

“TIP48 and TIP49: united in mitosis or poles apart?”

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Abstract:

TIP48 and TIP49 are two homologous AAA+ ATPases and are individually essential in all eukaryotes. They have been implicated in a multitude of broad cellular processes including transcriptional regulation, oncogenesis and DNA repair. It is established that TIP48 and TIP49 are found together as components of multi-protein nuclear complexes, including several chromatin remodelling complexes; their chromatin remodelling activities may explain the variety of nuclear functions. It is still unclear whether a simple underlying mechanism of TIP48 and TIP49 links these diverse processes and how these different functions are coordinated. Moreover, it is essential to establish if TIP48 and TIP49 have independent roles and whether these roles are regulated by oligomerisation. We are currently investigating the biochemical properties and sub-cellular localisation of TIP48 and TIP49, with focus on the assembly of TIP48 and TIP49 into their active forms. Several recent reports have suggested that TIP48 and TIP49 are important factors in mitosis and cytokinesis, further increasing their broad repertoire of functions. In contrast with their nuclear activities, current data suggest TIP48 and TIP49 operate independently during mitosis. Investigating the various mitotic roles of TIP48 and TIP49 and how these are regulated is of central importance, and finding an underlying mechanism that connects the multitude of processes in which TIP48 and TIP49 are essential, remains an interesting conundrum.