

EWA JOACHIMIAK

Laboratory of Cytoskeleton and Cilia Biology, Department of Cell Biology, Nencki Institute of Experimental Biology PAS, 3 Pasteur Str., 02-093 Warsaw, E-mail: e.joachimiak@nencki.gov.pl

BIOGENESIS OF CENTRIOLES

Summary

Centrioles are microtubule-based organelles that in animal cells are a part of the centrosome. These structures play an important role during both interphase and mitosis in proliferating cells, as well as in differentiated cells, including ciliation of epithelial cells. The number of centrioles is strictly regulated as their excess or reduction leads to abnormalities in cell division or cell functions. Centrioles are formed in a process called biogenesis or duplication. In proliferating cells, centrioles are duplicated only once in each cell cycle, while in epithelial cells before ciliation, numerous centrioles are assembled, suggesting different mechanisms of duplication. During the so-called “classic” or “centriolar” duplication, in proliferating cells two new centrioles are formed before mitosis. By contrast, during differentiating into ciliated epithelial cells even few hundreds of new centrioles are assembled (so-called “deuterosomal” biogenesis).

Key words: cartwheel, centriole, deuterosome, duplication