

Dr P C E Moody - Structure and function of core metabolic enzymes in enteric pathogens.

H pylori is the causative organism of gastric ulcers and *Campylobacter jejuni* is a major cause of diarrhoea. Examples of both these organisms have had their full genomes sequenced. Our (and others) experimental work combined with analysis of the open reading frames has allowed us to reconsider the role of the glycolysis/gluconeogenic pathways away from the usual model of being for energy production and storage to a biosynthetic role. The project will involve cloning, expressing, purification, enzymatic characterisation, crystallisation and solving the crystal structures of key enzymes from these pathways. Experiments will then be devised in order to understand how these enzymes are adapted for their roles and if it is possible to design specific inhibitors that could be used as specific drugs to kill these bacteria.

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Preliminary Publications.

PR Elliott, D Evans, J Greenwood and PCE Moody (2008) Expression, purification, crystallisation and preliminary X-ray analysis of a NADP-dependent Glyceraldehyde-3-phosphate Dehydrogenase from *Helicobacter pylori*, *Acta Cryst F* 64; 723-726

PR Elliott, S Mohammad, H.J Melrose and PCE Moody (2008) Expression, purification, crystallisation and preliminary X-ray analysis of a NAD-dependent Glyceraldehyde-3-phosphate dehydrogenase from *Helicobacter pylori*. *Acta Cryst F* 64; 727-729

Other representative group publications

SK. Badyal, CL. Metcalfe, J Basran, I Efimov, PCE Moody and EL Raven (2008) Iron Oxidation State Modulates Active Site Structure in a Heme Peroxidase. *Biochemistry* 47; 4403-4409

CL Metcalfe, IK Macdonald, EJ Murphy, KA Brown, EL Raven & PCE Moody (2008). The tuberculosis prodrug isoniazid bound to activating peroxidases. *J. Biol. Chem.* 283; 6193-6200

W-C Huang, ACG Westlake, J-D Marechal, MG Joyce, PCE Moody, & GCK Roberts (2007) Filling a hole in cytochrome P450 BM3 improves substrate binding and catalytic efficiency, *J. Mol. Biol.* 373(3):633-51

VE Pye, AP Tingey, RL Robson & PCE Moody (2004) The Structure and Mechanism of Serine Acetyltransferase from *Escherichia coli*. *J. Biol. Chem.* 279; 40729-40736

H Khan, T Barna, RJ. Harris, NC. Bruce, I Barsukov, AW Munro, PCE Moody & NS Scrutton, (2004) Atomic Resolution Structures and Solution Behavior of Enzyme-Substrate Complexes of *Enterobacter cloacae* PB2 Pentaerythritol Tetranitrate Reductase: Multiple conformational states and implications for the mechanism of nitroaromatic explosive degradation *J. Biol. Chem.* 279; 30563 – 30572

KH Sharp, M Mewies, PCE Moody & E Lloyd Raven, (2003) Crystal structure of the ascorbate peroxidase-ascorbate complex *Nature Structural Biology* 10; 303-397

T Barna, HL Messiha, C Petosa, NC. Bruce, NS Scrutton, & PCE Moody (2002) Crystal Structure of Bacterial Morphinone Reductase and Properties of the C191A Mutant Enzyme. *J. Biol. Chem.* 277; 30976 – 30983

JEA Wibley, AE Pegg & PCE Moody (2000) Crystal Structure of the Human O⁶Alkylguanine-DNA Alkyltransferase. *Nucl. Acids Res.* 28; 393-401