



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 28, 2023 – 02:15 PM EDT

PDB ID : 3LHA
Title : Crystal structure of mouse VPS26B(R240S/G241A/E242S) in spacegroup P41 21 2
Authors : Collins, B.; Shaw, D.; Norwood, S.
Deposited on : 2010-01-21
Resolution : 2.80 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 ⓘ 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 : 4.02b-467
Xtriage (Phenix) : 1.13
EDS : 2.35
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) : 2.35

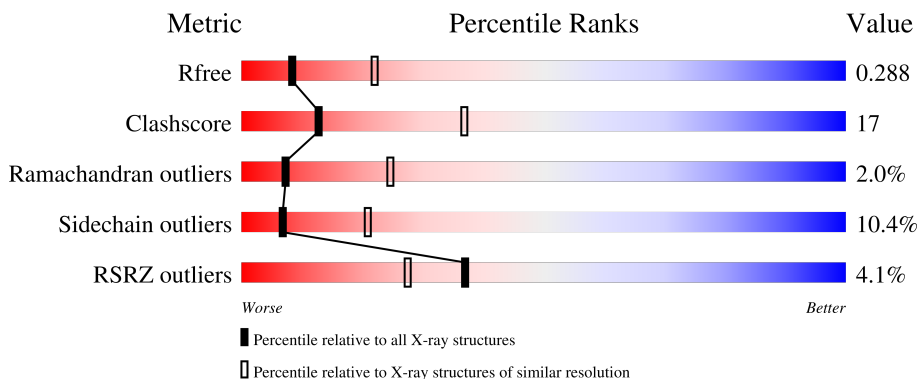
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 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))
R_{free}	130704	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

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	340	 3% 56% 22% • 17%
1	B	340	 4% 56% 22% •• 17%

2 Entry composition [i](#)

There are 2 unique types of molecules in this entry. The entry contains 4855 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 Vacuolar protein sorting-associated protein 26B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	283	2351	1506	396	443	6	0	1	0
1	B	282	2352	1507	396	443	6	0	1	0

There are 26 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-3	MET	-	expression tag	UNP Q8C0E2
A	-2	GLY	-	expression tag	UNP Q8C0E2
A	-1	SER	-	expression tag	UNP Q8C0E2
A	0	HIS	-	expression tag	UNP Q8C0E2
A	1	HIS	-	expression tag	UNP Q8C0E2
A	2	HIS	-	expression tag	UNP Q8C0E2
A	3	HIS	-	expression tag	UNP Q8C0E2
A	4	HIS	-	expression tag	UNP Q8C0E2
A	5	HIS	-	expression tag	UNP Q8C0E2
A	6	MET	-	expression tag	UNP Q8C0E2
A	197	SER	LEU	engineered mutation	UNP Q8C0E2
A	199	GLU	ARG	engineered mutation	UNP Q8C0E2
A	242	SER	GLU	engineered mutation	UNP Q8C0E2
B	-3	MET	-	expression tag	UNP Q8C0E2
B	-2	GLY	-	expression tag	UNP Q8C0E2
B	-1	SER	-	expression tag	UNP Q8C0E2
B	0	HIS	-	expression tag	UNP Q8C0E2
B	1	HIS	-	expression tag	UNP Q8C0E2
B	2	HIS	-	expression tag	UNP Q8C0E2
B	3	HIS	-	expression tag	UNP Q8C0E2
B	4	HIS	-	expression tag	UNP Q8C0E2
B	5	HIS	-	expression tag	UNP Q8C0E2
B	6	MET	-	expression tag	UNP Q8C0E2
B	197	SER	LEU	engineered mutation	UNP Q8C0E2
B	199	GLU	ARG	engineered mutation	UNP Q8C0E2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	242	SER	GLU	engineered mutation	UNP Q8C0E2

- Molecule 2 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	93	Total O 93 93	0	0
2	B	59	Total O 59 59	0	0

4 Data and refinement statistics

Property	Value	Source
Space group	P 41 21 2	Depositor
Cell constants a, b, c, α , β , γ	118.14Å 118.14Å 193.27Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	40.85 – 2.80 40.85 – 2.80	Depositor EDS
% Data completeness (in resolution range)	100.0 (40.85-2.80) 100.0 (40.85-2.80)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.92 (at 2.81Å)	Xtrriage
Refinement program	PHENIX (phenix.refine: 1.5_2)	Depositor
R, R_{free}	0.252 , 0.284 0.256 , 0.288	Depositor DCC
R_{free} test set	1734 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å ²)	52.3	Xtrriage
Anisotropy	0.000	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 53.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.45$, $\langle L^2 \rangle = 0.27$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.88	EDS
Total number of atoms	4855	wwPDB-VP
Average B, all atoms (Å ²)	51.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.62% 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	0.51	0/2401	0.65	0/3229
1	B	0.50	0/2402	0.68	2/3231 (0.1%)
All	All	0.51	0/4803	0.66	2/6460 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	60	ARG	CB-CG-CD	5.15	124.99	111.60
1	B	60	ARG	CG-CD-NE	5.13	122.57	111.80

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	2351	0	2345	76	0
1	B	2352	0	2350	83	2
2	A	93	0	0	10	1
2	B	59	0	0	5	0
All	All	4855	0	4695	156	2

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 17.

All (156) 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:B:179:ASN:ND2	1:B:190:VAL:HB	1.72	1.05
1:B:179:ASN:HD22	1:B:190:VAL:HB	1.22	1.04
1:A:179:ASN:ND2	1:A:190:VAL:HB	1.74	1.02
1:A:179:ASN:HD22	1:A:190:VAL:HB	1.25	0.99
1:B:171:CYS:HA	1:B:199:GLU:HB2	1.58	0.86
1:A:171:CYS:HA	1:A:199:GLU:HB2	1.59	0.84
1:A:155:TYR:CD1	1:A:182:LYS:HD3	2.17	0.80
1:B:155:TYR:CD1	1:B:182:LYS:HD3	2.18	0.79
1:A:155:TYR:HB3	1:A:156:PRO:HD2	1.68	0.76
1:B:155:TYR:HB3	1:B:156:PRO:HD2	1.66	0.76
1:B:217:THR:HG21	1:B:264:LYS:O	1.88	0.74
1:A:110:THR:HA	2:A:409:HOH:O	1.89	0.71
1:A:155:TYR:CE1	1:A:182:LYS:HD3	2.26	0.70
1:B:155:TYR:CE1	1:B:182:LYS:HD3	2.26	0.70
1:B:156:PRO:HB2	1:B:158:LEU:H	1.57	0.69
1:A:168:ILE:HD12	1:A:171:CYS:SG	2.33	0.69
1:A:154:THR:C	1:A:155:TYR:HD2	1.96	0.68
1:A:122:GLN:HG2	1:A:224[A]:GLU:HG3	1.76	0.68
1:B:122:GLN:HG2	1:B:224[A]:GLU:HG3	1.76	0.67
1:B:217:THR:H	1:B:221:VAL:HG22	1.59	0.66
1:A:243:SER:O	1:A:244:ILE:HG13	1.96	0.65
1:B:154:THR:C	1:B:155:TYR:HD2	1.98	0.65
1:B:243:SER:O	1:B:244:ILE:HG13	1.97	0.64
1:A:60:ARG:NH1	1:A:98:GLU:OE2	2.32	0.63
1:B:156:PRO:HB2	1:B:157:GLU:HA	1.79	0.63
1:A:210:ILE:HD12	1:A:273:ASN:HB2	1.81	0.63
1:B:60:ARG:NH1	1:B:98:GLU:OE2	2.31	0.63
1:B:182:LYS:HG2	1:B:291:VAL:HB	1.80	0.62
1:B:169:GLU:O	1:B:169:GLU:HG3	1.99	0.62
1:B:210:ILE:HD12	1:B:273:ASN:HB2	1.81	0.62
1:B:168:ILE:HD12	1:B:171:CYS:SG	2.40	0.62
1:A:280:GLU:O	1:A:281:GLU:HB2	1.99	0.61
1:B:155:TYR:HD1	1:B:182:LYS:HD3	1.64	0.61
1:A:154:THR:O	1:A:155:TYR:HD2	1.82	0.61
1:A:155:TYR:HD1	1:A:182:LYS:HD3	1.63	0.61
1:A:259:MET:CE	2:A:367:HOH:O	2.49	0.60
1:A:182:LYS:HG2	1:A:291:VAL:HB	1.83	0.59
1:B:60:ARG:CG	1:B:60:ARG:HH11	2.16	0.59
1:B:280:GLU:O	1:B:281:GLU:HB2	2.02	0.59
1:B:259:MET:HE2	2:B:358:HOH:O	2.04	0.58
1:A:169:GLU:O	1:A:169:GLU:HG3	2.04	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:259:MET:CE	2:B:358:HOH:O	2.51	0.57
1:B:122:GLN:CG	1:B:224[A]:GLU:HG3	2.35	0.57
1:A:111:HIS:N	2:A:409:HOH:O	2.14	0.56
1:A:91:LYS:HD3	2:A:365:HOH:O	2.05	0.56
1:B:156:PRO:CB	1:B:158:LEU:H	2.18	0.56
1:B:164:MET:CE	1:B:274:LEU:HB2	2.35	0.56
1:B:154:THR:O	1:B:155:TYR:HD2	1.89	0.55
1:B:24:ARG:HA	1:B:37:TYR:O	2.06	0.55
1:B:217:THR:CG2	1:B:264:LYS:O	2.55	0.55
1:B:155:TYR:CB	1:B:156:PRO:HD2	2.34	0.55
1:A:122:GLN:CG	1:A:224[A]:GLU:HG3	2.35	0.54
1:B:22:ARG:HD2	2:B:365:HOH:O	2.08	0.54
1:B:156:PRO:HB2	1:B:157:GLU:CA	2.37	0.54
1:B:164:MET:HE2	1:B:274:LEU:HB2	1.89	0.54
1:B:166:VAL:HG12	1:B:174:ILE:HB	1.90	0.54
1:A:164:MET:CE	1:A:274:LEU:HB2	2.38	0.54
1:A:137:ARG:HG3	2:A:402:HOH:O	2.07	0.53
1:B:225:ASN:O	2:B:385:HOH:O	2.19	0.53
1:B:60:ARG:HH11	1:B:60:ARG:HG2	1.74	0.52
1:B:69:GLU:HG2	1:B:90:VAL:HG22	1.90	0.52
1:B:171:CYS:CA	1:B:199:GLU:HB2	2.37	0.52
1:B:179:ASN:ND2	1:B:190:VAL:CB	2.61	0.52
1:B:156:PRO:HB2	1:B:158:LEU:N	2.25	0.52
1:B:208:ASP:HB2	1:B:273:ASN:HB3	1.93	0.51
1:A:166:VAL:HG12	1:A:174:ILE:HB	1.92	0.51
1:A:259:MET:HE3	2:A:367:HOH:O	2.09	0.51
1:A:155:TYR:CB	1:A:156:PRO:HD2	2.34	0.50
1:A:285:PHE:HB3	1:B:78:TYR:CE2	2.46	0.50
1:B:254:GLU:HA	1:B:254:GLU:OE1	2.12	0.50
1:A:254:GLU:HA	1:A:254:GLU:OE1	2.11	0.50
1:A:64:GLN:HA	1:A:96:PRO:HB3	1.94	0.49
1:A:259:MET:HE2	2:A:367:HOH:O	2.08	0.49
1:B:171:CYS:HB2	1:B:200:ILE:HG13	1.95	0.49
1:A:170:ASP:O	1:A:171:CYS:CB	2.61	0.48
1:A:22:ARG:NH2	1:A:44:GLU:OE1	2.41	0.48
1:B:124:VAL:HG22	1:B:125:LYS:N	2.29	0.48
1:A:110:THR:CA	2:A:409:HOH:O	2.53	0.47
1:B:76:LEU:HD23	1:B:124:VAL:HG23	1.97	0.47
1:A:124:VAL:HG22	1:A:125:LYS:N	2.29	0.47
1:A:20:GLU:CD	1:A:20:GLU:H	2.18	0.47
1:B:234:MET:HG3	1:B:235:ASP:OD2	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:208:ASP:HB2	1:A:273:ASN:HB3	1.96	0.47
1:B:137:ARG:H	1:B:137:ARG:HG3	1.34	0.47
1:B:170:ASP:O	1:B:171:CYS:CB	2.62	0.47
1:B:170:ASP:O	1:B:171:CYS:HB3	2.15	0.47
1:A:123:ASN:HD22	1:B:285:PHE:HE2	1.62	0.46
1:B:180:LYS:HB2	1:B:183:TYR:CZ	2.50	0.46
1:B:231:TYR:CD2	1:B:231:TYR:C	2.88	0.46
1:A:232:GLU:C	1:A:233:ILE:HD12	2.34	0.46
1:A:137:ARG:HG3	1:A:137:ARG:H	1.37	0.46
1:A:180:LYS:HB2	1:A:183:TYR:CZ	2.51	0.46
1:A:171:CYS:CA	1:A:199:GLU:HB2	2.39	0.46
1:A:206:GLU:OE2	1:A:230:LYS:HD3	2.16	0.46
1:A:69:GLU:HG2	1:A:90:VAL:HG22	1.98	0.46
1:A:119:TYR:HB2	1:A:259:MET:CE	2.46	0.46
1:A:170:ASP:O	1:A:171:CYS:HB3	2.15	0.46
1:A:171:CYS:HB2	1:A:200:ILE:HG13	1.97	0.46
1:B:230:LYS:HB2	1:B:230:LYS:HE2	1.69	0.46
1:B:20:GLU:H	1:B:20:GLU:CD	2.17	0.46
1:A:233:ILE:HD12	1:A:233:ILE:N	2.31	0.45
1:B:228:ILE:HG21	1:B:255:LEU:HD21	1.97	0.45
1:A:169:GLU:O	1:A:170:ASP:OD1	2.34	0.45
1:B:206:GLU:OE2	1:B:230:LYS:HD3	2.15	0.45
1:A:228:ILE:HG21	1:A:255:LEU:HD21	1.99	0.45
1:A:234:MET:HG3	1:A:235:ASP:OD2	2.16	0.45
1:B:168:ILE:HB	1:B:171:CYS:SG	2.56	0.45
1:A:24:ARG:HA	1:A:37:TYR:O	2.16	0.45
1:A:164:MET:HE3	1:A:274:LEU:HB2	1.98	0.45
1:B:49:LYS:HA	1:B:105:PHE:O	2.16	0.45
1:A:59:LYS:HG2	1:A:60:ARG:O	2.18	0.44
1:A:122:GLN:HG2	1:A:224[B]:GLU:CG	2.47	0.44
1:B:122:GLN:HG2	1:B:224[B]:GLU:CG	2.48	0.44
1:B:278:ASP:OD1	1:B:278:ASP:C	2.56	0.44
1:A:183:TYR:O	1:A:292:LEU:HA	2.17	0.44
1:A:154:THR:O	1:A:155:TYR:CD2	2.69	0.44
1:A:285:PHE:HE2	1:B:123:ASN:HD22	1.66	0.44
1:A:80:ARG:HD2	1:A:80:ARG:HA	1.66	0.43
1:A:49:LYS:NZ	1:A:49:LYS:HB3	2.33	0.43
1:B:59:LYS:HG2	1:B:60:ARG:O	2.17	0.43
1:B:64:GLN:HA	1:B:96:PRO:HB3	2.00	0.43
1:A:168:ILE:HB	1:A:171:CYS:SG	2.58	0.43
1:B:80:ARG:HA	1:B:80:ARG:HD2	1.68	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:218:GLY:HA2	1:B:219:PRO:HA	1.68	0.43
1:A:95:ARG:NH2	2:A:379:HOH:O	2.51	0.43
1:A:247:ARG:NH1	2:A:377:HOH:O	2.42	0.43
1:A:49:LYS:HA	1:A:105:PHE:O	2.18	0.42
1:A:164:MET:HE2	1:A:274:LEU:HB2	2.00	0.42
1:B:60:ARG:HG2	1:B:98:GLU:OE2	2.17	0.42
1:B:119:TYR:CZ	1:B:268:VAL:HG21	2.54	0.42
1:A:131:ARG:HD3	1:A:144:GLU:OE2	2.19	0.42
1:B:124:VAL:HG22	1:B:125:LYS:H	1.84	0.42
1:B:233:ILE:HD12	1:B:233:ILE:N	2.35	0.42
1:A:122:GLN:HG2	1:A:224[B]:GLU:CD	2.40	0.42
1:A:69:GLU:O	1:A:130:LEU:HA	2.19	0.42
1:A:163:LYS:HD3	1:A:175:GLU:OE2	2.20	0.42
1:B:108:GLU:OE1	1:B:110:THR:HG23	2.20	0.42
1:B:155:TYR:HB3	1:B:156:PRO:CD	2.43	0.42
1:B:60:ARG:HH11	1:B:60:ARG:CB	2.32	0.42
1:B:119:TYR:HB2	1:B:259:MET:CE	2.50	0.41
1:A:230:LYS:HE2	1:A:230:LYS:HB2	1.69	0.41
1:B:122:GLN:HG2	1:B:224[B]:GLU:CD	2.40	0.41
1:A:171:CYS:HA	1:A:199:GLU:CB	2.42	0.41
1:B:35:GLU:OE2	1:B:35:GLU:HA	2.19	0.41
1:A:35:GLU:OE2	1:A:35:GLU:HA	2.20	0.41
1:A:119:TYR:CZ	1:A:268:VAL:HG21	2.55	0.41
1:A:272:LEU:O	1:A:287:GLN:HA	2.21	0.41
1:B:154:THR:C	1:B:155:TYR:CD2	2.88	0.41
1:B:271:TYR:CE1	1:B:289:GLU:HB2	2.56	0.41
1:B:22:ARG:NH2	1:B:44:GLU:OE1	2.45	0.41
1:B:259:MET:HE3	2:B:358:HOH:O	2.17	0.41
1:A:210:ILE:HD12	1:A:273:ASN:CB	2.49	0.41
1:B:210:ILE:HD12	1:B:273:ASN:CB	2.50	0.40
1:A:231:TYR:CD2	1:A:231:TYR:C	2.95	0.40
1:B:169:GLU:O	1:B:170:ASP:OD1	2.39	0.40
1:B:232:GLU:C	1:B:233:ILE:HD12	2.41	0.40

All (2) 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:95:ARG:NH2	2:A:366:HOH:O[6_444]	2.11	0.09
1:B:196:LEU:O	1:B:196:LEU:O[7_555]	2.14	0.06

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	278/340 (82%)	256 (92%)	17 (6%)	5 (2%)	8	28
1	B	279/340 (82%)	254 (91%)	19 (7%)	6 (2%)	6	22
All	All	557/680 (82%)	510 (92%)	36 (6%)	11 (2%)	7	24

All (11) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	168	ILE
1	A	171	CYS
1	A	235	ASP
1	B	168	ILE
1	B	171	CYS
1	B	217	THR
1	A	138	LEU
1	B	138	LEU
1	B	156	PRO
1	B	57	PRO
1	A	32	GLY

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	261/308 (85%)	233 (89%)	28 (11%)	6	20
1	B	262/308 (85%)	236 (90%)	26 (10%)	8	23

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	523/616 (85%)	469 (90%)	54 (10%)	7 21

All (54) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	9	SER
1	A	10	VAL
1	A	23	LYS
1	A	28	LYS
1	A	29	THR
1	A	31	ASP
1	A	33	LYS
1	A	49	LYS
1	A	54	LEU
1	A	59	LYS
1	A	60	ARG
1	A	110	THR
1	A	113	GLU
1	A	137	ARG
1	A	154	THR
1	A	166	VAL
1	A	168	ILE
1	A	169	GLU
1	A	170	ASP
1	A	172	LEU
1	A	181	SER
1	A	230	LYS
1	A	231	TYR
1	A	234	MET
1	A	243	SER
1	A	261	ASP
1	A	279	GLU
1	A	286	LYS
1	B	9	SER
1	B	10	VAL
1	B	23	LYS
1	B	29	THR
1	B	31	ASP
1	B	33	LYS
1	B	49	LYS
1	B	54	LEU
1	B	59	LYS

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Mol	Chain	Res	Type
1	B	60	ARG
1	B	110	THR
1	B	113	GLU
1	B	137	ARG
1	B	154	THR
1	B	157	GLU
1	B	166	VAL
1	B	168	ILE
1	B	169	GLU
1	B	170	ASP
1	B	172	LEU
1	B	181	SER
1	B	230	LYS
1	B	234	MET
1	B	243	SER
1	B	261	ASP
1	B	286	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	123	ASN
1	A	273	ASN
1	A	288	GLN
1	B	123	ASN
1	B	179	ASN
1	B	273	ASN
1	B	288	GLN

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 monosaccharides 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

6.1 Protein, DNA and RNA chains

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	283/340 (83%)	0.14	9 (3%) 47 37	26, 45, 93, 133	0
1	B	282/340 (82%)	0.16	14 (4%) 28 19	26, 45, 92, 132	0
All	All	565/680 (83%)	0.15	23 (4%) 37 27	26, 45, 92, 133	0

All (23) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	235	ASP	5.7
1	B	58	ASN	5.2
1	A	234	MET	4.9
1	B	99	ILE	4.0
1	B	234	MET	4.0
1	B	62	GLU	3.9
1	B	235	ASP	3.9
1	A	297	ASP	3.4
1	A	19	ALA	3.2
1	B	56	ASN	3.0
1	A	137	ARG	2.9
1	B	159	ASN	2.9
1	B	201	LYS	2.8
1	A	58	ASN	2.8
1	B	57	PRO	2.6
1	A	138	LEU	2.5
1	A	57	PRO	2.4
1	B	160	SER	2.3
1	A	20	GLU	2.3
1	B	33	LYS	2.2
1	B	55	LYS	2.1
1	B	198	VAL	2.1
1	B	100	THR	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 monosaccharides 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.