

# Genome research set to take off in China

[BEIJING & SHANGHAI] China is launching several major initiatives in human genomics in Shanghai and Beijing, with budgets totalling over 250 million yuan (US\$30 million) over the next three years, and there are signs of even more investment to come.

New human genome centres are being established in both cities. Unusually for China, they are funded from a number of sources in both government and industry, and will draw researchers from several institutions. Both will focus on diseases that afflict large numbers of people in China.

The Shanghai centre is led by Zhu Chen of the Shanghai Second Medical University, and the centre in Beijing is under the leadership of Boqin Qiang, first vice-president of the Chinese Academy of Medical Sciences. Both have played an important role in China's human genome project, which until now has operated on a tiny fraction of the new budget.

The Shanghai Human Genome Center is located in a high-tech park in the city's new development zone of Pudong. It has an initial budget of 60 million yuan in the first year, with half coming from the Shanghai municipal government and Pudong.

The rest will come from the central government's Ministry of Science and Technology, the Chinese Academy of Sciences and various institutions that are participating in research at the centre, including Fudan University, Ruijin Hospital, Shanghai Medical University and the Second Military Medical University, as well as several institutes of the Chinese Academy of Sciences.

It is very unusual in China for scientists from so many different organizations affiliated with different parts of the government to work together under one roof. Some observers close to the project are sceptical about whether they will be able to collaborate successfully.

But Zhu Lilan, China's minister of science and technology, points out that the researchers have already been working together for two years under the human genome project, and says that Chen has the

ability to pull them all together.

The Beijing centre, which has a larger initial budget of almost 100 million yuan over three years, is also unusual in several ways. Two Beijing state-owned companies that invest in real estate and high technology will contribute over 50 million yuan to the centre, with the rest coming from the Beijing municipal government, the Chinese Academy of Sciences, the Chinese Academy of Medical Sciences, Beijing Medical University, Beijing Institute of Medicine and Pharmacology and the Ministry of Science and Technology.

Qiang says the central government hopes this unusual mix of funding from central and local governments and industry will provide a model for future funding of science in China, where the central government has limited funds but some parts of industry are booming.

The Shanghai centre will focus on identifying and cloning disease-related genes of particular significance to China, such as liver cancer. The centre's new building, which will open later this month, will expand within a year to a full complement of 35 to 40 researchers in four groups. These will work on expression profiles, genotyping for diseases, single-nucleotide polymorphisms and functional genomics.

Chen says the centre will also "coordinate" the various research efforts in human genomics in the Shanghai area. It will provide a high-quality service in genome analysis for research institutions and biotechnology and pharmaceutical companies at home and abroad, and serve as an "incubator" of genomics companies in China. It will make use of the rich human genetic resources of China, which has a fifth of the world's population and large numbers of patients with gene-related diseases.

Fudan University, which is participating in the research at Chen's centre, will maintain its own existing programme in human genome research, and the New Huangpu real-estate company in Shanghai will invest 100 million yuan in two laboratories at the university.



Looking to the future: Shanghai's Pudong zone where some of the research will take place.

Also, three US companies — PE Applied Biosystems, Axys Pharmaceutical and Siniwest Holdings — last year formed a joint venture in Shanghai called Shanghai GeneCore BioTechnologies to provide large-scale automated DNA sequencing and sequence analysis services for institutions in China.

This totally foreign-owned company has already won a large contract from the Ministry of Science and Technology to sequence human genes involved in liver cancer. Ming-Wei Wang, chairman and general manager of the venture, says the three companies will make an initial investment of about US\$10 million in three stages, in the form of cash, equipment and advanced technologies.

Other western companies also see Shanghai as an important centre for the development of the life sciences and the pharmaceutical industry. For example, Chen has received US\$1.8 million from SmithKline Beecham to support his research.

The Beijing centre will focus on different diseases from the Shanghai centre, in particular cardiovascular disease and diseases of the nervous system. According to Qiang, the centre will have a core of about 30 researchers working in three divisions — sequencing, genetic resources and bioinformatics — and 'satellite' laboratories in other institutions.

Qiang estimates that there are already about 30 laboratories in China working on the human genome project, with a total of about 500 researchers.

Several more health-related genomics projects are under consideration in China. The Ministry of Science and Technology will select several such projects for the National Programme for Key Basic Research Projects, otherwise known as the "scaling the heights" programme, which will provide about 50 million yuan per project. **David Swinbanks**

## Japan's Mars probe launched successfully

[TOKYO] Japan's Institute of Space and Astronautical Science last week launched PLANET-B, the nation's first Mars probe, from Kagoshima Space Centre on the southernmost tip of the island of Kyushu. The successful launch marks the beginning of Japanese efforts to join the United States and the former Soviet Union in the exploration of Mars.

The spacecraft will follow an elliptical orbit around Earth and the Moon until December, when it will begin its journey of

700 million km to Mars. PLANET-B, renamed *Nozomi* after the launch, is due to enter the martian atmosphere in October 1999.

The probe will spend two years observing interactions between the planet's atmosphere and ionosphere and the solar wind. The spacecraft carrying the probe also has a small aluminium plate bearing the names of more than 270,000 people following the institute's nationwide signature campaign (see *Nature* 391, 833; 1998). **Asako Saegusa**