ETH ZÜRICH

Q&A Kurt Wüthrich

Science regeneration

Nobel laureate Kurt Wüthrich is a Swiss biophysicist who works at the Scripps Research Institute in La Jolla, California, and the Swiss Federal Institute of Technology in Zürich. In 2013, he was appointed as a professor at ShanghaiTech in China, where he is helping to build the institution's science faculty.

What took you to China?

My first trip to the country was in 1983. I was secretary general of the IUPAB [International Union of Pure and Applied Biophysics]. During those years, mainland China was just beginning to emerge from decades of isolation. In the 1970s, there was a historic ping-pong match between US and Chinese athletes to promote diplomacy, and similar things were happening in science.

In the IUPAB and other scientific unions, China was represented by Taiwan; mainland China was isolated. We changed the statutes of the IUPAB so that we could accept two representations for China — one from Taipei and one from Beijing. That way, mainland China could rejoin the international scientific community. This was a very lengthy process and at times frustrating, but eventually it was a highly rewarding affair.

What was the scientific community in China like when you first visited?

There were high points in Chinese science already: at the Shanghai Institute of Biochemistry and Cell Biology, researchers had determined the structure of insulin and had also sequenced a transfer RNA molecule. Those were incredible feats. But the scientists who were in charge in 1983 had barely survived the

Cultural Revolution, including physical abuse. They went through terrible times. There were very few who published good work.

How does China's political history affect the country's science research?

China lacks two generations of scientists, who should have been studying during the Cultural Revolution. So although they reopened the universities that had been closed, they didn't have qualified individuals to fill the positions. Even today, there are thousands of poorly qualified professors in universities and colleges. This is, of course, a very difficult situation, and there are some programmes to address the resultant problems. For instance, only a small percentage of professors in Chinese universities are empowered to advise graduate students.

Many new colleges and universities have been founded in China in the past ten years. How are they progressing?

Many have no high-level research faculty. In contrast, I have witnessed the construction

of an entirely new campus for ShanghaiTech University, where I am involved in hiring scientists. We try to employ outstanding scientists who are originally from China, most of them are in the United States. We also try to hire non-Chinese scientists. We can offer start-up packages that are much better than those in the United States, yet it is still very difficult to attract top-level scientists. Furthermore, it is very rare to find new Chinese PhDs who want to do a postdoc in China — they all want to go abroad. That's a problem when you are trying to recruit good scientists to build a research team. There is also uncertainty about how long the present 'good life' in China, with all of its support for scientists, will last.

How should Chinese institutions evaluate their faculty members?

What needs to be done is to establish an evaluation process that is based on the quality of science. And this is a difficult thing. Institutions are at a very early stage of introducing proper peer review. Currently they place great importance on publication records. Acceptance of papers in international journals, based on peer review by scientists outside China, is taken as a very positive asset. Because there is no functioning evaluation system within China, the importance given to publication in high-impact journals is enormous. Another problem is that, overall, productivity in China is very high but quality is not. Publication numbers go up, but citation records don't necessarily follow. The solution is strict reviewing of faculty by international experts in science.

China must open its doors to review its system, with help from the international community. Many Chinese faculty want to open up, but a lot of power in China is with the administrators, who often don't write or speak English. Most of the world's top scientific journals are in English.

What can Chinese universities do to train better scientists?

The first recommendation is that all teaching in the natural sciences should be in English. The second is that the most highly talented candidates should be sent abroad, with an eye to recruiting them back as faculty in China.

The third is the most difficult one. That is to take risks and to lavishly support a small number of individuals who promise to do something really new. Scientists who are doing truly original work often don't have a great citation record and don't get published in the leading journals, because it's hard to find someone to evaluate the work. Therefore, the individuals in charge must take time to meet with candidates and have a good sense of what high quality means. Keeping this in mind, science education in China looks forward to a bright future. ■

INTERVIEW BY MONYA BAKER