



# Full wwPDB X-ray Structure Validation Report ⓘ

Oct 2, 2023 – 11:54 PM EDT

PDB ID : 6PEI  
Title : Structure of sorbitol dehydrogenase from Sinorhizobium meliloti 1021  
Authors : Bailey-Elkin, B.A.; Kohlmeier, M.G.; Oresnik, I.J.; Mark, B.L.  
Deposited on : 2019-06-20  
Resolution : 2.10 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

---

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : **FAILED**  
Xtrriage (Phenix) : 1.13  
EDS : **FAILED**  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.35.1

## 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.10 Å.

There are no overall percentile quality scores available for this entry.

MolProbity and EDS failed to run properly - the sequence quality summary graphics cannot be shown.

## 2 Entry composition i

There are 2 unique types of molecules in this entry. The entry contains 8345 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Sorbitol dehydrogenase (L-Iditol 2-dehydrogenase).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	256	Total 1902	C 1187	N 343	O 365	S 7	0	0	0
1	B	256	Total 1900	C 1187	N 341	O 365	S 7	0	0	0
1	C	256	Total 1906	C 1190	N 344	O 365	S 7	0	0	0
1	D	256	Total 1900	C 1187	N 341	O 365	S 7	0	0	0

There are 136 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-33	MET	-	initiating methionine	UNP Q92N06
A	-32	GLY	-	expression tag	UNP Q92N06
A	-31	SER	-	expression tag	UNP Q92N06
A	-30	SER	-	expression tag	UNP Q92N06
A	-29	HIS	-	expression tag	UNP Q92N06
A	-28	HIS	-	expression tag	UNP Q92N06
A	-27	HIS	-	expression tag	UNP Q92N06
A	-26	HIS	-	expression tag	UNP Q92N06
A	-25	HIS	-	expression tag	UNP Q92N06
A	-24	HIS	-	expression tag	UNP Q92N06
A	-23	SER	-	expression tag	UNP Q92N06
A	-22	SER	-	expression tag	UNP Q92N06
A	-21	GLY	-	expression tag	UNP Q92N06
A	-20	LEU	-	expression tag	UNP Q92N06
A	-19	VAL	-	expression tag	UNP Q92N06
A	-18	PRO	-	expression tag	UNP Q92N06
A	-17	ARG	-	expression tag	UNP Q92N06
A	-16	GLY	-	expression tag	UNP Q92N06
A	-15	SER	-	expression tag	UNP Q92N06
A	-14	HIS	-	expression tag	UNP Q92N06
A	-13	MET	-	expression tag	UNP Q92N06

*Continued on next page...*

*Continued from previous page...*

Chain	Residue	Modelled	Actual	Comment	Reference
A	-12	ALA	-	expression tag	UNP Q92N06
A	-11	SER	-	expression tag	UNP Q92N06
A	-10	MET	-	expression tag	UNP Q92N06
A	-9	THR	-	expression tag	UNP Q92N06
A	-8	GLY	-	expression tag	UNP Q92N06
A	-7	GLY	-	expression tag	UNP Q92N06
A	-6	GLN	-	expression tag	UNP Q92N06
A	-5	GLN	-	expression tag	UNP Q92N06
A	-4	MET	-	expression tag	UNP Q92N06
A	-3	GLY	-	expression tag	UNP Q92N06
A	-2	ARG	-	expression tag	UNP Q92N06
A	-1	GLY	-	expression tag	UNP Q92N06
A	0	SER	-	expression tag	UNP Q92N06
B	-33	MET	-	initiating methionine	UNP Q92N06
B	-32	GLY	-	expression tag	UNP Q92N06
B	-31	SER	-	expression tag	UNP Q92N06
B	-30	SER	-	expression tag	UNP Q92N06
B	-29	HIS	-	expression tag	UNP Q92N06
B	-28	HIS	-	expression tag	UNP Q92N06
B	-27	HIS	-	expression tag	UNP Q92N06
B	-26	HIS	-	expression tag	UNP Q92N06
B	-25	HIS	-	expression tag	UNP Q92N06
B	-24	HIS	-	expression tag	UNP Q92N06
B	-23	SER	-	expression tag	UNP Q92N06
B	-22	SER	-	expression tag	UNP Q92N06
B	-21	GLY	-	expression tag	UNP Q92N06
B	-20	LEU	-	expression tag	UNP Q92N06
B	-19	VAL	-	expression tag	UNP Q92N06
B	-18	PRO	-	expression tag	UNP Q92N06
B	-17	ARG	-	expression tag	UNP Q92N06
B	-16	GLY	-	expression tag	UNP Q92N06
B	-15	SER	-	expression tag	UNP Q92N06
B	-14	HIS	-	expression tag	UNP Q92N06
B	-13	MET	-	expression tag	UNP Q92N06
B	-12	ALA	-	expression tag	UNP Q92N06
B	-11	SER	-	expression tag	UNP Q92N06
B	-10	MET	-	expression tag	UNP Q92N06
B	-9	THR	-	expression tag	UNP Q92N06
B	-8	GLY	-	expression tag	UNP Q92N06
B	-7	GLY	-	expression tag	UNP Q92N06
B	-6	GLN	-	expression tag	UNP Q92N06
B	-5	GLN	-	expression tag	UNP Q92N06

*Continued on next page...*

*Continued from previous page...*

Chain	Residue	Modelled	Actual	Comment	Reference
B	-4	MET	-	expression tag	UNP Q92N06
B	-3	GLY	-	expression tag	UNP Q92N06
B	-2	ARG	-	expression tag	UNP Q92N06
B	-1	GLY	-	expression tag	UNP Q92N06
B	0	SER	-	expression tag	UNP Q92N06
C	-33	MET	-	initiating methionine	UNP Q92N06
C	-32	GLY	-	expression tag	UNP Q92N06
C	-31	SER	-	expression tag	UNP Q92N06
C	-30	SER	-	expression tag	UNP Q92N06
C	-29	HIS	-	expression tag	UNP Q92N06
C	-28	HIS	-	expression tag	UNP Q92N06
C	-27	HIS	-	expression tag	UNP Q92N06
C	-26	HIS	-	expression tag	UNP Q92N06
C	-25	HIS	-	expression tag	UNP Q92N06
C	-24	HIS	-	expression tag	UNP Q92N06
C	-23	SER	-	expression tag	UNP Q92N06
C	-22	SER	-	expression tag	UNP Q92N06
C	-21	GLY	-	expression tag	UNP Q92N06
C	-20	LEU	-	expression tag	UNP Q92N06
C	-19	VAL	-	expression tag	UNP Q92N06
C	-18	PRO	-	expression tag	UNP Q92N06
C	-17	ARG	-	expression tag	UNP Q92N06
C	-16	GLY	-	expression tag	UNP Q92N06
C	-15	SER	-	expression tag	UNP Q92N06
C	-14	HIS	-	expression tag	UNP Q92N06
C	-13	MET	-	expression tag	UNP Q92N06
C	-12	ALA	-	expression tag	UNP Q92N06
C	-11	SER	-	expression tag	UNP Q92N06
C	-10	MET	-	expression tag	UNP Q92N06
C	-9	THR	-	expression tag	UNP Q92N06
C	-8	GLY	-	expression tag	UNP Q92N06
C	-7	GLY	-	expression tag	UNP Q92N06
C	-6	GLN	-	expression tag	UNP Q92N06
C	-5	GLN	-	expression tag	UNP Q92N06
C	-4	MET	-	expression tag	UNP Q92N06
C	-3	GLY	-	expression tag	UNP Q92N06
C	-2	ARG	-	expression tag	UNP Q92N06
C	-1	GLY	-	expression tag	UNP Q92N06
C	0	SER	-	expression tag	UNP Q92N06
D	-33	MET	-	initiating methionine	UNP Q92N06
D	-32	GLY	-	expression tag	UNP Q92N06
D	-31	SER	-	expression tag	UNP Q92N06

*Continued on next page...*

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
D	-30	SER	-	expression tag	UNP Q92N06
D	-29	HIS	-	expression tag	UNP Q92N06
D	-28	HIS	-	expression tag	UNP Q92N06
D	-27	HIS	-	expression tag	UNP Q92N06
D	-26	HIS	-	expression tag	UNP Q92N06
D	-25	HIS	-	expression tag	UNP Q92N06
D	-24	HIS	-	expression tag	UNP Q92N06
D	-23	SER	-	expression tag	UNP Q92N06
D	-22	SER	-	expression tag	UNP Q92N06
D	-21	GLY	-	expression tag	UNP Q92N06
D	-20	LEU	-	expression tag	UNP Q92N06
D	-19	VAL	-	expression tag	UNP Q92N06
D	-18	PRO	-	expression tag	UNP Q92N06
D	-17	ARG	-	expression tag	UNP Q92N06
D	-16	GLY	-	expression tag	UNP Q92N06
D	-15	SER	-	expression tag	UNP Q92N06
D	-14	HIS	-	expression tag	UNP Q92N06
D	-13	MET	-	expression tag	UNP Q92N06
D	-12	ALA	-	expression tag	UNP Q92N06
D	-11	SER	-	expression tag	UNP Q92N06
D	-10	MET	-	expression tag	UNP Q92N06
D	-9	THR	-	expression tag	UNP Q92N06
D	-8	GLY	-	expression tag	UNP Q92N06
D	-7	GLY	-	expression tag	UNP Q92N06
D	-6	GLN	-	expression tag	UNP Q92N06
D	-5	GLN	-	expression tag	UNP Q92N06
D	-4	MET	-	expression tag	UNP Q92N06
D	-3	GLY	-	expression tag	UNP Q92N06
D	-2	ARG	-	expression tag	UNP Q92N06
D	-1	GLY	-	expression tag	UNP Q92N06
D	0	SER	-	expression tag	UNP Q92N06

- Molecule 2 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	206	Total O 206 206	0	0
2	B	173	Total O 173 173	0	0
2	C	171	Total O 171 171	0	0
2	D	187	Total O 187 187	0	0

MolProbity and EDS failed to run properly - this section is therefore empty.

### 3 Data and refinement statistics i

EDS failed to run properly - this section is therefore incomplete.

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	82.97Å 89.39Å 87.14Å 90.00° 118.12° 90.00°	Depositor
Resolution (Å)	39.29 – 2.10	Depositor
% Data completeness (in resolution range)	99.7 (39.29-2.10)	Depositor
$R_{merge}$	0.12	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.23 (at 2.10Å)	Xtrriage
Refinement program	REFMAC 5.8.0238	Depositor
R, $R_{free}$	0.192 , 0.252	Depositor
Wilson B-factor (Å <sup>2</sup> )	22.6	Xtrriage
Anisotropy	0.291	Xtrriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.51$ , $\langle L^2 \rangle = 0.34$	Xtrriage
Estimated twinning fraction	0.000 for h,-k,-h-l	Xtrriage
Total number of atoms	8345	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	25.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.21% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.



## 4 Model quality [i](#)

### 4.1 Standard geometry [i](#)

MolProbity failed to run properly - this section is therefore empty.

### 4.2 Too-close contacts [i](#)

MolProbity failed to run properly - this section is therefore empty.

### 4.3 Torsion angles [i](#)

#### 4.3.1 Protein backbone [i](#)

MolProbity failed to run properly - this section is therefore empty.

#### 4.3.2 Protein sidechains [i](#)

MolProbity failed to run properly - this section is therefore empty.

#### 4.3.3 RNA [i](#)

MolProbity failed to run properly - this section is therefore empty.

### 4.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

### 4.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

### 4.6 Ligand geometry [i](#)

There are no ligands in this entry.

### 4.7 Other polymers [i](#)

There are no such residues in this entry.

## 4.8 Polymer linkage issues

There are no chain breaks in this entry.

## 5 Fit of model and data [i](#)

### 5.1 Protein, DNA and RNA chains [i](#)

EDS failed to run properly - this section is therefore empty.

### 5.2 Non-standard residues in protein, DNA, RNA chains [i](#)

EDS failed to run properly - this section is therefore empty.

### 5.3 Carbohydrates [i](#)

EDS failed to run properly - this section is therefore empty.

### 5.4 Ligands [i](#)

EDS failed to run properly - this section is therefore empty.

### 5.5 Other polymers [i](#)

EDS failed to run properly - this section is therefore empty.