

Hundred-Talent Program and My Team

By SONG Jianlan (Staff Reporter)

Amid the fermenting excitement and renewed curiosity over the origin of birds shortly after the “dinosaur-bird transition” was listed in the 2014 top 10 ground-breaking discoveries and achievements by *Science*, a top journal in the science world, the author visited Prof. ZHOU Zhonghe, 1999 awardee of the Hundred-Talent Program in his office, a small room on the fifth floor of a building guarded by model dinosaurs, which make his institute, the CAS Institute of Vertebrate Palaeontology and Palaeoanthropology (IVPP) easy to recognize for laypeople from the busy streets in downtown Beijing.

Around a month before, ZHOU co-authored in *Science* a review of the latest advances on the origin of birds together with his IVPP colleague and long-term cooperator Prof. XU Xing, a well-acclaimed dinosaurologist, and



other colleagues. On December 19, only one week after the publication of their paper, *Science* released the well-awaited list of annual top 10 breakthroughs, highlighting the contributions from XU, ZHOU and their colleagues, a constellation of dinosaur/bird experts (for details please see p29).

Once again this encouraging news pushed ZHOU and his colleagues into the centre of spotlight; once more, however, the author easily recognized the typical ZHOU brand of common touch and simple nature in this scientist, just as around 15 years before when his team reported the first feathered dinosaur from northeastern China, which subverted many well-rooted beliefs at that time, including the definitions of dinosaurs and early birds, and the origin of feathers.



A special “team photo”: Now familiar for many dinosaur fans, the ecological reconstruction of the Jehol Biota completed in the early 2000s summarized the research of earlier stage by the young scientists with ZHOU’s team, the “*Liaoxi* Team”, featuring newly described species of fishes, amphibians, dinosaurs, birds, mammals, and others. Now landscapes of the Jehol Biota have been updated with more new species and their behavior details by the team’s ongoing work. (Image by ZENG Xiaolian)

Now having been working on fossil dinosaurs and early birds unearthed from the Jurassic and Cretaceous sediments of China, prominently from the Jehol Fauna for over two decades, ZHOU and his colleagues have presented abundant evidence to demonstrate how one dinosaurian lineage, *i.e.*, theropods, developed small and lightweight body structures and evolve into birds, making it one of the best-documented evolutionary transitions in palaeontology research.

As always, ZHOU emphasizes the contributions made by his fellows, his team to these discoveries.

The “*Liaoxi* Team”

“It would be very hard for any of us to achieve this without the collective efforts of our team,” ZHOU commented, rising from the piles of books in his office.

The past years have seen discoveries made by his team, dubbed “*Liaoxi* Team”, frequently hit headlines at home and abroad, accumulating to breakthrough one and another critical evolutionary issues. This team has been focusing on the fossil fishes, dinosaurs, birds, mammals and other species excavated from the Jurassic and Cretaceous strata of an area in northeast China across western Liaoning, northern Hebei and Inner Mongolia. In the Qing dynasty (1644–1911), this area was put under the governance of Jehol Province, therefore the team named the fauna after “Jehol”, and they themselves got the nick name “*Liaoxi*”, which means “the west of Liaoning Province” in Mandarin.

One of the first talents recruited by the Hundred-Talent Program, ZHOU thought highly of the latter's role in team building.

“The Hundred-Talent Program helped a lot in establishing our team,” emphasized ZHOU: “It rendered me the opportunity to take charge of the ‘*Liaoxi* Team’ on my return from the USA, offering generous, continuous funding to enhance the team’s capacity and the research. As a result, a group of researchers grew up and matured into outstanding scientists.

“XU Xing, for example, now a world-leading dinosaur expert, WANG Xiaolin, now an important pterosaur expert, and ZHANG Fucheng, renowned ornithologist, all won the ‘Outstanding Youth Foundation’ from the National Natural Science Foundation of China (NSFC), a great recognition for scholarship in the years followed,” with gratefulness and pride he introduced his team players, all now excellent principal investigators at IVPP.

Journey Home

Young as he is, ZHOU is actually an IVPP veteran who has been with this institute for about two decades. He

earned his Master's Degree here; and before going to the University of Kansas, USA in 1995 for his PhD, he worked for the institute for several years.

“At that time scientific research was severely underfunded, and scientists were simply low-paid. For many professionals, going abroad could be a good option to escape the sufferings,” ZHOU recalled: “I had thought of switching to business sectors too, but eventually I got the gut feeling that science would be more suitable for me, hence I stuck to my cause.”

It did take him some struggles, but what he called “provincialism” took an upper hand in the end and brought him home. “After all it is not easy to restart from scratch and fit yourself into a totally different niche. It was not worth doing for me too, as it's not like me to forsake science to pursue money,” he continued with frankness. “On the other hand, I did hold some nostalgic feelings for my native land and had no plan to stay in the USA for a long time. Last, by that time I had got some results from my research and started gaining some attention in the small circle of ornithology; moreover, China is absolutely the most ideal place for paleontology,” he added.

“Therefore I decided to return once I graduated from Kansas. I made the decision even before my application for the Hundred-Talent Program was approved – whether or not I got it, I would come home.”

“And I even persuaded GAO Xing, an IVPP colleague of mine who was then also studying in USA, to follow my suit. One year later, he succeeded in getting the support of the Program too, and came back home.”

“I got some difficulty in getting the approval, however,” ZHOU continued on his story: “Generally, to get eligible for the Program, one has to work for at least two years as a postdoctoral fellow after being granted his PhD Degree. This threw me into frustration, as I had worked for IVPP for quite some years before going to Kansas; and I did quite well at my research from my view.”

“Luckily, then IVPP leadership as well as some prestigious professors at the institute gave me really earnest help. Prof. QIU Zhuding, then head of IVPP, Prof. ZHANG Miman (Mee-mann Chang), CAS Member and great ichthyologist, both gave me great support; meanwhile some other colleagues who were then in USA also offered a hand. Eventually the CAS administration granted me the funding as an exception.”

ZHOU returned in 1999 as the first awardee of Hundred-Talent Program at IVPP. “I was so moved when I saw Profs. QIU Zhuding and ZHU Min, then Director and Assistant Director of IVPP, at the airport – they even came



ZHOU and his colleagues have broken through a series of critical issues in the transition from dinosaurs to birds, including the origin and evolution of feathers. Shown here is an artist's reconstruction of *Jeholornis*, an early bird with a unique "two-tail" plumage reported by ZHOU Zhonghe and his team in the October 07, 2013 issue of *PNAS*, demonstrated to have lived 125 million years ago in what is today Western Liaoning of Northeast China. Of the two illustrated tails, the long distal-like one is believed to be an ornamental structure, while the newly discovered fan-like one thought to have aided flight stabilization. (Image by SHI Aijuan)

to pick me up and gave me a warm welcome," he collected with thankfulness and reverence.

Birds of a Feather

"Everything went on very well after my return, even better than expected," ZHOU recalled.

Before his return, the research by IVPP on Jehol Fauna blazed into a new trail, and a contingent of scientists, namely the "*Liaoxi Team*", formed revolving this project. "The outstanding scientists who formerly led the team, including Profs. Mee-mann Chang, JIN Fan and WANG Yuanqing, all recommended me to take charge of this contingent," ZHOU continued: "Therefore with the help of the funding as well as the Institute, I got my own team for the very first time."

The funding, as much as 2.0 million yuan in RMB offered by the Hundred-Talent Program was quite generous, at least in the late 1990s when the Program was just set up to attract overseas scholars. "This greatly boosted our research on Jehol Fauna. The quality of my life was also improved with the extra allowance by the Program. The next year I was recommended by my institute to apply for the Outstanding Youth Foundation, and I successfully got the award/funding – probably due to the halo over the 'Hundred-Talent' awardee, I guess. Soon after that, in 2001,

thanks to the efforts made by the team built up with support of the Hundred-Talent Program, we got the funding for the 'Innovative Team of Research' from NSFC. Thanks to the efforts and excellent work of the team, we continuously got ample funding from 2001 to 2010, nine years in a row," ZHOU continued in a modest tone.

From the year 2000, ZHOU shouldered a sub-project under a paleontology program funded by the National Basic Research Program (dubbed "973" Program) headed by CAS Member RONG Jiayu. Later in 2006 he took the charge of a sub-project of a new "973" project. "Taking part in '973' projects brought me opportunities to cooperate with more outstanding scientists, and kept expanding my horizon of research," he commented.

In 2011, ZHOU assumed the position of Principal Scientist of a new "973" project in paleontology. "Looking back, luckily getting such solid and stable funding played very critical roles, either in my own research or in the team building; and all this has sprung from my first bucket of gold offered by the Hundred-Talent Program," ZHOU concluded.

Aside from the three winners of the Outstanding Youth Foundation mentioned above, many scientists in the "*Liaoxi Team*" published important results in leading journals like *Nature* and *Science*, including WANG Yuanqing, LI Chun and HU Yaoming. "HU passed away in 2008 and this

became our biggest loss ever,” ZHOU narrated with regrets. “Another colleague of mine, Dr. WANG Yuan has been working as the Director of the Paleozoological Museum of China for many years, doing very well both in research and science popularization. They have all become outstanding experts in their own areas.”

In 2000, the year immediately after ZHOU's return, the “*Liaoxi* Team” won the Second Prize from the National Awards for Natural Sciences in recognition of their excellent research on Jehol birds, with ZHOU listed second among contributors. They won the same prize once again in 2007 for their research on Jehol Fauna, with ZHOU listed as first contributor. Winning for twice this national prize, which attracts extra attention due to the frequent/long-term vacancy of the First Prize, became a phenomenon; yet the team players, who got a lot of spotlight and acclaims, have maintained their characteristic simple nature.

“Yes we won a lot of honors and awards as a team. For me, what I have got from my teammates has far exceeded what I have offered,” ZHOU asserted.

“Historic Opportunity”

Over the past years ZHOU himself achieved wide recognition too. On April 27, 2010, he was elected a Foreign Associate of the National Academy of Sciences of USA due to his contributions to the study of early avian evolution and the Jehol Fauna; and in December 2011, he was elected a CAS Member.

Now ZHOU is heading a bigger contingent: he took the helm of IVPP in August 2010. “I have been carefully feeling my way to get here since the Hundred-Talent Program pushed me to the position of a team leader. What has supported me all the way is the belief in the law that ‘one plus one is bigger than two’, as well as the principle of fairness and justice. It might be too much to call this ‘management expertise’; rather, I would owe our success to the frankness and trust shared by the whole team,” he emphasized.



ZHOU at fieldwork in Gansu Province of China in 2014, together with his students. (Photo by YOU Hailu)

Coincidentally, Prof. GAO Xing, who returned from the USA following ZHOU's advice, worked closely with ZHOU as a Deputy Director of IVPP from 2008 to 2013.

“With gratefulness I would say I made the right decision 16 years ago,” ZHOU asserted. “The Hundred-Talent Program offered the most timely help at the most difficult time,” he insisted: “It not only helped me grasp the historic opportunity to upgrade my own research, but also furthered my understanding of the importance of team building. And I would say the Hundred-Talent Program has been successful in terms of attracting talents to return and bridging the gap between generations of scientists,” he confirmed.

“To some extent, the vigor of a team comes from its ability to attract talents and to create good opportunities for their professional development. Over the past few years I made some efforts to seek and recommend Hundred-Talent candidates. I have received help from so many people; now it is time to think about how to help those in need. Among them, Dr. LIU Jun, one of the successful candidates, had also worked with our team for some time before going abroad.”

“Nothing could be more joyful than seeing the juniors growing. Their youthful look reminds me of the times when I just returned,” ZHOU smiled.