

My Takeoff from Shanghai

By SONG Jianlan (Staff Reporter)

On a warm day of 2014 winter, Dr. ZENG greeted the author in her lab nested on the ninth floor of the “Biochemistry Building” on the campus of the Shanghai Institute of Biochemistry and Cell Biology (SIBCB) under the Shanghai Institutes for Biological Sciences (SIBS) in a scenic area of Shanghai.

“Honestly I was not aware of the Hundred-Talent Program when I made my first efforts to seek a position back in China,” seated among green plants against a large window with a quiet smile, ZENG told a story somewhat different from imagined. “But I cannot represent the others, as I was not so well-prepared in hunting for a job and did not spend much energy on information collection,” she added with a tone of calm objectivity typical for a scientist. “Not until I took the interview to join SIBCB did I get to know this, from the Institute’s administration. Looking back I was a bit naive at that time,” with some shyness she laughed: “What I thought about was quite simple – to work in the right field, with the right people, without thinking too much about grants, talent programs and so on.”

Returning: Boost from Supervisor

At first she was uncertain about the idea moving back to China. “My husband, a veteran in silicon valley, wanted to be part of rising China, and more importantly, the supervisor of my postdoctoral fellowship gave me very strong support, or a strong boost,” she narrated.

At that time she was in the last year of her postdoctoral research at the Howard Hughes Medical Institute, Department of Developmental Biology, Stanford University, US. Her supervisor, Prof. Roel Nusse, insisted that before deciding on a job she must come back to China to have a visit: “You will get impressed as I did. You can never imagine how much China has progressed in terms of science research.” “You know what,” ZENG continued: “For this



Supported by the Hundred-Talent Program, Dr. ZENG Yi returned from the US in 2010 to join SIBCB. Four years later she captured the spotlight with her identification of multipotent stem cells in mice mammary glands. (Photo by courtesy of Dr. ZENG)

sake he even arranged a series of seminars for me, a tour involving almost all important institutes in the field of developmental biology in Beijing, Shanghai and other major cities, taking advantage of an academic conference held in Xiamen, a city in southeastern China.”

And she WAS impressed. “I had stayed in the US for quite long a time, about 10 years, and what remained in my memories were still research institutions trapped in poor situation,” she furthered: “The tour totally changed my impression of science research in China.”

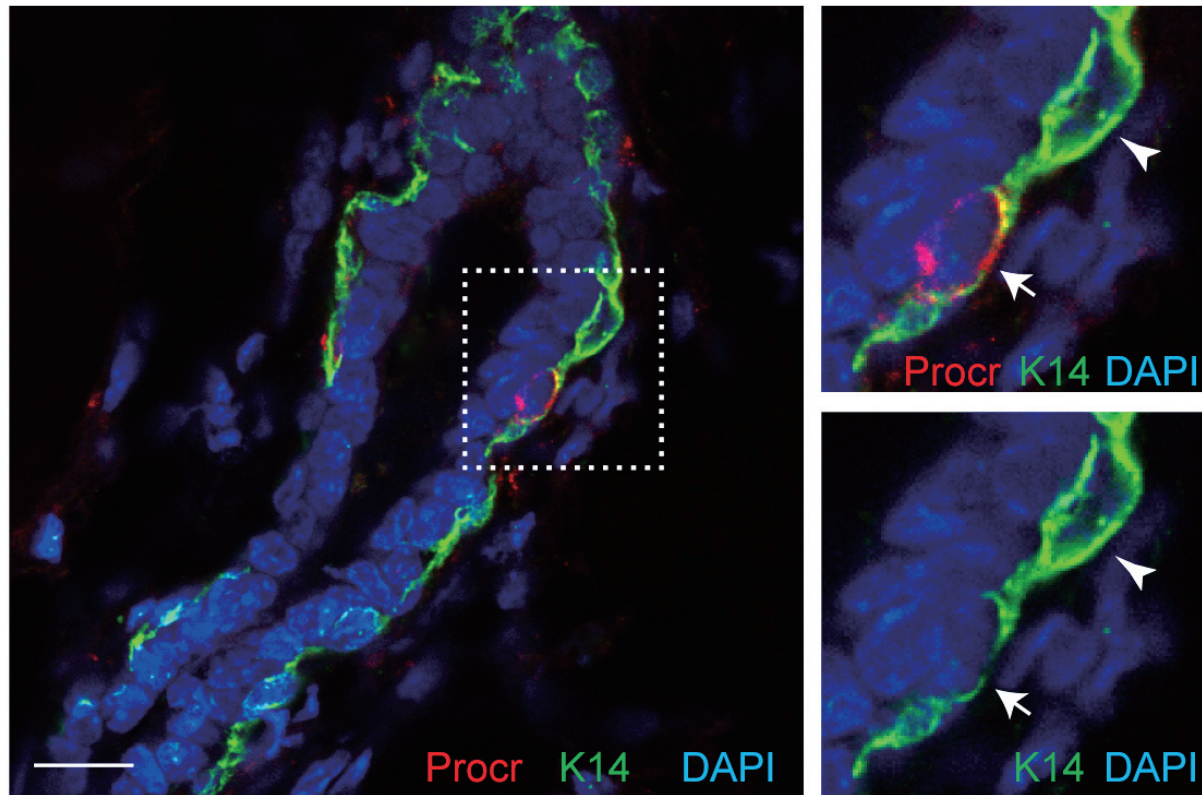
“It is totally beyond my mind, though still, I have to say, gap exists between our top institutions and those of the West, not only in terms of infrastructures like research policy and supporting core facilities, but also the level of research, of course.”

The young couple was then aiming at an internationalized city, an environment amiable for people who have only ability and diligence to survive on.

“I immediately felt that SIBCB would be my fated ONE after I had a seminar here in 2009, even after getting impressed by the institutes first in Beijing,” she collected with a radiation of excitement: “The academic atmosphere, the empathy shared among colleagues, the nice discussions and the well-fitted research areas... all so pleasant.

“Eventually we decided to settle down in Shanghai. We had no past connection with this city, as we both had our undergraduate education in Guangzhou,” she continued her story: “At first we thought Hong Kong would be a good choice, and my supervisor also included Hong Kong in my tour, but at the end Shanghai triumphed that.”

Only at that point she got to know the “Hundred -Talent” Program, which nowadays funds her position of



Dr. ZENG identified in 2012 a promising molecular marker to label stem cells in mice mammary glands, but not until October 2014 did she publish online in *Nature* an important discovery on the basis of this marker – the identification of a kind of multipotent stem cells in mice mammary glands. This discovery subverted the earlier belief that only unipotent stem cells existed in mice mammary glands, and attracted wide attention due to its implications in targeted therapy for breast cancer. (Image: By courtesy of Dr. ZENG)

Principal Investigator (PI) at SIBCB. “The administrative staff of the Institute made very considerate arrangements for me, with careful, smart consideration of the timing for the funding application, to make sure that I could use the fund immediately on my arrival to establish the laboratory. With all their support I am lucky enough to enjoy a smooth launching at my new position.”

Tailored for Startups

“With no doubt it greatly help my research career,” ZENG asserted. “The funding is well tailored for startups, allowing the most reasonable and generous proportions of budget for equipment purchase and stipend compared with other grants in China. Such expenditure is often the most needed for research, especially at the early stage,” she commented.

ZENG’s lab focuses on the signaling of adult stem cells and occurrence of cancers, which involve the maintenance, renewal and differentiation of stem cells. Their research heavily relies on a technique called flow sorting, which divides different types of cells from a population. “Our

experiments demand very high accuracy of flow sorting, which is critical for the whole research. At first, to do this we had to use equipment in the core facilities, which unfortunately were heavily used and overwhelmed. Naturally the output failed to meet our standard and expectation. During that period our experiments were bottlenecked by the poor survival of the sorted cells, and we had to spend a lot of time communicating with the technicians at the core facilities for extra demands,” ZENG explained. “Still, what they could do was very limited. Therefore to solve this problem, we managed to purchase our own equipment for flow sorting. Since then our experiments have never run into such problems,” ZENG recalled: “It could not have been possible without the funding from this program. It saved our lab!”

“Another important thing is, the program offers stable and continuous support without constantly stipulating certain demanded outcomes from the funded one, which is extremely important for juniors who are at the early stage of their exploration and are vulnerable to uncertainty.”

The world of science abounds with uncertainty – science itself is an exploration into the unknown. It might be hard

for outsiders to imagine why it could take years to publish a single high-quality paper; some might even look at this with a tone of skepticism. However, it is common for scientific research that after years of efforts, the hope remains much farther that looked. The long trek takes extraordinary courage, persistence and wisdom, and even luck.

Joining SIBCB in October 2010, ZENG spent her first three years setting up her lab, building the research team, recruiting students, and performing preliminary studies in her chosen topic, including improving a novel *in vitro* system capable of maintaining the properties of stem cells. She identified in 2012 a promising molecular marker to label stem cells in mice mammary glands, but not until late September 2014 did she publish online her first work since joining the Institute, reporting findings on the role of a novel hormone mediator in maintaining the self-renewal of mammary stem cells. Later in October the same year she further reported an important discovery and hence went into the spotlight: Her previous discovery of the molecular marker led to the subsequent identification of a kind of multipotent stem cells in mice mammary glands, subverting the earlier belief that only unipotent stem cells existed in mice mammary glands. Due to its implications in targeted therapy for breast cancer, especially for a notoriously refractory subtype, this discovery attracted broad attention within and outside the science community.

“It is hard to give a standard on how long it should take to publish a work, and a good scientist would not say

four years is too long for significant results, but we do have pressure and are anxious to produce good results from our research,” ZENG looked back at her early time as a PI when asked about the difficulties and confusions she met with. “We not only need to face a mid-term evaluation from the institute at the end of the third year, but also constantly need to deal with our own anxiety to produce. The institute would say they will focus on whether you are on the right track rather than the number of papers you have published by the third year, but looking around you might feel the peer pressure as you are surrounded by a group of very talented young investigators.

“Still, I was calm and confident enough to stick to my chosen track until getting the solid outcome rather than to switch to somewhere easier, driven by the urge to produce quick papers,” she laughed: “Relax, it is OK, right? You can't always be the Number One.”

“A very good thing for the Hundred-Talent Program is,” she continued: “it allows you a long enough time, a full four-year, to submit a satisfactory answer. They trust you with all the funding at once, without demanding a detailed progress report every year. I think this is necessary for scientists.

“I really appreciate the generous opportunity and latitude offered by the Hundred-Talent Program,” ZENG emphasized: “It has made it possible for me to focus on my research without worries, and has encouraged me to explore fearlessly.”