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MICROSCOPY TECHNIQUES FOR CYTOSKELETON RESARCH

Summary

Cytoskeleton is basically a network of protein polymers, but it also contains thousands of motor, regulatory and scaffolding proteins that interact with this network. Discoveries related to the cytoskeleton were strictly connected to the development of microscopy techniques used to observe the cytoskeletal structures. At first, the imaging involved only unspecific, very simple staining of fixed material. Then, the methods evolved into advanced structural microscopy, which enabled accurate detection of specific cytoskeletal proteins, their physiological status, and interactions with loosely bound membrane and cytoplasmic proteins. Today, it is possible not only to visualize the structure and function of the cytoskeleton with better spatial resolution but also to perform the imaging *in vivo* on live biological specimens. On the other hand, one should also notice that observations of the stable, well defined cytoskeletal structures from their very discovery have continuously stimulated the progress in the microscopy field.

Keywords: cytoskeleton, electron microscopy, immunocytochemistry, molecular probes, optical microscopy, superresolution microscopy