

P034 MPF and MAPK are required for inhibiting premature destruction of securin by APC/Cdh1 in mouse oocytes.

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In meiosis and mitosis, APC/Cdc20 ubiquitinates securin and cyclin B1 to induce anaphase onset and exit from M-phase. More recently, it has been shown that APC/cdh1 is required for maintaining prophase I arrest by suppressing the levels of cyclin B1. Moreover, during prometaphase I, APC/cdh1 degrades Cdc20 thereby delaying the onset of APC/cdc20 activity and the onset of anaphase. Mechanisms of APC/Cdh1 regulation during the prolonged prometaphase I in mouse oocytes are as yet unexplored.

Here we show that inhibition of MPF and MAPK, but not either one alone, using roscovitine and UO126, respectively, induces premature destruction of securin during prometaphase of meiosis I. This effect is also observed in the inhibitors-treated oocytes in which Cdc20 has been depleted using morpholino, indicating that it is not APC/Cdc20 dependant. These results suggest that APC/Cdh1 destroys securin during prometaphase I but that its activity is significantly attenuated by the activity of MPF and MAPK. Thus regulation of APC/Cdh1 activity is essential for accumulation of securin during prometaphase I in mouse oocytes.