

CLEM: bridging the light and electron microscopy

Roman S. Polishchuk
Telethon Institute of Genetics and Medicine

Correlative light–electron microscopy (CLEM) is a very effective technique that combines live-cell imaging and electron microscopy for ultrastructural morphological characterization of dynamic intracellular organelles. The use of fluorescent protein (FP)-tagged chimeras allows the user to follow the movements and/or behavior of intracellular structures in a live cell and to fix it at the moment of interest. The subsequent immuno-electron microscopy processing can then reveal the three-dimensional architecture of the same structure, together with precise recognition of the FP-labeled protein. The process resembles the taking of a high-resolution snapshot of an interesting live scene. The power of this approach opens new avenues for understanding of complex cellular processes that operate in health and disease.