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RESEARCH INTERESTS

- Biochemistry of metalloenzymes
- Cytochromes P450, Flavins
- Enzyme catalysis and mechanism
- Coenzyme Q biosynthesis

SUMMARY

Coenzyme Q (CoQ) is an endogenous lipid soluble molecule found in bacterial plasmatic or mitochondrial inner membranes, where it works as an essential electron carrier in the respiratory chain. Today, several inactivating mutations in genes affecting the biosynthesis of CoQ have been identified in severe pathologies as myopathies, nephropathies, or cerebellar ataxia. CoQ biosynthesis is complex and requires no less than a dozen of proteins, but a clear assignment of catalytic or biological function for many participating proteins is still missing. We aim at getting a better knowledge at the fundamental level of the biosynthesis of CoQ in *E.coli*, using a judicious combination of molecular genetics, site-directed mutagenesis, biochemistry, molecular biophysics (rapid-kinetics) and structural biology (X-Ray crystallography). The core of this project will be to provide the first *in vitro* biochemical characterization of the proteins involved in the biosynthesis of CoQ in *E.coli*, to elucidate their exact function, to solve their X-Ray structures and to study their molecular mechanism.

PUBLICATIONS

2020

- The O₂-independent pathway of ubiquinone biosynthesis is essential for denitrification in *Pseudomonas aeruginosa*
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2019

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- The UbiK protein is an accessory factor necessary for bacterial ubiquinone (UQ) biosynthesis and forms a complex with the UQ biogenesis factor UbiJ.
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2015

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