



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 10, 2020 – 12:44 AM BST

PDB ID : 1W7C
Title : PPLO at 1.23 Angstroms
Authors : Duff, A.P.; Cohen, A.E.; Ellis, P.J.; Guss, J.M.
Deposited on : 2004-09-01
Resolution : 1.23 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

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.13.1
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.13.1

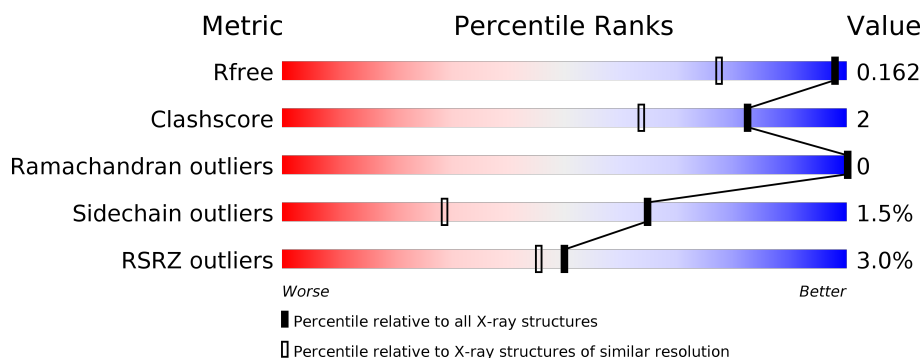
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.23 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}	130704	2024 (1.28-1.20)
Clashscore	141614	1007 (1.26-1.22)
Ramachandran outliers	138981	2053 (1.28-1.20)
Sidechain outliers	138945	2051 (1.28-1.20)
RSRZ outliers	127900	1987 (1.28-1.20)

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 respectively. 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	747	<div> <div>3%</div> <div> <div></div> <div>93%</div> <div>5% ..</div> </div> </div>
2	B	3	<div> <div></div> <div>100%</div> </div>

2 Entry composition [i](#)

There are 9 unique types of molecules in this entry. The entry contains 12713 atoms, of which 5372 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.

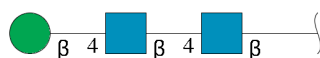
- Molecule 1 is a protein called LYSYL OXIDASE.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	737	Total	C	H	N	O	S	18	54	1
			11451	3913	5283	987	1252	16			

There are 9 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	314	VAL	ILE	conflict	UNP Q96X16
A	338	ASP	GLU	conflict	UNP Q96X16
A	417	SER	ALA	conflict	UNP Q96X16
A	549	GLN	LYS	conflict	UNP Q96X16
A	577	PHE	LEU	conflict	UNP Q96X16
A	579	ASN	LYS	conflict	UNP Q96X16
A	650	THR	GLU	conflict	UNP Q96X16
A	758	VAL	LEU	conflict	UNP Q96X16
A	761	ALA	PRO	conflict	UNP Q96X16

- Molecule 2 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	3	Total	C	H	N	O	0	0	0
			68	22	29	2	15			

- Molecule 3 is COPPER (II) ION (three-letter code: CU) (formula: Cu).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Cu	0	0
			1	1		

- Molecule 4 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	2	Total	Ca	0	0
			2	2		

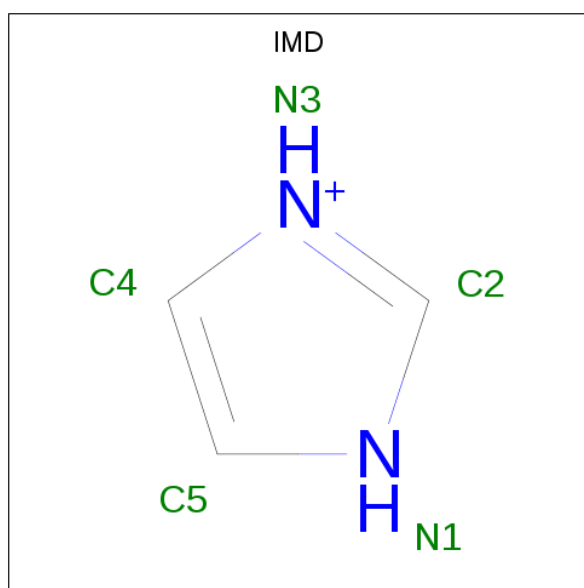
- Molecule 5 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	5	Total	Mg	0	0
			5	5		

- Molecule 6 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	5	Total	Cl	0	0
			5	5		

- Molecule 7 is IMIDAZOLE (three-letter code: IMD) (formula: C₃H₅N₂).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
7	A	1	Total	C	H	N	0	0
			10	3	5	2		

- Molecule 8 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C₈H₁₅NO₆).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
8	A	1	Total	C	H	N	O	0	1
			50	16	22	2	10		
8	A	1	Total	C	H	N	O	0	0
			25	8	11	1	5		
8	A	1	Total	C	H	N	O	0	0
			25	8	11	1	5		
8	A	1	Total	C	H	N	O	0	0
			25	8	11	1	5		

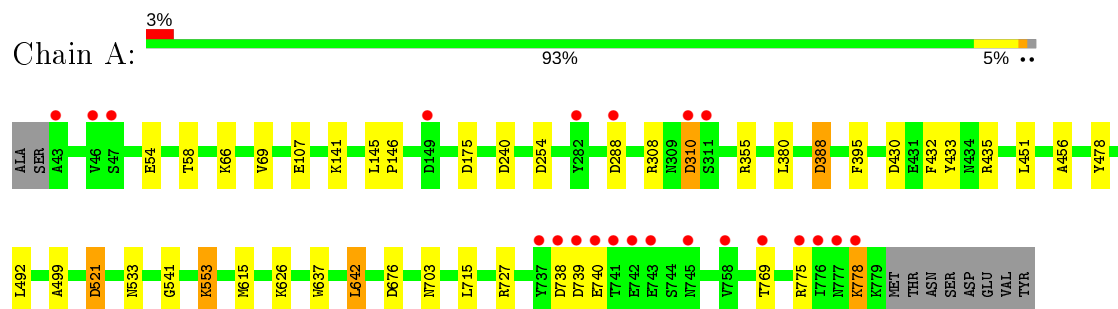
- Molecule 9 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
9	A	1046	Total	O	0	0
			1046	1046		

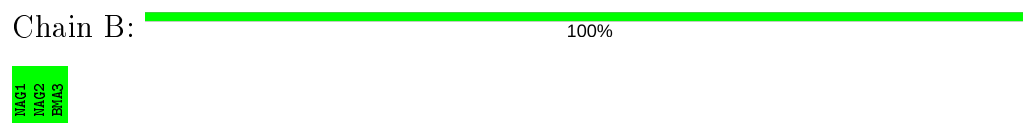
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide 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: LYSYL OXIDASE



• Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	139.95Å 67.03Å 108.69Å 90.00° 118.95° 90.00°	Depositor
Resolution (Å)	24.01 – 1.23 23.81 – 1.23	Depositor EDS
% Data completeness (in resolution range)	95.4 (24.01-1.23) 95.4 (23.81-1.23)	Depositor EDS
R_{merge}	0.04	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.66 (at 1.23Å)	Xtriage
Refinement program	REFMAC 5.1.24	Depositor
R, R_{free}	0.112 , 0.146 0.132 , 0.162	Depositor DCC
R_{free} test set	8699 reflections (2.04%)	wwPDB-VP
Wilson B-factor (Å ²)	14.2	Xtriage
Anisotropy	0.406	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.41 , 55.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.99	EDS
Total number of atoms	12713	wwPDB-VP
Average B, all atoms (Å ²)	23.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.00% 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 [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: MG, BMA, NAG, CL, CA, TPQ, CU, IMD

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	1.32	2/6527 (0.0%)	0.85	16/8883 (0.2%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	778[A]	LYS	CE-NZ	66.95	3.16	1.49
1	A	778[B]	LYS	CE-NZ	66.95	3.16	1.49

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	778[A]	LYS	CD-CE-NZ	-16.19	74.46	111.70
1	A	778[B]	LYS	CD-CE-NZ	-16.19	74.46	111.70
1	A	642	LEU	CA-CB-CG	8.44	134.71	115.30
1	A	240[A]	ASP	CB-CG-OD2	6.92	124.53	118.30
1	A	240[B]	ASP	CB-CG-OD2	6.92	124.53	118.30
1	A	310	ASP	CB-CG-OD2	6.43	124.08	118.30
1	A	175	ASP	CB-CG-OD2	6.40	124.06	118.30
1	A	521[A]	ASP	CB-CG-OD2	6.02	123.72	118.30
1	A	521[B]	ASP	CB-CG-OD2	6.02	123.72	118.30
1	A	388	ASP	CB-CG-OD2	5.77	123.49	118.30
1	A	288	ASP	CB-CG-OD2	5.73	123.46	118.30
1	A	430	ASP	CB-CG-OD2	5.66	123.39	118.30
1	A	739	ASP	CB-CG-OD2	5.63	123.36	118.30
1	A	254	ASP	CB-CG-OD2	5.45	123.20	118.30
1	A	308	ARG	NE-CZ-NH2	-5.43	117.58	120.30
1	A	738	ASP	CB-CG-OD2	5.19	122.97	118.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	6168	5283	5667	28	0
2	B	39	29	34	0	0
3	A	1	0	0	0	0
4	A	2	0	0	0	0
5	A	5	0	0	0	0
6	A	5	0	0	0	0
7	A	5	5	5	0	0
8	A	70	55	65	2	0
9	A	1046	0	0	20	0
All	All	7341	5372	5771	30	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 2.

All (30) 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:58[A]:THR:HG21	9:A:2038:HOH:O	1.10	1.23
1:A:541[A]:GLY:O	9:A:2738:HOH:O	1.60	1.18
1:A:54[B]:GLU:CD	9:A:2025:HOH:O	1.81	1.18
1:A:626[B]:LYS:HE3	9:A:2855:HOH:O	1.50	1.06
1:A:54[B]:GLU:OE2	9:A:2025:HOH:O	1.89	0.84
1:A:66[B]:LYS:HG3	1:A:778[B]:LYS:HZ2	1.43	0.84
1:A:499:ALA:HB1	9:A:2700:HOH:O	1.81	0.79
1:A:58[A]:THR:CG2	9:A:2038:HOH:O	1.87	0.78
1:A:676[B]:ASP:OD1	9:A:2938:HOH:O	2.11	0.68
1:A:54[B]:GLU:OE2	9:A:2020:HOH:O	2.11	0.68
8:A:1780[B]:NAG:H5	9:A:3040:HOH:O	1.97	0.65
1:A:66[B]:LYS:HG3	1:A:778[B]:LYS:NZ	2.15	0.61
1:A:432:PHE:HB2	1:A:778[B]:LYS:HD2	1.93	0.51
1:A:107[B]:GLU:CD	9:A:2157:HOH:O	2.50	0.50
1:A:769:THR:HG23	9:A:3027:HOH:O	2.10	0.50
1:A:727:ARG:HA	1:A:727:ARG:CZ	2.44	0.48
1:A:456[B]:ALA:HB2	9:A:2322:HOH:O	2.13	0.48
1:A:492[B]:LEU:HD11	1:A:715:LEU:HD12	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:451:LEU:HD12	1:A:451:LEU:C	2.36	0.46
1:A:533:ASN:HB2	1:A:637:TRP:CE3	2.51	0.46
1:A:553:LYS:HG2	9:A:2752:HOH:O	2.17	0.45
1:A:141[B]:LYS:CE	9:A:2236:HOH:O	2.66	0.44
1:A:433:TYR:CE2	1:A:775:ARG:HG2	2.53	0.43
1:A:141[A]:LYS:CE	9:A:2236:HOH:O	2.67	0.43
1:A:145:LEU:HA	1:A:146:PRO:C	2.40	0.43
8:A:1780[B]:NAG:H62	9:A:3041:HOH:O	2.18	0.42
1:A:69:VAL:HB	1:A:778[B]:LYS:HZ3	1.85	0.42
1:A:58[B]:THR:HG21	9:A:2037:HOH:O	2.19	0.42
1:A:615[B]:MET:HE2	9:A:2844:HOH:O	2.20	0.42
1:A:435:ARG:HB3	9:A:2663:HOH:O	2.21	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	790/747 (106%)	768 (97%)	22 (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	698/658 (106%)	687 (98%)	11 (2%)	62 26

All (11) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	310	ASP
1	A	355	ARG
1	A	380	LEU
1	A	388	ASP
1	A	395	PHE
1	A	521[A]	ASP
1	A	521[B]	ASP
1	A	553	LYS
1	A	642	LEU
1	A	703	ASN
1	A	740	GLU

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 ⓘ

2 non-standard protein/DNA/RNA residues 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
1	TPQ	A	478[B]	1,7	13,14,15	1.86	4 (30%)	15,19,21	1.19	2 (13%)
1	TPQ	A	478[A]	1,3	13,14,15	1.93	5 (38%)	15,19,21	2.24	2 (13%)

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
1	TPQ	A	478[B]	1,7	-	2/5/22/24	0/1/1/1
1	TPQ	A	478[A]	1,3	-	2/5/22/24	0/1/1/1

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	478[B]	TPQ	O4-C4	-4.07	1.23	1.34
1	A	478[A]	TPQ	O4-C4	-4.04	1.23	1.34
1	A	478[B]	TPQ	C3-C4	3.54	1.41	1.35
1	A	478[A]	TPQ	C3-C4	3.54	1.41	1.35
1	A	478[B]	TPQ	C6-C1	2.38	1.40	1.34
1	A	478[A]	TPQ	C6-C1	2.37	1.40	1.34
1	A	478[A]	TPQ	CB-C1	2.12	1.54	1.50
1	A	478[A]	TPQ	C3-C2	2.09	1.50	1.44
1	A	478[B]	TPQ	C3-C2	2.09	1.50	1.44

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	478[A]	TPQ	CA-CB-C1	-7.39	99.40	113.51
1	A	478[A]	TPQ	CB-CA-C	-2.45	106.88	111.47
1	A	478[B]	TPQ	CB-C1-C2	2.18	122.48	118.57
1	A	478[B]	TPQ	CB-CA-C	-2.09	107.54	111.47

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	478[B]	TPQ	O-C-CA-CB
1	A	478[A]	TPQ	C-CA-CB-C1
1	A	478[A]	TPQ	N-CA-CB-C1
1	A	478[B]	TPQ	N-CA-CB-C1

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates ⓘ

3 monosaccharides 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	NAG	B	1	1,2	14,14,15	0.77	0	17,19,21	0.94	0
2	NAG	B	2	2	14,14,15	0.47	0	17,19,21	0.88	0
2	BMA	B	3	2	11,11,12	0.51	0	15,15,17	0.81	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	NAG	B	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	B	2	2	-	0/6/23/26	0/1/1/1
2	BMA	B	3	2	-	0/2/19/22	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

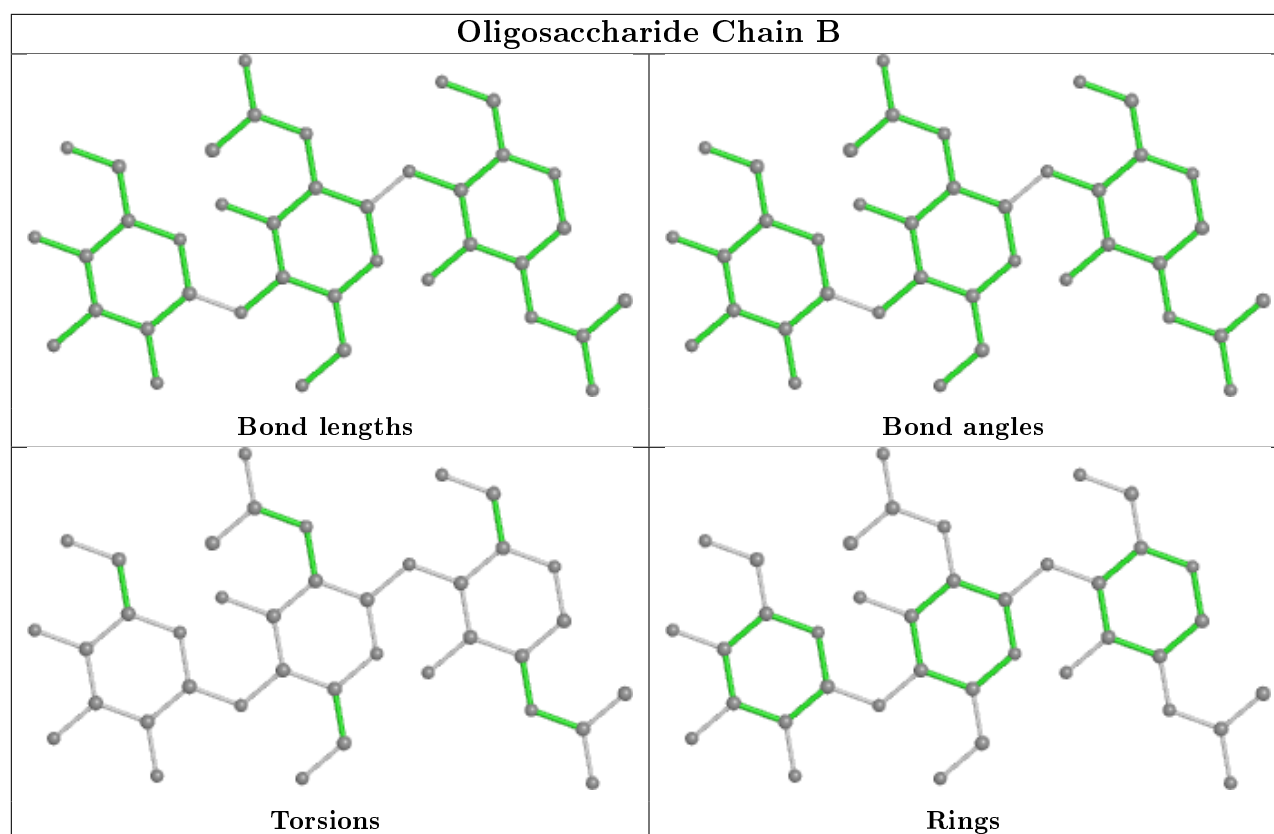
There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.



5.6 Ligand geometry [i](#)

Of 19 ligands modelled in this entry, 13 are monoatomic - leaving 6 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	$\# Z > 2$
8	NAG	A	1786	1	14,14,15	0.61	0	17,19,21	1.23	1 (5%)
8	NAG	A	1785	1	14,14,15	0.76	0	17,19,21	0.90	0
8	NAG	A	1780[A]	1	14,14,15	0.51	0	17,19,21	0.85	0
8	NAG	A	1784	1	14,14,15	0.73	1 (7%)	17,19,21	0.97	1 (5%)
8	NAG	A	1780[B]	1	14,14,15	0.62	0	17,19,21	1.34	1 (5%)
7	IMD	A	821	1	3,5,5	0.38	0	4,5,5	0.87	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
8	NAG	A	1786	1	-	2/6/23/26	0/1/1/1
8	NAG	A	1785	1	-	0/6/23/26	0/1/1/1
8	NAG	A	1780[A]	1	-	0/6/23/26	0/1/1/1
8	NAG	A	1784	1	-	2/6/23/26	0/1/1/1
8	NAG	A	1780[B]	1	-	0/6/23/26	0/1/1/1
7	IMD	A	821	1	-	-	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	A	1784	NAG	C1-C2	2.12	1.55	1.52

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	A	1780[B]	NAG	C1-O5-C5	3.81	117.36	112.19
8	A	1786	NAG	O5-C1-C2	-3.54	105.70	111.29
8	A	1784	NAG	O5-C5-C6	2.07	110.44	107.20

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
8	A	1784	NAG	O5-C5-C6-O6
8	A	1786	NAG	C8-C7-N2-C2
8	A	1784	NAG	C4-C5-C6-O6
8	A	1786	NAG	O7-C7-N2-C2

There are no ring outliers.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
8	A	1780[B]	NAG	2	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues

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, 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	736/747 (98%)	-0.34	22 (2%) 50 45	13, 19, 40, 103	11 (1%)

All (22) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	740	GLU	7.8
1	A	741	THR	7.7
1	A	739	ASP	6.8
1	A	776	ILE	6.2
1	A	311	SER	5.3
1	A	46	VAL	4.5
1	A	47	SER	4.3
1	A	778[A]	LYS	4.1
1	A	738	ASP	4.0
1	A	742	GLU	4.0
1	A	737	TYR	3.9
1	A	777	ASN	3.8
1	A	775	ARG	3.6
1	A	149	ASP	3.4
1	A	288	ASP	3.2
1	A	310	ASP	3.0
1	A	769	THR	2.8
1	A	745	ASN	2.4
1	A	758	VAL	2.4
1	A	43	ALA	2.2
1	A	282	TYR	2.1
1	A	743	GLU	2.0

6.2 Non-standard residues in protein, DNA, RNA chains

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

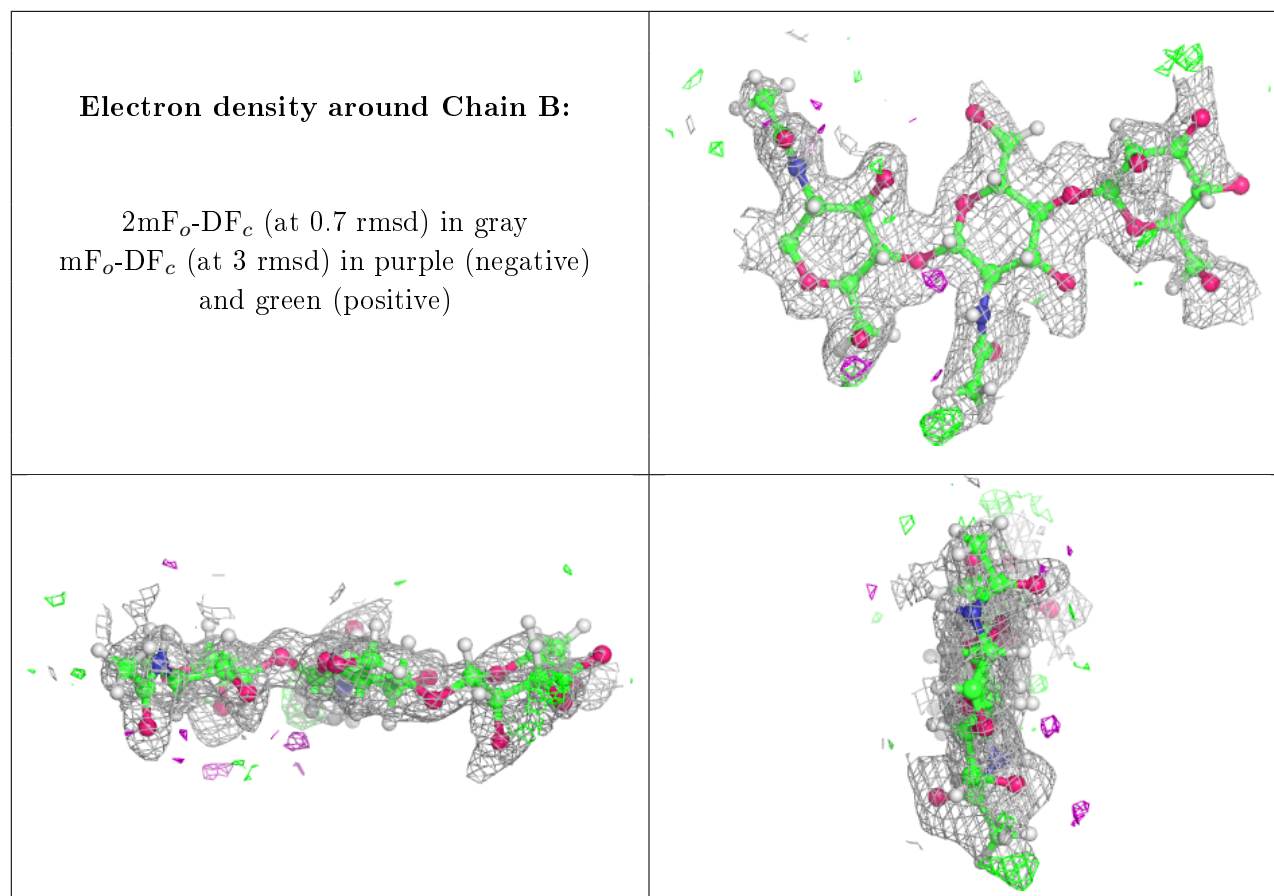
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
1	TPQ	A	478[B]	14/15	0.99	0.05	16,31,50,50	13
1	TPQ	A	478[A]	14/15	0.99	0.05	16,31,50,50	13

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. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	BMA	B	3	11/12	0.75	0.35	41,65,78,88	0
2	NAG	B	2	14/15	0.95	0.17	31,43,55,72	0
2	NAG	B	1	14/15	0.95	0.10	24,34,45,47	0

The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.



6.4 Ligands ⓘ

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
8	NAG	A	1785	14/15	0.63	0.36	43,70,86,88	0
5	MG	A	807	1/1	0.75	0.20	73,73,73,73	0
8	NAG	A	1780[A]	14/15	0.77	0.18	31,34,41,54	25
8	NAG	A	1780[B]	14/15	0.77	0.18	22,26,34,35	25
8	NAG	A	1786	14/15	0.86	0.24	34,42,72,81	0
5	MG	A	808	1/1	0.90	0.29	68,68,68,68	0
7	IMD	A	821	5/5	0.92	0.07	30,32,46,50	10
8	NAG	A	1784	14/15	0.92	0.21	33,39,55,60	0
5	MG	A	806	1/1	0.95	0.07	30,30,30,30	1
5	MG	A	805	1/1	0.98	0.17	21,21,21,21	1
6	CL	A	814	1/1	0.98	0.04	34,34,34,34	1
3	CU	A	801	1/1	0.99	0.03	20,20,20,20	0
4	CA	A	802	1/1	1.00	0.06	13,13,13,13	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
6	CL	A	811	1/1	1.00	0.03	24,24,24,24	0
4	CA	A	803	1/1	1.00	0.05	15,15,15,15	0
5	MG	A	804	1/1	1.00	0.04	20,20,20,20	0
6	CL	A	815	1/1	1.00	0.08	36,36,36,36	1
6	CL	A	813	1/1	1.00	0.05	27,27,27,27	0
6	CL	A	812	1/1	1.00	0.09	27,27,27,27	0

6.5 Other polymers [i](#)

There are no such residues in this entry.