Full wwPDB X-ray Structure Validation Report ⓘ

Oct 23, 2023 – 05:15 AM EDT

PDB ID	:	2Z9N
Title	:	Crystal structure of cameline peptidoglycan recognition protein at 3.2 A resolution
Authors	:	Sharma, P.; Jain, R.; Singh, N.; Sharma, S.; Kaur, P.; Singh, T.P.
Deposited on	:	2007-09-21
Resolution	:	3.20 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references ⓘ) were used in the production of this report:

|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 3.20 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		0.196
Clashscore		27
Ramachandran outliers		2.4%
Sidechain outliers		11.5%
RSRZ outliers		2.6%

Worse — *Better*

▮ Percentile relative to all X-ray structures
▯ Percentile relative to X-ray structures of similar resolution
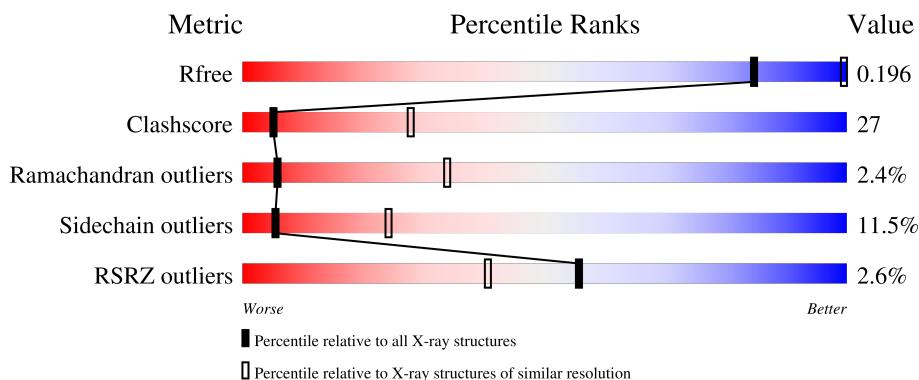
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1133 (3.20-3.20)
Clashscore	141614	1253 (3.20-3.20)
Ramachandran outliers	138981	1234 (3.20-3.20)
Sidechain outliers	138945	1233 (3.20-3.20)
RSRZ outliers	127900	1095 (3.20-3.20)

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	A	171	3% — 56% / 39% / · ·
1	B	171	2% — 53% / 38% / 8% ·
1	C	171	3% — 51% / 41% / 6% ·
1	D	171	2% — 49% / 44% / 8%
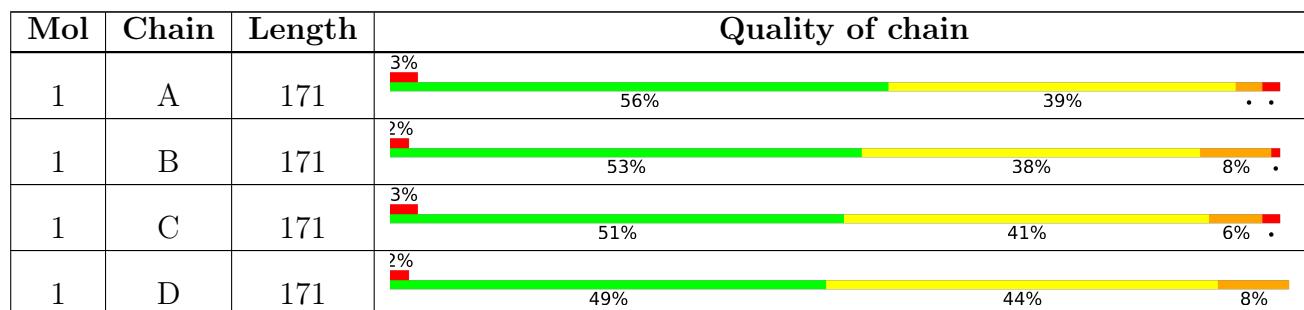
2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 5459 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 Peptidoglycan recognition protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	171	Total 1337	C 834	N 254	O 241	S 8	0	0	0
1	B	171	Total 1337	C 834	N 254	O 241	S 8	0	0	0
1	C	171	Total 1337	C 834	N 254	O 241	S 8	0	0	0
1	D	171	Total 1337	C 834	N 254	O 241	S 8	0	0	0

- Molecule 2 is L(+)-TARTARIC ACID (three-letter code: TLA) (formula: $C_4H_6O_6$).
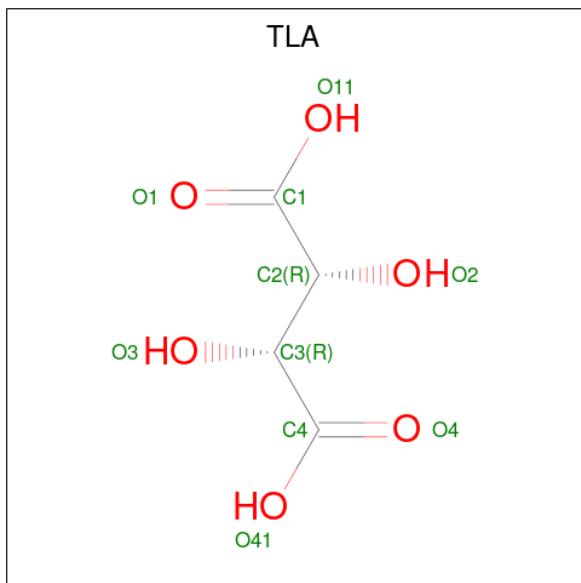
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total 10	C 4	O 6	0	0
2	B	1	Total 10	C 4	O 6	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	C	1	Total 10	C 4	O 6	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	12	Total 12	O 12	0	0
3	B	19	Total 19	O 19	0	0
3	C	29	Total 29	O 29	0	0
3	D	21	Total 21	O 21	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: Peptidoglycan recognition protein
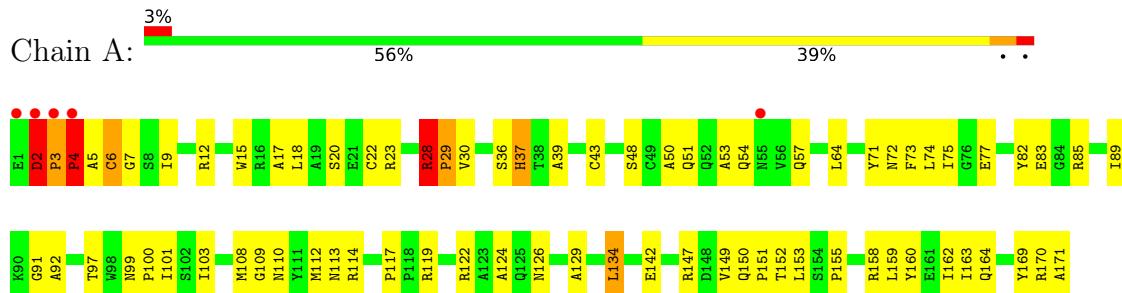
- Molecule 1: Peptidoglycan recognition protein

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E1 D2 P3 P4 G7 S8 I9 R12 R13 E14 W15 R16 A17 L18 E21 C22 T27 R28 P29 V30 R31 Y32 V33 H37 T38 A39 H42 C43 S48 Q51 Q52 A53 Q54 Q57 S58 Y59 H60 V61 R62 N63 W66 C67 D68 V69 G70 Y71 N72 F73 L74 I75

G76 E77 D78 G79 L80 V81 R85 N88 I89 K90 G91 P100 I103 G104 I105 S106 F107 M108 G109 N110 Y111 M112 N113 R114 V115 P116 P117 P118 R119 R122 Q125 N126 R138 S139 N140 Y141 E142 V143 K144 L153 S154 P155 G156 D157 R158 L159 Y160 E161 I162 I163 Q164 T165

W166 S167 H168 Y169 R170 A171
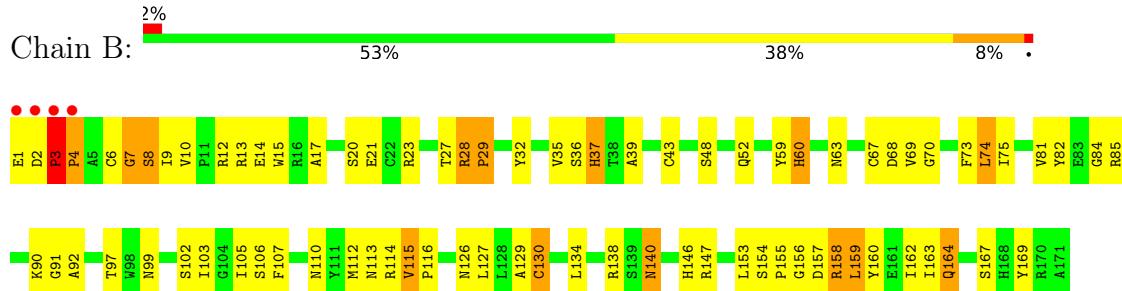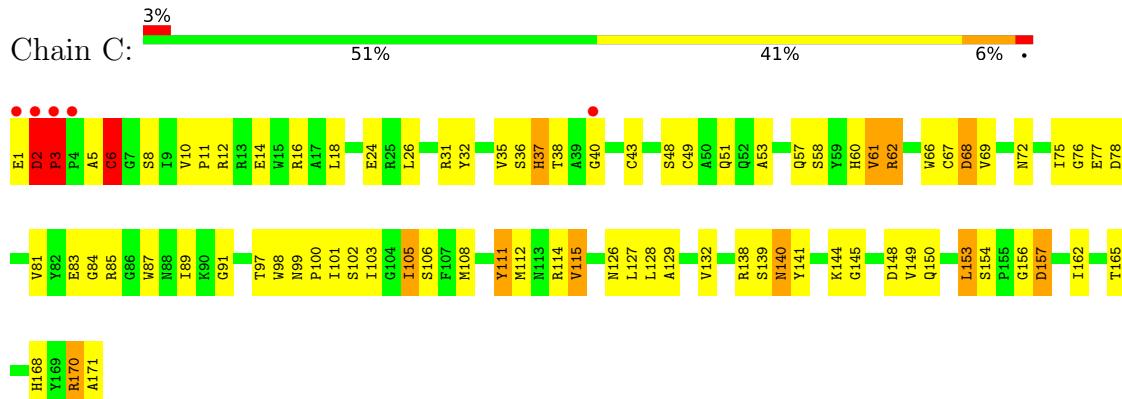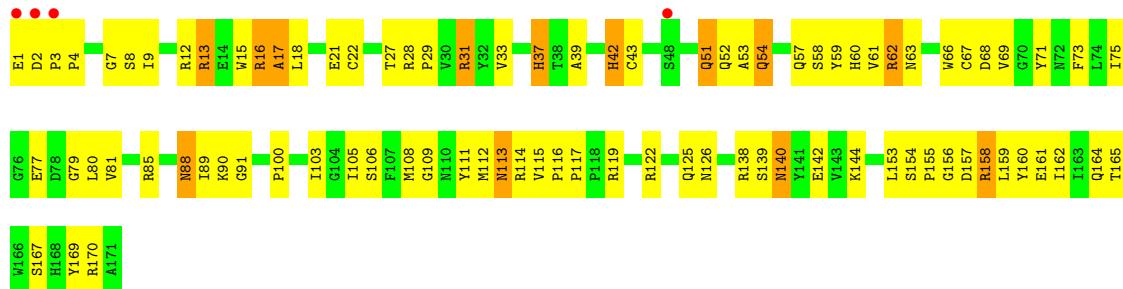
4 Data and refinement statistics (i)

Property	Value	Source
Space group	I 2 2 2	Depositor
Cell constants a, b, c, α, β, γ	89.86Å 102.46Å 164.04Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 3.20 14.58 – 3.20	Depositor EDS
% Data completeness (in resolution range)	88.7 (20.00-3.20) 96.7 (14.58-3.20)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.23	Depositor
$<I/\sigma(I)>$ [1]	1.95 (at 3.18Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.215 , 0.258 0.176 , 0.196	Depositor DCC
R_{free} test set	605 reflections (4.93%)	wwPDB-VP
Wilson B-factor (Å^2)	36.9	Xtriage
Anisotropy	0.512	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 93.4	EDS
L-test for twinning[2]	$<|L|> = 0.47$, $<L^2> = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	5459	wwPDB-VP
Average B, all atoms (Å^2)	27.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.46% 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　ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: TLA

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	0.41	0/1374	0.87	6/1871 (0.3%)
1	B	0.38	0/1374	0.88	5/1871 (0.3%)
1	C	0.42	0/1374	0.77	1/1871 (0.1%)
1	D	0.38	0/1374	0.71	0/1871
All	All	0.40	0/5496	0.81	12/7484 (0.2%)

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	B	0	1
1	C	0	1
All	All	0	2

There are no bond length outliers.

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	28	ARG	C-N-CD	10.41	150.25	128.40
1	B	28	ARG	N-CA-C	10.25	138.68	111.00
1	B	2	ASP	N-CA-C	-10.01	83.97	111.00
1	B	28	ARG	C-N-CA	-8.73	85.35	122.00
1	A	28	ARG	N-CA-C	8.65	134.35	111.00
1	B	28	ARG	C-N-CD	7.40	143.94	128.40
1	A	28	ARG	C-N-CA	-6.65	94.07	122.00
1	A	3	PRO	N-CA-C	6.40	128.74	112.10
1	A	4	PRO	N-CA-C	6.38	128.70	112.10
1	C	6	CYS	N-CA-C	-6.20	94.25	111.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	29	PRO	N-CA-C	-6.17	96.07	112.10
1	A	2	ASP	N-CA-C	5.12	124.82	111.00

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	82	TYR	Sidechain
1	C	111	TYR	Sidechain

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	A	1337	0	1288	59	0
1	B	1337	0	1288	67	0
1	C	1337	0	1288	76	0
1	D	1337	0	1288	86	0
2	A	10	0	4	0	0
2	B	10	0	4	2	0
2	C	10	0	4	0	0
3	A	12	0	0	2	0
3	B	19	0	0	1	0
3	C	29	0	0	5	0
3	D	21	0	0	1	0
All	All	5459	0	5164	283	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 27.

All (283) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:28:ARG:HG2	1:B:28:ARG:O	1.57	1.03
1:B:13:ARG:HH21	2:B:172:TLA:H2	1.28	0.98

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WORLD WIDE
wwPDB
PROTEIN DATA BANK

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:92:ALA:HA	1:B:99:ASN:ND2	1.80	0.96
1:B:13:ARG:NH2	2:B:172:TLA:H2	1.85	0.90
1:A:36:SER:HA	1:A:155:PRO:HB3	1.54	0.89
1:B:6:CYS:HA	1:B:130:CYS:HB2	1.55	0.88
1:B:75:ILE:HD12	1:B:81:VAL:HG22	1.55	0.87
1:C:35:VAL:HG22	1:C:105:ILE:HD11	1.59	0.85
1:C:115:VAL:HG12	1:C:162:ILE:HD11	1.57	0.85
1:B:112:MET:CE	1:B:153:LEU:HG	2.11	0.81
1:D:16:ARG:HG3	1:D:16:ARG:HH11	1.43	0.81
1:B:90:LYS:HE2	1:B:99:ASN:HB3	1.62	0.80
1:A:6:CYS:SG	1:A:7:GLY:N	2.56	0.78
1:C:85:ARG:HD2	1:C:91:GLY:HA2	1.65	0.78
1:D:112:MET:CE	1:D:153:LEU:HB3	2.14	0.78
1:D:90:LYS:HD2	1:D:100:PRO:HB3	1.66	0.77
1:D:85:ARG:HD2	1:D:91:GLY:HA2	1.65	0.76
1:B:112:MET:HE3	1:B:153:LEU:HG	1.68	0.76
1:B:164:GLN:HG3	1:B:169:TYR:CE2	2.21	0.76
1:B:3:PRO:HB2	1:B:4:PRO:HD2	1.67	0.75
1:D:112:MET:HE1	1:D:153:LEU:HB3	1.69	0.75
1:B:90:LYS:HE2	1:B:99:ASN:CB	2.17	0.74
1:A:28:ARG:O	1:A:29:PRO:C	2.17	0.74
1:A:28:ARG:O	1:A:30:VAL:N	2.21	0.73
1:C:140:ASN:H	1:C:140:ASN:HD22	1.35	0.73
1:A:64:LEU:HD21	3:A:179:HOH:O	1.88	0.73
1:A:142:GLU:HG2	1:A:170:ARG:HG3	1.68	0.73
1:C:149:VAL:O	1:C:150:GLN:HG2	1.88	0.73
1:C:18:LEU:HD12	1:C:57:GLN:OE1	1.89	0.73
1:A:53:ALA:HA	1:A:108:MET:HE1	1.71	0.72
1:B:85:ARG:HD2	1:B:91:GLY:HA2	1.71	0.72
1:C:112:MET:CE	1:C:153:LEU:HB3	2.19	0.72
1:A:85:ARG:HD2	1:A:91:GLY:HA2	1.73	0.71
1:D:138:ARG:HG2	1:D:140:ASN:ND2	2.05	0.71
1:B:147:ARG:HG3	1:B:154:SER:O	1.90	0.71
1:C:81:VAL:HG11	1:C:127:LEU:HD13	1.73	0.70
1:C:18:LEU:HD21	1:C:62:ARG:NH2	2.07	0.70
1:C:145:GLY:O	1:C:148:ASP:HB2	1.92	0.69
1:A:30:VAL:HG11	1:A:103:ILE:HD13	1.74	0.69
1:B:92:ALA:HA	1:B:99:ASN:HD21	1.56	0.69
1:B:60:HIS:HD2	1:B:70:GLY:H	1.41	0.68
1:D:111:TYR:CD2	1:D:116:PRO:HG3	2.29	0.68
1:D:57:GLN:O	1:D:61:VAL:HG12	1.94	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:15:TRP:CH2	1:D:17:ALA:HB2	2.30	0.67
1:B:6:CYS:HA	1:B:130:CYS:CB	2.25	0.67
1:D:112:MET:HE2	1:D:157:ASP:N	2.09	0.67
1:C:37:HIS:CD2	1:C:154:SER:HA	2.31	0.66
1:D:1:GLU:HG3	1:D:2:ASP:N	2.11	0.66
1:A:122:ARG:NH2	1:B:14:GLU:OE1	2.29	0.66
1:C:75:ILE:HD12	1:C:75:ILE:N	2.10	0.65
1:D:42:HIS:ND1	1:D:114:ARG:NH2	2.44	0.65
1:D:85:ARG:HD2	1:D:91:GLY:CA	2.26	0.64
1:A:147:ARG:HD2	1:A:160:TYR:CE2	2.33	0.64
1:B:36:SER:HA	1:B:155:PRO:HB3	1.79	0.64
1:B:59:TYR:HD1	1:B:63:ASN:HD22	1.44	0.64
1:A:75:ILE:HD12	1:A:124:ALA:HB2	1.80	0.63
1:A:39:ALA:HA	1:A:110:ASN:HB2	1.80	0.63
1:D:116:PRO:HG2	1:D:159:LEU:HD13	1.80	0.63
1:C:112:MET:HE1	1:C:153:LEU:HB3	1.79	0.63
1:D:53:ALA:HA	1:D:108:MET:CE	2.28	0.63
1:B:112:MET:HE2	1:B:156:GLY:HA2	1.81	0.63
1:C:67:CYS:O	1:C:68:ASP:HB2	1.99	0.62
1:B:3:PRO:HB2	1:B:4:PRO:CD	2.28	0.62
1:B:28:ARG:O	1:B:28:ARG:CG	2.35	0.62
1:D:112:MET:HE2	1:D:157:ASP:H	1.64	0.62
1:C:168:HIS:HE1	3:C:194:HOH:O	1.82	0.62
1:A:171:ALA:HB3	1:C:24:GLU:OE1	2.00	0.61
1:B:112:MET:HE1	1:B:153:LEU:HG	1.80	0.61
1:C:85:ARG:NH1	1:C:91:GLY:HA2	2.14	0.61
1:C:162:ILE:O	1:C:165:THR:HB	2.01	0.61
1:B:159:LEU:O	1:B:159:LEU:HD12	2.00	0.61
1:A:85:ARG:CD	1:A:91:GLY:HA2	2.31	0.61
1:A:36:SER:CA	1:A:155:PRO:HB3	2.29	0.61
1:B:39:ALA:HA	1:B:110:ASN:HB2	1.83	0.60
1:B:75:ILE:CD1	1:B:81:VAL:HG22	2.29	0.60
1:D:42:HIS:H	1:D:42:HIS:CD2	2.17	0.60
1:B:12:ARG:NH1	1:B:84:GLY:O	2.35	0.59
1:A:53:ALA:HA	1:A:108:MET:CE	2.32	0.59
1:D:59:TYR:O	1:D:63:ASN:HB2	2.03	0.59
1:D:60:HIS:O	1:D:66:TRP:HB2	2.02	0.59
1:A:92:ALA:HA	1:A:99:ASN:ND2	2.17	0.59
1:C:43:CYS:O	1:C:77:GLU:HB2	2.03	0.59
1:D:155:PRO:HB2	1:D:159:LEU:HD23	1.86	0.58
1:D:112:MET:HE3	1:D:153:LEU:HB3	1.86	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:9:ILE:HD13	1:B:73:PHE:HE2	1.67	0.57
1:A:119:ARG:HA	1:A:122:ARG:NH1	2.19	0.57
1:A:43:CYS:HB2	1:A:48:SER:OG	2.03	0.57
1:A:155:PRO:O	1:A:159:LEU:HD23	2.05	0.57
1:D:13:ARG:HH11	1:D:13:ARG:HB2	1.69	0.57
1:A:37:HIS:HB2	1:A:109:GLY:O	2.04	0.57
1:A:126:ASN:O	1:A:129:ALA:HB3	2.05	0.56
1:C:85:ARG:HH11	1:C:91:GLY:HA2	1.68	0.56
1:D:18:LEU:HD12	1:D:61:VAL:HG11	1.87	0.56
1:D:158:ARG:O	1:D:162:ILE:HG12	2.05	0.56
1:C:112:MET:HE3	1:C:153:LEU:HB3	1.87	0.56
1:B:20:SER:O	1:B:21:GLU:HG2	2.05	0.56
1:B:138:ARG:HD2	1:B:140:ASN:HD21	1.71	0.56
1:A:164:GLN:HG2	1:A:169:TYR:CE2	2.40	0.56
1:C:10:VAL:HG12	1:C:14:GLU:HB3	1.88	0.56
1:D:75:ILE:HD12	1:D:81:VAL:HG22	1.87	0.56
1:A:158:ARG:O	1:A:162:ILE:HG13	2.06	0.56
1:B:115:VAL:HG22	1:B:158:ARG:HG2	1.86	0.56
1:D:85:ARG:HD3	1:D:89:ILE:HG22	1.87	0.55
1:B:7:GLY:HA3	1:B:126:ASN:HD21	1.72	0.55
1:B:9:ILE:HD13	1:B:73:PHE:CE2	2.41	0.55
1:A:15:TRP:CH2	1:A:17:ALA:HB2	2.42	0.55
1:C:170:ARG:HD2	1:C:171:ALA:N	2.20	0.54
1:D:79:GLY:O	1:D:80:LEU:HD23	2.07	0.54
1:B:3:PRO:HG3	1:D:138:ARG:NH2	2.22	0.54
1:C:132:VAL:HG13	1:C:139:SER:HA	1.89	0.54
1:C:141:TYR:O	1:C:168:HIS:HD2	1.90	0.54
1:D:16:ARG:HH11	1:D:16:ARG:CG	2.18	0.54
1:A:85:ARG:NE	1:A:91:GLY:HA2	2.22	0.54
1:B:155:PRO:O	1:B:159:LEU:HB3	2.07	0.54
1:D:53:ALA:HA	1:D:108:MET:HE3	1.89	0.54
1:C:18:LEU:HD21	1:C:62:ARG:HH22	1.73	0.54
1:A:155:PRO:HB2	1:A:159:LEU:HD23	1.90	0.53
1:A:9:ILE:HD13	1:A:73:PHE:HE2	1.72	0.53
1:A:149:VAL:O	1:A:150:GLN:HB3	2.07	0.53
1:D:37:HIS:CD2	1:D:154:SER:HA	2.44	0.53
1:B:10:VAL:HG12	1:B:14:GLU:HB3	1.90	0.53
1:D:157:ASP:O	1:D:161:GLU:HG3	2.09	0.53
1:D:43:CYS:O	1:D:77:GLU:HB2	2.09	0.53
1:B:3:PRO:CB	1:B:4:PRO:CD	2.86	0.52
1:B:164:GLN:HA	1:B:169:TYR:CD2	2.44	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:112:MET:HE2	1:C:156:GLY:HA2	1.91	0.52
1:D:58:SER:HA	1:D:61:VAL:HG12	1.92	0.52
1:B:43:CYS:HB2	1:B:48:SER:OG	2.10	0.52
1:C:11:PRO:O	1:C:12:ARG:C	2.46	0.52
1:C:12:ARG:NH1	1:C:84:GLY:O	2.43	0.52
1:A:50:ALA:O	1:A:54:GLN:HG3	2.10	0.52
1:C:38:THR:C	1:C:40:GLY:N	2.62	0.51
1:D:1:GLU:HG3	1:D:2:ASP:H	1.74	0.51
1:C:53:ALA:HA	1:C:108:MET:HE3	1.91	0.51
1:A:15:TRP:CZ2	1:A:17:ALA:HB2	2.46	0.51
1:C:170:ARG:HD2	1:C:171:ALA:H	1.76	0.51
1:D:16:ARG:HG3	1:D:16:ARG:NH1	2.19	0.51
1:B:115:VAL:CG1	1:B:162:ILE:HD11	2.41	0.51
1:C:99:ASN:HB2	1:C:100:PRO:HD3	1.92	0.51
1:C:26:LEU:HD12	1:C:87:TRP:O	2.11	0.50
1:D:58:SER:HA	1:D:61:VAL:CG1	2.41	0.50
1:A:57:GLN:O	1:A:57:GLN:HG2	2.12	0.50
1:D:7:GLY:HA3	1:D:126:ASN:ND2	2.27	0.50
1:D:15:TRP:CZ3	1:D:17:ALA:HB2	2.47	0.50
1:C:112:MET:HE2	1:C:157:ASP:N	2.26	0.50
1:D:42:HIS:H	1:D:42:HIS:HD2	1.58	0.50
1:C:140:ASN:H	1:C:140:ASN:ND2	2.07	0.50
1:D:122:ARG:O	1:D:126:ASN:HB2	2.10	0.50
1:B:6:CYS:O	1:B:8:SER:N	2.45	0.50
1:C:14:GLU:HG2	3:C:173:HOH:O	2.12	0.50
1:C:85:ARG:CD	1:C:91:GLY:HA2	2.40	0.50
1:D:37:HIS:CG	1:D:155:PRO:O	2.65	0.50
1:C:101:ILE:O	1:C:102:SER:HB3	2.12	0.49
1:B:160:TYR:HD1	1:B:163:ILE:HD11	1.78	0.49
1:D:164:GLN:HA	1:D:169:TYR:CG	2.48	0.49
1:C:60:HIS:O	1:C:66:TRP:HB2	2.12	0.49
1:D:57:GLN:HG3	1:D:69:VAL:HB	1.95	0.49
1:C:128:LEU:HD13	1:C:141:TYR:CE1	2.47	0.49
1:C:112:MET:HA	1:C:157:ASP:H	1.77	0.49
1:C:57:GLN:O	1:C:61:VAL:HG13	2.12	0.49
1:A:72:ASN:HA	1:A:85:ARG:H	1.77	0.49
1:D:77:GLU:OE2	1:D:117:PRO:HD3	2.13	0.48
1:A:85:ARG:HD2	1:A:91:GLY:CA	2.41	0.48
1:D:33:VAL:HG22	1:D:103:ILE:HG22	1.95	0.48
1:B:9:ILE:HD11	1:B:127:LEU:CD1	2.43	0.48
1:D:85:ARG:NH1	1:D:91:GLY:HA2	2.29	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:35:VAL:HG22	1:B:105:ILE:HD11	1.95	0.48
1:D:42:HIS:CE1	1:D:114:ARG:CZ	2.96	0.48
1:C:2:ASP:O	1:C:3:PRO:C	2.52	0.48
1:C:1:GLU:O	1:C:2:ASP:HB2	2.12	0.48
1:B:90:LYS:CE	1:B:99:ASN:HB3	2.39	0.48
1:C:75:ILE:N	1:C:75:ILE:CD1	2.75	0.48
1:B:3:PRO:HG3	1:D:138:ARG:CZ	2.44	0.48
1:A:12:ARG:NH2	1:A:20:SER:HB2	2.29	0.48
1:B:1:GLU:HG3	3:B:180:HOH:O	2.14	0.48
1:D:51:GLN:O	1:D:54:GLN:HG3	2.14	0.48
1:D:58:SER:O	1:D:62:ARG:HG2	2.14	0.48
1:C:12:ARG:HG3	1:C:83:GLU:OE1	2.14	0.47
1:C:72:ASN:HB2	1:C:103:ILE:HG23	1.96	0.47
1:D:111:TYR:CD1	1:D:111:TYR:N	2.82	0.47
1:D:13:ARG:HG2	3:D:178:HOH:O	2.14	0.47
1:B:107:PHE:CG	1:B:159:LEU:HD21	2.49	0.47
1:A:18:LEU:H	1:A:57:GLN:HE22	1.62	0.47
1:B:81:VAL:HG11	1:B:127:LEU:HD13	1.97	0.47
1:D:21:GLU:HB2	1:D:67:CYS:HB2	1.96	0.47
1:B:37:HIS:CD2	1:B:154:SER:HB2	2.50	0.46
1:C:170:ARG:O	1:C:171:ALA:C	2.53	0.46
1:D:142:GLU:OE2	1:D:170:ARG:HD3	2.16	0.46
1:B:146:HIS:ND1	1:B:154:SER:OG	2.48	0.46
1:C:98:TRP:NE1	1:C:149:VAL:HB	2.30	0.46
1:D:37:HIS:CD2	1:D:37:HIS:O	2.68	0.46
1:D:77:GLU:O	1:D:119:ARG:NH2	2.48	0.46
1:C:31:ARG:HA	1:C:138:ARG:HG3	1.98	0.46
1:D:71:TYR:CD2	1:D:106:SER:HB2	2.50	0.45
1:D:105:ILE:O	1:D:105:ILE:HG13	2.16	0.45
1:C:26:LEU:HD13	1:C:103:ILE:CD1	2.46	0.45
1:D:3:PRO:HB2	1:D:4:PRO:HD2	1.97	0.45
1:A:112:MET:HE1	1:A:153:LEU:HB3	1.98	0.45
1:D:75:ILE:CD1	1:D:81:VAL:HG22	2.47	0.45
1:A:12:ARG:HG3	1:A:83:GLU:OE1	2.17	0.45
1:A:77:GLU:OE1	1:A:117:PRO:HD3	2.16	0.45
1:A:99:ASN:N	1:A:100:PRO:HD2	2.31	0.45
1:D:42:HIS:ND1	1:D:114:ARG:CZ	2.79	0.45
1:B:32:TYR:HB2	1:B:102:SER:HB3	1.98	0.45
1:D:9:ILE:HD13	1:D:73:PHE:CE2	2.51	0.45
1:A:112:MET:CE	1:A:153:LEU:HB3	2.47	0.45
1:D:1:GLU:CG	1:D:2:ASP:H	2.27	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:31:ARG:CZ	1:D:138:ARG:HD2	2.46	0.45
1:C:140:ASN:HD22	1:C:140:ASN:N	2.08	0.44
1:C:58:SER:O	1:C:62:ARG:HB2	2.18	0.44
1:A:170:ARG:HH11	1:A:170:ARG:HG2	1.82	0.44
1:C:36:SER:O	1:C:106:SER:HA	2.18	0.44
1:D:68:ASP:O	1:D:69:VAL:C	2.55	0.44
1:B:75:ILE:CD1	1:B:81:VAL:HG13	2.48	0.44
1:B:147:ARG:NH2	1:B:157:ASP:OD2	2.50	0.44
1:D:1:GLU:CG	1:D:2:ASP:N	2.75	0.44
1:D:39:ALA:N	1:D:109:GLY:O	2.50	0.44
1:C:3:PRO:O	1:C:5:ALA:N	2.50	0.44
1:B:154:SER:HB2	1:B:155:PRO:HA	1.99	0.44
1:C:14:GLU:OE1	3:C:173:HOH:O	2.21	0.44
1:D:16:ARG:O	1:D:17:ALA:C	2.56	0.43
1:B:69:VAL:HG21	1:B:74:LEU:HD11	2.01	0.43
1:C:49:CYS:C	1:C:51:GLN:N	2.70	0.43
1:B:115:VAL:HG12	1:B:116:PRO:HD2	1.99	0.43
1:A:12:ARG:HB3	1:A:17:ALA:HB3	2.00	0.43
1:D:31:ARG:NH2	1:D:138:ARG:NH1	2.66	0.43
1:C:68:ASP:O	1:C:69:VAL:C	2.57	0.43
1:C:111:TYR:CD1	1:C:111:TYR:N	2.86	0.43
1:D:140:ASN:C	1:D:140:ASN:HD22	2.22	0.43
1:B:15:TRP:CZ3	1:B:17:ALA:HB2	2.53	0.43
1:C:126:ASN:O	1:C:129:ALA:HB3	2.19	0.43
1:D:53:ALA:HA	1:D:108:MET:HE1	1.98	0.43
1:A:77:GLU:OE2	1:A:114:ARG:NH2	2.49	0.42
1:A:99:ASN:N	1:A:100:PRO:CD	2.82	0.42
1:C:11:PRO:HD2	1:C:14:GLU:HB3	2.01	0.42
1:B:52:GLN:HA	1:B:52:GLN:NE2	2.34	0.42
1:B:103:ILE:HD13	1:B:103:ILE:HA	1.74	0.42
1:B:160:TYR:CD1	1:B:163:ILE:HD11	2.55	0.42
1:A:51:GLN:HG3	3:A:174:HOH:O	2.20	0.42
1:A:74:LEU:HB2	1:A:82:TYR:HB2	2.01	0.42
1:A:77:GLU:OE1	1:A:114:ARG:NH2	2.53	0.42
1:B:7:GLY:HA3	1:B:126:ASN:ND2	2.33	0.42
1:C:10:VAL:HG13	3:C:173:HOH:O	2.19	0.42
1:A:39:ALA:HA	1:A:110:ASN:CB	2.48	0.42
1:A:2:ASP:N	1:A:3:PRO:HD3	2.34	0.42
1:D:67:CYS:O	1:D:68:ASP:HB2	2.18	0.42
1:D:111:TYR:CE2	1:D:116:PRO:HG3	2.55	0.42
1:C:49:CYS:C	1:C:51:GLN:H	2.22	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:75:ILE:HD11	1:C:105:ILE:HB	2.01	0.42
1:D:3:PRO:O	1:D:4:PRO:C	2.58	0.42
1:D:28:ARG:NH1	1:D:88:ASN:OD1	2.53	0.41
1:D:29:PRO:HG2	1:D:138:ARG:NH2	2.35	0.41
1:C:37:HIS:HD2	1:C:154:SER:OG	2.04	0.41
1:C:48:SER:O	1:C:51:GLN:HB3	2.19	0.41
1:D:9:ILE:HD13	1:D:73:PHE:HE2	1.83	0.41
1:C:67:CYS:O	1:C:68:ASP:CB	2.68	0.41
1:C:10:VAL:CG1	3:C:173:HOH:O	2.67	0.41
1:C:144:LYS:NZ	1:C:170:ARG:HB3	2.36	0.41
1:A:159:LEU:O	1:A:163:ILE:HG23	2.21	0.41
1:B:67:CYS:O	1:B:68:ASP:HB2	2.21	0.41
1:C:99:ASN:N	1:C:100:PRO:CD	2.84	0.41
1:D:31:ARG:NH2	1:D:138:ARG:HH11	2.19	0.41
1:C:77:GLU:OE1	1:C:114:ARG:NH2	2.53	0.41
1:A:9:ILE:HD13	1:A:73:PHE:CE2	2.53	0.41
1:D:12:ARG:HA	1:D:15:TRP:NE1	2.36	0.41
1:D:138:ARG:HG2	1:D:140:ASN:HD21	1.80	0.41
1:A:22:CYS:HB2	1:A:89:ILE:HG21	2.01	0.41
1:A:85:ARG:CZ	1:A:91:GLY:HA2	2.51	0.41
1:C:2:ASP:N	1:C:3:PRO:CD	2.84	0.41
1:C:31:ARG:HD2	1:C:32:TYR:CE1	2.56	0.41
1:C:76:GLY:C	1:C:78:ASP:N	2.74	0.41
1:C:38:THR:C	1:C:40:GLY:H	2.23	0.41
1:D:42:HIS:CE1	1:D:114:ARG:NH2	2.89	0.41
1:D:112:MET:CE	1:D:156:GLY:HA2	2.51	0.41
1:B:12:ARG:HH22	1:B:68:ASP:CG	2.24	0.40
1:D:160:TYR:CE2	1:D:164:GLN:NE2	2.90	0.40
1:A:5:ALA:HA	1:B:129:ALA:HB1	2.03	0.40
1:A:12:ARG:HA	1:A:15:TRP:NE1	2.37	0.40
1:A:18:LEU:N	1:A:57:GLN:HE22	2.19	0.40
1:B:97:THR:O	1:B:97:THR:HG22	2.21	0.40
1:A:134:LEU:HA	1:A:134:LEU:HD23	1.80	0.40
1:D:16:ARG:CG	1:D:16:ARG:NH1	2.79	0.40
1:D:113:ASN:C	1:D:113:ASN:HD22	2.24	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	A	169/171 (99%)	151 (89%)	14 (8%)	4 (2%)	6	34
1	B	169/171 (99%)	148 (88%)	15 (9%)	6 (4%)	3	23
1	C	169/171 (99%)	145 (86%)	19 (11%)	5 (3%)	4	28
1	D	169/171 (99%)	144 (85%)	24 (14%)	1 (1%)	25	64
All	All	676/684 (99%)	588 (87%)	72 (11%)	16 (2%)	6	34

All (16) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	6	CYS
1	A	28	ARG
1	B	3	PRO
1	B	7	GLY
1	C	3	PRO
1	A	151	PRO
1	B	8	SER
1	C	8	SER
1	C	68	ASP
1	B	4	PRO
1	B	114	ARG
1	C	2	ASP
1	C	6	CYS
1	D	17	ALA
1	A	4	PRO
1	B	29	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	A	139/139 (100%)	128 (92%)	11 (8%)	12	43
1	B	139/139 (100%)	123 (88%)	16 (12%)	5	24
1	C	139/139 (100%)	124 (89%)	15 (11%)	6	27
1	D	139/139 (100%)	117 (84%)	22 (16%)	2	12
All	All	556/556 (100%)	492 (88%)	64 (12%)	5	24

All (64) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2	ASP
1	A	4	PRO
1	A	23	ARG
1	A	29	PRO
1	A	37	HIS
1	A	71	TYR
1	A	97	THR
1	A	101	ILE
1	A	113	ASN
1	A	134	LEU
1	A	152	THR
1	B	3	PRO
1	B	23	ARG
1	B	27	THR
1	B	37	HIS
1	B	60	HIS
1	B	74	LEU
1	B	106	SER
1	B	113	ASN
1	B	115	VAL
1	B	130	CYS
1	B	134	LEU
1	B	140	ASN
1	B	158	ARG
1	B	159	LEU
1	B	164	GLN
1	B	167	SER
1	C	2	ASP
1	C	3	PRO
1	C	6	CYS

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Mol	Chain	Res	Type
1	C	16	ARG
1	C	37	HIS
1	C	61	VAL
1	C	62	ARG
1	C	89	ILE
1	C	97	THR
1	C	105	ILE
1	C	115	VAL
1	C	140	ASN
1	C	153	LEU
1	C	157	ASP
1	C	170	ARG
1	D	8	SER
1	D	13	ARG
1	D	16	ARG
1	D	22	CYS
1	D	27	THR
1	D	31	ARG
1	D	37	HIS
1	D	42	HIS
1	D	51	GLN
1	D	52	GLN
1	D	54	GLN
1	D	62	ARG
1	D	88	ASN
1	D	113	ASN
1	D	115	VAL
1	D	125	GLN
1	D	139	SER
1	D	140	ASN
1	D	144	LYS
1	D	158	ARG
1	D	165	THR
1	D	167	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (26) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	52	GLN
1	A	54	GLN
1	A	55	ASN
1	A	93	HIS

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Mol	Chain	Res	Type
1	A	125	GLN
1	A	150	GLN
1	B	52	GLN
1	B	55	ASN
1	B	60	HIS
1	B	140	ASN
1	C	37	HIS
1	C	52	GLN
1	C	54	GLN
1	C	55	ASN
1	C	63	ASN
1	C	140	ASN
1	C	168	HIS
1	D	37	HIS
1	D	52	GLN
1	D	54	GLN
1	D	55	ASN
1	D	63	ASN
1	D	113	ASN
1	D	126	ASN
1	D	140	ASN
1	D	164	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 ⓘ

3 ligands are 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	#$\|Z\| > 2$
2	TLA	A	172	-	9,9,9	1.41	1 (11%)	12,12,12	1.68	4 (33%)
2	TLA	B	172	-	9,9,9	1.46	2 (22%)	12,12,12	1.61	3 (25%)
2	TLA	C	172	-	9,9,9	1.29	1 (11%)	12,12,12	1.98	6 (50%)

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
2	TLA	A	172	-	-	0/12/12/12	-
2	TLA	B	172	-	-	0/12/12/12	-
2	TLA	C	172	-	-	0/12/12/12	-

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	172	TLA	O11-C1	-3.14	1.20	1.30
2	C	172	TLA	O11-C1	-3.07	1.20	1.30
2	A	172	TLA	O11-C1	-2.97	1.20	1.30
2	B	172	TLA	C2-C1	2.20	1.55	1.52

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	172	TLA	O3-C3-C2	-3.92	102.45	110.23
2	B	172	TLA	O4-C4-C3	-3.00	113.74	121.63
2	A	172	TLA	O4-C4-C3	-2.95	113.86	121.63
2	A	172	TLA	O41-C4-C3	2.83	120.91	113.27
2	B	172	TLA	O41-C4-C3	2.73	120.64	113.27
2	C	172	TLA	O4-C4-C3	-2.66	114.62	121.63
2	C	172	TLA	O41-C4-C3	2.34	119.60	113.27
2	B	172	TLA	O1-C1-C2	-2.31	115.56	121.63
2	A	172	TLA	O1-C1-C2	-2.26	115.70	121.63
2	C	172	TLA	O1-C1-C2	-2.25	115.72	121.63
2	C	172	TLA	O11-C1-O1	2.15	128.97	124.09

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	172	TLA	O2-C2-C1	-2.06	106.34	110.66
2	C	172	TLA	O2-C2-C1	-2.02	106.43	110.66

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	172	TLA	2	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 (i)

6.1 Protein, DNA and RNA chains (i)

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	171/171 (100%)	-0.07	5 (2%)	51	36	6, 23, 48, 97	0
1	B	171/171 (100%)	0.09	4 (2%)	60	47	6, 29, 58, 100	0
1	C	171/171 (100%)	-0.06	5 (2%)	51	36	6, 21, 44, 99	0
1	D	171/171 (100%)	-0.01	4 (2%)	60	47	9, 25, 49, 100	0
All	All	684/684 (100%)	-0.01	18 (2%)	56	40	6, 24, 51, 100	0

All (18) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	2	ASP	5.7
1	C	3	PRO	5.1
1	B	2	ASP	5.0
1	B	1	GLU	4.8
1	C	1	GLU	4.0
1	B	3	PRO	3.5
1	A	4	PRO	3.3
1	D	3	PRO	3.3
1	A	2	ASP	3.1
1	A	1	GLU	2.9
1	A	3	PRO	2.7
1	C	40	GLY	2.5
1	D	48	SER	2.5
1	D	1	GLU	2.4
1	D	2	ASP	2.3
1	C	4	PRO	2.2
1	A	55	ASN	2.2
1	B	4	PRO	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 ⓘ

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(Å^2)	Q<0.9
2	TLA	A	172	10/10	0.71	0.38	41,43,43,44	10
2	TLA	B	172	10/10	0.83	0.33	41,41,41,42	10
2	TLA	C	172	10/10	0.84	0.35	37,38,39,40	10

6.5 Other polymers ⓘ

There are no such residues in this entry.

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