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Molecular and Cellular Analyses of *NCP*, a Nuclear and Centrosomal Protein in Mouse Gametes and Early Embryos

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For many animals the centrosome consists of a pair of centrioles and surrounding pericentriolar materials (PCMs). PCMs have been known to play roles during cell division. It is known that centrioles are necessary to assemble centrosomal components. However, many types of oocytes undergo meiosis without centrioles. It is known that in nonmurine mammalian species, the sperm introduces an intact proximal centriole unlike sea urchin where two centrioles are introduced. In case of mouse sperm, the presence of centrosome is not clear. In this study, a monoclonal antibody was developed to investigate centrosome during mouse germ cell and early embryo development. Results of immunostaining and Western blotting in CHO cells suggest that the monoclonal antibody recognizes a nuclear and centrosomal protein, thus called NCP. The NCP monoclonal antibody was used to screen a cDNA expression library prepared from 12.5 mouse brain to isolate NCP gene. Nucleotide size of NCP gene obtained from immunoscreening was about 5.5kb. It is determined that the NCP may be closely related with pericentriolar material -1 gene (*Pcm*-1) from the result of sequencing analysis. The molecular weight, 66kDa, calculated by known DNA sequence in database is consistent with that of detected from Western blotting using CHO cell lysates. Therefore, it is assumed that NCP may be alternative splicing form of *Pcm*-1 of which molecular weight is 228kDa. In mouse oocytes, NCP was distributed in nucleus as in CHO cells. It was shown that the NCP was localized around neck region, probably the centrosome in mouse neck region. Interestingly, dramatic change in distribution of NCP was also shown in male germ cell development. Finally, we observed the cellular distribution of NCP during early embryo development. NCP was detected in nucleus as well as centrosome foci. It is suggested that the centrioles reassembly are occurring in blastocysts and then affects the distribution of NCP.

Key words) ***Centrosome, Mouse germ cells, Embryo, NCP***