

ADVANCING PLANT RESEARCH IN CHINA

Recognizing the importance of plant sciences and Chinese scientists' remarkable achievements in the field, **THE CHINESE ACADEMY OF SCIENCES LAUNCHED THE CENTRE FOR EXCELLENCE IN MOLECULAR PLANT SCIENCES**. Aiming at achieving milestone breakthroughs, the centre is playing a leading role in China's plant research.

Approved for construction in July 2015 and headquartered in Shanghai, the Centre for Excellence in Molecular Plant Sciences at the Chinese Academy of Sciences (CAS) is one of the 15 centres of excellence established at CAS. Aiming at meeting national strategic needs in food security and ecological safety, the centre is dedicated to doing cutting-edge basic research. It is set to become a leading international research institute in plant sciences and to contribute to the development of agriculture and ecological sciences.

Plant research in China has developed in leaps and bounds over the past 20 years, and China is already playing a leading role in the world in several key fields, including agricultural genomics, crop functional genomics, and plant hormone mechanisms. With the state government consistently increasing its investment in basic research and a large number of talented young scholars either returning to China from overseas or being fostered at home, China has transformed from being a follower to a

leader in plant sciences. Its success was demonstrated in a 2017 Nature Plants editorial titled A Chinese renaissance, which commended China's outstanding achievements in agricultural sciences. As cited in the editorial, the proportion of Chinese publications in agricultural science journals included in the Web of Science rose to nearly 17.7% in 2016, ranking first in the world. The proportion of Chinese publications in high-quality plant journals also increased from 6.3% in 2006 to 20.6% in 2016, surpassed only by the United States. China's tremendous advances in crop sciences have led it to be positioned at the forefront of global plant science research.

Against this backdrop of the advancement of Chinese plant research, the CAS Centre for Excellence in Molecular Plant Sciences was established to leverage existing resources. Led by Han Bin, director of the Shanghai Institute of Plant Physiology and Ecology at CAS, the centre selects talented principle investigators from across the CAS. As of 2016, it has recruited 50



principle investigators from the Shanghai Institute of Plant Physiology and Ecology, the Institute of Genetics and Developmental Biology and the Institute of Botany in Beijing, the Shanghai Centre for Plant Stress Biology, Xishuangbanna Tropical Botanical Garden in Yunnan, Chengdu Institute of Biology in Sichuan and the University of Science and Technology of China. It has formed a mainly pyramid-shaped talent structure, with CAS academicians and experts selected for the Thousand Talents Plan and National High-level Personnel of Special Support Program taking the lead role at the top, while recipients of the National Science Fund for Distinguished Young Scholars, the National Science Fund for

Excellent Young Scholars and the Thousand Young Talents Plan forming the backbone of the centre.

The centre aims to attract a large group of talented researchers in molecular plant sciences and form multidisciplinary research teams committed to excellence and innovation. "We want to empower talented scientists and students to pursue the very basic questions in plant biology and to drive innovation," said Han. "Integrating our resources helps create excellence."

Focusing on genetic variation and selection of valuable agricultural traits and plant adaptation, the centre will study plant development and physiology at the genomic, proteomic and metabolic



(small molecules) levels, as well as the macro-level interaction between plants and the environment. Its major research directions include agricultural genomics and crop domestication, along with diversity of plant metabolism, the molecular mechanisms of plant development and plant-environment interactions. These four research areas are interrelated and will provide the basic theory and technical support needed to build an efficient and sustainable

agricultural production system.

Since its foundation, the centre has carried out a large number of original studies to explore the hybrid rigour of rice, key genetic resources for high-yield and high-quality crop, control of plant growth by epigenetic regulation and signalling networks, as well as interactions between plants and bacteria (both symbiotic and pathogenic). It is expected that in five to ten years, the centre will make major theoretical breakthroughs in elucidation

of the genetic and molecular basis of heterosis, identification of new plant metabolic pathways, unravelling of the molecular basis of plant cell totipotency, and dissection of new immunologic mechanisms and stress epigenetic memory mechanisms of plants.

To this end, the centre is restructuring its research management systems and introducing new incentive mechanisms to drive innovation. It provides solid technical platforms and other

support to its research teams to invigorate research and generate world-class results. The centre is poised to lead plant research in China by spearheading significant scientific achievements and fostering talented plant researchers. It ultimately aspires to become a major player in the global community of plant research. ■

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