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Elucidating a Mechanism of Growth Cessation in Heterocysts of (*Anabaena*)

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Oral Presentation O6.3

**ELUCIDATING A MECHANISM OF GROWTH CESSATION
IN HETEROCYSTS OF *ANABAENA***

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Anabaena sp. strain PCC 7120 is a filamentous, multicellular cyanobacterium that serves as a model for the study of terminal cell type differentiation. When starved for bioavailable nitrogen, a subset of cells in a filament terminally differentiate into a nitrogen-fixing cell type, called a heterocyst. To maintain their position in the growing filament, heterocysts lose the ability to divide. This cell-type specific cessation of division suggests that there is a regulatory link between binary fission and heterocyst differentiation. It is unknown how cell division is inhibited in heterocysts, but it has been shown that heterocysts lack polymerized FtsZ rings (Z-rings) normally responsible for cytokinesis. Here, we find that a strain of *Anabaena* mutant for the *hetP* gene exhibited Z rings in heterocysts. This indicates that the *hetP* gene may directly or indirectly inhibit Z ring formation in heterocysts, thus preventing division. To test these two possibilities, the interactions between HetP and FtsZ were qualitatively and quantitatively assessed through a bacterial two-hybrid system and β -galactosidase assay, and a potential model relating the action of HetP and FtsZ was developed.