



# Full wwPDB X-ray Structure Validation Report ⓘ

Mar 1, 2026 – 08:02 PM UTC

PDB ID : 5IJD / pdb\_00005ijd  
Title : The crystal structure of mouse TLR4/MD-2/lipid A complex  
Authors : Wang, Y.; Su, L.; Morin, M.D.; Jones, B.T.; Whitby, L.R.; Surakattula, M.; Huang, H.; Shi, H.; Choi, J.H.; Wang, K.; Moresco, E.M.; Berger, M.; Zhan, X.; Zhang, H.; Boger, D.L.; Beutler, B.  
Deposited on : 2016-03-01  
Resolution : 2.70 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

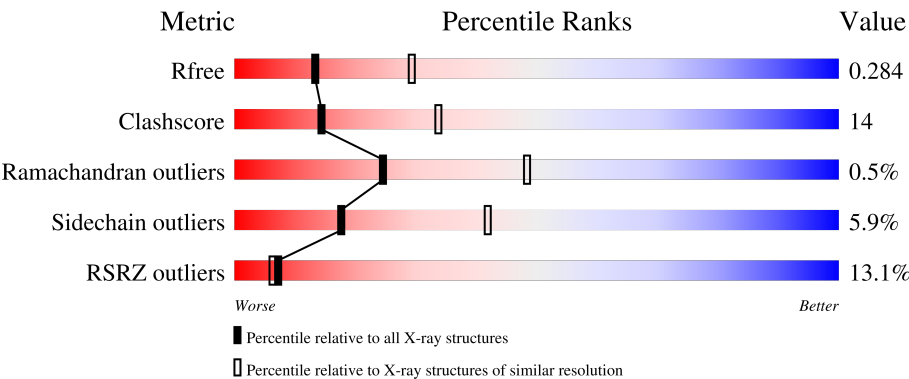
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:  
*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.70 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))
$R_{free}$	180053	3538 (2.70-2.70)
Clashscore	190562	3843 (2.70-2.70)
Ramachandran outliers	187476	3778 (2.70-2.70)
Sidechain outliers	187428	3778 (2.70-2.70)
RSRZ outliers	180081	3538 (2.70-2.70)

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  $\geq 3$ , 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	594	<div><div>13%</div><div>66%</div><div>31%</div><div>..</div></div>
1	B	594	<div><div>17%</div><div>69%</div><div>27%</div><div>.</div></div>
2	C	150	<div><div>3%</div><div>64%</div><div>25%</div><div>.. 9%</div></div>
2	D	150	<div><div>5%</div><div>57%</div><div>30%</div><div>. 9%</div></div>

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Mol	Chain	Length	Quality of chain
3	E	2	 100%
3	F	2	 100%
3	G	2	 50% 50%
3	H	2	 100%
3	I	2	 100%
3	J	2	 100%
3	K	2	 50% 50%

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
3	NAG	E	2	X	-	-	-
3	NAG	G	1	X	-	-	-
3	NAG	H	2	X	-	-	-
3	NAG	J	1	X	-	-	-
3	NAG	J	2	X	-	-	-
3	NAG	K	2	X	-	-	-
4	NAG	B	705	X	-	-	-

## 2 Entry composition

There are 9 unique types of molecules in this entry. The entry contains 12385 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 Toll-like receptor 4, Variable lymphocyte receptor B chimera.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	590	Total	C	N	O	S	0	1	0
			4708	3011	784	889	24			
1	B	592	Total	C	N	O	S	0	0	0
			4713	3014	783	891	25			

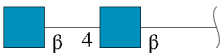
- Molecule 2 is a protein called Lymphocyte antigen 96.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	C	137	Total	C	N	O	S	0	0	0
			1112	718	188	199	7			
2	D	137	Total	C	N	O	S	0	0	0
			1112	718	188	199	7			

There are 16 discrepancies between the modelled and reference sequences:

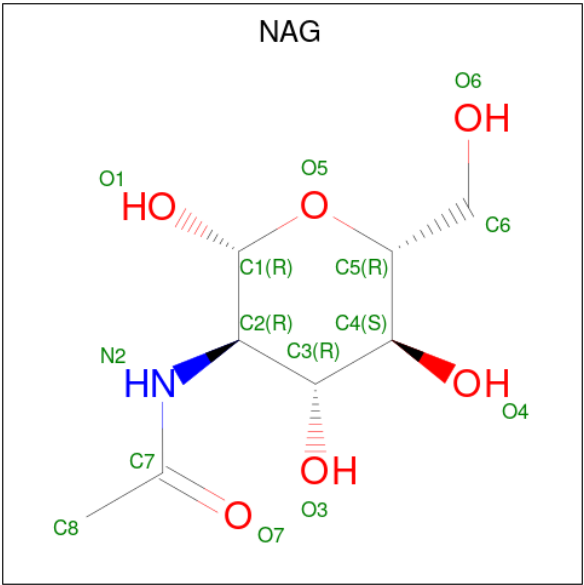
Chain	Residue	Modelled	Actual	Comment	Reference
C	161	LYS	-	cloning artifact	UNP Q9JHF9
C	162	GLY	-	cloning artifact	UNP Q9JHF9
C	163	GLU	-	cloning artifact	UNP Q9JHF9
C	164	ASN	-	cloning artifact	UNP Q9JHF9
C	165	LEU	-	cloning artifact	UNP Q9JHF9
C	166	TYR	-	cloning artifact	UNP Q9JHF9
C	167	PHE	-	cloning artifact	UNP Q9JHF9
C	168	GLN	-	cloning artifact	UNP Q9JHF9
D	161	LYS	-	cloning artifact	UNP Q9JHF9
D	162	GLY	-	cloning artifact	UNP Q9JHF9
D	163	GLU	-	cloning artifact	UNP Q9JHF9
D	164	ASN	-	cloning artifact	UNP Q9JHF9
D	165	LEU	-	cloning artifact	UNP Q9JHF9
D	166	TYR	-	cloning artifact	UNP Q9JHF9
D	167	PHE	-	cloning artifact	UNP Q9JHF9
D	168	GLN	-	cloning artifact	UNP Q9JHF9

- Molecule 3 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
3	E	2	Total	C	N	O	0	0	0
			28	16	2	10			
3	F	2	Total	C	N	O	0	0	0
			28	16	2	10			
3	G	2	Total	C	N	O	0	0	0
			28	16	2	10			
3	H	2	Total	C	N	O	0	0	0
			28	16	2	10			
3	I	2	Total	C	N	O	0	0	0
			28	16	2	10			
3	J	2	Total	C	N	O	0	0	0
			28	16	2	10			
3	K	2	Total	C	N	O	0	0	0
			28	16	2	10			

- Molecule 4 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: C<sub>8</sub>H<sub>15</sub>NO<sub>6</sub>).



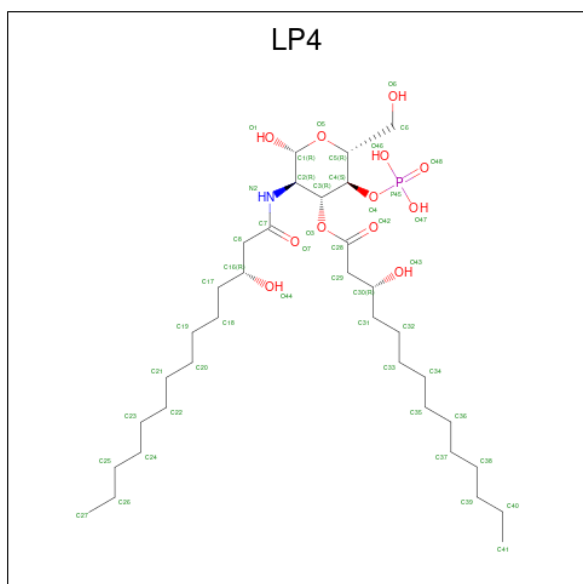
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total	C	N	O	0	0
			14	8	1	5		

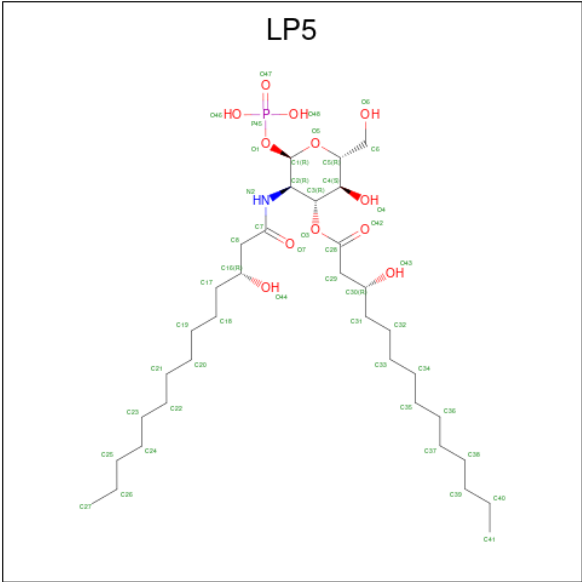
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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total	C	N	O	0	0
			14	8	1	5		
4	C	1	Total	C	N	O	0	0
			14	8	1	5		
4	D	1	Total	C	N	O	0	0
			14	8	1	5		
4	B	1	Total	C	N	O	0	0
			14	8	1	5		

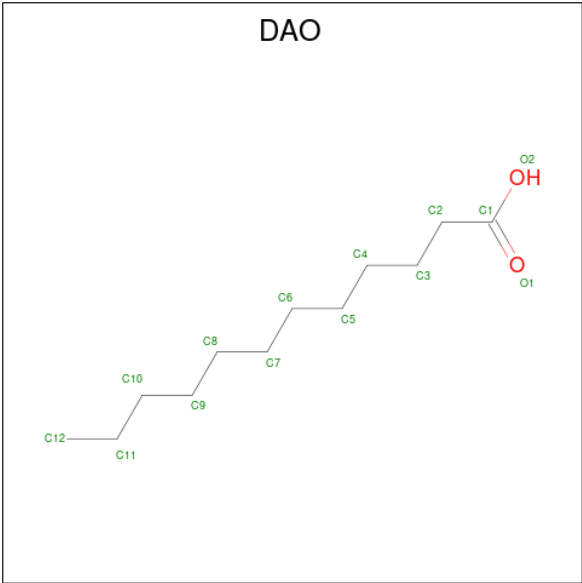
- Molecule 5 is 2-deoxy-3-O-[(3R)-3-hydroxytetradecanoyl]-2-[(3R)-3-hydroxytetradecanoyl amino]-4-O-phosphono-beta-D-glucopyranose (CCD ID: LP4) (formula: C<sub>34</sub>H<sub>66</sub>NO<sub>12</sub>P).





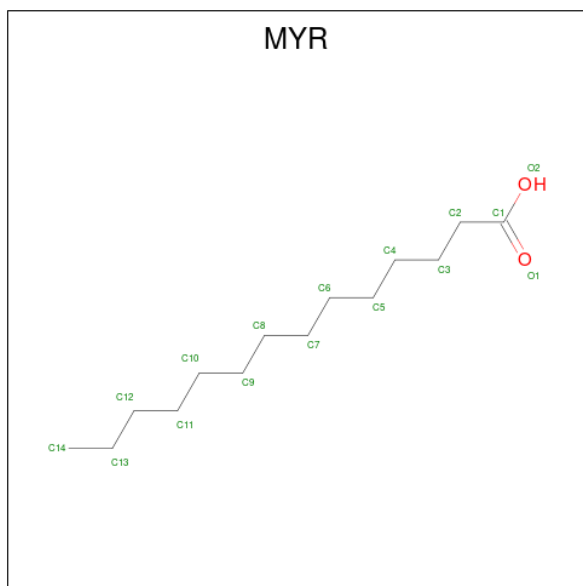
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
6	C	1	Total 48	C 34	N 1	O 12	P 1	0	0
6	D	1	Total 48	C 34	N 1	O 12	P 1	0	0

- Molecule 7 is LAURIC ACID (CCD ID: DAO) (formula: C<sub>12</sub>H<sub>24</sub>O<sub>2</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	C	1	Total	C	O	0	0
			13	12	1		
7	D	1	Total	C	O	0	0
			13	12	1		

- Molecule 8 is MYRISTIC ACID (CCD ID: MYR) (formula:  $C_{14}H_{28}O_2$ ).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
8	C	1	Total	C	O	0	0
			15	14	1		
8	D	1	Total	C	O	0	0
			15	14	1		

- Molecule 9 is water.

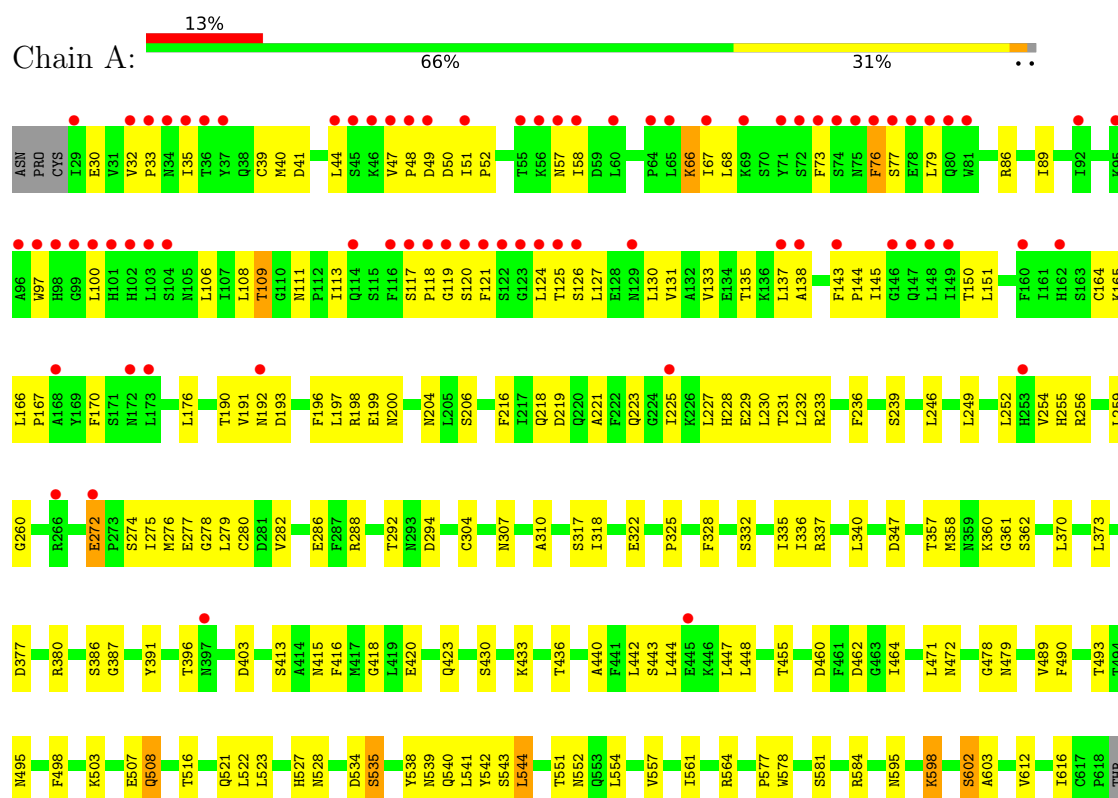
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
9	A	92	Total	O	0	0
			92	92		
9	C	29	Total	O	0	0
			29	29		
9	D	22	Total	O	0	0
			22	22		
9	B	89	Total	O	0	0
			89	89		



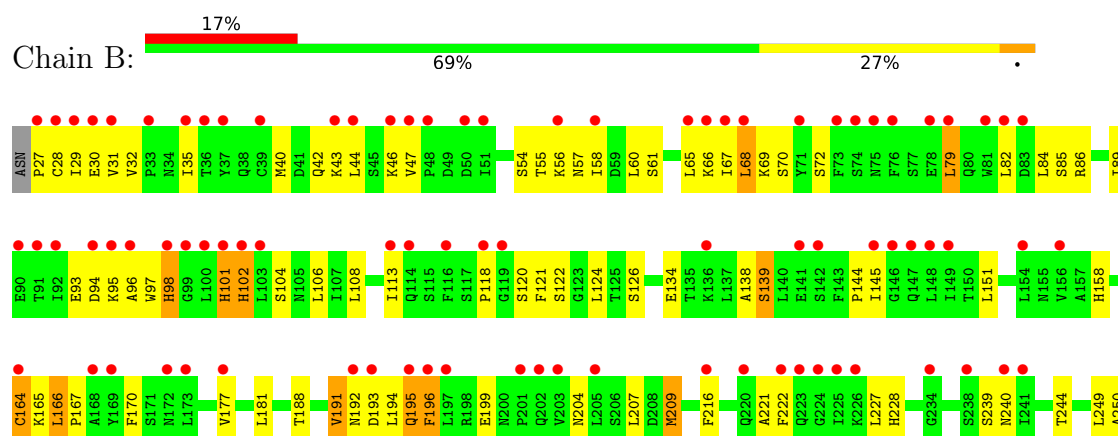
### 3 Residue-property plots

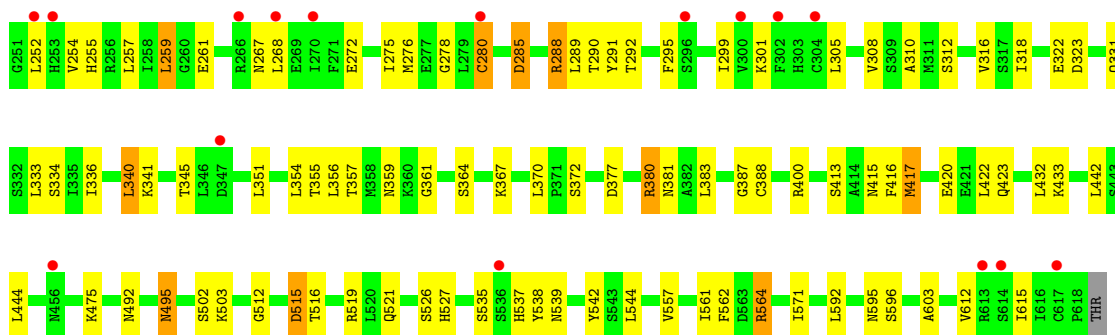
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: Toll-like receptor 4, Variable lymphocyte receptor B chimera

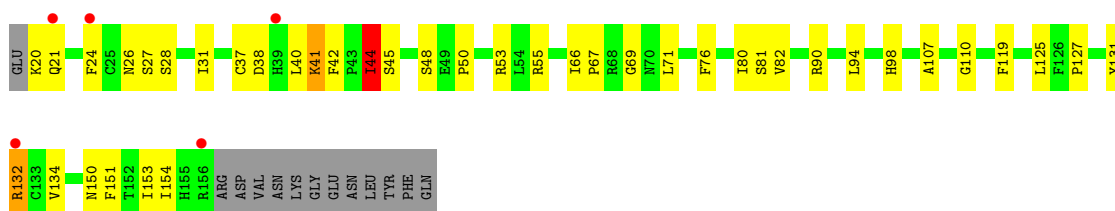


- Molecule 1: Toll-like receptor 4, Variable lymphocyte receptor B chimera

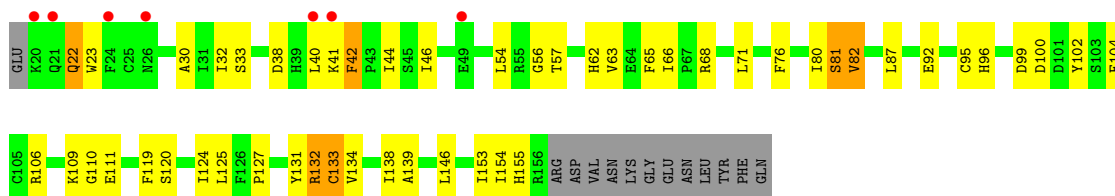




- Molecule 2: Lymphocyte antigen 96



- Molecule 2: Lymphocyte antigen 96



- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

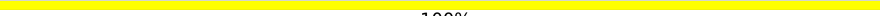


- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain G:  50% 50%

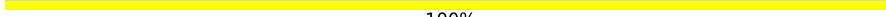
MAG1  
MAG2

- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain H:  100%

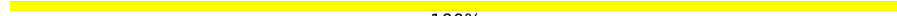
MAG1  
MAG2

- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain I:  100%


MAG1  
MAG2

- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J:  100%

MAG1  
MAG2

- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain K:  50% 50%

MAG1  
MAG2

## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	66.84Å 145.74Å 136.19Å 90.00° 100.67° 90.00°	Depositor
Resolution (Å)	39.34 – 2.70 39.34 – 2.70	Depositor EDS
% Data completeness (in resolution range)	77.2 (39.34-2.70) 77.7 (39.34-2.70)	Depositor EDS
$R_{merge}$	0.06	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.39 (at 2.69Å)	Xtriage
Refinement program	REFMAC 5.8.0049	Depositor
R, $R_{free}$	0.215 , 0.285 0.217 , 0.284	Depositor DCC
$R_{free}$ test set	1978 reflections (2.78%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	38.3	Xtriage
Anisotropy	0.269	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.33 , 41.0	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.91	EDS
Total number of atoms	12385	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	44.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.08% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: LP5, NAG, LP4, MYR, DAO

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	0.92	0/4811	1.04	7/6519 (0.1%)
1	B	0.87	1/4814 (0.0%)	1.07	13/6524 (0.2%)
2	C	0.93	0/1143	1.05	1/1544 (0.1%)
2	D	0.90	0/1143	1.01	4/1544 (0.3%)
All	All	0.90	1/11911 (0.0%)	1.05	25/16131 (0.2%)

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
1	A	0	2
1	B	0	1
2	C	0	1
All	All	0	4

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	432	LEU	CA-C	-6.37	1.44	1.52

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	31	VAL	N-CA-C	15.08	125.47	111.45
1	B	32	VAL	N-CA-C	-9.71	87.90	108.88
1	B	272	GLU	CA-C-N	6.93	127.22	119.32
1	B	272	GLU	C-N-CA	6.93	127.22	119.32
1	A	249	LEU	N-CA-C	-6.15	105.81	113.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	460	ASP	CB-CA-C	-5.86	99.70	109.55
2	D	82	VAL	CB-CA-C	-5.86	102.95	110.98
2	D	133	CYS	CA-C-N	-5.77	114.93	122.37
2	D	133	CYS	C-N-CA	-5.77	114.93	122.37
1	A	236	PHE	N-CA-C	5.72	118.56	109.24
2	D	134	VAL	N-CA-CB	5.72	116.95	110.72
1	B	312	SER	N-CA-C	5.65	116.99	108.46
1	B	32	VAL	N-CA-CB	5.62	119.08	111.21
1	B	139	SER	N-CA-C	5.46	116.43	108.14
1	B	101	HIS	N-CA-C	-5.39	105.09	110.97
1	A	544	LEU	N-CA-C	5.36	118.00	109.96
2	C	44	ILE	CB-CA-C	-5.26	104.49	111.80
1	A	362	SER	N-CA-C	-5.26	100.67	109.24
1	B	380	ARG	N-CA-C	5.25	118.67	111.54
1	A	464	ILE	N-CA-C	5.24	116.59	110.62
1	A	602	SER	N-CA-C	5.24	116.93	108.34
1	B	252	LEU	N-CA-C	5.16	118.05	110.30
1	B	370	LEU	CA-C-N	5.16	124.77	119.56
1	B	370	LEU	C-N-CA	5.16	124.77	119.56
1	B	615	ILE	N-CA-C	5.02	115.58	109.30

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	278	GLY	Peptide
1	A	361	GLY	Peptide
1	B	361	GLY	Peptide
2	C	132	ARG	Sidechain

## 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	4708	0	4698	145	2
1	B	4713	0	4694	127	2
2	C	1112	0	1075	31	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	D	1112	0	1075	37	0
3	E	28	0	25	0	0
3	F	28	0	25	0	0
3	G	28	0	25	3	0
3	H	28	0	25	0	0
3	I	28	0	25	0	0
3	J	28	0	25	0	0
3	K	28	0	25	1	0
4	A	28	0	26	4	0
4	B	14	0	13	1	0
4	C	14	0	13	0	0
4	D	14	0	13	0	0
5	C	45	0	53	0	0
5	D	45	0	53	1	0
6	C	48	0	63	2	0
6	D	48	0	63	1	0
7	C	13	0	23	0	0
7	D	13	0	23	0	0
8	C	15	0	27	1	0
8	D	15	0	27	2	0
9	A	92	0	0	5	0
9	B	89	0	0	5	0
9	C	29	0	0	0	0
9	D	22	0	0	3	0
All	All	12385	0	12114	342	2

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 14.

All (342) 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)
5:D:804:LP4:C1	6:D:805:LP5:O6	1.64	1.44
1:A:117:SER:O	1:A:119:GLY:N	2.04	0.90
1:A:191:VAL:HG12	1:A:221:ALA:HA	1.55	0.85
1:B:261:GLU:OE2	1:B:267:ASN:HB3	1.77	0.83
1:B:255:HIS:ND1	1:B:285:ASP:OD2	2.12	0.83
2:C:21:GLN:HE21	2:C:24:PHE:HB3	1.44	0.82
1:B:29:ILE:HG22	1:B:30:GLU:N	1.92	0.82
1:A:252:LEU:HB3	1:A:282:VAL:HG23	1.65	0.78
1:B:387:GLY:HA2	1:B:413:SER:OG	1.84	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:170:PHE:HB2	1:B:196:PHE:CZ	2.20	0.76
1:B:29:ILE:HG22	1:B:30:GLU:H	1.51	0.74
1:B:340:LEU:HB2	1:B:359:ASN:HD21	1.53	0.72
1:B:97:TRP:HB3	1:B:124:LEU:HD21	1.71	0.72
1:A:433:LYS:HE2	9:A:872:HOH:O	1.90	0.71
1:B:170:PHE:CB	1:B:196:PHE:CZ	2.75	0.70
1:A:97:TRP:HB3	1:A:100:LEU:CD2	2.21	0.70
1:A:97:TRP:HB3	1:A:100:LEU:HD23	1.72	0.69
1:A:228:HIS:O	1:A:255:HIS:HB3	1.92	0.69
1:A:557:VAL:CG1	1:A:561:ILE:HG21	2.23	0.69
1:B:29:ILE:CG2	1:B:30:GLU:H	2.05	0.69
1:A:106:LEU:HD11	1:A:108:LEU:HD21	1.75	0.68
1:B:612:VAL:HA	9:B:872:HOH:O	1.92	0.68
1:B:29:ILE:CG2	1:B:30:GLU:N	2.57	0.68
1:A:292:THR:HG22	1:A:294:ASP:O	1.93	0.68
1:A:479:ASN:O	9:A:801:HOH:O	2.13	0.67
1:B:557:VAL:CG1	1:B:561:ILE:HG21	2.24	0.67
1:A:522:LEU:C	1:A:522:LEU:HD23	2.19	0.67
1:B:69:LYS:O	1:B:72:SER:HB2	1.96	0.66
1:A:51:ILE:HG23	1:A:52:PRO:HD2	1.78	0.65
1:A:66:LYS:HA	1:A:89:ILE:HA	1.77	0.65
1:B:240:ASN:O	1:B:244:THR:HG22	1.96	0.65
1:A:279:LEU:HA	1:A:282:VAL:HG12	1.79	0.65
1:B:35:ILE:HG23	1:B:56:LYS:HE2	1.80	0.64
1:A:32:VAL:CG1	1:A:35:ILE:CG2	2.76	0.64
2:D:82:VAL:HG22	2:D:131:TYR:CE2	2.33	0.64
1:A:76:PHE:CD1	1:A:76:PHE:N	2.66	0.63
3:G:1:NAG:O3	3:G:1:NAG:H82	1.99	0.62
1:A:239:SER:OG	1:A:275:ILE:HD11	1.99	0.62
2:D:99:ASP:OD1	1:B:288:ARG:NH1	2.32	0.62
1:A:32:VAL:HG12	1:A:35:ILE:HG22	1.82	0.62
1:B:46:LYS:HA	1:B:65:LEU:HD22	1.81	0.62
2:D:66:ILE:HG13	2:D:111:GLU:O	1.99	0.62
1:A:109:THR:HG22	1:A:131:VAL:HG12	1.82	0.61
2:C:82:VAL:HG21	6:C:205:LP5:H272	1.83	0.61
1:A:164:CYS:O	1:A:166:LEU:HD12	2.01	0.61
1:B:377:ASP:OD1	1:B:377:ASP:C	2.44	0.60
1:B:55:THR:HG21	1:B:58:ILE:CD1	2.31	0.60
1:A:337[B]:ARG:NH1	2:C:98:HIS:O	2.35	0.60
2:D:153:ILE:N	2:D:153:ILE:HD12	2.17	0.60
1:A:252:LEU:HB3	1:A:282:VAL:CG2	2.31	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:30:GLU:OE1	1:A:33:PRO:HA	2.02	0.60
1:B:82:LEU:HD23	1:B:106:LEU:HD13	1.84	0.60
2:C:71:LEU:HD12	2:C:107:ALA:HB3	1.83	0.59
1:B:207:LEU:HD13	1:B:209:MET:HE1	1.84	0.59
1:B:415:ASN:OD1	1:B:417:MET:HE2	2.03	0.59
1:B:194:LEU:HD21	1:B:222:PHE:CE1	2.38	0.59
1:A:32:VAL:HG12	1:A:35:ILE:CG2	2.33	0.58
1:B:516:THR:O	1:B:516:THR:HG22	2.03	0.58
2:D:127:PRO:O	2:D:131:TYR:OH	2.17	0.58
1:A:539:ASN:OD1	1:A:539:ASN:C	2.46	0.57
1:B:82:LEU:HD21	1:B:84:LEU:HD11	1.86	0.57
9:B:805:HOH:O	3:K:1:NAG:H83	2.03	0.57
4:A:704:NAG:H82	4:A:704:NAG:O3	2.04	0.57
2:D:30:ALA:HB1	2:D:32:ILE:HD12	1.86	0.57
1:A:121:PHE:CZ	1:A:130:LEU:HD21	2.39	0.57
1:B:592:LEU:O	1:B:596:SER:N	2.37	0.57
1:A:239:SER:OG	1:A:275:ILE:CD1	2.52	0.57
1:A:280:CYS:HB3	1:A:304:CYS:SG	2.45	0.56
2:D:66:ILE:HD11	2:D:110:GLY:C	2.30	0.56
1:B:55:THR:HG21	1:B:58:ILE:HD11	1.87	0.56
1:A:307:ASN:HD22	4:A:703:NAG:H83	1.70	0.56
1:B:166:LEU:HD12	1:B:166:LEU:N	2.20	0.56
1:B:257:LEU:HD21	1:B:259:LEU:HD22	1.87	0.56
1:B:79:LEU:O	1:B:102:HIS:O	2.24	0.56
1:B:331:GLN:O	1:B:351:LEU:HD12	2.06	0.56
1:B:170:PHE:HB3	1:B:196:PHE:CZ	2.41	0.56
1:A:97:TRP:HA	1:A:100:LEU:HD22	1.87	0.55
2:C:82:VAL:HG22	2:C:131:TYR:CE2	2.41	0.55
1:A:49:ASP:OD1	1:A:50:ASP:N	2.39	0.55
1:A:557:VAL:HG13	1:A:561:ILE:HG21	1.88	0.55
1:A:436:THR:HG22	9:A:856:HOH:O	2.07	0.55
2:D:56:GLY:O	2:D:57:THR:OG1	2.21	0.55
4:A:704:NAG:C8	9:D:916:HOH:O	2.54	0.55
1:B:336:ILE:HG12	1:B:357:THR:HG22	1.88	0.55
1:A:89:ILE:HG22	1:A:113:ILE:HG22	1.89	0.55
1:A:280:CYS:CB	1:A:304:CYS:SG	2.95	0.55
1:B:537:HIS:HB2	1:B:538:TYR:CE2	2.42	0.55
1:A:325:PRO:HG2	1:A:328:PHE:CE1	2.42	0.54
1:A:73:PHE:HE1	1:A:100:LEU:HD21	1.73	0.54
2:D:96:HIS:N	2:D:100:ASP:OD2	2.37	0.54
1:A:336:ILE:HG12	1:A:357:THR:HG22	1.90	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:97:TRP:CA	1:A:100:LEU:HD22	2.38	0.54
1:A:256:ARG:NE	1:A:286:GLU:OE2	2.32	0.54
1:B:571:ILE:HG23	1:B:571:ILE:O	2.07	0.54
1:A:503:LYS:HA	1:A:527:HIS:O	2.08	0.54
1:B:492:ASN:HB2	9:B:883:HOH:O	2.08	0.54
2:D:42:PHE:CD2	2:D:68:ARG:HG3	2.43	0.54
2:D:95:CYS:HA	2:D:100:ASP:OD2	2.08	0.53
1:A:231:THR:HG21	9:A:864:HOH:O	2.07	0.53
1:B:27:PRO:O	1:B:28:CYS:HB2	2.08	0.53
1:A:538:TYR:HA	1:A:541:LEU:HD12	1.91	0.53
1:A:137:LEU:C	1:A:137:LEU:HD23	2.34	0.53
4:A:704:NAG:H5	9:A:871:HOH:O	2.08	0.53
1:B:165:LYS:CB	1:B:193:ASP:HA	2.39	0.53
1:B:249:LEU:O	1:B:250:ALA:C	2.51	0.53
1:A:68:LEU:HD13	1:A:97:TRP:CH2	2.44	0.53
1:A:336:ILE:HG12	1:A:357:THR:CG2	2.39	0.53
1:A:370:LEU:HD12	1:A:373:LEU:HD22	1.90	0.53
2:C:31:ILE:CG2	2:C:154:ILE:HB	2.39	0.53
1:A:280:CYS:HB3	1:A:304:CYS:CB	2.38	0.53
1:B:188:THR:HA	1:B:216:PHE:O	2.09	0.52
2:C:27:SER:OG	2:C:28:SER:N	2.42	0.52
1:B:70:SER:HB2	1:B:95:LYS:HB3	1.91	0.52
1:A:274:SER:C	1:A:276:MET:H	2.18	0.52
2:D:30:ALA:HB1	2:D:32:ILE:CD1	2.40	0.52
2:D:41:LYS:O	2:D:42:PHE:C	2.52	0.52
1:A:507:GLU:C	1:A:508:GLN:HG3	2.33	0.52
1:B:188:THR:HG22	1:B:216:PHE:HB3	1.92	0.52
1:B:194:LEU:HD21	1:B:222:PHE:CD1	2.45	0.52
1:B:276:MET:HE1	1:B:299:ILE:HG23	1.91	0.52
2:D:132:ARG:HG3	2:D:133:CYS:N	2.25	0.52
2:C:132:ARG:HD3	2:C:151:PHE:O	2.09	0.51
1:B:35:ILE:CG2	1:B:56:LYS:HE2	2.38	0.51
1:B:512:GLY:HA2	1:B:515:ASP:OD2	2.10	0.51
1:B:539:ASN:HA	1:B:564:ARG:HG3	1.91	0.51
2:C:127:PRO:O	2:C:131:TYR:OH	2.15	0.51
2:C:132:ARG:HD2	2:C:150:ASN:OD1	2.11	0.51
1:A:223:GLN:O	1:A:225:ILE:HD12	2.09	0.51
2:D:46:ILE:HD12	2:D:63:VAL:HG22	1.93	0.51
1:A:117:SER:C	1:A:119:GLY:N	2.69	0.51
2:D:81:SER:HB3	9:D:910:HOH:O	2.11	0.51
1:B:192:ASN:O	1:B:193:ASP:C	2.55	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:207:LEU:HB3	1:B:209:MET:HE3	1.93	0.51
1:A:121:PHE:CE1	1:A:130:LEU:CD2	2.94	0.50
2:C:67:PRO:HB2	2:C:69:GLY:O	2.11	0.50
1:B:170:PHE:HB3	1:B:196:PHE:HZ	1.77	0.50
1:A:121:PHE:CE1	1:A:130:LEU:HD22	2.47	0.50
2:C:132:ARG:NH1	3:G:1:NAG:H5	2.27	0.50
1:B:170:PHE:HB2	1:B:196:PHE:CE2	2.46	0.50
2:C:153:ILE:N	2:C:153:ILE:HD12	2.26	0.49
1:A:227:LEU:O	1:A:254:VAL:HA	2.13	0.49
2:C:21:GLN:NE2	2:C:24:PHE:HB3	2.21	0.49
1:A:109:THR:HB	1:A:133:VAL:HB	1.93	0.49
1:A:137:LEU:HD23	1:A:138:ALA:N	2.27	0.49
1:A:191:VAL:HG12	1:A:221:ALA:CA	2.37	0.49
1:A:416:PHE:HB3	1:A:444:LEU:HD21	1.93	0.49
1:A:276:MET:O	1:A:277:GLU:C	2.55	0.49
1:A:430:SER:O	1:A:455:THR:HA	2.13	0.49
1:A:391:TYR:HB2	1:A:418:GLY:HA3	1.94	0.49
1:A:595:ASN:HB3	1:A:598:LYS:HG3	1.94	0.49
1:A:377:ASP:C	1:A:377:ASP:OD1	2.54	0.48
1:A:170:PHE:HB3	1:A:196:PHE:CZ	2.48	0.48
1:A:275:ILE:HG22	1:A:275:ILE:O	2.13	0.48
1:A:229:GLU:OE1	1:A:256:ARG:NH1	2.42	0.48
1:A:442:LEU:HD23	2:D:125:LEU:O	2.13	0.48
2:C:66:ILE:HG23	2:C:110:GLY:O	2.14	0.48
1:A:97:TRP:HB3	1:A:100:LEU:HD22	1.95	0.48
2:D:100:ASP:CG	9:D:901:HOH:O	2.55	0.48
1:B:400:ARG:C	1:B:422:LEU:HD12	2.38	0.48
1:A:521:GLN:C	1:A:544:LEU:HD12	2.39	0.48
1:A:603:ALA:O	1:A:612:VAL:HG23	2.14	0.48
1:B:595:ASN:O	1:B:596:SER:C	2.56	0.48
1:B:42:GLN:O	1:B:43:LYS:C	2.55	0.48
1:A:57:ASN:C	1:A:58:ILE:HG13	2.39	0.48
1:B:165:LYS:HB2	1:B:193:ASP:HA	1.95	0.48
1:A:252:LEU:CB	1:A:282:VAL:HG23	2.38	0.47
2:D:99:ASP:OD2	1:B:288:ARG:HD3	2.14	0.47
2:C:20:LYS:O	2:C:21:GLN:C	2.56	0.47
1:A:216:PHE:CZ	1:A:218:GLN:HA	2.49	0.47
1:A:256:ARG:HD3	1:A:288:ARG:HD2	1.95	0.47
1:B:94:ASP:O	1:B:95:LYS:CB	2.61	0.47
1:A:121:PHE:HE1	1:A:130:LEU:HD22	1.80	0.47
1:B:354:LEU:HD12	1:B:355:THR:N	2.29	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:475:LYS:HG2	9:B:821:HOH:O	2.14	0.47
1:B:495:ASN:N	1:B:495:ASN:OD1	2.47	0.47
1:A:206:SER:HG	1:A:228:HIS:HB3	1.80	0.47
1:A:387:GLY:HA2	1:A:413:SER:OG	2.14	0.47
2:D:44:ILE:HA	2:D:65:PHE:CB	2.45	0.47
1:B:121:PHE:CD2	1:B:145:ILE:HG22	2.49	0.47
1:B:177:VAL:HG12	1:B:177:VAL:O	2.15	0.47
1:B:502:SER:HA	1:B:526:SER:O	2.15	0.47
1:A:233:ARG:HA	1:A:260:GLY:O	2.14	0.47
2:C:41:LYS:O	2:C:42:PHE:C	2.56	0.47
1:A:121:PHE:CZ	1:A:145:ILE:CG2	2.99	0.46
1:A:448:LEU:O	1:A:471:LEU:HD12	2.14	0.46
1:A:534:ASP:OD1	1:A:535:SER:N	2.49	0.46
2:D:102:TYR:HB3	2:D:104:PHE:CE2	2.50	0.46
1:B:134:GLU:HA	1:B:158:HIS:O	2.15	0.46
2:C:80:ILE:HG22	2:C:81:SER:N	2.30	0.46
2:D:109:LYS:HD2	1:B:40:MET:HE2	1.97	0.46
1:B:191:VAL:HG12	1:B:221:ALA:HA	1.98	0.46
1:B:333:LEU:HD12	1:B:334:SER:H	1.81	0.46
1:A:370:LEU:O	1:A:396:THR:HB	2.16	0.46
1:A:111:ASN:O	1:A:135:THR:HA	2.16	0.46
1:B:227:LEU:O	1:B:254:VAL:HA	2.16	0.46
1:A:246:LEU:HD13	1:A:279:LEU:HD11	1.98	0.45
2:C:53:ARG:HE	2:C:55:ARG:HB3	1.80	0.45
1:A:190:THR:O	1:A:193:ASP:HB2	2.16	0.45
1:A:272:GLU:O	1:A:275:ILE:HG13	2.16	0.45
1:B:85:SER:O	1:B:86:ARG:C	2.59	0.45
1:B:56:LYS:HG3	1:B:57:ASN:HD22	1.80	0.45
1:A:540:GLN:HA	1:A:542:TYR:CE1	2.52	0.45
1:A:121:PHE:CE2	1:A:145:ILE:HG23	2.51	0.45
1:B:278:GLY:C	1:B:280:CYS:N	2.70	0.45
1:A:199:GLU:O	1:A:200:ASN:CG	2.60	0.45
1:B:561:ILE:HG23	1:B:562:PHE:CD1	2.52	0.45
2:D:99:ASP:OD2	1:B:288:ARG:CD	2.65	0.45
1:B:192:ASN:O	1:B:195:GLN:HB3	2.17	0.45
1:B:207:LEU:HD12	1:B:227:LEU:HD11	1.97	0.45
1:B:356:LEU:C	1:B:356:LEU:HD23	2.42	0.45
1:A:557:VAL:CG1	1:A:561:ILE:CG2	2.94	0.45
2:C:45:SER:O	2:C:45:SER:OG	2.32	0.45
4:B:705:NAG:H5	9:B:852:HOH:O	2.16	0.45
1:A:166:LEU:HD12	1:A:166:LEU:N	2.32	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:503:LYS:HA	1:B:527:HIS:O	2.17	0.45
1:A:126:SER:HA	1:A:150:THR:HG21	1.99	0.44
1:A:286:GLU:HG2	1:A:310:ALA:HB3	1.99	0.44
1:B:181:LEU:HD12	1:B:209:MET:HE2	1.99	0.44
1:A:66:LYS:O	1:A:67:ILE:HD13	2.18	0.44
1:A:462:ASP:HA	1:A:489:VAL:HG12	1.98	0.44
2:C:150:ASN:OD1	2:C:150:ASN:C	2.58	0.44
2:D:80:ILE:HG22	2:D:81:SER:N	2.30	0.44
1:B:166:LEU:HD12	1:B:166:LEU:H	1.82	0.44
1:B:289:LEU:HD21	1:B:295:PHE:HE1	1.82	0.44
1:B:308:VAL:HG12	1:B:310:ALA:H	1.83	0.44
1:A:44:LEU:HD21	1:A:48:PRO:HD3	1.99	0.44
1:A:280:CYS:HG	1:A:304:CYS:HG	1.11	0.44
1:B:60:LEU:O	1:B:61:SER:C	2.60	0.44
1:B:519:ARG:HH11	1:B:519:ARG:HG3	1.82	0.44
1:B:603:ALA:C	1:B:612:VAL:HG23	2.42	0.44
1:A:137:LEU:HD12	1:A:143:PHE:CE1	2.53	0.44
1:A:416:PHE:CB	1:A:444:LEU:HD21	2.48	0.44
1:A:522:LEU:HD23	1:A:523:LEU:N	2.33	0.44
1:A:274:SER:C	1:A:276:MET:N	2.75	0.44
1:A:554:LEU:O	1:A:577:PRO:HD2	2.17	0.44
2:C:37:CYS:O	2:C:38:ASP:C	2.60	0.44
1:B:118:PRO:HA	1:B:144:PRO:HB3	2.00	0.44
1:B:170:PHE:CB	1:B:196:PHE:CE2	2.99	0.44
1:A:415:ASN:O	1:A:443:SER:OG	2.35	0.44
1:B:47:VAL:HG21	1:B:72:SER:OG	2.17	0.44
1:B:95:LYS:HA	1:B:98:HIS:CD2	2.53	0.44
1:B:354:LEU:HD12	1:B:355:THR:H	1.83	0.44
1:B:571:ILE:O	1:B:571:ILE:CG2	2.66	0.44
2:D:76:PHE:CZ	8:D:807:MYR:H132	2.53	0.44
2:D:139:ALA:HB2	2:D:146:LEU:HD11	2.00	0.44
1:B:415:ASN:N	1:B:417:MET:CE	2.81	0.44
1:A:97:TRP:CD1	1:A:120:SER:O	2.71	0.44
1:A:204:ASN:OD1	1:A:204:ASN:C	2.60	0.44
1:A:280:CYS:HB3	1:A:304:CYS:HB3	2.00	0.44
1:A:472:ASN:HA	1:A:495:ASN:O	2.18	0.44
1:B:195:GLN:O	1:B:196:PHE:HB2	2.18	0.44
1:B:557:VAL:HG13	1:B:561:ILE:HG21	1.98	0.44
1:A:124:LEU:HD12	1:A:127:LEU:HD13	1.99	0.44
1:A:478:GLY:HA2	1:A:503:LYS:O	2.17	0.44
1:A:540:GLN:HA	1:A:542:TYR:CZ	2.53	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:58:ILE:HD11	1:A:79:LEU:HD13	2.00	0.43
1:A:198:ARG:HG3	1:A:198:ARG:HH11	1.83	0.43
2:C:44:ILE:CG2	2:C:45:SER:N	2.81	0.43
1:B:68:LEU:HD13	1:B:89:ILE:HD13	2.00	0.43
1:B:138:ALA:O	1:B:139:SER:HB2	2.17	0.43
1:B:164:CYS:SG	1:B:193:ASP:HB3	2.58	0.43
1:A:121:PHE:CE2	1:A:145:ILE:CG2	3.01	0.43
1:A:256:ARG:HA	1:A:286:GLU:O	2.18	0.43
6:C:205:LP5:O42	6:C:205:LP5:N2	2.52	0.43
2:D:22:GLN:O	2:D:23:TRP:HB2	2.18	0.43
2:D:92:GLU:HB3	8:D:807:MYR:H52	2.01	0.43
1:A:516:THR:HG22	1:A:516:THR:O	2.18	0.43
1:B:181:LEU:CD1	1:B:209:MET:HE2	2.49	0.43
1:B:381:ASN:HB2	1:B:383:LEU:HB2	2.01	0.43
1:B:415:ASN:H	1:B:417:MET:CE	2.31	0.43
1:B:261:GLU:CD	1:B:267:ASN:HB3	2.40	0.43
1:B:539:ASN:OD1	1:B:564:ARG:HD2	2.19	0.43
1:A:113:ILE:HG13	1:A:113:ILE:O	2.19	0.43
1:A:415:ASN:HB3	1:A:440:ALA:HA	2.00	0.43
2:C:44:ILE:HG22	2:C:45:SER:N	2.33	0.43
1:B:516:THR:O	1:B:516:THR:CG2	2.66	0.43
1:A:165:LYS:O	1:A:167:PRO:HD3	2.19	0.43
1:A:490:PHE:HA	1:A:493:THR:OG1	2.19	0.43
1:A:528:ASN:O	1:A:552:ASN:HA	2.19	0.43
2:D:82:VAL:HG22	2:D:131:TYR:CD2	2.53	0.43
1:B:416:PHE:HB3	1:B:444:LEU:HD21	2.01	0.43
1:A:40:MET:O	1:A:41:ASP:C	2.61	0.42
2:D:56:GLY:C	2:D:57:THR:OG1	2.62	0.42
1:B:54:SER:O	1:B:55:THR:C	2.61	0.42
1:B:255:HIS:CE1	1:B:285:ASP:OD2	2.71	0.42
1:A:68:LEU:HD13	1:A:97:TRP:HH2	1.84	0.42
2:D:119:PHE:CD1	2:D:119:PHE:C	2.97	0.42
1:B:70:SER:HA	1:B:96:ALA:HA	2.01	0.42
1:B:204:ASN:OD1	1:B:228:HIS:HB2	2.20	0.42
1:B:102:HIS:HA	1:B:126:SER:HB2	2.01	0.42
1:B:291:TYR:CG	1:B:292:THR:N	2.87	0.42
1:A:121:PHE:CE1	1:A:130:LEU:HD21	2.55	0.42
1:A:124:LEU:O	1:A:126:SER:N	2.52	0.42
1:A:252:LEU:HD23	1:A:282:VAL:HG21	2.01	0.42
1:A:557:VAL:HG23	1:A:578:TRP:HZ3	1.84	0.42
1:B:261:GLU:HG3	1:B:292:THR:HA	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:46:ILE:CD1	2:D:63:VAL:HG22	2.50	0.42
1:A:124:LEU:HB3	1:A:127:LEU:HB2	2.01	0.42
2:D:54:LEU:HD12	2:D:155:HIS:ND1	2.35	0.42
1:A:151:LEU:O	1:A:176:LEU:N	2.53	0.42
2:C:48:SER:OG	2:C:50:PRO:O	2.22	0.42
1:A:89:ILE:HG22	1:A:113:ILE:CG2	2.49	0.42
1:A:318:ILE:HG23	1:A:340:LEU:CD1	2.50	0.42
1:A:47:VAL:HG11	1:A:76:PHE:HE2	1.85	0.41
1:A:196:PHE:CD1	1:A:196:PHE:C	2.98	0.41
1:A:403:ASP:OD1	1:A:403:ASP:C	2.62	0.41
1:A:498:PHE:CD1	1:A:498:PHE:C	2.98	0.41
2:C:125:LEU:HG	1:B:442:LEU:HD23	2.01	0.41
1:B:285:ASP:OD1	1:B:285:ASP:N	2.53	0.41
3:G:1:NAG:O3	3:G:1:NAG:C8	2.68	0.41
1:A:358:MET:HA	1:A:380:ARG:O	2.20	0.41
1:B:94:ASP:O	1:B:95:LYS:HB2	2.20	0.41
1:B:521:GLN:HA	1:B:544:LEU:HA	2.01	0.41
1:B:301:LYS:HD3	1:B:323:ASP:O	2.21	0.41
1:B:535:SER:O	1:B:539:ASN:ND2	2.54	0.41
2:C:26:ASN:HB3	2:C:31:ILE:HG13	2.02	0.41
2:D:44:ILE:HA	2:D:65:PHE:HB3	2.03	0.41
1:A:143:PHE:HA	1:A:144:PRO:HD3	1.75	0.41
2:C:119:PHE:CD2	2:C:119:PHE:C	2.99	0.41
1:B:170:PHE:CB	1:B:196:PHE:HZ	2.30	0.41
1:B:195:GLN:O	1:B:196:PHE:CB	2.69	0.41
1:A:124:LEU:O	1:A:125:THR:C	2.63	0.41
1:A:527:HIS:CD2	1:A:551:THR:HG21	2.56	0.41
1:B:66:LYS:C	1:B:67:ILE:HG13	2.45	0.41
1:B:97:TRP:CD1	1:B:124:LEU:HD11	2.56	0.41
1:B:316:VAL:HG12	1:B:318:ILE:H	1.86	0.41
1:A:121:PHE:HZ	1:A:130:LEU:HD21	1.85	0.41
2:C:66:ILE:HA	2:C:67:PRO:HD2	1.95	0.41
2:C:76:PHE:CE2	8:C:207:MYR:H143	2.56	0.41
1:B:305:LEU:O	1:B:308:VAL:HG23	2.21	0.41
1:A:230:LEU:HD21	1:A:232:LEU:HD11	2.04	0.40
1:B:199:GLU:OE1	1:B:199:GLU:N	2.54	0.40
1:B:239:SER:HB3	1:B:275:ILE:HD11	2.03	0.40
1:A:106:LEU:CD1	1:A:108:LEU:HD21	2.49	0.40
1:A:423:GLN:C	1:A:447:LEU:HD12	2.46	0.40
2:D:32:ILE:CG2	2:D:33:SER:N	2.85	0.40
1:A:86:ARG:HG3	1:A:86:ARG:O	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:46:ILE:HA	2:D:62:HIS:O	2.21	0.40
2:C:94:LEU:HD23	2:C:94:LEU:HA	1.93	0.40
2:D:92:GLU:OE2	2:D:92:GLU:HA	2.21	0.40
1:B:89:ILE:HG22	1:B:113:ILE:HD11	2.03	0.40
1:B:331:GLN:C	1:B:351:LEU:HD12	2.46	0.40

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:564:ARG:NH1	1:B:542:TYR:CD1[1_655]	2.15	0.05
1:A:540:GLN:O	1:B:519:ARG:NH2[1_655]	2.18	0.02

## 5.3 Torsion angles

### 5.3.1 Protein backbone

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	589/594 (99%)	516 (88%)	72 (12%)	1 (0%)	43	68
1	B	590/594 (99%)	521 (88%)	64 (11%)	5 (1%)	16	37
2	C	135/150 (90%)	119 (88%)	16 (12%)	0	100	100
2	D	135/150 (90%)	114 (84%)	20 (15%)	1 (1%)	18	41
All	All	1449/1488 (97%)	1270 (88%)	172 (12%)	7 (0%)	24	48

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	196	PHE
1	B	195	GLN
1	A	118	PRO
1	B	515	ASP

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Mol	Chain	Res	Type
1	B	93	GLU
1	B	167	PRO
2	D	42	PHE

### 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	548/551 (100%)	522 (95%)	26 (5%)	23	51
1	B	549/551 (100%)	513 (93%)	36 (7%)	15	36
2	C	124/136 (91%)	119 (96%)	5 (4%)	28	56
2	D	124/136 (91%)	112 (90%)	12 (10%)	8	20
All	All	1345/1374 (98%)	1266 (94%)	79 (6%)	18	42

All (79) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	39	CYS
1	A	66	LYS
1	A	76	PHE
1	A	77	SER
1	A	109	THR
1	A	192	ASN
1	A	197	LEU
1	A	219	ASP
1	A	259	LEU
1	A	272	GLU
1	A	317	SER
1	A	322	GLU
1	A	332	SER
1	A	335	ILE
1	A	347	ASP
1	A	360	LYS
1	A	386	SER
1	A	420	GLU

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Mol	Chain	Res	Type
1	A	508	GLN
1	A	535	SER
1	A	543	SER
1	A	581	SER
1	A	584	ARG
1	A	598	LYS
1	A	602	SER
1	A	616	ILE
2	C	40	LEU
2	C	41	LYS
2	C	44	ILE
2	C	90	ARG
2	C	134	VAL
2	D	22	GLN
2	D	38	ASP
2	D	40	LEU
2	D	71	LEU
2	D	81	SER
2	D	87	LEU
2	D	106	ARG
2	D	120	SER
2	D	124	ILE
2	D	132	ARG
2	D	138	ILE
2	D	154	ILE
1	B	44	LEU
1	B	68	LEU
1	B	79	LEU
1	B	98	HIS
1	B	101	HIS
1	B	102	HIS
1	B	104	SER
1	B	108	LEU
1	B	120	SER
1	B	122	SER
1	B	151	LEU
1	B	164	CYS
1	B	166	LEU
1	B	191	VAL
1	B	209	MET
1	B	259	LEU
1	B	268	LEU

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Mol	Chain	Res	Type
1	B	280	CYS
1	B	285	ASP
1	B	288	ARG
1	B	290	THR
1	B	322	GLU
1	B	340	LEU
1	B	341	LYS
1	B	345	THR
1	B	364	SER
1	B	367	LYS
1	B	372	SER
1	B	380	ARG
1	B	388	CYS
1	B	417	MET
1	B	420	GLU
1	B	423	GLN
1	B	433	LYS
1	B	495	ASN
1	B	564	ARG

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

Mol	Chain	Res	Type
1	A	38	GLN
1	A	293	ASN
1	A	569	GLN
2	C	21	GLN
2	C	98	HIS
1	B	57	ASN
1	B	192	ASN
1	B	235	ASN
1	B	247	GLN
1	B	359	ASN

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

19 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	NAG	K	1	1,3	14,14,15	0.98	1 (7%)	17,19,21	2.03	4 (23%)
3	NAG	K	2	3	14,14,15	0.73	0	17,19,21	1.51	2 (11%)
3	NAG	E	1	1,3	14,14,15	0.56	0	17,19,21	1.36	3 (17%)
3	NAG	F	1	1,3	14,14,15	0.72	0	17,19,21	1.98	4 (23%)
3	NAG	G	1	2,3	14,14,15	0.71	0	17,19,21	2.22	7 (41%)
3	NAG	E	2	3	14,14,15	0.47	0	17,19,21	1.64	4 (23%)
4	NAG	A	703	1	14,14,15	0.59	0	17,19,21	2.36	7 (41%)
3	NAG	J	1	1,3	14,14,15	0.79	0	17,19,21	2.01	5 (29%)
4	NAG	D	803	2	14,14,15	0.98	0	17,19,21	2.99	7 (41%)
4	NAG	A	704	1	14,14,15	0.74	0	17,19,21	2.09	5 (29%)
3	NAG	H	1	2,3	14,14,15	0.75	0	17,19,21	3.08	7 (41%)
3	NAG	G	2	3	14,14,15	0.55	0	17,19,21	1.91	5 (29%)
3	NAG	J	2	3	14,14,15	0.81	1 (7%)	17,19,21	1.55	3 (17%)
3	NAG	I	1	1,3	14,14,15	0.51	0	17,19,21	2.03	4 (23%)
4	NAG	B	705	1	14,14,15	1.34	3 (21%)	17,19,21	2.43	3 (17%)
3	NAG	I	2	3	14,14,15	0.80	1 (7%)	17,19,21	1.57	3 (17%)
4	NAG	C	201	2	14,14,15	0.67	0	17,19,21	1.64	4 (23%)
3	NAG	F	2	3	14,14,15	0.62	0	17,19,21	1.17	2 (11%)
3	NAG	H	2	3	14,14,15	0.90	1 (7%)	17,19,21	1.52	2 (11%)

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	NAG	K	1	1,3	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	K	2	3	1/1/5/7	3/6/23/26	0/1/1/1
3	NAG	E	1	1,3	-	1/6/23/26	0/1/1/1
3	NAG	F	1	1,3	-	0/6/23/26	0/1/1/1
3	NAG	G	1	2,3	1/1/5/7	3/6/23/26	0/1/1/1
3	NAG	E	2	3	1/1/5/7	2/6/23/26	0/1/1/1
4	NAG	A	703	1	-	3/6/23/26	0/1/1/1
3	NAG	J	1	1,3	1/1/5/7	2/6/23/26	0/1/1/1
4	NAG	D	803	2	-	3/6/23/26	0/1/1/1
4	NAG	A	704	1	-	3/6/23/26	0/1/1/1
3	NAG	H	1	2,3	-	3/6/23/26	0/1/1/1
3	NAG	G	2	3	-	2/6/23/26	0/1/1/1
3	NAG	J	2	3	1/1/5/7	2/6/23/26	0/1/1/1
3	NAG	I	1	1,3	-	0/6/23/26	0/1/1/1
4	NAG	B	705	1	1/1/5/7	3/6/23/26	0/1/1/1
3	NAG	I	2	3	-	3/6/23/26	0/1/1/1
4	NAG	C	201	2	-	2/6/23/26	0/1/1/1
3	NAG	F	2	3	-	3/6/23/26	0/1/1/1
3	NAG	H	2	3	1/1/5/7	3/6/23/26	0/1/1/1

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	705	NAG	C1-C2	3.23	1.56	1.52
3	K	1	NAG	C1-C2	2.96	1.56	1.52
4	B	705	NAG	C3-C2	2.58	1.57	1.52
3	I	2	NAG	C1-C2	2.46	1.55	1.52
3	H	2	NAG	C1-C2	2.35	1.55	1.52
4	B	705	NAG	O5-C1	-2.19	1.40	1.43
3	J	2	NAG	C1-C2	2.02	1.55	1.52

All (81) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	H	1	NAG	C2-N2-C7	8.03	133.67	122.90
4	B	705	NAG	O5-C1-C2	-7.28	100.02	111.29
3	I	1	NAG	C1-O5-C5	6.62	121.05	112.19
4	D	803	NAG	C4-C3-C2	-5.86	102.42	111.02
3	H	1	NAG	C8-C7-N2	5.85	125.81	116.12
4	D	803	NAG	O5-C1-C2	-5.38	102.96	111.29

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	703	NAG	C1-O5-C5	5.09	119.01	112.19
3	K	1	NAG	C8-C7-N2	4.99	124.39	116.12
3	F	1	NAG	C1-O5-C5	4.98	118.86	112.19
3	G	1	NAG	C8-C7-N2	4.67	123.86	116.12
4	B	705	NAG	C4-C3-C2	4.58	117.73	111.02
3	J	2	NAG	C4-C3-C2	4.54	117.68	111.02
4	D	803	NAG	C2-N2-C7	4.54	128.99	122.90
3	H	1	NAG	C1-C2-N2	-4.46	103.41	110.43
4	A	704	NAG	C4-C3-C2	-4.43	104.53	111.02
3	J	1	NAG	C4-C3-C2	4.28	117.29	111.02
3	K	1	NAG	O7-C7-N2	-4.19	114.57	121.98
3	E	2	NAG	C4-C3-C2	-4.19	104.88	111.02
3	G	2	NAG	O5-C1-C2	-4.07	105.00	111.29
4	D	803	NAG	C1-C2-N2	4.01	116.75	110.43
3	I	2	NAG	C1-O5-C5	3.97	117.51	112.19
4	A	703	NAG	C8-C7-N2	3.95	122.67	116.12
4	D	803	NAG	C1-O5-C5	3.89	117.41	112.19
4	D	803	NAG	O3-C3-C2	3.87	117.44	109.40
3	G	1	NAG	C2-N2-C7	3.84	128.04	122.90
4	A	704	NAG	C2-N2-C7	3.83	128.03	122.90
3	K	2	NAG	C1-O5-C5	-3.74	107.17	112.19
3	G	2	NAG	C3-C4-C5	3.69	116.92	110.23
4	B	705	NAG	O5-C5-C4	-3.56	102.17	110.83
3	J	1	NAG	C3-C4-C5	3.52	116.61	110.23
3	H	1	NAG	O7-C7-N2	-3.45	115.89	121.98
4	A	703	NAG	C4-C3-C2	3.40	116.00	111.02
3	H	2	NAG	C3-C4-C5	-3.39	104.08	110.23
4	A	703	NAG	O7-C7-C8	-3.37	116.05	122.05
4	A	703	NAG	C2-N2-C7	3.35	127.39	122.90
3	G	1	NAG	O7-C7-C8	-3.23	116.31	122.05
3	G	2	NAG	C1-C2-N2	3.22	115.51	110.43
3	H	2	NAG	O5-C5-C4	-3.22	103.00	110.83
4	A	704	NAG	C8-C7-N2	3.20	121.43	116.12
4	A	704	NAG	O3-C3-C2	3.16	115.97	109.40
3	F	1	NAG	C4-C3-C2	-3.16	106.39	111.02
3	F	2	NAG	C1-O5-C5	3.09	116.33	112.19
3	F	1	NAG	O4-C4-C5	3.07	116.89	109.32
4	C	201	NAG	C1-O5-C5	3.07	116.30	112.19
3	J	1	NAG	O4-C4-C5	3.03	116.79	109.32
3	H	1	NAG	C1-O5-C5	2.94	116.13	112.19
3	E	2	NAG	C1-O5-C5	2.93	116.12	112.19
3	K	1	NAG	C2-N2-C7	2.89	126.77	122.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	C	201	NAG	C1-C2-N2	2.84	114.91	110.43
3	J	2	NAG	C1-O5-C5	2.79	115.93	112.19
4	C	201	NAG	C4-C3-C2	-2.79	106.94	111.02
3	I	2	NAG	C3-C4-C5	-2.73	105.29	110.23
3	I	1	NAG	C4-C3-C2	-2.67	107.10	111.02
3	J	1	NAG	O5-C1-C2	-2.67	107.16	111.29
3	E	2	NAG	O5-C1-C2	-2.62	107.24	111.29
3	H	1	NAG	O3-C3-C2	2.56	114.72	109.40
3	G	2	NAG	C4-C3-C2	2.51	114.70	111.02
3	K	1	NAG	O4-C4-C5	2.51	115.50	109.32
3	E	1	NAG	O4-C4-C3	2.48	116.23	110.38
3	E	1	NAG	C1-C2-N2	-2.45	106.58	110.43
4	D	803	NAG	O5-C5-C4	2.41	116.68	110.83
4	A	703	NAG	O3-C3-C2	-2.40	104.42	109.40
3	I	1	NAG	O4-C4-C5	2.38	115.19	109.32
3	I	2	NAG	O7-C7-C8	-2.38	117.81	122.05
3	E	2	NAG	C2-N2-C7	-2.36	119.74	122.90
4	C	201	NAG	O5-C1-C2	-2.36	107.64	111.29
3	G	1	NAG	O3-C3-C4	-2.30	104.95	110.38
3	I	1	NAG	O4-C4-C3	2.29	115.77	110.38
3	F	1	NAG	C2-N2-C7	-2.27	119.86	122.90
3	G	1	NAG	O5-C1-C2	-2.26	107.79	111.29
3	E	1	NAG	O5-C5-C4	-2.18	105.52	110.83
3	J	1	NAG	O7-C7-C8	-2.14	118.25	122.05
4	A	704	NAG	O4-C4-C5	2.13	114.58	109.32
3	G	1	NAG	C1-C2-N2	-2.12	107.10	110.43
3	H	1	NAG	O7-C7-C8	-2.11	118.29	122.05
3	J	2	NAG	C3-C4-C5	2.11	114.06	110.23
3	G	1	NAG	C1-O5-C5	2.11	115.01	112.19
3	F	2	NAG	C1-C2-N2	-2.06	107.19	110.43
3	K	2	NAG	O4-C4-C3	-2.05	105.53	110.38
3	G	2	NAG	C8-C7-N2	2.05	119.52	116.12
4	A	703	NAG	C1-C2-N2	2.02	113.62	110.43

All (7) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
3	E	2	NAG	C1
3	G	1	NAG	C1
3	H	2	NAG	C1
3	J	1	NAG	C1
3	J	2	NAG	C1

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Mol	Chain	Res	Type	Atom
4	B	705	NAG	C1
3	K	2	NAG	C1

All (43) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	H	1	NAG	C3-C2-N2-C7
4	D	803	NAG	C3-C2-N2-C7
4	C	201	NAG	C4-C5-C6-O6
4	D	803	NAG	C4-C5-C6-O6
3	J	2	NAG	C4-C5-C6-O6
4	D	803	NAG	O5-C5-C6-O6
3	K	2	NAG	O5-C5-C6-O6
3	G	2	NAG	O5-C5-C6-O6
3	J	1	NAG	O5-C5-C6-O6
4	C	201	NAG	O5-C5-C6-O6
3	J	2	NAG	O5-C5-C6-O6
3	E	2	NAG	O5-C5-C6-O6
4	A	703	NAG	C8-C7-N2-C2
4	A	703	NAG	O7-C7-N2-C2
4	A	704	NAG	C8-C7-N2-C2
4	A	704	NAG	O7-C7-N2-C2
3	G	1	NAG	C8-C7-N2-C2
3	G	1	NAG	O7-C7-N2-C2
3	H	1	NAG	C8-C7-N2-C2
3	H	1	NAG	O7-C7-N2-C2
3	K	1	NAG	C8-C7-N2-C2
3	K	1	NAG	O7-C7-N2-C2
3	I	2	NAG	C4-C5-C6-O6
3	K	2	NAG	C4-C5-C6-O6
3	G	2	NAG	C4-C5-C6-O6
4	B	705	NAG	O5-C5-C6-O6
3	E	2	NAG	C4-C5-C6-O6
3	I	2	NAG	C3-C2-N2-C7
3	J	1	NAG	C4-C5-C6-O6
3	I	2	NAG	O5-C5-C6-O6
3	H	2	NAG	O5-C5-C6-O6
4	B	705	NAG	C4-C5-C6-O6
3	E	1	NAG	C3-C2-N2-C7
3	F	2	NAG	C3-C2-N2-C7
3	G	1	NAG	C3-C2-N2-C7
4	B	705	NAG	C3-C2-N2-C7

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Mol	Chain	Res	Type	Atoms
3	H	2	NAG	C4-C5-C6-O6
3	F	2	NAG	O5-C5-C6-O6
4	A	704	NAG	C4-C5-C6-O6
3	F	2	NAG	C1-C2-N2-C7
4	A	703	NAG	C4-C5-C6-O6
3	H	2	NAG	C3-C2-N2-C7
3	K	2	NAG	C3-C2-N2-C7

There are no ring outliers.

5 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	K	1	NAG	1	0
3	G	1	NAG	3	0
4	A	703	NAG	1	0
4	A	704	NAG	3	0
4	B	705	NAG	1	0

## 5.5 Carbohydrates [i](#)

14 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	$\# Z  > 2$
3	NAG	E	1	1,3	14,14,15	0.56	0	17,19,21	1.36	3 (17%)
3	NAG	E	2	3	14,14,15	0.47	0	17,19,21	1.64	4 (23%)
3	NAG	F	1	1,3	14,14,15	0.72	0	17,19,21	1.98	4 (23%)
3	NAG	F	2	3	14,14,15	0.62	0	17,19,21	1.17	2 (11%)
3	NAG	G	1	2,3	14,14,15	0.71	0	17,19,21	2.22	7 (41%)
3	NAG	G	2	3	14,14,15	0.55	0	17,19,21	1.91	5 (29%)
3	NAG	H	1	2,3	14,14,15	0.75	0	17,19,21	3.08	7 (41%)
3	NAG	H	2	3	14,14,15	0.90	1 (7%)	17,19,21	1.52	2 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	NAG	I	1	1,3	14,14,15	0.51	0	17,19,21	2.03	4 (23%)
3	NAG	I	2	3	14,14,15	0.80	1 (7%)	17,19,21	1.57	3 (17%)
3	NAG	J	1	1,3	14,14,15	0.79	0	17,19,21	2.01	5 (29%)
3	NAG	J	2	3	14,14,15	0.81	1 (7%)	17,19,21	1.55	3 (17%)
3	NAG	K	1	1,3	14,14,15	0.98	1 (7%)	17,19,21	2.03	4 (23%)
3	NAG	K	2	3	14,14,15	0.73	0	17,19,21	1.51	2 (11%)

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	NAG	E	1	1,3	-	1/6/23/26	0/1/1/1
3	NAG	E	2	3	1/1/5/7	2/6/23/26	0/1/1/1
3	NAG	F	1	1,3	-	0/6/23/26	0/1/1/1
3	NAG	F	2	3	-	3/6/23/26	0/1/1/1
3	NAG	G	1	2,3	1/1/5/7	3/6/23/26	0/1/1/1
3	NAG	G	2	3	-	2/6/23/26	0/1/1/1
3	NAG	H	1	2,3	-	3/6/23/26	0/1/1/1
3	NAG	H	2	3	1/1/5/7	3/6/23/26	0/1/1/1
3	NAG	I	1	1,3	-	0/6/23/26	0/1/1/1
3	NAG	I	2	3	-	3/6/23/26	0/1/1/1
3	NAG	J	1	1,3	1/1/5/7	2/6/23/26	0/1/1/1
3	NAG	J	2	3	1/1/5/7	2/6/23/26	0/1/1/1
3	NAG	K	1	1,3	-	2/6/23/26	0/1/1/1
3	NAG	K	2	3	1/1/5/7	3/6/23/26	0/1/1/1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	K	1	NAG	C1-C2	2.96	1.56	1.52
3	I	2	NAG	C1-C2	2.46	1.55	1.52
3	H	2	NAG	C1-C2	2.35	1.55	1.52
3	J	2	NAG	C1-C2	2.02	1.55	1.52

All (55) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	H	1	NAG	C2-N2-C7	8.03	133.67	122.90
3	I	1	NAG	C1-O5-C5	6.62	121.05	112.19
3	H	1	NAG	C8-C7-N2	5.85	125.81	116.12
3	K	1	NAG	C8-C7-N2	4.99	124.39	116.12
3	F	1	NAG	C1-O5-C5	4.98	118.86	112.19
3	G	1	NAG	C8-C7-N2	4.67	123.86	116.12
3	J	2	NAG	C4-C3-C2	4.54	117.68	111.02
3	H	1	NAG	C1-C2-N2	-4.46	103.41	110.43
3	J	1	NAG	C4-C3-C2	4.28	117.29	111.02
3	K	1	NAG	O7-C7-N2	-4.19	114.57	121.98
3	E	2	NAG	C4-C3-C2	-4.19	104.88	111.02
3	G	2	NAG	O5-C1-C2	-4.07	105.00	111.29
3	I	2	NAG	C1-O5-C5	3.97	117.51	112.19
3	G	1	NAG	C2-N2-C7	3.84	128.04	122.90
3	K	2	NAG	C1-O5-C5	-3.74	107.17	112.19
3	G	2	NAG	C3-C4-C5	3.69	116.92	110.23
3	J	1	NAG	C3-C4-C5	3.52	116.61	110.23
3	H	1	NAG	O7-C7-N2	-3.45	115.89	121.98
3	H	2	NAG	C3-C4-C5	-3.39	104.08	110.23
3	G	1	NAG	O7-C7-C8	-3.23	116.31	122.05
3	G	2	NAG	C1-C2-N2	3.22	115.51	110.43
3	H	2	NAG	O5-C5-C4	-3.22	103.00	110.83
3	F	1	NAG	C4-C3-C2	-3.16	106.39	111.02
3	F	2	NAG	C1-O5-C5	3.09	116.33	112.19
3	F	1	NAG	O4-C4-C5	3.07	116.89	109.32
3	J	1	NAG	O4-C4-C5	3.03	116.79	109.32
3	H	1	NAG	C1-O5-C5	2.94	116.13	112.19
3	E	2	NAG	C1-O5-C5	2.93	116.12	112.19
3	K	1	NAG	C2-N2-C7	2.89	126.77	122.90
3	J	2	NAG	C1-O5-C5	2.79	115.93	112.19
3	I	2	NAG	C3-C4-C5	-2.73	105.29	110.23
3	I	1	NAG	C4-C3-C2	-2.67	107.10	111.02
3	J	1	NAG	O5-C1-C2	-2.67	107.16	111.29
3	E	2	NAG	O5-C1-C2	-2.62	107.24	111.29
3	H	1	NAG	O3-C3-C2	2.56	114.72	109.40
3	G	2	NAG	C4-C3-C2	2.51	114.70	111.02
3	K	1	NAG	O4-C4-C5	2.51	115.50	109.32
3	E	1	NAG	O4-C4-C3	2.48	116.23	110.38
3	E	1	NAG	C1-C2-N2	-2.45	106.58	110.43
3	I	1	NAG	O4-C4-C5	2.38	115.19	109.32
3	I	2	NAG	O7-C7-C8	-2.38	117.81	122.05
3	E	2	NAG	C2-N2-C7	-2.36	119.74	122.90
3	G	1	NAG	O3-C3-C4	-2.30	104.95	110.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	I	1	NAG	O4-C4-C3	2.29	115.77	110.38
3	F	1	NAG	C2-N2-C7	-2.27	119.86	122.90
3	G	1	NAG	O5-C1-C2	-2.26	107.79	111.29
3	E	1	NAG	O5-C5-C4	-2.18	105.52	110.83
3	J	1	NAG	O7-C7-C8	-2.14	118.25	122.05
3	G	1	NAG	C1-C2-N2	-2.12	107.10	110.43
3	H	1	NAG	O7-C7-C8	-2.11	118.29	122.05
3	J	2	NAG	C3-C4-C5	2.11	114.06	110.23
3	G	1	NAG	C1-O5-C5	2.11	115.01	112.19
3	F	2	NAG	C1-C2-N2	-2.06	107.19	110.43
3	K	2	NAG	O4-C4-C3	-2.05	105.53	110.38
3	G	2	NAG	C8-C7-N2	2.05	119.52	116.12

All (6) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
3	E	2	NAG	C1
3	G	1	NAG	C1
3	H	2	NAG	C1
3	J	1	NAG	C1
3	J	2	NAG	C1
3	K	2	NAG	C1

All (29) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	H	1	NAG	C3-C2-N2-C7
3	J	2	NAG	C4-C5-C6-O6
3	K	2	NAG	O5-C5-C6-O6
3	G	2	NAG	O5-C5-C6-O6
3	J	1	NAG	O5-C5-C6-O6
3	J	2	NAG	O5-C5-C6-O6
3	E	2	NAG	O5-C5-C6-O6
3	G	1	NAG	C8-C7-N2-C2
3	G	1	NAG	O7-C7-N2-C2
3	H	1	NAG	C8-C7-N2-C2
3	H	1	NAG	O7-C7-N2-C2
3	K	1	NAG	C8-C7-N2-C2
3	K	1	NAG	O7-C7-N2-C2
3	I	2	NAG	C4-C5-C6-O6
3	K	2	NAG	C4-C5-C6-O6
3	G	2	NAG	C4-C5-C6-O6

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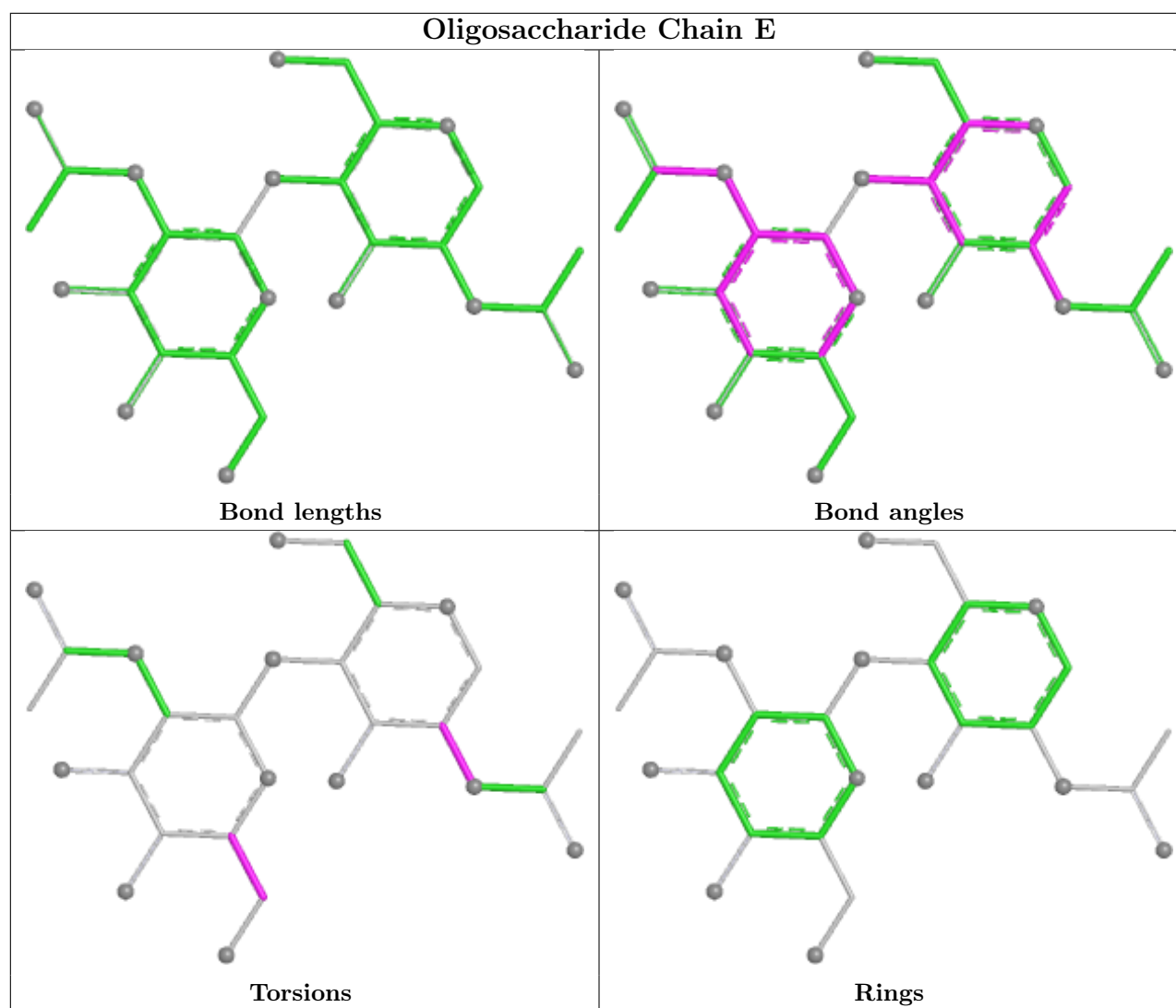
Mol	Chain	Res	Type	Atoms
3	E	2	NAG	C4-C5-C6-O6
3	I	2	NAG	C3-C2-N2-C7
3	J	1	NAG	C4-C5-C6-O6
3	I	2	NAG	O5-C5-C6-O6
3	H	2	NAG	O5-C5-C6-O6
3	E	1	NAG	C3-C2-N2-C7
3	F	2	NAG	C3-C2-N2-C7
3	G	1	NAG	C3-C2-N2-C7
3	H	2	NAG	C4-C5-C6-O6
3	F	2	NAG	O5-C5-C6-O6
3	F	2	NAG	C1-C2-N2-C7
3	H	2	NAG	C3-C2-N2-C7
3	K	2	NAG	C3-C2-N2-C7

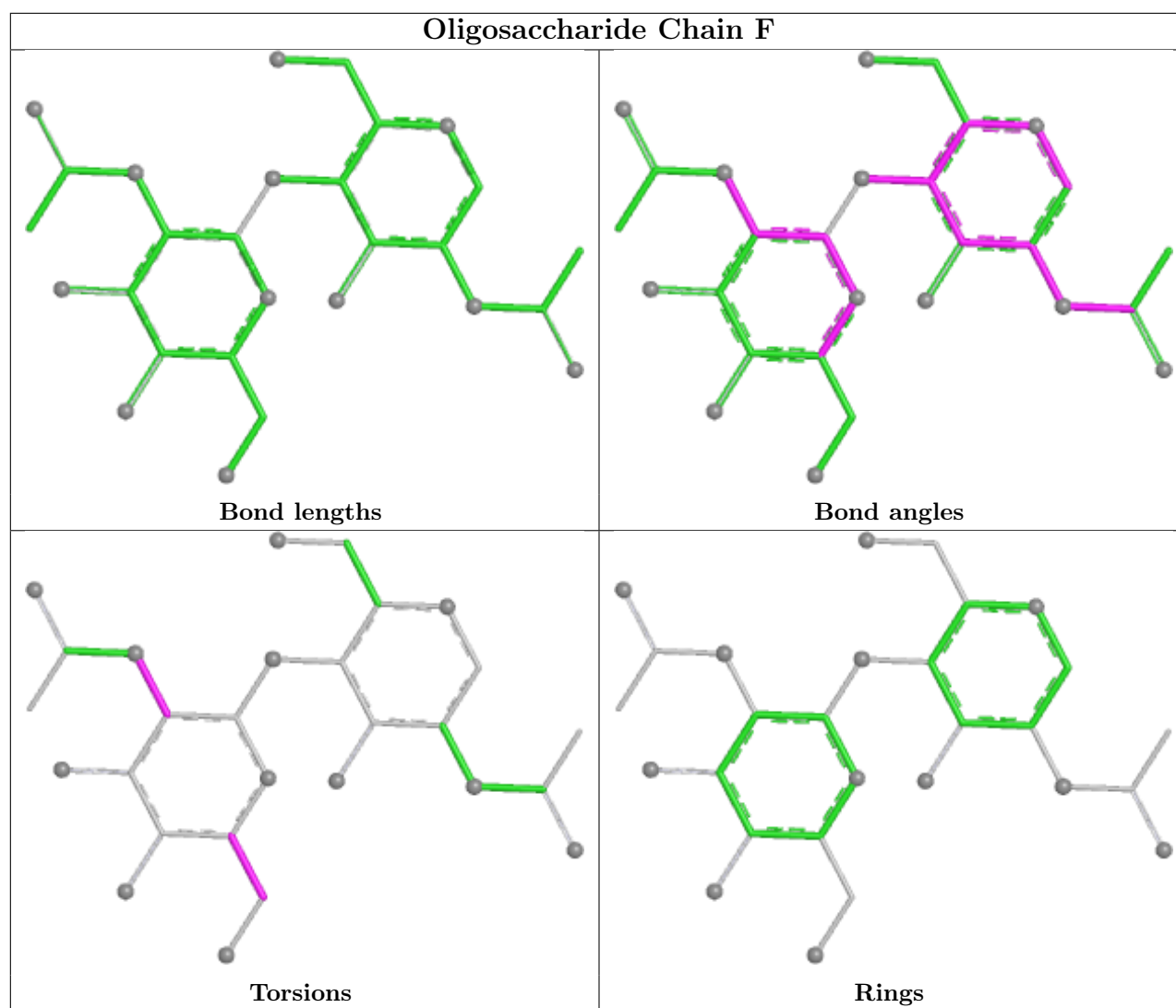
There are no ring outliers.

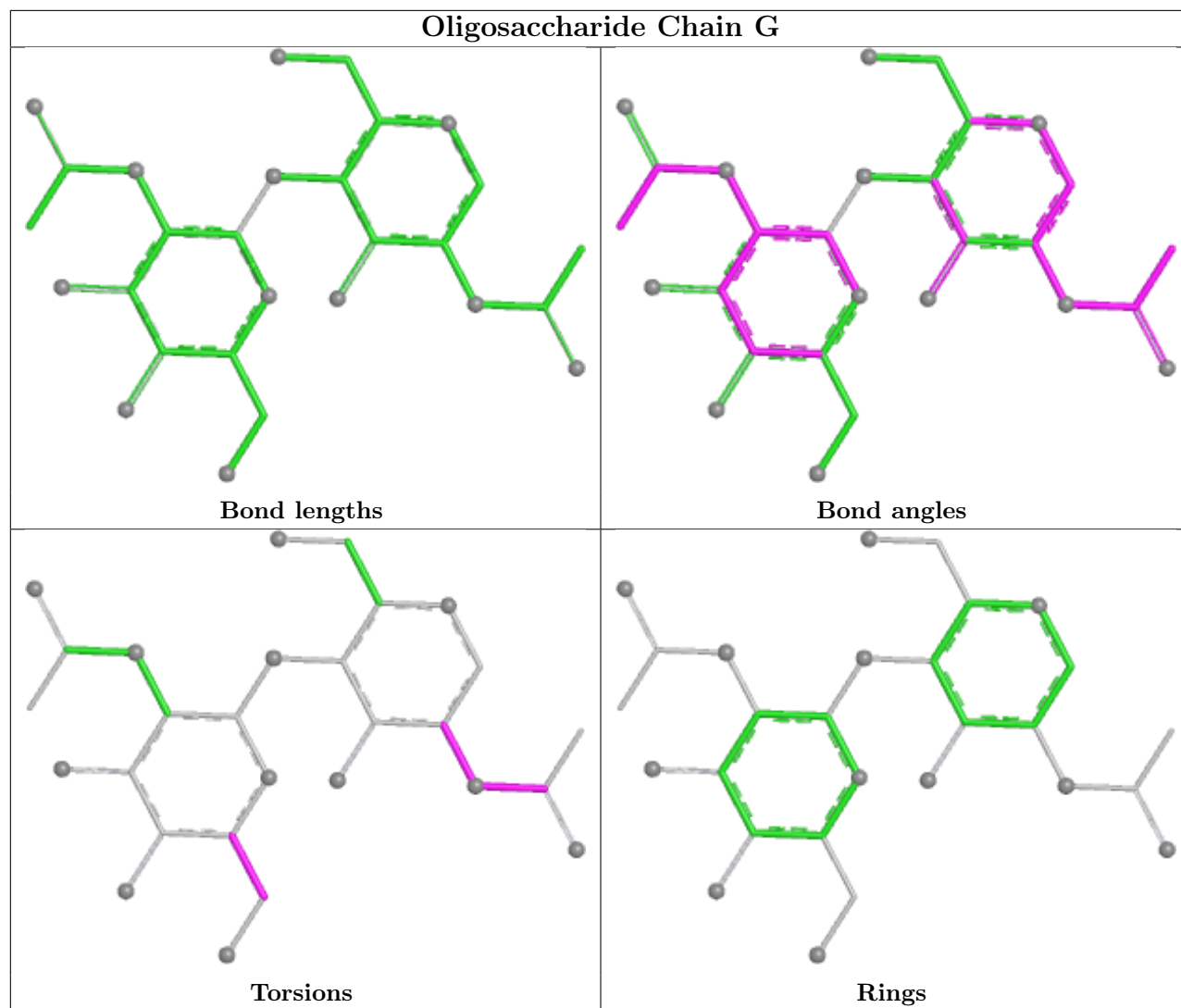
2 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	G	1	NAG	3	0
3	K	1	NAG	1	0

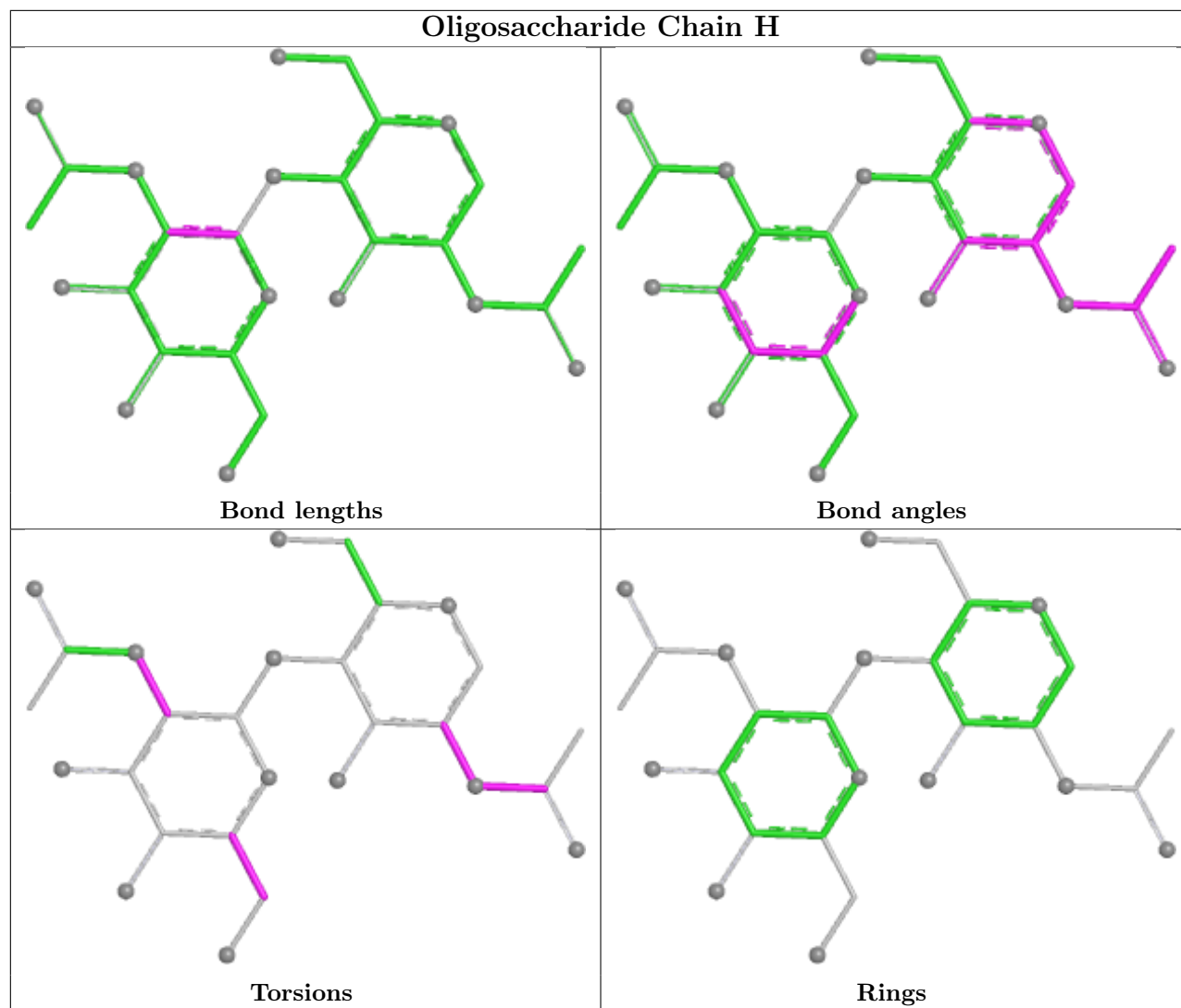
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

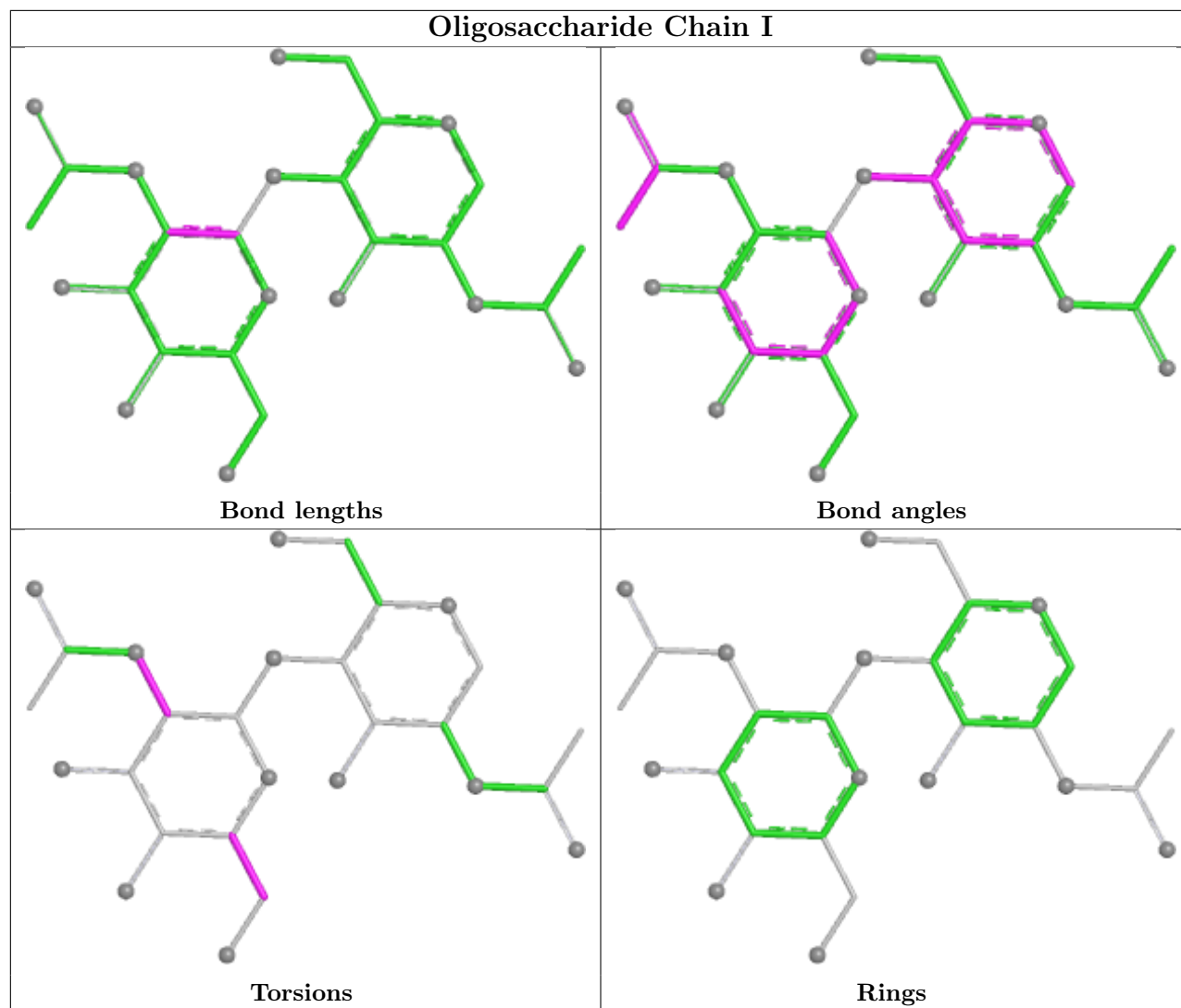


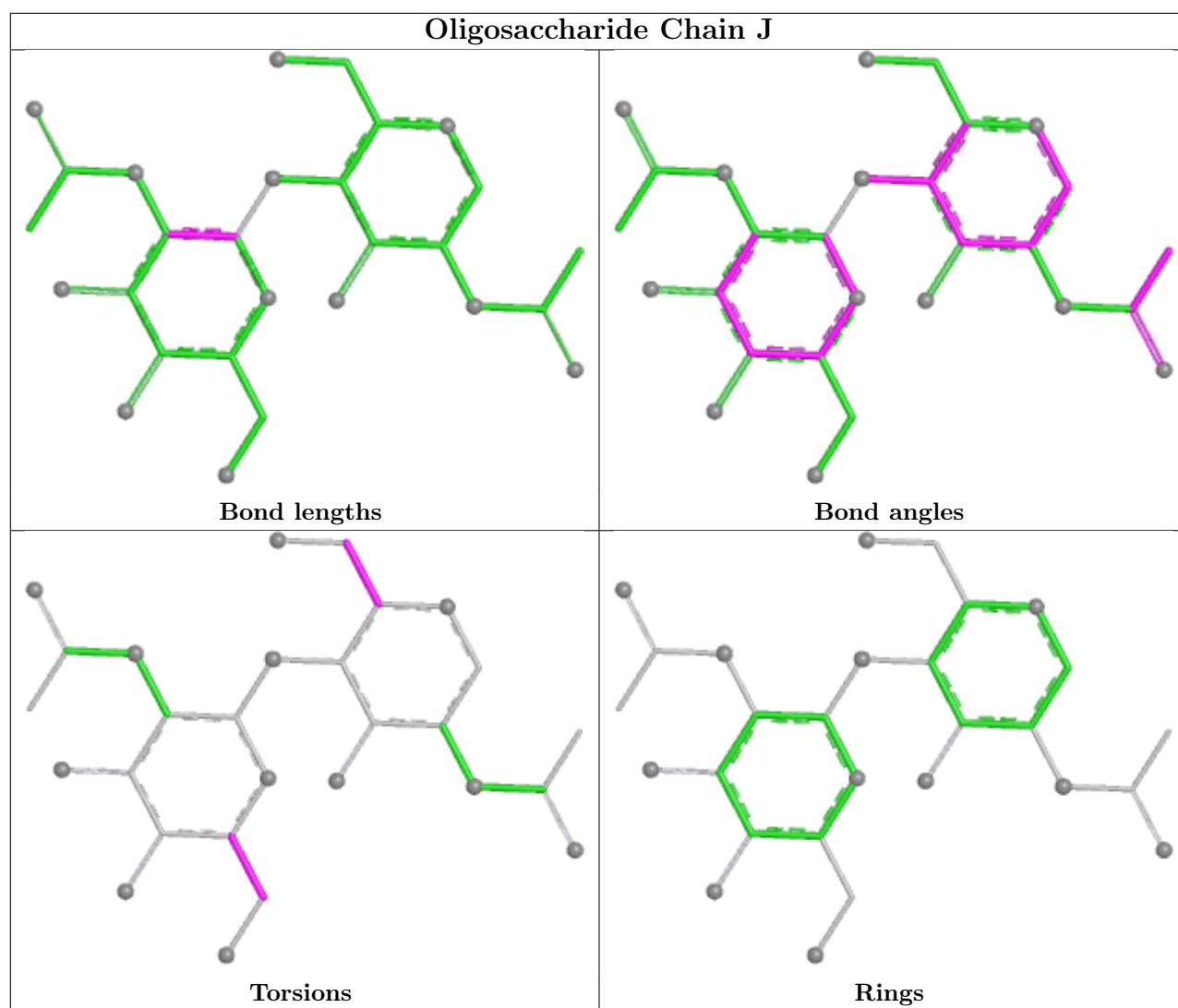


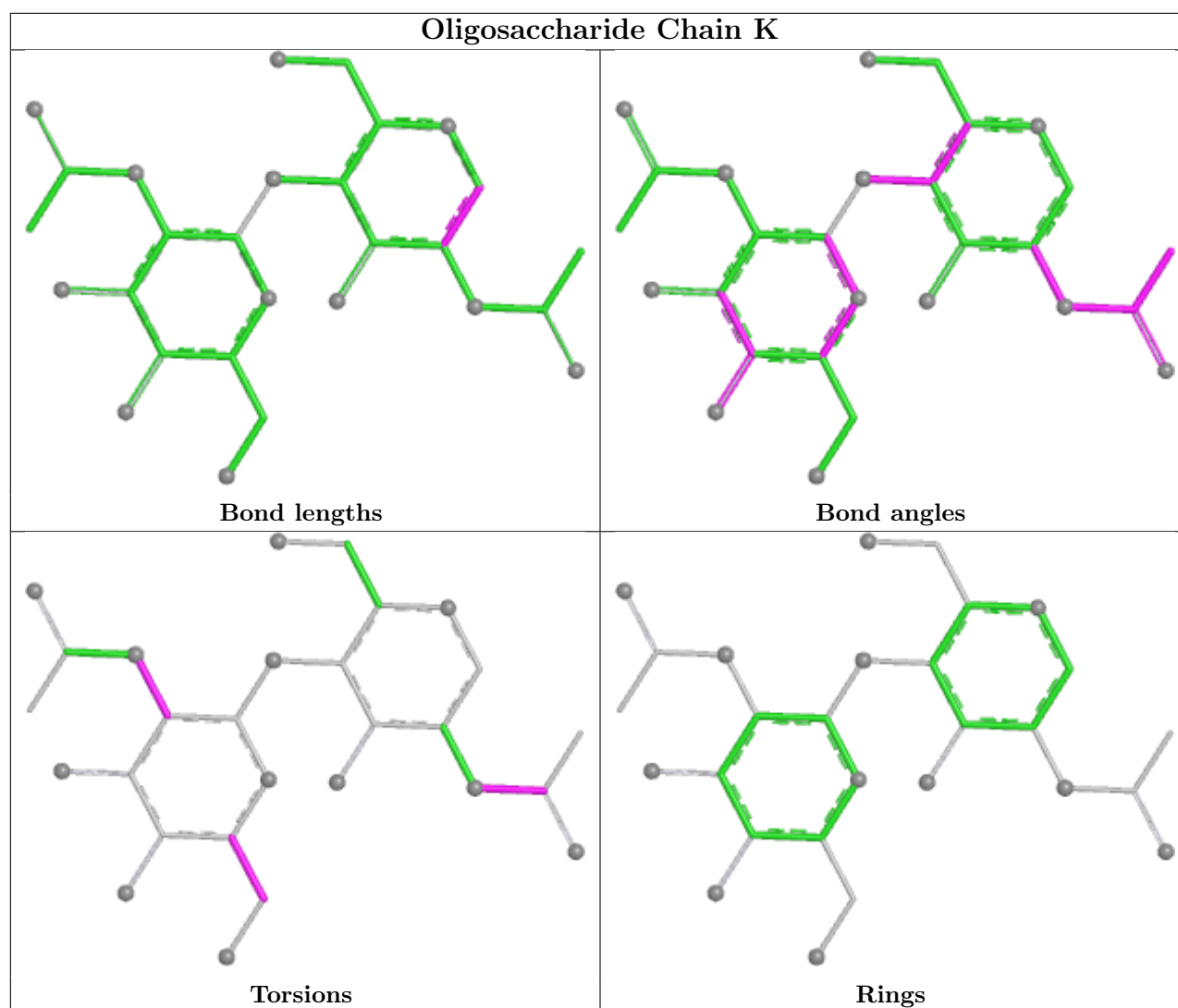












## 5.6 Ligand geometry [i](#)

13 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	LP4	D	804	-	45,45,48	0.89	2 (4%)	54,56,60	1.64	8 (14%)
4	NAG	B	705	1	14,14,15	1.34	3 (21%)	17,19,21	2.43	3 (17%)
4	NAG	A	703	1	14,14,15	0.59	0	17,19,21	2.36	7 (41%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
4	NAG	D	803	2	14,14,15	0.98	0	17,19,21	2.99	7 (41%)
4	NAG	C	201	2	14,14,15	0.67	0	17,19,21	1.64	4 (23%)
6	LP5	D	805	-	47,48,48	0.76	2 (4%)	58,60,60	1.33	7 (12%)
4	NAG	A	704	1	14,14,15	0.74	0	17,19,21	2.09	5 (29%)
8	MYR	D	807	-	13,14,15	0.35	0	12,13,15	0.92	0
8	MYR	C	207	-	13,14,15	0.35	0	12,13,15	0.93	0
6	LP5	C	205	-	47,48,48	0.77	2 (4%)	58,60,60	1.29	5 (8%)
7	DAO	D	806	-	11,12,13	0.50	0	10,11,13	0.42	0
7	DAO	C	206	-	11,12,13	0.49	0	10,11,13	0.73	0
5	LP4	C	204	-	45,45,48	0.80	2 (4%)	54,56,60	1.66	12 (22%)

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	LP4	D	804	-	-	12/43/60/65	0/1/1/1
4	NAG	A	703	1	-	3/6/23/26	0/1/1/1
4	NAG	B	705	1	1/1/5/7	3/6/23/26	0/1/1/1
4	NAG	D	803	2	-	3/6/23/26	0/1/1/1
4	NAG	C	201	2	-	2/6/23/26	0/1/1/1
6	LP5	D	805	-	-	14/44/65/65	0/1/1/1
4	NAG	A	704	1	-	3/6/23/26	0/1/1/1
8	MYR	D	807	-	-	6/12/12/13	-
8	MYR	C	207	-	-	3/12/12/13	-
6	LP5	C	205	-	-	15/44/65/65	0/1/1/1
7	DAO	D	806	-	-	4/10/10/11	-
7	DAO	C	206	-	-	7/10/10/11	-
5	LP4	C	204	-	-	14/43/60/65	0/1/1/1

All (11) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	D	804	LP4	O3-C28	3.93	1.45	1.34
5	C	204	LP4	O3-C28	3.62	1.44	1.34
6	C	205	LP5	O3-C28	3.54	1.44	1.34
6	D	805	LP5	O3-C28	3.51	1.44	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	705	NAG	C1-C2	3.23	1.56	1.52
6	C	205	LP5	O3-C3	-2.69	1.40	1.44
4	B	705	NAG	C3-C2	2.58	1.57	1.52
5	D	804	LP4	O3-C3	-2.55	1.41	1.44
6	D	805	LP5	O3-C3	-2.27	1.41	1.44
5	C	204	LP4	O3-C3	-2.26	1.41	1.44
4	B	705	NAG	O5-C1	-2.19	1.40	1.43

All (58) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	705	NAG	O5-C1-C2	-7.28	100.02	111.29
4	D	803	NAG	C4-C3-C2	-5.86	102.42	111.02
4	D	803	NAG	O5-C1-C2	-5.38	102.96	111.29
5	D	804	LP4	C1-C2-N2	-5.38	101.96	110.43
4	A	703	NAG	C1-O5-C5	5.09	119.01	112.19
5	C	204	LP4	C3-C2-N2	4.95	118.66	110.57
5	D	804	LP4	C3-C2-N2	4.71	118.26	110.57
4	B	705	NAG	C4-C3-C2	4.58	117.73	111.02
4	D	803	NAG	C2-N2-C7	4.54	128.99	122.90
6	D	805	LP5	C1-C2-N2	-4.45	103.45	110.92
4	A	704	NAG	C4-C3-C2	-4.43	104.53	111.02
6	C	205	LP5	C1-C2-N2	-4.39	103.55	110.92
6	C	205	LP5	C3-C2-N2	4.12	117.48	110.91
4	D	803	NAG	C1-C2-N2	4.01	116.75	110.43
4	A	703	NAG	C8-C7-N2	3.95	122.67	116.12
4	D	803	NAG	C1-O5-C5	3.89	117.41	112.19
4	D	803	NAG	O3-C3-C2	3.87	117.44	109.40
4	A	704	NAG	C2-N2-C7	3.83	128.03	122.90
5	D	804	LP4	O3-C3-C4	-3.61	101.08	108.25
4	B	705	NAG	O5-C5-C4	-3.56	102.17	110.83
5	C	204	LP4	C3-C4-C5	3.54	117.84	110.58
4	A	703	NAG	C4-C3-C2	3.40	116.00	111.02
5	C	204	LP4	O5-C1-C2	-3.39	106.05	111.29
4	A	703	NAG	O7-C7-C8	-3.37	116.05	122.05
4	A	703	NAG	C2-N2-C7	3.35	127.39	122.90
4	A	704	NAG	C8-C7-N2	3.20	121.43	116.12
4	A	704	NAG	O3-C3-C2	3.16	115.97	109.40
5	D	804	LP4	O7-C7-C8	-3.15	116.94	121.54
4	C	201	NAG	C1-O5-C5	3.07	116.30	112.19
6	D	805	LP5	O46-P45-O48	3.02	119.13	107.80
5	C	204	LP4	O3-C28-C29	2.97	116.75	111.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	C	204	LP4	C4-C3-C2	-2.97	107.21	111.79
4	C	201	NAG	C1-C2-N2	2.84	114.91	110.43
5	C	204	LP4	C32-C31-C30	-2.84	106.87	114.68
4	C	201	NAG	C4-C3-C2	-2.79	106.94	111.02
5	C	204	LP4	O47-P45-O48	2.62	121.03	110.83
5	C	204	LP4	O5-C5-C6	2.59	112.71	107.66
5	C	204	LP4	C1-C2-N2	-2.57	106.38	110.43
6	D	805	LP5	O3-C28-C29	2.57	116.03	111.43
6	C	205	LP5	O3-C28-C29	2.56	116.03	111.43
5	C	204	LP4	O3-C3-C2	2.49	112.81	108.15
6	D	805	LP5	O5-C1-C2	-2.49	105.89	110.59
5	C	204	LP4	O3-C3-C4	-2.44	103.41	108.25
5	D	804	LP4	C31-C30-C29	-2.41	104.78	112.88
4	D	803	NAG	O5-C5-C4	2.41	116.68	110.83
4	A	703	NAG	O3-C3-C2	-2.40	104.42	109.40
5	D	804	LP4	O43-C30-C29	2.37	115.78	109.64
4	C	201	NAG	O5-C1-C2	-2.36	107.64	111.29
6	D	805	LP5	O1-C1-C2	-2.26	104.31	108.40
6	D	805	LP5	O43-C30-C31	2.23	115.29	109.35
6	C	205	LP5	O48-P45-O47	2.19	119.35	110.83
4	A	704	NAG	O4-C4-C5	2.13	114.58	109.32
5	D	804	LP4	O4-P45-O48	-2.13	101.75	109.33
5	D	804	LP4	C1-O5-C5	2.10	115.00	112.19
5	C	204	LP4	C39-C38-C37	-2.10	103.75	114.37
4	A	703	NAG	C1-C2-N2	2.02	113.62	110.43
6	D	805	LP5	C1-O5-C5	-2.02	109.77	113.72
6	C	205	LP5	O3-C3-C2	2.01	111.63	107.92

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
4	B	705	NAG	C1

All (89) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	D	803	NAG	C3-C2-N2-C7
5	C	204	LP4	C17-C16-C8-C7
5	C	204	LP4	O44-C16-C8-C7
5	C	204	LP4	C29-C30-C31-C32
5	C	204	LP4	O43-C30-C31-C32
5	D	804	LP4	C17-C16-C8-C7

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Mol	Chain	Res	Type	Atoms
5	D	804	LP4	O44-C16-C8-C7
5	D	804	LP4	C8-C16-C17-C18
5	D	804	LP4	O44-C16-C17-C18
5	D	804	LP4	C28-C29-C30-C31
5	D	804	LP4	C28-C29-C30-O43
6	D	805	LP5	C8-C16-C17-C18
7	C	206	DAO	O1-C1-C2-C3
7	D	806	DAO	O1-C1-C2-C3
8	D	807	MYR	C1-C2-C3-C4
4	C	201	NAG	C4-C5-C6-O6
4	D	803	NAG	C4-C5-C6-O6
4	D	803	NAG	O5-C5-C6-O6
4	C	201	NAG	O5-C5-C6-O6
6	C	205	LP5	C2-C3-O3-C28
4	A	703	NAG	C8-C7-N2-C2
4	A	703	NAG	O7-C7-N2-C2
4	A	704	NAG	C8-C7-N2-C2
4	A	704	NAG	O7-C7-N2-C2
6	C	205	LP5	C4-C3-O3-C28
6	C	205	LP5	O44-C16-C17-C18
6	D	805	LP5	O43-C30-C31-C32
8	D	807	MYR	C9-C10-C11-C12
6	D	805	LP5	C17-C18-C19-C20
6	C	205	LP5	C17-C18-C19-C20
5	D	804	LP4	C21-C22-C23-C24
6	D	805	LP5	C29-C28-O3-C3
4	B	705	NAG	O5-C5-C6-O6
7	C	206	DAO	C6-C7-C8-C9
5	C	204	LP4	C29-C28-O3-C3
5	C	204	LP4	O42-C28-O3-C3
6	D	805	LP5	O42-C28-O3-C3
6	C	205	LP5	C33-C34-C35-C36
8	C	207	MYR	C9-C10-C11-C12
5	C	204	LP4	C18-C19-C20-C21
6	D	805	LP5	O44-C16-C17-C18
8	D	807	MYR	C3-C4-C5-C6
7	C	206	DAO	C5-C6-C7-C8
7	D	806	DAO	C6-C7-C8-C9
6	D	805	LP5	C31-C32-C33-C34
6	D	805	LP5	C33-C34-C35-C36
6	C	205	LP5	C24-C25-C26-C27
6	D	805	LP5	C38-C39-C40-C41

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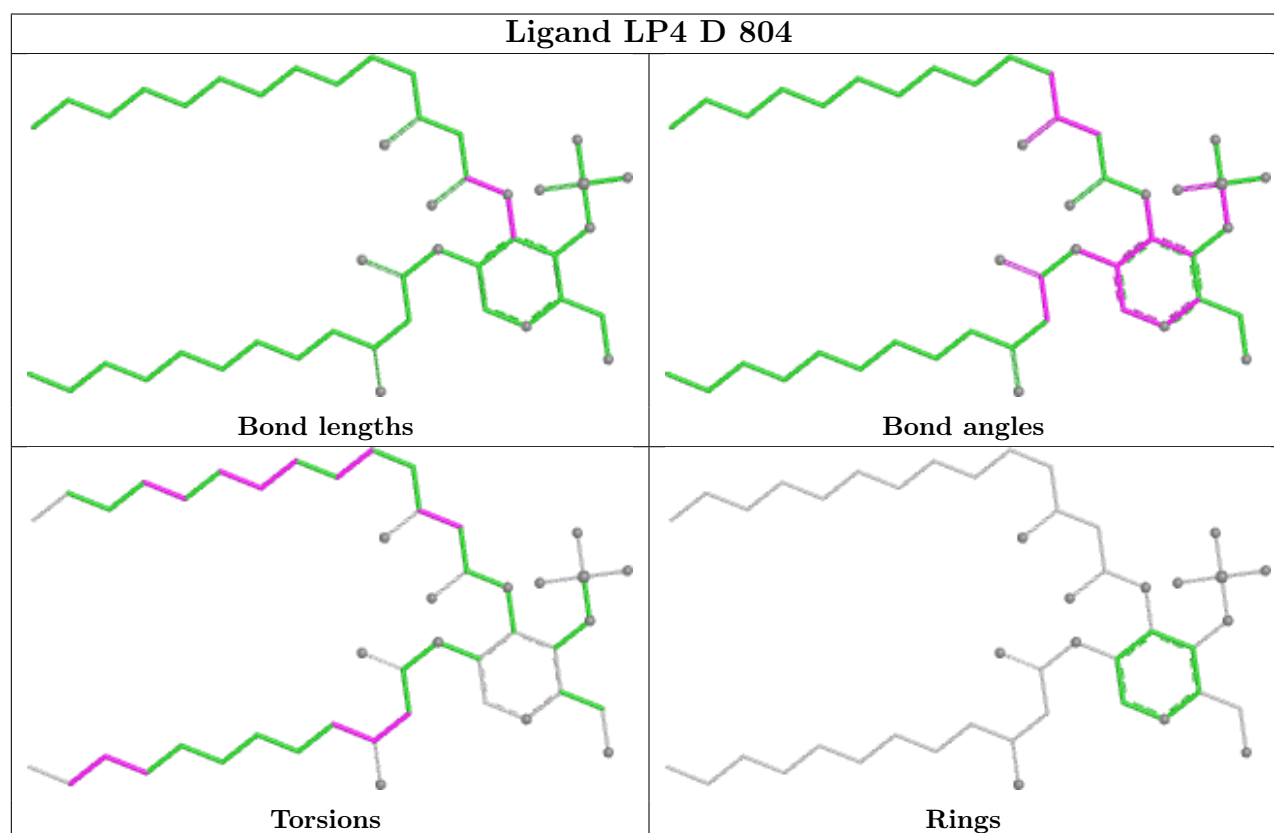
Mol	Chain	Res	Type	Atoms
5	C	204	LP4	C19-C20-C21-C22
6	C	205	LP5	O43-C30-C31-C32
5	C	204	LP4	C17-C18-C19-C20
8	C	207	MYR	C2-C3-C4-C5
5	C	204	LP4	C28-C29-C30-C31
6	C	205	LP5	C35-C36-C37-C38
6	D	805	LP5	C22-C23-C24-C25
7	C	206	DAO	C3-C4-C5-C6
5	C	204	LP4	O5-C5-C6-O6
6	C	205	LP5	C29-C28-O3-C3
5	D	804	LP4	C22-C23-C24-C25
8	C	207	MYR	C10-C11-C12-C13
8	D	807	MYR	C7-C8-C9-C10
7	C	206	DAO	C1-C2-C3-C4
4	B	705	NAG	C4-C5-C6-O6
5	D	804	LP4	C31-C32-C33-C34
6	C	205	LP5	C34-C35-C36-C37
5	D	804	LP4	C33-C34-C35-C36
4	B	705	NAG	C3-C2-N2-C7
6	C	205	LP5	C31-C32-C33-C34
7	C	206	DAO	C11-C10-C9-C8
6	D	805	LP5	C32-C33-C34-C35
7	D	806	DAO	C2-C3-C4-C5
6	C	205	LP5	O42-C28-O3-C3
6	D	805	LP5	C37-C38-C39-C40
7	C	206	DAO	C9-C10-C11-C12
4	A	704	NAG	C4-C5-C6-O6
5	D	804	LP4	C36-C37-C38-C39
5	D	804	LP4	C34-C35-C36-C37
6	C	205	LP5	C36-C37-C38-C39
4	A	703	NAG	C4-C5-C6-O6
6	D	805	LP5	C21-C22-C23-C24
6	C	205	LP5	C8-C16-C17-C18
5	C	204	LP4	C21-C22-C23-C24
6	C	205	LP5	C32-C33-C34-C35
8	D	807	MYR	C11-C12-C13-C14
5	C	204	LP4	C22-C23-C24-C25
7	D	806	DAO	C3-C4-C5-C6
5	C	204	LP4	C16-C17-C18-C19
8	D	807	MYR	C4-C5-C6-C7
6	D	805	LP5	C20-C21-C22-C23

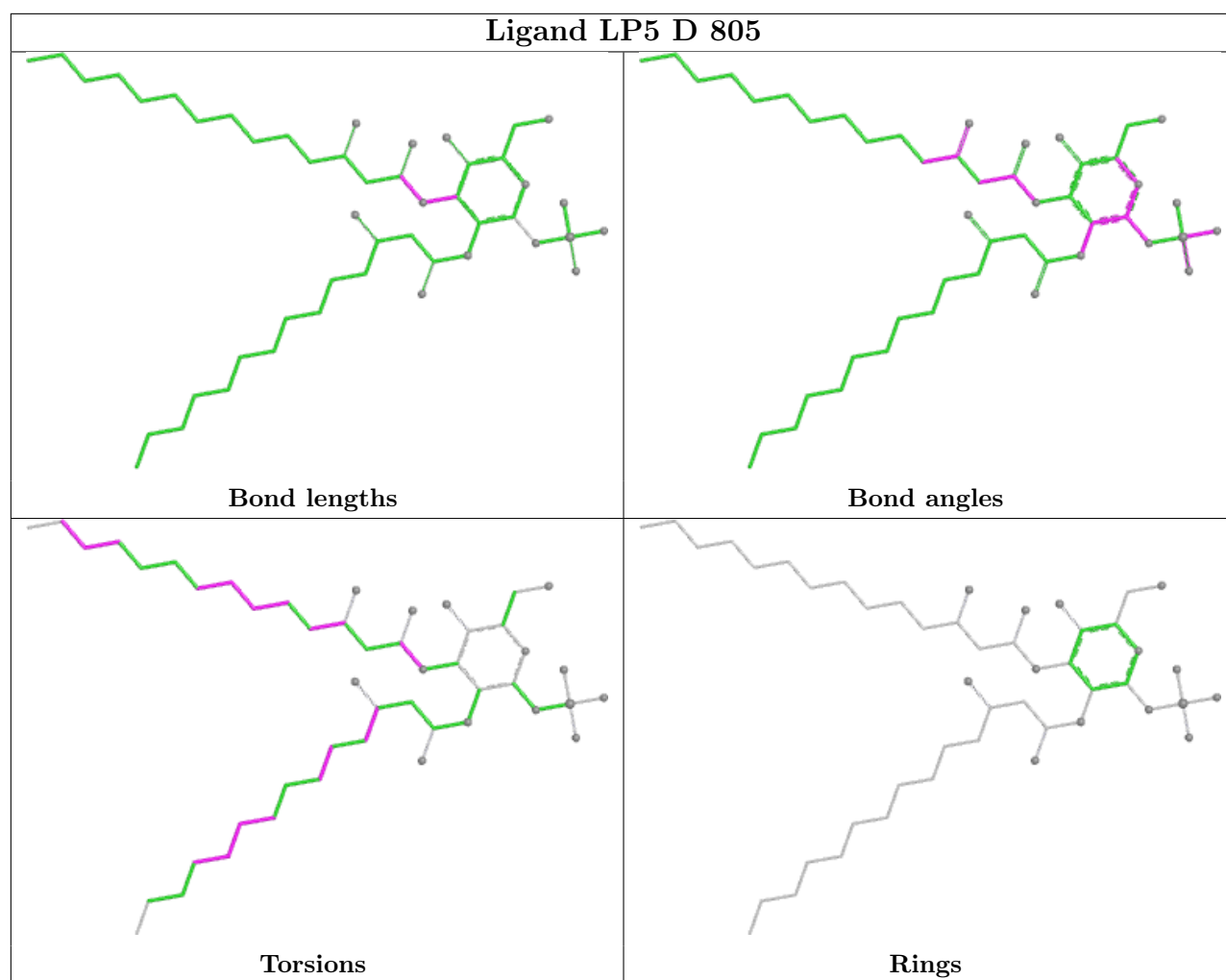
There are no ring outliers.

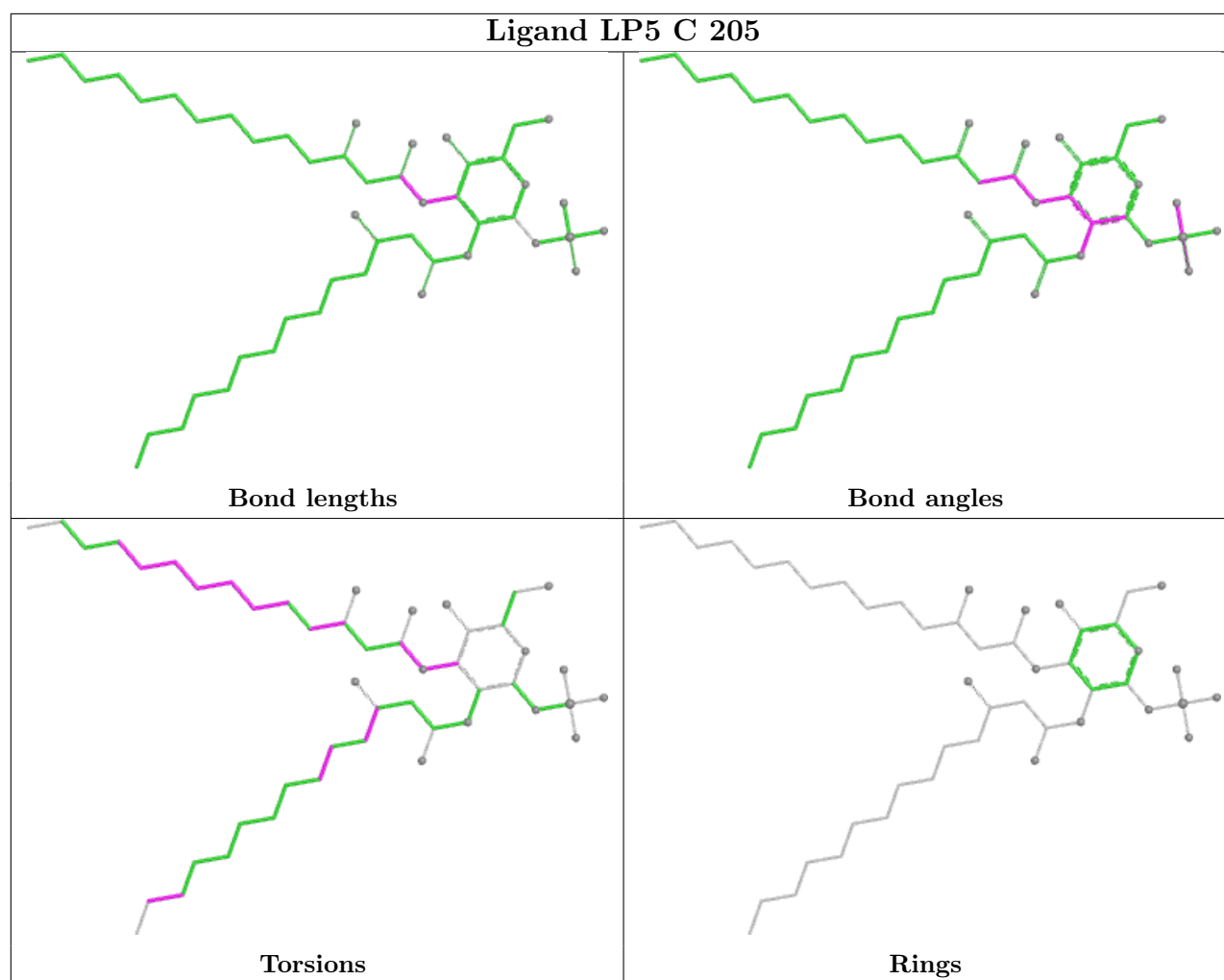
8 monomers are involved in 11 short contacts:

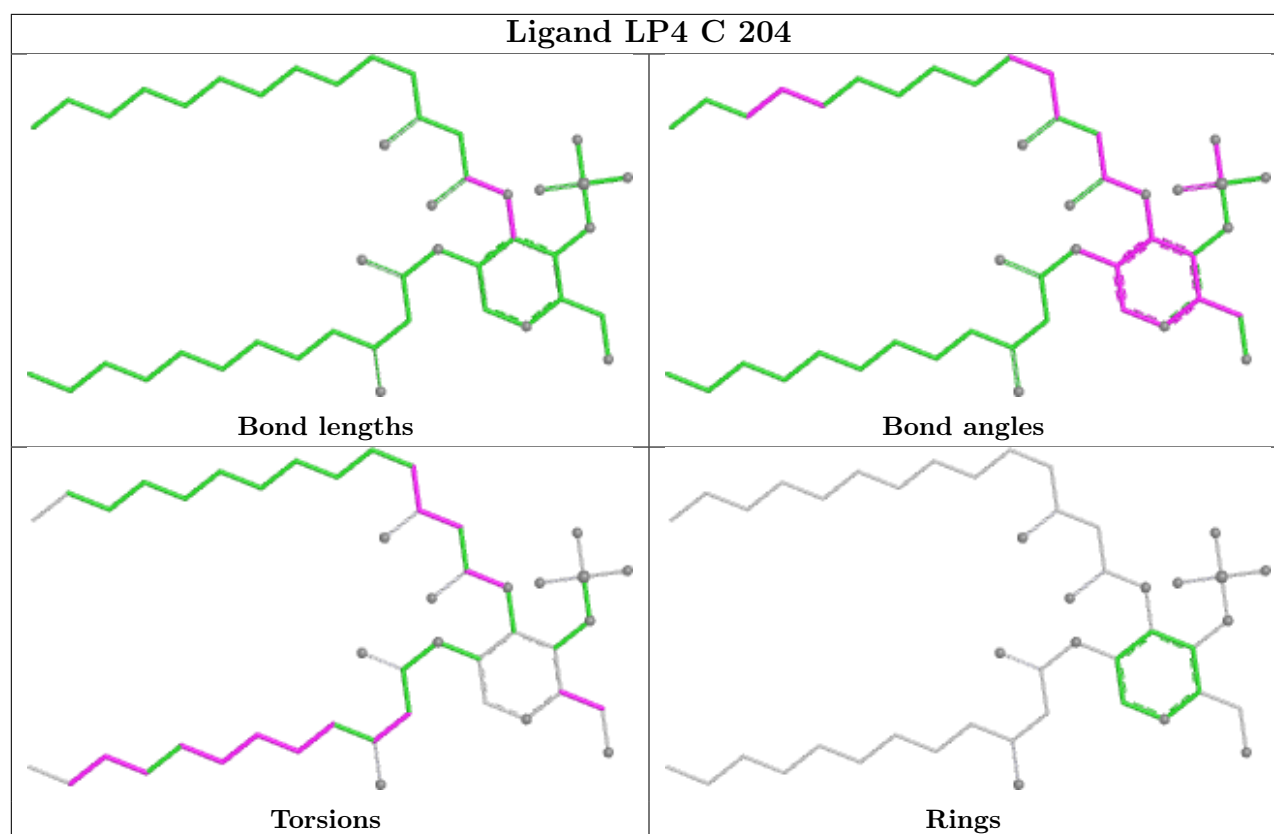
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	D	804	LP4	1	0
4	B	705	NAG	1	0
4	A	703	NAG	1	0
6	D	805	LP5	1	0
4	A	704	NAG	3	0
8	D	807	MYR	2	0
8	C	207	MYR	1	0
6	C	205	LP5	2	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.









## 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, 95<sup>th</sup> percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å <sup>2</sup> )	Q<0.9
1	A	590/594 (99%)	0.50	77 (13%) <b>7</b> <b>6</b>	9, 33, 95, 142	1 (0%)
1	B	592/594 (99%)	0.75	102 (17%) <b>4</b> <b>3</b>	10, 43, 99, 132	0
2	C	137/150 (91%)	0.19	5 (3%) 46 42	20, 35, 55, 76	0
2	D	137/150 (91%)	0.58	7 (5%) 33 29	23, 42, 65, 79	0
All	All	1456/1488 (97%)	0.58	191 (13%) <b>7</b> <b>6</b>	9, 37, 95, 142	1 (0%)

All (191) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	121	PHE	7.7
1	B	27	PRO	7.1
1	A	100	LEU	6.8
1	A	80	GLN	6.0
1	A	102	HIS	6.0
1	A	76	PHE	5.6
1	A	120	SER	5.6
1	B	29	ILE	5.4
1	A	101	HIS	5.4
1	B	56	LYS	5.0
1	A	119	GLY	5.0
1	B	98	HIS	4.8
1	B	94	ASP	4.7
1	A	35	ILE	4.6
1	B	33	PRO	4.6
1	A	37	TYR	4.5
1	B	71	TYR	4.5
1	B	613	ARG	4.5
1	B	100	LEU	4.4
1	A	118	PRO	4.4
1	A	44	LEU	4.3

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Mol	Chain	Res	Type	RSRZ
1	B	28	CYS	4.3
1	A	78	GLU	4.3
1	B	50	ASP	4.3
1	A	45	SER	4.2
1	A	99	GLY	4.2
1	B	30	GLU	4.1
1	B	99	GLY	4.1
1	A	146	GLY	4.1
1	B	74	SER	4.1
1	B	35	ILE	4.0
1	A	34	ASN	4.0
1	B	225	ILE	4.0
1	A	98	HIS	4.0
1	A	97	TRP	4.0
1	B	68	LEU	3.9
1	B	96	ALA	3.8
1	A	95	LYS	3.8
1	B	149	ILE	3.8
1	B	66	LYS	3.7
2	C	21	GLN	3.7
1	B	253	HIS	3.7
1	A	71	TYR	3.7
2	D	20	LYS	3.7
1	B	203	VAL	3.6
1	B	164	CYS	3.5
1	B	65	LEU	3.5
1	B	536	SER	3.5
1	A	48	PRO	3.5
1	B	240	ASN	3.5
1	B	101	HIS	3.5
2	C	39	HIS	3.5
1	B	37	TYR	3.4
1	B	67	ILE	3.4
1	A	33	PRO	3.4
1	B	173	LEU	3.4
1	B	252	LEU	3.4
1	B	226	LYS	3.3
1	A	72	SER	3.3
1	A	148	LEU	3.3
1	B	196	PHE	3.3
1	A	47	VAL	3.3
1	A	79	LEU	3.3

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Mol	Chain	Res	Type	RSRZ
1	A	51	ILE	3.3
1	B	114	GLN	3.2
1	A	147	GLN	3.2
1	B	146	GLY	3.2
1	B	46	LYS	3.2
1	A	64	PRO	3.1
1	A	73	PHE	3.1
1	A	46	LYS	3.1
1	B	119	GLY	3.1
2	D	24	PHE	3.1
1	A	74	SER	3.1
1	B	197	LEU	3.1
1	A	56	LYS	3.0
1	B	154	LEU	3.0
1	B	102	HIS	3.0
1	B	141	GLU	3.0
1	A	168	ALA	3.0
1	A	32	VAL	3.0
1	B	216	PHE	3.0
1	B	195	GLN	3.0
1	A	173	LEU	2.9
1	A	81	TRP	2.9
1	B	58	ILE	2.9
1	B	224	GLY	2.9
1	B	156	VAL	2.9
1	B	78	GLU	2.9
1	B	202	GLN	2.9
1	A	75	ASN	2.9
1	A	116	PHE	2.9
1	B	145	ILE	2.9
1	A	124	LEU	2.9
1	B	82	LEU	2.9
1	A	117	SER	2.8
1	A	149	ILE	2.8
1	B	136	LYS	2.8
1	B	51	ILE	2.8
1	A	123	GLY	2.8
2	D	21	GLN	2.8
1	A	92	ILE	2.8
1	A	77	SER	2.8
1	A	103	LEU	2.8
1	B	116	PHE	2.8

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Mol	Chain	Res	Type	RSRZ
1	A	49	ASP	2.8
1	B	177	VAL	2.8
1	B	617	CYS	2.7
1	B	614	SER	2.7
1	A	96	ALA	2.7
1	A	36	THR	2.7
1	B	147	GLN	2.7
1	B	43	LYS	2.7
1	A	225	ILE	2.7
1	A	126	SER	2.7
1	B	118	PRO	2.7
1	A	60	LEU	2.6
1	A	445	GLU	2.6
1	A	143	PHE	2.6
1	A	29	ILE	2.6
1	B	95	LYS	2.6
1	A	122	SER	2.6
1	B	456	ASN	2.6
1	B	270	ILE	2.6
1	B	91	THR	2.5
2	D	40	LEU	2.5
1	B	266	ARG	2.5
1	B	192	ASN	2.5
1	B	302	PHE	2.5
1	A	55	THR	2.5
1	A	57	ASN	2.5
1	A	125	THR	2.5
1	B	75	ASN	2.5
1	B	280	CYS	2.5
1	A	266	ARG	2.5
1	B	142	SER	2.5
1	B	347	ASP	2.5
1	B	73	PHE	2.5
1	B	148	LEU	2.4
1	B	201	PRO	2.4
1	A	58	ILE	2.4
1	A	172	ASN	2.4
1	A	162	HIS	2.4
1	A	69	LYS	2.3
1	A	104	SER	2.3
1	B	83	ASP	2.3
1	B	103	LEU	2.3

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Mol	Chain	Res	Type	RSRZ
1	A	67	ILE	2.3
2	D	26	ASN	2.3
1	B	300	VAL	2.3
1	B	222	PHE	2.3
1	B	44	LEU	2.3
1	B	79	LEU	2.3
1	B	76	PHE	2.3
1	B	36	THR	2.2
1	A	114	GLN	2.2
1	B	193	ASP	2.2
1	A	65	LEU	2.2
1	B	223	GLN	2.2
1	B	47	VAL	2.2
1	A	138	ALA	2.2
1	A	272	GLU	2.2
1	B	39	CYS	2.2
2	D	41	LYS	2.2
1	B	81	TRP	2.1
2	D	49	GLU	2.1
1	B	90	GLU	2.1
1	B	172	ASN	2.1
1	B	169	TYR	2.1
1	B	31	VAL	2.1
1	B	113	ILE	2.1
1	B	241	ILE	2.1
1	B	238	SER	2.1
1	A	129	ASN	2.1
2	C	156	ARG	2.1
1	B	220	GLN	2.1
1	A	397	ASN	2.1
1	A	253	HIS	2.1
1	B	234	GLY	2.1
1	B	92	ILE	2.1
1	B	48	PRO	2.0
1	A	137	LEU	2.0
1	B	205	LEU	2.0
1	B	268	LEU	2.0
1	A	192	ASN	2.0
1	B	304	CYS	2.0
1	A	160	PHE	2.0
2	C	24	PHE	2.0
1	B	168	ALA	2.0

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Mol	Chain	Res	Type	RSRZ
1	B	296	SER	2.0
2	C	132	ARG	2.0

## 6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
3	NAG	J	2	14/15	0.43	0.21	95,108,117,122	0
3	NAG	I	2	14/15	0.59	0.19	70,82,103,104	0
4	NAG	A	703	14/15	0.62	0.19	52,76,83,84	0
3	NAG	J	1	14/15	0.65	0.28	98,106,115,118	0
4	NAG	B	705	14/15	0.65	0.19	67,75,83,85	0
4	NAG	A	704	14/15	0.71	0.16	66,72,77,78	0
3	NAG	F	2	14/15	0.72	0.14	39,52,57,60	0
3	NAG	H	2	14/15	0.73	0.14	78,86,88,90	0
4	NAG	D	803	14/15	0.73	0.17	68,74,77,77	0
3	NAG	E	2	14/15	0.76	0.15	64,76,82,86	0
3	NAG	I	1	14/15	0.77	0.18	84,88,91,94	0
3	NAG	G	2	14/15	0.78	0.13	65,74,85,87	0
3	NAG	E	1	14/15	0.79	0.16	59,65,74,75	0
4	NAG	C	201	14/15	0.79	0.14	66,74,83,92	0
3	NAG	K	2	14/15	0.79	0.13	42,48,52,56	0
3	NAG	G	1	14/15	0.83	0.13	45,48,53,62	0
3	NAG	H	1	14/15	0.86	0.11	47,52,59,70	0
3	NAG	K	1	14/15	0.93	0.09	24,27,33,37	0
3	NAG	F	1	14/15	0.96	0.07	26,30,33,38	0

## 6.3 Carbohydrates [i](#)

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

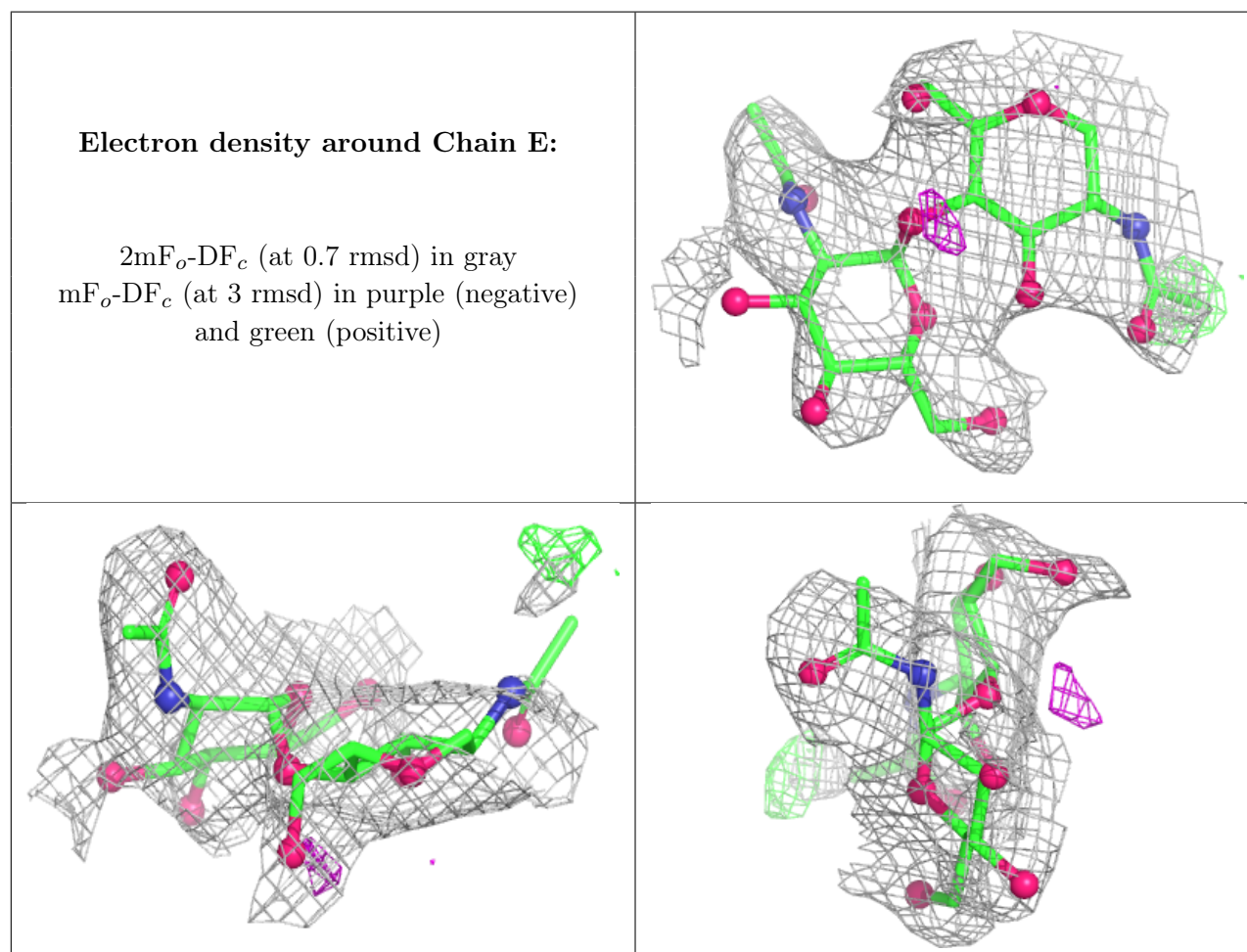
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
3	NAG	J	2	14/15	0.43	0.21	95,108,117,122	0
3	NAG	I	2	14/15	0.59	0.19	70,82,103,104	0

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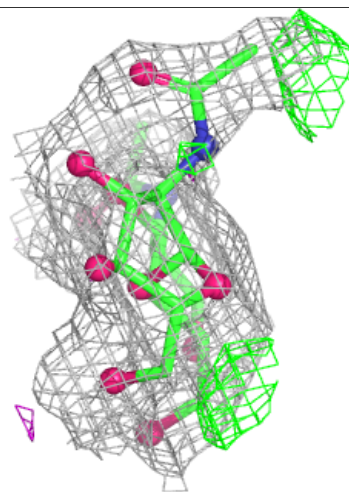
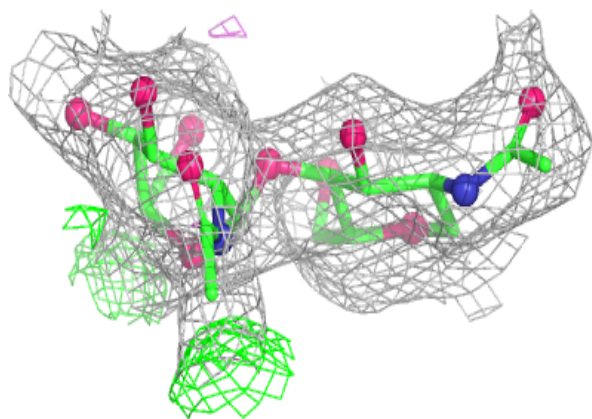
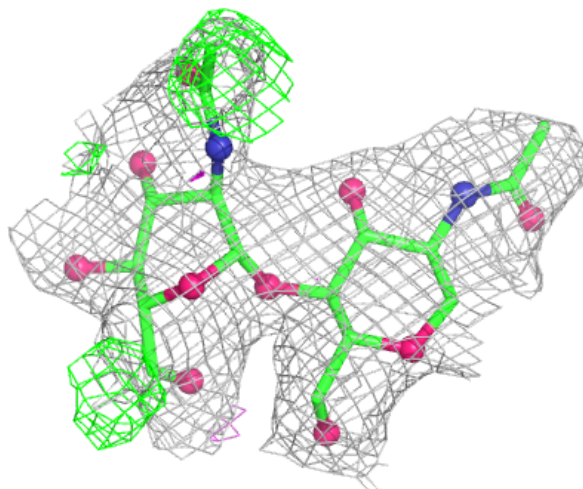
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
3	NAG	J	1	14/15	0.65	0.28	98,106,115,118	0
3	NAG	F	2	14/15	0.72	0.14	39,52,57,60	0
3	NAG	H	2	14/15	0.73	0.14	78,86,88,90	0
3	NAG	E	2	14/15	0.76	0.15	64,76,82,86	0
3	NAG	I	1	14/15	0.77	0.18	84,88,91,94	0
3	NAG	G	2	14/15	0.78	0.13	65,74,85,87	0
3	NAG	E	1	14/15	0.79	0.16	59,65,74,75	0
3	NAG	K	2	14/15	0.79	0.13	42,48,52,56	0
3	NAG	G	1	14/15	0.83	0.13	45,48,53,62	0
3	NAG	H	1	14/15	0.86	0.11	47,52,59,70	0
3	NAG	K	1	14/15	0.93	0.09	24,27,33,37	0
3	NAG	F	1	14/15	0.96	0.07	26,30,33,38	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.



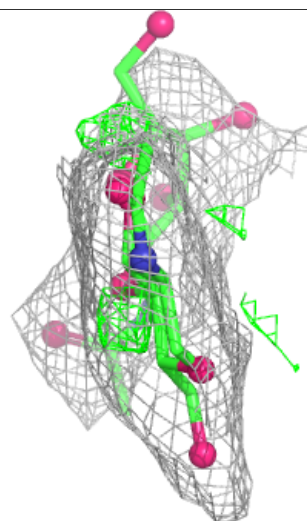
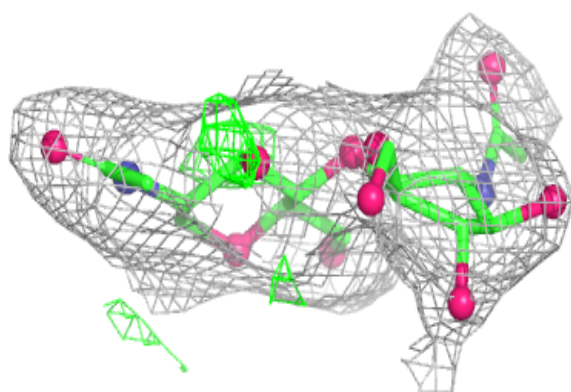
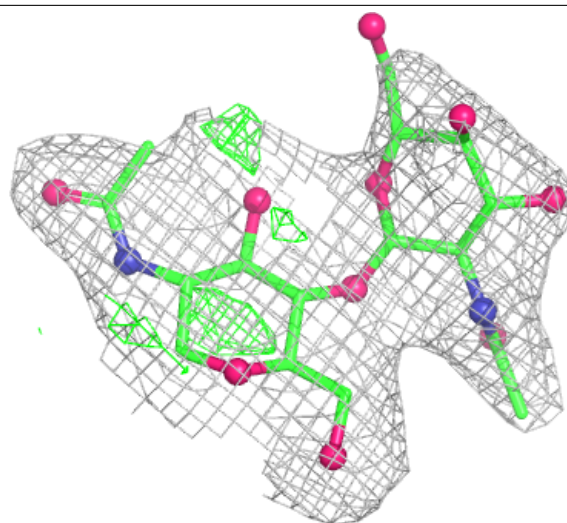
**Electron density around Chain F:**

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



**Electron density around Chain G:**

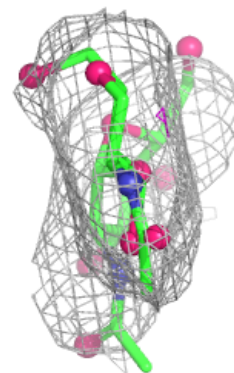
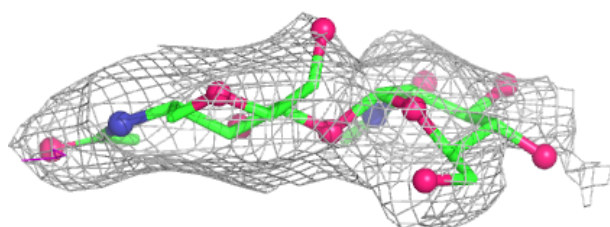
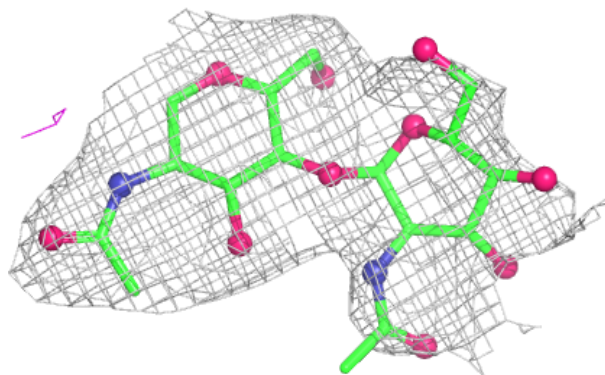
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





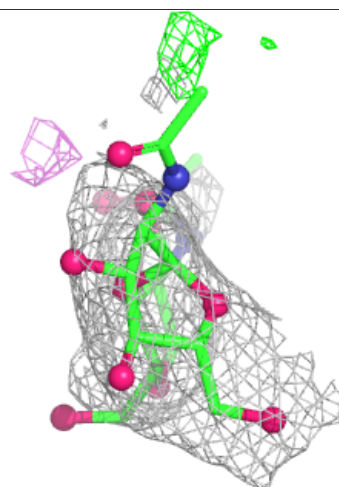
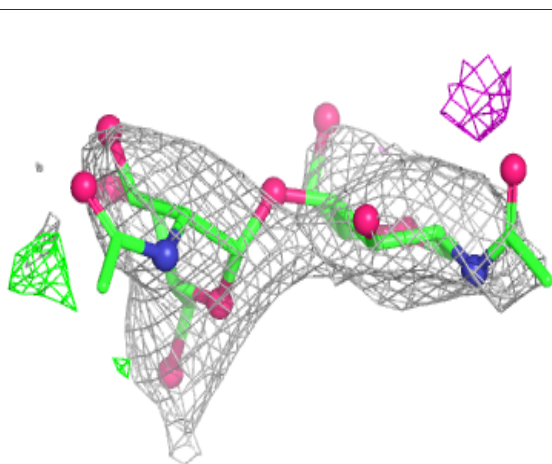
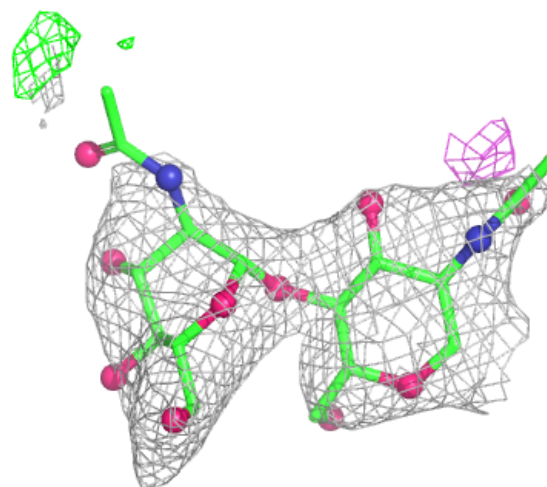
**Electron density around Chain H:**

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



**Electron density around Chain I:**

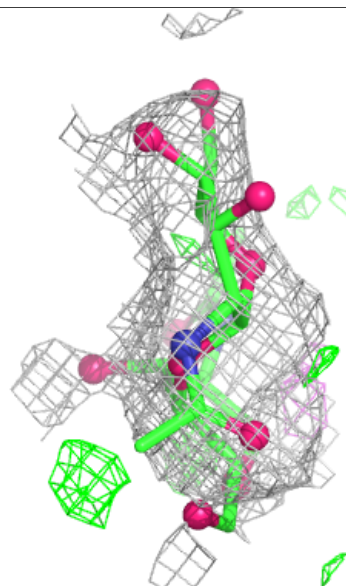
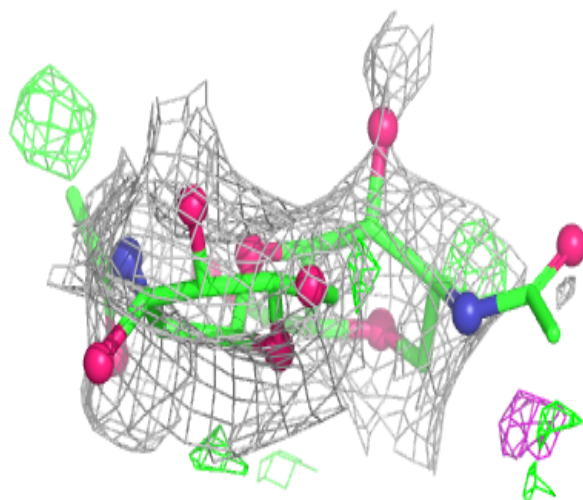
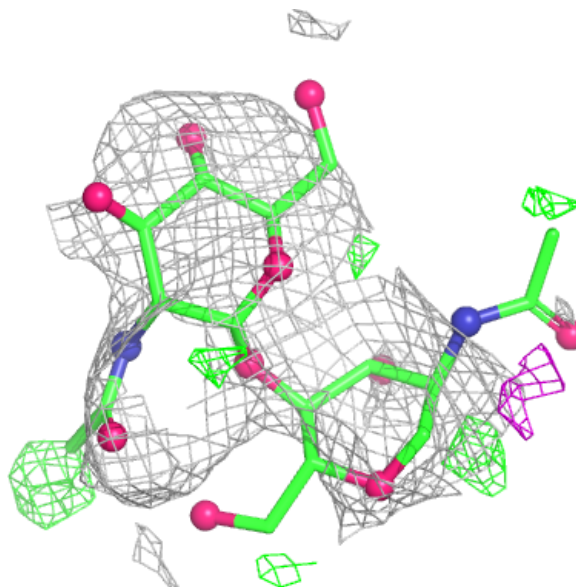
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)

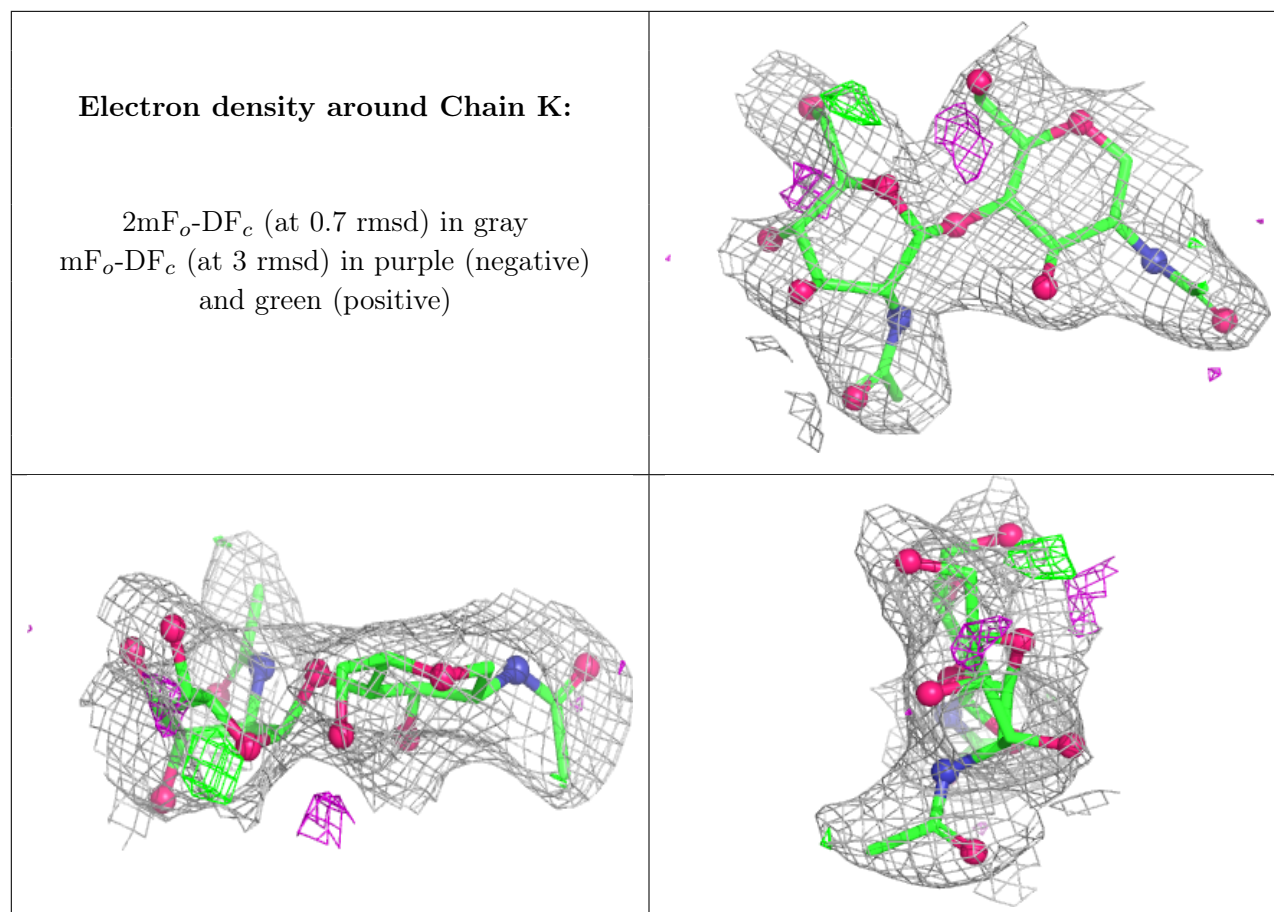




**Electron density around Chain J:**

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





## 6.4 Ligands [i](#)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
4	NAG	A	703	14/15	0.62	0.19	52,76,83,84	0
4	NAG	B	705	14/15	0.65	0.19	67,75,83,85	0
4	NAG	A	704	14/15	0.71	0.16	66,72,77,78	0
4	NAG	D	803	14/15	0.73	0.17	68,74,77,77	0
4	NAG	C	201	14/15	0.79	0.14	66,74,83,92	0
8	MYR	C	207	15/16	0.83	0.25	52,62,77,89	0
8	MYR	D	807	15/16	0.83	0.20	46,50,65,66	0
5	LP4	D	804	45/48	0.88	0.12	35,50,59,68	0
7	DAO	C	206	13/14	0.89	0.15	39,44,59,65	0
5	LP4	C	204	45/48	0.90	0.12	28,37,52,56	0
7	DAO	D	806	13/14	0.92	0.13	45,51,63,69	0
6	LP5	D	805	48/48	0.92	0.11	31,45,63,67	0

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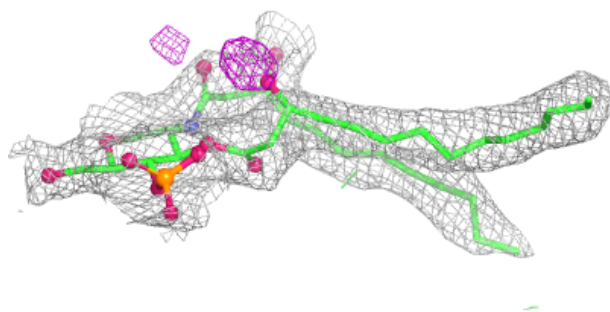
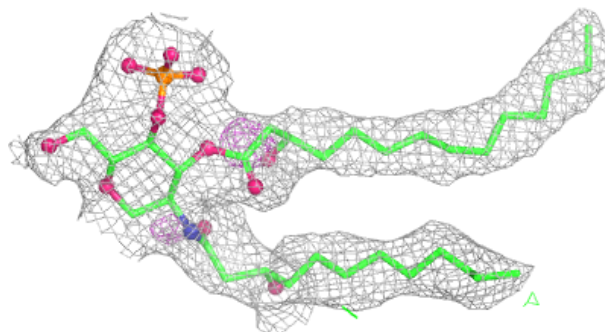
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
6	LP5	C	205	48/48	0.92	0.11	38,46,56,61	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

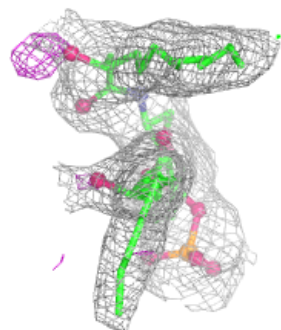
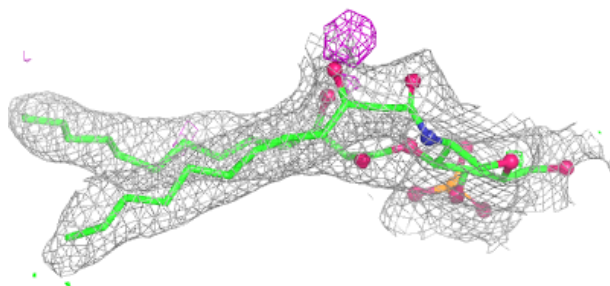
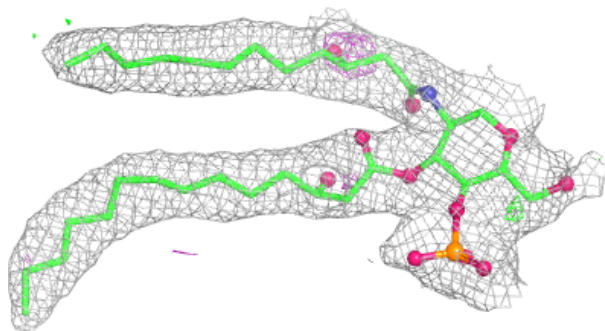
**Electron density around LP4 D 804:**

2mF<sub>o</sub>-DF<sub>c</sub> (at 0.7 rmsd) in gray  
mF<sub>o</sub>-DF<sub>c</sub> (at 3 rmsd) in purple (negative)  
and green (positive)

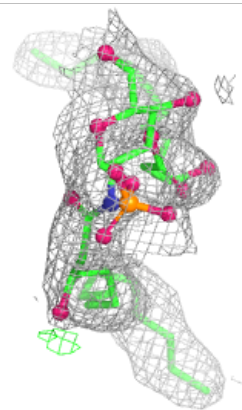
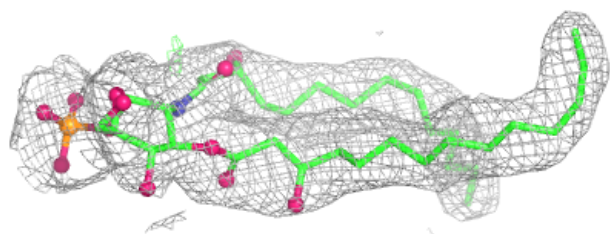
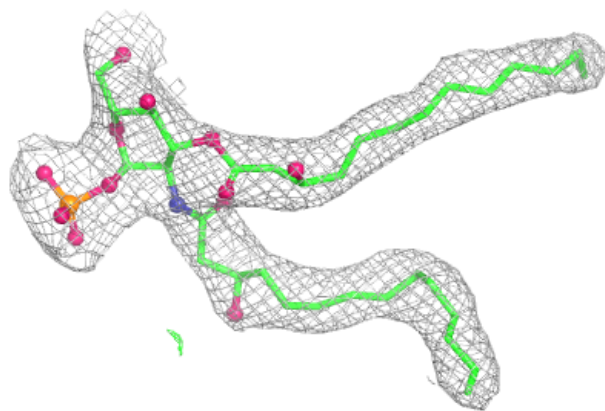


**Electron density around LP4 C 204:**

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

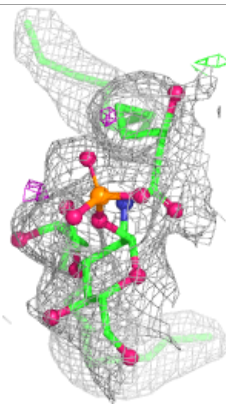
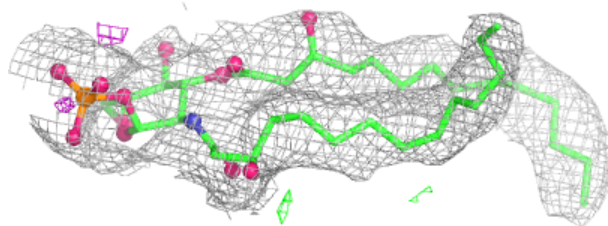
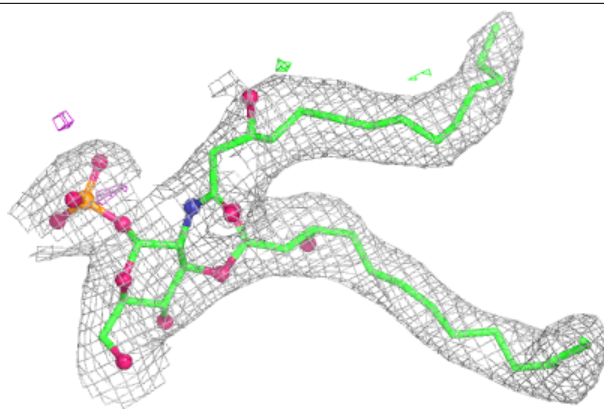
**Electron density around LP5 D 805:**

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



**Electron density around LP5 C 205:**

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



## 6.5 Other polymers [i](#)

There are no such residues in this entry.