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| | **Experiment title:**<br>Ribose 5-phosphate B from *M. tuberculosis* in complex with 4-phospho-D-erythronate | **Experiment number**:<br>MX-133 |
| **Beamline**:<br>ID29 | **Date of experiment**:<br>7th November 2003 | **Date of report**:<br>30th Aug 2004 |
| **Shifts:**<br>1/2 | **Local contact(s)**:<br>Dr. Andrew McCarthy | |

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## Report:

Ribose-5-phosphate isomerase is an enzyme involved in the pentose phosphate pathway where it catalyses the interconversion of ribose-5-phosphate to ribulose-5-phosphate. Two non-homologous enzymes have been identified that perform this catalysis, RpiA and RpiB. Humans have the RpiA form whereas the pathogenic bacterium *M. tuberculosis* only has RpiB. Therefore this enzyme could be a good potential drug target. We solved the structure in 2003 (Roos et *al.*) and are now pursuing ligand complex structures to learn more about the reaction mechanism and to find possible inhibitory molecules. 4-phospho-D-erythronate is designed to look like the substrate and kinetic studies have showed that it inhibits the enzymatic activity slightly.

A data set was collected on ID29 to 2.2 Ångström and after letting the five molecules in the asymmetric unit of the original structure (PDB code 1usl, with waters and phosphate ligands removed) move independently in rigid body refinement the resulting maps showed density for the ligand.

Roos, A.K., Andersson, C.E., Bergfors, T., Jacobsson, M., Karlen, A., Unge, T., Jones, T.A. and Mowbray, S.L. (2004). *Mycobacterium tuberculosis* ribose-5-phosphate isomerase has a known fold, but a novel active site. *J Mol Biol* **335**, 799-809.