won fame but not glory for the institute, which is housed in a decrepit building near the Friendship Hotel. Piles of crates and brown packages crammed with fossils tower precariously in stairwells and halls. The office of professor Huang Wanpo overflows with specimens and papers. Huang is studying fossilized giant panda teeth to learn when the panda first began to eat bamboo, a clue for understanding ancient ecology. His funding is not adequate to mount an expedition in search of the skull of *gigantopithecus*, a large primate whose jaw was unearthed along the Yangtze River. "That's just a dream," he sighs.

Dinosaurs are different, however. Canadians gave the institute $100,000 for a dig in Inner Mongolia, Huang says. And *Asahi Shimbun*, Japan's largest newspaper, donated another $100,000 for the rights to announce any new dinosaur species dug up along the ancient Silk Road.

But not all is gloomy. Huang mentions that he will be moving to a new building, a seven-story edifice shimmering across the courtyard that is the result of 30 years of lobbying by three successive directors. "My new office is beautiful!" he exclaims happily. "I don't really know why it is finally getting done now. We'll need computers, equipment, and display cases. They will put the donor's names on a plaque. We hope to have room for foreign researchers, too."

Bottlenecks. New buildings and new funding sources have greatly improved working conditions for some, but much more needs to be done. Equipment in all but the elite institutes is outdated. International journals are so costly that hundreds or even thousands of scientists must share a single library copy. Electronic-mail is virtually unknown. The BEPC has a link through Stanford University, but everyone else must rely on faxes and telephones. "I feel cut off from my colleagues," complains Zhao, the young Beida chemist. When people send him faxes, he gets billed $1 a page—a charge that makes a sizable dent in his $60 monthly income.

One of the biggest problems is the lack of young researchers. China lost a generation to the Cultural Revolution (1966-1976), when universities were shut and intellectuals were sent to work in fields and factories, and it has taken another decade for higher education to recover. "The quality of Chinese students has improved very much in the last 5 years," says a Japanese science policy maker. But tens of thousands have gone overseas to study, and many, perhaps most, have not returned. "In our institute, 30 have gone abroad, and only one has come back," remarks Wu Chien-ping, director of the Shanghai Brain Research Institute. In addition, he says that most graduate students want to get their Ph.D.s in the West or in Japan.

Some argue such a system benefits China. "China can't afford basic research," says Cai Mingjie, a Shanghai-born Stanford Ph.D. who now works at the Institute of Molecular and Cell Biology in Singapore. "If they got 10,000 Ph.D.s coming back, there'd be no jobs for them. And it's not that China desperately needs these people back. China needs talent in management, economics, and business, but not in basic research. The government also knows that having those people abroad can eventually help China." To ease that interaction, the government now allows scientists living abroad to come and go freely, and staff at several CAS institutes can also work overseas for 3 months each year.

More worrisome is the growing gulf between salaries in the public and private sectors. "When I was a student," says Zhao, speaking of the early 1980s, "the brilliant ones looked for hard and interesting fields, even if not practical. Now the best look for something not so hard but very practical." To combat the lure of industrial salaries that may be 10 times those of academia and to

China Beckons to Drug Companies

BEIJING—With a population of 1.2 billion, 1.4 million registered physicians and 67,000 hospitals, China offers unrivalled opportunities for clinical research. Although annual sales of pharmaceuticals now stand at only $3.5 billion—compared with $50 billion for the United States—the value of foreign drugs sold in the country is doubling each year, and some Western industry executives predict that China may become the world's largest market by the end of the decade.

Foreign pharmaceutical companies are interested in more than just the size of the potential market, however: China is also an attractive testing ground for new drugs. Relatively low standards of health care, poor nutrition, and primitive hygiene prevail in much of the country, resulting in high occurrence rates for many diseases. Northern China, for example, has the world's highest rate (6 per 1000 births) of congenital neural tube disorders such as spinal bifida and anencephaly, while hepatitis, tuberculosis, and polio remain widespread in both rural and urban areas. In addition, there's little geographical mobility, making it easier to conduct long-term studies. And cost may be significantly lower in China.

But there is also a downside to conducting clinical trials in China. A lack of essential equipment and trained personnel in hospitals can make the experience difficult and dangerous for Western companies. "This is a highly erratic environment and you have much less control over any work done in China than at your own doorstep," says Ian Stones, director of the pharmaceutical division of Pfizer-China.

Indeed, hospital standards can be appallingly lax. At Beijing's Capital Hospital, one of the country's best, an American who was there for an HIV test (mandatory for foreign residents) recalls seeing technicians carrying racks of uncapped vials of blood from the clinic to a lab a block away, seemingly oblivious to the vigorous sloshing experienced by the samples on their journey. And basic equipment is often simply not available. While many hospitals boast of sophisticated diagnostic imaging systems, few have access to such basic equipment as electrolyte analyzers.

The U.S. Food and Drug Administration (FDA) requires tests conducted in China to meet the same standards as those carried out in the United States, and applicants must certify the worthiness of the researchers and facilities involved in the trial. An FDA spokesman admits, however, "there are limits to what we can do about evaluating the qualifications of Chinese clinics."

The greatest risk for foreign firms doing trials in China is that a participant may die for reasons entirely unrelated to the product. Such "serious adverse events," as the FDA calls them, must be reported promptly, and the company is left trying to figure out the cause. "Even if the drug itself was clearly not responsible, the event will be recorded in your dossier and could have disastrous consequences for the future of the product," says Pfizer's Stone.

Despite such difficulties, foreign firms are sponsoring trials and beginning to have the results accepted by the FDA. In return for their participation, Chinese clinics gain the prestige of cooperating with foreign researchers and, at times, flat payments or donated equipment. Researchers involved in trials often get invited to international meetings. Trials using Chinese patients also can help boost sales of the drugs among a local population. "Many local doctors believe that ethnic factors affect a drug's performance," says one executive at a leading European company, "and they prefer to see data on local populations." Given the mutual benefits, clinical trials appear to be opening new frontiers for collaboration between scientists in China and the West.

–T.P.