

CHINESE ACADEMY OF SCIENCES

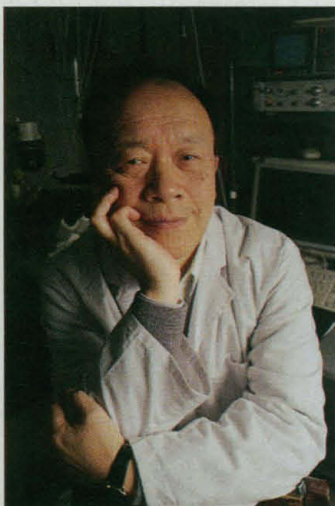
Institutes Reinvent Themselves As Part of Well-Funded Reform

BEIJING—Deng Maicun seems an unlikely leader of a revolution at the Chinese Academy of Sciences (CAS), which operates the country's premier network of research laboratories. The 39-year-old chemical engineer lacks a doctoral degree and admits he isn't at the cutting edge of research in his field.

But as the new director of the Dalian Institute of Chemical Physics in northeastern China, he's a pivotal figure in a massive reorganization that aims to turn CAS into a lean, mean, merit-based research machine and into a model for research across the country.

The Dalian institute is one of 12 projects approved in November by China's governing body, the State Council, as part of a 3-year, \$650 million effort known as the Knowledge Innovation Program. The sweeping initiative groups 40 of CAS's more than 120 institutes into nine megafacilities and turns Dalian and two other prominent institutes into test-beds for a slew of management reforms.* In addition to lopping 38,000 positions from the existing CAS staff of 68,000 by 2010 and eliminating lifetime tenure, the reforms are meant to relieve institutes of responsibility for nonresearch activities such as housing and medical care and to give scientists more authority over personnel decisions (see sidebar). The new program is also a vote of

confidence in the leadership of CAS president Lu Yongxiang, a mechanical engineer who has promised to revamp operations so that institutes can better contribute to the world's store of knowledge and to the country's economic growth (*Science*, 30 January 1998, p. 649).



Well-placed. Wu Chien-ping is in line to head new Shanghai academy.

In time, the reforms should produce savings. But implementing them requires a large up-front investment. The new program represents a doubling of CAS's annual operating budget, although it falls short of CAS's initial request for \$800 million. The funds will buy equipment and raise salaries for existing staff and up to 300 talented young Chinese scientists lured back from positions overseas. In addition, a large chunk will be used to cushion the blow to laid-off workers. The lavish support, CAS officials confess, puts them in the

hot seat. "On one hand, we need the money badly to carry out in-depth structural reform," says CAS vice president Yan Yixun. "On the other hand, we feel a great amount of pressure because we cannot use a lack of money as an excuse if we fail to come up with tangible results."

The Dalian institute is the first of the CAS projects off the mark. In November, it received a down payment on a \$9 million award meant to help it downsize from 800 to 150 fixed positions. Deng says his primary job is "to create a good living and research environment for the institute." And giving scientists a major voice in personnel decisions, he adds, is the key to cutting through the red tape and cronyism that stand in the way. This fall, a first-ever committee elected by researchers chose 10 laboratory heads to oversee the hiring or rehiring of staff. The

laboratory heads, like the institute director, will be elected every 4 years, and those who serve two terms running will receive permanent positions. The rest of the research staff will be put on renewable 2-year contracts.

The new lab chiefs also represent the next generation of scientific leadership. The competition was limited to those 56 or younger, and youth ruled: Eight of the 10 heads are under the age of 40. At the same time, however, nearly all the jobs went to in-house candidates. Deng, who came up through the institute's ranks, says that tight deadlines prevented the institute from advertising the lab chief slots. As a result, only one outside scientist—who heard of the competition via word of mouth—even put in a bid. "We will do our best to invite outside applications for the next term," says Feng Aisheng, office

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Neuroscience Institute Breaks New Ground

Bai Lu of the U.S. National Institutes of Health (NIH) flew to Shanghai in the spring of 1996 looking for someone to help him and two other Chinese-born, U.S.-trained neurobiologists set up a joint lab there. His success resulted in regular exchanges and a string of papers. But the trip did much more than create a scientific partnership: It planted the seeds for a new institute that aims to become not only a world-class research facility but also a model for how China can manage science more creatively. "It's a rare opportunity for China to forge ahead in neuroscience," says Mu-ming Poo, a 50-year-old biologist at the University of California, San Diego, who will serve as the institute's part-time director. "But it has to be done right."

The Chinese Institute of Neuroscience (CIN), which won final approval from the government in November, will be unlike any existing institute. Although housed initially at the Shanghai Brain Research Institute, CIN will be independent of its host and enjoy considerable autonomy from its parent, the Chinese Academy of Sciences (CAS). Its budget will allow up to 30 senior scientists to operate their labs to Western standards, including a start-up package approaching \$300,000, plus \$100,000 a year in running expenses and salaries three or four times the norm in China. The money comes from an un-

* Other megainstitutes include: in Shanghai, Applied R&D (electronics and materials); in Beijing, Mathematics, Information Science, Materials Science, and Earth Sciences; in Lanzhou, Natural Resources and Environment; in Shenyang, Advanced Manufacturing; and an astronomical observatory using facilities in Nanjing, Shanghai, Xian, and Yunnan. Other model projects include the Theoretical Physics Institute in Beijing and the Nanjing Institute of Geology and Paleontology.

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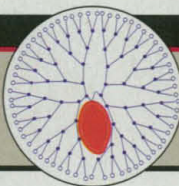
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manager at the institute.

Although senior scientists recognize the need to make room for fresh talent, some say that a rigid adherence to age restrictions is counterproductive. Yi Baolian, 60, a member of the selection committee, wasn't happy about being removed as head of a key national research project involving scientists at nearly a dozen institutes. "There was only 2

years left, and it was such a big project," he says. "Why couldn't they let me keep my position? Or they could find me an assistant if they think me too old." After losing on appeal,



Moving target. Dalian's Deng Maicun seeks greater mobility for scientists.

head of the academy's preparatory committee, says a key to success is streamlining the duties of the director: "In the past, directors had too much to worry about, from seeking

Yi says he has offered to help coordinate work among the various partners.

The proposed Shanghai Academy of Life Sciences (SALS) appears to be furthest along in figuring out how to create a CAS megainstitute. Tang Zhangcheng, former director of Shanghai's Institute of Plant Biology and deputy

research funds to taking care of a funeral." Once the reforms are in place, he adds, "institute directors will have no pretext for not doing their job."

The structure of the SALS, still under review by CAS, would bring together eight biology-related CAS institutes—in biological chemistry, cytology, physiology, brain research, medicines, plant biology, insects, and biological engineering. The research portfolios of each institute would remain independent, but SALS would oversee operating budgets and handle such support functions as real estate, libraries and information networks, and the care of laboratory animals. The current director of the brain research institute, Wu Chien-ping, is in line for the top post at SALS.

To allow the institutes to focus on their core task—producing good science—some

usual mixture of sources: CAS, the Ministry of Science and Technology (MOST), and the Shanghai municipal government. Most striking of all, however, is the government's commitment to a hands-off management policy: The institute can recruit throughout China and can set its own administrative policies on everything from ordering supplies and equipment to letting grad students burn the midnight oil.

"The vice premier [Li Lan-ting] promised us that people would have complete freedom to move," says Lu, 41, who heads the synaptic plasticity unit at NIH's National Institute of Child Health and Human Development. "It's also important that scientists set the rules."

Although the new institute will be run strictly on merit, its origins rest on old ties. The idea for a joint lab came from Yi Rao, a neurobiologist at Washington University in St. Louis, Missouri, and Lu's colleague at Shanghai Medical University. The third partner, Lin Mei of the University of Virginia, Charlottesville, is a former colleague of Linyin Feng of the Shanghai brain institute, who manages the lab. The success of that collaboration led the brain institute's director, neurophysiologist Wu Chien-ping, to ask the trio to think about creating a Western-style research institute. Lu brought in Poo, his mentor in the late 1980s at Columbia University and a leader in studying the mechanisms of synaptic formation and activation, to draw up a proposal.

Poo knew what he wanted. "It had to be

a new institute, the appointments had to be merit-based, and there had to be steady support," says Poo. The government's response to the proposal, submitted this summer, came with unprecedented speed. CAS officials liked the idea but didn't have sufficient resources to bankroll it. So government officials created a new administrative entity that allowed them to invite other partners. MOST and Shanghai city quickly joined the team.



"In addition to the increased funding, the status gives us a lot more freedom," says Mei. "The existing rules don't apply." By November everyone had signed off, and the U.S.-based scientists began spreading the word. The project has also received a boost from the first-ever Gordon Research Conference in China, a 5-day session held last fall in Beijing that was co-chaired by Lu and Wu.

Mei credits Wu with shepherding the new

institute through the many layers of bureaucracy. Wu, in turn, says that Poo's participation made it an easy sell. "The proposal came from a world-renowned neuroscientist," he notes, "which greatly increased its chances of success." Marc Caron, a Howard Hughes Medical Institute investigator at Duke University, calls Poo "a superstar, scientifically," and Carla Shatz, an HHMI investigator at the University of California, Berkeley, notes that Poo's "talent and energy level will be a real shot in the arm for Chinese neuroscience."

Poo plans to spend 3 months a year in China and to leave day-to-day scientific operations in the hands of a strong deputy. He says the government's pledge of 10 years' support allows plenty of time to build up the institute. He's also confident that its track record—measured in top-flight journal publications and graduate students trained—will



A team approach. Mu-ming Poo, upper left, will head the institute, which grew out of a joint Shanghai neurobiology lab set up by, from left, Bai Lu, Yi Rao, and Lin Mei.

warrant continued government support as well as private funding. And he hopes that success will be infectious. "We may be an isolated island [of excellence] now," he says. "But if we succeed, I hope other institutes will follow in our footsteps."

—JEFFREY MERVIS

With reporting by Li Hui in Beijing.

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