

French Alps, somehow came loose from its cable and plummeted 80 meters. The accident is likely to delay completion of a new radiotelescope.

IRAM is run by the French basic research agency CNRS, Germany's Max Planck Society, and Spain's National Geographical Institute. IRAM operates two major facilities, a 30-meter telescope at Pico Veleta in southern Spain and an array of five 15-meter telescopes at Bure. The telescopes detect emissions at millimeter wavelengths, between radio and infrared, which reveal molecules in cool interstellar regions and dust shrouding comets and young stars. In recent years, IRAM's telescopes have racked up an impressive list of accomplishments. For example, they enabled astronomers to detect flat disks of gas and dust around several young stars, resembling a disk thought to have encircled our own sun before the birth of the solar system. Combined with other studies of disks around young stars, the finding could provide valuable insights into how planets form.

The cable car provided the sole access to the mountaintop facility, so until the tragedy has been fully investigated and the cable system repaired, the center's activities will be sharply curtailed, says Philippe Chauvin, a CNRS spokesperson in Paris. The accident will also delay completion of a sixth radiotelescope, which was supposed to have come online late this year or early next, Chauvin says. At press time, IRAM officials were scheduled to meet this week to discuss the consequences of the accident. But late last week, Chauvin said, no one wanted to think about what to do next: "The people there are completely traumatized." —MICHAEL BALTER

LIFE SCIENCES

Japan Readies Huge Increase in Biotech

TOKYO—Japan's political leaders are piecing together a plan that would nearly double the country's current investment in life sciences research over the next 5 years. The multi-agency initiative, which would start next spring, is aimed at bolstering the country's biotechnology industry through support for basic science.

A 3 July report in *Nihon Keizai Shimbun*, Japan's leading economic daily, says that the government and the ruling Liberal Democratic Party have set a target of adding 2 trillion yen (\$16.7 billion) over 5 years to the current annual \$4.2 billion spent on biotechnology-related R&D. Officials at several ministries cautioned that 2 trillion yen is likely to be more than they will get from the Ministry of Finance, which is trying to rein in the country's recession-swollen

national debt. But they confirmed that five ministries and agencies are seeking major increases to support everything from accelerating the sequencing of the rice genome to boosting efforts in human genomics to providing support for new biotechnology companies. "The life sciences will be one of the most important areas [of science and technology] for the next few decades, so the Japanese government is trying to increase its support," says Nobuhiro Muroya, deputy director of planning for the Science and Technology Agency (STA).

Details on the new spending are sketchy, even though proposed budgets for the next fiscal year must be worked out by the end of August. One major initiative will be to hunt for the subtle genetic variations known as SNPs—sites where the spelling of the genome varies by a single letter from one individual to another. The hope is that SNPs, or single-nucleotide polymorphisms, will provide a powerful tool for tracing disease genes and developing individualized drugs.

That idea has already led the U.S. National Institutes of Health to set up a SNPs program, and brought together 10 major U.S. and European pharmaceutical firms to set up The SNP Consortium (TSC) (*Science*, 16 April, p. 406). Researchers in Japan hope their own SNPs project will move them into the mainstream of genetic research. "We are behind the American and European efforts [in genomics]," says Yusuke Nakamura, director of University of Tokyo's Human Genome Center and a member of a working group that mapped out a SNPs project strategy. Nakamura hopes the initiative also will provide an opportunity to revamp Japan's human genome project, which he believes has been hampered by too many research groups and the lack of an overall strategy.

The first step in the SNPs project involves spending \$50 million over 2 years to map between 100,000 and 150,000 SNPs, concentrating on areas associated with gene expression and function and using samples from 50 Japanese individuals. Researchers hope the approach will increase the likelihood of spotting SNPs associated with disease susceptibility and drug response. The work will be concentrated at one center, says Kanji Fujiki, director of the Life Sciences Division of STA, which is funding the effort. Fujiki says a final decision hasn't been made, but that the center is likely to be Nakamura's.

The second step will be to look for asso-

ciations between the identified SNPs and disease susceptibility and drug response. This research will target diseases prevalent in Japan, including cancer, diabetes, rheumatoid arthritis, and cardiovascular diseases. The effort will involve STA and possibly the Ministry of Health and Welfare and the private sector. Fujiki says the scope of the project will vary by disease and the total effort is still being worked out.

Drug companies hope that studies of SNPs will reveal why medication that proves effective in one person is useless or produces side effects in another—information that could lead to "tailor-made medicine," says Teruhisa Noguchi, a former vice president of Yamanouchi Pharmaceutical Co. "This is going to be an extremely important field for industry," says Noguchi, who heads an industry group promoting the nascent field of pharmacogenomics, or the use of genomic data and lab techniques in developing drugs and diagnostics.

So far, it appears that Japan's effort will be independent of SNP searches overseas, such as TSC. That consortium plans to spend \$45 million over the next 2 years to create a SNP map of the whole genome and to make the data public without any preferential access for consortium members (*Science*, 16 April, p. 406). Speaking at a pharmacogenomics forum in Tsukuba last week, Arthur Holden, consortium chairman,

emphasized the group's interest in having Japanese participation. "Expanding our activities would benefit everyone," he says.

But Japanese officials say their priorities lie elsewhere. "The Japanese have their own [genetic] characteristics and we feel we should do our own work on SNPs," says STA's Fujiki. At the same time, he says that the databases for Japan's project will be open to all and that the idea of merging the data is worth pursuing.

Other initiatives that might be funded by the new money include three new STA research institutes focused on genome informatics, stem cell research, and plant genetics. Hiroshi Arakawa, an official in the Ministry of International Trade and Industry's (MITI's) Biochemical Industry Division, says MITI is studying a range of programs to promote Japan's biotechnology industry, including possible tax incentives to promote the commercialization of technologies resulting from genomic research. The ministry is also considering a plan to support the creation of up to 1000 new biotechnology businesses.

—DENNIS NORMILE



Suitable research. Drug industry's Teruhisa Noguchi says SNPs offer promise of "tailor-made medicine."