



The Biosynthesis Pathway of PyrroloQuinoline Quinone (PQQ)

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Book Condition: New. Publisher/Verlag: VDM Verlag Dr. Müller | Master's thesis in structural biology | The biosynthesis pathway of PyrroloQuinoline Quinone, a bacterial redox active cofactor for numerous dehydrogenases, is largely unknown, but it is known that at least six genes PqqA-F are required, all of which are located in the PQQ-operon. New structural data of some PQQ biosynthesis proteins and their homologues provide new insights and functional assignments of the proteins in the pathway. Based on sequence analysis and homology models I propose the role and catalytic function for each enzyme involved in this intriguing biosynthesis pathway. PQQ is derived from the two amino acids glutamate and tyrosine encoded in the precursor peptide PqqA. Five reactions are necessary to form this quinone cofactor. The PqqA peptide is recognised by PqqE, which links two carbon atoms, afterwards it is accepted by PqqF which cuts out the linked amino acids. The next reaction (Schiff base) is spontaneous, the following dioxygenation is catalysed by an unknown enzyme. The last cyclization and oxidation steps are catalysed by PqqC. Taken together the known facts of the different proteins I assign a putative function to all six proteins in the PQQ biosynthesis pathway. | Format:...



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