



# Full wwPDB X-ray Structure Validation Report ⓘ

May 23, 2024 – 03:49 PM EDT

PDB ID : 4QCC  
Title : Structure of a cube-shaped, highly porous protein cage designed by fusing symmetric oligomeric domains  
Authors : Lai, Y.-T.; Yeates, T.O.  
Deposited on : 2014-05-10  
Resolution : 7.08 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>.

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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) : 2.36.2

## 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 7.08 Å.

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

## 2 Entry composition i

There is only 1 type of molecule in this entry. The entry contains 3954 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 2-dehydro-3-deoxy-6-phosphogalactonate aldolase, peptidyl-prolyl cis-trans isomerase chimera.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	270	1977	1251	335	384	7	0	1	0
1	B	270	1977	1251	335	384	7	0	1	0

There are 32 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	204	GLN	-	linker	UNP U6NBA4
A	205	LYS	-	linker	UNP U6NBA4
A	206	GLN	-	linker	UNP U6NBA4
A	207	LYS	-	linker	UNP U6NBA4
A	208	GLU	-	linker	UNP U6NBA4
A	209	GLN	-	linker	UNP U6NBA4
A	210	ARG	-	linker	UNP U6NBA4
A	211	GLN	-	linker	UNP U6NBA4
A	284	LEU	-	expression tag	UNP U6NBA4
A	285	GLU	-	expression tag	UNP U6NBA4
A	286	HIS	-	expression tag	UNP U6NBA4
A	287	HIS	-	expression tag	UNP U6NBA4
A	288	HIS	-	expression tag	UNP U6NBA4
A	289	HIS	-	expression tag	UNP U6NBA4
A	290	HIS	-	expression tag	UNP U6NBA4
A	291	HIS	-	expression tag	UNP U6NBA4
B	204	GLN	-	linker	UNP U6NBA4
B	205	LYS	-	linker	UNP U6NBA4
B	206	GLN	-	linker	UNP U6NBA4
B	207	LYS	-	linker	UNP U6NBA4
B	208	GLU	-	linker	UNP U6NBA4
B	209	GLN	-	linker	UNP U6NBA4
B	210	ARG	-	linker	UNP U6NBA4
B	211	GLN	-	linker	UNP U6NBA4

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Chain	Residue	Modelled	Actual	Comment	Reference
B	284	LEU	-	expression tag	UNP U6NBA4
B	285	GLU	-	expression tag	UNP U6NBA4
B	286	HIS	-	expression tag	UNP U6NBA4
B	287	HIS	-	expression tag	UNP U6NBA4
B	288	HIS	-	expression tag	UNP U6NBA4
B	289	HIS	-	expression tag	UNP U6NBA4
B	290	HIS	-	expression tag	UNP U6NBA4
B	291	HIS	-	expression tag	UNP U6NBA4

SEQUENCE-PLOTS INFOmissingINFO

### 3 Data and refinement statistics i

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

Property	Value	Source
Space group	F 2 3	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	272.68Å 272.68Å 272.68Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	96.41 – 7.08	Depositor
% Data completeness (in resolution range)	94.7 (96.41-7.08)	Depositor
$R_{merge}$	0.07	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	3.55 (at 7.43Å)	Xtrriage
Refinement program	REFMAC 5.8.0069	Depositor
R, $R_{free}$	0.283 , 0.317	Depositor
Wilson B-factor (Å <sup>2</sup> )	410.5	Xtrriage
Anisotropy	0.000	Xtrriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.51$ , $\langle L^2 \rangle = 0.35$	Xtrriage
Estimated twinning fraction	0.437 for k,h,-l	Xtrriage
Total number of atoms	3954	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	292.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 9.33% 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](#)

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

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

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

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

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

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

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### 4.5 Carbohydrates [i](#)

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

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

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## 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](#)

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### 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.