Asunción CONTRERAS

Mutational analysis of PipX: effect of point mutations on NtcA activation and toxicity in the absence of PII
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In the cyanobacterium Synechococcus elongatus sp PCC 7942, the PipX protein mediates partner swapping between two key nitrogen regulators, the global transcriptional activator NtcA and the signal transduction protein PII, a protein found in all three domains of life as integrators of signals of the nitrogen and carbon balance. Structural and functional work on both types of complexes clarified the 2OG assisted PII control of NtcA dependent gene expression. PipX coactivates NtcA by stabilizing its active conformation, and by possibly helping to recruit RNA polymerase. The finding that PipX is toxic to S. elongatus in the absence PII suggests a greater complexity of PipX functions. Point mutations at pipX with different effects on PipX-NtcA and PipX-PII complexes have been introduced in different genetic background to assess their effect on previously known in vivo functions of PipX, such as stimulation of NtcA dependent expression and toxicity in the absence of PII. The results will be discussed in the context of the 2-oxoglutarate mediated partner swapping model.