



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 15, 2017 – 02:42 PM EDT

PDB ID : 3BCD
Title : Alpha-amylase B in complex with maltotetraose and alpha-cyclodextrin
Authors : Tan, T.-C.; Mijts, B.N.; Swaminathan, K.; Patel, B.K.C.; Divne, C.
Deposited on : unknown
Resolution : 2.20 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<http://wwpdb.org/validation/2016/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 : 1.7.2 (RC1), CSD as538be (2017)
Xtriage (Phenix) : 1.9-1692
EDS : rb-20030345
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)
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) : rb-20030345

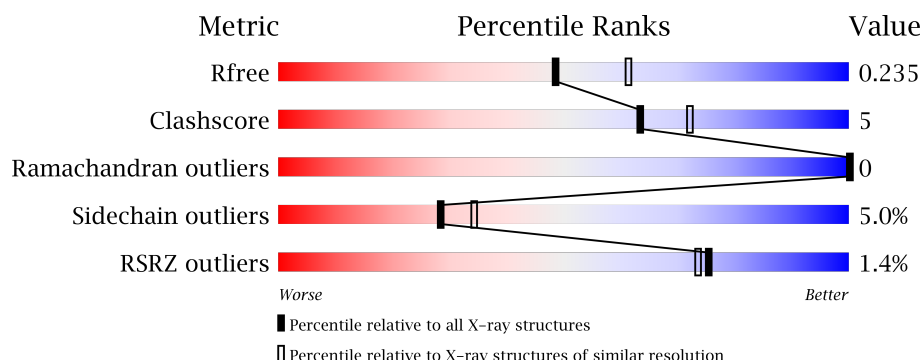
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.20 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}	100719	4002 (2.20-2.20)
Clashscore	112137	4730 (2.20-2.20)
Ramachandran outliers	110173	4656 (2.20-2.20)
Sidechain outliers	110143	4657 (2.20-2.20)
RSRZ outliers	101464	4033 (2.20-2.20)

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	599	

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
4	ACX	A	901	-	-	-	X
5	CA	A	707	-	-	-	X

2 Entry composition [i](#)

There are 7 unique types of molecules in this entry. The entry contains 5170 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 Alpha amylase, catalytic region.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	585	4747	3025	767	944	11	0	0	0

- Molecule 2 is ALPHA-D-GLUCOSE (three-letter code: GLC) (formula: C₆H₁₂O₆).



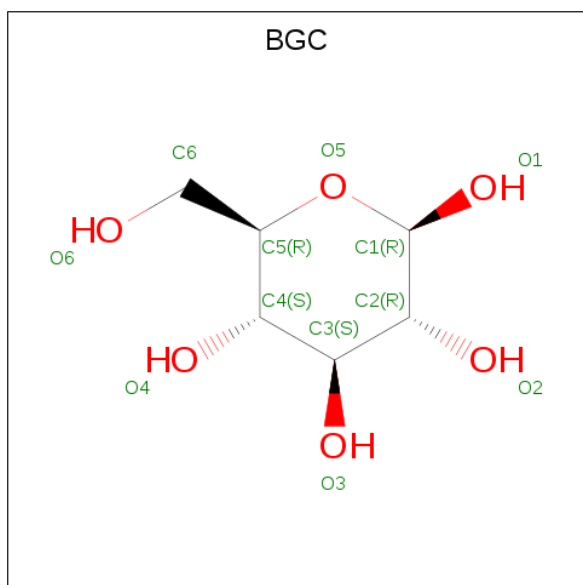
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			11	6	5		
2	A	1	Total	C	O	0	0
			11	6	5		
2	A	1	Total	C	O	0	0
			11	6	5		
2	A	1	Total	C	O	0	0
			11	6	5		
2	A	1	Total	C	O	0	0
			11	6	5		

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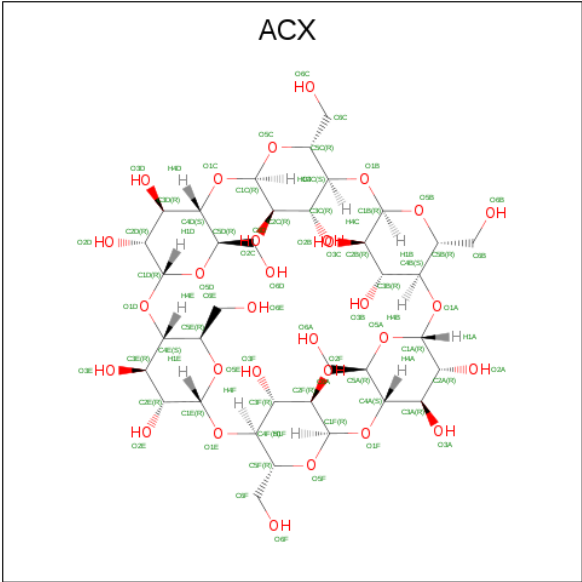
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			11	6	5		
2	A	1	Total	C	O	0	0
			12	6	6		

- Molecule 3 is BETA-D-GLUCOSE (three-letter code: BGC) (formula: $C_6H_{12}O_6$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			12	6	6		

- Molecule 4 is ALPHA-CYCLODEXTRIN (CYCLOHEXA-AMYLOSE) (three-letter code: ACX) (formula: $C_{36}H_{60}O_{30}$).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	C O	0	0
			66	36 30		

- Molecule 5 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	7	Total	Ca	0	0
			7	7		

- Molecule 6 is SODIUM ION (three-letter code: NA) (formula: Na).

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

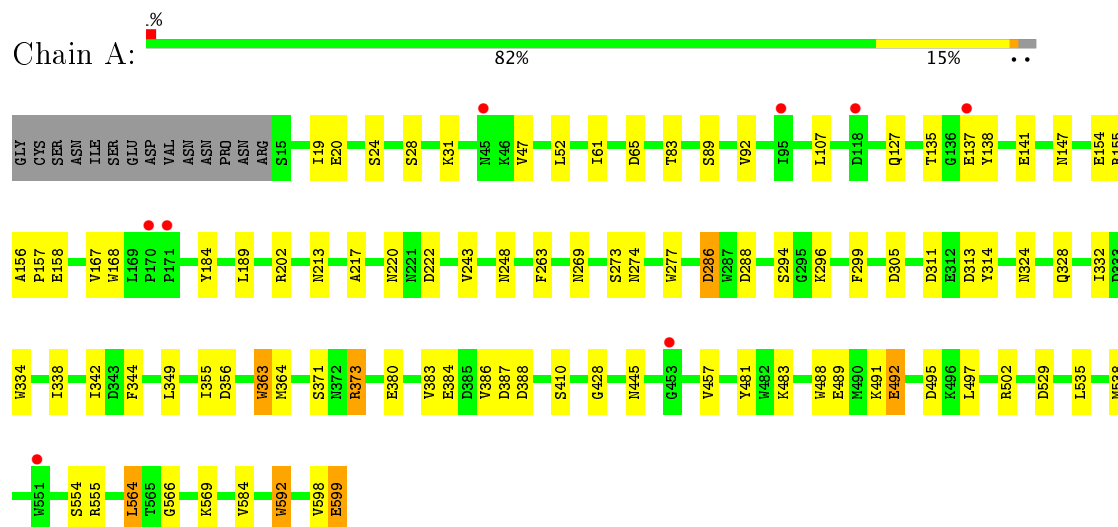
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	259	Total	O	0	0
			259	259		

3 Residue-property plots

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 ($\text{RSRZ} > 2$). 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: Alpha amylase, catalytic region



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	228.70 Å 78.05 Å 50.64 Å 90.00° 98.90° 90.00°	Depositor
Resolution (Å)	30.00 – 2.20 28.99 – 2.15	Depositor EDS
% Data completeness (in resolution range)	98.2 (30.00-2.20) 98.0 (28.99-2.15)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.06	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.36 (at 2.16 Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.196 , 0.240 0.195 , 0.235	Depositor DCC
R_{free} test set	897 reflections (2.04%)	DCC
Wilson B-factor (Å ²)	25.1	Xtriage
Anisotropy	0.048	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 36.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.29$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	5170	wwPDB-VP
Average B, all atoms (Å ²)	11.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.60% 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: GLC, NA, CA, BGC, ACX

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	1.07	4/4878 (0.1%)	0.96	8/6645 (0.1%)

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	492	GLU	CG-CD	9.73	1.66	1.51
1	A	380	GLU	CB-CG	5.66	1.62	1.52
1	A	428	GLY	C-O	-5.21	1.15	1.23
1	A	363	TRP	CB-CG	-5.16	1.41	1.50

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	313	ASP	CB-CG-OD1	7.29	124.86	118.30
1	A	502	ARG	NE-CZ-NH2	6.76	123.68	120.30
1	A	288	ASP	CB-CG-OD1	6.21	123.89	118.30
1	A	373	ARG	NE-CZ-NH1	-6.06	117.27	120.30
1	A	286	ASP	CB-CG-OD1	5.74	123.47	118.30
1	A	286	ASP	CB-CG-OD2	-5.73	113.15	118.30
1	A	502	ARG	NE-CZ-NH1	-5.71	117.45	120.30
1	A	364	MET	CG-SD-CE	5.69	109.30	100.20

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	4747	0	4383	46	0
2	A	78	0	67	1	0
3	A	12	0	11	1	0
4	A	66	0	60	0	0
5	A	7	0	0	0	0
6	A	1	0	0	0	0
7	A	259	0	0	3	0
All	All	5170	0	4521	46	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 5.

All (46) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:384:GLU:OE1	3:A:804:BGC:H1	1.66	0.96
1:A:497:LEU:HD21	1:A:592:TRP:CZ3	2.28	0.69
1:A:535:LEU:HD12	1:A:535:LEU:C	2.14	0.68
1:A:386:VAL:HG13	7:A:1026:HOH:O	1.94	0.67
1:A:19:ILE:HG22	1:A:20:GLU:HG2	1.81	0.62
1:A:497:LEU:HD21	1:A:592:TRP:CE3	2.36	0.60
1:A:598:VAL:HG23	1:A:599:GLU:HG2	1.83	0.59
1:A:263:PHE:HB2	1:A:277:TRP:HB2	1.85	0.58
1:A:167:VAL:O	1:A:167:VAL:HG23	2.03	0.57
1:A:243:VAL:HG11	1:A:299:PHE:CD2	2.39	0.57
1:A:155:ARG:O	1:A:158:GLU:HG2	2.05	0.56
1:A:328:GLN:O	1:A:332:ILE:HG13	2.09	0.53
1:A:47:VAL:HG22	1:A:92:VAL:HG12	1.95	0.49
1:A:184:TYR:HB3	2:A:801:GLC:H62	1.96	0.48
1:A:296:LYS:NZ	1:A:311:ASP:OD1	2.40	0.48
1:A:324:ASN:C	1:A:324:ASN:OD1	2.53	0.48
1:A:554:SER:O	1:A:555:ARG:HB2	2.13	0.47
1:A:156:ALA:HB3	1:A:157:PRO:HD3	1.96	0.47
1:A:566:GLY:O	1:A:569:LYS:NZ	2.47	0.47
1:A:564:LEU:HD12	1:A:564:LEU:C	2.35	0.47
1:A:488:TRP:O	1:A:489:GLU:HB2	2.14	0.47
1:A:286:ASP:OD2	7:A:1233:HOH:O	2.20	0.46
1:A:135:THR:O	1:A:138:TYR:HB2	2.16	0.46
1:A:538:MET:HE2	1:A:584:VAL:HG12	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:383:VAL:HG11	1:A:388:ASP:HB3	1.98	0.46
1:A:305:ASP:HB3	1:A:356:ASP:OD2	2.16	0.45
1:A:217:ALA:O	1:A:220:ASN:HB3	2.17	0.45
1:A:189:LEU:HB3	1:A:334:TRP:NE1	2.31	0.45
1:A:342:ILE:O	1:A:342:ILE:HG22	2.18	0.43
1:A:386:VAL:HG23	1:A:387:ASP:N	2.34	0.43
1:A:28:SER:HA	1:A:107:LEU:O	2.18	0.43
1:A:52:LEU:HD23	1:A:61:ILE:HD12	2.01	0.43
1:A:491:LYS:NZ	1:A:495:ASP:OD2	2.49	0.42
1:A:481:TYR:CE2	1:A:483:LYS:HB3	2.55	0.41
1:A:598:VAL:HG23	1:A:599:GLU:CG	2.50	0.41
1:A:243:VAL:CG1	1:A:299:PHE:CD2	3.03	0.41
1:A:147:ASN:ND2	1:A:202:ARG:HH12	2.18	0.41
1:A:383:VAL:CG1	1:A:388:ASP:HB3	2.51	0.41
1:A:355:ILE:O	1:A:356:ASP:C	2.59	0.41
1:A:535:LEU:C	1:A:535:LEU:CD1	2.84	0.41
1:A:349:LEU:HD21	1:A:363:TRP:CZ3	2.56	0.41
1:A:286:ASP:HB3	1:A:314:TYR:OH	2.21	0.40
1:A:569:LYS:CD	7:A:1127:HOH:O	2.69	0.40
1:A:107:LEU:HD22	1:A:566:GLY:HA2	2.02	0.40
1:A:338:ILE:HG23	1:A:344:PHE:CD1	2.57	0.40
1:A:127:GLN:HE22	1:A:445:ASN:HB2	1.87	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	583/599 (97%)	558 (96%)	25 (4%)	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	504/517 (98%)	479 (95%)	25 (5%)	28	34

All (25) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	24	SER
1	A	31	LYS
1	A	65	ASP
1	A	83	THR
1	A	89	SER
1	A	137	GLU
1	A	141	GLU
1	A	154	GLU
1	A	168	TRP
1	A	213	ASN
1	A	222	ASP
1	A	248	ASN
1	A	269	ASN
1	A	273	SER
1	A	274	ASN
1	A	294	SER
1	A	371	SER
1	A	373	ARG
1	A	410	SER
1	A	457	VAL
1	A	492	GLU
1	A	529	ASP
1	A	564	LEU
1	A	592	TRP
1	A	599	GLU

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	85	ASN
1	A	127	GLN
1	A	147	ASN
1	A	173	ASN
1	A	274	ASN
1	A	515	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 17 ligands modelled in this entry, 8 are monoatomic - leaving 9 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	GLC	A	1001	2	11,11,12	1.24	1 (9%)	13,15,17	1.44	2 (15%)
2	GLC	A	1002	2	11,11,12	0.95	0	13,15,17	1.40	1 (7%)
2	GLC	A	1003	2	11,11,12	0.79	1 (9%)	13,15,17	1.62	1 (7%)
2	GLC	A	1004	2	12,12,12	1.03	1 (8%)	17,17,17	1.98	5 (29%)
2	GLC	A	801	2	11,11,12	1.67	3 (27%)	13,15,17	3.42	7 (53%)
2	GLC	A	802	2	11,11,12	1.16	0	13,15,17	2.39	7 (53%)
2	GLC	A	803	3,2	11,11,12	0.83	0	13,15,17	1.75	5 (38%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	BGC	A	804	2	12,12,12	0.98	0	17,17,17	1.48	4 (23%)
4	ACX	A	901	-	72,72,72	0.74	1 (1%)	108,108,108	1.18	10 (9%)

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	GLC	A	1001	2	-	0/2/19/22	0/1/1/1
2	GLC	A	1002	2	-	0/2/19/22	0/1/1/1
2	GLC	A	1003	2	-	0/2/19/22	0/1/1/1
2	GLC	A	1004	2	-	0/2/22/22	0/1/1/1
2	GLC	A	801	2	-	0/2/19/22	0/1/1/1
2	GLC	A	802	2	-	0/2/19/22	0/1/1/1
2	GLC	A	803	3,2	-	0/2/19/22	0/1/1/1
3	BGC	A	804	2	-	0/2/22/22	0/1/1/1
4	ACX	A	901	-	-	0/36/156/156	0/0/7/7

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1001	GLC	O5-C1	-2.35	1.39	1.43
2	A	1003	GLC	O5-C1	-2.06	1.40	1.43
4	A	901	ACX	O1B-C1B	2.03	1.47	1.41
2	A	1004	GLC	C1-C2	2.07	1.57	1.52
2	A	801	GLC	O5-C5	2.33	1.48	1.43
2	A	801	GLC	C2-C3	2.55	1.56	1.52
2	A	801	GLC	O5-C1	3.23	1.49	1.43

All (42) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1003	GLC	O5-C1-C2	-4.49	103.76	110.79
4	A	901	ACX	O5B-C1B-C2B	-4.22	102.16	110.30
2	A	801	GLC	C6-C5-C4	-4.14	103.31	113.00
2	A	802	GLC	C3-C4-C5	-4.05	103.08	110.22
2	A	1001	GLC	O5-C1-C2	-3.41	105.44	110.79
2	A	801	GLC	C1-C2-C3	-3.28	105.49	109.65
2	A	802	GLC	O2-C2-C3	-3.16	103.96	110.17
2	A	1002	GLC	C3-C4-C5	-3.04	104.86	110.22
2	A	801	GLC	O5-C1-C2	-2.40	107.03	110.79

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	901	ACX	O3C-C3C-C2C	-2.35	105.25	110.36
3	A	804	BGC	C1-C2-C3	-2.31	106.47	110.65
2	A	803	GLC	C2-C3-C4	-2.15	107.13	110.88
4	A	901	ACX	O5A-C5A-C4A	2.01	113.86	109.75
4	A	901	ACX	C1C-C2C-C3C	2.05	113.79	109.98
2	A	803	GLC	O5-C1-C2	2.06	114.02	110.79
3	A	804	BGC	O3-C3-C2	2.09	114.90	110.36
4	A	901	ACX	C1B-O1B-C4C	2.12	123.15	118.00
4	A	901	ACX	O1B-C4C-C3C	2.12	112.29	107.19
3	A	804	BGC	C3-C4-C5	2.13	113.96	110.22
2	A	1004	GLC	O2-C2-C1	2.24	114.41	109.75
4	A	901	ACX	O2E-C2E-C3E	2.31	115.38	110.36
2	A	1001	GLC	C1-C2-C3	2.41	112.70	109.65
2	A	802	GLC	C1-C2-C3	2.42	112.72	109.65
4	A	901	ACX	O1B-C1B-C2B	2.52	113.80	108.11
2	A	803	GLC	C1-C2-C3	2.53	112.86	109.65
2	A	803	GLC	C1-O5-C5	2.55	115.68	112.17
2	A	801	GLC	O2-C2-C3	2.56	115.20	110.17
2	A	802	GLC	O4-C4-C3	2.56	115.93	110.36
4	A	901	ACX	C2C-C3C-C4C	2.61	115.02	109.61
2	A	1004	GLC	C4-C3-C2	2.68	115.56	110.84
3	A	804	BGC	O3-C3-C4	2.70	116.23	110.36
2	A	803	GLC	O3-C3-C4	2.73	116.31	110.36
2	A	802	GLC	O3-C3-C4	2.76	116.36	110.36
2	A	1004	GLC	O5-C5-C4	2.95	115.10	109.66
2	A	802	GLC	C6-C5-C4	3.12	120.29	113.00
4	A	901	ACX	C1F-C2F-C3F	3.13	115.80	109.98
2	A	801	GLC	O4-C4-C3	3.16	117.23	110.36
2	A	801	GLC	O2-C2-C1	3.26	115.80	109.18
2	A	1004	GLC	C1-C2-C3	3.33	116.67	110.65
2	A	802	GLC	O4-C4-C5	3.37	117.78	109.28
2	A	1004	GLC	C1-O5-C5	4.67	121.82	113.39
2	A	801	GLC	C1-O5-C5	9.24	124.90	112.17

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	801	GLC	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	804	BGC	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	585/599 (97%)	-0.15	8 (1%) 75 73	2, 9, 19, 29	0

All (8) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	95	ILE	3.7
1	A	170	PRO	2.7
1	A	137	GLU	2.5
1	A	118	ASP	2.2
1	A	453	GLY	2.2
1	A	45	ASN	2.2
1	A	551	TRP	2.1
1	A	171	PRO	2.0

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 [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. 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, 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	LLDF	B-factors(\AA^2)	Q<0.9
5	CA	A	707	1/1	0.97	0.19	6.13	17,17,17,17	0
4	ACX	A	901	66/66	0.75	0.25	5.10	50,60,69,70	0
5	CA	A	708	1/1	0.95	0.20	1.77	21,21,21,21	0
5	CA	A	706	1/1	0.96	0.13	0.88	18,18,18,18	0
2	GLC	A	802	11/12	0.87	0.15	0.64	21,26,30,35	1
5	CA	A	705	1/1	0.88	0.15	0.41	29,29,29,29	0
2	GLC	A	801	11/12	0.90	0.15	0.06	15,25,29,30	0
2	GLC	A	1002	11/12	0.91	0.11	-0.07	9,14,16,17	0
2	GLC	A	1001	11/12	0.95	0.12	-0.25	11,17,21,24	0
6	NA	A	704	1/1	0.98	0.09	-1.06	6,6,6,6	0
5	CA	A	703	1/1	0.98	0.07	-1.83	8,8,8,8	0
5	CA	A	702	1/1	0.95	0.09	-1.96	9,9,9,9	0
5	CA	A	701	1/1	0.99	0.06	-3.97	8,8,8,8	0
2	GLC	A	1004	12/12	0.67	0.32	-	38,52,55,55	0
2	GLC	A	1003	11/12	0.91	0.10	-	17,20,27,28	0
2	GLC	A	803	11/12	0.93	0.13	-	27,34,38,40	0
3	BGC	A	804	12/12	0.69	0.34	-	47,58,61,62	0

6.5 Other polymers [i](#)

There are no such residues in this entry.