Full wwPDB X-ray Structure Validation Report (i)

Jun 18, 2024 – 07:46 PM EDT

PDB ID	:	4I9Y
Title	:	Structure of the C-terminal domain of Nup358
Authors	:	Lin, D.H.; Zimmermann, S.; Stuwe, T.; Stuwe, E.; Hoelz, A.
Deposited on	:	2012-12-05
Resolution	:	1.75 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 (i) 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 (i)) were used in the production of this report:

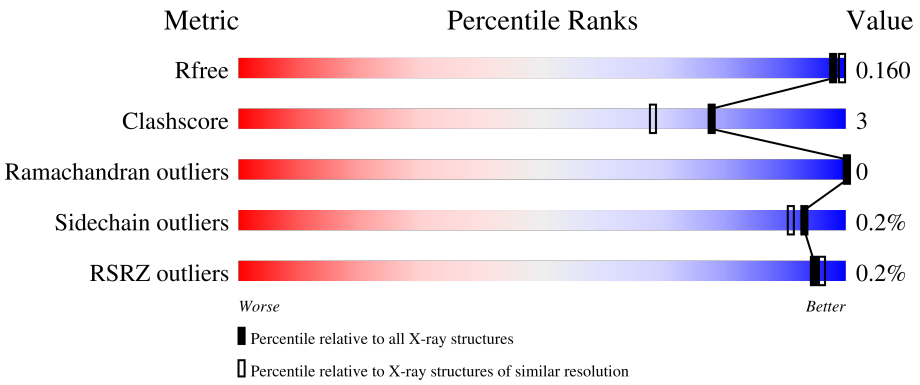
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	2.37.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 1.75 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}	130704	2340 (1.76-1.76)
Clashscore	141614	2466 (1.76-1.76)
Ramachandran outliers	138981	2437 (1.76-1.76)
Sidechain outliers	138945	2437 (1.76-1.76)
RSRZ outliers	127900	2298 (1.76-1.76)

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	167	96%
1	B	167	97%
1	C	167	% 99%
1	D	167	95%
1	E	167	91% 9%

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Mol	Chain	Length	Quality of chain
1	F	167	98%

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
2	GOL	B	202	-	-	X	-
2	GOL	D	201	-	-	X	-

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 17923 atoms, of which 8147 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 E3 SUMO-protein ligase RanBP2.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
1	A	167	2717	861	1356	232	257	11	0	14	0
1	B	167	2687	853	1336	228	259	11	0	13	0
1	C	167	2662	845	1326	228	252	11	0	10	0
1	D	167	2617	833	1299	224	251	10	0	6	0
1	E	167	2714	861	1355	228	260	10	0	14	0
1	F	167	2610	829	1295	227	249	10	0	5	0

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	GLY	-	EXPRESSION TAG	UNP P49792
A	-1	PRO	-	EXPRESSION TAG	UNP P49792
A	0	HIS	-	EXPRESSION TAG	UNP P49792
A	1	MET	-	EXPRESSION TAG	UNP P49792
B	-2	GLY	-	EXPRESSION TAG	UNP P49792
B	-1	PRO	-	EXPRESSION TAG	UNP P49792
B	0	HIS	-	EXPRESSION TAG	UNP P49792
B	1	MET	-	EXPRESSION TAG	UNP P49792
C	-2	GLY	-	EXPRESSION TAG	UNP P49792
C	-1	PRO	-	EXPRESSION TAG	UNP P49792
C	0	HIS	-	EXPRESSION TAG	UNP P49792
C	1	MET	-	EXPRESSION TAG	UNP P49792
D	-2	GLY	-	EXPRESSION TAG	UNP P49792
D	-1	PRO	-	EXPRESSION TAG	UNP P49792
D	0	HIS	-	EXPRESSION TAG	UNP P49792
D	1	MET	-	EXPRESSION TAG	UNP P49792
E	-2	GLY	-	EXPRESSION TAG	UNP P49792

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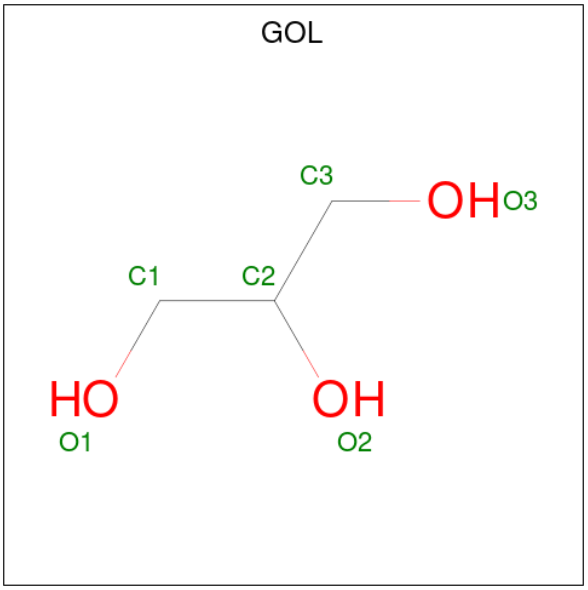
Chain	Residue	Modelled	Actual	Comment	Reference
E	-1	PRO	-	EXPRESSION TAG	UNP P49792
E	0	HIS	-	EXPRESSION TAG	UNP P49792
E	1	MET	-	EXPRESSION TAG	UNP P49792
F	-2	GLY	-	EXPRESSION TAG	UNP P49792
F	-1	PRO	-	EXPRESSION TAG	UNP P49792
F	0	HIS	-	EXPRESSION TAG	UNP P49792
F	1	MET	-	EXPRESSION TAG	UNP P49792

- Molecule 2 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
2	A	1	14	3	8	3	0	0
			Total	C	H	O		
2	A	1	14	3	8	3	0	0
			Total	C	H	O		
2	A	1	14	3	8	3	0	0
			Total	C	H	O		
2	B	1	14	3	8	3	0	0
			Total	C	H	O		
2	B	1	14	3	8	3	0	0
			Total	C	H	O		
2	B	1	14	3	8	3	0	0
			Total	C	H	O		
2	B	1	14	3	8	3	0	0
			Total	C	H	O		
2	B	1	14	3	8	3	0	0

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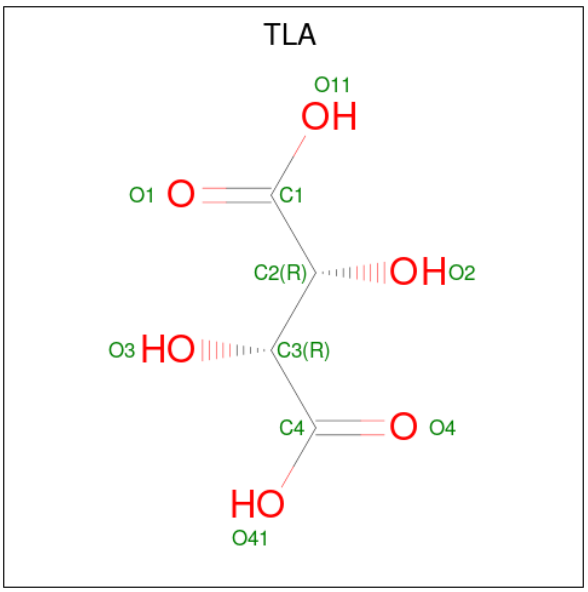
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
2	C	1	14	3	8	3	0	0
			Total	C	H	O		
2	C	1	14	3	8	3	0	0
			Total	C	H	O		
2	C	1	14	3	8	3	0	0
			Total	C	H	O		
2	D	1	14	3	8	3	0	0
			Total	C	H	O		
2	D	1	14	3	8	3	0	0
			Total	C	H	O		
2	D	1	14	3	8	3	0	0
			Total	C	H	O		
2	D	1	14	3	8	3	0	0
			Total	C	H	O		
2	D	1	14	3	8	3	0	0
			Total	C	H	O		
2	E	1	14	3	8	3	0	0
			Total	C	H	O		
2	E	1	14	3	8	3	0	0
			Total	C	H	O		
2	F	1	14	3	8	3	0	0
			Total	C	H	O		
2	F	1	14	3	8	3	0	0
			Total	C	H	O		
2	F	1	14	3	8	3	0	0

- Molecule 3 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Cl		
3	A	1	1	1	0	0
			Total	Cl		
3	B	1	1	1	0	0
			Total	Cl		
3	C	1	1	1	0	0
			Total	Cl		
3	D	1	1	1	0	0
			Total	Cl		
3	E	1	1	1	0	0
			Total	Cl		
3	F	1	1	1	0	0

- Molecule 4 is L(+)-TARTARIC ACID (three-letter code: TLA) (formula: $C_4H_6O_6$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
4	A	1	14	4	4	6	0	0
			Total	C	H	O		
4	B	1	14	4	4	6	0	0
			Total	C	H	O		
4	E	1	14	4	4	6	0	0

- Molecule 5 is water.

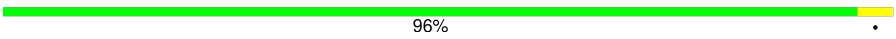
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
5	A	275	278	278	0	9
			Total	O		
5	B	263	276	276	0	16
			Total	O		
5	C	248	255	255	0	7
			Total	O		
5	D	254	256	256	0	3
			Total	O		
5	E	242	251	251	0	9
			Total	O		
5	F	251	258	258	0	8

3 Residue-property plots (i)

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.

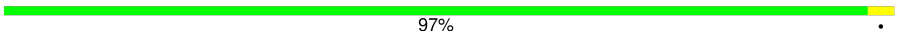
- Molecule 1: E3 SUMO-protein ligase RanBP2

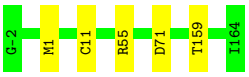
Chain A:



- Molecule 1: E3 SUMO-protein ligase RanBP2

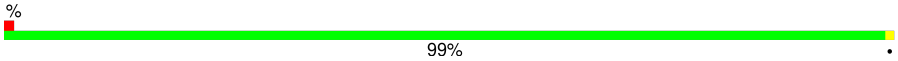
Chain B:

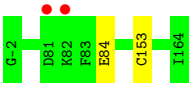




- Molecule 1: E3 SUMO-protein ligase RanBP2

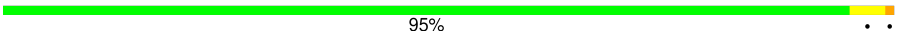
Chain C:

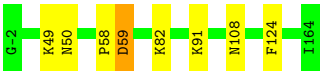




- Molecule 1: E3 SUMO-protein ligase RanBP2

Chain D:



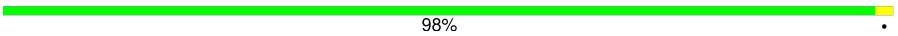


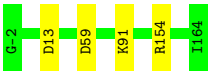
- Molecule 1: E3 SUMO-protein ligase RanBP2

Chain E:

- Molecule 1: E3 SUMO-protein ligase RanBP2

Chain F:




G-2
D13
D59
K91
R154
I164

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	104.06Å 97.13Å 108.15Å 90.00° 117.38° 90.00°	Depositor
Resolution (Å)	48.57 – 1.75 48.57 – 1.75	Depositor EDS
% Data completeness (in resolution range)	97.4 (48.57-1.75) 97.4 (48.57-1.75)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.19 (at 1.75Å)	Xtriage
Refinement program	PHENIX 1.8.1_1168	Depositor
R, R_{free}	0.123 , 0.158 0.127 , 0.160	Depositor DCC
R_{free} test set	9502 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å^2)	20.3	Xtriage
Anisotropy	0.515	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.42 , 59.3	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.015 for h,-k,-h-l	Xtriage
F_o,F_c correlation	0.98	EDS
Total number of atoms	17923	wwPDB-VP
Average B, all atoms (Å^2)	25.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.73% of the height of the origin peak. No significant pseudotranslation is detected.*

[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 (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: GOL, CL, 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	0.45	0/1426	0.61	0/1917
1	B	0.47	0/1415	0.59	0/1903
1	C	0.43	0/1395	0.56	0/1876
1	D	0.42	0/1364	0.57	0/1834
1	E	0.45	0/1431	0.56	0/1925
1	F	0.43	0/1358	0.56	0/1825
All	All	0.44	0/8389	0.58	0/11280

There are no bond length outliers.

There are no bond angle outliers.

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	1361	1356	1341	12	0
1	B	1351	1336	1322	5	0
1	C	1336	1326	1310	2	0
1	D	1318	1299	1293	6	0
1	E	1359	1355	1339	15	0
1	F	1315	1295	1289	2	0
2	A	18	24	24	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	30	40	40	7	0
2	C	18	24	24	0	0
2	D	30	40	40	6	0
2	E	12	16	16	0	0
2	F	18	24	24	1	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
3	E	1	0	0	0	0
3	F	1	0	0	0	0
4	A	10	4	4	0	0
4	B	10	4	4	0	0
4	E	10	4	4	0	0
5	A	278	0	0	4	0
5	B	276	0	0	5	0
5	C	255	0	0	2	0
5	D	256	0	0	3	0
5	E	251	0	0	5	0
5	F	258	0	0	1	0
All	All	9776	8147	8074	48	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 3.

All (48) 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:155[B]:ARG:NH1	5:A:567[B]:HOH:O	1.86	1.09
1:E:11[B]:CYS:SG	1:E:159[B]:THR:HG21	2.18	0.84
1:B:11[B]:CYS:SG	1:B:159[B]:THR:HG21	2.26	0.76
1:A:11[A]:CYS:SG	1:A:159[A]:THR:HG21	2.28	0.74
1:A:155[A]:ARG:NH1	5:A:391:HOH:O	2.22	0.72
2:B:203:GOL:H11	5:B:447:HOH:O	1.89	0.71
1:B:71[B]:ASP:OD1	5:B:462:HOH:O	2.08	0.71
1:E:31:ARG:NH1	5:E:414:HOH:O	2.23	0.70
1:A:11[B]:CYS:SG	1:A:157[B]:THR:OG1	2.50	0.69
1:E:21[B]:THR:HG21	5:E:363:HOH:O	1.93	0.69
2:B:202:GOL:C3	5:B:346:HOH:O	2.42	0.67
1:A:157[B]:THR:HG21	5:A:567[B]:HOH:O	1.93	0.67
2:B:202:GOL:H31	5:B:346:HOH:O	1.94	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:124:PHE:HB3	2:D:201:GOL:H11	1.77	0.67
1:E:84[B]:GLU:H	1:E:84[B]:GLU:CD	2.04	0.61
1:E:116:LEU:O	1:E:117[A]:LYS:HG2	2.00	0.60
1:A:159[A]:THR:HG22	5:C:526:HOH:O	2.00	0.60
1:A:68:THR:HG22	2:D:201:GOL:H32	1.87	0.55
1:E:117[B]:LYS:HD3	5:E:480:HOH:O	2.07	0.55
1:E:84[B]:GLU:HG2	5:E:362:HOH:O	2.09	0.53
2:B:202:GOL:H11	5:D:395:HOH:O	2.10	0.52
1:E:58:PRO:O	1:E:59:ASP:HB2	2.11	0.51
1:A:68:THR:CB	2:D:201:GOL:H32	2.42	0.50
5:E:396:HOH:O	2:F:202:GOL:H2	2.11	0.49
1:E:11[B]:CYS:SG	1:E:159[B]:THR:CG2	2.98	0.49
2:B:202:GOL:H32	5:B:346:HOH:O	2.11	0.48
1:B:55:ARG:NH1	2:B:201:GOL:O2	2.45	0.48
1:E:118:LYS:HE2	1:E:120[B]:GLU:CG	2.45	0.47
1:A:52:ILE:HG22	1:A:157[B]:THR:HG22	1.96	0.47
1:C:84[B]:GLU:HG3	5:C:487:HOH:O	2.13	0.47
2:D:201:GOL:H12	5:D:480:HOH:O	2.15	0.47
1:F:13:ASP:HB2	1:F:154:ARG:HD3	1.98	0.46
1:B:1[A]:MET:HE1	5:D:433:HOH:O	2.17	0.45
1:A:16[B]:PRO:HG3	1:C:153[B]:CYS:SG	2.57	0.45
1:E:21[B]:THR:OG1	1:E:134:ASP:HB3	2.17	0.45
1:D:49:LYS:O	1:D:50:ASN:HB2	2.17	0.44
1:E:52:ILE:HG22	1:E:157[B]:THR:HG22	1.99	0.44
1:F:91:LYS:NZ	5:F:517:HOH:O	2.51	0.43
1:D:124:PHE:O	2:D:201:GOL:H11	2.19	0.43
1:B:11[B]:CYS:SG	1:B:159[B]:THR:CG2	3.04	0.43
1:A:68:THR:CG2	2:D:201:GOL:H32	2.48	0.42
1:A:157[B]:THR:CG2	5:A:567[B]:HOH:O	2.60	0.41
1:D:58:PRO:O	1:D:59:ASP:HB2	2.20	0.41
1:E:118:LYS:HE2	1:E:120[B]:GLU:HG3	2.03	0.41
1:E:31:ARG:NH2	1:E:84[B]:GLU:OE2	2.45	0.41
1:D:82:LYS:HA	1:D:108:ASN:O	2.21	0.40
2:B:202:GOL:H31	1:D:91:LYS:HE2	2.03	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	179/167 (107%)	171 (96%)	8 (4%)	0	100	100
1	B	178/167 (107%)	171 (96%)	7 (4%)	0	100	100
1	C	175/167 (105%)	171 (98%)	4 (2%)	0	100	100
1	D	171/167 (102%)	167 (98%)	4 (2%)	0	100	100
1	E	179/167 (107%)	175 (98%)	4 (2%)	0	100	100
1	F	170/167 (102%)	166 (98%)	4 (2%)	0	100	100
All	All	1052/1002 (105%)	1021 (97%)	31 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	155/142 (109%)	155 (100%)	0	100	100
1	B	154/142 (108%)	154 (100%)	0	100	100
1	C	152/142 (107%)	152 (100%)	0	100	100
1	D	148/142 (104%)	147 (99%)	1 (1%)	84	75
1	E	156/142 (110%)	156 (100%)	0	100	100
1	F	147/142 (104%)	146 (99%)	1 (1%)	84	75
All	All	912/852 (107%)	910 (100%)	2 (0%)	93	91

All (2) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	59	ASP
1	F	59	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 30 ligands modelled in this entry, 6 are monoatomic - leaving 24 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	$\#\|Z\| > 2$
2	GOL	B	204	-	5,5,5	0.37	0	5,5,5	0.46	0
4	TLA	B	206	-	9,9,9	1.66	2 (22%)	12,12,12	1.16	1 (8%)
2	GOL	D	204	-	5,5,5	0.23	0	5,5,5	0.46	0
2	GOL	B	203	-	5,5,5	0.46	0	5,5,5	0.27	0
2	GOL	A	201	-	5,5,5	0.41	0	5,5,5	0.50	0
2	GOL	F	202	-	5,5,5	0.38	0	5,5,5	0.29	0
2	GOL	D	201	-	5,5,5	0.38	0	5,5,5	0.62	0
2	GOL	B	201	-	5,5,5	0.42	0	5,5,5	0.67	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	GOL	C	202	-	5,5,5	0.33	0	5,5,5	0.41	0
2	GOL	F	204	-	5,5,5	0.40	0	5,5,5	0.38	0
2	GOL	E	201	-	5,5,5	0.36	0	5,5,5	0.55	0
2	GOL	F	201	-	5,5,5	0.35	0	5,5,5	0.31	0
2	GOL	D	202	-	5,5,5	0.40	0	5,5,5	0.47	0
2	GOL	D	203	-	5,5,5	0.45	0	5,5,5	0.57	0
2	GOL	E	204	-	5,5,5	0.47	0	5,5,5	0.45	0
2	GOL	A	202	-	5,5,5	0.47	0	5,5,5	0.60	0
2	GOL	B	207	-	5,5,5	0.34	0	5,5,5	0.39	0
2	GOL	C	204	-	5,5,5	0.51	0	5,5,5	0.25	0
4	TLA	E	203	-	9,9,9	1.67	2 (22%)	12,12,12	1.15	1 (8%)
2	GOL	D	206	-	5,5,5	0.40	0	5,5,5	0.48	0
2	GOL	C	201	-	5,5,5	0.48	0	5,5,5	0.12	0
4	TLA	A	204	-	9,9,9	1.71	2 (22%)	12,12,12	1.41	2 (16%)
2	GOL	A	205	-	5,5,5	0.45	0	5,5,5	0.42	0
2	GOL	B	202	-	5,5,5	0.40	0	5,5,5	1.37	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
2	GOL	B	204	-	-	0/4/4/4	-
4	TLA	B	206	-	-	7/12/12/12	-
2	GOL	D	204	-	-	2/4/4/4	-
2	GOL	B	203	-	-	2/4/4/4	-
2	GOL	A	201	-	-	0/4/4/4	-
2	GOL	F	202	-	-	2/4/4/4	-
2	GOL	D	201	-	-	2/4/4/4	-
2	GOL	B	201	-	-	2/4/4/4	-
2	GOL	C	202	-	-	2/4/4/4	-
2	GOL	F	204	-	-	2/4/4/4	-
2	GOL	E	201	-	-	0/4/4/4	-
2	GOL	F	201	-	-	2/4/4/4	-
2	GOL	D	202	-	-	4/4/4/4	-
2	GOL	D	203	-	-	0/4/4/4	-
2	GOL	E	204	-	-	4/4/4/4	-
2	GOL	A	202	-	-	0/4/4/4	-
2	GOL	B	207	-	-	0/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GOL	C	204	-	-	0/4/4/4	-
4	TLA	E	203	-	-	6/12/12/12	-
2	GOL	D	206	-	-	2/4/4/4	-
2	GOL	C	201	-	-	0/4/4/4	-
4	TLA	A	204	-	-	6/12/12/12	-
2	GOL	A	205	-	-	0/4/4/4	-
2	GOL	B	202	-	-	1/4/4/4	-

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	206	TLA	C2-C1	-2.99	1.48	1.52
4	E	203	TLA	C2-C1	-2.77	1.48	1.52
4	A	204	TLA	C3-C4	-2.65	1.48	1.52
4	A	204	TLA	C2-C1	-2.52	1.49	1.52
4	E	203	TLA	C3-C4	-2.34	1.49	1.52
4	B	206	TLA	C3-C4	-2.08	1.49	1.52

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	204	TLA	O3-C3-C4	-2.48	105.39	110.69
4	E	203	TLA	O2-C2-C1	-2.25	105.89	110.69
4	B	206	TLA	O2-C2-C1	-2.11	106.19	110.69
4	A	204	TLA	O2-C2-C1	-2.06	106.29	110.69

There are no chirality outliers.

All (46) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	201	GOL	O1-C1-C2-C3
2	B	203	GOL	O1-C1-C2-O2
2	B	203	GOL	O1-C1-C2-C3
2	C	202	GOL	O1-C1-C2-C3
2	D	201	GOL	C1-C2-C3-O3
2	D	202	GOL	O1-C1-C2-C3
2	D	202	GOL	C1-C2-C3-O3
2	D	202	GOL	O2-C2-C3-O3
2	D	206	GOL	C1-C2-C3-O3
2	E	204	GOL	O1-C1-C2-C3

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Mol	Chain	Res	Type	Atoms
2	F	204	GOL	C1-C2-C3-O3
4	A	204	TLA	O11-C1-C2-O2
4	A	204	TLA	O3-C3-C4-O4
4	A	204	TLA	O3-C3-C4-O41
4	B	206	TLA	O3-C3-C4-O4
4	B	206	TLA	O3-C3-C4-O41
4	E	203	TLA	O1-C1-C2-O2
4	E	203	TLA	O11-C1-C2-O2
4	E	203	TLA	O3-C3-C4-O4
4	E	203	TLA	O3-C3-C4-O41
4	A	204	TLA	O1-C1-C2-O2
4	B	206	TLA	O11-C1-C2-O2
4	B	206	TLA	O1-C1-C2-O2
4	A	204	TLA	C1-C2-C3-C4
4	B	206	TLA	C1-C2-C3-C4
4	E	203	TLA	C1-C2-C3-C4
2	D	204	GOL	O1-C1-C2-C3
2	E	204	GOL	C1-C2-C3-O3
2	F	201	GOL	O1-C1-C2-C3
2	F	202	GOL	C1-C2-C3-O3
2	B	201	GOL	O1-C1-C2-O2
2	C	202	GOL	O1-C1-C2-O2
2	D	201	GOL	O2-C2-C3-O3
2	D	204	GOL	O1-C1-C2-O2
2	D	206	GOL	O2-C2-C3-O3
2	E	204	GOL	O1-C1-C2-O2
2	F	201	GOL	O1-C1-C2-O2
2	F	204	GOL	O2-C2-C3-O3
2	D	202	GOL	O1-C1-C2-O2
2	E	204	GOL	O2-C2-C3-O3
4	A	204	TLA	O2-C2-C3-O3
4	B	206	TLA	O2-C2-C3-O3
4	E	203	TLA	O2-C2-C3-O3
4	B	206	TLA	O1-C1-C2-C3
2	F	202	GOL	O2-C2-C3-O3
2	B	202	GOL	O1-C1-C2-O2

There are no ring outliers.

5 monomers are involved in 14 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	203	GOL	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	F	202	GOL	1	0
2	D	201	GOL	6	0
2	B	201	GOL	1	0
2	B	202	GOL	5	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	167/167 (100%)	-0.67	0	100	100	10, 16, 29, 44	0
1	B	167/167 (100%)	-0.72	0	100	100	9, 17, 32, 50	0
1	C	167/167 (100%)	-0.69	2 (1%)	79	84	12, 20, 38, 54	0
1	D	167/167 (100%)	-0.73	0	100	100	12, 19, 36, 50	0
1	E	167/167 (100%)	-0.61	0	100	100	14, 21, 33, 48	0
1	F	167/167 (100%)	-0.76	0	100	100	14, 20, 35, 75	0
All	All	1002/1002 (100%)	-0.70	2 (0%)	95	96	9, 19, 35, 75	0

All (2) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	81	ASP	3.0
1	C	82	LYS	2.2

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	GOL	D	204	6/6	0.64	0.37	29,35,41,42	14
2	GOL	B	202	6/6	0.73	0.32	27,32,35,42	14
2	GOL	B	203	6/6	0.77	0.25	29,37,42,45	14
2	GOL	A	205	6/6	0.77	0.24	37,50,60,60	0
2	GOL	E	204	6/6	0.79	0.17	36,51,57,61	14
2	GOL	D	201	6/6	0.80	0.32	29,35,40,42	14
2	GOL	B	207	6/6	0.80	0.17	42,60,69,73	0
2	GOL	C	201	6/6	0.80	0.17	35,52,62,62	14
4	TLA	E	203	10/10	0.82	0.32	12,19,31,32	14
4	TLA	A	204	10/10	0.83	0.30	12,20,30,31	14
2	GOL	F	201	6/6	0.84	0.15	30,50,61,61	14
2	GOL	C	204	6/6	0.87	0.15	41,49,57,57	0
2	GOL	F	204	6/6	0.87	0.14	43,55,64,67	14
4	TLA	B	206	10/10	0.89	0.22	11,19,29,31	14
2	GOL	B	201	6/6	0.90	0.25	32,40,48,49	14
2	GOL	D	206	6/6	0.90	0.12	38,56,68,69	14
2	GOL	A	201	6/6	0.92	0.17	21,47,57,57	14
2	GOL	E	201	6/6	0.93	0.14	26,43,54,61	14
2	GOL	D	202	6/6	0.93	0.10	24,46,57,57	14
2	GOL	D	203	6/6	0.93	0.17	22,38,46,48	14
2	GOL	F	202	6/6	0.93	0.12	32,46,57,61	14
2	GOL	B	204	6/6	0.95	0.12	21,43,53,56	14
2	GOL	A	202	6/6	0.96	0.14	22,37,47,51	0
2	GOL	C	202	6/6	0.97	0.12	24,42,53,57	14
3	CL	D	205	1/1	1.00	0.05	30,30,30,30	1
3	CL	E	202	1/1	1.00	0.03	23,23,23,23	1
3	CL	F	203	1/1	1.00	0.08	35,35,35,35	0
3	CL	A	203	1/1	1.00	0.04	19,19,19,19	1
3	CL	B	205	1/1	1.00	0.04	20,20,20,20	1
3	CL	C	203	1/1	1.00	0.04	19,19,19,19	1

6.5 Other polymers (i)

There are no such residues in this entry.