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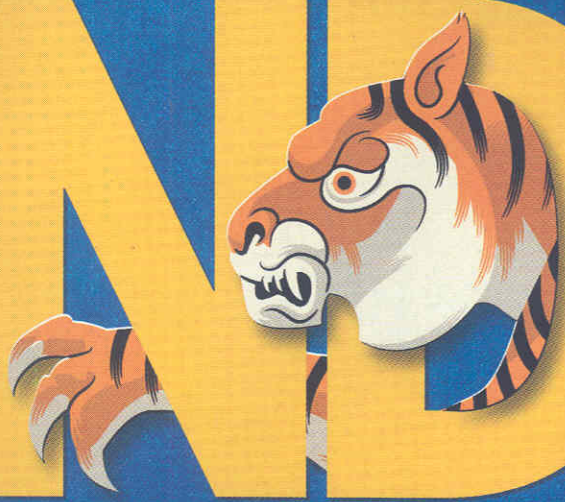

What you need to know now

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SHARING KNOWHOW Chipscreen was founded by Western-educated PhDs

DAVID HARTUNG

Engineering at the University of California at San Diego and a frequent visitor to the mainland. "Whatever the Chinese publish, we will see here in the U.S., and we can step on each other's shoulders to move ahead faster. If we look at it as a friendly competition, everyone gets better."

Experts increasingly see the chance of a win-win result from the combination of Chinese and American research might. That was one of the motivations for Wise Young, director of the W.M. Keck Center for Collaborative Neuroscience at Rutgers University, when he decided to set up a network of 17 clinical centers in China and train researchers to test new therapies. Born in Hong Kong, Young is a leader in the search for spinal-cord injury cures.

CHINESE CLINICAL CENTERS COULD HELP WESTERN COMPANIES GET THEIR OWN TREATMENTS TO MARKET MORE QUICKLY

'China Shouldn't Follow the American Way'

Tiny Tech, Big Ambitions: China must be innovative in using nanotechnology to solve its energy problems, says NASA and IBM alum Han Jie

BusinessWeek online
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A few years ago he had a visit from Chinese gymnast Sang Lan, who broke her neck practicing for the Goodwill Games in 1998. "She asked, if I discover the cure, how will it get back to China?" Young recalls. "I said that the only way China would get the therapy was if it actually did the clinical trials."

Young's clinical centers could help China become a leader in important new areas such as stem cells and nerve regeneration. They could also offer a way for Western companies to get their own treatments to market more quickly, Young says. Costs for conducting clinical trials in China are about one-fourth of those in the U.S. And while China was previously known for poorly regulating clinical trials, the government is beefing up standards in a bid to attract more Western companies to test drugs there.

TECH FOR TODAY

BEIJING IS ALSO WORKING hard to lure American-educated Chinese scientists back to the mainland. One way to do that is by hiring returnees such as Han Jie, 48, a University of Utah PhD in materials science and engineering, to run government institutes. Han worked for IBM and for NASA's Ames Center for Nanotechnology before becoming director of a premier Chinese nanotech lab, the National Engineering Research Center for Nanotechnology in Shanghai, last spring. Next year, Han and his team will move to a new $15 million complex equipped with top-of-the line facilities. Among other projects, the center is working on energy-efficient streetlights made from nanomaterials. "In the U.S., we try to build up technology for the future, but in China, I try to build technology that can be used today," Han says.

It's too early to tell what results labs like Han's will achieve. But experts such as Horst L. Störmer, a Nobel prize laureate and director of Columbia University's nanotech center, have returned from visiting China's top nanotech institutes impressed by the science. Störmer is convinced the Chinese will become major players. "We talked at the same level," he says, adding that the Chinese were doing "top-notch research."

No doubt, some Chinese scientists will wind up becoming world-beaters, challenging their counterparts in the U.S. What's important is that researchers from both countries also expand their efforts at collaboration. That will pay off for all.

–With Neil Gross in New York

A New Lab Partner For the U.S.?

China's rapid rise in science could make it a valuable ally in breakthrough research. BY BRUCE EINHORN AND JOHN CAREY

ON A JULY AFTERNOON, CHINA'S NEWLY built Shanghai Institute for Antibodies is quiet. No researchers yet toil amid the recently installed rows of DNA analyzers, mass spectrometers, and other state-of-the-art scientific tools. But the hush is temporary, promises Guo Yajun, the center's chairman. By yearend 100 PhD researchers and 200 technicians and other staffers will be developing cancer treatments at the new $60 million facility in Shanghai's Zhangjiang Hi-Tech Park. "Everything is brand-new here," says Guo, 50, a professor of oncology and immunology at University of Nebraska's Eppley Institute who splits his time between the U.S. and China. "The equipment is much better than my lab in the U.S."

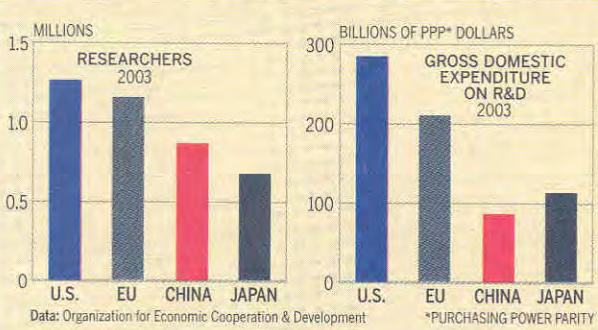
Researchers with U.S. experience like Guo are helping to power a remarkable surge in Chinese science. Zhangjiang Hi-Tech Park has become a hotbed of new biotechnology research facilities. Eight government-run labs, including the Shanghai Transgenic Research Center, are located in the park, which is also home to 34 local and multinational drugmakers. Roche Holding Ltd. opened a research and development center nearby last year. And Chinese government spending on R&D is on the rise. It has more than tripled since 1998, and the number of scientific papers from Chinese researchers has more than doubled in that time. If current trends continue, says Richard B. Freeman, economics professor at Harvard University and director of labor studies at the National Bureau of Economic Research, "by 2010, China will produce more science and engineering PhDs than the U.S."

Such dramatic statistics are setting off alarms in the U.S., where Cassandras are quick to warn of a possible end to American preeminence in science. "There is a good chance that U.S. competitiveness in vitally important high-tech areas will fall behind that of China" and other countries, Johns Hopkins University President William R. Brody told a congressional panel on July 21. Experts worry that China is investing heavily in key areas like biotech and nanotech while U.S. funding for the National Institutes of Health has leveled off after a five-year doubling. Spending in some areas of the physical sciences has actually declined in real dollars.

But that doesn't mean China will ever beat—or even seriously challenge—the U.S. in research and high tech. For one thing, China's advantages—low costs, government support, and skilled researchers—are still outweighed by shortcomings. These include an immature financial system that makes it hard for science-based startup companies to raise money, a copycat culture wherein intellectual-property pirates regularly rip off patents and copyrights, and weak links between China's universities and its top businesses. "There's still a lot that needs to be done before China can be an innovative economy," says Lu Xianping, a 42-year-old native of western China's Sichuan province who did postdoctoral research at the University of California at San Diego and worked in the U.S. for a dozen years. He is now president and chief scientific officer of Shenzhen Chipscreen Biosciences Ltd., a drug-discovery startup he founded with six other Western-educated PhDs.

More important, China's rise doesn't have to be America's loss. Besides leading to benefits at home, Chinese R&D will add to the world's pool of knowledge. "Science really doesn't have boundaries," explains Shu Chien, the China-born director of the Institute for Biomedical

How Chinese Science Stacks Up



Data: Organization for Economic Cooperation & Development

*PURCHASING POWER PARITY

CHARTS BY ERIC HOFFMANN/BW

TESTING In the lab at Chipscreen Biosciences in Shenzhen

The Leap Ahead

Biotech. Cars. Chips. China and India look to emerge as contenders in some key industries