Cytokinetic abscission is an acute G1 event

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Abstract

Animal cell division ends with the cutting of the microtubule and membrane intercellular bridge connecting the two daughter cells. This process, known as cytokinetic abscission (abscission), is widely regarded as the last step of cytokinesis, i.e., the last step of the cell cycle. Major breakthroughs have been recently achieved, illuminating mechanistic aspects of abscission; however, the timing of abscission with respect to the mammalian cell cycle remains unclear. In this study, we carefully measured the onset and progression of abscission in dividing cells expressing a G1 reporter. We conclude that abscission commences long after cells enter the G1 phase. Affiliating abscission with G1 is beyond semantics, since it essentially postulates that the last step of the cell cycle is regulated in, and probably by, the following cycle.