

BIV-01-warren-C1net-public-summary-application

PI Martin Warren, University of Kent

Cloning and metal analysis of recombinant aldehyde ferredoxin oxidoreductase (AOR)

The aim of the project is to enhance the recombinant production of a key enzyme of biotechnological importance with a view to the production of metal-cofactor complete protein. Specifically, the aim is to find optimal conditions that allow for overproduction of recombinant aldehyde ferredoxin oxidoreductase (AOR), an enzyme that allows the transformation of carboxylic acids into aldehydes. AOR has an unusual metal requirement in that it contains an oxo-tungsten centre bound to a pair of molybdopterin cofactors and a 4Fe-4S cluster. We will clone two mesophilic forms of AOR from *Clostridium ljungdahlii* and another thermophilic form of the enzyme from *Pyrococcus furiosus*. The enzyme will be produced with a His-tag to allow for easy purification. Moreover, the protein will also be produced with a tag to allow for the protein to be targeted to a bacterial microcompartment (BMC). BMCs are utilised by nature to help accommodate enzymes that produce aldehydes as pathway intermediates.