



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2018 – 03:01 pm GMT

PDB ID : 2IH3
Title : Ion selectivity in a semi-synthetic K⁺ channel locked in the conductive conformation
Authors : Valiyaveetil, F.I.; Leonetti, M.; Muir, T.W.; MacKinnon, R.
Deposited on : 2006-09-25
Resolution : 1.72 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.7.3 (157068), CSD as539be (2018)
Xtrriage (Phenix) : 1.13
EDS : trunk30967
Percentile statistics : 20171227.v01 (using entries in the PDB archive December 27th 2017)
Refmac : 5.8.0158
CCP4 : 7.0 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk30967

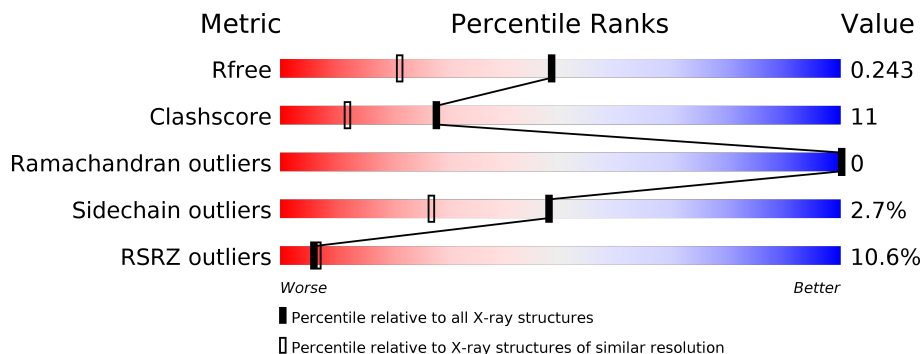
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.72 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}	111664	4894 (1.74-1.70)
Clashscore	122126	5296 (1.74-1.70)
Ramachandran outliers	120053	5219 (1.74-1.70)
Sidechain outliers	120020	5219 (1.74-1.70)
RSRZ outliers	108989	4804 (1.74-1.70)

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. 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	219	
2	B	212	
3	C	122	

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 4338 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 FAB Heavy Chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	219	1648	1042	275	325	6	0	0	0

- Molecule 2 is a protein called FAB Light Chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	212	1649	1023	283	338	5	0	0	0

- Molecule 3 is a protein called Voltage-gated potassium channel.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	C	98	737	487	125	123	2	0	0	0

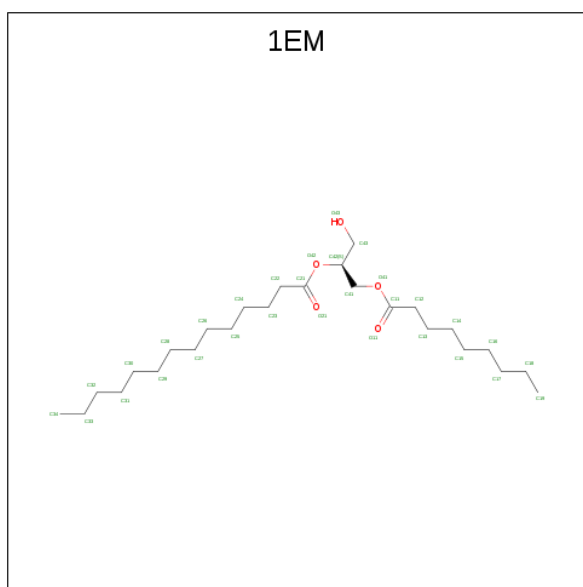
There are 5 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	1	MET	-	CLONING ARTIFACT	UNP P0A334
C	2	ALA	-	CLONING ARTIFACT	UNP P0A334
C	69	ALA	SER	ENGINEERED	UNP P0A334
C	70	CYS	VAL	ENGINEERED	UNP P0A334
C	77	DAL	GLY	MODIFIED RESIDUE	UNP P0A334

- Molecule 4 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	C	7	Total	K	0	0
			7	7		

- Molecule 5 is (1S)-2-HYDROXY-1-[(NONANOYLOXY)METHYL]ETHYL MYRISTATE (three-letter code: 1EM) (formula: C₂₆H₅₀O₅).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	C	1	Total	C O	0	0
			31	26 5		

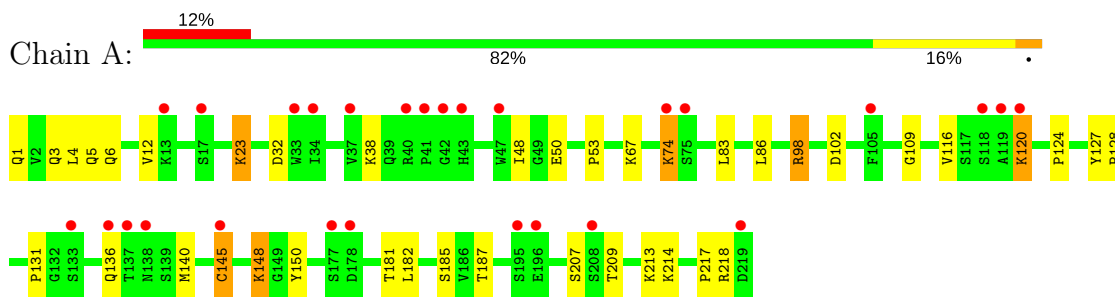
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	110	Total	O	0	0
			110	110		
6	B	120	Total	O	0	0
			120	120		
6	C	36	Total	O	0	0
			36	36		

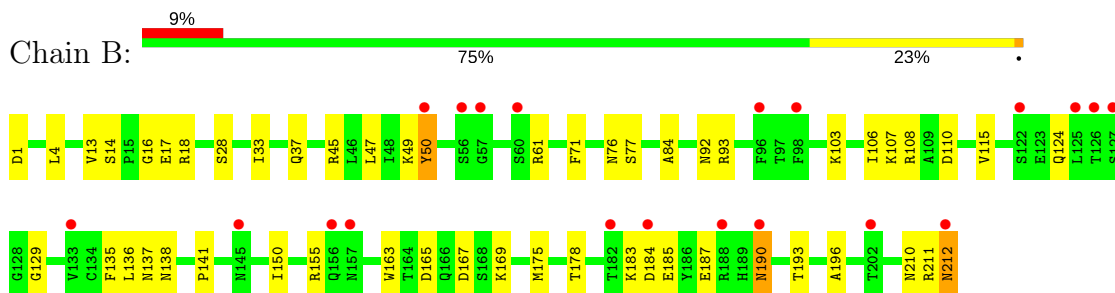
3 Residue-property plots [i](#)

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.

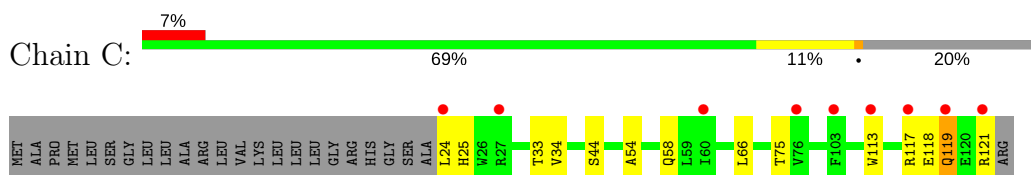
- Molecule 1: FAB Heavy Chain



- Molecule 2: FAB Light Chain



- Molecule 3: Voltage-gated potassium channel



4 Data and refinement statistics

Property	Value	Source
Space group	I 4	Depositor
Cell constants a, b, c, α , β , γ	155.72Å 155.72Å 75.74Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	31.20 – 1.72 31.20 – 1.72	Depositor EDS
% Data completeness (in resolution range)	93.4 (31.20-1.72) 93.4 (31.20-1.72)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.06	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.35 (at 1.72Å)	Xtrriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.233 , 0.242 0.229 , 0.243	Depositor DCC
R_{free} test set	9442 reflections (9.96%)	wwPDB-VP
Wilson B-factor (Å ²)	25.0	Xtrriage
Anisotropy	0.302	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.40 , 59.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	0.022 for -k,-h,-l	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	4338	wwPDB-VP
Average B, all atoms (Å ²)	35.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.26% 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](#)

Bond lengths and bond angles in the following residue types are not validated in this section: DAL, K, 1EM

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	0.90	1/1692 (0.1%)	0.90	4/2312 (0.2%)
2	B	0.91	1/1686 (0.1%)	0.89	0/2287
3	C	1.20	2/750 (0.3%)	1.05	1/1031 (0.1%)
All	All	0.97	4/4128 (0.1%)	0.92	5/5630 (0.1%)

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	50	GLU	CB-CG	6.12	1.63	1.52
2	B	50	TYR	CE1-CZ	-5.63	1.31	1.38
3	C	54	ALA	CA-CB	5.17	1.63	1.52
3	C	75	THR	C-O	5.04	1.32	1.23

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	98	ARG	NE-CZ-NH2	-11.22	114.69	120.30
1	A	98	ARG	NE-CZ-NH1	5.96	123.28	120.30
1	A	145	CYS	CA-CB-SG	5.72	124.29	114.00
1	A	32	ASP	CB-CG-OD1	5.16	122.94	118.30
3	C	119	GLN	CB-CA-C	-5.00	100.40	110.40

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	1648	0	1616	31	0
2	B	1649	0	1576	47	0
3	C	737	0	756	11	0
4	C	7	0	0	0	0
5	C	31	0	50	0	0
6	A	110	0	0	5	0
6	B	120	0	0	15	0
6	C	36	0	0	6	0
All	All	4338	0	3998	86	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 11.

All (86) 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)
3:C:34:VAL:HA	6:C:335:HOH:O	1.41	1.18
2:B:107:LYS:C	6:B:274:HOH:O	2.18	0.80
1:A:53:PRO:HB3	1:A:74:LYS:HE2	1.66	0.79
3:C:34:VAL:CA	6:C:335:HOH:O	2.10	0.78
1:A:23:LYS:HE3	1:A:23:LYS:H	1.51	0.75
2:B:108:ARG:N	6:B:274:HOH:O	2.20	0.75
2:B:167:ASP:OD2	2:B:169:LYS:HB2	1.89	0.71
3:C:34:VAL:N	6:C:335:HOH:O	2.23	0.71
2:B:108:ARG:CA	6:B:274:HOH:O	2.39	0.70
2:B:76:ASN:OD1	6:B:262:HOH:O	2.08	0.70
2:B:178:THR:O	6:B:297:HOH:O	2.10	0.69
2:B:61:ARG:HG3	2:B:76:ASN:O	1.93	0.68
1:A:23:LYS:HE3	1:A:23:LYS:N	2.08	0.68
3:C:113:TRP:HE1	3:C:117:ARG:NH1	1.92	0.67
3:C:33:THR:C	6:C:335:HOH:O	2.32	0.67
2:B:45:ARG:HD2	6:B:330:HOH:O	1.97	0.63
2:B:106:ILE:HG22	6:B:274:HOH:O	1.98	0.62
2:B:137:ASN:HB3	2:B:138:ASN:HD22	1.64	0.61
2:B:183:LYS:O	2:B:187:GLU:HG2	1.99	0.61
2:B:13:VAL:CG2	2:B:17:GLU:HB3	2.30	0.61
3:C:24:LEU:N	6:C:317:HOH:O	2.34	0.60
2:B:92:ASN:HD21	3:C:58:GLN:HE21	1.50	0.60
2:B:193:THR:HG23	6:B:248:HOH:O	2.02	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:120:LYS:HD2	1:A:120:LYS:O	2.04	0.57
2:B:108:ARG:HA	6:B:274:HOH:O	2.03	0.56
3:C:25:HIS:ND1	6:C:330:HOH:O	2.33	0.55
2:B:92:ASN:HD22	2:B:93:ARG:HG3	1.71	0.55
1:A:53:PRO:CB	1:A:74:LYS:HE2	2.35	0.55
2:B:190:ASN:HD21	2:B:210:ASN:HD22	1.55	0.55
2:B:28:SER:OG	6:B:269:HOH:O	2.18	0.54
3:C:118:GLU:OE2	3:C:121:ARG:HD3	2.08	0.54
2:B:190:ASN:ND2	2:B:210:ASN:HD22	2.06	0.53
1:A:140:MET:HE3	1:A:187:THR:HG22	1.89	0.53
2:B:150:ILE:HD12	2:B:155:ARG:HH11	1.74	0.52
2:B:49:LYS:NZ	6:B:302:HOH:O	2.40	0.51
1:A:128:PRO:HG3	1:A:213:LYS:HD2	1.92	0.51
1:A:1:GLN:N	1:A:1:GLN:OE1	2.39	0.51
2:B:183:LYS:HB3	2:B:183:LYS:NZ	2.25	0.50
2:B:115:VAL:HG22	2:B:136:LEU:CD1	2.41	0.50
2:B:211:ARG:HG2	2:B:211:ARG:HH11	1.76	0.50
2:B:37:GLN:HB2	2:B:47:LEU:HD11	1.93	0.50
1:A:148:LYS:HB3	1:A:181:THR:HG23	1.94	0.50
1:A:83:LEU:HB3	1:A:86:LEU:HD21	1.94	0.50
3:C:44:SER:OG	3:C:66:LEU:HA	2.12	0.50
2:B:1:ASP:HA	6:B:237:HOH:O	2.12	0.49
1:A:6:GLN:HE21	1:A:109:GLY:HA3	1.77	0.49
1:A:5:GLN:HG3	6:A:287:HOH:O	2.13	0.49
2:B:110:ASP:OD1	2:B:141:PRO:HD3	2.12	0.48
1:A:128:PRO:HG3	1:A:213:LYS:CG	2.42	0.48
2:B:13:VAL:HG22	2:B:14:SER:N	2.28	0.48
2:B:137:ASN:HB3	2:B:138:ASN:ND2	2.29	0.48
2:B:33:ILE:HG21	2:B:71:PHE:CD2	2.49	0.47
1:A:67:LYS:NZ	6:A:299:HOH:O	2.10	0.47
2:B:136:LEU:CD1	2:B:196:ALA:HB2	2.45	0.47
2:B:185:GLU:HG2	6:B:292:HOH:O	2.15	0.47
1:A:207:SER:O	1:A:209:THR:HG23	2.15	0.46
1:A:185:SER:HB2	2:B:135:PHE:CE2	2.51	0.46
2:B:212:ASN:ND2	2:B:212:ASN:OXT	2.49	0.46
3:C:118:GLU:O	3:C:119:GLN:C	2.55	0.45
2:B:18:ARG:NH1	2:B:76:ASN:OD1	2.49	0.45
2:B:167:ASP:HB2	6:B:320:HOH:O	2.17	0.45
1:A:148:LYS:HB2	1:A:148:LYS:NZ	2.33	0.44
2:B:13:VAL:HG22	2:B:17:GLU:HB3	1.98	0.44
1:A:3:GLN:HE21	1:A:98:ARG:NH1	2.16	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:136:LEU:HD11	2:B:196:ALA:HB2	1.98	0.44
1:A:3:GLN:HG3	6:A:317:HOH:O	2.18	0.44
1:A:102:ASP:HB2	2:B:50:TYR:OH	2.18	0.43
1:A:12:VAL:O	1:A:116:VAL:HA	2.19	0.43
1:A:127:TYR:HA	1:A:128:PRO:HD3	1.87	0.43
1:A:140:MET:CE	1:A:187:THR:HG22	2.49	0.43
2:B:124:GLN:HG2	2:B:129:GLY:O	2.19	0.43
1:A:182:LEU:HD12	1:A:182:LEU:C	2.38	0.42
2:B:18:ARG:NH1	2:B:76:ASN:ND2	2.68	0.42
2:B:16:GLY:O	2:B:77:SER:HA	2.19	0.42
2:B:103:LYS:HE2	6:B:268:HOH:O	2.18	0.42
1:A:217:PRO:HA	6:A:263:HOH:O	2.19	0.42
1:A:131:PRO:O	1:A:218:ARG:HD3	2.19	0.42
1:A:214:LYS:NZ	6:A:297:HOH:O	2.46	0.42
2:B:136:LEU:HD22	2:B:136:LEU:N	2.35	0.41
2:B:163:TRP:CD1	2:B:175:MET:HG3	2.56	0.41
1:A:124:PRO:HB3	1:A:150:TYR:HB3	2.03	0.41
1:A:38:LYS:HB2	1:A:48:ILE:HD11	2.01	0.41
1:A:3:GLN:HE21	1:A:98:ARG:HH11	1.68	0.41
2:B:84:ALA:O	2:B:103:LYS:HD2	2.21	0.41
1:A:128:PRO:HG3	1:A:213:LYS:CD	2.51	0.40
2:B:167:ASP:OD2	2:B:169:LYS:CB	2.66	0.40

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	217/219 (99%)	210 (97%)	7 (3%)	0	100	100
2	B	210/212 (99%)	203 (97%)	7 (3%)	0	100	100
3	C	95/122 (78%)	95 (100%)	0	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
All	All	522/553 (94%)	508 (97%)	14 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	185/185 (100%)	178 (96%)	7 (4%)	36	14
2	B	190/190 (100%)	185 (97%)	5 (3%)	49	28
3	C	70/89 (79%)	70 (100%)	0	100	100
All	All	445/464 (96%)	433 (97%)	12 (3%)	48	27

All (12) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	4	LEU
1	A	23	LYS
1	A	74	LYS
1	A	120	LYS
1	A	136	GLN
1	A	145	CYS
1	A	148	LYS
2	B	4	LEU
2	B	165	ASP
2	B	184	ASP
2	B	190	ASN
2	B	212	ASN

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	3	GLN

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Mol	Chain	Res	Type
1	A	5	GLN
1	A	6	GLN
2	B	41	ASN
2	B	85	ASN
2	B	92	ASN
2	B	137	ASN
2	B	138	ASN
2	B	190	ASN
2	B	210	ASN
2	B	212	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](#)

1 non-standard protein/DNA/RNA residue is modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	DAL	C	77	3,4	4,4,5	2.84	2 (50%)	1,4,6	2.60	1 (100%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	DAL	C	77	3,4	-	0/0/2/4	0/0/0/0

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	77	DAL	O-C	2.73	1.31	1.19
3	C	77	DAL	CA-C	4.78	1.56	1.50

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	77	DAL	CB-CA-N	2.60	118.11	109.62

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

Of 8 ligands modelled in this entry, 7 are monoatomic - leaving 1 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	1EM	C	301	-	30,30,30	1.18	3 (10%)	32,32,32	1.14	2 (6%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	1EM	C	301	-	-	0/32/32/32	0/0/0/0

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	C	301	1EM	O41-C41	-2.42	1.39	1.45
5	C	301	1EM	O42-C21	3.48	1.44	1.34
5	C	301	1EM	O41-C11	3.86	1.44	1.33

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	C	301	1EM	O41-C11-C12	2.09	117.96	111.92
5	C	301	1EM	O42-C21-C22	3.76	119.49	111.55

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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	219/219 (100%)	0.82	27 (12%) 4 4	18, 36, 51, 64	0
2	B	212/212 (100%)	0.57	20 (9%) 8 9	16, 34, 55, 67	0
3	C	97/122 (79%)	0.51	9 (9%) 8 9	14, 21, 57, 64	0
All	All	528/553 (95%)	0.66	56 (10%) 6 7	14, 34, 55, 67	0

All (56) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	219	ASP	6.0
2	B	212	ASN	5.3
1	A	178	ASP	5.0
2	B	202	THR	4.4
2	B	127	SER	4.2
1	A	138	ASN	4.2
2	B	126	THR	4.1
2	B	184	ASP	4.1
1	A	120	LYS	4.1
1	A	137	THR	4.0
1	A	177	SER	3.8
1	A	136	GLN	3.5
2	B	157	ASN	3.4
1	A	47	TRP	3.4
1	A	43	HIS	3.4
3	C	27	ARG	3.4
2	B	133	VAL	3.3
3	C	119	GLN	3.3
2	B	122	SER	3.3
3	C	103	PHE	3.3
1	A	37	VAL	3.2
1	A	74	LYS	3.1
3	C	117	ARG	3.1

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Mol	Chain	Res	Type	RSRZ
2	B	56	SER	3.1
1	A	145	CYS	3.0
3	C	121	ARG	3.0
2	B	57	GLY	3.0
2	B	190	ASN	2.7
1	A	42	GLY	2.6
1	A	41	PRO	2.6
1	A	118	SER	2.6
1	A	75	SER	2.6
1	A	195	SER	2.6
1	A	13	LYS	2.5
2	B	188	ARG	2.5
2	B	125	LEU	2.5
2	B	60	SER	2.5
3	C	60	ILE	2.5
1	A	133	SER	2.4
1	A	40	ARG	2.4
1	A	196	GLU	2.4
1	A	105	PHE	2.3
2	B	156	GLN	2.3
3	C	24	LEU	2.3
2	B	96	PHE	2.3
1	A	33	TRP	2.2
3	C	113	TRP	2.2
2	B	145	ASN	2.2
2	B	182	THR	2.1
1	A	34	ILE	2.1
2	B	50	TYR	2.1
1	A	119	ALA	2.1
2	B	98	PHE	2.1
3	C	76	VAL	2.1
1	A	17	SER	2.0
1	A	208	SER	2.0

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

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
3	DAL	C	77	5/6	0.96	0.16	12,14,14,19	0

6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
5	1EM	C	301	31/31	0.55	0.34	64,71,76,79	0
4	K	C	207	1/1	0.87	0.36	61,61,61,61	1
4	K	C	206	1/1	0.93	0.30	74,74,74,74	1
4	K	C	205	1/1	0.98	0.16	61,61,61,61	1
4	K	C	204	1/1	1.00	0.11	17,17,17,17	1
4	K	C	203	1/1	1.00	0.13	17,17,17,17	1
4	K	C	202	1/1	1.00	0.11	16,16,16,16	1
4	K	C	201	1/1	1.00	0.14	15,15,15,15	1

6.5 Other polymers [i](#)

There are no such residues in this entry.