

Setting Up an Objective and Effective Evaluation System at CAS

– An interview with Prof. WANG Xiaofan, winner of the 2013 CAS Award for International Science and Technology Cooperation

WANG Xiaofan, a distinguished researcher in pharmacology and cancer biology from the School of Medicine, Duke University, was conferred the CAS Award for International Science and Technology Cooperation on January 9, 2014. Prof. WANG was recognized for his “key advisory role” in promoting the academy’s S&T reform, by organizing international peer-based evaluation for more than a dozen CAS institutes in the field of life sciences, to help establish a scientific, balanced and effective research evaluation system. During a phone interview with BCAS reporter XIN Ling in May, Prof. WANG pointed out that international evaluation proved to be a good place to start, but CAS still faces challenges in making the best of such evaluation to push forward its overall reform.

How was the idea of “international evaluation” brought up at CAS?

WANG: In 2005, I talked with Prof. LI Jiayang, who was then vice president of CAS in charge of the life sciences sector. “It is time we made an objective evaluation about our institutes and scientists, to know where we are in the world,” he said. He was very insightful to see that. Since the Knowledge Innovation Program was launched in 1997, CAS had achieved remarkable progress in research and team building. But due to many reasons, an effective evaluation system was not in place. For most institutes, evaluation meant no more than a work report based on numbers – the number of papers published, students trained, or the sum of grants and projects, followed by some “harmless” comments from invited evaluators who often had collaborative connections with the institute. There was hardly any substantial, in-depth assessment on the science itself. This situation needed to be changed.

Then I thought of the National Institutes of Health. As a government-sponsored medical research agency,

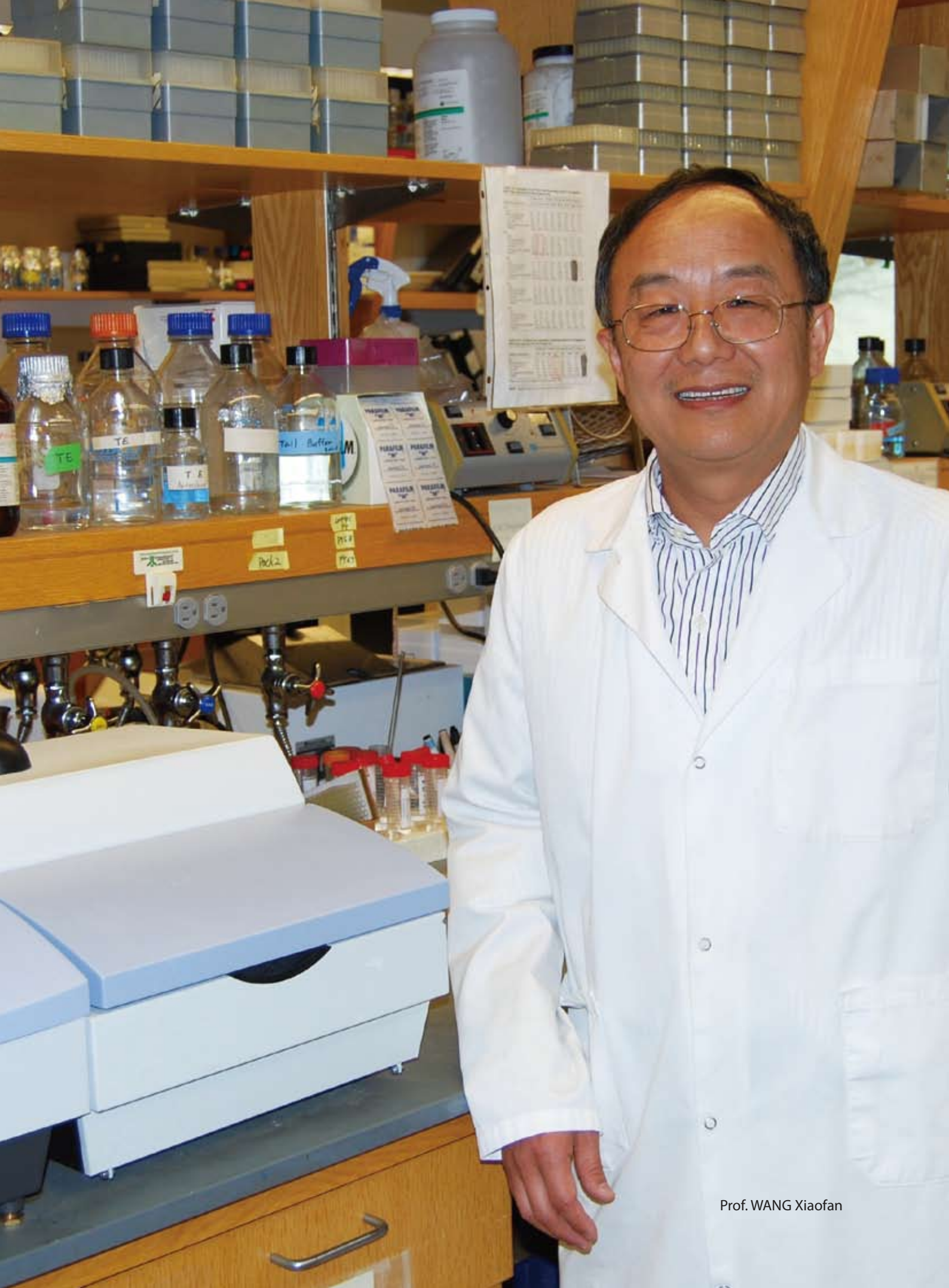
NIH receives funding directly from the US Congress. To guarantee research efficiency, it has been implementing a strict peer-based evaluation system. That is: every four years, a panel of leading scientists is invited from outside NIH to judge the research performance of PIs in each laboratory. Qualified PIs win another four years of funding. Those with outstanding performance are allowed to hire more people in the lab. A few whose work is unsatisfactory may be put on probation, or get a reduction of resources. Such an evaluation system has proved to be very effective. It is welcomed by PIs as an incentive to reflect on and plan their studies.

After serious consideration, CAS decided to try out a similar peer-based evaluation system on two of its more internationalized institutes – the Institute of Genetics and Developmental Biology in Beijing and the Institute of Neuroscience in Shanghai. To avoid potential conflicts, all experts were outsiders and invited from abroad. The evaluation turned out to be very successful, encouraging CAS to spread it to other institutes. By the year 2010, international evaluation had been carried out at eight CAS institutes in the life sciences sector. Now, the number has increased to over a dozen.

Which metrics are used to evaluate the research performance of PIs?

WANG: Our evaluation is qualitative and science-based. Each PI is asked to prepare one page of scientific overview, describing his or her ongoing projects, overall research goals, and scientific objectives. Then in four to five pages of research summary, they need to specify their major findings, how their work has contributed to their research field, as well as the intellectual framework and goals of their future study. Of course, personal information, funding, personnel and papers are also included.

Contribution to related field is the key metrics for



Prof. WANG Xiaofan

grading. By doing so, we want to encourage systematic and intensive research into a specific area – even if the area is less “popular”. Publication is important, but we don’t use publication itself as a major criterion. Weighing science with the number of papers or the impact factor of journals is dangerous in the long run.

For instance, in one evaluation, Scientist A earned high scores with her Nature paper on avian flu. Her colleague B did not have papers published in Science or Nature. But judging from many other aspects, we found B’s work on insect viruses to be world-leading. In this case, both A and B were recognized as outstanding researchers. As I said, science, especially basic science, should always cherish excellence in a specific area.

How is the evaluation received at CAS?

WANG: It has been well received and widely applauded. According to many institute directors, it has helped them to obtain a deeper, more comprehensive understanding of their researchers. Although our advice is not final, most of them will be accepted and implemented by the directors.

The evaluation has exerted positive influence on individual scientists, too. Some expressed their gratitude for the recognition and encouragement they got during the evaluation, when they were still beginners with few “presentable” results. For me, it is a delight to see young researchers stick to their dream and grow into strong rivals in the global arena.

At the academy level, the evaluation has become a means of oversight to boost the sound development of institutes. The assimilation of research is a major challenge CAS is facing. Under the “One-Three-Five” Strategic Plan Framework, every institute is urged to refine their research spectrum and focuses, and find a distinctive development route for the future. Two years ago, the assessment of these plans became an important part of the evaluation. Since then, we have been offering diagnostic advice to the institutes, helping them to see the feasibility of their goals, the potential handicaps in implementation, and possible solutions. In this way, the evaluation bridges the academy and institutes in a unique, science-based way, and the

achievement has been fruitful.

An effective evaluation system is regarded as the key to S&T reform. Why?

WANG: A good evaluation system can use its values to fundamentally guide S&T reform. Like I mentioned, we encourage systematic and in-depth study into the scientific problems a scientist finds attractive to him or her, so that excellence can be achieved in that specific field. We appreciate innovation, rather than following in other people’s footsteps. With increasing investment in science each year, Chinese scientists have every reason to try new things which have not been done by anyone before. And in the end, we hope this helps to nurture an innovative research atmosphere in the country.

Which factors do you think have led to the existing evaluation problems in China?

WANG: There are several reasons. First, the domestic critical mass is limited. Potential conflicts or common interests often exist between the experts of a particular area. So objectiveness becomes a problem. The second is China’s “human relationship” culture. In such context, the confidentiality of evaluation cannot be guaranteed, and spelling out the hard truth is still expensive.

How do you see the challenges of CAS’s S&T reform?

WANG: I think the biggest challenge now lies in the mobility of scientists. To a large extent, the development of the academy and its institutes in recent years is based on expansion. More and more scientists are joining CAS, with a growing demand on government input and local resources. But theoretically speaking, there should be a limit to the scale of an institute. In parallel with recruitment, we need a rational and transparent elimination mechanism.

International evaluation is at a vantage point to promote mobility. As long as the academy and the institutes can make the best of these evaluation results, they will be able to make easier decisions on the allocation of research resources, and to push forward the overall S&T reform toward a more balanced growth mode.

“Xiaofan has put enormous time and energy into organizing international evaluations in and outside CAS. As a leading figure in the overseas Chinese biology community, he used his influence, connections and personal charm to facilitate these evaluations in China. His role is fundamental and irreplaceable. The contributions he has made are significant to the development of life sciences in this country.”

— Prof. LI Lin, President of the Shanghai Institutes for Biological Sciences and former Director of the Institute of Biochemistry and Cell Biology

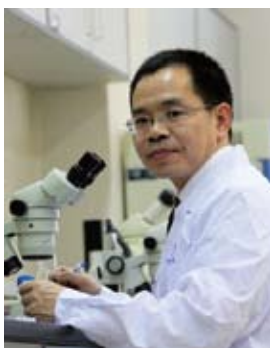


"The introduction of international evaluation in 2008 was a milestone in the history of the Institute of Biochemistry and Cell Biology. It was an eye opener, a mirror and a motivation. Its notion on doing research for the sake of scientific excellence has influenced many young people. It also helped us identify a very different route of development for the institute.

"International evaluation is beyond an effective management mechanism. It has conveyed invisible but key messages about nurturing a healthy research culture. It helped us shape a research atmosphere that values innovation and cooperation.

"The evaluations in 2008 and 2012 proved to be very fruitful. Therefore, I hope such a good practice will be carried out on a regular basis, for instance once every four years. Our institute has a solid foundation in research, including the world's first chemical synthesis of crystalline bovine insulin in 1965. With the help of international evaluation, we are ready to scale new heights with more openness."

– Prof. LI Lin, President of the Shanghai Institutes for Biological Sciences and former Director of the Institute of Biochemistry and Cell Biology



"A major problem with our traditional evaluation system is that evaluators often have 'connections' with the evaluatees. It has seriously undermined the objectiveness and credibility of an evaluation.

"In October 2009, an international evaluation was carried out at the Institute of Zoology (IOZ). It is the first of its kind in the institute's history. A dozen renowned experts from abroad assessed the research performance and potential of 45 principal investigators (PIs), and offered diagnostic suggestions on the strengths, weaknesses and development strategies of IOZ.

"As the director general of IOZ at that time, I consider the evaluation to be very fair and successful. It built our confidence, and offered a unique opportunity to face our shortcomings. Feedbacks from PIs showed high recognition of the evaluation results. It thus became natural to practice a new evaluation regime at IOZ, 70% of which is based on the conclusion of international evaluation. It also helped IOZ to set up a more balanced evaluation system for scientists in both basic and application research."

– Prof. MENG Anming, School of Life Sciences, Tsinghua University and former Director General of the Institute of Zoology, Chinese Academy of Sciences