



# Full wwPDB X-ray Structure Validation Report ⓘ

Jun 23, 2024 – 06:09 AM EDT

PDB ID : 4ZXB  
Title : Structure of the human insulin receptor ectodomain, IRDeltabeta construct, in complex with four Fab molecules  
Authors : Croll, T.; Smith, B.J.; Margetts, M.B.; Whittaker, J.; Weiss, M.A.; Ward, C.W.; Lawrence, M.C.  
Deposited on : 2015-05-20  
Resolution : 3.30 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 : 4.02b-467  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.37.1  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.37.1

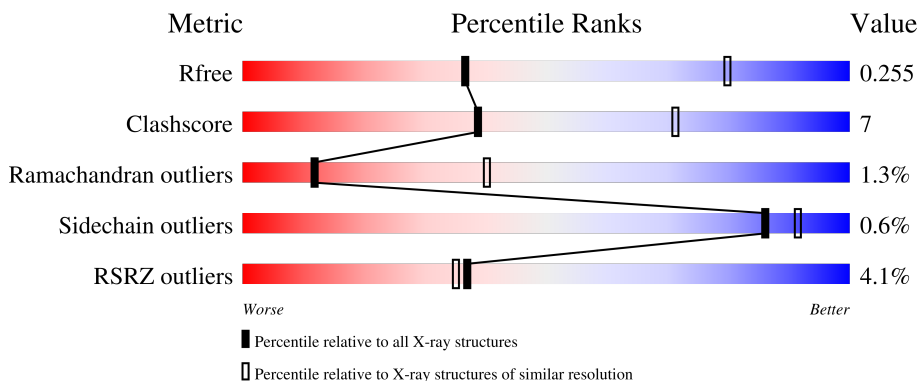
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.30 Å.

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





Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	1149 (3.34-3.26)
Clashscore	141614	1205 (3.34-3.26)
Ramachandran outliers	138981	1183 (3.34-3.26)
Sidechain outliers	138945	1182 (3.34-3.26)
RSRZ outliers	127900	1115 (3.34-3.26)

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	219	
2	B	219	
3	C	220	
4	D	214	
5	E	894	

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Mol	Chain	Length	Quality of chain
6	F	3	 100%
6	H	3	 67% 33%
6	K	3	 67% 33%
7	G	3	 100%
8	I	6	 33% 67%
9	J	2	 50% 50%
9	L	2	 50% 50%

## 2 Entry composition [i](#)

There are 10 unique types of molecules in this entry. The entry contains 12918 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 Fab 83-7 heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	214	1611	1018	266	319	8	0	0	0

- Molecule 2 is a protein called Fab 83-7 light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	218	1706	1068	286	345	7	0	0	0

- Molecule 3 is a protein called Fab 83-14 heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	C	187	1427	917	234	271	5	0	0	0

- Molecule 4 is a protein called Fab 83-14 light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	D	182	1384	865	227	287	5	0	0	0

- Molecule 5 is a protein called Insulin receptor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
5	E	800	6473	4106	1117	1202	48	0	0	0

There are 28 discrepancies between the modelled and reference sequences:

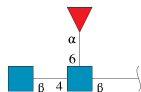
Chain	Residue	Modelled	Actual	Comment	Reference
E	144	HIS	TYR	engineered mutation	UNP P06213
E	?	-	ARG	deletion	UNP P06213

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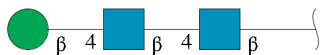
Chain	Residue	Modelled	Actual	Comment	Reference
E	?	-	LYS	deletion	UNP P06213
E	?	-	ARG	deletion	UNP P06213
E	?	-	ARG	deletion	UNP P06213
E	?	-	VAL	deletion	UNP P06213
E	?	-	THR	deletion	UNP P06213
E	?	-	VAL	deletion	UNP P06213
E	?	-	ALA	deletion	UNP P06213
E	?	-	VAL	deletion	UNP P06213
E	?	-	PRO	deletion	UNP P06213
E	?	-	THR	deletion	UNP P06213
E	?	-	VAL	deletion	UNP P06213
E	?	-	ALA	deletion	UNP P06213
E	?	-	ALA	deletion	UNP P06213
E	?	-	PHE	deletion	UNP P06213
E	?	-	PRO	deletion	UNP P06213
E	?	-	ASN	deletion	UNP P06213
E	?	-	THR	deletion	UNP P06213
E	?	-	SER	deletion	UNP P06213
E	?	-	SER	deletion	UNP P06213
E	?	-	THR	deletion	UNP P06213
E	?	-	SER	deletion	UNP P06213
E	?	-	VAL	deletion	UNP P06213
E	750	ALA	PRO	engineered mutation	UNP P06213
E	751	GLY	THR	engineered mutation	UNP P06213
E	752	ASN	SER	engineered mutation	UNP P06213
E	753	ASN	PRO	engineered mutation	UNP P06213

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



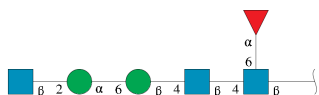
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
6	F	3	38	22	2	14	0	0	0
6	H	3	38	22	2	14	0	0	0
6	K	3	38	22	2	14	0	0	0

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



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
7	G	3	39	22	2	15	0	0	0

- Molecule 8 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-2)-alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.



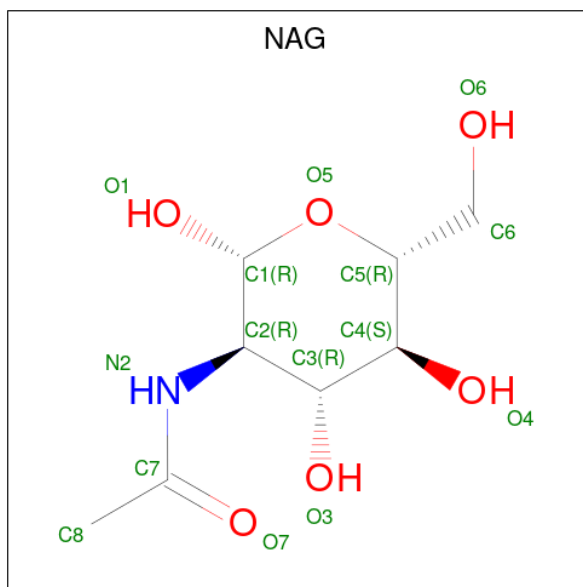
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
8	I	6	74	42	3	29	0	0	0

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



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
9	J	2	24	14	1	9	0	0	0
9	L	2	24	14	1	9	0	0	0

- Molecule 10 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C<sub>8</sub>H<sub>15</sub>NO<sub>6</sub>).

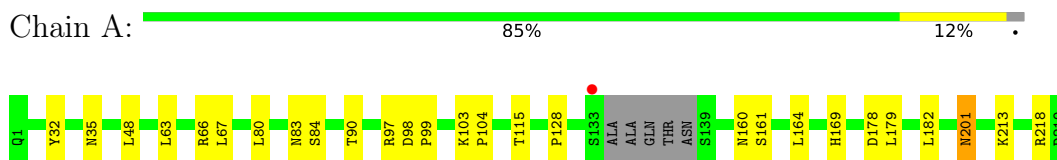


Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
10	E	1	Total	C	N	O	0	0
			14	8	1	5		
10	E	1	Total	C	N	O	0	0
			14	8	1	5		
10	E	1	Total	C	N	O	0	0
			14	8	1	5		

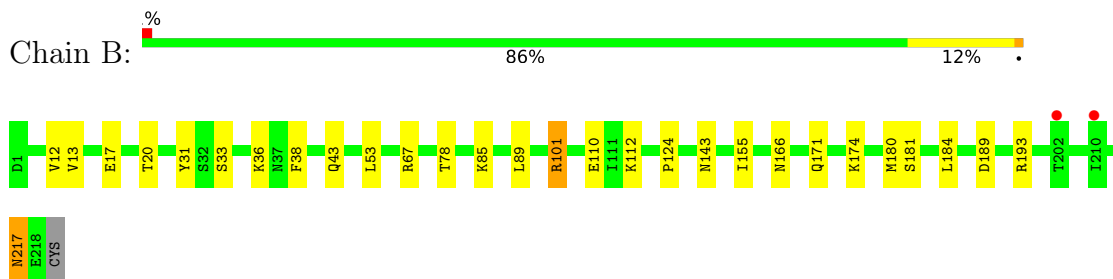
### 3 Residue-property plots [i](#)

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.

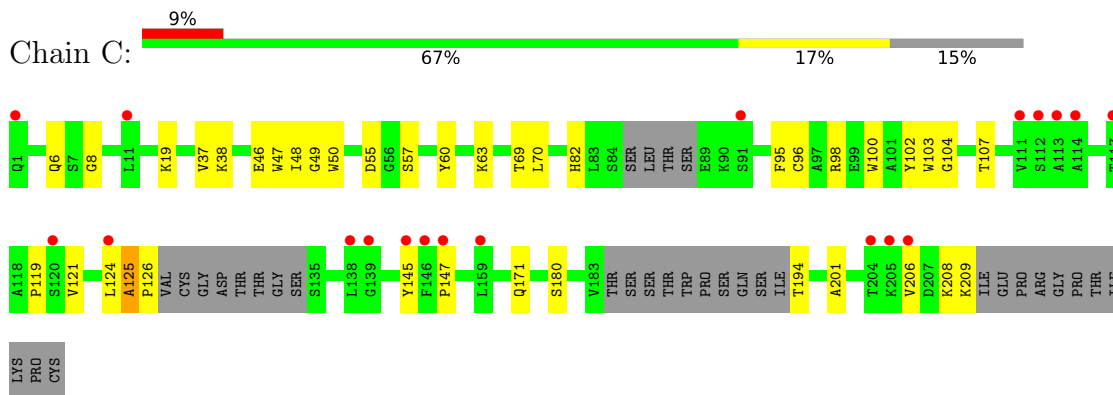
- Molecule 1: Fab 83-7 heavy chain



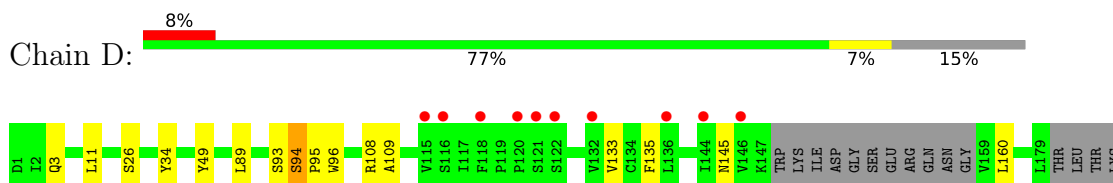
- Molecule 2: Fab 83-7 light chain



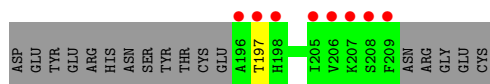
- Molecule 3: Fab 83-14 heavy chain



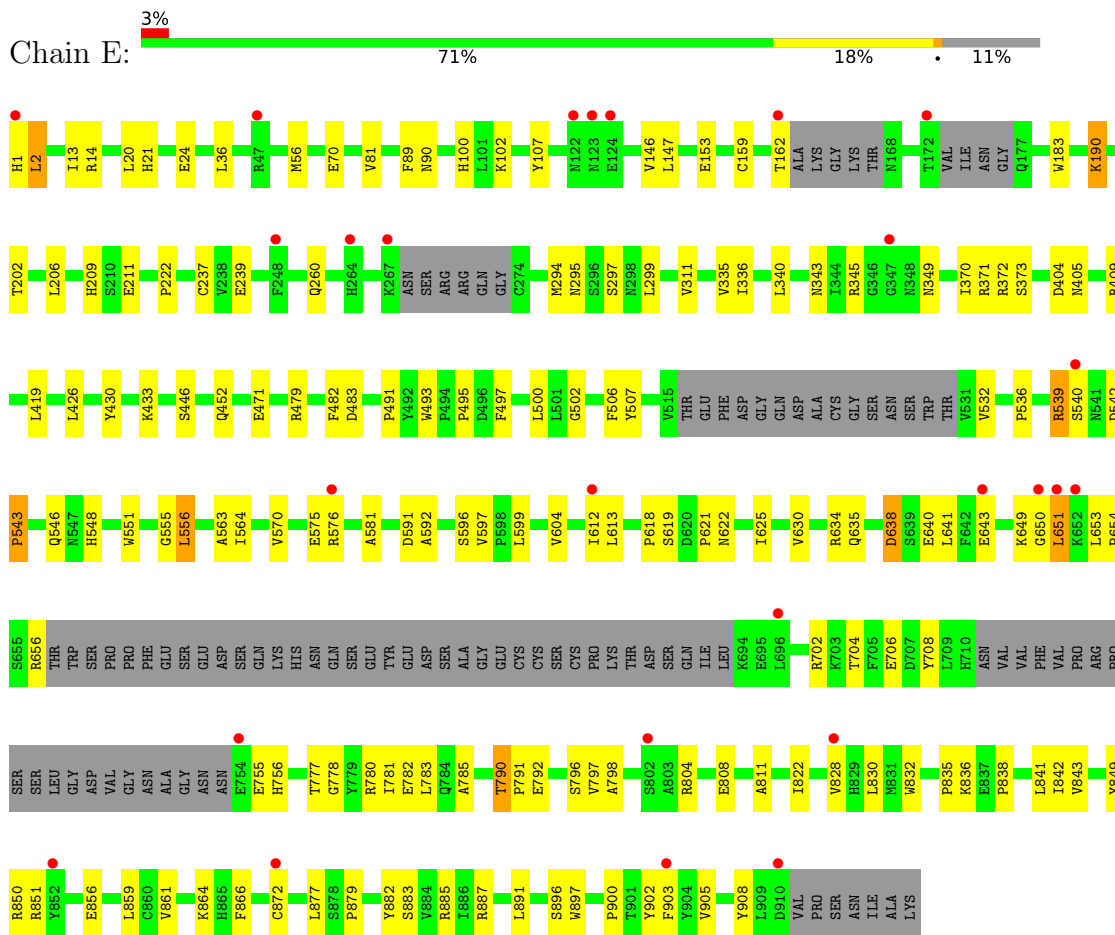
- Molecule 4: Fab 83-14 light chain



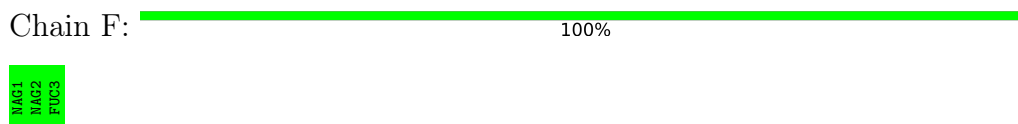




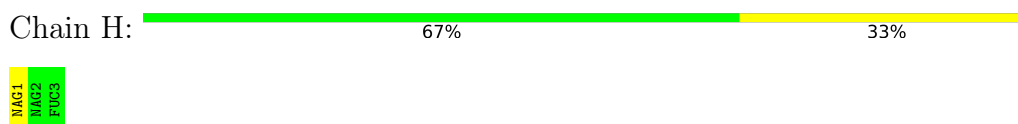
- Molecule 5: Insulin receptor



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



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

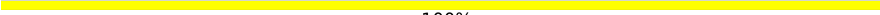


- Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain K:  67% 33%

MAG1  
MAG2  
FUC3

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

Chain G:  100%

MAG1  
MAG2  
BMA3

- Molecule 8: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-2)-alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain I:  33% 67%

MAG1  
MAG2  
BMA3  
MAM4  
MAG5  
FUC6

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

Chain J:  50% 50%

MAG1  
FUC2

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

Chain L:  50% 50%

MAG1  
FUC2

## 4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	121.87Å 321.25Å 199.40Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	34.46 – 3.30 34.26 – 3.30	Depositor EDS
% Data completeness (in resolution range)	98.0 (34.46-3.30) 98.0 (34.26-3.30)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.12 (at 3.32Å)	Xtrriage
Refinement program	BUSTER 2.10.2	Depositor
R, $R_{free}$	0.205 , 0.237 0.222 , 0.255	Depositor DCC
$R_{free}$ test set	2911 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	106.7	Xtrriage
Anisotropy	0.228	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.31 , 90.8	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.93	EDS
Total number of atoms	12918	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	134.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.57% 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 [i](#)

### 5.1 Standard geometry [i](#)

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

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	0.54	0/1654	0.78	0/2261
2	B	0.48	0/1744	0.73	0/2363
3	C	0.47	0/1465	0.83	0/1995
4	D	0.54	0/1412	0.84	1/1914 (0.1%)
5	E	0.53	0/6631	0.84	3/8986 (0.0%)
All	All	0.52	0/12906	0.82	4/17519 (0.0%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	E	555	GLY	C-N-CA	6.36	137.59	121.70
5	E	539	ARG	C-N-CA	5.45	135.31	121.70
4	D	93	SER	C-N-CA	5.33	135.04	121.70
5	E	295	ASN	N-CA-C	-5.08	97.28	111.00

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1611	0	1582	26	0
2	B	1706	0	1648	29	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	C	1427	0	1407	35	0
4	D	1384	0	1337	13	0
5	E	6473	0	6272	101	0
6	F	38	0	34	0	0
6	H	38	0	34	0	0
6	K	38	0	34	0	0
7	G	39	0	34	0	0
8	I	74	0	64	0	0
9	J	24	0	22	0	0
9	L	24	0	22	0	0
10	E	42	0	39	1	0
All	All	12918	0	12529	190	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 7.

All (190) 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:E:426:LEU:H	5:E:452:GLN:HE21	1.13	0.88
1:A:48:LEU:HD22	1:A:63:LEU:CD1	2.05	0.86
3:C:125:ALA:H	3:C:126:PRO:HD3	1.40	0.86
5:E:790:THR:HB	5:E:791:PRO:HD3	1.57	0.84
2:B:101:ARG:HH11	2:B:101:ARG:CG	1.93	0.81
5:E:755:GLU:HG2	5:E:756:HIS:N	1.99	0.77
2:B:12:VAL:HG12	2:B:110:GLU:HB2	1.65	0.76
3:C:6:GLN:HE21	3:C:104:GLY:HA3	1.50	0.75
5:E:755:GLU:HG2	5:E:756:HIS:H	1.51	0.75
1:A:35:ASN:ND2	1:A:98:ASP:HB2	2.01	0.74
1:A:48:LEU:HD22	1:A:63:LEU:HD12	1.69	0.73
3:C:46:GLU:OE1	3:C:63:LYS:HD3	1.89	0.72
5:E:599:LEU:HD11	5:E:619:SER:HB3	1.72	0.71
3:C:124:LEU:HD13	4:D:133:VAL:HG11	1.72	0.70
2:B:13:VAL:HG22	2:B:17:GLU:HB2	1.73	0.70
5:E:885:ARG:HE	5:E:897:TRP:HB3	1.55	0.69
3:C:60:TYR:HE1	3:C:70:LEU:HD13	1.58	0.69
5:E:70:GLU:O	5:E:102:LYS:HG2	1.93	0.68
5:E:471:GLU:HB2	5:E:581:ALA:HB2	1.75	0.68
1:A:35:ASN:HD21	1:A:98:ASP:HB2	1.58	0.67
2:B:101:ARG:HH11	2:B:101:ARG:HG3	1.58	0.67
3:C:98:ARG:NH2	5:E:546:GLN:HB3	2.11	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:102:TYR:HE1	5:E:546:GLN:HB2	1.62	0.64
5:E:651:LEU:HD23	5:E:651:LEU:H	1.62	0.64
5:E:785:ALA:H	5:E:796:SER:HB3	1.60	0.64
5:E:56:MET:HG3	5:E:81:VAL:HB	1.80	0.64
5:E:426:LEU:H	5:E:452:GLN:NE2	1.92	0.64
3:C:8:GLY:HA3	3:C:107:THR:HG23	1.79	0.64
1:A:48:LEU:CD2	1:A:63:LEU:HD12	2.29	0.63
5:E:808:GLU:HB2	5:E:811:ALA:HB2	1.80	0.63
1:A:99:PRO:HG2	1:A:103:LYS:HB2	1.81	0.63
1:A:161:SER:H	1:A:201:ASN:HD21	1.46	0.62
5:E:597:VAL:HG22	5:E:797:VAL:CG2	2.28	0.62
1:A:48:LEU:CD2	1:A:63:LEU:CD1	2.77	0.61
1:A:218:ARG:HH22	2:B:124:PRO:HB2	1.64	0.61
5:E:209:HIS:CD2	5:E:211:GLU:H	2.19	0.61
5:E:643:GLU:HA	5:E:864:LYS:HE3	1.82	0.61
5:E:89:PHE:O	5:E:90:ASN:HB3	2.02	0.60
5:E:879:PRO:HA	5:E:905:VAL:HG23	1.82	0.59
2:B:13:VAL:CG2	2:B:17:GLU:HB2	2.31	0.59
2:B:101:ARG:HH11	2:B:101:ARG:HG2	1.65	0.58
3:C:125:ALA:H	3:C:126:PRO:CD	2.11	0.58
5:E:822:ILE:HG12	5:E:828:VAL:HG22	1.86	0.57
1:A:218:ARG:HH12	2:B:124:PRO:HD2	1.69	0.57
5:E:704:THR:HG22	5:E:708:TYR:CE2	2.40	0.57
1:A:67:LEU:HD11	1:A:80:LEU:HD11	1.86	0.57
5:E:146:VAL:HG22	5:E:147:LEU:HG	1.87	0.56
2:B:31:TYR:HB2	2:B:38:PHE:CE1	2.41	0.56
5:E:294:MET:O	5:E:294:MET:HG3	2.05	0.56
5:E:634:ARG:HD2	5:E:777:THR:HG21	1.87	0.55
5:E:604:VAL:HB	5:E:612:ILE:HG13	1.88	0.55
5:E:885:ARG:NH1	5:E:900:PRO:HD3	2.21	0.55
1:A:160:ASN:HB2	1:A:164:LEU:HD13	1.88	0.55
5:E:190:LYS:HG3	10:E:1008:NAG:H81	1.88	0.55
5:E:345:ARG:NH2	5:E:372:ARG:HD2	2.23	0.55
3:C:180:SER:HB3	4:D:135:PHE:CE2	2.42	0.54
5:E:835:PRO:HD2	5:E:842:ILE:HD12	1.88	0.54
5:E:483:ASP:O	5:E:556:LEU:HB2	2.08	0.54
2:B:217:ASN:HD22	2:B:217:ASN:H	1.55	0.54
2:B:31:TYR:CE2	2:B:33:SER:HB2	2.43	0.53
2:B:31:TYR:HB2	2:B:38:PHE:HE1	1.73	0.53
5:E:654:PRO:HG2	5:E:656:ARG:HH21	1.73	0.53
5:E:542:ASP:N	5:E:543:PRO:HD3	2.24	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:161:SER:H	1:A:201:ASN:ND2	2.06	0.53
5:E:345:ARG:HH21	5:E:372:ARG:HD2	1.73	0.52
1:A:90:THR:HG23	1:A:115:THR:HA	1.92	0.52
5:E:502:GLY:HA2	5:E:536:PRO:HG3	1.91	0.52
3:C:121:VAL:HB	3:C:206:VAL:HG11	1.91	0.52
3:C:60:TYR:CE1	3:C:70:LEU:HD13	2.43	0.52
2:B:43:GLN:HB2	2:B:53:LEU:HD11	1.92	0.51
3:C:124:LEU:HD13	4:D:133:VAL:CG1	2.39	0.51
5:E:336:ILE:HD12	5:E:340:LEU:HD11	1.91	0.51
5:E:613:LEU:HD22	5:E:781:ILE:HG21	1.91	0.51
3:C:47:TRP:HZ2	3:C:50:TRP:HD1	1.57	0.51
3:C:206:VAL:CG1	3:C:208:LYS:HD3	2.41	0.51
3:C:19:LYS:HB3	3:C:82:HIS:CD2	2.46	0.51
5:E:702:ARG:O	5:E:706:GLU:HG3	2.10	0.51
5:E:597:VAL:HG22	5:E:797:VAL:HG22	1.93	0.51
1:A:169:HIS:CE1	2:B:143:ASN:HD21	2.30	0.50
2:B:155:ILE:HD11	2:B:184:LEU:HD21	1.94	0.50
5:E:482:PHE:HA	5:E:591:ASP:HB2	1.93	0.50
5:E:597:VAL:HG22	5:E:797:VAL:HG23	1.92	0.50
2:B:180:MET:HG2	2:B:181:SER:N	2.26	0.50
5:E:373:SER:H	5:E:405:ASN:HD22	1.58	0.50
5:E:532:VAL:HG11	5:E:551:TRP:CE2	2.47	0.50
5:E:630:VAL:HG22	5:E:783:LEU:HD13	1.94	0.50
5:E:635:GLN:HE21	5:E:780:ARG:HB2	1.76	0.49
3:C:194:THR:OG1	3:C:209:LYS:HG2	2.12	0.49
5:E:546:GLN:HG3	5:E:548:HIS:HD2	1.77	0.49
4:D:145:ASN:HB3	4:D:197:THR:HB	1.93	0.49
5:E:373:SER:H	5:E:405:ASN:ND2	2.10	0.49
2:B:20:THR:HG23	2:B:78:THR:CG2	2.42	0.49
5:E:546:GLN:C	5:E:548:HIS:H	2.16	0.49
5:E:209:HIS:CD2	5:E:222:PRO:HB3	2.48	0.49
5:E:1:HIS:CD2	5:E:2:LEU:H	2.30	0.49
5:E:506:PHE:O	5:E:564:ILE:HA	2.13	0.48
3:C:124:LEU:CD1	4:D:133:VAL:HG11	2.39	0.48
5:E:877:LEU:N	5:E:877:LEU:HD12	2.29	0.48
3:C:38:LYS:HB2	3:C:48:ILE:HD11	1.96	0.47
5:E:592:ALA:HB1	5:E:622:ASN:O	2.14	0.47
5:E:851:ARG:HB2	5:E:882:TYR:CE2	2.49	0.47
5:E:830:LEU:HB2	5:E:872:CYS:HB3	1.96	0.47
1:A:67:LEU:HD11	1:A:80:LEU:CD1	2.44	0.47
5:E:404:ASP:HA	5:E:430:TYR:O	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:101:ARG:HG3	2:B:101:ARG:NH1	2.28	0.47
1:A:66:ARG:HB2	1:A:83:ASN:HB2	1.96	0.47
5:E:493:TRP:CE3	5:E:497:PHE:HB2	2.50	0.47
5:E:2:LEU:HD11	5:E:237:CYS:SG	2.55	0.46
4:D:108:ARG:HG2	4:D:109:ALA:N	2.31	0.46
5:E:859:LEU:HD23	5:E:872:CYS:SG	2.55	0.46
1:A:32:TYR:HE2	1:A:99:PRO:HB3	1.79	0.46
3:C:171:GLN:HB2	4:D:160:LEU:HD11	1.98	0.46
3:C:47:TRP:HD1	3:C:100:TRP:HH2	1.64	0.46
5:E:828:VAL:HG21	5:E:903:PHE:CE1	2.51	0.46
4:D:3:GLN:H	4:D:26:SER:CB	2.29	0.45
5:E:13:ILE:HD13	5:E:20:LEU:HA	1.97	0.45
2:B:36:LYS:HE3	5:E:239:GLU:OE2	2.17	0.45
2:B:67:ARG:NH1	2:B:85:LYS:HD2	2.31	0.45
5:E:260:GLN:HA	5:E:299:LEU:HD11	1.98	0.45
5:E:782:GLU:HG3	5:E:798:ALA:HB1	1.96	0.45
1:A:103:LYS:HB3	1:A:104:PRO:HD2	1.98	0.45
5:E:426:LEU:N	5:E:452:GLN:HE21	1.97	0.45
5:E:849:TYR:HA	5:E:883:SER:O	2.17	0.45
5:E:159:CYS:O	5:E:162:THR:HG23	2.16	0.45
4:D:89:LEU:HD11	4:D:96:TRP:HB3	1.97	0.44
5:E:202:THR:HG22	5:E:206:LEU:HB2	1.98	0.44
5:E:507:TYR:HA	5:E:563:ALA:O	2.17	0.44
5:E:621:PRO:HB3	5:E:625:ILE:HD11	1.98	0.44
2:B:31:TYR:CB	2:B:38:PHE:HE1	2.30	0.44
2:B:101:ARG:CG	2:B:101:ARG:NH1	2.63	0.44
2:B:189:ASP:O	2:B:193:ARG:HG3	2.16	0.44
3:C:37:VAL:CG2	3:C:95:PHE:HB2	2.47	0.44
3:C:47:TRP:HZ2	3:C:50:TRP:CD1	2.35	0.44
5:E:107:TYR:HA	5:E:183:TRP:CD1	2.52	0.44
3:C:50:TRP:CZ2	5:E:479:ARG:HD2	2.52	0.44
5:E:755:GLU:CG	5:E:756:HIS:N	2.77	0.44
5:E:861:VAL:HG12	5:E:866:PHE:HB2	1.99	0.44
5:E:640:GLU:CD	5:E:640:GLU:H	2.21	0.44
1:A:48:LEU:HD22	1:A:63:LEU:HD13	1.95	0.44
4:D:94:SER:HB2	4:D:95:PRO:HD3	2.00	0.44
3:C:147:PRO:HD2	3:C:201:ALA:CB	2.48	0.43
5:E:343:ASN:HD22	5:E:371:ARG:HH21	1.64	0.43
5:E:641:LEU:HB3	5:E:841:LEU:HD21	1.99	0.43
2:B:217:ASN:H	2:B:217:ASN:ND2	2.16	0.43
4:D:11:LEU:C	4:D:11:LEU:HD23	2.38	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:89:LEU:HD21	2:B:171:GLN:HB3	2.00	0.43
3:C:50:TRP:CE2	5:E:479:ARG:HD2	2.52	0.43
5:E:832:TRP:CH2	5:E:872:CYS:HB2	2.54	0.43
5:E:832:TRP:HH2	5:E:872:CYS:HB2	1.82	0.43
4:D:34:TYR:HD1	4:D:49:TYR:HA	1.83	0.43
5:E:419:LEU:O	5:E:446:SER:HA	2.18	0.43
5:E:850:ARG:NH2	5:E:856:GLU:HB2	2.33	0.42
5:E:885:ARG:HH12	5:E:900:PRO:HD3	1.81	0.42
3:C:180:SER:HB3	4:D:135:PHE:CD2	2.54	0.42
5:E:755:GLU:CG	5:E:756:HIS:H	2.27	0.42
1:A:178:ASP:O	1:A:179:LEU:HD23	2.19	0.42
2:B:13:VAL:HA	2:B:112:LYS:HE2	2.01	0.42
5:E:653:LEU:HD21	5:E:891:LEU:HD23	2.01	0.42
1:A:35:ASN:HD21	1:A:98:ASP:CB	2.29	0.42
2:B:166:ASN:HB3	2:B:180:MET:HE3	2.00	0.42
5:E:21:HIS:O	5:E:24:GLU:HB2	2.19	0.42
5:E:778:GLY:HA2	5:E:804:ARG:HA	2.01	0.42
2:B:174:LYS:HA	2:B:174:LYS:HD3	1.43	0.42
5:E:654:PRO:HB2	5:E:656:ARG:HE	1.84	0.42
1:A:32:TYR:CD2	1:A:97:ARG:HD2	2.55	0.42
3:C:100:TRP:HE3	3:C:103:TRP:CZ2	2.38	0.42
3:C:47:TRP:CZ2	3:C:49:GLY:HA2	2.55	0.41
3:C:125:ALA:N	3:C:126:PRO:CD	2.81	0.41
5:E:596:SER:HB3	5:E:618:PRO:HB2	2.01	0.41
5:E:89:PHE:O	5:E:90:ASN:CB	2.67	0.41
3:C:47:TRP:HD1	3:C:100:TRP:CH2	2.38	0.41
1:A:128:PRO:HG3	1:A:213:LYS:HD2	2.03	0.41
3:C:119:PRO:HB3	3:C:145:TYR:HB3	2.02	0.41
5:E:14:ARG:HA	5:E:36:LEU:O	2.21	0.41
3:C:6:GLN:HE22	3:C:96:CYS:H	1.69	0.41
3:C:37:VAL:HG22	3:C:95:PHE:HB2	2.01	0.41
5:E:370:ILE:N	5:E:370:ILE:HD12	2.35	0.41
1:A:32:TYR:CE2	1:A:99:PRO:HB3	2.55	0.41
5:E:887:ARG:HB2	5:E:897:TRP:CD2	2.56	0.41
5:E:556:LEU:H	5:E:556:LEU:CD1	2.34	0.40
5:E:651:LEU:H	5:E:651:LEU:CD2	2.30	0.40
2:B:20:THR:HG23	2:B:78:THR:HG23	2.02	0.40
5:E:409:ARG:HG2	5:E:433:LYS:HB3	2.03	0.40
5:E:575:GLU:HB3	5:E:576:ARG:H	1.76	0.40
5:E:653:LEU:HD22	5:E:843:VAL:HG21	2.03	0.40
1:A:182:LEU:HD12	1:A:182:LEU:C	2.41	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:E:500:LEU:HA	5:E:570:VAL:HG12	2.02	0.40
5:E:882:TYR:O	5:E:902:TYR:HA	2.21	0.40
3:C:55:ASP:CG	3:C:57:SER:HB2	2.41	0.40
5:E:311:VAL:HG22	5:E:335:VAL:HB	2.04	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	210/219 (96%)	198 (94%)	11 (5%)	1 (0%)	29	61
2	B	216/219 (99%)	212 (98%)	4 (2%)	0	100	100
3	C	179/220 (81%)	169 (94%)	9 (5%)	1 (1%)	25	57
4	D	176/214 (82%)	171 (97%)	4 (2%)	1 (1%)	25	57
5	E	786/894 (88%)	715 (91%)	53 (7%)	18 (2%)	6	29
All	All	1567/1766 (89%)	1465 (94%)	81 (5%)	21 (1%)	12	40

All (21) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	C	125	ALA
4	D	94	SER
5	E	153	GLU
5	E	539	ARG
5	E	540	SER
5	E	543	PRO
5	E	556	LEU
5	E	649	LYS
5	E	790	THR
5	E	896	SER

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Mol	Chain	Res	Type
5	E	100	HIS
5	E	638	ASP
5	E	2	LEU
5	E	297	SER
5	E	650	GLY
5	E	792	GLU
1	A	84	SER
5	E	495	PRO
5	E	836	LYS
5	E	908	TYR
5	E	838	PRO

### 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	187/190 (98%)	186 (100%)	1 (0%)	88	93
2	B	196/197 (100%)	194 (99%)	2 (1%)	76	86
3	C	157/187 (84%)	156 (99%)	1 (1%)	86	91
4	D	161/190 (85%)	161 (100%)	0	100	100
5	E	729/809 (90%)	724 (99%)	5 (1%)	84	90
All	All	1430/1573 (91%)	1421 (99%)	9 (1%)	86	91

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

Mol	Chain	Res	Type
1	A	201	ASN
2	B	101	ARG
2	B	217	ASN
3	C	69	THR
5	E	190	LYS
5	E	349	ASN
5	E	491	PRO
5	E	638	ASP

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Mol	Chain	Res	Type
5	E	651	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (23) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	56	ASN
1	A	83	ASN
1	A	110	GLN
1	A	201	ASN
2	B	95	GLN
2	B	143	ASN
2	B	217	ASN
3	C	5	GLN
3	C	6	GLN
4	D	161	ASN
5	E	1	HIS
5	E	34	GLN
5	E	209	HIS
5	E	260	GLN
5	E	343	ASN
5	E	405	ASN
5	E	407	ASN
5	E	452	GLN
5	E	513	GLN
5	E	546	GLN
5	E	548	HIS
5	E	610	GLN
5	E	635	GLN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

22 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
6	NAG	F	1	6,5	14,14,15	0.33	0	17,19,21	0.55	0
6	NAG	F	2	6	14,14,15	0.32	0	17,19,21	0.48	0
6	FUC	F	3	6	10,10,11	0.45	0	14,14,16	0.76	0
7	NAG	G	1	5,7	14,14,15	0.42	0	17,19,21	1.65	4 (23%)
7	NAG	G	2	7	14,14,15	0.34	0	17,19,21	1.04	2 (11%)
7	BMA	G	3	7	11,11,12	0.43	0	15,15,17	0.76	1 (6%)
6	NAG	H	1	6,5	14,14,15	0.34	0	17,19,21	0.84	1 (5%)
6	NAG	H	2	6	14,14,15	0.44	0	17,19,21	0.58	0
6	FUC	H	3	6	10,10,11	0.53	0	14,14,16	0.78	0
8	NAG	I	1	8,5	14,14,15	0.31	0	17,19,21	0.84	1 (5%)
8	NAG	I	2	8	14,14,15	0.37	0	17,19,21	0.78	1 (5%)
8	BMA	I	3	8	11,11,12	0.33	0	15,15,17	0.43	0
8	MAN	I	4	8	11,11,12	0.50	0	15,15,17	0.96	1 (6%)
8	NAG	I	5	8	14,14,15	0.35	0	17,19,21	1.08	2 (11%)
8	FUC	I	6	8	10,10,11	0.55	0	14,14,16	0.76	0
9	NAG	J	1	5,9	14,14,15	0.43	0	17,19,21	0.72	1 (5%)
9	FUC	J	2	9	10,10,11	0.45	0	14,14,16	0.64	0
6	NAG	K	1	6,5	14,14,15	0.37	0	17,19,21	0.49	0
6	NAG	K	2	6	14,14,15	0.36	0	17,19,21	0.84	1 (5%)
6	FUC	K	3	6	10,10,11	0.45	0	14,14,16	0.51	0
9	NAG	L	1	5,9	14,14,15	0.43	0	17,19,21	1.29	1 (5%)
9	FUC	L	2	9	10,10,11	0.51	0	14,14,16	0.62	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	NAG	F	1	6,5	-	0/6/23/26	0/1/1/1
6	NAG	F	2	6	-	0/6/23/26	0/1/1/1
6	FUC	F	3	6	-	-	0/1/1/1

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

There are no bond length outliers.

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	G	1	NAG	C1-O5-C5	4.61	118.44	112.19
9	L	1	NAG	C1-C2-N2	-3.77	104.05	110.49
7	G	1	NAG	C1-C2-N2	3.31	116.15	110.49
8	I	1	NAG	C1-O5-C5	2.99	116.24	112.19
8	I	4	MAN	C1-O5-C5	2.93	116.17	112.19
6	H	1	NAG	C1-O5-C5	2.75	115.91	112.19
6	K	2	NAG	C1-O5-C5	2.75	115.91	112.19
8	I	5	NAG	O5-C1-C2	-2.65	107.11	111.29
7	G	2	NAG	O5-C1-C2	-2.64	107.12	111.29
7	G	2	NAG	C1-O5-C5	2.58	115.69	112.19
7	G	1	NAG	O5-C1-C2	-2.56	107.25	111.29
9	J	1	NAG	C1-O5-C5	2.51	115.59	112.19
8	I	5	NAG	C1-O5-C5	2.46	115.52	112.19
7	G	1	NAG	O4-C4-C5	2.16	114.66	109.30
7	G	3	BMA	C1-O5-C5	2.05	114.97	112.19
8	I	2	NAG	C1-C2-N2	2.01	113.92	110.49

There are no chirality outliers.

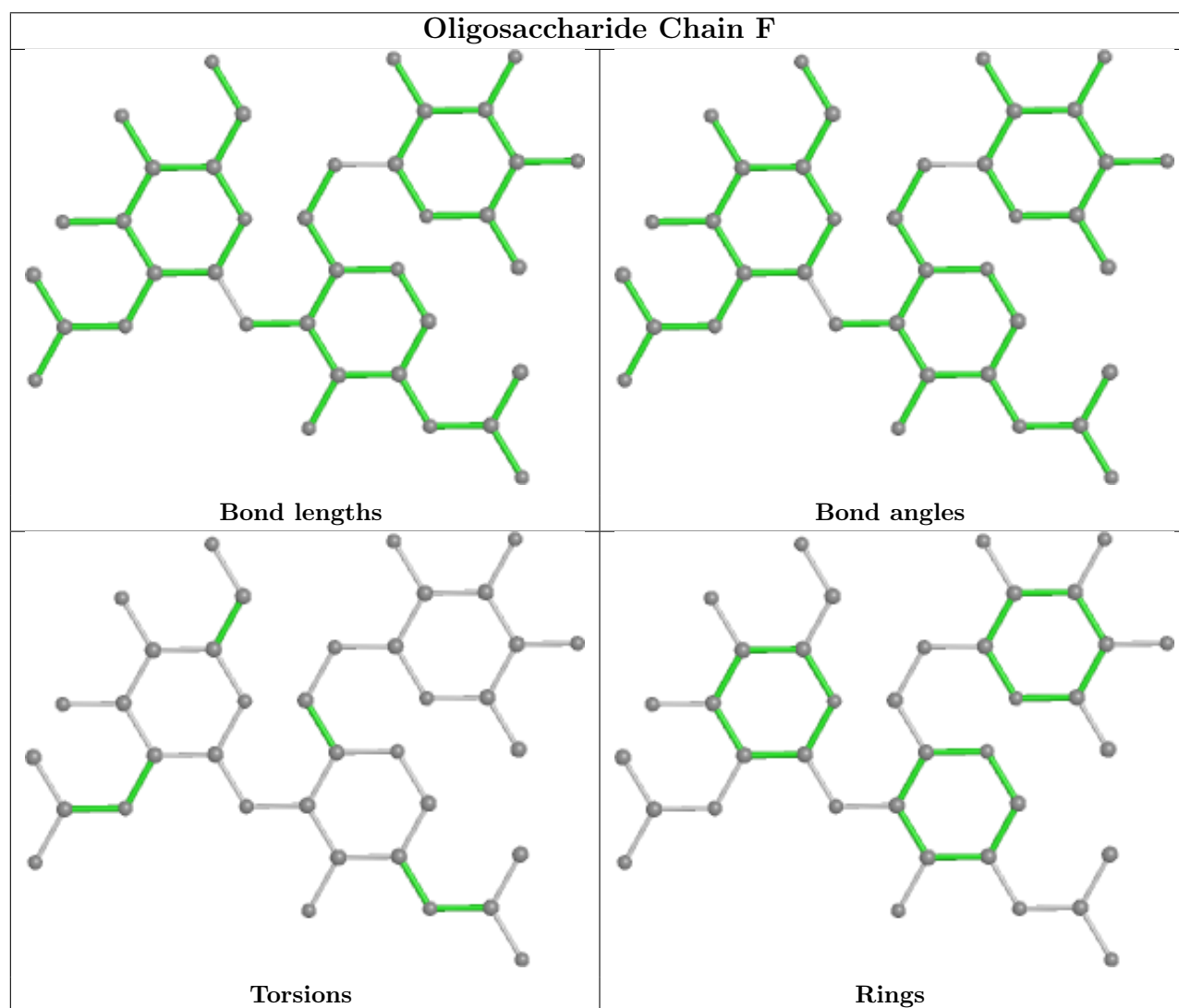
All (2) torsion outliers are listed below:

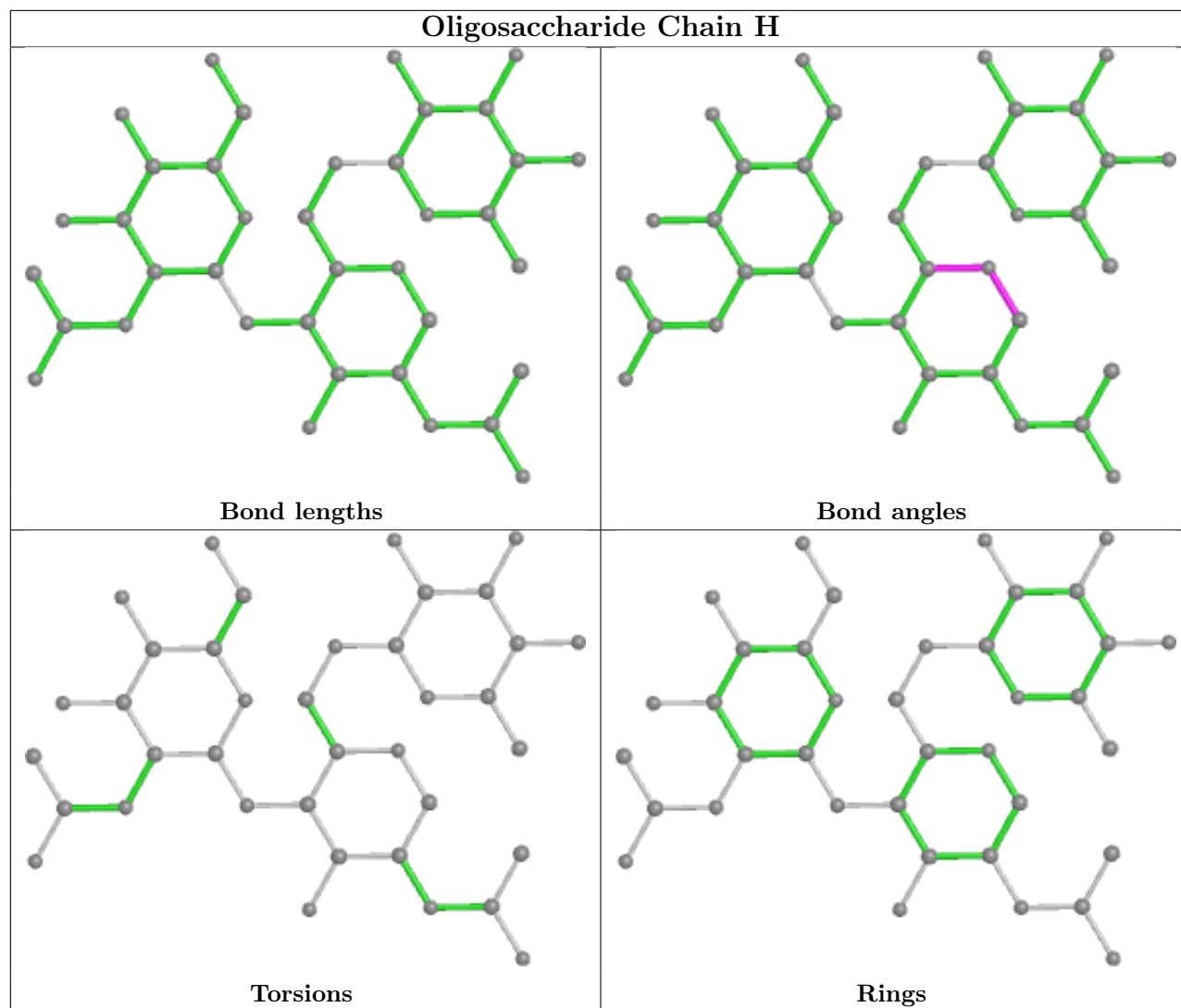
Mol	Chain	Res	Type	Atoms
8	I	4	MAN	O5-C5-C6-O6
7	G	1	NAG	O5-C5-C6-O6

There are no ring outliers.

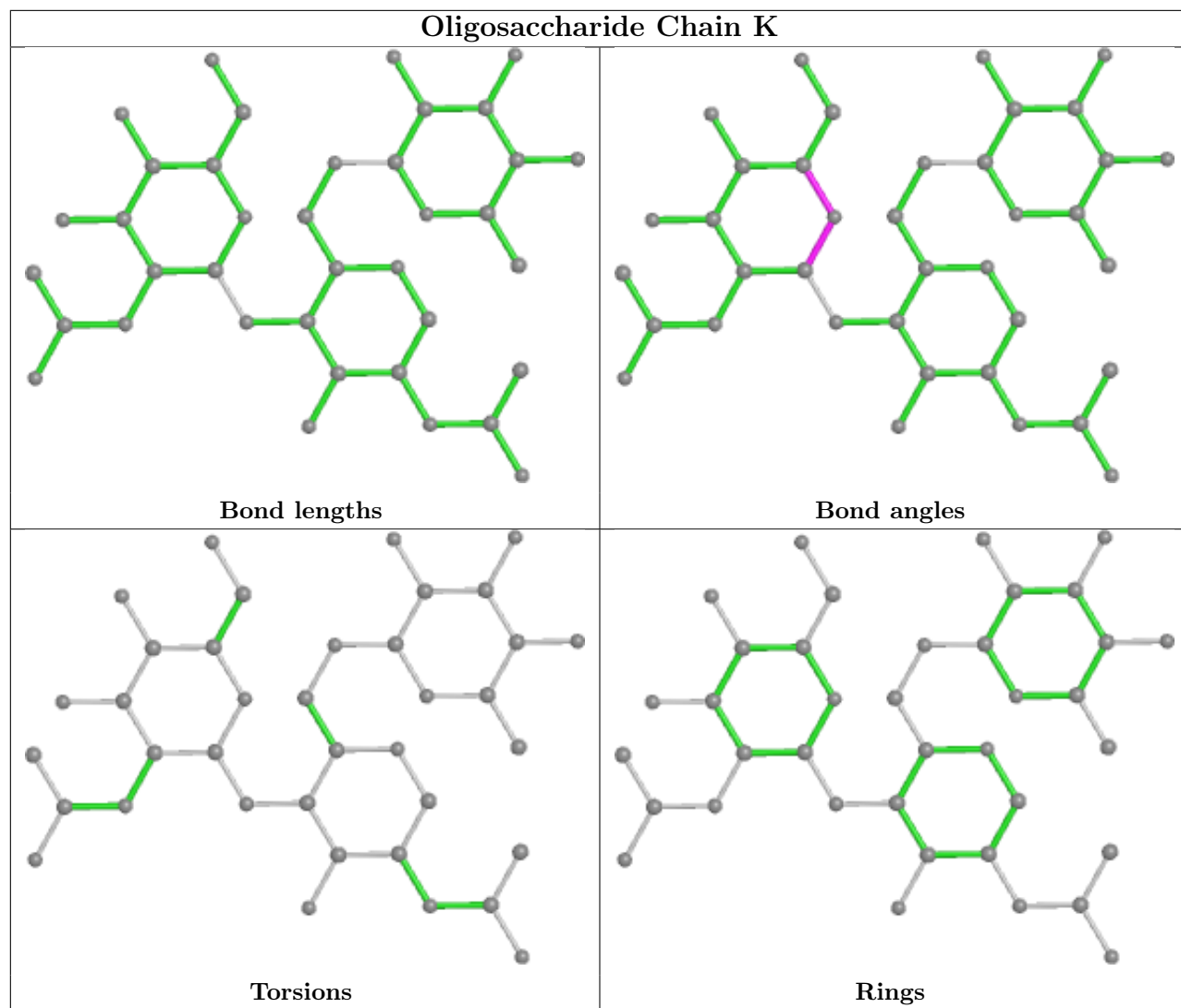
No monomer is involved in short contacts.

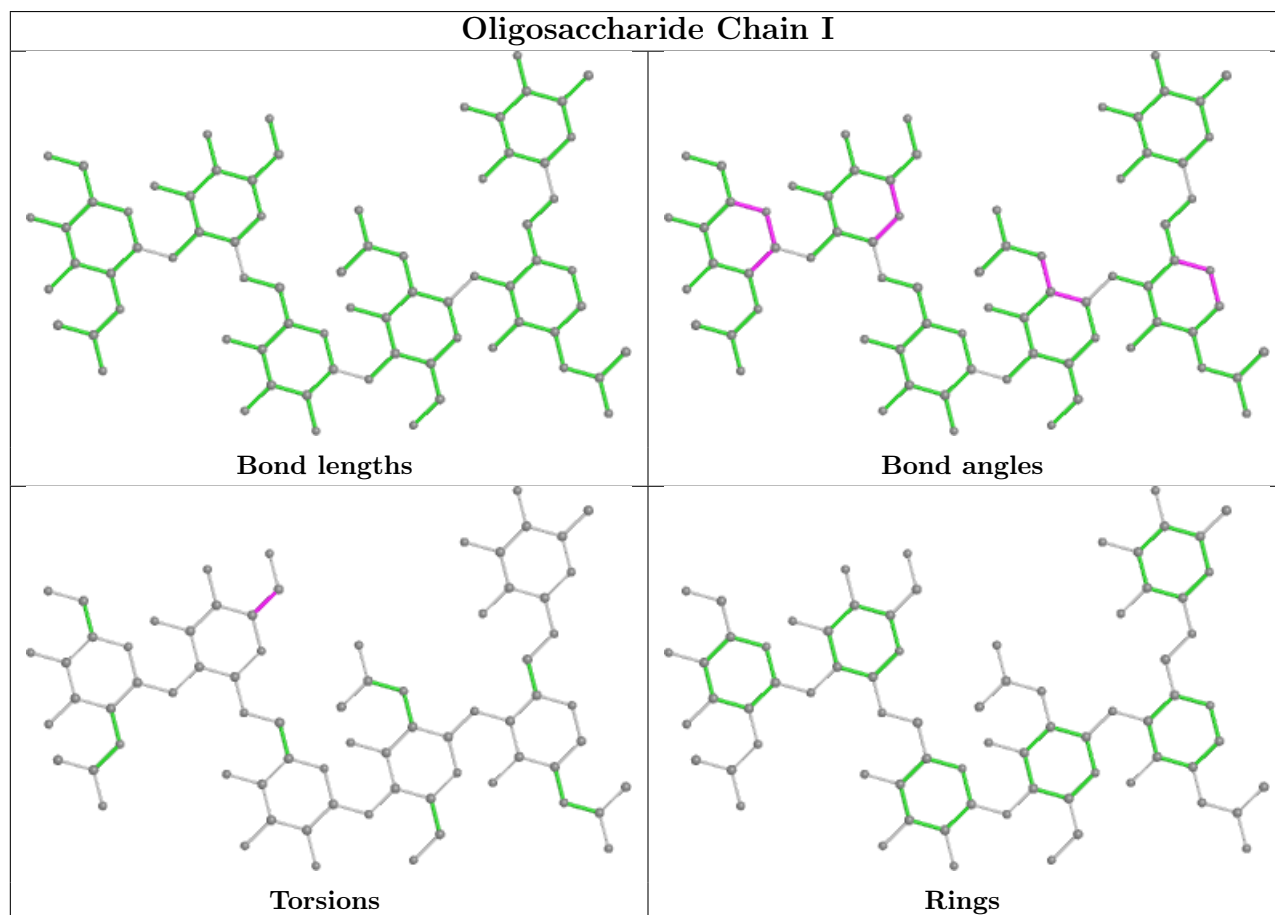
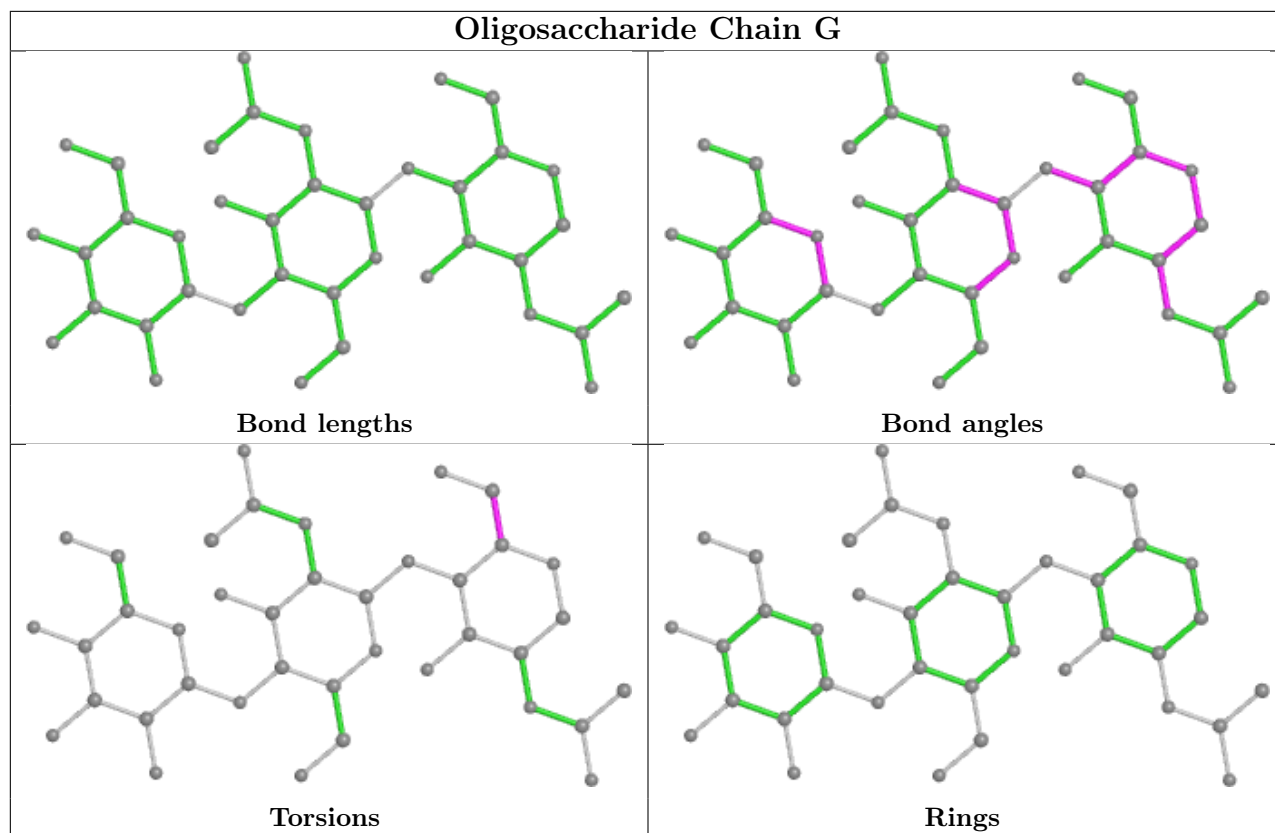
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

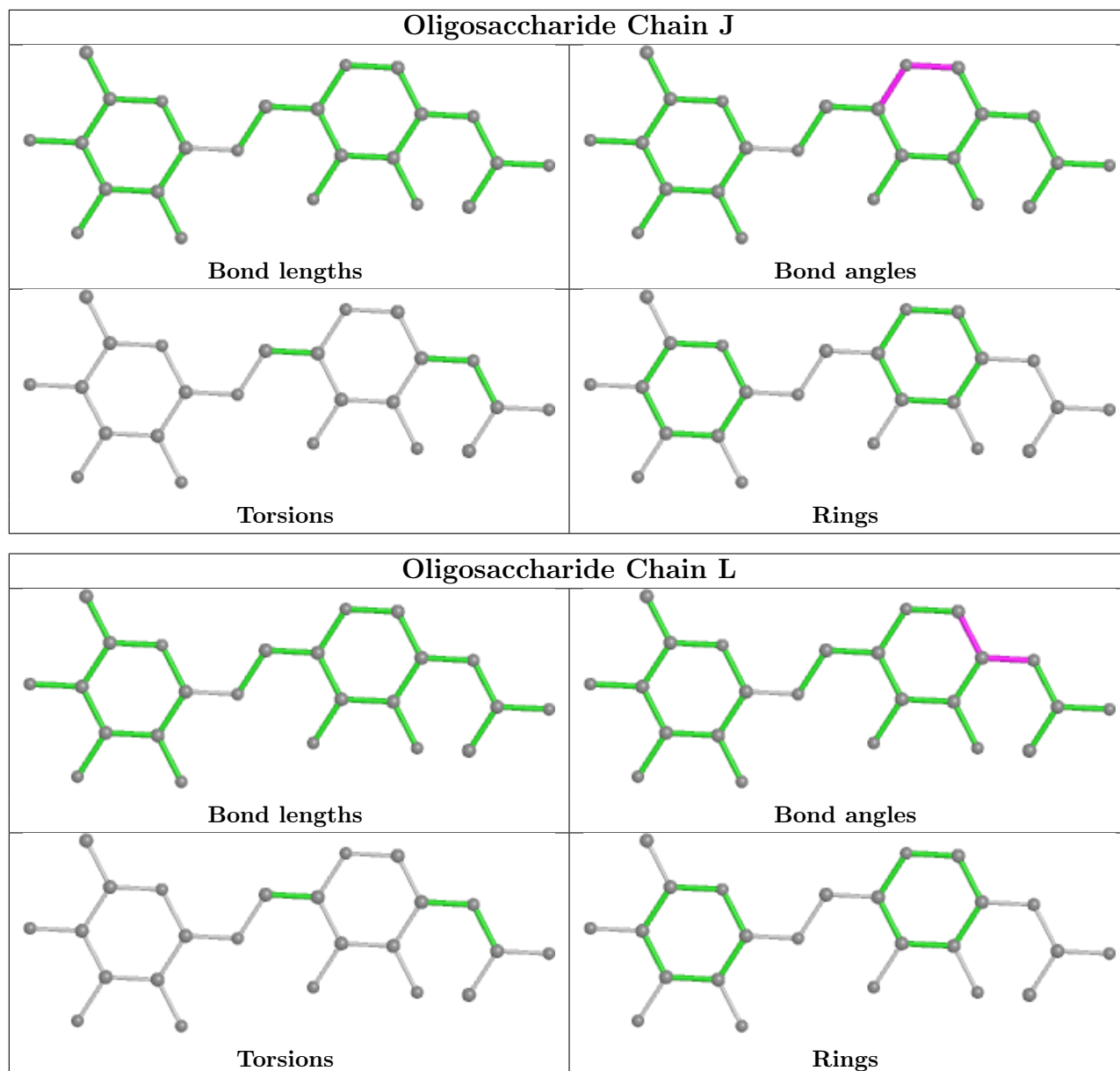












## 5.6 Ligand geometry [i](#)

3 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
10	NAG	E	1008	5	14,14,15	0.30	0	17,19,21	2.17	2 (11%)
10	NAG	E	1001	5	14,14,15	0.38	0	17,19,21	0.60	0
10	NAG	E	1020	5	14,14,15	0.37	0	17,19,21	1.02	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
10	NAG	E	1008	5	-	1/6/23/26	0/1/1/1
10	NAG	E	1001	5	-	0/6/23/26	0/1/1/1
10	NAG	E	1020	5	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	E	1008	NAG	C1-C2-N2	-8.25	96.40	110.49
10	E	1020	NAG	C1-O5-C5	2.87	116.08	112.19
10	E	1008	NAG	O5-C1-C2	2.45	115.15	111.29
10	E	1020	NAG	C1-C2-N2	2.27	114.37	110.49

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
10	E	1008	NAG	O5-C5-C6-O6

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
10	E	1008	NAG	1	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues

There are no chain breaks in this entry.

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	214/219 (97%)	-0.07	1 (0%) 91 91	78, 111, 146, 168	0
2	B	218/219 (99%)	0.03	2 (0%) 84 84	84, 121, 155, 175	0
3	C	187/220 (85%)	0.54	19 (10%) 6 6	87, 155, 199, 214	0
4	D	182/214 (85%)	0.54	18 (9%) 7 7	78, 123, 204, 217	0
5	E	800/894 (89%)	0.22	26 (3%) 46 44	72, 135, 186, 228	0
All	All	1601/1766 (90%)	0.23	66 (4%) 37 35	72, 129, 190, 228	0

All (66) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
4	D	208	SER	7.4
5	E	267	LYS	5.1
4	D	196	ALA	5.1
4	D	115	VAL	4.3
4	D	206	VAL	4.1
3	C	139	GLY	3.9
5	E	754	GLU	3.7
3	C	112	SER	3.6
2	B	210	ILE	3.6
4	D	197	THR	3.5
5	E	162	THR	3.5
3	C	146	PHE	3.4
3	C	159	LEU	3.2
3	C	138	LEU	3.1
5	E	1	HIS	3.0
3	C	147	PRO	3.0
5	E	123	ASN	3.0
4	D	146	VAL	2.9
4	D	144	ILE	2.9
3	C	11	LEU	2.9

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
5	E	910	ASP	2.9
4	D	121	SER	2.8
4	D	120	PRO	2.8
5	E	612	ILE	2.8
5	E	903	PHE	2.8
5	E	802	SER	2.8
4	D	116	SER	2.7
3	C	205	LYS	2.7
4	D	209	PHE	2.7
5	E	122	ASN	2.7
1	A	133	SER	2.7
5	E	643	GLU	2.6
5	E	540	SER	2.6
4	D	207	LYS	2.6
4	D	122	SER	2.6
5	E	248	PHE	2.6
5	E	872	CYS	2.6
3	C	1	GLN	2.6
5	E	124	GLU	2.6
5	E	651	LEU	2.5
5	E	264	HIS	2.5
3	C	120	SER	2.5
5	E	652	LYS	2.5
4	D	205	ILE	2.5
5	E	696	LEU	2.4
3	C	204	THR	2.4
3	C	114	ALA	2.4
5	E	576	ARG	2.4
3	C	206	VAL	2.4
3	C	111	VAL	2.3
4	D	118	PHE	2.3
5	E	347	GLY	2.3
3	C	117	THR	2.3
5	E	650	GLY	2.2
3	C	91	SER	2.2
3	C	124	LEU	2.2
5	E	852	TYR	2.1
3	C	145	TYR	2.1
3	C	113	ALA	2.1
2	B	202	THR	2.1
5	E	47	ARG	2.1
5	E	172	THR	2.1

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Mol	Chain	Res	Type	RSRZ
4	D	136	LEU	2.1
4	D	198	HIS	2.0
4	D	132	VAL	2.0
5	E	828	VAL	2.0

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

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

## 6.3 Carbohydrates [i](#)

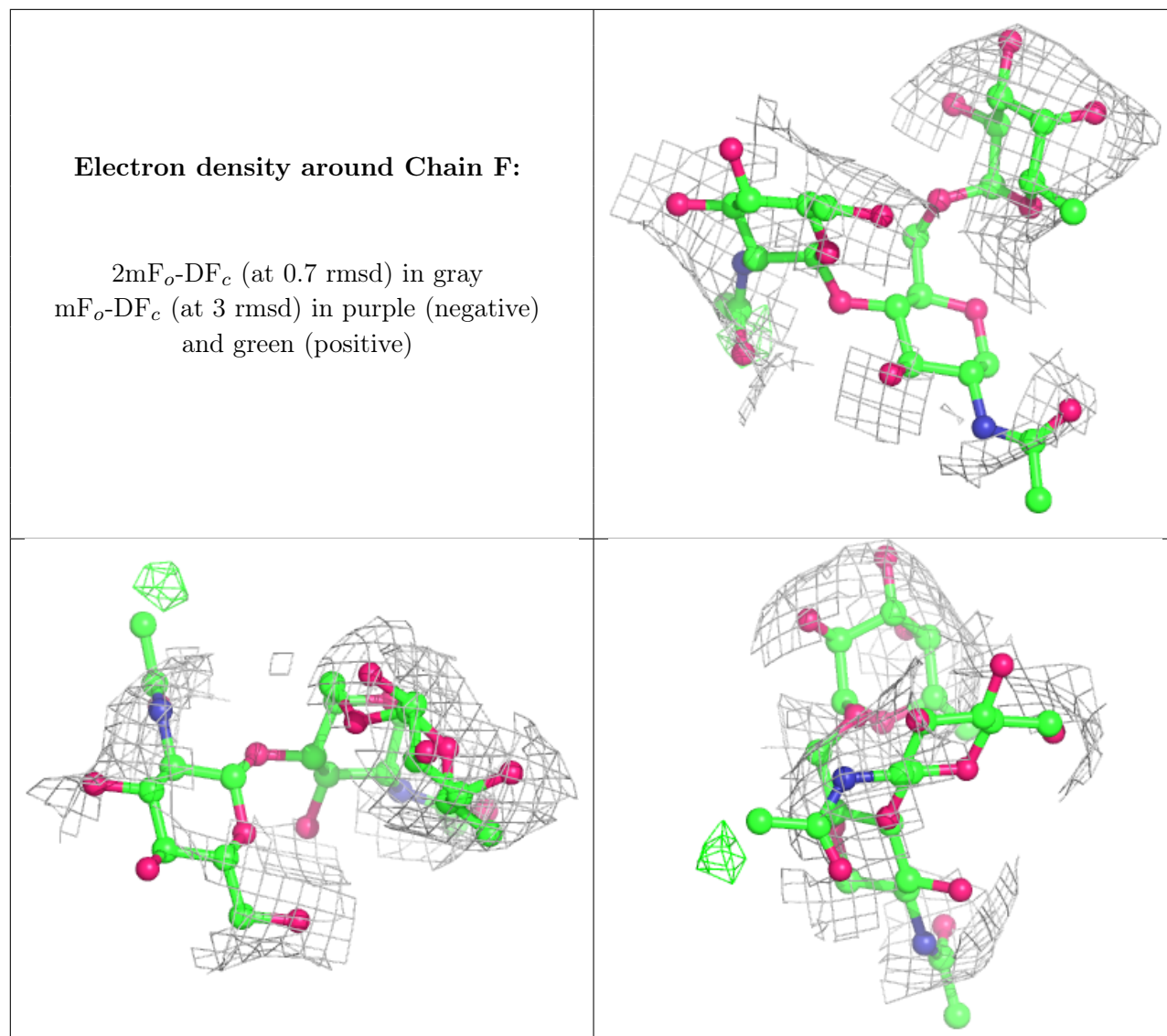
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 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
7	BMA	G	3	11/12	0.67	0.30	160,165,169,169	0
9	NAG	L	1	14/15	0.80	0.28	152,159,173,184	0
6	NAG	F	2	14/15	0.81	0.35	179,204,207,207	0
8	BMA	I	3	11/12	0.83	0.33	186,198,199,200	0
6	FUC	H	3	10/11	0.83	0.28	146,154,162,162	0
8	NAG	I	5	14/15	0.84	0.34	160,168,180,181	0
8	NAG	I	2	14/15	0.84	0.33	153,185,196,200	0
6	NAG	K	2	14/15	0.85	0.34	173,193,201,203	0
9	NAG	J	1	14/15	0.85	0.16	181,187,195,196	0
8	MAN	I	4	11/12	0.85	0.34	185,197,203,208	0
9	FUC	L	2	10/11	0.85	0.44	187,197,205,206	0
9	FUC	J	2	10/11	0.86	0.33	178,184,186,189	0
6	NAG	H	2	14/15	0.88	0.23	146,173,183,183	0
6	NAG	K	1	14/15	0.88	0.26	155,179,193,198	0
8	NAG	I	1	14/15	0.90	0.13	147,159,171,177	0
6	FUC	F	3	10/11	0.90	0.33	177,185,193,194	0
6	NAG	F	1	14/15	0.90	0.27	177,187,197,204	0
6	FUC	K	3	10/11	0.92	0.17	180,188,194,201	0
6	NAG	H	1	14/15	0.94	0.15	135,148,159,159	0
7	NAG	G	2	14/15	0.94	0.15	133,151,167,174	0
8	FUC	I	6	10/11	0.95	0.15	161,170,173,174	0
7	NAG	G	1	14/15	0.96	0.18	138,152,170,180	0

The following is a graphical depiction of the model fit to experimental electron density for oligosac-

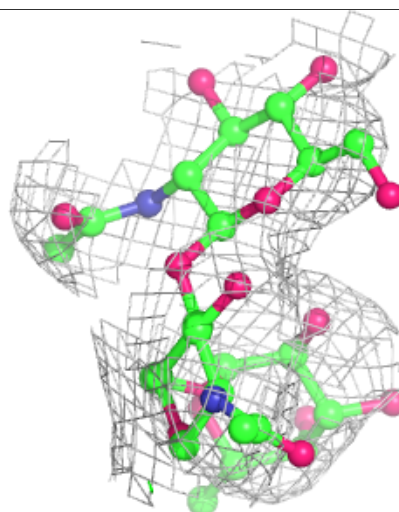
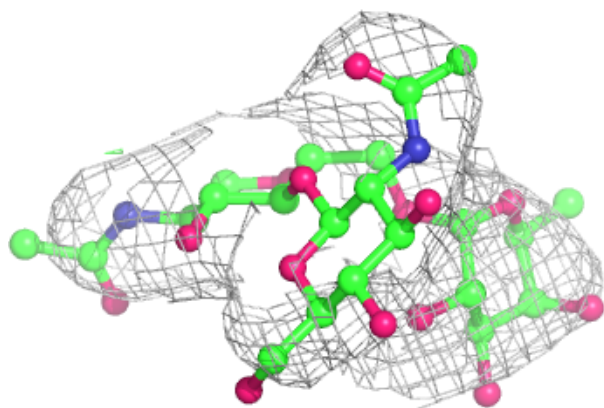


charide. Each fit is shown from different orientation to approximate a three-dimensional view.



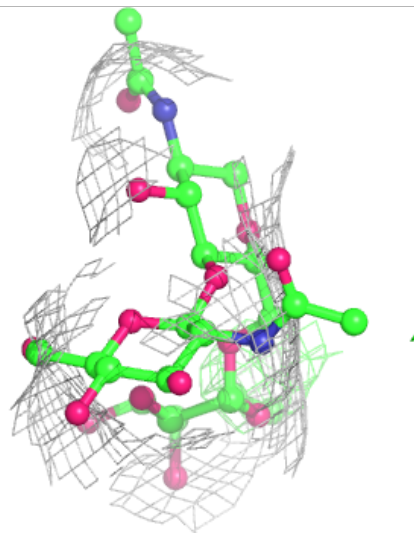
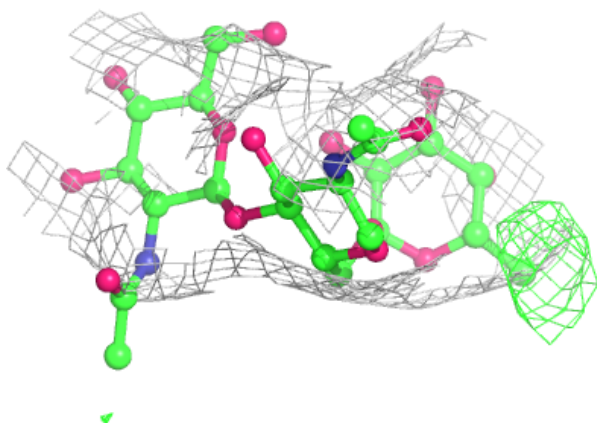
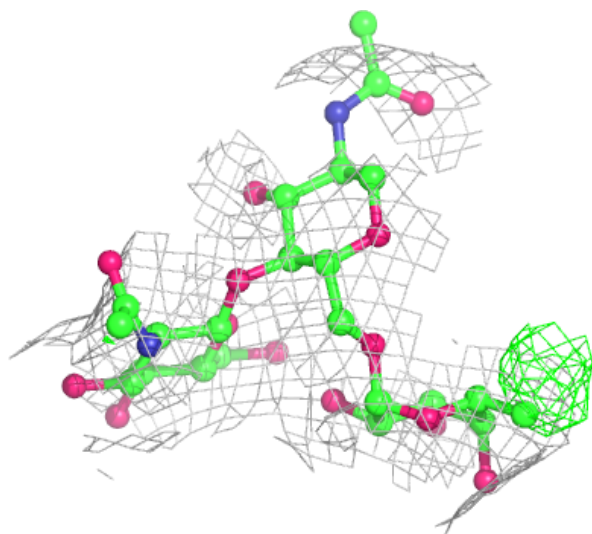
**Electron density around Chain H:**

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



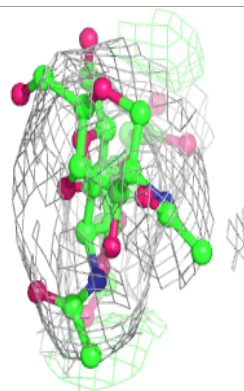
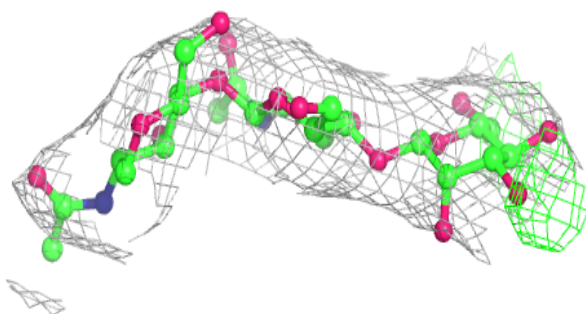
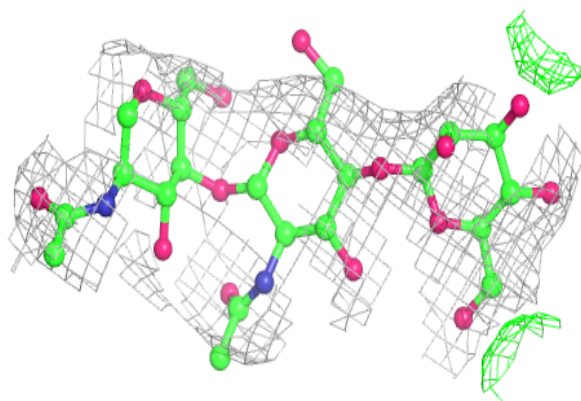
**Electron density around Chain K:**

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



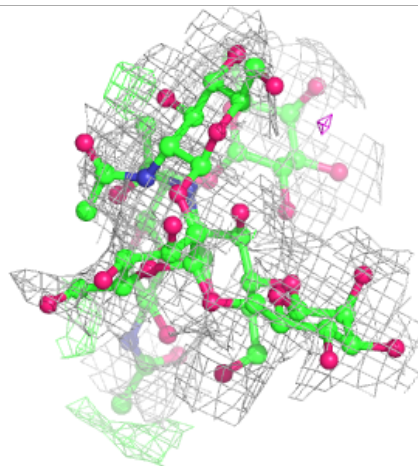
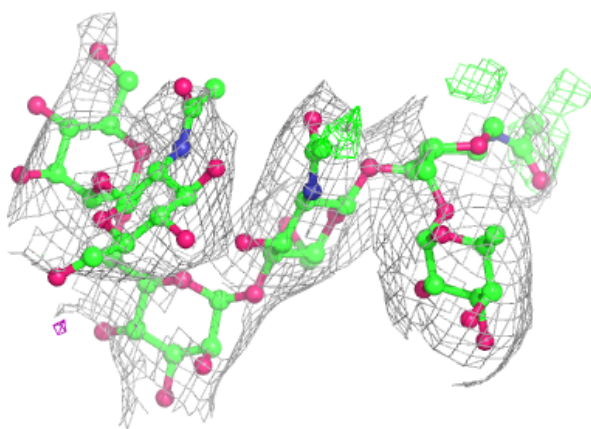
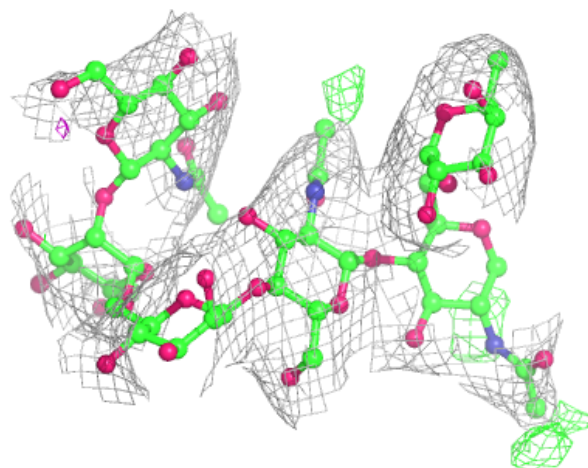
**Electron density around Chain G:**

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



**Electron density around Chain I:**

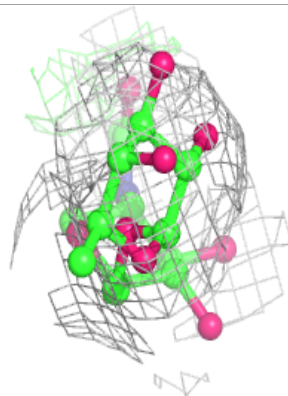
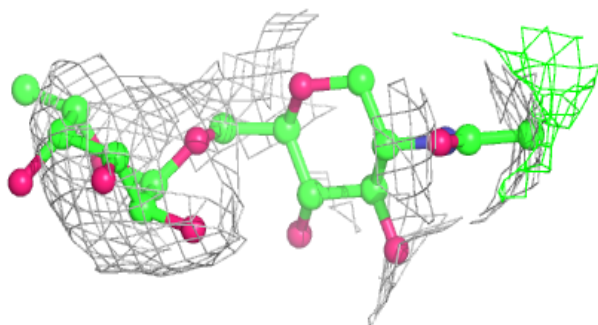
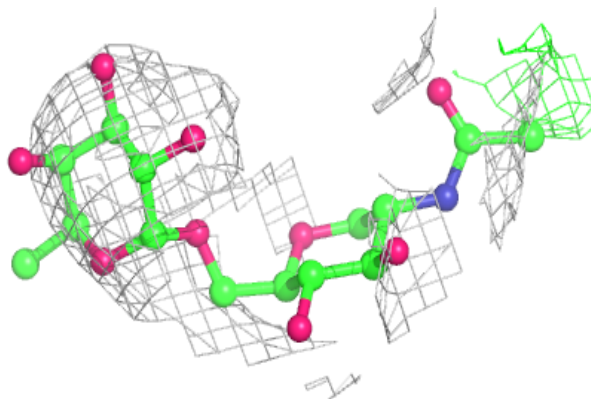
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



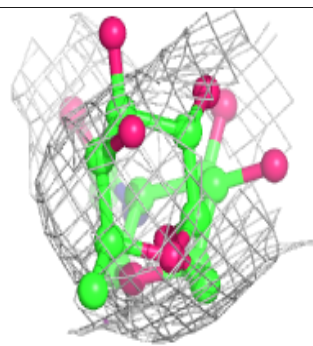
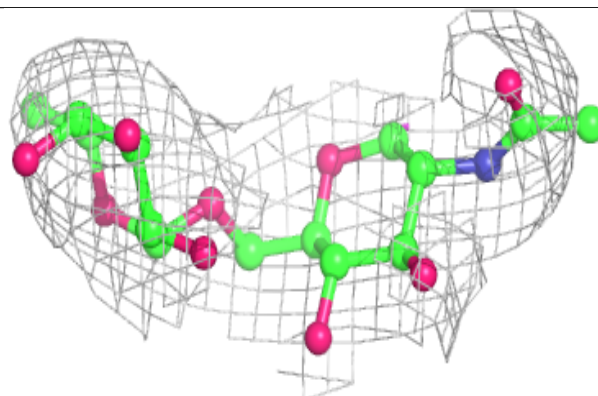
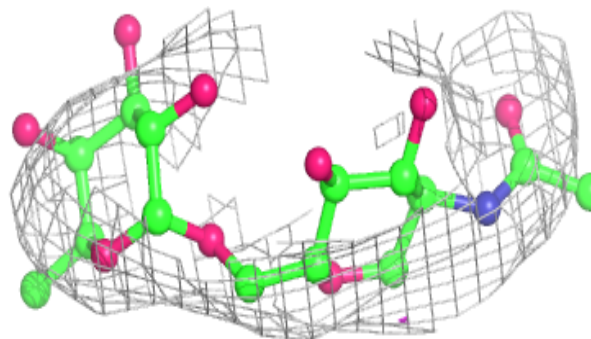


**Electron density around Chain J:**

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

**Electron density around Chain 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<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( $\text{\AA}^2$ )	Q<0.9
10	NAG	E	1001	14/15	0.84	0.19	152,163,168,169	0
10	NAG	E	1020	14/15	0.84	0.24	155,162,168,169	0
10	NAG	E	1008	14/15	0.92	0.15	134,150,160,163	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.