



# Full wwPDB X-ray Structure Validation Report ⓘ

Oct 18, 2018 – 01:13 PM EDT

PDB ID : 5W6S  
Title : Crystal structure of Bacteriophage CBA120 tailspike protein 2 enzymatically active domain (TSP2dN, orf211) complex with Escherichia Coli O157-antigen  
Authors : Plattner, M.; Shneider, M.M.; Leiman, P.G.  
Deposited on : 2017-06-16  
Resolution : 2.26 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

<https://www.wwpdb.org/validation/2017/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 : 1.7.3 (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

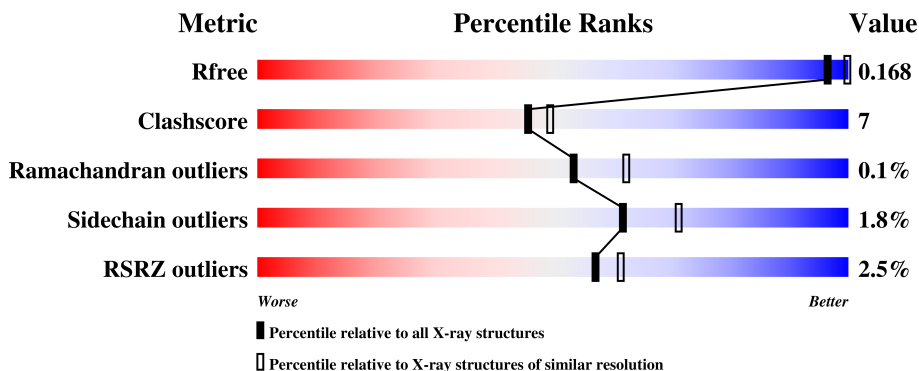
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

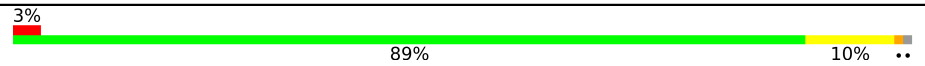
The reported resolution of this entry is 2.26 Å.

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	1178 (2.26-2.26)
Clashscore	122126	1286 (2.26-2.26)
Ramachandran outliers	120053	1253 (2.26-2.26)
Sidechain outliers	120020	1254 (2.26-2.26)
RSRZ outliers	108989	1158 (2.26-2.26)

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	680	

## 2 Entry composition [i](#)

There are 13 unique types of molecules in this entry. The entry contains 5764 atoms, of which 6 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.

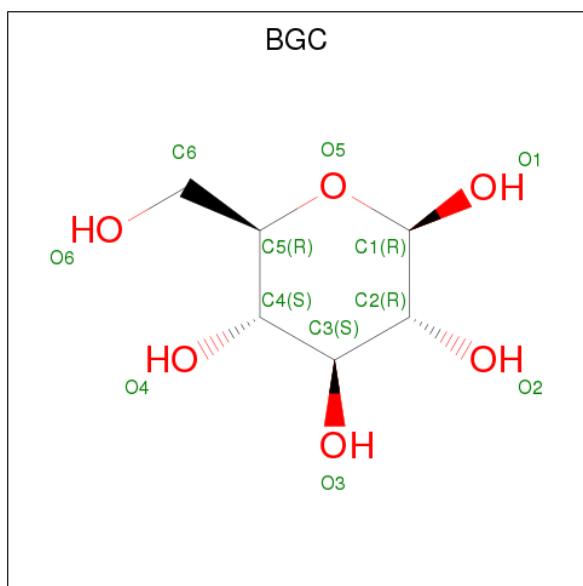
- Molecule 1 is a protein called tailspike protein 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	676	5059	3165	868	1005	21	0	1	0

There are 4 discrepancies between the modelled and reference sequences:

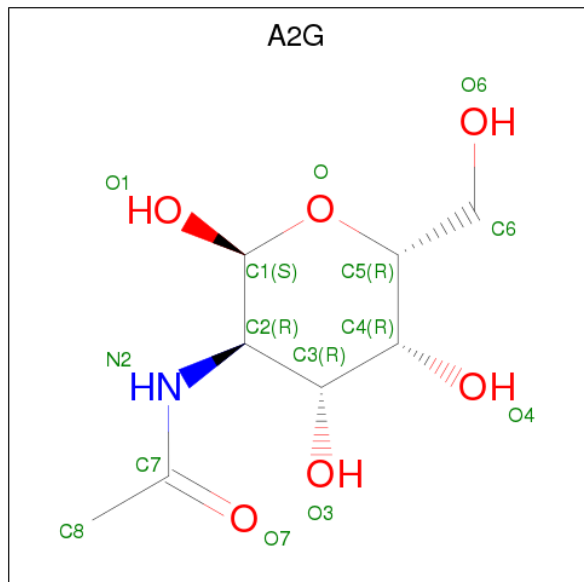
Chain	Residue	Modelled	Actual	Comment	Reference
A	242	GLY	-	expression tag	UNP G3M190
A	243	SER	-	expression tag	UNP G3M190
A	244	GLY	-	expression tag	UNP G3M190
A	245	SER	-	expression tag	UNP G3M190

- Molecule 2 is BETA-D-GLUCOSE (three-letter code: BGC) (formula: C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>).



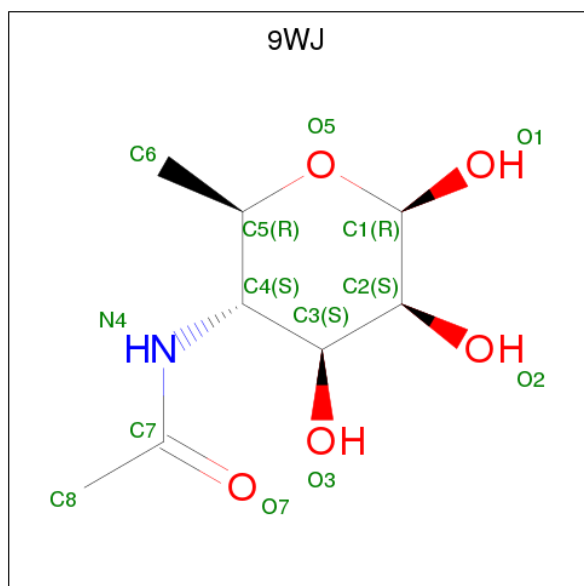
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
2	A	1	11	6	5	0	0

- Molecule 3 is N-ACETYL-2-DEOXY-2-AMINO-GALACTOSE (three-letter code: A2G) (formula:  $C_8H_{15}NO_6$ ).



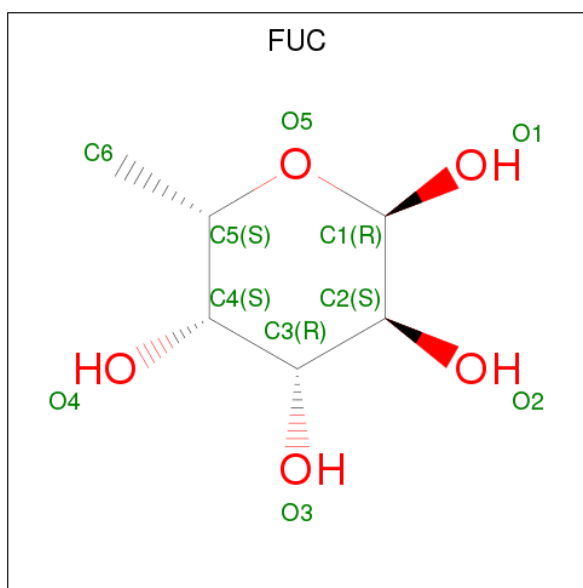
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
3	A	1	14	8	1	5	0	0

- Molecule 4 is 4-(acetylamino)-4,6-dideoxy-beta-D-mannopyranose (three-letter code: 9WJ) (formula:  $C_8H_{15}NO_5$ ).



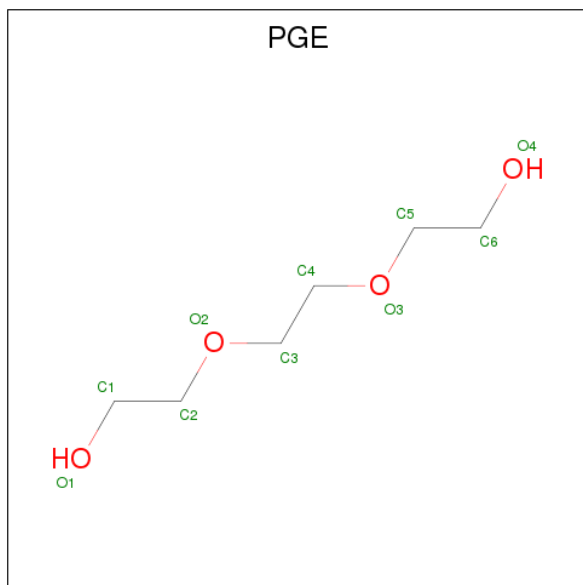
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
4	A	1	13	8	1	4	0	0

- Molecule 5 is ALPHA-L-FUCOSE (three-letter code: FUC) (formula: C<sub>6</sub>H<sub>12</sub>O<sub>5</sub>).



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

- Molecule 6 is TRIETHYLENE GLYCOL (three-letter code: PGE) (formula: C<sub>6</sub>H<sub>14</sub>O<sub>4</sub>).



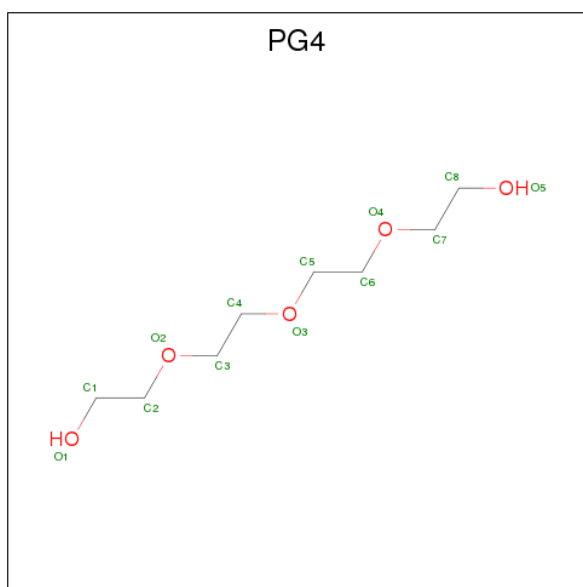
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total	C	O	0	0
			10	6	4		
6	A	1	Total	C	O	0	0
			10	6	4		

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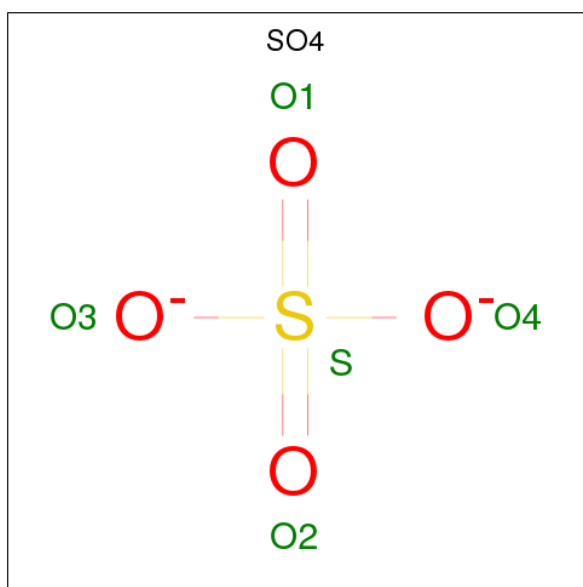
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total	C	O	0	0
			10	6	4		
6	A	1	Total	C	O	0	0
			10	6	4		
6	A	1	Total	C	O	0	0
			10	6	4		

- Molecule 7 is TETRAETHYLENE GLYCOL (three-letter code: PG4) (formula: C<sub>8</sub>H<sub>18</sub>O<sub>5</sub>).



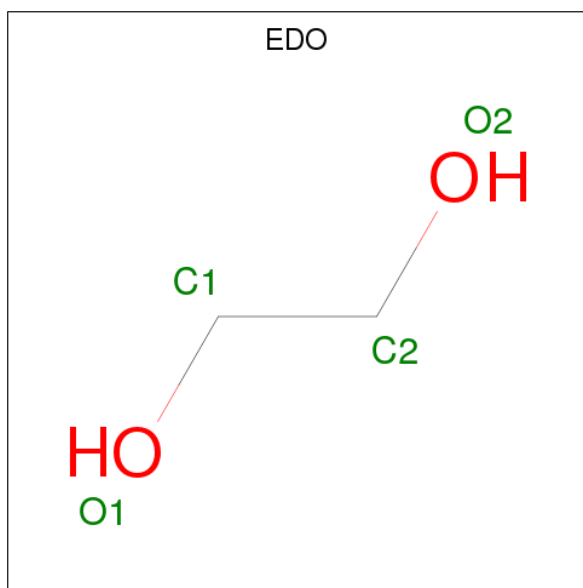
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	A	1	Total	C	O	0	0
			13	8	5		
7	A	1	Total	C	O	0	0
			13	8	5		

- Molecule 8 is SULFATE ION (three-letter code: SO4) (formula: O<sub>4</sub>S).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	1	Total O S 5 4 1	0	0

- Molecule 9 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula:  $C_2H_6O_2$ ).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
9	A	1	Total C O 4 2 2	0	0
9	A	1	Total C O 4 2 2	0	0
9	A	1	Total C O 4 2 2	0	0

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

- Molecule 10 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
10	A	1	Total Na 1 1	0	0

- Molecule 11 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
11	A	1	Total K 1 1	0	0

- Molecule 12 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
12	A	3	Total Cl 3 3	0	0

- Molecule 13 is water.

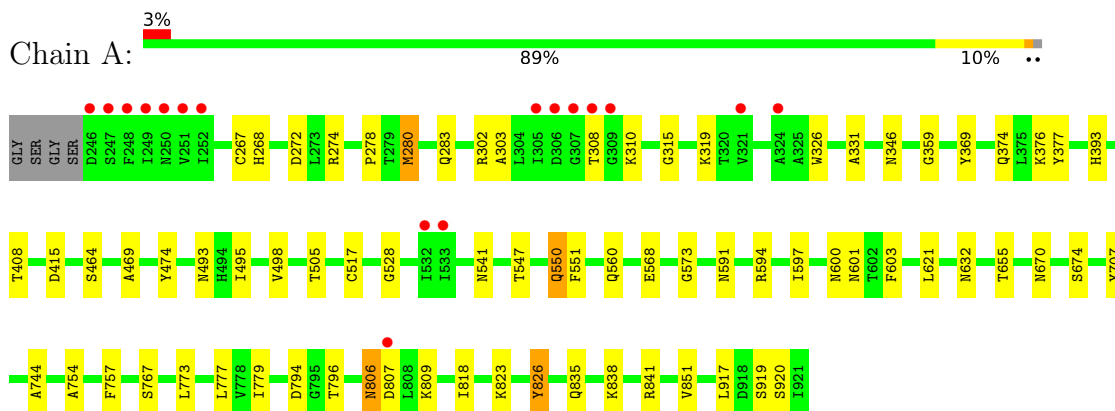
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
13	A	540	Total O 540 540	0	0



### 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 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: tailspike protein 2



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 43 3 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	185.23Å 185.23Å 185.23Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.50 – 2.26 49.50 – 2.26	Depositor EDS
% Data completeness (in resolution range)	99.0 (49.50-2.26) 99.3 (49.50-2.26)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.61 (at 2.27Å)	Xtrriage
Refinement program	PHENIX (dev_2666: ???)	Depositor
R, $R_{free}$	0.133 , 0.164 0.136 , 0.168	Depositor DCC
$R_{free}$ test set	2535 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	32.2	Xtrriage
Anisotropy	0.000	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.34 , 42.4	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.47$ , $\langle L^2 \rangle = 0.29$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.97	EDS
Total number of atoms	5764	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	37.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.22% 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, 0.333 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: BGC, CL, NA, K, EDO, PG4, PGE, FUC, A2G, 9WJ, 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	0.33	0/5156	0.53	0/7014

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	5059	0	4914	59	0
2	A	11	0	10	0	0
3	A	14	0	12	0	0
4	A	13	0	0	0	0
5	A	11	0	11	1	0
6	A	50	0	70	10	0
7	A	26	0	36	6	0
8	A	5	0	0	1	0
9	A	24	6	36	6	0
10	A	1	0	0	0	0
11	A	1	0	0	0	0
12	A	3	0	0	2	0
13	A	540	0	0	23	2
All	All	5758	6	5089	71	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 7.

All (71) 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)
9:A:1013:EDO:O2	13:A:1101:HOH:O	1.79	0.98
9:A:1017:EDO:O2	13:A:1103:HOH:O	1.97	0.81
6:A:1006:PGE:H22	13:A:1481:HOH:O	1.79	0.80
6:A:1009:PGE:O1	13:A:1104:HOH:O	1.99	0.79
1:A:346:ASN:HB2	13:A:1417:HOH:O	1.85	0.76
8:A:1012:SO4:O1	13:A:1106:HOH:O	2.03	0.74
1:A:600:ASN:HD22	7:A:1011:PG4:H72	1.52	0.74
1:A:268:HIS:NE2	12:A:1023:CL:CL	2.58	0.72
1:A:807:ASP:OD1	13:A:1107:HOH:O	2.06	0.72
1:A:796:THR:HG22	13:A:1109:HOH:O	1.88	0.71
1:A:806:ASN:ND2	13:A:1111:HOH:O	2.23	0.70
1:A:601:ASN:HD22	7:A:1011:PG4:H61	1.65	0.59
1:A:670:ASN:OD1	6:A:1006:PGE:H12	2.04	0.57
1:A:757:PHE:HE1	1:A:779:ILE:HD13	1.68	0.57
6:A:1005:PGE:H22	13:A:1483:HOH:O	2.03	0.57
1:A:331:ALA:HB1	13:A:1491:HOH:O	2.03	0.57
1:A:376:LYS:HD3	13:A:1600:HOH:O	2.04	0.56
1:A:310:LYS:NZ	13:A:1115:HOH:O	2.33	0.56
6:A:1008:PGE:H52	13:A:1576:HOH:O	2.05	0.55
6:A:1009:PGE:H42	13:A:1585:HOH:O	2.07	0.55
1:A:376:LYS:NZ	13:A:1105:HOH:O	2.02	0.54
5:A:1004:FUC:H1	13:A:1182:HOH:O	2.09	0.52
1:A:568:GLU:HA	1:A:591:ASN:O	2.09	0.52
1:A:377:TYR:CD1	6:A:1008:PGE:H5	2.44	0.52
1:A:838:LYS:NZ	7:A:1011:PG4:H11	2.25	0.52
1:A:274:ARG:HD2	13:A:1496:HOH:O	2.09	0.52
1:A:600:ASN:ND2	7:A:1011:PG4:H72	2.24	0.52
1:A:757:PHE:CE1	1:A:779:ILE:HD13	2.45	0.51
1:A:359:GLY:HA2	6:A:1008:PGE:H32	1.92	0.51
1:A:369:TYR:HA	1:A:393:HIS:O	2.11	0.51
1:A:469:ALA:HA	1:A:493:ASN:O	2.11	0.50
1:A:835:GLN:NE2	12:A:1022:CL:CL	2.82	0.50
1:A:547:THR:HG21	1:A:551:PHE:CE1	2.46	0.50
1:A:838:LYS:HZ2	7:A:1011:PG4:H11	1.76	0.50
1:A:547:THR:HG22	1:A:547:THR:O	2.11	0.50
1:A:474:TYR:HA	1:A:498:VAL:O	2.12	0.49
1:A:528:GLY:HA2	1:A:560:GLN:O	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:374:GLN:HG2	13:A:1204:HOH:O	2.13	0.49
1:A:823:LYS:HG2	1:A:826:TYR:HB3	1.94	0.49
7:A:1010:PG4:H31	13:A:1297:HOH:O	2.13	0.48
1:A:303:ALA:HB2	1:A:326:TRP:CZ3	2.48	0.48
1:A:268:HIS:HB3	1:A:272:ASP:OD2	2.13	0.48
9:A:1016:EDO:H22	13:A:1470:HOH:O	2.14	0.48
1:A:773:LEU:HD23	1:A:773:LEU:C	2.34	0.47
1:A:280:MET:CE	1:A:283:GLN:HG3	2.44	0.47
1:A:806:ASN:HA	1:A:809:LYS:HD2	1.97	0.47
1:A:310:LYS:O	1:A:319:LYS:HD2	2.14	0.46
1:A:794:ASP:O	13:A:1109:HOH:O	2.20	0.46
1:A:278:PRO:HG3	1:A:303:ALA:HB1	1.96	0.46
1:A:600:ASN:HB2	1:A:632:ASN:OD1	2.16	0.45
1:A:550:GLN:HG3	1:A:603:PHE:CE1	2.52	0.45
1:A:621:LEU:HD23	1:A:621:LEU:C	2.37	0.45
1:A:707:TYR:CG	1:A:919:SER:HA	2.51	0.45
1:A:621:LEU:HD12	1:A:655:THR:HG21	1.98	0.45
9:A:1014:EDO:O2	13:A:1110:HOH:O	2.21	0.45
1:A:777:LEU:HG	1:A:779:ILE:CD1	2.47	0.45
1:A:917:LEU:HA	1:A:920:SER:O	2.17	0.44
1:A:280:MET:HE2	1:A:283:GLN:CB	2.48	0.43
1:A:377:TYR:HB3	6:A:1008:PGE:H5	2.00	0.43
1:A:280:MET:HE1	1:A:283:GLN:HG3	2.00	0.43
1:A:794:ASP:HB2	1:A:851:VAL:HG21	2.01	0.42
1:A:415:ASP:HA	1:A:464:SER:O	2.20	0.42
1:A:495:ILE:O	1:A:517:CYS:HA	2.19	0.42
1:A:547:THR:CG2	1:A:551:PHE:CE1	3.03	0.42
1:A:744:ALA:HA	1:A:818:ILE:O	2.19	0.42
1:A:408:THR:HB	9:A:1014:EDO:H22	2.02	0.41
1:A:754:ALA:HA	1:A:779:ILE:O	2.20	0.41
1:A:283:GLN:O	1:A:302:ARG:HA	2.21	0.41
1:A:767:SER:OG	9:A:1017:EDO:H12	2.20	0.41
1:A:505:THR:HG21	6:A:1005:PGE:H3	2.03	0.41
1:A:573:GLY:HA2	1:A:597:ILE:HG12	2.04	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)
13:A:1320:HOH:O	13:A:1521:HOH:O[9_555]	1.98	0.22
13:A:1534:HOH:O	13:A:1534:HOH:O[22_445]	2.00	0.20

## 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	675/680 (99%)	639 (95%)	35 (5%)	1 (0%)	53 62

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	315	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	555/556 (100%)	545 (98%)	10 (2%)	62 71

All (10) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	267	CYS
1	A	280	MET
1	A	308	THR
1	A	541	ASN
1	A	550	GLN
1	A	594	ARG
1	A	674	SER
1	A	806	ASN
1	A	826	TYR
1	A	841	ARG

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	565	ASN
1	A	588	ASN
1	A	650	ASN

### 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](#)

Of 23 ligands modelled in this entry, 5 are monoatomic - leaving 18 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	BGC	A	1001	3	11,11,12	1.75	3 (27%)	15,15,17	1.11	0
3	A2G	A	1002	2,4	14,14,15	1.65	2 (14%)	17,19,21	1.82	5 (29%)
4	9WJ	A	1003	3,5	11,13,14	0.54	0	15,18,20	2.89	8 (53%)
5	FUC	A	1004	4	11,11,11	0.89	0	15,16,16	1.62	3 (20%)
6	PGE	A	1005	-	9,9,9	0.31	0	8,8,8	0.32	0
6	PGE	A	1006	-	9,9,9	0.31	0	8,8,8	0.35	0
6	PGE	A	1007	-	9,9,9	0.31	0	8,8,8	0.29	0
6	PGE	A	1008	-	9,9,9	0.35	0	8,8,8	0.31	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
6	PGE	A	1009	-	9,9,9	0.33	0	8,8,8	0.31	0
7	PG4	A	1010	-	12,12,12	0.51	0	11,11,11	0.27	0
7	PG4	A	1011	-	12,12,12	0.53	0	11,11,11	0.32	0
8	SO4	A	1012	-	4,4,4	0.16	0	6,6,6	0.09	0
9	EDO	A	1013	-	3,3,3	0.42	0	2,2,2	0.45	0
9	EDO	A	1014	-	3,3,3	0.49	0	2,2,2	0.31	0
9	EDO	A	1015	-	3,3,3	0.47	0	2,2,2	0.39	0
9	EDO	A	1016	-	3,3,3	0.49	0	2,2,2	0.28	0
9	EDO	A	1017	-	3,3,3	0.48	0	2,2,2	0.35	0
9	EDO	A	1018	-	3,3,3	0.49	0	2,2,2	0.26	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	BGC	A	1001	3	-	0/2/19/22	0/1/1/1
3	A2G	A	1002	2,4	-	0/6/23/26	0/1/1/1
4	9WJ	A	1003	3,5	-	0/4/21/24	0/1/1/1
5	FUC	A	1004	4	-	0/0/20/20	0/1/1/1
6	PGE	A	1005	-	-	0/7/7/7	0/0/0/0
6	PGE	A	1006	-	-	0/7/7/7	0/0/0/0
6	PGE	A	1007	-	-	0/7/7/7	0/0/0/0
6	PGE	A	1008	-	-	0/7/7/7	0/0/0/0
6	PGE	A	1009	-	-	0/7/7/7	0/0/0/0
7	PG4	A	1010	-	-	0/10/10/10	0/0/0/0
7	PG4	A	1011	-	-	0/10/10/10	0/0/0/0
8	SO4	A	1012	-	-	0/0/0/0	0/0/0/0
9	EDO	A	1013	-	-	0/1/1/1	0/0/0/0
9	EDO	A	1014	-	-	0/1/1/1	0/0/0/0
9	EDO	A	1015	-	-	0/1/1/1	0/0/0/0
9	EDO	A	1016	-	-	0/1/1/1	0/0/0/0
9	EDO	A	1017	-	-	0/1/1/1	0/0/0/0
9	EDO	A	1018	-	-	0/1/1/1	0/0/0/0

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1001	BGC	C2-C3	-2.30	1.49	1.52
3	A	1002	A2G	O3-C3	2.24	1.48	1.43
2	A	1001	BGC	O5-C5	2.29	1.48	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	1002	A2G	C7-N2	3.10	1.45	1.34
2	A	1001	BGC	O5-C1	4.52	1.51	1.43

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	1003	9WJ	C1-C2-C3	-6.76	101.11	109.66
4	A	1003	9WJ	C1-O5-C5	-4.84	101.69	112.39
3	A	1002	A2G	C2-N2-C7	-4.37	116.56	122.94
4	A	1003	9WJ	C2-C3-C4	-3.77	108.17	111.09
4	A	1003	9WJ	O5-C1-C2	-3.56	105.24	110.78
5	A	1004	FUC	C3-C4-C5	-3.17	104.79	109.72
3	A	1002	A2G	C1-O-C5	-2.86	108.26	112.19
4	A	1003	9WJ	O2-C2-C3	-2.83	104.67	110.19
3	A	1002	A2G	O-C1-C2	-2.68	107.82	111.52
5	A	1004	FUC	C1-C2-C3	-2.31	105.75	110.36
4	A	1003	9WJ	C4-N4-C7	-2.07	118.08	123.23
3	A	1002	A2G	C3-C4-C5	2.05	113.91	110.24
4	A	1003	9WJ	C3-C4-C5	2.39	114.94	110.48
3	A	1002	A2G	C8-C7-N2	2.43	120.36	116.10
4	A	1003	9WJ	O2-C2-C1	2.78	114.77	109.17
5	A	1004	FUC	O3-C3-C4	2.97	117.28	110.34

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

12 monomers are involved in 24 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	1004	FUC	1	0
6	A	1005	PGE	2	0
6	A	1006	PGE	2	0
6	A	1008	PGE	4	0
6	A	1009	PGE	2	0
7	A	1010	PG4	1	0
7	A	1011	PG4	5	0
8	A	1012	SO4	1	0
9	A	1013	EDO	1	0
9	A	1014	EDO	2	0
9	A	1016	EDO	1	0
9	A	1017	EDO	2	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 6 Fit of model and data [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled '#RSRZ > 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	676/680 (99%)	-0.34	17 (2%) 57 61	23, 33, 59, 108	0

All (17) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	247	SER	5.3
1	A	248	PHE	4.8
1	A	251	VAL	4.3
1	A	308	THR	4.1
1	A	249	ILE	3.5
1	A	324	ALA	3.3
1	A	307	GLY	2.9
1	A	305	ILE	2.8
1	A	250	ASN	2.7
1	A	309	GLY	2.7
1	A	807	ASP	2.5
1	A	533	ILE	2.4
1	A	246	ASP	2.3
1	A	306	ASP	2.2
1	A	252	ILE	2.2
1	A	532	ILE	2.2
1	A	321	VAL	2.1

### 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 carbohydrates 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, 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	B-factors(Å <sup>2</sup> )	Q<0.9
6	PGE	A	1008	10/10	0.81	0.19	44,61,64,65	0
2	BGC	A	1001	11/12	0.82	0.39	74,77,78,78	0
7	PG4	A	1011	13/13	0.86	0.27	67,70,75,75	0
6	PGE	A	1009	10/10	0.88	0.20	60,62,76,79	0
9	EDO	A	1016	4/4	0.88	0.18	74,75,75,75	0
9	EDO	A	1015	4/4	0.88	0.12	65,65,66,67	0
7	PG4	A	1010	13/13	0.89	0.15	54,61,66,68	0
6	PGE	A	1005	10/10	0.89	0.20	48,50,75,77	0
12	CL	A	1023	1/1	0.92	0.11	71,71,71,71	0
6	PGE	A	1006	10/10	0.92	0.22	60,66,71,72	0
5	FUC	A	1004	11/11	0.93	0.15	38,43,51,52	0
3	A2G	A	1002	14/15	0.93	0.24	50,55,67,68	0
9	EDO	A	1017	4/4	0.93	0.12	46,52,54,55	0
9	EDO	A	1014	4/4	0.93	0.24	50,52,53,53	0
4	9WJ	A	1003	13/14	0.94	0.18	37,41,46,48	0
9	EDO	A	1013	4/4	0.95	0.12	42,44,48,51	0
6	PGE	A	1007	10/10	0.95	0.15	57,59,69,70	0
9	EDO	A	1018	4/4	0.95	0.11	62,75,75,76	0
12	CL	A	1022	1/1	0.97	0.11	65,65,65,65	0
12	CL	A	1021	1/1	0.97	0.03	67,67,67,67	0
8	SO4	A	1012	5/5	0.99	0.09	57,58,61,62	0
10	NA	A	1019	1/1	0.99	0.06	39,39,39,39	1
11	K	A	1020	1/1	1.00	0.14	33,33,33,33	1

## 6.5 Other polymers [i](#)

There are no such residues in this entry.