



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 12, 2024 – 10:45 AM EDT

PDB ID : 6MFT
Title : Crystal structure of glycosylated 426c HIV-1 gp120 core G459C in complex with gIVRC01 A60C heavy chain
Authors : Weidle, C.; Pancera, M.; Stamatatos, L.; Gray, M.
Deposited on : 2018-09-12
Resolution : 2.31 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 ⓘ 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 ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 2022.3.0, CSD as543be (2022)
Xtrriage (Phenix) : 1.20.1
EDS : 3.0
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4 : 9.0.003 (Gargrove)
Density-Fitness : 1.0.11
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

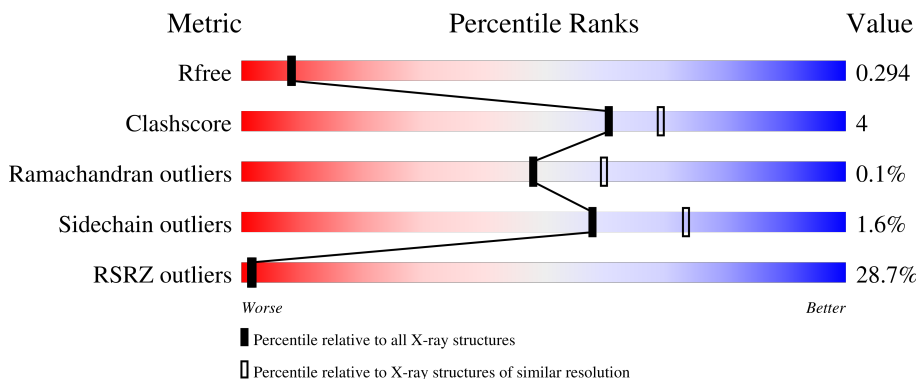
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.31 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.



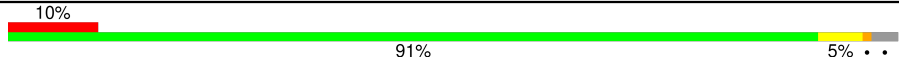


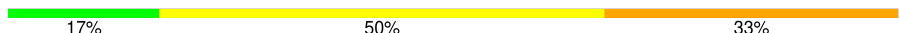
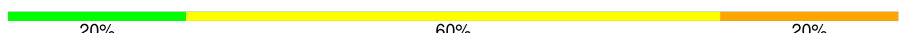
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	7250 (2.34-2.30)
Clashscore	180529	8063 (2.34-2.30)
Ramachandran outliers	177936	7993 (2.34-2.30)
Sidechain outliers	177891	7993 (2.34-2.30)
RSRZ outliers	164620	7250 (2.34-2.30)

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 $\leq 5\%$. 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	233	
1	H	233	
2	B	210	
2	L	210	
3	C	347	

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Mol	Chain	Length	Quality of chain
3	G	347	 <p>10% 91% 5% . .</p>
4	D	2	 <p>50% 50%</p>
4	E	2	 <p>50% 50%</p>
5	F	6	 <p>17% 50% 33%</p>
6	I	5	 <p>20% 60% 20%</p>

2 Entry composition [i](#)

There are 11 unique types of molecules in this entry. The entry contains 23916 atoms, of which 11446 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 Heavy Chain gIVRC01.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
1	H	216	Total	C	H	N	O	S	0	0	0
			3223	1034	1582	281	317	9			
1	A	215	Total	C	H	N	O	S	0	0	0
			3216	1032	1579	280	316	9			

- Molecule 2 is a protein called Light chain gIVRC01.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
2	L	208	Total	C	H	N	O	S	0	0	0
			3158	1007	1554	269	324	4			
2	B	209	Total	C	H	N	O	S	0	0	0
			3177	1012	1564	270	327	4			

- Molecule 3 is a protein called Gp120.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
3	G	336	Total	C	H	N	O	S	0	1	0
			5199	1647	2572	454	502	24			
3	C	336	Total	C	H	N	O	S	0	0	0
			5192	1645	2568	454	502	23			

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



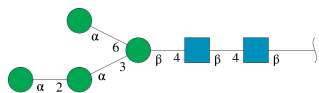
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
4	D	2	Total	C	N	O	0	0	0
			28	16	2	10			

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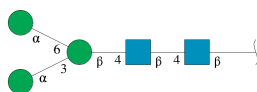
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
4	E	2	28	16	2	10	0	0	0

- Molecule 5 is an oligosaccharide called alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]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			
5	F	6	72	40	2	30	0	0	0

- Molecule 6 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]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			
6	I	5	61	34	2	25	0	0	0

- Molecule 7 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C₈H₁₅NO₆) (labeled as "Ligand of Interest" by depositor).



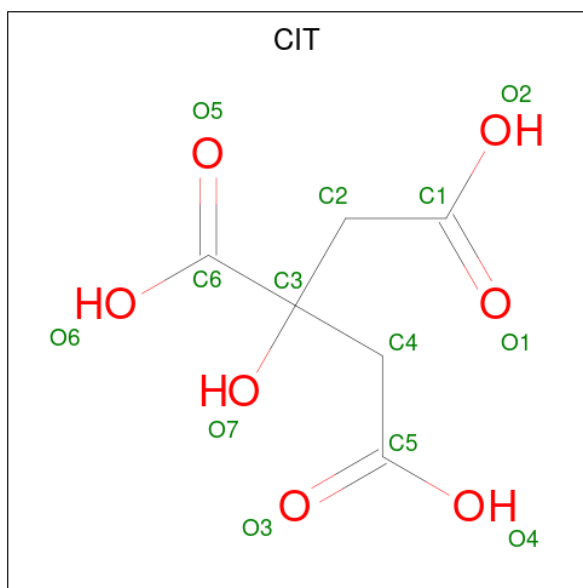
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
7	G	1	14	8	1	5	0	0
7	G	1	14	8	1	5	0	0
7	G	1	14	8	1	5	0	0
7	G	1	14	8	1	5	0	0
7	G	1	14	8	1	5	0	0
7	G	1	14	8	1	5	0	0
7	G	1	14	8	1	5	0	0
7	G	1	14	8	1	5	0	0
7	C	1	14	8	1	5	0	0
7	C	1	14	8	1	5	0	0
7	C	1	14	8	1	5	0	0
7	C	1	14	8	1	5	0	0
7	C	1	14	8	1	5	0	0

- Molecule 8 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: C₄H₁₀O₃).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
8	G	1	17	4	10	3	0	0

- Molecule 9 is CITRIC ACID (three-letter code: CIT) (formula: C₆H₈O₇).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
9	C	1	18	6	5	7	0	0

- Molecule 10 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C₂H₆O₂).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	
10	C	1	Total	C	H	O	0	0
			10	2	6	2		
10	C	1	Total	C	H	O	0	0
			10	2	6	2		

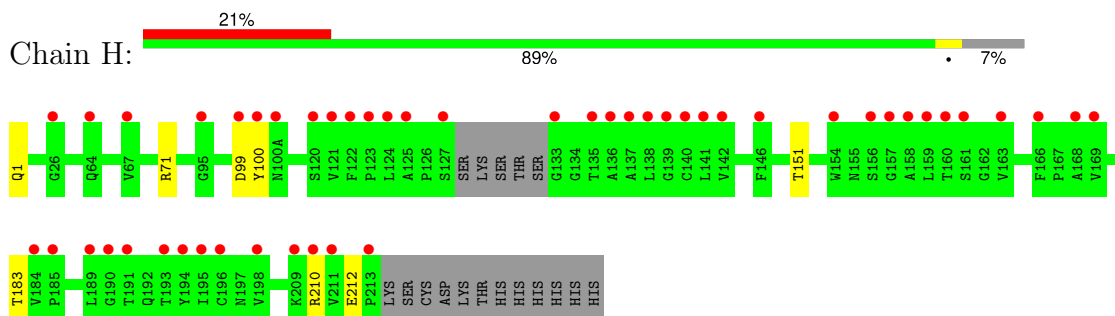
- Molecule 11 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
11	H	62	Total	O	0	0
			62	62		
11	L	44	Total	O	0	0
			44	44		
11	A	29	Total	O	0	0
			29	29		
11	B	23	Total	O	0	0
			23	23		
11	G	117	Total	O	0	0
			117	117		
11	C	50	Total	O	0	0
			50	50		

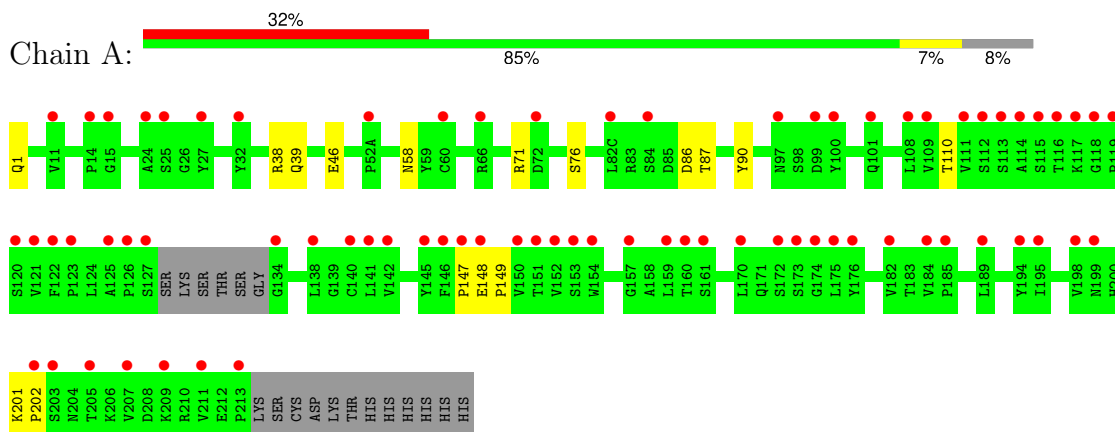
3 Residue-property plots [i](#)

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.

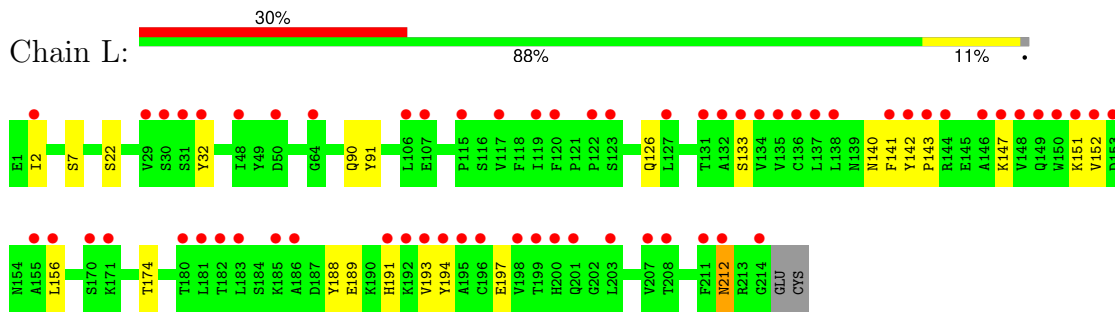
- Molecule 1: Heavy Chain glVRC01



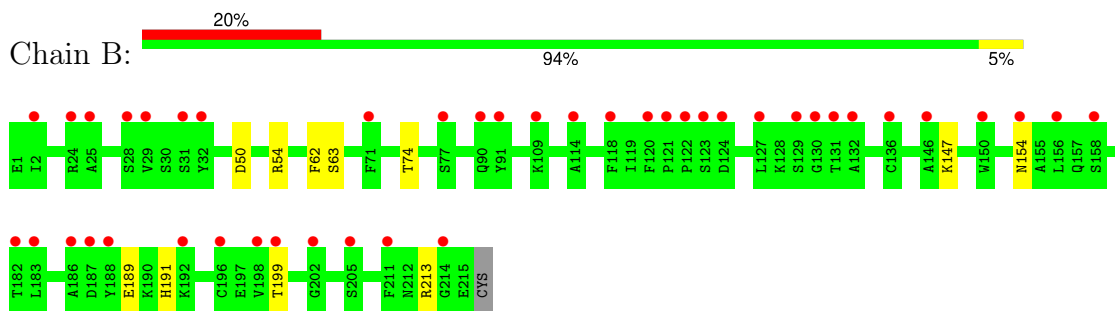
- Molecule 1: Heavy Chain glVRC01



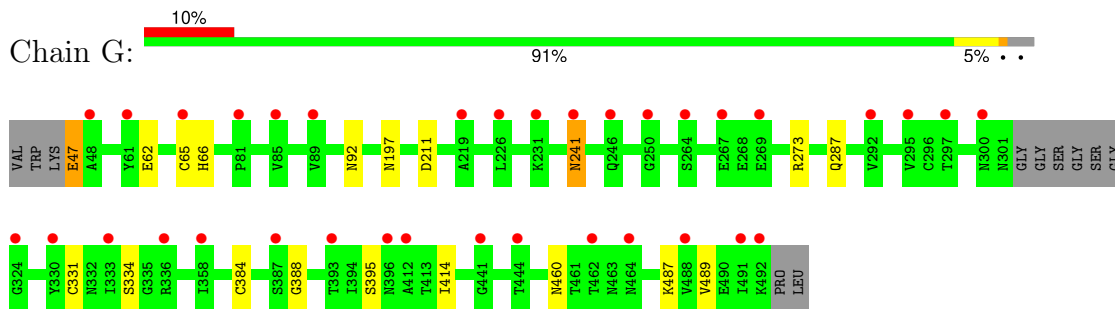
- Molecule 2: Light chain glVRC01



- Molecule 2: Light chain glVRC01



• Molecule 3: Gp120



• Molecule 3: Gp120



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

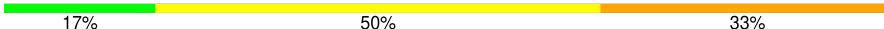


- Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain E:  50% 50%

MAG1
MAG2

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

Chain F:  17% 50% 33%

MAG1
MAG2
BMA3
MAN4
MAN5
MAN6

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

Chain I:  20% 60% 20%

MAG1
MAG2
BMA3
MAN4
MAN5

4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	197.08Å 109.00Å 103.22Å 90.00° 114.47° 90.00°	Depositor
Resolution (Å)	49.15 – 2.31 49.15 – 2.31	Depositor EDS
% Data completeness (in resolution range)	96.0 (49.15-2.31) 96.0 (49.15-2.31)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.35 (at 2.32Å)	Xtrriage
Refinement program	PHENIX (1.12_2829)	Depositor
R, R_{free}	0.244 , 0.295 0.243 , 0.294	Depositor DCC
R_{free} test set	4460 reflections (5.13%)	wwPDB-VP
Wilson B-factor (Å ²)	49.9	Xtrriage
Anisotropy	0.769	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 43.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	23916	wwPDB-VP
Average B, all atoms (Å ²)	81.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.63% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality

5.1 Standard geometry

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

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	0.25	0/1673	0.47	0/2281
1	H	0.25	0/1677	0.46	0/2286
2	B	0.26	0/1648	0.46	0/2238
2	L	0.26	0/1639	0.48	0/2226
3	C	0.25	0/2676	0.45	0/3630
3	G	0.25	0/2682	0.45	0/3638
All	All	0.26	0/11995	0.46	0/16299

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	1637	1579	1579	10	0
1	H	1641	1582	1582	3	0
2	B	1613	1564	1564	6	0
2	L	1604	1554	1558	15	0
3	C	2624	2568	2573	34	1
3	G	2627	2572	2574	19	0
4	D	28	0	25	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	E	28	0	25	3	0
5	F	72	0	61	6	0
6	I	61	0	52	5	0
7	C	84	0	78	14	0
7	G	98	0	91	8	0
8	G	7	10	10	0	0
9	C	13	5	5	1	0
10	C	8	12	12	0	0
11	A	29	0	0	1	0
11	B	23	0	0	0	0
11	C	50	0	0	5	0
11	G	117	0	0	1	0
11	H	62	0	0	1	0
11	L	44	0	0	2	0
All	All	12470	11446	11789	98	1

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 4.

All (98) 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:A:39:GLN:O	11:A:301:HOH:O	1.97	0.81
3:C:372:THR:OG1	11:C:1701:HOH:O	1.97	0.81
3:G:92:ASN:O	3:G:487:LYS:NZ	2.15	0.78
3:C:393:THR:CG2	7:C:1609:NAG:H4	2.15	0.76
3:G:197:ASN:OD1	7:G:511:NAG:H61	1.86	0.76
9:C:1612:CIT:O3	9:C:1612:CIT:O7	2.05	0.74
2:L:32:TYR:O	2:L:90:GLN:NE2	2.22	0.72
1:H:183:THR:O	11:H:301:HOH:O	2.07	0.72
7:C:1602:NAG:O4	11:C:1702:HOH:O	2.07	0.72
6:I:1:NAG:H62	6:I:2:NAG:N2	2.05	0.71
1:A:38:ARG:NH1	1:A:86:ASP:OD1	2.24	0.71
3:C:391:ASN:N	3:C:391:ASN:OD1	2.24	0.70
3:C:436:ALA:O	11:C:1703:HOH:O	2.10	0.69
3:G:47:GLU:N	3:G:47:GLU:OE1	2.26	0.68
3:G:388:GLY:O	7:G:505:NAG:H82	1.94	0.68
3:C:246:GLN:NE2	11:C:1704:HOH:O	2.27	0.68
3:C:227:LYS:NZ	3:C:229:ASN:OD1	2.26	0.68
7:C:1611:NAG:O7	7:C:1611:NAG:O3	2.11	0.67
2:L:151:LYS:NZ	2:L:197:GLU:OE2	2.25	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:L:189:GLU:OE1	11:L:301:HOH:O	2.13	0.66
3:G:334:SER:OG	7:G:508:NAG:H82	1.96	0.66
3:C:393:THR:HG21	7:C:1609:NAG:H4	1.79	0.64
3:C:327:ARG:NH2	3:C:422:GLN:OE1	2.30	0.63
3:C:391:ASN:HB3	7:C:1609:NAG:O5	1.99	0.62
4:E:1:NAG:O6	4:E:2:NAG:H83	1.98	0.62
5:F:1:NAG:H61	5:F:2:NAG:N2	2.15	0.61
2:L:188:TYR:O	2:L:194:TYR:OH	2.17	0.60
3:G:197:ASN:ND2	7:G:511:NAG:O7	2.34	0.59
2:B:189:GLU:OE1	2:B:213:ARG:NH1	2.36	0.59
2:L:142:TYR:CD2	2:L:143:PRO:HA	2.38	0.59
3:C:256:SER:OG	3:C:259:LEU:O	2.16	0.57
3:C:270:ILE:H	7:C:1611:NAG:H82	1.70	0.57
3:C:62:GLU:OE2	6:I:4:MAN:O6	2.09	0.56
1:A:58:ASN:ND2	3:C:456:ARG:O	2.37	0.56
2:B:63:SER:OG	2:B:74:THR:OG1	2.23	0.55
2:L:147:LYS:NZ	11:L:304:HOH:O	2.37	0.54
3:G:241:ASN:OD1	7:G:501:NAG:H2	2.07	0.54
4:E:1:NAG:O4	4:E:2:NAG:H61	2.07	0.53
3:G:62:GLU:OE1	5:F:4:MAN:O6	2.26	0.52
1:H:210:ARG:NH2	1:H:212:GLU:OE2	2.38	0.51
3:C:119:CYS:O	3:C:203:GLN:N	2.40	0.51
2:L:126:GLN:OE1	2:L:133:SER:N	2.44	0.51
1:A:86:ASP:OD1	1:A:90:TYR:OH	2.29	0.51
3:C:120:VAL:HG22	3:C:434:ILE:HB	1.92	0.51
6:I:1:NAG:H62	6:I:2:NAG:HN2	1.74	0.50
2:B:54:ARG:NH1	2:B:62:PHE:O	2.41	0.50
3:C:197:ASN:HD21	7:C:1603:NAG:H4	1.76	0.49
2:B:191:HIS:O	2:B:213:ARG:NE	2.43	0.49
3:C:99:ASP:OD2	3:C:103:GLN:NE2	2.41	0.49
3:C:388:GLY:HA2	3:C:391:ASN:HD21	1.77	0.48
1:A:38:ARG:NE	1:A:46:GLU:OE2	2.40	0.48
1:A:76:SER:OG	7:C:1603:NAG:H61	2.14	0.48
5:F:4:MAN:C1	5:F:5:MAN:H5	2.44	0.48
3:C:229:ASN:ND2	7:C:1610:NAG:H61	2.29	0.48
2:L:152:VAL:HA	2:L:193:VAL:O	2.14	0.48
3:C:197:ASN:ND2	7:C:1603:NAG:H4	2.31	0.46
3:G:460:ASN:OD1	11:G:601:HOH:O	2.21	0.46
2:L:212:ASN:OD1	2:L:212:ASN:N	2.49	0.46
3:G:62:GLU:OE2	5:F:4:MAN:H62	2.15	0.46
3:C:300:ASN:OD1	3:C:300:ASN:N	2.49	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:446:LYS:O	6:I:1:NAG:H5	2.16	0.46
3:C:387:SER:OG	7:C:1602:NAG:H5	2.16	0.45
1:A:201:LYS:N	1:A:202:PRO:HD2	2.31	0.45
1:H:99:ASP:OD1	1:H:100:TYR:N	2.46	0.45
2:L:151:LYS:HA	2:L:156:LEU:HA	1.97	0.45
3:G:241:ASN:OD1	7:G:501:NAG:C2	2.65	0.45
3:G:414:ILE:HG12	7:G:505:NAG:H81	1.99	0.45
2:L:141:PHE:N	2:L:174:THR:OG1	2.50	0.45
1:A:148:GLU:N	1:A:149:PRO:HD2	2.32	0.45
2:B:154:ASN:O	2:B:154:ASN:ND2	2.49	0.45
3:C:393:THR:HG23	7:C:1609:NAG:H4	1.99	0.44
3:C:229:ASN:ND2	3:C:243:SER:OG	2.50	0.44
7:C:1611:NAG:HO3	7:C:1611:NAG:C7	2.18	0.43
2:L:91:TYR:OH	4:D:1:NAG:H61	2.19	0.43
3:C:64:GLU:OE1	3:C:66:HIS:N	2.40	0.43
3:C:211:ASP:OD2	6:I:2:NAG:H5	2.19	0.42
2:L:152:VAL:HG11	2:L:191:HIS:HB3	2.02	0.42
1:A:147:PRO:HG2	1:A:202:PRO:HG3	2.02	0.42
3:G:395:SER:N	7:G:505:NAG:O7	2.47	0.42
3:G:211:ASP:OD2	5:F:2:NAG:H5	2.19	0.42
3:C:369:GLU:OE1	3:C:369:GLU:N	2.40	0.42
2:L:7:SER:OG	2:L:22:SER:OG	2.38	0.41
3:C:97:LYS:NZ	11:C:1706:HOH:O	2.51	0.41
3:C:393:THR:HG23	7:C:1609:NAG:H2	2.02	0.41
3:G:331:CYS:SG	3:G:384:CYS:SG	3.18	0.41
2:B:147:LYS:HB3	2:B:199:THR:OG1	2.20	0.41
3:G:65[B]:CYS:SG	3:G:66:HIS:N	2.93	0.41
3:C:380:GLU:HB3	3:C:420:ILE:HD12	2.02	0.41
3:G:273:ARG:NH2	3:G:287:GLN:OE1	2.43	0.41
3:G:47:GLU:N	3:G:489:VAL:HA	2.36	0.41
3:C:249:HIS:CD2	3:C:249:HIS:C	2.94	0.41
2:L:151:LYS:CB	2:L:156:LEU:HA	2.50	0.41
5:F:1:NAG:H61	5:F:2:NAG:C7	2.50	0.41
3:G:47:GLU:N	3:G:489:VAL:HG12	2.35	0.40
3:C:381:PHE:O	3:C:420:ILE:HA	2.22	0.40
1:A:87:THR:HG23	1:A:110:THR:HA	2.04	0.40
3:C:368:LEU:HA	3:C:371:THR:HG22	2.03	0.40
4:E:1:NAG:O3	4:E:2:NAG:C1	2.68	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:200:THR:O	3:C:202:THR:H[2_557]	1.53	0.07

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	211/233 (91%)	201 (95%)	10 (5%)	0	100	100
1	H	212/233 (91%)	200 (94%)	12 (6%)	0	100	100
2	B	207/210 (99%)	193 (93%)	14 (7%)	0	100	100
2	L	206/210 (98%)	185 (90%)	20 (10%)	1 (0%)	25	31
3	C	332/347 (96%)	309 (93%)	22 (7%)	1 (0%)	37	46
3	G	333/347 (96%)	314 (94%)	19 (6%)	0	100	100
All	All	1501/1580 (95%)	1402 (93%)	97 (6%)	2 (0%)	48	60

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	C	413	THR
2	L	140	ASN

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	181/198 (91%)	180 (99%)	1 (1%)	84	92

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	H	181/198 (91%)	179 (99%)	2 (1%)	70	83
2	B	181/182 (100%)	180 (99%)	1 (1%)	84	92
2	L	180/182 (99%)	178 (99%)	2 (1%)	70	83
3	C	300/307 (98%)	287 (96%)	13 (4%)	25	35
3	G	301/307 (98%)	299 (99%)	2 (1%)	81	90
All	All	1324/1374 (96%)	1303 (98%)	21 (2%)	58	73

All (21) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	H	71	ARG
1	H	151	THR
2	L	2	ILE
2	L	212	ASN
1	A	71	ARG
2	B	50	ASP
3	G	47	GLU
3	G	241	ASN
3	C	64	GLU
3	C	119	CYS
3	C	200	THR
3	C	249	HIS
3	C	298	ARG
3	C	330	TYR
3	C	391	ASN
3	C	392	ASP
3	C	396	ASN
3	C	413	THR
3	C	420	ILE
3	C	445	CYS
3	C	459	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
2	L	90	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](#)

2 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
1	PCA	A	1	1	7,8,9	2.31	2 (28%)	9,10,12	2.05	4 (44%)
1	PCA	H	1	1	7,8,9	2.32	2 (28%)	9,10,12	1.96	4 (44%)

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
1	PCA	A	1	1	-	0/0/11/13	0/1/1/1
1	PCA	H	1	1	-	0/0/11/13	0/1/1/1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1	PCA	CD-N	4.98	1.46	1.34
1	H	1	PCA	CD-N	4.96	1.46	1.34
1	H	1	PCA	CA-N	3.45	1.50	1.46
1	A	1	PCA	CA-N	3.38	1.50	1.46

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1	PCA	CA-N-CD	-3.13	102.85	113.58
1	A	1	PCA	OE-CD-CG	-2.90	121.54	126.72
1	H	1	PCA	CA-N-CD	-2.88	103.71	113.58

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	H	1	PCA	OE-CD-CG	-2.83	121.67	126.72
1	A	1	PCA	CB-CA-N	2.56	110.29	103.24
1	H	1	PCA	CB-CA-N	2.54	110.24	103.24
1	H	1	PCA	CG-CD-N	2.52	114.56	108.39
1	A	1	PCA	CG-CD-N	2.50	114.52	108.39

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

15 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
4	NAG	D	1	4,3	14,14,15	0.19	0	17,19,21	0.45	0
4	NAG	D	2	4	14,14,15	0.25	0	17,19,21	0.46	0
4	NAG	E	1	4,3	14,14,15	0.45	0	17,19,21	0.58	0
4	NAG	E	2	4	14,14,15	0.28	0	17,19,21	0.77	1 (5%)
5	NAG	F	1	3,5	14,14,15	0.40	0	17,19,21	0.60	0
5	NAG	F	2	5	14,14,15	0.22	0	17,19,21	0.43	0
5	BMA	F	3	5	11,11,12	0.60	0	15,15,17	0.75	0
5	MAN	F	4	5	11,11,12	0.72	0	15,15,17	0.96	1 (6%)
5	MAN	F	5	5	11,11,12	0.64	0	15,15,17	0.99	2 (13%)
5	MAN	F	6	5	11,11,12	0.61	0	15,15,17	1.15	2 (13%)
6	NAG	I	1	3,6	14,14,15	0.32	0	17,19,21	0.50	0
6	NAG	I	2	6	14,14,15	0.24	0	17,19,21	0.40	0
6	BMA	I	3	6	11,11,12	0.64	0	15,15,17	0.73	0
6	MAN	I	4	6	11,11,12	0.69	0	15,15,17	0.98	2 (13%)
6	MAN	I	5	6	11,11,12	1.01	0	15,15,17	1.13	1 (6%)

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	D	1	4,3	-	2/6/23/26	0/1/1/1
4	NAG	D	2	4	-	0/6/23/26	0/1/1/1
4	NAG	E	1	4,3	-	2/6/23/26	0/1/1/1
4	NAG	E	2	4	-	2/6/23/26	0/1/1/1
5	NAG	F	1	3,5	-	2/6/23/26	0/1/1/1
5	NAG	F	2	5	-	2/6/23/26	0/1/1/1
5	BMA	F	3	5	-	0/2/19/22	0/1/1/1
5	MAN	F	4	5	-	2/2/19/22	0/1/1/1
5	MAN	F	5	5	-	0/2/19/22	0/1/1/1
5	MAN	F	6	5	-	1/2/19/22	0/1/1/1
6	NAG	I	1	3,6	-	0/6/23/26	0/1/1/1
6	NAG	I	2	6	-	0/6/23/26	0/1/1/1
6	BMA	I	3	6	-	2/2/19/22	0/1/1/1
6	MAN	I	4	6	-	1/2/19/22	0/1/1/1
6	MAN	I	5	6	-	2/2/19/22	0/1/1/1

There are no bond length outliers.

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	E	2	NAG	C1-O5-C5	2.84	115.99	112.19
5	F	6	MAN	C1-O5-C5	2.72	115.83	112.19
6	I	4	MAN	C1-O5-C5	2.48	115.50	112.19
5	F	5	MAN	C1-O5-C5	2.40	115.40	112.19
5	F	4	MAN	O2-C2-C3	-2.37	105.23	110.15
5	F	6	MAN	O2-C2-C3	-2.23	105.52	110.15
6	I	4	MAN	O2-C2-C3	-2.16	105.67	110.15
6	I	5	MAN	O2-C2-C3	-2.16	105.67	110.15
5	F	5	MAN	O2-C2-C3	-2.00	106.00	110.15

There are no chirality outliers.

All (18) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	I	3	BMA	O5-C5-C6-O6
4	E	1	NAG	O5-C5-C6-O6

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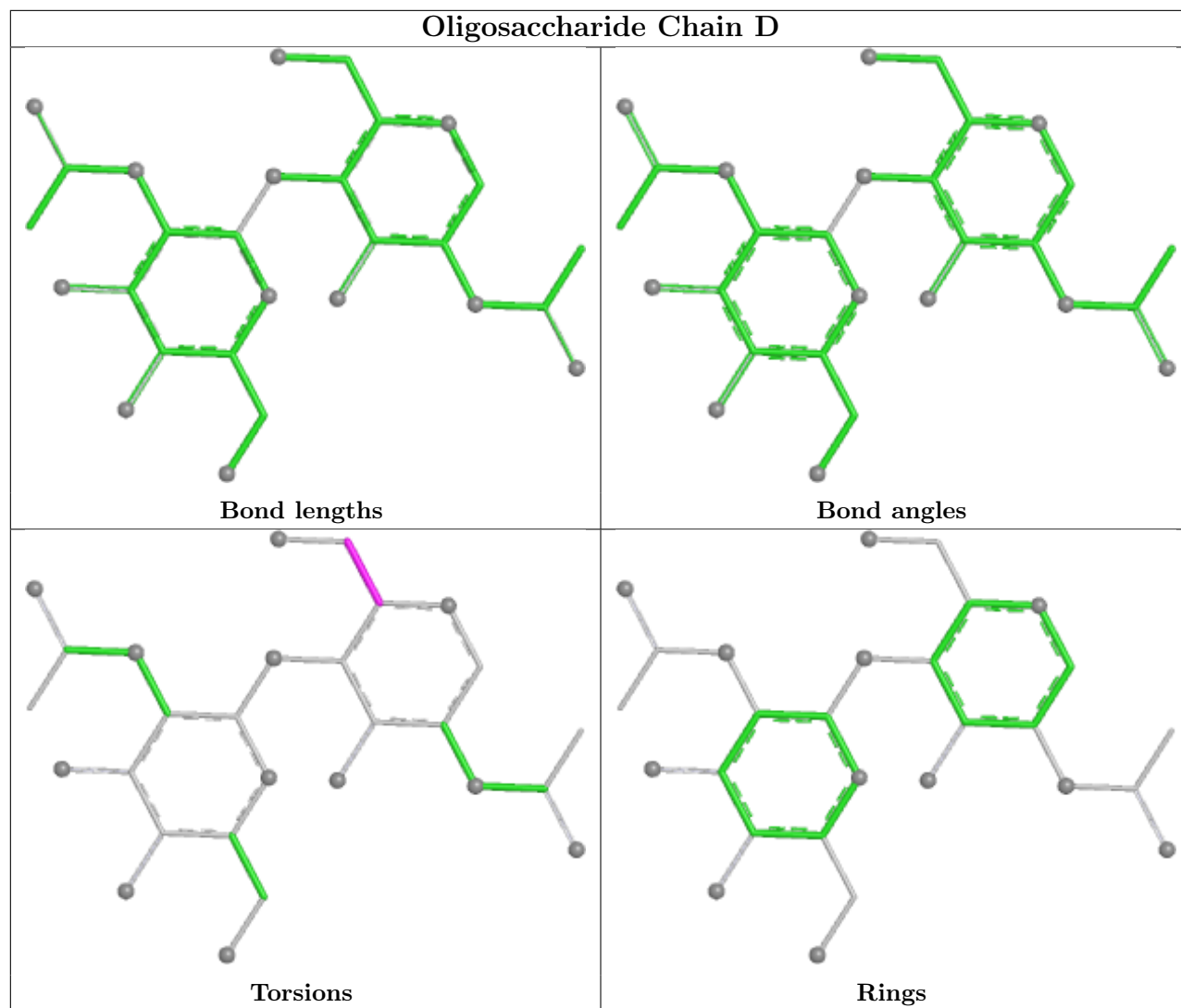
Mol	Chain	Res	Type	Atoms
5	F	4	MAN	O5-C5-C6-O6
4	E	1	NAG	C4-C5-C6-O6
4	D	1	NAG	O5-C5-C6-O6
5	F	2	NAG	O5-C5-C6-O6
6	I	5	MAN	O5-C5-C6-O6
4	D	1	NAG	C4-C5-C6-O6
6	I	3	BMA	C4-C5-C6-O6
5	F	2	NAG	C4-C5-C6-O6
4	E	2	NAG	C8-C7-N2-C2
4	E	2	NAG	O7-C7-N2-C2
6	I	4	MAN	O5-C5-C6-O6
6	I	5	MAN	C4-C5-C6-O6
5	F	4	MAN	C4-C5-C6-O6
5	F	1	NAG	O5-C5-C6-O6
5	F	1	NAG	C4-C5-C6-O6
5	F	6	MAN	C4-C5-C6-O6

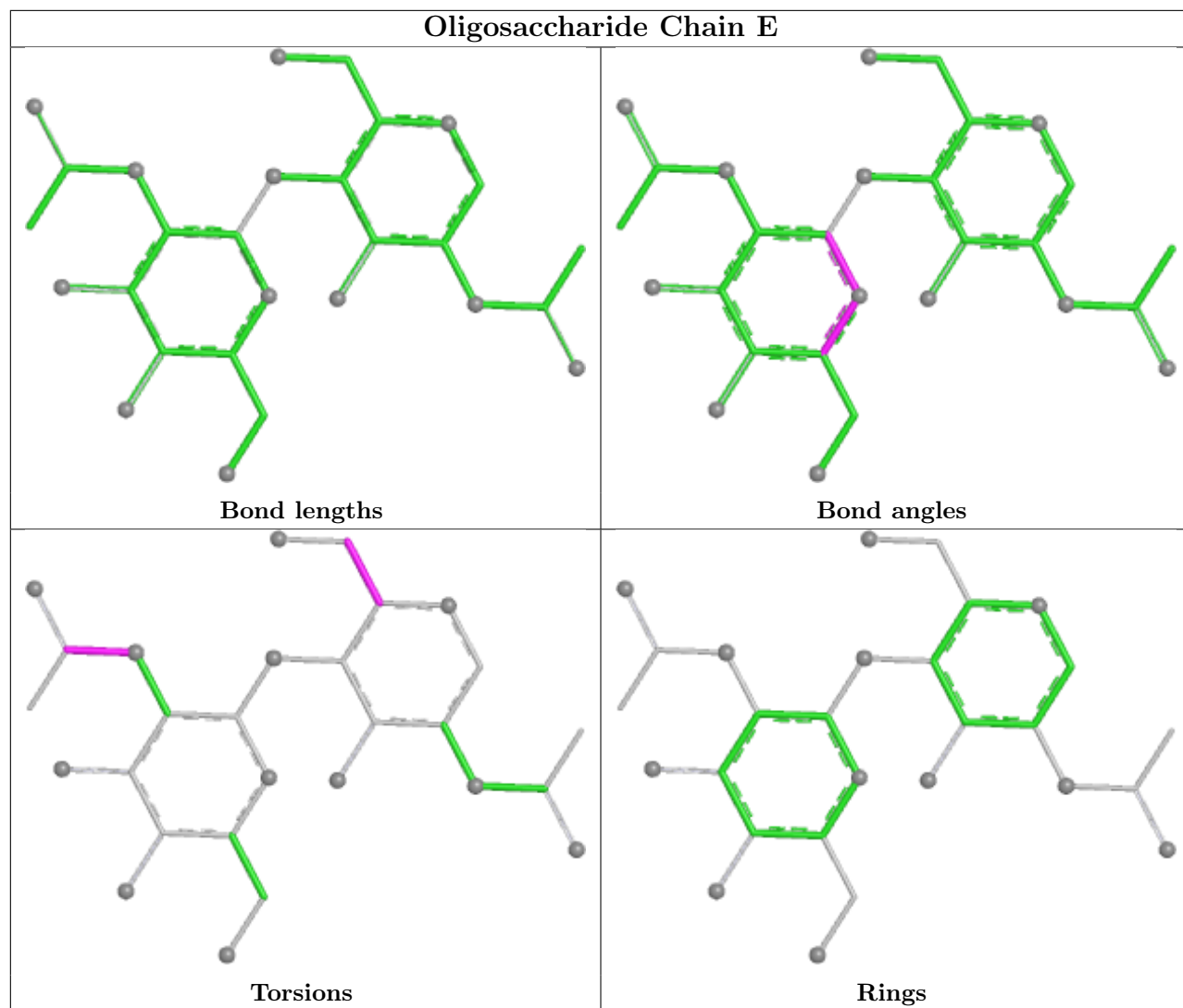
There are no ring outliers.

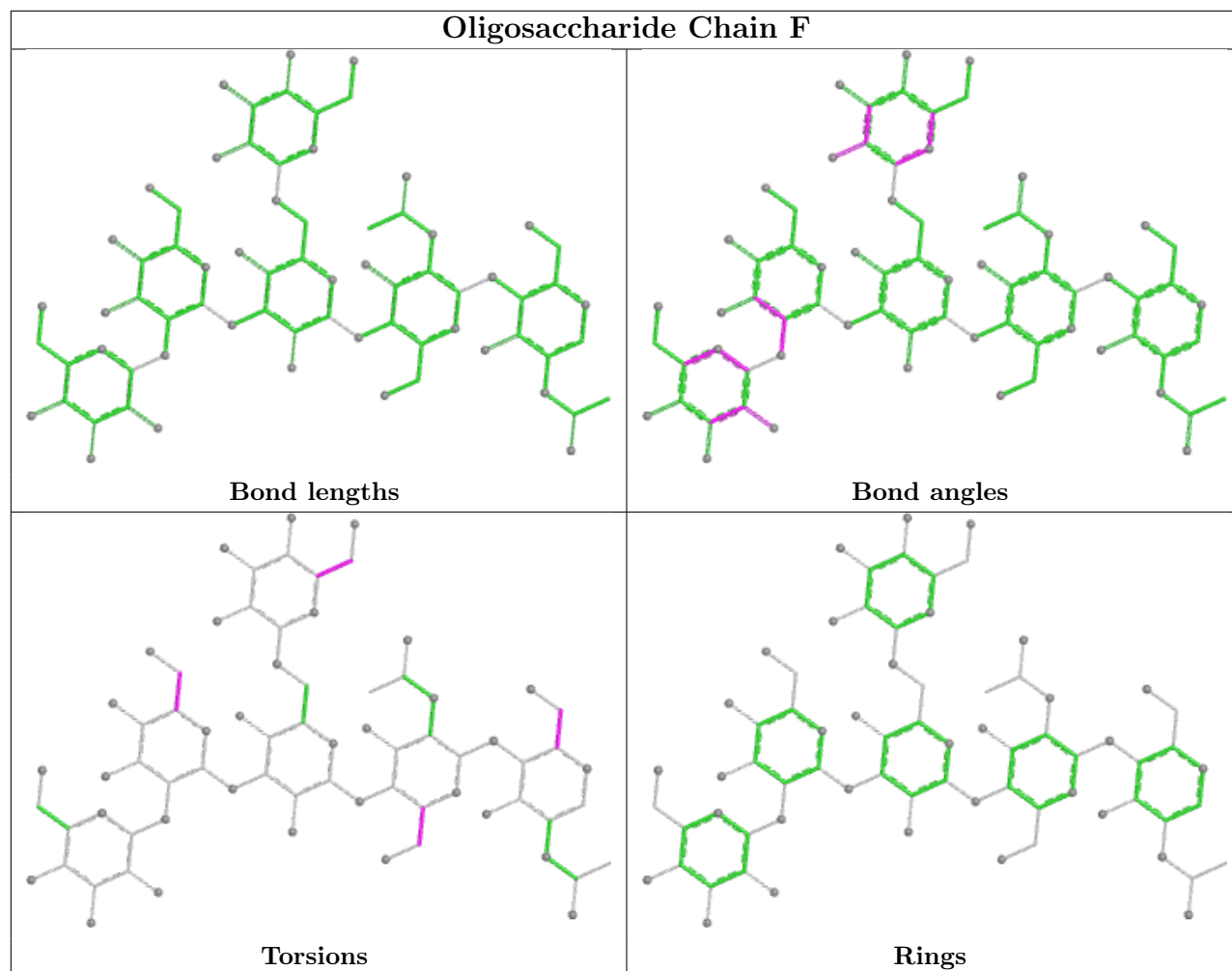
10 monomers are involved in 15 short contacts:

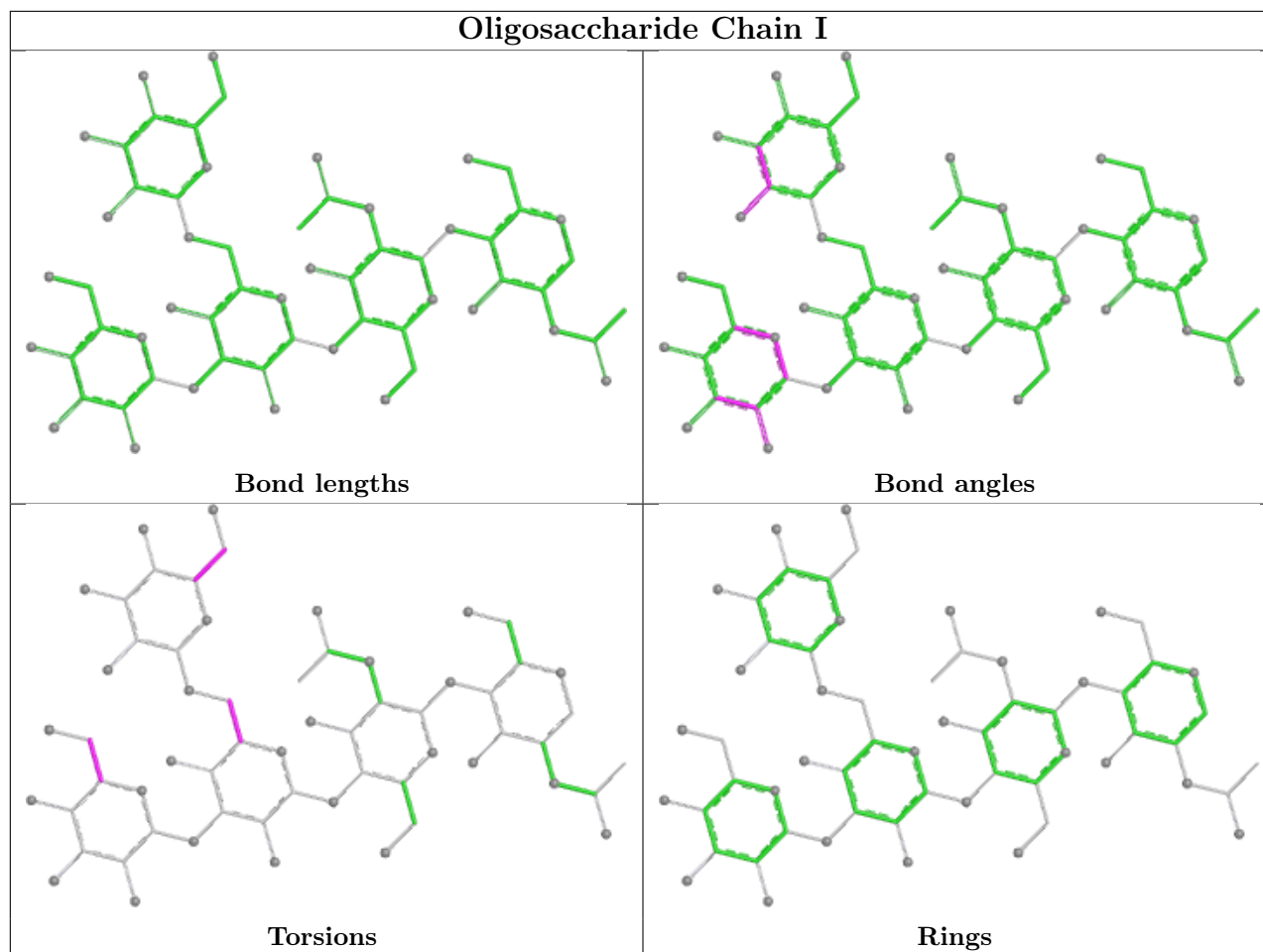
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	I	4	MAN	1	0
6	I	1	NAG	3	0
5	F	2	NAG	3	0
5	F	1	NAG	2	0
5	F	5	MAN	1	0
4	E	1	NAG	3	0
5	F	4	MAN	3	0
4	D	1	NAG	1	0
4	E	2	NAG	3	0
6	I	2	NAG	3	0

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









5.6 Ligand geometry [i](#)

17 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	EDO	C	1613	-	3,3,3	0.41	0	2,2,2	0.36	0
10	EDO	C	1614	-	3,3,3	0.42	0	2,2,2	0.35	0
7	NAG	G	506	3	14,14,15	0.23	0	17,19,21	0.45	0
7	NAG	G	505	3	14,14,15	0.21	0	17,19,21	0.40	0
7	NAG	G	507	3	14,14,15	0.22	0	17,19,21	0.42	0
9	CIT	C	1612	-	12,12,12	1.08	0	17,17,17	1.61	2 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
7	NAG	G	508	3	14,14,15	0.26	0	17,19,21	0.46	0
7	NAG	C	1601	3	14,14,15	0.21	0	17,19,21	0.44	0
7	NAG	G	504	3	14,14,15	0.19	0	17,19,21	0.47	0
7	NAG	C	1609	3	14,14,15	0.22	0	17,19,21	0.39	0
7	NAG	G	501	3	14,14,15	0.28	0	17,19,21	0.46	0
7	NAG	C	1603	3	14,14,15	0.53	0	17,19,21	0.78	1 (5%)
7	NAG	G	511	3	14,14,15	1.39	1 (7%)	17,19,21	1.67	1 (5%)
7	NAG	C	1611	3	14,14,15	0.29	0	17,19,21	0.39	0
8	PEG	G	518	-	6,6,6	0.49	0	5,5,5	0.21	0
7	NAG	C	1610	3	14,14,15	0.28	0	17,19,21	0.52	0
7	NAG	C	1602	3	14,14,15	0.24	0	17,19,21	0.40	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
10	EDO	C	1613	-	-	0/1/1/1	-
10	EDO	C	1614	-	-	0/1/1/1	-
7	NAG	G	506	3	-	4/6/23/26	0/1/1/1
7	NAG	G	505	3	-	2/6/23/26	0/1/1/1
7	NAG	G	507	3	-	0/6/23/26	0/1/1/1
9	CIT	C	1612	-	-	3/16/16/16	-
7	NAG	G	508	3	-	0/6/23/26	0/1/1/1
7	NAG	C	1601	3	-	2/6/23/26	0/1/1/1
7	NAG	G	504	3	-	2/6/23/26	0/1/1/1
7	NAG	C	1609	3	-	0/6/23/26	0/1/1/1
7	NAG	G	501	3	-	2/6/23/26	0/1/1/1
7	NAG	C	1603	3	-	2/6/23/26	0/1/1/1
7	NAG	G	511	3	-	3/6/23/26	0/1/1/1
7	NAG	C	1611	3	-	2/6/23/26	0/1/1/1
8	PEG	G	518	-	-	0/4/4/4	-
7	NAG	C	1610	3	-	2/6/23/26	0/1/1/1
7	NAG	C	1602	3	-	2/6/23/26	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	G	511	NAG	O5-C1	5.03	1.52	1.43

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	G	511	NAG	C1-O5-C5	6.63	121.07	112.19
9	C	1612	CIT	O6-C6-C3	4.26	121.31	113.14
7	C	1603	NAG	C1-O5-C5	2.93	116.11	112.19
9	C	1612	CIT	C3-C4-C5	-2.19	107.95	113.92

There are no chirality outliers.

All (26) torsion outliers are listed below:

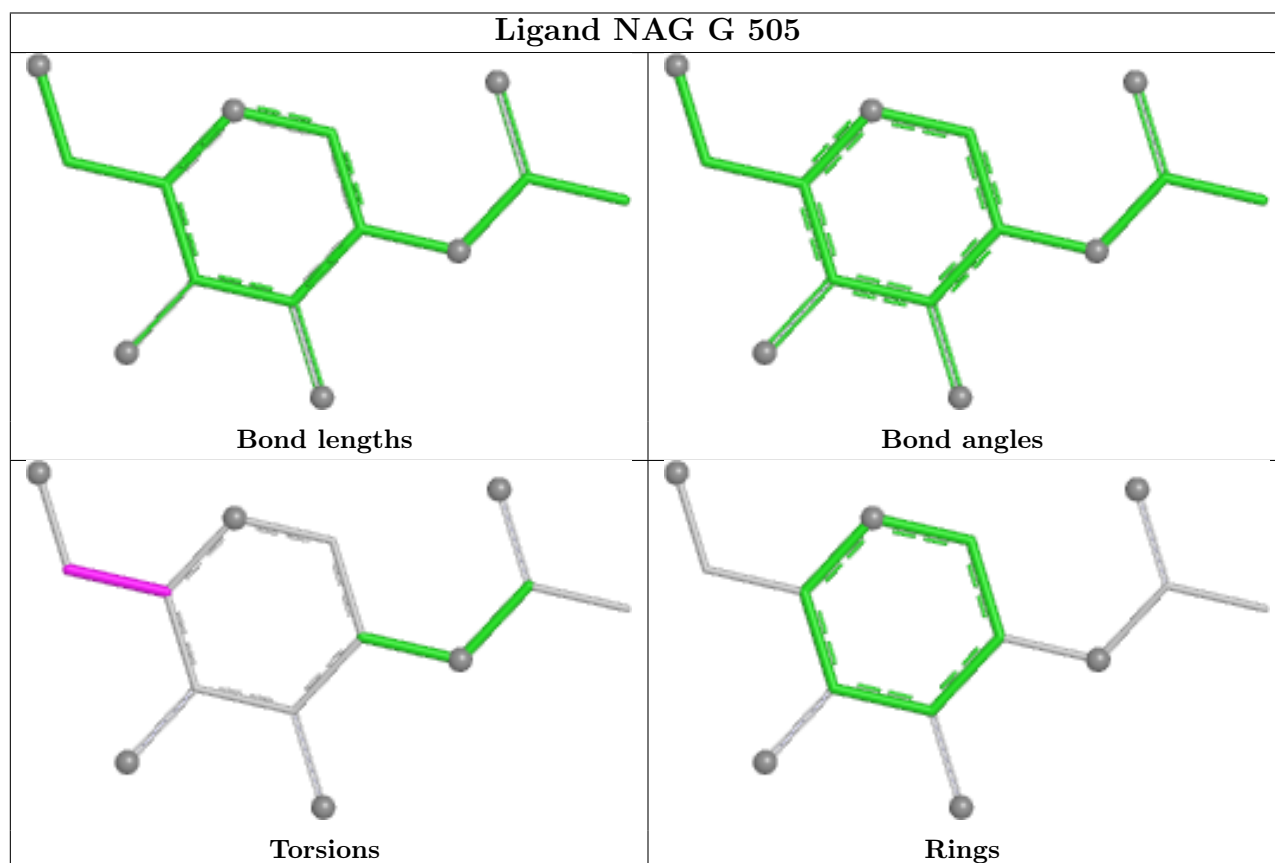
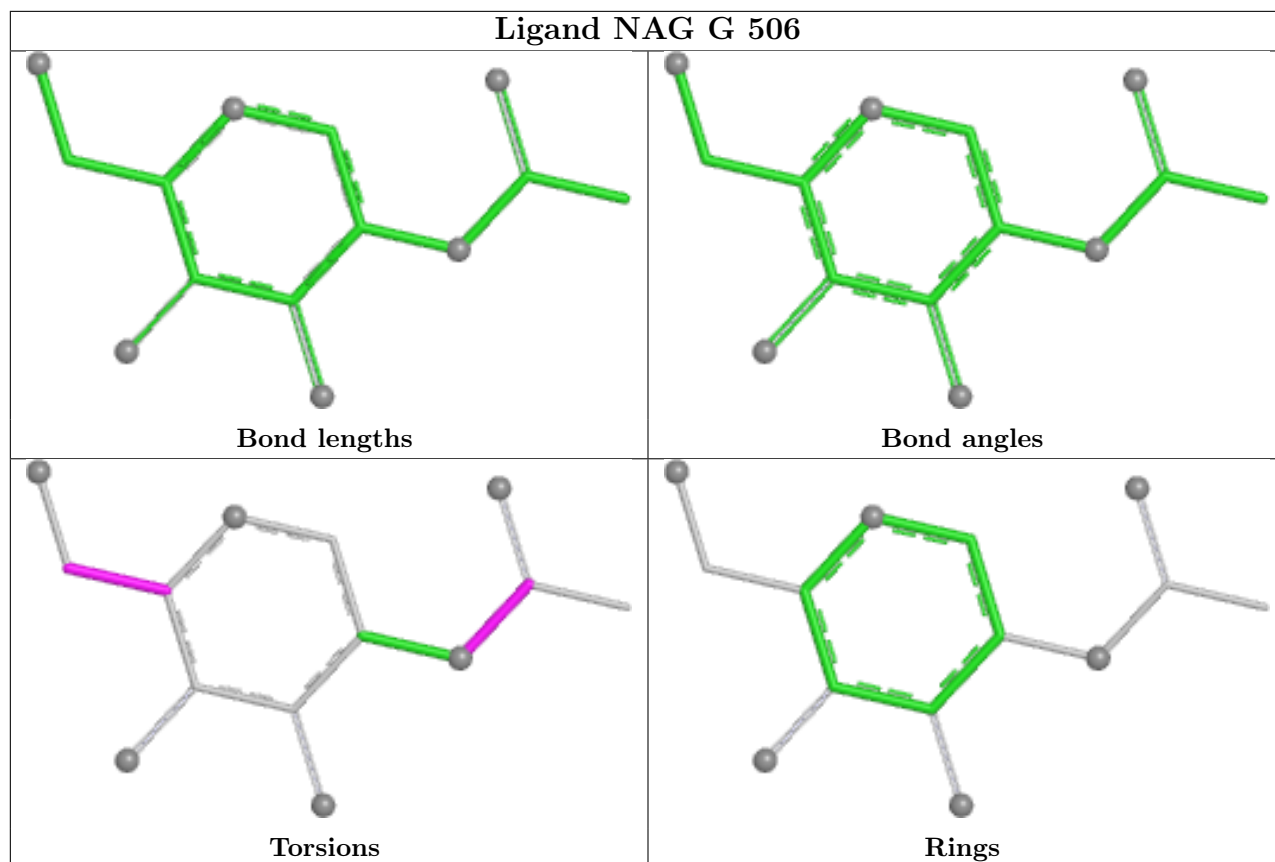
Mol	Chain	Res	Type	Atoms
7	G	511	NAG	C1-C2-N2-C7
9	C	1612	CIT	O7-C3-C4-C5
7	G	506	NAG	C4-C5-C6-O6
7	G	505	NAG	O5-C5-C6-O6
7	G	506	NAG	O5-C5-C6-O6
7	C	1601	NAG	C4-C5-C6-O6
7	C	1602	NAG	O5-C5-C6-O6
7	C	1601	NAG	O5-C5-C6-O6
7	C	1610	NAG	O5-C5-C6-O6
7	G	505	NAG	C4-C5-C6-O6
7	C	1602	NAG	C4-C5-C6-O6
7	G	506	NAG	C8-C7-N2-C2
7	G	506	NAG	O7-C7-N2-C2
7	C	1603	NAG	C8-C7-N2-C2
7	C	1603	NAG	O7-C7-N2-C2
7	G	501	NAG	O5-C5-C6-O6
7	G	504	NAG	C4-C5-C6-O6
7	C	1610	NAG	C4-C5-C6-O6
9	C	1612	CIT	C6-C3-C4-C5
7	G	504	NAG	O5-C5-C6-O6
9	C	1612	CIT	C2-C3-C4-C5
7	G	511	NAG	C4-C5-C6-O6
7	C	1611	NAG	C1-C2-N2-C7
7	G	501	NAG	C4-C5-C6-O6
7	C	1611	NAG	C3-C2-N2-C7
7	G	511	NAG	O5-C5-C6-O6

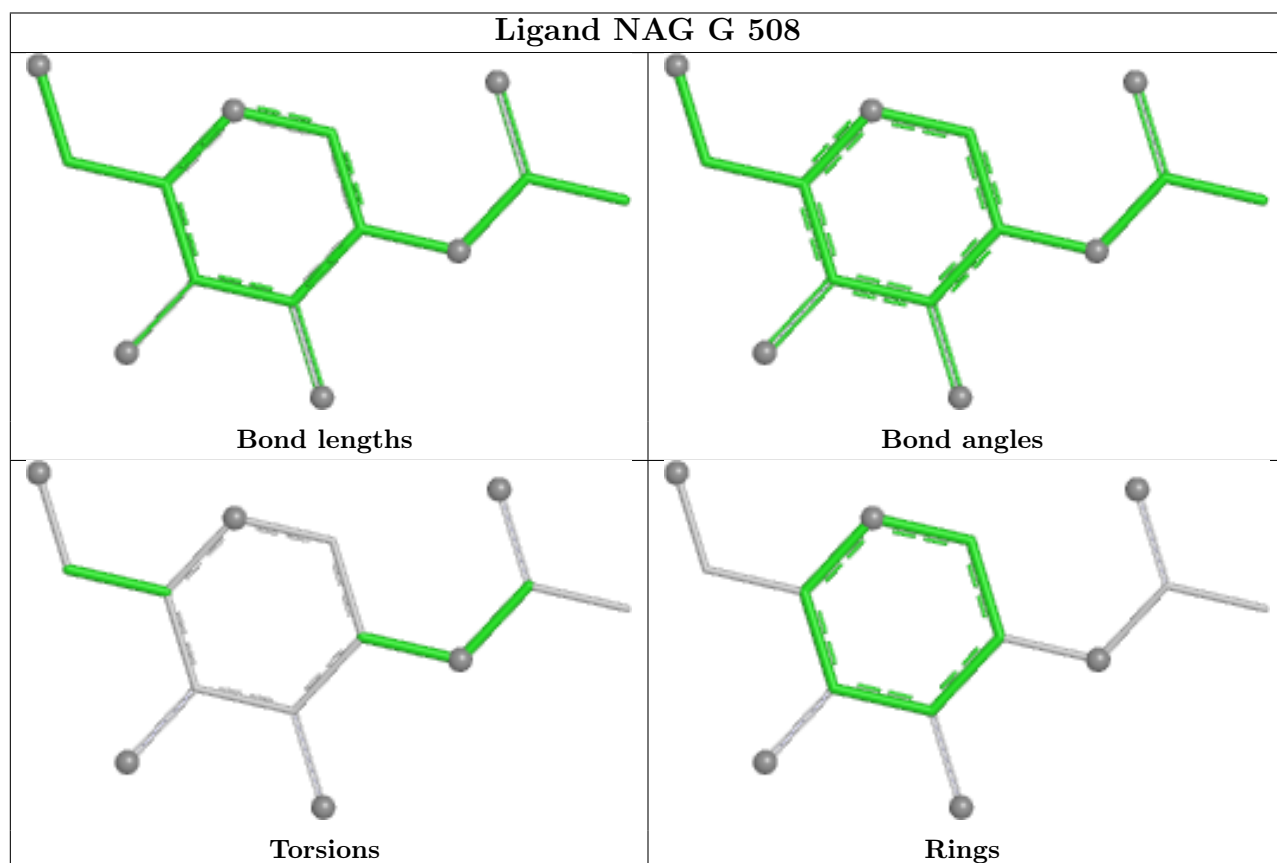
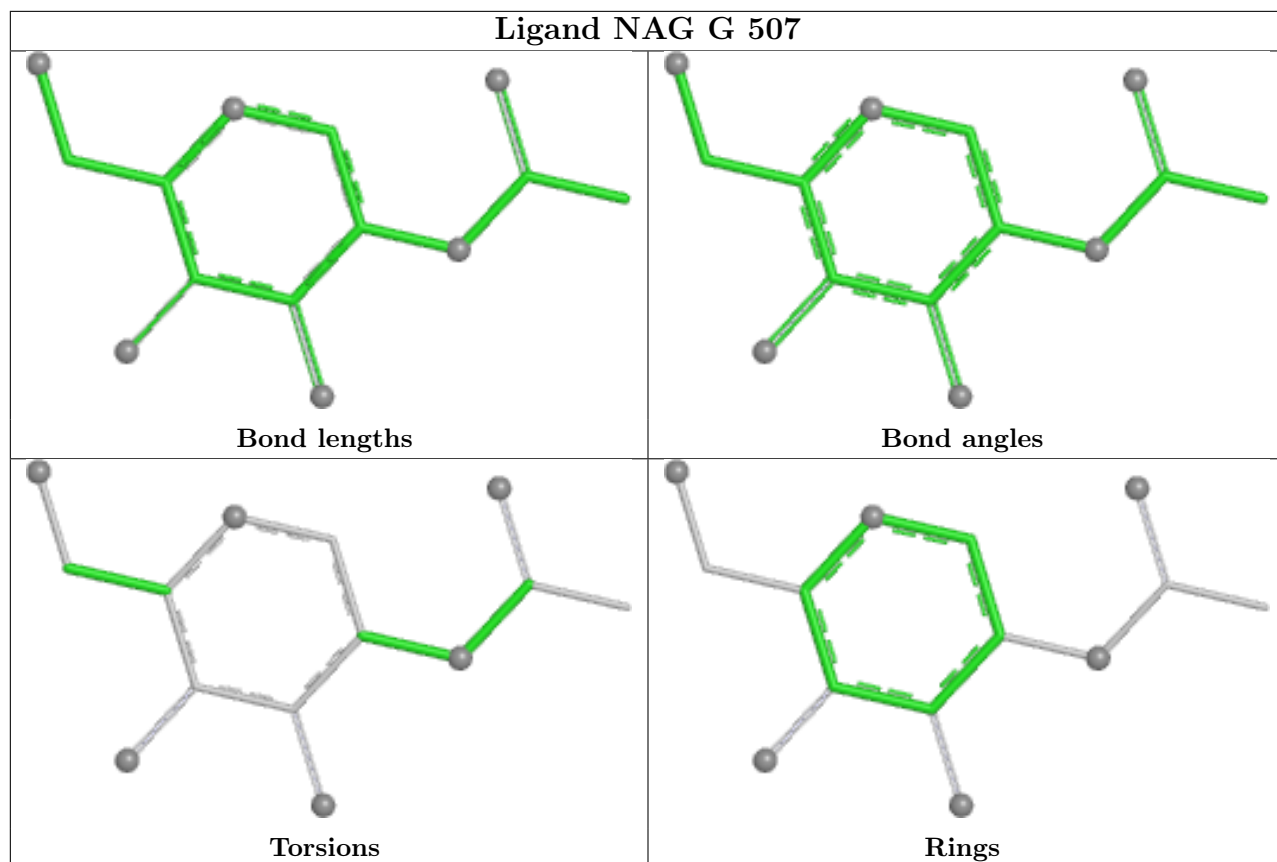
There are no ring outliers.

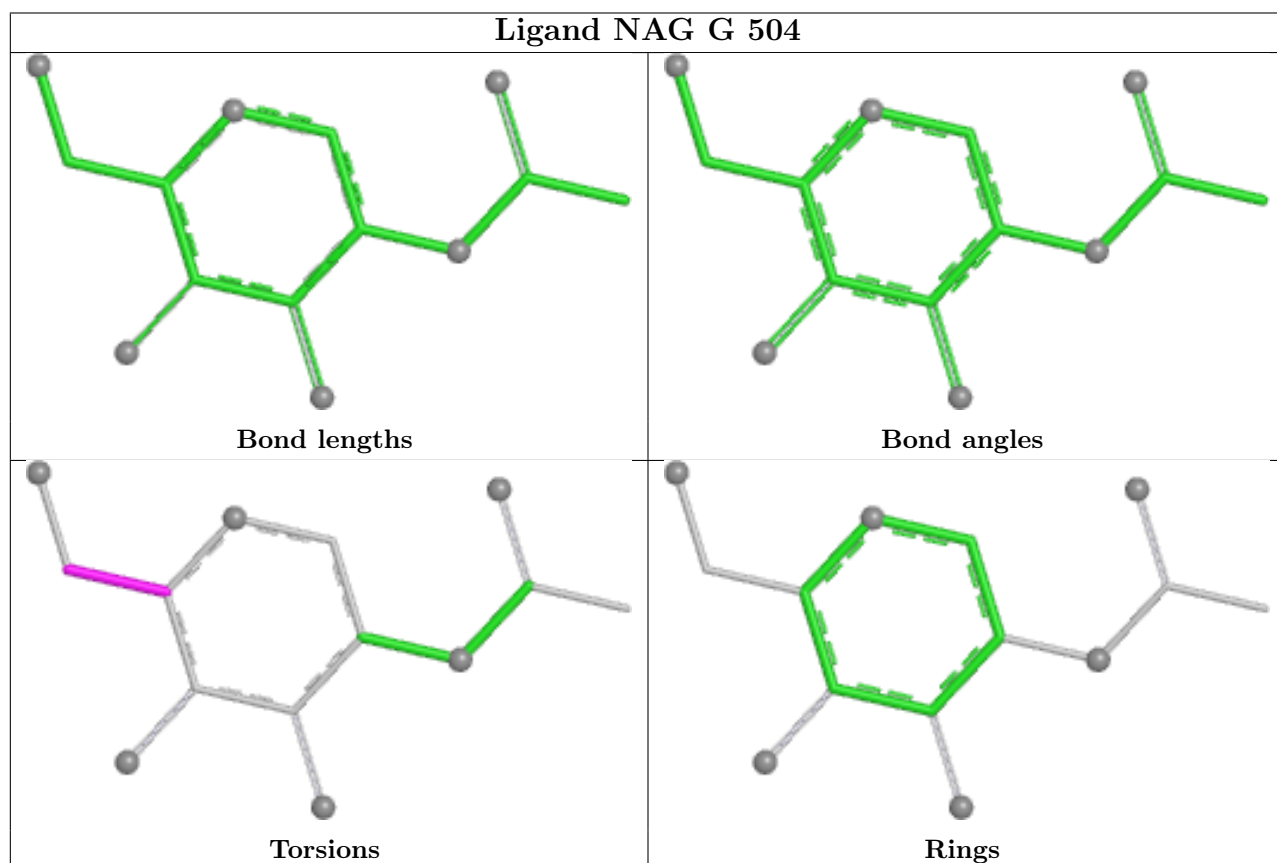
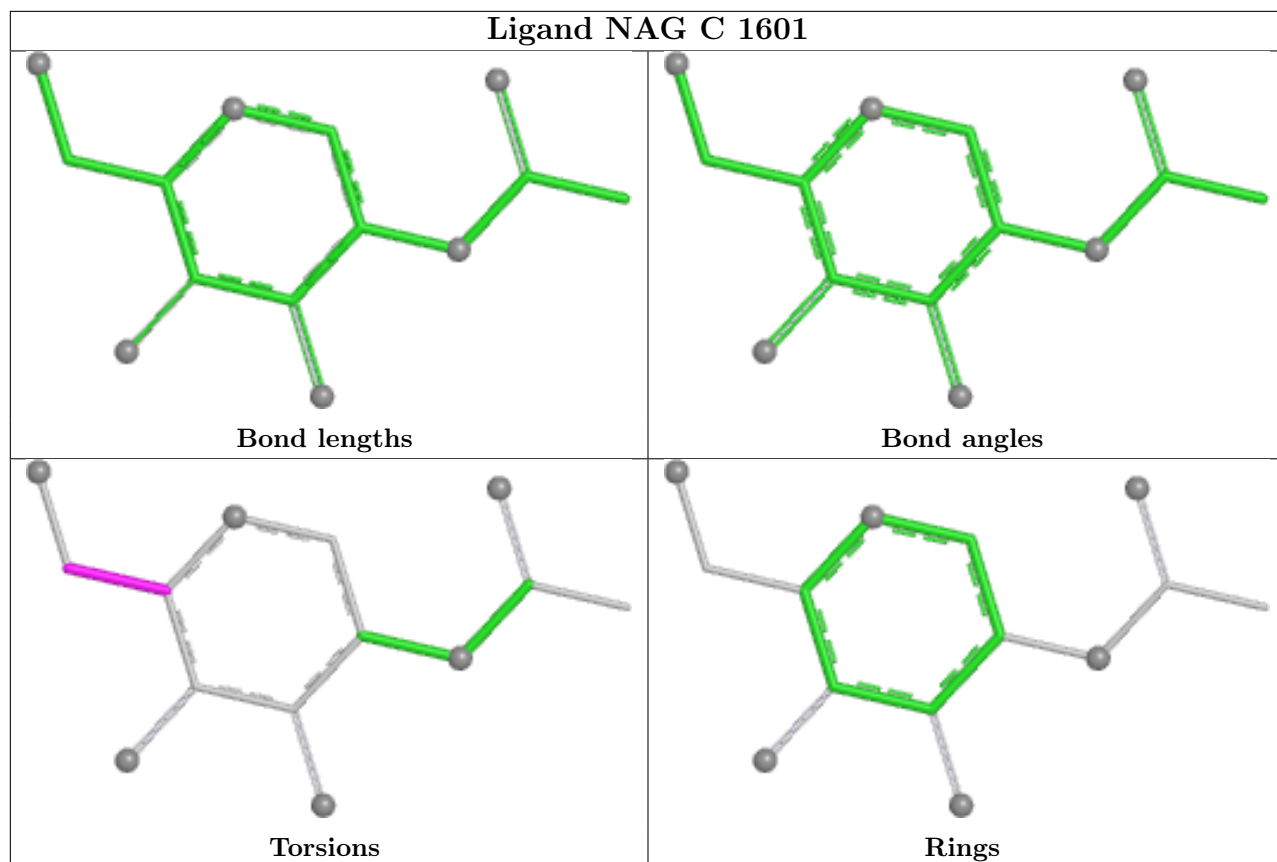
10 monomers are involved in 23 short contacts:

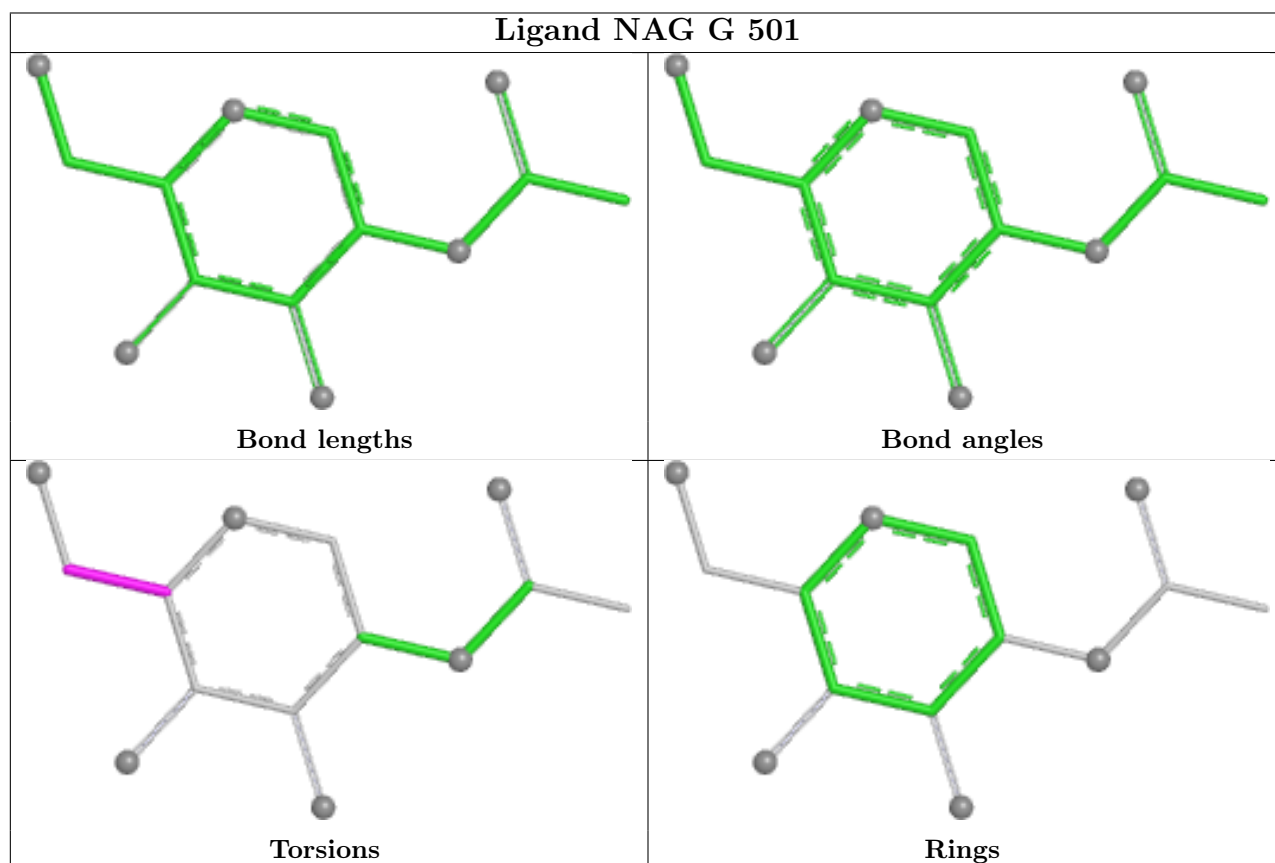
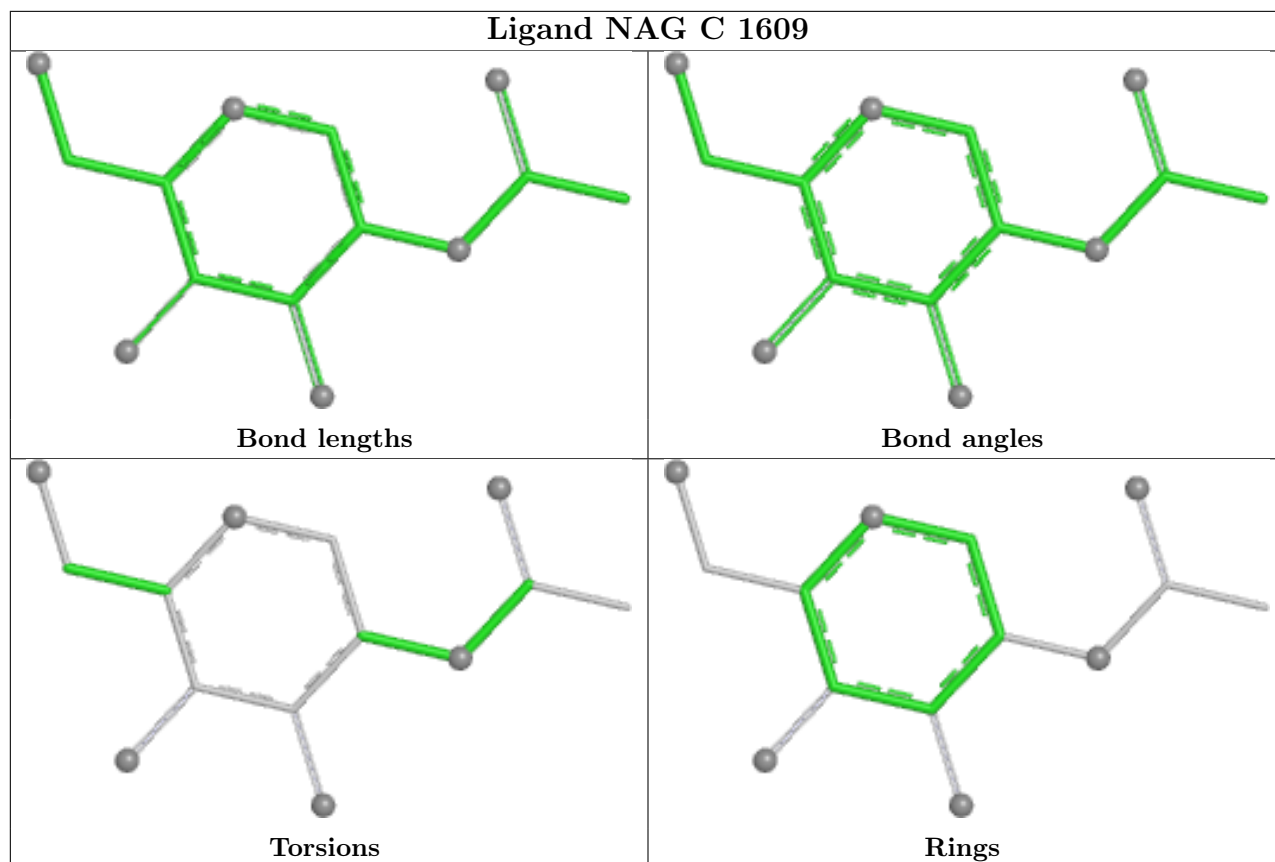
Mol	Chain	Res	Type	Clashes	Symm-Clashes
7	G	505	NAG	3	0
9	C	1612	CIT	1	0
7	G	508	NAG	1	0
7	C	1609	NAG	5	0
7	G	501	NAG	2	0
7	C	1603	NAG	3	0
7	G	511	NAG	2	0
7	C	1611	NAG	3	0
7	C	1610	NAG	1	0
7	C	1602	NAG	2	0

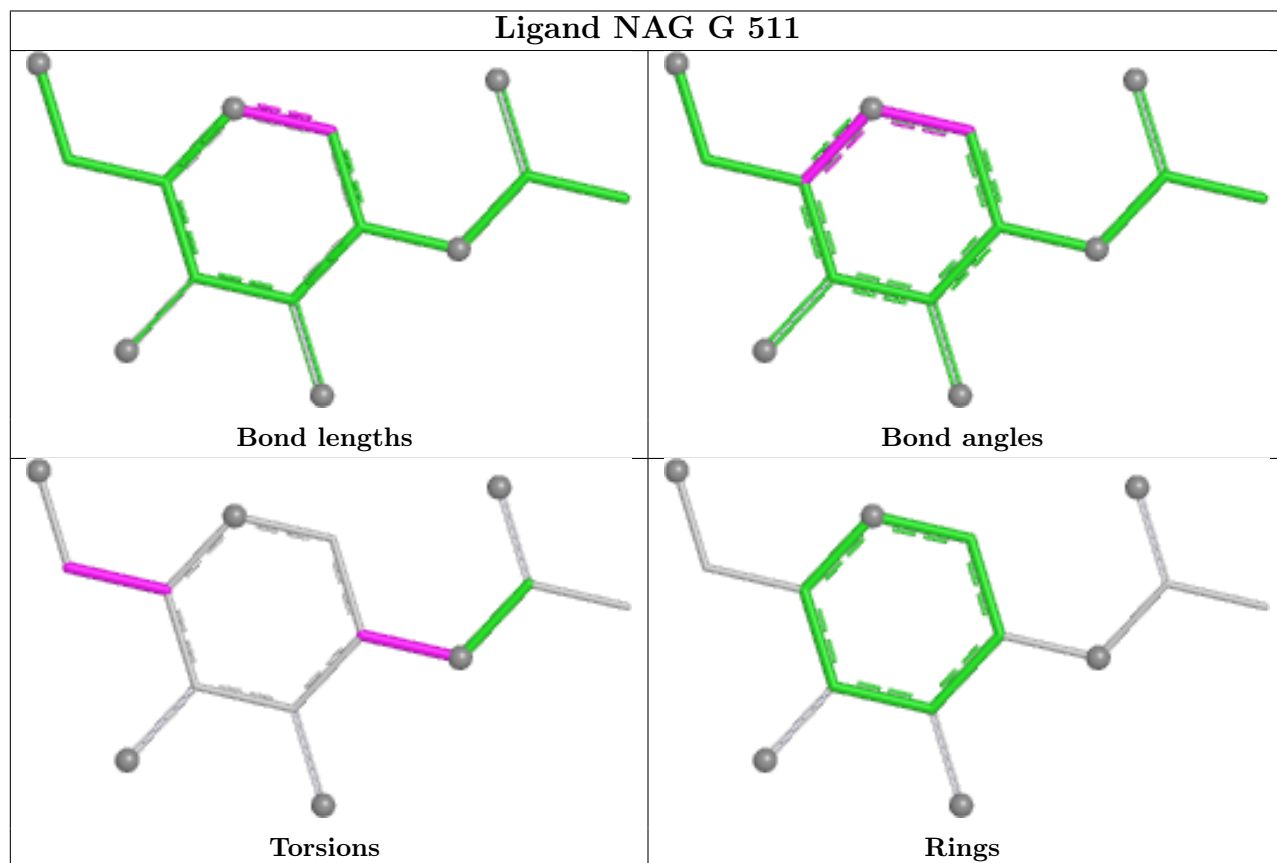
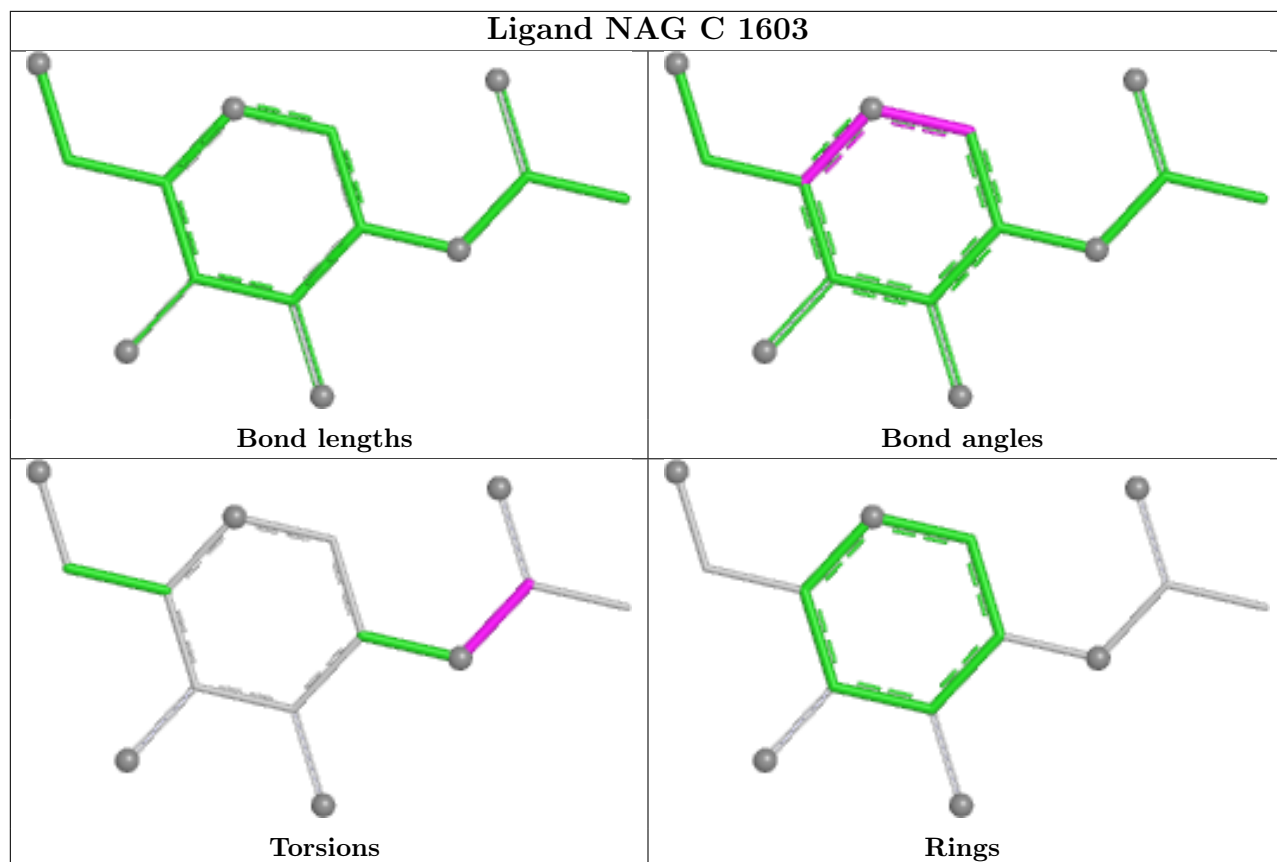
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

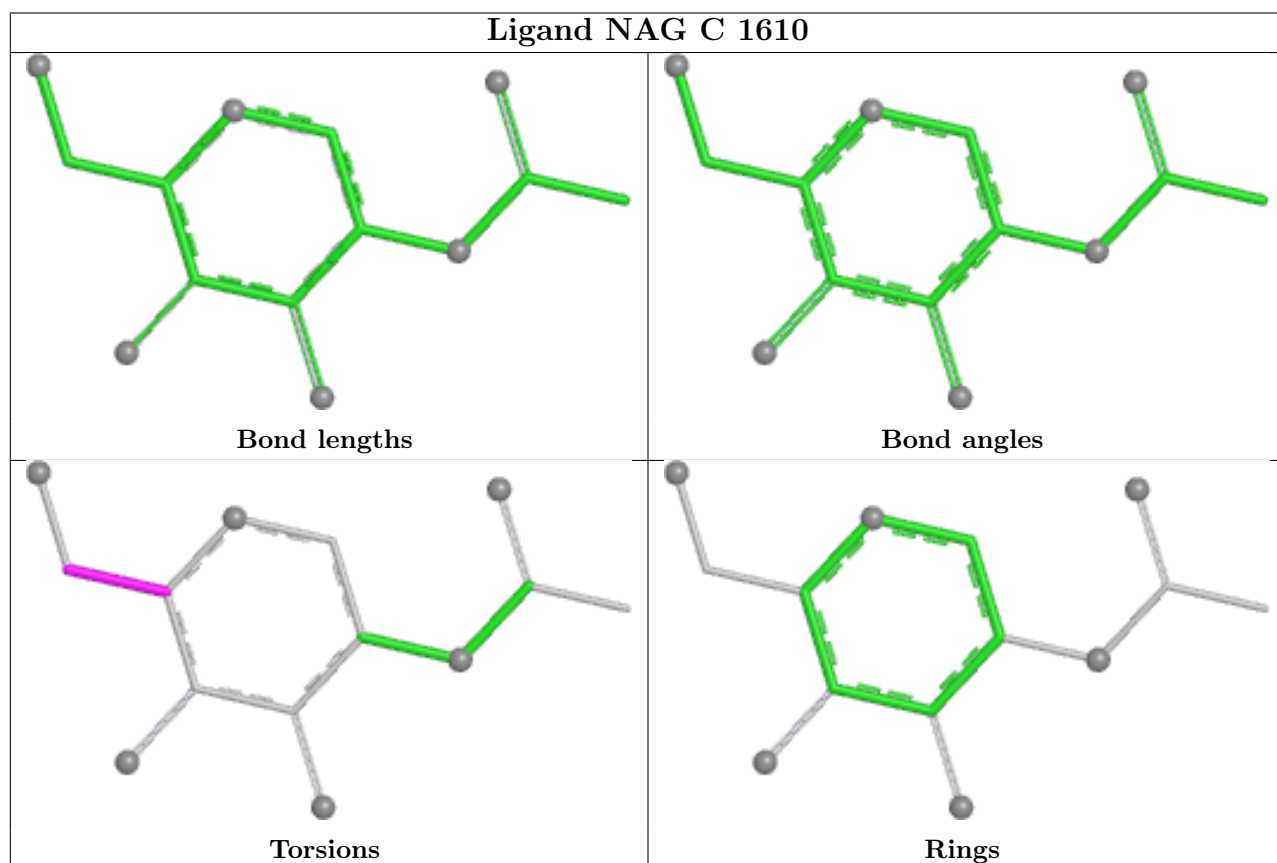
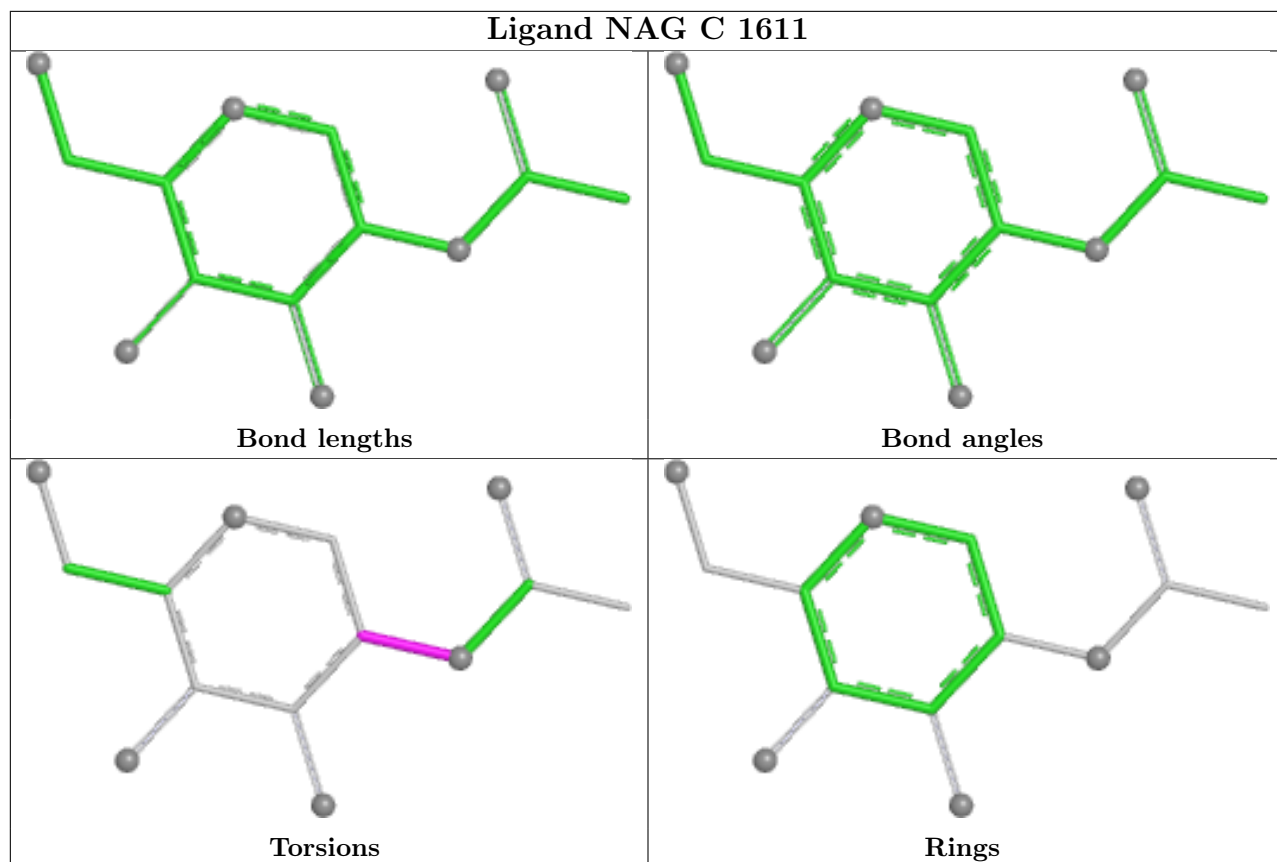


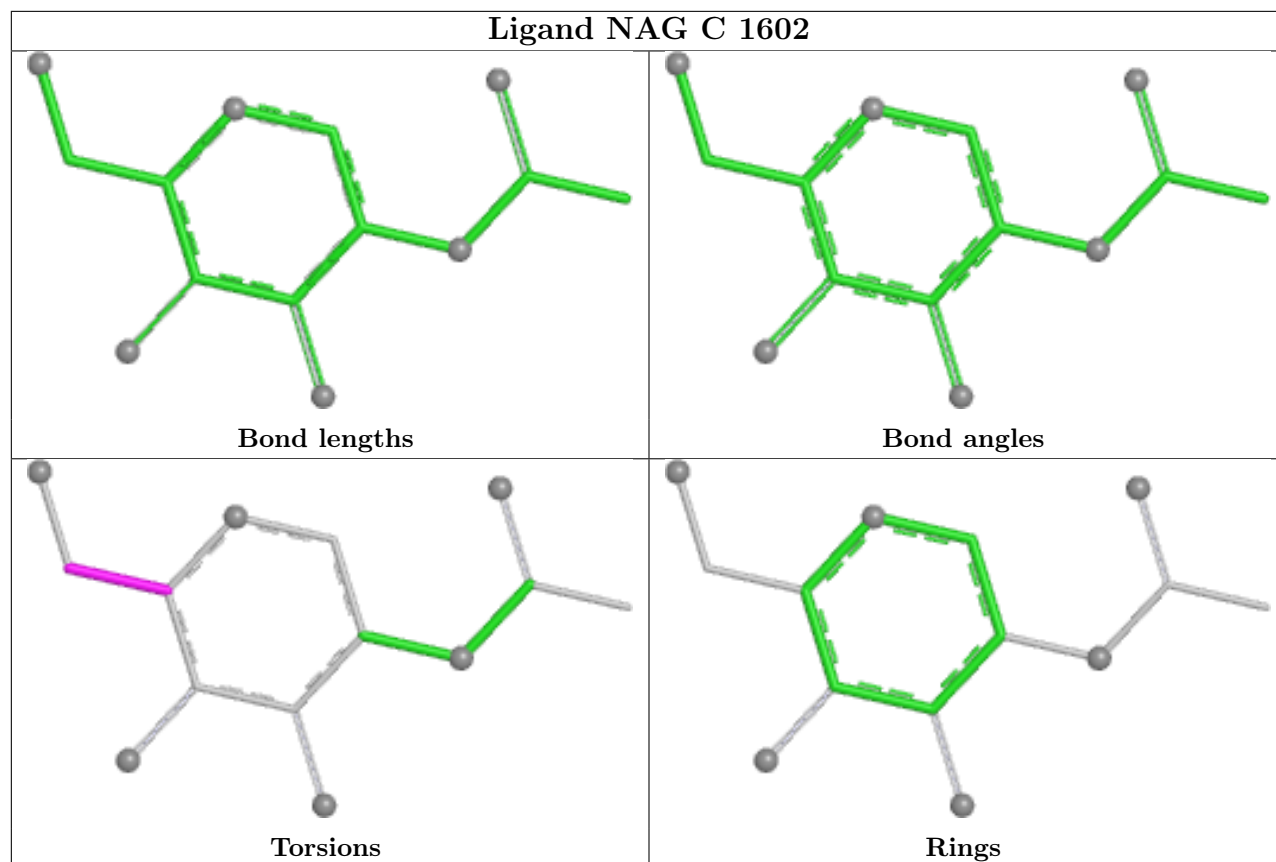












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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	214/233 (91%)	1.71	74 (34%) 1 1	51, 90, 123, 135	0
1	H	215/233 (92%)	1.34	49 (22%) 2 3	45, 73, 115, 134	0
2	B	209/210 (99%)	1.36	43 (20%) 3 4	49, 79, 116, 142	0
2	L	208/210 (99%)	1.66	63 (30%) 1 1	47, 84, 132, 144	0
3	C	336/347 (96%)	2.31	172 (51%) 0 0	56, 86, 116, 134	0
3	G	336/347 (96%)	1.09	35 (10%) 13 15	41, 64, 98, 136	1 (0%)
All	All	1518/1580 (96%)	1.60	436 (28%) 1 2	41, 78, 119, 144	1 (0%)

All (436) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	C	295	VAL	6.8
3	C	375	PHE	6.0
3	C	424	ILE	6.0
1	H	196	CYS	6.0
3	C	296	CYS	5.9
3	C	388	GLY	5.8
3	C	212	PRO	5.8
3	C	294	ILE	5.8
3	C	65	CYS	5.6
3	C	382	PHE	5.4
3	C	338	TRP	5.3
3	C	381	PHE	5.2
3	C	412	ALA	5.1
3	C	376	ASN	5.0
3	C	394	ILE	5.0
3	C	330	TYR	4.9
2	L	148	VAL	4.9
3	C	120	VAL	4.9
3	C	254	VAL	4.7

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Mol	Chain	Res	Type	RSRZ
3	C	423	ILE	4.7
3	C	439	ILE	4.7
2	L	214	GLY	4.7
3	C	342	VAL	4.7
3	C	261	LEU	4.6
2	L	155	ALA	4.6
3	C	299	PRO	4.6
1	A	122	PHE	4.5
3	C	416	LEU	4.5
3	C	418	CYS	4.5
1	A	213	PRO	4.4
3	G	324	GLY	4.4
3	C	331	CYS	4.4
3	C	201	LEU	4.4
3	C	288	LEU	4.4
3	C	385	ASN	4.4
1	A	11	VAL	4.3
3	C	378	GLY	4.3
1	H	211	VAL	4.3
3	C	370	ILE	4.3
2	L	152	VAL	4.2
1	A	138	LEU	4.2
3	C	66	HIS	4.2
3	C	434	ILE	4.2
3	C	449	ILE	4.2
3	C	368	LEU	4.2
3	C	209	THR	4.2
1	A	207	VAL	4.1
1	A	127	SER	4.1
2	L	211	PHE	4.1
1	A	194	TYR	4.1
2	B	29	VAL	4.1
3	G	396	ASN	4.0
3	C	414	ILE	4.0
1	A	112	SER	4.0
3	C	300	ASN	4.0
3	C	395	SER	4.0
3	C	443	ILE	4.0
3	C	433	ALA	3.9
3	C	259	LEU	3.9
2	B	127	LEU	3.9
2	L	150	TRP	3.9

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Mol	Chain	Res	Type	RSRZ
3	C	333	ILE	3.8
3	C	200	THR	3.8
2	L	122	PRO	3.8
3	C	435	TYR	3.8
3	C	326	ILE	3.8
3	C	413	THR	3.8
3	C	339	SER	3.8
1	H	141	LEU	3.8
2	L	143	PRO	3.8
3	C	301	ASN	3.8
3	C	422	GLN	3.7
2	L	198	VAL	3.7
1	A	170	LEU	3.7
1	A	118	GLY	3.7
1	A	176	TYR	3.7
3	C	445	CYS	3.7
3	C	420	ILE	3.7
1	H	193	THR	3.7
3	C	293	GLU	3.7
3	C	358	ILE	3.7
1	H	127	SER	3.6
3	C	297	THR	3.6
3	C	427	TRP	3.6
3	G	444	THR	3.6
1	A	141	LEU	3.6
3	G	412	ALA	3.6
1	H	100	TYR	3.6
2	L	196	CYS	3.6
2	L	147	LYS	3.6
3	G	462	THR	3.6
3	C	371	THR	3.6
2	L	193	VAL	3.6
3	C	69	TRP	3.6
1	H	123	PRO	3.6
3	G	441	GLY	3.5
1	A	148	GLU	3.5
3	C	438	PRO	3.5
3	C	255	VAL	3.5
1	A	114	ALA	3.5
3	C	263	GLY	3.5
1	A	198	VAL	3.5
3	C	430	VAL	3.5

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Mol	Chain	Res	Type	RSRZ
2	L	149	GLN	3.5
3	C	292	VAL	3.5
3	G	81	PRO	3.4
3	C	421	LYS	3.4
3	C	432	LYS	3.4
3	C	337	ASN	3.4
1	A	151	THR	3.4
3	C	417	PRO	3.4
2	L	156	LEU	3.4
3	C	122	LEU	3.3
3	C	332	ASN	3.3
3	C	341	ALA	3.3
3	C	213	ILE	3.3
2	L	138	LEU	3.3
3	C	202	THR	3.3
3	C	372	THR	3.3
3	C	386	THR	3.2
1	H	154	TRP	3.2
3	C	364	SER	3.2
3	C	458	GLY	3.2
3	C	221	ALA	3.2
3	C	384	CYS	3.2
2	L	199	THR	3.2
2	L	208	THR	3.2
3	G	297	THR	3.2
3	C	415	MET	3.2
1	H	194	TYR	3.2
3	C	265	LEU	3.2
1	A	152	VAL	3.2
2	B	32	TYR	3.2
3	C	373	HIS	3.2
2	B	131	THR	3.1
3	C	444	THR	3.1
1	A	209	LYS	3.1
1	A	184	VAL	3.1
2	B	186	ALA	3.1
2	L	32	TYR	3.1
1	H	189	LEU	3.1
2	L	137	LEU	3.1
1	H	195	ILE	3.1
2	B	205	SER	3.1
3	C	334	SER	3.1

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Mol	Chain	Res	Type	RSRZ
3	C	451	GLY	3.1
3	C	210	PHE	3.1
3	C	324	GLY	3.0
1	A	115	SER	3.0
3	C	208	VAL	3.0
1	A	145	TYR	3.0
1	H	161	SER	3.0
3	C	340	GLU	3.0
1	H	122	PHE	3.0
3	C	345	VAL	3.0
1	A	123	PRO	3.0
3	G	491	ILE	3.0
3	C	262	ASN	3.0
3	C	462	THR	3.0
2	L	127	LEU	3.0
3	G	65[A]	CYS	3.0
1	H	163	VAL	3.0
2	L	201	GLN	3.0
2	L	2	ILE	2.9
2	L	194	TYR	2.9
3	C	121	LYS	2.9
3	C	419	ARG	2.9
1	A	109	VAL	2.9
1	H	136	ALA	2.9
2	B	199	THR	2.9
3	C	393	THR	2.9
1	A	159	LEU	2.9
3	C	389	LEU	2.9
2	B	198	VAL	2.9
3	C	344	GLN	2.9
3	C	329	ALA	2.9
2	B	2	ILE	2.9
3	C	396	ASN	2.9
3	G	336	ARG	2.9
1	H	124	LEU	2.9
1	H	159	LEU	2.9
2	L	142	TYR	2.9
1	A	111	VAL	2.8
2	B	196	CYS	2.8
3	C	437	PRO	2.8
3	C	470	PRO	2.8
1	H	125	ALA	2.8

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Mol	Chain	Res	Type	RSRZ
3	C	70	ALA	2.8
1	H	209	LYS	2.8
3	C	56	SER	2.8
1	A	147	PRO	2.8
2	L	203	LEU	2.8
3	C	215	ILE	2.8
3	C	251	ILE	2.8
1	H	142	VAL	2.8
2	B	24	ARG	2.8
3	G	250	GLY	2.8
1	H	100(A)	ASN	2.8
3	G	241	ASN	2.8
3	G	358	ILE	2.8
2	L	151	LYS	2.8
3	C	377	CYS	2.8
3	G	464	ASN	2.8
2	B	28	SER	2.7
1	A	108	LEU	2.7
2	L	120	PHE	2.7
2	L	134	VAL	2.7
3	C	55	ALA	2.7
3	C	355	HIS	2.7
3	C	119	CYS	2.7
3	C	252	LYS	2.7
3	C	290	LYS	2.7
2	B	129	SER	2.7
3	C	118	PRO	2.7
3	C	107	ASP	2.7
3	G	292	VAL	2.7
3	C	360	PHE	2.7
3	C	48	ALA	2.7
3	C	436	ALA	2.7
2	L	192	LYS	2.7
2	B	214	GLY	2.7
1	A	160	THR	2.7
3	C	54	CYS	2.7
2	L	212	ASN	2.7
3	C	298	ARG	2.7
1	H	185	PRO	2.7
3	C	492	LYS	2.7
1	A	15	GLY	2.6
3	C	205	CYS	2.6

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Mol	Chain	Res	Type	RSRZ
1	A	120	SER	2.6
1	H	213	PRO	2.6
3	C	328	GLN	2.6
1	H	158	ALA	2.6
3	G	219	ALA	2.6
2	B	202	GLY	2.6
3	C	467	ILE	2.6
3	C	291	SER	2.6
2	B	109	LYS	2.6
1	A	121	VAL	2.6
3	C	383	TYR	2.6
2	L	106	LEU	2.6
3	C	115	CYS	2.6
1	H	156	SER	2.6
3	G	492	LYS	2.6
1	H	198	VAL	2.6
3	C	390	PHE	2.6
3	C	266	ALA	2.6
1	A	119	PRO	2.6
3	C	228	CYS	2.6
1	A	150	VAL	2.5
2	L	135	VAL	2.5
1	A	189	LEU	2.5
1	A	202	PRO	2.5
2	B	90	GLN	2.5
1	A	82(C)	LEU	2.5
2	B	154	ASN	2.5
3	G	231	LYS	2.5
3	C	203	GLN	2.5
3	G	333	ILE	2.5
1	A	203	SER	2.5
2	L	170	SER	2.5
2	B	77	SER	2.5
1	H	169	VAL	2.5
1	H	184	VAL	2.5
1	A	24	ALA	2.5
2	B	120	PHE	2.5
3	C	58	ALA	2.5
3	G	393	THR	2.5
3	C	270	ILE	2.5
2	L	133	SER	2.5
3	C	247	CYS	2.5

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Mol	Chain	Res	Type	RSRZ
1	A	174	GLY	2.5
2	L	146	ALA	2.5
2	B	118	PHE	2.5
2	B	132	ALA	2.5
2	L	191	HIS	2.5
2	B	122	PRO	2.5
1	A	25	SER	2.4
1	A	161	SER	2.4
1	H	133	GLY	2.4
2	B	130	GLY	2.4
1	A	182	VAL	2.4
3	C	226	LEU	2.4
1	H	210	ARG	2.4
2	L	131	THR	2.4
3	C	50	THR	2.4
3	C	465	THR	2.4
1	A	100	TYR	2.4
3	C	109	ILE	2.4
3	C	446	LYS	2.4
1	H	137	ALA	2.4
1	A	142	VAL	2.4
1	A	146	PHE	2.4
3	C	68	VAL	2.4
3	C	116	LEU	2.4
1	H	135	THR	2.4
1	A	185	PRO	2.4
2	B	124	ASP	2.4
2	L	195	ALA	2.4
2	B	182	THR	2.4
1	A	113	SER	2.4
2	B	123	SER	2.4
3	C	447	SER	2.4
3	G	246	GLN	2.4
2	B	114	ALA	2.4
3	G	226	LEU	2.4
3	C	74	CYS	2.4
2	L	29	VAL	2.3
2	B	121	PRO	2.3
3	C	475	MET	2.3
2	L	123	SER	2.3
2	B	188	TYR	2.3
1	H	139	GLY	2.3

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Mol	Chain	Res	Type	RSRZ
1	H	138	LEU	2.3
2	L	183	LEU	2.3
3	C	260	LEU	2.3
3	C	455	LEU	2.3
3	C	347	LYS	2.3
2	L	144	ARG	2.3
2	B	158	SER	2.3
3	C	111	ILE	2.3
1	A	199	ASN	2.3
3	G	269	GLU	2.3
3	C	204	ALA	2.3
1	H	166	PHE	2.3
1	A	140	CYS	2.3
2	L	182	THR	2.3
3	G	85	VAL	2.3
3	C	233	PHE	2.3
2	L	153	ASP	2.3
3	C	217	TYR	2.3
2	B	156	LEU	2.3
1	A	125	ALA	2.3
1	H	160	THR	2.3
1	A	14	PRO	2.3
1	A	126	PRO	2.3
3	C	238	PRO	2.3
2	L	141	PHE	2.3
1	A	99	ASP	2.3
2	L	31	SER	2.3
1	H	157	GLY	2.3
2	L	181	LEU	2.2
3	C	67	ASN	2.2
1	H	168	ALA	2.2
2	L	186	ALA	2.2
1	H	140	CYS	2.2
1	A	60	CYS	2.2
1	H	95	GLY	2.2
3	C	64	GLU	2.2
1	A	97	ASN	2.2
2	B	183	LEU	2.2
3	G	61	TYR	2.2
2	B	146	ALA	2.2
3	C	214	PRO	2.2
3	C	257	THR	2.2

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Mol	Chain	Res	Type	RSRZ
1	H	146	PHE	2.2
2	L	200	HIS	2.2
3	C	242	VAL	2.2
2	B	136	CYS	2.2
1	A	153	SER	2.2
1	A	172	SER	2.2
2	B	31	SER	2.2
3	C	374	SER	2.2
3	C	481	SER	2.2
2	L	119	ILE	2.2
1	A	154	TRP	2.2
2	B	150	TRP	2.2
3	C	369	GLU	2.2
1	A	27	TYR	2.2
1	A	32	TYR	2.2
1	H	121	VAL	2.2
3	C	271	VAL	2.2
3	C	258	GLN	2.2
1	A	72	ASP	2.2
3	C	459	CYS	2.2
1	A	175	LEU	2.2
1	H	191	THR	2.2
1	A	205	THR	2.2
1	A	211	VAL	2.2
2	L	117	VAL	2.2
1	H	26	GLY	2.1
1	A	195	ILE	2.1
2	L	64	GLY	2.1
3	G	267	GLU	2.1
3	C	335	GLY	2.1
3	G	300	ASN	2.1
3	C	343	ASN	2.1
3	C	207	LYS	2.1
2	B	187	ASP	2.1
3	C	250	GLY	2.1
2	L	48	ILE	2.1
3	C	452	LEU	2.1
3	C	478	ASN	2.1
3	C	79	PRO	2.1
1	A	116	THR	2.1
2	B	25	ALA	2.1
3	G	48	ALA	2.1

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Mol	Chain	Res	Type	RSRZ
2	L	107	GLU	2.1
1	H	120	SER	2.1
1	A	84	SER	2.1
2	L	136	CYS	2.1
1	A	101	GLN	2.1
1	A	117	LYS	2.1
3	C	454	LEU	2.1
3	C	76	PRO	2.1
2	L	180	THR	2.1
2	L	207	VAL	2.1
3	G	89	VAL	2.1
3	G	295	VAL	2.1
1	A	66	ARG	2.1
1	A	157	GLY	2.1
2	B	192	LYS	2.1
2	L	115	PRO	2.1
2	L	132	ALA	2.1
3	C	380	GLU	2.0
1	H	67	VAL	2.0
2	B	71	PHE	2.0
1	A	134	GLY	2.0
2	L	50	ASP	2.0
1	A	173	SER	2.0
3	G	264	SER	2.0
3	G	387	SER	2.0
2	L	171	LYS	2.0
1	H	64	GLN	2.0
1	A	52(A)	PRO	2.0
3	G	488	VAL	2.0
3	C	89	VAL	2.0
2	B	91	TYR	2.0
2	B	211	PHE	2.0
3	G	330	TYR	2.0
1	H	99	ASP	2.0
1	H	190	GLY	2.0
3	C	468	PHE	2.0
2	L	30	SER	2.0
2	L	185	LYS	2.0
3	C	81	PRO	2.0

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

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 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
1	PCA	H	1	8/9	0.62	0.19	72,94,107,107	0
1	PCA	A	1	8/9	0.69	0.16	75,109,121,130	0

6.3 Carbohydrates [i](#)

SUGAR-RSR INFOmissingINFO

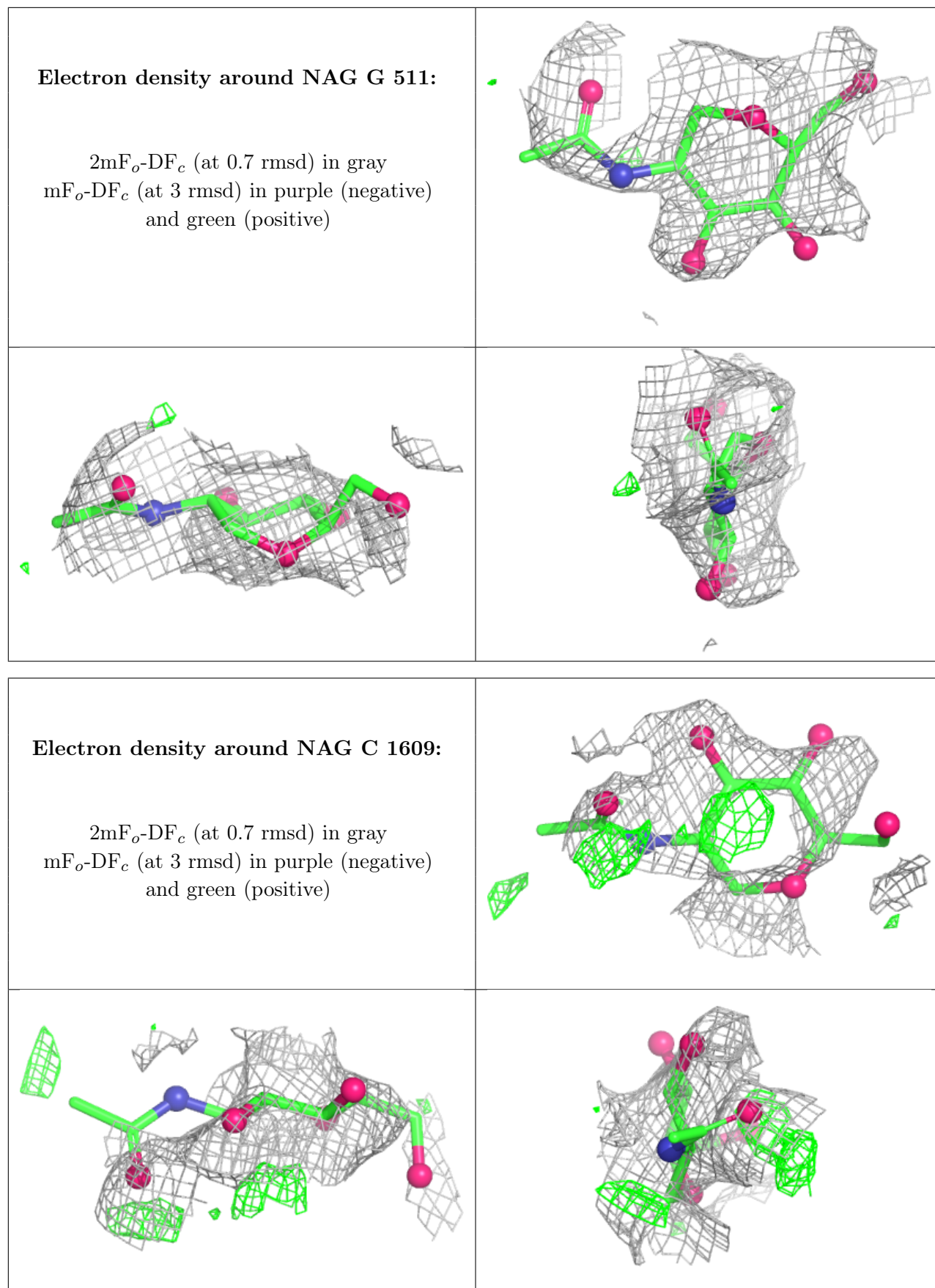
6.4 Ligands [i](#)

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
7	NAG	G	511	14/15	0.39	0.18	74,113,117,117	0
7	NAG	C	1609	14/15	0.40	0.26	110,118,122,129	0
7	NAG	C	1603	14/15	0.56	0.20	98,110,120,123	0
7	NAG	C	1610	14/15	0.57	0.23	98,106,126,128	0
7	NAG	G	501	14/15	0.64	0.26	83,94,100,104	0
7	NAG	C	1611	14/15	0.64	0.29	98,113,124,125	0
7	NAG	G	507	14/15	0.65	0.21	88,99,110,114	0
7	NAG	G	506	14/15	0.65	0.25	89,98,102,106	0
7	NAG	G	508	14/15	0.67	0.21	100,113,118,123	0
7	NAG	C	1601	14/15	0.70	0.19	108,119,131,132	0
7	NAG	C	1602	14/15	0.75	0.19	70,96,101,102	0
8	PEG	G	518	7/7	0.75	0.28	54,65,77,78	0
9	CIT	C	1612	13/13	0.79	0.20	53,78,102,102	0
7	NAG	G	505	14/15	0.80	0.18	65,75,90,91	0
7	NAG	G	504	14/15	0.83	0.20	70,77,86,94	0
10	EDO	C	1614	4/4	0.84	0.28	72,86,104,104	0
10	EDO	C	1613	4/4	0.88	0.21	61,76,92,95	0

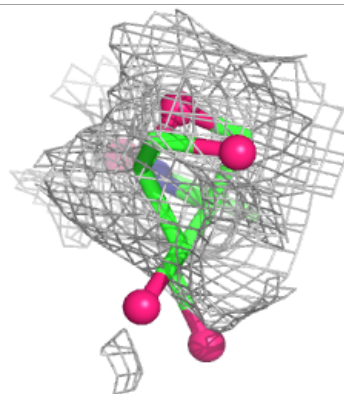
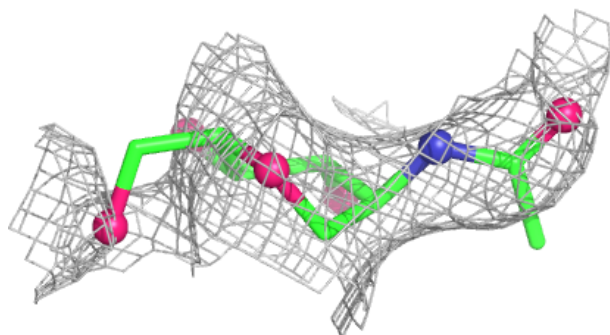
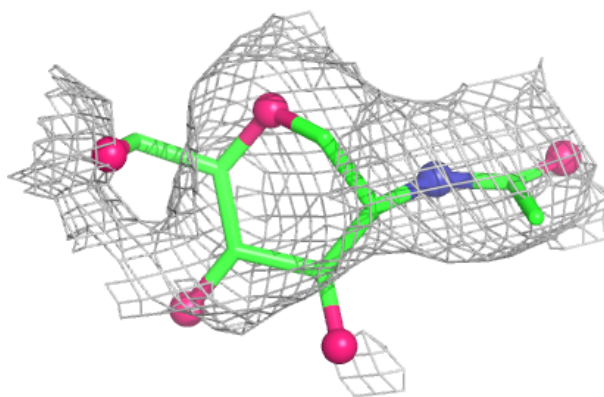
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different

orientation to approximate a three-dimensional view.

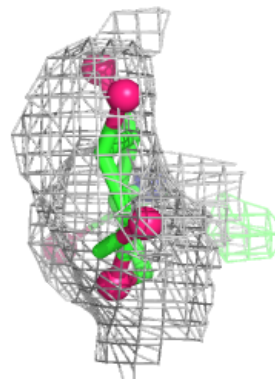
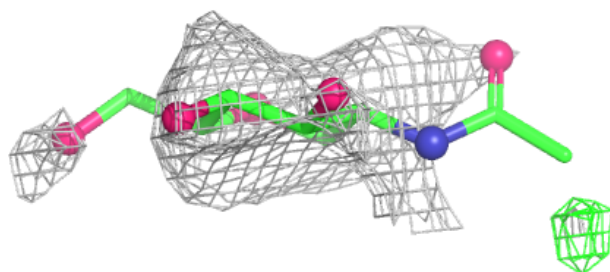
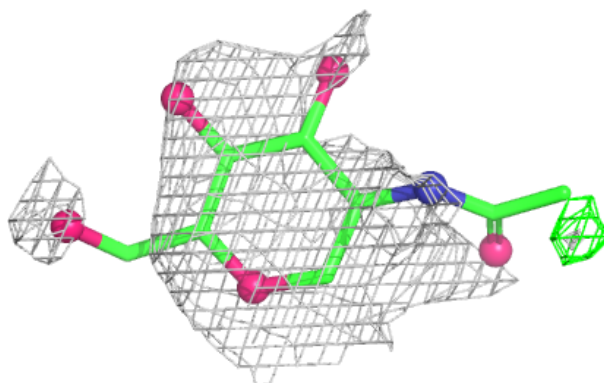


Electron density around NAG C 1603:

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

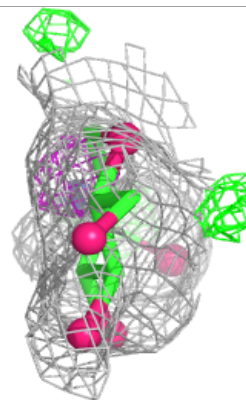
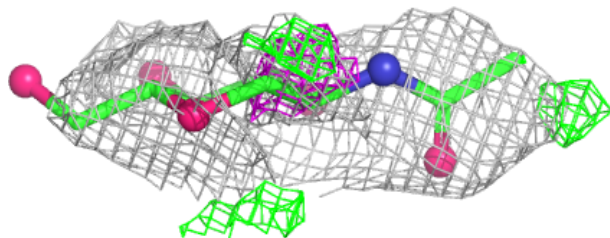
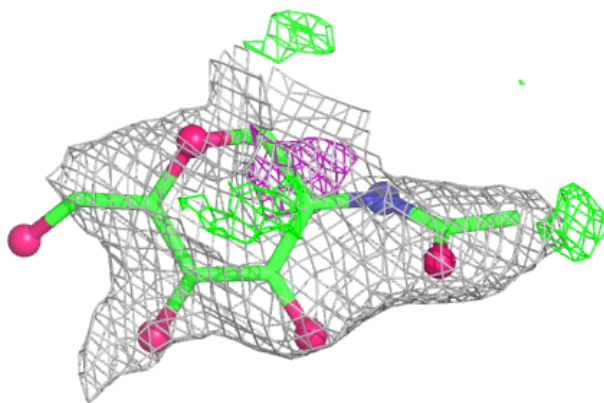
**Electron density around NAG C 1610:**

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

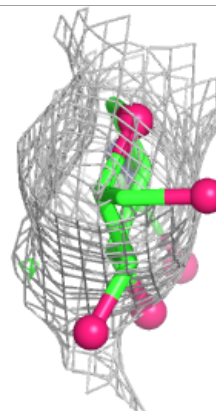
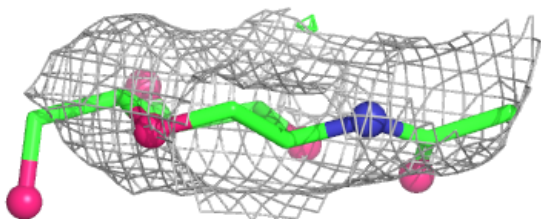
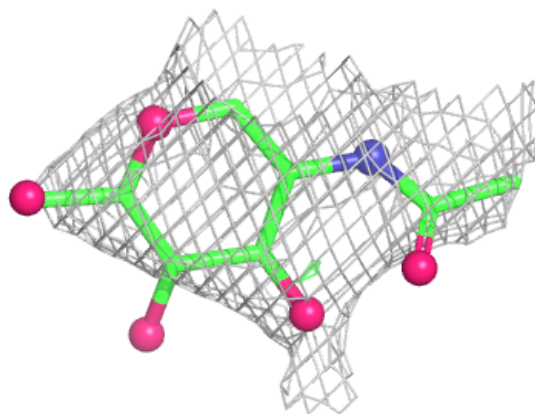


Electron density around NAG G 501:

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

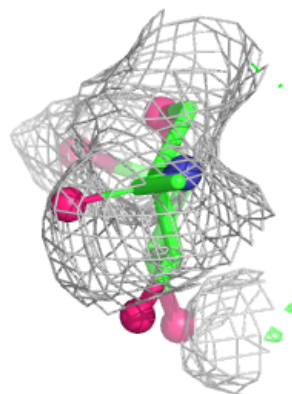
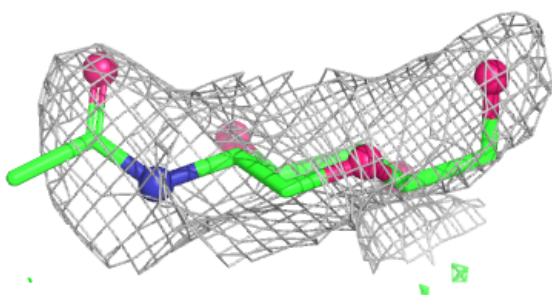
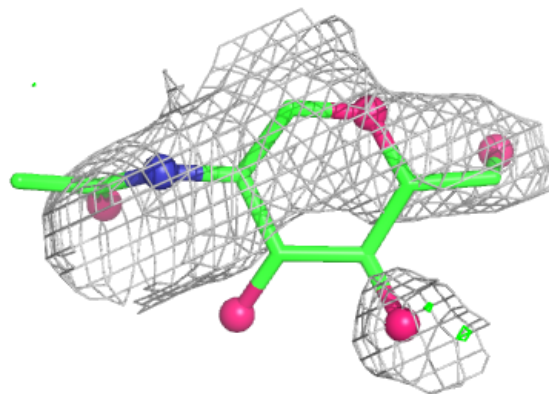
**Electron density around NAG C 1611:**

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

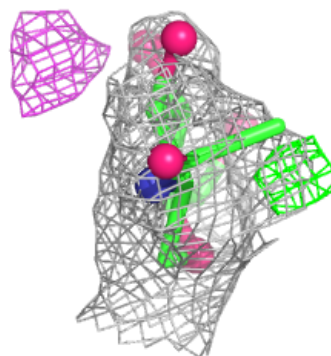
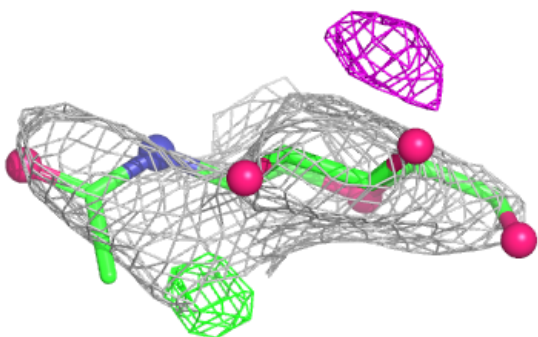
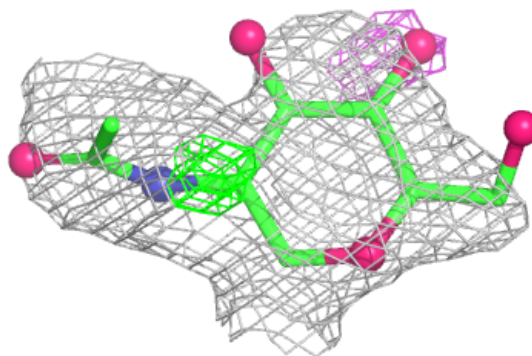


Electron density around NAG G 507:

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

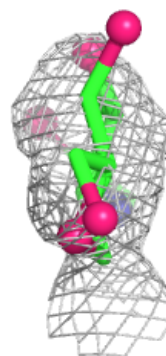
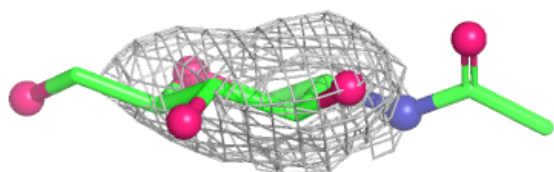
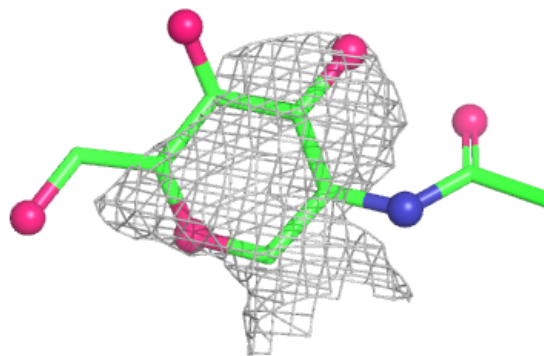
**Electron density around NAG G 506:**

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

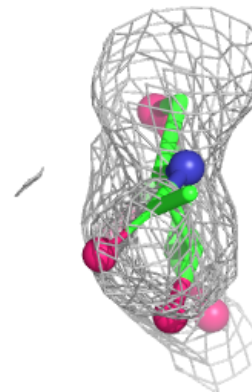
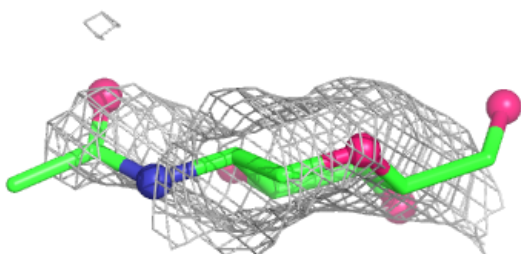
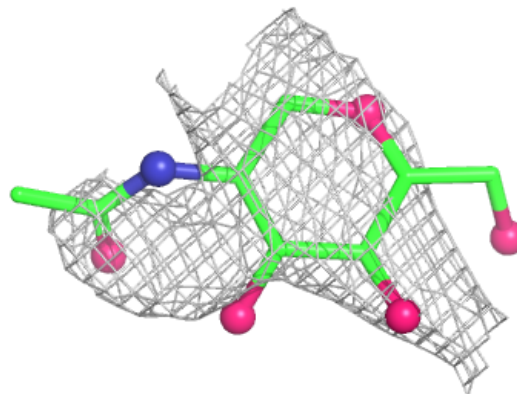


Electron density around NAG G 508:

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

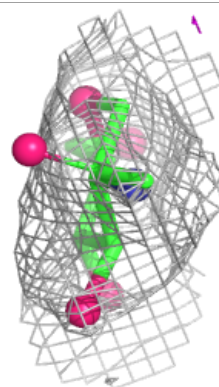
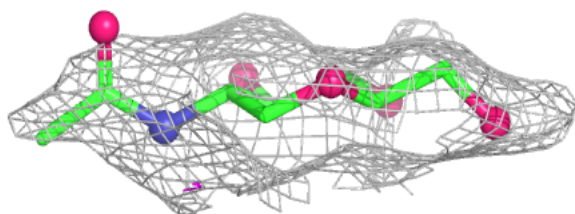
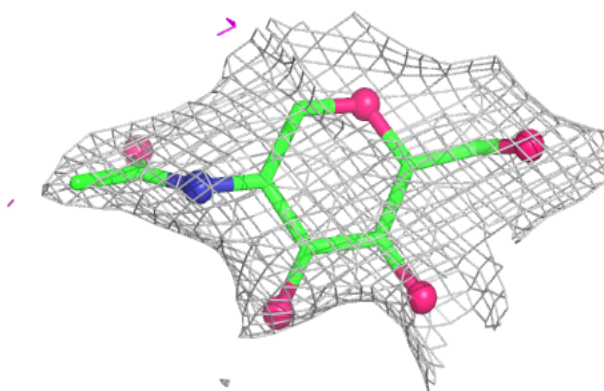
**Electron density around NAG C 1601:**

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

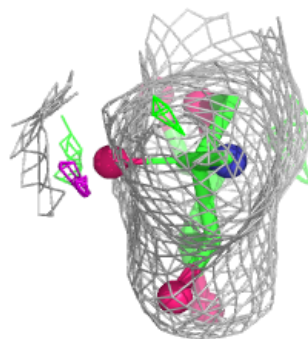
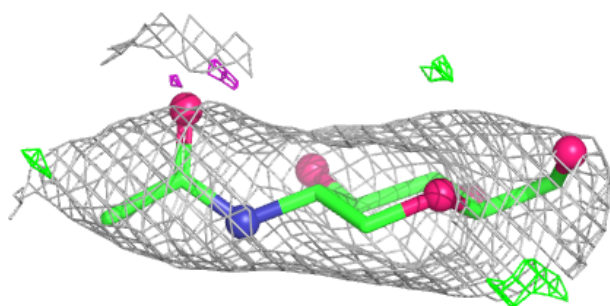
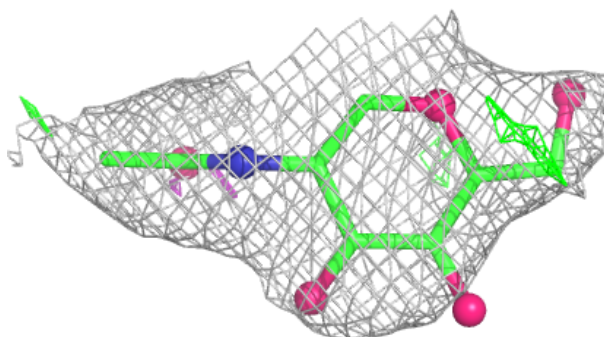


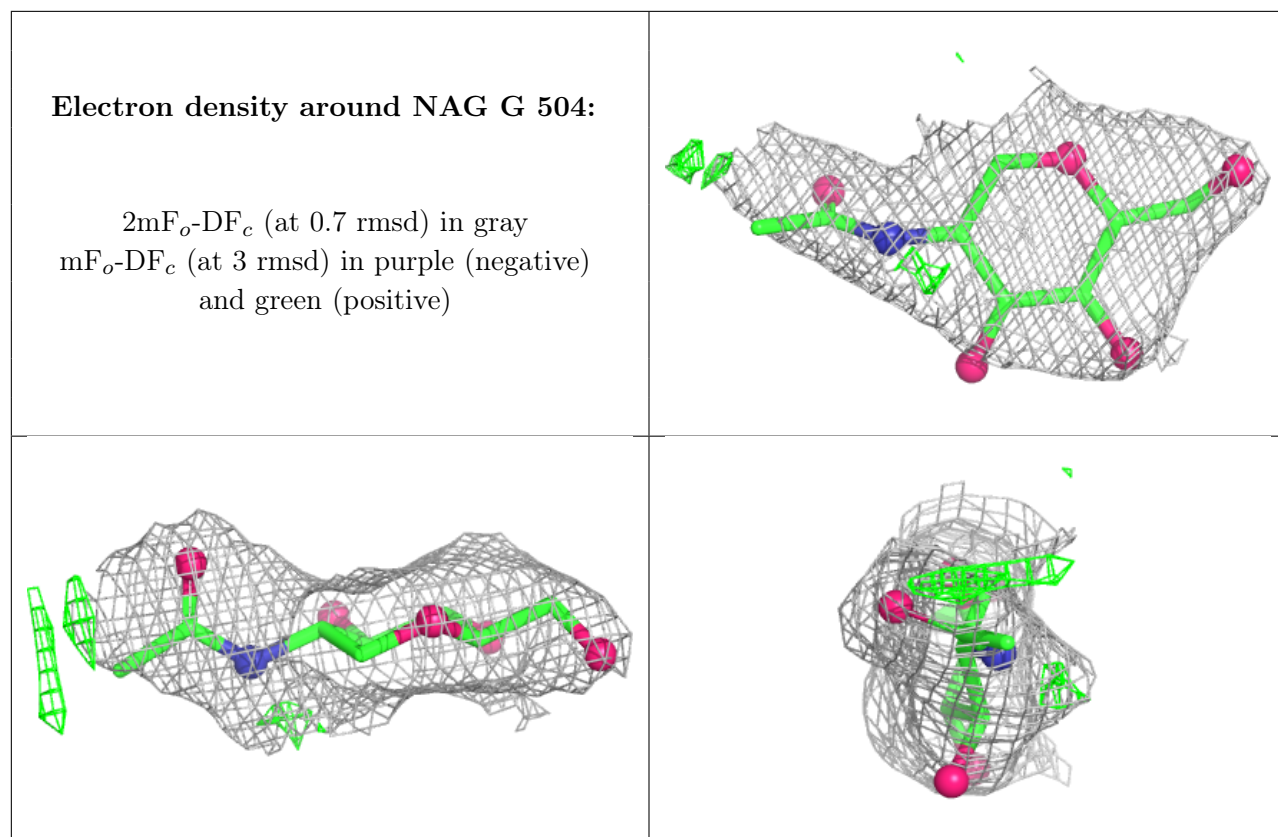
Electron density around NAG C 1602:

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

**Electron density around NAG G 505:**

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





6.5 Other polymers [i](#)

There are no such residues in this entry.