



wwPDB X-ray Structure Validation Summary Report ⓘ

Dec 10, 2018 – 04:38 PM EST

PDB ID : 2C5C
Title : Shiga-like toxin 1 B subunit complexed with a bivalent inhibitor
Authors : Dodd, R.B.; Read, R.J.
Deposited on : 2005-10-26
Resolution : 2.94 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.7.3 (157068), CSD as539be (2018)
Xtriage (Phenix) : 1.13
EDS : rb-20031633
Percentile statistics : 20171227.v01 (using entries in the PDB archive December 27th 2017)
Refmac : 5.8.0158
CCP4 : 7.0 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : rb-20031633

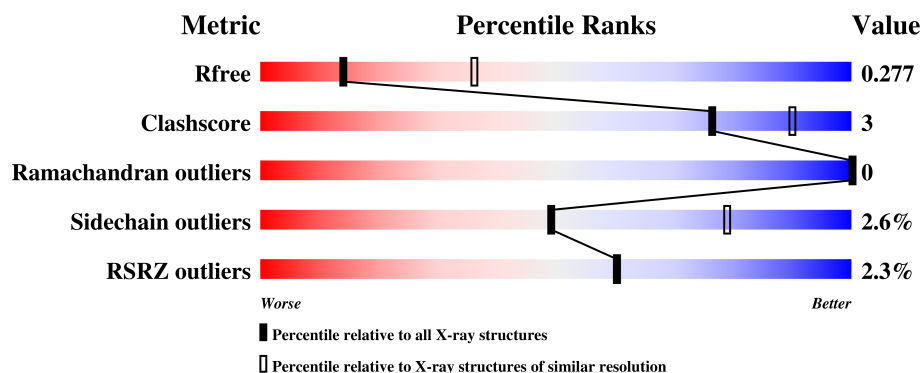
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.94 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}	111664	2506 (2.98-2.90)
Clashscore	122126	2745 (2.98-2.90)
Ramachandran outliers	120053	2675 (2.98-2.90)
Sidechain outliers	120020	2677 (2.98-2.90)
RSRZ outliers	108989	2445 (2.98-2.90)

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	69	<div> <div>%</div> <div> <div></div> <div>90%</div> <div>9%</div> <div>.</div> </div> </div>
1	B	69	<div> <div></div> <div>91%</div> <div>9%</div> </div>
1	C	69	<div> <div>4%</div> <div> <div></div> <div>93%</div> <div>7%</div> </div> </div>
1	D	69	<div> <div>%</div> <div> <div></div> <div>83%</div> <div>16%</div> <div>.</div> </div> </div>
1	E	69	<div> <div></div> <div>88%</div> <div>10%</div> <div>.</div> </div>

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Mol	Chain	Length	Quality of chain
1	F	69	
1	G	69	
1	H	69	
1	I	69	
1	J	69	

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	GLA	I	1073[A]	X	-	-	-
2	GLA	I	1078[B]	X	-	-	-
4	GLC	A	1072	X	-	-	-
4	GLC	A	1075	X	-	-	-
4	GLC	B	1074	X	-	-	-
4	GLC	B	1075	X	-	-	-
4	GLC	B	72	X	-	-	-
4	GLC	C	1076	X	-	-	-
4	GLC	E	1074	X	-	-	-
4	GLC	H	1074	X	-	-	-
4	GLC	J	1072	X	-	-	-
4	GLC	J	1075	X	-	-	-

2 Entry composition

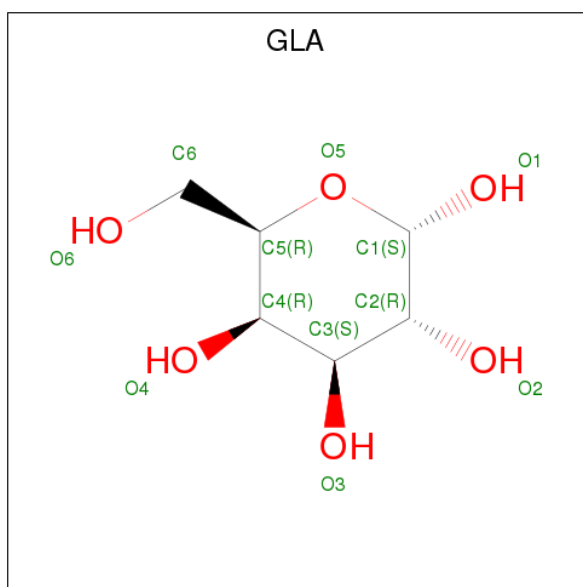
There are 8 unique types of molecules in this entry. The entry contains 6136 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 SHIGA-LIKE TOXIN 1 B SUBUNIT.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	69	Total	C	N	O	S	0	0	0
			540	339	90	108	3			
1	B	69	Total	C	N	O	S	0	0	0
			540	339	90	108	3			
1	C	69	Total	C	N	O	S	0	0	0
			540	339	90	108	3			
1	D	69	Total	C	N	O	S	0	0	0
			540	339	90	108	3			
1	E	69	Total	C	N	O	S	0	0	0
			540	339	90	108	3			
1	F	69	Total	C	N	O	S	0	0	0
			540	339	90	108	3			
1	G	69	Total	C	N	O	S	0	0	0
			540	339	90	108	3			
1	H	69	Total	C	N	O	S	0	0	0
			540	339	90	108	3			
1	I	69	Total	C	N	O	S	0	0	0
			540	339	90	108	3			
1	J	69	Total	C	N	O	S	0	0	0
			540	339	90	108	3			

- Molecule 2 is ALPHA D-GALACTOSE (three-letter code: GLA) (formula: C₆H₁₂O₆).



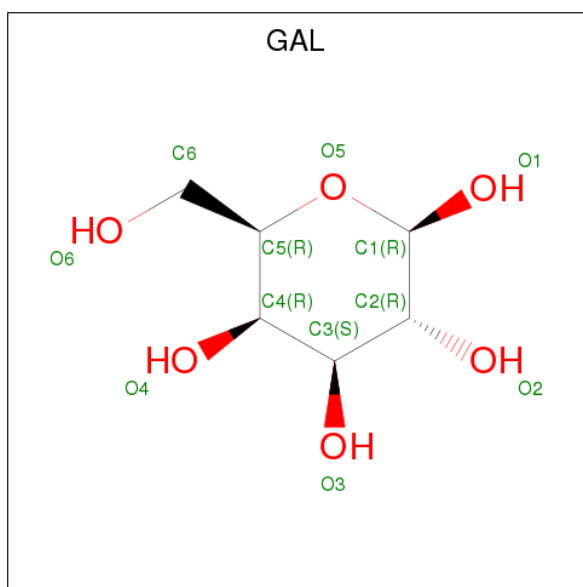
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			11	6	5		
2	A	1	Total	C	O	0	0
			11	6	5		
2	B	1	Total	C	O	0	0
			11	6	5		
2	B	1	Total	C	O	0	0
			11	6	5		
2	B	1	Total	C	O	0	0
			11	6	5		
2	C	1	Total	C	O	0	0
			11	6	5		
2	C	1	Total	C	O	0	0
			11	6	5		
2	C	1	Total	C	O	0	0
			11	6	5		
2	D	1	Total	C	O	0	0
			11	6	5		
2	D	1	Total	C	O	0	0
			11	6	5		
2	D	1	Total	C	O	0	1
			11	6	5		
2	D	1	Total	C	O	0	1
			11	6	5		
2	E	1	Total	C	O	0	0
			11	6	5		

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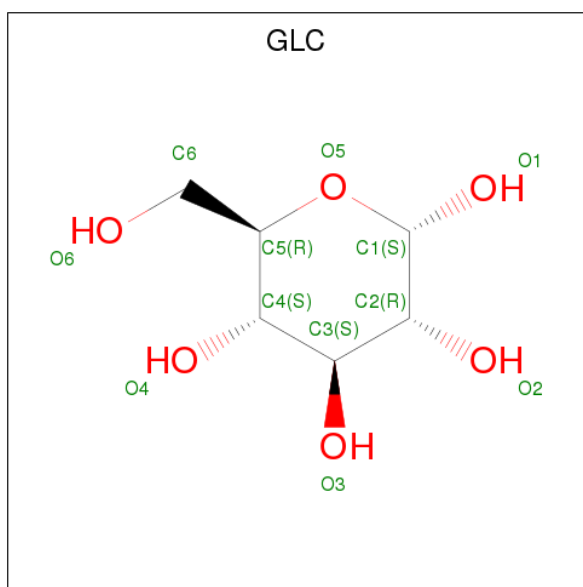
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	E	1	Total	C	O	0	0
			11	6	5		
2	E	1	Total	C	O	0	0
			11	6	5		
2	G	1	Total	C	O	0	0
			11	6	5		
2	G	1	Total	C	O	0	0
			11	6	5		
2	H	1	Total	C	O	0	0
			11	6	5		
2	H	1	Total	C	O	0	0
			11	6	5		
2	H	1	Total	C	O	0	0
			11	6	5		
2	I	1	Total	C	O	0	0
			11	6	5		
2	I	1	Total	C	O	0	0
			11	6	5		
2	I	1	Total	C	O	0	1
			11	6	5		
2	I	1	Total	C	O	0	1
			11	6	5		
2	I	1	Total	C	O	0	1
			11	6	5		
2	I	1	Total	C	O	0	1
			11	6	5		
2	J	1	Total	C	O	0	0
			11	6	5		
2	J	1	Total	C	O	0	0
			11	6	5		

- Molecule 3 is BETA-D-GALACTOSE (three-letter code: GAL) (formula: C₆H₁₂O₆).



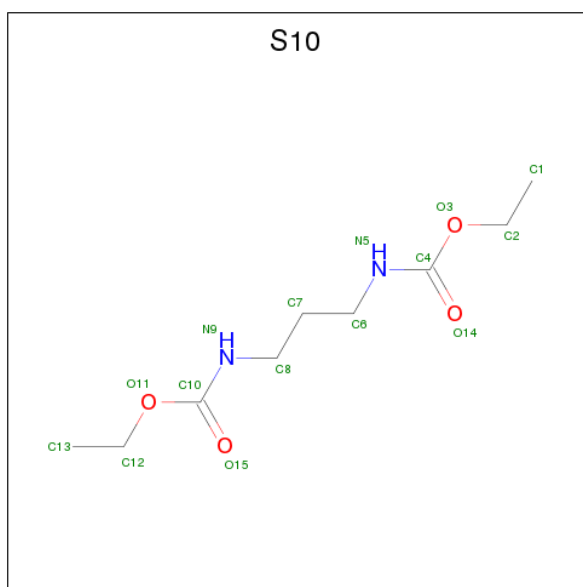
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			11	6	5		
3	A	1	Total	C	O	0	0
			11	6	5		
3	B	1	Total	C	O	0	0
			11	6	5		
3	B	1	Total	C	O	0	0
			11	6	5		
3	B	1	Total	C	O	0	0
			11	6	5		
3	C	1	Total	C	O	0	0
			11	6	5		
3	D	1	Total	C	O	0	1
			11	6	5		
3	D	1	Total	C	O	0	1
			11	6	5		
3	E	1	Total	C	O	0	0
			11	6	5		
3	H	1	Total	C	O	0	0
			11	6	5		
3	J	1	Total	C	O	0	0
			11	6	5		
3	J	1	Total	C	O	0	0
			11	6	5		

- Molecule 4 is ALPHA-D-GLUCOSE (three-letter code: GLC) (formula: C₆H₁₂O₆).



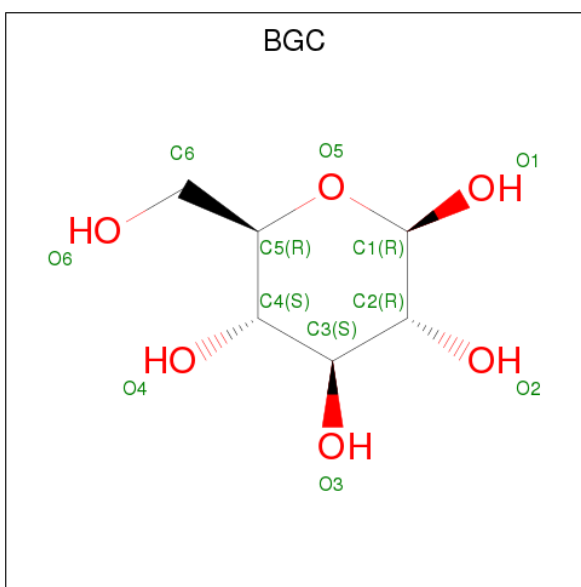
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			12	6	6		
4	A	1	Total	C	O	0	0
			12	6	6		
4	B	1	Total	C	O	0	0
			12	6	6		
4	B	1	Total	C	O	0	0
			12	6	6		
4	B	1	Total	C	O	0	0
			12	6	6		
4	C	1	Total	C	O	0	0
			12	6	6		
4	E	1	Total	C	O	0	0
			12	6	6		
4	H	1	Total	C	O	0	0
			12	6	6		
4	J	1	Total	C	O	0	0
			12	6	6		
4	J	1	Total	C	O	0	0
			12	6	6		

- Molecule 5 is DIETHYL PROPANE-1,3-DIYLBISCARBAMATE (three-letter code: S10) (formula: $C_9H_{18}N_2O_4$).



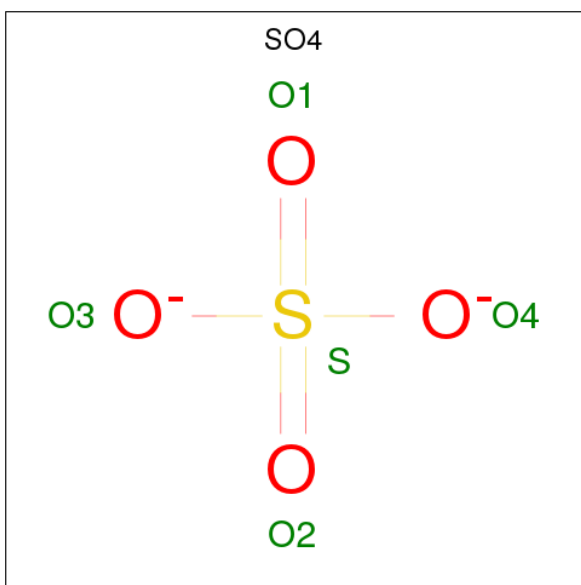
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C N O 15 9 2 4	0	0
5	C	1	Total C N O 15 9 2 4	0	0
5	D	1	Total C N O 15 9 2 4	0	1
5	E	1	Total C O 5 3 2	0	0
5	F	1	Total C N O 9 6 1 2	0	0
5	I	1	Total C N O 15 9 2 4	0	0
5	J	1	Total C N O 15 9 2 4	0	0
5	J	1	Total C O 5 3 2	0	0

- Molecule 6 is BETA-D-GLUCOSE (three-letter code: BGC) (formula: C₆H₁₂O₆).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	D	1	Total	C	O	0	1
			12	6	6		
6	D	1	Total	C	O	0	1
			12	6	6		
6	I	1	Total	C	O	0	1
			12	6	6		
6	I	1	Total	C	O	0	1
			12	6	6		

- Molecule 7 is SULFATE ION (three-letter code: SO₄) (formula: O₄S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	I	1	Total	O	S	0	0
			5	4	1		

- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	5	Total	O	0	0
			5	5		
8	B	1	Total	O	0	0
			1	1		
8	D	2	Total	O	0	0
			2	2		
8	E	2	Total	O	0	0
			2	2		
8	G	1	Total	O	0	0
			1	1		
8	I	2	Total	O	0	0
			2	2		
8	J	5	Total	O	0	0
			5	5		

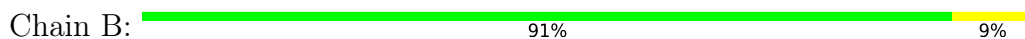
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA 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.

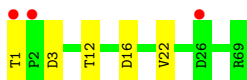
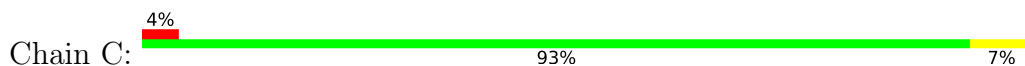
- Molecule 1: SHIGA-LIKE TOXIN 1 B SUBUNIT



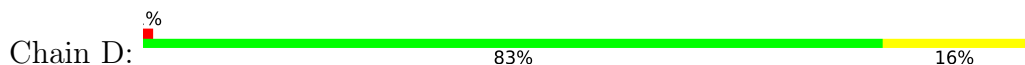
- Molecule 1: SHIGA-LIKE TOXIN 1 B SUBUNIT



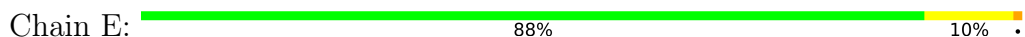
- Molecule 1: SHIGA-LIKE TOXIN 1 B SUBUNIT



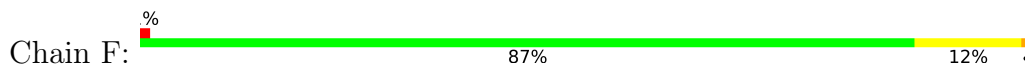
- Molecule 1: SHIGA-LIKE TOXIN 1 B SUBUNIT



- Molecule 1: SHIGA-LIKE TOXIN 1 B SUBUNIT

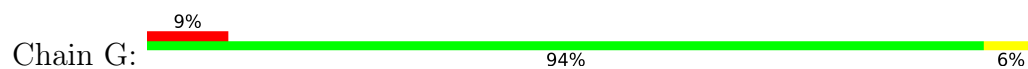


- Molecule 1: SHIGA-LIKE TOXIN 1 B SUBUNIT





- Molecule 1: SHIGA-LIKE TOXIN 1 B SUBUNIT



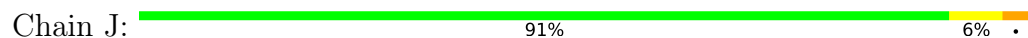
- Molecule 1: SHIGA-LIKE TOXIN 1 B SUBUNIT



- Molecule 1: SHIGA-LIKE TOXIN 1 B SUBUNIT



- Molecule 1: SHIGA-LIKE TOXIN 1 B SUBUNIT



4 Data and refinement statistics

Property	Value	Source
Space group	H 3 2	Depositor
Cell constants a, b, c, α , β , γ	114.31Å 114.31Å 406.94Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	22.76 – 2.94 22.76 – 2.94	Depositor EDS
% Data completeness (in resolution range)	90.4 (22.76-2.94) 90.4 (22.76-2.94)	Depositor EDS
R_{merge}	0.18	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.05 (at 2.94Å)	Xtriage
Refinement program	REFMAC 5.1.29	Depositor
R, R_{free}	0.198 , 0.267 0.205 , 0.277	Depositor DCC
R_{free} test set	1029 reflections (5.12%)	wwPDB-VP
Wilson B-factor (Å ²)	65.5	Xtriage
Anisotropy	0.048	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 53.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.51$, $\langle L^2 \rangle = 0.35$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	6136	wwPDB-VP
Average B, all atoms (Å ²)	35.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.86% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: S10, GLA, GLC, GAL, BGC, SO4

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	1.10	0/549	1.05	3/742 (0.4%)
1	B	1.26	2/549 (0.4%)	1.09	2/742 (0.3%)
1	C	1.03	0/549	1.03	2/742 (0.3%)
1	D	1.17	2/549 (0.4%)	1.09	3/742 (0.4%)
1	E	1.22	2/549 (0.4%)	1.11	2/742 (0.3%)
1	F	1.00	0/549	1.09	4/742 (0.5%)
1	G	0.90	0/549	0.98	1/742 (0.1%)
1	H	0.82	0/549	0.87	1/742 (0.1%)
1	I	0.98	0/549	0.98	0/742
1	J	1.14	0/549	1.05	1/742 (0.1%)
All	All	1.07	6/5490 (0.1%)	1.04	19/7420 (0.3%)

The worst 5 of 6 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	22	VAL	CB-CG2	-6.50	1.39	1.52
1	B	42	SER	CB-OG	-6.07	1.34	1.42
1	E	22	VAL	CB-CG2	-5.65	1.41	1.52
1	D	14	TYR	CD2-CE2	5.50	1.47	1.39
1	E	64	SER	C-O	-5.21	1.13	1.23

The worst 5 of 19 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	16	ASP	CB-CG-OD2	8.12	125.61	118.30
1	F	26	ASP	CB-CG-OD2	7.91	125.42	118.30
1	E	17	ASP	CB-CG-OD2	7.13	124.72	118.30
1	A	17	ASP	CB-CG-OD2	6.84	124.46	118.30
1	E	16	ASP	CB-CG-OD2	6.56	124.20	118.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	540	0	527	1	0
1	B	540	0	527	1	0
1	C	540	0	527	1	0
1	D	540	0	527	3	0
1	E	540	0	527	2	0
1	F	540	0	527	3	0
1	G	540	0	527	1	0
1	H	540	0	527	1	0
1	I	540	0	527	1	0
1	J	540	0	527	3	0
2	A	22	0	20	1	0
2	B	33	0	29	1	0
2	C	44	0	37	3	0
2	D	44	0	39	1	0
2	E	33	0	28	0	0
2	G	22	0	19	0	0
2	H	33	0	29	2	0
2	I	66	0	55	9	0
2	J	22	0	20	0	0
3	A	22	0	16	1	0
3	B	33	0	26	1	0
3	C	11	0	8	1	0
3	D	22	0	17	2	0
3	E	11	0	8	0	0
3	H	11	0	9	0	0
3	J	22	0	16	1	0
4	A	24	0	22	0	0
4	B	36	0	32	0	0
4	C	12	0	11	0	0
4	E	12	0	11	0	0
4	H	12	0	11	0	0
4	J	24	0	22	1	0
5	A	15	0	14	0	0
5	C	15	0	16	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	D	15	0	17	2	0
5	E	5	0	4	0	0
5	F	9	0	9	1	0
5	I	15	0	14	0	0
5	J	20	0	19	2	0
6	D	24	0	22	2	0
6	I	24	0	22	2	0
7	I	5	0	0	0	0
8	A	5	0	0	0	0
8	B	1	0	0	0	0
8	D	2	0	0	0	0
8	E	2	0	0	0	0
8	G	1	0	0	0	0
8	I	2	0	0	0	0
8	J	5	0	0	0	0
All	All	6136	0	5892	39	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.

The worst 5 of 39 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)
2:H:1070:GLA:C1	2:H:1071:GLA:H61	2.01	0.90
3:B:1077:GAL:H4	1:F:34:TRP:CD2	2.35	0.62
2:C:1070:GLA:O6	2:C:1070:GLA:O4	2.20	0.60
1:E:11:TYR:OH	1:E:28:GLU:OE2	2.14	0.56
5:J:1076:S10:H133	5:J:1076:S10:O15	2.09	0.52

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	67/69 (97%)	63 (94%)	4 (6%)	0	100	100
1	B	67/69 (97%)	65 (97%)	2 (3%)	0	100	100
1	C	67/69 (97%)	65 (97%)	2 (3%)	0	100	100
1	D	67/69 (97%)	64 (96%)	3 (4%)	0	100	100
1	E	67/69 (97%)	65 (97%)	2 (3%)	0	100	100
1	F	67/69 (97%)	64 (96%)	3 (4%)	0	100	100
1	G	67/69 (97%)	66 (98%)	1 (2%)	0	100	100
1	H	67/69 (97%)	65 (97%)	2 (3%)	0	100	100
1	I	67/69 (97%)	65 (97%)	2 (3%)	0	100	100
1	J	67/69 (97%)	65 (97%)	2 (3%)	0	100	100
All	All	670/690 (97%)	647 (97%)	23 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	61/61 (100%)	58 (95%)	3 (5%)	27	60
1	B	61/61 (100%)	60 (98%)	1 (2%)	65	87
1	C	61/61 (100%)	60 (98%)	1 (2%)	65	87
1	D	61/61 (100%)	57 (93%)	4 (7%)	18	45
1	E	61/61 (100%)	60 (98%)	1 (2%)	65	87
1	F	61/61 (100%)	60 (98%)	1 (2%)	65	87
1	G	61/61 (100%)	60 (98%)	1 (2%)	65	87
1	H	61/61 (100%)	60 (98%)	1 (2%)	65	87
1	I	61/61 (100%)	60 (98%)	1 (2%)	65	87
1	J	61/61 (100%)	59 (97%)	2 (3%)	41	73
All	All	610/610 (100%)	594 (97%)	16 (3%)	49	79

5 of 16 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	22	VAL
1	D	23	LYS
1	H	22	VAL
1	D	8	LYS
1	I	1	THR

Some 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 carbohydrates in this entry.

5.6 Ligand geometry [i](#)

64 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	GLA	A	1070	3	11,11,12	0.94	0	15,15,17	1.76	5 (33%)
3	GAL	A	1071	2,5,4	11,11,12	1.18	1 (9%)	15,15,17	3.28	6 (40%)
4	GLC	A	1072	3	12,12,12	1.20	2 (16%)	17,17,17	2.14	9 (52%)
2	GLA	A	1073	3	11,11,12	0.99	0	15,15,17	2.00	5 (33%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	GAL	A	1074	2,5,4	11,11,12	0.69	0	15,15,17	2.41	5 (33%)
4	GLC	A	1075	3	12,12,12	0.52	0	17,17,17	2.28	7 (41%)
5	S10	A	1076	3,2	14,14,14	2.30	2 (14%)	15,15,15	2.43	6 (40%)
2	GLA	B	1072	3	11,11,12	1.34	2 (18%)	15,15,17	2.19	6 (40%)
3	GAL	B	1073	2,4	11,11,12	1.54	2 (18%)	15,15,17	2.60	8 (53%)
4	GLC	B	1074	3	12,12,12	1.19	1 (8%)	17,17,17	1.67	6 (35%)
4	GLC	B	1075	3	12,12,12	0.86	0	17,17,17	2.90	8 (47%)
2	GLA	B	1076	3	11,11,12	1.11	0	15,15,17	3.66	8 (53%)
3	GAL	B	1077	2,5,4	11,11,12	1.15	1 (9%)	15,15,17	2.13	5 (33%)
2	GLA	B	70	3	11,11,12	1.71	2 (18%)	15,15,17	2.62	6 (40%)
3	GAL	B	71	2,4	11,11,12	1.47	3 (27%)	15,15,17	2.83	5 (33%)
4	GLC	B	72	3	12,12,12	0.98	1 (8%)	17,17,17	2.38	6 (35%)
2	GLA	C	1070	-	11,11,12	1.92	3 (27%)	15,15,17	3.89	8 (53%)
2	GLA	C	1071	2	11,11,12	1.24	1 (9%)	15,15,17	2.20	6 (40%)
2	GLA	C	1072	2,5	11,11,12	1.33	2 (18%)	15,15,17	4.01	8 (53%)
5	S10	C	1073	3,2	14,14,14	2.89	3 (21%)	15,15,15	2.28	6 (40%)
2	GLA	C	1074	3	11,11,12	1.01	0	15,15,17	2.70	8 (53%)
3	GAL	C	1075	2,5,4	11,11,12	1.17	2 (18%)	15,15,17	3.23	10 (66%)
4	GLC	C	1076	3	12,12,12	0.96	0	17,17,17	2.61	5 (29%)
2	GLA	D	1070	2	11,11,12	1.18	0	15,15,17	3.03	9 (60%)
2	GLA	D	1071	2	11,11,12	2.64	7 (63%)	15,15,17	3.90	10 (66%)
2	GLA	D	1072[A]	3	11,11,12	1.08	0	15,15,17	2.13	3 (20%)
3	GAL	D	1073[A]	2,5,6	11,11,12	0.90	0	15,15,17	1.58	4 (26%)
6	BGC	D	1074[A]	3	12,12,12	0.63	0	17,17,17	2.02	3 (17%)
5	S10	D	1075[A]	3	14,14,14	2.11	4 (28%)	15,15,15	3.18	9 (60%)
2	GLA	D	1076[B]	3	11,11,12	1.08	0	15,15,17	2.13	3 (20%)
3	GAL	D	1077[B]	2,6	11,11,12	0.90	0	15,15,17	1.58	4 (26%)
6	BGC	D	1078[B]	3	12,12,12	0.63	0	17,17,17	2.02	3 (17%)
2	GLA	E	1070	2	11,11,12	1.08	2 (18%)	15,15,17	2.48	4 (26%)
2	GLA	E	1071	2,5	11,11,12	1.79	3 (27%)	15,15,17	3.16	9 (60%)
2	GLA	E	1072	3	11,11,12	1.68	2 (18%)	15,15,17	2.42	6 (40%)
3	GAL	E	1073	2,5,4	11,11,12	1.16	1 (9%)	15,15,17	2.49	8 (53%)
4	GLC	E	1074	3	12,12,12	0.75	0	17,17,17	2.19	5 (29%)
5	S10	E	1075	3	4,4,14	3.69	1 (25%)	2,3,15	0.26	0
5	S10	F	1073	3	8,8,14	2.75	1 (12%)	8,8,15	3.96	4 (50%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	GLA	G	1070	2	11,11,12	1.29	1 (9%)	15,15,17	2.92	8 (53%)
2	GLA	G	1071	2	11,11,12	0.97	0	15,15,17	3.11	8 (53%)
2	GLA	H	1070	2	11,11,12	1.23	1 (9%)	15,15,17	2.86	6 (40%)
2	GLA	H	1071	2	11,11,12	1.84	2 (18%)	15,15,17	2.77	6 (40%)
2	GLA	H	1072	3	11,11,12	0.97	1 (9%)	15,15,17	2.55	8 (53%)
3	GAL	H	1073	2,4	11,11,12	0.82	0	15,15,17	2.62	8 (53%)
4	GLC	H	1074	3	12,12,12	0.75	0	17,17,17	2.55	6 (35%)
2	GLA	I	1070	2	11,11,12	1.94	4 (36%)	15,15,17	3.48	8 (53%)
2	GLA	I	1071	2	11,11,12	1.82	1 (9%)	15,15,17	2.46	8 (53%)
2	GLA	I	1072[A]	2	11,11,12	1.02	0	15,15,17	1.75	2 (13%)
2	GLA	I	1073[A]	2,5,6	11,11,12	0.77	0	15,15,17	1.08	0
6	BGC	I	1074[A]	2	12,12,12	0.86	0	17,17,17	2.13	5 (29%)
5	S10	I	1075	2	14,14,14	2.10	2 (14%)	15,15,15	2.87	6 (40%)
7	SO4	I	1076	-	4,4,4	0.25	0	6,6,6	0.37	0
2	GLA	I	1077[B]	2	11,11,12	1.02	0	15,15,17	1.75	2 (13%)
2	GLA	I	1078[B]	2,5,6	11,11,12	0.77	0	15,15,17	1.08	0
6	BGC	I	1079[B]	2	12,12,12	0.86	0	17,17,17	2.13	5 (29%)
2	GLA	J	1070	3	11,11,12	1.22	1 (9%)	15,15,17	2.46	4 (26%)
3	GAL	J	1071	2,5,4	11,11,12	1.47	3 (27%)	15,15,17	4.16	11 (73%)
4	GLC	J	1072	3	12,12,12	0.68	0	17,17,17	2.92	8 (47%)
2	GLA	J	1073	3	11,11,12	0.48	0	15,15,17	1.82	4 (26%)
3	GAL	J	1074	2,5,4	11,11,12	1.18	0	15,15,17	3.03	9 (60%)
4	GLC	J	1075	3	12,12,12	0.84	0	17,17,17	2.01	6 (35%)
5	S10	J	1076	3	14,14,14	2.24	2 (14%)	15,15,15	4.55	9 (60%)
5	S10	J	1077	3	4,4,14	2.26	1 (25%)	2,3,15	1.51	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	GLA	A	1070	3	-	0/2/19/22	0/1/1/1
3	GAL	A	1071	2,5,4	-	0/2/19/22	0/1/1/1
4	GLC	A	1072	3	1/1/5/5	0/2/22/22	0/1/1/1
2	GLA	A	1073	3	-	0/2/19/22	0/1/1/1
3	GAL	A	1074	2,5,4	-	0/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	GLC	A	1075	3	1/1/5/5	0/2/22/22	0/1/1/1
5	S10	A	1076	3,2	-	0/14/14/14	0/0/0/0
2	GLA	B	1072	3	-	0/2/19/22	0/1/1/1
3	GAL	B	1073	2,4	-	0/2/19/22	0/1/1/1
4	GLC	B	1074	3	1/1/5/5	0/2/22/22	0/1/1/1
4	GLC	B	1075	3	1/1/5/5	0/2/22/22	0/1/1/1
2	GLA	B	1076	3	-	0/2/19/22	0/1/1/1
3	GAL	B	1077	2,5,4	-	0/2/19/22	0/1/1/1
2	GLA	B	70	3	-	0/2/19/22	0/1/1/1
3	GAL	B	71	2,4	-	0/2/19/22	0/1/1/1
4	GLC	B	72	3	1/1/5/5	0/2/22/22	0/1/1/1
2	GLA	C	1070	-	-	0/2/19/22	0/1/1/1
2	GLA	C	1071	2	-	0/2/19/22	0/1/1/1
2	GLA	C	1072	2,5	-	0/2/19/22	0/1/1/1
5	S10	C	1073	3,2	-	0/14/14/14	0/0/0/0
2	GLA	C	1074	3	-	0/2/19/22	0/1/1/1
3	GAL	C	1075	2,5,4	-	0/2/19/22	0/1/1/1
4	GLC	C	1076	3	1/1/5/5	0/2/22/22	0/1/1/1
2	GLA	D	1070	2	-	0/2/19/22	0/1/1/1
2	GLA	D	1071	2	-	0/2/19/22	0/1/1/1
2	GLA	D	1072[A]	3	-	0/2/19/22	0/1/1/1
3	GAL	D	1073[A]	2,5,6	-	0/2/19/22	0/1/1/1
6	BGC	D	1074[A]	3	-	0/2/22/22	0/1/1/1
5	S10	D	1075[A]	3	-	0/14/14/14	0/0/0/0
2	GLA	D	1076[B]	3	-	0/2/19/22	0/1/1/1
3	GAL	D	1077[B]	2,6	-	0/2/19/22	0/1/1/1
6	BGC	D	1078[B]	3	-	0/2/22/22	0/1/1/1
2	GLA	E	1070	2	-	0/2/19/22	0/1/1/1
2	GLA	E	1071	2,5	-	0/2/19/22	0/1/1/1
2	GLA	E	1072	3	-	0/2/19/22	0/1/1/1
3	GAL	E	1073	2,5,4	-	0/2/19/22	0/1/1/1
4	GLC	E	1074	3	1/1/5/5	0/2/22/22	0/1/1/1
5	S10	E	1075	3	-	0/2/2/14	0/0/0/0
5	S10	F	1073	3	-	0/7/7/14	0/0/0/0
2	GLA	G	1070	2	-	0/2/19/22	0/1/1/1
2	GLA	G	1071	2	-	0/2/19/22	0/1/1/1
2	GLA	H	1070	2	-	0/2/19/22	0/1/1/1
2	GLA	H	1071	2	-	0/2/19/22	0/1/1/1
2	GLA	H	1072	3	-	0/2/19/22	0/1/1/1
3	GAL	H	1073	2,4	-	0/2/19/22	0/1/1/1
4	GLC	H	1074	3	1/1/5/5	0/2/22/22	0/1/1/1
2	GLA	I	1070	2	-	0/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GLA	I	1071	2	-	0/2/19/22	0/1/1/1
2	GLA	I	1072[A]	2	-	0/2/19/22	0/1/1/1
2	GLA	I	1073[A]	2,5,6	1/1/4/5	0/2/19/22	0/1/1/1
6	BGC	I	1074[A]	2	-	0/2/22/22	0/1/1/1
5	S10	I	1075	2	-	0/14/14/14	0/0/0/0
7	SO4	I	1076	-	-	0/0/0/0	0/0/0/0
2	GLA	I	1077[B]	2	-	0/2/19/22	0/1/1/1
2	GLA	I	1078[B]	2,5,6	1/1/4/5	0/2/19/22	0/1/1/1
6	BGC	I	1079[B]	2	-	0/2/22/22	0/1/1/1
2	GLA	J	1070	3	-	0/2/19/22	0/1/1/1
3	GAL	J	1071	2,5,4	-	0/2/19/22	0/1/1/1
4	GLC	J	1072	3	1/1/5/5	0/2/22/22	0/1/1/1
2	GLA	J	1073	3	-	0/2/19/22	0/1/1/1
3	GAL	J	1074	2,5,4	-	0/2/19/22	0/1/1/1
4	GLC	J	1075	3	1/1/5/5	0/2/22/22	0/1/1/1
5	S10	J	1076	3	-	0/14/14/14	0/0/0/0
5	S10	J	1077	3	-	0/2/2/14	0/0/0/0

The worst 5 of 68 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	E	1072	GLA	C2-C3	-3.72	1.47	1.52
2	B	70	GLA	O3-C3	-3.03	1.35	1.43
5	D	1075[A]	S10	C7-C6	-2.85	1.39	1.51
5	D	1075[A]	S10	C7-C8	-2.85	1.39	1.51
2	C	1071	GLA	C2-C3	-2.77	1.48	1.52

The worst 5 of 373 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	J	1076	S10	C6-N5-C4	-9.18	107.00	121.86
4	B	1075	GLC	C1-O5-C5	-7.47	99.33	113.69
4	C	1076	GLC	O2-C2-C3	-6.99	94.02	110.34
3	J	1071	GAL	O5-C5-C6	-6.92	96.20	107.15
5	J	1076	S10	O14-C4-N5	-6.73	114.42	124.97

5 of 12 chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	I	1078[B]	GLA	C1
4	A	1075	GLC	C1
4	J	1075	GLC	C1

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Mol	Chain	Res	Type	Atom
2	I	1073[A]	GLA	C1
4	B	1074	GLC	C1

There are no torsion outliers.

There are no ring outliers.

30 monomers are involved in 26 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1070	GLA	1	0
3	A	1071	GAL	1	0
2	B	1072	GLA	1	0
3	B	1077	GAL	1	0
2	C	1070	GLA	1	0
2	C	1071	GLA	1	0
2	C	1072	GLA	1	0
2	C	1074	GLA	1	0
3	C	1075	GAL	1	0
2	D	1070	GLA	1	0
3	D	1073[A]	GAL	1	0
6	D	1074[A]	BGC	1	0
5	D	1075[A]	S10	2	0
3	D	1077[B]	GAL	1	0
6	D	1078[B]	BGC	1	0
5	F	1073	S10	1	0
2	H	1070	GLA	2	0
2	H	1071	GLA	2	0
2	I	1070	GLA	1	0
2	I	1071	GLA	1	0
2	I	1072[A]	GLA	3	0
2	I	1073[A]	GLA	4	0
6	I	1074[A]	BGC	1	0
2	I	1077[B]	GLA	3	0
2	I	1078[B]	GLA	4	0
6	I	1079[B]	BGC	1	0
3	J	1071	GAL	1	0
4	J	1072	GLC	1	0
5	J	1076	S10	1	0
5	J	1077	S10	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 [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	69/69 (100%)	-0.19	1 (1%) 75 76	26, 31, 38, 41	0
1	B	69/69 (100%)	-0.27	0 100 100	26, 31, 38, 41	0
1	C	69/69 (100%)	-0.20	3 (4%) 35 33	27, 31, 38, 41	0
1	D	69/69 (100%)	-0.19	1 (1%) 75 76	27, 31, 38, 41	0
1	E	69/69 (100%)	-0.35	0 100 100	27, 31, 38, 41	0
1	F	69/69 (100%)	-0.12	1 (1%) 75 76	27, 31, 38, 41	0
1	G	69/69 (100%)	0.49	6 (8%) 10 8	27, 31, 38, 41	0
1	H	69/69 (100%)	0.45	4 (5%) 23 21	27, 31, 38, 41	0
1	I	69/69 (100%)	-0.19	0 100 100	27, 31, 38, 41	0
1	J	69/69 (100%)	-0.26	0 100 100	27, 31, 38, 41	0
All	All	690/690 (100%)	-0.08	16 (2%) 60 60	26, 31, 39, 41	0

The worst 5 of 16 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	G	26	ASP	3.8
1	H	1	THR	3.5
1	C	2	PRO	3.4
1	G	60	GLY	3.0
1	C	1	THR	3.0

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

There are no carbohydrates 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
5	S10	I	1075	15/15	0.71	0.31	76,77,79,79	15
2	GLA	H	1071	11/12	0.76	0.36	98,103,105,106	0
5	S10	C	1073	15/15	0.80	0.31	74,79,87,87	0
4	GLC	H	1074	12/12	0.82	0.39	96,103,105,106	0
2	GLA	H	1070	11/12	0.83	0.25	85,97,98,99	0
6	BGC	I	1079[B]	12/12	0.85	0.35	76,78,80,81	12
2	GLA	D	1071	11/12	0.85	0.31	62,64,69,69	0
6	BGC	I	1074[A]	12/12	0.85	0.33	76,78,80,81	12
2	GLA	G	1070	11/12	0.85	0.41	87,90,91,92	0
2	GLA	C	1070	11/12	0.86	0.31	57,67,73,74	0
2	GLA	I	1078[B]	11/12	0.87	0.18	71,75,77,80	11
2	GLA	I	1071	11/12	0.87	0.31	72,80,84,84	0
2	GLA	E	1071	11/12	0.88	0.20	56,60,65,65	0
2	GLA	I	1073[A]	11/12	0.88	0.16	71,75,77,80	11
2	GLA	G	1071	11/12	0.88	0.37	79,85,88,90	0
6	BGC	D	1074[A]	12/12	0.90	0.20	46,48,50,51	12
5	S10	A	1076	15/15	0.90	0.44	45,68,78,78	0
3	GAL	H	1073	11/12	0.90	0.24	99,101,103,104	0
2	GLA	H	1072	11/12	0.91	0.18	93,97,99,100	0
6	BGC	D	1078[B]	12/12	0.91	0.22	46,48,50,51	12
5	S10	F	1073	9/15	0.91	0.34	55,65,73,78	0
2	GLA	I	1070	11/12	0.91	0.30	61,72,77,79	0
4	GLC	B	1074	12/12	0.91	0.21	55,67,71,72	0
3	GAL	B	1073	11/12	0.91	0.14	55,59,62,62	0
5	S10	E	1075	5/15	0.92	0.17	40,44,51,53	0
4	GLC	B	72	12/12	0.92	0.20	55,62,64,65	0
3	GAL	C	1075	11/12	0.93	0.15	66,70,74,76	0
4	GLC	B	1075	12/12	0.93	0.14	49,55,56,58	0
5	S10	J	1077	5/15	0.93	0.36	59,60,62,63	0
4	GLC	C	1076	12/12	0.93	0.37	75,80,84,85	0
5	S10	D	1075[A]	15/15	0.94	0.17	58,59,60,60	15
2	GLA	B	70	11/12	0.94	0.20	41,53,60,67	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	GAL	B	1077	11/12	0.94	0.15	42,56,58,62	0
2	GLA	C	1072	11/12	0.94	0.10	58,59,64,70	0
2	GLA	D	1070	11/12	0.95	0.25	54,59,63,63	0
2	GLA	B	1076	11/12	0.95	0.13	51,54,56,58	0
3	GAL	D	1077[B]	11/12	0.95	0.09	36,45,51,54	11
7	SO4	I	1076	5/5	0.95	0.14	73,74,75,75	5
3	GAL	B	71	11/12	0.95	0.21	48,59,63,63	0
3	GAL	D	1073[A]	11/12	0.95	0.11	36,45,51,54	11
3	GAL	A	1071	11/12	0.96	0.17	37,43,51,51	0
3	GAL	A	1074	11/12	0.96	0.11	48,49,52,52	0
4	GLC	A	1072	12/12	0.96	0.25	38,49,51,54	0
2	GLA	B	1072	11/12	0.96	0.15	48,52,54,55	0
2	GLA	E	1070	11/12	0.97	0.18	61,66,67,69	0
2	GLA	J	1070	11/12	0.97	0.13	39,46,50,51	0
4	GLC	J	1072	12/12	0.97	0.12	27,43,47,51	0
4	GLC	J	1075	12/12	0.97	0.13	30,37,41,42	0
4	GLC	E	1074	12/12	0.97	0.21	42,48,52,54	0
3	GAL	J	1071	11/12	0.97	0.14	43,48,52,54	0
2	GLA	I	1077[B]	11/12	0.97	0.15	67,68,70,70	11
2	GLA	E	1072	11/12	0.97	0.12	40,42,50,52	0
3	GAL	E	1073	11/12	0.97	0.10	30,40,44,46	0
2	GLA	J	1073	11/12	0.97	0.12	34,44,51,52	0
2	GLA	I	1072[A]	11/12	0.97	0.14	67,68,70,70	11
2	GLA	D	1072[A]	11/12	0.98	0.14	36,40,44,44	11
2	GLA	C	1074	11/12	0.98	0.10	60,66,70,70	0
2	GLA	C	1071	11/12	0.98	0.11	44,53,56,57	0
4	GLC	A	1075	12/12	0.98	0.19	42,44,49,49	0
5	S10	J	1076	15/15	0.98	0.12	42,57,59,59	0
2	GLA	A	1070	11/12	0.98	0.10	37,40,42,43	0
2	GLA	A	1073	11/12	0.98	0.16	44,52,56,57	0
2	GLA	D	1076[B]	11/12	0.98	0.14	36,40,44,44	11
3	GAL	J	1074	11/12	0.98	0.09	37,41,45,50	0

6.5 Other polymers ⓘ

There are no such residues in this entry.