<특별강연 II>

ELECTRON MICROSCOPY OF CYTOSKELETON

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The cytoskeleton is mainly composed of three distinct kinds of cytoplasmic fibrous structures, namely, microtubules, actin filaments, and intermediate filament. These fibrous structures widely occur in almost all type of eukaryotic cells. Utilizing these cytoskeletal components cells seem to develop and maintain their own cell shapes, locate properly cytoplasmic organelles inside the cells, and construct various motile apparatus. Such functional significances have first been deduced from the pattern of intracellular distribution and arrangement of cytoskeletal components, which can be directly visualized by electron microscopy. The distribution pattern of cytoskeletal components often depends on the interaction with other cellular structures, particularly the plasmalemma. The interaction between cytoskeleton and the plasmalemma is most Lypically found at the plasmalemmal undercoat. The plasmalemmal undercoat is seen as electron -dense material directly applied to the cytoplasmic surface of the plasmalemma. The plasmalemmal undercoat supports the membrane itself structurally, giving rigidity, strength and elasticity to membranes, regulating the distribution of integral membrane proteins thus forming functional domains on the cell surface, and pro- viding the attatchment sites for cytoskeletal fibrous components. Through such attachment, the plasmalemma is further reinforced so that cells can maintain their firm adhesion with neighboring cells as well as the extracellular matrix. Here, I would like to present some of our work on the modes in which each type of cytoskeletal components attaches to the undercoat as revealed by electron microscopy.