



Full wwPDB X-ray Structure Validation Report ⓘ

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PDB ID : 2WLO / pdb_00002wlo
Title : POTASSIUM CHANNEL FROM MAGNETOSPIRILLUM MAGNETO-TACTICUM
Authors : Clarke, O.B.; Caputo, A.T.; Smith, B.J.; Gulbis, J.M.
Deposited on : 2009-06-24
Resolution : 4.04 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	:	4-5-2 with Phenix2.0
Mogul	:	NOT EXECUTED
Xtriage (Phenix)	:	2.0
EDS	:	NOT EXECUTED
Buster-report	:	NOT EXECUTED
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

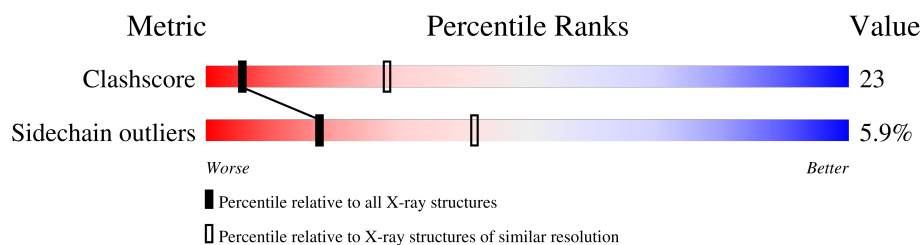
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 4.04 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	190562	1164 (4.28-3.80)
Sidechain outliers	187428	1086 (4.28-3.80)

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 $\leq 5\%$.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	301	 53% 38% • 6%
1	B	301	 51% 36% • 10%

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 4339 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 POTASSIUM CHANNEL.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	283	Total	C	N	O	S	0	0	0
			2208	1419	383	398	8			
1	B	272	Total	C	N	O	S	0	0	0
			2128	1373	367	380	8			

- Molecule 2 is POTASSIUM ION (CCD ID: K) (formula: K).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	3	Total	K	0	0
			3	3		

4 Data and refinement statistics

EDS was not executed - this section is therefore incomplete.

Property	Value	Source
Space group	I 2 2 2	Depositor
Cell constants a, b, c, α , β , γ	105.86Å 115.36Å 289.11Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	14.99 – 4.04	Depositor
% Data completeness (in resolution range)	92.2 (14.99-4.04)	Depositor
R_{merge}	0.22	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.52 (at 4.00Å)	Xtriage
Refinement program	PHENIX (PHENIX.REFINE)	Depositor
R, R_{free}	0.245 , 0.255	Depositor
Wilson B-factor (Å ²)	136.5	Xtriage
Anisotropy	0.039	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.42$, $\langle L^2 \rangle = 0.25$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	4339	wwPDB-VP
Average B, all atoms (Å ²)	203.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.07% 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:
K

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	0.33	0/2264	0.80	4/3080 (0.1%)
1	B	0.35	0/2183	0.84	4/2971 (0.1%)
All	All	0.34	0/4447	0.82	8/6051 (0.1%)

There are no bond length outliers.

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	97	ILE	N-CA-C	-18.17	93.34	110.42
1	A	97	ILE	N-CA-C	-16.08	95.30	110.42
1	B	97	ILE	CB-CA-C	8.52	122.86	111.87
1	A	97	ILE	CB-CA-C	6.84	120.70	111.87
1	A	106	GLY	CA-C-N	5.19	124.63	119.24
1	A	106	GLY	C-N-CA	5.19	124.63	119.24
1	B	106	GLY	CA-C-N	5.06	124.50	119.24
1	B	106	GLY	C-N-CA	5.06	124.50	119.24

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	2208	0	2152	107	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	2128	0	2075	102	0
2	A	3	0	0	0	0
All	All	4339	0	4227	200	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 23.

All (200) 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:25:ARG:HH11	1:A:25:ARG:CG	1.63	1.11
1:A:25:ARG:HH11	1:A:25:ARG:HG2	1.07	1.09
1:B:168:ILE:H	1:B:168:ILE:HD12	1.34	0.92
1:A:138:PRO:HB3	1:A:250:PHE:CD1	2.08	0.89
1:A:168:ILE:H	1:A:168:ILE:HD12	1.36	0.89
1:B:138:PRO:HB3	1:B:250:PHE:CD1	2.08	0.89
1:A:25:ARG:HG2	1:A:25:ARG:NH1	1.80	0.87
1:B:137:ARG:C	1:B:138:PRO:N	2.35	0.85
1:A:137:ARG:C	1:A:138:PRO:N	2.35	0.84
1:B:266:ILE:HD12	1:B:293:ILE:HD12	1.62	0.80
1:A:284:ALA:HA	1:B:23:ILE:HG23	1.64	0.80
1:B:278:LEU:HD12	1:B:282:ARG:HG3	1.64	0.79
1:A:266:ILE:HD12	1:A:293:ILE:HD12	1.63	0.79
1:A:25:ARG:CG	1:A:25:ARG:NH1	2.35	0.78
1:A:15:LEU:HD23	1:A:21:SER:HA	1.66	0.75
1:A:88:PHE:O	1:A:92:GLN:HG3	1.89	0.72
1:B:88:PHE:O	1:B:92:GLN:HG3	1.90	0.71
1:B:44:VAL:HG13	1:B:48:VAL:HB	1.72	0.71
1:A:114:THR:HG22	1:B:91:VAL:HG21	1.71	0.71
1:A:44:VAL:HG13	1:A:48:VAL:HB	1.73	0.70
1:A:90:SER:O	1:A:93:THR:HG22	1.93	0.68
1:B:90:SER:O	1:B:93:THR:HG22	1.93	0.68
1:B:44:VAL:CG1	1:B:48:VAL:HB	2.24	0.68
1:A:278:LEU:HB3	1:A:279:PRO:HD2	1.76	0.68
1:B:280:ASP:HB3	1:B:282:ARG:HG2	1.76	0.67
1:B:178:LEU:HD13	1:B:241:VAL:HG22	1.76	0.67
1:A:178:LEU:HD13	1:A:241:VAL:HG22	1.76	0.66
1:A:44:VAL:CG1	1:A:48:VAL:HB	2.25	0.66
1:A:227:GLU:HG3	1:A:231:THR:OG1	1.96	0.66
1:B:172:ILE:HG13	1:B:246:HIS:HB3	1.77	0.66
1:A:172:ILE:HG13	1:A:246:HIS:HB3	1.77	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:227:GLU:HG3	1:B:231:THR:OG1	1.98	0.62
1:B:74:VAL:HB	1:B:109:ALA:HB2	1.81	0.62
1:A:74:VAL:HB	1:A:109:ALA:HB2	1.81	0.61
1:A:56:LEU:O	1:A:60:THR:HG23	2.00	0.61
1:B:139:THR:O	1:B:167:ARG:NH1	2.34	0.61
1:A:25:ARG:HH11	1:A:25:ARG:HG3	1.63	0.61
1:A:130:LEU:O	1:A:134:ARG:HG2	2.02	0.60
1:B:56:LEU:O	1:B:60:THR:HG23	2.01	0.60
1:B:130:LEU:O	1:B:134:ARG:HG2	2.02	0.59
1:B:201:THR:CG2	1:B:217:PRO:HD3	2.32	0.59
1:A:201:THR:CG2	1:A:217:PRO:HD3	2.32	0.59
1:B:138:PRO:HB3	1:B:250:PHE:CG	2.38	0.59
1:A:96:THR:HG22	1:B:97:ILE:HG12	1.85	0.58
1:A:21:SER:OG	1:B:210:LEU:HD21	2.03	0.58
1:A:139:THR:O	1:A:167:ARG:NH1	2.35	0.58
1:A:127:ALA:O	1:A:131:ILE:HG12	2.04	0.58
1:A:140:ALA:HB1	1:A:142:VAL:HG23	1.86	0.57
1:A:138:PRO:HB3	1:A:250:PHE:CG	2.39	0.57
1:A:276:THR:HG22	1:A:277:THR:N	2.17	0.57
1:B:184:GLU:OE1	1:B:194:ARG:HD2	2.04	0.57
1:B:184:GLU:OE2	1:B:196:HIS:HE1	1.87	0.57
1:A:138:PRO:HB2	1:A:254:VAL:HG12	1.87	0.57
1:B:88:PHE:O	1:B:91:VAL:HG22	2.05	0.57
1:B:36:ASP:OD1	1:B:39:HIS:HB3	2.04	0.56
1:B:127:ALA:O	1:B:131:ILE:HG12	2.05	0.56
1:B:140:ALA:HB1	1:B:142:VAL:HG23	1.85	0.56
1:B:138:PRO:HB2	1:B:254:VAL:HG12	1.87	0.56
1:B:274:VAL:CG2	1:B:285:LEU:CD1	2.83	0.56
1:A:46:TRP:O	1:A:50:ILE:HG13	2.06	0.56
1:A:88:PHE:O	1:A:91:VAL:HG22	2.05	0.56
1:A:36:ASP:OD1	1:A:39:HIS:HB3	2.07	0.54
1:A:242:LEU:HB2	1:B:207:ILE:HD11	1.89	0.54
1:B:46:TRP:O	1:B:50:ILE:HG13	2.08	0.54
1:A:149:VAL:HG12	1:A:293:ILE:HD13	1.89	0.54
1:A:188:GLU:OE2	1:B:155:GLY:N	2.38	0.54
1:B:149:VAL:HG12	1:B:293:ILE:HD13	1.90	0.54
1:B:239:PHE:CE1	1:B:265:ILE:HD11	2.42	0.54
1:A:184:GLU:OE1	1:A:194:ARG:HD2	2.08	0.54
1:B:193:ARG:NH1	1:B:236:HIS:O	2.41	0.54
1:B:200:LEU:HD13	1:B:214:VAL:CG1	2.38	0.54
1:B:204:ARG:HG2	1:B:204:ARG:HH11	1.73	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:61:ASN:HD21	1:A:94:MET:HE1	1.73	0.53
1:A:239:PHE:CE1	1:A:265:ILE:HD11	2.42	0.53
1:B:61:ASN:HD21	1:B:94:MET:HE1	1.74	0.53
1:B:240:LEU:HD12	1:B:258:HIS:O	2.08	0.53
1:A:261:SER:H	1:A:264:GLU:HG3	1.74	0.53
1:B:110:ASN:O	1:B:113:VAL:HB	2.09	0.52
1:B:209:SER:O	1:B:210:LEU:HD23	2.08	0.52
1:A:14:ILE:HG12	1:A:236:HIS:CE1	2.45	0.52
1:A:204:ARG:HH11	1:A:204:ARG:HG2	1.74	0.52
1:A:184:GLU:OE2	1:A:196:HIS:HE1	1.92	0.52
1:B:194:ARG:HG2	1:B:195:PHE:N	2.24	0.52
1:B:261:SER:H	1:B:264:GLU:HG3	1.74	0.52
1:A:194:ARG:HG2	1:A:195:PHE:N	2.24	0.52
1:A:240:LEU:HD12	1:A:258:HIS:O	2.10	0.52
1:A:110:ASN:O	1:A:113:VAL:HB	2.10	0.52
1:A:61:ASN:ND2	1:A:94:MET:HE1	2.25	0.52
1:A:200:LEU:HD13	1:A:214:VAL:CG1	2.39	0.51
1:B:198:LEU:HB3	1:B:216:HIS:ND1	2.25	0.51
1:B:198:LEU:HB3	1:B:216:HIS:CE1	2.46	0.51
1:A:209:SER:O	1:A:210:LEU:HD23	2.11	0.51
1:B:172:ILE:CG1	1:B:246:HIS:HB3	2.41	0.51
1:A:182:ARG:HA	1:A:193:ARG:NH1	2.26	0.51
1:B:244:THR:HG22	1:B:255:HIS:HB2	1.93	0.50
1:A:172:ILE:CG1	1:A:246:HIS:HB3	2.41	0.50
1:A:182:ARG:HB3	1:A:237:SER:HB3	1.94	0.50
1:A:138:PRO:HB3	1:A:250:PHE:CE1	2.47	0.50
1:A:23:ILE:HG23	1:B:284:ALA:HA	1.94	0.50
1:B:61:ASN:ND2	1:B:94:MET:HE1	2.26	0.50
1:A:274:VAL:CG2	1:A:285:LEU:CD1	2.90	0.50
1:A:188:GLU:OE1	1:B:154:GLU:N	2.41	0.50
1:A:244:THR:HG22	1:A:255:HIS:HB2	1.94	0.50
1:B:173:GLU:HA	1:B:206:PRO:HA	1.93	0.50
1:A:132:TYR:CD2	1:A:132:TYR:C	2.90	0.49
1:A:173:GLU:HA	1:A:206:PRO:HA	1.94	0.49
1:B:42:LEU:HB3	1:B:137:ARG:NH2	2.26	0.49
1:B:132:TYR:CD2	1:B:132:TYR:C	2.90	0.49
1:A:198:LEU:HB3	1:A:216:HIS:ND1	2.27	0.49
1:A:229:ASP:OD1	1:A:233:ARG:NH1	2.46	0.49
1:B:229:ASP:OD1	1:B:233:ARG:NH1	2.46	0.49
1:A:198:LEU:HB3	1:A:216:HIS:CE1	2.48	0.48
1:B:158:THR:HG21	1:B:215:MET:HB3	1.96	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:227:GLU:OE2	1:A:231:THR:HB	2.13	0.48
1:A:141:GLY:O	1:A:166:LEU:HB2	2.14	0.48
1:B:141:GLY:O	1:B:166:LEU:HB2	2.13	0.48
1:A:149:VAL:CG1	1:A:293:ILE:HD13	2.45	0.47
1:A:132:TYR:CE1	1:A:136:THR:HG21	2.49	0.47
1:B:61:ASN:HD21	1:B:94:MET:CE	2.27	0.47
1:B:147:ARG:HB2	1:B:293:ILE:HD11	1.96	0.47
1:A:61:ASN:HD21	1:A:94:MET:CE	2.27	0.47
1:A:110:ASN:HB3	1:B:88:PHE:CD2	2.50	0.47
1:A:158:THR:HG21	1:A:215:MET:HB3	1.97	0.47
1:A:272:VAL:CG1	1:A:273:ASP:N	2.77	0.47
1:B:149:VAL:CG1	1:B:293:ILE:HD13	2.45	0.47
1:B:182:ARG:HB3	1:B:237:SER:HB3	1.97	0.47
1:B:201:THR:HG23	1:B:217:PRO:HD3	1.97	0.47
1:A:194:ARG:HG2	1:A:195:PHE:H	1.79	0.47
1:A:266:ILE:CD1	1:A:293:ILE:HD12	2.41	0.47
1:A:110:ASN:O	1:A:114:THR:HG23	2.15	0.47
1:B:138:PRO:HB3	1:B:250:PHE:CE1	2.47	0.47
1:A:278:LEU:HB3	1:A:279:PRO:CD	2.44	0.46
1:B:49:PHE:CZ	1:B:53:ILE:HD11	2.50	0.46
1:B:272:VAL:CG1	1:B:273:ASP:N	2.78	0.46
1:A:89:PHE:HD1	1:A:102:LEU:HB2	1.81	0.46
1:B:49:PHE:HE2	1:B:131:ILE:HD13	1.80	0.46
1:B:182:ARG:HA	1:B:193:ARG:NH1	2.30	0.46
1:B:227:GLU:OE2	1:B:231:THR:HB	2.14	0.46
1:A:147:ARG:HB2	1:A:293:ILE:HD11	1.98	0.46
1:B:183:SER:HA	1:B:192:PHE:O	2.16	0.46
1:A:201:THR:HG23	1:A:217:PRO:HD3	1.97	0.46
1:B:185:ILE:HG22	1:B:186:SER:O	2.15	0.46
1:A:140:ALA:C	1:A:142:VAL:H	2.24	0.46
1:A:276:THR:CG2	1:A:277:THR:N	2.79	0.46
1:A:49:PHE:HE2	1:A:131:ILE:HD13	1.81	0.46
1:B:274:VAL:HG23	1:B:285:LEU:CD1	2.46	0.46
1:B:110:ASN:O	1:B:114:THR:HG23	2.17	0.45
1:B:207:ILE:O	1:B:207:ILE:HG22	2.17	0.45
1:A:25:ARG:O	1:A:26:LEU:HD23	2.16	0.45
1:A:49:PHE:CZ	1:A:53:ILE:HD11	2.51	0.45
1:A:182:ARG:CB	1:A:237:SER:HB3	2.46	0.45
1:B:89:PHE:HD1	1:B:102:LEU:HB2	1.82	0.45
1:B:194:ARG:HG2	1:B:195:PHE:H	1.81	0.45
1:B:266:ILE:CD1	1:B:293:ILE:HD12	2.39	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:55:GLY:O	1:A:59:VAL:HG23	2.18	0.44
1:B:182:ARG:CB	1:B:237:SER:HB3	2.48	0.44
1:B:140:ALA:C	1:B:142:VAL:H	2.25	0.43
1:B:94:MET:HE2	1:B:94:MET:HB3	1.88	0.43
1:A:193:ARG:NH1	1:A:236:HIS:O	2.51	0.43
1:B:37:HIS:CG	1:B:38:TYR:N	2.86	0.43
1:B:132:TYR:CE1	1:B:136:THR:HG21	2.53	0.43
1:B:186:SER:OG	1:B:188:GLU:OE1	2.35	0.43
1:B:195:PHE:N	1:B:195:PHE:CD2	2.86	0.43
1:A:278:LEU:HD22	1:A:279:PRO:HD2	1.99	0.43
1:B:109:ALA:O	1:B:113:VAL:HG23	2.19	0.43
1:B:192:PHE:HE1	1:B:194:ARG:HB2	1.84	0.43
1:A:185:ILE:CD1	1:A:191:VAL:HB	2.48	0.43
1:A:278:LEU:CB	1:A:279:PRO:HD2	2.44	0.43
1:B:243:PHE:CD2	1:B:243:PHE:C	2.96	0.43
1:B:55:GLY:O	1:B:59:VAL:HG23	2.18	0.43
1:B:191:VAL:O	1:B:191:VAL:HG13	2.18	0.43
1:B:222:SER:OG	1:B:224:ILE:HG12	2.18	0.43
1:B:201:THR:HG22	1:B:217:PRO:HD3	2.01	0.43
1:A:161:MET:HE2	1:A:161:MET:HB2	1.88	0.42
1:A:207:ILE:O	1:A:207:ILE:HG22	2.19	0.42
1:A:243:PHE:CD2	1:A:243:PHE:C	2.96	0.42
1:A:222:SER:OG	1:A:224:ILE:HG12	2.19	0.42
1:B:286:ASP:OD1	1:B:286:ASP:C	2.62	0.42
1:B:94:MET:HB2	1:B:116:GLU:HG2	2.02	0.42
1:B:49:PHE:CE2	1:B:131:ILE:HD13	2.55	0.42
1:A:109:ALA:O	1:A:113:VAL:HG23	2.19	0.41
1:A:272:VAL:HG12	1:A:273:ASP:N	2.35	0.41
1:B:278:LEU:HD12	1:B:282:ARG:CG	2.41	0.41
1:A:266:ILE:O	1:A:266:ILE:HG22	2.19	0.41
1:B:216:HIS:HA	1:B:217:PRO:HD2	1.95	0.41
1:A:42:LEU:HB3	1:A:137:ARG:NH2	2.36	0.41
1:A:94:MET:HE2	1:A:94:MET:HB3	1.88	0.41
1:A:286:ASP:OD1	1:A:286:ASP:C	2.62	0.41
1:A:37:HIS:CG	1:A:38:TYR:N	2.87	0.41
1:B:36:ASP:CG	1:B:39:HIS:HB3	2.46	0.41
1:B:87:PHE:O	1:B:91:VAL:HG13	2.20	0.41
1:B:192:PHE:CE1	1:B:194:ARG:HB2	2.56	0.41
1:A:186:SER:OG	1:A:188:GLU:OE1	2.34	0.41
1:A:54:THR:O	1:A:57:TYR:HB3	2.20	0.40
1:A:195:PHE:N	1:A:195:PHE:CD2	2.89	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:232:LEU:HD23	1:A:232:LEU:HA	1.89	0.40
1:B:266:ILE:O	1:B:266:ILE:HG22	2.21	0.40
1:A:49:PHE:CE2	1:A:131:ILE:HD13	2.56	0.40
1:A:94:MET:HB2	1:A:116:GLU:HG2	2.04	0.40
1:B:54:THR:O	1:B:57:TYR:HB3	2.20	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

There are no protein backbone outliers to report in this entry.

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	235/256 (92%)	221 (94%)	14 (6%)	17	41
1	B	225/256 (88%)	212 (94%)	13 (6%)	18	42
All	All	460/512 (90%)	433 (94%)	27 (6%)	18	42

All (27) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	25	ARG
1	A	74	VAL
1	A	82	SER
1	A	91	VAL
1	A	114	THR
1	A	149	VAL
1	A	154	GLU
1	A	168	ILE

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Mol	Chain	Res	Type
1	A	180	LEU
1	A	204	ARG
1	A	209	SER
1	A	214	VAL
1	A	220	HIS
1	A	264	GLU
1	B	74	VAL
1	B	82	SER
1	B	91	VAL
1	B	114	THR
1	B	149	VAL
1	B	154	GLU
1	B	163	LEU
1	B	168	ILE
1	B	180	LEU
1	B	204	ARG
1	B	214	VAL
1	B	220	HIS
1	B	264	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	196	HIS
1	A	258	HIS
1	B	196	HIS
1	B	258	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](#)

Mogul was not executed - this section is therefore empty.

5.5 Carbohydrates [i](#)

Mogul was not executed - this section is therefore empty.

5.6 Ligand geometry [i](#)

Mogul was not executed - this section is therefore empty.

5.7 Other polymers [i](#)

Mogul was not executed - this section is therefore empty.

5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	1
1	B	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	137:ARG	C	138:PRO	N	2.35
1	B	137:ARG	C	138:PRO	N	2.35

6 Fit of model and data

6.1 Protein, DNA and RNA chains

EDS was not executed - this section is therefore empty.

6.2 Non-standard residues in protein, DNA, RNA chains

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

6.4 Ligands

EDS was not executed - this section is therefore empty.

6.5 Other polymers

EDS was not executed - this section is therefore empty.