Full wwPDB X-ray Structure Validation Report (i)

Aug 28, 2025 – 12:12 PM JST

PDB ID	:	9W1K / pdb_00009w1k
Title	:	Crystal structure of Aedes aegypti Dopachrome Conversion Enzyme.
Authors	:	Guo, Y.; Zhang, L.; Guo, D.; Deng, J.; Li, J.; Han, Q.
Deposited on	:	2025-07-25
Resolution	:	2.90 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references (1)) were used in the production of this report:

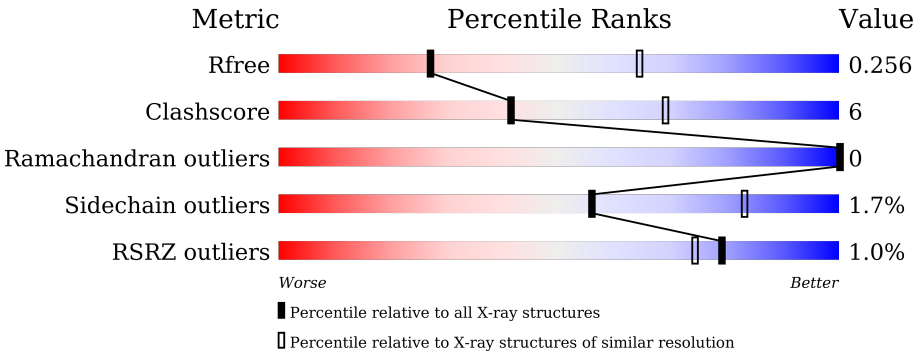
MolProbity	:	4-5-2 with Phenix2.0rc1
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.006 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

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 2.90 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}	164625	2335 (2.90-2.90)
Clashscore	180529	2564 (2.90-2.90)
Ramachandran outliers	177936	2514 (2.90-2.90)
Sidechain outliers	177891	2516 (2.90-2.90)
RSRZ outliers	164620	2337 (2.90-2.90)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	463	72% 13% 15%
1	B	463	2% 65% 19% • 14%
1	C	463	% 75% 11% 14%
1	D	463	75% 10% • 14%
2	E	3	100%
3	F	3	67% 33%

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Mol	Chain	Length	Quality of chain
4	G	3	33% 33% 33%
5	H	6	17% 83%
6	I	4	25% 25% 50%
7	J	2	100%
8	K	2	50% 50%
9	L	3	100%

2 Entry composition

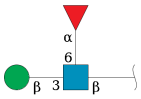
There are 12 unique types of molecules in this entry. The entry contains 13335 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Dopachrome conversion enzyme.

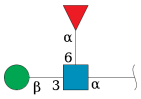
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	395	Total	C	N	O	S	0	0	0
			3213	2068	539	595	11			
1	B	398	Total	C	N	O	S	0	0	0
			3243	2085	548	599	11			
1	C	396	Total	C	N	O	S	0	0	0
			3223	2074	542	596	11			
1	D	396	Total	C	N	O	S	0	0	0
			3223	2074	542	596	11			

- Molecule 2 is an oligosaccharide called beta-D-mannopyranose-(1-3)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	E	3	Total	C	N	O	0	0	0
			35	20	1	14			

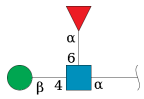
- Molecule 3 is an oligosaccharide called beta-D-mannopyranose-(1-3)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-alpha-D-glucopyranose.



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	F	3	Total	C	N	O	0	0	0
			35	20	1	14			

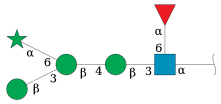
- Molecule 4 is an oligosaccharide called beta-D-mannopyranose-(1-4)-[alpha-L-fucopyranose-

(1-6)]2-acetamido-2-deoxy-alpha-D-glucopyranose.



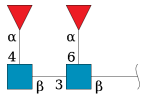
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
4	G	3	35	20	1	14	0	0	0

- Molecule 5 is an oligosaccharide called beta-D-mannopyranose-(1-3)-[alpha-L-arabinopyranose-(1-6)]beta-D-mannopyranose-(1-4)-beta-D-mannopyranose-(1-3)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-alpha-D-glucopyranose.



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
5	H	6	66	37	1	28	0	0	0

- Molecule 6 is an oligosaccharide called alpha-L-fucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-3)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
6	I	4	48	28	2	18	0	0	0

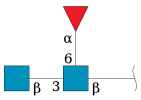
- Molecule 7 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
7	J	2	Total	C	N	O	0	0	0
			25	14	1	10			

- Molecule 8 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-alpha-D-glucopyranose.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
8	K	2	Total	C	N	O	0	0	0
			25	14	1	10			

- Molecule 9 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-3)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.

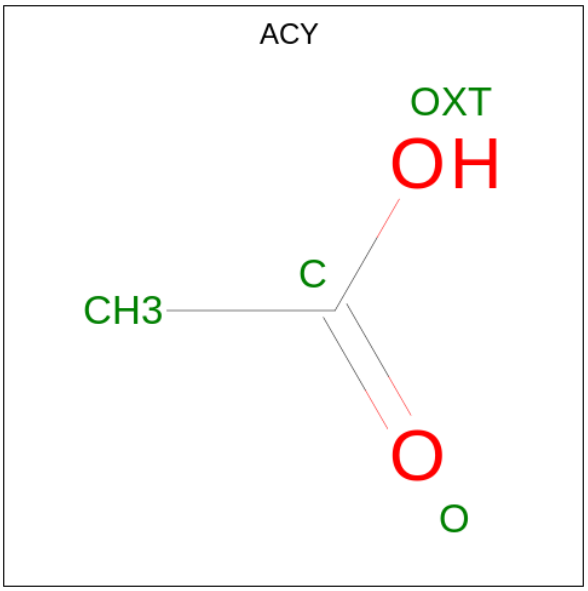


Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
9	L	3	Total	C	N	O	0	0	0
			38	22	2	14			

- Molecule 10 is CALCIUM ION (CCD ID: CA) (formula: Ca).

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

- Molecule 11 is ACETIC ACID (CCD ID: ACY) (formula: $C_2H_4O_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
11	A	1	Total C O 4 2 2	0	0
11	A	1	Total C O 4 2 2	0	0
11	A	1	Total C O 4 2 2	0	0
11	A	1	Total C O 4 2 2	0	0
11	A	1	Total C O 4 2 2	0	0
11	A	1	Total C O 4 2 2	0	0
11	A	1	Total C O 4 2 2	0	0
11	B	1	Total C O 4 2 2	0	0
11	B	1	Total C O 4 2 2	0	0
11	B	1	Total C O 4 2 2	0	0
11	C	1	Total C O 4 2 2	0	0
11	C	1	Total C O 4 2 2	0	0
11	D	1	Total C O 4 2 2	0	0
11	D	1	Total C O 4 2 2	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
11	D	1	Total C O 4 2 2	0	0
11	D	1	Total C O 4 2 2	0	0
11	D	1	Total C O 4 2 2	0	0
11	D	1	Total C O 4 2 2	0	0

- Molecule 12 is water.

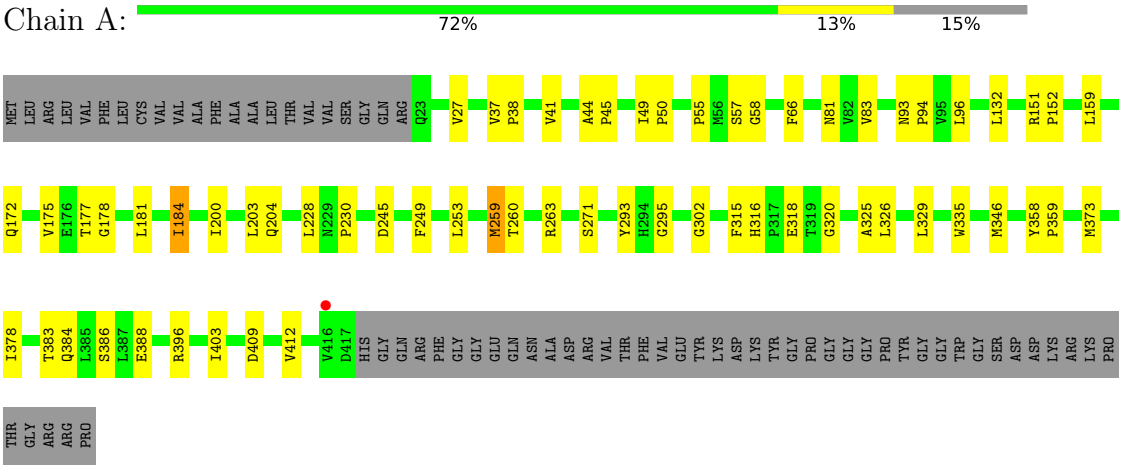
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
12	A	9	Total O 9 9	0	0
12	B	5	Total O 5 5	0	0
12	C	8	Total O 8 8	0	0
12	D	28	Total O 28 28	0	0

3 Residue-property plots (i)

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

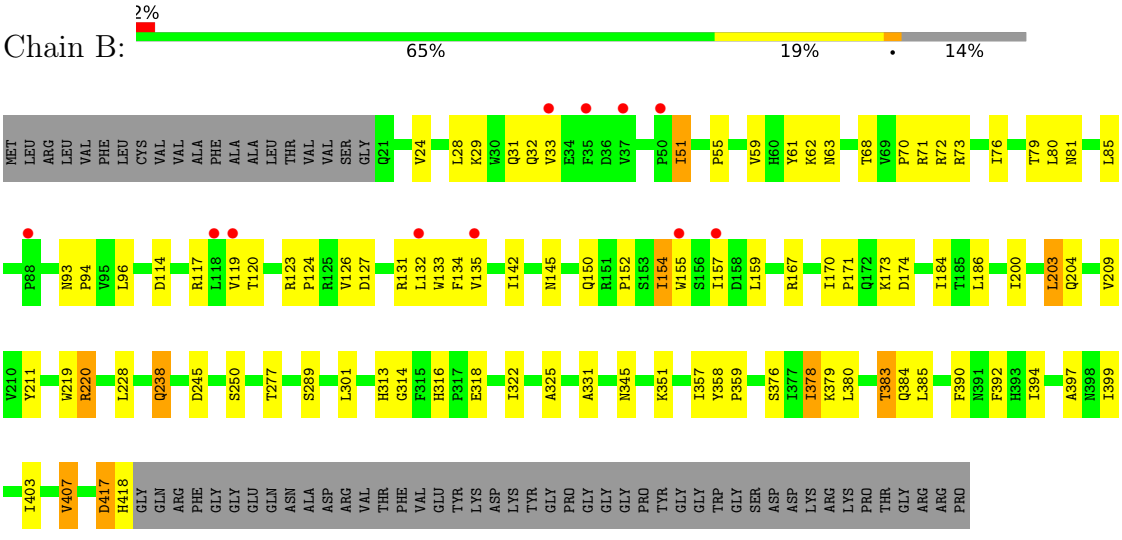
• Molecule 1: Dopachrome conversion enzyme

Chain A:



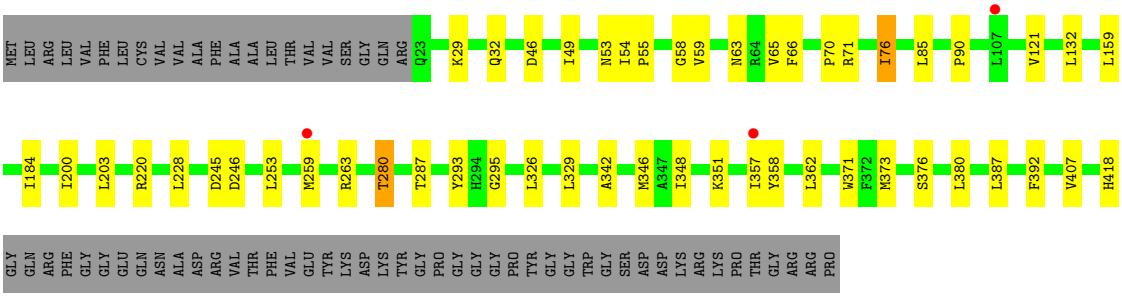
• Molecule 1: Dopachrome conversion enzyme

Chain B:



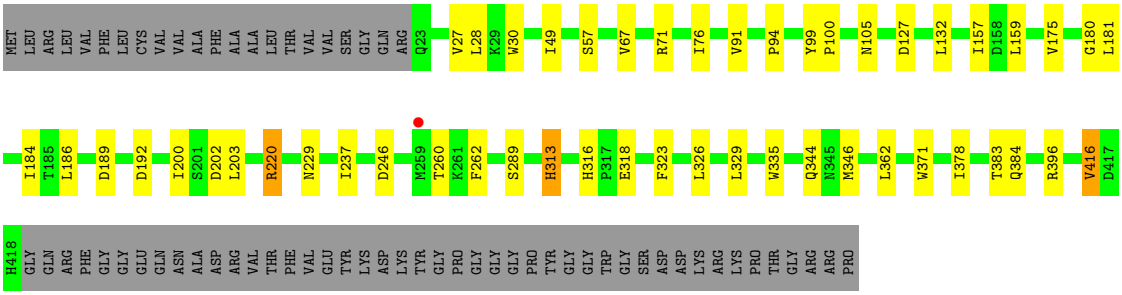
• Molecule 1: Dopachrome conversion enzyme

Chain C:



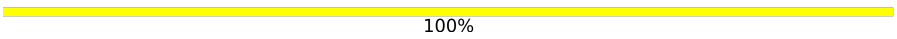
• Molecule 1: Dopachrome conversion enzyme

Chain D:



• Molecule 2: beta-D-mannopyranose-(1-3)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain E:

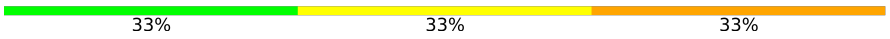


• Molecule 3: beta-D-mannopyranose-(1-3)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-alpha-D-glucopyranose

Chain F:

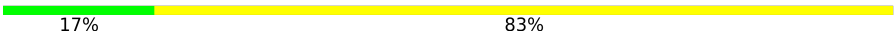
• Molecule 4: beta-D-mannopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-alpha-D-glucopyranose

Chain G:



• Molecule 5: beta-D-mannopyranose-(1-3)-[alpha-L-arabinopyranose-(1-6)]beta-D-mannopyranose-(1-4)-beta-D-mannopyranose-(1-3)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-alpha-D-glucopyranose

Chain H:

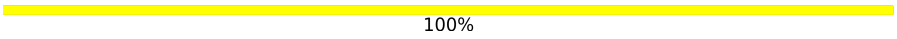


• Molecule 6: alpha-L-fucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-3)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain I:

• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J:

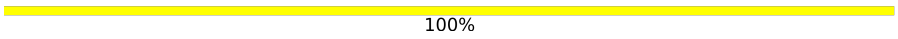


• Molecule 8: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-alpha-D-glucopyranose

Chain K:

• Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-3)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain L:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	88.76Å 105.07Å 101.40Å 90.00° 109.97° 90.00°	Depositor
Resolution (Å)	29.90 – 2.90 29.90 – 2.90	Depositor EDS
% Data completeness (in resolution range)	93.0 (29.90-2.90) 93.0 (29.90-2.90)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.02 (at 2.90Å)	Xtriage
Refinement program	REFMAC 5.7.0029	Depositor
R, R_{free}	0.208 , 0.256 0.209 , 0.256	Depositor DCC
R_{free} test set	1807 reflections (4.65%)	wwPDB-VP
Wilson B-factor (Å^2)	51.5	Xtriage
Anisotropy	0.030	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 30.6	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	13335	wwPDB-VP
Average B, all atoms (Å^2)	54.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.10% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ARA, BMA, FUC, NDG, NAG, ACY, CA

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	0.37	0/3308	0.73	1/4517 (0.0%)
1	B	0.39	0/3339	0.73	2/4558 (0.0%)
1	C	0.39	0/3319	0.73	2/4532 (0.0%)
1	D	0.37	0/3319	0.72	2/4532 (0.0%)
All	All	0.38	0/13285	0.73	7/18139 (0.0%)

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	31	GLN	N-CA-C	-6.78	105.57	114.31
1	B	417	ASP	N-CA-C	6.19	117.72	110.97
1	D	49	ILE	CA-C-N	5.50	124.96	119.24
1	D	49	ILE	C-N-CA	5.50	124.96	119.24
1	A	302	GLY	N-CA-C	5.49	117.40	110.38
1	C	76	ILE	CA-C-N	5.29	124.92	119.05
1	C	76	ILE	C-N-CA	5.29	124.92	119.05

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3213	0	3113	35	0
1	B	3243	0	3141	63	0
1	C	3223	0	3120	30	0
1	D	3223	0	3120	31	0
2	E	35	0	31	0	0
3	F	35	0	30	0	0
4	G	35	0	30	1	0
5	H	66	0	55	0	0
6	I	48	0	43	3	0
7	J	25	0	22	0	0
8	K	25	0	21	1	0
9	L	38	0	34	0	0
10	A	1	0	0	0	0
10	B	1	0	0	0	0
10	C	1	0	0	0	0
10	D	1	0	0	0	0
11	A	28	0	21	0	0
11	B	12	0	9	0	0
11	C	8	0	6	0	0
11	D	24	0	18	0	0
12	A	9	0	0	0	0
12	B	5	0	0	1	0
12	C	8	0	0	0	0
12	D	28	0	0	0	0
All	All	13335	0	12814	163	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 6.

All (163) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:383:THR:HG22	1:D:384:GLN:H	1.22	1.03
1:B:383:THR:HG23	1:B:384:GLN:H	1.25	1.02
1:A:383:THR:HG22	1:A:384:GLN:H	1.35	0.91
1:A:383:THR:HG22	1:A:384:GLN:N	1.93	0.83
1:C:357:ILE:CD1	1:C:376:SER:HA	2.09	0.82
1:B:383:THR:HG23	1:B:384:GLN:N	1.93	0.81
1:C:357:ILE:HD11	1:C:376:SER:HA	1.63	0.81
1:A:383:THR:CG2	1:A:384:GLN:H	1.94	0.81
1:D:383:THR:HG22	1:D:384:GLN:N	1.98	0.77
6:I:1:NAG:H4	6:I:2:NAG:C2	2.15	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:383:THR:CG2	1:D:384:GLN:H	1.98	0.74
1:B:174:ASP:HA	1:B:220:ARG:HG2	1.70	0.73
1:C:348:ILE:HD11	1:C:351:LYS:HB2	1.70	0.73
1:B:238:GLN:OE1	1:B:357:ILE:HD12	1.91	0.70
1:C:357:ILE:HD12	1:C:358:TYR:N	2.07	0.69
1:B:71:ARG:NH1	1:B:76:ILE:O	2.25	0.69
1:D:71:ARG:NH1	1:D:76:ILE:O	2.26	0.69
1:B:383:THR:CG2	1:B:384:GLN:N	2.55	0.69
6:I:1:NAG:H4	6:I:2:NAG:H2	1.75	0.67
1:B:55:PRO:HD2	1:B:392:PHE:CE2	2.30	0.65
1:D:71:ARG:NH2	1:D:105:ASN:O	2.30	0.64
1:B:55:PRO:HA	1:B:68:THR:O	1.98	0.63
1:C:55:PRO:HB2	1:C:373:MET:HE1	1.81	0.62
1:C:357:ILE:HD11	1:C:376:SER:CA	2.27	0.62
1:C:357:ILE:HD12	1:C:358:TYR:H	1.64	0.62
1:B:72:ARG:O	1:B:142:ILE:HA	2.00	0.62
1:B:135:VAL:HG12	1:B:154:ILE:HG22	1.83	0.61
1:B:316:HIS:ND1	1:B:399:ILE:HD13	2.16	0.60
1:D:132:LEU:HB2	1:D:159:LEU:HD21	1.82	0.60
1:B:155:TRP:CZ2	1:B:167:ARG:HD2	2.36	0.60
1:C:263:ARG:H	1:C:280:THR:HG22	1.66	0.59
1:D:28:LEU:HD23	1:D:91:VAL:HB	1.84	0.59
1:A:383:THR:CG2	1:A:384:GLN:N	2.56	0.58
1:B:380:LEU:HB2	1:B:385:LEU:HD22	1.86	0.57
1:D:127:ASP:HB3	1:D:186:LEU:HD13	1.87	0.56
1:A:326:LEU:HD13	1:A:329:LEU:HD12	1.87	0.56
1:B:316:HIS:HD2	1:B:318:GLU:H	1.51	0.56
1:A:228:LEU:HD13	1:A:245:ASP:HA	1.87	0.56
1:C:293:TYR:CZ	1:C:295:GLY:HA2	2.41	0.56
1:B:155:TRP:HZ2	1:B:167:ARG:HH21	1.52	0.56
1:B:154:ILE:HD11	1:B:211:TYR:CE2	2.42	0.55
1:C:71:ARG:NH1	1:C:76:ILE:O	2.39	0.55
1:C:32:GLN:HB3	1:C:387:LEU:HD22	1.88	0.55
1:A:335:TRP:HB2	1:A:346:MET:HG2	1.89	0.55
1:C:63:ASN:HA	1:C:85:LEU:HD12	1.89	0.54
1:D:27:VAL:CG2	1:D:396:ARG:HG2	2.37	0.54
1:B:200:ILE:HB	1:B:209:VAL:HG13	1.91	0.53
1:D:184:ILE:HG22	1:D:200:ILE:HG12	1.91	0.53
1:A:386:SER:OG	1:A:388:GLU:HG2	2.09	0.53
1:B:152:PRO:HB2	1:B:170:ILE:HD12	1.90	0.53
1:C:326:LEU:HD13	1:C:329:LEU:HD12	1.91	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:124:PRO:HB3	1:B:134:PHE:HB3	1.91	0.53
1:D:335:TRP:HB2	1:D:346:MET:HG2	1.90	0.53
1:B:219:TRP:CD1	1:B:289:SER:HG	2.27	0.53
1:A:230:PRO:HD2	1:D:229:ASN:HD22	1.73	0.52
1:A:203:LEU:HD12	1:A:204:GLN:HG2	1.92	0.52
1:B:171:PRO:HB2	1:B:173:LYS:HG2	1.92	0.51
1:D:189:ASP:HB3	1:D:192:ASP:O	2.10	0.51
1:A:27:VAL:CG2	1:A:396:ARG:HG2	2.41	0.51
1:A:58:GLY:HA2	1:A:66:PHE:O	2.10	0.51
1:A:37:VAL:HB	1:A:38:PRO:HD2	1.92	0.51
1:B:79:THR:HG23	1:B:80:LEU:H	1.75	0.51
1:D:175:VAL:HG11	1:D:181:LEU:HD11	1.93	0.51
1:D:260:THR:HG23	1:D:262:PHE:H	1.75	0.51
1:D:326:LEU:HD13	1:D:329:LEU:HD12	1.93	0.50
1:C:54:ILE:HG13	1:C:380:LEU:HD22	1.92	0.50
1:C:46:ASP:HB3	1:C:49:ILE:HD11	1.92	0.50
1:D:100:PRO:HG3	1:D:157:ILE:HD13	1.94	0.50
1:C:203:LEU:HD12	1:C:246:ASP:HB3	1.94	0.49
1:D:316:HIS:CE1	1:D:318:GLU:HB2	2.46	0.49
1:B:204:GLN:NE2	12:B:602:HOH:O	2.45	0.49
1:A:203:LEU:HD23	1:A:249:PHE:CD1	2.48	0.49
1:A:315:PHE:CZ	1:A:320:GLY:HA2	2.48	0.48
1:B:33:VAL:HG13	1:B:96:LEU:HD13	1.94	0.48
1:D:27:VAL:HG21	1:D:396:ARG:HG2	1.95	0.48
1:A:151:ARG:NH1	1:A:172:GLN:HG3	2.28	0.48
1:A:184:ILE:HG22	1:A:200:ILE:HG12	1.95	0.48
1:C:59:VAL:O	1:C:65:VAL:HA	2.14	0.48
1:B:59:VAL:HG11	1:B:126:VAL:HG23	1.95	0.48
1:C:228:LEU:HD22	1:C:245:ASP:HA	1.96	0.48
1:C:184:ILE:HG22	1:C:200:ILE:HG12	1.96	0.48
1:C:362:LEU:HA	1:C:371:TRP:O	2.14	0.48
1:C:49:ILE:O	1:C:53:ASN:ND2	2.47	0.47
1:D:344:GLN:HE21	1:D:416:VAL:HG11	1.79	0.47
1:B:132:LEU:HB2	1:B:159:LEU:HD21	1.95	0.47
1:B:238:GLN:OE1	1:B:357:ILE:CD1	2.61	0.47
1:A:403:ILE:O	1:A:409:ASP:HB2	2.15	0.47
1:C:357:ILE:CD1	1:C:358:TYR:H	2.26	0.47
1:B:93:ASN:N	1:B:94:PRO:HD3	2.30	0.47
1:B:314:GLY:O	1:B:322:ILE:HA	2.15	0.47
1:B:358:TYR:HB2	1:B:378:ILE:CD1	2.46	0.46
1:B:24:VAL:HG13	1:B:397:ALA:HB2	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:63:ASN:HA	1:B:85:LEU:HD12	1.97	0.46
1:A:152:PRO:HD3	1:A:177:THR:O	2.15	0.46
1:B:114:ASP:HB2	1:B:117:ARG:HB2	1.96	0.46
1:B:61:TYR:O	1:B:62:LYS:C	2.59	0.46
1:A:259:MET:HE2	1:A:259:MET:HB3	1.67	0.46
1:A:293:TYR:CE2	1:A:295:GLY:HA2	2.51	0.46
1:B:133:TRP:CG	1:B:186:LEU:HD21	2.51	0.46
1:B:399:ILE:O	1:B:403:ILE:HG12	2.17	0.45
1:B:32:GLN:HG2	1:B:33:VAL:N	2.30	0.45
1:C:357:ILE:CG1	1:C:376:SER:HA	2.46	0.45
1:D:344:GLN:H	1:D:344:GLN:CD	2.23	0.45
1:D:180:GLY:O	1:D:202:ASP:HA	2.16	0.45
1:A:316:HIS:CE1	1:A:318:GLU:HB2	2.52	0.45
1:B:331:ALA:HB2	1:B:351:LYS:HG3	1.98	0.45
1:A:132:LEU:HB2	1:A:159:LEU:HD21	1.97	0.45
1:B:123:ARG:O	1:B:184:ILE:HG22	2.18	0.44
1:D:313:HIS:HB2	1:D:323:PHE:O	2.17	0.44
1:D:30:TRP:NE1	1:D:94:PRO:HD2	2.32	0.44
1:A:253:LEU:HB3	1:A:263:ARG:HE	1.81	0.44
1:B:127:ASP:HB3	1:B:186:LEU:HD13	1.99	0.44
1:B:325:ALA:HB1	1:B:359:PRO:HB2	1.98	0.44
1:C:58:GLY:HA2	1:C:66:PHE:O	2.16	0.44
1:B:81:ASN:HD22	1:B:96:LEU:HD23	1.81	0.44
8:K:1:NDG:H2	8:K:1:NDG:H8C1	1.71	0.44
1:B:155:TRP:HZ2	1:B:167:ARG:NH2	2.15	0.44
1:B:131:ARG:HA	1:B:157:ILE:O	2.17	0.44
1:B:277:THR:HG23	1:B:301:LEU:HB2	1.99	0.44
1:A:178:GLY:HA2	1:A:181:LEU:HG	1.99	0.43
1:B:357:ILE:HB	1:B:376:SER:HA	1.99	0.43
1:C:54:ILE:HG23	1:C:392:PHE:HE1	1.83	0.43
1:D:57:SER:O	1:D:67:VAL:HA	2.18	0.43
1:A:93:ASN:N	1:A:94:PRO:HD3	2.33	0.43
1:A:55:PRO:HB2	1:A:373:MET:HE1	2.01	0.43
1:A:358:TYR:HB2	1:A:378:ILE:HD12	1.99	0.43
4:G:1:NDG:H2	4:G:1:NDG:H8C1	1.69	0.43
1:C:29:LYS:HE2	1:C:90:PRO:HG2	2.01	0.43
1:A:228:LEU:HB2	1:A:271:SER:HB2	2.00	0.42
1:A:409:ASP:HB3	1:A:412:VAL:HG23	2.02	0.42
1:B:28:LEU:HD12	1:B:394:ILE:HG13	2.01	0.42
1:B:59:VAL:CG1	1:B:126:VAL:HG23	2.49	0.42
1:B:379:LYS:O	1:B:383:THR:C	2.62	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:81:ASN:HB3	1:A:96:LEU:HB3	2.00	0.42
1:B:142:ILE:HB	1:B:145:ASN:O	2.19	0.42
1:C:342:ALA:C	1:C:346:MET:HE3	2.45	0.42
1:D:362:LEU:HA	1:D:371:TRP:O	2.19	0.42
1:A:38:PRO:HG2	1:A:41:VAL:HG23	2.02	0.42
1:D:99:TYR:HA	1:D:100:PRO:C	2.44	0.42
1:D:203:LEU:HD12	1:D:246:ASP:HB3	2.02	0.42
1:B:220:ARG:O	1:B:289:SER:HB2	2.20	0.42
1:D:28:LEU:HD22	1:D:94:PRO:HG2	2.02	0.42
1:B:59:VAL:HG21	1:B:124:PRO:O	2.19	0.42
1:C:70:PRO:HG3	1:C:121:VAL:O	2.20	0.42
1:D:237:ILE:HB	1:D:378:ILE:HD13	2.01	0.42
1:C:253:LEU:HB3	1:C:263:ARG:HE	1.85	0.41
6:I:1:NAG:C4	6:I:2:NAG:H2	2.47	0.41
1:B:70:PRO:HB3	1:B:120:THR:HG23	2.02	0.41
1:A:325:ALA:HB1	1:A:359:PRO:HB2	2.02	0.41
1:B:132:LEU:HB3	1:B:157:ILE:HB	2.03	0.41
1:B:203:LEU:HD12	1:B:204:GLN:HG2	2.03	0.41
1:A:44:ALA:HA	1:A:45:PRO:HD3	1.98	0.41
1:B:51:ILE:HD11	1:B:385:LEU:HB3	2.03	0.41
1:B:73:ARG:HA	1:B:142:ILE:HG13	2.03	0.41
1:D:220:ARG:O	1:D:289:SER:HB2	2.21	0.41
1:A:49:ILE:HA	1:A:50:PRO:HD3	1.92	0.41
1:B:316:HIS:ND1	1:B:399:ILE:HG21	2.36	0.41
1:B:29:LYS:HE2	1:B:390:PHE:CD2	2.56	0.40
1:B:119:VAL:HG23	1:B:150:GLN:HE21	1.86	0.40
1:B:250:SER:HB3	1:B:313:HIS:ND1	2.35	0.40
1:C:132:LEU:HB2	1:C:159:LEU:HD21	2.03	0.40
1:B:228:LEU:HD13	1:B:245:ASP:HA	2.02	0.40
1:B:345:ASN:HA	1:B:407:VAL:HG11	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	393/463 (85%)	376 (96%)	17 (4%)	0	100	100
1	B	396/463 (86%)	377 (95%)	19 (5%)	0	100	100
1	C	394/463 (85%)	375 (95%)	19 (5%)	0	100	100
1	D	394/463 (85%)	379 (96%)	15 (4%)	0	100	100
All	All	1577/1852 (85%)	1507 (96%)	70 (4%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	361/413 (87%)	355 (98%)	6 (2%)	56	83
1	B	364/413 (88%)	354 (97%)	10 (3%)	40	73
1	C	362/413 (88%)	356 (98%)	6 (2%)	56	83
1	D	362/413 (88%)	359 (99%)	3 (1%)	79	93
All	All	1449/1652 (88%)	1424 (98%)	25 (2%)	56	83

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

Mol	Chain	Res	Type
1	A	57	SER
1	A	83	VAL
1	A	175	VAL
1	A	184	ILE
1	A	259	MET
1	A	260	THR
1	B	51	ILE
1	B	154	ILE
1	B	203	LEU
1	B	220	ARG

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Mol	Chain	Res	Type
1	B	238	GLN
1	B	378	ILE
1	B	383	THR
1	B	407	VAL
1	B	417	ASP
1	B	418	HIS
1	C	220	ARG
1	C	259	MET
1	C	280	THR
1	C	287	THR
1	C	407	VAL
1	C	418	HIS
1	D	220	ARG
1	D	313	HIS
1	D	416	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (17) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	216	GLN
1	A	273	ASN
1	A	366	GLN
1	B	32	GLN
1	B	53	ASN
1	B	112	GLN
1	B	150	GLN
1	B	216	GLN
1	B	229	ASN
1	B	330	ASN
1	B	352	ASN
1	C	273	ASN
1	C	391	ASN
1	C	398	ASN
1	D	229	ASN
1	D	273	ASN
1	D	369	ASN

5.3.3 RNA

There are no RNA molecules in this entry.

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

17 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	$\#\|Z\| > 2$
5	FUC	H	6	5	10,10,11	0.68	0	14,14,16	0.99	0
9	NAG	L	1	9,1	14,14,15	0.52	0	17,19,21	3.13	8 (47%)
3	NDG	F	1	3	14,14,15	0.54	0	17,19,21	2.23	6 (35%)
9	NAG	L	2	9	14,14,15	1.03	1 (7%)	17,19,21	2.06	6 (35%)
6	FUC	I	3	6	10,10,11	0.67	0	14,14,16	1.10	1 (7%)
6	NAG	I	2	6	14,14,15	0.50	0	17,19,21	1.16	1 (5%)
4	FUC	G	3	4	10,10,11	0.61	0	14,14,16	0.69	0
5	NDG	H	1	5	14,14,15	0.58	0	17,19,21	2.30	4 (23%)
2	FUC	E	3	2	10,10,11	0.61	0	14,14,16	1.19	1 (7%)
2	NAG	E	1	2,1	14,14,15	0.83	0	17,19,21	1.38	3 (17%)
6	NAG	I	1	6,1	14,14,15	0.66	0	17,19,21	2.13	6 (35%)
9	FUC	L	3	9	10,10,11	0.65	0	14,14,16	1.17	2 (14%)
6	FUC	I	4	6	10,10,11	0.72	0	14,14,16	1.10	0
7	NAG	J	1	7,1	14,14,15	0.55	0	17,19,21	0.88	1 (5%)
3	FUC	F	3	3	10,10,11	0.64	0	14,14,16	0.85	0
8	NDG	K	1	8	14,14,15	0.48	0	17,19,21	1.53	4 (23%)
4	NDG	G	1	4	14,14,15	0.73	0	17,19,21	1.83	5 (29%)

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
9	NAG	L	1	9,1	-	3/6/23/26	0/1/1/1
5	FUC	H	6	5	-	-	0/1/1/1
3	NDG	F	1	3	-	3/6/23/26	0/1/1/1
9	NAG	L	2	9	-	4/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	FUC	I	3	6	-	-	0/1/1/1
6	NAG	I	2	6	-	0/6/23/26	0/1/1/1
4	FUC	G	3	4	-	-	0/1/1/1
5	NDG	H	1	5	-	0/6/23/26	0/1/1/1
2	FUC	E	3	2	-	-	0/1/1/1
2	NAG	E	1	2,1	-	2/6/23/26	0/1/1/1
6	NAG	I	1	6,1	-	4/6/23/26	0/1/1/1
9	FUC	L	3	9	-	-	0/1/1/1
6	FUC	I	4	6	-	-	0/1/1/1
7	NAG	J	1	7,1	-	2/6/23/26	0/1/1/1
3	FUC	F	3	3	-	-	0/1/1/1
8	NDG	K	1	8	-	2/6/23/26	0/1/1/1
4	NDG	G	1	4	-	4/6/23/26	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	L	2	NAG	O5-C1	-2.08	1.40	1.43

All (48) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	L	1	NAG	C1-O5-C5	8.42	123.61	112.19
5	H	1	NDG	C1-O5-C5	6.94	121.59	112.19
9	L	1	NAG	C2-N2-C7	5.90	131.30	122.90
6	I	1	NAG	C1-O5-C5	4.60	118.43	112.19
3	F	1	NDG	C2-N2-C7	4.40	129.16	122.90
6	I	1	NAG	C3-C4-C5	4.23	117.79	110.24
4	G	1	NDG	O5-C5-C6	4.20	113.79	107.20
3	F	1	NDG	C1-O5-C5	3.98	117.59	112.19
6	I	2	NAG	C1-O5-C5	3.82	117.37	112.19
9	L	1	NAG	C4-C3-C2	-3.70	105.59	111.02
3	F	1	NDG	O5-C1-C2	-3.70	105.44	111.29
9	L	1	NAG	O5-C1-C2	3.64	117.04	111.29
3	F	1	NDG	C3-C4-C5	3.57	116.61	110.24
9	L	2	NAG	O7-C7-N2	-3.56	115.41	121.95
9	L	2	NAG	O5-C1-C2	-3.53	105.71	111.29
5	H	1	NDG	O5-C1-C2	3.45	116.73	111.29
9	L	2	NAG	C8-C7-N2	3.39	121.83	116.10
9	L	1	NAG	C8-C7-N2	3.36	121.79	116.10
6	I	3	FUC	C1-C2-C3	3.25	113.67	109.67

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	L	2	NAG	C4-C3-C2	3.22	115.73	111.02
2	E	1	NAG	O5-C1-C2	-3.07	106.44	111.29
2	E	1	NAG	C4-C3-C2	2.99	115.40	111.02
8	K	1	NDG	C3-C4-C5	2.92	115.45	110.24
9	L	2	NAG	C1-C2-N2	2.89	115.42	110.49
4	G	1	NDG	O5-C1-C2	2.89	115.84	111.29
9	L	2	NAG	C3-C4-C5	2.88	115.38	110.24
2	E	3	FUC	C1-O5-C5	2.80	119.13	112.78
8	K	1	NDG	C4-C3-C2	2.80	115.12	111.02
5	H	1	NDG	O5-C5-C6	2.67	111.38	107.20
7	J	1	NAG	C1-O5-C5	2.62	115.75	112.19
8	K	1	NDG	C1-O5-C5	2.61	115.73	112.19
5	H	1	NDG	C2-N2-C7	2.55	126.54	122.90
8	K	1	NDG	O5-C5-C6	2.55	111.19	107.20
6	I	1	NAG	O5-C1-C2	-2.52	107.31	111.29
2	E	1	NAG	C3-C4-C5	2.49	114.67	110.24
4	G	1	NDG	C3-C4-C5	2.41	114.54	110.24
3	F	1	NDG	O5-C5-C4	2.39	116.64	110.83
6	I	1	NAG	C4-C3-C2	2.37	114.48	111.02
4	G	1	NDG	C6-C5-C4	-2.33	107.54	113.00
6	I	1	NAG	C2-N2-C7	2.29	126.17	122.90
9	L	3	FUC	C3-C4-C5	2.28	113.32	109.77
9	L	3	FUC	O5-C5-C4	2.22	113.50	109.52
9	L	1	NAG	O5-C5-C6	2.19	110.63	107.20
4	G	1	NDG	C1-O5-C5	2.17	115.13	112.19
9	L	1	NAG	O7-C7-C8	-2.16	118.04	122.06
6	I	1	NAG	C8-C7-N2	2.08	119.63	116.10
3	F	1	NDG	O5-C5-C6	2.07	110.45	107.20
9	L	1	NAG	O3-C3-C2	2.06	113.74	109.47

There are no chirality outliers.

All (24) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	E	1	NAG	C4-C5-C6-O6
2	E	1	NAG	O5-C5-C6-O6
9	L	2	NAG	O5-C5-C6-O6
7	J	1	NAG	O5-C5-C6-O6
3	F	1	NDG	O5-C5-C6-O6
6	I	1	NAG	O5-C5-C6-O6
9	L	2	NAG	C4-C5-C6-O6
4	G	1	NDG	C8-C7-N2-C2

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Mol	Chain	Res	Type	Atoms
4	G	1	NDG	O7-C7-N2-C2
6	I	1	NAG	C8-C7-N2-C2
6	I	1	NAG	O7-C7-N2-C2
8	K	1	NDG	C8-C7-N2-C2
8	K	1	NDG	O7-C7-N2-C2
9	L	1	NAG	C8-C7-N2-C2
9	L	1	NAG	O7-C7-N2-C2
9	L	2	NAG	C8-C7-N2-C2
9	L	2	NAG	O7-C7-N2-C2
6	I	1	NAG	C4-C5-C6-O6
7	J	1	NAG	C4-C5-C6-O6
3	F	1	NDG	C4-C5-C6-O6
4	G	1	NDG	O5-C5-C6-O6
4	G	1	NDG	C4-C5-C6-O6
3	F	1	NDG	C3-C2-N2-C7
9	L	1	NAG	C3-C2-N2-C7

There are no ring outliers.

4 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	I	2	NAG	3	0
6	I	1	NAG	3	0
8	K	1	NDG	1	0
4	G	1	NDG	1	0

5.5 Carbohydrates (i)

26 monosaccharides are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	NAG	E	1	2,1	14,14,15	0.83	0	17,19,21	1.38	3 (17%)
2	BMA	E	2	2	11,11,12	0.57	0	15,15,17	1.31	2 (13%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	FUC	E	3	2	10,10,11	0.61	0	14,14,16	1.19	1 (7%)
3	NDG	F	1	3	14,14,15	0.54	0	17,19,21	2.23	6 (35%)
3	BMA	F	2	3	11,11,12	0.65	0	15,15,17	0.59	0
3	FUC	F	3	3	10,10,11	0.64	0	14,14,16	0.85	0
4	NDG	G	1	4	14,14,15	0.73	0	17,19,21	1.83	5 (29%)
4	BMA	G	2	4	11,11,12	0.88	0	15,15,17	1.56	2 (13%)
4	FUC	G	3	4	10,10,11	0.61	0	14,14,16	0.69	0
5	NDG	H	1	5	14,14,15	0.58	0	17,19,21	2.30	4 (23%)
5	BMA	H	2	5	11,11,12	0.75	0	15,15,17	2.17	6 (40%)
5	BMA	H	3	5	11,11,12	0.74	0	15,15,17	2.82	6 (40%)
5	BMA	H	4	5	11,11,12	0.70	0	15,15,17	1.64	3 (20%)
5	ARA	H	5	5	9,9,10	0.67	0	10,12,14	2.05	2 (20%)
5	FUC	H	6	5	10,10,11	0.68	0	14,14,16	0.99	0
6	NAG	I	1	6,1	14,14,15	0.66	0	17,19,21	2.13	6 (35%)
6	NAG	I	2	6	14,14,15	0.50	0	17,19,21	1.16	1 (5%)
6	FUC	I	3	6	10,10,11	0.67	0	14,14,16	1.10	1 (7%)
6	FUC	I	4	6	10,10,11	0.72	0	14,14,16	1.10	0
7	NAG	J	1	7,1	14,14,15	0.55	0	17,19,21	0.88	1 (5%)
7	BMA	J	2	7	11,11,12	0.58	0	15,15,17	1.30	1 (6%)
8	NDG	K	1	8	14,14,15	0.48	0	17,19,21	1.53	4 (23%)
8	BMA	K	2	8	11,11,12	0.75	0	15,15,17	1.20	3 (20%)
9	NAG	L	1	9,1	14,14,15	0.52	0	17,19,21	3.13	8 (47%)
9	NAG	L	2	9	14,14,15	1.03	1 (7%)	17,19,21	2.06	6 (35%)
9	FUC	L	3	9	10,10,11	0.65	0	14,14,16	1.17	2 (14%)

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	E	1	2,1	-	2/6/23/26	0/1/1/1
2	BMA	E	2	2	-	0/2/19/22	0/1/1/1
2	FUC	E	3	2	-	-	0/1/1/1
3	NDG	F	1	3	-	3/6/23/26	0/1/1/1
3	BMA	F	2	3	-	0/2/19/22	0/1/1/1
3	FUC	F	3	3	-	-	0/1/1/1
4	NDG	G	1	4	-	4/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	BMA	G	2	4	-	2/2/19/22	0/1/1/1
4	FUC	G	3	4	-	-	0/1/1/1
5	NDG	H	1	5	-	0/6/23/26	0/1/1/1
5	BMA	H	2	5	-	0/2/19/22	0/1/1/1
5	BMA	H	3	5	-	0/2/19/22	0/1/1/1
5	BMA	H	4	5	-	0/2/19/22	0/1/1/1
5	ARA	H	5	5	-	-	0/1/1/1
5	FUC	H	6	5	-	-	0/1/1/1
6	NAG	I	1	6,1	-	4/6/23/26	0/1/1/1
6	NAG	I	2	6	-	0/6/23/26	0/1/1/1
6	FUC	I	3	6	-	-	0/1/1/1
6	FUC	I	4	6	-	-	0/1/1/1
7	NAG	J	1	7,1	-	2/6/23/26	0/1/1/1
7	BMA	J	2	7	-	2/2/19/22	0/1/1/1
8	NDG	K	1	8	-	2/6/23/26	0/1/1/1
8	BMA	K	2	8	-	2/2/19/22	0/1/1/1
9	NAG	L	1	9,1	-	3/6/23/26	0/1/1/1
9	NAG	L	2	9	-	4/6/23/26	0/1/1/1
9	FUC	L	3	9	-	-	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	L	2	NAG	O5-C1	-2.08	1.40	1.43

All (73) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	L	1	NAG	C1-O5-C5	8.42	123.61	112.19
5	H	1	NDG	C1-O5-C5	6.94	121.59	112.19
5	H	3	BMA	C1-C2-C3	6.55	117.71	109.67
5	H	3	BMA	C1-O5-C5	6.08	120.42	112.19
9	L	1	NAG	C2-N2-C7	5.90	131.30	122.90
5	H	2	BMA	C1-C2-C3	5.40	116.31	109.67
5	H	5	ARA	C1-C2-C3	-5.27	103.19	109.67
6	I	1	NAG	C1-O5-C5	4.60	118.43	112.19
5	H	4	BMA	C3-C4-C5	4.53	118.33	110.24
4	G	2	BMA	C1-C2-C3	4.42	115.10	109.67
3	F	1	NDG	C2-N2-C7	4.40	129.16	122.90
6	I	1	NAG	C3-C4-C5	4.23	117.79	110.24

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	G	1	NDG	O5-C5-C6	4.20	113.79	107.20
3	F	1	NDG	C1-O5-C5	3.98	117.59	112.19
7	J	2	BMA	C1-O5-C5	3.87	117.44	112.19
6	I	2	NAG	C1-O5-C5	3.82	117.37	112.19
5	H	2	BMA	C1-O5-C5	3.79	117.33	112.19
9	L	1	NAG	C4-C3-C2	-3.70	105.59	111.02
3	F	1	NDG	O5-C1-C2	-3.70	105.44	111.29
2	E	2	BMA	C1-O5-C5	3.65	117.14	112.19
9	L	1	NAG	O5-C1-C2	3.64	117.04	111.29
4	G	2	BMA	C1-O5-C5	3.57	117.03	112.19
3	F	1	NDG	C3-C4-C5	3.57	116.61	110.24
9	L	2	NAG	O7-C7-N2	-3.56	115.41	121.95
9	L	2	NAG	O5-C1-C2	-3.53	105.71	111.29
5	H	1	NDG	O5-C1-C2	3.45	116.73	111.29
9	L	2	NAG	C8-C7-N2	3.39	121.83	116.10
9	L	1	NAG	C8-C7-N2	3.36	121.79	116.10
6	I	3	FUC	C1-C2-C3	3.25	113.67	109.67
9	L	2	NAG	C4-C3-C2	3.22	115.73	111.02
5	H	3	BMA	C3-C4-C5	3.20	115.95	110.24
5	H	3	BMA	C6-C5-C4	-3.07	105.81	113.00
2	E	1	NAG	O5-C1-C2	-3.07	106.44	111.29
5	H	5	ARA	C5-C4-C3	3.03	113.39	109.67
2	E	1	NAG	C4-C3-C2	2.99	115.40	111.02
5	H	3	BMA	C2-C3-C4	2.95	116.00	110.89
8	K	1	NDG	C3-C4-C5	2.92	115.45	110.24
9	L	2	NAG	C1-C2-N2	2.89	115.42	110.49
4	G	1	NDG	O5-C1-C2	2.89	115.84	111.29
9	L	2	NAG	C3-C4-C5	2.88	115.38	110.24
2	E	3	FUC	C1-O5-C5	2.80	119.13	112.78
8	K	1	NDG	C4-C3-C2	2.80	115.12	111.02
2	E	2	BMA	C1-C2-C3	2.77	113.08	109.67
5	H	2	BMA	O5-C1-C2	2.77	115.05	110.77
5	H	1	NDG	O5-C5-C6	2.67	111.38	107.20
7	J	1	NAG	C1-O5-C5	2.62	115.75	112.19
8	K	1	NDG	C1-O5-C5	2.61	115.73	112.19
5	H	4	BMA	C2-C3-C4	2.58	115.36	110.89
5	H	1	NDG	C2-N2-C7	2.55	126.54	122.90
8	K	1	NDG	O5-C5-C6	2.55	111.19	107.20
6	I	1	NAG	O5-C1-C2	-2.52	107.31	111.29
2	E	1	NAG	C3-C4-C5	2.49	114.67	110.24
8	K	2	BMA	C3-C4-C5	2.42	114.56	110.24
4	G	1	NDG	C3-C4-C5	2.41	114.54	110.24

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	H	2	BMA	O4-C4-C3	2.40	115.90	110.35
3	F	1	NDG	O5-C5-C4	2.39	116.64	110.83
5	H	4	BMA	O5-C1-C2	-2.37	107.11	110.77
6	I	1	NAG	C4-C3-C2	2.37	114.48	111.02
8	K	2	BMA	C1-C2-C3	2.34	112.54	109.67
4	G	1	NDG	C6-C5-C4	-2.33	107.54	113.00
6	I	1	NAG	C2-N2-C7	2.29	126.17	122.90
9	L	3	FUC	C3-C4-C5	2.28	113.32	109.77
5	H	3	BMA	O3-C3-C4	-2.27	105.10	110.35
8	K	2	BMA	C2-C3-C4	2.23	114.75	110.89
9	L	3	FUC	O5-C5-C4	2.22	113.50	109.52
9	L	1	NAG	O5-C5-C6	2.19	110.63	107.20
4	G	1	NDG	C1-O5-C5	2.17	115.13	112.19
5	H	2	BMA	C2-C3-C4	2.16	114.64	110.89
9	L	1	NAG	O7-C7-C8	-2.16	118.04	122.06
6	I	1	NAG	C8-C7-N2	2.08	119.63	116.10
3	F	1	NDG	O5-C5-C6	2.07	110.45	107.20
9	L	1	NAG	O3-C3-C2	2.06	113.74	109.47
5	H	2	BMA	O4-C4-C5	2.04	114.37	109.30

There are no chirality outliers.

All (30) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	E	1	NAG	C4-C5-C6-O6
2	E	1	NAG	O5-C5-C6-O6
9	L	2	NAG	O5-C5-C6-O6
4	G	2	BMA	C4-C5-C6-O6
4	G	2	BMA	O5-C5-C6-O6
8	K	2	BMA	C4-C5-C6-O6
7	J	1	NAG	O5-C5-C6-O6
3	F	1	NDG	O5-C5-C6-O6
6	I	1	NAG	O5-C5-C6-O6
8	K	2	BMA	O5-C5-C6-O6
9	L	2	NAG	C4-C5-C6-O6
4	G	1	NDG	C8-C7-N2-C2
4	G	1	NDG	O7-C7-N2-C2
6	I	1	NAG	C8-C7-N2-C2
6	I	1	NAG	O7-C7-N2-C2
8	K	1	NDG	C8-C7-N2-C2
8	K	1	NDG	O7-C7-N2-C2
9	L	1	NAG	C8-C7-N2-C2

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Mol	Chain	Res	Type	Atoms
9	L	1	NAG	O7-C7-N2-C2
9	L	2	NAG	C8-C7-N2-C2
9	L	2	NAG	O7-C7-N2-C2
6	I	1	NAG	C4-C5-C6-O6
7	J	1	NAG	C4-C5-C6-O6
3	F	1	NDG	C4-C5-C6-O6
4	G	1	NDG	O5-C5-C6-O6
4	G	1	NDG	C4-C5-C6-O6
3	F	1	NDG	C3-C2-N2-C7
7	J	2	BMA	C4-C5-C6-O6
7	J	2	BMA	O5-C5-C6-O6
9	L	1	NAG	C3-C2-N2-C7

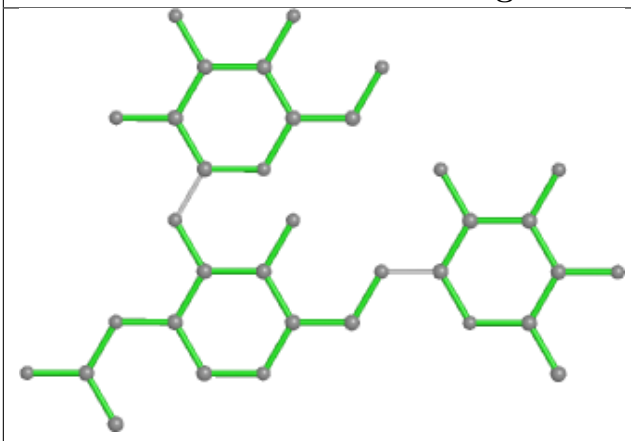
There are no ring outliers.

4 monomers are involved in 5 short contacts:

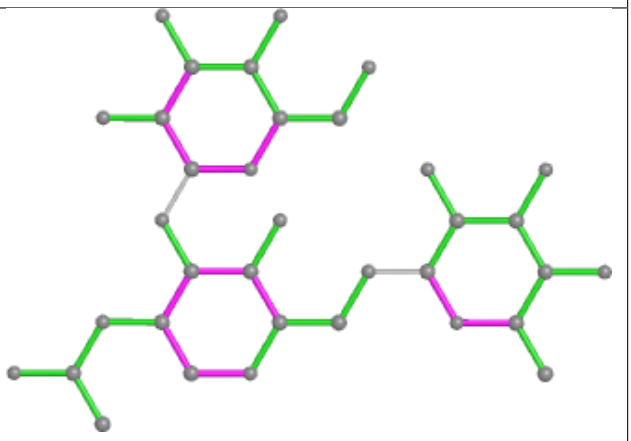
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	G	1	NDG	1	0
6	I	2	NAG	3	0
6	I	1	NAG	3	0
8	K	1	NDG	1	0

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

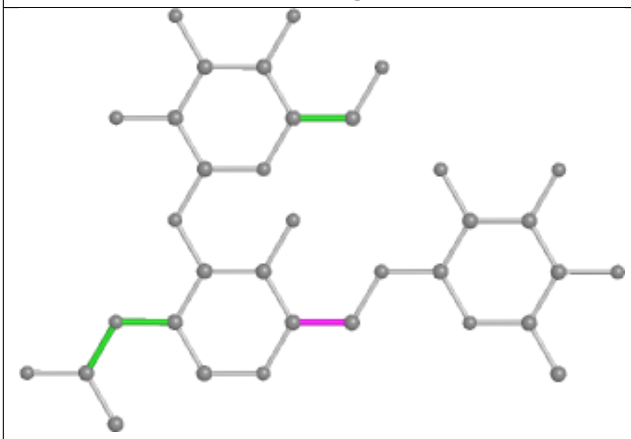
Oligosaccharide Chain E



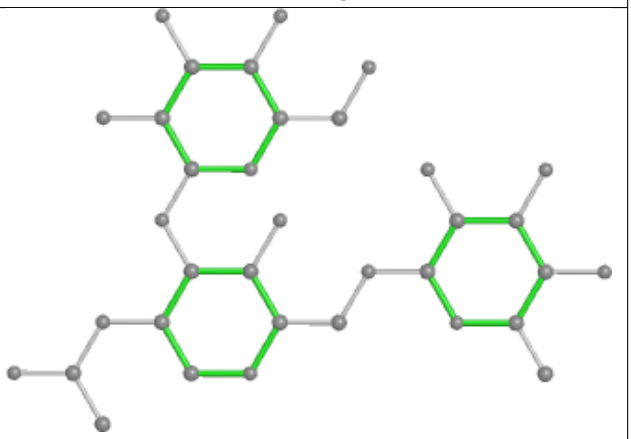
Bond lengths



Bond angles

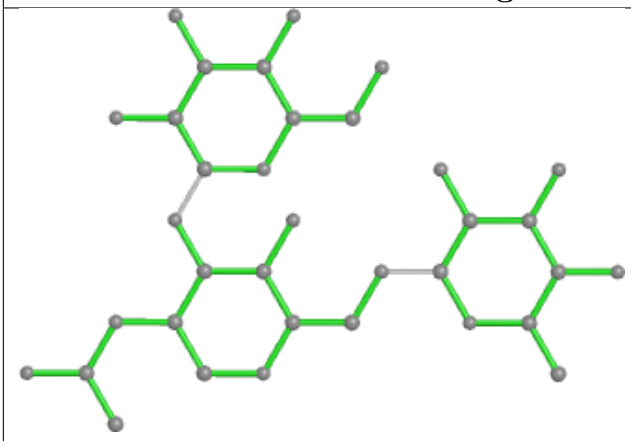


Torsions

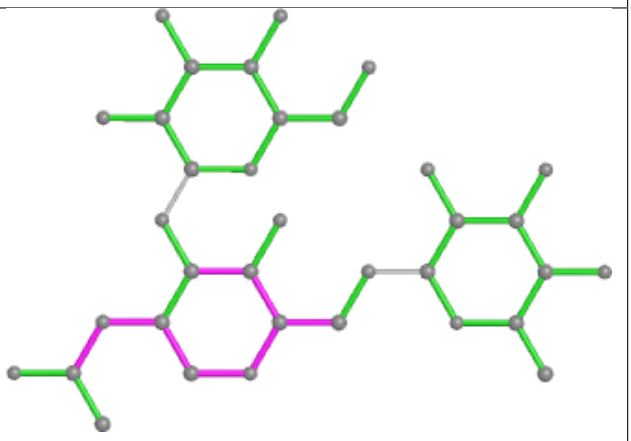


Rings

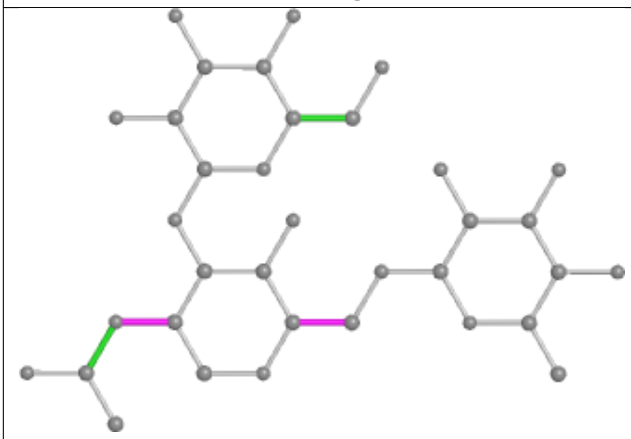
Oligosaccharide Chain F



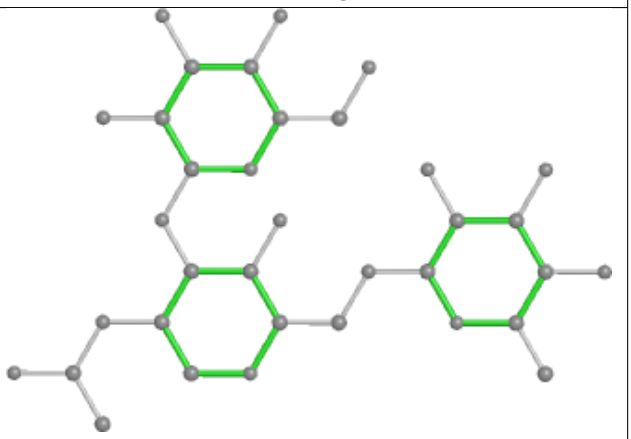
Bond lengths



Bond angles

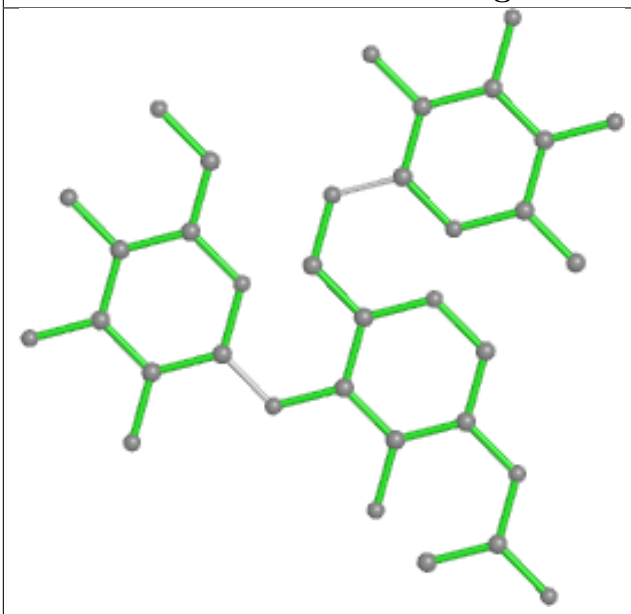


Torsions

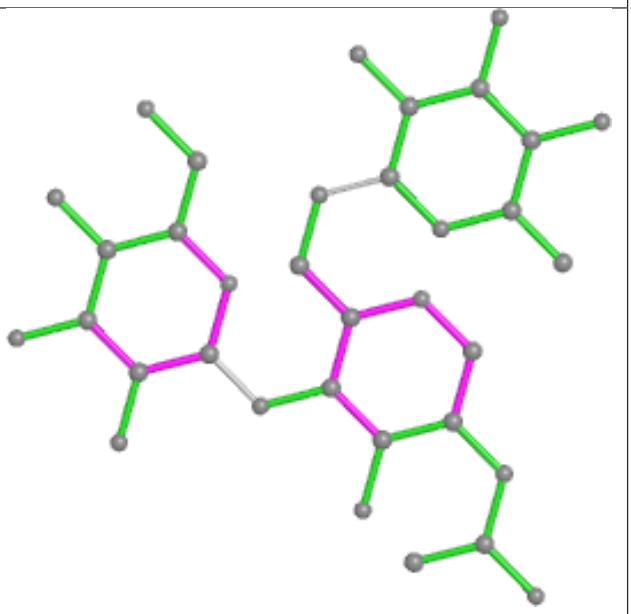


Rings

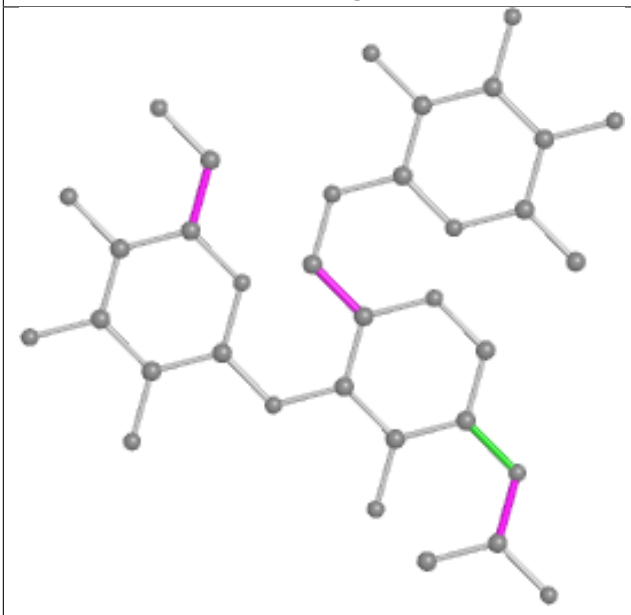
Oligosaccharide Chain G



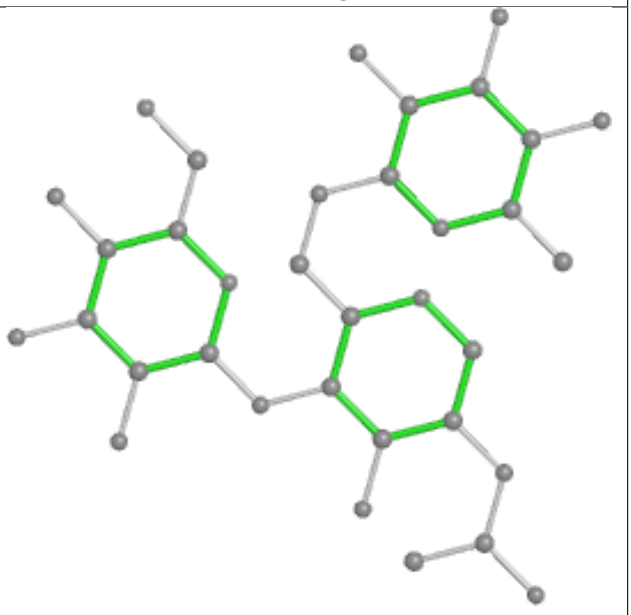
Bond lengths



Bond angles

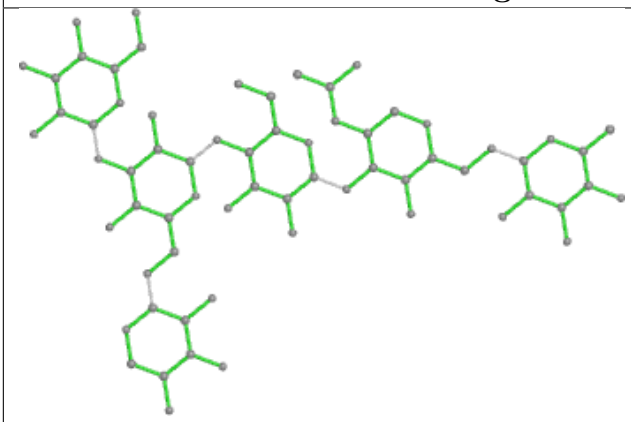


Torsions

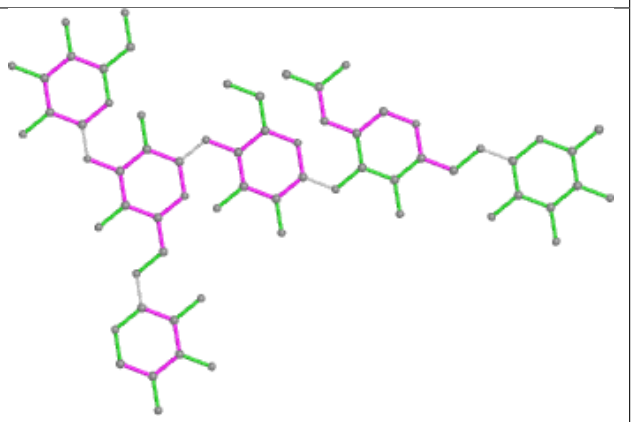


Rings

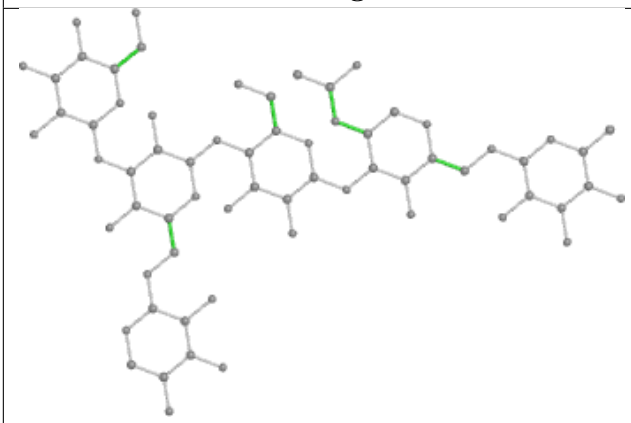
Oligosaccharide Chain H



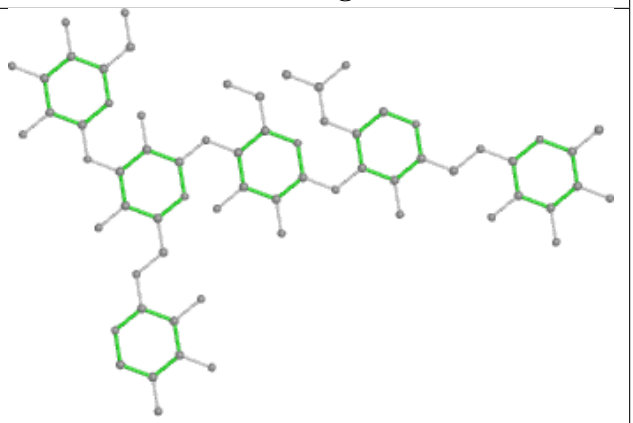
Bond lengths



Bond angles

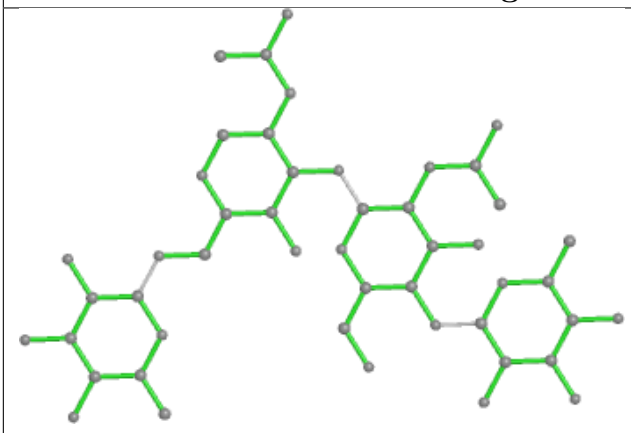


Torsions

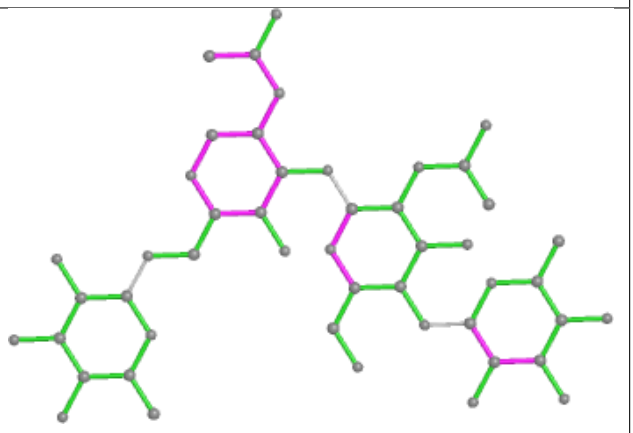


Rings

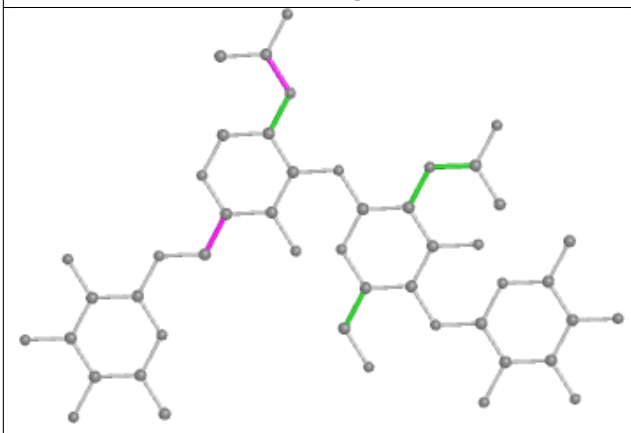
Oligosaccharide Chain I



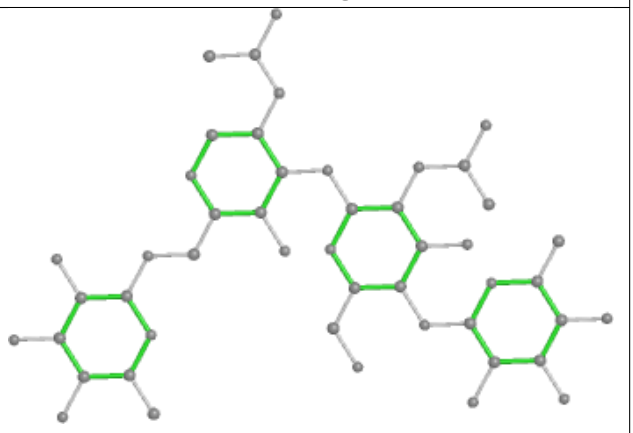
Bond lengths



Bond angles

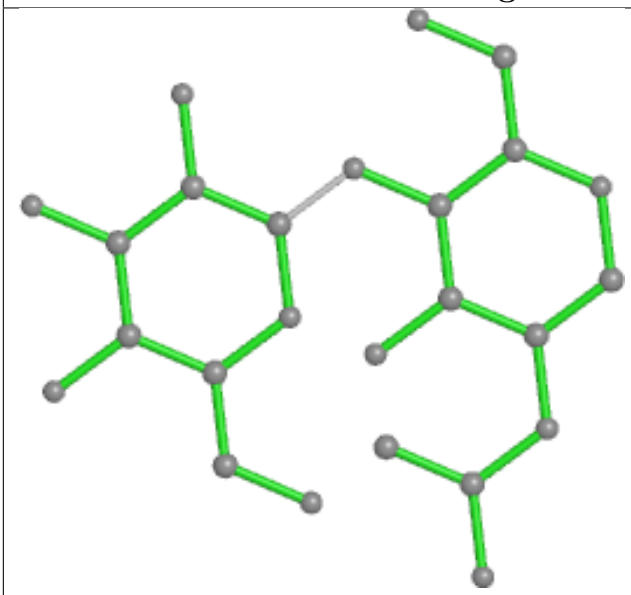


Torsions

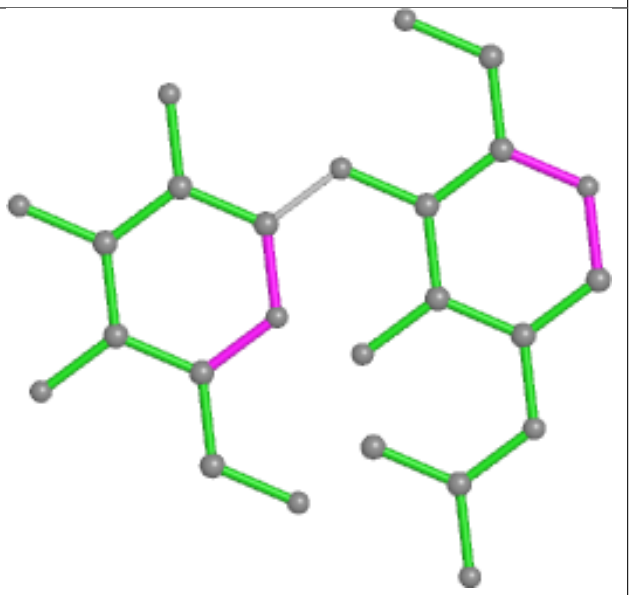


Rings

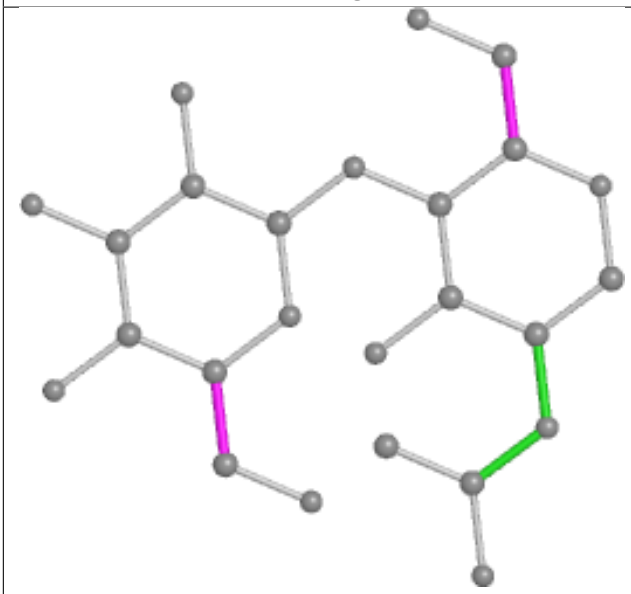
Oligosaccharide Chain J



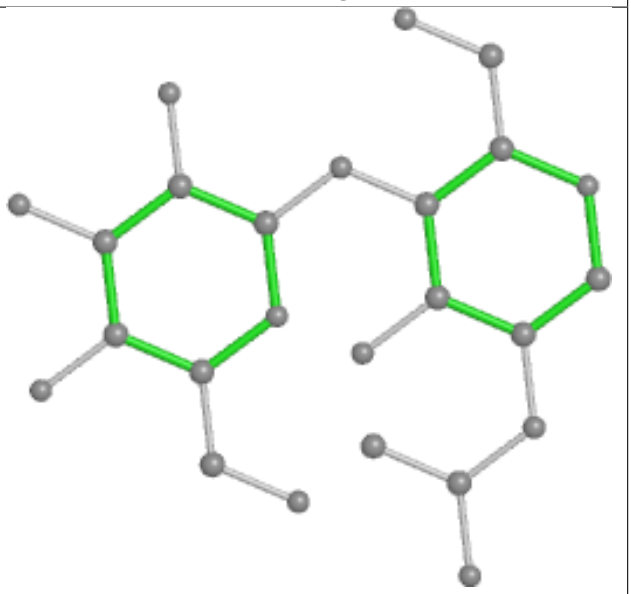
Bond lengths



Bond angles

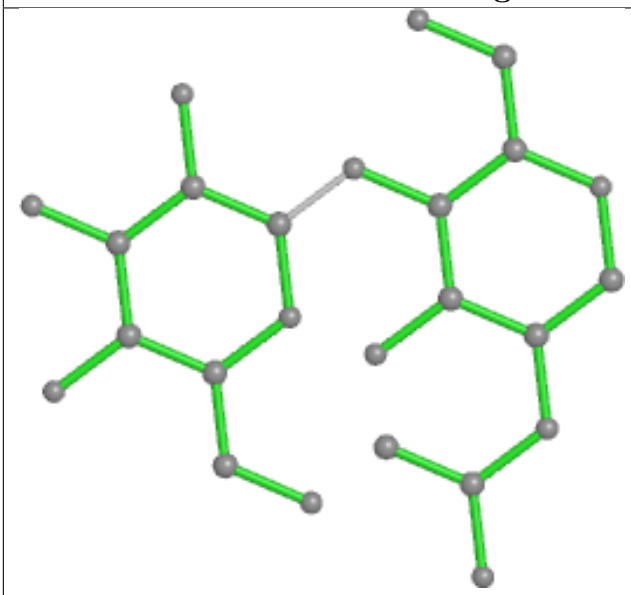


Torsions

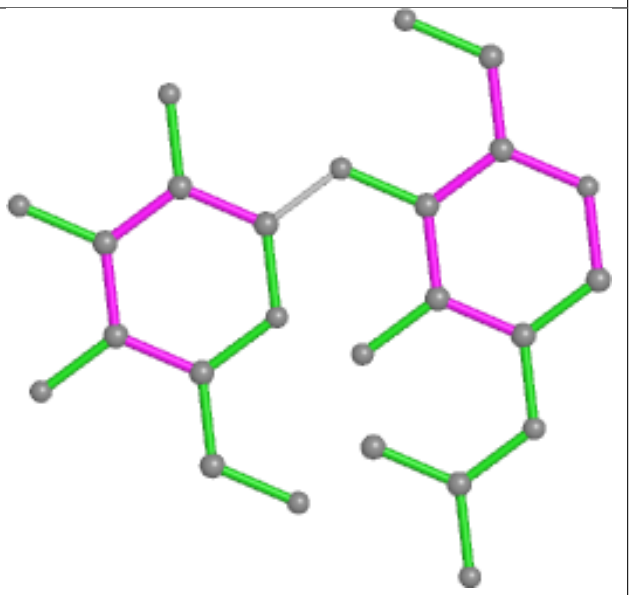


Rings

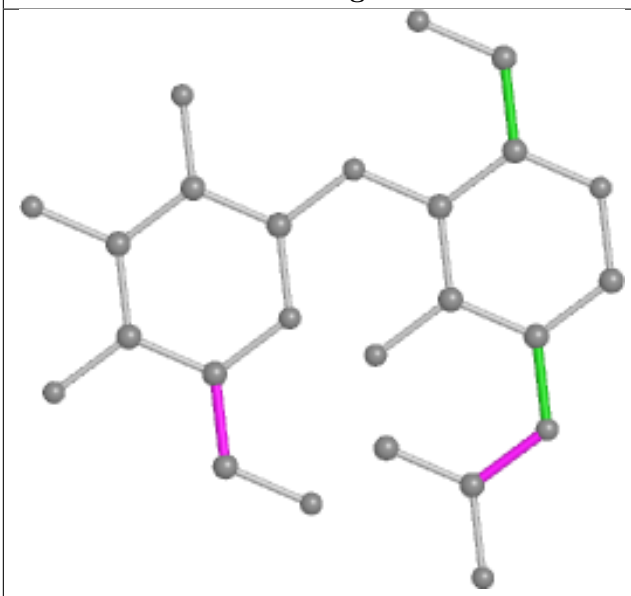
Oligosaccharide Chain K



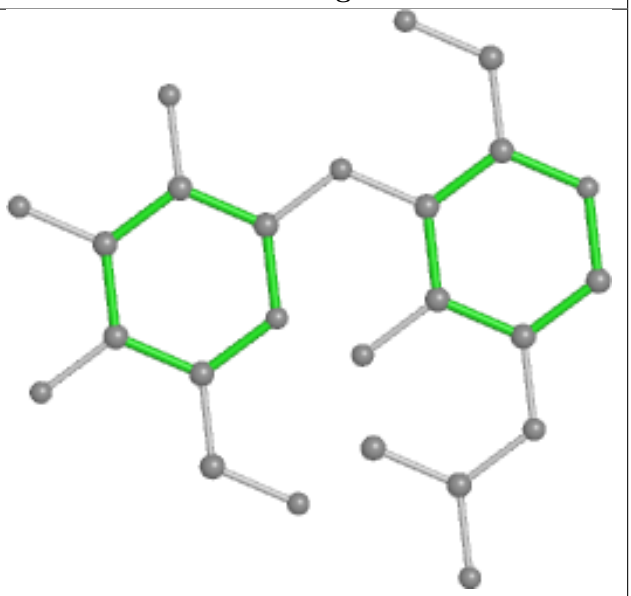
Bond lengths



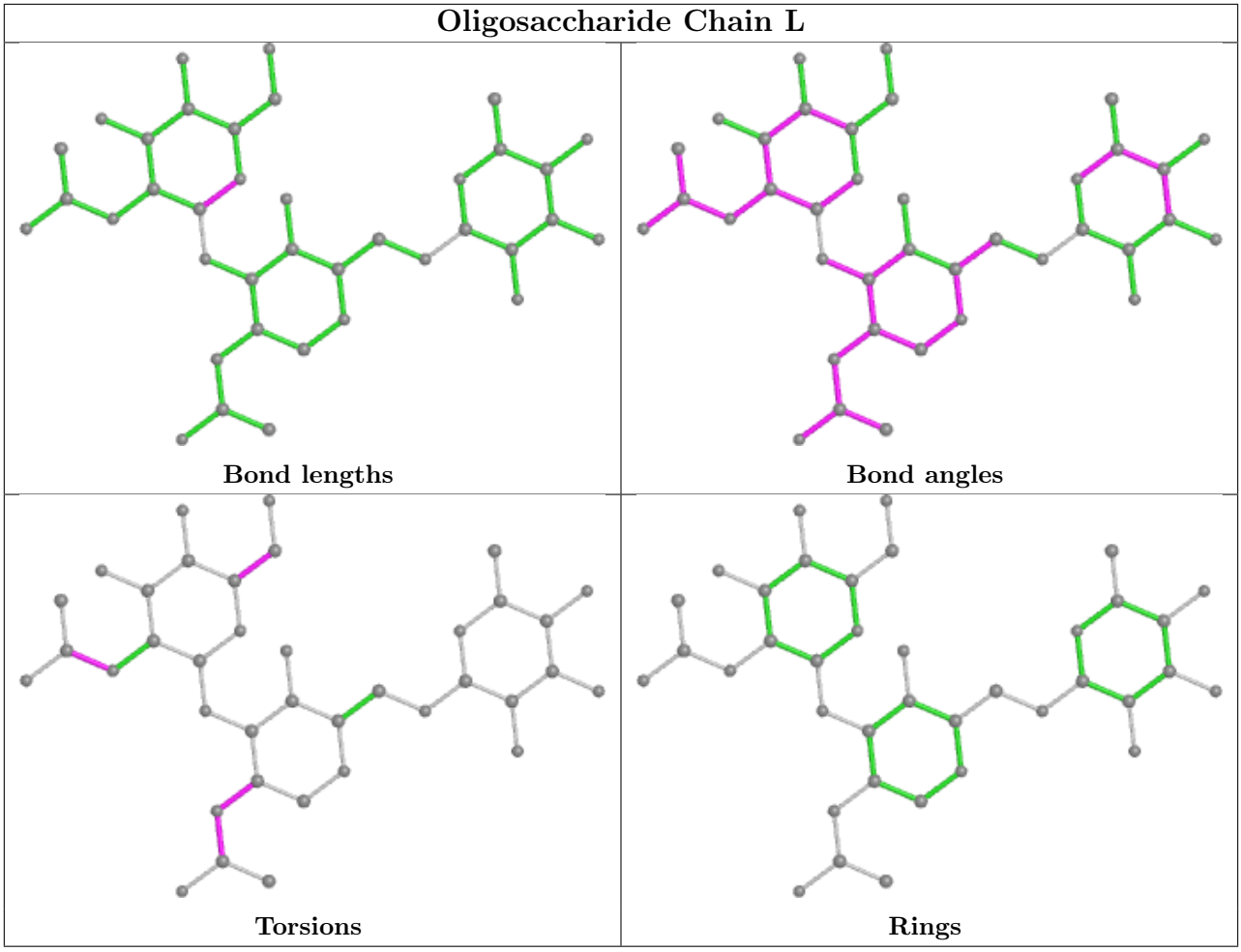
Bond angles



Torsions



Rings



5.6 Ligand geometry (i)

Of 22 ligands modelled in this entry, 4 are monoatomic - leaving 18 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	$\#\|Z\| > 2$
11	ACY	A	505	-	3,3,3	0.78	0	3,3,3	0.67	0
11	ACY	B	504	-	3,3,3	0.77	0	3,3,3	0.72	0
11	ACY	D	504	-	3,3,3	0.76	0	3,3,3	0.71	0
11	ACY	C	503	-	3,3,3	0.78	0	3,3,3	0.69	0
11	ACY	D	506	-	3,3,3	0.77	0	3,3,3	0.74	0
11	ACY	D	503	-	3,3,3	0.77	0	3,3,3	0.70	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
11	ACY	A	504	-	3,3,3	0.79	0	3,3,3	0.65	0
11	ACY	B	503	-	3,3,3	0.78	0	3,3,3	0.73	0
11	ACY	A	506	-	3,3,3	0.77	0	3,3,3	0.77	0
11	ACY	A	502	-	3,3,3	0.75	0	3,3,3	0.75	0
11	ACY	A	503	-	3,3,3	0.77	0	3,3,3	0.72	0
11	ACY	A	507	-	3,3,3	0.77	0	3,3,3	0.73	0
11	ACY	C	502	-	3,3,3	0.77	0	3,3,3	0.74	0
11	ACY	B	502	-	3,3,3	0.76	0	3,3,3	0.75	0
11	ACY	A	508	-	3,3,3	0.77	0	3,3,3	0.74	0
11	ACY	D	505	-	3,3,3	0.77	0	3,3,3	0.72	0
11	ACY	D	502	-	3,3,3	0.77	0	3,3,3	0.73	0
11	ACY	D	507	-	3,3,3	0.77	0	3,3,3	0.72	0

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} 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	395/463 (85%)	-0.33	1 (0%) 90 88	26, 46, 65, 82	0
1	B	398/463 (85%)	0.32	11 (2%) 55 49	39, 69, 98, 108	0
1	C	396/463 (85%)	0.18	3 (0%) 82 78	43, 68, 89, 108	0
1	D	396/463 (85%)	-0.60	1 (0%) 90 88	23, 33, 45, 79	0
All	All	1585/1852 (85%)	-0.11	16 (1%) 79 74	23, 51, 87, 108	0

All (16) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	357	ILE	2.9
1	B	33	VAL	2.9
1	B	118	LEU	2.8
1	C	107	LEU	2.8
1	D	259	MET	2.7
1	A	416	VAL	2.6
1	B	157	ILE	2.5
1	B	135	VAL	2.4
1	B	50	PRO	2.3
1	C	259	MET	2.2
1	B	132	LEU	2.2
1	B	119	VAL	2.2
1	B	88	PRO	2.1
1	B	155	TRP	2.1
1	B	37	VAL	2.0
1	B	35	PHE	2.0

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

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum,

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
6	FUC	I	3	10/11	0.18	0.17	101,103,104,105	0
9	NAG	L	2	14/15	0.31	0.19	87,89,90,91	0
3	NDG	F	1	14/15	0.41	0.15	108,111,112,113	0
6	FUC	I	4	10/11	0.50	0.18	93,94,95,96	0
9	FUC	L	3	10/11	0.53	0.17	91,93,93,94	0
3	FUC	F	3	10/11	0.54	0.16	108,109,110,110	0
4	NDG	G	1	14/15	0.57	0.14	99,101,103,106	0
4	FUC	G	3	10/11	0.59	0.15	99,100,101,101	0
8	NDG	K	1	14/15	0.67	0.13	94,96,99,102	0
9	NAG	L	1	14/15	0.68	0.14	71,76,83,87	0
2	FUC	E	3	10/11	0.74	0.13	85,86,87,87	0
6	NAG	I	1	14/15	0.75	0.15	75,81,86,90	0
6	NAG	I	2	14/15	0.75	0.12	88,90,94,98	0
2	NAG	E	1	14/15	0.76	0.11	80,84,86,88	0
7	NAG	J	1	14/15	0.79	0.12	79,80,83,88	0
5	NDG	H	1	14/15	0.84	0.11	42,44,46,46	0
5	FUC	H	6	10/11	0.88	0.13	43,44,45,45	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^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
6	FUC	I	3	10/11	0.18	0.17	101,103,104,105	0
8	BMA	K	2	11/12	0.26	0.14	105,106,106,106	0
9	NAG	L	2	14/15	0.31	0.19	87,89,90,91	0
4	BMA	G	2	11/12	0.37	0.12	108,110,110,110	0
3	NDG	F	1	14/15	0.41	0.15	108,111,112,113	0
2	BMA	E	2	11/12	0.45	0.14	91,92,93,94	0
6	FUC	I	4	10/11	0.50	0.18	93,94,95,96	0
3	BMA	F	2	11/12	0.51	0.12	114,114,115,116	0
9	FUC	L	3	10/11	0.53	0.17	91,93,93,94	0
3	FUC	F	3	10/11	0.54	0.16	108,109,110,110	0
4	NDG	G	1	14/15	0.57	0.14	99,101,103,106	0
4	FUC	G	3	10/11	0.59	0.15	99,100,101,101	0
7	BMA	J	2	11/12	0.62	0.13	91,94,95,96	0
5	ARA	H	5	9/10	0.66	0.15	45,45,46,46	0

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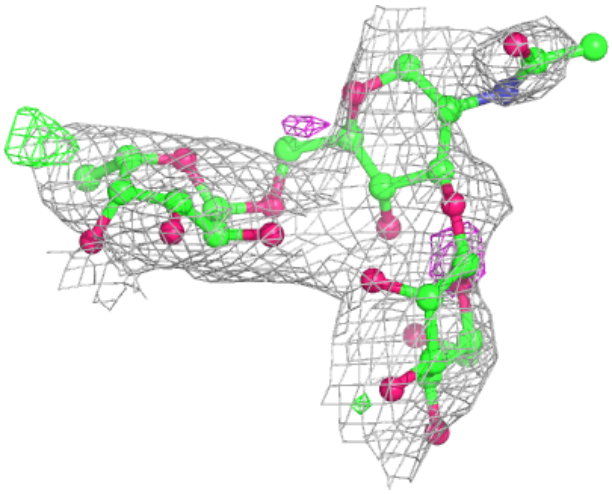
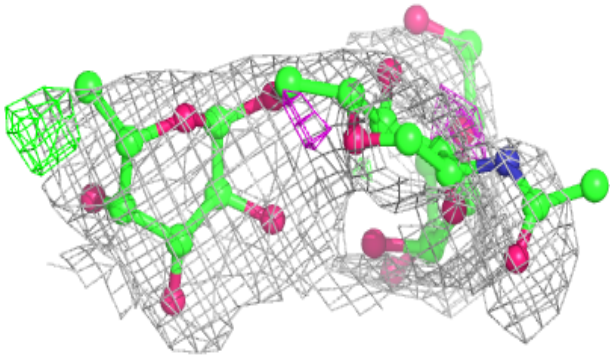
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
8	NDG	K	1	14/15	0.67	0.13	94,96,99,102	0
9	NAG	L	1	14/15	0.68	0.14	71,76,83,87	0
5	BMA	H	2	11/12	0.72	0.12	45,47,47,48	0
5	BMA	H	4	11/12	0.73	0.12	51,52,53,53	0
2	FUC	E	3	10/11	0.74	0.13	85,86,87,87	0
6	NAG	I	1	14/15	0.75	0.15	75,81,86,90	0
6	NAG	I	2	14/15	0.75	0.12	88,90,94,98	0
2	NAG	E	1	14/15	0.76	0.11	80,84,86,88	0
7	NAG	J	1	14/15	0.79	0.12	79,80,83,88	0
5	NDG	H	1	14/15	0.84	0.11	42,44,46,46	0
5	BMA	H	3	11/12	0.87	0.11	46,47,48,50	0
5	FUC	H	6	10/11	0.88	0.13	43,44,45,45	0

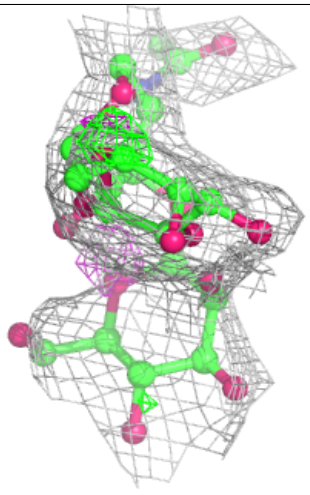
The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around Chain E:

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

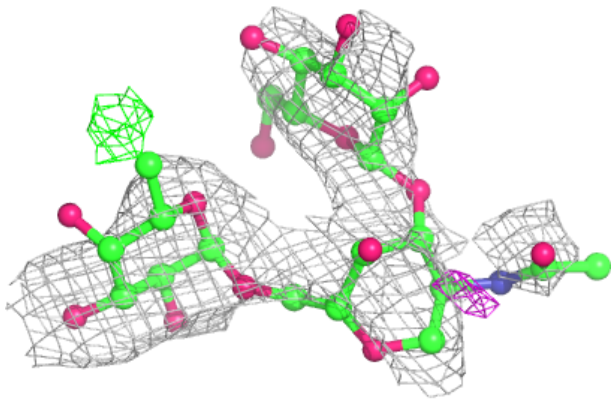


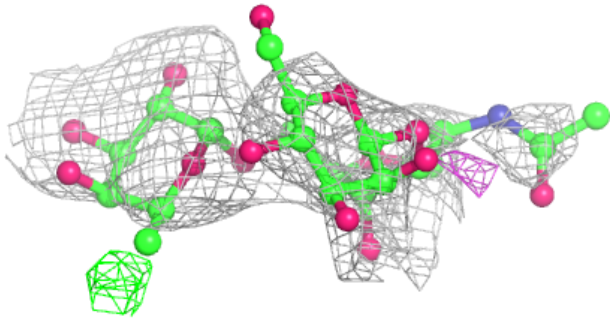


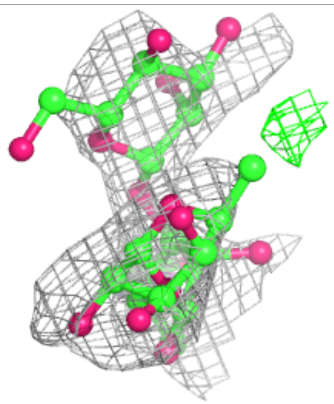


Electron density around Chain F:

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

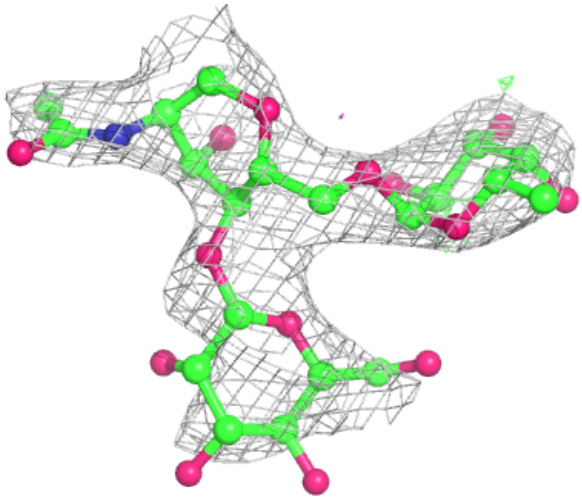


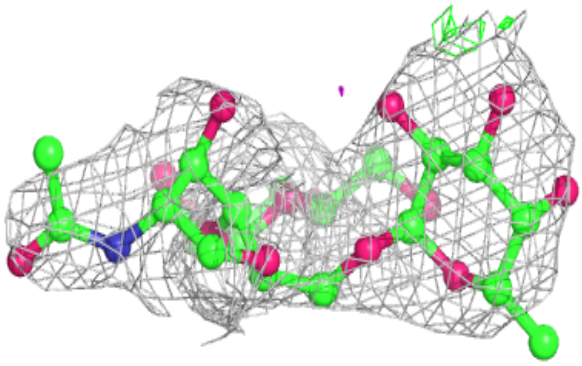


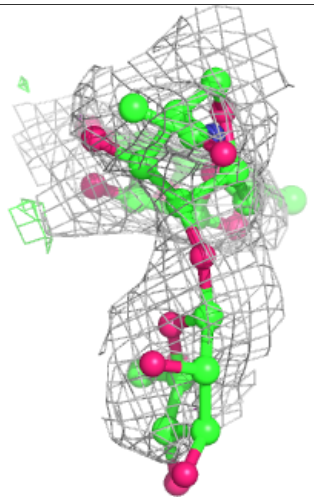


Electron density around Chain G:

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

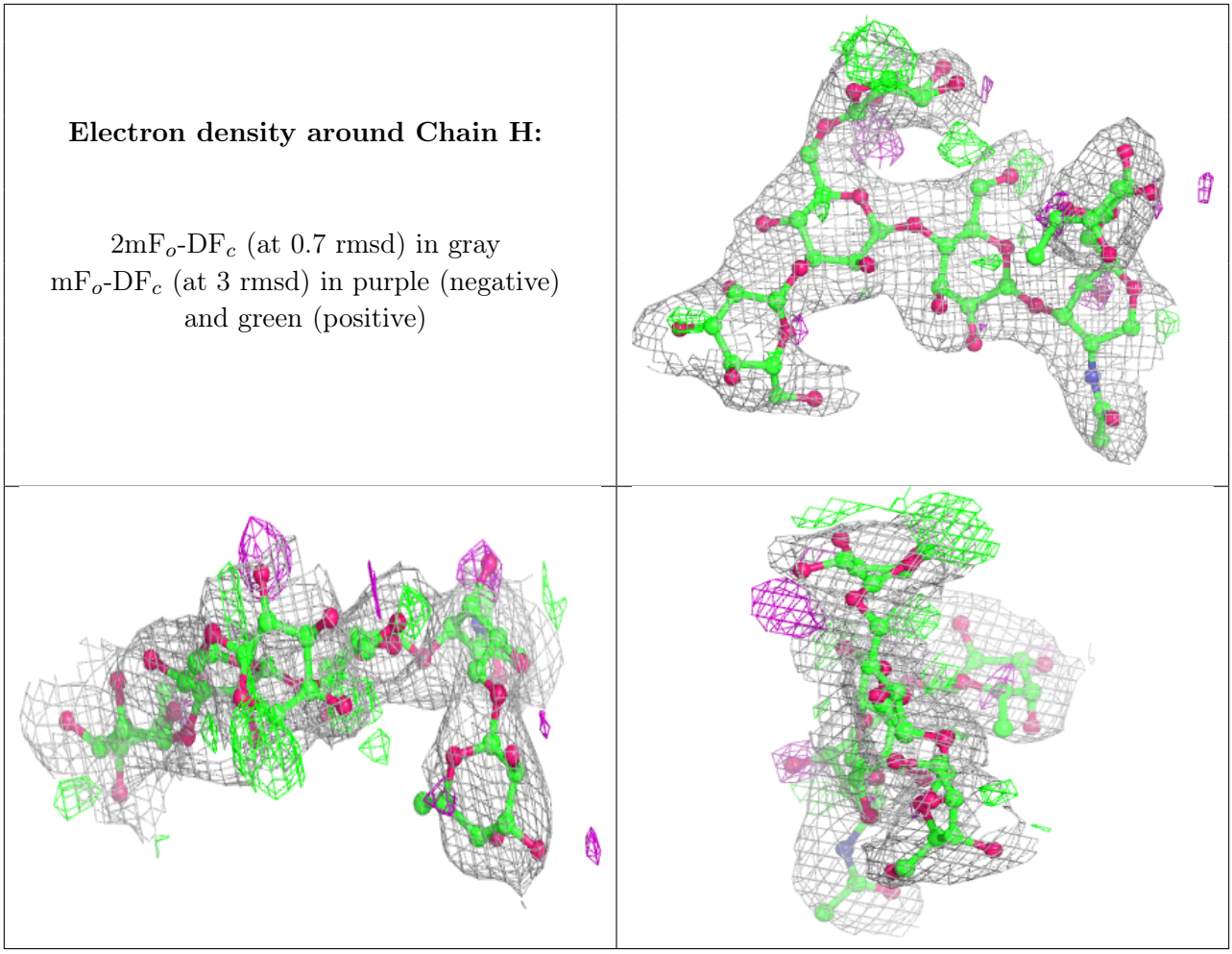






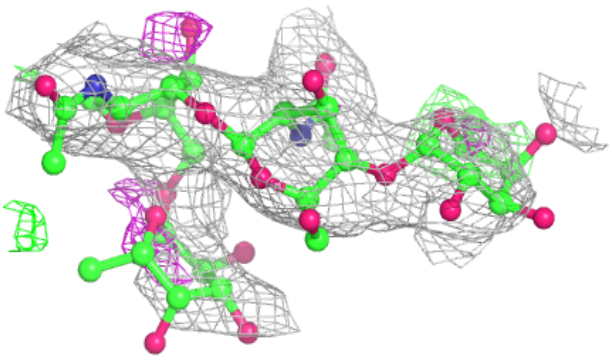
Electron density around Chain H:

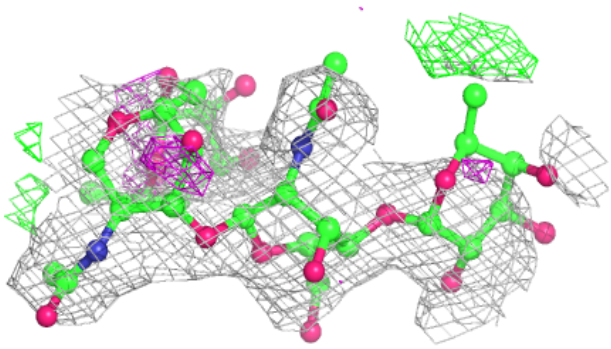
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

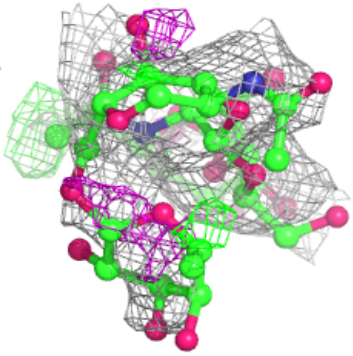


Electron density around Chain I:

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

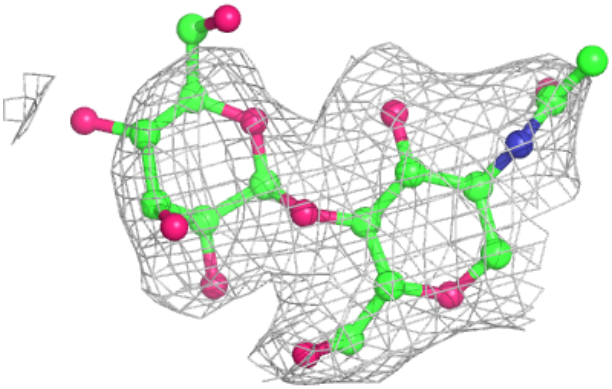


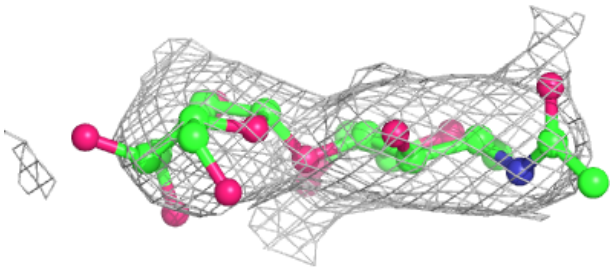


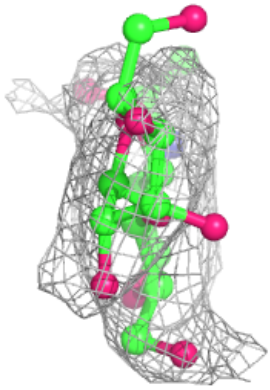


Electron density around Chain J:

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

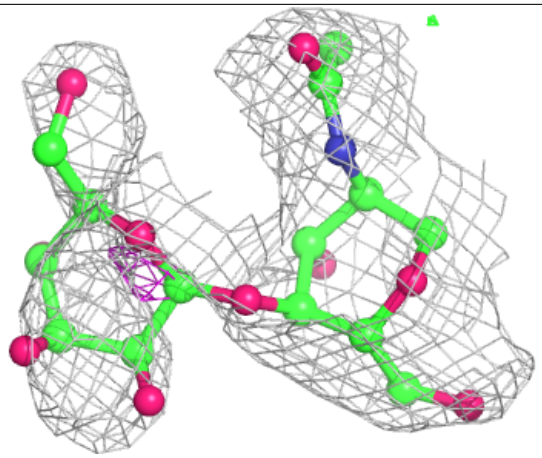


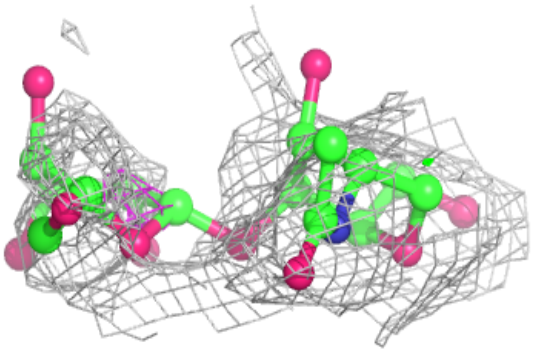




Electron density around Chain K:

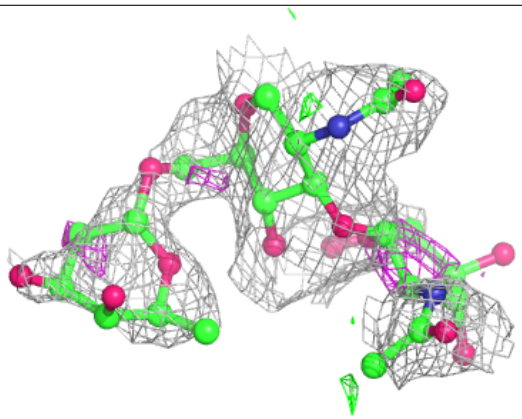
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

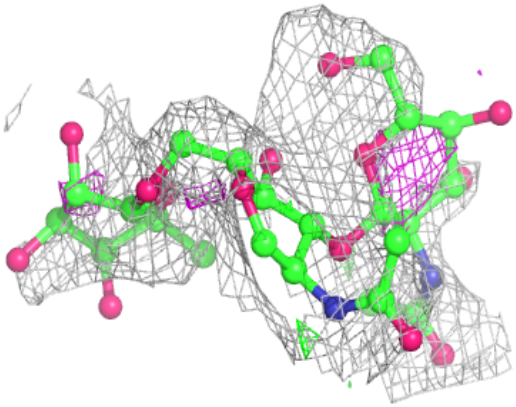


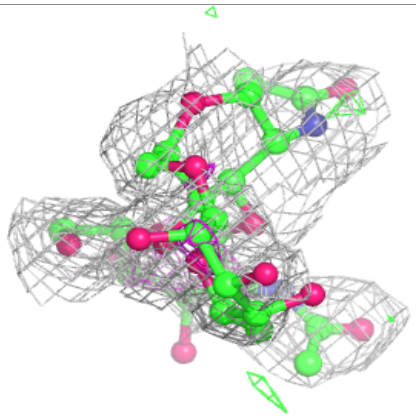


Electron density around Chain L:

$2mF_o$-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^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
11	ACY	A	504	4/4	0.55	0.19	62,62,62,62	0
11	ACY	D	507	4/4	0.65	0.18	66,66,67,67	0
11	ACY	A	507	4/4	0.70	0.17	76,76,77,77	0
11	ACY	C	503	4/4	0.72	0.17	61,61,61,62	0
11	ACY	D	504	4/4	0.76	0.15	57,57,57,58	0
11	ACY	B	504	4/4	0.76	0.18	64,65,65,65	0
11	ACY	B	502	4/4	0.79	0.21	70,71,71,71	0
11	ACY	B	503	4/4	0.79	0.12	59,59,59,59	0
11	ACY	A	505	4/4	0.81	0.15	51,51,51,51	0
11	ACY	A	502	4/4	0.83	0.20	61,61,62,62	0
11	ACY	A	503	4/4	0.84	0.19	49,49,49,49	0
11	ACY	A	508	4/4	0.86	0.12	46,46,46,46	0
11	ACY	D	502	4/4	0.87	0.15	53,53,53,53	0
10	CA	B	501	1/1	0.88	0.11	86,86,86,86	0
11	ACY	D	503	4/4	0.88	0.13	49,49,49,49	0
11	ACY	C	502	4/4	0.89	0.17	60,60,60,60	0
11	ACY	D	505	4/4	0.91	0.11	62,62,62,63	0
11	ACY	A	506	4/4	0.91	0.15	56,56,57,57	0
11	ACY	D	506	4/4	0.93	0.10	47,47,47,47	0
10	CA	C	501	1/1	0.93	0.06	76,76,76,76	0
10	CA	A	501	1/1	0.96	0.07	48,48,48,48	0
10	CA	D	501	1/1	0.97	0.04	44,44,44,44	0

6.5 Other polymers (i)

There are no such residues in this entry.