Full wwPDB X-ray Structure Validation Report (i)

Aug 7, 2020 – 12:51 PM BST

PDB ID	:	5U84
Title	:	Acid ceramidase (ASAH1, aCDase) from common minke whale, Cys143Ala, uncleaved
Authors	:	Gebai, A.; Gorelik, A.; Illes, K.; Nagar, B.
Deposited on	:	2016-12-13
Resolution	:	2.34 Å(reported)

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

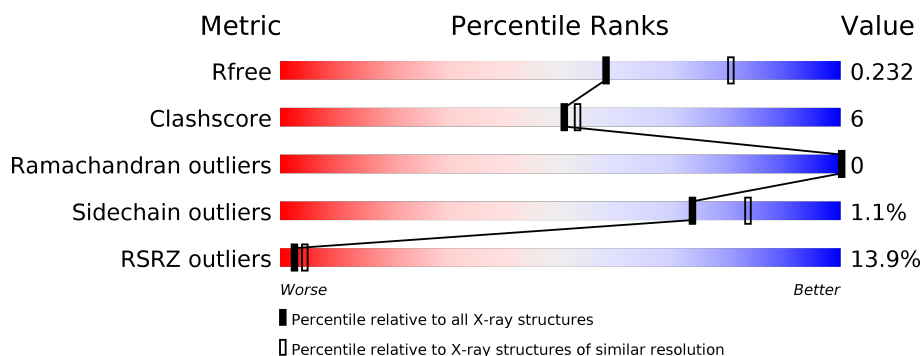|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.13.1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.13.1

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 2.34 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		0.232
Clashscore		6
Ramachandran outliers		0
Sidechain outliers		1.1%
RSRZ outliers		13.9%

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	2096 (2.36-2.32)
Clashscore	141614	2193 (2.36-2.32)
Ramachandran outliers	138981	2159 (2.36-2.32)
Sidechain outliers	138945	2160 (2.36-2.32)
RSRZ outliers	127900	2067 (2.36-2.32)

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 on 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	384	9% / 81% / 10% / 8%
1	B	384	16% / 83% / 9% / 8%
2	C	3	67% / 33%
2	E	3	67% / 33%
3	D	2	100%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	I3C	A	407[C]	-	-	X	-
5	IOD	B	416	-	-	X	-

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 11888 atoms, of which 5775 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 Acid ceramidase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	352	Total 5648	C 1840	H 2821	N 460	O 514	S 13	0	1	0
1	B	353	Total 5669	C 1849	H 2831	N 461	O 515	S 13	0	1	0

There are 22 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	12	ASP	-	expression tag	UNP A0A383ZFX3
A	13	ARG	-	expression tag	UNP A0A383ZFX3
A	14	HIS	-	expression tag	UNP A0A383ZFX3
A	15	HIS	-	expression tag	UNP A0A383ZFX3
A	16	HIS	-	expression tag	UNP A0A383ZFX3
A	17	HIS	-	expression tag	UNP A0A383ZFX3
A	18	HIS	-	expression tag	UNP A0A383ZFX3
A	19	HIS	-	expression tag	UNP A0A383ZFX3
A	20	LYS	-	expression tag	UNP A0A383ZFX3
A	21	LEU	-	expression tag	UNP A0A383ZFX3
A	143	ALA	CYS	engineered mutation	UNP A0A383ZFX3
B	12	ASP	-	expression tag	UNP A0A383ZFX3
B	13	ARG	-	expression tag	UNP A0A383ZFX3
B	14	HIS	-	expression tag	UNP A0A383ZFX3
B	15	HIS	-	expression tag	UNP A0A383ZFX3
B	16	HIS	-	expression tag	UNP A0A383ZFX3
B	17	HIS	-	expression tag	UNP A0A383ZFX3
B	18	HIS	-	expression tag	UNP A0A383ZFX3
B	19	HIS	-	expression tag	UNP A0A383ZFX3
B	20	LYS	-	expression tag	UNP A0A383ZFX3
B	21	LEU	-	expression tag	UNP A0A383ZFX3
B	143	ALA	CYS	engineered mutation	UNP A0A383ZFX3

- Molecule 2 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.
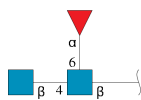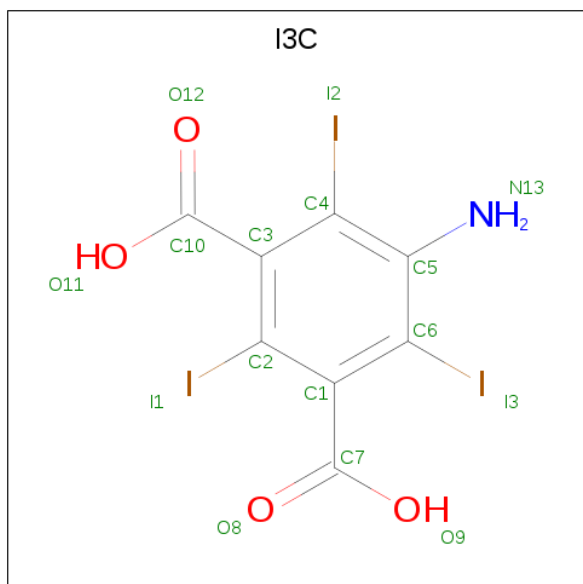
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	C	3	Total	C	H	N	O	0	0	0
			75	22	37	2	14			
2	E	3	Total	C	H	N	O	0	0	0
			75	22	37	2	14			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	D	2	Total	C	H	N	O	0	0	0
			55	16	27	2	10			

- Molecule 4 is 5-amino-2,4,6-triiodobenzene-1,3-dicarboxylic acid (three-letter code: I3C) (formula: $C_8H_4I_3NO_4$).

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
4	A	1	Total	C	H	I	N	O	0	0
			18	8	2	3	1	4		

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Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
4	A	1	Total 54	C 24	H 6	I 9	N 3	O 12	0	1
4	A	1	Total 18	C 8	H 2	I 3	N 1	O 4	0	0
4	A	1	Total 18	C 8	H 2	I 3	N 1	O 4	0	0
4	A	1	Total 18	C 8	H 2	I 3	N 1	O 4	0	0
4	A	1	Total 18	C 8	H 2	I 3	N 1	O 4	0	0
4	A	1	Total 18	C 8	H 2	I 3	N 1	O 4	0	0
4	B	1	Total 18	C 8	H 2	I 3	N 1	O 4	0	0
4	B	1	Total 18	C 8	H 2	I 3	N 1	O 4	0	0

- Molecule 5 is IODIDE ION (three-letter code: IOD) (formula: I).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	B	16	Total 16	I 16	0	0
5	A	18	Total 18	I 18	0	0

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	93	Total 93	O 93	0	0
6	B	41	Total 41	O 41	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.
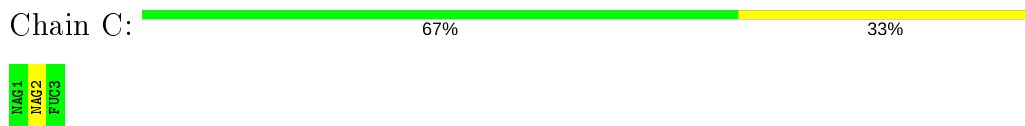
- Molecule 1: Acid ceramidase
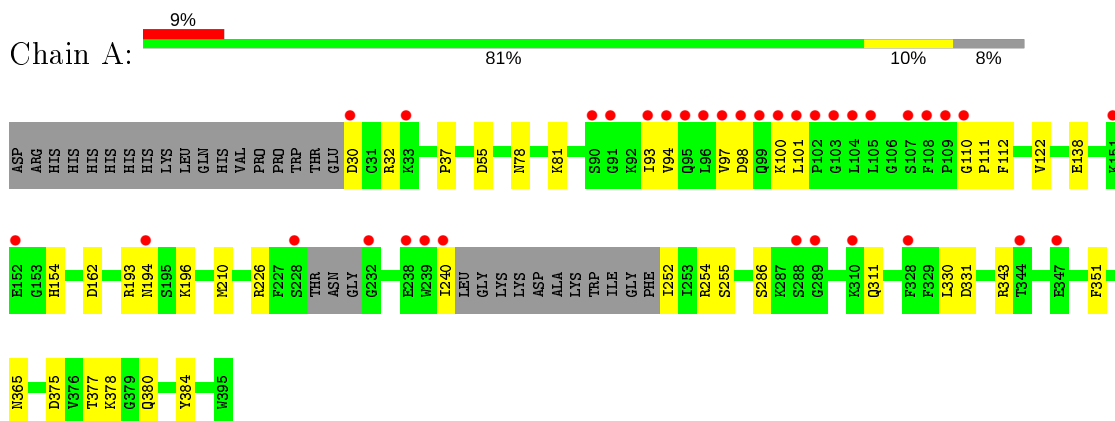
- Molecule 1: Acid ceramidase
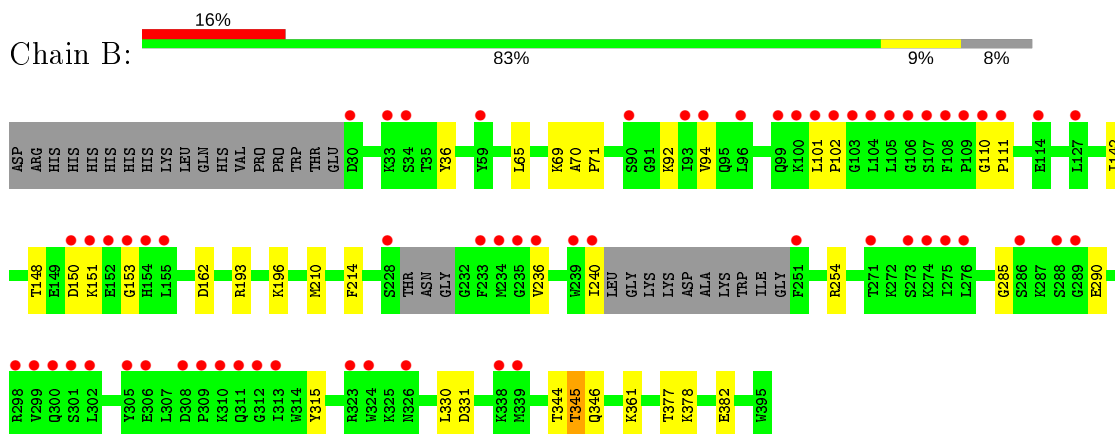
- Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-ace tamido-2-deoxy-beta-D-glucopyranose

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

Chain E:

NAG1 NAG2 FUC3

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

Chain D:

NAG1 NAG2

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	118.81Å 109.27Å 79.54Å 90.00° 102.97° 90.00°	Depositor
Resolution (Å)	44.66 – 2.34 44.66 – 2.34	Depositor EDS
% Data completeness (in resolution range)	81.5 (44.66-2.34) 88.6 (44.66-2.34)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$<I/\sigma(I)>$ [1]	1.34 (at 2.34Å)	Xtriage
Refinement program	PHENIX 1.10.1_2155	Depositor
R, R_{free}	0.200 , 0.231 0.202 , 0.232	Depositor DCC
R_{free} test set	1922 reflections (4.84%)	wwPDB-VP
Wilson B-factor (Å^2)	30.8	Xtriage
Anisotropy	0.059	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.47 , 52.9	EDS
L-test for twinning[2]	$<|L|> = 0.49$, $<L^2> = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	11888	wwPDB-VP
Average B, all atoms (Å^2)	48.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.03% 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 (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: I3C, IOD, NAG, FUC

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	0.27	0/2904	0.49	0/3946
1	B	0.26	0/2916	0.47	0/3962
All	All	0.26	0/5820	0.48	0/7908

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 (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2827	2821	2822	39	1
1	B	2838	2831	2832	21	0
2	C	38	37	34	0	0
2	E	38	37	34	0	0
3	D	28	27	25	5	0
4	A	144	18	18	24	0
4	B	32	4	4	3	0
5	A	18	0	0	3	0
5	B	16	0	0	5	0
6	A	93	0	0	5	0
6	B	41	0	0	0	0
All	All	6113	5775	5769	67	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 6.

All (67) 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)
3:D:1:NAG:O3	3:D:1:NAG:O7	1.99	0.81
1:A:78[A]:ASN:ND2	6:A:505:HOH:O	2.21	0.74
4:A:412:I3C:O12	6:A:501:HOH:O	2.07	0.72
4:A:407[B]:I3C:I2	4:A:408:I3C:I1	3.49	0.71
1:A:378:LYS:HE3	4:A:407[B]:I3C:I1	2.61	0.70
1:B:378:LYS:NZ	4:B:404:I3C:O11	2.23	0.70
1:A:194:ASN:O	6:A:502:HOH:O	2.11	0.68
1:A:112:PHE:CZ	3:D:1:NAG:H81	2.31	0.65
4:A:409:I3C:O8	6:A:504:HOH:O	2.15	0.64
1:A:286:SER:O	6:A:503:HOH:O	2.14	0.64
1:B:193:ARG:O	1:B:196:LYS:HG2	1.98	0.62
1:A:30:ASP:OD1	1:A:343:ARG:NH1	2.32	0.62
1:A:380:GLN:NE2	4:A:407[B]:I3C:O11	2.31	0.62
1:B:344:THR:O	1:B:345:THR:HG22	2.02	0.60
1:A:193:ARG:O	4:A:410:I3C:I1	2.90	0.60
1:A:375:ASP:OD2	1:A:378:LYS:NZ	2.34	0.59
1:A:194:ASN:HB2	4:A:410:I3C:I1	2.76	0.55
1:A:252:ILE:HG22	4:A:412:I3C:I3	2.78	0.54
1:B:377:THR:HB	4:B:405:I3C:I3	2.78	0.53
1:A:154:HIS:ND1	4:A:407[C]:I3C:I3	3.12	0.53
1:B:94:VAL:HB	5:B:416:IOD:I	2.80	0.52
5:B:413:IOD:I	5:B:414:IOD:I	3.67	0.52
1:A:196:LYS:HD2	4:A:410:I3C:I1	2.81	0.51
3:D:1:NAG:O3	3:D:2:NAG:O5	2.29	0.50
1:A:97:VAL:O	1:A:101:LEU:N	2.45	0.49
1:A:100:LYS:HD3	1:A:240:ILE:HG22	1.94	0.49
1:A:378:LYS:CE	4:A:407[B]:I3C:I1	3.30	0.49
1:A:378:LYS:HE3	4:A:407[A]:I3C:N13	2.28	0.49
1:A:378:LYS:HD3	4:A:407[C]:I3C:C5	2.42	0.49
1:A:55:ASP:OD2	1:A:194:ASN:N	2.46	0.49
1:A:252:ILE:CG2	4:A:412:I3C:I3	3.32	0.48
1:A:331:ASP:HB3	5:A:419:IOD:I	2.83	0.48
1:A:94:VAL:O	1:A:98:ASP:HB2	2.14	0.48
1:B:150:ASP:OD1	1:B:153:GLY:N	2.47	0.48
1:B:92:LYS:HB3	5:B:416:IOD:I	2.84	0.48
3:D:1:NAG:HO3	3:D:1:NAG:C7	2.13	0.48
1:A:377:THR:HG21	4:A:407[C]:I3C:I3	2.85	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:36:TYR:OH	1:B:382:GLU:OE1	2.29	0.47
1:B:101:LEU:HB3	1:B:102:PRO:HD3	1.96	0.46
1:A:154:HIS:CE1	4:A:407[C]:I3C:I3	3.40	0.45
1:A:378:LYS:HD3	4:A:407[C]:I3C:C6	2.46	0.45
1:A:81:LYS:HE2	1:A:94:VAL:HG21	1.98	0.45
1:A:377:THR:CG2	4:A:407[C]:I3C:I3	3.36	0.44
1:B:70:ALA:N	1:B:71:PRO:HD2	2.32	0.44
1:A:32:ARG:HD3	5:A:424:IOD:I	2.87	0.44
1:A:378:LYS:HD3	4:A:407[C]:I3C:C4	2.48	0.44
1:A:162:ASP:OD2	1:A:365:ASN:OD1	2.35	0.44
1:A:330:LEU:HD22	1:B:330:LEU:HD23	2.00	0.44
1:B:285:GLY:N	1:B:290:GLU:O	2.44	0.43
1:B:151:LYS:HD2	1:B:346:GLN:OE1	2.18	0.43
1:A:32:ARG:HD2	5:A:427:IOD:I	2.89	0.43
1:B:377:THR:CG2	4:B:405:I3C:I3	3.37	0.42
1:B:331:ASP:HB3	5:B:411:IOD:I	2.88	0.42
1:A:122:VAL:HG13	4:A:411:I3C:I1	2.90	0.42
1:A:384:TYR:OH	4:A:408:I3C:O12	2.37	0.42
1:A:138:GLU:OE1	4:A:412:I3C:O8	2.38	0.41
1:B:236:VAL:O	1:B:240:ILE:HG13	2.20	0.41
1:B:65:LEU:O	1:B:69:LYS:HD2	2.20	0.41
1:B:110:GLY:N	1:B:111:PRO:HD2	2.36	0.41
1:B:148:THR:HG22	1:B:315:TYR:HB2	2.02	0.41
1:A:110:GLY:N	1:A:111:PRO:HD2	2.36	0.41
1:A:37:PRO:HB3	4:A:408:I3C:O11	2.20	0.41
1:B:142:ILE:HG13	1:B:162:ASP:HB2	2.03	0.41
1:A:93:ILE:HG23	1:A:94:VAL:N	2.36	0.41
3:D:1:NAG:C3	3:D:1:NAG:O7	2.69	0.40
1:A:351:PHE:HB2	4:A:407[B]:I3C:C1	2.51	0.40
1:B:361:LYS:HE2	5:B:417:IOD:I	2.91	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)
1:A:226:ARG:HH22	1:A:311:GLN:OE1[2_556]	1.57	0.03

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	347/384 (90%)	339 (98%)	8 (2%)	0	100	100
1	B	348/384 (91%)	342 (98%)	6 (2%)	0	100	100
All	All	695/768 (90%)	681 (98%)	14 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	312/339 (92%)	309 (99%)	3 (1%)	76	85
1	B	313/339 (92%)	309 (99%)	4 (1%)	69	79
All	All	625/678 (92%)	618 (99%)	7 (1%)	73	83

All (7) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	210	MET
1	A	254	ARG
1	A	255	SER
1	B	210	MET
1	B	214	PHE
1	B	254	ARG
1	B	345	THR

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

Mol	Chain	Res	Type
1	A	365	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 ⓘ

8 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	C	1	1,2	14,14,15	0.20	0	17,19,21	0.47	0
2	NAG	C	2	2	14,14,15	0.50	0	17,19,21	0.78	1 (5%)
2	FUC	C	3	2	10,10,11	0.58	0	14,14,16	0.93	0
3	NAG	D	1	1,3	14,14,15	1.72	1 (7%)	17,19,21	1.27	2 (11%)
3	NAG	D	2	3	14,14,15	1.25	3 (21%)	17,19,21	1.18	1 (5%)
2	NAG	E	1	1,2	14,14,15	0.39	0	17,19,21	0.58	0
2	NAG	E	2	2	14,14,15	0.18	0	17,19,21	0.63	1 (5%)
2	FUC	E	3	2	10,10,11	0.82	0	14,14,16	0.74	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.

Full wwPDB X-ray Structure Validation Report   5U84

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

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	1	NAG	O5-C1	-6.33	1.33	1.43
3	D	2	NAG	O5-C1	-2.99	1.38	1.43
3	D	2	NAG	C1-C2	2.66	1.56	1.52
3	D	2	NAG	C3-C2	2.03	1.56	1.52

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	D	1	NAG	C1-O5-C5	3.12	116.41	112.19
3	D	2	NAG	C1-C2-N2	-3.04	105.29	110.49
2	C	2	NAG	C1-O5-C5	2.25	115.24	112.19
3	D	1	NAG	O5-C5-C6	-2.15	103.83	107.20
2	E	2	NAG	C1-O5-C5	2.13	115.08	112.19

There are no chirality outliers.

All (10) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	D	1	NAG	C3-C2-N2-C7
3	D	1	NAG	O5-C5-C6-O6
3	D	1	NAG	C4-C5-C6-O6
2	C	2	NAG	C4-C5-C6-O6
2	C	2	NAG	O5-C5-C6-O6
3	D	2	NAG	O5-C5-C6-O6
2	E	2	NAG	C4-C5-C6-O6
2	E	2	NAG	O5-C5-C6-O6
2	E	1	NAG	C4-C5-C6-O6
3	D	2	NAG	C4-C5-C6-O6

There are no ring outliers.

2 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	D	2	NAG	1	0
3	D	1	NAG	5	0

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

Oligosaccharide Chain C

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain E

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain D

Bond lengths	Bond angles
Torsions	Rings
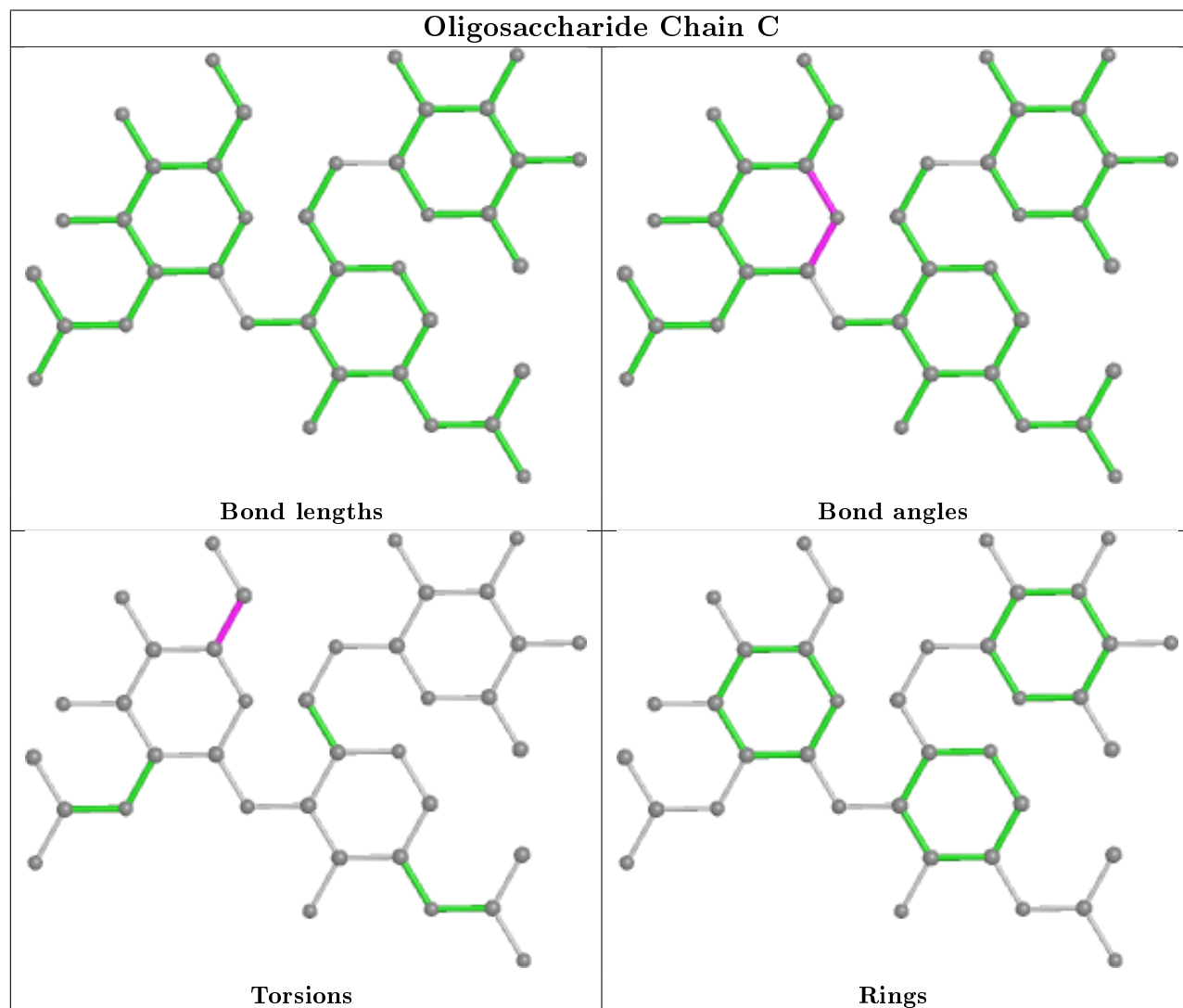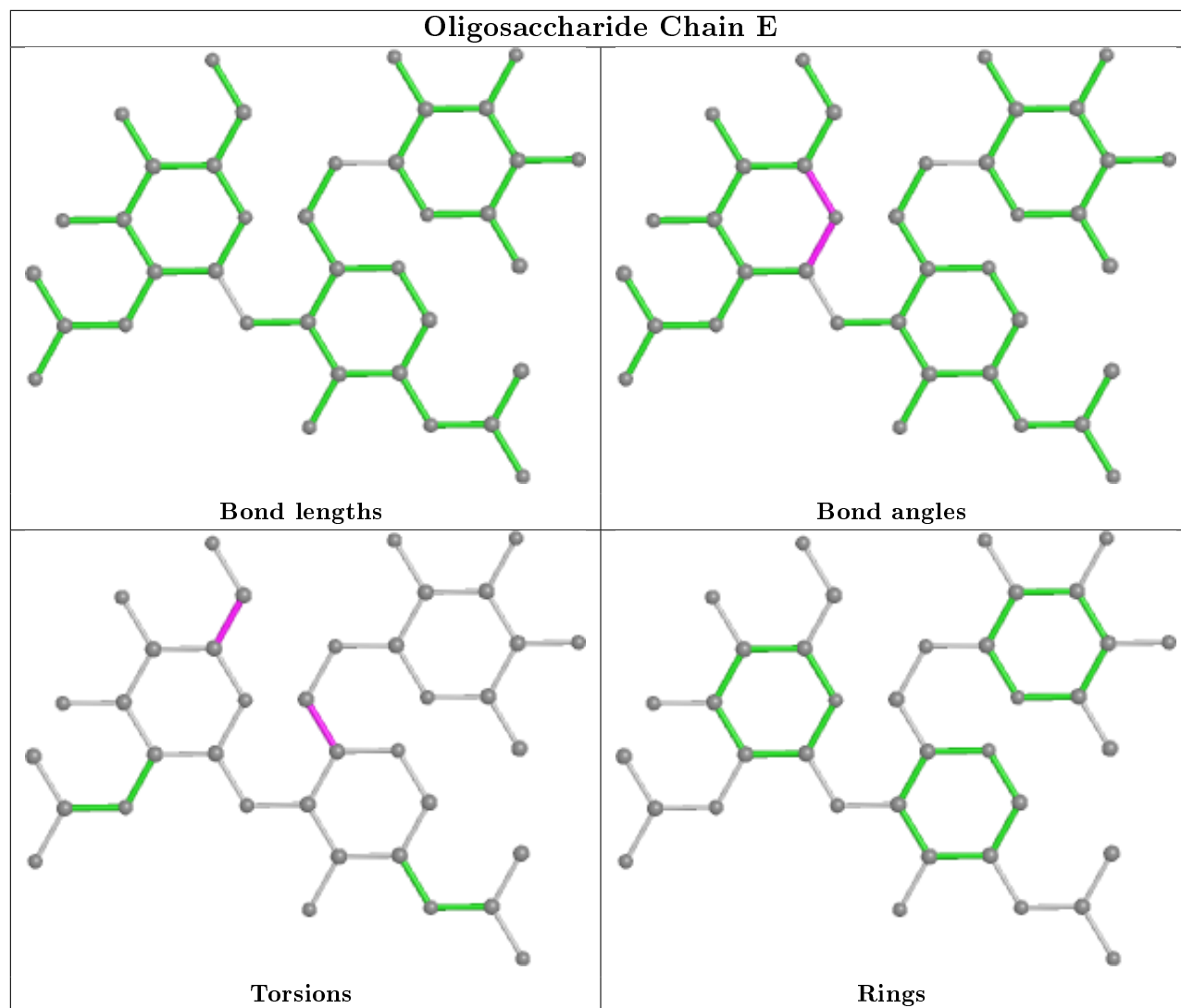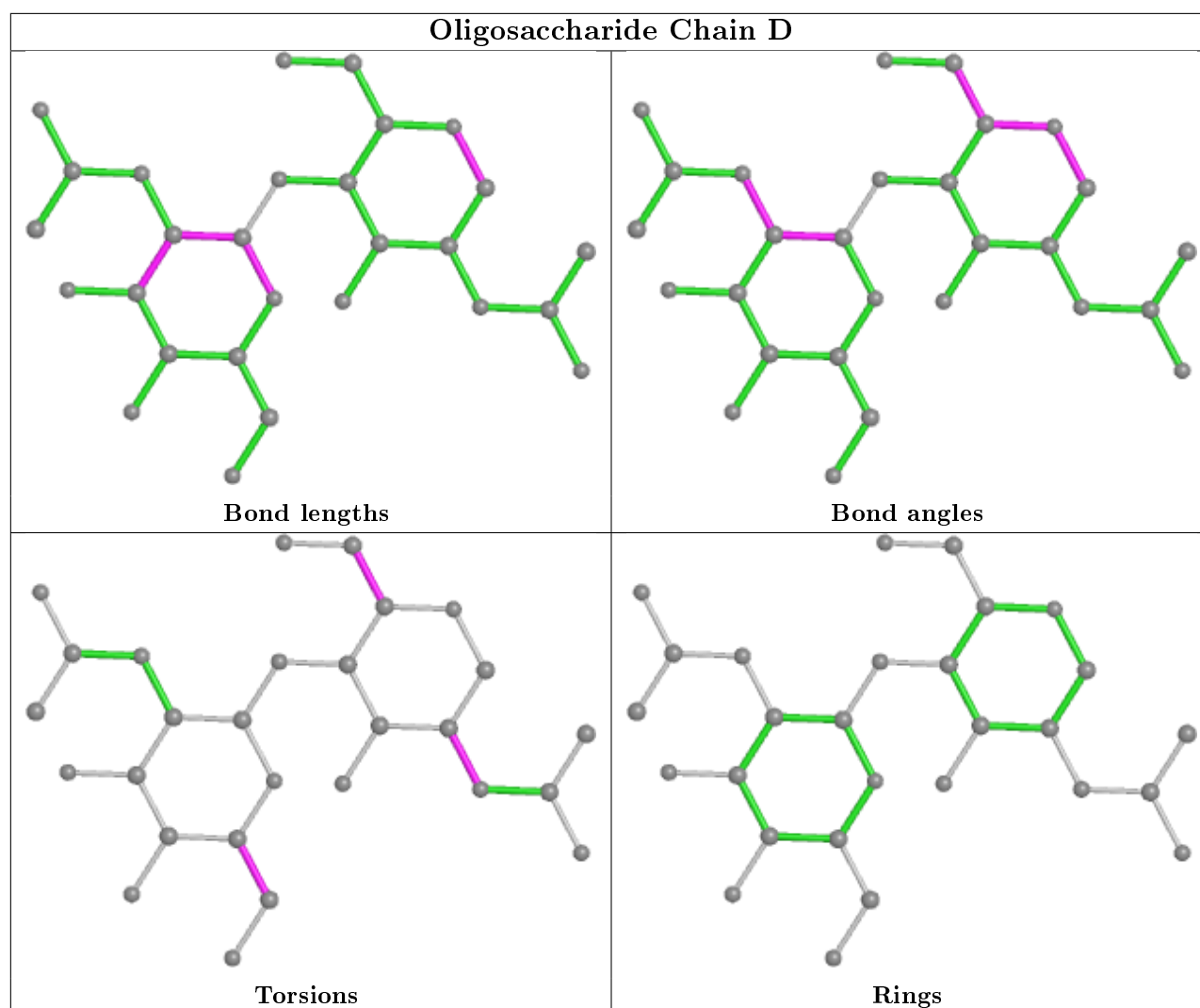
5.6 Ligand geometry (i)

Of 45 ligands modelled in this entry, 34 are monoatomic - leaving 11 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
4	I3C	A	406	-	12,16,16	2.67	3 (25%)	14,24,24	1.85	4 (28%)
4	I3C	B	404	-	12,16,16	2.65	3 (25%)	14,24,24	1.84	4 (28%)
4	I3C	A	409	-	12,16,16	2.67	3 (25%)	14,24,24	2.02	4 (28%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
4	I3C	A	411	-	12,16,16	2.67	3 (25%)	14,24,24	2.23	6 (42%)
4	I3C	A	407[B]	-	12,16,16	2.60	3 (25%)	14,24,24	2.09	5 (35%)
4	I3C	B	405	-	12,16,16	2.71	3 (25%)	14,24,24	1.87	4 (28%)
4	I3C	A	407[C]	-	12,16,16	2.71	3 (25%)	14,24,24	1.66	3 (21%)
4	I3C	A	408	-	12,16,16	2.73	4 (33%)	14,24,24	1.75	4 (28%)
4	I3C	A	412	-	12,16,16	2.77	3 (25%)	14,24,24	2.39	7 (50%)
4	I3C	A	410	-	12,16,16	2.70	3 (25%)	14,24,24	2.09	6 (42%)
4	I3C	A	407[A]	-	12,16,16	2.80	3 (25%)	14,24,24	2.19	6 (42%)

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	I3C	A	406	-	-	0/0/8/8	0/1/1/1
4	I3C	B	404	-	-	0/0/8/8	0/1/1/1
4	I3C	A	409	-	-	0/0/8/8	0/1/1/1
4	I3C	A	411	-	-	0/0/8/8	0/1/1/1
4	I3C	A	407[B]	-	-	0/0/8/8	0/1/1/1
4	I3C	B	405	-	-	0/0/8/8	0/1/1/1
4	I3C	A	407[C]	-	-	0/0/8/8	0/1/1/1
4	I3C	A	408	-	-	0/0/8/8	0/1/1/1
4	I3C	A	412	-	-	0/0/8/8	0/1/1/1
4	I3C	A	410	-	-	0/0/8/8	0/1/1/1
4	I3C	A	407[A]	-	-	0/0/8/8	0/1/1/1

All (34) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	412	I3C	C1-C7	6.53	1.53	1.47
4	A	407[A]	I3C	C3-C10	6.47	1.53	1.47
4	A	408	I3C	C3-C10	6.16	1.53	1.47
4	A	407[C]	I3C	C1-C7	6.09	1.53	1.47
4	A	410	I3C	C3-C10	6.08	1.53	1.47
4	A	407[B]	I3C	C1-C7	5.99	1.53	1.47
4	B	405	I3C	C1-C7	5.99	1.53	1.47
4	B	405	I3C	C3-C10	5.95	1.53	1.47
4	A	407[A]	I3C	C1-C7	5.92	1.53	1.47
4	A	406	I3C	C1-C7	5.90	1.53	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	411	I3C	C1-C7	5.87	1.53	1.47
4	A	410	I3C	C1-C7	5.86	1.53	1.47
4	A	411	I3C	C3-C10	5.85	1.53	1.47
4	B	404	I3C	C1-C7	5.85	1.53	1.47
4	A	409	I3C	C1-C7	5.84	1.53	1.47
4	A	407[C]	I3C	C3-C10	5.84	1.53	1.47
4	A	409	I3C	C3-C10	5.82	1.53	1.47
4	A	406	I3C	C3-C10	5.76	1.53	1.47
4	B	404	I3C	C3-C10	5.71	1.53	1.47
4	A	412	I3C	C3-C10	5.70	1.53	1.47
4	A	408	I3C	C1-C7	5.69	1.52	1.47
4	A	407[B]	I3C	C3-C10	5.19	1.52	1.47
4	A	407[B]	I3C	C5-N13	2.66	1.45	1.37
4	B	405	I3C	C5-N13	2.66	1.45	1.37
4	A	408	I3C	C5-N13	2.65	1.45	1.37
4	A	406	I3C	C5-N13	2.64	1.45	1.37
4	A	407[C]	I3C	C5-N13	2.63	1.45	1.37
4	B	404	I3C	C5-N13	2.62	1.45	1.37
4	A	410	I3C	C5-N13	2.61	1.45	1.37
4	A	409	I3C	C5-N13	2.58	1.45	1.37
4	A	411	I3C	C5-N13	2.57	1.45	1.37
4	A	407[A]	I3C	C5-N13	2.54	1.45	1.37
4	A	412	I3C	C5-N13	2.47	1.45	1.37
4	A	408	I3C	C5-C6	-2.13	1.38	1.41

All (53) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	407[A]	I3C	C4-C5-C6	4.57	120.60	116.40
4	A	412	I3C	C5-C6-I3	4.28	122.59	118.47
4	A	409	I3C	C4-C5-C6	4.22	120.28	116.40
4	A	407[A]	I3C	C1-C6-C5	-4.15	119.41	122.62
4	A	411	I3C	C5-C4-I2	4.10	122.42	118.47
4	B	405	I3C	C4-C5-C6	3.84	119.93	116.40
4	A	406	I3C	C4-C5-C6	3.82	119.91	116.40
4	A	408	I3C	C4-C5-C6	3.81	119.90	116.40
4	A	412	I3C	C4-C5-C6	3.80	119.89	116.40
4	A	410	I3C	C4-C5-C6	3.72	119.82	116.40
4	A	411	I3C	C4-C5-C6	3.68	119.78	116.40
4	B	404	I3C	C4-C5-C6	3.68	119.78	116.40
4	A	412	I3C	C3-C4-C5	-3.64	119.81	122.62
4	A	407[B]	I3C	C5-C4-I2	3.60	121.94	118.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	409	I3C	C1-C6-C5	-3.57	119.86	122.62
4	A	410	I3C	C1-C6-C5	-3.56	119.87	122.62
4	A	407[C]	I3C	C4-C5-C6	3.45	119.57	116.40
4	A	409	I3C	C3-C4-C5	-3.43	119.97	122.62
4	A	411	I3C	C1-C6-C5	-3.39	120.00	122.62
4	A	407[B]	I3C	C1-C6-C5	-3.35	120.03	122.62
4	A	412	I3C	C4-C5-N13	-3.30	118.95	121.75
4	A	407[B]	I3C	C4-C5-C6	3.30	119.43	116.40
4	A	411	I3C	C3-C4-C5	-3.28	120.09	122.62
4	A	406	I3C	C1-C6-C5	-3.26	120.10	122.62
4	B	405	I3C	C3-C4-C5	-3.25	120.11	122.62
4	A	406	I3C	C3-C4-C5	-3.20	120.15	122.62
4	B	404	I3C	C1-C6-C5	-3.19	120.15	122.62
4	B	404	I3C	C3-C4-C5	-3.14	120.19	122.62
4	A	408	I3C	C1-C6-C5	-3.11	120.22	122.62
4	B	405	I3C	C1-C6-C5	-3.04	120.27	122.62
4	A	410	I3C	C3-C4-C5	-3.04	120.27	122.62
4	A	411	I3C	C6-C5-N13	-2.98	119.21	121.75
4	A	407[B]	I3C	C3-C4-C5	-2.97	120.32	122.62
4	A	407[A]	I3C	C3-C4-C5	-2.95	120.34	122.62
4	A	408	I3C	C3-C4-C5	-2.84	120.42	122.62
4	A	407[C]	I3C	C3-C4-C5	-2.80	120.46	122.62
4	A	407[C]	I3C	C1-C6-C5	-2.71	120.52	122.62
4	A	412	I3C	C1-C6-C5	-2.68	120.55	122.62
4	A	410	I3C	C5-C4-I2	2.58	120.95	118.47
4	A	407[A]	I3C	C4-C5-N13	-2.57	119.57	121.75
4	A	410	I3C	C5-C6-I3	2.52	120.90	118.47
4	A	412	I3C	C1-C6-I3	-2.48	116.86	120.68
4	A	409	I3C	C6-C5-N13	-2.46	119.66	121.75
4	A	407[B]	I3C	C4-C5-N13	-2.37	119.73	121.75
4	A	408	I3C	C6-C5-N13	-2.36	119.75	121.75
4	A	412	I3C	C5-C4-I2	2.28	120.67	118.47
4	A	407[A]	I3C	C6-C5-N13	-2.27	119.82	121.75
4	A	407[A]	I3C	C1-C2-I1	-2.22	117.26	120.68
4	A	410	I3C	C4-C5-N13	-2.19	119.89	121.75
4	A	406	I3C	C4-C5-N13	-2.17	119.91	121.75
4	B	404	I3C	C4-C5-N13	-2.07	119.99	121.75
4	A	411	I3C	C3-C4-I2	-2.07	117.50	120.68
4	B	405	I3C	C4-C5-N13	-2.04	120.02	121.75

There are no chirality outliers.

There are no torsional outliers.

There are no ring outliers.

10 monomers are involved in 27 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	404	I3C	1	0
4	A	409	I3C	1	0
4	A	411	I3C	1	0
4	A	407[B]	I3C	5	0
4	B	405	I3C	2	0
4	A	407[C]	I3C	7	0
4	A	408	I3C	3	0
4	A	412	I3C	4	0
4	A	410	I3C	3	0
4	A	407[A]	I3C	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 I3C A 406

Bond lengths

Bond angles

Torsions

Rings

Ligand I3C B 404

Bond lengths

Bond angles

Torsions

Rings

Ligand I3C A 409

Bond lengths

Bond angles

Torsions

Rings

Ligand I3C A 411

Bond lengths

Bond angles

Torsions

Rings

Ligand I3C A 407 (B)

Bond lengths

Bond angles

Torsions

Rings

Full wwPDB X-ray Structure Validation Report

Ligand I3C B 405

Bond lengths

Bond angles

Torsions

Rings

Full wwPDB X-ray Structure Validation Report

Ligand I3C A 407 (C)

Bond lengths

Bond angles

Torsions

Rings

Ligand I3C A 408

Bond lengths

Bond angles

Torsions

Rings

Ligand I3C A 412

Bond lengths

Bond angles

Torsions

Rings

Ligand I3C A 410

Bond lengths

Bond angles

Torsions

Rings

Ligand I3C A 407 (A)

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 (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	352/384 (91%)	0.61	35 (9%)	7	12	20, 34, 76, 95	0
1	B	353/384 (91%)	1.07	63 (17%)	1	2	26, 47, 78, 99	0
All	All	705/768 (91%)	0.84	98 (13%)	2	4	20, 39, 78, 99	0

All (98) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	310	LYS	7.1
1	B	274	LYS	6.0
1	B	311	GLN	5.9
1	A	100	LYS	5.8
1	A	238	GLU	5.8
1	A	289	GLY	5.2
1	B	240	ILE	5.2
1	A	95	GLN	5.1
1	A	107	SER	5.1
1	A	102	PRO	4.8
1	B	228	SER	4.7
1	B	110	GLY	4.7
1	B	298	ARG	4.7
1	B	324	TRP	4.7
1	B	313	ILE	4.7
1	A	90	SER	4.7
1	B	309	PRO	4.6
1	B	108	PHE	4.5
1	B	102	PRO	4.5
1	A	194	ASN	4.5
1	A	94	VAL	4.5
1	A	110	GLY	4.5
1	A	228	SER	4.4
1	A	93	ILE	4.3

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Mol	Chain	Res	Type	RSRZ
1	B	106	GLY	4.3
1	A	240	ILE	4.3
1	A	151	LYS	4.3
1	A	108	PHE	4.3
1	A	99	GLN	4.1
1	B	94	VAL	4.1
1	B	308	ASP	3.9
1	B	288	SER	3.9
1	B	151	LYS	3.8
1	A	33	LYS	3.8
1	B	235	GLY	3.7
1	B	299	VAL	3.7
1	A	30	ASP	3.7
1	B	30	ASP	3.6
1	B	107	SER	3.6
1	B	105	LEU	3.6
1	A	288	SER	3.5
1	B	99	GLN	3.5
1	B	239	TRP	3.5
1	A	109	PRO	3.5
1	B	109	PRO	3.4
1	B	34	SER	3.4
1	B	100	LYS	3.4
1	A	105	LEU	3.3
1	B	153	GLY	3.3
1	B	312	GLY	3.3
1	A	104	LEU	3.2
1	A	101	LEU	3.2
1	A	310	LYS	3.2
1	B	103	GLY	3.2
1	B	271	THR	3.1
1	A	239	TRP	3.1
1	B	90	SER	3.1
1	B	300	GLN	3.1
1	A	232	GLY	3.0
1	B	152	GLU	3.0
1	B	33	LYS	3.0
1	B	302	LEU	3.0
1	A	96	LEU	3.0
1	B	306	GLU	2.9
1	A	328	PHE	2.9
1	B	104	LEU	2.8

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Mol	Chain	Res	Type	RSRZ
1	B	101	LEU	2.8
1	A	152	GLU	2.7
1	A	97	VAL	2.7
1	B	236	VAL	2.7
1	B	96	LEU	2.7
1	A	98	ASP	2.7
1	B	339	MET	2.7
1	B	275	ILE	2.6
1	B	155	LEU	2.6
1	B	301	SER	2.6
1	B	150	ASP	2.6
1	B	289	GLY	2.6
1	B	59	TYR	2.5
1	B	273	SER	2.5
1	B	233	PHE	2.5
1	B	276	LEU	2.5
1	B	111	PRO	2.5
1	B	93	ILE	2.4
1	B	234	MET	2.4
1	B	154	HIS	2.4
1	B	326	ASN	2.3
1	B	114	GLU	2.3
1	B	305	TYR	2.3
1	A	103	GLY	2.3
1	A	347	GLU	2.2
1	A	91	GLY	2.2
1	B	338	LYS	2.1
1	B	127	LEU	2.1
1	B	286	SER	2.1
1	B	251	PHE	2.1
1	A	344	THR	2.1
1	B	323	ARG	2.0

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

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

6.3 Carbohydrates (i)

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

Full wwPDB X-ray Structure Validation Report

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	D	1	14/15	0.76	0.27	66,83,94,109	0
3	NAG	D	2	14/15	0.79	0.40	73,88,105,107	0
2	NAG	C	2	14/15	0.81	0.27	49,74,91,92	0
2	NAG	E	2	14/15	0.86	0.22	45,59,77,85	0
2	FUC	E	3	10/11	0.91	0.12	26,44,55,57	0
2	FUC	C	3	10/11	0.92	0.11	28,56,68,78	0
2	NAG	C	1	14/15	0.94	0.10	27,42,54,56	0
2	NAG	E	1	14/15	0.96	0.13	27,38,55,58	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.
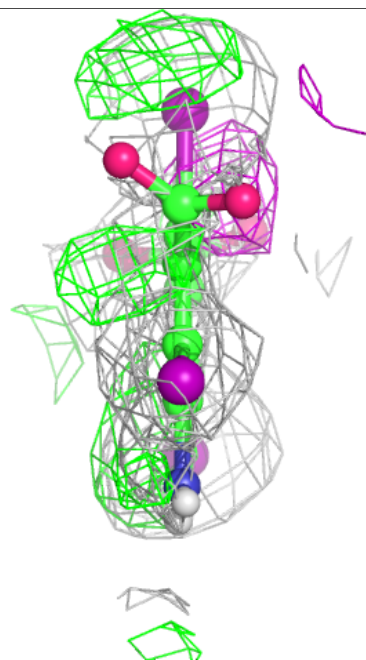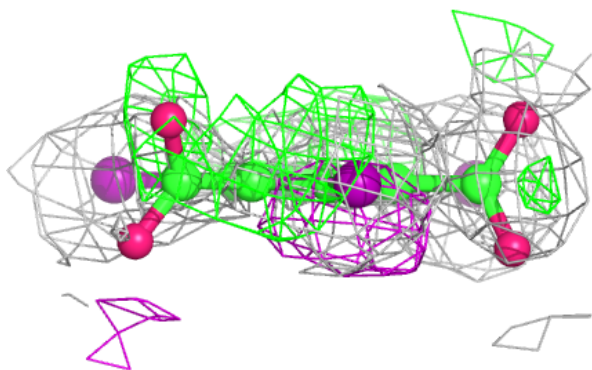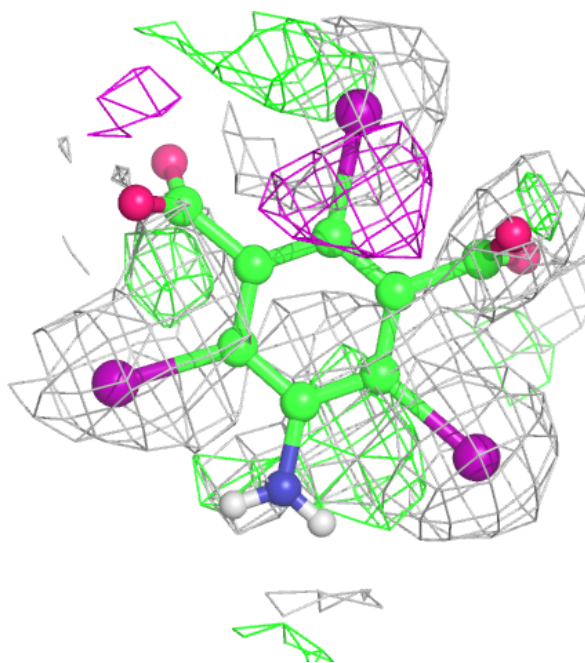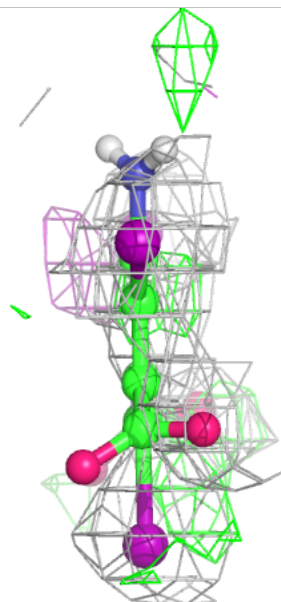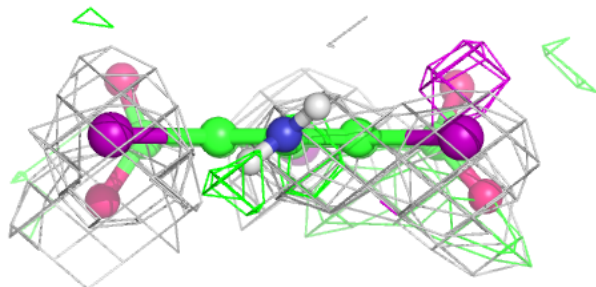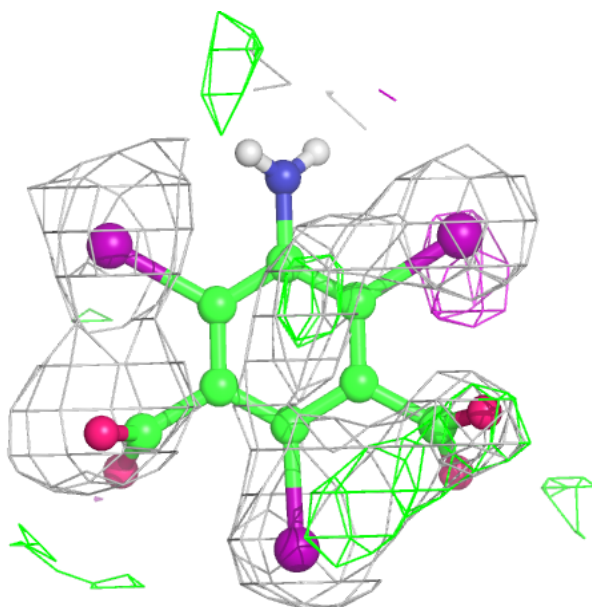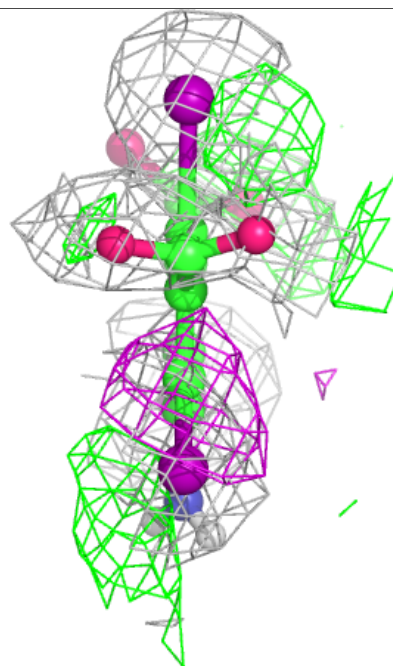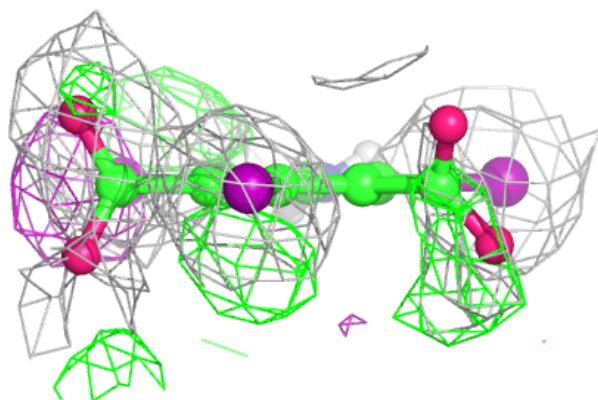
Electron density around Chain C:

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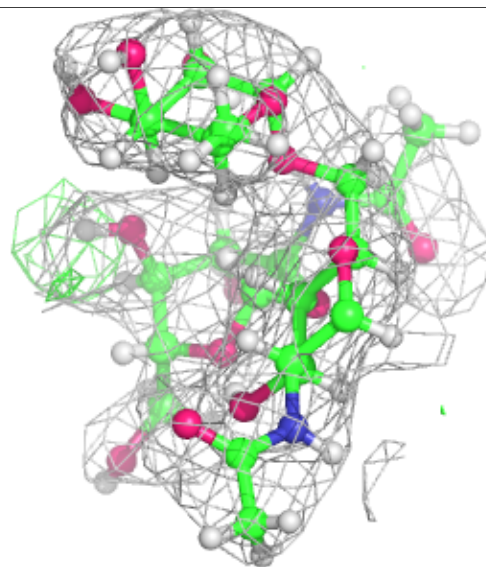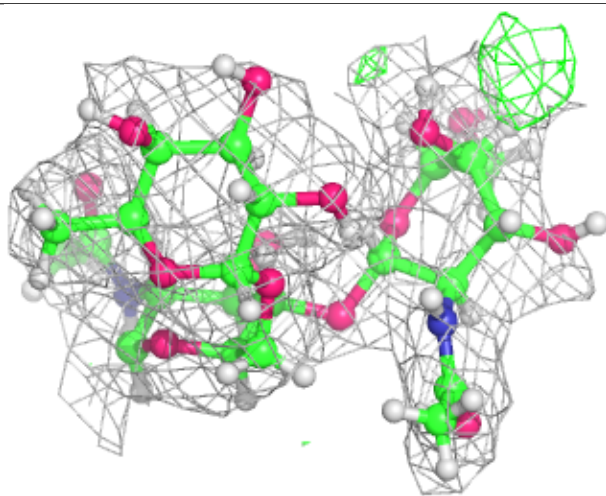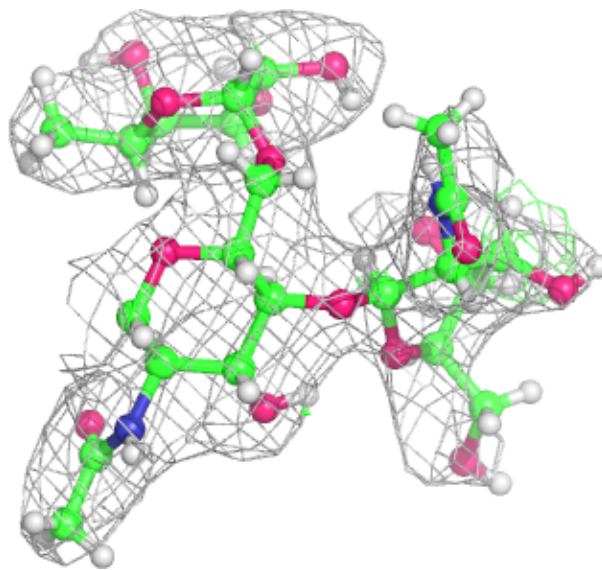
Electron density around Chain E:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)
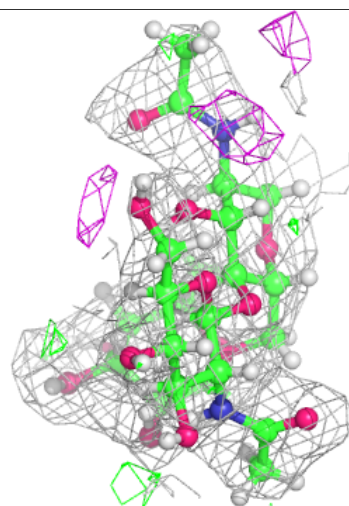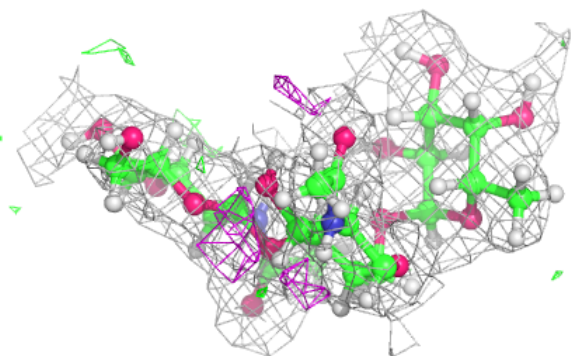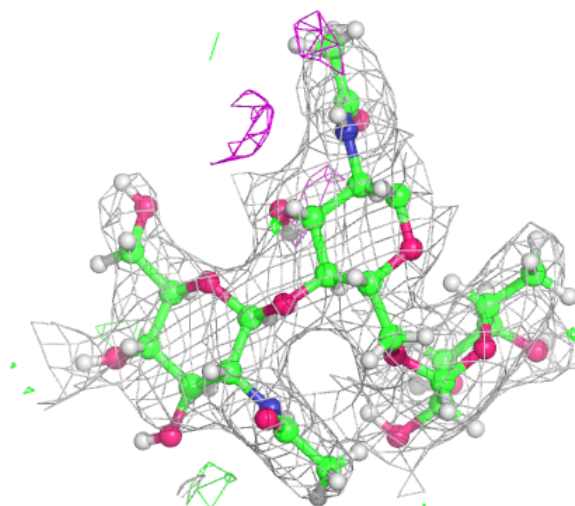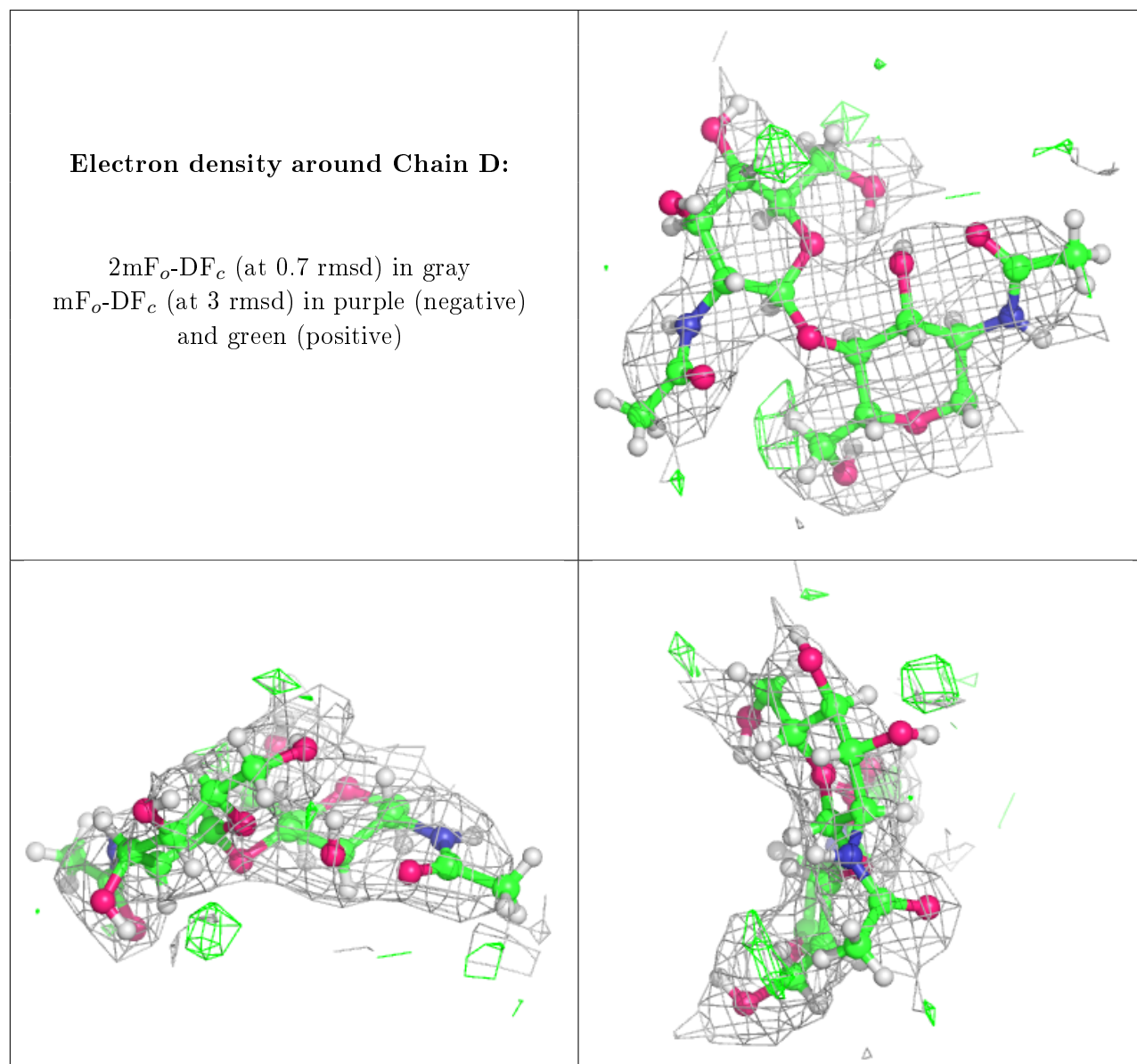
Electron density around Chain D:

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

6.4 Ligands ⓘ

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
5	IOD	B	415	1/1	0.60	0.15	133,133,133,133	1
5	IOD	B	406	1/1	0.72	0.13	79,79,79,79	1
5	IOD	B	409	1/1	0.73	0.18	59,59,59,59	1
5	IOD	B	417	1/1	0.74	0.16	73,73,73,73	1
5	IOD	B	412	1/1	0.74	0.18	93,93,93,93	1

Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($Å^2$)	Q<0.9
5	IOD	A	422	1/1	0.78	0.13	100,100,100,100	1
5	IOD	A	415	1/1	0.78	0.14	101,101,101,101	1
5	IOD	A	420	1/1	0.81	0.10	116,116,116,116	1
5	IOD	A	428	1/1	0.81	0.12	106,106,106,106	1
5	IOD	B	418	1/1	0.82	0.08	102,102,102,102	1
5	IOD	B	419	1/1	0.83	0.42	89,89,89,89	1
5	IOD	A	429	1/1	0.83	0.21	117,117,117,117	1
5	IOD	A	416	1/1	0.85	0.17	93,93,93,93	1
5	IOD	A	430	1/1	0.85	0.12	79,79,79,79	1
5	IOD	B	413	1/1	0.86	0.18	114,114,114,114	1
5	IOD	B	421	1/1	0.86	0.10	100,100,100,100	1
4	I3C	A	412	16/16	0.86	0.32	46,63,84,85	18
5	IOD	B	420	1/1	0.86	0.20	94,94,94,94	1
5	IOD	B	410	1/1	0.87	0.25	124,124,124,124	1
5	IOD	A	427	1/1	0.88	0.31	98,98,98,98	1
5	IOD	B	414	1/1	0.88	0.12	75,75,75,75	1
5	IOD	A	414	1/1	0.91	0.06	85,85,85,85	1
4	I3C	A	407[B]	16/16	0.91	0.30	27,43,55,64	18
4	I3C	A	407[C]	16/16	0.91	0.30	54,64,83,85	18
4	I3C	A	407[A]	16/16	0.91	0.30	32,48,61,61	18
5	IOD	B	416	1/1	0.91	0.23	74,74,74,74	1
5	IOD	A	417	1/1	0.91	0.13	31,31,31,31	1
5	IOD	B	408	1/1	0.92	0.12	74,74,74,74	1
5	IOD	A	413	1/1	0.92	0.09	56,56,56,56	1
5	IOD	A	423	1/1	0.93	0.12	86,86,86,86	1
4	I3C	A	411	16/16	0.93	0.34	18,34,60,68	18
5	IOD	A	426	1/1	0.93	0.23	68,68,68,68	1
5	IOD	A	421	1/1	0.94	0.27	47,47,47,47	1
5	IOD	A	424	1/1	0.94	0.09	41,41,41,41	1
4	I3C	A	410	16/16	0.95	0.19	45,55,75,96	18
5	IOD	B	411	1/1	0.95	0.19	45,45,45,45	1
4	I3C	A	408	16/16	0.96	0.24	21,28,39,42	18
4	I3C	A	409	16/16	0.96	0.24	33,38,55,72	18
5	IOD	A	425	1/1	0.97	0.06	65,65,65,65	1
5	IOD	A	419	1/1	0.97	0.18	28,28,28,28	1
4	I3C	B	405	16/16	0.97	0.21	37,48,56,59	18
4	I3C	A	406	16/16	0.98	0.13	29,42,56,57	18
4	I3C	B	404	16/16	0.98	0.17	32,42,55,55	18
5	IOD	A	418	1/1	0.98	0.14	37,37,37,37	1
5	IOD	B	407	1/1	0.98	0.13	36,36,36,36	1

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 I3C A 412:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
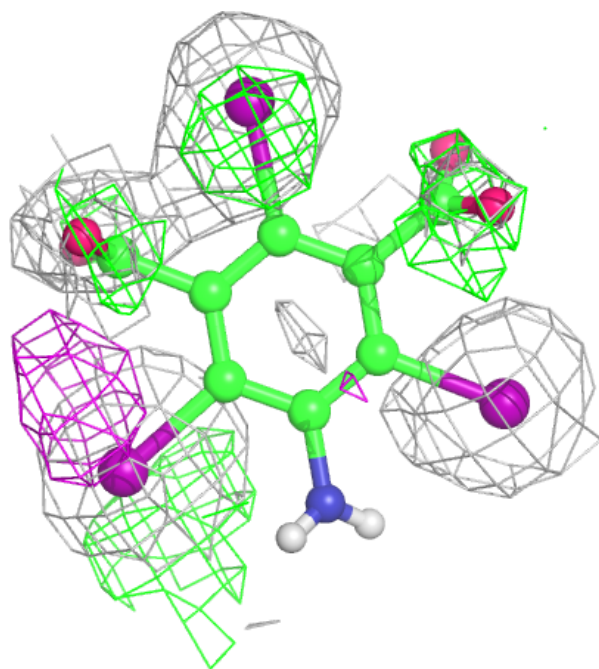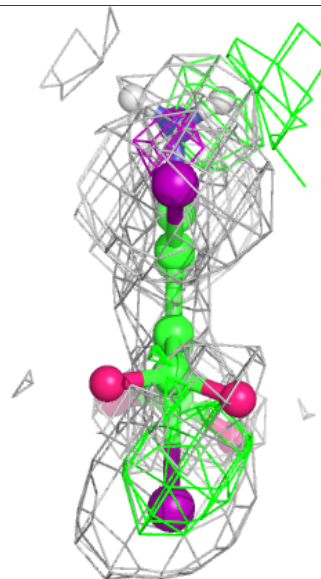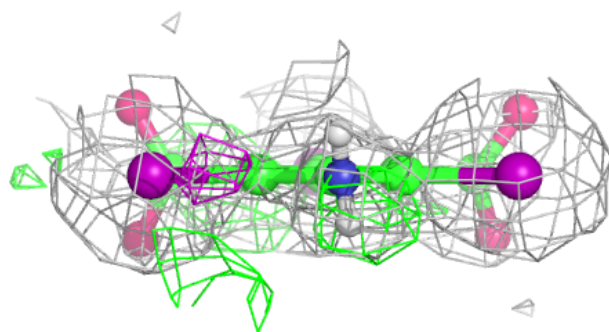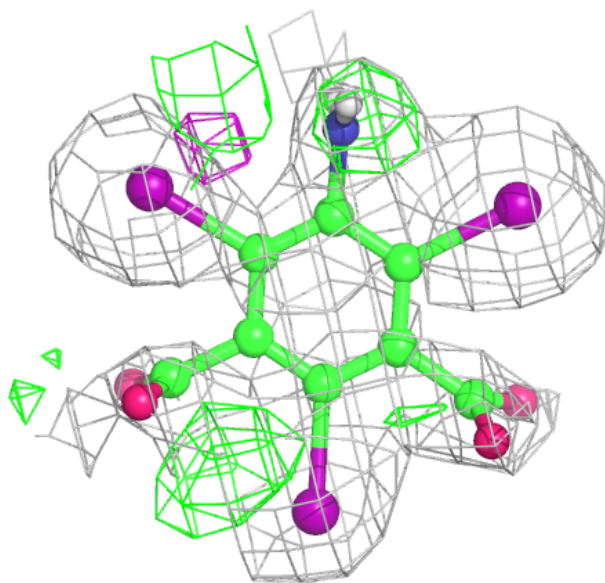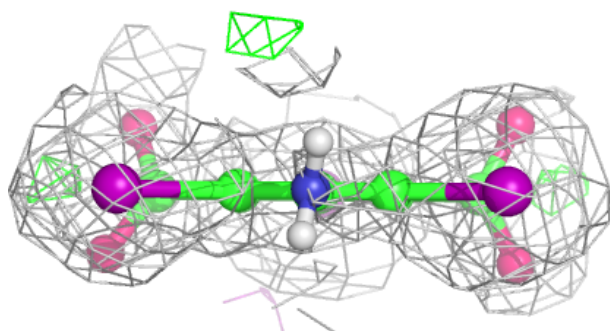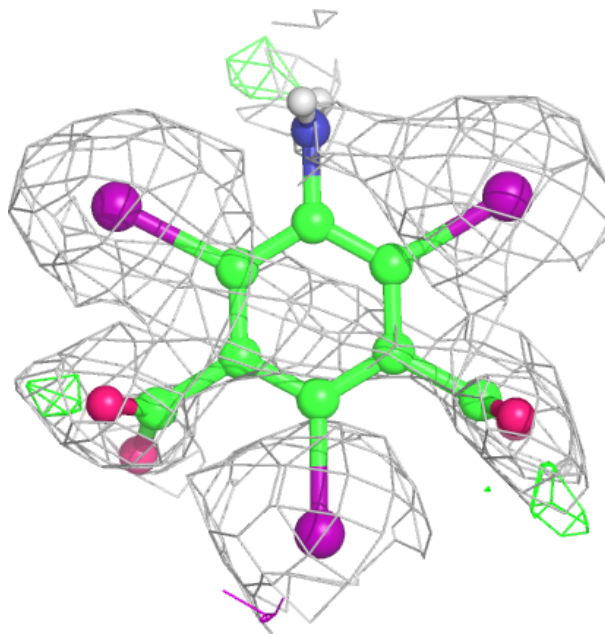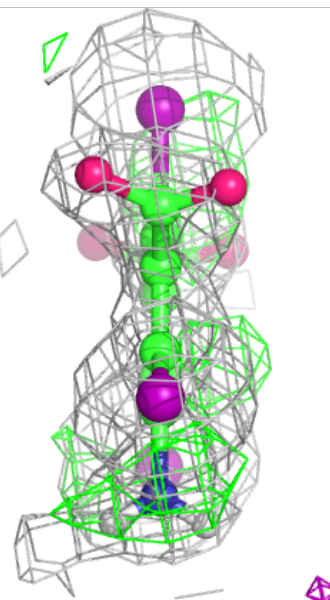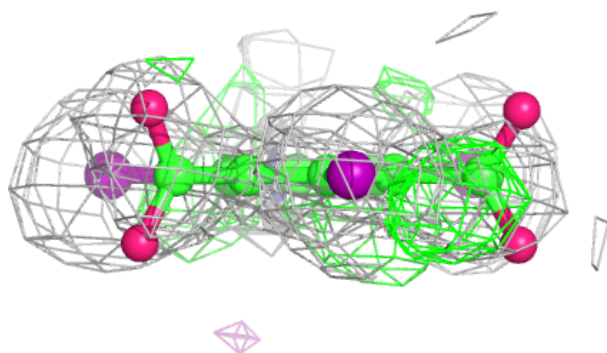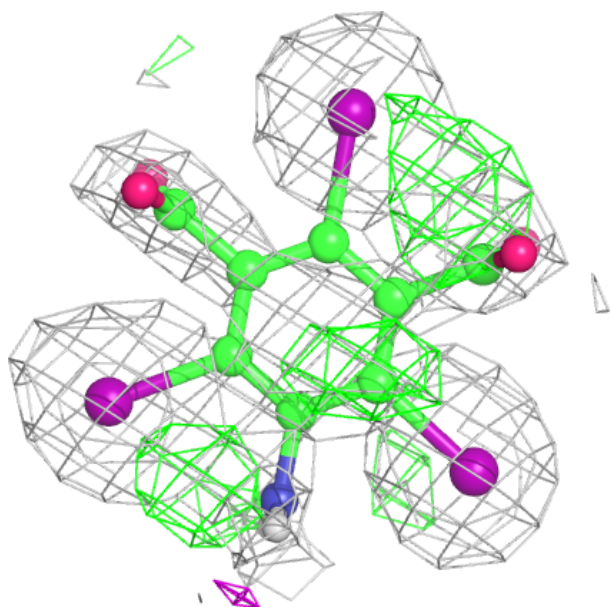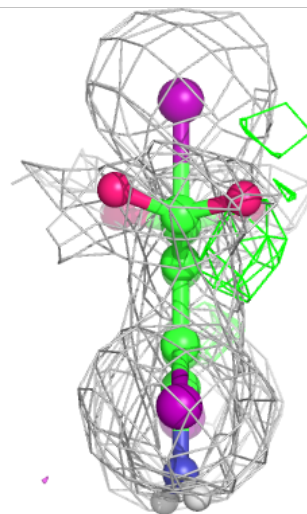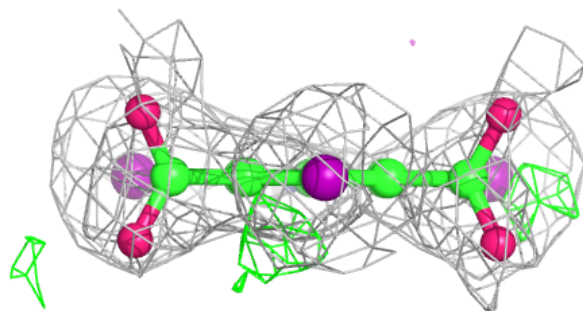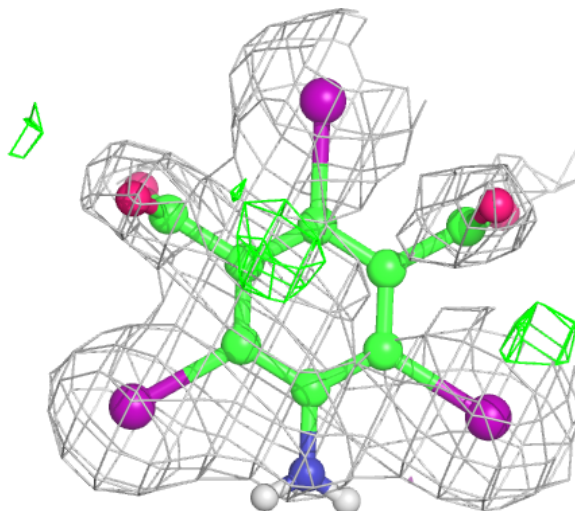$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
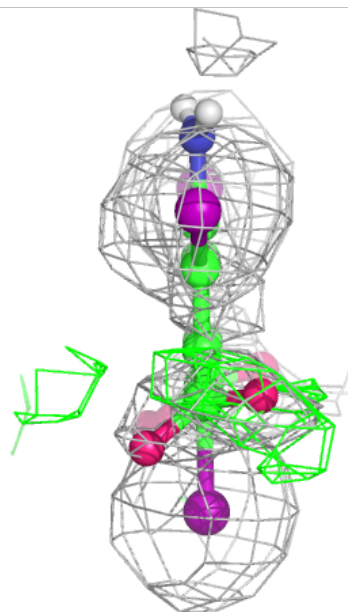and green (positive)
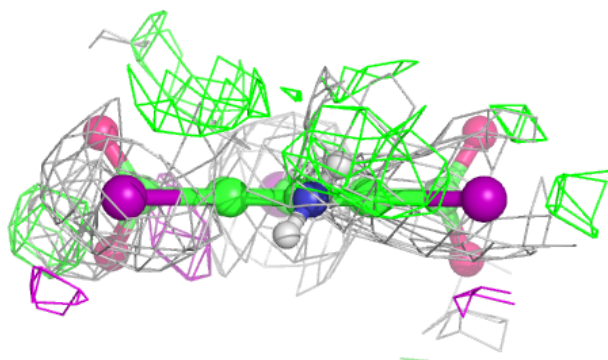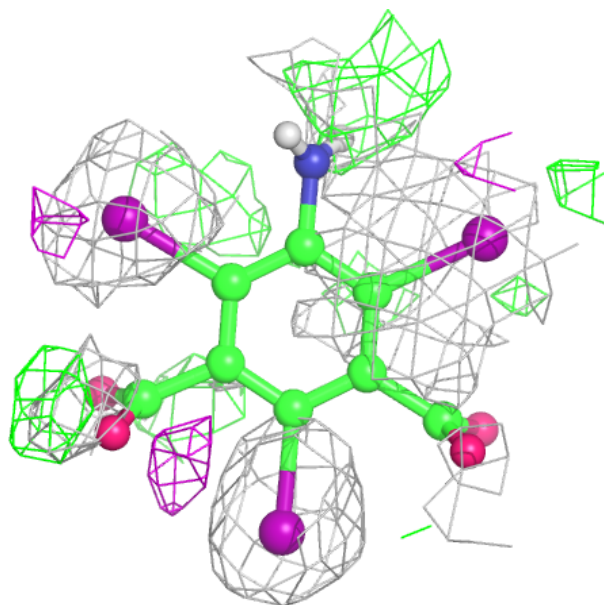
Electron density around I3C A 407 (B):

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

Electron density around I3C A 407 (C):

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

Electron density around I3C A 407 (A):

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

Electron density around I3C A 411:

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

Electron density around I3C A 410:

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

Electron density around I3C A 408:

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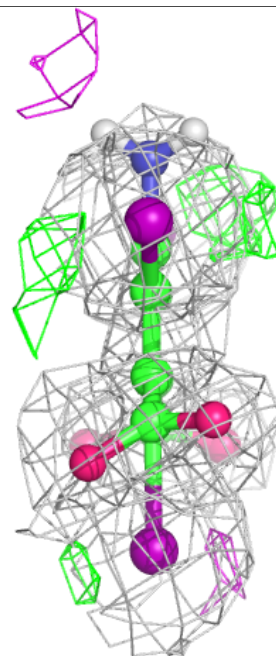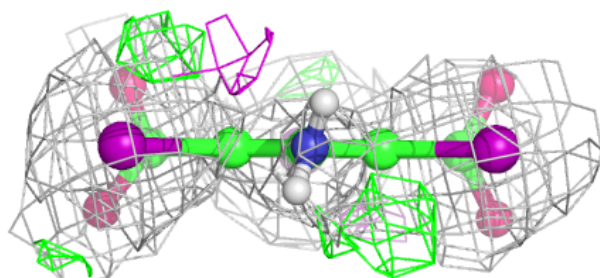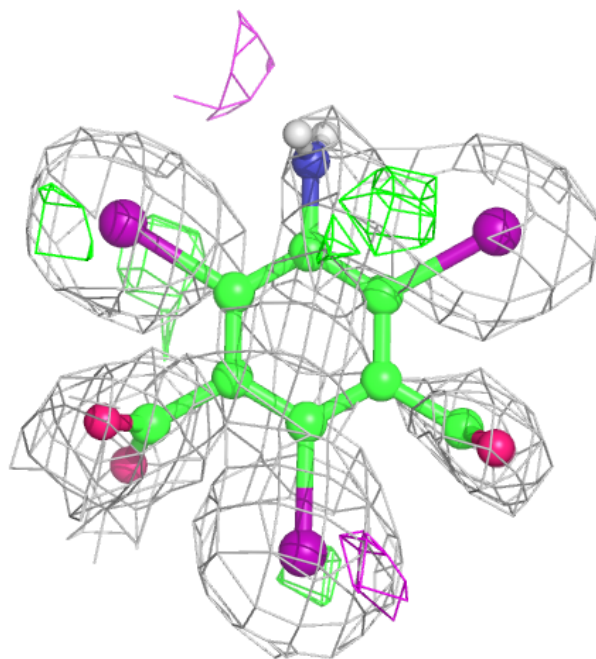mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around I3C A 409:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
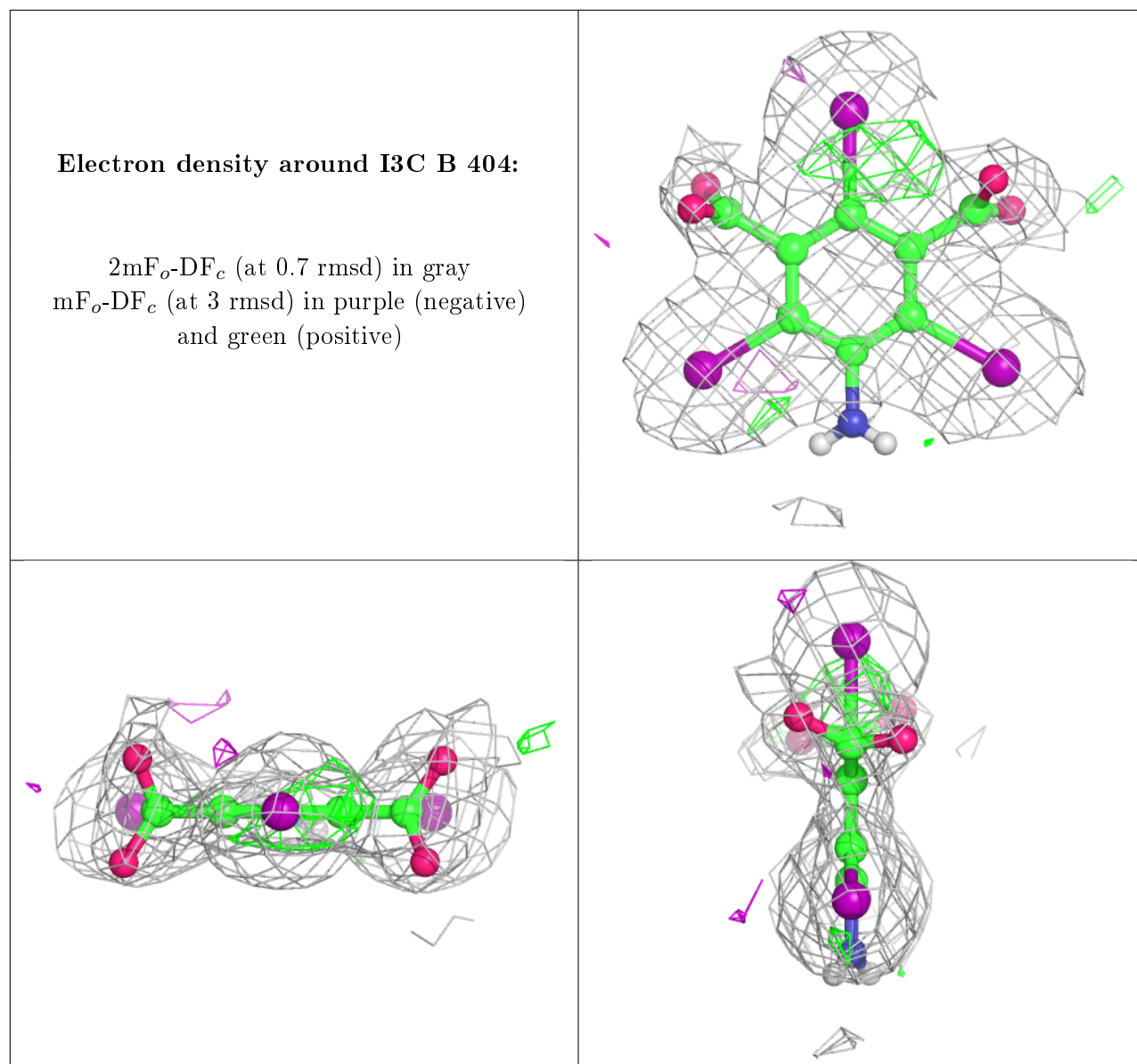
Electron density around I3C B 405:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
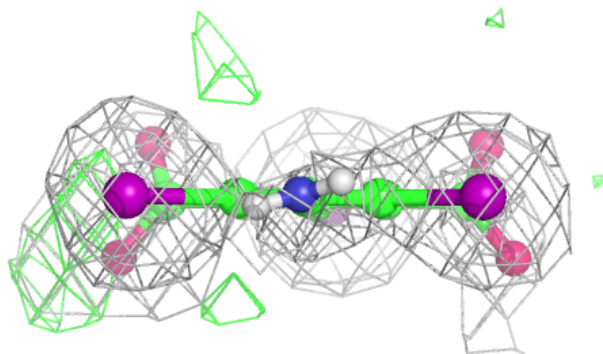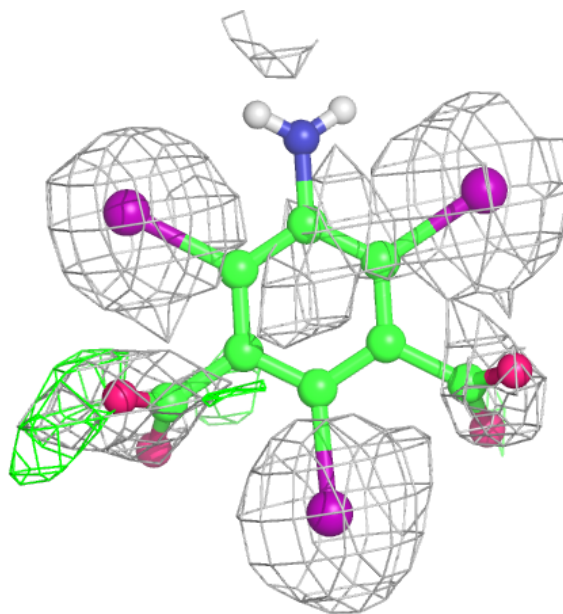
Electron density around I3C A 406:

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

Electron density around I3C B 404:

$2mF_o$-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.