Full wwPDB X-ray Structure Validation Report (i)

May 13, 2020 – 07:40 am BST

PDB ID	:	2ZBI
Title	:	Crystal structure of a bacterial cell-surface flagellin
Authors	:	Maruyama, Y.
Deposited on	:	2007-10-22
Resolution	:	2.00 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*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

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

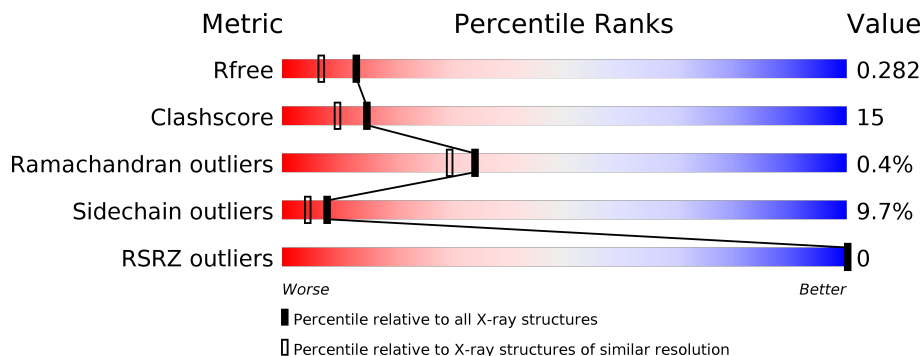|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.11
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.11

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.00 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	Percentile Ranks	Value
Rfree		0.282
Clashscore		15
Ramachandran outliers		0.4%
Sidechain outliers		9.7%
RSRZ outliers		0

Worse   *Better*

▌ Percentile relative to all X-ray structures

▐ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	130704	8085 (2.00-2.00)
Clashscore	141614	9178 (2.00-2.00)
Ramachandran outliers	138981	9054 (2.00-2.00)
Sidechain outliers	138945	9053 (2.00-2.00)
RSRZ outliers	127900	7900 (2.00-2.00)

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 on 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 <=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	292	71% 16% • 9%
1	B	292	69% 16% 6% 9%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 4198 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 Flagellin homolog.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	265	Total 1922	C 1151	N 348	O 421	Se 2	0	2	0
1	B	267	Total 1932	C 1157	N 351	O 422	Se 2	0	1	0

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	339	LEU	-	EXPRESSION TAG	UNP Q2PHB2
A	340	GLU	-	EXPRESSION TAG	UNP Q2PHB2
A	341	HIS	-	EXPRESSION TAG	UNP Q2PHB2
A	342	HIS	-	EXPRESSION TAG	UNP Q2PHB2
A	343	HIS	-	EXPRESSION TAG	UNP Q2PHB2
A	344	HIS	-	EXPRESSION TAG	UNP Q2PHB2
A	345	HIS	-	EXPRESSION TAG	UNP Q2PHB2
A	346	HIS	-	EXPRESSION TAG	UNP Q2PHB2
B	339	LEU	-	EXPRESSION TAG	UNP Q2PHB2
B	340	GLU	-	EXPRESSION TAG	UNP Q2PHB2
B	341	HIS	-	EXPRESSION TAG	UNP Q2PHB2
B	342	HIS	-	EXPRESSION TAG	UNP Q2PHB2
B	343	HIS	-	EXPRESSION TAG	UNP Q2PHB2
B	344	HIS	-	EXPRESSION TAG	UNP Q2PHB2
B	345	HIS	-	EXPRESSION TAG	UNP Q2PHB2
B	346	HIS	-	EXPRESSION TAG	UNP Q2PHB2

- Molecule 2 is water.

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	167	Total 167	O 167	0	0
2	B	177	Total 177	O 177	0	0

3 Residue-property plots (i)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: Flagellin homolog

Chain A:

- Molecule 1: Flagellin homolog

Chain B:
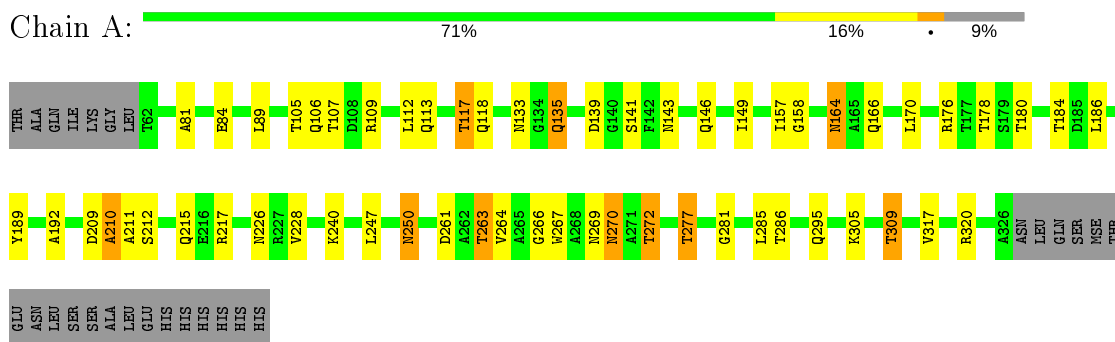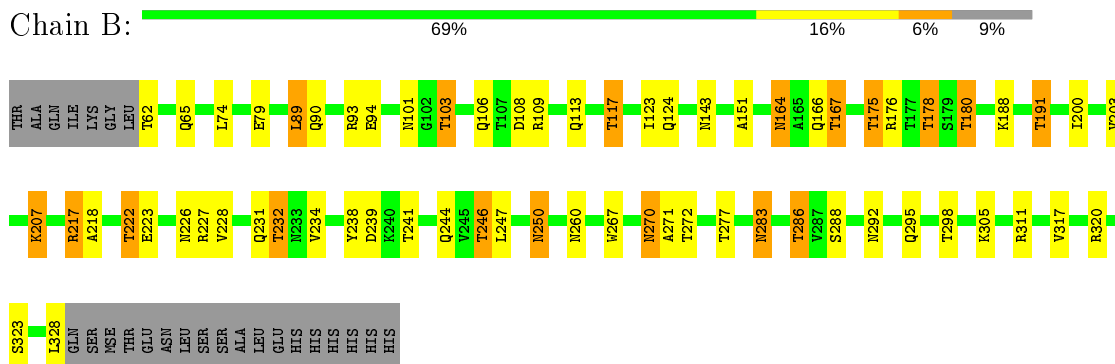
4   Data and refinement statistics   (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	32.49Å 52.17Å 76.20Å 99.11° 93.90° 107.97°	Depositor
Resolution (Å)	37.68 – 2.00 37.68 – 2.00	Depositor EDS
% Data completeness (in resolution range)	97.9 (37.68-2.00) 97.8 (37.68-2.00)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.05	Depositor
$< I/\sigma(I) >$ [1]	5.63 (at 2.00Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.196 , 0.282 0.198 , 0.282	Depositor DCC
R_{free} test set	1546 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å^2)	15.3	Xtriage
Anisotropy	0.105	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.38 , 46.0	EDS
L-test for twinning[2]	$< |L| > = 0.49, < L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	4198	wwPDB-VP
Average B, all atoms (Å^2)	16.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.92% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1] Intensities estimated from amplitudes.
[2] Theoretical values of $< |L| >$, $< L^2 >$ 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	0.82	0/1934	0.83	0/2629
1	B	0.85	0/1941	0.85	1/2639 (0.0%)
All	All	0.83	0/3875	0.84	1/5268 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	108	ASP	CB-CG-OD1	5.55	123.30	118.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	209	ASP	Peptide

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	1922	0	1882	52	0
1	B	1932	0	1893	67	1
2	A	167	0	0	13	0
2	B	177	0	0	15	0
All	All	4198	0	3775	115	1

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 15.

All (115) 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:A:215:GLN:NE2	1:B:277:THR:HG21	1.62	1.12
1:A:215:GLN:HE22	1:B:277:THR:HG21	0.98	1.08
1:A:215:GLN:HE22	1:B:277:THR:CG2	1.68	1.06
1:B:320:ARG:HD3	2:B:571:HOH:O	1.61	0.99
1:B:124:GLN:HE22	1:B:166:GLN:HE21	1.10	0.98
1:B:191:THR:O	1:B:217:ARG:NH1	1.99	0.95
1:B:106:GLN:HE22	1:B:226:ASN:HD22	1.13	0.92
1:A:261:ASP:HB3	1:A:264:VAL:HG12	1.54	0.88
1:B:218:ALA:O	1:B:222:THR:HG23	1.79	0.83
1:B:232:THR:HG21	2:B:493:HOH:O	1.77	0.83
1:A:106:GLN:HE22	1:A:226:ASN:HD22	1.24	0.81
1:B:62:THR:HG21	2:B:616:HOH:O	1.82	0.78
1:A:192:ALA:HA	1:A:210:ALA:H	1.49	0.77
1:A:135:GLN:HG3	2:A:430:HOH:O	1.84	0.77
1:A:192:ALA:HB2	1:A:210:ALA:HB2	1.65	0.76
1:A:176:ARG:HH11	1:A:295:GLN:HE22	1.34	0.76
1:B:167:THR:HG21	2:B:658:HOH:O	1.86	0.75
1:B:167:THR:HG23	1:B:283:ASN:HB3	1.68	0.75
1:B:106:GLN:NE2	1:B:226:ASN:HD22	1.83	0.75
1:B:323:SER:HB2	2:B:665:HOH:O	1.89	0.72
1:A:113:GLN:HE21	1:A:117:THR:HG22	1.56	0.71
1:B:113:GLN:O	1:B:117:THR:HG23	1.91	0.71
1:A:261:ASP:OD1	1:A:263:THR:HB	1.91	0.70
1:B:101:ASN:OD1	1:B:103:THR:HG22	1.91	0.69
1:B:222:THR:HG21	1:B:238:TYR:HB2	1.73	0.69
1:A:176:ARG:NH1	1:A:295:GLN:HE22	1.91	0.69
1:A:105:THR:CG2	1:A:107:THR:HG22	2.23	0.68
1:A:178:THR:OG1	1:A:277:THR:HG21	1.93	0.68
1:B:232:THR:CG2	1:B:234:VAL:H	2.08	0.66
1:A:106:GLN:NE2	1:A:226:ASN:HD22	1.93	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:188:LYS:HB3	1:B:191:THR:CG2	2.26	0.65
1:B:62:THR:HG22	1:B:65:GLN:HG3	1.78	0.65
1:A:105:THR:HG22	1:A:107:THR:H	1.62	0.65
1:B:167:THR:HG23	1:B:283:ASN:CB	2.27	0.64
1:A:105:THR:HG21	1:A:107:THR:HG22	1.78	0.64
1:B:113:GLN:HE21	1:B:117:THR:HG22	1.63	0.63
1:A:106:GLN:NE2	1:A:109:ARG:HH21	1.97	0.62
1:A:250:ASN:H	1:A:250:ASN:HD22	1.47	0.61
1:B:106:GLN:NE2	1:B:109:ARG:HH21	1.98	0.60
1:A:189:TYR:O	1:A:211:ALA:HB3	2.02	0.60
1:B:223:GLU:HG3	2:B:570:HOH:O	2.02	0.60
1:B:62:THR:HG23	1:B:65:GLN:H	1.67	0.59
1:B:270:ASN:ND2	1:B:272:THR:H	2.01	0.58
1:B:90:GLN:O	1:B:94:GLU:HG3	2.03	0.58
1:A:240:LYS:HE2	1:B:244:GLN:NE2	2.19	0.58
1:A:250:ASN:N	1:A:250:ASN:HD22	2.02	0.58
1:B:124:GLN:NE2	1:B:166:GLN:HE21	1.92	0.58
1:B:175:THR:HG23	2:B:519:HOH:O	2.04	0.58
1:A:166:GLN:CG	2:A:471:HOH:O	2.52	0.57
1:B:176:ARG:HH11	1:B:295:GLN:HE22	1.52	0.56
1:B:232:THR:HG22	1:B:234:VAL:H	1.68	0.56
1:A:309:THR:HG22	2:A:364:HOH:O	2.07	0.55
1:B:286:THR:HG23	1:B:288:SER:H	1.71	0.54
1:A:105:THR:HG22	1:A:107:THR:N	2.21	0.54
1:B:218:ALA:O	1:B:222:THR:CG2	2.55	0.53
2:A:495:HOH:O	1:B:178:THR:HG21	2.09	0.53
1:A:149:ILE:HG12	1:A:157:ILE:HG12	1.90	0.53
1:A:305:LYS:O	1:A:309:THR:HG23	2.08	0.53
1:B:113:GLN:NE2	1:B:117:THR:HG22	2.22	0.53
1:B:180:THR:HB	1:B:246:THR:HB	1.91	0.53
1:A:247:LEU:HG	1:A:267:TRP:CZ2	2.45	0.52
1:B:176:ARG:HB3	2:B:667:HOH:O	2.11	0.51
1:B:103:THR:HG23	2:B:636:HOH:O	2.10	0.51
1:B:167:THR:CG2	1:B:283:ASN:HB3	2.39	0.51
1:A:105:THR:HG22	1:A:107:THR:HG22	1.91	0.51
1:B:246:THR:HG22	2:B:495:HOH:O	2.11	0.50
1:B:232:THR:HG23	1:B:234:VAL:H	1.75	0.50
1:A:164:ASN:HD21	1:A:166:GLN:HG3	1.77	0.50
1:B:246:THR:CG2	2:B:495:HOH:O	2.60	0.49
1:A:176:ARG:NE	2:A:497:HOH:O	2.45	0.48
1:B:164:ASN:HD21	1:B:166:GLN:HB2	1.78	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:228:VAL:O	1:B:232:THR:HB	2.14	0.48
1:B:247:LEU:HG	1:B:267:TRP:CZ2	2.49	0.48
1:A:217:ARG:HH12	1:A:264:VAL:HG23	1.79	0.48
1:A:270:ASN:ND2	1:A:272:THR:H	2.12	0.47
1:B:200:ILE:O	1:B:203:VAL:HG22	2.14	0.47
1:B:124:GLN:HE22	1:B:166:GLN:NE2	1.94	0.47
1:A:186:LEU:HD13	1:A:217:ARG:HG3	1.97	0.47
1:A:149:ILE:CG1	1:A:157:ILE:HG12	2.45	0.46
1:A:139:ASP:CB	2:A:471:HOH:O	2.64	0.46
1:B:167:THR:CG2	1:B:283:ASN:CB	2.94	0.45
1:B:232:THR:HG23	1:B:234:VAL:N	2.32	0.45
1:A:228:VAL:HA	2:A:428:HOH:O	2.16	0.45
1:A:215:GLN:N	1:A:215:GLN:OE1	2.50	0.44
1:A:81:ALA:O	1:A:84[A]:GLU:HB2	2.15	0.44
1:A:146:GLN:NE2	1:A:158:GLY:HA3	2.32	0.44
1:B:176:ARG:NH1	1:B:295:GLN:HE22	2.16	0.44
1:B:143[A]:ASN:ND2	2:B:560:HOH:O	2.50	0.44
1:B:323:SER:CB	2:B:665:HOH:O	2.58	0.44
1:B:270:ASN:HD22	1:B:271:ALA:N	2.16	0.43
1:B:62:THR:CG2	1:B:65:GLN:H	2.30	0.43
1:B:79:GLU:OE2	1:B:311:ARG:HD2	2.19	0.43
1:A:166:GLN:HG2	2:A:471:HOH:O	2.17	0.43
1:A:176:ARG:NH2	2:A:497:HOH:O	2.52	0.43
1:B:89:LEU:HD13	1:B:123:ILE:HD13	2.00	0.42
1:B:239:ASP:OD2	1:B:241:THR:HB	2.19	0.42
1:A:139:ASP:OD2	1:A:141:SER:OG	2.26	0.42
1:A:118:GLN:CG	2:A:479:HOH:O	2.67	0.42
1:A:269:ASN:HD22	1:A:269:ASN:N	2.17	0.42
1:B:298:THR:HG21	2:B:545:HOH:O	2.19	0.42
1:A:170:LEU:O	1:A:281:GLY:HA2	2.20	0.42
1:A:286:THR:CG2	2:A:445:HOH:O	2.67	0.42
1:B:223:GLU:HG2	1:B:227:ARG:HH12	1.85	0.41
1:B:286:THR:HG22	1:B:292:ASN:HB3	2.01	0.41
1:B:250:ASN:H	1:B:250:ASN:HD22	1.69	0.41
1:B:270:ASN:HD22	1:B:272:THR:H	1.68	0.41
1:A:186:LEU:HD21	1:A:266:GLY:HA2	2.02	0.41
1:B:207:LYS:HE2	2:B:638:HOH:O	2.20	0.41
1:B:286:THR:CG2	1:B:288:SER:H	2.33	0.41
1:A:176:ARG:CZ	2:A:497:HOH:O	2.69	0.41
1:A:320:ARG:NH2	2:A:355:HOH:O	2.53	0.40
1:B:74:LEU:HD23	1:B:74:LEU:C	2.42	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:250:ASN:H	1:A:250:ASN:ND2	2.14	0.40
1:B:283:ASN:OD1	1:B:283:ASN:C	2.60	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:93:ARG:NH1	1:B:151:ALA:O[1_445]	2.19	0.01

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	265/292 (91%)	257 (97%)	7 (3%)	1 (0%)	34	30
1	B	266/292 (91%)	256 (96%)	9 (3%)	1 (0%)	34	30
All	All	531/584 (91%)	513 (97%)	16 (3%)	2 (0%)	34	30

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	210	ALA
1	B	260	ASN

5.3.2 Protein sidechains (i)

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	203/222 (91%)	186 (92%)	17 (8%)	11	7
1	B	204/222 (92%)	182 (89%)	22 (11%)	6	3
All	All	407/444 (92%)	368 (90%)	39 (10%)	8	5

All (39) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	89	LEU
1	A	112	LEU
1	A	117	THR
1	A	133	ASN
1	A	135	GLN
1	A	164	ASN
1	A	180	THR
1	A	184	THR
1	A	212	SER
1	A	250	ASN
1	A	263	THR
1	A	270	ASN
1	A	272	THR
1	A	277	THR
1	A	285	LEU
1	A	309	THR
1	A	317	VAL
1	B	89	LEU
1	B	103	THR
1	B	117	THR
1	B	164	ASN
1	B	167	THR
1	B	175	THR
1	B	178	THR
1	B	180	THR
1	B	191	THR
1	B	207	LYS
1	B	217	ARG
1	B	222	THR
1	B	231	GLN
1	B	232	THR
1	B	246	THR
1	B	250	ASN
1	B	270	ASN
1	B	283	ASN

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Mol	Chain	Res	Type
1	B	286	THR
1	B	305	LYS
1	B	317	VAL
1	B	328	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (43) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	63	GLN
1	A	67	ASN
1	A	69	ASN
1	A	76	GLN
1	A	87	ASN
1	A	98	GLN
1	A	104	ASN
1	A	106	GLN
1	A	118	GLN
1	A	124	GLN
1	A	133	ASN
1	A	135	GLN
1	A	164	ASN
1	A	166	GLN
1	A	250	ASN
1	A	269	ASN
1	A	270	ASN
1	A	295	GLN
1	A	299	GLN
1	A	302	ASN
1	B	63	GLN
1	B	65	GLN
1	B	67	ASN
1	B	69	ASN
1	B	76	GLN
1	B	87	ASN
1	B	98	GLN
1	B	106	GLN
1	B	129	GLN
1	B	133	ASN
1	B	146	GLN
1	B	164	ASN
1	B	166	GLN
1	B	231	GLN

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Mol	Chain	Res	Type
1	B	244	GLN
1	B	250	ASN
1	B	269	ASN
1	B	270	ASN
1	B	295	GLN
1	B	299	GLN
1	B	302	ASN
1	B	319	ASN
1	B	327	ASN

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 carbohydrates 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	263/292 (90%)	-0.25	0	100	100	5, 14, 26, 33	0
1	B	265/292 (90%)	-0.29	0	100	100	5, 15, 25, 31	0
All	All	528/584 (90%)	-0.27	0	100	100	5, 15, 26, 33	0

There are no RSRZ outliers to report.

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 carbohydrates 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.