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## HKUST First to Discover Regulatory Role for Key Protein

Researchers at the Hong Kong University of Science and Technology (HKUST) have become the first to discover the structure and biological function of a protein that plays a central role in ensuring the normal operation of cells. The findings have been published in the 27 July issue of *Science*, the world's top science journal. *Science* editors receive more than 7,000 papers each year, and less than 10% are accepted for publication.

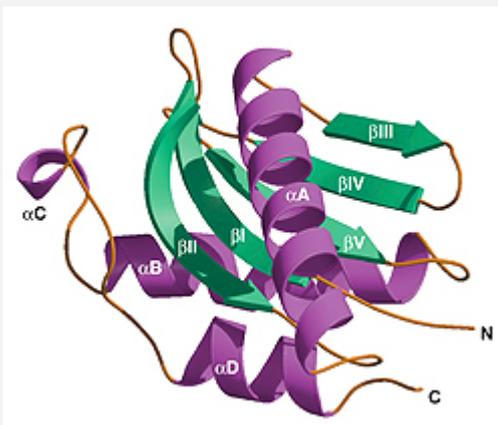
All cells contain complex molecular machinery that ensures the integrity of normal cellular operations. One of these fundamental intra-cellular machines, a composite of several sub-compartments inside the cell, is known as the secretory pathway.

The secretory pathway is responsible for the proper formation, processing and sorting of proteins. In addition, it manages the secretion of proteins from the cell, a process that is mediated by small membrane-bound carriers known as transport vesicles.

"One key question cell biologists want to answer is precisely how cells ensure that this multi-faceted process is regulated. This is critical because defects in the secretory pathway, as well as in protein processing, are known to lead to a number of serious diseases. What our team has uncovered is the structure and biological function of the protein called Ykt6p, which plays a central regulatory role in the secretory pathway," says Dr David Banfield, Assistant Professor of Biology at HKUST.



[Hi-res image](#) From left: David Banfield, Marco M K Tsui, Hidehito Tochio and Mingjie Zhang



Structure of the Ykt6p domain

"While we now understand considerably more about how cells control intra-cellular membrane fusion events, the discoveries made in this study will allow us to identify, in a very direct way, additional regulatory components that work together with Ykt6p to ensure cells function properly," further explains Dr Banfield.

This important research was a collaborative effort between the laboratories of Dr Banfield and Dr Mingjie Zhang, Associate Professor of Biochemistry. Outstanding contributions to the research were also made by PhD student Marco M K Tsui and post-doctoral fellow Hidehito Tochio.

"To achieve this breakthrough, we combined our respective expertise in cell biology, molecular genetics and structural biology. This successful collaboration has again illustrated the power of

cross-disciplinary research," adds Dr Zhang.

### Additional Information

This is the second article authored by HKUST researchers that appeared in *Science* within a month. On 29 June 2001, *Science* published the research findings of HKUST physicists that single 4-Angstrom-carbon nanotubes exhibit

superconducting properties.