



# wwPDB X-ray Structure Validation Summary Report ⓘ

Feb 1, 2016 – 01:15 AM GMT

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](mailto:validation@mail.wwpdb.org)  
A user guide is available at  
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>  
with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467  
Mogul : 1.7 (RC4), CSD as536be (2015)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20026688  
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)  
Refmac : 5.8.0135  
CCP4 : 6.5.0  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : trunk26865

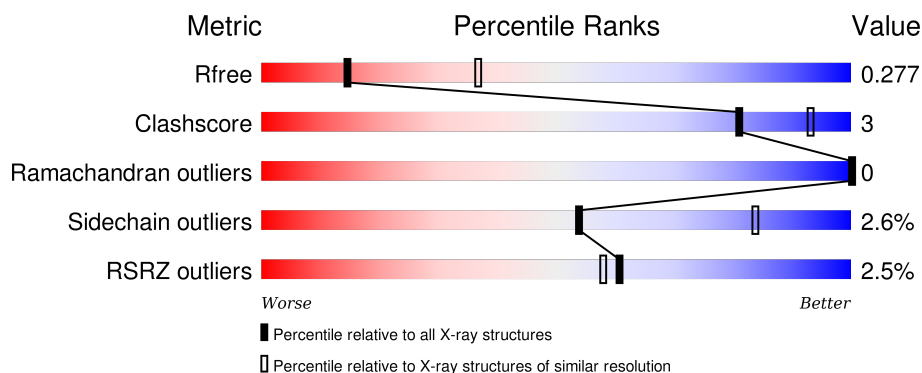
# 1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 2.94 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))
$R_{free}$	91344	2057 (2.98-2.90)
Clashscore	102246	2308 (2.98-2.90)
Ramachandran outliers	100387	2245 (2.98-2.90)
Sidechain outliers	100360	2247 (2.98-2.90)
RSRZ outliers	91569	2065 (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  $\geq 3$ , 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>90% 9% .</div> </div>
1	B	69	<div> <div></div> <div>91% 9%</div> </div>
1	C	69	<div> <div>4%</div> <div>93% 7%</div> </div>
1	D	69	<div> <div></div> <div>83% 16% .</div> </div>
1	E	69	<div> <div></div> <div>88% 10% .</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	GLC	A	1072	X	-	-	-
2	GLC	A	1075	X	-	-	-
2	GLC	B	1074	X	-	-	-
2	GLC	B	72	X	-	-	-
2	GLC	C	1076	X	-	-	-
2	GLC	E	1074	X	-	-	-
2	GLC	H	1074	X	-	-	-
2	GLC	J	1072	X	-	-	-
2	GLC	J	1075	X	-	-	-
4	GLC	B	1075	X	-	-	-
5	GLA	C	1070	-	-	-	X
6	GLA	D	1070	-	-	-	X
6	GLA	G	1070	-	-	-	X
6	GLA	I	1070	-	-	-	X
8	GLA	I	1073	X	-	-	-
8	GLA	I	1078	X	-	-	-

## 2 Entry composition [i](#)

There are 10 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 a polymer of unknown type called SUGAR (3-MER).

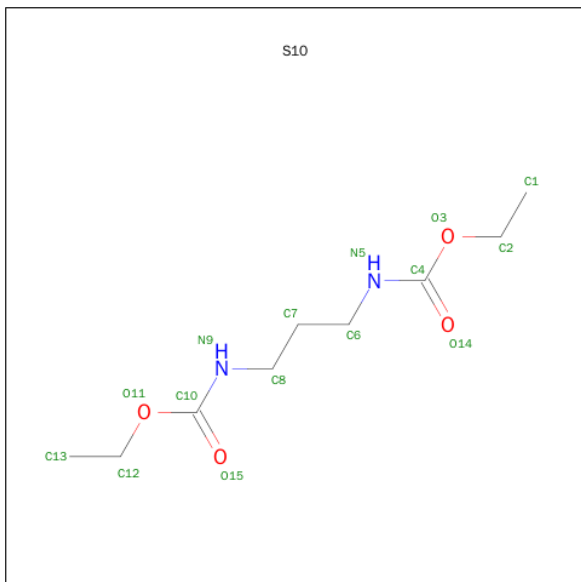
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	3	Total	C	O	0	0
			34	18	16		
2	A	3	Total	C	O	0	0
			34	18	16		
2	B	3	Total	C	O	0	0
			34	18	16		
2	B	3	Total	C	O	0	0
			34	18	16		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	C	3	Total	C	O	0	0
			34	18	16		
2	E	3	Total	C	O	0	0
			34	18	16		
2	H	3	Total	C	O	0	0
			34	18	16		
2	J	3	Total	C	O	0	0
			34	18	16		
2	J	3	Total	C	O	0	0
			34	18	16		

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



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

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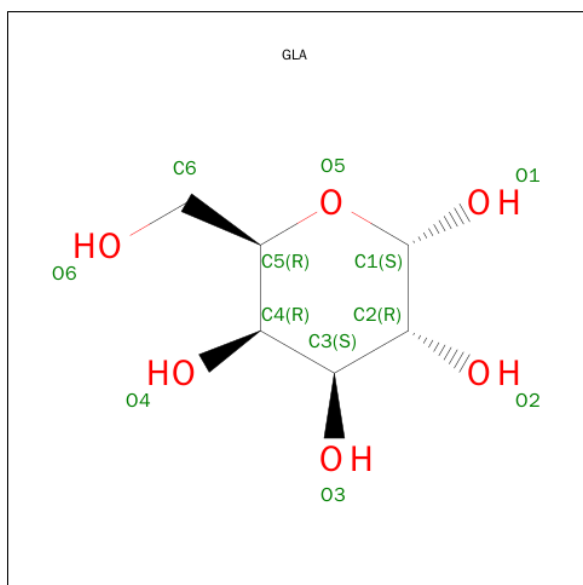
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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	J	1	Total	C	N	O	0	0
			15	9	2	4		
3	J	1	Total	C	O		0	0
			5	3	2			

- Molecule 4 is a polymer of unknown type called SUGAR (3-MER).

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	3	Total	C	O	0	0
			34	18	16		

- Molecule 5 is SUGAR (ALPHA D-GALACTOSE) (three-letter code: GLA) (formula: C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	C	1	Total	C	O	0	0
			11	6	5		

- Molecule 6 is a polymer of unknown type called SUGAR (2-MER).

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	C	2	Total	C	O	0	0
			22	12	10		
6	D	2	Total	C	O	0	0
			22	12	10		
6	E	2	Total	C	O	0	0
			22	12	10		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	G	2	Total	C	O	0	0
			22	12	10		
6	H	2	Total	C	O	0	0
			22	12	10		
6	I	2	Total	C	O	0	0
			22	12	10		

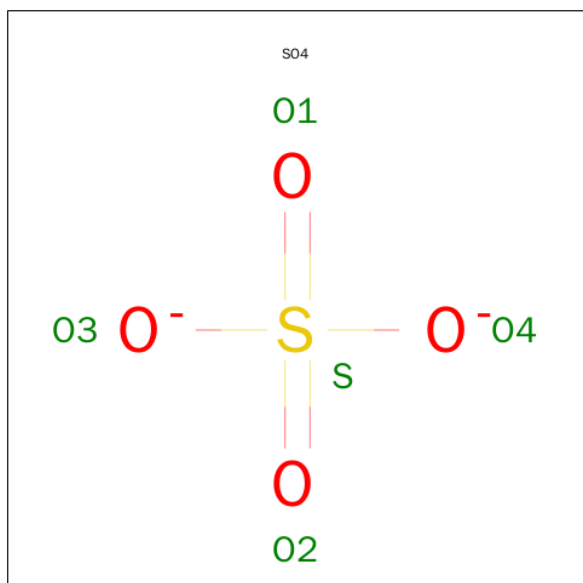
- Molecule 7 is a polymer of unknown type called SUGAR (3-MER).

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	D	3	Total	C	O	0	0
			34	18	16		
7	D	3	Total	C	O	0	0
			34	18	16		

- Molecule 8 is a polymer of unknown type called SUGAR (3-MER).

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
8	I	3	Total	C	O	0	0
			34	18	16		
8	I	3	Total	C	O	0	0
			34	18	16		

- Molecule 9 is SULFATE ION (three-letter code: SO4) (formula: O<sub>4</sub>S).



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

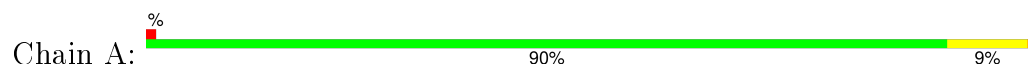
- Molecule 10 is water.

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
10	A	5	Total	O		0	0
			5	5			
10	B	1	Total	O		0	0
			1	1			
10	D	2	Total	O		0	0
			2	2			
10	E	2	Total	O		0	0
			2	2			
10	G	1	Total	O		0	0
			1	1			
10	I	2	Total	O		0	0
			2	2			
10	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 errors 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.

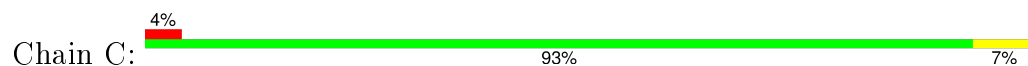
- Molecule 1: SHIGA-LIKE TOXIN 1 B SUBUNIT



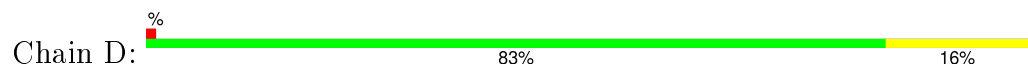
- Molecule 1: SHIGA-LIKE TOXIN 1 B SUBUNIT



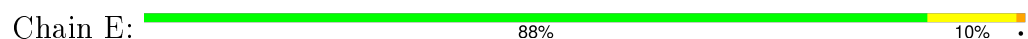
- Molecule 1: SHIGA-LIKE TOXIN 1 B SUBUNIT



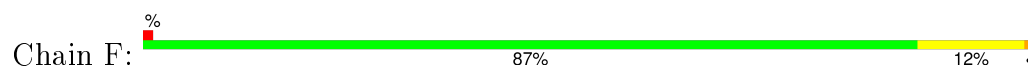
- Molecule 1: SHIGA-LIKE TOXIN 1 B SUBUNIT



- 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, $\alpha$ , $\beta$ , $\gamma$	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
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	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 (5.39%)	DCC
Wilson B-factor (Å <sup>2</sup> )	65.5	Xtriage
Anisotropy	0.048	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.35 , 53.4	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.51$ , $\langle L^2 \rangle = 0.35$	Xtriage
Outliers	0 of 20116 reflections	Xtriage
$F_o, F_c$ correlation	0.93	EDS
Total number of atoms	6136	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	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.*

<sup>1</sup>Intensities estimated from amplitudes.

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

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

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

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
2	A	2	0
2	B	2	0
2	C	1	0
2	E	1	0
2	H	1	0
2	J	2	0
4	B	1	0
8	I	2	0
All	All	12	0

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

5 of 12 chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	A	1072	GLC	C1
2	A	1075	GLC	C1
2	B	72	GLC	C1
2	B	1074	GLC	C1
4	B	1075	GLC	C1

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

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	I	540	0	527	1	0
1	J	540	0	527	3	0
2	A	68	0	58	1	0
2	B	68	0	59	1	0
2	C	34	0	29	1	0
2	E	34	0	29	0	0
2	H	34	0	30	0	0
2	J	68	0	58	2	0
3	A	15	0	14	0	0
3	C	15	0	16	0	0
3	D	15	0	16	2	0
3	E	5	0	4	0	0
3	F	9	0	9	1	0
3	I	15	0	14	0	0
3	J	20	0	19	2	0
4	B	34	0	28	1	0
5	C	11	0	10	1	0
6	C	22	0	17	1	0
6	D	22	0	19	1	0
6	E	22	0	18	0	0
6	G	22	0	19	0	0
6	H	22	0	19	2	0
6	I	22	0	19	1	0
7	D	68	0	58	2	0
8	I	68	0	58	8	0
9	I	5	0	0	0	0
10	A	5	0	0	0	0
10	B	1	0	0	0	0
10	D	2	0	0	0	0
10	E	2	0	0	0	0
10	G	1	0	0	0	0
10	I	2	0	0	0	0
10	J	5	0	0	0	0
All	All	6136	0	5890	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)
6:H:1070:GLA:C1	6:H:1071:GLA:H61	2.01	0.90
4:B:1077:GAL:H4	1:F:34:TRP:CD2	2.35	0.62
5:C:1070:GLA:O6	5:C:1070:GLA:O4	2.20	0.60
1:E:11:TYR:OH	1:E:28:GLU:OE2	2.14	0.56
3:J:1076:S10:H133	3:J:1076:S10:O15	2.09	0.52

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	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 [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	61/61 (100%)	58 (95%)	3 (5%)	31	65
1	B	61/61 (100%)	60 (98%)	1 (2%)	70	90
1	C	61/61 (100%)	60 (98%)	1 (2%)	70	90
1	D	61/61 (100%)	57 (93%)	4 (7%)	21	50
1	E	61/61 (100%)	60 (98%)	1 (2%)	70	90
1	F	61/61 (100%)	60 (98%)	1 (2%)	70	90
1	G	61/61 (100%)	60 (98%)	1 (2%)	70	90
1	H	61/61 (100%)	60 (98%)	1 (2%)	70	90
1	I	61/61 (100%)	60 (98%)	1 (2%)	70	90
1	J	61/61 (100%)	59 (97%)	2 (3%)	45	79
All	All	610/610 (100%)	594 (97%)	16 (3%)	54	84

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 ⓘ

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 ⓘ

54 carbohydrates 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	2	11,11,12	0.92	0	14,15,17	1.52	4 (28%)
2	GAL	A	1071	3,2	11,11,12	1.15	1 (9%)	14,15,17	3.57	8 (57%)
2	GLC	A	1072	2	12,12,12	1.19	2 (16%)	17,17,17	2.19	9 (52%)
2	GLA	A	1073	2	11,11,12	0.96	0	14,15,17	2.09	3 (21%)
2	GAL	A	1074	3,2	11,11,12	0.67	0	14,15,17	2.10	3 (21%)
2	GLC	A	1075	2	12,12,12	0.60	0	17,17,17	2.36	9 (52%)
2	GLA	B	1072	2	11,11,12	1.32	2 (18%)	14,15,17	2.31	6 (42%)
2	GAL	B	1073	2	11,11,12	1.55	2 (18%)	14,15,17	2.54	7 (50%)
2	GLC	B	1074	2	12,12,12	1.18	1 (8%)	17,17,17	1.68	6 (35%)
4	GLC	B	1075	4	12,12,12	0.89	0	17,17,17	2.92	8 (47%)
4	GLA	B	1076	4	11,11,12	1.11	0	14,15,17	3.77	8 (57%)
4	GAL	B	1077	3,4	11,11,12	1.16	1 (9%)	14,15,17	2.05	6 (42%)
2	GLA	B	70	2	11,11,12	1.71	2 (18%)	14,15,17	2.73	5 (35%)
2	GAL	B	71	2	11,11,12	1.47	3 (27%)	14,15,17	2.97	5 (35%)
2	GLC	B	72	2	12,12,12	1.03	1 (8%)	17,17,17	2.47	8 (47%)
6	GLA	C	1071	6	11,11,12	1.28	1 (9%)	14,15,17	2.24	7 (50%)
6	GLA	C	1072	3,6	11,11,12	1.30	2 (18%)	14,15,17	3.91	8 (57%)
2	GLA	C	1074	2	11,11,12	1.01	0	14,15,17	2.93	8 (57%)
2	GAL	C	1075	3,2	11,11,12	1.20	2 (18%)	14,15,17	3.21	9 (64%)
2	GLC	C	1076	2	12,12,12	0.96	0	17,17,17	2.81	5 (29%)
6	GLA	D	1070	6	11,11,12	1.16	0	14,15,17	3.06	8 (57%)
6	GLA	D	1071	6	11,11,12	2.70	7 (63%)	14,15,17	3.99	9 (64%)
7	GLA	D	1072	7	11,11,12	1.07	0	14,15,17	2.24	3 (21%)
7	GAL	D	1073	3,7	11,11,12	0.89	0	14,15,17	1.54	2 (14%)
7	BGC	D	1074	7	12,12,12	0.63	0	17,17,17	2.06	4 (23%)
7	GLA	D	1076	7	11,11,12	1.07	0	14,15,17	2.23	3 (21%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
7	GAL	D	1077	3,7	11,11,12	0.90	0	14,15,17	1.55	2 (14%)
7	BGC	D	1078	7	12,12,12	0.62	0	17,17,17	2.06	4 (23%)
6	GLA	E	1070	6	11,11,12	1.10	2 (18%)	14,15,17	2.73	3 (21%)
6	GLA	E	1071	3,6	11,11,12	1.80	3 (27%)	14,15,17	3.11	9 (64%)
2	GLA	E	1072	2	11,11,12	1.73	2 (18%)	14,15,17	2.43	5 (35%)
2	GAL	E	1073	3,2	11,11,12	1.11	1 (9%)	14,15,17	2.45	6 (42%)
2	GLC	E	1074	2	12,12,12	0.76	0	17,17,17	2.25	5 (29%)
6	GLA	G	1070	6	11,11,12	1.30	1 (9%)	14,15,17	2.88	7 (50%)
6	GLA	G	1071	6	11,11,12	0.96	0	14,15,17	3.20	8 (57%)
6	GLA	H	1070	6	11,11,12	1.24	1 (9%)	14,15,17	2.73	6 (42%)
6	GLA	H	1071	6	11,11,12	1.89	2 (18%)	14,15,17	2.85	6 (42%)
2	GLA	H	1072	2	11,11,12	0.96	1 (9%)	14,15,17	2.51	8 (57%)
2	GAL	H	1073	2	11,11,12	0.82	0	14,15,17	2.66	7 (50%)
2	GLC	H	1074	2	12,12,12	0.74	0	17,17,17	2.74	6 (35%)
6	GLA	I	1070	6	11,11,12	1.97	4 (36%)	14,15,17	3.67	7 (50%)
6	GLA	I	1071	6	11,11,12	1.90	1 (9%)	14,15,17	2.50	7 (50%)
8	GLA	I	1072	8	11,11,12	1.04	1 (9%)	14,15,17	1.60	2 (14%)
8	GLA	I	1073	8,3	11,11,12	0.76	0	14,15,17	1.09	0
8	BGC	I	1074	8	12,12,12	0.85	0	17,17,17	2.24	5 (29%)
8	GLA	I	1077	8	11,11,12	1.04	1 (9%)	14,15,17	1.60	2 (14%)
8	GLA	I	1078	8,3	11,11,12	0.76	0	14,15,17	1.09	0
8	BGC	I	1079	8	12,12,12	0.85	0	17,17,17	2.24	5 (29%)
2	GLA	J	1070	2	11,11,12	1.21	1 (9%)	14,15,17	2.53	4 (28%)
2	GAL	J	1071	3,2	11,11,12	1.44	1 (9%)	14,15,17	4.26	10 (71%)
2	GLC	J	1072	2	12,12,12	0.75	0	17,17,17	2.99	8 (47%)
2	GLA	J	1073	2	11,11,12	0.48	0	14,15,17	1.89	3 (21%)
2	GAL	J	1074	3,2	11,11,12	1.16	0	14,15,17	3.04	8 (57%)
2	GLC	J	1075	2	12,12,12	0.91	0	17,17,17	2.01	7 (41%)

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	2	-	0/2/19/22	0/1/1/1
2	GAL	A	1071	3,2	-	0/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GLC	A	1072	2	1/1/5/5	0/2/22/22	0/1/1/1
2	GLA	A	1073	2	-	0/2/19/22	0/1/1/1
2	GAL	A	1074	3,2	-	0/2/19/22	0/1/1/1
2	GLC	A	1075	2	1/1/5/5	0/2/22/22	0/1/1/1
2	GLA	B	1072	2	-	0/2/19/22	0/1/1/1
2	GAL	B	1073	2	-	0/2/19/22	0/1/1/1
2	GLC	B	1074	2	1/1/5/5	0/2/22/22	0/1/1/1
4	GLC	B	1075	4	1/1/5/5	0/2/22/22	0/1/1/1
4	GLA	B	1076	4	-	0/2/19/22	0/1/1/1
4	GAL	B	1077	3,4	-	0/2/19/22	0/1/1/1
2	GLA	B	70	2	-	0/2/19/22	0/1/1/1
2	GAL	B	71	2	-	0/2/19/22	0/1/1/1
2	GLC	B	72	2	1/1/5/5	0/2/22/22	0/1/1/1
6	GLA	C	1071	6	-	0/2/19/22	0/1/1/1
6	GLA	C	1072	3,6	-	0/2/19/22	0/1/1/1
2	GLA	C	1074	2	-	0/2/19/22	0/1/1/1
2	GAL	C	1075	3,2	-	0/2/19/22	0/1/1/1
2	GLC	C	1076	2	1/1/5/5	0/2/22/22	0/1/1/1
6	GLA	D	1070	6	-	0/2/19/22	0/1/1/1
6	GLA	D	1071	6	-	0/2/19/22	0/1/1/1
7	GLA	D	1072	7	-	0/2/19/22	0/1/1/1
7	GAL	D	1073	3,7	-	0/2/19/22	0/1/1/1
7	BGC	D	1074	7	-	0/2/22/22	0/1/1/1
7	GLA	D	1076	7	-	0/2/19/22	0/1/1/1
7	GAL	D	1077	3,7	-	0/2/19/22	0/1/1/1
7	BGC	D	1078	7	-	0/2/22/22	0/1/1/1
6	GLA	E	1070	6	-	0/2/19/22	0/1/1/1
6	GLA	E	1071	3,6	-	0/2/19/22	0/1/1/1
2	GLA	E	1072	2	-	0/2/19/22	0/1/1/1
2	GAL	E	1073	3,2	-	0/2/19/22	0/1/1/1
2	GLC	E	1074	2	1/1/5/5	0/2/22/22	0/1/1/1
6	GLA	G	1070	6	-	0/2/19/22	0/1/1/1
6	GLA	G	1071	6	-	0/2/19/22	0/1/1/1
6	GLA	H	1070	6	-	0/2/19/22	0/1/1/1
6	GLA	H	1071	6	-	0/2/19/22	0/1/1/1
2	GLA	H	1072	2	-	0/2/19/22	0/1/1/1
2	GAL	H	1073	2	-	0/2/19/22	0/1/1/1
2	GLC	H	1074	2	1/1/5/5	0/2/22/22	0/1/1/1
6	GLA	I	1070	6	-	0/2/19/22	0/1/1/1
6	GLA	I	1071	6	-	0/2/19/22	0/1/1/1
8	GLA	I	1072	8	-	0/2/19/22	0/1/1/1
8	GLA	I	1073	8,3	1/1/4/5	0/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
8	BGC	I	1074	8	-	0/2/22/22	0/1/1/1
8	GLA	I	1077	8	-	0/2/19/22	0/1/1/1
8	GLA	I	1078	8,3	1/1/4/5	0/2/19/22	0/1/1/1
8	BGC	I	1079	8	-	0/2/22/22	0/1/1/1
2	GLA	J	1070	2	-	0/2/19/22	0/1/1/1
2	GAL	J	1071	3,2	-	0/2/19/22	0/1/1/1
2	GLC	J	1072	2	1/1/5/5	0/2/22/22	0/1/1/1
2	GLA	J	1073	2	-	0/2/19/22	0/1/1/1
2	GAL	J	1074	3,2	-	0/2/19/22	0/1/1/1
2	GLC	J	1075	2	1/1/5/5	0/2/22/22	0/1/1/1

The worst 5 of 49 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	E	1072	GLA	C2-C3	-4.00	1.47	1.52
2	B	70	GLA	O3-C3	-3.10	1.35	1.43
6	C	1071	GLA	C2-C3	-2.98	1.48	1.52
2	A	1072	GLC	O4-C4	-2.30	1.37	1.43
2	B	1072	GLA	O5-C5	-2.10	1.38	1.43

The worst 5 of 311 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	1075	GLC	C1-O5-C5	-7.65	99.33	113.47
2	C	1076	GLC	O2-C2-C3	-7.25	94.02	110.34
2	C	1075	GAL	C1-C2-C3	-6.67	101.65	109.54
2	J	1072	GLC	C1-O5-C5	-6.53	101.39	113.47
2	J	1074	GAL	C1-O5-C5	-6.03	104.59	112.25

5 of 12 chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
8	I	1073	GLA	C1
8	I	1078	GLA	C1
2	A	1075	GLC	C1
2	B	1074	GLC	C1
2	J	1075	GLC	C1

There are no torsion outliers.

There are no ring outliers.

25 monomers are involved in 21 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1070	GLA	1	0
2	A	1071	GAL	1	0
2	B	1072	GLA	1	0
4	B	1077	GAL	1	0
6	C	1071	GLA	1	0
6	C	1072	GLA	1	0
2	C	1074	GLA	1	0
2	C	1075	GAL	1	0
6	D	1070	GLA	1	0
7	D	1073	GAL	1	0
7	D	1074	BGC	1	0
7	D	1077	GAL	1	0
7	D	1078	BGC	1	0
6	H	1070	GLA	2	0
6	H	1071	GLA	2	0
6	I	1070	GLA	1	0
6	I	1071	GLA	1	0
8	I	1072	GLA	3	0
8	I	1073	GLA	4	0
8	I	1074	BGC	1	0
8	I	1077	GLA	3	0
8	I	1078	GLA	4	0
8	I	1079	BGC	1	0
2	J	1071	GAL	1	0
2	J	1072	GLC	1	0

## 5.6 Ligand geometry [i](#)

10 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	$\# Z  > 2$
3	S10	A	1076	2,6	14,14,14	2.20	2 (14%)	15,15,15	2.43	7 (46%)
5	GLA	C	1070	-	11,11,12	1.88	3 (27%)	14,15,17	4.14	6 (42%)
3	S10	C	1073	2,6	14,14,14	2.76	3 (21%)	15,15,15	2.23	6 (40%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	S10	D	1075	7	14,14,14	2.02	4 (28%)	15,15,15	3.01	9 (60%)
3	S10	E	1075	2	4,4,14	3.72	1 (25%)	2,3,15	0.26	0
3	S10	F	1073	4	8,8,14	2.64	1 (12%)	8,8,15	3.81	4 (50%)
3	S10	I	1075	8	14,14,14	2.01	2 (14%)	15,15,15	2.72	6 (40%)
9	SO4	I	1076	-	4,4,4	0.20	0	6,6,6	0.46	0
3	S10	J	1076	2	14,14,14	2.14	2 (14%)	15,15,15	4.51	8 (53%)
3	S10	J	1077	2	4,4,14	2.28	1 (25%)	2,3,15	1.41	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
3	S10	A	1076	2,6	-	0/14/14/14	0/0/0/0
5	GLA	C	1070	-	-	0/2/19/22	0/1/1/1
3	S10	C	1073	2,6	-	0/14/14/14	0/0/0/0
3	S10	D	1075	7	-	0/14/14/14	0/0/0/0
3	S10	E	1075	2	-	0/2/2/14	0/0/0/0
3	S10	F	1073	4	-	0/7/7/14	0/0/0/0
3	S10	I	1075	8	-	0/14/14/14	0/0/0/0
9	SO4	I	1076	-	-	0/0/0/0	0/0/0/0
3	S10	J	1076	2	-	0/14/14/14	0/0/0/0
3	S10	J	1077	2	-	0/2/2/14	0/0/0/0

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

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	1075	S10	C7-C6	-2.74	1.39	1.51
3	D	1075	S10	C7-C8	-2.74	1.39	1.51
3	C	1073	S10	O14-C4	2.16	1.25	1.21
5	C	1070	GLA	C2-C3	2.28	1.55	1.52
5	C	1070	GLA	C4-C3	3.43	1.61	1.52

The worst 5 of 46 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	J	1076	S10	C6-N5-C4	-9.79	107.00	121.88
3	J	1076	S10	O14-C4-N5	-6.83	114.42	124.97
3	F	1073	S10	O11-C10-O15	-5.25	113.42	124.22
5	C	1070	GLA	O4-C4-C5	-4.79	96.56	109.24

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	1075	S10	O3-C4-O14	-4.58	114.79	124.22

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

5 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	C	1070	GLA	1	0
3	D	1075	S10	2	0
3	F	1073	S10	1	0
3	J	1076	S10	1	0
3	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 ⓘ

### 6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	69/69 (100%)	-0.18	1 (1%) 78 77	26, 31, 38, 41	0
1	B	69/69 (100%)	-0.26	0 100 100	26, 31, 38, 41	0
1	C	69/69 (100%)	-0.18	3 (4%) 39 35	27, 31, 38, 41	0
1	D	69/69 (100%)	-0.17	1 (1%) 78 77	27, 31, 38, 41	0
1	E	69/69 (100%)	-0.34	0 100 100	27, 31, 38, 41	0
1	F	69/69 (100%)	-0.10	1 (1%) 78 77	27, 31, 38, 41	0
1	G	69/69 (100%)	0.52	6 (8%) 13 9	27, 31, 38, 41	0
1	H	69/69 (100%)	0.48	5 (7%) 18 14	27, 31, 38, 41	0
1	I	69/69 (100%)	-0.18	0 100 100	27, 31, 38, 41	0
1	J	69/69 (100%)	-0.25	0 100 100	27, 31, 38, 41	0
All	All	690/690 (100%)	-0.07	17 (2%) 61 58	26, 31, 39, 41	0

The worst 5 of 17 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	G	26	ASP	4.0
1	H	1	THR	3.6
1	C	2	PRO	3.5
1	C	1	THR	3.1
1	G	60	GLY	3.1

### 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 ⓘ

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(Å <sup>2</sup> )	Q<0.9
6	GLA	I	1070	11/12	0.91	0.30	4.13	61,72,77,79	0
6	GLA	G	1070	11/12	0.85	0.41	3.56	87,90,91,92	0
6	GLA	D	1070	11/12	0.95	0.25	2.89	54,59,63,63	0
2	GLA	B	70	11/12	0.94	0.20	1.64	41,53,60,67	0
2	GLC	A	1075	12/12	0.98	0.19	1.17	42,44,49,49	0
6	GLA	H	1070	11/12	0.83	0.25	0.83	85,97,98,99	0
2	GLC	B	72	12/12	0.92	0.20	0.76	55,62,64,65	0
2	GLC	E	1074	12/12	0.97	0.21	0.41	42,48,52,54	0
6	GLA	E	1070	11/12	0.97	0.18	0.32	61,66,67,69	0
2	GLA	B	1072	11/12	0.96	0.15	0.11	48,52,54,55	0
8	GLA	I	1078	11/12	0.88	0.18	-0.16	71,75,77,80	11
2	GLA	A	1073	11/12	0.98	0.16	-0.38	44,52,56,57	0
8	GLA	I	1073	11/12	0.88	0.16	-0.43	71,75,77,80	11
2	GAL	H	1073	11/12	0.90	0.24	-0.49	99,101,103,104	0
2	GLA	H	1072	11/12	0.91	0.18	-0.67	93,97,99,100	0
2	GAL	B	1073	11/12	0.91	0.15	-0.81	55,59,62,62	0
2	GLA	E	1072	11/12	0.97	0.12	-0.95	40,42,50,52	0
2	GLA	J	1070	11/12	0.97	0.13	-0.99	39,46,50,51	0
2	GAL	C	1075	11/12	0.93	0.15	-1.02	66,70,74,76	0
8	GLA	I	1077	11/12	0.97	0.15	-1.10	67,68,70,70	11
2	GLA	J	1073	11/12	0.97	0.12	-1.16	34,44,51,52	0
6	GLA	C	1072	11/12	0.94	0.10	-1.27	58,59,64,70	0
4	GLA	B	1076	11/12	0.95	0.13	-1.29	51,54,56,58	0
2	GLC	J	1075	12/12	0.97	0.13	-1.53	30,37,41,42	0
2	GAL	E	1073	11/12	0.97	0.10	-1.64	30,40,44,46	0
7	GLA	D	1076	11/12	0.98	0.15	-1.67	36,40,44,44	11
8	GLA	I	1072	11/12	0.97	0.14	-1.75	67,68,70,70	11
7	GAL	D	1073	11/12	0.95	0.11	-1.81	36,45,51,54	11
2	GAL	J	1074	11/12	0.98	0.09	-1.84	37,41,45,50	0
7	GLA	D	1072	11/12	0.98	0.14	-1.96	36,40,44,44	11
6	GLA	C	1071	11/12	0.98	0.11	-2.12	44,53,56,57	0
7	GAL	D	1077	11/12	0.94	0.09	-2.13	36,45,51,54	11
2	GLA	A	1070	11/12	0.98	0.10	-2.24	37,40,42,43	0
2	GAL	A	1074	11/12	0.96	0.11	-2.29	48,49,52,52	0
4	GLC	B	1075	12/12	0.93	0.14	-2.53	49,55,56,58	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors( $\text{\AA}^2$ )	Q<0.9
2	GLA	C	1074	11/12	0.98	0.10	-3.13	60,66,70,70	0
2	GLC	H	1074	12/12	0.82	0.39	-	96,103,105,106	0
6	GLA	I	1071	11/12	0.87	0.31	-	72,80,84,84	0
4	GAL	B	1077	11/12	0.94	0.15	-	42,56,58,62	0
8	BGC	I	1074	12/12	0.85	0.34	-	76,78,80,81	12
7	BGC	D	1078	12/12	0.91	0.22	-	46,48,50,51	12
6	GLA	D	1071	11/12	0.85	0.31	-	62,64,69,69	0
6	GLA	E	1071	11/12	0.88	0.20	-	56,60,65,65	0
2	GLC	B	1074	12/12	0.91	0.21	-	55,67,71,72	0
7	BGC	D	1074	12/12	0.90	0.20	-	46,48,50,51	12
2	GLC	C	1076	12/12	0.93	0.37	-	75,80,84,85	0
6	GLA	H	1071	11/12	0.75	0.36	-	98,103,105,106	0
2	GAL	A	1071	11/12	0.96	0.17	-	37,43,51,51	0
2	GLC	A	1072	12/12	0.96	0.25	-	38,49,51,54	0
8	BGC	I	1079	12/12	0.85	0.35	-	76,78,80,81	12
2	GAL	J	1071	11/12	0.98	0.14	-	43,48,52,54	0
6	GLA	G	1071	11/12	0.88	0.37	-	79,85,88,90	0
2	GAL	B	71	11/12	0.95	0.21	-	48,59,63,63	0
2	GLC	J	1072	12/12	0.97	0.12	-	27,43,47,51	0

## 6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors( $\text{\AA}^2$ )	Q<0.9
5	GLA	C	1070	11/12	0.86	0.31	3.95	57,67,73,74	0
3	S10	J	1076	15/15	0.98	0.12	-1.76	42,57,59,59	0
3	S10	E	1075	5/15	0.92	0.17	-	40,44,51,53	0
3	S10	I	1075	15/15	0.71	0.31	-	76,77,79,79	15
3	S10	F	1073	9/15	0.91	0.34	-	55,65,73,78	0
3	S10	J	1077	5/15	0.93	0.36	-	59,60,62,63	0
3	S10	A	1076	15/15	0.90	0.43	-	45,68,78,78	0
3	S10	D	1075	15/15	0.94	0.17	-	58,59,60,60	15
3	S10	C	1073	15/15	0.80	0.31	-	74,79,87,87	0
9	SO4	I	1076	5/5	0.95	0.14	-	73,74,75,75	5

## 6.5 Other polymers [i](#)

There are no such residues in this entry.