

CHINA

Biologists Muscle Up With Major New Protein Facilities

BEIJING—When molecular biologist Xu Rui-Ming gave up a plum professorship at New York University to return to China last autumn, he knew the move would entail sacrifices: a pay cut, for starters, and the need to acclimate to Beijing, one of the fastest growing cities in the world. But the opportunity to help build a research empire was impossible to resist.

This month, Xu and colleagues here at the Institute of Biophysics (IBP) of the Chinese Academy of Sciences (CAS) will begin recruiting researchers for a National Laboratory of Protein Science (NLPS). In the spirit of Janelia Farm, the biomedical research haven in Virginia run by the Howard Hughes Medical Institute, the national lab will give a few dozen top-notch biologists generous contracts, access to top equipment, and protection from the vitality-sapping chase for research funding.

Last year, Premier Wen Jiabao called for the creation of several dozen national labs; NLPS is among the first in the biological sciences. “We are the guinea pigs,” says Xu. They will get a leg up from an allied effort to lift biology boats countrywide. Science managers here and in Shanghai are divvying up \$160 million for a National Core Facility for Protein Sciences that will be open to all Chinese researchers, including those at NLPS, and eventually to foreigners as well. “It’s the first time in history that the government has funded a national facility in life sciences,” says cell biologist He Fuchu, director of the Beijing Proteome Research Center.

Quickest off the blocks should be NLPS. It’s the brainchild of former IBP Director Rao Zhihe, now rector of Nankai University in Tianjin, who floated the concept in 2003. CAS has spent \$45 million over 5 years instrumenting IBP. Next, “we need high-caliber researchers,” says Xu, a specialist on epigenetics who intends to recruit a significant number of the lab’s initial 60 principal investigators from overseas.

To sweeten the appeal, the national lab will give researchers a salary and 5-year grants and let them loose in a setting akin to Cold Spring Harbor Laboratory, where Xu worked for 13 years. “This is an absolutely new concept in China,” he says. Two-thirds of the initial recruits will be stationed at IBP and the rest spread around the country, like Howard Hughes investigators at their home institutions; the plan is to ramp up to 100 principal investigators, with a rising per-

centage located outside IBP. NLPS’s budget is roughly \$60 million a year.

An even grander plan is the National Core Facility for Protein Sciences. After months of discussions, the research center is taking shape. Four organizations are orchestrating the Beijing part of the venture: the Academy of Military Medical Sciences, Tsinghua University, Peking University, and CAS. Last month, the partners agreed on the

User committees have begun drawing up wish lists of equipment. PHOENIX, says He, who will head it, will host more than 50 principal investigators. Outside researchers would be able to come for short periods to conduct experiments or tap into the complex remotely via high-speed data links. The core facility, backers say, will provide a platform for ‘small science’ projects conceived by individual investigators. Groundbreaking is expected to take place around the end of the year.

CAS’s Shanghai Institutes of Biological Sciences (SIBS) will receive the other half of NDRC’s largess to build a National Facility for Protein Science in Shanghai. Pending NDRC approval of an itemized budget, the facility will be located at a science and technology park that CAS and the Shanghai municipal government plan to build in Pudong district, just down the road from a third-generation synchrotron source set to come online this spring. The synchrotron will be a major resource of the Shanghai protein facility, which plans to construct five beamlines for solving protein structures, studying protein dynamics, and imaging molecules.

As with PHOENIX, the intent is not “big science,” says SIBS vice president Wu Jiarui, chief scientist of the Shanghai component of the national core facility. “It may

be considered a protein hospital,” says Wu, in that biologists, like doctors examining patients, will use a variety of approaches—including electron microscopy and mass spectrometry—to probe protein structure, function, and interactions.

In China, biology has long been a poor cousin of the physical sciences, which until recently lured many of the country’s finest minds and produced strategic advances such as a nuclear arsenal and human space flight. Now it is biology’s turn to shine, says He. “We hope to make a great leap in understanding the functions of protein systems,” he says.

—RICHARD STONE

With reporting by Hao Xin in Shanghai.



Beijing bio-glitterati. Xu Rui-Ming (top) will lead the National Laboratory of Protein Science, while He Fuchu is the top manager of PHOENIX, a planned proteomics facility.

broad outlines of how they will spend \$80 million from the agency that bankrolls major infrastructure projects—the National Development and Reform Commission (NDRC)—and a nearly equivalent sum on top of that from the Beijing municipal government, the Ministry of Education, and the Department of Logistics of the People’s Liberation Army.

The Beijing facility, dubbed PHOENIX, will focus on proteomics, including high-throughput pipelines for protein expression profiling and protein-protein interactions; structure determination; proteome-wide functional analysis; large-scale protein and antibody production; and bioinformatics.