WORLDWIDE PDB

PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Feb 21, 2024 – 08:34 AM EST

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PDB ID	:	4OJ2
Title	:	The structure of aquaporin
Authors	:	Vahedi-Faridi, A.; Lodowski, D.; Engel, A.; Transcontinental EM Initiative for Membrane Protein Structure (TEMIMPS)
Deposited on	:	2014-01-20
Resolution	:	3.05 Å(reported)

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	Percentile Ranks	Value
Rfree		0.304
Clashscore		47
Ramachandran outliers		2.8%
Sidechain outliers		11.3%
RSRZ outliers		11.5%

Worse   *Better*

▌ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
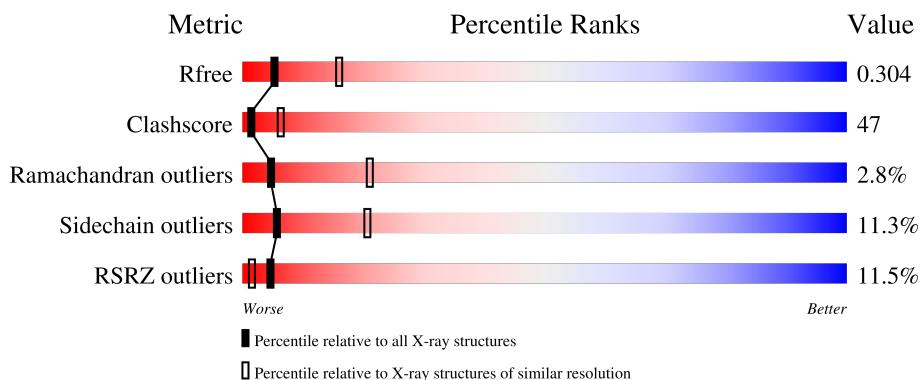
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1754 (3.10-3.02)
Clashscore	141614	1864 (3.10-3.02)
Ramachandran outliers	138981	1794 (3.10-3.02)
Sidechain outliers	138945	1793 (3.10-3.02)
RSRZ outliers	127900	1713 (3.10-3.02)

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 <=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	X	274	11% 39% 43% 9% · 8%
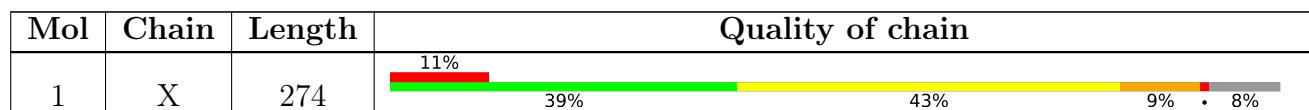
2 Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 1915 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 Aquaporin-2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	X	253	Total 1890	C 1226	N 324	O 334	S 6	0	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
X	-2	SER	-	expression tag	UNP P41181
X	-1	HIS	-	expression tag	UNP P41181
X	0	VAL	-	expression tag	UNP P41181
X	256	ALA	SER	engineered mutation	UNP P41181

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	X	25	Total 25	O 25	0	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide 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: Aquaporin-2
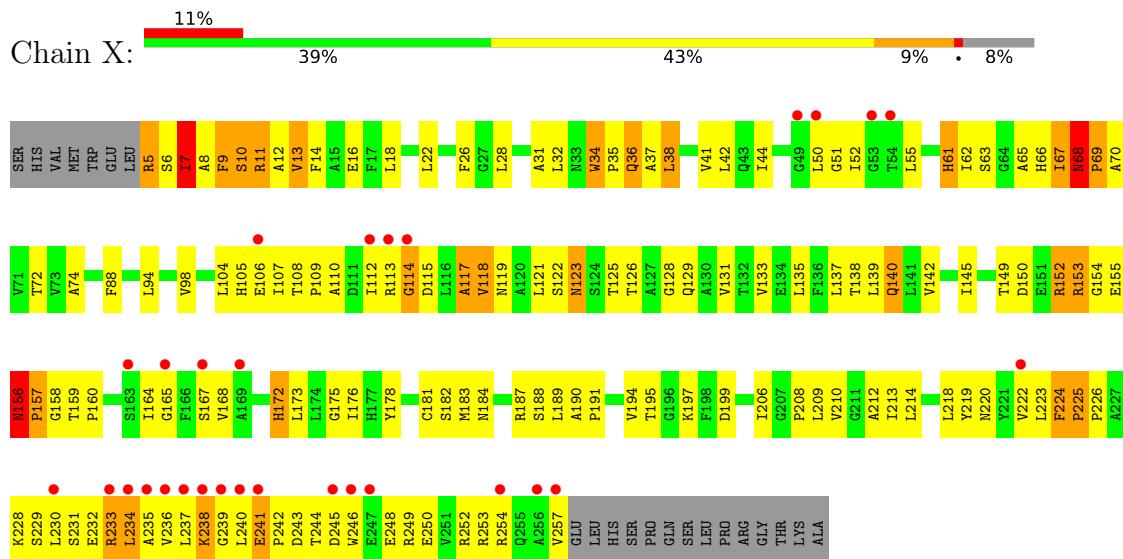
4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 4 21 2	Depositor
Cell constants a, b, c, α, β, γ	95.72Å 95.72Å 79.06Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	79.07 – 3.05 47.86 – 3.05	Depositor EDS
% Data completeness (in resolution range)	99.7 (79.07-3.05) 99.9 (47.86-3.05)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.30 (at 3.07Å)	Xtriage
Refinement program	REFMAC 5.8.0049	Depositor
R, R_{free}	0.257 , 0.299 0.263 , 0.304	Depositor DCC
R_{free} test set	300 reflections (4.04%)	wwPDB-VP
Wilson B-factor (Å^2)	134.3	Xtriage
Anisotropy	0.146	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.28 , 126.4	EDS
L-test for twinning[2]	$< |L| > = 0.49, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	1915	wwPDB-VP
Average B, all atoms (Å^2)	150.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 8.22% 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 ⓘ

5.1 Standard geometry ⓘ

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	X	0.62	7/1934 (0.4%)	0.67	3/2642 (0.1%)

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	X	157	PRO	C-N	6.52	1.44	1.33
1	X	194	VAL	C-N	-5.62	1.21	1.34
1	X	69	PRO	C-N	5.43	1.46	1.34
1	X	117	ALA	C-N	-5.32	1.21	1.34
1	X	114	GLY	C-N	5.03	1.45	1.34
1	X	157	PRO	N-CD	5.02	1.54	1.47
1	X	241	GLU	CA-CB	5.00	1.65	1.53

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	X	68	ASN	C-N-CD	5.92	140.83	128.40
1	X	156	ASN	C-N-CD	5.87	140.73	128.40
1	X	34	TRP	C-N-CD	5.87	140.72	128.40

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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	X	1890	0	1923	178	0
2	X	25	0	0	8	0
All	All	1915	0	1923	178	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 47.

All (178) 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:X:35:PRO:HD3	1:X:112:ILE:CG2	1.68	1.21
1:X:35:PRO:CD	1:X:112:ILE:HG21	1.78	1.12
1:X:241:GLU:HB3	1:X:242:PRO:HD3	1.28	1.11
1:X:35:PRO:CD	1:X:112:ILE:CG2	2.35	1.04
1:X:35:PRO:HD2	1:X:112:ILE:HG21	1.35	1.04
1:X:222:VAL:HG12	1:X:223:LEU:CD1	1.88	1.03
1:X:154:GLY:O	1:X:157:PRO:HG3	1.60	1.00
1:X:109:PRO:HG2	1:X:112:ILE:HD11	1.45	0.99
1:X:222:VAL:HG12	1:X:223:LEU:HD12	1.47	0.93
1:X:191:PRO:O	1:X:195:THR:HG22	1.69	0.93
1:X:220:ASN:HA	2:X:322:HOH:O	1.67	0.92
1:X:32:LEU:HB2	1:X:34:TRP:NE1	1.87	0.89
1:X:223:LEU:O	1:X:224:PHE:HB2	1.72	0.88
1:X:61:HIS:ND1	1:X:62:ILE:HD12	1.90	0.86
1:X:35:PRO:HD3	1:X:112:ILE:HG22	1.59	0.84
1:X:9:PHE:O	1:X:13:VAL:HG23	1.78	0.82
1:X:241:GLU:HB3	1:X:242:PRO:CD	2.09	0.81
1:X:34:TRP:HB2	1:X:37:ALA:O	1.81	0.81
1:X:241:GLU:CB	1:X:242:PRO:HD3	2.08	0.81
1:X:153:ARG:HB3	2:X:316:HOH:O	1.81	0.80
1:X:9:PHE:O	1:X:13:VAL:CG2	2.30	0.79
1:X:10:SER:C	1:X:13:VAL:HG23	2.04	0.78
1:X:115:ASP:HA	2:X:318:HOH:O	1.83	0.78
1:X:133:VAL:HG21	1:X:178:TYR:CD2	2.19	0.77
1:X:246:TRP:O	1:X:250:GLU:HG2	1.86	0.76
1:X:10:SER:O	1:X:13:VAL:HG23	1.86	0.76
1:X:51:GLY:O	1:X:55:LEU:HG	1.88	0.74
1:X:233:ARG:O	1:X:236:VAL:HG12	1.87	0.74
1:X:7:ILE:HD12	1:X:7:ILE:N	2.03	0.73
1:X:10:SER:CA	1:X:13:VAL:HG23	2.18	0.73
1:X:208:PRO:HB2	2:X:325:HOH:O	1.88	0.73
1:X:249:ARG:O	1:X:253:ARG:HG3	1.89	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:X:237:LEU:O	1:X:241:GLU:HB2	1.88	0.72
1:X:238:LYS:O	1:X:242:PRO:HD2	1.90	0.72
1:X:68:ASN:HD22	1:X:69:PRO:N	1.88	0.71
1:X:235:ALA:HA	1:X:238:LYS:HD2	1.73	0.71
1:X:224:PHE:HB3	1:X:225:PRO:CA	2.20	0.71
1:X:155:GLU:O	1:X:157:PRO:HD3	1.91	0.70
1:X:10:SER:HA	1:X:13:VAL:CG2	2.22	0.69
1:X:66:HIS:ND1	1:X:72:THR:HA	2.08	0.69
1:X:222:VAL:C	1:X:223:LEU:HD12	2.14	0.69
1:X:142:VAL:HG21	1:X:212:ALA:HA	1.75	0.68
1:X:155:GLU:CD	1:X:156:ASN:H	1.96	0.68
1:X:11:ARG:O	1:X:14:PHE:HB3	1.93	0.68
1:X:98:VAL:HG12	1:X:190:ALA:HA	1.75	0.67
1:X:105:HIS:HD2	1:X:113:ARG:HD2	1.60	0.67
1:X:8:ALA:HA	1:X:11:ARG:HD2	1.76	0.67
1:X:224:PHE:CB	1:X:225:PRO:HA	2.23	0.67
1:X:236:VAL:HG13	1:X:237:LEU:HD12	1.76	0.67
1:X:8:ALA:CA	1:X:11:ARG:HD2	2.25	0.66
1:X:11:ARG:HG2	1:X:12:ALA:N	2.09	0.66
1:X:65:ALA:O	1:X:67:ILE:HG13	1.94	0.66
1:X:153:ARG:CB	2:X:316:HOH:O	2.42	0.65
1:X:36:GLN:NE2	1:X:36:GLN:HA	2.10	0.65
1:X:32:LEU:HD12	1:X:34:TRP:CZ2	2.32	0.65
1:X:222:VAL:O	1:X:223:LEU:HD12	1.97	0.64
1:X:139:LEU:C	1:X:139:LEU:HD23	2.18	0.63
1:X:209:LEU:HG	2:X:325:HOH:O	1.99	0.63
1:X:182:SER:O	1:X:184:ASN:N	2.32	0.63
1:X:12:ALA:HB2	2:X:308:HOH:O	1.98	0.62
1:X:206:ILE:O	1:X:210:VAL:HG23	2.00	0.62
1:X:68:ASN:HD22	1:X:68:ASN:C	2.02	0.61
1:X:239:GLY:O	1:X:243:ASP:HB2	2.01	0.61
1:X:109:PRO:CG	1:X:112:ILE:HD11	2.26	0.61
1:X:223:LEU:O	1:X:224:PHE:CB	2.46	0.61
1:X:182:SER:C	1:X:184:ASN:H	2.04	0.60
1:X:224:PHE:HB3	1:X:225:PRO:HA	1.82	0.60
1:X:105:HIS:CD2	1:X:113:ARG:HD2	2.37	0.60
1:X:184:ASN:HB3	1:X:187:ARG:HB3	1.83	0.60
1:X:8:ALA:O	1:X:11:ARG:HD2	2.03	0.59
1:X:94:LEU:HD22	1:X:189:LEU:HD23	1.83	0.59
1:X:218:LEU:N	1:X:218:LEU:HD23	2.18	0.59
1:X:224:PHE:CB	1:X:225:PRO:CA	2.78	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:X:32:LEU:HB2	1:X:34:TRP:HE1	1.65	0.58
1:X:233:ARG:O	1:X:233:ARG:HG2	2.03	0.58
1:X:245:ASP:O	1:X:249:ARG:HG3	2.03	0.58
1:X:195:THR:HG23	1:X:197:LYS:H	1.67	0.58
1:X:35:PRO:HD3	1:X:112:ILE:HG23	1.79	0.58
1:X:160:PRO:O	1:X:164:ILE:HG13	2.04	0.58
1:X:137:LEU:HD11	1:X:175:GLY:HA3	1.86	0.57
1:X:224:PHE:HB3	1:X:225:PRO:HB3	1.86	0.57
1:X:10:SER:HA	1:X:13:VAL:HG21	1.86	0.57
1:X:182:SER:C	1:X:184:ASN:N	2.58	0.57
1:X:5:ARG:HB2	1:X:6:SER:OG	2.05	0.56
1:X:16:GLU:OE2	1:X:66:HIS:N	2.39	0.56
1:X:232:GLU:O	1:X:233:ARG:HG2	2.06	0.56
1:X:137:LEU:O	1:X:140:GLN:HG3	2.06	0.56
1:X:9:PHE:O	1:X:13:VAL:HG22	2.04	0.55
1:X:18:LEU:O	1:X:22:LEU:HG	2.06	0.55
1:X:135:LEU:C	1:X:135:LEU:HD23	2.27	0.55
1:X:254:ARG:HA	1:X:257:VAL:HG12	1.88	0.55
1:X:220:ASN:O	1:X:225:PRO:HD3	2.07	0.55
1:X:234:LEU:HD13	1:X:234:LEU:H	1.72	0.55
1:X:248:GLU:O	1:X:252:ARG:HG3	2.07	0.55
1:X:65:ALA:C	1:X:67:ILE:HG13	2.27	0.54
1:X:122:SER:O	1:X:125:THR:HG23	2.08	0.54
1:X:224:PHE:HB3	1:X:225:PRO:CB	2.38	0.54
1:X:108:THR:HG22	1:X:112:ILE:CD1	2.38	0.54
1:X:32:LEU:O	1:X:34:TRP:HD1	1.91	0.53
1:X:108:THR:CG2	1:X:112:ILE:CD1	2.86	0.53
1:X:224:PHE:HA	1:X:226:PRO:HD3	1.90	0.52
1:X:155:GLU:N	1:X:155:GLU:OE1	2.42	0.52
1:X:234:LEU:H	1:X:234:LEU:HD22	1.75	0.52
1:X:10:SER:HA	1:X:13:VAL:HG23	1.83	0.51
1:X:155:GLU:CD	1:X:156:ASN:N	2.63	0.51
1:X:209:LEU:O	1:X:213:ILE:HG13	2.11	0.50
1:X:123:ASN:N	1:X:123:ASN:OD1	2.44	0.50
1:X:128:GLY:O	1:X:131:VAL:HG12	2.13	0.49
1:X:244:THR:O	1:X:248:GLU:HG2	2.13	0.48
1:X:108:THR:CG2	1:X:112:ILE:HD13	2.43	0.48
1:X:109:PRO:O	1:X:112:ILE:HD12	2.12	0.48
1:X:16:GLU:HG2	1:X:63:SER:OG	2.14	0.48
1:X:139:LEU:HD23	1:X:140:GLN:N	2.28	0.48
1:X:7:ILE:HD12	1:X:7:ILE:H	1.77	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:X:34:TRP:N	1:X:34:TRP:CD1	2.82	0.47
1:X:126:THR:HG23	1:X:129:GLN:OE1	2.14	0.47
1:X:222:VAL:HG12	1:X:223:LEU:HD13	1.86	0.47
1:X:248:GLU:O	1:X:252:ARG:CG	2.62	0.47
1:X:68:ASN:ND2	1:X:70:ALA:H	2.12	0.47
1:X:32:LEU:O	1:X:34:TRP:CD1	2.68	0.47
1:X:158:GLY:HA2	1:X:159:THR:HA	1.67	0.47
1:X:8:ALA:O	1:X:11:ARG:HG2	2.16	0.46
1:X:236:VAL:CG1	1:X:237:LEU:HD12	2.45	0.46
1:X:237:LEU:O	1:X:241:GLU:CB	2.59	0.46
1:X:61:HIS:ND1	1:X:62:ILE:CD1	2.73	0.46
1:X:8:ALA:HB1	1:X:11:ARG:HD3	1.98	0.46
1:X:153:ARG:HA	1:X:153:ARG:HD2	1.70	0.46
1:X:209:LEU:N	2:X:325:HOH:O	2.38	0.46
1:X:121:LEU:HD23	1:X:121:LEU:N	2.31	0.46
1:X:31:ALA:HB2	1:X:44:ILE:HG23	1.98	0.46
1:X:22:LEU:O	1:X:26:PHE:HD1	1.99	0.45
1:X:34:TRP:O	1:X:38:LEU:HG	2.16	0.45
1:X:229:SER:C	1:X:231:SER:H	2.19	0.45
1:X:133:VAL:HG21	1:X:178:TYR:CE2	2.50	0.45
1:X:233:ARG:O	1:X:233:ARG:CG	2.62	0.45
1:X:74:ALA:HB2	1:X:212:ALA:HB1	1.98	0.45
1:X:138:THR:O	1:X:139:LEU:C	2.55	0.45
1:X:150:ASP:OD2	1:X:219:TYR:OH	2.24	0.45
1:X:8:ALA:O	1:X:11:ARG:CD	2.64	0.45
1:X:234:LEU:HD13	1:X:234:LEU:N	2.32	0.44
1:X:62:ILE:HD12	1:X:62:ILE:H	1.83	0.44
1:X:228:LYS:HB2	1:X:230:LEU:CD2	2.47	0.44
1:X:9:PHE:CD2	1:X:9:PHE:C	2.91	0.44
1:X:155:GLU:C	1:X:157:PRO:HD3	2.38	0.44
1:X:160:PRO:O	1:X:164:ILE:CG1	2.66	0.44
1:X:5:ARG:C	1:X:5:ARG:HD3	2.38	0.44
1:X:10:SER:O	1:X:13:VAL:CG2	2.61	0.43
1:X:152:ARG:NE	1:X:152:ARG:HA	2.32	0.43
1:X:115:ASP:O	1:X:118:VAL:HG13	2.18	0.43
1:X:172:HIS:ND1	1:X:181:CYS:SG	2.85	0.43
1:X:150:ASP:OD1	1:X:152:ARG:HG2	2.18	0.43
1:X:104:LEU:O	1:X:107:ILE:HG22	2.18	0.42
1:X:164:ILE:O	1:X:167:SER:HB3	2.19	0.42
1:X:178:TYR:CD1	1:X:178:TYR:N	2.87	0.42
1:X:240:LEU:O	1:X:244:THR:OG1	2.21	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:X:42:LEU:HD12	1:X:173:LEU:HD21	2.02	0.42
1:X:140:GLN:HE21	1:X:140:GLN:HB2	1.65	0.42
1:X:234:LEU:HD22	1:X:234:LEU:N	2.34	0.42
1:X:5:ARG:HA	1:X:6:SER:OG	2.19	0.42
1:X:110:ALA:HA	1:X:113:ARG:NE	2.34	0.42
1:X:190:ALA:HB3	1:X:191:PRO:CD	2.49	0.42
1:X:13:VAL:CG1	1:X:88:PHE:HB3	2.50	0.42
1:X:12:ALA:HA	1:X:62:ILE:HG22	2.02	0.41
1:X:165:GLY:O	1:X:168:VAL:HB	2.20	0.41
1:X:238:LYS:HA	1:X:241:GLU:HB3	2.03	0.41
1:X:145:ILE:O	1:X:149:THR:HG23	2.21	0.41
1:X:32:LEU:HB2	1:X:34:TRP:CE2	2.55	0.41
1:X:246:TRP:O	1:X:250:GLU:N	2.43	0.41
1:X:7:ILE:N	1:X:7:ILE:CD1	2.73	0.41
1:X:41:VAL:HG13	1:X:176:ILE:HD12	2.03	0.41
1:X:119:ASN:OD1	1:X:188:SER:HB3	2.21	0.41
1:X:224:PHE:HA	1:X:225:PRO:HA	1.78	0.41
1:X:152:ARG:NE	1:X:152:ARG:CA	2.84	0.41
1:X:8:ALA:O	1:X:11:ARG:CG	2.70	0.40
1:X:5:ARG:C	1:X:5:ARG:CD	2.90	0.40
1:X:28:LEU:HD22	1:X:117:ALA:HB3	2.03	0.40
1:X:52:ILE:HG13	1:X:168:VAL:HG21	2.04	0.40
1:X:214:LEU:O	1:X:218:LEU:HG	2.20	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	X	251/274 (92%)	231 (92%)	13 (5%)	7 (3%)	5	21

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	X	183	MET
1	X	114	GLY
1	X	156	ASN
1	X	7	ILE
1	X	67	ILE
1	X	224	PHE
1	X	225	PRO

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	X	195/214 (91%)	173 (89%)	22 (11%)	6	21

All (22) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	X	5	ARG
1	X	7	ILE
1	X	9	PHE
1	X	10	SER
1	X	11	ARG
1	X	13	VAL
1	X	36	GLN
1	X	38	LEU
1	X	50	LEU
1	X	61	HIS
1	X	68	ASN
1	X	106	GLU
1	X	118	VAL
1	X	123	ASN
1	X	140	GLN
1	X	152	ARG
1	X	153	ARG
1	X	172	HIS
1	X	199	ASP
1	X	233	ARG

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Mol	Chain	Res	Type
1	X	234	LEU
1	X	238	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	X	36	GLN
1	X	68	ASN
1	X	105	HIS
1	X	140	GLN
1	X	220	ASN
1	X	255	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

There are no ligands in this entry.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

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(Å²)	Q<0.9
1	X	253/274 (92%)	0.49	29 (11%)	4	1	94, 134, 248, 279	0

All (29) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	X	235	ALA	8.9
1	X	236	VAL	7.2
1	X	234	LEU	5.7
1	X	256	ALA	5.4
1	X	247	GLU	4.9
1	X	257	VAL	4.2
1	X	240	LEU	3.9
1	X	254	ARG	3.6
1	X	167	SER	3.6
1	X	163	SER	3.5
1	X	237	LEU	3.2
1	X	113	ARG	3.1
1	X	230	LEU	3.0
1	X	245	ASP	3.0
1	X	49	GLY	2.6
1	X	112	ILE	2.6
1	X	165	GLY	2.6
1	X	238	LYS	2.6
1	X	246	TRP	2.5
1	X	222	VAL	2.3
1	X	114	GLY	2.3
1	X	241	GLU	2.3
1	X	53	GLY	2.3
1	X	106	GLU	2.3
1	X	239	GLY	2.3
1	X	50	LEU	2.1
1	X	233	ARG	2.1

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Mol	Chain	Res	Type	RSRZ
1	X	54	THR	2.1
1	X	169	ALA	2.0

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

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

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

There are no ligands in this entry.

6.5 Other polymers ⓘ

There are no such residues in this entry.