Full wwPDB X-ray Structure Validation Report ⓘ

Aug 10, 2020 – 09:47 AM BST

PDB ID	:	4BQC
Title	:	Crystal structure of the FN5 and FN6 domains of NEO1 bound to SOS
Authors	:	Bell, C.H.; Healey, E.; vanErp, S.; Bishop, B.; Tang, C.; Gilbert, R.J.C.; Aricescu, A.R.; Pasterkamp, R.J.; Siebold, C.
Deposited on	:	2013-05-30
Resolution	:	3.20 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 following versions of software and data (see references ⓘ) were used in the production of this report:

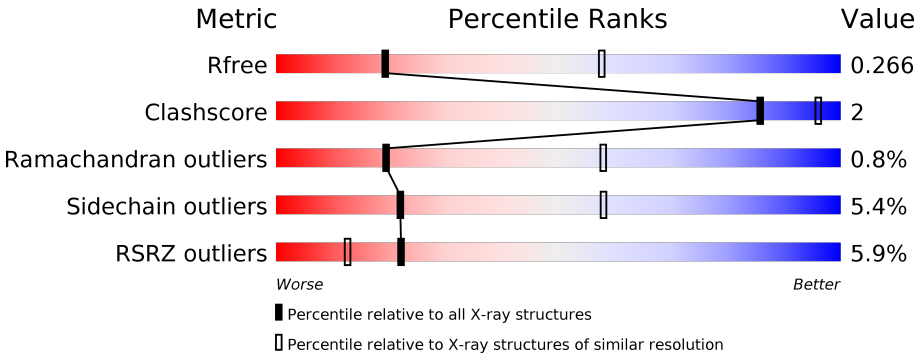
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.13.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry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

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.20 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1133 (3.20-3.20)
Clashscore	141614	1253 (3.20-3.20)
Ramachandran outliers	138981	1234 (3.20-3.20)
Sidechain outliers	138945	1233 (3.20-3.20)
RSRZ outliers	127900	1095 (3.20-3.20)

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	264	% 67% 6% • 25%
1	B	264	8% 59% 7% 33%
2	C	2	100%
2	D	2	100%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 3079 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 NEOGENIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	197	Total	C	N	O	S	0	0	0
			1555	990	265	294	6			
1	B	176	Total	C	N	O	S	0	0	0
			1398	901	233	260	4			

There are 26 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	880	GLU	-	expression tag	UNP P97798
A	881	THR	-	expression tag	UNP P97798
A	882	GLY	-	expression tag	UNP P97798
A	1134	ASN	-	expression tag	UNP P97798
A	1135	GLY	-	expression tag	UNP P97798
A	1136	THR	-	expression tag	UNP P97798
A	1137	LYS	-	expression tag	UNP P97798
A	1138	HIS	-	expression tag	UNP P97798
A	1139	HIS	-	expression tag	UNP P97798
A	1140	HIS	-	expression tag	UNP P97798
A	1141	HIS	-	expression tag	UNP P97798
A	1142	HIS	-	expression tag	UNP P97798
A	1143	HIS	-	expression tag	UNP P97798
B	880	GLU	-	expression tag	UNP P97798
B	881	THR	-	expression tag	UNP P97798
B	882	GLY	-	expression tag	UNP P97798
B	1134	ASN	-	expression tag	UNP P97798
B	1135	GLY	-	expression tag	UNP P97798
B	1136	THR	-	expression tag	UNP P97798
B	1137	LYS	-	expression tag	UNP P97798
B	1138	HIS	-	expression tag	UNP P97798
B	1139	HIS	-	expression tag	UNP P97798
B	1140	HIS	-	expression tag	UNP P97798
B	1141	HIS	-	expression tag	UNP P97798
B	1142	HIS	-	expression tag	UNP P97798

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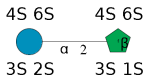
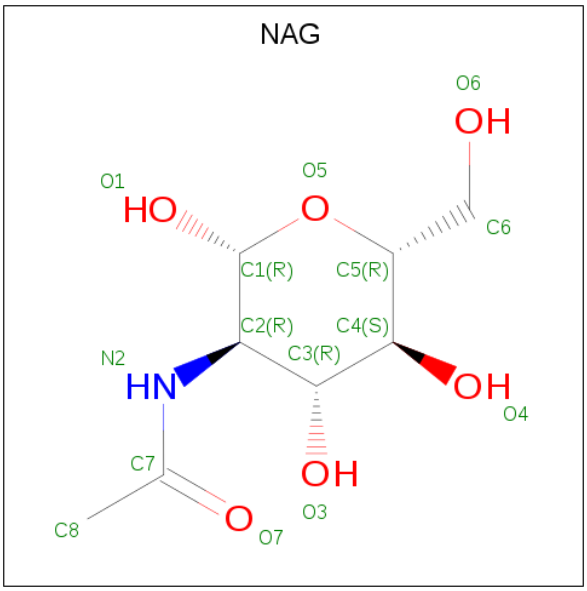
Chain	Residue	Modelled	Actual	Comment	Reference
B	1143	HIS	-	expression tag	UNP P97798

- Molecule 2 is an oligosaccharide called 1,3,4,6-tetra-O-sulfo-beta-D-fructofuranose-(2-1)-2,3,4,6-tetra-O-sulfonato-alpha-D-glucopyranose.



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	C	2	Total	C	O	S	0	0	0
			55	12	35	8			
2	D	2	Total	C	O	S	0	0	0
			55	12	35	8			

- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	N	O	0	0
			14	8	1	5		

- Molecule 4 is SODIUM ION (three-letter code: NA) (formula: Na).

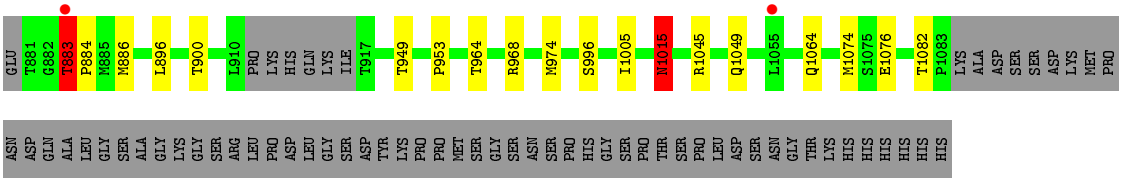
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total Na 1 1	0	0
4	A	1	Total Na 1 1	0	0

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.

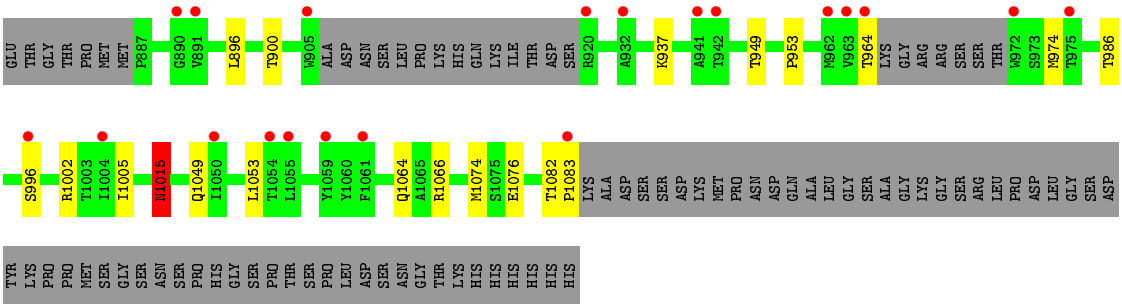
• Molecule 1: NEOGENIN

Chain A:



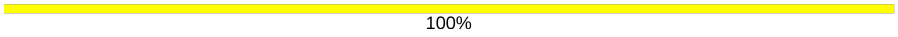
• Molecule 1: NEOGENIN

Chain B:



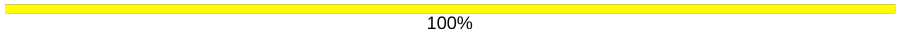
• Molecule 2: 1,3,4,6-tetra-O-sulfo-beta-D-fructofuranose-(2-1)-2,3,4,6-tetra-O-sulfonato-alpha-D-glucopyranose

Chain C:



• Molecule 2: 1,3,4,6-tetra-O-sulfo-beta-D-fructofuranose-(2-1)-2,3,4,6-tetra-O-sulfonato-alpha-D-glucopyranose

Chain D:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	96.16Å 157.84Å 89.92Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	30.00 – 3.20 42.40 – 3.20	Depositor EDS
% Data completeness (in resolution range)	99.5 (30.00-3.20) 99.5 (42.40-3.20)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.37 (at 3.19Å)	Xtriage
Refinement program	BUSTER 2.11.2	Depositor
R, R_{free}	0.217 , 0.259 0.227 , 0.266	Depositor DCC
R_{free} test set	554 reflections (4.79%)	wwPDB-VP
Wilson B-factor (Å^2)	79.6	Xtriage
Anisotropy	0.590	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.28 , 65.7	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	0.000 for 1/2*h-1/2*k,-3/2*h-1/2*k,-l 0.003 for 1/2*h+1/2*k,3/2*h-1/2*k,-l	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	3079	wwPDB-VP
Average B, all atoms (Å^2)	102.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 37.62 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 4.1721e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[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: NA, GU4, NAG, YYJ

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	0/1596	0.71	1/2181 (0.0%)
1	B	0.45	0/1437	0.68	0/1966
All	All	0.48	0/3033	0.69	1/4147 (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	1045	ARG	CD-NE-CZ	5.47	131.25	123.60

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	1555	0	1545	7	0
1	B	1398	0	1387	7	0
2	C	55	0	6	0	0
2	D	55	0	6	0	0
3	A	14	0	13	0	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
All	All	3079	0	2957	13	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 2.

All (13) 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:1005:ILE:HG13	1:A:1049:GLN:HG3	1.94	0.49
1:B:1064:GLN:HB3	1:B:1074:MET:HG2	1.94	0.49
1:B:953:PRO:HB2	1:B:1015:ASN:HB3	1.95	0.48
1:B:1005:ILE:HG13	1:B:1049:GLN:HG3	1.96	0.48
1:A:1064:GLN:HB3	1:A:1074:MET:HG2	1.97	0.47
1:A:953:PRO:HB2	1:A:1015:ASN:HB3	1.97	0.46
1:A:883:THR:HG22	1:A:884:PRO:HA	1.99	0.44
1:B:1002:ARG:HD2	1:B:1053:LEU:O	2.17	0.44
1:A:883:THR:HA	1:A:968:ARG:HH21	1.83	0.44
1:A:896:LEU:HB2	1:A:900:THR:HG22	2.01	0.42
1:B:896:LEU:HB2	1:B:900:THR:HG22	2.02	0.42
1:A:896:LEU:O	1:B:1066:ARG:NH1	2.40	0.41
1:B:986:THR:HG23	1:B:1015:ASN:ND2	2.36	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	193/264 (73%)	181 (94%)	10 (5%)	2 (1%)	15	54
1	B	170/264 (64%)	160 (94%)	9 (5%)	1 (1%)	25	64
All	All	363/528 (69%)	341 (94%)	19 (5%)	3 (1%)	19	58

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1015	ASN

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Mol	Chain	Res	Type
1	B	1015	ASN
1	A	883	THR

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	175/232 (75%)	166 (95%)	9 (5%)	24	60
1	B	156/232 (67%)	147 (94%)	9 (6%)	20	55
All	All	331/464 (71%)	313 (95%)	18 (5%)	22	58

All (18) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	883	THR
1	A	886	MET
1	A	949	THR
1	A	964	THR
1	A	974	MET
1	A	996	SER
1	A	1015	ASN
1	A	1076	GLU
1	A	1082	THR
1	B	937	LYS
1	B	949	THR
1	B	964	THR
1	B	974	MET
1	B	996	SER
1	B	1015	ASN
1	B	1076	GLU
1	B	1082	THR
1	B	1083	PRO

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

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

4 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	GU4	C	1	2	27,27,28	1.91	11 (40%)	29,43,45	2.33	8 (27%)
2	YYJ	C	2	2	27,28,28	2.18	7 (25%)	28,46,46	2.11	7 (25%)
2	GU4	D	1	2	27,27,28	1.81	7 (25%)	29,43,45	2.13	6 (20%)
2	YYJ	D	2	2	27,28,28	1.77	3 (11%)	28,46,46	1.12	2 (7%)

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	GU4	C	1	2	-	10/21/38/41	0/1/1/1
2	YYJ	C	2	2	-	11/23/42/42	0/1/1/1
2	GU4	D	1	2	-	9/21/38/41	0/1/1/1
2	YYJ	D	2	2	-	7/23/42/42	0/1/1/1

All (28) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	2	YYJ	O2-C2	6.65	1.52	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	2	YYJ	O5-C2	6.02	1.52	1.43
2	D	2	YYJ	O2-C2	5.86	1.50	1.40
2	C	1	GU4	C3-C4	4.50	1.61	1.52
2	D	1	GU4	C3-C4	3.99	1.60	1.52
2	D	1	GU4	C1-C2	3.32	1.57	1.51
2	C	1	GU4	C1-C2	3.15	1.56	1.51
2	D	1	GU4	O5-C5	2.96	1.49	1.43
2	D	2	YYJ	O5-C2	2.80	1.47	1.43
2	C	1	GU4	C4-C5	2.74	1.60	1.52
2	C	1	GU4	O4-C4	2.58	1.51	1.46
2	D	1	GU4	C4-C5	2.50	1.59	1.52
2	D	1	GU4	O5-C1	2.41	1.47	1.43
2	C	1	GU4	O5-C1	2.36	1.47	1.43
2	C	1	GU4	O5-C5	2.26	1.48	1.43
2	C	1	GU4	O2-C2	2.19	1.51	1.47
2	C	1	GU4	C3-C2	2.17	1.58	1.52
2	C	2	YYJ	O2S1-S1	2.13	1.54	1.45
2	C	1	GU4	O26-S4	2.13	1.54	1.45
2	C	1	GU4	O22-S6	2.10	1.54	1.45
2	C	1	GU4	O23-S6	2.09	1.54	1.45
2	C	2	YYJ	O4-C4	-2.08	1.42	1.46
2	D	2	YYJ	O2S4-S4	2.07	1.54	1.45
2	D	1	GU4	O28-S3	2.06	1.54	1.45
2	C	2	YYJ	O2S4-S4	2.03	1.54	1.45
2	C	2	YYJ	O3S4-S4	2.02	1.53	1.45
2	D	1	GU4	O27-S3	2.01	1.53	1.45
2	C	2	YYJ	O3S1-S1	2.00	1.53	1.45

All (23) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	C	1	GU4	O2-C2-C3	7.17	114.59	106.65
2	C	2	YYJ	O5-C5-C6	6.17	123.03	109.45
2	C	1	GU4	C4-O4-S4	5.67	129.82	118.88
2	D	1	GU4	C4-O4-S4	5.59	129.67	118.88
2	D	1	GU4	C2-O2-S2	5.50	125.08	117.91
2	D	1	GU4	O2-C2-C3	4.96	112.15	106.65
2	C	1	GU4	C2-O2-S2	4.70	124.04	117.91
2	C	2	YYJ	O4-C4-C3	4.50	118.69	108.91
2	C	2	YYJ	O5-C5-C4	-3.51	97.63	103.49
2	C	2	YYJ	C5-C4-C3	-3.46	94.23	103.36
2	C	1	GU4	C1-O5-C5	3.44	116.86	112.19

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	C	2	YYJ	O3-C3-C4	3.35	118.73	109.32
2	D	1	GU4	C1-O5-C5	3.24	116.59	112.19
2	C	1	GU4	O5-C5-C4	3.19	116.05	110.07
2	C	2	YYJ	O6-C6-C5	3.09	113.38	107.62
2	D	2	YYJ	O2-C2-O5	-3.03	103.66	109.50
2	D	1	GU4	C3-O3-S3	2.86	124.41	118.88
2	C	1	GU4	C3-C4-C5	2.78	116.36	110.55
2	C	1	GU4	C4-C3-C2	2.71	116.22	110.55
2	D	1	GU4	O4-C4-C3	2.50	113.97	108.48
2	D	2	YYJ	C4-O4-S4	2.38	123.48	118.88
2	C	2	YYJ	C2-C3-C4	-2.35	94.63	102.94
2	C	1	GU4	O3-C3-C4	2.04	112.95	108.48

There are no chirality outliers.

All (37) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	D	1	GU4	O5-C5-C6-O6
2	D	1	GU4	C5-C4-O4-S4
2	D	1	GU4	C3-C4-O4-S4
2	D	1	GU4	C3-O3-S3-O29
2	D	2	YYJ	O1-C1-C2-C3
2	D	2	YYJ	O1-C1-C2-O2
2	D	2	YYJ	O1-C1-C2-O5
2	D	2	YYJ	C2-C1-O1-S1
2	C	2	YYJ	O1-C1-C2-O2
2	C	2	YYJ	O1-C1-C2-O5
2	C	2	YYJ	C2-C1-O1-S1
2	C	2	YYJ	C4-C5-C6-O6
2	C	2	YYJ	C1-O1-S1-O1S1
2	C	1	GU4	O5-C5-C6-O6
2	C	1	GU4	C5-C4-O4-S4
2	C	1	GU4	C3-C4-O4-S4
2	C	1	GU4	C3-O3-S3-O29
2	C	1	GU4	C3-O3-S3-O27
2	C	2	YYJ	C1-O1-S1-O3S1
2	C	1	GU4	C6-O6-S6-O23
2	C	2	YYJ	C1-O1-S1-O2S1
2	C	2	YYJ	O5-C5-C6-O6
2	C	1	GU4	C6-O6-S6-O21
2	D	1	GU4	C3-O3-S3-O27
2	C	1	GU4	C3-O3-S3-O28

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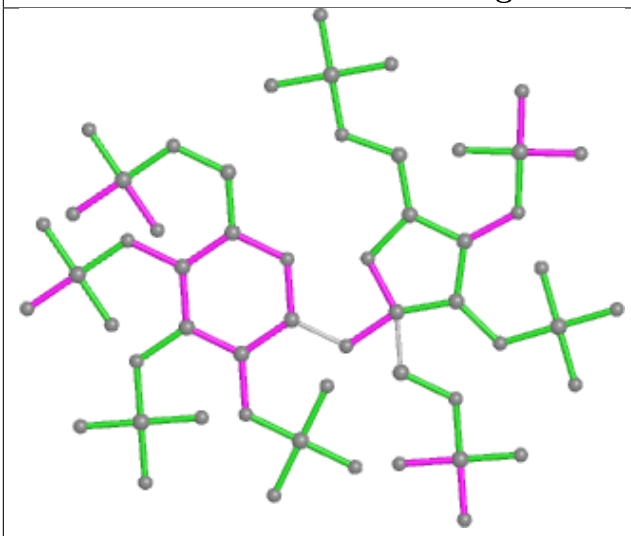
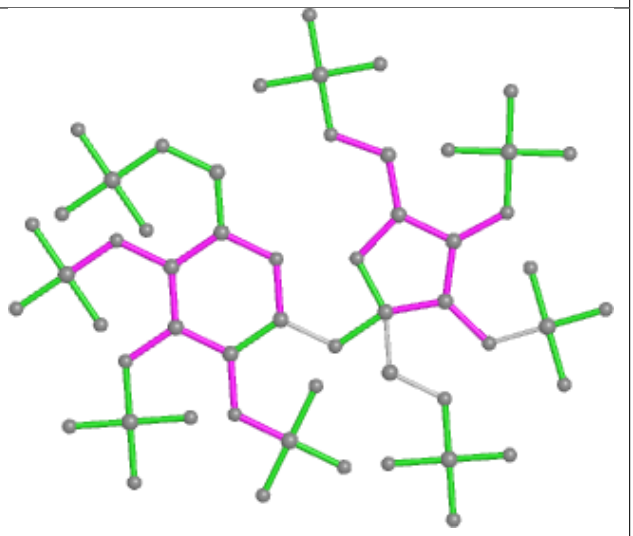
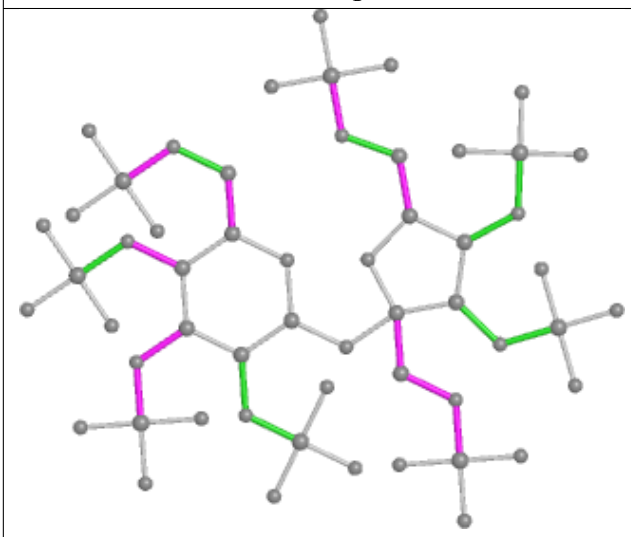
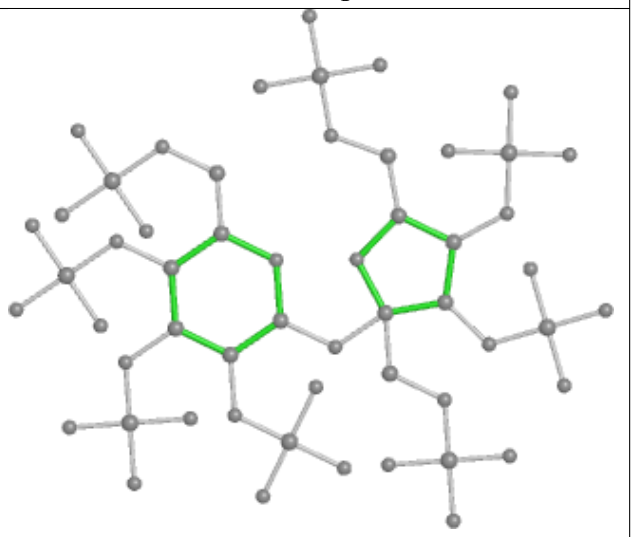
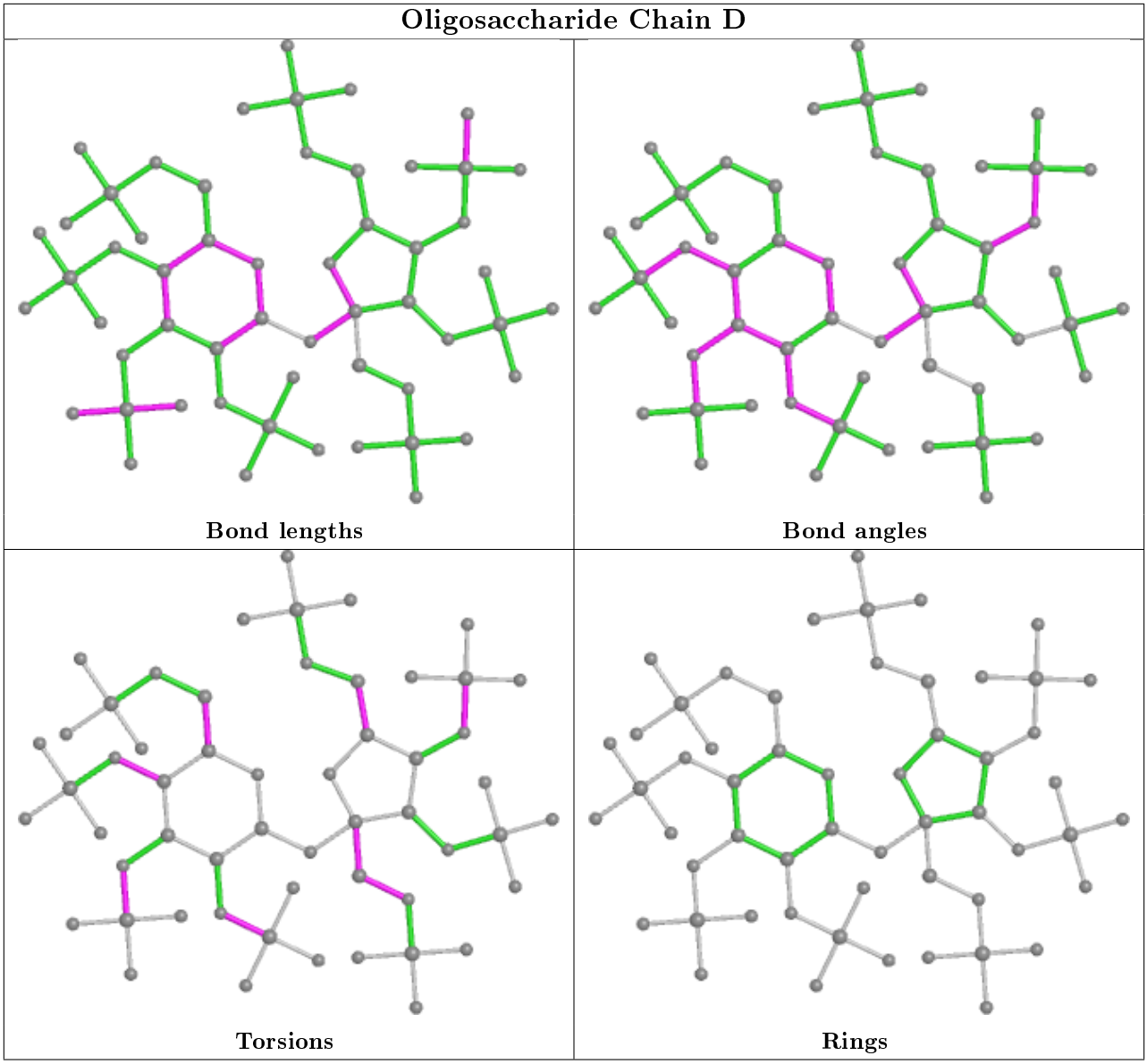
Mol	Chain	Res	Type	Atoms
2	C	1	GU4	C6-O6-S6-O22
2	C	2	YYJ	C6-O6-S6-O3S6
2	D	2	YYJ	C4-C5-C6-O6
2	C	1	GU4	C2-C3-O3-S3
2	D	2	YYJ	O5-C5-C6-O6
2	C	2	YYJ	C6-O6-S6-O2S6
2	D	1	GU4	C3-O3-S3-O28
2	D	1	GU4	C2-O2-S2-O11
2	D	1	GU4	C2-O2-S2-O12
2	C	2	YYJ	C6-O6-S6-O1S6
2	D	1	GU4	C2-O2-S2-O10
2	D	2	YYJ	C4-O4-S4-O2S4

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 C	
 Bond lengths	 Bond angles
 Torsions	 Rings



5.6 Ligand geometry (i)

Of 3 ligands modelled in this entry, 2 are monoatomic - leaving 1 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	NAG	A	2085	1	14,14,15	0.38	0	17,19,21	0.60	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
3	NAG	A	2085	1	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} 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	197/264 (74%)	0.12	2 (1%) 82 72	47, 77, 126, 145	0
1	B	176/264 (66%)	0.57	20 (11%) 5 3	57, 116, 178, 201	0
All	All	373/528 (70%)	0.33	22 (5%) 22 13	47, 91, 167, 201	0

All (22) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	1055	LEU	4.5
1	B	964	THR	3.2
1	B	972	TRP	3.1
1	B	920	ARG	2.9
1	B	1054	THR	2.8
1	B	1083	PRO	2.8
1	B	891	VAL	2.8
1	B	975	THR	2.7
1	B	942	THR	2.6
1	B	905	TRP	2.5
1	B	996	SER	2.5
1	B	962	MET	2.5
1	B	963	VAL	2.3
1	B	1004	ILE	2.3
1	B	1050	ILE	2.3
1	B	890	GLY	2.2
1	B	932	ALA	2.2
1	B	941	ALA	2.2
1	B	1059	TYR	2.2
1	A	883	THR	2.2
1	A	1055	LEU	2.1
1	B	1061	PHE	2.0

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

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

6.3 Carbohydrates (i)

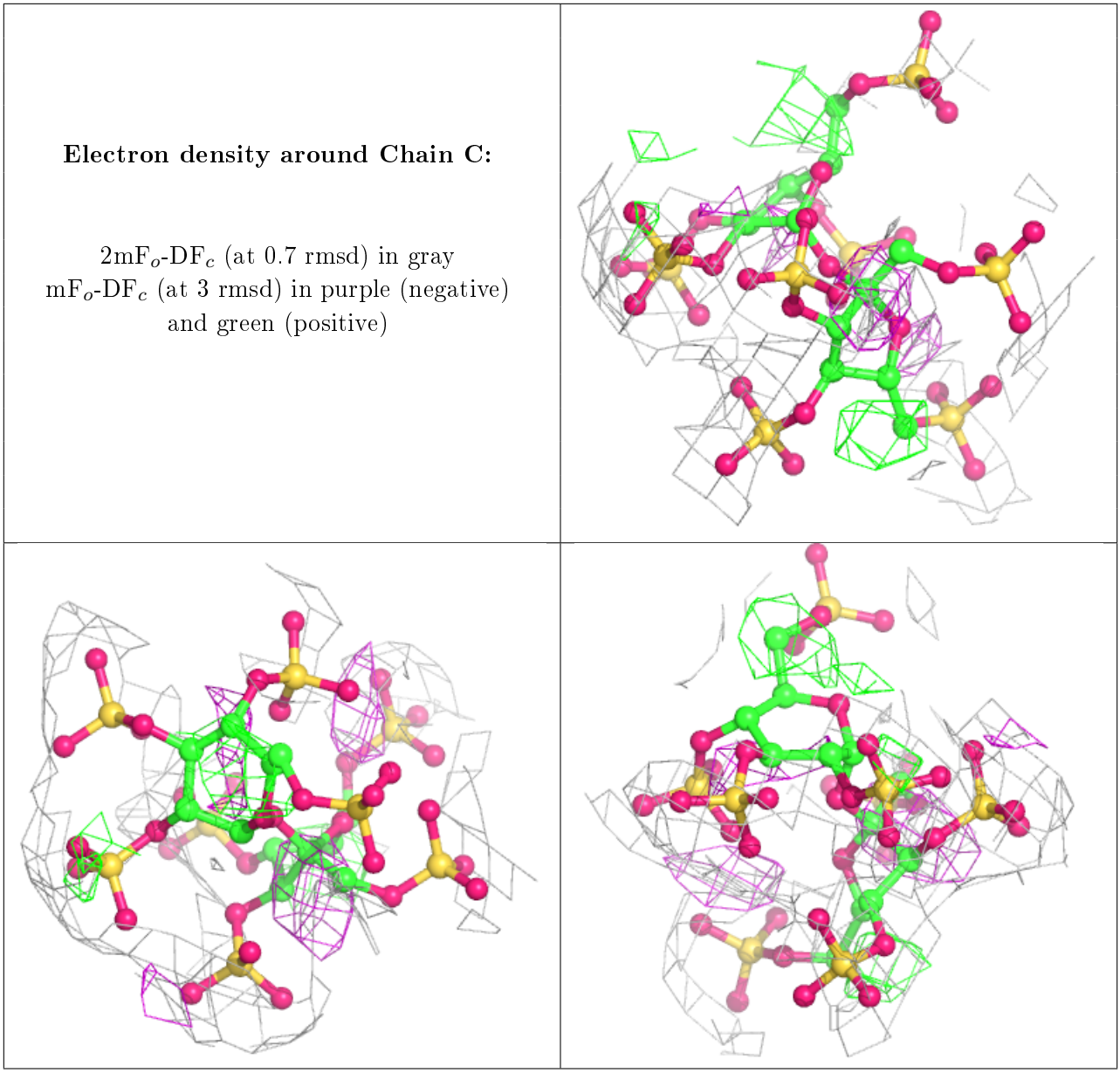
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' 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	YYJ	D	2	28/28	0.62	0.24	233,238,243,243	0
2	GU4	D	1	27/28	0.64	0.21	228,235,245,246	0
2	YYJ	C	2	28/28	0.70	0.19	142,169,177,178	0
2	GU4	C	1	27/28	0.76	0.17	136,151,180,180	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.

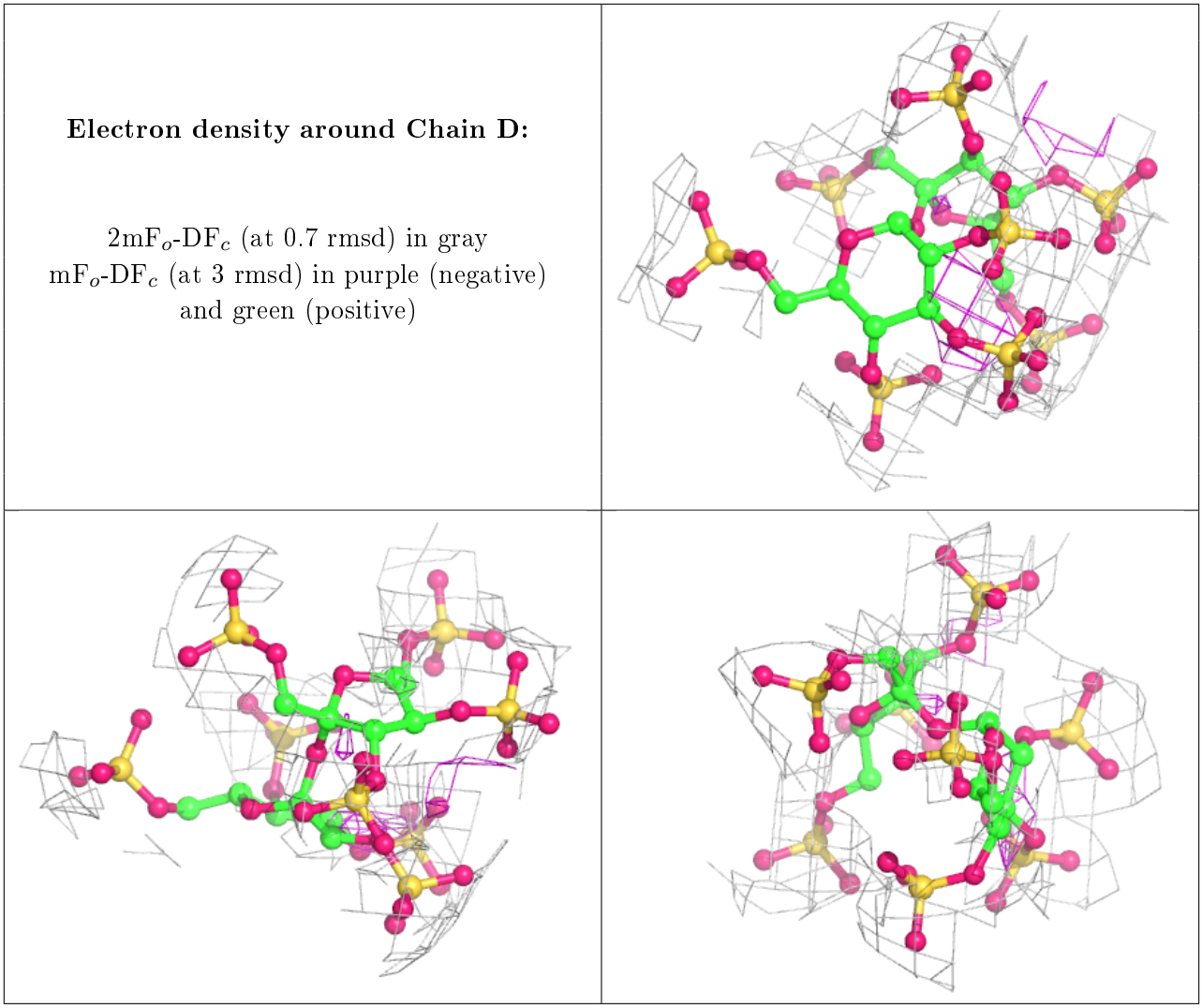
Electron density around Chain C:

$2mF_o$-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 D:

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



6.4 Ligands

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} 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	A	2085	14/15	0.86	0.18	102,107,115,119	0
4	NA	B	2084	1/1	0.95	0.32	71,71,71,71	0
4	NA	A	2086	1/1	0.97	0.46	51,51,51,51	0

6.5 Other polymers

There are no such residues in this entry.