PRESS RELEASE

Singapore, 19 September 2002

FUNDAMENTAL PLANT RESEARCH BY TLL SCIENTISTS LEADS TO A BREAKTHROUGH IN UNDERSTANDING THE INTERPLAY BETWEEN CELL PROLIFERATION AND DEVELOPMENT

Singapore, 19 September 2002 – The Temasek Life Sciences Laboratory (TLL) is pleased to announce a breakthrough discovery in auxin signaling in plants, which contributes to the understanding of the development of biological systems, including diseases such as cancer. The breakthrough was discovered by a team in Singapore working in collaboration with Dr Allan Weissman and Dr Shengyun Feng from National Cancer Institute, National Institute of Health, USA (NCI-NIH). The research team, led by Prof Nam-Hai Chua, published their findings in the September 12th issue of the world-renowned science journal *Nature*.

Auxin is an important hormone that regulates many processes in plants. It has been shown to play a key role in lateral root development in plants. Although many proteins involved in auxin response have been identified, the mechanism and operation for this process is poorly understood.

Dr Qi Xie, Acting Principal Investigator of the Laboratory of Molecular Cell Biology, and his colleagues have previously identified a gene NAC1 in the model plant Arabidopsis, that when over-expressed promotes lateral root development. As reported in Nature, they have now discovered a new protein SINAT5 which interacts with NAC1, helping scientists better understand how plant lateral root development is controlled.

Dr Xie is very pleased with their contribution, "Plant root development plays an important role in the overall development of the plant as roots are involved in the uptake of water, nutrients and minerals. Understanding how lateral root development is regulated has important implications in engineering plants that are more resistant to drought and adverse environmental conditions. This breakthrough can be of importance in engineering stronger trees with greater growth rates, thus helping to speed up reforestation even in places with low water content."

Although SINAT5 is found in plants, this gene is not plant-specific, and has homologues in Drosophila and humans. This similarity means that an understanding of the interactions might help in the understanding of some mechanisms involved in human diseases.

A/Prof Mohan Balasubramanian, Acting Director of TLL is thrilled and says that "This is really exciting for the cell cycle and cell proliferation fields, especially being a cell cycle researcher myself. This work is of outstanding importance in exploring the interplay between cell cycle, development and disease, of relevance not only to plants, but also to human. Hopefully, such work at TLL using plants, yeast, and animals will help build a strong Singaporean Life Sciences/Biomedical Cluster together with the other research institutes, universities, hospitals, etc."

This work was initiated in 2000 at the Institute of Molecular Agrobiology by Dr Qi Xie. Two other scientists, Dr Hui-Shan Guo and Dr Geza Dallman, also contributed to the work and are co-authors of the paper, The research team is currently continuing their work

at the newly established Temasek Life Sciences Laboratory, which is affiliated to the National University of Singapore and Nanyang Technological University.

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