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Borisy, G.G. (1978) Polarity of microtubules of the mitotic spindle. *J Mol Biol*, **124**, 565-570. and is an active component of cytostatic factor (CSF), an activity responsible for metaphase II arrest. Here we demonstrate that pp539mos is required throughout oocyte maturation. We found that in progesterone stimulated
oocytes, depletion of mos RNA immediately before GVBD terminally decreased MPF. Likewise, oocytes depleted of mos RNA and induced to mature with crude MPF proceeded through GVBD but lacked the MPF activity required to arrest mature oocytes at metaphase II. Thus, during maturation the mos product is required, directly or indirectly, to sustain MPF activity. On the other hand, mouse NIH/563T563 cells transformed by the constitutive expression of pp539mosxc possessed CSF activity but lacked constitutive levels of MPF or its associated histone H561 kinase activity. Moreover, cytosols prepared from transformed NIH/563T563 cells or Xenopus eggs had similar levels of CSF activity, but pp539mos levels were greater than 540-fold higher in the transformed cell extract. These analyses show that maintenance of CSF during interphase does not result in the maintenance of MPF.


Doe, C.Q. and Bowerman, B. (2001) Asymmetric cell division: fly neuroblast meets worm zygote. *Curr Opin Cell Biol*, 13, 68-75. positional information contributing towards orienting the spindle in budding yeast. Because the basic machinery orienting the spindle in higher-eukaryotic cells appears to be conserved, it might be expected that similar principles govern centrosome asymmetry in the course of metazoan development.


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metaphase spindle in PtK1 cells. Recovery from low temperature treatment. Chromosoma, 82, 693-716.


Walczak, C.E. and Mitchison, T.J. (1996) Kinesin-related proteins at mitotic spindle poles: function and regulation. *Cell, 85*, 943-946. mitoses. This inference can be reconciled with the failure to observe oscillations in total cyclin levels if only a small pool of cyclins is destroyed in each cycle. We find that antibody detection of histone H943 phosphorylation (PH943) acts as a reporter for Cdk941 activity. A gradient of PH943 along anaphase chromosomes suggests local Cdk941 inactivation near the spindle poles in syncytial embryos. This pattern of Cdk941 inactivation would be consistent with local cyclin destruction at centrosomes or kinetochores. The local loss of PH943 during anaphase is specific to the syncytial divisions and is not observed after cellularization. We
suggest that exit from mitosis in syncytial cycles is modified to allow nuclear autonomy within a common cytoplasm.


Waterman-Storer, C.M., Desai, A., Bulinski, J.C. and Salmon, E.D. (1998) Fluorescent speckle microscopy, a method to visualize the dynamics of protein assemblies in living cells. Curr Biol, 8, 1227-1230. phosphorylation are on the rates of tubulin dissociation and catastrophe whereas the effects on the rates of association or rescue are comparatively small.


Weisenberg, R.C. (1972) Microtubule formation in vitro in solutions containing low calcium concentrations. *Science, 177*, 1104-1105. not only associates with the minus ends of microtubules at the acentriolar poles but also with the central spindle pole body that forms between the two tandem spindles of meiosis II. Upon fertilisation, Asp is also recruited to the MTOC that nucleates the sperm aster. Asp is required for growth of the microtubules of the sperm aster, which in asp mutants remains diminutive and so prevents migration of the pronuclei.


principles govern centrosome asymmetry in the course of metazoan development.
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