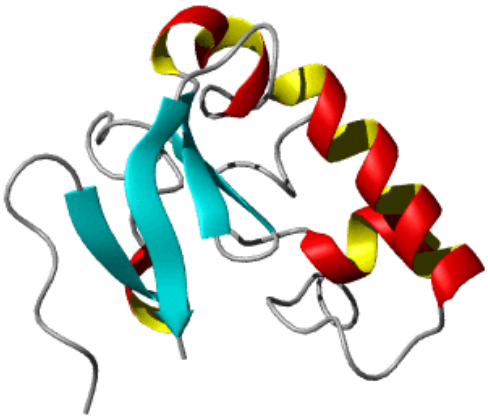
Center for Eukaryotic Structural Genomics

Protein Structure Initiative

Target ID	GO.6705	
Source Organism	*Arabidopsis thaliana*	
Target Name	At2g24940.1	
PDB Entry	1T0G (replaced 1SV7)	Deposition: 06-Apr-2004
BMRB Entry	6138	Deposition: 01-Mar-2004
Function	steroid binding protein (FF/Refine: 2Q3R)	
Produced From	Cell-Free (wheat germ extract)	
Structure by NMR	Restraints/Residue: 26	Subunits/Molecule: 1
	No. of Residues: 109	Molecular Weight: 11.0 kDa
	Backbone RMSD(11–109): 0.72 Å	All Heavy Atoms RMSD(11–109): 1.10 Å
Data Collected At	Nuclear Magnetic Resonance Facilty at Madison (NMRFAM)	
Authors	J. Song, D.A. Vinarov, E.M. Tyler, M.N. Shahan, R.C. Tyler, J.L. Markley	



Structural Features

This represented the first case in CESG in which the wheat germ cell-free protein expression method was used to prepare protein samples for NMR spectroscopy. At2g24940.1 adopts a β-α-β-β-α-α-α–β fold. The most similar structures in the PDB were the N-terminal domain (residues 3–84) of chicken sulfite oxidase with 22% sequence identity (1SOX) and rat outer mitochondrial membrane cytochrome b5 with sequence identity of 17% (1B5M). Although the structure of At2g24940.1 revealed a Cyt-b5 fold, it also shows ~40% sequence identity with mammalian MAPR, which suggests that At2g24940.1 may act as a steroid binding protein. A binding experiment was carried out using NMR. The chemical shift perturbation of the ^{1}H-^{15}N HSQC of At2g24940.1 upon addition of progesterone clearly demonstrates the binding and the location of this ligand to the predicted binding cavity. This target aligns to domains within Pfam trusted matches for Cyt-b5 over residues 11–108.

References: (1) Song, J., Vinarov, D., Tyler, E.M., Shahan, M.N., Tyler, R.C., Markley, J.L. (2004) Hypothetical protein At2g24940.1 from *Arabidopsis thaliana* has a cytochrome b5 like fold. *J Biomol NMR* 30(2):215-8.

Percent Identity with Nearest PDB Structure at Time Solved	22% over 82 aa (1SOX)
Pfam Cluster	Cyt-b5
Protonet Cluster Size : Structures in PDB	44 : 0

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