



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2026 – 04:00 PM UTC

PDB ID : 4FN0 / pdb_00004fn0
Title : Crystal structure of mouse nectin-2 extracellular fragment D1-D2, 2nd crystal form
Authors : Harrison, O.J.; Brasch, J.; Shapiro, L.
Deposited on : 2012-06-18
Resolution : 3.35 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
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) : 2.49

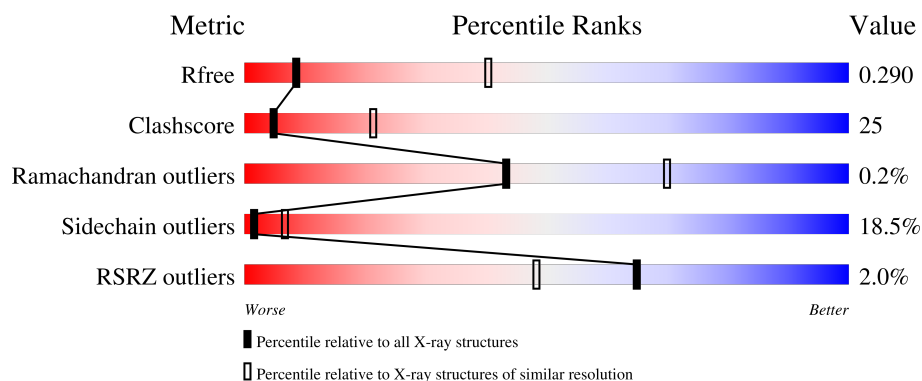
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.35 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}	180053	1099 (3.40-3.32)
Clashscore	190562	1116 (3.40-3.32)
Ramachandran outliers	187476	1101 (3.40-3.32)
Sidechain outliers	187428	1101 (3.40-3.32)
RSRZ outliers	180081	1099 (3.40-3.32)

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 of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	225	3% 52% 39% 7% ••
1	B	225	48% 39% 10% •
1	C	225	3% 59% 31% 7% •
2	D	4	25% 75%
2	E	4	25% 75%

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Mol	Chain	Length	Quality of chain
2	F	4	
2	G	4	
2	H	4	

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
2	NAG	F	2	-	-	X	-
2	FUC	F	4	-	-	X	-

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 5383 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.

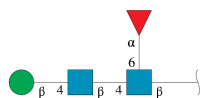
- Molecule 1 is a protein called Poliovirus receptor-related protein 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	220	Total	C	N	O	S	0	0	0
			1706	1067	316	319	4			
1	B	220	Total	C	N	O	S	0	0	0
			1706	1067	316	319	4			
1	C	219	Total	C	N	O	S	0	0	0
			1696	1061	313	318	4			

There are 18 discrepancies between the modelled and reference sequences:

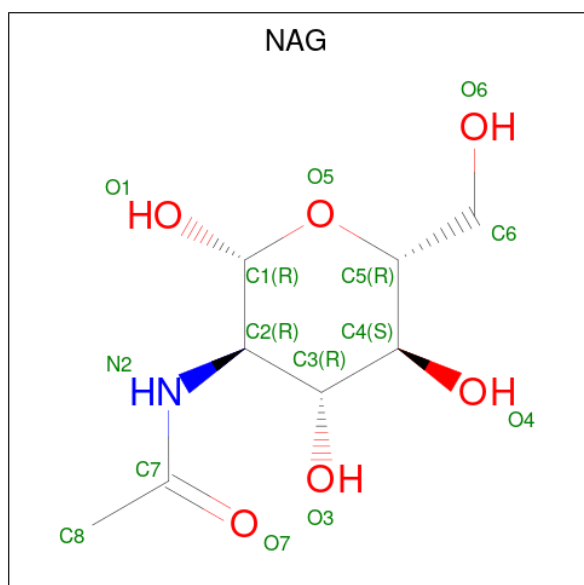
Chain	Residue	Modelled	Actual	Comment	Reference
A	251	HIS	-	expression tag	UNP P32507
A	252	HIS	-	expression tag	UNP P32507
A	253	HIS	-	expression tag	UNP P32507
A	254	HIS	-	expression tag	UNP P32507
A	255	HIS	-	expression tag	UNP P32507
A	256	HIS	-	expression tag	UNP P32507
B	251	HIS	-	expression tag	UNP P32507
B	252	HIS	-	expression tag	UNP P32507
B	253	HIS	-	expression tag	UNP P32507
B	254	HIS	-	expression tag	UNP P32507
B	255	HIS	-	expression tag	UNP P32507
B	256	HIS	-	expression tag	UNP P32507
C	251	HIS	-	expression tag	UNP P32507
C	252	HIS	-	expression tag	UNP P32507
C	253	HIS	-	expression tag	UNP P32507
C	254	HIS	-	expression tag	UNP P32507
C	255	HIS	-	expression tag	UNP P32507
C	256	HIS	-	expression tag	UNP P32507

- Molecule 2 is an oligosaccharide called beta-D-mannopyranose-(1-4)-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	D	4	Total	C	N	O	0	0	0
			49	28	2	19			
2	E	4	Total	C	N	O	0	0	0
			49	28	2	19			
2	F	4	Total	C	N	O	0	0	0
			49	28	2	19			
2	G	4	Total	C	N	O	0	0	0
			49	28	2	19			
2	H	4	Total	C	N	O	0	0	0
			49	28	2	19			

- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: C₈H₁₅NO₆).



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

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	6	Total	O	0	0
			6	6		

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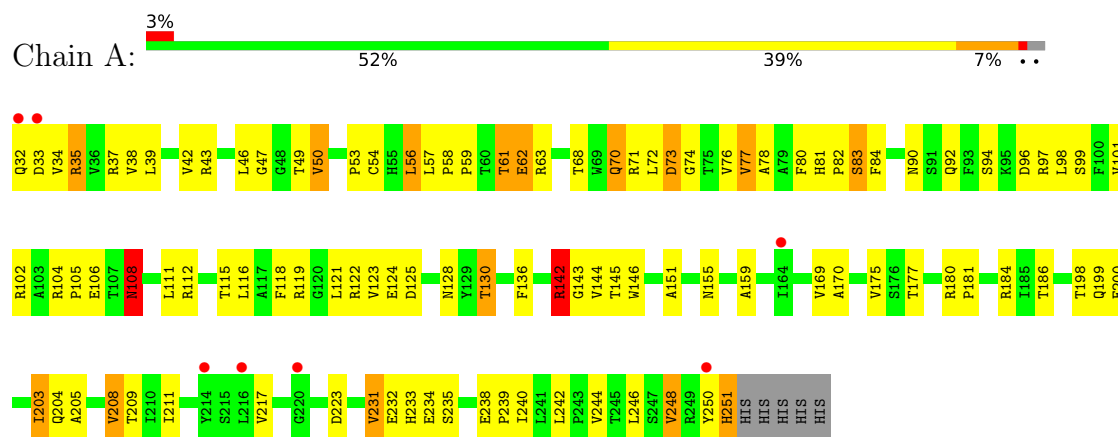
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	B	8	Total	O	0	0
			8	8		
4	C	2	Total	O	0	0
			2	2		

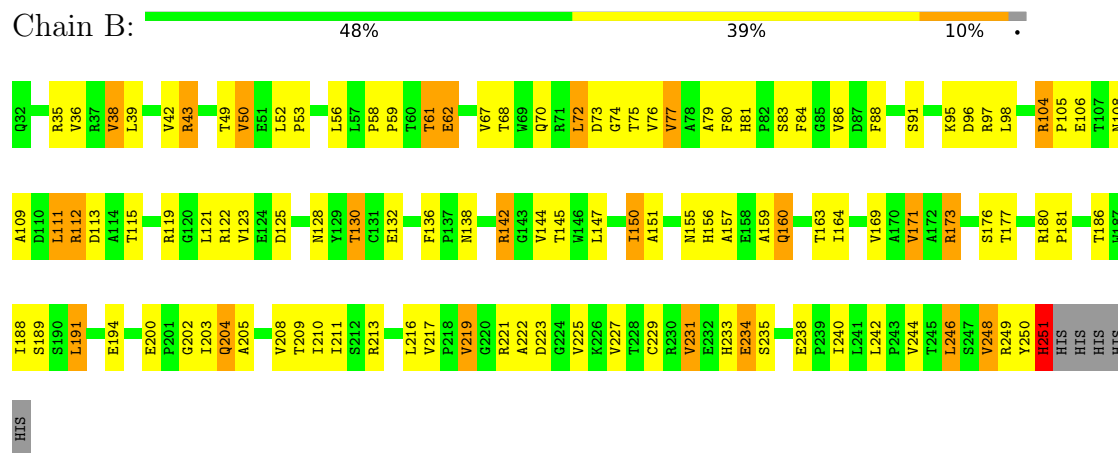
3 Residue-property plots

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.

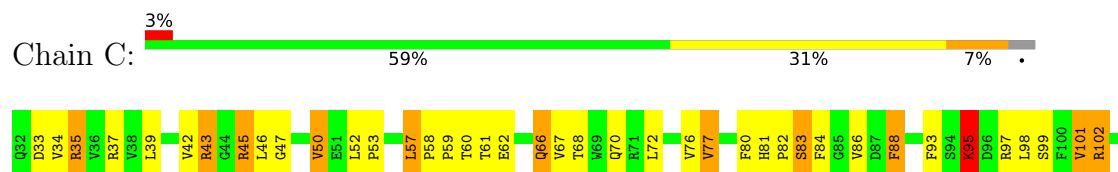
• Molecule 1: Poliovirus receptor-related protein 2

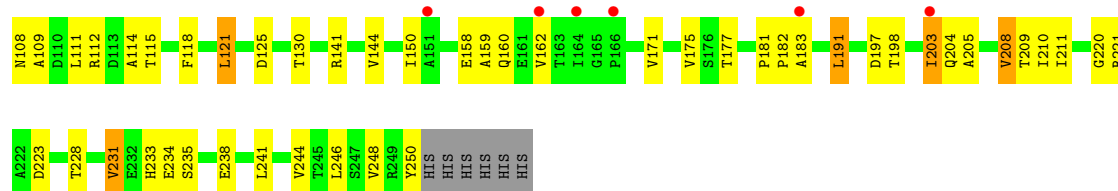


• Molecule 1: Poliovirus receptor-related protein 2



• Molecule 1: Poliovirus receptor-related protein 2





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

Chain D: 25% 75%



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

Chain E: 25% 75%



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

Chain F: 25% 25% 50%



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

Chain G: 25% 50% 25%



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

Chain H: 100%



4 Data and refinement statistics

Property	Value	Source
Space group	P 31 2 1	Depositor
Cell constants a, b, c, α , β , γ	117.02Å 117.02Å 158.47Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	20.00 – 3.35 20.00 – 3.35	Depositor EDS
% Data completeness (in resolution range)	99.3 (20.00-3.35) 98.9 (20.00-3.35)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.09	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.94 (at 3.39Å)	Xtriage
Refinement program	REFMAC 5.6.0117	Depositor
R, R_{free}	0.247 , 0.293 0.249 , 0.290	Depositor DCC
R_{free} test set	943 reflections (5.11%)	wwPDB-VP
Wilson B-factor (Å ²)	78.5	Xtriage
Anisotropy	0.786	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.25 , 70.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.51$, $\langle L^2 \rangle = 0.35$	Xtriage
Estimated twinning fraction	0.033 for -h,-k,l	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	5383	wwPDB-VP
Average B, all atoms (Å ²)	135.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.88% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z > 5$	RMSZ	$\# Z > 5$
1	A	1.10	0/1744	1.03	2/2378 (0.1%)
1	B	1.05	1/1744 (0.1%)	1.05	0/2378
1	C	0.94	0/1733	0.98	3/2363 (0.1%)
All	All	1.03	1/5221 (0.0%)	1.02	5/7119 (0.1%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	251	HIS	CG-CD2	5.06	1.41	1.35

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	88	PHE	CA-C-N	6.45	126.38	119.28
1	C	88	PHE	C-N-CA	6.45	126.38	119.28
1	C	203	ILE	CB-CA-C	-6.16	104.09	111.97
1	A	142	ARG	N-CA-C	5.25	117.17	109.24
1	A	108	ASN	N-CA-CB	5.04	117.75	109.95

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	1706	0	1687	95	0
1	B	1706	0	1687	92	0
1	C	1696	0	1680	74	0
2	D	49	0	43	6	0
2	E	49	0	43	0	0
2	F	49	0	43	15	0
2	G	49	0	43	1	0
2	H	49	0	43	0	0
3	C	14	0	13	2	0
4	A	6	0	0	0	0
4	B	8	0	0	0	0
4	C	2	0	0	0	0
All	All	5383	0	5282	270	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 25.

All (270) 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:223:ASP:HB3	1:A:248:VAL:HG22	1.22	1.21
2:F:2:NAG:N2	2:F:4:FUC:H61	1.62	1.15
1:B:106:GLU:HA	1:B:109:ALA:HB2	1.21	1.15
1:A:104:ARG:HD3	1:A:105:PRO:HD2	1.35	1.07
1:B:219:VAL:HG22	1:B:221:ARG:H	1.17	1.06
1:B:189:SER:HB2	1:B:227:VAL:HG13	1.40	1.04
2:F:2:NAG:C2	2:F:4:FUC:H61	1.90	1.00
1:B:106:GLU:HA	1:B:109:ALA:CB	1.93	0.98
1:B:111:LEU:H	1:B:111:LEU:HD23	1.29	0.97
1:B:177:THR:HA	1:B:209:THR:HG23	1.47	0.96
2:D:1:NAG:H4	2:D:4:FUC:O2	1.65	0.96
1:A:231:VAL:HG13	1:A:240:ILE:CG2	1.97	0.95
1:C:80:PHE:CD2	1:C:111:LEU:HD22	2.04	0.92
2:F:2:NAG:H3	2:F:4:FUC:C6	2.00	0.91
2:F:2:NAG:HN2	2:F:4:FUC:H61	1.22	0.91
1:C:62:GLU:OE1	3:C:305:NAG:H83	1.71	0.90
1:A:104:ARG:HG2	1:A:108:ASN:N	1.92	0.85
1:B:43:ARG:HB3	1:B:150:ILE:HD11	1.57	0.84
1:B:80:PHE:CE2	1:B:111:LEU:HD13	2.12	0.83
1:A:128:ASN:ND2	2:D:1:NAG:O7	2.13	0.81
1:A:71:ARG:NH1	1:B:219:VAL:HG21	1.95	0.81
2:F:2:NAG:HN2	2:F:4:FUC:C6	1.94	0.80

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:2:NAG:C1	2:F:4:FUC:H61	2.10	0.80
1:C:101:VAL:HG12	1:C:102:ARG:CZ	2.13	0.79
1:A:104:ARG:NH1	1:A:108:ASN:HA	1.99	0.77
1:B:191:LEU:HD22	1:B:216:LEU:HD22	1.67	0.77
1:A:80:PHE:CE2	1:A:111:LEU:HD13	2.21	0.76
2:F:2:NAG:H3	2:F:4:FUC:H63	1.67	0.75
1:C:58:PRO:HA	1:C:59:PRO:C	2.11	0.75
1:B:80:PHE:CD2	1:B:111:LEU:HD13	2.22	0.74
1:A:231:VAL:HG13	1:A:240:ILE:HG22	1.69	0.73
1:A:231:VAL:HG13	1:A:240:ILE:HG23	1.69	0.73
1:B:50:VAL:HG22	1:B:121:LEU:HD11	1.70	0.73
1:B:104:ARG:HG2	1:B:108:ASN:HD22	1.53	0.73
1:B:219:VAL:HG22	1:B:221:ARG:N	1.98	0.72
1:A:81:HIS:CD2	1:A:84:PHE:CD2	2.77	0.72
1:A:130:THR:HG22	1:A:130:THR:O	1.88	0.72
1:B:53:PRO:HA	1:B:115:THR:HG23	1.71	0.72
1:A:46:LEU:HD23	1:A:47:GLY:N	2.06	0.71
1:B:96:ASP:OD1	1:B:97:ARG:HG3	1.92	0.70
1:A:104:ARG:HG2	1:A:108:ASN:CA	2.21	0.70
1:A:58:PRO:HA	1:A:59:PRO:C	2.17	0.69
1:B:106:GLU:CA	1:B:109:ALA:HB2	2.12	0.69
1:C:182:PRO:HG3	1:C:208:VAL:HG21	1.74	0.69
2:F:2:NAG:C3	2:F:4:FUC:C6	2.71	0.68
1:A:33:ASP:HB3	1:A:35:ARG:HE	1.57	0.68
1:B:122:ARG:NH1	1:B:125:ASP:OD1	2.26	0.68
1:A:104:ARG:HD3	1:A:105:PRO:CD	2.21	0.67
1:A:97:ARG:NH2	1:A:125:ASP:OD2	2.28	0.66
1:A:80:PHE:CD2	1:A:111:LEU:HD13	2.31	0.66
1:A:53:PRO:HA	1:A:115:THR:HG23	1.78	0.66
1:A:104:ARG:HG2	1:A:108:ASN:CB	2.26	0.66
1:A:90:ASN:OD1	1:A:92:GLN:HB2	1.96	0.65
1:A:177:THR:HA	1:A:209:THR:HG23	1.78	0.65
2:F:2:NAG:C1	2:F:4:FUC:C6	2.76	0.64
1:A:238:GLU:HB3	1:A:239:PRO:CD	2.28	0.64
1:A:104:ARG:HG2	1:A:108:ASN:HB3	1.78	0.63
1:C:159:ALA:HB2	1:C:244:VAL:CG1	2.28	0.63
2:F:2:NAG:C2	2:F:4:FUC:C6	2.73	0.63
1:C:101:VAL:CG1	1:C:102:ARG:NH2	2.62	0.63
1:B:73:ASP:OD1	1:B:75:THR:HG23	1.99	0.63
1:C:70:GLN:HG2	1:C:76:VAL:HG22	1.80	0.63
1:A:146:TRP:NE1	2:D:1:NAG:H82	2.15	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:62:GLU:N	1:B:62:GLU:CD	2.58	0.62
1:A:81:HIS:HD2	1:A:84:PHE:H	1.48	0.61
1:A:159:ALA:N	1:A:244:VAL:HG11	2.14	0.61
1:B:61:THR:OG1	1:B:62:GLU:OE1	2.17	0.61
1:A:37:ARG:HB2	1:A:57:LEU:HD11	1.81	0.61
1:B:50:VAL:HG21	1:B:147:LEU:HD11	1.81	0.61
1:B:231:VAL:HG13	1:B:240:ILE:HB	1.83	0.61
1:B:58:PRO:HA	1:B:59:PRO:C	2.26	0.60
1:C:62:GLU:CD	3:C:305:NAG:H83	2.26	0.60
1:B:223:ASP:HB2	1:B:248:VAL:HG22	1.83	0.60
1:A:32:GLN:HE22	1:A:143:GLY:HA2	1.65	0.60
1:A:142:ARG:HH11	1:A:142:ARG:CG	2.15	0.60
1:B:97:ARG:NH2	1:B:125:ASP:OD2	2.35	0.59
1:B:132:GLU:OE2	1:B:142:ARG:NH2	2.35	0.59
1:C:102:ARG:CG	1:C:102:ARG:HH11	2.14	0.59
1:B:128:ASN:ND2	2:F:1:NAG:O7	2.32	0.59
1:C:97:ARG:NH2	1:C:125:ASP:OD2	2.34	0.59
1:A:32:GLN:NE2	1:A:144:VAL:HG12	2.18	0.58
1:A:238:GLU:HB3	1:A:239:PRO:HD2	1.86	0.58
1:A:56:LEU:HD23	1:A:112:ARG:NH2	2.18	0.58
1:C:101:VAL:HG11	1:C:102:ARG:NH2	2.19	0.58
1:A:71:ARG:HH12	1:B:219:VAL:HG21	1.67	0.58
1:B:80:PHE:HE2	1:B:111:LEU:HD13	1.68	0.57
1:A:223:ASP:HB3	1:A:248:VAL:CG2	2.16	0.57
1:C:60:THR:HA	1:C:112:ARG:CZ	2.34	0.57
1:A:73:ASP:OD1	1:B:219:VAL:HG23	2.04	0.57
1:C:102:ARG:HH11	1:C:102:ARG:HG2	1.70	0.57
1:B:70:GLN:HG2	1:B:76:VAL:HG22	1.87	0.57
1:B:77:VAL:HG13	1:B:98:LEU:HD12	1.86	0.56
1:C:228:THR:HG21	1:C:241:LEU:HB3	1.87	0.56
1:A:77:VAL:HG12	1:A:78:ALA:N	2.20	0.56
1:C:183:ALA:HB1	1:C:231:VAL:HG23	1.88	0.56
1:C:223:ASP:HB2	1:C:248:VAL:HG22	1.88	0.56
1:C:102:ARG:HH11	1:C:102:ARG:HB2	1.70	0.56
1:A:73:ASP:CG	1:B:219:VAL:HG23	2.31	0.56
1:A:70:GLN:HG2	1:A:74:GLY:O	2.06	0.55
1:B:111:LEU:HD23	1:B:111:LEU:N	2.11	0.55
1:A:50:VAL:HG23	1:A:118:PHE:HB2	1.88	0.55
2:F:2:NAG:N2	2:F:4:FUC:C6	2.52	0.55
1:A:104:ARG:CG	1:A:108:ASN:HB3	2.37	0.55
1:C:101:VAL:HG12	1:C:102:ARG:NH2	2.22	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:72:LEU:C	1:B:74:GLY:H	2.14	0.54
1:A:101:VAL:O	1:A:102:ARG:C	2.50	0.54
1:C:162:VAL:HG21	1:C:171:VAL:HG12	1.87	0.54
1:B:233:HIS:HD2	1:B:235:SER:H	1.56	0.54
1:A:199:GLN:O	1:A:200:GLU:HB3	2.07	0.54
1:A:250:TYR:CG	1:A:250:TYR:O	2.61	0.54
1:B:81:HIS:CD2	1:B:83:SER:H	2.26	0.54
1:C:175:VAL:HG12	1:C:211:ILE:HG23	1.90	0.54
1:C:228:THR:CG2	1:C:241:LEU:HB3	2.37	0.54
1:B:68:THR:HG22	1:B:79:ALA:HB2	1.90	0.53
1:B:181:PRO:O	1:B:233:HIS:HE1	1.91	0.53
1:C:177:THR:HA	1:C:209:THR:HG23	1.90	0.53
1:A:80:PHE:CD2	1:A:111:LEU:CD1	2.91	0.53
1:B:171:VAL:HG23	1:B:246:LEU:HD11	1.90	0.53
1:C:81:HIS:HD2	1:C:84:PHE:H	1.57	0.53
1:C:233:HIS:CD2	1:C:235:SER:H	2.26	0.53
2:F:2:NAG:C3	2:F:4:FUC:H61	2.33	0.53
1:A:81:HIS:CD2	1:A:83:SER:H	2.27	0.53
1:A:151:ALA:HB3	1:A:180:ARG:HB3	1.89	0.53
1:B:81:HIS:HD2	1:B:84:PHE:H	1.57	0.53
2:D:1:NAG:O3	2:D:2:NAG:O5	2.22	0.53
1:A:80:PHE:CD2	1:A:80:PHE:C	2.88	0.52
2:D:1:NAG:O7	2:D:1:NAG:C1	2.55	0.52
1:B:163:THR:HG22	1:B:164:ILE:N	2.23	0.52
1:B:233:HIS:CD2	1:B:235:SER:H	2.28	0.52
1:B:43:ARG:HH22	1:B:234:GLU:HG2	1.74	0.52
1:C:81:HIS:CD2	1:C:84:PHE:CD1	2.97	0.52
1:C:60:THR:HA	1:C:112:ARG:NH2	2.25	0.52
1:A:142:ARG:HH11	1:A:142:ARG:HG2	1.74	0.52
1:B:49:THR:HG22	1:B:119:ARG:HB2	1.90	0.51
1:C:77:VAL:HG22	1:C:93:PHE:CG	2.45	0.51
1:A:38:VAL:HG12	1:A:54:CYS:HA	1.93	0.51
1:A:102:ARG:HH22	1:A:106:GLU:C	2.19	0.51
1:A:124:GLU:OE2	1:A:124:GLU:N	2.43	0.51
1:C:98:LEU:HD21	1:C:118:PHE:CD1	2.45	0.51
1:A:122:ARG:NH1	1:A:124:GLU:HB2	2.25	0.51
1:A:71:ARG:HH11	1:B:219:VAL:HG21	1.73	0.51
1:C:86:VAL:CG1	1:C:88:PHE:CE2	2.94	0.51
1:A:58:PRO:CA	1:A:59:PRO:C	2.83	0.51
1:B:181:PRO:O	1:B:233:HIS:CE1	2.64	0.51
1:C:60:THR:HA	1:C:112:ARG:NH1	2.26	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:43:ARG:NH2	1:B:234:GLU:HG2	2.26	0.50
1:B:151:ALA:HB3	1:B:180:ARG:HB3	1.93	0.50
1:A:181:PRO:O	1:A:233:HIS:HE1	1.94	0.50
1:B:123:VAL:HG21	1:B:205:ALA:O	2.10	0.50
1:C:50:VAL:HG22	1:C:121:LEU:HD11	1.93	0.50
1:A:58:PRO:HA	1:A:59:PRO:O	2.11	0.50
1:B:49:THR:HG22	1:B:119:ARG:CB	2.41	0.50
1:C:108:ASN:OD1	1:C:109:ALA:N	2.43	0.50
2:F:1:NAG:H4	2:F:4:FUC:O5	2.12	0.50
1:B:81:HIS:HD2	1:B:83:SER:H	1.59	0.50
1:C:81:HIS:CD2	1:C:83:SER:H	2.29	0.50
1:C:66:GLN:NE2	1:C:68:THR:HG23	2.27	0.50
1:C:46:LEU:HD23	1:C:47:GLY:N	2.27	0.49
1:C:181:PRO:O	1:C:233:HIS:HE1	1.95	0.49
1:C:80:PHE:CE2	1:C:111:LEU:HD22	2.45	0.49
1:C:159:ALA:HB2	1:C:244:VAL:HG13	1.93	0.49
1:C:182:PRO:HG3	1:C:208:VAL:CG2	2.42	0.49
1:B:125:ASP:O	1:B:147:LEU:HD23	2.12	0.49
1:A:99:SER:O	1:A:116:LEU:HD12	2.13	0.49
1:A:233:HIS:CD2	1:A:235:SER:H	2.30	0.49
1:A:146:TRP:HE1	2:D:1:NAG:H82	1.78	0.49
1:A:181:PRO:O	1:A:233:HIS:CE1	2.65	0.49
1:A:142:ARG:HG2	1:A:142:ARG:NH1	2.28	0.49
1:B:111:LEU:H	1:B:111:LEU:CD2	2.07	0.48
1:A:144:VAL:HG13	1:A:144:VAL:O	2.13	0.48
1:C:80:PHE:CD2	1:C:80:PHE:C	2.90	0.48
1:A:56:LEU:HD23	1:A:112:ARG:CZ	2.43	0.48
1:B:77:VAL:HG13	1:B:98:LEU:CD1	2.44	0.48
1:C:45:ARG:HA	1:C:150:ILE:O	2.13	0.48
1:A:155:ASN:HB3	1:A:242:LEU:HD11	1.97	0.47
1:B:97:ARG:HH12	1:B:122:ARG:NH1	2.12	0.47
1:B:171:VAL:HG23	1:B:246:LEU:CD1	2.45	0.47
1:C:102:ARG:HH11	1:C:102:ARG:CB	2.27	0.47
1:B:138:ASN:HD22	2:G:1:NAG:C7	2.28	0.47
1:C:144:VAL:O	1:C:144:VAL:HG13	2.13	0.47
1:C:181:PRO:O	1:C:233:HIS:CE1	2.68	0.47
1:A:49:THR:HG22	1:A:119:ARG:CB	2.45	0.47
1:B:159:ALA:HB2	1:B:244:VAL:CG1	2.45	0.47
1:C:233:HIS:HD2	1:C:235:SER:H	1.62	0.47
1:A:142:ARG:CG	1:A:142:ARG:NH1	2.78	0.47
1:B:43:ARG:HB3	1:B:150:ILE:CD1	2.38	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:49:THR:HG22	1:B:119:ARG:HA	1.98	0.46
1:B:104:ARG:NH2	1:B:113:ASP:OD2	2.47	0.46
1:A:198:THR:HG22	1:A:199:GLN:N	2.29	0.46
1:A:233:HIS:HD2	1:A:235:SER:OG	1.98	0.46
1:C:67:VAL:CG2	1:C:111:LEU:HD23	2.46	0.46
1:B:62:GLU:CD	1:B:62:GLU:H	2.21	0.46
1:B:104:ARG:HD3	1:B:108:ASN:HB2	1.97	0.46
1:A:203:ILE:HD12	1:A:204:GLN:H	1.81	0.46
1:A:46:LEU:HD23	1:A:46:LEU:C	2.41	0.46
1:B:52:LEU:N	1:B:52:LEU:HD12	2.31	0.46
1:A:204:GLN:O	1:A:205:ALA:C	2.59	0.45
1:C:86:VAL:HG11	1:C:88:PHE:CE2	2.52	0.45
1:C:141:ARG:HG2	1:C:141:ARG:HH11	1.82	0.45
1:C:183:ALA:HB1	1:C:231:VAL:CG2	2.46	0.45
1:A:70:GLN:HG3	1:A:76:VAL:HG22	1.98	0.45
1:A:104:ARG:CG	1:A:108:ASN:N	2.75	0.45
1:B:36:VAL:HG12	1:B:38:VAL:HG13	1.98	0.45
1:B:130:THR:O	1:B:130:THR:HG22	2.17	0.45
1:A:81:HIS:CD2	1:A:84:PHE:H	2.31	0.45
1:C:57:LEU:HD12	1:C:57:LEU:HA	1.82	0.45
1:C:95:LYS:HB3	1:C:95:LYS:HE3	1.80	0.45
1:A:73:ASP:OD2	1:B:219:VAL:HG23	2.16	0.45
1:B:160:GLN:HE22	1:B:173:ARG:HB3	1.82	0.45
1:A:169:VAL:HG22	1:A:170:ALA:N	2.32	0.45
1:B:72:LEU:C	1:B:74:GLY:N	2.75	0.45
1:B:222:ALA:O	1:B:225:VAL:HG23	2.17	0.45
1:B:156:HIS:CD2	1:B:157:ALA:H	2.35	0.44
1:B:43:ARG:HH22	1:B:234:GLU:CG	2.31	0.44
1:B:56:LEU:HB3	1:B:112:ARG:HB3	2.00	0.44
1:A:251:HIS:CD2	1:A:251:HIS:H	2.35	0.44
1:B:97:ARG:C	1:B:98:LEU:HD23	2.42	0.44
1:A:175:VAL:HG12	1:A:177:THR:CG2	2.47	0.44
1:A:200:GLU:O	1:A:208:VAL:HG22	2.18	0.44
1:C:191:LEU:HD23	1:C:221:ARG:NH2	2.33	0.44
1:C:220:GLY:HA2	1:C:248:VAL:HG21	2.00	0.44
1:C:62:GLU:OE2	1:C:62:GLU:N	2.50	0.44
1:A:61:THR:N	1:A:62:GLU:OE2	2.44	0.44
1:C:67:VAL:HG23	1:C:111:LEU:HD23	2.00	0.43
1:C:67:VAL:HG11	1:C:114:ALA:CB	2.47	0.43
1:A:32:GLN:NE2	1:A:143:GLY:HA2	2.32	0.43
1:A:73:ASP:OD2	1:A:73:ASP:N	2.49	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:136:PHE:HB2	1:C:66:GLN:OE1	2.18	0.43
1:A:39:LEU:O	1:A:145:THR:HG23	2.18	0.43
1:A:104:ARG:HH11	1:A:108:ASN:HA	1.82	0.43
1:B:204:GLN:O	1:B:205:ALA:C	2.61	0.43
1:B:229:CYS:HB3	1:B:242:LEU:HB2	2.00	0.43
1:C:33:ASP:HB3	1:C:35:ARG:HG2	2.00	0.43
1:B:105:PRO:O	1:B:106:GLU:HB2	2.19	0.43
1:C:60:THR:HG22	1:C:112:ARG:HD2	2.01	0.43
1:C:88:PHE:CZ	1:C:99:SER:HA	2.54	0.43
1:B:68:THR:HG22	1:B:79:ALA:CB	2.48	0.43
1:B:81:HIS:CD2	1:B:84:PHE:H	2.35	0.43
1:C:58:PRO:HB2	1:C:59:PRO:HA	2.01	0.43
1:C:197:ASP:O	1:C:198:THR:HG23	2.18	0.43
1:A:136:PHE:CD2	1:A:136:PHE:C	2.97	0.43
1:C:52:LEU:O	1:C:115:THR:HG23	2.18	0.43
1:B:86:VAL:HG11	1:B:88:PHE:CE2	2.54	0.43
1:C:81:HIS:HA	1:C:82:PRO:HD3	1.93	0.43
1:C:101:VAL:CG1	1:C:102:ARG:CZ	2.89	0.43
1:B:128:ASN:ND2	2:F:1:NAG:C7	2.82	0.42
1:B:202:GLY:C	1:B:204:GLN:N	2.76	0.42
1:C:53:PRO:HA	1:C:115:THR:HG23	2.00	0.42
1:C:58:PRO:CA	1:C:59:PRO:C	2.83	0.42
1:C:204:GLN:O	1:C:205:ALA:C	2.62	0.42
1:A:104:ARG:CZ	1:A:108:ASN:HA	2.48	0.42
1:C:67:VAL:HG11	1:C:114:ALA:HB1	2.02	0.42
1:A:217:VAL:HG23	1:A:217:VAL:O	2.20	0.42
1:B:144:VAL:O	1:B:144:VAL:HG13	2.18	0.42
1:C:80:PHE:HD2	1:C:111:LEU:HD22	1.76	0.42
1:A:97:ARG:C	1:A:98:LEU:HD23	2.44	0.42
1:A:81:HIS:HA	1:A:82:PRO:HD3	1.82	0.41
1:C:45:ARG:O	1:C:46:LEU:C	2.63	0.41
1:A:97:ARG:HH22	1:A:125:ASP:CG	2.29	0.41
1:B:43:ARG:C	1:B:50:VAL:HG11	2.45	0.41
1:B:113:ASP:OD1	1:B:113:ASP:C	2.63	0.41
1:A:50:VAL:HG22	1:A:121:LEU:HD11	2.03	0.41
1:A:121:LEU:HD23	1:A:121:LEU:HA	1.86	0.41
1:B:202:GLY:C	1:B:204:GLN:H	2.28	0.41
1:A:232:GLU:HG2	1:A:239:PRO:HG3	2.03	0.40
1:C:60:THR:HG22	1:C:112:ARG:NH1	2.36	0.40
1:B:155:ASN:HD22	1:B:176:SER:HA	1.85	0.40
1:B:250:TYR:O	1:B:251:HIS:C	2.65	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:39:LEU:O	1:B:145:THR:OG1	2.32	0.40
1:C:43:ARG:HB3	1:C:150:ILE:HD12	2.04	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	218/225 (97%)	204 (94%)	14 (6%)	0	100	100
1	B	218/225 (97%)	208 (95%)	10 (5%)	0	100	100
1	C	217/225 (96%)	204 (94%)	12 (6%)	1 (0%)	24	52
All	All	653/675 (97%)	616 (94%)	36 (6%)	1 (0%)	43	70

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	95	LYS

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	186/191 (97%)	155 (83%)	31 (17%)	2	9
1	B	186/191 (97%)	144 (77%)	42 (23%)	1	3

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	C	185/191 (97%)	155 (84%)	30 (16%)	2 10
All	All	557/573 (97%)	454 (82%)	103 (18%)	1 7

All (103) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	34	VAL
1	A	35	ARG
1	A	42	VAL
1	A	43	ARG
1	A	50	VAL
1	A	56	LEU
1	A	61	THR
1	A	62	GLU
1	A	63	ARG
1	A	68	THR
1	A	70	GLN
1	A	72	LEU
1	A	73	ASP
1	A	77	VAL
1	A	83	SER
1	A	94	SER
1	A	96	ASP
1	A	108	ASN
1	A	123	VAL
1	A	130	THR
1	A	142	ARG
1	A	184	ARG
1	A	186	THR
1	A	203	ILE
1	A	208	VAL
1	A	211	ILE
1	A	231	VAL
1	A	234	GLU
1	A	246	LEU
1	A	248	VAL
1	A	251	HIS
1	B	35	ARG
1	B	38	VAL
1	B	42	VAL
1	B	43	ARG
1	B	50	VAL

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Mol	Chain	Res	Type
1	B	61	THR
1	B	62	GLU
1	B	67	VAL
1	B	72	LEU
1	B	77	VAL
1	B	91	SER
1	B	95	LYS
1	B	104	ARG
1	B	111	LEU
1	B	112	ARG
1	B	130	THR
1	B	142	ARG
1	B	150	ILE
1	B	160	GLN
1	B	169	VAL
1	B	171	VAL
1	B	173	ARG
1	B	186	THR
1	B	188	ILE
1	B	191	LEU
1	B	194	GLU
1	B	200	GLU
1	B	203	ILE
1	B	204	GLN
1	B	208	VAL
1	B	210	ILE
1	B	211	ILE
1	B	213	ARG
1	B	217	VAL
1	B	219	VAL
1	B	231	VAL
1	B	234	GLU
1	B	238	GLU
1	B	246	LEU
1	B	248	VAL
1	B	249	ARG
1	B	251	HIS
1	C	34	VAL
1	C	35	ARG
1	C	37	ARG
1	C	39	LEU
1	C	42	VAL

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Mol	Chain	Res	Type
1	C	43	ARG
1	C	45	ARG
1	C	50	VAL
1	C	57	LEU
1	C	61	THR
1	C	66	GLN
1	C	72	LEU
1	C	77	VAL
1	C	83	SER
1	C	95	LYS
1	C	101	VAL
1	C	102	ARG
1	C	121	LEU
1	C	130	THR
1	C	158	GLU
1	C	160	GLN
1	C	191	LEU
1	C	203	ILE
1	C	208	VAL
1	C	210	ILE
1	C	231	VAL
1	C	234	GLU
1	C	238	GLU
1	C	246	LEU
1	C	250	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (21) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	32	GLN
1	A	55	HIS
1	A	81	HIS
1	A	92	GLN
1	A	108	ASN
1	A	155	ASN
1	A	204	GLN
1	A	233	HIS
1	A	251	HIS
1	B	81	HIS
1	B	90	ASN
1	B	108	ASN
1	B	155	ASN

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Mol	Chain	Res	Type
1	B	156	HIS
1	B	160	GLN
1	B	233	HIS
1	C	55	HIS
1	C	81	HIS
1	C	155	ASN
1	C	156	HIS
1	C	233	HIS

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 ⓘ

20 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	0.83	0	17,19,21	1.44	3 (17%)
2	NAG	D	2	2	14,14,15	0.63	0	17,19,21	1.09	2 (11%)
2	BMA	D	3	2	11,11,12	0.58	0	15,15,17	1.19	1 (6%)
2	FUC	D	4	2	10,10,11	1.24	2 (20%)	14,14,16	1.52	2 (14%)
2	NAG	E	1	2,1	14,14,15	0.83	1 (7%)	17,19,21	1.27	2 (11%)
2	NAG	E	2	2	14,14,15	0.58	0	17,19,21	1.26	3 (17%)
2	BMA	E	3	2	11,11,12	0.64	0	15,15,17	0.66	0
2	FUC	E	4	2	10,10,11	0.68	0	14,14,16	1.20	2 (14%)
2	NAG	F	1	2,1	14,14,15	0.88	1 (7%)	17,19,21	1.00	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	NAG	F	2	2	14,14,15	0.53	0	17,19,21	0.74	0
2	BMA	F	3	2	11,11,12	0.42	0	15,15,17	0.58	0
2	FUC	F	4	2	10,10,11	1.12	1 (10%)	14,14,16	1.13	1 (7%)
2	NAG	G	1	2,1	14,14,15	0.86	1 (7%)	17,19,21	1.81	2 (11%)
2	NAG	G	2	2	14,14,15	0.69	0	17,19,21	1.10	1 (5%)
2	BMA	G	3	2	11,11,12	0.59	0	15,15,17	1.18	1 (6%)
2	FUC	G	4	2	10,10,11	0.70	0	14,14,16	0.82	0
2	NAG	H	1	2,1	14,14,15	0.63	0	17,19,21	1.20	2 (11%)
2	NAG	H	2	2	14,14,15	0.63	0	17,19,21	1.19	2 (11%)
2	BMA	H	3	2	11,11,12	0.72	0	15,15,17	1.32	2 (13%)
2	FUC	H	4	2	10,10,11	0.83	0	14,14,16	1.57	2 (14%)

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	-	3/6/23/26	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
2	FUC	D	4	2	-	-	0/1/1/1
2	NAG	E	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	E	2	2	-	0/6/23/26	0/1/1/1
2	BMA	E	3	2	-	1/2/19/22	0/1/1/1
2	FUC	E	4	2	-	-	0/1/1/1
2	NAG	F	1	2,1	-	3/6/23/26	0/1/1/1
2	NAG	F	2	2	-	0/6/23/26	0/1/1/1
2	BMA	F	3	2	-	0/2/19/22	0/1/1/1
2	FUC	F	4	2	-	-	0/1/1/1
2	NAG	G	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	G	2	2	-	2/6/23/26	0/1/1/1
2	BMA	G	3	2	-	0/2/19/22	0/1/1/1
2	FUC	G	4	2	-	-	0/1/1/1
2	NAG	H	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	H	2	2	-	2/6/23/26	0/1/1/1
2	BMA	H	3	2	-	0/2/19/22	0/1/1/1
2	FUC	H	4	2	-	-	0/1/1/1

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	4	FUC	C2-C3	2.74	1.56	1.52
2	G	1	NAG	O5-C1	-2.43	1.39	1.43
2	F	4	FUC	O5-C5	-2.34	1.38	1.43
2	E	1	NAG	O5-C1	-2.34	1.39	1.43
2	D	4	FUC	C1-C2	2.20	1.57	1.52
2	F	1	NAG	O5-C1	-2.16	1.40	1.43

All (29) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	G	1	NAG	C1-C2-N2	5.05	118.39	110.43
2	H	4	FUC	C1-C2-C3	4.60	116.35	109.64
2	D	4	FUC	C1-C2-C3	4.11	115.62	109.64
2	G	1	NAG	O5-C1-C2	4.09	117.62	111.29
2	E	1	NAG	C1-O5-C5	-3.33	107.72	112.19
2	H	3	BMA	C1-O5-C5	3.20	116.47	112.19
2	D	2	NAG	C4-C3-C2	2.93	115.31	111.02
2	D	1	NAG	O6-C6-C5	2.76	120.72	111.33
2	G	3	BMA	C3-C4-C5	2.72	115.16	110.23
2	D	3	BMA	C1-C2-C3	2.71	113.59	109.64
2	G	2	NAG	C4-C3-C2	2.67	114.93	111.02
2	H	3	BMA	C1-C2-C3	2.66	113.51	109.64
2	E	2	NAG	C1-O5-C5	2.65	115.74	112.19
2	D	1	NAG	C1-C2-N2	-2.63	106.29	110.43
2	H	1	NAG	O5-C5-C6	2.51	112.55	107.66
2	F	1	NAG	O7-C7-C8	-2.50	117.61	122.05
2	D	2	NAG	O5-C1-C2	-2.48	107.45	111.29
2	E	2	NAG	O5-C1-C2	-2.46	107.48	111.29
2	E	4	FUC	O5-C1-C2	-2.43	104.99	110.79
2	H	2	NAG	C4-C3-C2	-2.39	107.51	111.02
2	E	1	NAG	O6-C6-C5	-2.38	103.23	111.33
2	E	2	NAG	O7-C7-C8	-2.37	117.83	122.05
2	H	1	NAG	C4-C3-C2	2.36	114.47	111.02
2	D	1	NAG	O7-C7-N2	2.34	126.12	121.98
2	D	4	FUC	C2-C3-C4	2.24	114.80	110.86
2	F	4	FUC	C1-C2-C3	2.11	112.72	109.64
2	E	4	FUC	O5-C5-C6	2.08	111.92	107.40
2	H	4	FUC	O5-C5-C4	-2.08	105.81	109.55
2	H	2	NAG	O5-C1-C2	-2.02	108.16	111.29

There are no chirality outliers.

All (17) torsion outliers are listed below:

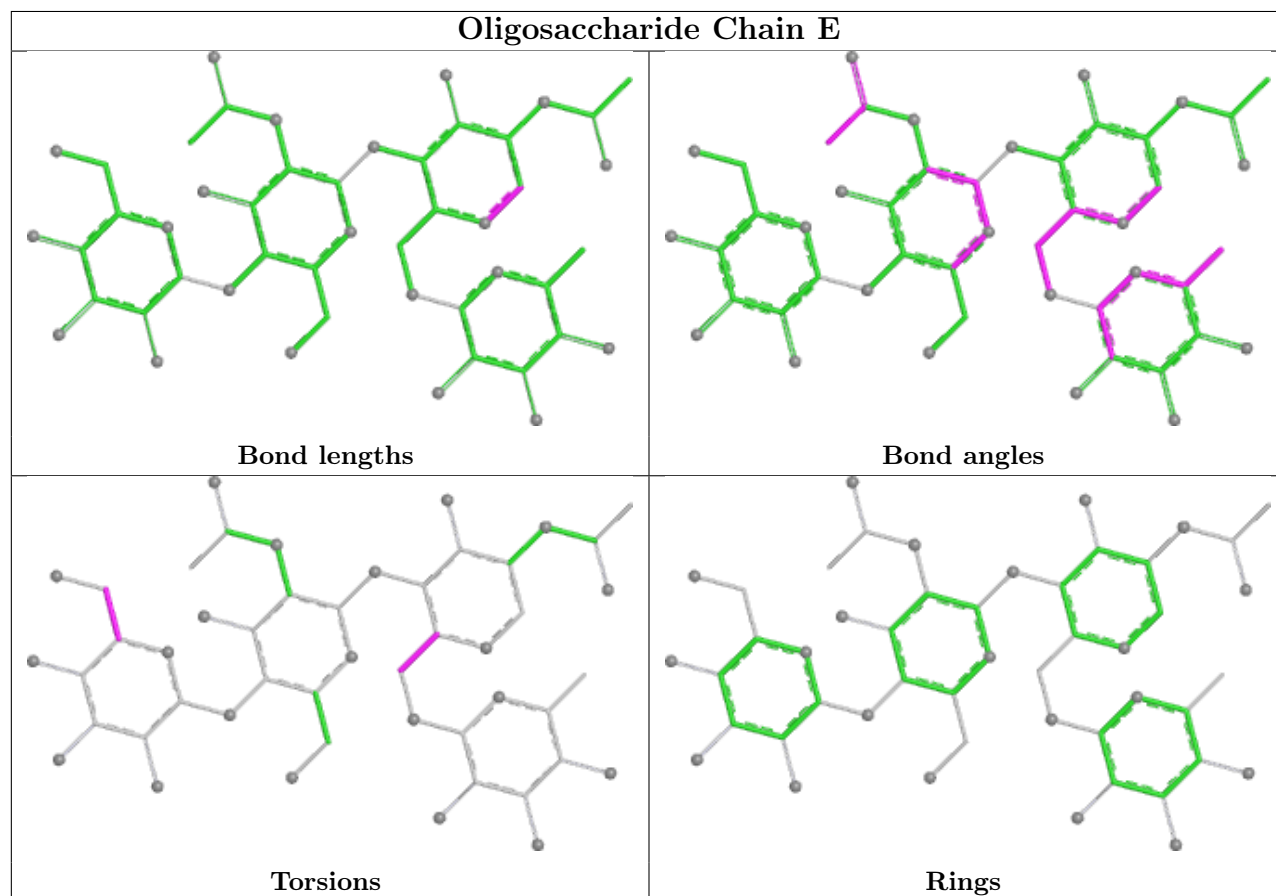
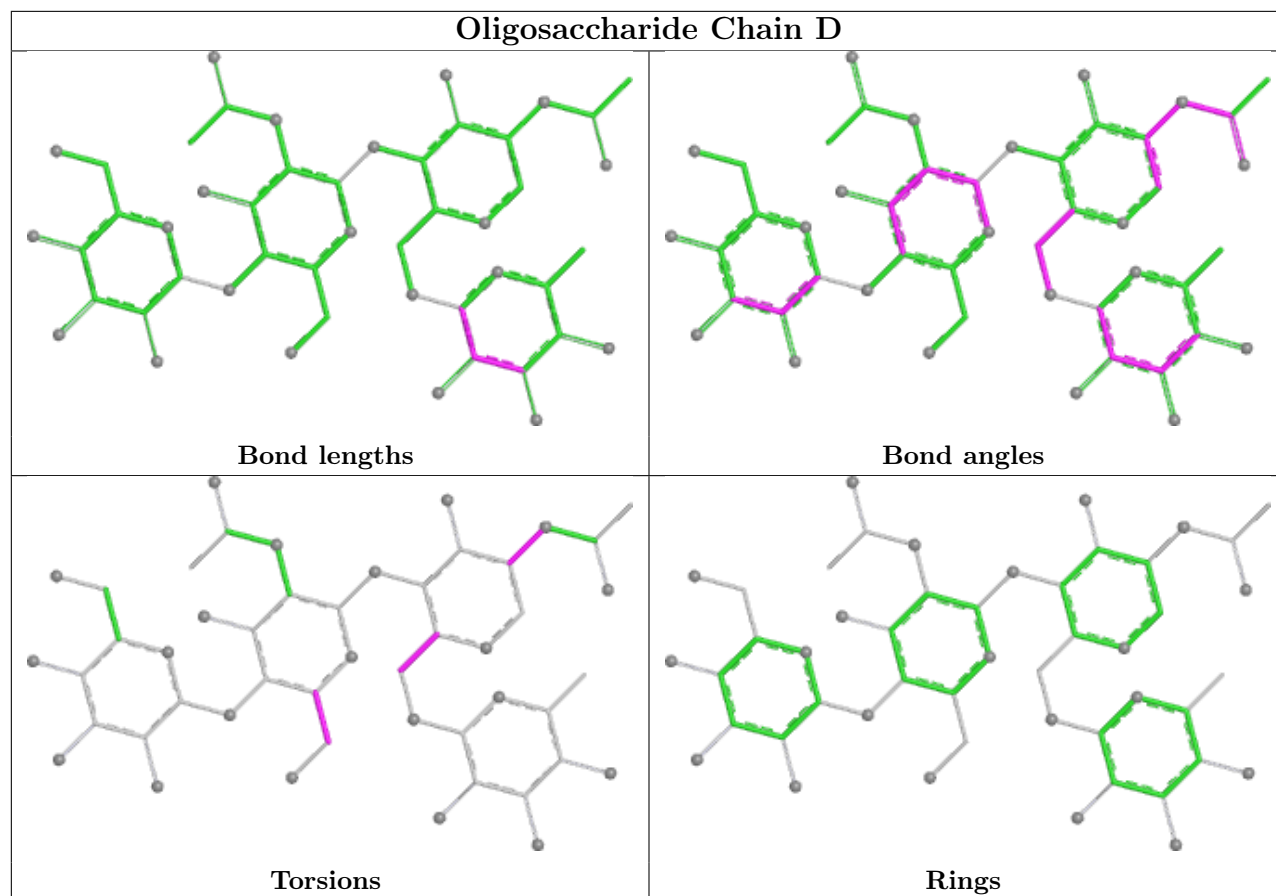
Mol	Chain	Res	Type	Atoms
2	D	1	NAG	C1-C2-N2-C7
2	H	1	NAG	O5-C5-C6-O6
2	G	2	NAG	O5-C5-C6-O6
2	G	2	NAG	C4-C5-C6-O6
2	H	2	NAG	C4-C5-C6-O6
2	H	1	NAG	C4-C5-C6-O6
2	D	1	NAG	O5-C5-C6-O6
2	D	2	NAG	C4-C5-C6-O6
2	D	1	NAG	C4-C5-C6-O6
2	F	1	NAG	C4-C5-C6-O6
2	F	1	NAG	O5-C5-C6-O6
2	H	2	NAG	O5-C5-C6-O6
2	D	2	NAG	O5-C5-C6-O6
2	E	3	BMA	O5-C5-C6-O6
2	E	1	NAG	O5-C5-C6-O6
2	E	1	NAG	C4-C5-C6-O6
2	F	1	NAG	C1-C2-N2-C7

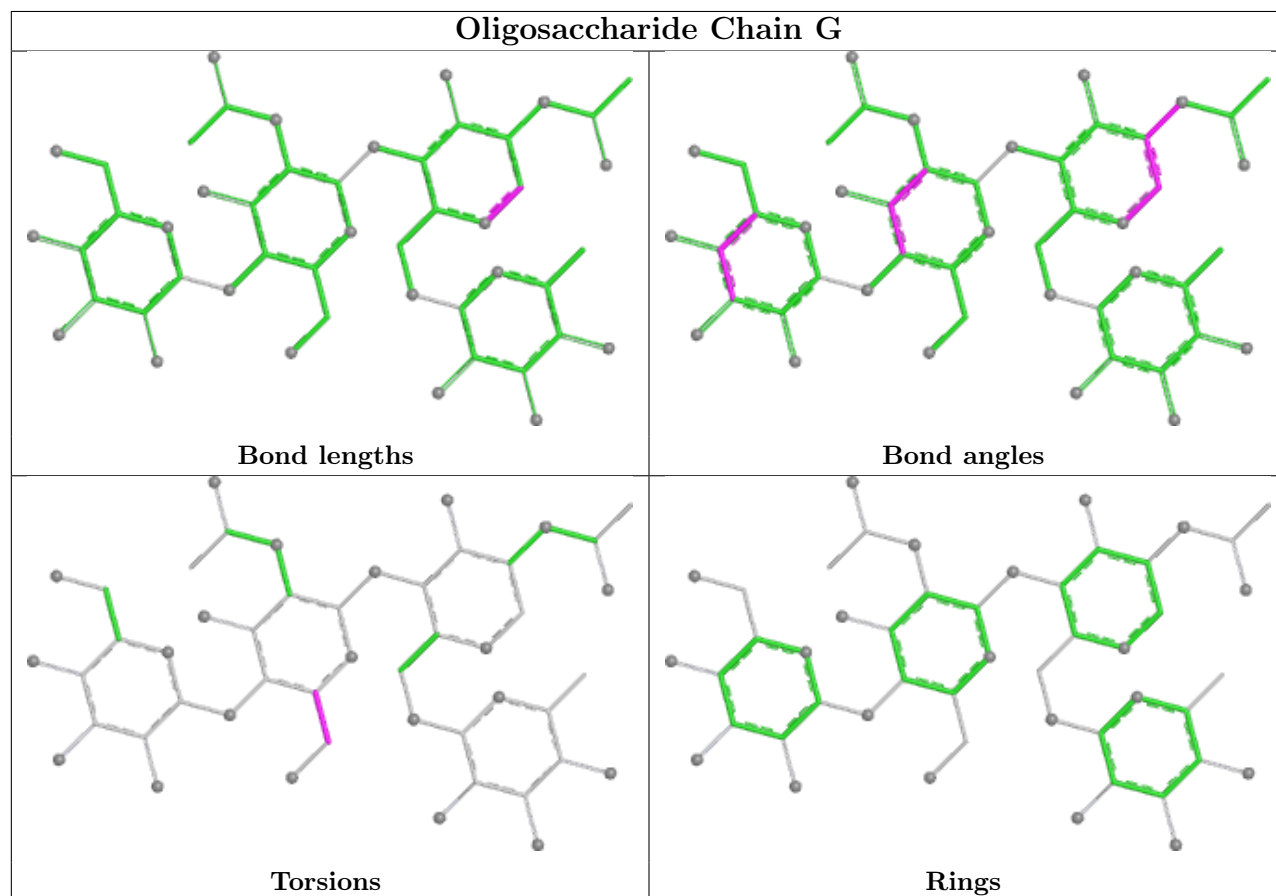
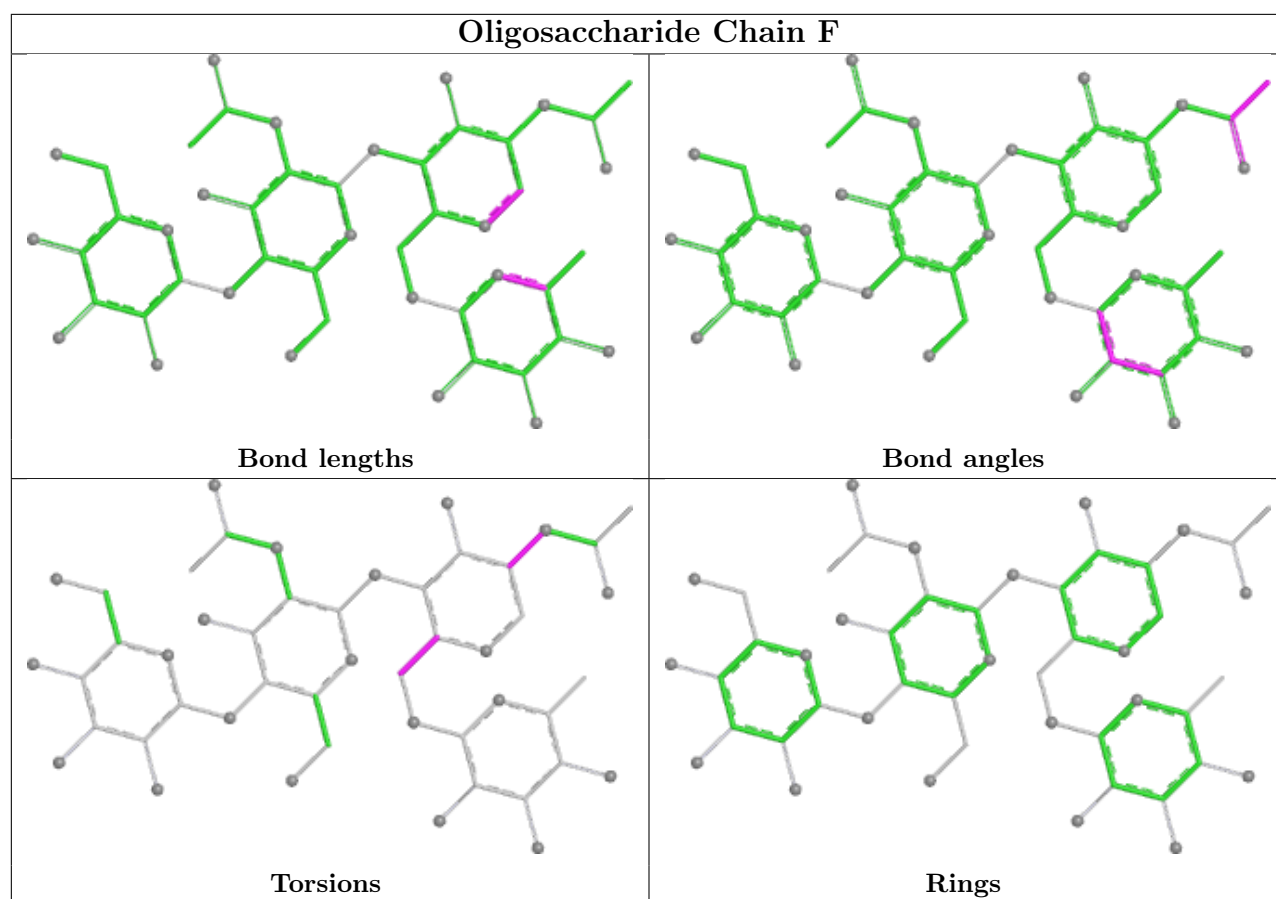
There are no ring outliers.

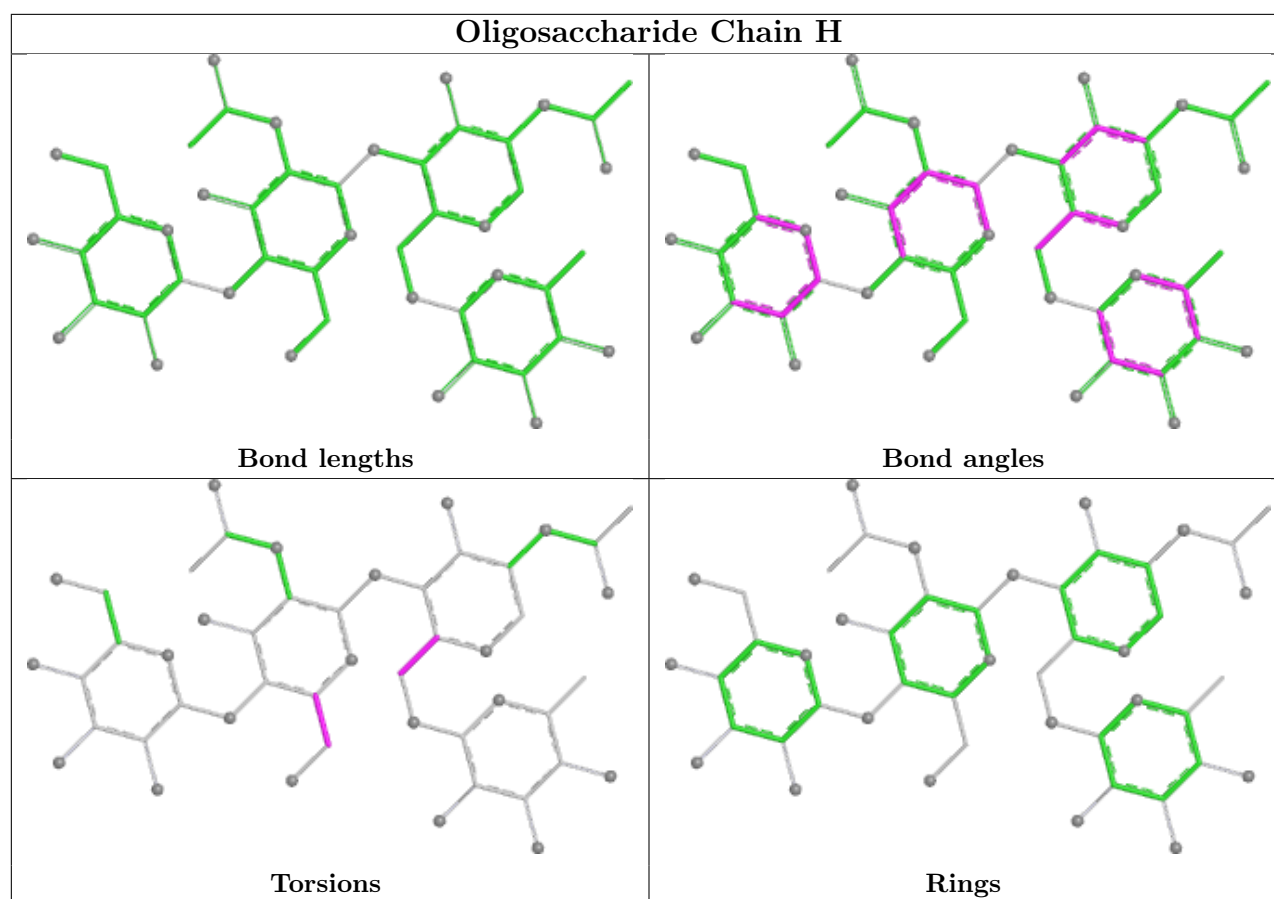
7 monomers are involved in 22 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	F	1	NAG	3	0
2	D	2	NAG	1	0
2	F	4	FUC	13	0
2	G	1	NAG	1	0
2	D	4	FUC	1	0
2	F	2	NAG	12	0
2	D	1	NAG	6	0

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







5.6 Ligand geometry [i](#)

1 ligand is modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	NAG	C	305	1	14,14,15	1.43	1 (7%)	17,19,21	2.94	6 (35%)

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	C	305	1	-	0/6/23/26	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	305	NAG	C1-C2	3.96	1.57	1.52

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	305	NAG	C1-O5-C5	9.28	124.62	112.19
3	C	305	NAG	C1-C2-N2	4.31	117.23	110.43
3	C	305	NAG	O5-C5-C6	3.10	113.70	107.66
3	C	305	NAG	C4-C3-C2	-2.84	106.86	111.02
3	C	305	NAG	O7-C7-C8	-2.33	117.91	122.05
3	C	305	NAG	O3-C3-C2	2.20	113.97	109.40

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	C	305	NAG	2	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

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

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

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	220/225 (97%)	0.09	7 (3%) 50 36	44, 96, 303, 370	0
1	B	220/225 (97%)	-0.31	0 100 100	65, 90, 146, 246	0
1	C	219/225 (97%)	0.27	6 (2%) 56 41	75, 145, 325, 384	0
All	All	659/675 (97%)	0.02	13 (1%) 65 48	44, 102, 301, 384	0

All (13) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	216	LEU	5.2
1	A	214	TYR	3.7
1	A	32	GLN	3.4
1	C	162	VAL	2.9
1	A	33	ASP	2.7
1	A	164	ILE	2.7
1	C	203	ILE	2.7
1	A	250	TYR	2.7
1	C	164	ILE	2.4
1	A	220	GLY	2.4
1	C	166	PRO	2.4
1	C	183	ALA	2.3
1	C	151	ALA	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 ⓘ

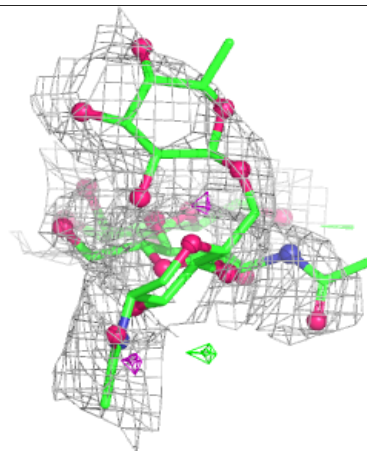
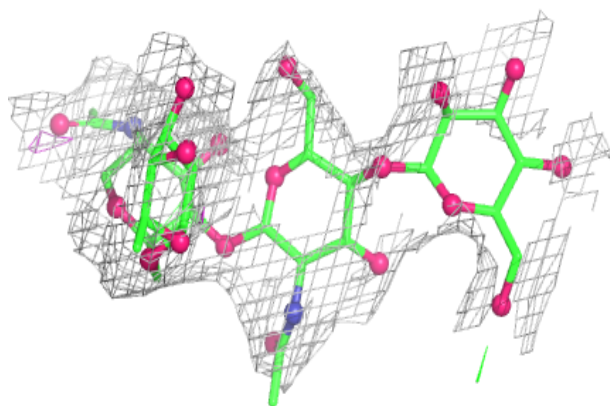
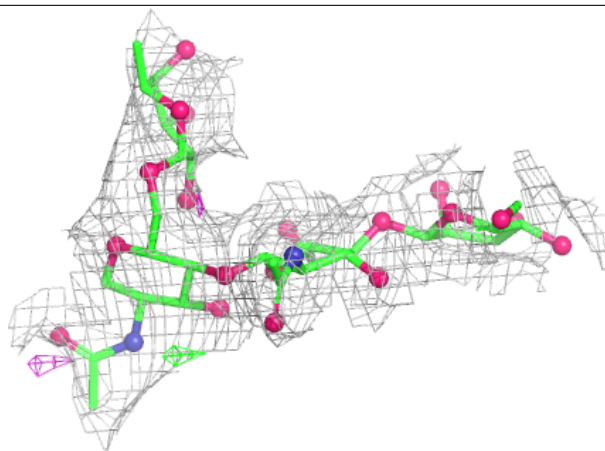
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists 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	0.43	0.14	165,194,205,209	0
2	FUC	H	4	10/11	0.46	0.15	155,164,171,185	0
2	BMA	H	3	11/12	0.47	0.08	162,184,193,200	0
2	BMA	F	3	11/12	0.48	0.12	141,198,207,212	0
2	BMA	G	3	11/12	0.51	0.15	159,200,215,218	0
2	BMA	E	3	11/12	0.57	0.12	163,182,188,191	0
2	FUC	E	4	10/11	0.59	0.15	136,143,154,163	0
2	FUC	G	4	10/11	0.59	0.13	159,170,186,189	0
2	FUC	F	4	10/11	0.66	0.12	148,156,165,165	0
2	FUC	D	4	10/11	0.67	0.12	141,169,181,181	0
2	NAG	E	2	14/15	0.71	0.09	129,138,158,183	0
2	NAG	G	2	14/15	0.72	0.10	193,211,228,249	0
2	NAG	E	1	14/15	0.75	0.14	76,104,136,137	0
2	NAG	D	1	14/15	0.78	0.10	70,104,145,151	0
2	NAG	H	2	14/15	0.81	0.09	120,158,179,182	0
2	NAG	D	2	14/15	0.83	0.07	114,149,173,185	0
2	NAG	F	1	14/15	0.83	0.11	90,115,144,149	0
2	NAG	G	1	14/15	0.83	0.11	107,156,191,192	0
2	NAG	H	1	14/15	0.86	0.09	85,108,126,143	0
2	NAG	F	2	14/15	0.86	0.08	113,158,178,193	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.

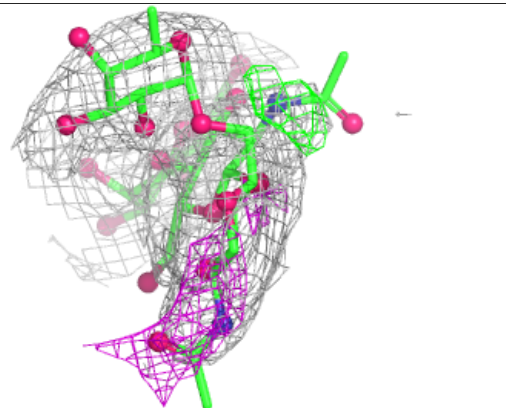
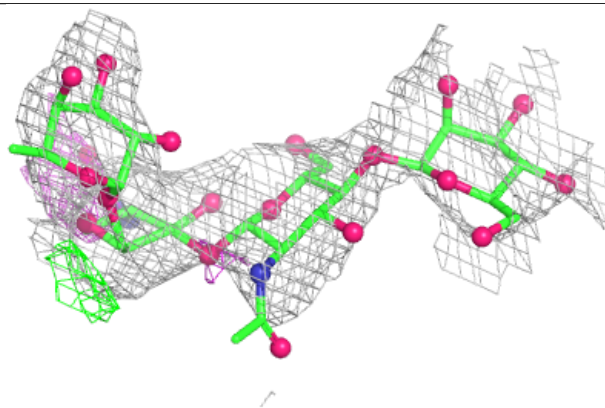
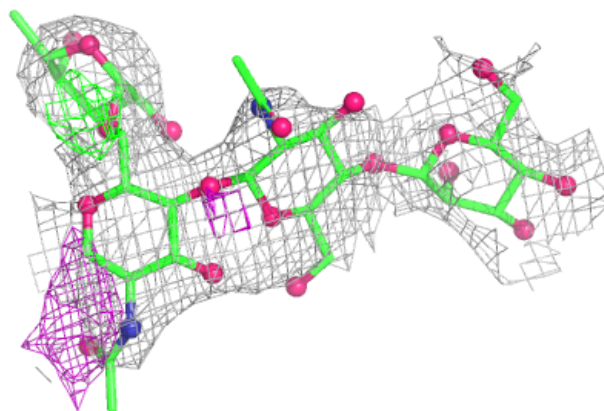
Electron density around Chain D:

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

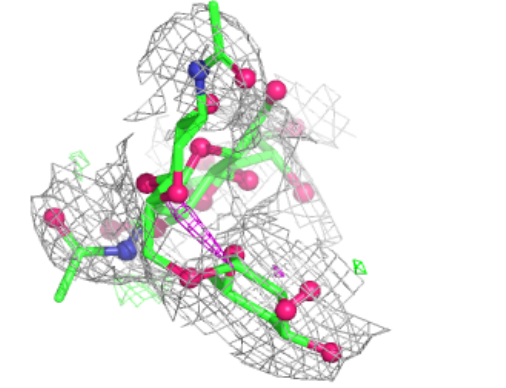
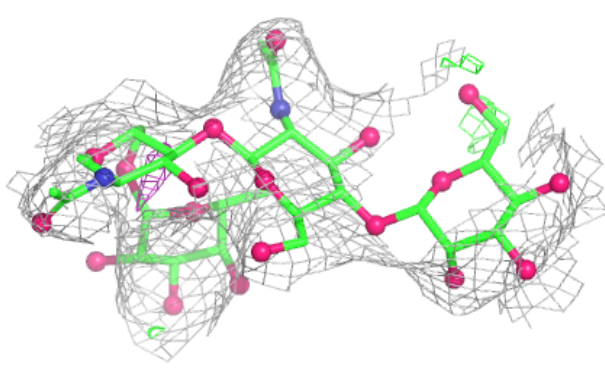
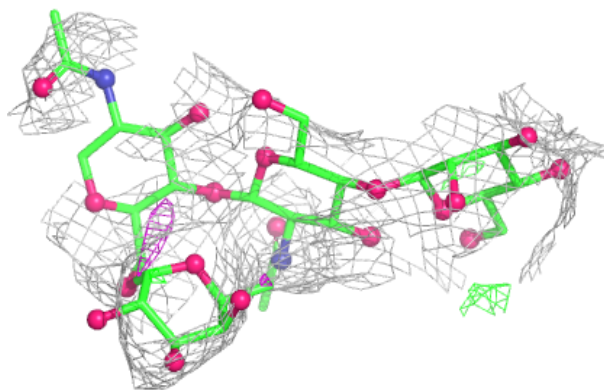


Electron density around Chain E:

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

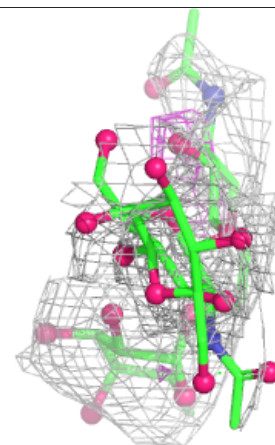
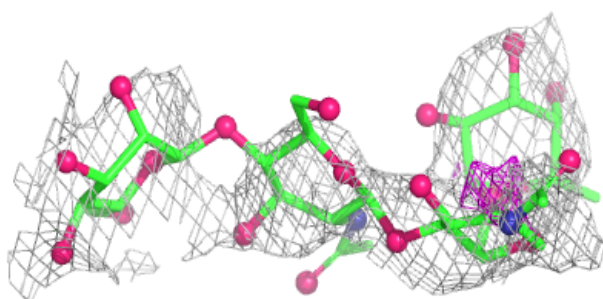
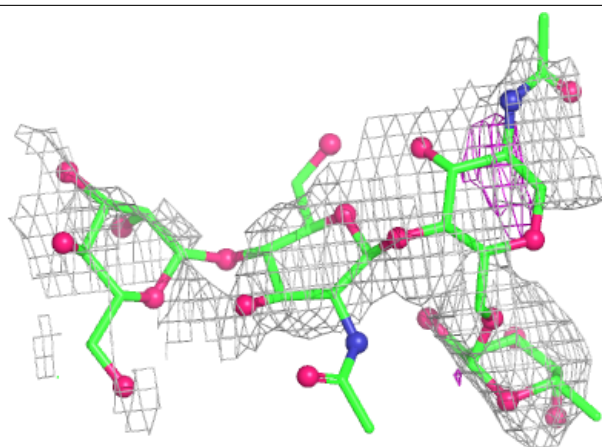
**Electron density around Chain F:**

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

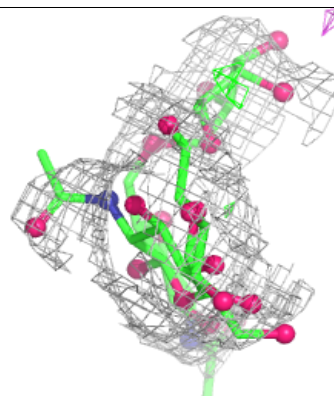
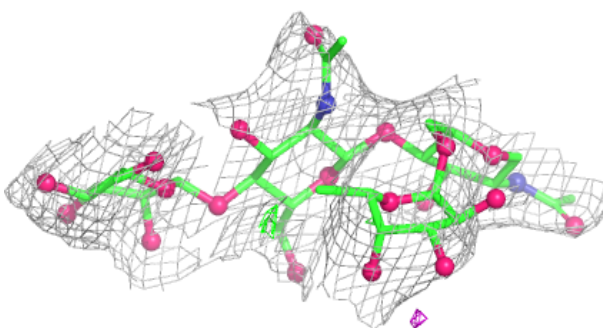
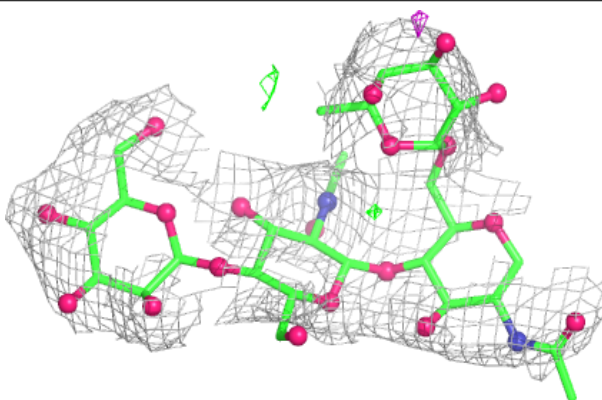


Electron density around Chain G:

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

**Electron density around Chain H:**

$2mF_o-DF_c$ (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, 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($\text{\AA}^2$)	Q<0.9
3	NAG	C	305	14/15	0.50	0.15	116,135,154,159	0

6.5 Other polymers

There are no such residues in this entry.