WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report (i)

Feb 16, 2026 – 10:08 AM EST

PDB ID	:	9O6N / pdb_00009o6n
Title	:	Structure of Siglec-10
Authors	:	Medina, E.; Ming, Q.; Tran, T.H.; Luca, V.C.
Deposited on	:	2025-04-14
Resolution	:	2.98 Å(reported)

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

|		
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.48

1 Overall quality at a glance ⓘ

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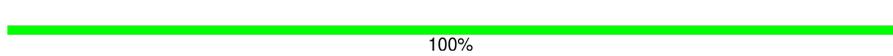*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.98 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.
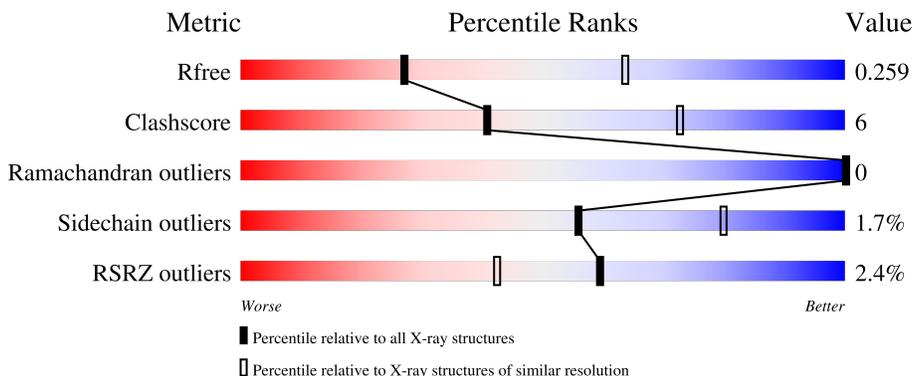
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	3360 (3.00-2.96)
Clashscore	180529	3751 (3.00-2.96)
Ramachandran outliers	177936	3628 (3.00-2.96)
Sidechain outliers	177891	3631 (3.00-2.96)
RSRZ outliers	164620	3372 (3.00-2.96)

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	219	4% / 77% / 21% / •
1	B	219	3% / 88% / 12%
1	C	219	85% / 14% / •
2	D	3	100%

2 Entry composition ⓘ

There are 7 unique types of molecules in this entry. The entry contains 5296 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 Sialic acid-binding Ig-like lectin 10.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	216	Total	C	N	O	S	0	0	0
			1710	1086	296	318	10			
1	B	219	Total	C	N	O	S	0	0	0
			1733	1099	299	325	10			
1	C	219	Total	C	N	O	S	0	0	0
			1739	1102	302	325	10			

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	17	PRO	-	expression tag	UNP Q96LC7
B	17	PRO	-	expression tag	UNP Q96LC7
C	17	PRO	-	expression tag	UNP Q96LC7

- Molecule 2 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.
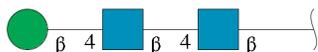
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	D	3	Total	C	N	O	0	0	0
			39	22	2	15			

- Molecule 3 is CITRATE ANION (CCD ID: FLC) (formula: $C_6H_5O_7$) (labeled as "Ligand of Interest" by depositor).

FLC
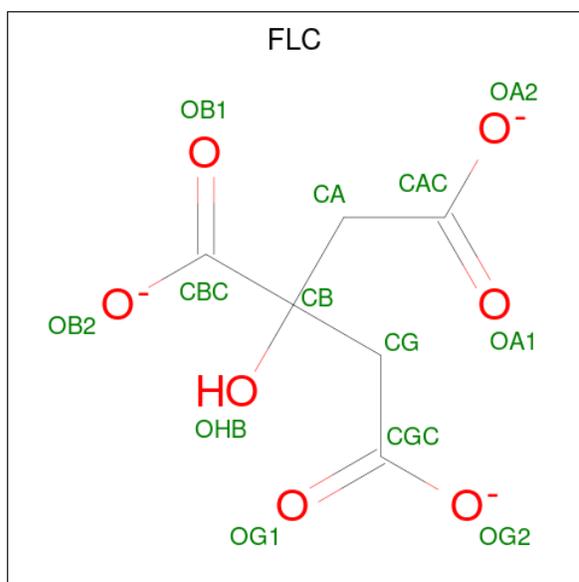
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total 13	C 6	O 7	0	0
3	A	1	Total 13	C 6	O 7	0	0
3	C	1	Total 13	C 6	O 7	0	0

- Molecule 4 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$) (labeled as "Ligand of Interest" by depositor).

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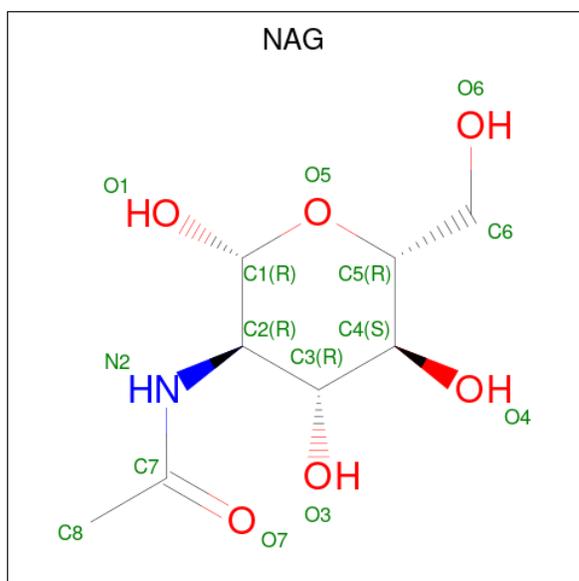
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	B	1	Total 14	C 8	N 1	O 5	0	0

- Molecule 5 is GLYCEROL (CCD ID: GOL) (formula: $C_3H_8O_3$).

GOL
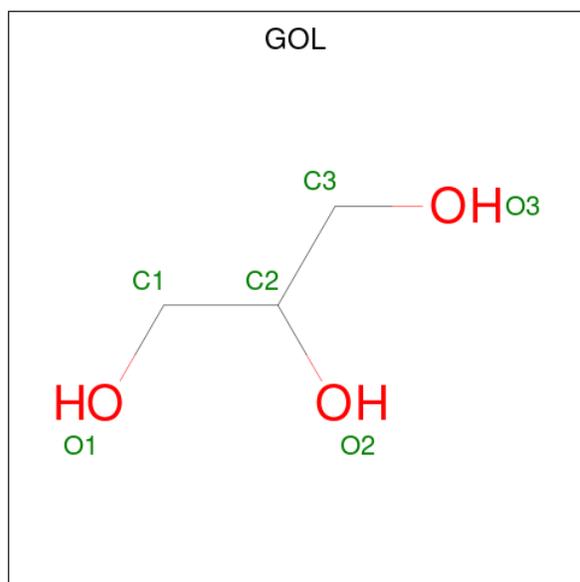
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	B	1	Total 6	C 3	O 3	0	0
5	C	1	Total 6	C 3	O 3	0	0

- Molecule 6 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	B	1	Total 1	Cl 1	0	0

- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	5	Total 5	O 5	0	0
7	B	2	Total 2	O 2	0	0
7	C	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.
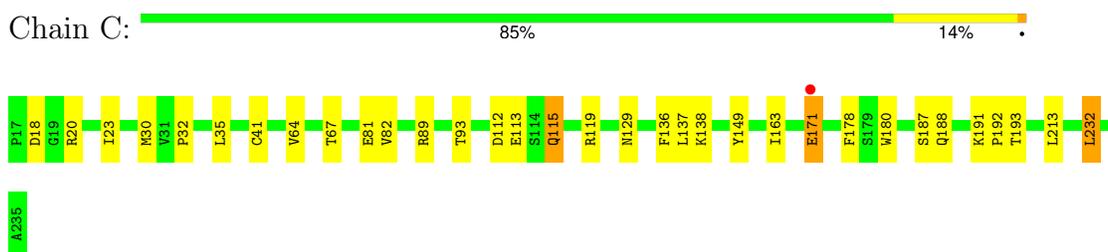
• Molecule 1: Sialic acid-binding Ig-like lectin 10
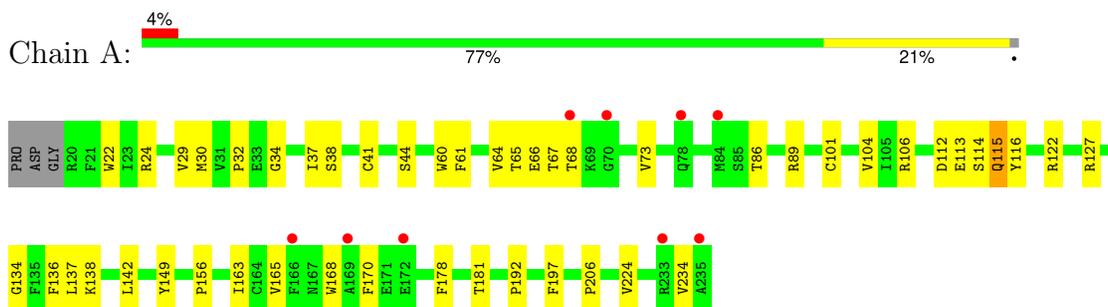
Chain A:

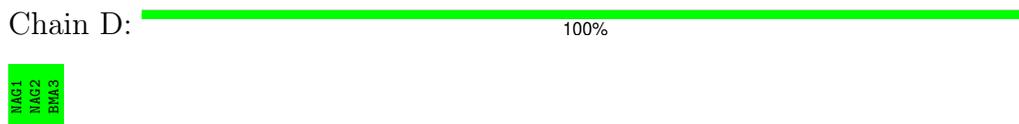• Molecule 1: Sialic acid-binding Ig-like lectin 10

Chain B:

• Molecule 1: Sialic acid-binding Ig-like lectin 10

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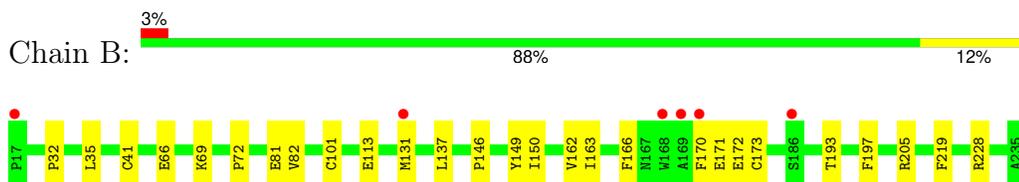
• Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain D:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 65 2 2	Depositor
Cell constants a, b, c, α, β, γ	83.83Å 83.83Å 484.40Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	46.50 – 2.98 46.50 – 2.98	Depositor EDS
% Data completeness (in resolution range)	99.9 (46.50-2.98) 93.8 (46.50-2.98)	Depositor EDS
R_{merge}	0.27	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.42 (at 2.96Å)	Xtriage
Refinement program	PHENIX (1.21.1_5286: ???)	Depositor
R, R_{free}	0.212 , 0.259 0.218 , 0.259	Depositor DCC
R_{free} test set	2000 reflections (9.12%)	wwPDB-VP
Wilson B-factor (Å²)	61.3	Xtriage
Anisotropy	0.440	Xtriage
Bulk solvent k_{sol}(e/Å³), B_{sol}(Å²)	0.34 , 43.6	EDS
L-test for twinning[2]	$< |L| > = 0.46, < L^2 > = 0.29$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	5296	wwPDB-VP
Average B, all atoms (Å²)	66.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.15% 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: BMA, CL, FLC, NAG, GOL

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	0.50	0/1761	0.76	1/2400 (0.0%)
1	B	0.44	0/1785	0.67	0/2432
1	C	0.48	0/1791	0.74	0/2439
All	All	0.48	0/5337	0.72	1/7271 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	68	THR	N-CA-C	-5.31	106.77	113.20

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	1710	0	1630	32	0
1	B	1733	0	1649	19	0
1	C	1739	0	1661	20	0
2	D	39	0	34	0	0
3	A	26	0	10	2	0
3	C	13	0	5	0	0
4	B	14	0	13	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	B	6	0	8	0	0
5	C	6	0	8	0	0
6	B	1	0	0	0	0
7	A	5	0	0	0	0
7	B	2	0	0	0	0
7	C	2	0	0	0	0
All	All	5296	0	5018	66	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 6.

All (66) 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:C:30:MET:HG2	1:C:138:LYS:HB3	1.75	0.66
1:C:115:GLN:HG2	1:C:136:PHE:HD1	1.61	0.66
1:A:61:PHE:CD1	1:A:65:THR:HG21	2.36	0.61
1:A:115:GLN:HG2	1:A:136:PHE:CD2	2.35	0.61
1:A:115:GLN:HG2	1:A:136:PHE:HD2	1.68	0.59
1:B:150:ILE:HG13	1:B:162:VAL:HG22	1.84	0.58
1:A:73:VAL:HG23	1:A:86:THR:HG21	1.85	0.58
1:C:67:THR:HG21	1:C:129:ASN:HD21	1.67	0.58
1:A:163:ILE:HD12	1:B:163:ILE:HD13	1.87	0.56
1:A:149:TYR:HB2	1:A:163:ILE:HG23	1.86	0.55
1:B:32:PRO:HG2	1:B:35:LEU:HD22	1.90	0.54
1:A:127:ARG:HH11	3:A:302:FLC:HG1	1.73	0.54
1:C:67:THR:CG2	1:C:119:ARG:HD2	2.39	0.53
1:A:116:TYR:O	1:A:134:GLY:HA3	2.08	0.53
1:A:168:TRP:HA	1:A:168:TRP:CE3	2.43	0.53
1:A:38:SER:HB3	1:A:104:VAL:HG22	1.91	0.52
1:A:89:ARG:O	1:A:106:ARG:HG2	2.10	0.52
1:B:171:GLU:C	1:B:173:CYS:H	2.17	0.52
1:C:149:TYR:HB2	1:C:163:ILE:HG22	1.92	0.52
1:B:113:GLU:HG3	1:B:137:LEU:O	2.10	0.51
1:A:114:SER:OG	1:A:115:GLN:N	2.44	0.51
1:A:44:SER:HA	3:A:301:FLC:HA2	1.93	0.50
1:C:187:SER:O	1:C:188:GLN:HB2	2.12	0.50
1:A:60:TRP:O	1:A:73:VAL:HG12	2.11	0.49
1:B:171:GLU:C	1:B:173:CYS:N	2.70	0.48
1:C:113:GLU:HG3	1:C:137:LEU:O	2.12	0.48
1:A:165:VAL:HG11	1:B:149:TYR:OH	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:178:PHE:O	1:C:192:PRO:HA	2.14	0.47
1:B:41:CYS:HB3	1:B:101:CYS:C	2.40	0.46
1:B:66:GLU:OE2	1:B:69:LYS:HB2	2.15	0.46
1:A:113:GLU:HG3	1:A:137:LEU:O	2.15	0.45
1:A:89:ARG:NH2	1:A:112:ASP:OD2	2.43	0.45
1:B:166:PHE:CE2	1:B:219:PHE:HZ	2.34	0.45
1:B:170:PHE:HB3	1:B:172:GLU:OE1	2.16	0.45
1:B:172:GLU:H	1:B:172:GLU:CD	2.26	0.44
1:C:213:LEU:HB2	1:C:232:LEU:HD11	1.98	0.44
1:C:191:LYS:O	1:C:193:THR:HG23	2.18	0.44
1:A:22:TRP:CE3	1:A:24:ARG:HD3	2.53	0.44
1:A:34:GLY:HA3	1:A:224:VAL:HG11	2.00	0.43
1:A:66:GLU:HG3	1:A:67:THR:H	1.83	0.43
1:A:197:PHE:CD1	1:B:149:TYR:HB3	2.53	0.43
1:A:32:PRO:HB3	1:A:142:LEU:HA	2.01	0.43
1:C:149:TYR:HB2	1:C:163:ILE:CG2	2.47	0.43
1:A:29:VAL:HG13	1:A:37:ILE:HD13	2.01	0.43
1:A:41:CYS:HB3	1:A:101:CYS:C	2.43	0.43
1:A:156:PRO:HG3	1:A:234:VAL:HG12	2.00	0.42
1:C:119:ARG:NH1	1:C:129:ASN:OD1	2.42	0.42
1:C:67:THR:HG21	1:C:129:ASN:ND2	2.33	0.42
1:A:64:VAL:O	1:A:65:THR:C	2.63	0.42
1:B:131:MET:HE3	1:B:131:MET:HB3	1.91	0.42
1:B:166:PHE:HE2	1:B:219:PHE:HZ	1.67	0.42
1:A:30:MET:HA	1:A:138:LYS:O	2.19	0.42
1:C:180:TRP:CE3	1:C:213:LEU:HD21	2.54	0.42
1:C:18:ASP:HB2	1:C:20:ARG:HG3	2.02	0.42
1:C:23:ILE:HD11	1:C:41:CYS:SG	2.60	0.41
1:C:171:GLU:CD	1:C:171:GLU:H	2.29	0.41
1:A:122:ARG:NH2	1:C:81:GLU:OE2	2.38	0.41
1:B:205:ARG:HE	1:B:205:ARG:HB2	1.73	0.41
1:A:149:TYR:HB3	1:B:197:PHE:CD1	2.55	0.41
1:B:72:PRO:HD2	1:B:81:GLU:O	2.20	0.41
1:A:156:PRO:HB3	1:A:206:PRO:HD3	2.02	0.41
1:C:89:ARG:HH22	1:C:112:ASP:CG	2.29	0.41
1:B:146:PRO:O	1:B:228:ARG:HD2	2.21	0.41
1:A:178:PHE:O	1:A:192:PRO:HA	2.21	0.40
1:C:32:PRO:O	1:C:35:LEU:HB2	2.21	0.40
1:A:37:ILE:HG13	1:A:170:PHE:CZ	2.57	0.40

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	214/219 (98%)	206 (96%)	8 (4%)	0	100	100
1	B	217/219 (99%)	212 (98%)	5 (2%)	0	100	100
1	C	217/219 (99%)	212 (98%)	5 (2%)	0	100	100
All	All	648/657 (99%)	630 (97%)	18 (3%)	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	189/193 (98%)	187 (99%)	2 (1%)	70	86
1	B	192/193 (100%)	190 (99%)	2 (1%)	73	87
1	C	193/193 (100%)	187 (97%)	6 (3%)	35	66
All	All	574/579 (99%)	564 (98%)	10 (2%)	56	80

All (10) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	115	GLN
1	A	181	THR
1	B	82	VAL
1	B	193	THR
1	C	64	VAL

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Mol	Chain	Res	Type
1	C	82	VAL
1	C	93	THR
1	C	115	GLN
1	C	171	GLU
1	C	232	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	115	GLN
1	B	26	GLN
1	B	227	GLN
1	C	26	GLN
1	C	100	ASN
1	C	132	ASN

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 ⓘ

3 monosaccharides are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
2	NAG	D	1	2,1	14,14,15	0.39	0	17,19,21	0.64	0
2	NAG	D	2	2	14,14,15	0.39	0	17,19,21	0.70	0
2	BMA	D	3	2	11,11,12	0.28	0	15,15,17	0.41	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
2	NAG	D	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	D	2	2	-	2/6/23/26	0/1/1/1
2	BMA	D	3	2	-	0/2/19/22	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	D	2	NAG	C8-C7-N2-C2
2	D	2	NAG	O7-C7-N2-C2

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 D

Bond lengths	Bond angles

Torsions	Rings
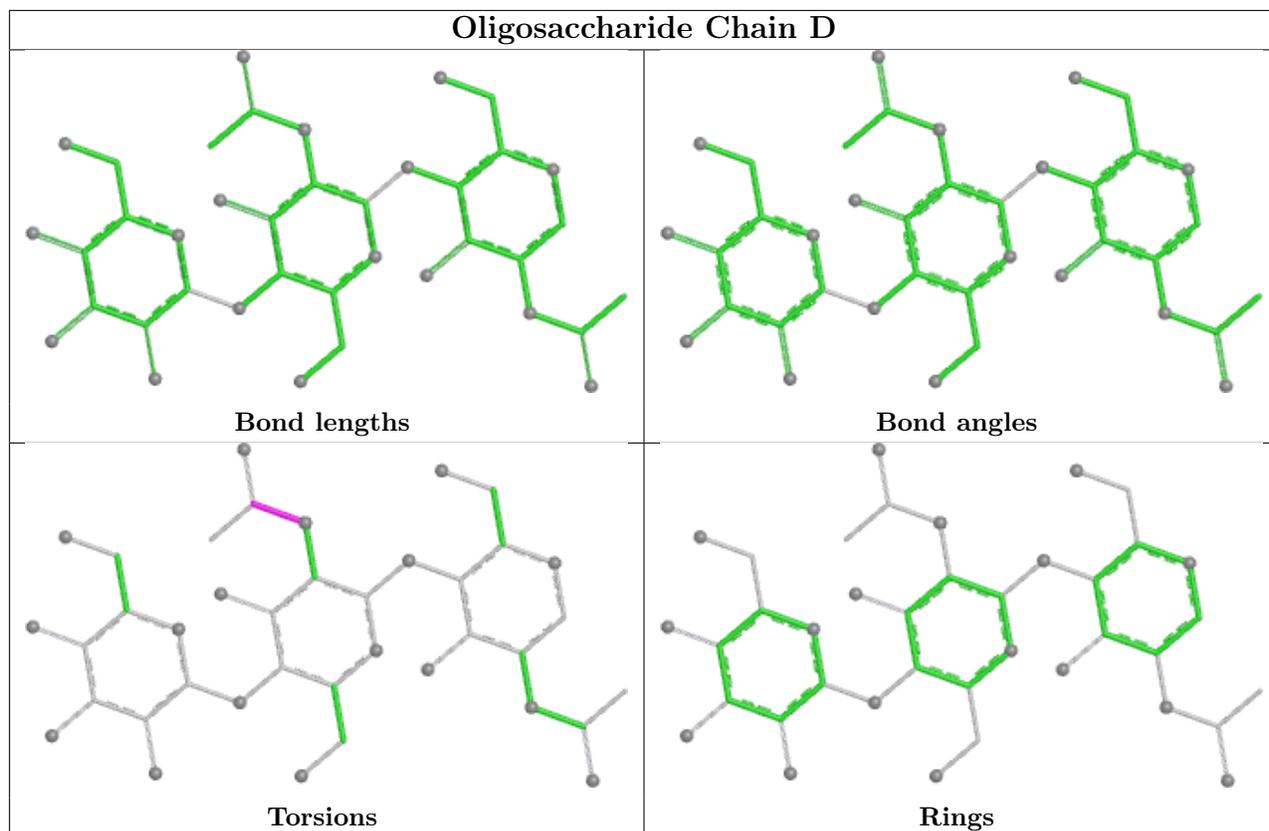
5.6 Ligand geometry ⓘ

Of 7 ligands modelled in this entry, 1 is monoatomic - leaving 6 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$|Z| > 2$	Counts	RMSZ	#$|Z| > 2$
3	FLC	A	301	-	12,12,12	1.13	0	17,17,17	1.80	4 (23%)
5	GOL	B	302	-	5,5,5	0.35	0	5,5,5	0.44	0
4	NAG	B	301	1	14,14,15	0.85	1 (7%)	17,19,21	1.83	4 (23%)
5	GOL	C	302	-	5,5,5	0.45	0	5,5,5	0.38	0
3	FLC	A	302	-	12,12,12	1.11	0	17,17,17	0.99	0
3	FLC	C	301	-	12,12,12	1.21	0	17,17,17	1.04	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	FLC	A	301	-	-	6/16/16/16	-
5	GOL	B	302	-	-	0/4/4/4	-
4	NAG	B	301	1	-	2/6/23/26	0/1/1/1
5	GOL	C	302	-	-	4/4/4/4	-
3	FLC	A	302	-	-	9/16/16/16	-
3	FLC	C	301	-	-	3/16/16/16	-

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	301	NAG	C1-C2	2.18	1.55	1.52

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	301	NAG	C3-C4-C5	-4.49	102.09	110.23
3	A	301	FLC	OB1-CBC-CB	-4.41	113.54	122.09
4	B	301	NAG	C1-O5-C5	3.37	116.70	112.19
4	B	301	NAG	C2-N2-C7	2.74	126.58	122.90
3	A	301	FLC	CA-CB-CBC	-2.60	104.29	110.03
3	A	301	FLC	CB-CG-CGC	2.53	120.85	113.92
3	A	301	FLC	OB2-CBC-CB	2.17	117.31	113.14
3	C	301	FLC	CB-CG-CGC	2.09	119.65	113.92
4	B	301	NAG	O4-C4-C5	2.09	114.47	109.32

There are no chirality outliers.

All (24) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	301	FLC	CG-CB-CBC-OB1
3	A	301	FLC	CG-CB-CBC-OB2
3	A	301	FLC	OHB-CB-CBC-OB1
3	A	301	FLC	OHB-CB-CBC-OB2
3	A	302	FLC	OHB-CB-CBC-OB1
3	A	302	FLC	OHB-CB-CBC-OB2
3	C	301	FLC	OHB-CB-CG-CGC
3	C	301	FLC	CA-CB-CG-CGC
4	B	301	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
4	B	301	NAG	C4-C5-C6-O6
5	C	302	GOL	O2-C2-C3-O3
3	C	301	FLC	CBC-CB-CG-CGC
5	C	302	GOL	O1-C1-C2-C3
5	C	302	GOL	C1-C2-C3-O3
3	A	302	FLC	CA-CB-CBC-OB1
3	A	302	FLC	CG-CB-CBC-OB2
3	A	302	FLC	CA-CB-CBC-OB2
3	A	302	FLC	CAC-CA-CB-OHB
3	A	302	FLC	CA-CB-CG-CGC
3	A	301	FLC	CAC-CA-CB-OHB
5	C	302	GOL	O1-C1-C2-O2
3	A	302	FLC	CBC-CB-CG-CGC
3	A	302	FLC	CG-CB-CBC-OB1
3	A	301	FLC	CA-CB-CBC-OB1

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	301	FLC	1	0
3	A	302	FLC	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for 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 FLC A 301

Bond lengths

Bond angles

Torsions

Rings

Ligand NAG B 301

Bond lengths

Bond angles

Torsions

Rings

Ligand FLC A 302

Bond lengths

Bond angles

Torsions

Rings

Ligand FLC C 301

Bond lengths

Bond angles

Torsions

Rings
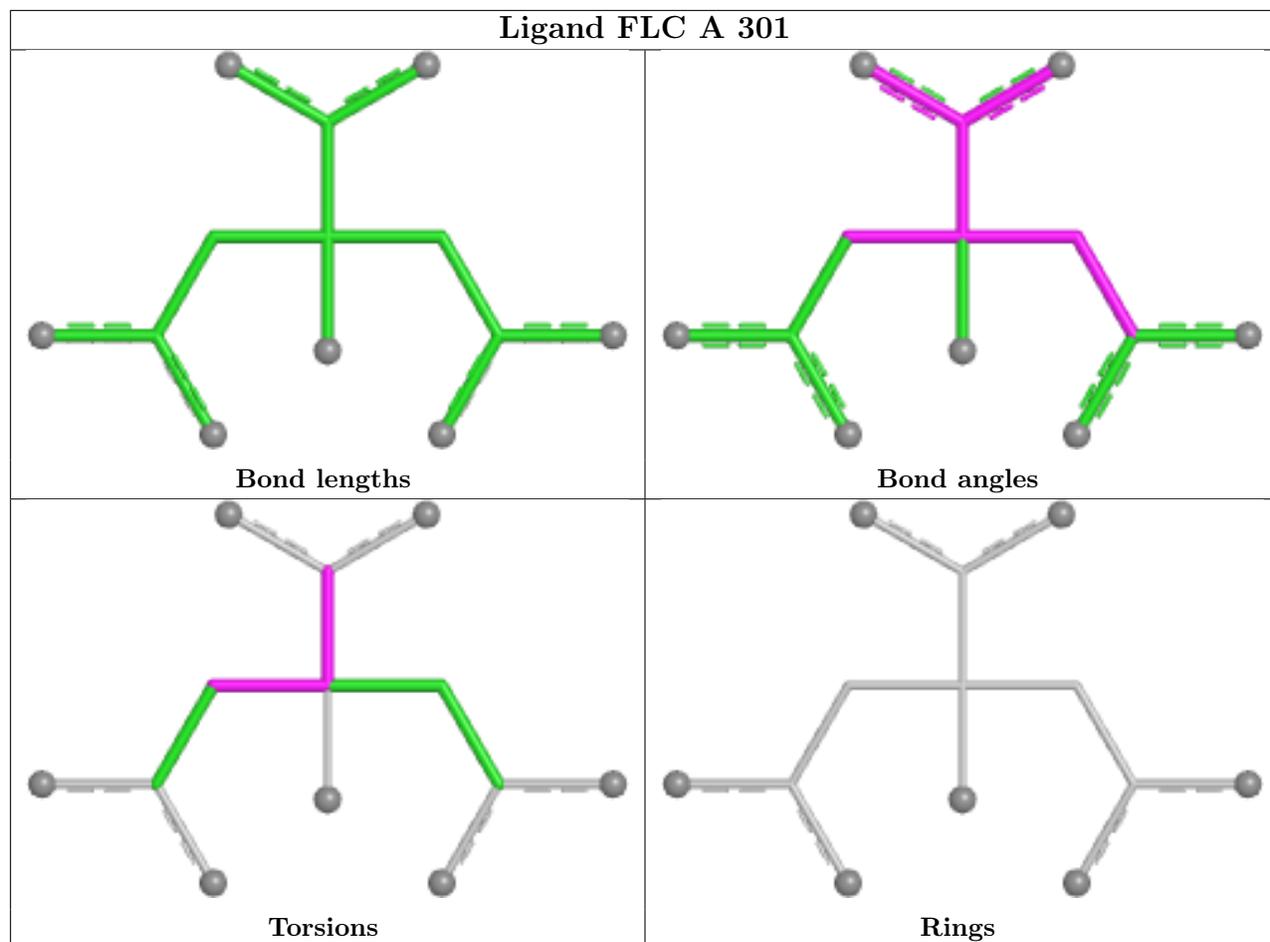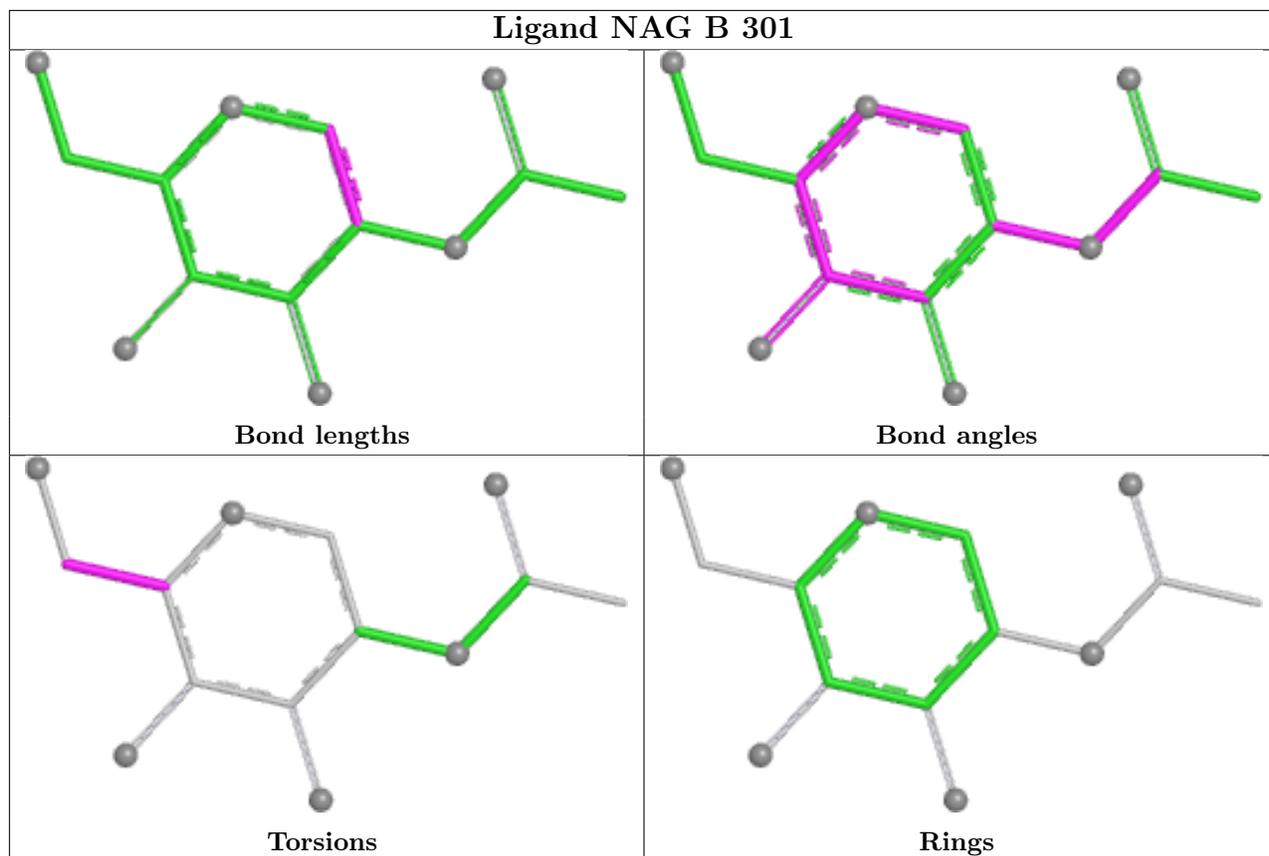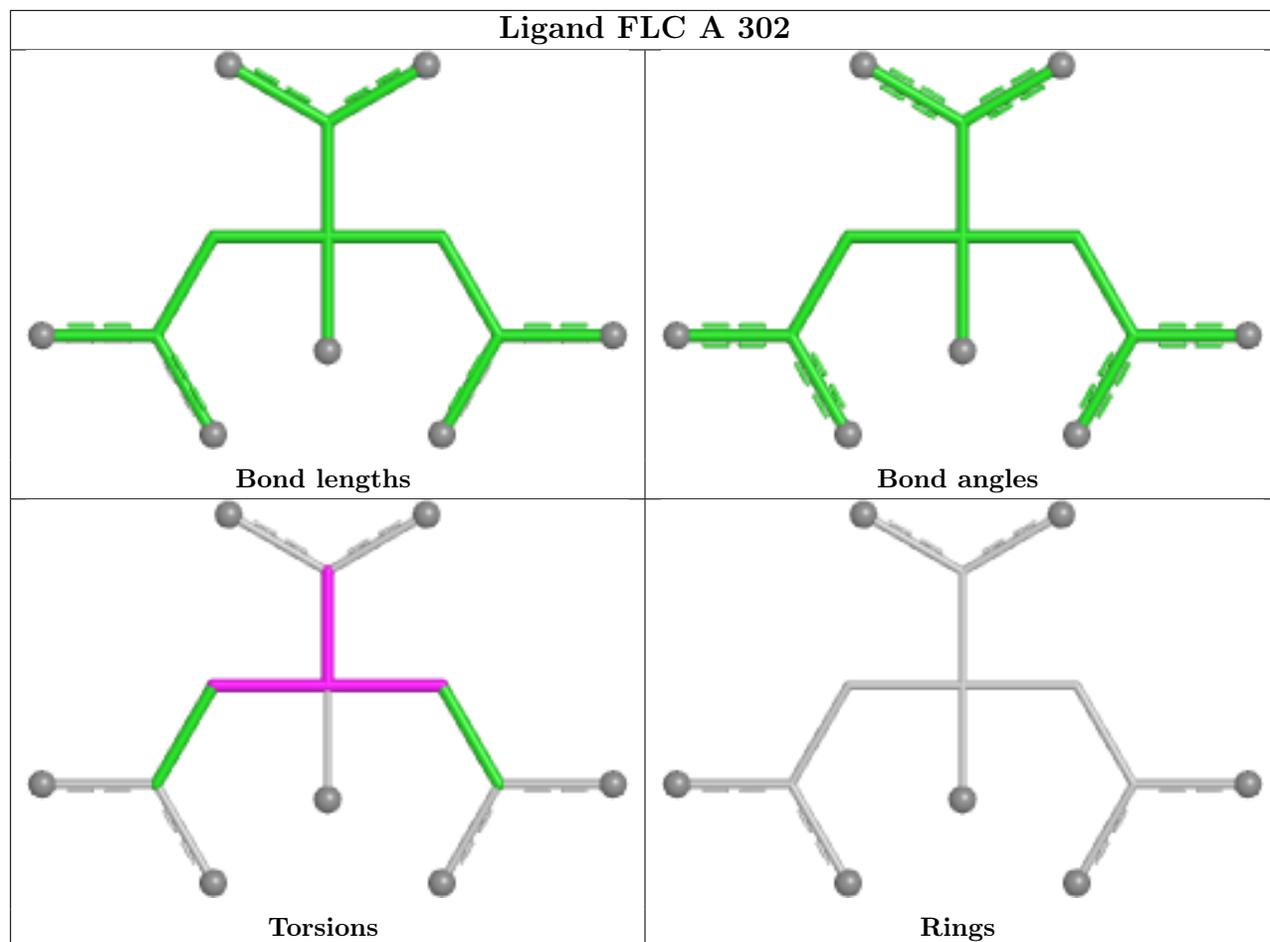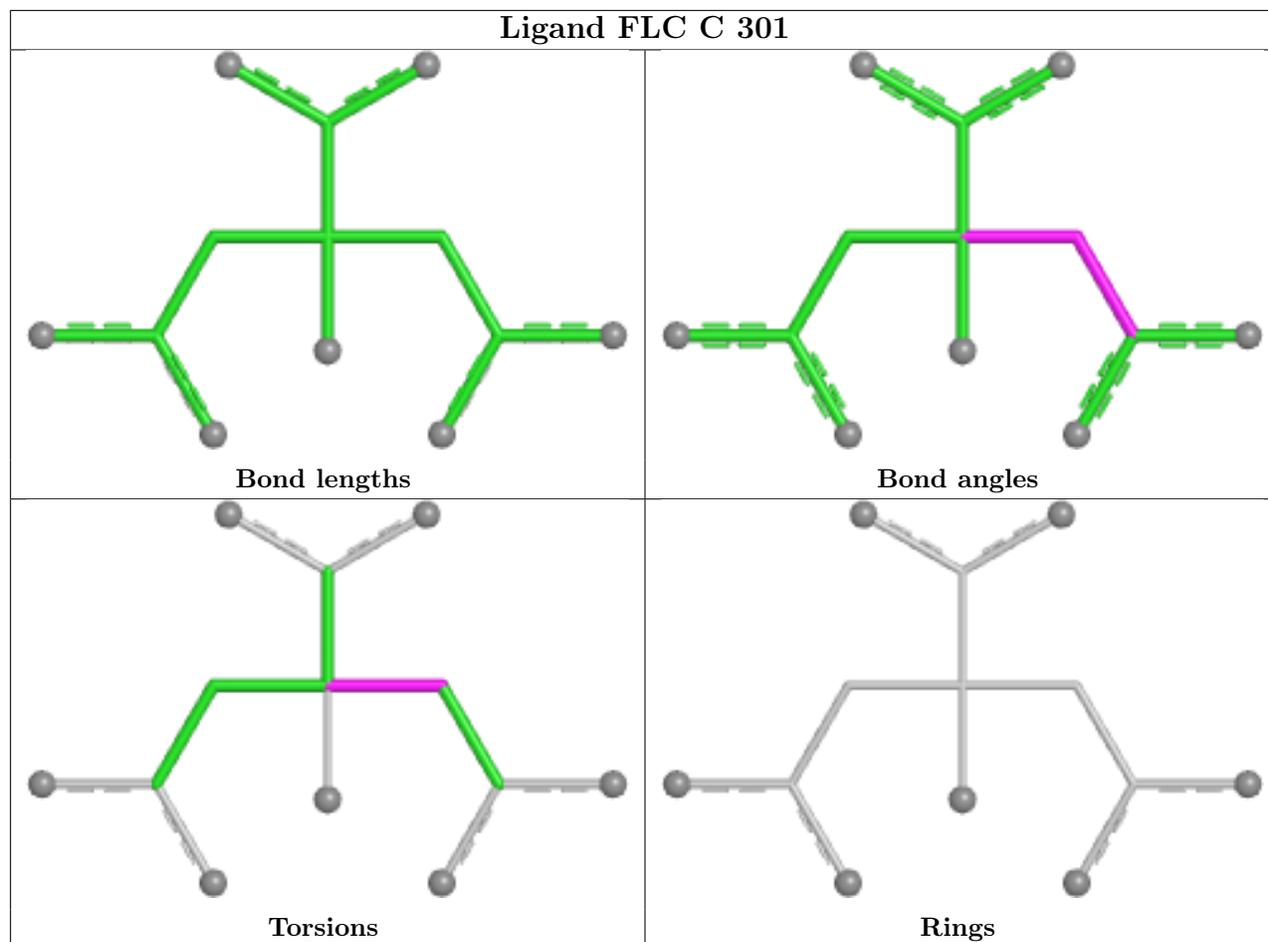
5.7 Other polymers ⓘ

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	216/219 (98%)	0.04	9 (4%)	41	27	48, 62, 108, 158	0
1	B	219/219 (100%)	-0.10	6 (2%)	56	39	46, 64, 94, 133	0
1	C	219/219 (100%)	-0.10	1 (0%)	87	77	45, 59, 102, 148	0
All	All	654/657 (99%)	-0.05	16 (2%)	59	42	45, 62, 98, 158	0

All (16) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	68	THR	3.8
1	A	166	PHE	3.8
1	A	169	ALA	3.6
1	B	168	TRP	3.3
1	B	17	PRO	3.1
1	B	186	SER	3.1
1	A	70	GLY	2.9
1	C	171	GLU	2.9
1	B	170	PHE	2.8
1	A	172	GLU	2.7
1	B	131	MET	2.7
1	A	78	GLN	2.4
1	B	169	ALA	2.4
1	A	235	ALA	2.0
1	A	84	MET	2.0
1	A	233	ARG	2.0

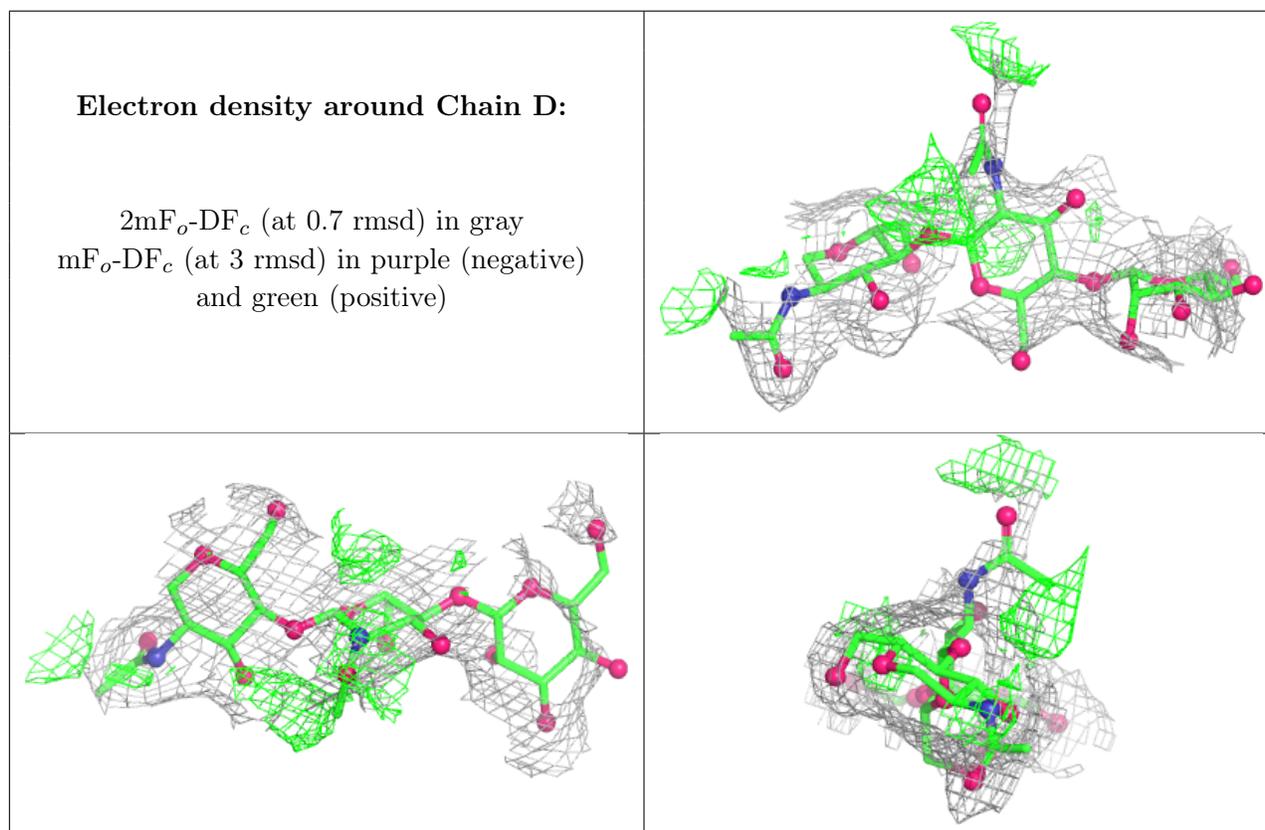## 6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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

6.3 Carbohydrates (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
2	BMA	D	3	11/12	0.42	0.14	135,138,149,150	0
2	NAG	D	2	14/15	0.69	0.19	102,114,123,129	14
2	NAG	D	1	14/15	0.85	0.12	69,76,85,96	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.
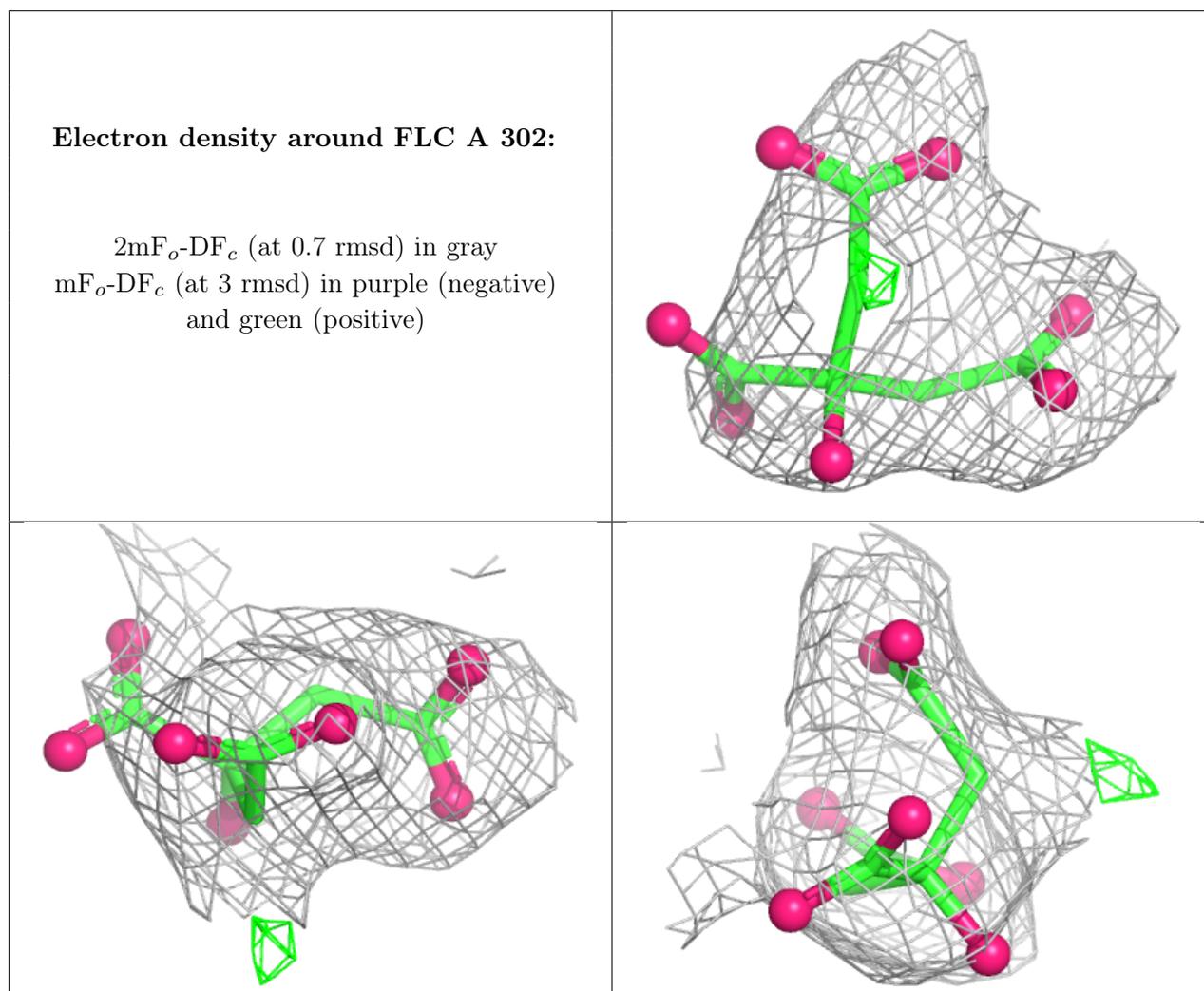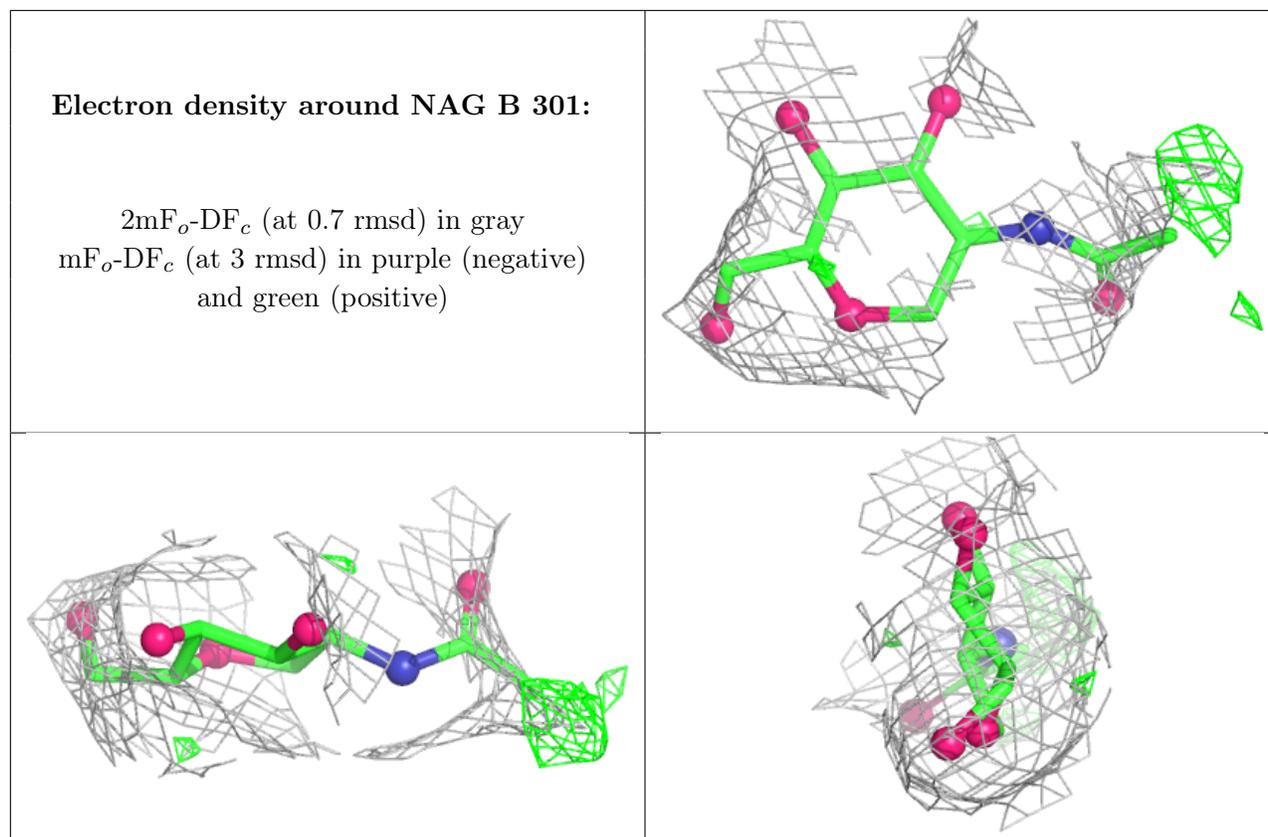

Electron density around Chain D:

$2\text{mF}_o\text{-DF}_c$ (at 0.7 rmsd) in gray
$\text{mF}_o\text{-DF}_c$ (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
3	FLC	A	302	13/13	0.67	0.12	101,106,114,116	0
4	NAG	B	301	14/15	0.70	0.14	101,104,110,118	0
5	GOL	B	302	6/6	0.74	0.24	83,87,91,94	0
3	FLC	C	301	13/13	0.80	0.11	73,84,89,90	0
3	FLC	A	301	13/13	0.82	0.12	65,68,73,75	0
5	GOL	C	302	6/6	0.90	0.11	69,70,72,74	0
6	CL	B	303	1/1	0.95	0.11	72,72,72,72	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 FLC A 302:

$2mF_o$-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 B 301:

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

Electron density around FLC C 301:

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

Electron density around FLC A 301:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)
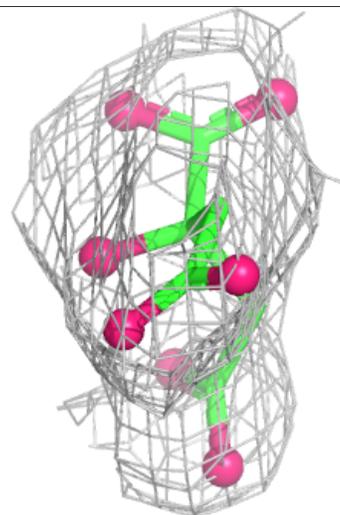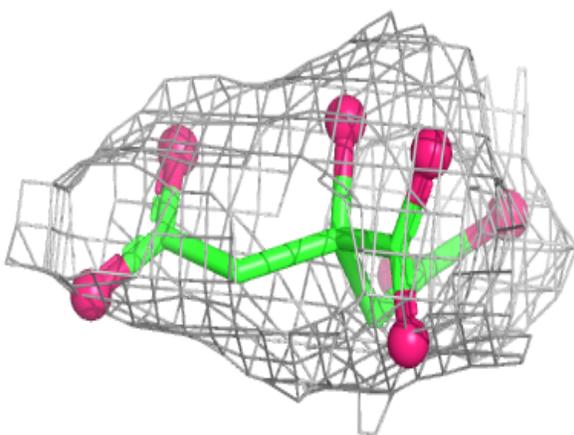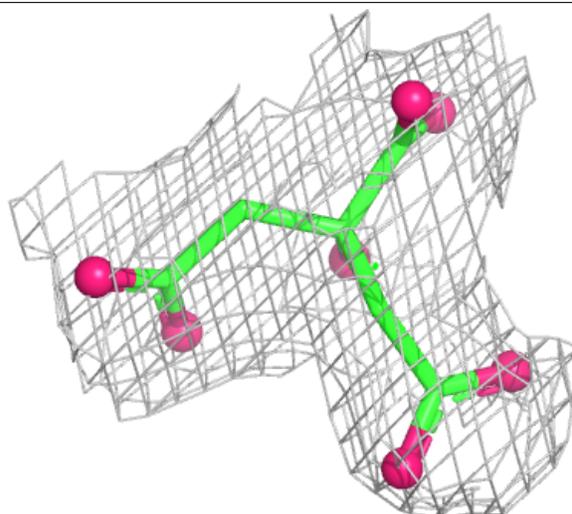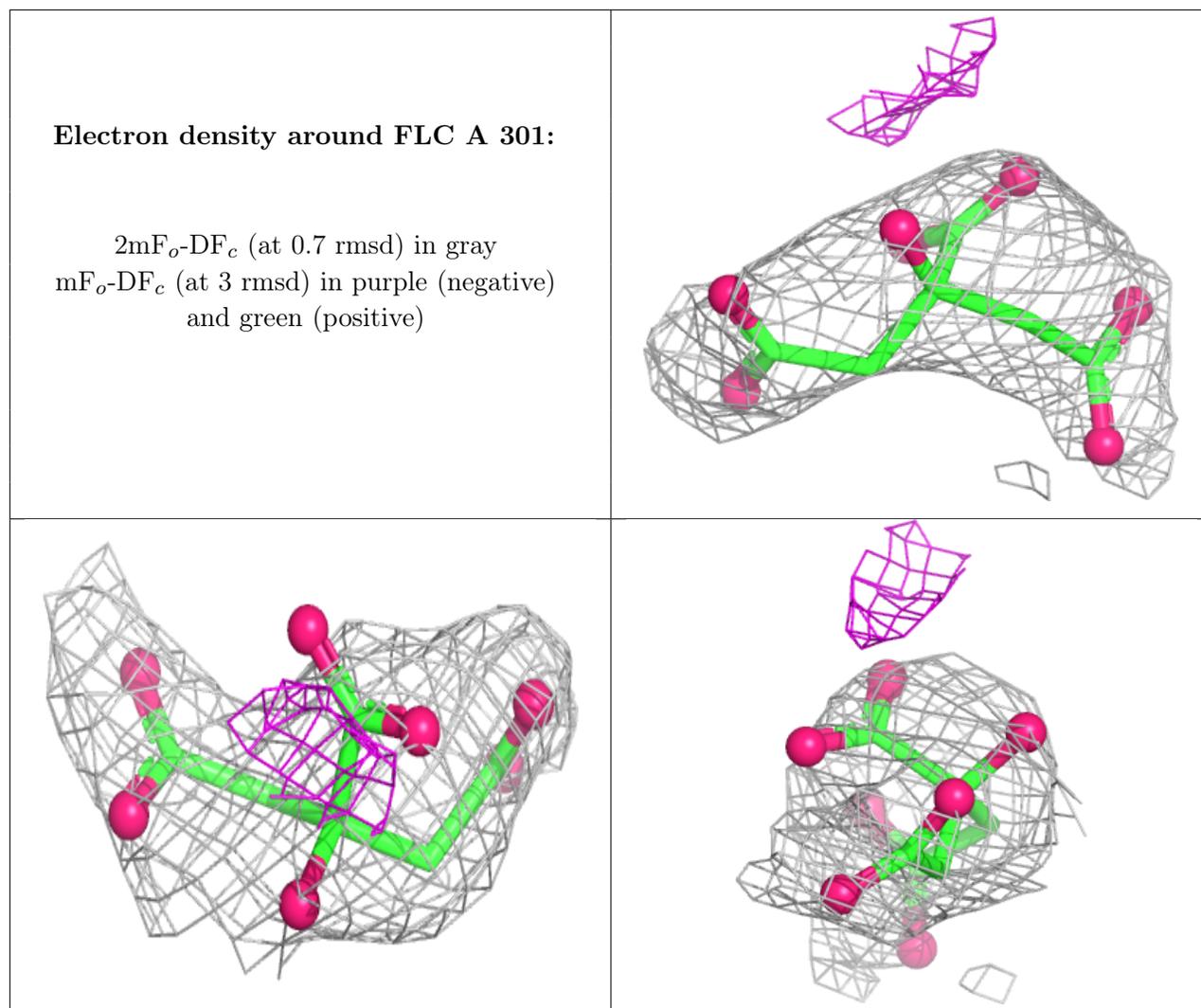
6.5 Other polymers (i)

There are no such residues in this entry.