

P018 Following cyclinB1-cdk1 activity in living cells

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During the cell cycle, the activation of cyclinB1-cdk1 kinase is the main driving force for entry in mitosis. The regulation of its intracellular localization and degradation during mitosis has been extensively studied. However, we still do not know in living cells where and when the kinase is activated and what are the mechanisms triggering the rapid activation of the kinase pool. To investigate these questions, we generated a specific cyclin-cdk1 activity sensor that exhibits a FRET activity regulated by its phosphorylation by cdk1. Using this FRET sensor, we were able to investigate carefully the timing of cdk1 activation in prophase. Looking at the inactivation of cdk1 when the cell exit mitosis, we observed that the FRET activity decreases at the anaphase onset several minutes after the beginning of cyclinB1 degradation. This result suggests that an unidentified phosphatase could be activated at the metaphase/anaphase transition and responsible for the reversal of cyclinB1-cdk1 phosphorylation events.