The network of ferredoxins in the cyanobacterium *Synechocystis sp* PCC6803

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Ferredoxins (Fdx) are probably among the oldest proteins on Earth (1). They presumably played a pivotal role as electron carriers in primordial CO_2-fixation (2). Ferredoxins are small FeS proteins that transfer electrons in a multitude of metabolic reactions. The cyanobacterium *Synechocystis* sp PCC 6803 contains about eleven different ferredoxins from both the plant-like type with (2Fe2S) clusters and bacterial-type with (3Fe4S) and (4Fe4S) clusters. The distinctive functions of these ferredoxins are known only fragmentarily. We deleted Fdx 9 (slr2059) from the genome of *Synechocystis* and characterized the respective mutant. Fdx9 belongs to the bacterial-type ferredoxins and contains two (4Fe4S) clusters. We found that it is essential under heterotrophic conditions and seems to be involved in the nitrogen metabolism in *Synechocystis*.

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