



wwPDB X-ray Structure Validation Summary Report ⓘ

Jun 24, 2025 – 03:03 pm BST

PDB ID : 4B3Z / pdb_00004b3z
Title : Structure of the human collapsin response mediator protein-1, a lung cancer suppressor
Authors : Liu, S.H.; Lin, Y.H.; Huang, S.F.; Niou, Y.K.; Huang, L.L.; Chen, Y.J.
Deposited on : 2012-07-27
Resolution : 3.05 Å(reported)

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

We welcome your comments at 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	:	4-5-2 with Phenix2.0rc1
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.44

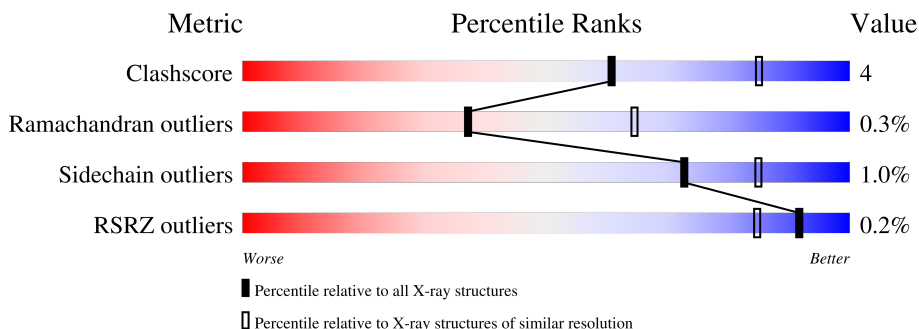
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.05 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	180529	2399 (3.10-3.02)
Ramachandran outliers	177936	2269 (3.10-3.02)
Sidechain outliers	177891	2268 (3.10-3.02)
RSRZ outliers	164620	2258 (3.10-3.02)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	572	
1	B	572	
1	C	572	
1	D	572	

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 14530 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 DIHYDROPYRIMIDINASE-RELATED PROTEIN 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	476	Total	C	N	O	S	0	0	0
			3654	2322	618	697	17			
1	B	469	Total	C	N	O	S	0	0	0
			3608	2295	610	687	16			
1	C	468	Total	C	N	O	S	0	0	0
			3603	2292	609	686	16			
1	D	477	Total	C	N	O	S	0	0	0
			3665	2329	622	698	16			

4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	84.81Å 147.85Å 86.02Å 90.00° 94.61° 90.00°	Depositor
Resolution (Å)	39.18 – 3.05 39.18 – 3.05	Depositor EDS
% Data completeness (in resolution range)	99.6 (39.18-3.05) 97.2 (39.18-3.05)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.93 (at 3.00Å)	Xtriage
Refinement program	PHENIX	Depositor
R, R_{free}	0.174 , 0.227 0.174 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å ²)	56.9	Xtriage
Anisotropy	0.156	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.27 , 20.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.025 for l,-k,h	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	14530	wwPDB-VP
Average B, all atoms (Å ²)	60.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.50% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.54	0/3730	0.91	8/5059 (0.2%)
1	B	0.52	0/3682	0.89	4/4992 (0.1%)
1	C	0.54	0/3677	0.87	3/4985 (0.1%)
1	D	0.57	1/3739 (0.0%)	0.90	1/5069 (0.0%)
All	All	0.54	1/14828 (0.0%)	0.89	16/20105 (0.1%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	491	LEU	CA-C	6.85	1.61	1.52

The worst 5 of 16 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	395	TYR	CA-C-N	-8.89	109.16	118.85
1	A	395	TYR	C-N-CA	-8.89	109.16	118.85
1	C	351	ILE	CB-CA-C	-7.17	102.44	110.68
1	B	109	VAL	CA-C-N	6.82	126.99	120.31
1	B	109	VAL	C-N-CA	6.82	126.99	120.31

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3654	0	3641	33	0
1	B	3608	0	3596	31	0
1	C	3603	0	3591	33	0
1	D	3665	0	3657	29	0
All	All	14530	0	14485	120	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 4.

The worst 5 of 120 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:416:LYS:HD3	1:D:442:SER:HB3	1.72	0.72
1:B:25:ILE:HB	1:B:66:ILE:HG22	1.71	0.71
1:B:295:TRP:HB2	1:D:496:ARG:HD3	1.73	0.70
1:C:25:ILE:HB	1:C:66:ILE:HG22	1.76	0.67
1:C:386:THR:HG22	1:C:390:LYS:HE3	1.78	0.64

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	474/572 (83%)	445 (94%)	26 (6%)	3 (1%)	22	49
1	B	465/572 (81%)	446 (96%)	19 (4%)	0	100	100
1	C	464/572 (81%)	447 (96%)	16 (3%)	1 (0%)	44	71
1	D	473/572 (83%)	451 (95%)	20 (4%)	2 (0%)	30	58
All	All	1876/2288 (82%)	1789 (95%)	81 (4%)	6 (0%)	37	64

5 of 6 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	489	PHE
1	D	491	LEU
1	A	52	PRO
1	A	53	GLY
1	C	357	GLY

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	392/473 (83%)	389 (99%)	3 (1%)	79	88
1	B	387/473 (82%)	382 (99%)	5 (1%)	65	80
1	C	387/473 (82%)	382 (99%)	5 (1%)	65	80
1	D	393/473 (83%)	391 (100%)	2 (0%)	86	91
All	All	1559/1892 (82%)	1544 (99%)	15 (1%)	73	85

5 of 15 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	442	SER
1	D	245	ARG
1	C	211	ARG
1	D	491	LEU
1	C	425	HIS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 13 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	91	GLN
1	C	378	ASN
1	D	449	GLN
1	D	378	ASN
1	D	425	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

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

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

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	476/572 (83%)	-0.70	1 (0%) 92 85	30, 53, 91, 168	0
1	B	469/572 (81%)	-0.63	0 100 100	38, 61, 89, 134	0
1	C	468/572 (81%)	-0.71	1 (0%) 92 85	28, 52, 89, 165	0
1	D	477/572 (83%)	-0.62	1 (0%) 92 85	34, 59, 98, 165	0
All	All	1890/2288 (82%)	-0.67	3 (0%) 92 85	28, 56, 92, 168	0

All (3) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	492	GLN	2.6
1	A	489	PHE	2.2
1	C	490	GLY	2.1

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

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

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.