



# Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 07:01 AM GMT

PDB ID : 2Z8F  
Title : The galacto-N-biose-/lacto-N-biose I-binding protein (GL-BP) of the ABC transporter from Bifidobacterium longum in complex with lacto-N-tetraose  
Authors : Suzuki, R.; Wada, J.; Katayama, T.; Fushinobu, S.  
Deposited on : 2007-09-05  
Resolution : 1.65 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](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

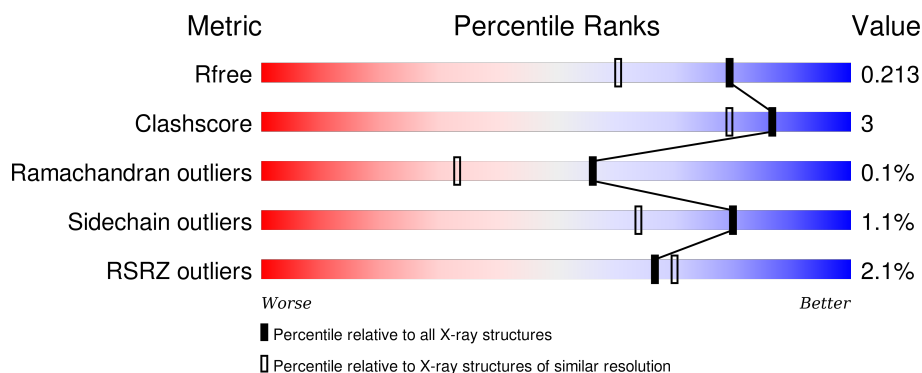
# 1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 1.65 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	1226 (1.66-1.66)
Clashscore	102246	1323 (1.66-1.66)
Ramachandran outliers	100387	1295 (1.66-1.66)
Sidechain outliers	100360	1295 (1.66-1.66)
RSRZ outliers	91569	1227 (1.66-1.66)

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	412	<div> <div></div> <div>93%</div> <div>• •</div> </div>
1	B	412	<div> <div>3%</div> <div>92%</div> <div>5% •</div> </div>

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	BGC	B	4	-	-	-	X

## 2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 7119 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 Galacto-N-biose/lacto-N-biose I transporter substrate-binding protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	401	Total	C	N	O	S	0	0	0
			3015	1906	486	612	11			
1	B	399	Total	C	N	O	S	0	0	0
			3004	1901	484	608	11			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	27	MET	-	INITIATING METHIONINE	UNP A8W790
B	27	MET	-	INITIATING METHIONINE	UNP A8W790

- Molecule 2 is a polymer of unknown type called SUGAR (4-MER).

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	4	Total	C	N	O	0	0
			48	26	1	21		
2	B	4	Total	C	N	O	0	0
			48	26	1	21		

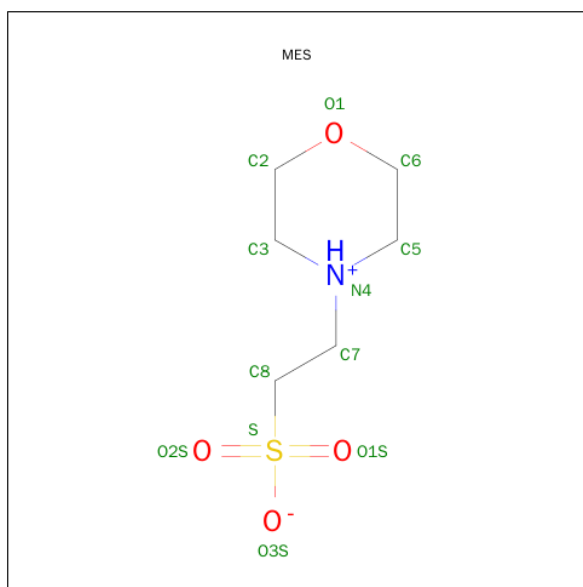
- Molecule 3 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	B	3	Total	Zn	0	0
			3	3		
3	A	2	Total	Zn	0	0
			2	2		

- Molecule 4 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total Na 1 1	0	0
4	A	2	Total Na 2 2	0	0

- Molecule 5 is 2-(N-MORPHOLINO)-ETHANESULFONIC ACID (three-letter code: MES) (formula: C<sub>6</sub>H<sub>13</sub>NO<sub>4</sub>S).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C N O S 12 6 1 4 1	0	0
5	B	1	Total C N O S 12 6 1 4 1	0	0

- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	504	Total O 504 504	0	0
6	B	468	Total O 468 468	0	0

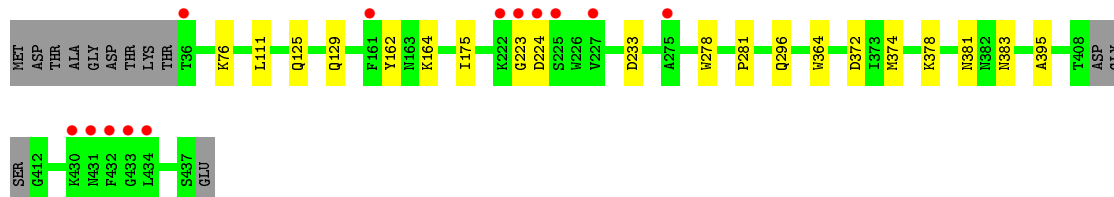
### 3 Residue-property plots [i](#)

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: Galacto-N-biose/lacto-N-biose I transporter substrate-binding protein



- Molecule 1: Galacto-N-biose/lacto-N-biose I transporter substrate-binding protein



## 4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	106.15Å 143.05Å 113.74Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	30.27 – 1.65 30.27 – 1.65	Depositor EDS
% Data completeness (in resolution range)	98.9 (30.27-1.65) 98.9 (30.27-1.65)	Depositor EDS
$R_{merge}$	0.06	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.60 (at 1.65Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, $R_{free}$	0.179 , 0.214 0.178 , 0.213	Depositor DCC
$R_{free}$ test set	5137 reflections (5.26%)	DCC
Wilson B-factor (Å <sup>2</sup> )	21.9	Xtriage
Anisotropy	0.177	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.35 , 44.0	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtriage
Outliers	0 of 103006 reflections	Xtriage
$F_o, F_c$ correlation	0.97	EDS
Total number of atoms	7119	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	25.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.11% 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

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, BGC, NAG, NA, GAL, MES

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	0.59	0/3085	0.64	0/4190
1	B	0.54	0/3073	0.62	0/4173
All	All	0.57	0/6158	0.63	0/8363

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

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	3015	0	2878	16	0
1	B	3004	0	2872	15	1
2	A	48	0	42	0	0
2	B	48	0	42	1	0
3	A	2	0	0	0	0
3	B	3	0	0	0	0
4	A	2	0	0	0	0
4	B	1	0	0	1	0
5	A	12	0	12	1	0
5	B	12	0	12	0	0
6	A	504	0	0	6	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	B	468	0	0	8	2
All	All	7119	0	5858	32	2

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

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:364:TRP:HZ2	6:B:1131:HOH:O	1.32	1.10
1:A:181:GLU:OE2	6:A:789:HOH:O	1.74	1.04
1:B:364:TRP:CZ2	6:B:1131:HOH:O	2.13	0.95
1:A:416:ASP:HB3	6:A:910:HOH:O	1.67	0.94
1:B:372:ASP:HB3	6:B:1038:HOH:O	1.74	0.86
4:B:16:NA:NA	6:B:1325:HOH:O	1.58	0.77
1:A:233:ASP:OD1	6:A:545:HOH:O	2.04	0.76
1:A:174:GLU:OE1	6:A:789:HOH:O	2.06	0.73
1:A:47:MET:CE	1:A:91:LEU:HD21	2.19	0.72
1:A:176:PRO:HB3	1:A:181:GLU:HG2	1.81	0.61
1:A:406:LYS:N	1:A:406:LYS:HD3	2.16	0.61
1:B:162:TYR:CE2	1:B:175:ILE:HD11	2.37	0.60
1:A:47:MET:HE1	1:A:91:LEU:CD2	2.32	0.58
1:A:47:MET:CE	1:A:91:LEU:CD2	2.83	0.56
1:A:47:MET:HE3	1:A:91:LEU:HD21	1.88	0.56
1:B:76:LYS:NZ	6:B:1139:HOH:O	2.20	0.55
6:A:789:HOH:O	1:B:233:ASP:OD2	2.19	0.51
1:B:372:ASP:CG	6:B:1287:HOH:O	2.47	0.51
1:B:395:ALA:HA	6:B:895:HOH:O	2.15	0.46
1:B:372:ASP:OD2	6:B:1287:HOH:O	2.21	0.45
1:A:133:ASP:OD2	5:A:21:MES:H21	2.18	0.44
1:B:125:GLN:O	1:B:129:GLN:NE2	2.50	0.44
1:B:281:PRO:HB3	1:B:364:TRP:CZ2	2.53	0.44
1:B:162:TYR:CZ	1:B:175:ILE:HD11	2.52	0.44
1:A:139:TYR:O	1:A:142:VAL:HG22	2.17	0.43
1:A:47:MET:HE1	1:A:91:LEU:HD23	2.00	0.43
1:A:143:GLN:HA	1:A:147:LYS:O	2.19	0.42
1:B:164:LYS:HB2	1:B:296:GLN:HG3	2.02	0.42
1:A:249:LYS:N	1:A:249:LYS:HD2	2.35	0.41
1:B:374:MET:O	1:B:378:LYS:HG2	2.20	0.41
1:A:132:ASN:HB2	6:A:518:HOH:O	2.20	0.41
1:B:278:TRP:CH2	2:B:2:NAG:H3	2.56	0.40

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:B:1209:HOH:O	6:B:1209:HOH:O[4_556]	2.06	0.14
1:B:372:ASP:OD2	6:B:1248:HOH:O[4_556]	2.18	0.02

## 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	399/412 (97%)	392 (98%)	7 (2%)	0	100	100
1	B	395/412 (96%)	387 (98%)	7 (2%)	1 (0%)	46	24
All	All	794/824 (96%)	779 (98%)	14 (2%)	1 (0%)	56	33

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	223	GLY

### 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	312/321 (97%)	309 (99%)	3 (1%)	82	68
1	B	311/321 (97%)	307 (99%)	4 (1%)	76	57
All	All	623/642 (97%)	616 (99%)	7 (1%)	80	64

All (7) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	174	GLU
1	A	406	LYS
1	A	432	PHE
1	B	111	LEU
1	B	224	ASP
1	B	381	ASN
1	B	383	ASN

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	132	ASN
1	A	381	ASN
1	A	382	ASN
1	B	132	ASN
1	B	381	ASN
1	B	382	ASN

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates ⓘ

8 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	GAL	A	1	2	11,11,12	0.55	0	14,15,17	0.94	1 (7%)
2	NAG	A	2	2	14,14,15	0.65	0	15,19,21	1.73	5 (33%)
2	GAL	A	3	2	11,11,12	0.76	0	14,15,17	1.94	4 (28%)
2	BGC	A	4	2	12,12,12	0.52	0	17,17,17	0.71	0
2	GAL	B	1	2	11,11,12	0.70	0	14,15,17	0.80	0
2	NAG	B	2	2	14,14,15	0.54	0	15,19,21	1.25	2 (13%)
2	GAL	B	3	2	11,11,12	0.58	0	14,15,17	2.31	3 (21%)
2	BGC	B	4	2	12,12,12	0.68	0	17,17,17	1.07	2 (11%)

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	GAL	A	1	2	-	0/2/19/22	0/1/1/1
2	NAG	A	2	2	-	0/6/23/26	0/1/1/1
2	GAL	A	3	2	-	0/2/19/22	0/1/1/1
2	BGC	A	4	2	-	0/2/22/22	0/1/1/1
2	GAL	B	1	2	-	0/2/19/22	0/1/1/1
2	NAG	B	2	2	-	0/6/23/26	0/1/1/1
2	GAL	B	3	2	-	0/2/19/22	0/1/1/1
2	BGC	B	4	2	-	0/2/22/22	0/1/1/1

There are no bond length outliers.

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	3	GAL	O3-C3-C2	-3.74	103.24	110.00
2	A	2	NAG	O3-C3-C2	-3.65	101.88	109.11
2	A	2	NAG	C2-N2-C7	-3.07	119.09	123.04
2	B	2	NAG	O3-C3-C2	-2.71	103.74	109.11
2	B	3	GAL	O3-C3-C2	-2.54	105.42	110.00
2	B	4	BGC	O5-C1-C2	-2.03	106.56	109.80
2	A	2	NAG	O5-C5-C6	2.03	111.75	107.35
2	A	1	GAL	C1-O5-C5	2.05	114.85	112.25
2	A	3	GAL	O3-C3-C4	2.08	115.01	110.34
2	B	2	NAG	C1-O5-C5	2.11	114.93	112.25
2	A	2	NAG	O3-C3-C4	2.13	115.14	110.34
2	A	2	NAG	O7-C7-N2	2.20	126.35	121.86

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	4	BGC	O5-C5-C4	2.60	114.56	109.68
2	A	3	GAL	C1-C2-C3	3.47	113.64	109.54
2	A	3	GAL	C1-O5-C5	3.89	117.18	112.25
2	B	3	GAL	C1-O5-C5	5.10	118.72	112.25
2	B	3	GAL	C1-C2-C3	5.60	116.17	109.54

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	2	NAG	1	0

## 5.6 Ligand geometry [i](#)

Of 10 ligands modelled in this entry, 8 are monoatomic - leaving 2 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	$\# Z  > 2$
5	MES	A	21	-	11,12,12	0.64	0	14,16,16	2.94	3 (21%)
5	MES	B	22	-	11,12,12	0.65	0	14,16,16	2.75	4 (28%)

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
5	MES	A	21	-	-	0/6/14/14	0/1/1/1
5	MES	B	22	-	-	0/6/14/14	0/1/1/1

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	B	22	MES	O2S-S-C8	2.33	108.89	106.91
5	B	22	MES	C7-N4-C3	3.47	120.17	111.27
5	A	21	MES	C7-N4-C5	4.13	121.87	111.27
5	B	22	MES	O1S-S-C8	4.56	110.79	106.91
5	A	21	MES	C5-N4-C3	6.15	122.23	108.90
5	A	21	MES	O1S-S-C8	7.29	113.13	106.91
5	B	22	MES	C5-N4-C3	7.66	125.48	108.90

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	21	MES	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	401/412 (97%)	-0.14	4 (0%) 84 86	15, 21, 30, 40	0
1	B	399/412 (96%)	0.10	13 (3%) 50 51	17, 24, 37, 57	0
All	All	800/824 (97%)	-0.02	17 (2%) 67 70	15, 23, 34, 57	0

All (17) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	224	ASP	5.0
1	B	223	GLY	3.8
1	B	434	LEU	3.4
1	B	222	LYS	3.1
1	B	225	SER	3.0
1	A	98	GLY	2.9
1	A	99	GLU	2.7
1	B	431	ASN	2.7
1	B	433	GLY	2.6
1	B	36	THR	2.3
1	B	161	PHE	2.3
1	B	227	VAL	2.2
1	B	430	LYS	2.2
1	A	276	ALA	2.2
1	B	275	ALA	2.1
1	B	432	PHE	2.1
1	A	96	LYS	2.1

### 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
2	BGC	B	4	12/12	0.63	0.19	3.46	39,43,48,49	0
2	BGC	A	4	12/12	0.89	0.11	0.79	23,28,31,33	0
2	GAL	B	3	11/12	0.82	0.14	0.72	21,31,36,38	0
2	GAL	B	1	11/12	0.98	0.14	0.62	16,17,18,18	0
2	GAL	A	1	11/12	0.96	0.13	0.53	14,15,16,17	0
2	NAG	B	2	14/15	0.96	0.13	0.04	15,17,20,24	0
2	NAG	A	2	14/15	0.96	0.10	-0.38	15,16,21,21	0
2	GAL	A	3	11/12	0.94	0.07	-0.58	17,21,24,26	0

### 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. 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
5	MES	B	22	12/12	0.89	0.13	1.43	29,32,39,40	0
5	MES	A	21	12/12	0.87	0.12	0.83	38,41,45,46	0
3	ZN	B	14	1/1	0.98	0.05	-0.97	24,24,24,24	0
3	ZN	B	12	1/1	0.99	0.04	-1.17	23,23,23,23	0
3	ZN	A	13	1/1	0.99	0.04	-1.22	23,23,23,23	0
3	ZN	A	11	1/1	0.99	0.04	-1.26	22,22,22,22	0
4	NA	A	18	1/1	0.99	0.08	-	14,14,14,14	0
3	ZN	B	15	1/1	1.00	0.03	-	17,17,17,17	1
4	NA	A	17	1/1	0.97	0.10	-	14,14,14,14	0
4	NA	B	16	1/1	0.99	0.07	-	15,15,15,15	0

### 6.5 Other polymers ⓘ

There are no such residues in this entry.