Japanese industry, either. When Mitsubishi Kasei's Institute for Life Sciences opened its doors, for example, it had to struggle to recruit researchers, even though it offered superior facilities and complete scientific freedom. Today, the institute, though successful at attracting bright young researchers, doesn't expect to keep them permanently. Instead, it has become a stepping stone on their way to a university professorship, which suits director Imahori fine, he says, because it "keeps the place fresh."

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East meets West. "Thinking of Sowing New Seeds" says a poster at Japan Tobacco, which has invested heavily in biotech.

Still, although coaxing a future Nobel laureate on board is something Japanese firms only fantasize about, they find access to top scientists in other ways. MITI's key technology centers bring together academic and industry scientists on leave from permanent jobs, a system that skirts the problem of wooing people away from lifetime posts—or getting rid of them later on.

In another initiative to encourage technology transfer, stodgy Monbusho, which once opposed any university-industry linkages, now sponsors hundreds of collaborations between academic researchers and their industry colleagues. This merging of talents and resources has spawned development of such drugs as Takeda's endothelien inhibitor and a second antihypertensive drug, atrial natriuretic factor, which was synthesized by a university professor and is now in large-scale clinical trials at Suntory, a beer and whiskey maker that, like Kirin, has a vigorous drug division.

Links between top academics and industry have become so pervasive, in fact, that Keiko Oishi-Nakamura, Genentech's manager of research collaborations in Japan, can scarcely find a professor to work with the California biotech legend. "They're all committed to a Japanese company," she says, wrinkling her nose.

In the past, Japanese industry ignored its compatriots' seminal work relating to such substances as interferons, interleukin-2, and granulocyte colony stimulating factor—which U.S. companies exploited first. By nurturing close ties with scientists, they intend not to let opportunity slip by again. When scientists at the Osaka Biosciences Institute discovered two sleep-regulating hormones known as D2 and E2, companies from around the world beat a path to the 5-year-old laboratory's postmodern portals, but a Japanese firm won out over the multinationals. "We don't intend to discriminate," says lab director Osamu Hayaishi, "but it's easier to communicate and gain access when the partner is also Japanese."

Do sentiments like that mean Japanese companies and U.S. biotech firms are going to turn away from each other, reversing the trend of the 1980s that the NRC and others warned about? Some, on both shores of the Pacific, think that would mean a loss for both partners. Says Takamoto Suzuki, manager of research planning and licensing for Kirin's pharmaceuticals division, "In Japan, it's hard to keep the staff young. They need these injections of youthful energy from U.S. ventures." Rathmann agrees that entrepreneurial spirit is something U.S. biotech firms have in abundance. In contrast to the conservative Japanese firms, he says, "at Amgen, everyone owns stock. You own it, you love it, you have tremendous drive—it goes way beyond a normal job. You just can't duplicate that in a large organization."

Given those reciprocal needs, it seems unlikely the partnership between Japanese corporate giants and small, innovative U.S. biotech firms will come to an end any time soon. That, naturally, raises the question of who benefits from this partnership, the question that the NRC thundered about in its report. In an interview, Suzuki paused to ponder that unasked question, considering his words carefully before answering: "As for the Japanese running away with the profits—look where Amgen is now."

–June Kinoshita

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GERMAN SCIENCE

Kohl Replaces Science Minister

For the past 11 years, German Science Minister Heinz Riesenhuber has been a fixture in the ever changing line-up of Europe's senior science policy makers. But no more. As part of a wider cabinet reshuffle, German Chancellor Helmut Kohl last week replaced Riesenhuber with one of the country's rising young politicians—Matthias Wissmann, a 43-year-old lawyer who's spent the past few years as the parliamentary economic spokesman for Germany's two main conservative parties.

The change is causing some unease in the scientific community. While Riesenhuber came into politics from a career as an industrial chemist, Wissmann has no scientific background and has made few public statements on research policy. And he enters the research ministry at a time when German science has its back to the wall, facing budgetary squeezes, the quandary of how to integrate researchers from the former East Germany, and deep-seated public opposition to genetic engineering and animal research. "I'm concerned about the timing of the change," admits Thomas Trautner, a vice president of the Max Planck Society and codirector of its Institute for Molecular Genetics in Berlin.

Nevertheless, Riesenhuber's departure had been rumored for many months. The conventional wisdom is that he's being replaced simply to bring new blood into the cabinet at a time when Kohl's coalition government has slumped to an all-time low in the popularity ratings, and to counter complaints that Wissmann's home state of Baden-Württemberg has been poorly represented in the German federal government. Certainly, there's no indication that Riesenhuber himself had decided it was time to go. "[He] had not become disenchanted with his position," asserts Max Syrbe, president of the Fraunhofer Society, an independent but largely publicly funded agency that runs almost 50 applied research institutes.

Leading German researchers contacted by *Science* last week said that Riesenhuber will be remembered for investing heavily in basic research during the 1980s—supporting such projects as the construction of the HERA electron-proton collider at the DESY high-energy physics lab in Hamburg. But he wins lower marks for failing in 1990 to prevent the German parliament from passing the infamous "gene technology law," which has burdened biology labs with regulatory red tape (*Science*, 31 January 1992, p. 524). And some researchers are disappointed that Riesenhuber did not defend the science budget more vigorously in the face of the unexpectedly high costs of German unification. "People fear that basic science is in danger," says Marburg University cell biologist Horst Kern.

Now researchers are counting on Wissmann to make their case. Some argue that the fact that he has come fresh from a prominent position in the German parliament may be an advantage. "I would hope that he retains the support of his former colleagues," says astronomer Klaus Pinkau, scientific director of the Max Planck Institute for Plasma Physics in Munich.

–Peter Aldhous