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Isolation and Characterization of the Novel Components of the Mammalian Centrosome

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Centrosome is the main microtubule-organizing center of animal cells. This consists of a pair of microtubule-based centrioles surrounded by the pericentriolar material, which is involved in microtubule formation. As the primary MTOC of the mammalian cell, the centrosome has a profound influence on all microtubule-dependent processes. When the cell centers mitosis, the centrosomes function as spindle poles to separate chromosomes into two daughter cells. During the cell cycle, centrosomes duplicate, mature and separate to prepare for mitosis. Even if the centrosome has been described by Boveri over one hundred years ago, its composition was to be investigated only recently. A proteomic analysis indicated that the centrosome is composed of about five hundred species of proteins. The purpose of our work was to understand functional relationships among the centrosomal proteins. In the present presentation, we will introduce a systemic approach for understanding protein-protein interactions of the centrosomal proteins. We will show functional and structural meanings of a few selected interactions of the centrosomal proteins.