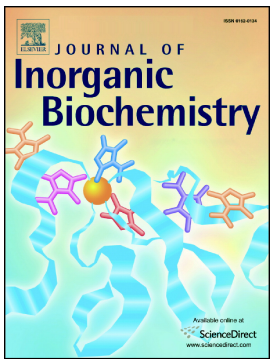

Structural and catalytic properties of the peroxygenase P450 enzyme CYP152K6 from Bacillus methanolicus

Hazel M. Girvan, Harshwardhan Poddar, Kirsty J. McLean, David R. Nelson, Katherine A. Hollywood, Colin W. Levy, David Leys, Andrew W. Munro

PII: S0162-0134(18)30162-4
DOI: doi:10.1016/j.jinorgbio.2018.08.002
Reference: JIB 10541

To appear in: *Journal of Inorganic Biochemistry*

Received date: 14 March 2018
Revised date: 23 July 2018
Accepted date: 2 August 2018

Please cite this article as: Hazel M. Girvan, Harshwardhan Poddar, Kirsty J. McLean, David R. Nelson, Katherine A. Hollywood, Colin W. Levy, David Leys, Andrew W. Munro , Structural and catalytic properties of the peroxygenase P450 enzyme CYP152K6 from Bacillus methanolicus. Jib (2018), doi:10.1016/j.jinorgbio.2018.08.002

Structural and Catalytic Properties of the Peroxygenase P450 enzyme CYP152K6 from *Bacillus methanolicus*

Hazel M. Girvan[1], Harshwardhan Poddar[1], Kirsty J. McLean[1], David R. Nelson[2], Katherine A. Hollywood[1], Colin W. Levy[1], David Leys[1] and Andrew W. Munro[1*]

[1]Centre for Synthetic Biology of Fine and Specialty Chemicals (SYNBIOCHEM), Manchester Institute of Biotechnology, School of Chemistry, The University of Manchester , Manchester M1 7DN, United Kingdom. [2]Department of Microbiology, Immunology and Biochemistry, University of Tennessee Health Science Center, Memphis, Tennessee 38163, United States of America.

*Author for correspondence. Phone 44-161-3065151. Email Andrew.Munro@Manchester.ac.uk

***Highlights*:**

The cytochrome P450 (P450 or CYP) CYP152K6 from *Bacillus methanolicus* was characterized

CYP152K6 is a peroxygenase that catalyzes efficient oxidation of dodecanoic acid

A 1.3 Å crystal structure was solved for CYP152K6 bound to tetradecanoic acid

EPR reveals three low-spin CYP152K6 species whose populations change on lipid binding

CYP152K6 produces 2,3-dihydroxydodecanoic acid as a novel peroxygenase product

***Keywords*:** peroxygenase, cytochrome P450, organic products, protein structure, substrate binding, EPR spectroscopy