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Authors: Joanne L. Porter, Selina Sabatini, Jack Manning, Michele Tavanti, James L. Galman, Nicholas J. Turner, Sabine L. Flitsch

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ACCEPTED MANUSCRIPT

Cloning, expression and characterisation of P450-Hal1 (CYP116B62) from *Halomonas* sp. NCIMB 172: A self-sufficient P450 with high expression and diverse substrate scope

Joanne L. Porter, Selina Sabatini, Jack Manning, Michele Tavanti, James L. Galman, Nicholas J. Turner and Sabine L. Flitsch*

School of Chemistry, Manchester Institute of Biotechnology, The University of Manchester, UK

*Corresponding author email: sabine.flitsch@manchester.ac.uk

Highlights

- A new class VII self-sufficient P450 monooxygenase (Hal1, CYP116B62) has been identified and cloned from *Halomonas* sp. NCIMP 172, the genome of which has not yet been sequenced.
- P450-Hal1 shows high levels of expression in a recombinant *E. coli* host and can be utilized in crude lysate or readily purified by IMAC.
- Hal1 displays a wide substrate scope (including hydroxylation, demethylation and sulphoxidation activity) and can operate in the presence of organic co-solvents with only modest reduction in activity.
- The handling and operational robustness of Hal1 make it a promising candidate for biocatalytic applications or as a template for engineering studies.

Abstract

Cytochrome P450 monooxygenases are able to catalyse a range of synthetically challenging reactions ranging from hydroxylation and demethylation to sulfoxidation and epoxidation. As such they have great potential for biocatalytic applications but are underutilised due to often-

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