

Prof. Jie Zhang: from learning to surpassing, the Department of Pathology competes in a global arena

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At first sight, Prof. Jie Zhang (*Figure 1*), Director of the Department of Pathology of Shanghai Chest Hospital (SCH), impressed us by his rigorous and meticulous attitude. However, during the one-hour interview, he showed us that he was also very agreeable and pleasant. Prof. Zhang's smile was always bathing us in warmth, and his speech was informative and encouraging. Prof. Zhang shared us with his 30 years' experiences of practicing medicine and showed us around all the laboratories and advanced instruments and equipment in the Department of Pathology. His vivid descriptions presented us the history of pathology in modern China, helping us deeply understand the rapid development of Pathology Department of SCH and the future of various diseases and their diagnosis and treatments.

Understand diseases at a deeper level

Prof. Zhang was full of pride when he talked about the Pathology Department of SCH. In his eyes, due to the special nature and tasks of pathology, the Pathology Department is a bridge discipline between basic medicine and clinical medicine, and its importance is self-evident. Based on a variety of basic disciplines including physiology and anatomy, the Department of Pathology uses a variety of study approaches at different levels to explain the clinical symptoms and signs and thus make diagnosis. It provides an essential tool for medical treatment. Therefore, in western countries, pathologists are also known as "doctor's doctor".

Prof. Zhang has been practicing medicine for 30 years; like all other pathologists, he always has a microscope near him. "Things have changed a lot." Prof. Zhang said with emotion when he recalled the past. The equipment used when he was a student was just a monocular microscope; today, electronic microscope and more sophisticated equipment have been introduced in the department. The pathologist's knowledge of diseases has evolved from cytology to proteomics, and today the genomics has



Figure 1 Prof. Jie Zhang.

offered another promising direction. It is through these gradually subdivided dimensions that we can better learn and understand the diseases and make more definitive and accurate diagnosis. There is no room for any sloppy performance in this backstage work. Prof. Zhang stressed that a pathologist should have a solid foundation in medical knowledge about the body and continuously improve his/her technical level; meanwhile, he/she should strengthen the communication with clinicians and strive to reduce, or even eliminate, any misdiagnosis or missed diagnosis, so as to ensure the interests of patients.

Steps from learning to surpassing

"The past three decades have witnessed the dramatic development of pathology in China." said Prof. Zhang. "Today, the facilities and resources of the Pathology Department are comparable to our peers in the United States. Yesterday, we were students that had to learn and follow foreign knowledge and standards; today, we are entering a new era for transcendence and innovation." During the interview, Prof. Zhang has always stressed that a pathologist must have his own thinking and should not always follow the rules formulated by others. "You must dare to question authority and dare to innovate." he said.

Due to the long history and abundant case resources

of SCH, more than 8,000 cases of thoracic tumors were removed in SCH in 2016. Today, the Pathology Department of SCH has become one of the most important pathological diagnosis centers of thymus tumors in the world. Meanwhile, it is also one of the largest lung cancer drive genes detection centers worldwide. The Pathology Department has earned reputations in the diagnosis of thymic tumors, diagnosis of various types of lung cancer (especially early lung cancer), and detection of lung cancer genes. In recent years, Prof. Zhang and his colleagues have published a number of influential articles in top peer-reviewed journals including *Chinese Journal of Pathology*, *American Journal of Surgical Pathology*, and *Journal of Thoracic Oncology*.

Thymic epithelial tumors are relatively rare tumors in the human body; in recent years, however, with its increased detection rate, the clinical diagnosis and treatment of this disease is facing great challenges due to its complex histopathological classification. As one of the largest thymoma diagnosis and treatment centers in East China and across China, the Pathology Department has become the mainstay in this field and has made its voice heard globally. In 2010, after having been trained at the Institute of Pathology at the University Medical Centre Mannheim, University of Heidelberg, under the instruction of Alexander Marx, the WHO chief thymic tumor pathologist, Prof. Zhang had a more profound understanding and knowledge of WHO pathological classification of thymic tumors. After returning home, he began to develop the Atlas of Pathological Diagnosis of Thymus Tumor, which was formally published in 2016 as the first yet atlas in this field. The publication of this book plays an active role in improving thymus tumor management at clinicopathological level in China and further enriches the connotation of pathology. Prof. Zhang has repeatedly stressed that the pathologic diagnosis of diseases in China has changed from learning and imitation western countries to constant surpassing and innovation.

The diagnostic techniques of lung cancer (especially those for early lung adenocarcinoma) in the Pathology Department is in the leading position in China. Frozen pathological diagnosis of early lung adenocarcinoma is particularly important for the surgical treatment of these patients. Due to the lack of relevant norms and standards in the international community, pathologists are under great pressure. "Fortunately," said Prof. Zhang, "our research project on the establishment and promotion of the standard model for early frozen diagnosis has received grant from

Shanghai municipal government." By promoting the diagnostic ideas and creating case and specimen databases, he hopes to create a professional website for learning and exchanges, so as to achieve the standardization and internationalization of the diagnostic criteria and contribute to the development of frozen diagnosis of early stage lung cancer in China.

In addition, the application of gene detection technology has also been explored for many years in the Pathology Department. In 2010, Prof. Zhang found that molecular pathology was an important development trend and began to explore gene detection techniques. In 2011, the Pathology Department began to use the first-generation gene sequencing techniques. In 2012, the second-generation gene sequencing facility was introduced and put into use in 2013. His forward-looking vision has been leading the Pathology Department of SCH at the forefront of the country. He was proud that, with Chinese policy of reform and opening to the outside world and after unremitting efforts of Chinese pathologists, the pathologic diagnosis for chest tumors in China has finally caught up with the world advanced level. Gene detection technique plays a particularly important role in the diagnosis of difficult miscellaneous diseases. The morphology of primary colorectal adenocarcinoma is extremely similar to that of lung adenocarcinoma, making the differential diagnosis of these two diseases particularly difficult. In contrast, the second-generation gene sequencing technique shows that the genetic phenotypes of these two cancers are quite different; thus, it is easy to differentiate these two cancers when in combination with clinical history and histologic heterogeneity. "Research for clinical practice" has long been advocated by Prof. Zhang.

Expectations of the discipline and the journal Shanghai Chest: from the perspective of challenges

When it came to the challenges faced by the Pathology Departments in China, Prof. Zhang said that there were still many problems in this field despite its rapid development in recent years. More prognostic materials and pathological diagnosis cases are needed to address gaps and lay solid foundations to ensure the development of pathology. In addition, the Pathology Departments have high requirements on talents, whereas retaining talents is difficult due to long training period, high working pressure, and heavy workload. As the behind-the-scenes workers, the

pathologists often feel that their role is underestimated, which is another cause of brain drain. Prof. Zhang expressed his expectations of the discipline: "Pathology is the basis of disease treatment. Hopefully the discipline can receive the understanding and attention they require from the society and the hospital." The hospital managers should also create a better environment for the training and career development of excellent talents, so that the Pathology Department can be more capable and the hospital can further develop.

Meanwhile, Prof. Zhang put forward his opinion on the development of *Shanghai Chest*. He believes that, as a new journal, *Shanghai Chest* should first publish some influential articles and avoid any high-flown style. Only by integrating innovation and breakthrough into its genes can the journal build up its own brand and complete with its international counterparts.

Having contributed to the development of pathology in the past thirty years, Prof. Zhang says confident of future development of pathology in China and will lead the Pathology Department of SCH to enter the international arena. As a pathologist, Prof. Zhang has been accustomed to understanding diseases from deeper and more extensive dimensions and facing challenges in a wider and broader perspective. His immense treasure of experience and wisdom typify the features of all staff in SCH.

Expert's introduction

Jie Zhang, Director of Pathology Department of SCH.

He has been engaged in clinicopathological diagnosis for more than 30 years. His research interests include clinicopathological diagnosis and molecular pathological research of tumors.

He has been trained or carried out scientific research in the Department of Anatomical and Cellular Pathology of Chinese University of Hong Kong, Department of Molecular Pathology, Hiroshima University School of Medicine (Japan), and Heidelberg University (Germany). His publications include 70 academic articles and one monograph.

Currently, he also serves as the deputy chief of the Chest Pathology Panel of the Chinese Society of Pathology, member of the editorial board of *Chinese Journal of Pathology*, member of the Pathological Quality Control

Center Molecular Pathological Group of National Health and Family Planning Commission of China, member of the Committee of Pathologists of Chinese Medical Doctor Association, member of the Pathology Committee of Chinese Anti-Cancer Association, member of Shanghai Medical Association Pathology Committee, and member of Shanghai Clinical Pathology Quality Control Committee.

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Footnote

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