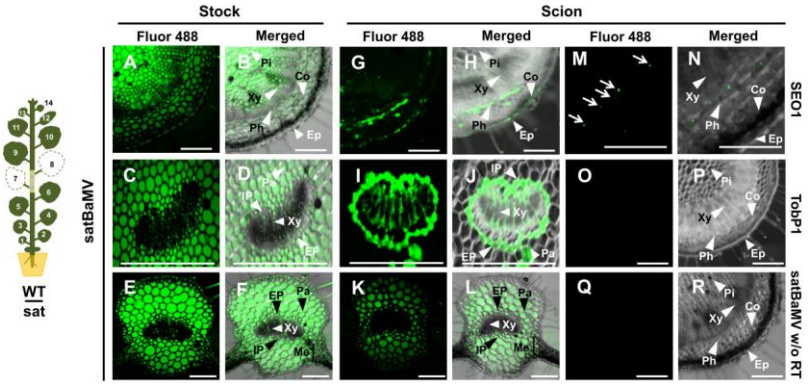
Viral parasite on the move



As the small infectious agents, viruses can infect all types of life forms, from animals, plants to microorganisms. They are obligate parasites which depend on host's machineries and encoded proteins to complete their life cycle. However, satellite RNAs (satRNAs) are molecular parasites of viruses; they are almost exclusively associated with plant viruses. They are dependent on their cognate helper virus for replication, encapsidation and efficient spread. SatRNAs have attracted much interest over the past decades, mainly because they have been valuable components as biocontrol agents against viral diseases and been important subjects for research in RNA biology.

An international research team led by Dr. Na-Sheng Lin, Distinguished Research Fellow at the Institute of Plant and Microbial Biology, Academia Sinica, Dr. Yau-Heiu Hsu, Distinguished Professor of the Graduate Institute of Biotechnology, National Chung-Hsing University, and Dr. Michael Taliansky, Professor of the Department of Cell and Molecular Sciences, The James Hutton Institute, Scotland UK, recently first demonstrated that the satellite RNA associated with Bamboo mosaic virus (satBaMV), isolated from local bamboo (Bambusa vulgaris McClure), is able to move autonomously in plants and dependent on fibrillarin protein to achieve the long-distance trafficking. The full article, entitled "The Nucleolar Fibrillarin Protein is Required for Helper Virus-Independent Long-Distance Trafficking of a Subviral Satellite RNA in Plants", is published in The Plant Cell on Oct. 5, 2016.

RNA trafficking is essential for plant development, nutrient allocation, gene silencing, and stress responses. While systemic trafficking of virus is enabled by phloem transport, local cell-to-cell communication relies on microchannels that traverse plant cell walls, known as plasmodesmata. By technologies of transgenic and grafting approaches in combination with biochemical, molecular and cellular biology, the satBaMV was found to hijack nucleolar protein fibrillarin via satBaMV-encoded protein to assist satBaMV RNA long-distance trafficking in plants. These findings suggest that satBaMV can provide an excellent molecular probe to address RNA trafficking in plants and can lead to identification of host proteins involved in endogenous and viral RNA long-distance trafficking in plants in general.

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The full article is available on The Plant Cell website at:
http://www.plantcell.org/content/early/2016/10/04/tpc.16.00071.abstract