

# Mitochondrial Structure and Network Remodeling Studies by Cryo-electron Tomography

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## Abstract

Mitochondrial function is critical to cellular physiology, which builds upon the organelle structure and the homeostasis of the mitochondrial network (Chan, 2020, Giacomello, Pyakurel et al., 2020). Mitochondria have a unique double-membrane ultrastructure and the cristae invagination contains electron transport chain complexes, which the ultrastructure associates intricately with its metabolic function and signaling. In cells, mitochondria operate as an integrated network and the homeostasis is modulated by the fusion and fission processes. The alteration of mitochondrial ultrastructure and network balance associate with a wide range of diseases. Therefore, it is essential to understand the mechanisms of mitochondrial ultrastructure and network remodeling.

To visualize the dynamic structural alteration in a native cellular context, cryo-electron tomography is a technique that can unravel the structural and molecular mechanisms *in situ* at low nm resolution. We will share the cryo-electron tomography studies to elucidate the regulatory mechanisms of mitochondrial structure and network remodeling in the speech.