

〈シンポジウム I〉

『次世代先端評価技術を駆使する』

ライブセルイメージングで見る細胞内膜交通

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**Live Cell Imaging of Membrane Traffic**

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**Abstract**

Membrane traffic represents a variety of transport processes connecting intracellular membrane-bounded compartments in eukaryotic cells. Small vesicles and tubules are the carriers of these processes. In addition to conventional molecular approaches such as genetics and biochemistry, live cell imaging has become a very powerful methodology to understand mechanisms of membrane traffic. We have developed a new microscopic method employing the spinning-disk confocal scanner and the ultra-high sensitivity detection system, in combination with mathematical data processing. This method enables us live imaging at very high resolution in both space and time, and we have named it SCLIM, standing for super-resolution confocal live imaging microscopy. Many questions and disputes about the molecular mechanisms underlying protein sorting during membrane traffic can be solved by SCLIM. As such examples, I describe the maturation of the Golgi cisternae and the hug-and-kiss action of the *cis*-Golgi towards the endoplasmic reticulum exit sites.

**Key words:** live cell imaging, membrane traffic, Golgi apparatus, endoplasmic reticulum, super-resolution confocal live imaging microscopy (SCLIM).