Full wwPDB X-ray Structure Validation Report ⓘ

Sep 25, 2023 – 12:31 AM EDT

PDB ID	:	5W6U
Title	:	Crystal structure of the A/Puerto Rico/8/1934 (H1N1) influenza virus hemagglutinin in complex with cyclic peptide CP121068 (P2)
Authors	:	Wilson, I.A.; Kadam, R.U.
Deposited on	:	2017-06-16
Resolution	:	2.88 Å(reported)

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

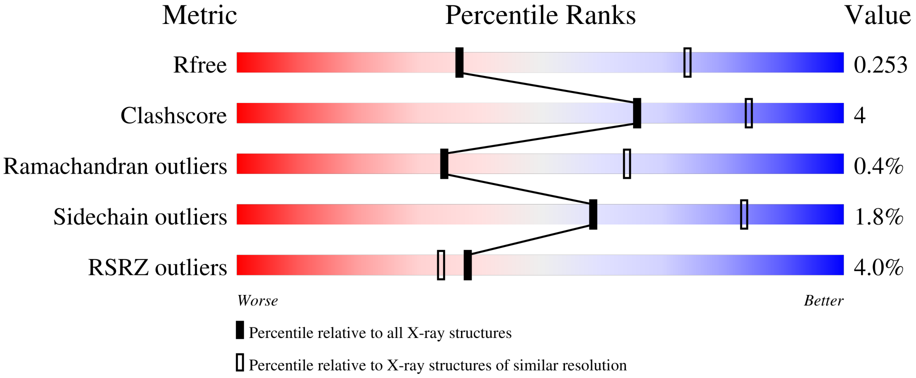
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35.1

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 2.88 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	2691 (2.90-2.86)
Clashscore	141614	2947 (2.90-2.86)
Ramachandran outliers	138981	2868 (2.90-2.86)
Sidechain outliers	138945	2871 (2.90-2.86)
RSRZ outliers	127900	2629 (2.90-2.86)

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 of 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 <=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	326	
2	B	176	
3	D	12	
4	C	2	

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
5	NAG	A	401	-	-	-	X
5	NAG	B	201	X	-	-	X

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 4126 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 Hemagglutinin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	322	2542	1603	443	483	13	0	0	0

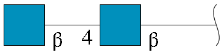
- Molecule 2 is a protein called Hemagglutinin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	171	1380	866	235	272	7	0	0	0

- Molecule 3 is a protein called ACE-ARG-ORN-LEU-GLU-TYR-PHE-GLU-TRP-LEU-SER-BAL.

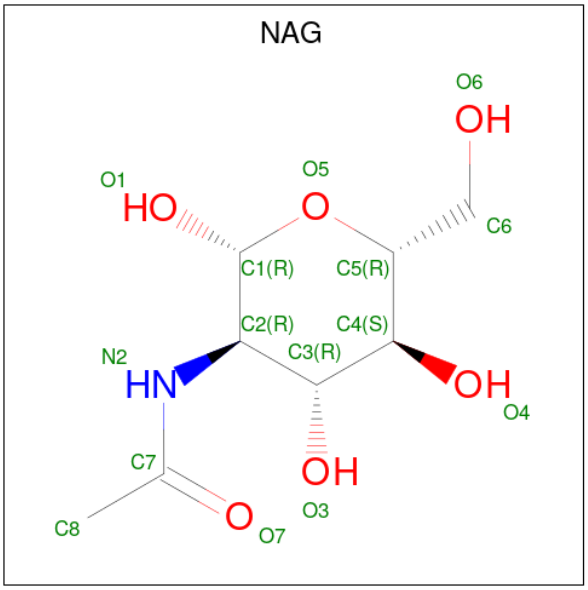
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
3	D	12	104	70	16	18	0	0	0

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



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
4	C	2	28	16	2	10	0	0	0

- Molecule 5 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



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

- Molecule 6 is water.

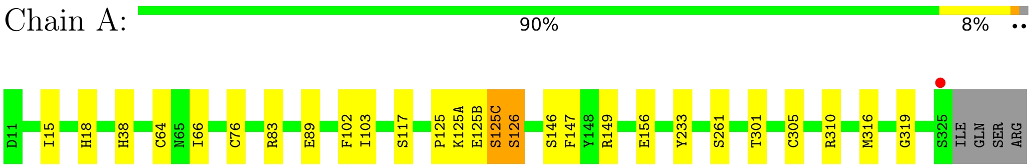
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	23	Total O 23 23	0	0
6	B	5	Total O 5 5	0	0
6	D	2	Total O 2 2	0	0

3 Residue-property plots ⓘ

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.

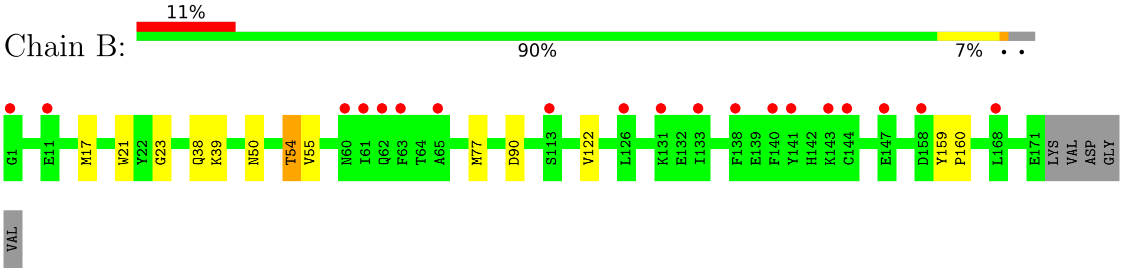
- Molecule 1: Hemagglutinin

Chain A:



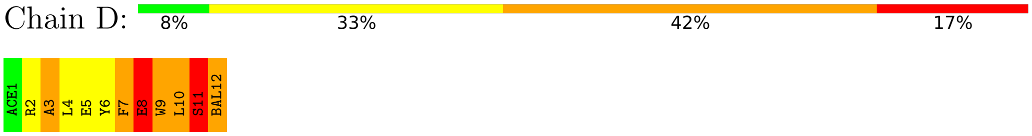
- Molecule 2: Hemagglutinin

Chain B:



- Molecule 3: ACE-ARG-ORN-LEU-GLU-TYR-PHE-GLU-TRP-LEU-SER-BAL

Chain D:



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

Chain C:

4 Data and refinement statistics ⓘ

Property	**Value**	**Source**
Space group	I 21 3	Depositor
Cell constants a, b, c, α, β, γ	166.08Å 166.08Å 166.08Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	44.39 – 2.88 44.39 – 2.88	Depositor EDS
% Data completeness (in resolution range)	99.3 (44.39-2.88) 99.3 (44.39-2.88)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.11	Depositor
$< I/\sigma(I) >$ [1]	5.26 (at 2.86Å)	Xtriage
Refinement program	PHENIX (1.10_2155: ???)	Depositor
R, R_{free}	0.233 , 0.252 0.234 , 0.253	Depositor DCC
R_{free} test set	838 reflections (4.84%)	wwPDB-VP
Wilson B-factor (Å^2)	64.7	Xtriage
Anisotropy	0.000	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 27.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.51$, $< L^2 > = 0.35$	Xtriage
Estimated twinning fraction	0.025 for -l,-k,-h	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	4126	wwPDB-VP
Average B, all atoms (Å^2)	66.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.95% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ 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: NAG, ACE, BAL, ORN

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	0.43	0/2606	0.51	0/3544
2	B	0.41	0/1407	0.47	0/1891
3	D	2.79	13/91 (14.3%)	1.77	1/121 (0.8%)
All	All	0.59	13/4104 (0.3%)	0.56	1/5556 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
3	D	0	1

All (13) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	9	TRP	CG-CD2	-8.34	1.29	1.43
3	D	9	TRP	CD2-CE2	-8.03	1.31	1.41
3	D	6	TYR	CB-CG	-8.01	1.39	1.51
3	D	9	TRP	CA-C	-6.73	1.35	1.52
3	D	7	PHE	CB-CG	-6.73	1.40	1.51
3	D	11	SER	CA-C	-6.52	1.35	1.52
3	D	6	TYR	CA-C	-6.14	1.36	1.52
3	D	9	TRP	CD2-CE3	-6.02	1.31	1.40
3	D	10	LEU	CA-C	-5.82	1.37	1.52
3	D	5	GLU	CA-C	-5.76	1.38	1.52
3	D	8	GLU	CA-C	-5.69	1.38	1.52
3	D	7	PHE	CA-C	-5.28	1.39	1.52
3	D	4	LEU	CA-C	-5.27	1.39	1.52

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	9	TRP	CD1-CG-CD2	6.23	111.28	106.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	D	11	SER	Peptide

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	2542	0	2473	17	0
2	B	1380	0	1308	10	0
3	D	104	0	94	10	0
4	C	28	0	25	0	0
5	A	28	0	26	0	0
5	B	14	0	13	0	0
6	A	23	0	0	2	0
6	B	5	0	0	1	0
6	D	2	0	0	3	0
All	All	4126	0	3939	32	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 4.

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:A:64:CYS:SG	1:A:76:CYS:SG	1.46	1.38
2:B:50:ASN:O	2:B:54:THR:HG23	1.58	1.03
2:B:50:ASN:O	2:B:54:THR:CG2	2.20	0.87
1:A:125:PRO:O	1:A:126:SER:OG	1.95	0.84
3:D:3:ORN:HD3	6:D:101:HOH:O	1.80	0.81
1:A:103:ILE:HG13	1:A:233:TYR:CE2	2.20	0.77
2:B:17:MET:SD	2:B:23:GLY:HA3	2.29	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:3:ORN:CD	6:D:101:HOH:O	2.38	0.70
3:D:7:PHE:H	3:D:10:LEU:HD11	1.64	0.63
3:D:3:ORN:NE	6:D:101:HOH:O	2.31	0.63
1:A:310:ARG:NH1	2:B:90:ASP:OD1	2.35	0.59
2:B:38:GLN:HB3	3:D:9:TRP:CZ3	2.41	0.56
2:B:77:MET:HE1	6:B:307:HOH:O	2.10	0.51
1:A:149:ARG:NE	6:A:502:HOH:O	2.11	0.49
3:D:8:GLU:HA	3:D:8:GLU:OE1	2.13	0.48
1:A:15:ILE:HD11	2:B:122:VAL:HG21	1.96	0.48
1:A:301:THR:HB	1:A:305:CYS:SG	2.53	0.48
1:A:117:SER:HB3	1:A:261:SER:HB2	1.95	0.47
1:A:18:HIS:HB2	2:B:21:TRP:HA	1.97	0.46
1:A:38:HIS:HB2	1:A:319:GLY:HA3	1.97	0.46
1:A:38:HIS:HB2	1:A:319:GLY:CA	2.45	0.45
1:A:38:HIS:HB2	1:A:319:GLY:N	2.30	0.45
1:A:83:ARG:NH1	6:A:504:HOH:O	2.49	0.44
3:D:3:ORN:HG3	3:D:12:BAL:O	2.17	0.44
3:D:3:ORN:HD3	3:D:3:ORN:HA	1.65	0.43
1:A:66:ILE:HG12	1:A:89:GLU:OE1	2.20	0.41
1:A:125(B):GLU:O	1:A:125(C):SER:CB	2.68	0.41
1:A:316:MET:HE1	2:B:55:VAL:HG11	2.03	0.41
2:B:159:TYR:HB3	2:B:160:PRO:HD3	2.03	0.41
3:D:8:GLU:CG	3:D:8:GLU:O	2.70	0.40
1:A:146:SER:OG	1:A:147:PHE:N	2.53	0.40
3:D:7:PHE:N	3:D:10:LEU:HD11	2.33	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	320/326 (98%)	311 (97%)	7 (2%)	2 (1%)	25 55

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	B	169/176 (96%)	166 (98%)	3 (2%)	0	100	100
3	D	9/12 (75%)	9 (100%)	0	0	100	100
All	All	498/514 (97%)	486 (98%)	10 (2%)	2 (0%)	34	64

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	125(C)	SER
1	A	125(A)	LYS

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	285/289 (99%)	282 (99%)	3 (1%)	73	90
2	B	147/151 (97%)	145 (99%)	2 (1%)	67	87
3	D	9/9 (100%)	6 (67%)	3 (33%)	0	0
All	All	441/449 (98%)	433 (98%)	8 (2%)	59	83

All (8) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	102	PHE
1	A	126	SER
1	A	156	GLU
2	B	39	LYS
2	B	54	THR
3	D	2	ARG
3	D	8	GLU
3	D	11	SER

Sometimes 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	$\#\|Z\| > 2$
3	BAL	D	12	3	4,4,5	0.52	0	3,3,5	1.72	1 (33%)
3	ORN	D	3	3	6,7,8	1.68	1 (16%)	2,7,9	0.68	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	BAL	D	12	3	-	1/1/2/3	-
3	ORN	D	3	3	-	3/5/6/8	-

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	3	ORN	CB-CA	-4.02	1.48	1.53

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	D	12	BAL	CB-CA-C	-2.81	107.25	111.42

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	D	3	ORN	C-CA-CB-CG
3	D	3	ORN	CA-CB-CG-CD
3	D	12	BAL	C-CA-CB-N
3	D	3	ORN	N-CA-CB-CG

There are no ring outliers.

2 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	D	12	BAL	1	0
3	D	3	ORN	5	0

5.5 Carbohydrates

2 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	$\#\|Z\|>2$
4	NAG	C	1	1,4	14,14,15	1.39	1 (7%)	17,19,21	0.72	0
4	NAG	C	2	4	14,14,15	0.21	0	17,19,21	0.44	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
4	NAG	C	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	C	2	4	-	0/6/23/26	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	C	1	NAG	O5-C1	-5.09	1.35	1.43

There are no bond angle outliers.

There are no chirality outliers.

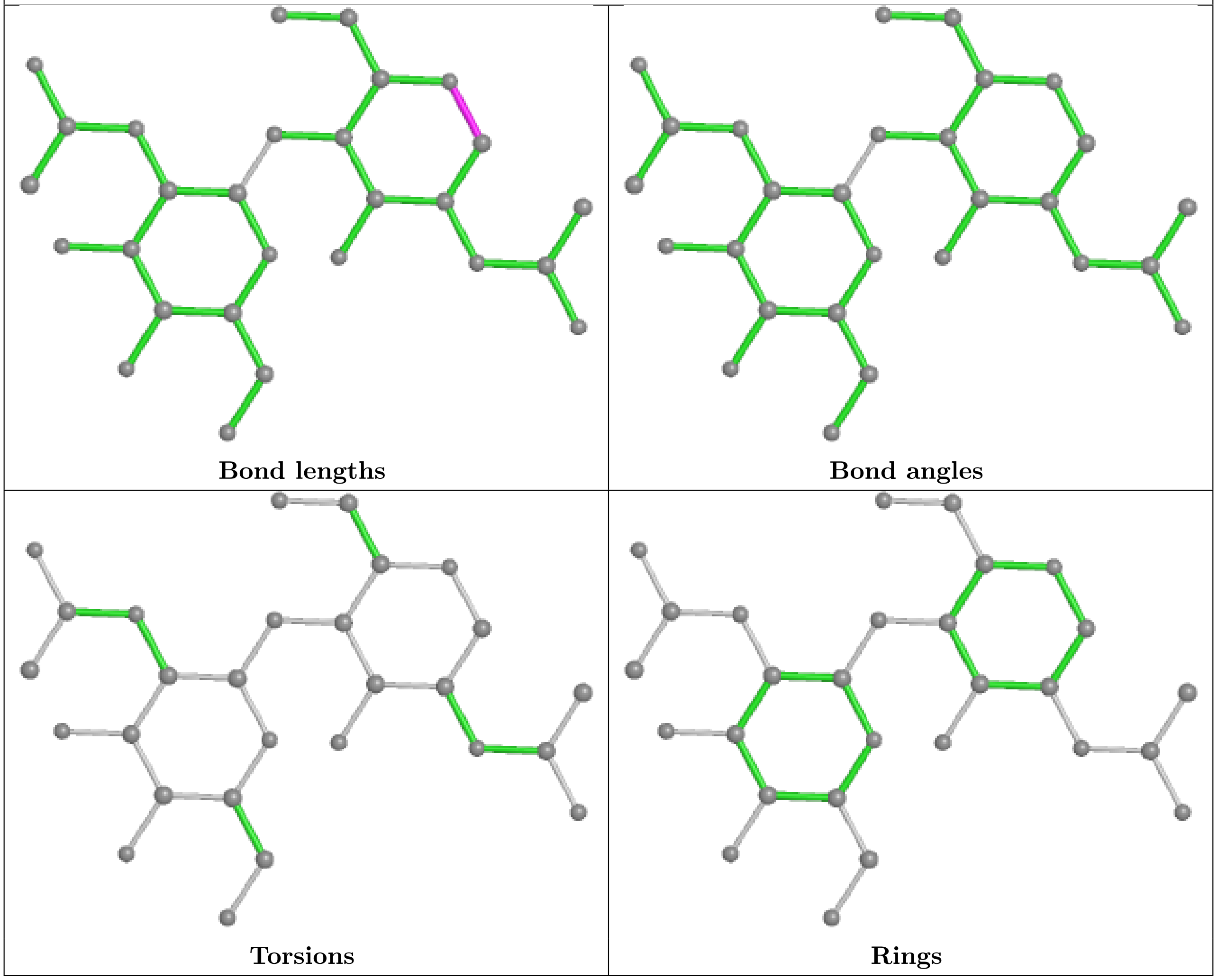
There are no torsion outliers.

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.

Oligosaccharide Chain C



Bond lengths **Bond angles**

Torsions **Rings**

5.6 Ligand geometry (i)

3 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	**Type**	**Chain**	**Res**	**Link**	**Bond lengths**			**Bond angles**		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
5	NAG	B	201	2	14,14,15	0.45	0	17,19,21	1.20	2 (11%)
5	NAG	A	401	1	14,14,15	0.43	0	17,19,21	0.72	0
5	NAG	A	404	1	14,14,15	1.54	1 (7%)	17,19,21	0.92	1 (5%)

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	NAG	A	404	1	-	0/6/23/26	0/1/1/1
5	NAG	A	401	1	-	2/6/23/26	0/1/1/1
5	NAG	B	201	2	1/1/5/7	5/6/23/26	0/1/1/1

All (1) bond length outliers are listed below:

Mol	**Chain**	**Res**	**Type**	**Atoms**	**Z**	**Observed(Å)**	**Ideal(Å)**
5	A	404	NAG	C1-C2	5.22	1.60	1.52

All (3) bond angle outliers are listed below:

Mol	**Chain**	**Res**	**Type**	**Atoms**	**Z**	**Observed(^{o})**	**Ideal(^{o})**
5	B	201	NAG	O5-C5-C4	-2.19	105.49	110.83
5	B	201	NAG	O5-C5-C6	2.15	110.57	107.20
5	A	404	NAG	C1-O5-C5	2.03	114.94	112.19

All (1) chirality outliers are listed below:

Mol	**Chain**	**Res**	**Type**	**Atom**
5	B	201	NAG	C1

All (7) torsion outliers are listed below:

Mol	**Chain**	**Res**	**Type**	**Atoms**
5	B	201	NAG	C3-C2-N2-C7
5	B	201	NAG	C8-C7-N2-C2
5	B	201	NAG	O7-C7-N2-C2

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Mol	Chain	Res	Type	Atoms
5	A	401	NAG	C4-C5-C6-O6
5	A	401	NAG	O5-C5-C6-O6
5	B	201	NAG	C1-C2-N2-C7
5	B	201	NAG	O5-C5-C6-O6

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers ⓘ

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	322/326 (98%)	-0.01	1 (0%)	94	94	39, 54, 82, 111	0
2	B	171/176 (97%)	0.66	19 (11%)	5	4	36, 78, 118, 126	0
3	D	9/12 (75%)	-0.12	0	100	100	70, 77, 81, 93	0
All	All	502/514 (97%)	0.21	20 (3%)	38	33	36, 58, 113, 126	0

All (20) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	138	PHE	4.0
2	B	1	GLY	3.8
2	B	141	TYR	3.7
2	B	61	ILE	3.5
2	B	63	PHE	3.0
2	B	62	GLN	2.9
2	B	60	ASN	2.7
2	B	65	ALA	2.6
2	B	147	GLU	2.5
2	B	168	LEU	2.5
2	B	131	LYS	2.4
2	B	126	LEU	2.4
2	B	133	ILE	2.3
2	B	140	PHE	2.3
1	A	325	SER	2.2
2	B	158	ASP	2.2
2	B	11	GLU	2.2
2	B	144	CYS	2.1
2	B	113	SER	2.1
2	B	143	LYS	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
3	BAL	D	12	5/6	0.84	0.25	83,85,88,89	0
3	ORN	D	3	8/9	0.91	0.18	73,77,81,88	0

6.3 Carbohydrates ⓘ

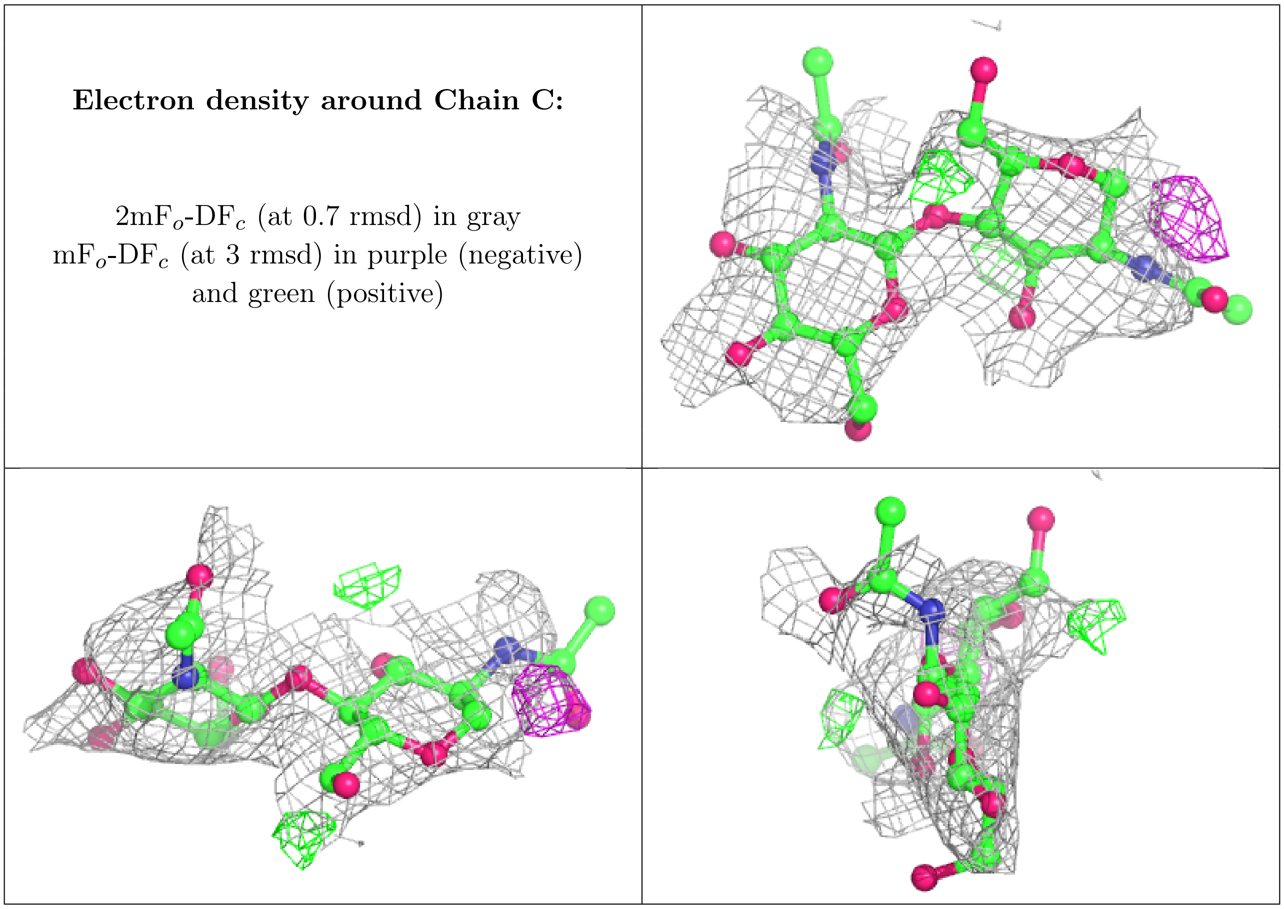
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled ‘Q< 0.9’ lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($Å^2$)	Q<0.9
4	NAG	C	1	14/15	0.69	0.33	112,122,128,129	0
4	NAG	C	2	14/15	0.75	0.37	116,126,129,132	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.

Electron density around Chain C:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



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(Å^2)	Q<0.9
5	NAG	B	201	14/15	0.41	0.46	116,128,138,146	0
5	NAG	A	404	14/15	0.72	0.37	121,127,129,130	0
5	NAG	A	401	14/15	0.76	0.46	101,121,130,138	0

6.5 Other polymers ⓘ

There are no such residues in this entry.