



Full wwPDB X-ray Structure Validation Report ⓘ

Nov 13, 2016 – 04:59 AM EST

PDB ID : 5KXE
Title : Wisteria floribunda lectin in complex with GalNAc(beta1-4)GlcNAc (LacdiNAc) at pH 4.2
Authors : Evans, S.V.; Haji-Ghassemi, O.
Deposited on : 2016-07-20
Resolution : 2.09 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 : 1.7.1 (RC1), CSD as537be (2016)
Xtriage (Phenix) : 1.9-1692
EDS : rb-20028320
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : rb-20028320

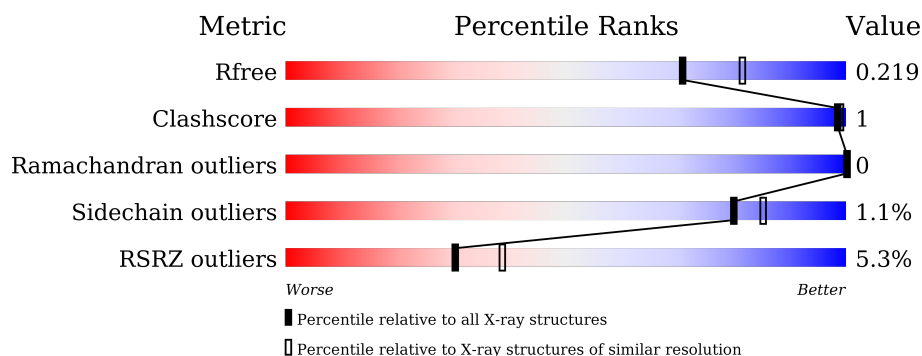
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.09 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	91344	3939 (2.10-2.10)
Clashscore	102246	4460 (2.10-2.10)
Ramachandran outliers	100387	4413 (2.10-2.10)
Sidechain outliers	100360	4414 (2.10-2.10)
RSRZ outliers	91569	3948 (2.10-2.10)

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	243	<div> <div>3%</div> <div>95%</div> <div>..</div> </div>
1	B	243	<div> <div>5%</div> <div>95%</div> <div>...</div> </div>
1	C	243	<div> <div>4%</div> <div>96%</div> <div>..</div> </div>
1	D	243	<div> <div>8%</div> <div>95%</div> <div>..</div> </div>

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

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
5	MAN	B	306	-	-	-	X
6	6Y2	A	306	-	-	-	X
6	6Y2	B	308	-	-	-	X
6	6Y2	D	303	-	-	-	X

2 Entry composition [i](#)

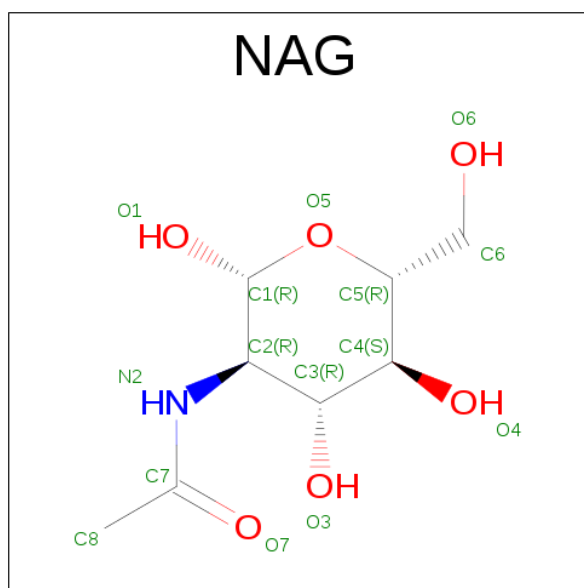
There are 12 unique types of molecules in this entry. The entry contains 8355 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Wisteria floribunda agglutinin.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
1	A	238	Total	C	N	O	0	0	0
			1851	1179	303	369			
1	B	238	Total	C	N	O	0	0	0
			1851	1179	303	369			
1	C	238	Total	C	N	O	0	0	0
			1851	1179	303	369			
1	D	238	Total	C	N	O	0	0	0
			1851	1179	303	369			

- Molecule 2 is N-ACETYL-D-GLUCOSAMINE (three-letter code: NAG) (formula: C₈H₁₅NO₆).



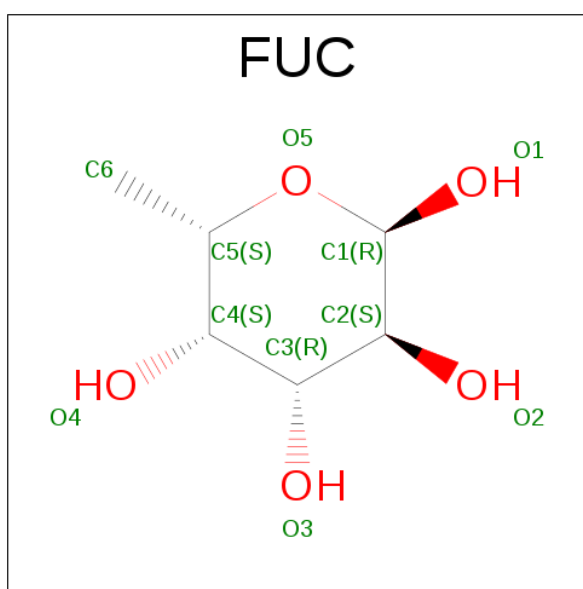
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		

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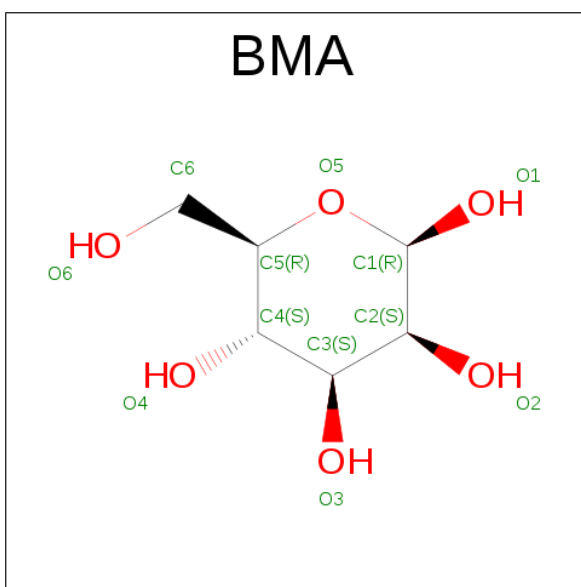
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	C	1	Total	C	N	O	0	0
			14	8	1	5		
2	D	1	Total	C	N	O	0	0
			14	8	1	5		

- Molecule 3 is ALPHA-L-FUCOSE (three-letter code: FUC) (formula: $C_6H_{12}O_5$).



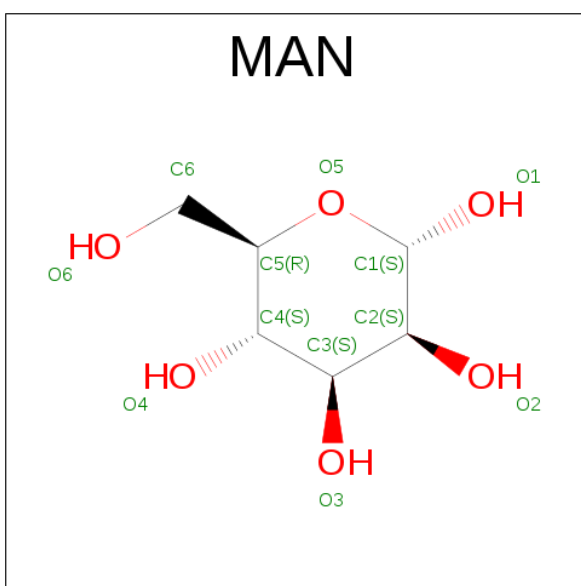
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			10	6	4		
3	B	1	Total	C	O	0	0
			10	6	4		
3	C	1	Total	C	O	0	0
			10	6	4		
3	D	1	Total	C	O	0	0
			10	6	4		

- Molecule 4 is BETA-D-MANNOSE (three-letter code: BMA) (formula: $C_6H_{12}O_6$).



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

- Molecule 5 is ALPHA-D-MANNOSE (three-letter code: MAN) (formula: $C_6H_{12}O_6$).



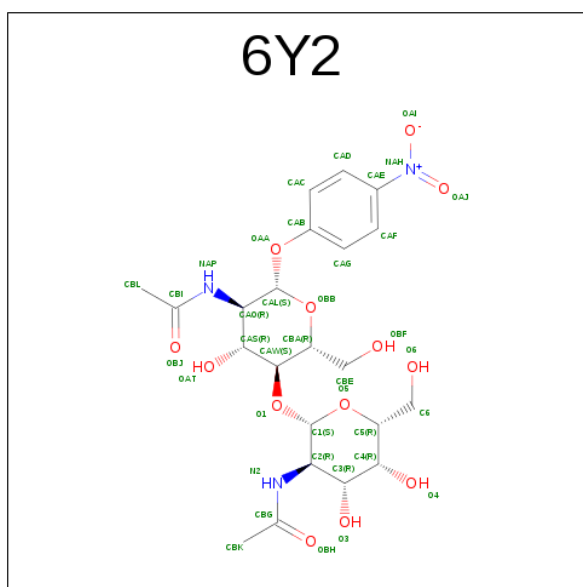
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			11	6	5		
5	B	1	Total	C	O	0	0
			11	6	5		

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

- Molecule 6 is {N}-[(2 {S},3 {R},4 {R},5 {R},6 {R})-2-[(2 {R},3 {S},4 {R},5 {R},6 {S})-5-acetamido-2-(hydroxymethyl)-6-(4-nitrophenoxy)-4-oxidanyl-oxan-3-yl]oxy-6-(hydroxymethyl)-4,5-bis(oxidanyl)oxan-3-yl]ethanamide (three-letter code: 6Y2) (formula: C₂₂H₃₁N₃O₁₃).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	A	1	Total	C	N	O	0	0
			38	22	3	13		
6	B	1	Total	C	N	O	0	0
			38	22	3	13		
6	C	1	Total	C	N	O	0	0
			38	22	3	13		
6	D	1	Total	C	N	O	0	0
			38	22	3	13		

- Molecule 7 is MANGANESE (II) ION (three-letter code: MN) (formula: Mn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	B	1	Total	Mn	0	0
			1	1		
7	A	1	Total	Mn	0	0
			1	1		
7	D	1	Total	Mn	0	0
			1	1		

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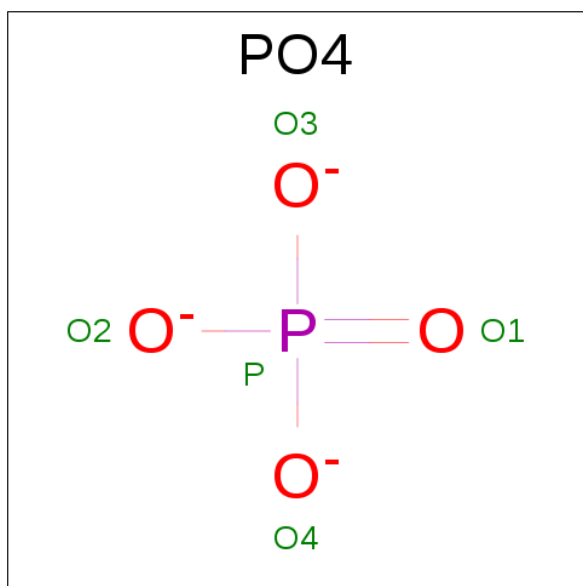
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	C	1	Total	Mn	0	0
			1	1		

- Molecule 8 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	B	1	Total	Ca	0	0
			1	1		
8	A	1	Total	Ca	0	0
			1	1		
8	D	1	Total	Ca	0	0
			1	1		
8	C	1	Total	Ca	0	0
			1	1		

- Molecule 9 is PHOSPHATE ION (three-letter code: PO4) (formula: O₄P).



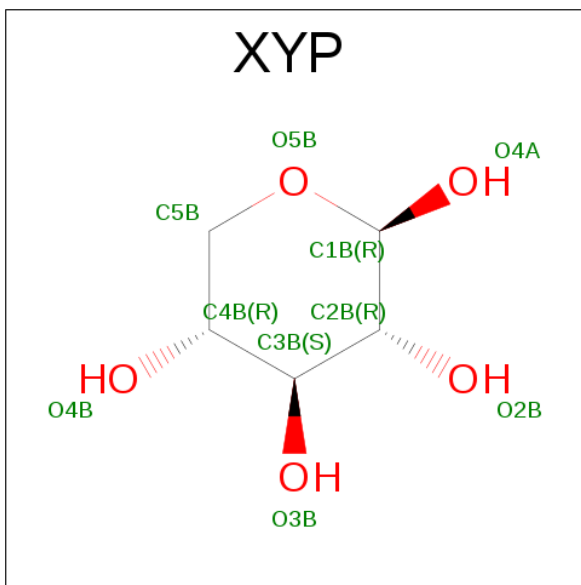
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
9	A	1	Total	O	P	0	0
			5	4	1		
9	A	1	Total	O	P	0	0
			5	4	1		
9	B	1	Total	O	P	0	0
			5	4	1		
9	B	1	Total	O	P	0	0
			5	4	1		

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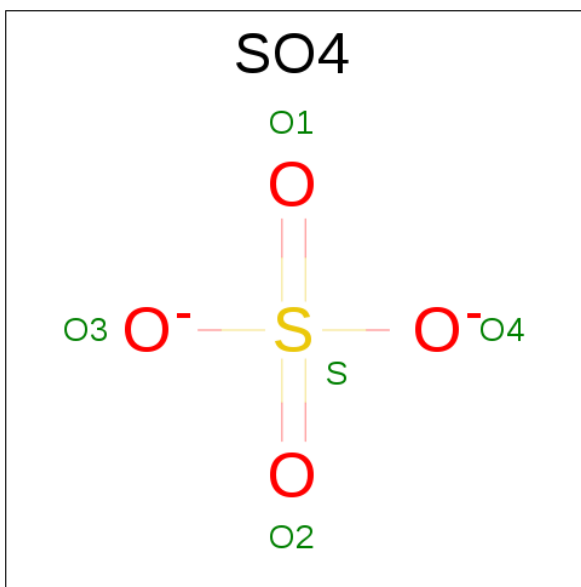
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
9	C	1	Total	O	P	0	0
			5	4	1		
9	D	1	Total	O	P	0	0
			5	4	1		

- Molecule 10 is BETA-D-XYLOPYRANOSE (three-letter code: XYP) (formula: C₅H₁₀O₅).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
10	B	1	Total	C	O	0	0
			9	5	4		

- Molecule 11 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
11	B	1	Total	O	S	0	0
			5	4	1		

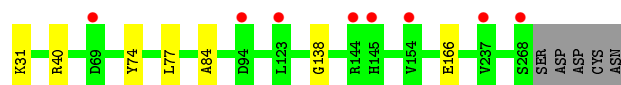
- Molecule 12 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
12	A	149	Total	O	0	0
			149	149		
12	B	136	Total	O	0	0
			136	136		
12	C	166	Total	O	0	0
			166	166		
12	D	117	Total	O	0	0
			117	117		

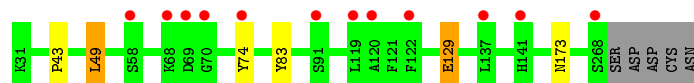
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

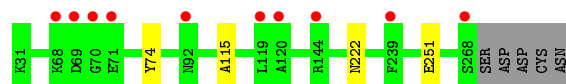
- Molecule 1: *Wisteria floribunda* agglutinin



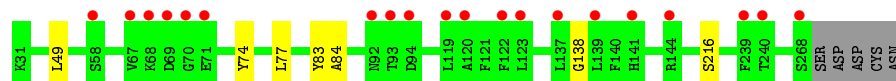
- Molecule 1: *Wisteria floribunda* agglutinin



- Molecule 1: *Wisteria floribunda* agglutinin



- Molecule 1: *Wisteria floribunda* agglutinin



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	76.58 Å 97.94 Å 149.16 Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.01 – 2.09 29.91 – 2.09	Depositor EDS
% Data completeness (in resolution range)	99.6 (50.01-2.09) 99.7 (29.91-2.09)	Depositor EDS
R_{merge}	0.14	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.20 (at 2.08 Å)	Xtriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.181 , 0.212 0.189 , 0.219	Depositor DCC
R_{free} test set	3400 reflections (5.35%)	DCC
Wilson B-factor (Å ²)	25.1	Xtriage
Anisotropy	0.063	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.37 , 41.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	8355	wwPDB-VP
Average B, all atoms (Å ²)	29.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.37% 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: 6Y2, XYP, BMA, NAG, PO4, MN, SO4, MAN, CA, FUC

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	0.50	0/1899	0.71	1/2599 (0.0%)
1	B	0.49	0/1899	0.70	1/2599 (0.0%)
1	C	0.50	0/1899	0.69	0/2599
1	D	0.46	0/1899	0.69	0/2599
All	All	0.49	0/7596	0.70	2/10396 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	40	ARG	NE-CZ-NH2	5.74	123.17	120.30
1	B	129	GLU	CA-CB-CG	5.06	124.53	113.40

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	1851	0	1779	3	0
1	B	1851	0	1779	1	0
1	C	1851	0	1779	2	0
1	D	1851	0	1779	4	0
2	A	28	0	23	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	28	0	23	1	0
2	C	14	0	12	1	0
2	D	14	0	12	0	0
3	A	10	0	10	3	0
3	B	10	0	10	1	0
3	C	10	0	10	1	0
3	D	10	0	10	0	0
4	A	11	0	9	0	0
4	B	11	0	7	0	0
5	A	11	0	10	0	0
5	B	22	0	20	0	0
6	A	38	0	0	1	0
6	B	38	0	0	0	0
6	C	38	0	0	0	0
6	D	38	0	0	0	0
7	A	1	0	0	0	0
7	B	1	0	0	0	0
7	C	1	0	0	0	0
7	D	1	0	0	0	0
8	A	1	0	0	0	0
8	B	1	0	0	0	0
8	C	1	0	0	0	0
8	D	1	0	0	0	0
9	A	10	0	0	1	0
9	B	10	0	0	0	0
9	C	5	0	0	0	0
9	D	5	0	0	0	0
10	B	9	0	8	0	0
11	B	5	0	0	0	0
12	A	149	0	0	1	0
12	B	136	0	0	0	0
12	C	166	0	0	0	0
12	D	117	0	0	0	0
All	All	8355	0	7280	14	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 1.

All (14) 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)
2:C:301:NAG:O4	3:C:302:FUC:H5	1.98	0.62
2:B:301:NAG:O4	3:B:302:FUC:H5	1.99	0.62
6:A:306:6Y2:N2	9:A:310:PO4:O4	2.35	0.59
3:A:302:FUC:H61	2:A:303:NAG:H61	1.83	0.59
2:A:301:NAG:H3	3:A:302:FUC:O2	2.04	0.56
1:D:49:LEU:HD12	1:D:83:TYR:CD1	2.42	0.54
1:B:49:LEU:HD12	1:B:83:TYR:CD2	2.42	0.54
1:A:84:ALA:HB2	1:D:84:ALA:HB2	1.94	0.50
1:A:31:LYS:N	12:A:405:HOH:O	2.48	0.47
2:A:301:NAG:O4	3:A:302:FUC:C1	2.67	0.42
1:A:77:LEU:HD11	1:A:138:GLY:HA3	2.02	0.42
1:C:222:ASN:HD21	1:D:216:SER:HA	1.84	0.41
1:D:77:LEU:HD11	1:D:138:GLY:HA3	2.03	0.41
1:C:115:ALA:HB1	1:C:251:GLU:OE1	2.20	0.41

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	236/243 (97%)	232 (98%)	4 (2%)	0	100	100
1	B	236/243 (97%)	232 (98%)	4 (2%)	0	100	100
1	C	236/243 (97%)	232 (98%)	4 (2%)	0	100	100
1	D	236/243 (97%)	232 (98%)	4 (2%)	0	100	100
All	All	944/972 (97%)	928 (98%)	16 (2%)	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	210/215 (98%)	208 (99%)	2 (1%)	82	87
1	B	210/215 (98%)	205 (98%)	5 (2%)	57	61
1	C	210/215 (98%)	209 (100%)	1 (0%)	92	95
1	D	210/215 (98%)	209 (100%)	1 (0%)	92	95
All	All	840/860 (98%)	831 (99%)	9 (1%)	80	85

All (9) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	74	TYR
1	A	166	GLU
1	B	43	PRO
1	B	49	LEU
1	B	74	TYR
1	B	129	GLU
1	B	173	ASN
1	C	74	TYR
1	D	74	TYR

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (10) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	149	ASN
1	A	173	ASN
1	B	149	ASN
1	B	173	ASN
1	C	46	GLN
1	C	61	HIS
1	C	149	ASN
1	C	173	ASN
1	C	222	ASN
1	D	149	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

5.6 Ligand geometry ⓘ

Of 35 ligands modelled in this entry, 8 are monoatomic - leaving 27 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	NAG	A	301	1,3,2	14,14,15	0.38	0	15,19,21	1.05	2 (13%)
3	FUC	A	302	2	10,10,11	0.30	0	13,14,16	0.77	0
2	NAG	A	303	2,4	14,14,15	0.47	0	15,19,21	0.59	0
4	BMA	A	304	2,5	11,11,12	0.79	0	15,15,17	1.50	2 (13%)
5	MAN	A	305	4	11,11,12	0.73	0	15,15,17	0.79	0
6	6Y2	A	306	-	38,40,40	2.65	6 (15%)	50,57,57	1.07	2 (4%)
9	PO4	A	309	-	4,4,4	0.62	0	6,6,6	0.27	0
9	PO4	A	310	-	4,4,4	0.64	0	6,6,6	0.29	0
2	NAG	B	301	1,3,2	14,14,15	0.47	0	15,19,21	0.79	0
3	FUC	B	302	2	10,10,11	0.30	0	13,14,16	0.78	0
2	NAG	B	303	2,4	14,14,15	0.42	0	15,19,21	0.77	0
4	BMA	B	304	10,2,5	11,11,12	0.53	0	15,15,17	1.31	2 (13%)
10	XYP	B	305	4	9,9,10	0.63	0	12,12,14	1.07	1 (8%)
5	MAN	B	306	4	11,11,12	0.72	0	15,15,17	1.15	1 (6%)
5	MAN	B	307	4	11,11,12	0.58	0	15,15,17	1.68	2 (13%)
6	6Y2	B	308	-	38,40,40	2.29	3 (7%)	50,57,57	0.95	2 (4%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
9	PO4	B	311	-	4,4,4	0.48	0	6,6,6	0.30	0
9	PO4	B	312	-	4,4,4	1.21	0	6,6,6	0.22	0
11	SO4	B	313	-	4,4,4	0.39	0	6,6,6	0.14	0
2	NAG	C	301	1,3	14,14,15	0.42	0	15,19,21	1.78	5 (33%)
3	FUC	C	302	2	10,10,11	0.31	0	13,14,16	0.77	0
6	6Y2	C	303	-	38,40,40	2.17	2 (5%)	50,57,57	1.22	6 (12%)
9	PO4	C	306	-	4,4,4	0.55	0	6,6,6	0.27	0
2	NAG	D	301	1,3	14,14,15	0.60	0	15,19,21	2.05	4 (26%)
3	FUC	D	302	2	10,10,11	0.30	0	13,14,16	0.78	0
6	6Y2	D	303	-	38,40,40	1.77	2 (5%)	50,57,57	1.25	5 (10%)
9	PO4	D	306	-	4,4,4	0.55	0	6,6,6	0.30	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	A	301	1,3,2	-	0/6/23/26	0/1/1/1
3	FUC	A	302	2	-	0/0/17/20	0/1/1/1
2	NAG	A	303	2,4	-	0/6/23/26	0/1/1/1
4	BMA	A	304	2,5	-	0/2/19/22	0/1/1/1
5	MAN	A	305	4	-	0/2/19/22	0/1/1/1
6	6Y2	A	306	-	-	0/24/64/64	0/3/3/3
9	PO4	A	309	-	-	0/0/0/0	0/0/0/0
9	PO4	A	310	-	-	0/0/0/0	0/0/0/0
2	NAG	B	301	1,3,2	-	0/6/23/26	0/1/1/1
3	FUC	B	302	2	-	0/0/17/20	0/1/1/1
2	NAG	B	303	2,4	-	0/6/23/26	0/1/1/1
4	BMA	B	304	10,2,5	-	0/2/19/22	0/1/1/1
10	XYP	B	305	4	-	0/0/14/17	0/1/1/1
5	MAN	B	306	4	-	0/2/19/22	0/1/1/1
5	MAN	B	307	4	-	0/2/19/22	0/1/1/1
6	6Y2	B	308	-	-	0/24/64/64	0/3/3/3
9	PO4	B	311	-	-	0/0/0/0	0/0/0/0
9	PO4	B	312	-	-	0/0/0/0	0/0/0/0
11	SO4	B	313	-	-	0/0/0/0	0/0/0/0
2	NAG	C	301	1,3	-	0/6/23/26	0/1/1/1
3	FUC	C	302	2	-	0/0/17/20	0/1/1/1
6	6Y2	C	303	-	-	0/24/64/64	0/3/3/3
9	PO4	C	306	-	-	0/0/0/0	0/0/0/0
2	NAG	D	301	1,3	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	FUC	D	302	2	-	0/0/17/20	0/1/1/1
6	6Y2	D	303	-	-	0/24/64/64	0/3/3/3
9	PO4	D	306	-	-	0/0/0/0	0/0/0/0

All (13) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	306	6Y2	CAL-CAO	-3.12	1.47	1.53
6	A	306	6Y2	O1-C1	-2.05	1.36	1.41
6	C	303	6Y2	O1-C1	-2.04	1.36	1.41
6	A	306	6Y2	OBB-CAL	2.07	1.47	1.41
6	B	308	6Y2	CBL-CBI	2.12	1.55	1.50
6	A	306	6Y2	CAO-NAP	2.25	1.49	1.45
6	A	306	6Y2	OAA-CAL	2.75	1.45	1.41
6	B	308	6Y2	OAA-CAL	3.15	1.46	1.41
6	D	303	6Y2	OAA-CAL	3.39	1.46	1.41
6	D	303	6Y2	OAJ-NAH	9.03	1.40	1.22
6	C	303	6Y2	OAJ-NAH	12.51	1.47	1.22
6	B	308	6Y2	OAJ-NAH	12.76	1.48	1.22
6	A	306	6Y2	OAJ-NAH	14.63	1.51	1.22

All (34) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	C	303	6Y2	O1-C1-O5	-3.83	100.71	110.69
2	D	301	NAG	O3-C3-C2	-3.48	101.92	109.37
6	D	303	6Y2	CAD-CAE-NAH	-3.01	117.35	119.51
2	C	301	NAG	O3-C3-C2	-2.99	102.98	109.37
6	C	303	6Y2	O1-CAW-CBA	-2.93	101.54	109.33
6	C	303	6Y2	CBE-CBA-CAW	-2.63	105.51	113.25
6	D	303	6Y2	O1-C1-O5	-2.52	104.11	110.69
2	C	301	NAG	O5-C5-C4	-2.50	105.99	110.13
6	D	303	6Y2	C1-O5-C5	-2.32	109.20	113.74
6	B	308	6Y2	CAL-OBB-CBA	-2.17	109.49	113.74
6	A	306	6Y2	O1-C1-O5	-2.16	105.06	110.69
6	C	303	6Y2	C1-O5-C5	-2.15	109.53	113.74
6	C	303	6Y2	O6-C6-C5	-2.13	104.20	111.30
6	D	303	6Y2	CAL-OBB-CBA	-2.05	109.72	113.74
6	C	303	6Y2	O1-CAW-CAS	2.00	112.40	107.18
2	A	301	NAG	O5-C5-C6	2.02	111.65	107.34
10	B	305	XYP	C5B-O5B-C1B	2.17	115.37	111.81
2	D	301	NAG	O5-C5-C6	2.29	112.25	107.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	301	NAG	C2-N2-C7	2.32	126.12	123.11
4	A	304	BMA	O5-C1-C2	2.36	114.67	110.89
2	C	301	NAG	C1-O5-C5	2.38	115.64	112.14
4	B	304	BMA	C1-O5-C5	2.41	115.68	112.14
2	A	301	NAG	C1-O5-C5	2.42	115.70	112.14
5	B	307	MAN	O5-C5-C4	2.61	114.45	110.13
6	B	308	6Y2	OBB-CAL-OAA	2.72	115.69	108.49
2	C	301	NAG	C8-C7-N2	2.72	121.31	116.10
6	A	306	6Y2	CAF-CAE-NAH	3.22	121.83	119.51
2	D	301	NAG	O4-C4-C3	3.31	117.81	110.36
4	B	304	BMA	C1-C2-C3	3.44	113.72	109.55
5	B	306	MAN	C1-O5-C5	3.61	117.45	112.14
4	A	304	BMA	C1-O5-C5	3.61	117.46	112.14
6	D	303	6Y2	CAF-CAE-NAH	3.93	122.33	119.51
2	D	301	NAG	C1-O5-C5	4.78	119.17	112.14
5	B	307	MAN	C1-O5-C5	5.12	119.66	112.14

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

9 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	301	NAG	2	0
3	A	302	FUC	3	0
2	A	303	NAG	1	0
6	A	306	6Y2	1	0
9	A	310	PO4	1	0
2	B	301	NAG	1	0
3	B	302	FUC	1	0
2	C	301	NAG	1	0
3	C	302	FUC	1	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	238/243 (97%)	0.17	8 (3%) 49 58	15, 25, 42, 61	0
1	B	238/243 (97%)	0.26	12 (5%) 32 41	16, 25, 46, 64	0
1	C	238/243 (97%)	0.12	10 (4%) 40 49	16, 23, 38, 67	0
1	D	238/243 (97%)	0.39	20 (8%) 14 19	17, 28, 47, 68	0
All	All	952/972 (97%)	0.23	50 (5%) 30 39	15, 25, 44, 68	0

All (50) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	268	SER	5.7
1	C	268	SER	5.5
1	B	268	SER	5.2
1	D	69	ASP	4.8
1	C	69	ASP	4.7
1	C	70	GLY	3.7
1	A	268	SER	3.7
1	B	68	LYS	3.5
1	B	91	SER	3.4
1	A	94	ASP	3.4
1	D	120	ALA	3.3
1	D	68	LYS	3.2
1	D	92	ASN	3.2
1	B	69	ASP	3.1
1	D	144	ARG	3.1
1	D	119	LEU	3.0
1	C	68	LYS	2.9
1	D	70	GLY	2.9
1	D	139	LEU	2.8
1	D	58	SER	2.8
1	C	144	ARG	2.7

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Mol	Chain	Res	Type	RSRZ
1	D	94	ASP	2.6
1	B	70	GLY	2.6
1	B	120	ALA	2.6
1	B	119	LEU	2.6
1	A	69	ASP	2.6
1	B	74	TYR	2.5
1	C	92	ASN	2.4
1	D	141	HIS	2.4
1	D	240	THR	2.4
1	C	239	PHE	2.4
1	C	119	LEU	2.3
1	B	58	SER	2.3
1	D	239	PHE	2.3
1	A	123	LEU	2.3
1	B	137	LEU	2.2
1	A	237	VAL	2.2
1	D	93	THR	2.2
1	A	145	HIS	2.2
1	B	141	HIS	2.2
1	C	71	GLU	2.1
1	A	144	ARG	2.1
1	B	122	PHE	2.1
1	C	120	ALA	2.1
1	D	137	LEU	2.1
1	D	122	PHE	2.1
1	A	154	VAL	2.0
1	D	67	VAL	2.0
1	D	71	GLU	2.0
1	D	123	LEU	2.0

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

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

6.3 Carbohydrates ⓘ

There are no carbohydrates in this entry.

6.4 Ligands ⓘ

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 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(Å ²)	Q<0.9
6	6Y2	B	308	38/38	0.82	0.29	5.65	25,56,127,133	0
6	6Y2	D	303	38/38	0.87	0.27	5.04	29,56,128,146	0
6	6Y2	A	306	38/38	0.89	0.21	4.28	23,42,111,114	0
5	MAN	B	306	11/12	0.92	0.21	2.84	34,39,42,42	0
9	PO4	C	306	5/5	0.96	0.23	1.39	47,48,50,51	0
6	6Y2	C	303	38/38	0.93	0.15	0.96	19,28,71,76	0
5	MAN	A	305	11/12	0.83	0.20	0.92	60,65,68,71	0
2	NAG	D	301	14/15	0.84	0.19	-0.02	45,54,62,62	0
8	CA	D	305	1/1	0.99	0.06	-1.52	24,24,24,24	0
8	CA	C	305	1/1	1.00	0.06	-2.26	18,18,18,18	0
8	CA	B	310	1/1	0.99	0.07	-2.61	21,21,21,21	0
8	CA	A	308	1/1	0.99	0.06	-2.67	19,19,19,19	0
7	MN	B	309	1/1	1.00	0.04	-3.03	27,27,27,27	0
7	MN	D	304	1/1	0.99	0.03	-3.03	30,30,30,30	0
7	MN	A	307	1/1	1.00	0.04	-3.60	26,26,26,26	0
7	MN	C	304	1/1	0.99	0.04	-3.89	25,25,25,25	0
9	PO4	A	309	5/5	0.84	0.31	-	66,67,70,71	0
3	FUC	C	302	10/11	0.74	0.39	-	71,80,81,83	0
9	PO4	A	310	5/5	0.73	0.29	-	56,59,66,69	0
11	SO4	B	313	5/5	0.86	0.39	-	87,88,93,97	0
3	FUC	D	302	10/11	0.76	0.35	-	61,67,69,70	0
3	FUC	A	302	10/11	0.57	0.42	-	80,82,84,85	0
9	PO4	B	312	5/5	0.99	0.09	-	29,29,31,33	0
4	BMA	B	304	11/12	0.87	0.28	-	46,52,62,71	0
9	PO4	B	311	5/5	0.90	0.21	-	44,53,56,56	0
4	BMA	A	304	11/12	0.52	0.37	-	70,78,80,80	0
10	XYP	B	305	9/10	0.75	0.36	-	56,59,59,60	0
9	PO4	D	306	5/5	0.91	0.16	-	48,54,57,59	0
3	FUC	B	302	10/11	0.72	0.43	-	63,66,69,69	0
2	NAG	B	303	14/15	0.88	0.37	-	50,55,56,57	0
5	MAN	B	307	11/12	0.73	0.37	-	70,77,80,80	0
2	NAG	B	301	14/15	0.81	0.30	-	46,56,61,61	0
2	NAG	A	301	14/15	0.87	0.30	-	51,60,72,72	0
2	NAG	C	301	14/15	0.73	0.41	-	59,67,72,76	0
2	NAG	A	303	14/15	0.79	0.39	-	68,76,81,82	0

6.5 Other polymers

There are no such residues in this entry.