

## **The cell biology of Archaea**

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In most bacteria, cell division depends on the tubulin homolog FtsZ and other proteins that form a large complex termed the divisome. This complex is composed of many proteins that ensure proper execution of cell division resulting in two daughter cells of the same size and DNA content. Many archaea employ FtsZ homologs for cell division, but besides these homologs and the FtsZ membrane anchor SepF, no other proteins have been identified as part of their cell division system.

We demonstrated that two homologous proteins, both composed of a single conserved protein domain, called PRC domain (photoreaction center), play essential/important roles in cell division in Archaea. I will discuss the roles of the CdpB proteins during cell division in FtsZ-based cell division in Archaea. Another aspect I will discuss is the motility structure of archaea, the archaellum. We have studied in detail how this structure is assembled and how it generates torque for swimming motility in archaea.