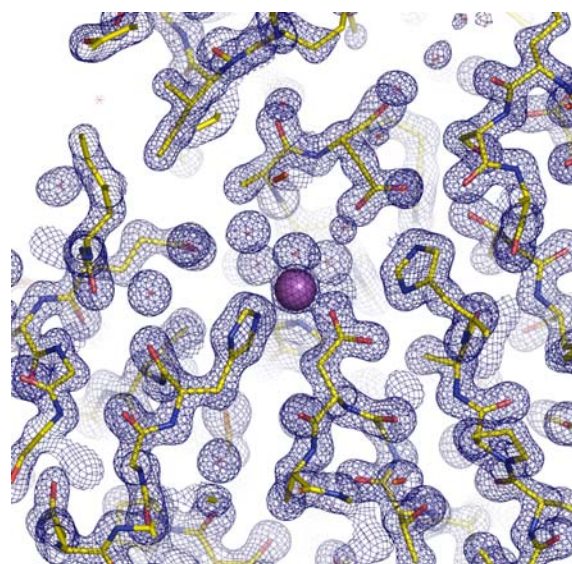
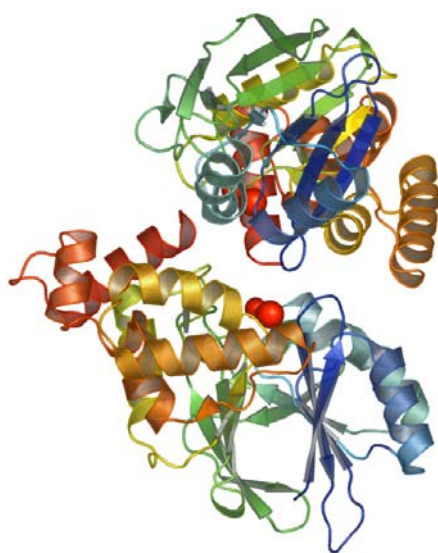


Center for Eukaryotic Structural Genomics

Protein Structure Initiative



Target ID	GO.4020	
Source Organism	<i>Arabidopsis thaliana</i>	
Target Name	At1g53580.1	
PDB Entry	2GCU	Deposition: 14-Mar-2006
Function	putative hydroxyacylglutathione hydrolase 3 (FF/Refine: 2Q4C)	
Produced From	<i>E. coli</i> BL21	
Structure by X-ray	Resolution: 1.48Å	R-value (R-free): 17.6% (20.4%)
	No. of Residues/ASU: 982 (976)	Monomers/ASU: 4
Data Collected At	Advanced Photon Source 22-ID 05-May-2005, 23-ID-D 11-Aug-2005	
Authors	J.G. McCoy, G.E. Wesenberg, G.N. Phillips, Jr., E. Bitto, C.A. Bingman	



Structural Features

The protein product of At1g53580.1 from *Arabidopsis* belongs to the metallo- β -lactamase superfamily. It is closely related to the glyoxalase II enzymes, however, the enzyme does not possess glyoxalase II activity (hydrolysis of glutathione-based thioesters). The enzyme has been shown to bind two equivalents of iron. ICP analysis indicated that the iron/protein ration of our sample was roughly 0.5. This was confirmed in the crystal structure as well, although all of the residues necessary for binding a second metal atom were there. The enzyme possesses 54% identity to a human protein which has been implicated in the rare disorder ethylmalonic encephalopathy. The At1g53580.1 enzyme is currently the most closely related homolog to this enzyme that has been structurally characterized. The structure reveals a small dimeric interface, which is accessible due to a missing two-helix bundle found in glyoxalase II enzymes, as well as a C-terminal fold change which occludes the opening of the active site. The function of this enzyme is currently unknown.

References: (1) McCoy, J.G., Bingman, C.A., Bitto, E., Holdorf, M.M., Makaroff, C.A., Phillips, G.N., Jr. (2006) Structure of an ETHE1-like protein from *Arabidopsis thaliana*. *Acta Crystallogr D Biol Crystallogr* 62(Pt 9):964-70.

Percent Identity with Nearest PDB Structure at Time Solved	30% (1QH3)
Pfam Cluster	Lactamase_B
Sequence Cluster Size	1331

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