

New Roles for Old Spindle Checkpoint Proteins: Lessons from Drosophila.



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The Spindle Checkpoint is the mechanism that surveys the state of microtubule kinetochore attachments during mitosis, and delays the onset of anaphase if an unattached kinetochore is detected. In this way the checkpoint provides time for the cell to correct attachment errors. It turns out however that proteins participating in the checkpoint mechanism may also serve other functions during mitosis. Thus, experimental knockout or depletion of checkpoint proteins generate complex mitotic phenotypes, beyond simply eliminating the checkpoint function. Primary *Drosophila* cells from developing larvae have unique properties that greatly facilitate the identification and study of these non-checkpoint functions. I will describe some of our work concerning the roles of the kinetochore proteins BubR1, Mad1, the RZZ complex, their contribution to the checkpoint and their non-checkpoint roles during mitosis.