SHANGHAI BY THE NUMBERS

A former seaport and textile town, Shanghai has grown into an international business centre with a burgeoning life-sciences sector. Bisected by the Huangpu River, the city has on its eastern bank the district of Pudong, known as 'New Shanghai' because of its golf courses, a high-speed mag-lev train that reaches 431 kilometres per hour and the Zhangjiang Hi-Tech Park. Pudong is also home to the research labs of global pharmaceutical companies such as Novartis and Roche. Puxi, or 'Old Shanghai', on the western bank, boasts trendy French cafes and Shanghai's main research institutions — Shanghai Jiao Tong University, Fudan University, the Shanghai Institutes for Biological Sciences and the Pasteur Institute of Shanghai.

PHARMACEUTICAL SECTOR

- Swiss-based Novartis's 2009 revenue growth in China was 36%, compared with 11% worldwide. Driving the Chinese growth were sales of 100 million doses of H1N1 flu virus pandemic vaccine.
- Novartis has pledged to expand its Shanghai operations and invest 6.8 billion renminbi (US\$1 billion) in its pharmaceutical research and development centre in Shanghai, with staff numbers predicted to increase from 160 today to 1,000.

- From 2000 to 2009, the number of pharma-related published patents taken out in Shanghai was 558, including 293 small-molecule patents and 265 large-molecule patents, representing 26% of the total for China.
- Shanghai received about 1.16 billion renminbi of the 6.8 billion that the Chinese government started pouring into a new drug development 'mega-project' in 2008 to build infrastructure and encourage commercialization of researchers' results (go.nature.com/pU6uv2). Around 50 projects will be funded in Shanghai.

BUSINESS AND COMMERCE

- In 2009, the Zhangjiang Hi-Tech Park leased space to 1,650 companies with a total of 142,444 employees and collected 102.1 billion renminbi in revenue.
- On the basis of market capitalization, the Shanghai Stock Exchange is the sixth largest in the world. Only the New York Stock Exchange (NYSE), Tokyo, the NASDAQ, the NYSE's Euronext and London are bigger.
- Organizers expect that the Shanghai World Expo, running from 1 May to 31 October this year, will have 70 million visitors. It has had 27 million so far, when *Nature* went to press.

NUMBER OF SCIENTISTS IN SHANGHAI

RESEARCH AND ACADEMIA

- The Shanghai Institutes for Biological Sciences (SIBS) of the Chinese Academy of Sciences employed a total of 1,269 scientists in 2009. Of those, 265 had recently gained a PhD or MSc in mainland China. SIBS also has 1,319 doctoral students. It comprises eight research institutes, a life-sciences information centre, a biotechnology company and a laboratory animal centre.
- A new synchrotron, opened in May 2009 in Zhangjiang Hi-Tech Park (go.nature.com/pxnERL) and supported by 1.2 billion renminbi of local and federal government funding, is expected to have 30 beam lines within five years.

Q&A

Kewen Jin, general manager of Charles River Laboratories China, a contract research organization for preclinical services, discusses the opportunities and challenges for Shanghai.

What trends are emerging in Shanghai's life-science community?

We see people moving between academia, large companies and start-ups. Many do research during the day, and write business plans and talk to venture capitalists at night. Leading academics might join pharmaceutical centres, or leaders of pharmaceutical research companies might head a start-up.

What personnel does Shanghai's life-sciences industry most need?

Pathologists, toxicologists, medicinal chemists and clinicians with experience in global trials. They are difficult to get because, whether foreigners or expatriate Chinese, most are overseas; those with enough experience are in short supply. They get compensation packages: housing allowances, coverage for their children's schools, or other benefits.

Are there jobs in junior positions?

Discovery operations are expanding, so there is a need for senior and junior researchers. But most of the junior positions are filled with local candidates. It is an availability and cost issue.

How do tightening business conditions for drug makers in the West affect China?

There is a push and pull. The pull is Chinese opportunities. The push is downsizing in the West. Lots of Chinese researchers still go to the West for their postdocs, but they are less likely to stay. I see many résumés that are extremely qualified and not Chinese. Some applicants are mid-career and have been laid off. But there are some at the start of their careers who came to see what it's like here and decided to stay.

Why are Charles River's expansion plans in China on hold?

There has been little demand for preclinical services, because many companies are just setting up. It takes a few years to get to preclinical development. It will be some time before the industries feel comfortable using Chinese data for global regulatory filings, but we are getting there, with research that is comparable in quality to Western studies.

Do you have advice for anyone seeking a research post in Shanghai?

You may not get an ideal offer at first. Don't be picky. Once you're here, you can network. ■

Interview and statistics by David Cyranoski.