WORLDWIDE wwPDB PROTEIN DATA BANK

wwPDB X-ray Structure Validation Summary Report ⓘ

Nov 20, 2023 – 07:29 PM JST

PDB ID	:	7DEA
Title	:	Structure of an avian influenza H5 hemagglutinin from the influenza virus A/duck Northern China/22/2017 (H5N6)
Authors	:	Sun, H.; Sun, H.; Song, J.; Zhang, W.; Wei, X.; Qi, J.; Gao, G.F.; Liu, J.
Deposited on	:	2020-11-03
Resolution	:	2.84 Å(reported)

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

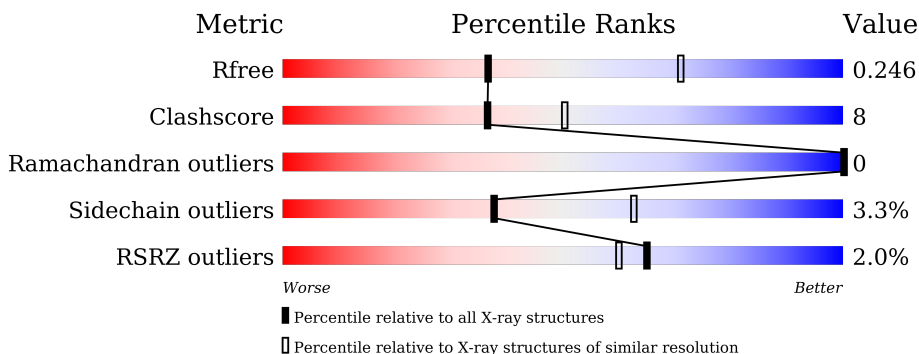|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 2.84 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	Percentile Ranks	Value
Rfree		0.246
Clashscore		8
Ramachandran outliers		0
Sidechain outliers		3.3%
RSRZ outliers		2.0%

Worse ← → Better

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1031 (2.86-2.82)
Clashscore	141614	1078 (2.86-2.82)
Ramachandran outliers	138981	1050 (2.86-2.82)
Sidechain outliers	138945	1051 (2.86-2.82)
RSRZ outliers	127900	1019 (2.86-2.82)

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	319	84% · · · · · · · 15% ·
1	C	319	% 80% · · · · · · · 19% ·
1	E	319	77% · · · · · · · 22% ·
2	B	171	6% 80% · · · · · · · 19% ·
2	D	171	5% 80% · · · · · · · 18% ·
2	F	171	5% 81% · · · · · · · 17% ·

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Mol	Chain	Length	Quality of chain
3	G	2	50% 50%
3	H	2	50% 50%
3	I	2	50% 50%

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 11980 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.
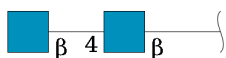
- Molecule 1 is a protein called Hemagglutinin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	319	Total	C	N	O	S	0	0	0
			2537	1596	445	479	17			
1	E	319	Total	C	N	O	S	0	0	0
			2537	1596	445	479	17			
1	C	319	Total	C	N	O	S	0	0	0
			2537	1596	445	479	17			

- Molecule 2 is a protein called Hemagglutinin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	F	171	Total	C	N	O	S	0	0	0
			1396	867	244	277	8			
2	D	171	Total	C	N	O	S	0	0	0
			1396	867	244	277	8			
2	B	171	Total	C	N	O	S	0	0	0
			1396	867	244	277	8			

- Molecule 3 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	G	2	Total	C	N	O	0	0	0
			28	16	2	10			
3	H	2	Total	C	N	O	0	0	0
			28	16	2	10			
3	I	2	Total	C	N	O	0	0	0
			28	16	2	10			

- Molecule 4 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$) (labeled as "Ligand of Interest" by depositor).
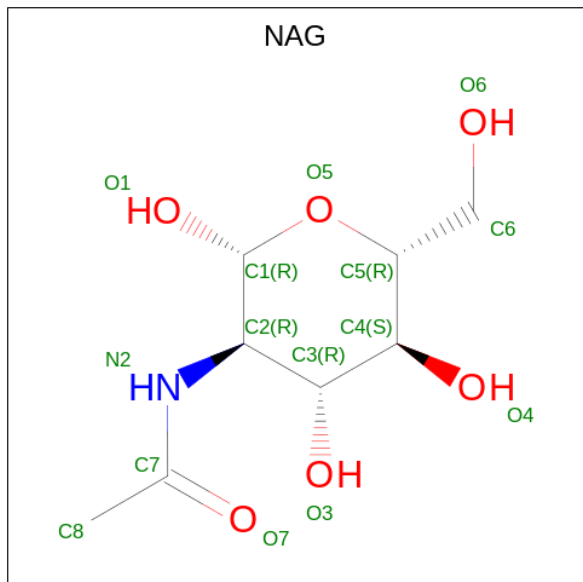
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total	C	N	O	0	0
			14	8	1	5		
4	A	1	Total	C	N	O	0	0
			14	8	1	5		
4	E	1	Total	C	N	O	0	0
			14	8	1	5		
4	E	1	Total	C	N	O	0	0
			14	8	1	5		
4	C	1	Total	C	N	O	0	0
			14	8	1	5		
4	C	1	Total	C	N	O	0	0
			14	8	1	5		

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	3	Total	O	0	0
			3	3		
5	E	1	Total	O	0	0
			1	1		
5	F	2	Total	O	0	0
			2	2		
5	C	5	Total	O	0	0
			5	5		

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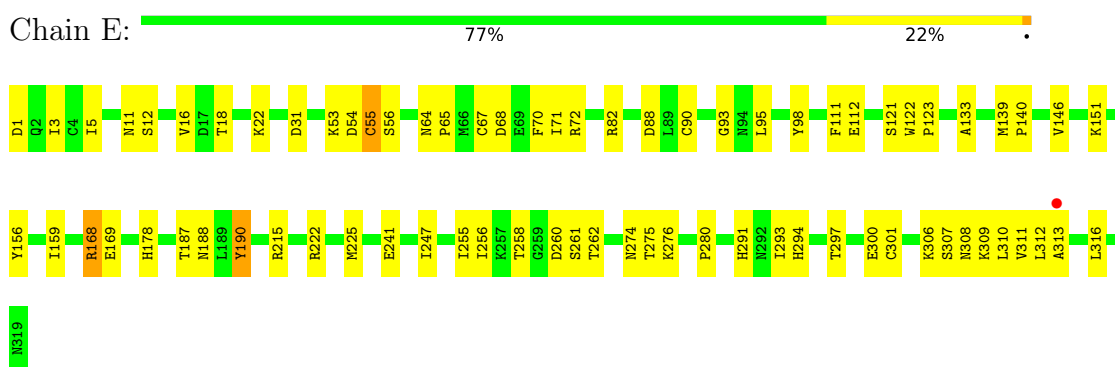| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	D	2	Total 2	O 2	0	0

3 Residue-property plots ⓘ

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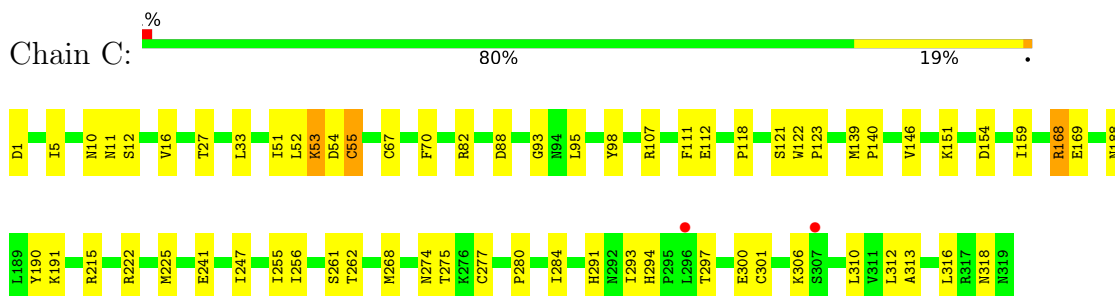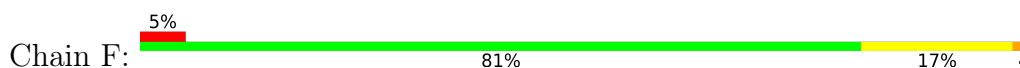
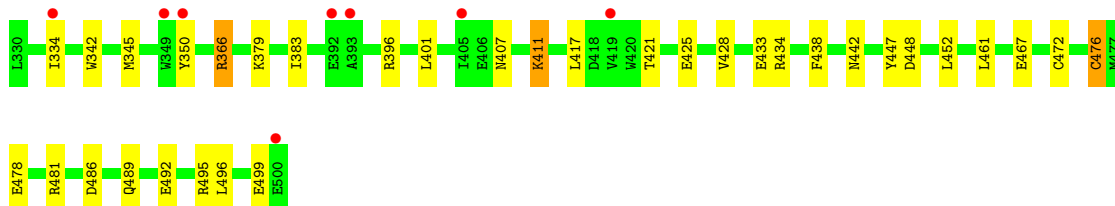- Molecule 1: Hemagglutinin

Chain A:

- Molecule 1: Hemagglutinin

Chain E:

- Molecule 1: Hemagglutinin

Chain C:

- Molecule 2: Hemagglutinin

Chain F:

L330 I334 W349 N356 K386 Q390 F391 E392 A393 L401 E402 R403 E406 K411 L417 D418 T421 E425 V428 R434 F438 N442 Y447 R455 D456 E460 L461 F466 E467 F468 Y469 H470 K471 E478 S479 V480 R481 E492 E493

A494 R495 L496 K497 E500

• Molecule 2: Hemagglutinin

Chain D:

5%

80%   18%

L330 I334 W342 M345 W349 Y350 R366 K379 I383 E392 A393 R396 L401 I405 E406 N407 K411 L417 D418 V419 W420 T421 E425 V428 E433 R434 F438 N442 Y447 D448 L452 L461 E467 C472 C476 M477

E478 R481 D486 Q489 E492 R495 L496 E499 E500

• Molecule 2: Hemagglutinin

Chain B:

6%

80%   19%

L330 I334 R366 Q370 K371 A372 I373 T389 Q390 N400 R403 N407 L417 T421 V428 L429 M430 E433 F438 N442 Y447 D448 L452 Q453 L454 R455 D456 E460 L461 F466 E467 F468 Y469 D473 N474 E475 E478 S479 V480 R481

Y485 D486 Y487 P488 Q489 Y490 A494 R495 L496 K497 R498 E499 E500

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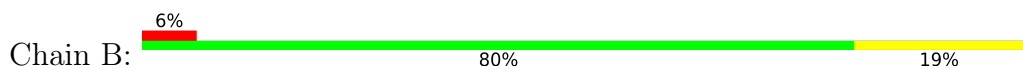
Chain G:

50%   50%

NAG1 NAG2

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

Chain H:

50%   50%

NAG1 NAG2

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

Chain I:

50%   50%

NAG1 NAG2

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	189.41Å 109.37Å 135.91Å 90.00° 90.02° 90.00°	Depositor
Resolution (Å)	135.91 – 2.84 40.86 – 2.84	Depositor EDS
% Data completeness (in resolution range)	99.3 (135.91-2.84) 99.3 (40.86-2.84)	Depositor EDS
R_{merge}	0.17	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.70 (at 2.86Å)	Xtriage
Refinement program	REFMAC 5.8.0218	Depositor
R, R_{free}	0.208 , 0.246 0.207 , 0.246	Depositor DCC
R_{free} test set	1988 reflections (3.06%)	wwPDB-VP
Wilson B-factor (Å^2)	69.5	Xtriage
Anisotropy	0.126	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 27.6	EDS
L-test for twinning[2]	$< \|L\| > = 0.50, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.010 for -1/2*h+3/2*k,1/2*h+1/2*k,-l 0.008 for -1/2*h-3/2*k,-1/2*h+1/2*k,-l 0.448 for 1/2*h+3/2*k,1/2*h-1/2*k,-l 0.447 for 1/2*h-3/2*k,-1/2*h-1/2*k,-l 0.008 for -h,-k,l	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	11980	wwPDB-VP
Average B, all atoms (Å^2)	70.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.10% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.

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

5   Model quality ⓘ

5.1   Standard geometry ⓘ

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

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	0.34	0/2599	0.56	0/3534
1	C	0.32	0/2599	0.54	0/3534
1	E	0.44	0/2599	0.56	0/3534
2	B	0.40	0/1423	0.60	0/1913
2	D	0.34	0/1423	0.54	0/1913
2	F	0.43	0/1423	0.54	0/1913
All	All	0.38	0/12066	0.55	0/16341

There are no bond length outliers.

There are no bond angle outliers.

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	2537	0	2472	33	0
1	C	2537	0	2472	38	0
1	E	2537	0	2472	50	0
2	B	1396	0	1297	28	0
2	D	1396	0	1299	34	0
2	F	1396	0	1297	27	0
3	G	28	0	25	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	H	28	0	25	0	0
3	I	28	0	25	0	0
4	A	28	0	26	0	0
4	C	28	0	26	0	0
4	E	28	0	26	0	0
5	A	3	0	0	0	0
5	C	5	0	0	0	0
5	D	2	0	0	0	0
5	E	1	0	0	0	0
5	F	2	0	0	0	0
All	All	11980	0	11462	183	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 8.

The worst 5 of 183 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:E:55:CYS:HB3	1:E:67:CYS:SG	1.58	1.41
1:C:55:CYS:SG	1:C:67:CYS:SG	1.15	1.14
1:A:55:CYS:SG	1:A:67:CYS:SG	1.14	1.13
1:E:55:CYS:CB	1:E:67:CYS:SG	2.36	1.12
2:D:472:CYS:CB	2:D:476:CYS:SG	2.42	1.06

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	317/319 (99%)	300 (95%)	17 (5%)	0	100	100
1	C	317/319 (99%)	302 (95%)	15 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	E	317/319 (99%)	299 (94%)	18 (6%)	0	100	100
2	B	169/171 (99%)	159 (94%)	10 (6%)	0	100	100
2	D	169/171 (99%)	160 (95%)	9 (5%)	0	100	100
2	F	169/171 (99%)	160 (95%)	9 (5%)	0	100	100
All	All	1458/1470 (99%)	1380 (95%)	78 (5%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	286/286 (100%)	278 (97%)	8 (3%)	43	68
1	C	286/286 (100%)	276 (96%)	10 (4%)	36	61
1	E	286/286 (100%)	277 (97%)	9 (3%)	40	64
2	B	147/147 (100%)	142 (97%)	5 (3%)	37	62
2	D	147/147 (100%)	143 (97%)	4 (3%)	44	69
2	F	147/147 (100%)	140 (95%)	7 (5%)	25	49
All	All	1299/1299 (100%)	1256 (97%)	43 (3%)	38	63

5 of 43 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	54	ASP
2	D	366	ARG
1	C	55	CYS
1	C	190	TYR
2	D	476	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 8 such sidechains are listed below:

Mol	Chain	Res	Type
2	B	400	ASN
1	C	291	HIS
2	F	390	GLN
1	E	291	HIS
1	C	15	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

6 monosaccharides are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
3	NAG	G	1	3,1	14,14,15	0.24	0	17,19,21	0.61	0
3	NAG	G	2	3	14,14,15	1.17	1 (7%)	17,19,21	0.86	1 (5%)
3	NAG	H	1	3,1	14,14,15	0.45	0	17,19,21	0.80	0
3	NAG	H	2	3	14,14,15	1.71	1 (7%)	17,19,21	1.28	2 (11%)
3	NAG	I	1	3,1	14,14,15	0.46	0	17,19,21	0.65	0
3	NAG	I	2	3	14,14,15	1.09	1 (7%)	17,19,21	0.79	1 (5%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	G	1	3,1	-	1/6/23/26	0/1/1/1
3	NAG	G	2	3	-	0/6/23/26	0/1/1/1
3	NAG	H	1	3,1	-	2/6/23/26	0/1/1/1
3	NAG	H	2	3	-	1/6/23/26	0/1/1/1
3	NAG	I	1	3,1	-	2/6/23/26	0/1/1/1
3	NAG	I	2	3	-	2/6/23/26	0/1/1/1

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	H	2	NAG	O5-C1	-5.90	1.34	1.43
3	G	2	NAG	O5-C1	-4.16	1.37	1.43
3	I	2	NAG	O5-C1	-3.40	1.38	1.43

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	H	2	NAG	C4-C3-C2	4.30	117.32	111.02
3	I	2	NAG	C4-C3-C2	2.34	114.45	111.02
3	H	2	NAG	C3-C4-C5	2.25	114.25	110.24
3	G	2	NAG	C1-O5-C5	-2.14	109.30	112.19

There are no chirality outliers.

5 of 8 torsion outliers are listed below:

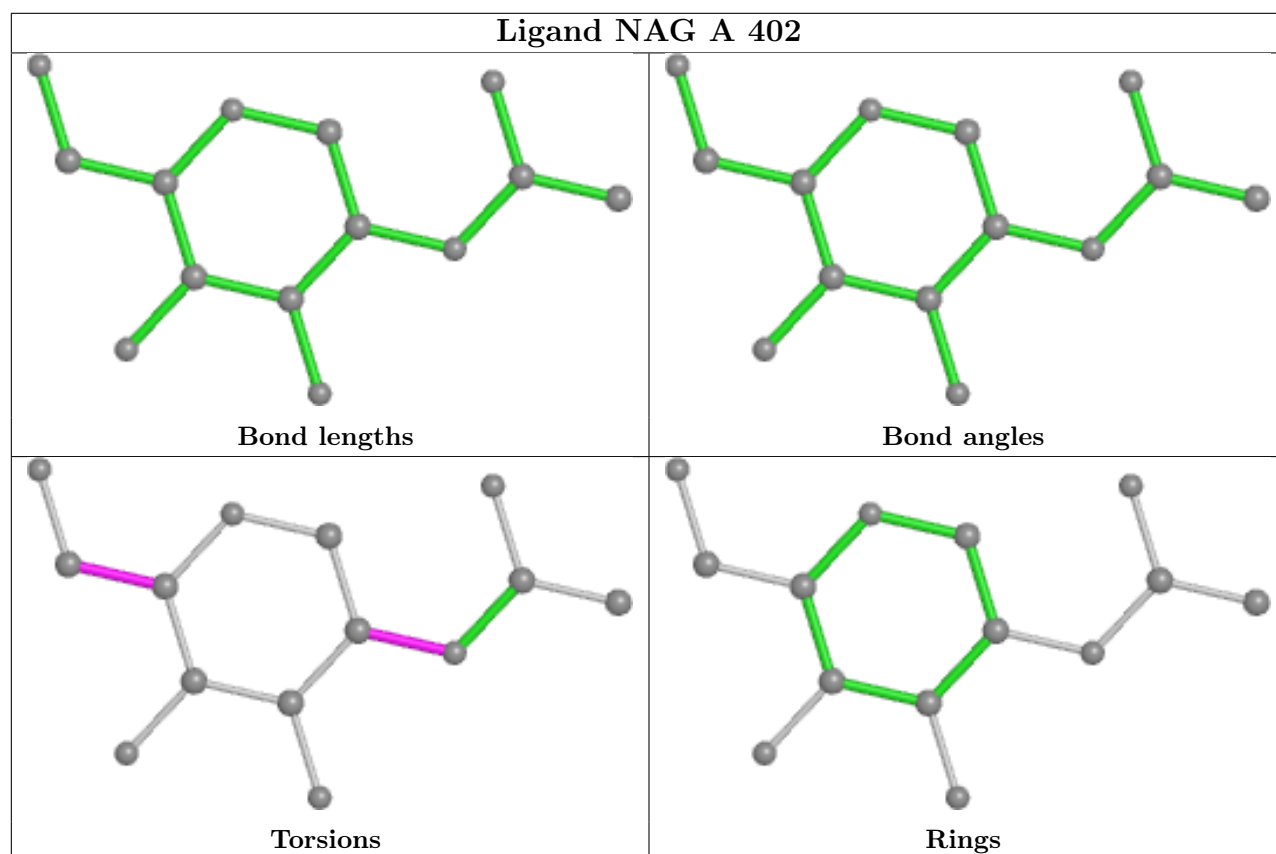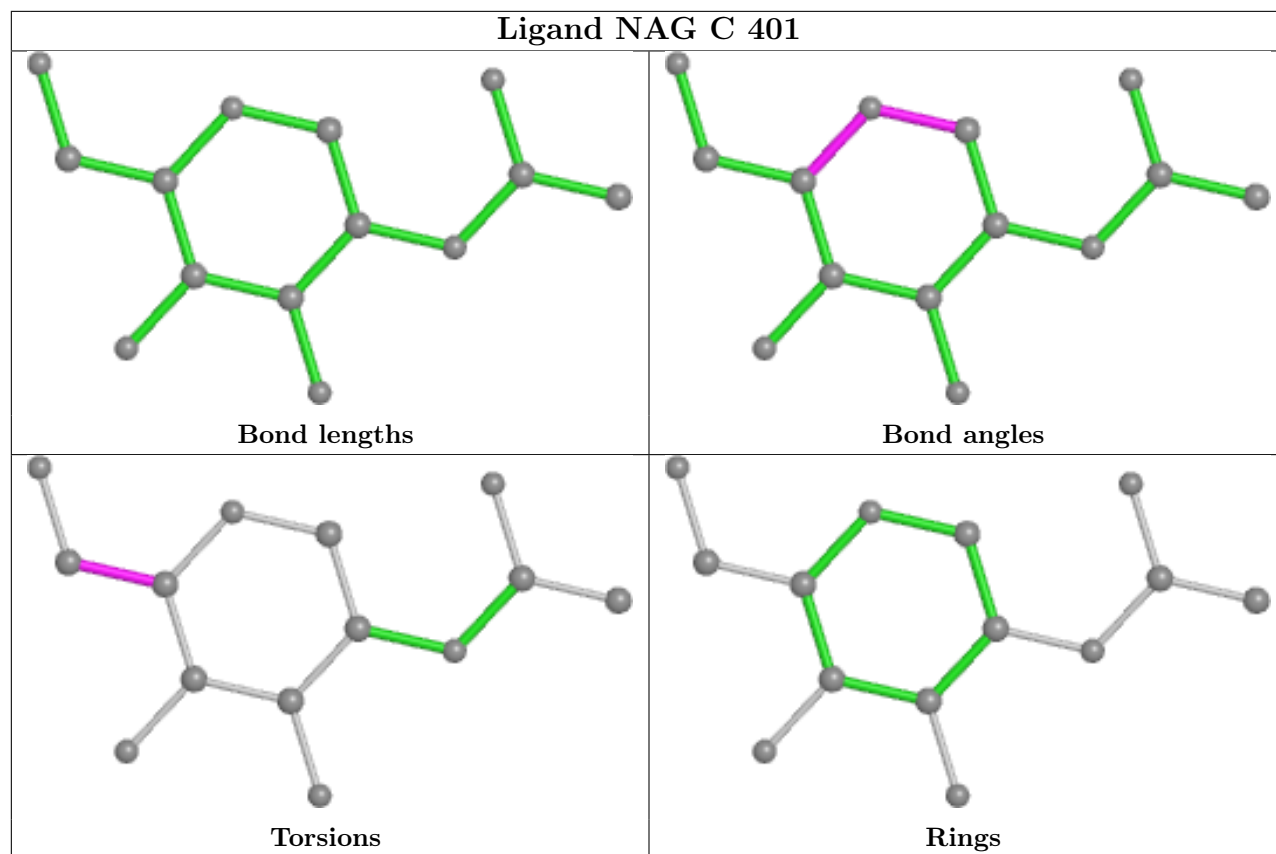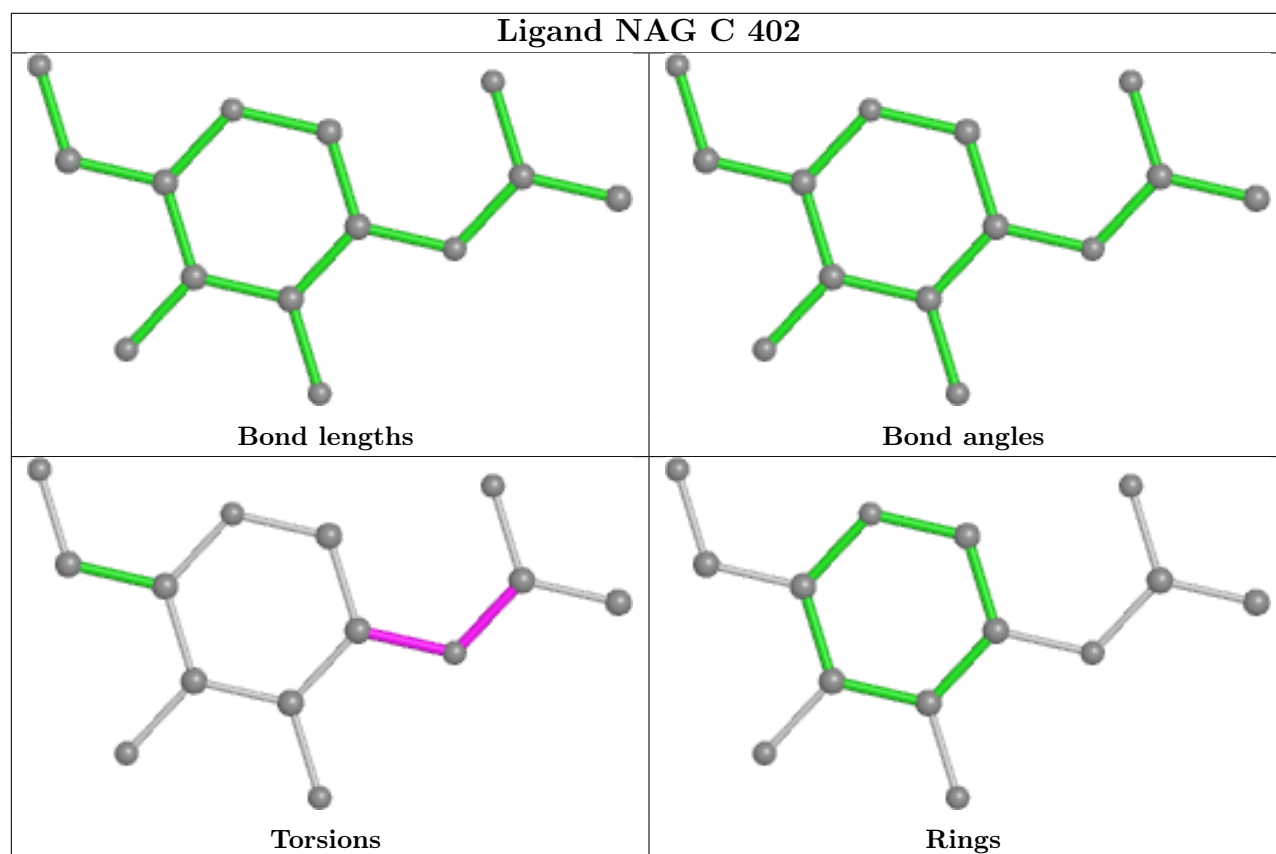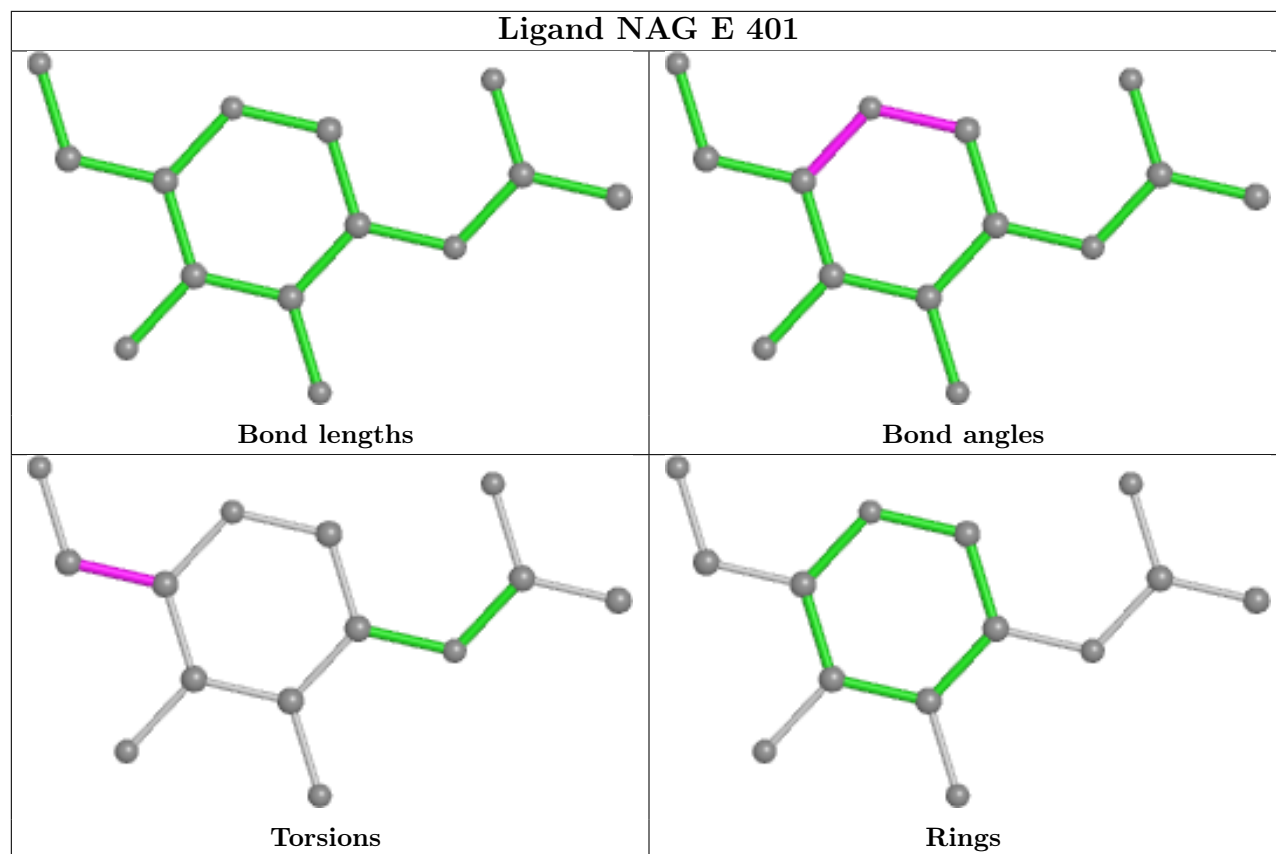| Mol	Chain	Res	Type	Atoms
3	I	1	NAG	C4-C5-C6-O6
3	I	1	NAG	O5-C5-C6-O6
3	I	2	NAG	O5-C5-C6-O6
3	I	2	NAG	C4-C5-C6-O6
3	H	1	NAG	O5-C5-C6-O6

There are no ring outliers.

No monomer is involved in short contacts.
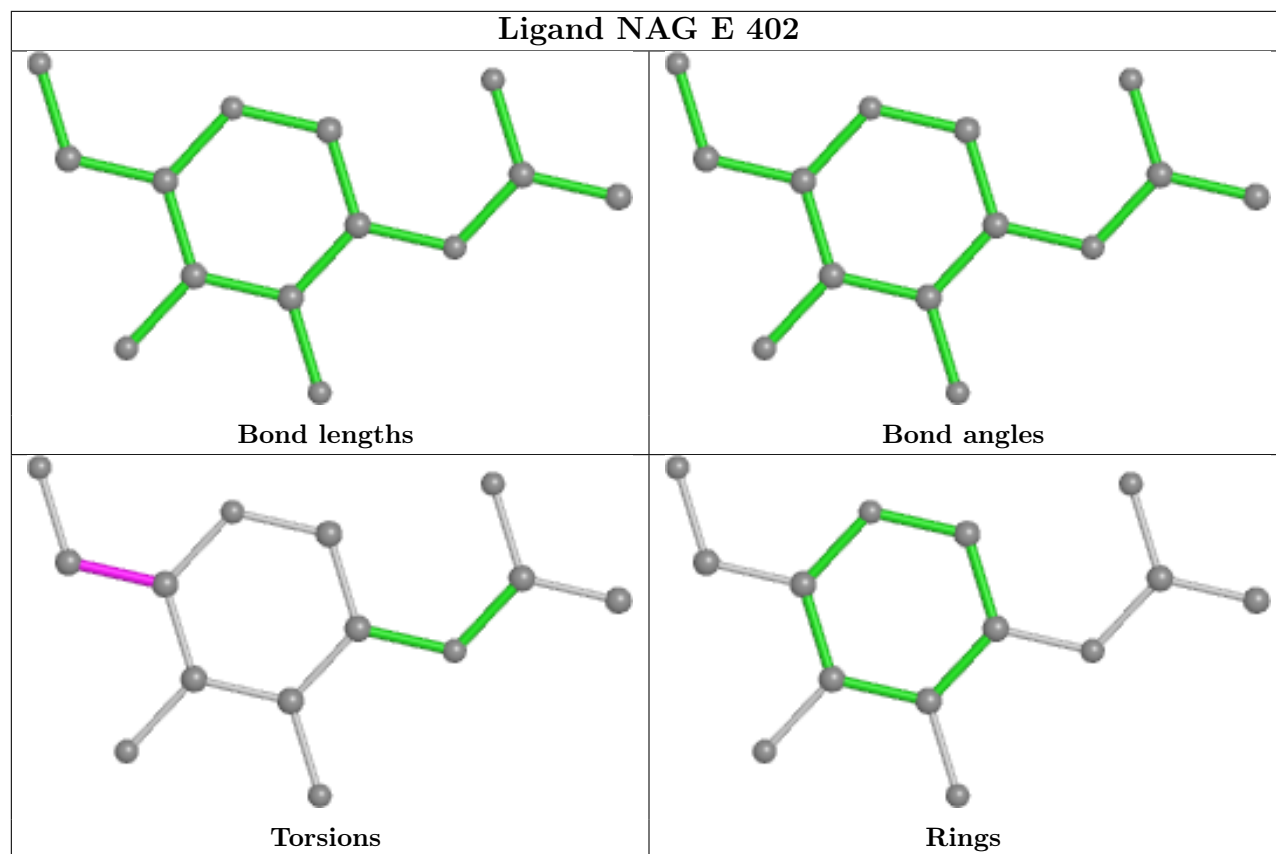
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

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
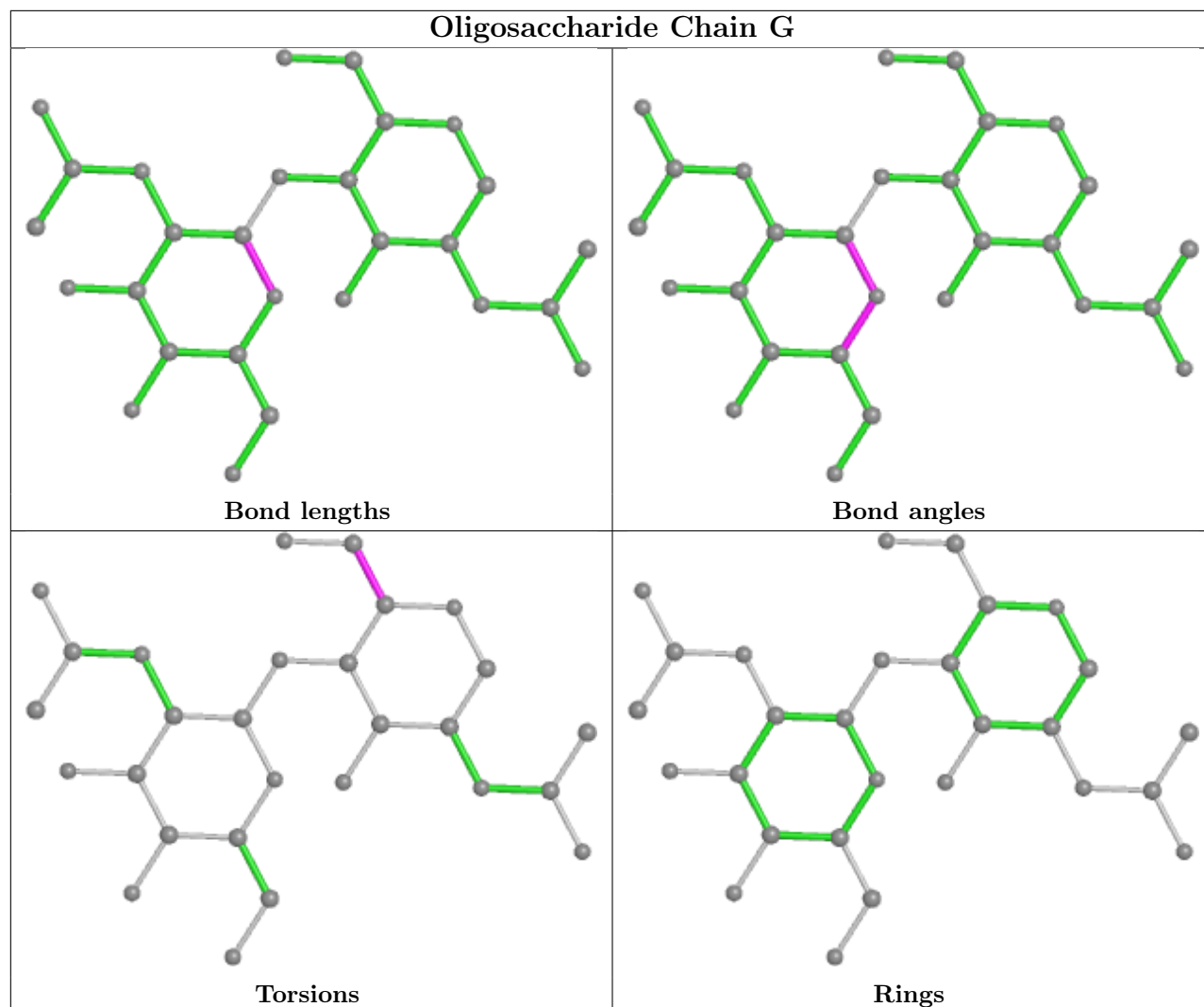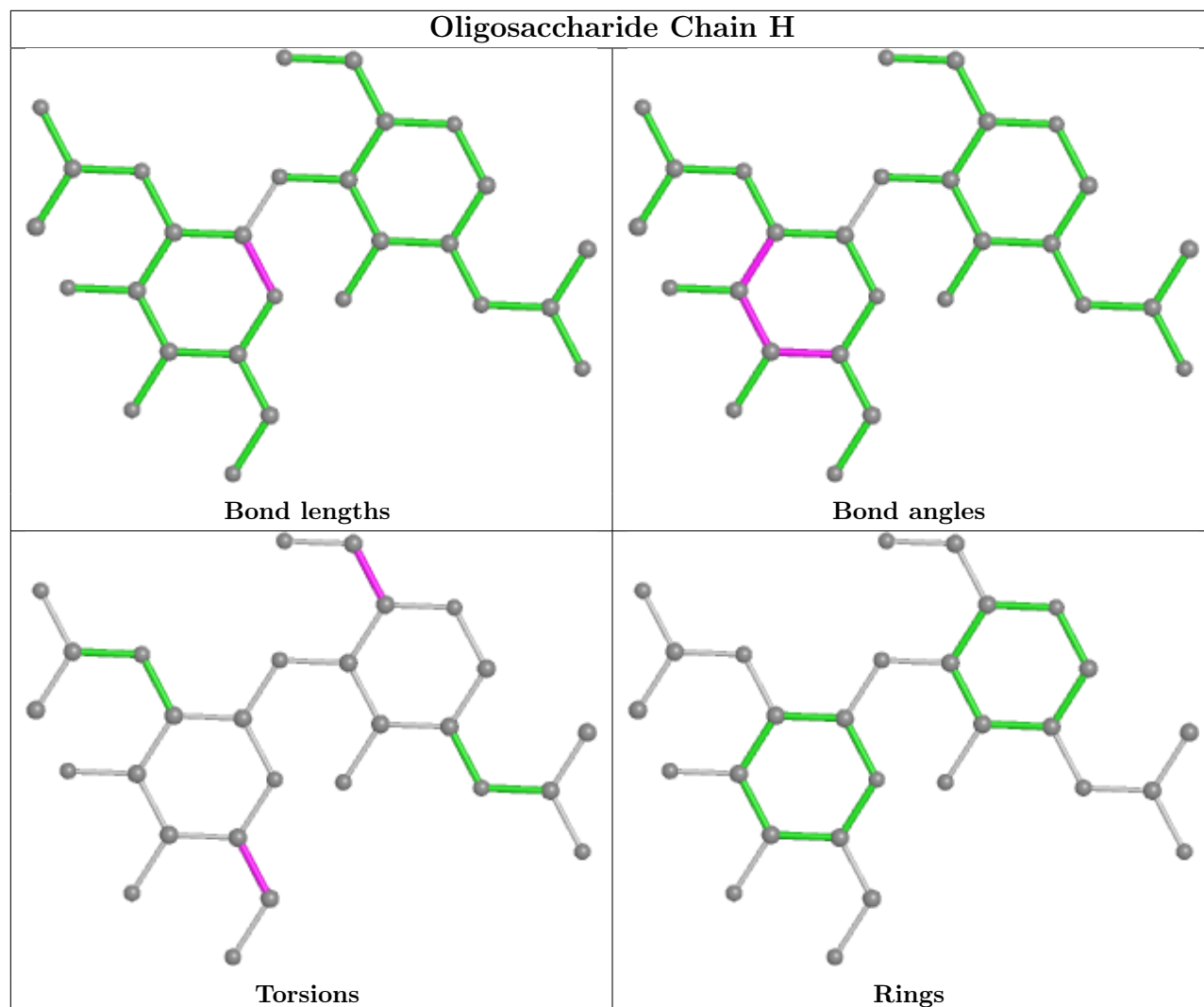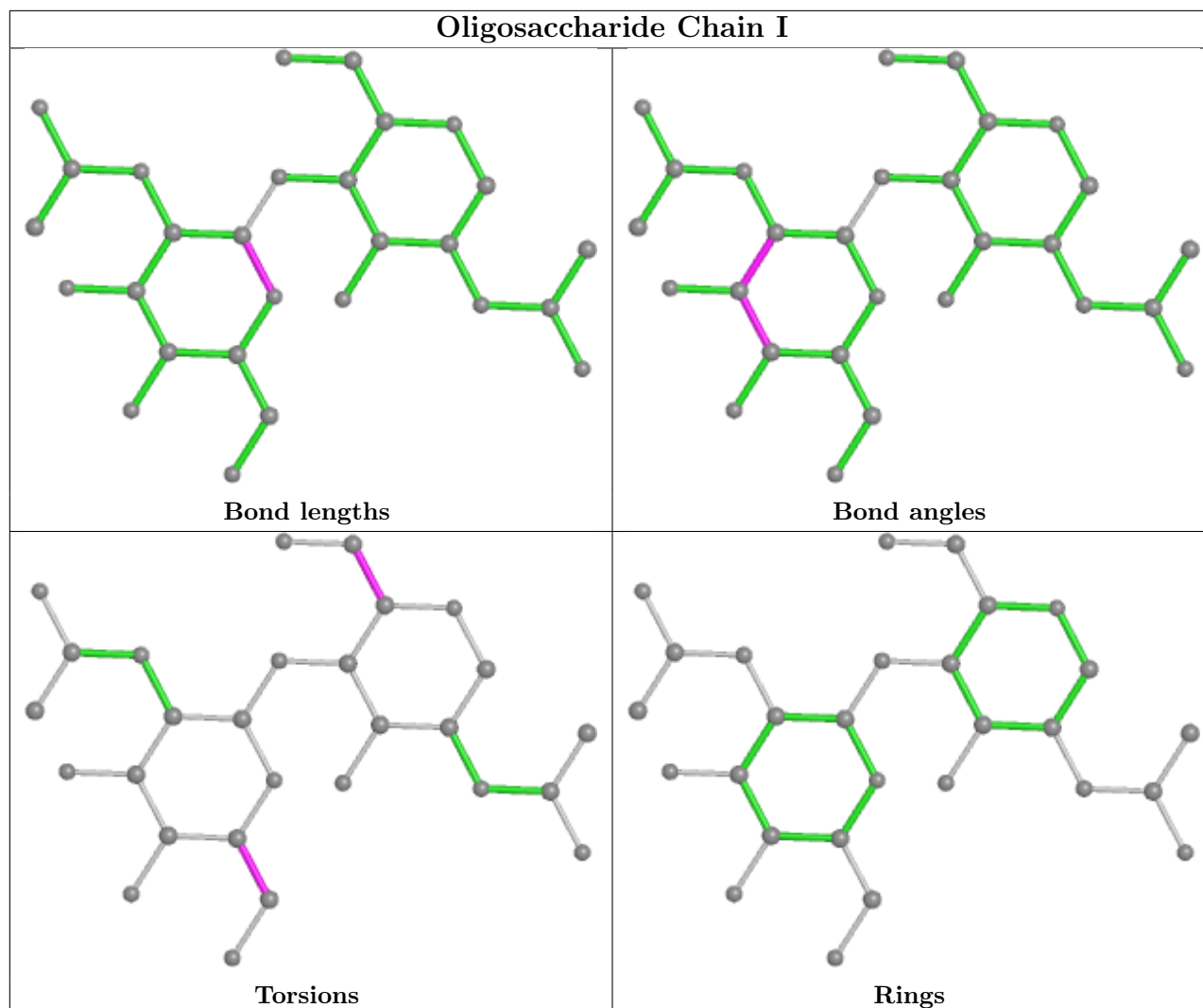
5.6 Ligand geometry (i)

6 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	$\#|Z| > 2$
4	NAG	A	401	1	14,14,15	0.55	0	17,19,21	0.74	1 (5%)
4	NAG	C	401	1	14,14,15	0.55	0	17,19,21	0.68	1 (5%)
4	NAG	A	402	1	14,14,15	0.35	0	17,19,21	0.77	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
4	NAG	E	401	1	14,14,15	0.55	0	17,19,21	0.79	1 (5%)
4	NAG	C	402	1	14,14,15	0.28	0	17,19,21	0.69	0
4	NAG	E	402	1	14,14,15	0.28	0	17,19,21	0.65	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	A	401	1	-	2/6/23/26	0/1/1/1
4	NAG	C	401	1	-	2/6/23/26	0/1/1/1
4	NAG	A	402	1	-	4/6/23/26	0/1/1/1
4	NAG	E	401	1	-	2/6/23/26	0/1/1/1
4	NAG	C	402	1	-	3/6/23/26	0/1/1/1
4	NAG	E	402	1	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	E	401	NAG	C1-O5-C5	2.77	115.95	112.19
4	A	401	NAG	C1-O5-C5	2.68	115.82	112.19
4	C	401	NAG	C1-O5-C5	2.40	115.44	112.19

There are no chirality outliers.

5 of 15 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	C	402	NAG	C3-C2-N2-C7
4	C	402	NAG	C8-C7-N2-C2
4	C	402	NAG	O7-C7-N2-C2
4	A	401	NAG	C4-C5-C6-O6
4	E	401	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 all instances of the Ligand of Interest. In

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

Ligand NAG A 401

Ligand NAG C 401	
Bond lengths	Bond angles
Torsions	Rings

Ligand NAG A 402	
Bond lengths	Bond angles
Torsions	Rings

Ligand NAG E 401

Bond lengths

Bond angles

Torsions

Rings

Ligand NAG C 402

Bond lengths

Bond angles

Torsions

Rings

Ligand NAG E 402

Bond lengths

Bond angles

Torsions

Rings
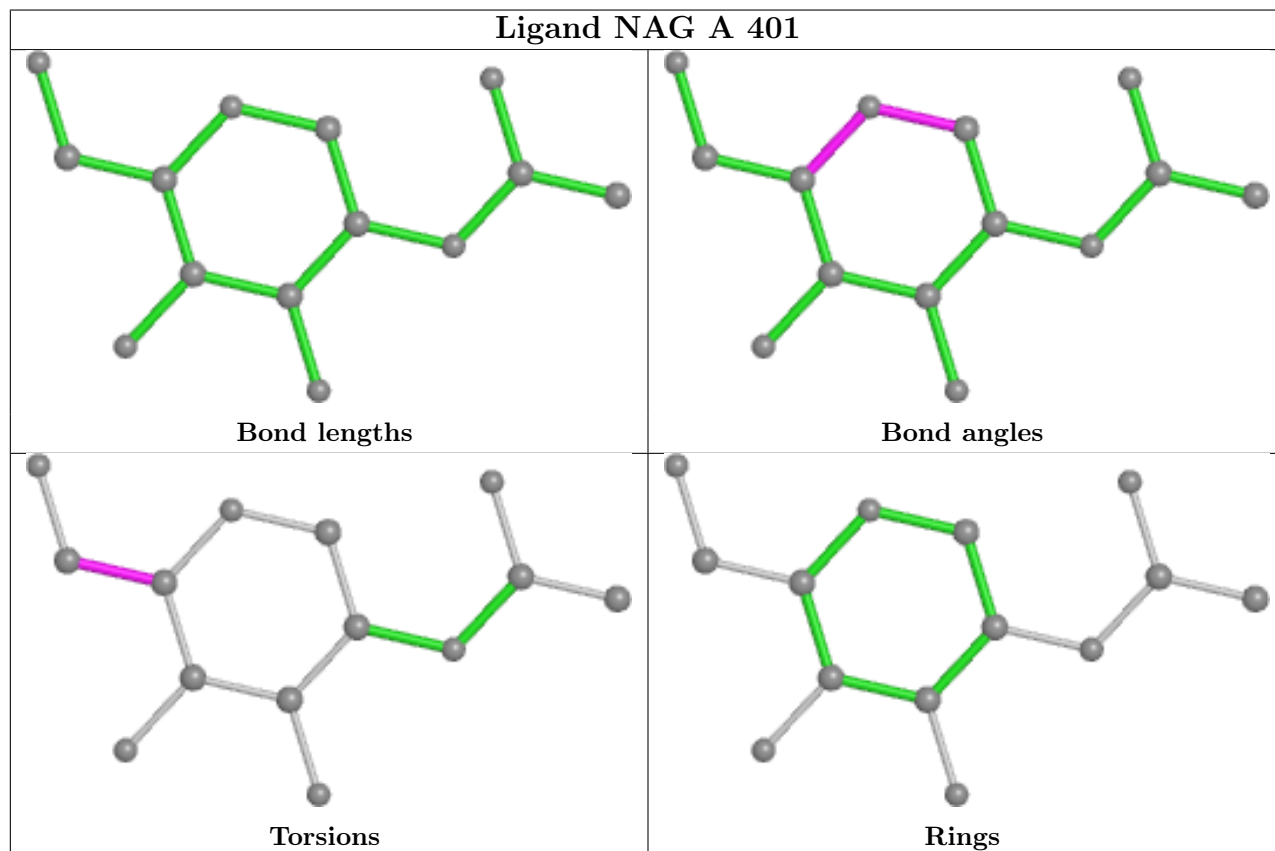
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	319/319 (100%)	0.28	0	100	100	39, 61, 86, 104	0
1	C	319/319 (100%)	0.31	2 (0%)	89	88	38, 61, 85, 103	0
1	E	319/319 (100%)	0.29	1 (0%)	94	93	41, 61, 85, 108	0
2	B	171/171 (100%)	0.45	10 (5%)	23	16	45, 80, 119, 146	0
2	D	171/171 (100%)	0.39	8 (4%)	31	24	44, 80, 117, 146	0
2	F	171/171 (100%)	0.36	8 (4%)	31	24	47, 80, 119, 152	0
All	All	1470/1470 (100%)	0.33	29 (1%)	65	60	38, 66, 105, 152	0

The worst 5 of 29 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	390	GLN	4.1
2	B	494	ALA	4.1
2	D	500	GLU	3.9
2	B	497	LYS	3.7
2	F	469	TYR	3.2

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

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

6.3 Carbohydrates ⓘ

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

| Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	NAG	I	2	14/15	0.90	0.12	97,116,130,132	0
3	NAG	H	2	14/15	0.91	0.15	96,116,123,126	0
3	NAG	G	2	14/15	0.91	0.20	92,117,129,137	0
3	NAG	G	1	14/15	0.96	0.16	61,77,97,103	0
3	NAG	I	1	14/15	0.97	0.13	69,86,102,112	0
3	NAG	H	1	14/15	0.97	0.16	62,83,104,111	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 G:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
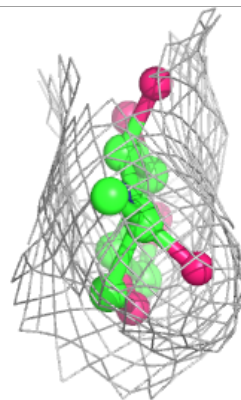$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative) and green (positive)
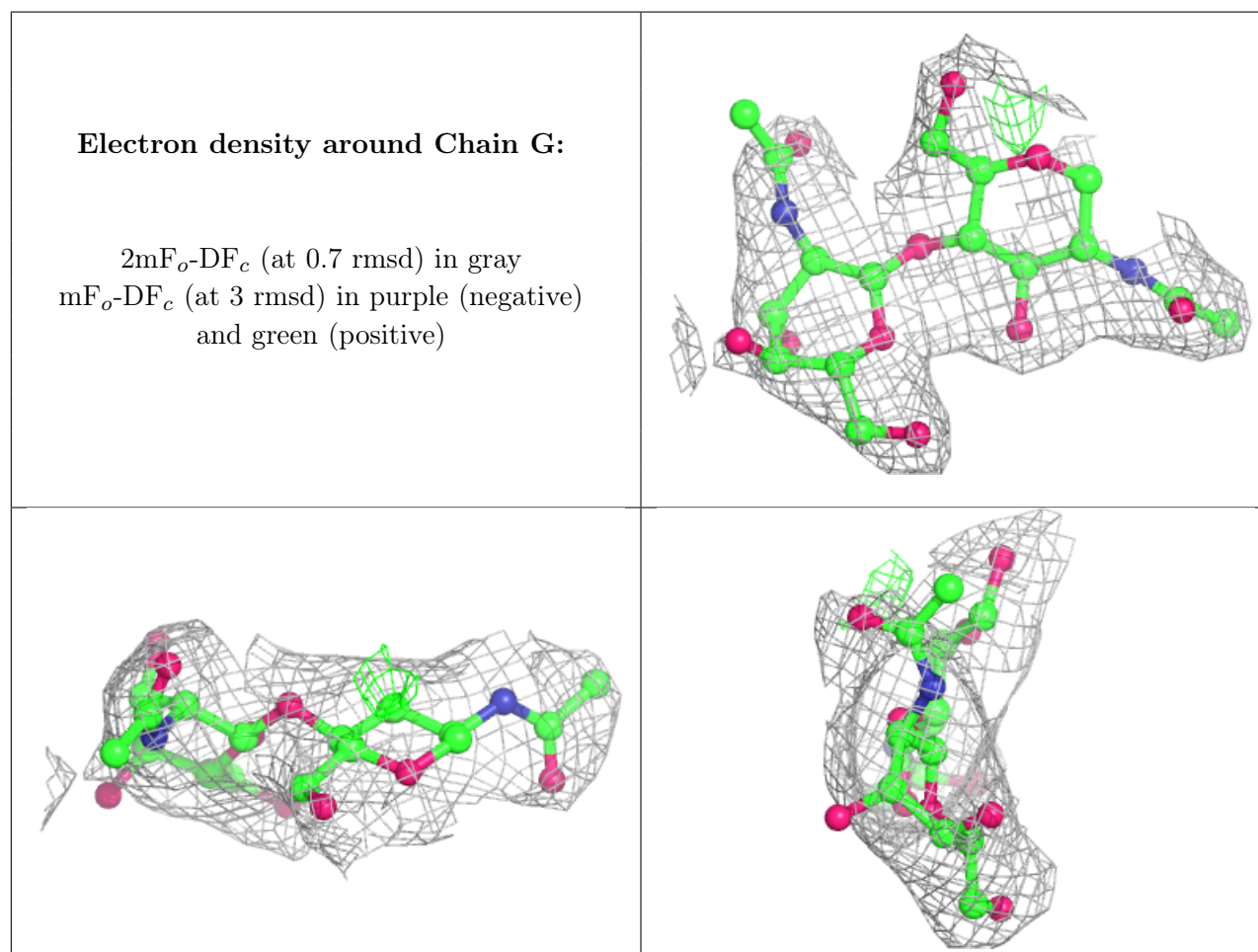
Electron density around Chain H:

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

Electron density around Chain I:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
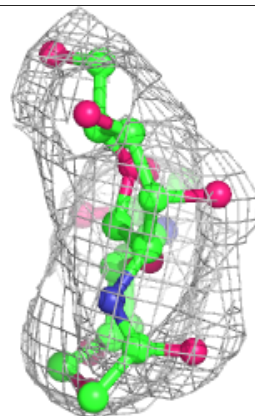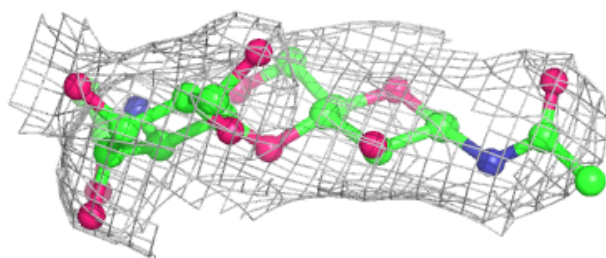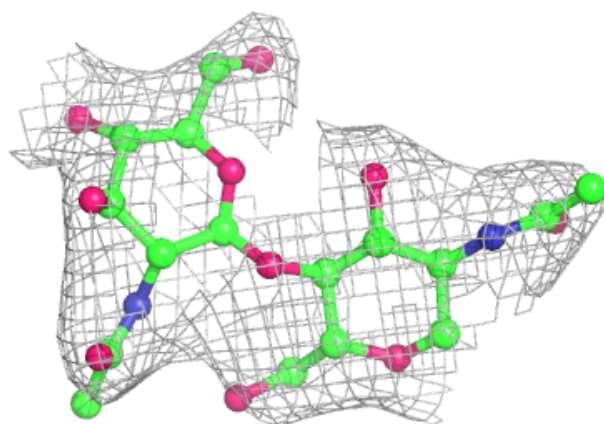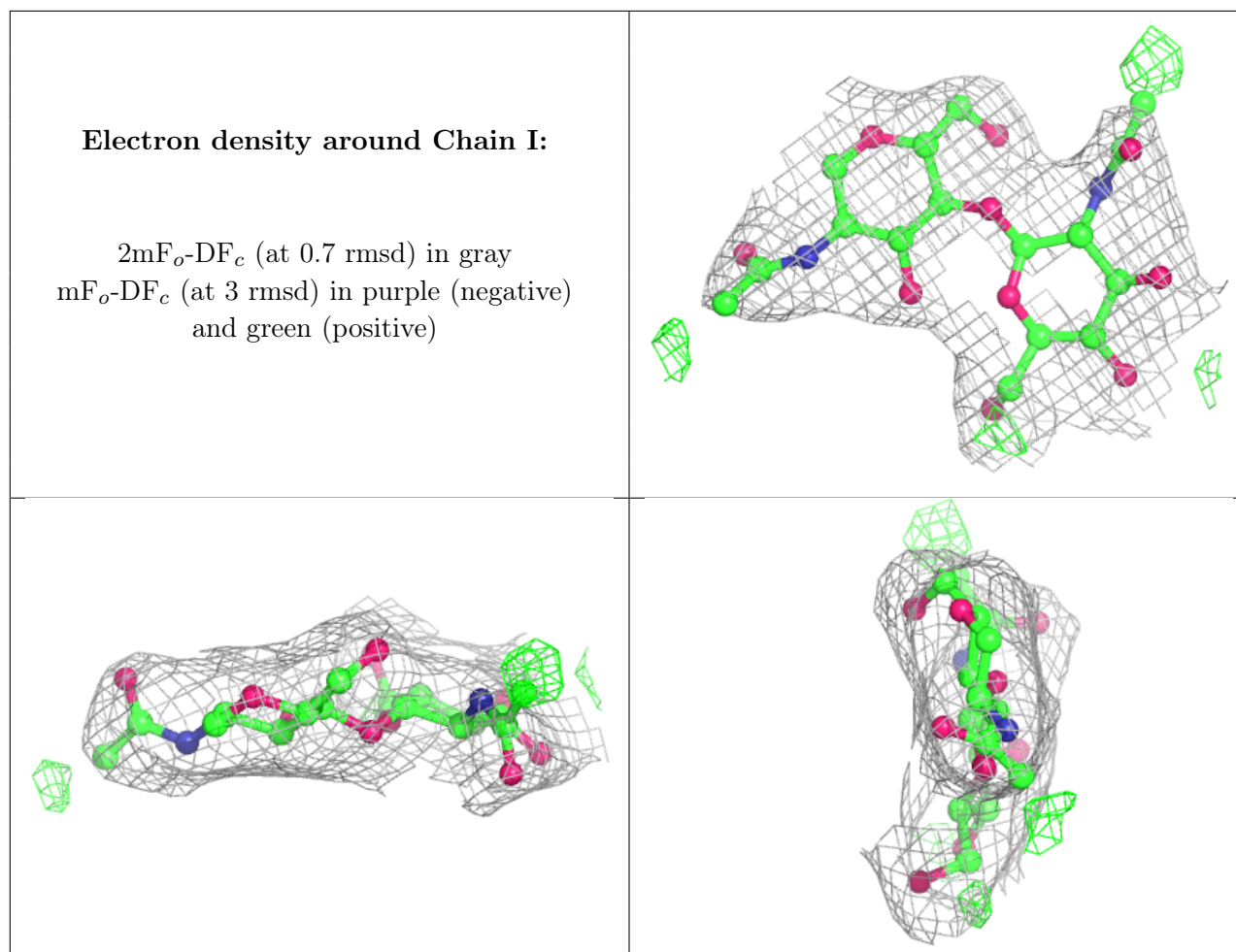
6.4   Ligands (i)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	NAG	E	402	14/15	0.86	0.19	30,30,30,30	0
4	NAG	E	401	14/15	0.88	0.28	107,122,136,141	0
4	NAG	C	401	14/15	0.88	0.16	98,123,142,144	0
4	NAG	C	402	14/15	0.88	0.21	30,30,30,30	0
4	NAG	A	402	14/15	0.89	0.19	30,30,30,30	0
4	NAG	A	401	14/15	0.90	0.12	97,114,129,135	0

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

Electron density around NAG E 402:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
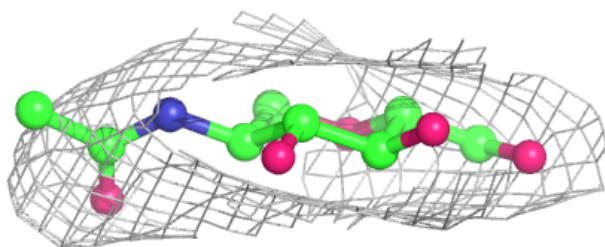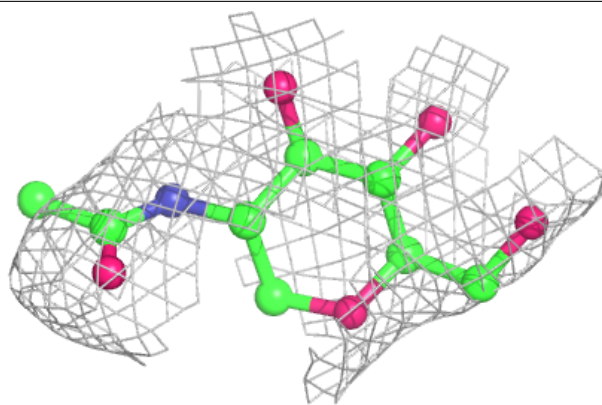mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
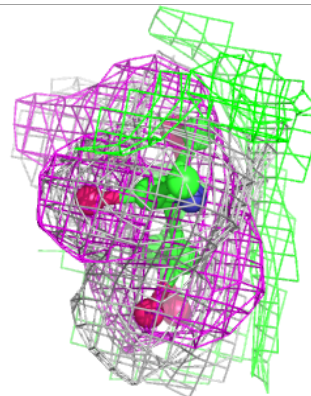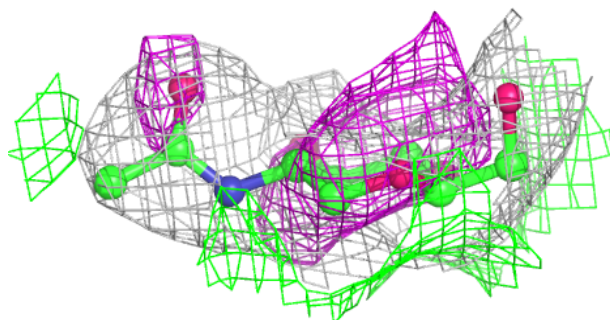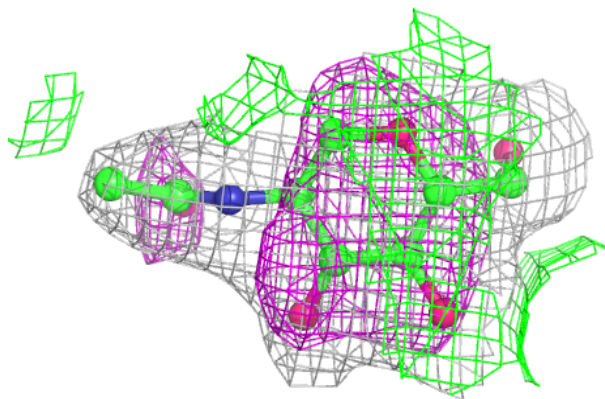
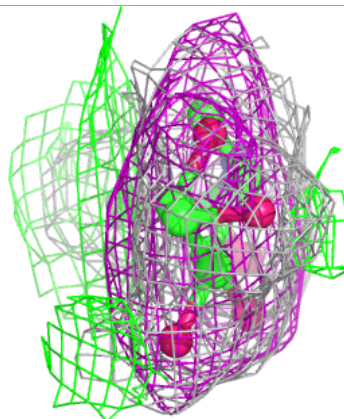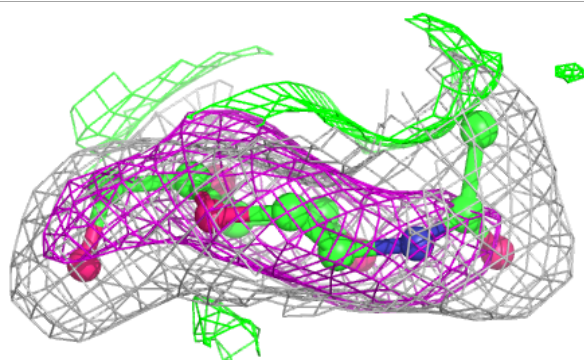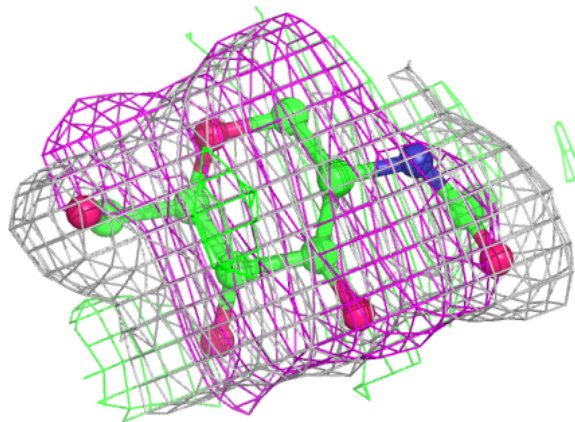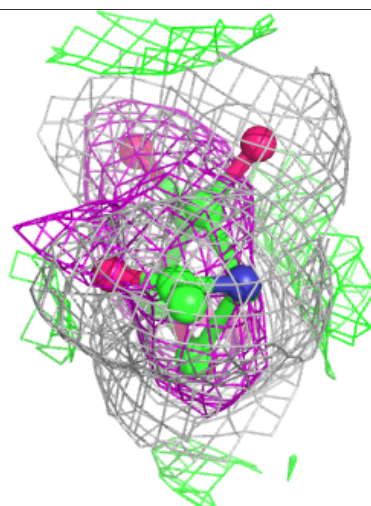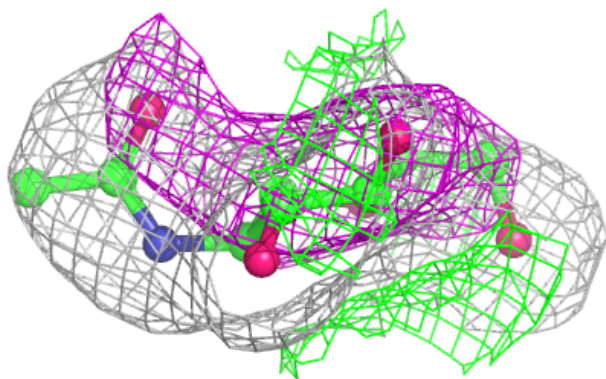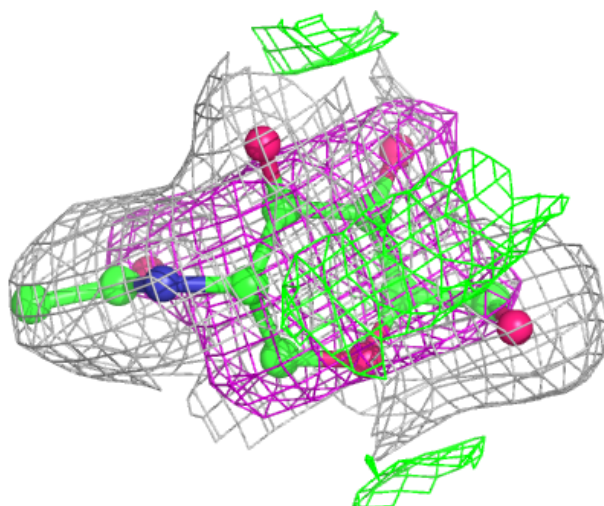**Electron density around NAG E 401:**

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
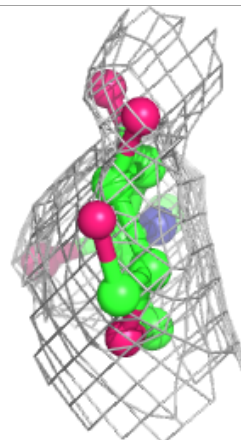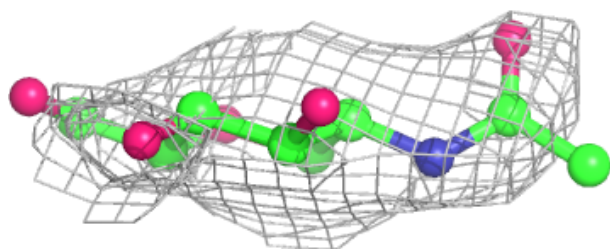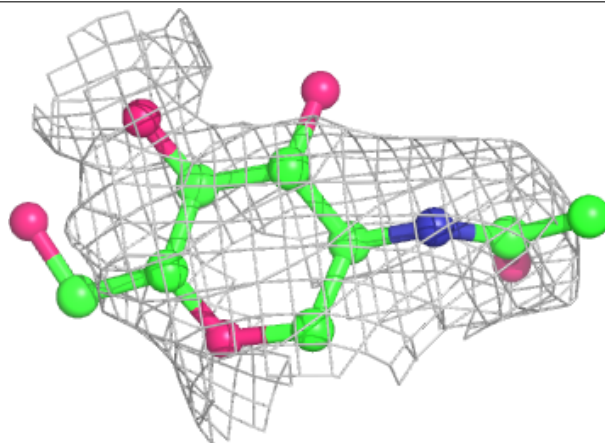
Electron density around NAG C 401:

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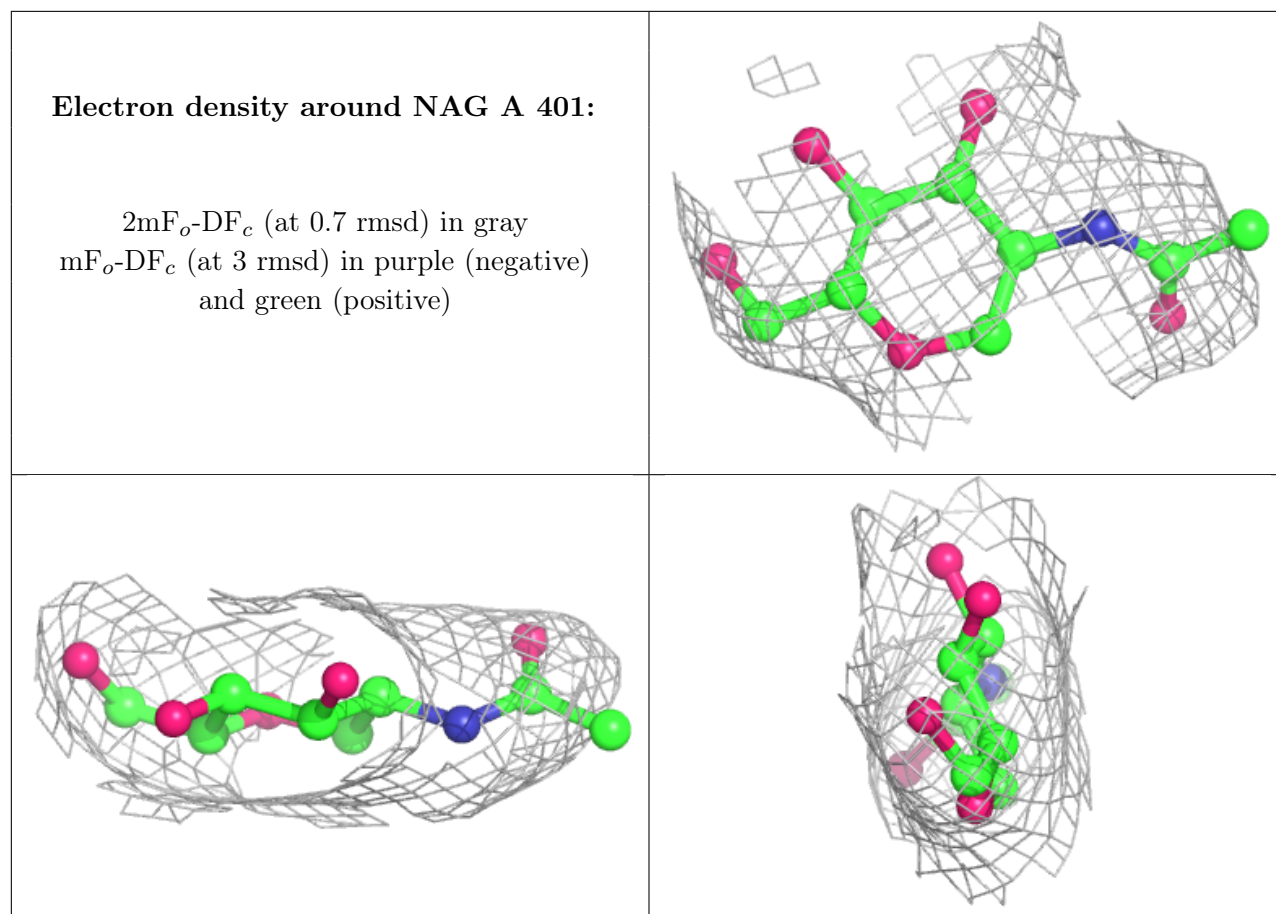

Electron density around NAG C 402:

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

Electron density around NAG A 402:

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

Electron density around NAG A 401:

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

6.5 Other polymers ⓘ

There are no such residues in this entry.