In this project, we have developed 3 micro-modules using the latest technique VR to enhance students' learning experience in new models of plant cell biology. A VR mobile application "3D Plant Cell Organelles in VR" is generated, in which students could explore and interact with 3D plant cell organelles in a stimulating cell environment.

To achieve the aim of the project, we first constructed 3D models of selected plant cell organelles (e.g. the autophagosome and the vacuole) based on real research data derived from our RGC-AoE- and CRF-funded research projects using the most advanced 3D Tomography TEM (transmission electron microscopy) system and the image processing, modeling and display program IMOD. Base on the models, we developed a mobile VR application for both iOS and android operating systems in which students can visualize the real appearances of 3D plant cell organelles at the nm resolution in person. In addition, VR googles are purchased for students to view the VR application in the lectures using their own mobile phones. The application and googles have been put into use for teaching the course CMBI4001 Protein Trafficking and LSCI5012 Advanced Topics in Biological Electron Microscopy and Live Cell Imaging in September 2018. This is the first such attempt to translate the latest research development into teaching materials for University education, which will be further refined and promoted.