The separation of mother from daughter cells at the end of each cell cycle requires the coordinated and precise activity of several processes. The cell must constrict and then fuse the plasma membrane to create two distinct cytosols and synthesize a special cell wall between mother and daughter cell to avoid cell lysis during this process. Finally, it must carefully break this wall to liberate both cells from each other. A comprehensive understanding of cell separation during cytokinesis requires not only a detailed knowledge of each of these processes but also a molecular understanding of how these different activities are coordinated in time and space.

Institute of Molecular Genetics and Cell Biology

Cell Separation at the End of the Cell Cycle

Head: Nils Johnsson

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We have recently identified a protein that is directly involved in the formation of the contractile acto-myosin ring structure (CAR) at the site of cell division. Cells lacking the corresponding gene fail to stabilize myosin at the position of the CAR. Mutations within this gene cause mislocalization of the protein and lead to the formation of myosin fibrils at the wrong places in the cytosol of the cell. To better understand the role of this protein in CAR assembly, we are currently trying to establish its influence on the formation of myosin fibrils in vitro.