



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 07:15 AM GMT

PDB ID : 3A3Y
Title : Crystal structure of the sodium-potassium pump with bound potassium and ouabain
Authors : Ogawa, H.; Shinoda, T.; Cornelius, F.; Toyoshima, C.
Deposited on : 2009-06-23
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
<http://wwpdb.org/validation/2016/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 (RC4), CSD as536be (2015)
Xtriage (Phenix) : 1.9-1692
EDS : rb-20026688
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk26865

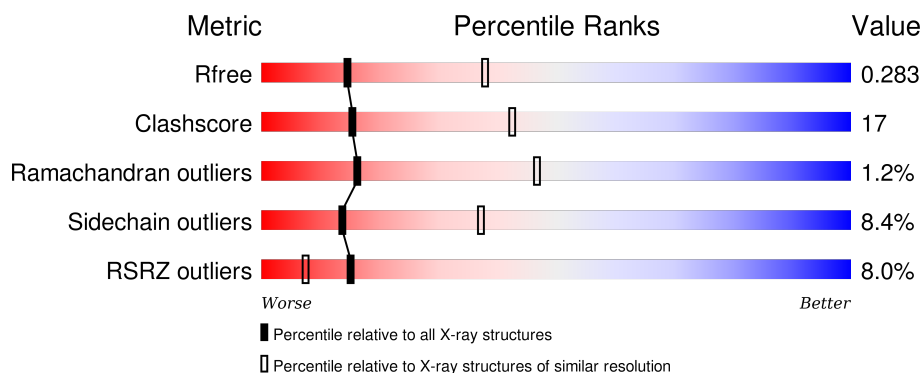
1 Overall quality at a glance

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}	91344	2393 (2.80-2.80)
Clashscore	102246	2827 (2.80-2.80)
Ramachandran outliers	100387	2782 (2.80-2.80)
Sidechain outliers	100360	2784 (2.80-2.80)
RSRZ outliers	91569	2404 (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 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	1028	<div> <div>7%</div> <div>61%</div> <div>32%</div> <div>.</div> <div>.</div> </div>
2	B	305	<div> <div>10%</div> <div>50%</div> <div>32%</div> <div>5%</div> <div>13%</div> </div>
3	G	74	<div> <div>32%</div> <div>19%</div> <div>49%</div> </div>

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	MF4	A	2001	-	-	-	X
8	CLR	B	3001	-	-	-	X

2 Entry composition [i](#)

There are 10 unique types of molecules in this entry. The entry contains 10308 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 Na, K-ATPase alpha subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	992	Total	C	N	O	S	0	0	0
			7675	4886	1290	1453	46			

- Molecule 2 is a protein called NA⁺,K⁺-ATPASE BETA SUBUNIT.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	265	Total	C	N	O	S	0	0	0
			2151	1392	356	392	11			

- Molecule 3 is a protein called Phospholemman-like protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	G	38	Total	C	N	O	S	0	0	0
			296	195	49	51	1			

- Molecule 4 is TETRAFLUOROMAGNESATE(2-) (three-letter code: MF4) (formula: F₄Mg).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total F Mg 5 4 1	0	0

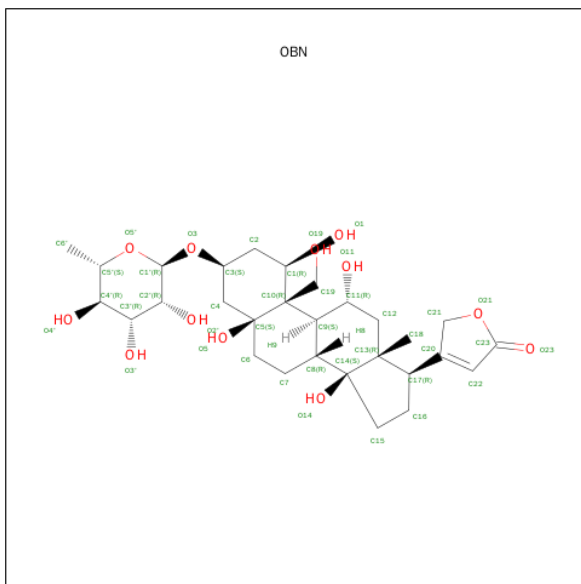
- Molecule 5 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total Mg 1 1	0	0

- Molecule 6 is POTASSIUM ION (three-letter code: K) (formula: K).

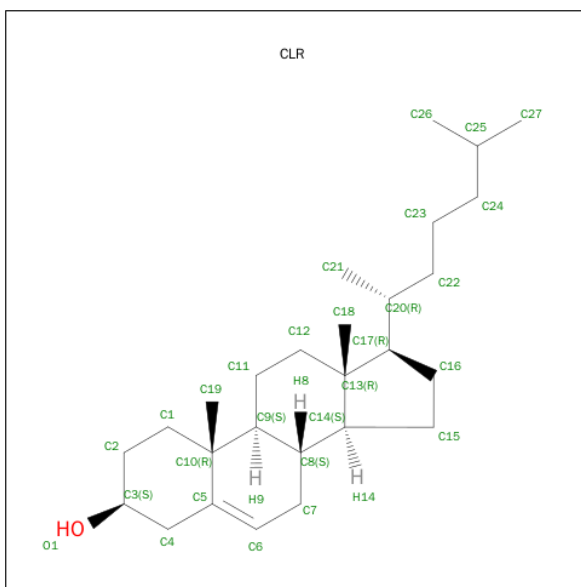
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	3	Total K 3 3	0	0

- Molecule 7 is OUABAIN (three-letter code: OBN) (formula: C₂₉H₄₄O₁₂).



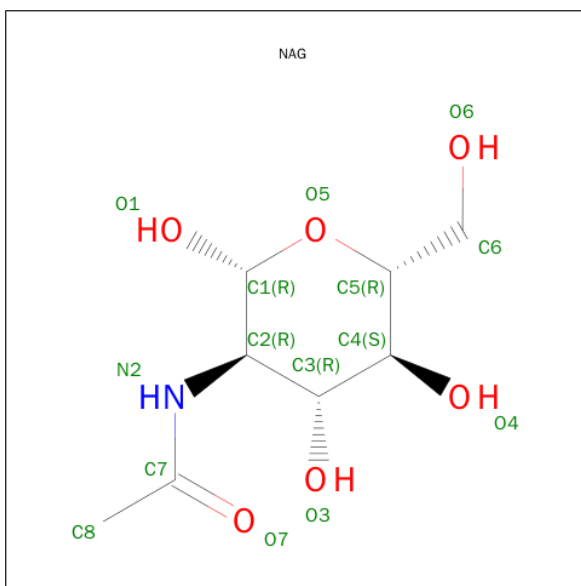
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	1	Total C O 41 29 12	0	0

- Molecule 8 is CHOLESTEROL (three-letter code: CLR) (formula: C₂₇H₄₆O).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
8	B	1	Total	C	O	0	0
			28	27	1		

- Molecule 9 is SUGAR (N-ACETYL-D-GLUCOSAMINE) (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
9	B	1	Total	C	N	O	0	0
			14	8	1	5		
9	B	1	Total	C	N	O	0	0
			14	8	1	5		

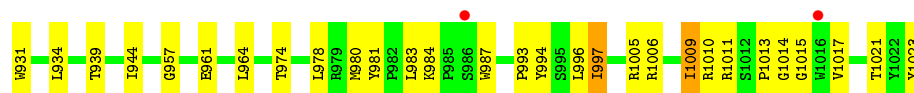
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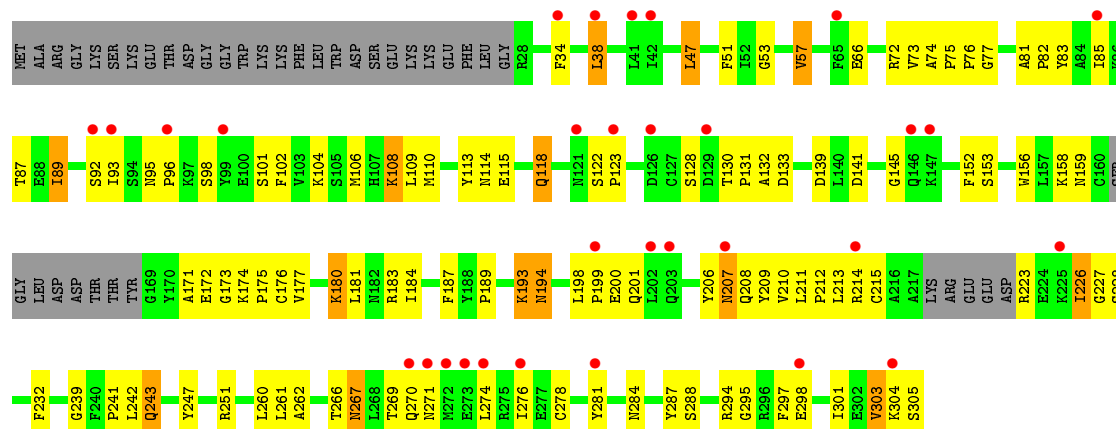
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
9	B	1	Total	C	N	O	0	0
			14	8	1	5		

- Molecule 10 is water.

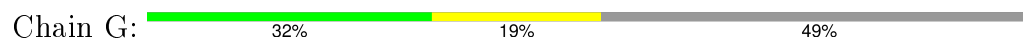
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	A	65	Total	O	0	0
			65	65		
10	G	1	Total	O	0	0
			1	1		



• Molecule 2: NA⁺,K⁺-ATPASE BETA SUBUNIT



• Molecule 3: Phospholemman-like protein



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	222.88Å 50.72Å 163.34Å 90.00° 104.63° 90.00°	Depositor
Resolution (Å)	15.00 – 2.80 43.58 – 2.80	Depositor EDS
% Data completeness (in resolution range)	100.0 (15.00-2.80) 99.9 (43.58-2.80)	Depositor EDS
R_{merge}	0.04	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.41 (at 2.81Å)	Xtriage
Refinement program	REFMAC 5.5.0072	Depositor
R, R_{free}	0.247 , 0.293 0.242 , 0.283	Depositor DCC
R_{free} test set	1333 reflections (3.12%)	DCC
Wilson B-factor (Å ²)	65.5	Xtriage
Anisotropy	0.362	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 72.0	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtriage
Outliers	0 of 44342 reflections	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	10308	wwPDB-VP
Average B, all atoms (Å ²)	63.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.77% 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, 0.375 respectively for untwinned datasets, and 0.333, 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: OBN, MG, NAG, K, MF4, CLR

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	0.37	0/7825	0.55	0/10616
2	B	0.35	0/2205	0.54	0/2970
3	G	0.39	0/300	0.53	0/407
All	All	0.37	0/10330	0.55	0/13993

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.

There are no bond angle outliers.

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1015	GLY	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	7675	0	7700	270	0
2	B	2151	0	2127	81	0
3	G	296	0	312	11	0
4	A	5	0	0	1	0
5	A	1	0	0	0	0
6	A	3	0	0	0	0
7	A	41	0	44	7	0
8	B	28	0	46	2	0
9	B	42	0	39	3	0
10	A	65	0	0	3	0
10	G	1	0	0	0	0
All	All	10308	0	10268	355	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 17.

All (355) 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:905:GLN:HE21	2:B:183:ARG:H	1.13	0.96
1:A:328:ILE:HG13	1:A:329:VAL:H	1.30	0.94
1:A:102:ILE:HA	1:A:105:TRP:HD1	1.32	0.94
1:A:44:HIS:H	1:A:44:HIS:CD2	1.83	0.93
1:A:894:TRP:HB2	2:B:83:TYR:HE1	1.38	0.88
1:A:905:GLN:NE2	2:B:183:ARG:H	1.71	0.88
1:A:714:VAL:HG23	1:A:728:ALA:HB2	1.56	0.86
1:A:329:VAL:HB	7:A:6000:OBN:O21	1.80	0.82
1:A:450:ASP:OD1	1:A:453:GLU:HB2	1.80	0.82
2:B:271:ASN:HD21	2:B:305:SER:H	1.25	0.82
1:A:78:ASN:HA	1:A:261:THR:HG23	1.63	0.80
2:B:171:ALA:HB3	2:B:175:PRO:HA	1.62	0.80
1:A:246:SER:OG	1:A:267:MET:HG3	1.82	0.79
1:A:806:THR:CG2	1:A:923:PHE:HB2	2.13	0.78
1:A:78:ASN:HD22	1:A:262:GLY:H	1.29	0.77
1:A:102:ILE:HA	1:A:105:TRP:CD1	2.20	0.76
1:A:61:ARG:HB3	1:A:61:ARG:HH11	1.51	0.75
1:A:344:LEU:HB3	1:A:361:LEU:HG	1.68	0.75
1:A:656:ASN:HD22	1:A:657:PRO:HD2	1.51	0.74
2:B:174:LYS:HB3	2:B:266:THR:HA	1.67	0.74
1:A:483:ASN:HB2	1:A:486:ASN:HB2	1.71	0.73
2:B:271:ASN:ND2	2:B:305:SER:H	1.85	0.73
1:A:61:ARG:CB	1:A:61:ARG:HH11	2.02	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:74:ALA:HB3	2:B:75:PRO:HD3	1.71	0.72
7:A:6000:OBN:H212	7:A:6000:OBN:H181	1.70	0.72
1:A:52:HIS:CE1	1:A:59:LEU:HA	2.24	0.71
7:A:6000:OBN:H1	7:A:6000:OBN:O11	1.90	0.71
1:A:301:PHE:O	1:A:305:SER:HB2	1.91	0.70
1:A:994:TYR:HA	1:A:997:ILE:HG22	1.74	0.70
1:A:328:ILE:HG13	1:A:329:VAL:N	2.06	0.70
1:A:572:ASP:HB3	1:A:577:ASN:HB2	1.72	0.69
1:A:61:ARG:CG	1:A:61:ARG:HH11	2.05	0.69
2:B:232:PHE:HB2	2:B:262:ALA:HB3	1.72	0.69
1:A:100:PHE:HE1	1:A:295:ILE:HG21	1.58	0.69
2:B:81:ALA:HB2	2:B:109:LEU:HD23	1.74	0.69
1:A:780:LEU:O	1:A:783:ASN:HB2	1.93	0.69
1:A:330:ALA:HB1	1:A:787:ILE:HG12	1.74	0.69
2:B:270:GLN:HG3	2:B:271:ASN:HD22	1.58	0.68
1:A:497:LYS:HE2	1:A:499:SER:HB2	1.75	0.68
1:A:806:THR:HG22	1:A:923:PHE:HB2	1.76	0.68
1:A:48:LEU:H	1:A:48:LEU:HD12	1.60	0.67
1:A:894:TRP:HD1	2:B:83:TYR:HH	1.42	0.67
1:A:100:PHE:HA	1:A:103:LEU:HD12	1.77	0.67
1:A:838:ASN:HD21	1:A:840:LYS:HG2	1.60	0.66
1:A:722:SER:OG	1:A:723:PRO:HD3	1.94	0.66
1:A:924:ILE:HD12	1:A:983:LEU:HD12	1.76	0.66
2:B:82:PRO:HG2	2:B:177:VAL:HG22	1.77	0.66
1:A:488:TYR:HE1	1:A:490:LEU:HD23	1.61	0.65
1:A:342:VAL:HB	1:A:820:ILE:HD12	1.77	0.65
1:A:907:THR:OG1	1:A:910:GLN:HG3	1.96	0.65
1:A:994:TYR:HA	1:A:997:ILE:CG2	2.27	0.65
1:A:102:ILE:CA	1:A:105:TRP:HD1	2.09	0.64
1:A:625:LYS:HD2	1:A:664:VAL:HG21	1.80	0.64
1:A:78:ASN:ND2	1:A:262:GLY:H	1.95	0.64
1:A:892:ASP:OD1	1:A:894:TRP:CD1	2.51	0.64
1:A:127:ASN:O	1:A:131:TYR:HB2	1.97	0.64
1:A:261:THR:HG22	1:A:264:ARG:NH2	2.13	0.63
2:B:131:PRO:HA	2:B:243:GLN:HE21	1.63	0.63
1:A:714:VAL:CG2	1:A:728:ALA:HB2	2.26	0.63
1:A:330:ALA:H	7:A:6000:OBN:C23	2.12	0.63
1:A:565:TYR:OH	1:A:579:PRO:HD3	1.99	0.63
2:B:213:LEU:HD23	2:B:261:LEU:HD13	1.80	0.63
1:A:622:ILE:HG12	10:A:5056:HOH:O	1.98	0.62
3:G:41:GLY:O	3:G:42:LYS:HB3	1.99	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:77:GLY:HA2	2:B:295:GLY:H	1.65	0.62
1:A:325:ILE:O	1:A:328:ILE:HG12	1.99	0.62
1:A:44:HIS:H	1:A:44:HIS:HD2	1.44	0.62
1:A:656:ASN:HD22	1:A:657:PRO:CD	2.12	0.62
2:B:89:ILE:HG22	2:B:102:PHE:CE2	2.36	0.61
1:A:417:THR:HA	1:A:522:LEU:HD22	1.81	0.61
2:B:214:ARG:HD3	2:B:281:TYR:OH	2.01	0.61
1:A:838:ASN:HD22	1:A:840:LYS:H	1.48	0.61
2:B:171:ALA:HB1	2:B:173:GLY:O	2.00	0.61
1:A:502:ARG:CG	1:A:503:TYR:H	2.14	0.61
1:A:202:ASP:HB2	1:A:260:TYR:HB2	1.83	0.60
1:A:772:LEU:O	1:A:776:ILE:HG12	2.01	0.60
1:A:61:ARG:HB3	1:A:61:ARG:NH1	2.15	0.60
1:A:261:THR:HG21	10:A:5028:HOH:O	2.01	0.60
1:A:301:PHE:HD2	1:A:302:LEU:HD23	1.65	0.60
1:A:170:LEU:HD23	1:A:192:GLU:HB3	1.83	0.60
1:A:851:SER:HA	8:B:3001:CLR:H72	1.81	0.60
1:A:304:VAL:HG12	1:A:324:LEU:HD11	1.83	0.60
2:B:132:ALA:O	2:B:209:TYR:HB3	2.02	0.60
2:B:226:ILE:HG22	2:B:269:THR:HB	1.84	0.60
1:A:846:ASN:ND2	1:A:848:ARG:HB2	2.17	0.59
2:B:53:GLY:O	2:B:57:VAL:HG13	2.03	0.59
1:A:214:ASP:O	1:A:247:THR:HB	2.03	0.59
1:A:621:PRO:HD2	10:A:5056:HOH:O	2.02	0.58
1:A:172:ILE:HG13	1:A:190:LEU:HD23	1.84	0.58
1:A:431:ALA:O	1:A:471:ARG:NH2	2.36	0.58
1:A:64:THR:HG22	1:A:66:ALA:H	1.68	0.58
1:A:838:ASN:ND2	1:A:840:LYS:H	2.01	0.58
1:A:814:THR:HB	1:A:961:GLU:HG3	1.85	0.58
1:A:502:ARG:CD	1:A:503:TYR:H	2.17	0.58
1:A:291:PHE:CZ	1:A:336:LEU:HD23	2.39	0.58
1:A:905:GLN:HE21	2:B:183:ARG:N	1.93	0.57
1:A:323:PHE:CD1	1:A:790:PHE:HZ	2.22	0.57
1:A:783:ASN:O	1:A:787:ILE:HG13	2.04	0.57
1:A:392:TRP:HB3	1:A:588:LEU:HB2	1.85	0.57
1:A:122:GLU:O	1:A:124:GLU:HG2	2.04	0.57
1:A:106:ILE:HG22	1:A:325:ILE:HD13	1.87	0.57
1:A:61:ARG:HG3	1:A:61:ARG:HH11	1.70	0.56
1:A:44:HIS:N	1:A:44:HIS:CD2	2.65	0.56
1:A:333:PRO:HB2	1:A:336:LEU:HB2	1.87	0.56
1:A:67:ARG:NH1	1:A:70:GLU:OE1	2.35	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:43:ASP:HB2	1:A:46:LEU:HD12	1.88	0.56
1:A:866:PHE:O	1:A:869:TYR:HB3	2.06	0.56
1:A:565:TYR:HD2	1:A:569:TYR:CE2	2.23	0.56
1:A:442:ILE:O	1:A:445:ARG:HG2	2.06	0.56
1:A:939:THR:O	1:A:1006:ARG:NH1	2.39	0.56
1:A:766:ARG:HD2	1:A:832:MET:CE	2.36	0.56
1:A:502:ARG:HD2	1:A:503:TYR:N	2.21	0.55
1:A:888:VAL:O	1:A:892:ASP:HB2	2.06	0.55
1:A:261:THR:HG22	1:A:264:ARG:HH21	1.70	0.55
1:A:497:LYS:O	1:A:501:SER:N	2.40	0.55
2:B:241:PRO:HB2	2:B:243:GLN:HG3	1.89	0.55
1:A:64:THR:HA	1:A:174:ASP:OD1	2.07	0.55
2:B:74:ALA:CB	2:B:75:PRO:HD3	2.37	0.55
1:A:502:ARG:HD2	1:A:503:TYR:H	1.70	0.54
1:A:145:CYS:O	1:A:149:TYR:HB2	2.07	0.54
1:A:429:ASN:HA	1:A:453:GLU:OE1	2.07	0.54
1:A:129:ASN:HA	1:A:132:LEU:HB3	1.89	0.54
1:A:974:THR:HG23	1:A:978:LEU:HD12	1.90	0.54
1:A:894:TRP:HB2	2:B:83:TYR:CE1	2.30	0.53
1:A:838:ASN:C	1:A:838:ASN:HD22	2.12	0.53
1:A:52:HIS:CE1	1:A:59:LEU:CA	2.91	0.53
1:A:52:HIS:HE1	1:A:59:LEU:HA	1.70	0.53
1:A:578:PHE:HB2	1:A:579:PRO:HD2	1.89	0.53
3:G:29:VAL:O	3:G:33:ILE:HG12	2.09	0.53
1:A:860:ILE:HG12	2:B:47:LEU:HD11	1.91	0.53
1:A:59:LEU:HG	1:A:206:ILE:HD12	1.91	0.53
2:B:213:LEU:HD11	2:B:278:CYS:HB3	1.90	0.53
2:B:132:ALA:H	2:B:243:GLN:HG2	1.73	0.53
1:A:673:LEU:HD22	1:A:677:VAL:HG11	1.91	0.53
2:B:114:ASN:O	2:B:118:GLN:HG3	2.09	0.53
1:A:103:LEU:HA	1:A:106:ILE:HD12	1.91	0.52
1:A:100:PHE:CE1	1:A:295:ILE:HG21	2.42	0.52
1:A:790:PHE:O	1:A:794:ILE:HG13	2.09	0.52
1:A:784:ILE:HG13	1:A:854:TYR:HA	1.90	0.52
2:B:93:ILE:H	2:B:305:SER:HB2	1.73	0.52
1:A:920:THR:HG21	1:A:981:TYR:O	2.09	0.52
1:A:696:GLN:O	1:A:700:ILE:HG12	2.10	0.52
1:A:571:PHE:HA	1:A:577:ASN:HD22	1.75	0.52
2:B:128:SER:HB3	2:B:130:THR:O	2.09	0.52
1:A:63:LEU:HD22	1:A:189:ASP:HB3	1.92	0.52
1:A:676:GLU:H	1:A:676:GLU:CD	2.13	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:328:ILE:CG1	1:A:329:VAL:H	2.11	0.52
1:A:693:THR:HA	1:A:697:GLN:HE21	1.74	0.52
1:A:974:THR:HG22	1:A:980:MET:HB2	1.91	0.51
1:A:894:TRP:HD1	2:B:83:TYR:OH	1.94	0.51
2:B:212:PRO:HG2	2:B:281:TYR:HB2	1.92	0.51
1:A:61:ARG:CG	1:A:61:ARG:NH1	2.73	0.51
1:A:1005:ARG:HH21	1:A:1021:THR:HB	1.76	0.51
2:B:193:LYS:HA	2:B:207:ASN:HD21	1.76	0.51
1:A:36:LYS:O	1:A:696:GLN:HG2	2.11	0.51
2:B:106:MET:O	2:B:110:MET:HG2	2.11	0.51
1:A:790:PHE:CE2	1:A:794:ILE:HD11	2.45	0.50
1:A:101:SER:O	1:A:105:TRP:CD1	2.64	0.50
1:A:1011:ARG:O	1:A:1013:PRO:HD3	2.11	0.50
1:A:754:ASN:HD21	1:A:756:ALA:HB3	1.75	0.50
1:A:212:LYS:HG2	1:A:224:PRO:HB2	1.93	0.50
2:B:171:ALA:CB	2:B:175:PRO:HA	2.39	0.50
1:A:818:PRO:HB3	1:A:934:LEU:HD22	1.93	0.50
1:A:735:GLY:O	1:A:743:LYS:HE3	2.12	0.50
1:A:192:GLU:OE1	1:A:255:ARG:HD2	2.12	0.50
2:B:101:SER:O	2:B:104:LYS:HB3	2.12	0.50
1:A:291:PHE:HZ	1:A:336:LEU:HD23	1.75	0.50
1:A:531:LYS:HE3	1:A:534:MET:HG2	1.92	0.50
1:A:345:THR:O	1:A:349:LYS:HG2	2.11	0.50
1:A:110:LEU:HD22	1:A:325:ILE:HG21	1.94	0.49
1:A:993:PRO:O	1:A:997:ILE:HG22	2.12	0.49
2:B:76:PRO:HG3	2:B:184:ILE:HD12	1.94	0.49
1:A:518:CYS:SG	1:A:585:PHE:HB2	2.52	0.49
1:A:693:THR:HA	1:A:697:GLN:NE2	2.27	0.49
2:B:180:LYS:HG2	2:B:181:LEU:N	2.27	0.49
2:B:95:ASN:HB2	2:B:98:SER:HB2	1.93	0.49
1:A:784:ILE:HD11	1:A:854:TYR:CG	2.47	0.49
1:A:458:LYS:O	1:A:462:LEU:HB2	2.13	0.49
1:A:572:ASP:CB	1:A:577:ASN:HB2	2.42	0.49
1:A:785:PRO:HB2	1:A:926:ILE:HD12	1.93	0.49
1:A:502:ARG:HG2	1:A:503:TYR:H	1.77	0.49
1:A:212:LYS:HB2	1:A:251:GLU:HG2	1.94	0.49
1:A:534:MET:C	1:A:536:GLU:H	2.15	0.49
2:B:113:TYR:CE1	2:B:260:LEU:HD11	2.48	0.49
1:A:790:PHE:O	1:A:793:PHE:HB3	2.13	0.49
1:A:150:GLN:HA	1:A:361:LEU:HB2	1.95	0.48
1:A:852:MET:HG2	1:A:1021:THR:HG22	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:639:GLU:OE2	1:A:647:ARG:NH1	2.46	0.48
1:A:868:SER:O	1:A:872:ILE:HG12	2.13	0.48
1:A:376:ASP:OD2	4:A:2001:MF4:F4	2.21	0.48
2:B:104:LYS:HE2	2:B:108:LYS:NZ	2.28	0.48
1:A:170:LEU:HD21	1:A:177:LYS:HD3	1.95	0.48
2:B:34:PHE:CE2	2:B:38:LEU:HD12	2.48	0.48
1:A:420:ALA:HB1	1:A:557:HIS:CE1	2.49	0.48
1:A:887:ARG:HA	1:A:890:TRP:HB3	1.94	0.48
1:A:61:ARG:HA	1:A:175:GLY:HA2	1.95	0.48
1:A:424:ILE:HG23	1:A:506:VAL:HB	1.96	0.48
1:A:48:LEU:O	1:A:52:HIS:HD2	1.97	0.48
3:G:18:ARG:HG2	3:G:18:ARG:HH11	1.79	0.48
2:B:194:ASN:HD22	2:B:194:ASN:N	2.11	0.47
1:A:209:HIS:HB3	1:A:253:THR:HG22	1.96	0.47
2:B:92:SER:HA	2:B:304:LYS:O	2.14	0.47
1:A:832:MET:HA	1:A:832:MET:HE2	1.95	0.47
1:A:502:ARG:HD3	1:A:560:LEU:O	2.14	0.47
1:A:797:ASN:C	1:A:887:ARG:HG2	2.35	0.47
2:B:215:CYS:HA	2:B:278:CYS:HA	1.96	0.47
1:A:670:LEU:HD23	1:A:678:LEU:CD2	2.45	0.47
1:A:618:GLY:O	1:A:692:ARG:HD2	2.15	0.47
1:A:274:ALA:O	1:A:726:LYS:HE2	2.15	0.47
1:A:592:ILE:O	1:A:594:PRO:HD3	2.14	0.47
2:B:210:VAL:HG13	2:B:239:GLY:HA3	1.95	0.47
1:A:152:ALA:O	1:A:360:ASN:ND2	2.47	0.47
1:A:135:VAL:O	1:A:139:VAL:HG23	2.15	0.47
1:A:994:TYR:CA	1:A:997:ILE:HG22	2.44	0.47
1:A:132:LEU:O	1:A:136:LEU:HG	2.15	0.46
1:A:831:ILE:HG22	1:A:834:ARG:CZ	2.45	0.46
2:B:288:SER:HB2	2:B:294:ARG:HH11	1.79	0.46
2:B:81:ALA:HB2	2:B:109:LEU:CD2	2.42	0.46
3:G:25:ILE:O	3:G:29:VAL:HG23	2.15	0.46
2:B:194:ASN:HA	2:B:198:LEU:HD11	1.97	0.46
1:A:788:THR:N	1:A:789:PRO:HD2	2.31	0.46
1:A:846:ASN:ND2	1:A:1023:TYR:OXT	2.49	0.46
3:G:15:ASP:OD2	3:G:18:ARG:HG3	2.14	0.46
2:B:227:GLY:HA2	2:B:267:ASN:CB	2.46	0.46
2:B:270:GLN:CG	2:B:271:ASN:HD22	2.27	0.46
2:B:209:TYR:HA	2:B:242:LEU:HD22	1.96	0.46
1:A:503:TYR:CE1	1:A:571:PHE:HE1	2.34	0.46
1:A:277:LEU:HB2	1:A:726:LYS:HD2	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:310:SER:O	1:A:315:TYR:HD2	1.99	0.46
1:A:883:LEU:HA	1:A:886:LYS:HZ3	1.80	0.46
1:A:100:PHE:HB3	1:A:332:VAL:CG1	2.46	0.46
1:A:52:HIS:NE2	1:A:59:LEU:HD12	2.31	0.46
1:A:156:ARG:HB2	1:A:744:GLN:OE1	2.15	0.45
2:B:159:ASN:HD21	9:B:4021:NAG:C1	2.28	0.45
1:A:815:ASP:CG	1:A:930:GLN:HE21	2.20	0.45
1:A:367:LEU:O	1:A:762:VAL:HB	2.17	0.45
2:B:122:SER:HA	2:B:123:PRO:HA	1.78	0.45
1:A:915:GLU:O	1:A:918:CYS:HB2	2.16	0.45
1:A:399:GLU:O	1:A:399:GLU:HG3	2.16	0.45
2:B:87:THR:HB	2:B:298:GLU:O	2.17	0.45
2:B:189:PRO:HB2	2:B:211:LEU:HD13	1.98	0.45
1:A:551:ARG:O	1:A:590:ALA:HA	2.17	0.45
1:A:909:GLU:O	1:A:913:ILE:HG12	2.17	0.45
2:B:187:PHE:CZ	2:B:284:ASN:HB3	2.52	0.45
1:A:387:THR:HB	1:A:594:PRO:HG3	2.00	0.45
1:A:367:LEU:HD23	1:A:761:GLY:HA3	1.99	0.45
1:A:846:ASN:HD22	1:A:848:ARG:HB2	1.80	0.44
1:A:211:CYS:HA	1:A:252:GLY:HA3	1.98	0.44
1:A:575:GLU:O	1:A:577:ASN:N	2.50	0.44
1:A:939:THR:OG1	1:A:1006:ARG:NH1	2.50	0.44
2:B:297:PHE:O	2:B:298:GLU:HG2	2.18	0.44
1:A:827:ALA:HB1	1:A:829:SER:O	2.17	0.44
1:A:91:LYS:HB3	1:A:148:TYR:HE1	1.82	0.44
1:A:61:ARG:HG3	1:A:61:ARG:NH1	2.32	0.44
2:B:158:LYS:HB2	2:B:232:PHE:CD2	2.52	0.44
1:A:816:MET:O	1:A:820:ILE:HG12	2.18	0.44
1:A:154:SER:HB3	1:A:359:LYS:HE3	1.99	0.44
1:A:295:ILE:HA	1:A:295:ILE:HD13	1.81	0.44
1:A:277:LEU:HB2	1:A:726:LYS:CD	2.48	0.44
1:A:802:LEU:CD1	1:A:922:PHE:HB3	2.48	0.44
2:B:74:ALA:HB3	2:B:75:PRO:CD	2.44	0.44
1:A:838:ASN:ND2	1:A:840:LYS:HG2	2.30	0.44
1:A:321:VAL:O	1:A:325:ILE:HG22	2.17	0.44
1:A:326:GLY:O	7:A:6000:OBN:C22	2.66	0.44
1:A:42:ASP:HB3	1:A:43:ASP:H	1.49	0.43
3:G:17:TYR:O	3:G:21:VAL:HG23	2.19	0.43
2:B:93:ILE:HD11	2:B:303:VAL:HB	2.00	0.43
2:B:228:SER:HB3	2:B:267:ASN:HA	2.00	0.43
1:A:984:LYS:HG2	3:G:14:TYR:CZ	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:799:PRO:HD2	1:A:869:TYR:OH	2.18	0.43
1:A:1009:ILE:HG22	1:A:1010:ARG:N	2.33	0.43
9:B:4001:NAG:O4	9:B:4002:NAG:N2	2.44	0.43
1:A:899:GLU:HA	1:A:904:GLN:O	2.19	0.43
1:A:536:GLU:HA	1:A:539:GLN:HB2	2.00	0.43
2:B:115:GLU:OE2	2:B:153:SER:HA	2.18	0.43
1:A:566:ASN:N	1:A:569:TYR:HB2	2.33	0.43
2:B:227:GLY:HA2	2:B:267:ASN:HB2	1.99	0.43
1:A:191:VAL:HG11	1:A:200:PRO:HG2	2.00	0.43
1:A:140:VAL:O	1:A:144:GLY:N	2.51	0.43
1:A:273:LEU:HD21	1:A:699:LEU:HD23	2.00	0.43
2:B:174:LYS:H	2:B:303:VAL:HG11	1.82	0.43
2:B:118:GLN:HE22	2:B:152:PHE:H	1.66	0.43
2:B:66:GLU:OE2	3:G:11:ARG:CZ	2.66	0.43
1:A:52:HIS:HD1	1:A:57:THR:HG23	1.84	0.43
1:A:479:GLU:HB2	1:A:490:LEU:O	2.18	0.43
1:A:785:PRO:HB2	1:A:926:ILE:CD1	2.49	0.43
3:G:18:ARG:CG	3:G:18:ARG:HH11	2.32	0.43
1:A:51:LEU:HD13	1:A:204:ARG:HG3	2.01	0.43
1:A:327:ILE:O	1:A:327:ILE:HG22	2.19	0.43
2:B:206:TYR:O	2:B:208:GLN:N	2.52	0.43
7:A:6000:OBN:H212	7:A:6000:OBN:C18	2.44	0.43
1:A:569:TYR:CE2	1:A:570:PRO:O	2.72	0.43
1:A:517:ARG:HD3	1:A:580:THR:O	2.19	0.42
1:A:658:ARG:HA	1:A:658:ARG:NE	2.34	0.42
1:A:43:ASP:HB2	1:A:46:LEU:CD1	2.49	0.42
2:B:72:ARG:HA	2:B:72:ARG:HD3	1.79	0.42
1:A:928:VAL:O	1:A:931:TRP:HB2	2.19	0.42
1:A:688:ILE:HG21	1:A:690:PHE:CE1	2.54	0.42
1:A:502:ARG:CG	1:A:503:TYR:N	2.82	0.42
1:A:382:THR:HA	1:A:595:PRO:HA	2.00	0.42
1:A:576:PRO:C	1:A:578:PHE:H	2.22	0.42
1:A:620:HIS:HA	1:A:621:PRO:HD3	1.81	0.42
1:A:850:ILE:O	1:A:854:TYR:HB2	2.20	0.42
1:A:48:LEU:HD23	1:A:206:ILE:HB	2.01	0.42
1:A:450:ASP:O	1:A:454:SER:OG	2.38	0.42
1:A:860:ILE:HG12	2:B:47:LEU:CD1	2.50	0.42
9:B:4001:NAG:O6	9:B:4002:NAG:H5	2.20	0.42
3:G:39:LEU:HD23	3:G:42:LYS:HA	2.02	0.42
2:B:95:ASN:HA	2:B:96:PRO:HD3	1.92	0.42
2:B:159:ASN:HA	2:B:159:ASN:HD22	1.70	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:800:LEU:HA	1:A:801:PRO:HD3	1.77	0.42
1:A:609:ALA:O	1:A:836:PRO:HD3	2.19	0.41
1:A:507:MET:HG2	1:A:556:CYS:SG	2.60	0.41
1:A:482:PHE:HB2	1:A:489:GLN:HB2	2.02	0.41
1:A:328:ILE:O	1:A:329:VAL:C	2.58	0.41
1:A:565:TYR:CD2	1:A:569:TYR:CE2	3.06	0.41
2:B:133:ASP:O	2:B:243:GLN:HA	2.20	0.41
1:A:488:TYR:CE1	1:A:490:LEU:HD23	2.49	0.41
1:A:882:ASP:O	1:A:886:LYS:NZ	2.53	0.41
1:A:1009:ILE:HG13	1:A:1017:VAL:HG12	2.01	0.41
1:A:345:THR:HA	1:A:361:LEU:HD11	2.02	0.41
1:A:478:VAL:HG21	1:A:571:PHE:HB2	2.02	0.41
1:A:161:PHE:HA	1:A:164:MET:HE2	2.01	0.41
1:A:44:HIS:HE1	1:A:234:GLU:O	2.04	0.41
1:A:924:ILE:HD12	1:A:983:LEU:CD1	2.48	0.41
2:B:89:ILE:HG13	2:B:301:ILE:HG22	2.02	0.41
2:B:269:THR:HG23	2:B:274:LEU:HD11	2.02	0.41
1:A:223:GLU:HA	1:A:224:PRO:HD2	1.89	0.41
3:G:14:TYR:HB3	3:G:16:TYR:CE1	2.55	0.41
1:A:847:GLU:H	1:A:847:GLU:CD	2.24	0.41
1:A:790:PHE:CG	7:A:6000:OBN:H161	2.56	0.41
1:A:63:LEU:HD13	1:A:189:ASP:HA	2.03	0.41
2:B:183:ARG:HD2	2:B:247:TYR:CE2	2.55	0.41
2:B:153:SER:HB2	2:B:156:TRP:CD1	2.55	0.41
1:A:570:PRO:O	1:A:577:ASN:ND2	2.54	0.41
1:A:534:MET:C	1:A:536:GLU:N	2.74	0.41
1:A:802:LEU:HD13	1:A:922:PHE:HB3	2.03	0.41
2:B:270:GLN:HG3	2:B:271:ASN:ND2	2.32	0.41
1:A:851:SER:HB3	8:B:3001:CLR:C4	2.51	0.41
1:A:817:VAL:HG12	1:A:957:GLY:HA2	2.03	0.41
1:A:199:ILE:HG22	1:A:201:ALA:O	2.21	0.41
1:A:150:GLN:HA	1:A:361:LEU:CB	2.51	0.40
1:A:339:THR:HG23	1:A:820:ILE:HD13	2.04	0.40
1:A:136:LEU:O	1:A:139:VAL:HB	2.20	0.40
1:A:367:LEU:HD12	1:A:367:LEU:HA	1.84	0.40
1:A:157:ILE:HD11	1:A:745:ALA:HA	2.02	0.40
1:A:81:THR:HA	1:A:82:PRO:HD2	1.78	0.40
1:A:48:LEU:O	1:A:52:HIS:CD2	2.75	0.40
1:A:59:LEU:O	1:A:59:LEU:HD23	2.22	0.40
1:A:994:TYR:OH	2:B:51:PHE:HA	2.22	0.40
1:A:503:TYR:CD1	1:A:571:PHE:CE1	3.10	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:82:PRO:HA	1:A:158:MET:HG2	2.04	0.40
1:A:218:LEU:HD12	1:A:218:LEU:N	2.37	0.40
1:A:443:LEU:HA	1:A:458:LYS:HD3	2.04	0.40
1:A:213:VAL:HG23	1:A:249:CYS:HA	2.04	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	990/1028 (96%)	902 (91%)	78 (8%)	10 (1%)	19	52
2	B	259/305 (85%)	216 (83%)	37 (14%)	6 (2%)	8	26
3	G	36/74 (49%)	32 (89%)	4 (11%)	0	100	100
All	All	1285/1407 (91%)	1150 (90%)	119 (9%)	16 (1%)	16	47

All (16) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	123	ASP
1	A	329	VAL
1	A	566	ASN
1	A	576	PRO
2	B	85	ILE
2	B	201	GLN
2	B	207	ASN
1	A	128	ASP
1	A	327	ILE
1	A	404	GLU
2	B	118	GLN
1	A	119	ALA
2	B	199	PRO

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Mol	Chain	Res	Type
1	A	1014	GLY
2	B	145	GLY
1	A	279	VAL

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	A	840/869 (97%)	770 (92%)	70 (8%)	14	38
2	B	232/266 (87%)	210 (90%)	22 (10%)	11	30
3	G	31/62 (50%)	30 (97%)	1 (3%)	46	80
All	All	1103/1197 (92%)	1010 (92%)	93 (8%)	14	37

All (93) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	39	VAL
1	A	42	ASP
1	A	51	LEU
1	A	61	ARG
1	A	72	LEU
1	A	104	LEU
1	A	110	LEU
1	A	128	ASP
1	A	165	VAL
1	A	172	ILE
1	A	212	LYS
1	A	213	VAL
1	A	231	PHE
1	A	248	ASN
1	A	253	THR
1	A	261	THR
1	A	270	ILE
1	A	284	ILE
1	A	291	PHE

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Mol	Chain	Res	Type
1	A	305	SER
1	A	307	PHE
1	A	309	LEU
1	A	311	LEU
1	A	317	TRP
1	A	344	LEU
1	A	367	LEU
1	A	371	SER
1	A	376	ASP
1	A	391	MET
1	A	413	LYS
1	A	427	LEU
1	A	434	GLN
1	A	440	VAL
1	A	454	SER
1	A	457	LEU
1	A	485	THR
1	A	515	LEU
1	A	516	ASP
1	A	520	THR
1	A	524	ASN
1	A	530	LEU
1	A	531	LYS
1	A	538	PHE
1	A	548	LEU
1	A	552	VAL
1	A	557	HIS
1	A	648	LEU
1	A	656	ASN
1	A	670	LEU
1	A	675	THR
1	A	682	LEU
1	A	712	VAL
1	A	719	VAL
1	A	762	VAL
1	A	768	ILE
1	A	804	THR
1	A	822	LEU
1	A	833	LYS
1	A	838	ASN
1	A	841	THR
1	A	847	GLU

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Mol	Chain	Res	Type
1	A	886	LYS
1	A	888	VAL
1	A	889	ARG
1	A	944	ILE
1	A	964	LEU
1	A	987	TRP
1	A	996	LEU
1	A	997	ILE
1	A	1009	ILE
2	B	38	LEU
2	B	47	LEU
2	B	57	VAL
2	B	73	VAL
2	B	89	ILE
2	B	108	LYS
2	B	139	ASP
2	B	141	ASP
2	B	172	GLU
2	B	176	CYS
2	B	180	LYS
2	B	193	LYS
2	B	194	ASN
2	B	200	GLU
2	B	223	ARG
2	B	226	ILE
2	B	243	GLN
2	B	251	ARG
2	B	267	ASN
2	B	276	ILE
2	B	287	TYR
2	B	303	VAL
3	G	13	THR

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (28) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	44	HIS
1	A	52	HIS
1	A	78	ASN
1	A	118	GLN
1	A	168	GLN
1	A	434	GLN

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Mol	Chain	Res	Type
1	A	524	ASN
1	A	557	HIS
1	A	577	ASN
1	A	656	ASN
1	A	697	GLN
1	A	754	ASN
1	A	838	ASN
1	A	846	ASN
1	A	904	GLN
1	A	905	GLN
1	A	1019	GLN
2	B	70	GLN
2	B	80	HIS
2	B	95	ASN
2	B	118	GLN
2	B	194	ASN
2	B	201	GLN
2	B	203	GLN
2	B	207	ASN
2	B	243	GLN
2	B	267	ASN
2	B	271	ASN

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 carbohydrates in this entry.

5.6 Ligand geometry ⓘ

Of 10 ligands modelled in this entry, 4 are monoatomic - leaving 6 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	$\# Z > 2$
4	MF4	A	2001	-	0,4,4	0.00	-	0,6,6	0.00	-
7	OBN	A	6000	-	44,46,46	0.71	1 (2%)	65,76,76	1.68	11 (16%)
8	CLR	B	3001	-	31,31,31	0.45	0	48,48,48	1.20	6 (12%)
9	NAG	B	4001	-	14,14,15	0.52	0	15,19,21	0.91	1 (6%)
9	NAG	B	4002	-	14,14,15	0.55	0	15,19,21	0.96	1 (6%)
9	NAG	B	4021	-	14,14,15	0.47	0	15,19,21	0.74	0

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
4	MF4	A	2001	-	-	0/0/0/0	0/0/0/0
7	OBN	A	6000	-	-	0/11/116/116	0/6/6/6
8	CLR	B	3001	-	-	0/10/68/68	0/4/4/4
9	NAG	B	4001	-	-	0/6/23/26	0/1/1/1
9	NAG	B	4002	-	-	0/6/23/26	0/1/1/1
9	NAG	B	4021	-	-	0/6/23/26	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	A	6000	OBN	O21-C23	3.31	1.45	1.36

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	A	6000	OBN	C15-C14-C8	-3.40	110.98	116.02
7	A	6000	OBN	C12-C11-C9	-3.37	107.69	112.59
7	A	6000	OBN	C18-C13-C12	-3.33	106.52	111.14
7	A	6000	OBN	C17-C20-C22	-3.07	120.30	128.64
8	B	3001	CLR	C14-C8-C9	-2.98	105.14	109.06
7	A	6000	OBN	C16-C17-C20	-2.56	108.77	113.36
8	B	3001	CLR	C3-C4-C5	-2.39	106.90	111.82

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	A	6000	OBN	O23-C23-C22	-2.15	125.98	130.83
8	B	3001	CLR	C4-C5-C10	2.08	119.46	116.43
7	A	6000	OBN	C1'-O5'-C5'	2.08	117.19	113.64
9	B	4002	NAG	C4-C3-C2	2.16	114.59	111.23
8	B	3001	CLR	C1-C2-C3	2.21	114.02	110.43
7	A	6000	OBN	C13-C14-C8	2.25	116.95	113.91
9	B	4001	NAG	C3-C4-C5	2.53	114.61	110.20
8	B	3001	CLR	C15-C14-C13	2.67	107.29	103.82
8	B	3001	CLR	C7-C8-C9	3.47	114.45	109.71
7	A	6000	OBN	C16-C17-C13	4.22	110.01	105.02
7	A	6000	OBN	C12-C13-C14	4.74	115.19	108.98
7	A	6000	OBN	C15-C14-C13	6.03	108.11	103.35

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

6 monomers are involved in 13 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	2001	MF4	1	0
7	A	6000	OBN	7	0
8	B	3001	CLR	2	0
9	B	4001	NAG	2	0
9	B	4002	NAG	2	0
9	B	4021	NAG	1	0

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	992/1028 (96%)	0.28	72 (7%) 18 10	23, 48, 111, 161	0
2	B	265/305 (86%)	0.69	31 (11%) 6 3	45, 86, 120, 127	0
3	G	38/74 (51%)	-0.22	0 100 100	37, 46, 85, 89	0
All	All	1295/1407 (92%)	0.35	103 (7%) 15 7	23, 54, 116, 161	0

All (103) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	116	GLY	7.1
1	A	317	TRP	6.5
1	A	131	TYR	6.5
1	A	90	ILE	6.5
1	A	313	LEU	6.4
1	A	125	PRO	5.6
2	B	199	PRO	5.2
1	A	112	PHE	5.1
1	A	119	ALA	5.0
1	A	115	TYR	4.9
1	A	146	PHE	4.9
1	A	96	LEU	4.8
1	A	130	LEU	4.8
1	A	499	SER	4.6
1	A	312	ILE	4.5
1	A	579	PRO	4.5
2	B	225	LYS	4.4
2	B	270	GLN	4.4
1	A	498	SER	4.3
2	B	121	ASN	4.3
1	A	123	ASP	3.9
2	B	214	ARG	3.9
1	A	86	THR	3.9

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Mol	Chain	Res	Type	RSRZ
2	B	42	ILE	3.8
1	A	563	ASP	3.8
1	A	567	GLU	3.8
1	A	126	ALA	3.7
1	A	308	ILE	3.7
2	B	38	LEU	3.7
1	A	89	TRP	3.7
2	B	93	ILE	3.7
2	B	99	TYR	3.6
1	A	92	PHE	3.3
2	B	85	ILE	3.3
2	B	202	LEU	3.3
2	B	41	LEU	3.3
1	A	127	ASN	3.3
1	A	100	PHE	3.3
1	A	150	GLN	3.2
1	A	530	LEU	3.2
1	A	321	VAL	3.2
1	A	573	ALA	3.2
2	B	273	GLU	3.2
1	A	324	LEU	3.1
2	B	207	ASN	3.1
2	B	203	GLN	3.1
1	A	129	ASN	3.1
1	A	562	GLU	3.0
1	A	675	THR	3.0
1	A	114	ALA	3.0
1	A	580	THR	2.9
1	A	503	TYR	2.8
1	A	529	PRO	2.8
1	A	566	ASN	2.8
1	A	439	ASN	2.8
2	B	96	PRO	2.8
1	A	986	SER	2.8
1	A	574	ASP	2.7
2	B	271	ASN	2.7
1	A	138	THR	2.7
2	B	129	ASP	2.7
1	A	122	GLU	2.7
1	A	560	LEU	2.6
1	A	894	TRP	2.6
1	A	84	PRO	2.5

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Mol	Chain	Res	Type	RSRZ
1	A	128	ASP	2.5
2	B	281	TYR	2.5
2	B	92	SER	2.5
1	A	120	ALA	2.5
1	A	154	SER	2.4
1	A	88	GLU	2.4
1	A	97	PHE	2.4
2	B	272	MET	2.4
1	A	32	LEU	2.4
2	B	65	PHE	2.4
2	B	298	GLU	2.4
1	A	534	MET	2.4
1	A	93	CYS	2.4
1	A	1016	TRP	2.4
1	A	148	TYR	2.4
1	A	77	PRO	2.3
1	A	124	GLU	2.3
1	A	502	ARG	2.3
2	B	146	GLN	2.3
1	A	149	TYR	2.3
1	A	118	GLN	2.3
2	B	304	LYS	2.3
2	B	274	LEU	2.2
1	A	105	TRP	2.2
2	B	276	ILE	2.2
2	B	147	LYS	2.2
1	A	147	SER	2.2
2	B	126	ASP	2.2
2	B	123	PRO	2.1
1	A	85	THR	2.1
1	A	41	MET	2.1
1	A	152	ALA	2.1
1	A	568	GLY	2.1
1	A	79	SER	2.0
1	A	103	LEU	2.0
1	A	829	SER	2.0
1	A	501	SER	2.0
2	B	34	PHE	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 [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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	LLDF	B-factors(\AA^2)	Q<0.9
8	CLR	B	3001	28/28	0.81	0.34	4.41	86,88,89,89	0
4	MF4	A	2001	5/5	0.94	0.25	2.58	23,23,24,27	0
5	MG	A	2002	1/1	0.97	0.19	-0.01	25,25,25,25	0
7	OBN	A	6000	41/41	0.84	0.19	-0.49	93,95,98,98	0
6	K	A	2005	1/1	0.94	0.10	-1.73	76,76,76,76	0
6	K	A	2003	1/1	0.97	0.14	-2.27	50,50,50,50	0
6	K	A	2004	1/1	0.95	0.10	-2.95	72,72,72,72	0
9	NAG	B	4001	14/15	0.87	0.22	-	101,102,102,102	0
9	NAG	B	4021	14/15	0.47	0.40	-	116,117,117,117	0
9	NAG	B	4002	14/15	0.63	0.32	-	109,110,111,111	0

6.5 Other polymers [i](#)

There are no such residues in this entry.