Realization of common platform technology, facilities, and equipment that creates innovative knowledge and products

Development of quantum microscopy for visualizing molecular functions in living cells

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Summary :

Each cell has different characteristics even when they are designed to provide the same functions. The development of technologies that can be used to understand the origin of these characteristics and predict and control the functions of molecules in cells has been strongly required. However, to realize such technologies, innovative methods of revealing factors that cannot be shown by conventional measurement methods are indispensable. Without the development of methods that can successively and microscopically probe the molecular behavior to reveal the origin of the biological activities of cells, we cannot effectively use and integrate the data accumulated thus far, those that will be obtained in the future, as well as various information behind them. In this study, we aim to realize a new microscopy that can (1) integrate the advanced technologies of quantum optics and scanning probe microscopy, (2) identify and select elemental molecules constituting cells, and (3) clarify the functions of these molecules including their dynamics in cells.



Microscopy for visualizing molecular functions

