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A Integrated Fluorescence Light Microscope for the Thermo Scientific Aquilos 2 Cryo-FIB

Alexander Rigort

Thermo Fisher Scientific, Eindhoven, Netherlands

Abstract

Cellular cryo-electron tomography is a high-resolution technique that enables imaging of the molecular machinery of a cell at close-to-native conditions. To render cells suitable for tomographic imaging, electron-transparent regions, named cryo-lamellae, must first be prepared with a cryo-focused ion beam (cryo-FIB) microscope. These cryo-lamellae are essentially snapshots of functional cellular environments preserved in a fully hydrated state and embedded in non-crystalline vitreous ice. To enable correlative imaging of vitrified samples, a new integrated light microscope has been added to the cryo-FIB microscope. With the iFLM Correlative System, the correlation of signals between two imaging modalities - light and electron microscopy - within one instrument becomes possible. The built-in fluorescence module facilitates localization of lamella sites and makes it possible to verify whether already milled lamellae contain fluorescent targets.

During this workshop you will:

- learn how cryo-electron tomography is used for imaging the interior of cells at high resolution
- see the iFLM Correlative System, a new fluorescence microscope that is integrated into the Aquilos 2 cryo-FIB for correlative imaging and lamella targeting.