



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 27, 2024 – 11:58 PM EDT

PDB ID : 2G5B
Title : Crystal Structure of the anti-Bax monoclonal antibody 6A7 and a Bax peptide.
Authors : Peyerl, F.W.; Dai, S.; Murphy, G.A.; Marrack, P.; Kappler, J.W.
Deposited on : 2006-02-22
Resolution : 2.30 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

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

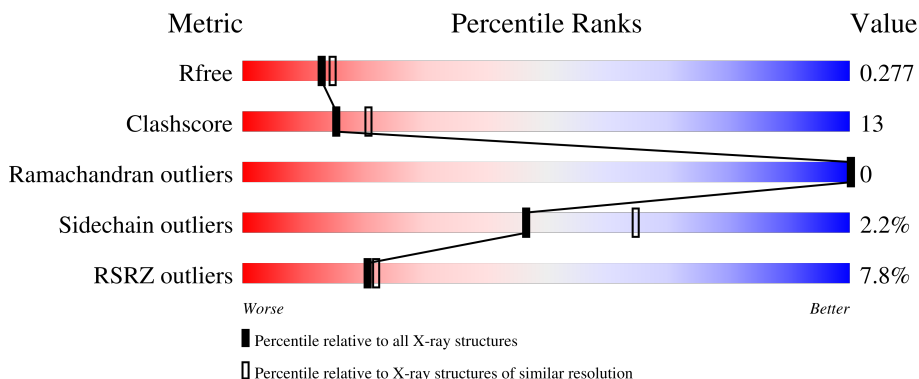
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	5963 (2.30-2.30)
Clashscore	180529	6698 (2.30-2.30)
Ramachandran outliers	177936	6640 (2.30-2.30)
Sidechain outliers	177891	6640 (2.30-2.30)
RSRZ outliers	164620	5963 (2.30-2.30)

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

Mol	Chain	Length	Quality of chain
1	A	217	
1	C	217	
1	E	217	
1	G	217	
2	B	222	

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Mol	Chain	Length	Quality of chain
2	D	222	 9% 76% 19%
2	F	222	 2% 73% 23%
2	H	222	 % 74% 22%
3	I	7	 14% 29% 71%
3	J	7	 14% 71% 29%
3	K	7	 14% 57% 43%
3	L	7	 14% 57% 43%
4	M	3	 100%
4	O	3	 33% 67%
5	N	2	 50% 50%
6	P	3	 100%

2 Entry composition [i](#)

There are 8 unique types of molecules in this entry. The entry contains 14198 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 6A7 Fab Light Chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	217	Total 1692	C 1052	N 290	O 343	S 7	0	0	0
1	C	217	Total 1692	C 1052	N 290	O 343	S 7	0	0	0
1	E	217	Total 1692	C 1052	N 290	O 343	S 7	0	0	0
1	G	217	Total 1692	C 1052	N 290	O 343	S 7	0	0	0

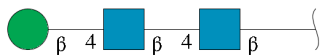
- Molecule 2 is a protein called 6A7 Fab Heavy Chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	216	Total 1654	C 1050	N 272	O 325	S 7	0	0	0
2	D	216	Total 1654	C 1050	N 272	O 325	S 7	0	0	0
2	F	216	Total 1654	C 1050	N 272	O 325	S 7	0	0	0
2	H	216	Total 1654	C 1050	N 272	O 325	S 7	0	0	0

- Molecule 3 is a protein called Bax Peptide.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
3	I	7	Total 53	C 31	N 8	O 14	0	0	0
3	J	7	Total 53	C 31	N 8	O 14	0	0	0
3	K	7	Total 53	C 31	N 8	O 14	0	0	0
3	L	7	Total 53	C 31	N 8	O 14	0	0	0

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



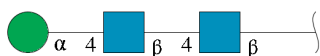
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
4	M	3	39	22	2	15	0	0	0
4	O	3	39	22	2	15	0	0	0

- Molecule 5 is an oligosaccharide called 2-acetamido-2-deoxy-alpha-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



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

- Molecule 6 is an oligosaccharide called alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
6	P	3	39	22	2	15	0	0	0

- Molecule 7 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	A	1	Total	O	S	0	0
			5	4	1		
7	A	1	Total	O	S	0	0
			5	4	1		
7	C	1	Total	O	S	0	0
			5	4	1		
7	C	1	Total	O	S	0	0
			5	4	1		
7	E	1	Total	O	S	0	0
			5	4	1		
7	E	1	Total	O	S	0	0
			5	4	1		
7	G	1	Total	O	S	0	0
			5	4	1		

- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	45	Total	O	0	0
			45	45		
8	B	28	Total	O	0	0
			28	28		
8	C	49	Total	O	0	0
			49	49		
8	D	54	Total	O	0	0
			54	54		
8	E	56	Total	O	0	0
			56	56		

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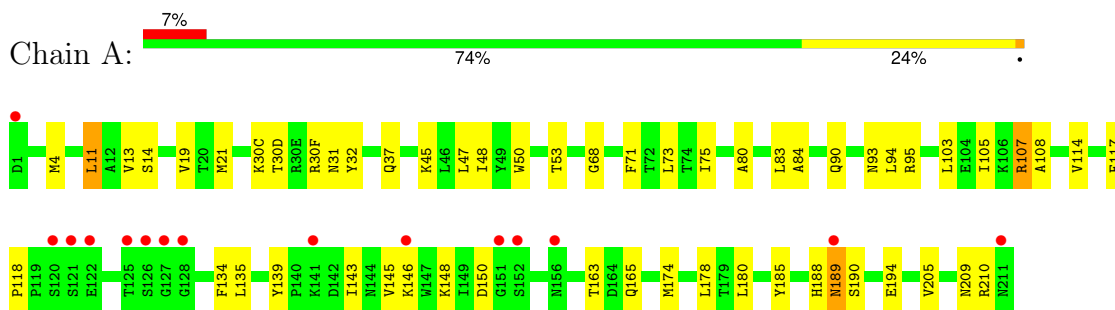
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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	F	57	Total O 57 57	0	0
8	G	53	Total O 53 53	0	0
8	H	73	Total O 73 73	0	0
8	J	3	Total O 3 3	0	0
8	K	1	Total O 1 1	0	0
8	L	3	Total O 3 3	0	0

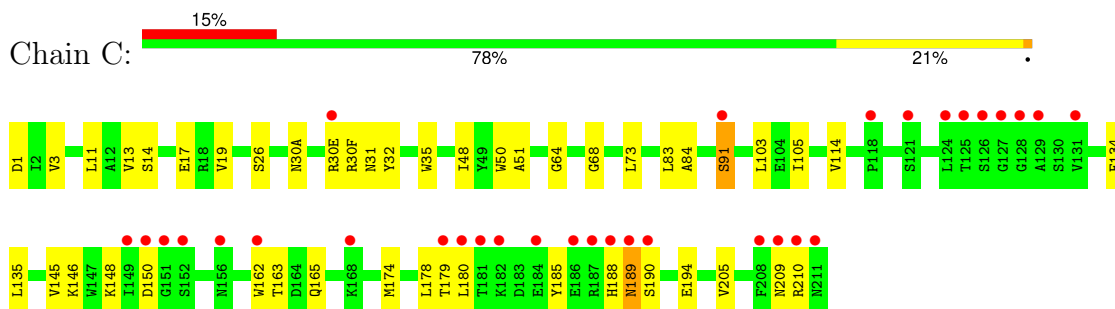
3 Residue-property plots [i](#)

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.

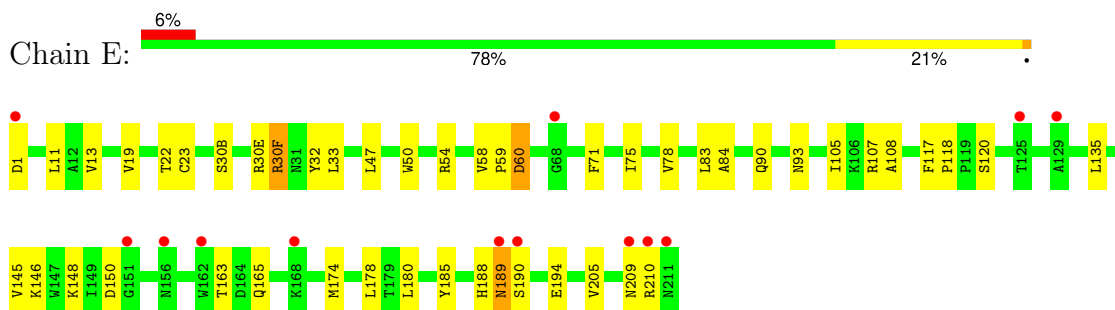
- Molecule 1: 6A7 Fab Light Chain



- Molecule 1: 6A7 Fab Light Chain

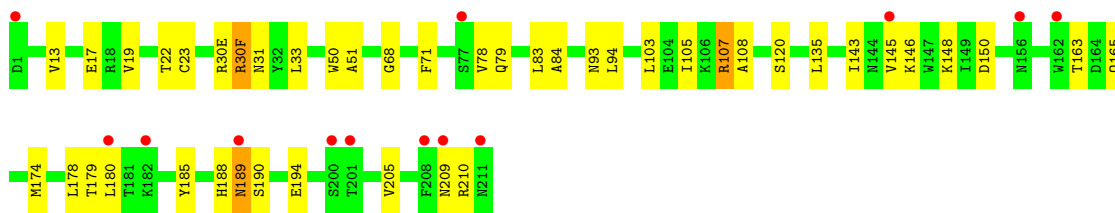


- Molecule 1: 6A7 Fab Light Chain

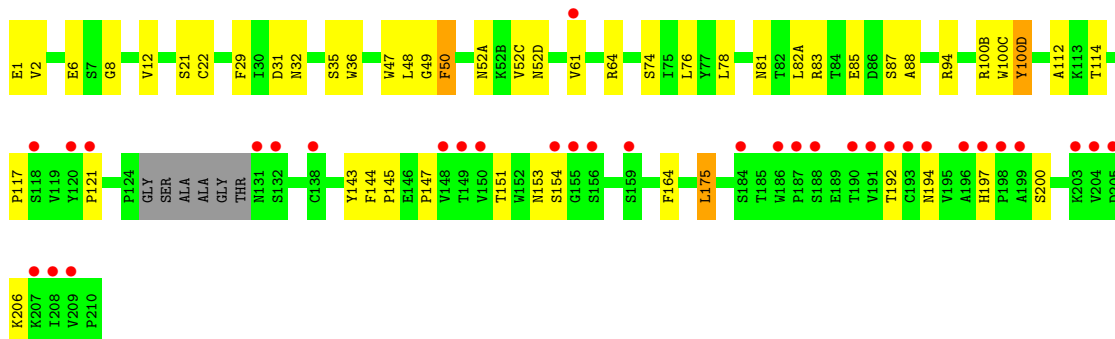
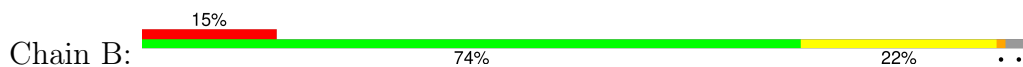


- Molecule 1: 6A7 Fab Light Chain

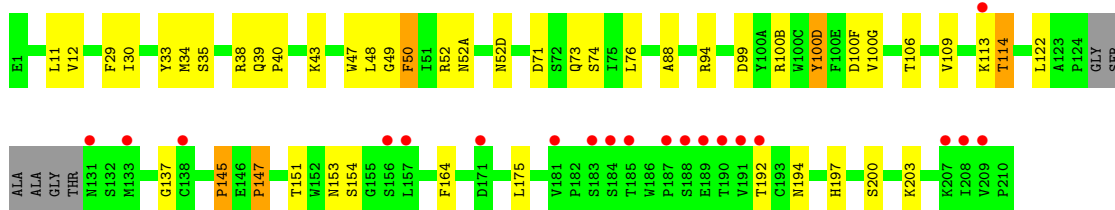
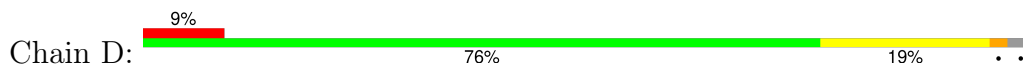




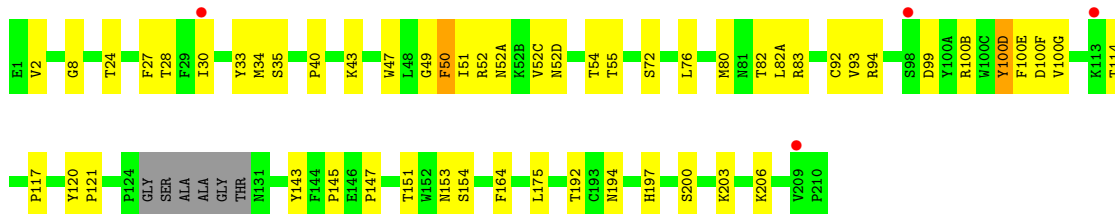
- Molecule 2: 6A7 Fab Heavy Chain



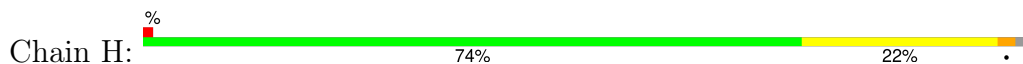
- Molecule 2: 6A7 Fab Heavy Chain

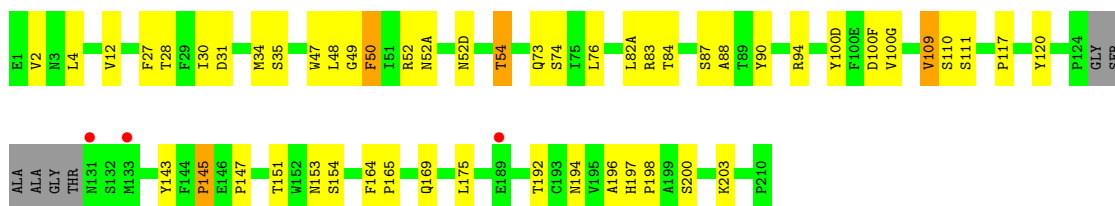


- Molecule 2: 6A7 Fab Heavy Chain



- Molecule 2: 6A7 Fab Heavy Chain





- Molecule 3: Bax Peptide



- Molecule 3: Bax Peptide



- Molecule 3: Bax Peptide



- Molecule 3: Bax Peptide



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



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





- Molecule 5: 2-acetamido-2-deoxy-alpha-D-glucofuranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucofuranose

Chain N:  50% 50%



- Molecule 6: alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucofuranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucofuranose

Chain P:  100%



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α , β , γ	166.53Å 183.90Å 67.08Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 2.30 20.00 – 2.30	Depositor EDS
% Data completeness (in resolution range)	99.6 (20.00-2.30) 99.5 (20.00-2.30)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.52 (at 2.29Å)	Xtrriage
Refinement program	CNS 1.0	Depositor
R, R_{free}	0.234 , 0.275 0.235 , 0.277	Depositor DCC
R_{free} test set	4606 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å ²)	38.0	Xtrriage
Anisotropy	0.286	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 30.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.34$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	14198	wwPDB-VP
Average B, all atoms (Å ²)	42.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.54% 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 [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: NDG, MAN, SO4, 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	0.34	0/1728	0.61	0/2340
1	C	0.34	0/1728	0.59	0/2340
1	E	0.36	0/1728	0.60	0/2340
1	G	0.35	0/1728	0.60	0/2340
2	B	0.34	0/1699	0.63	0/2324
2	D	0.36	0/1699	0.66	0/2324
2	F	0.36	0/1699	0.65	1/2324 (0.0%)
2	H	0.38	0/1699	0.67	0/2324
3	I	0.44	0/53	0.77	0/69
3	J	0.47	0/53	0.79	0/69
3	K	0.42	0/53	0.80	0/69
3	L	0.47	0/53	0.78	0/69
All	All	0.35	0/13920	0.63	1/18932 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	F	33	TYR	N-CA-C	-5.09	97.26	111.00

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	1692	0	1638	54	0
1	C	1692	0	1638	43	0
1	E	1692	0	1638	41	0
1	G	1692	0	1638	32	0
2	B	1654	0	1602	46	0
2	D	1654	0	1602	47	0
2	F	1654	0	1602	56	0
2	H	1654	0	1602	47	0
3	I	53	0	49	12	0
3	J	53	0	49	10	0
3	K	53	0	49	10	0
3	L	53	0	49	6	0
4	M	39	0	34	4	0
4	O	39	0	34	1	0
5	N	28	0	24	1	0
6	P	39	0	34	4	0
7	A	10	0	0	0	0
7	C	10	0	0	0	0
7	E	10	0	0	0	0
7	G	5	0	0	0	0
8	A	45	0	0	1	0
8	B	28	0	0	1	0
8	C	49	0	0	2	0
8	D	54	0	0	0	0
8	E	56	0	0	1	0
8	F	57	0	0	1	0
8	G	53	0	0	0	0
8	H	73	0	0	2	0
8	J	3	0	0	1	0
8	K	1	0	0	0	0
8	L	3	0	0	0	0
All	All	14198	0	13282	361	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 13.

All (361) 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)
2:D:154:SER:H	2:D:194:ASN:HD21	1.07	1.00
2:F:30:ILE:HD11	2:H:196:ALA:HB1	1.44	0.99
2:D:52(A):ASN:HD21	3:J:607:ILE:HG23	1.29	0.98

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:154:SER:H	2:F:194:ASN:HD21	1.09	0.97
6:P:2:NAG:H62	6:P:3:MAN:H2	1.48	0.96
2:F:52(A):ASN:HD21	3:K:607:ILE:HG23	1.31	0.95
1:C:105:ILE:H	1:C:165:GLN:HE22	1.14	0.94
2:H:154:SER:H	2:H:194:ASN:HD21	1.09	0.93
2:B:154:SER:H	2:B:194:ASN:HD21	1.08	0.92
2:H:52:ARG:HD2	2:H:54:THR:HG23	1.50	0.92
1:A:93:ASN:HD22	3:I:602:THR:H	1.18	0.91
1:G:105:ILE:H	1:G:165:GLN:HE22	1.14	0.90
2:D:52(A):ASN:HD21	3:J:607:ILE:CG2	1.89	0.86
2:F:93:VAL:HG11	2:F:100(E):PHE:HB3	1.56	0.85
1:A:105:ILE:H	1:A:165:GLN:HE22	1.20	0.85
2:H:52(A):ASN:HD21	3:L:607:ILE:HG23	1.40	0.85
2:D:153:ASN:ND2	2:D:192:THR:H	1.79	0.81
2:H:153:ASN:ND2	2:H:192:THR:H	1.78	0.81
2:B:153:ASN:ND2	2:B:192:THR:H	1.79	0.81
2:F:153:ASN:ND2	2:F:192:THR:H	1.80	0.79
2:D:154:SER:H	2:D:194:ASN:ND2	1.80	0.78
2:F:154:SER:H	2:F:194:ASN:ND2	1.81	0.78
1:E:105:ILE:H	1:E:165:GLN:HE22	1.29	0.78
3:I:606:GLN:O	3:I:607:ILE:HG22	1.84	0.77
2:B:154:SER:H	2:B:194:ASN:ND2	1.81	0.77
1:A:30(F):ARG:HH11	1:A:30(F):ARG:HG2	1.49	0.77
1:A:31:ASN:ND2	1:A:68:GLY:H	1.83	0.76
2:H:154:SER:H	2:H:194:ASN:ND2	1.82	0.76
3:J:606:GLN:O	3:J:607:ILE:HG22	1.85	0.76
3:K:606:GLN:O	3:K:607:ILE:HG22	1.85	0.76
1:C:11:LEU:HD11	1:C:19:VAL:HG13	1.68	0.75
1:C:105:ILE:N	1:C:165:GLN:HE22	1.84	0.75
2:F:52:ARG:HD2	2:F:54:THR:HG23	1.67	0.75
3:L:606:GLN:O	3:L:607:ILE:HG22	1.87	0.75
2:F:52(A):ASN:HD21	3:K:607:ILE:CG2	2.00	0.75
2:H:153:ASN:HD21	2:H:192:THR:H	1.35	0.74
2:H:52:ARG:HD2	2:H:54:THR:CG2	2.17	0.74
2:F:52:ARG:HD2	2:F:54:THR:CG2	2.17	0.74
1:G:150:ASP:HA	1:G:190:SER:HB3	1.70	0.73
2:F:153:ASN:HD21	2:F:192:THR:H	1.37	0.73
2:D:153:ASN:HD21	2:D:192:THR:H	1.36	0.73
1:E:150:ASP:HA	1:E:190:SER:HB3	1.70	0.73
1:A:80:ALA:O	1:A:105:ILE:HD11	1.87	0.73
1:E:13:VAL:HG21	1:E:19:VAL:HG22	1.71	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:30(F):ARG:HG2	1:C:30(F):ARG:HH11	1.54	0.72
2:F:52:ARG:HH11	2:F:54:THR:HG23	1.54	0.72
1:A:93:ASN:ND2	3:I:602:THR:H	1.87	0.72
1:A:150:ASP:HA	1:A:190:SER:HB3	1.71	0.72
1:E:93:ASN:HD22	3:K:602:THR:H	1.38	0.71
2:F:30:ILE:HD11	2:H:196:ALA:CB	2.18	0.71
2:B:52(A):ASN:HD21	3:I:607:ILE:HG23	1.54	0.71
2:B:153:ASN:HD21	2:B:192:THR:H	1.36	0.71
1:A:188:HIS:O	1:A:210:ARG:HD3	1.91	0.70
1:G:30(F):ARG:HD3	1:G:50:TRP:CE2	2.26	0.70
1:C:188:HIS:O	1:C:210:ARG:HD3	1.92	0.70
1:C:150:ASP:HA	1:C:190:SER:HB3	1.71	0.70
2:F:117:PRO:HB3	2:F:143:TYR:HB3	1.72	0.70
2:B:35:SER:OG	2:B:50:PHE:HB3	1.92	0.70
1:G:93:ASN:HD22	3:L:602:THR:H	1.40	0.69
2:B:8:GLY:H	2:D:73:GLN:NE2	1.92	0.68
1:C:105:ILE:H	1:C:165:GLN:NE2	1.90	0.68
1:E:188:HIS:O	1:E:210:ARG:HD3	1.94	0.67
1:G:188:HIS:O	1:G:210:ARG:HD3	1.94	0.67
2:H:52(A):ASN:HD21	3:L:607:ILE:CG2	2.08	0.66
1:G:107:ARG:HD3	1:G:108:ALA:O	1.95	0.66
1:A:19:VAL:HG22	1:A:75:ILE:HB	1.77	0.66
2:B:32:ASN:ND2	4:M:1:NAG:H81	2.11	0.65
2:F:52(D):ASN:HD21	3:K:607:ILE:HG22	1.61	0.64
1:A:30(F):ARG:HD3	1:A:50:TRP:CE2	2.33	0.63
6:P:2:NAG:C6	6:P:3:MAN:H2	2.26	0.63
2:B:32:ASN:HD21	4:M:1:NAG:H81	1.62	0.63
1:E:194:GLU:HG2	1:E:205:VAL:HG22	1.80	0.63
1:A:194:GLU:HG2	1:A:205:VAL:HG22	1.80	0.63
2:D:52(D):ASN:HD21	3:J:607:ILE:HG22	1.64	0.63
1:A:30(F):ARG:HG2	1:A:30(F):ARG:NH1	2.11	0.62
2:B:12:VAL:HG11	2:B:82(A):LEU:HD13	1.82	0.62
2:F:203:LYS:HE2	2:H:31:ASP:OD1	1.99	0.62
1:A:107:ARG:HD3	1:A:108:ALA:O	1.99	0.62
2:D:154:SER:N	2:D:194:ASN:HD21	1.89	0.61
2:F:47:TRP:CZ2	2:F:49:GLY:HA2	2.35	0.61
1:E:135:LEU:HD21	1:E:145:VAL:HG22	1.83	0.61
2:B:154:SER:N	2:B:194:ASN:HD21	1.91	0.61
1:G:194:GLU:HG2	1:G:205:VAL:HG22	1.82	0.61
1:C:30(E):ARG:HG3	1:C:30(E):ARG:HH11	1.66	0.61
2:D:11:LEU:HD23	2:D:114:THR:HG22	1.82	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:8:GLY:H	2:D:73:GLN:HE22	1.48	0.60
2:B:47:TRP:CZ2	2:B:49:GLY:HA2	2.37	0.60
1:A:135:LEU:HD21	1:A:145:VAL:HG22	1.83	0.60
1:A:30(F):ARG:HD3	1:A:50:TRP:CD2	2.37	0.60
1:C:194:GLU:HG2	1:C:205:VAL:HG22	1.84	0.59
2:H:12:VAL:O	2:H:109:VAL:HA	2.02	0.59
2:B:52(A):ASN:HD21	3:I:607:ILE:CG2	2.14	0.59
1:A:19:VAL:CG2	1:A:75:ILE:HB	2.33	0.59
1:C:135:LEU:HD21	1:C:145:VAL:HG22	1.85	0.59
1:G:120:SER:OG	2:H:120:TYR:HB3	2.02	0.59
2:D:52(A):ASN:ND2	3:J:607:ILE:HG23	2.10	0.59
2:B:175:LEU:C	2:B:175:LEU:HD12	2.23	0.58
1:C:31:ASN:ND2	1:C:68:GLY:H	2.01	0.58
2:D:106:THR:HG21	2:D:147:PRO:HD3	1.84	0.58
2:D:145:PRO:O	2:D:197:HIS:HE1	1.87	0.58
2:B:112:ALA:HB3	2:B:144:PHE:CE2	2.39	0.58
2:H:4:LEU:HD11	2:H:100(G):VAL:HG23	1.85	0.57
2:H:94:ARG:HB3	2:H:100(G):VAL:HG22	1.85	0.57
1:C:30(F):ARG:HD3	1:C:50:TRP:CE2	2.40	0.57
1:G:135:LEU:HD21	1:G:145:VAL:HG22	1.86	0.57
2:F:154:SER:N	2:F:194:ASN:HD21	1.91	0.57
1:E:30(E):ARG:C	1:E:30(F):ARG:HG2	2.25	0.57
2:D:175:LEU:HD12	2:D:175:LEU:C	2.26	0.56
2:F:100(D):TYR:CE2	2:F:100(F):ASP:HB3	2.40	0.56
1:E:54:ARG:NH1	1:E:54:ARG:HB2	2.20	0.56
2:H:175:LEU:C	2:H:175:LEU:HD12	2.26	0.56
1:A:30(D):THR:HG21	1:A:32:TYR:OH	2.05	0.56
1:A:45:LYS:HD2	8:A:747:HOH:O	2.04	0.56
2:B:1:GLU:HG2	2:B:2:VAL:N	2.21	0.56
1:C:30(F):ARG:HG2	1:C:30(F):ARG:NH1	2.19	0.56
2:F:175:LEU:HD12	2:F:175:LEU:C	2.26	0.56
2:B:145:PRO:O	2:B:197:HIS:HE1	1.88	0.56
2:D:52(D):ASN:ND2	3:J:607:ILE:HG22	2.20	0.56
2:H:145:PRO:O	2:H:197:HIS:HE1	1.89	0.56
2:F:145:PRO:O	2:F:197:HIS:HE1	1.89	0.55
2:D:30:ILE:HG22	2:D:71:ASP:HB3	1.88	0.55
2:D:47:TRP:CZ2	2:D:49:GLY:HA2	2.42	0.55
1:E:11:LEU:HD11	1:E:19:VAL:HG13	1.88	0.55
2:B:31:ASP:OD1	2:D:203:LYS:HE2	2.07	0.55
2:F:8:GLY:H	2:H:73:GLN:NE2	2.04	0.55
1:C:30(F):ARG:HD3	1:C:50:TRP:CD2	2.42	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:12:VAL:HG11	2:H:82(A):LEU:HD13	1.89	0.55
2:F:28:THR:HG22	2:F:30:ILE:HG13	1.89	0.55
2:F:151:THR:OG1	2:F:194:ASN:HB2	2.06	0.55
1:A:93:ASN:HD22	3:I:602:THR:N	1.97	0.54
1:A:31:ASN:HD21	1:A:68:GLY:H	1.52	0.54
2:H:52(D):ASN:HD21	3:L:607:ILE:HG22	1.72	0.54
1:C:31:ASN:HD21	1:C:68:GLY:H	1.56	0.54
2:B:151:THR:OG1	2:B:194:ASN:HB2	2.08	0.54
2:B:32:ASN:HD21	4:M:1:NAG:C8	2.21	0.53
1:A:80:ALA:HA	1:A:105:ILE:HD13	1.90	0.53
2:B:48:LEU:HD22	2:B:61:VAL:HG11	1.90	0.53
6:P:2:NAG:H62	6:P:3:MAN:C2	2.32	0.53
1:C:11:LEU:HD11	1:C:19:VAL:CG1	2.38	0.53
2:B:29:PHE:CD2	2:B:74:SER:HA	2.44	0.53
2:D:151:THR:OG1	2:D:194:ASN:HB2	2.09	0.53
1:C:185:TYR:O	1:C:210:ARG:HD2	2.09	0.53
2:H:151:THR:OG1	2:H:194:ASN:HB2	2.09	0.53
1:C:162:TRP:HE3	8:C:713:HOH:O	1.91	0.52
2:B:117:PRO:HB3	2:B:143:TYR:HB3	1.92	0.52
1:E:185:TYR:O	1:E:210:ARG:HD2	2.09	0.52
1:A:105:ILE:N	1:A:165:GLN:HE22	2.00	0.52
2:D:100(D):TYR:CE2	2:D:100(F):ASP:HB3	2.45	0.52
2:F:50:PHE:CD1	2:F:50:PHE:C	2.83	0.52
2:F:93:VAL:HG11	2:F:100(E):PHE:CB	2.32	0.52
1:A:185:TYR:O	1:A:210:ARG:HD2	2.10	0.52
2:B:121:PRO:HD3	2:B:206:LYS:HE2	1.91	0.52
1:G:163:THR:HG23	2:H:164:PHE:CD1	2.44	0.52
2:H:154:SER:N	2:H:194:ASN:HD21	1.92	0.52
1:C:163:THR:HG23	2:D:164:PHE:CD1	2.45	0.52
2:F:40:PRO:HB2	2:F:43:LYS:HD3	1.92	0.52
2:H:52(D):ASN:ND2	3:L:607:ILE:HG22	2.25	0.52
1:E:75:ILE:CG2	1:E:78:VAL:HG12	2.40	0.51
1:G:146:LYS:HD2	1:G:148:LYS:HE3	1.93	0.51
2:D:12:VAL:O	2:D:109:VAL:HA	2.10	0.51
2:D:33:TYR:CE2	2:D:52:ARG:HG2	2.45	0.51
1:C:91:SER:HB2	8:C:706:HOH:O	2.09	0.51
1:E:54:ARG:HB2	1:E:54:ARG:HH11	1.75	0.51
1:G:13:VAL:HG13	1:G:17:GLU:HB2	1.92	0.51
2:D:113:LYS:NZ	2:D:114:THR:HG23	2.26	0.51
2:D:35:SER:OG	2:D:50:PHE:HB3	2.11	0.51
2:F:99:ASP:OD1	2:F:100(B):ARG:NH1	2.44	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:146:LYS:HD2	1:A:148:LYS:HE3	1.93	0.51
2:B:22:CYS:HB3	2:B:76:LEU:HB3	1.93	0.51
2:F:52(D):ASN:ND2	3:K:607:ILE:HG22	2.25	0.51
2:B:83:ARG:HB2	2:B:85:GLU:HG2	1.93	0.51
1:E:146:LYS:HD2	1:E:148:LYS:HE3	1.92	0.50
1:A:30(C):LYS:NZ	1:A:30(C):LYS:HB3	2.25	0.50
1:G:185:TYR:O	1:G:210:ARG:HD2	2.11	0.50
2:H:169:GLN:HB3	8:H:663:HOH:O	2.12	0.50
2:F:100(D):TYR:HE2	2:F:100(F):ASP:HB3	1.77	0.50
1:G:78:VAL:HG12	1:G:79:GLN:N	2.27	0.50
2:D:50:PHE:CD1	2:D:50:PHE:C	2.85	0.50
1:C:146:LYS:HD2	1:C:148:LYS:HE3	1.92	0.49
1:E:107:ARG:HG3	1:E:107:ARG:HH11	1.76	0.49
2:F:93:VAL:CG1	2:F:100(E):PHE:HB3	2.36	0.49
2:F:34:MET:HB3	2:F:76:LEU:HD22	1.94	0.49
2:F:94:ARG:CZ	4:O:1:NAG:H83	2.42	0.49
2:F:72:SER:HA	2:H:198:PRO:O	2.12	0.49
2:B:36:TRP:CE2	2:B:78:LEU:HB2	2.47	0.49
1:A:163:THR:HG23	2:B:164:PHE:CD1	2.48	0.49
2:H:28:THR:HG22	2:H:30:ILE:HG22	1.95	0.49
2:H:197:HIS:HD2	2:H:200:SER:OG	1.95	0.48
1:A:11:LEU:HD12	1:A:11:LEU:O	2.13	0.48
2:B:32:ASN:ND2	4:M:1:NAG:C8	2.76	0.48
2:D:40:PRO:HB2	2:D:43:LYS:HG3	1.95	0.48
2:H:83:ARG:O	2:H:109:VAL:HG11	2.13	0.48
1:A:93:ASN:ND2	3:I:601:PRO:HA	2.28	0.48
1:E:105:ILE:N	1:E:165:GLN:HE22	2.05	0.48
2:H:100(D):TYR:HE1	2:H:100(F):ASP:HB3	1.78	0.48
2:D:99:ASP:OD1	2:D:100(B):ARG:NH1	2.47	0.48
2:F:117:PRO:CB	2:F:143:TYR:HB3	2.43	0.48
1:C:83:LEU:O	1:C:84:ALA:HB2	2.15	0.47
2:H:50:PHE:CD1	2:H:50:PHE:C	2.87	0.47
5:N:1:NAG:HO3	5:N:2:NDG:C1	2.28	0.47
1:A:93:ASN:O	1:A:94:LEU:HB2	2.15	0.47
1:E:83:LEU:C	1:E:83:LEU:HD23	2.36	0.47
1:E:22:THR:HG22	1:E:23:CYS:N	2.31	0.47
1:E:33:LEU:HG	1:E:71:PHE:CG	2.50	0.47
2:H:47:TRP:CZ2	2:H:49:GLY:HA2	2.50	0.47
2:B:32:ASN:ND2	2:B:94:ARG:HD2	2.30	0.46
2:B:50:PHE:CD1	2:B:50:PHE:C	2.89	0.46
2:B:154:SER:N	2:B:194:ASN:ND2	2.58	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:154:SER:N	2:D:194:ASN:ND2	2.57	0.46
1:E:163:THR:HG23	2:F:164:PHE:CD1	2.50	0.46
2:F:50:PHE:C	2:F:50:PHE:HD1	2.19	0.46
2:D:197:HIS:HD2	2:D:200:SER:OG	1.98	0.46
2:F:24:THR:HB	2:F:27:PHE:HE1	1.80	0.46
1:E:145:VAL:HG21	1:E:174:MET:CE	2.46	0.46
1:A:189:ASN:O	1:A:209:ASN:HA	2.16	0.46
1:G:31:ASN:ND2	1:G:68:GLY:H	2.13	0.46
1:G:150:ASP:OD2	1:G:188:HIS:HB3	2.16	0.46
1:E:107:ARG:HG3	1:E:108:ALA:O	2.15	0.46
2:F:154:SER:N	2:F:194:ASN:ND2	2.58	0.46
2:H:73:GLN:O	2:H:74:SER:HB2	2.16	0.46
1:C:178:LEU:HG	1:C:180:LEU:HD13	1.98	0.46
1:E:189:ASN:O	1:E:209:ASN:HA	2.16	0.46
2:F:52:ARG:CD	2:F:54:THR:HG23	2.42	0.46
1:A:145:VAL:HG21	1:A:174:MET:CE	2.46	0.45
1:C:189:ASN:O	1:C:209:ASN:HA	2.16	0.45
1:E:30(F):ARG:HD3	1:E:50:TRP:CE2	2.51	0.45
1:E:150:ASP:OD2	1:E:188:HIS:HB3	2.17	0.45
2:F:30:ILE:HD12	2:H:203:LYS:HB2	1.97	0.45
2:H:35:SER:OG	2:H:50:PHE:HB3	2.16	0.45
2:H:84:THR:HG22	8:H:634:HOH:O	2.16	0.45
2:F:35:SER:OG	2:F:50:PHE:HB3	2.16	0.45
1:G:83:LEU:O	1:G:84:ALA:HB2	2.17	0.45
1:G:145:VAL:HG21	1:G:174:MET:CE	2.46	0.45
1:G:178:LEU:HG	1:G:180:LEU:HD13	1.98	0.45
1:A:178:LEU:HG	1:A:180:LEU:HD13	1.99	0.45
1:E:117:PHE:HA	1:E:118:PRO:HD3	1.84	0.45
2:F:80:MET:HB3	2:F:82(A):LEU:HD21	1.98	0.45
2:D:11:LEU:HD23	2:D:114:THR:CG2	2.47	0.45
1:E:120:SER:OG	2:F:120:TYR:HB3	2.17	0.45
2:F:197:HIS:HD2	2:F:200:SER:OG	1.99	0.45
1:G:31:ASN:HD21	1:G:68:GLY:H	1.64	0.45
1:A:150:ASP:OD2	1:A:188:HIS:HB3	2.17	0.45
1:C:13:VAL:HG22	1:C:14:SER:N	2.31	0.45
1:C:150:ASP:OD2	1:C:188:HIS:HB3	2.16	0.45
2:D:122:LEU:HB2	2:D:137:GLY:C	2.37	0.45
2:F:82:THR:HG22	2:F:82:THR:O	2.17	0.45
2:H:2:VAL:HG13	2:H:27:PHE:CD1	2.52	0.45
2:F:52(D):ASN:ND2	3:K:607:ILE:CG2	2.80	0.45
2:F:153:ASN:HD21	2:F:192:THR:N	2.11	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:83:LEU:O	1:A:84:ALA:HB2	2.17	0.44
2:D:38:ARG:CD	2:D:48:LEU:HD21	2.47	0.44
2:F:121:PRO:HD3	2:F:206:LYS:HE2	1.99	0.44
2:H:48:LEU:HD11	2:H:90:TYR:CE2	2.52	0.44
2:H:52:ARG:CD	2:H:54:THR:HG23	2.33	0.44
1:A:30(C):LYS:HE3	3:I:604:SER:HB3	1.98	0.44
2:B:64:ARG:HG2	2:B:81:ASN:O	2.18	0.44
2:H:100(D):TYR:CE1	2:H:100(F):ASP:HB3	2.52	0.44
1:G:189:ASN:O	1:G:209:ASN:HA	2.17	0.44
1:E:54:ARG:HD2	1:E:59:PRO:O	2.18	0.44
2:F:2:VAL:HG13	2:F:27:PHE:CD1	2.52	0.44
2:B:12:VAL:CG1	2:B:82(A):LEU:HD13	2.48	0.44
1:C:145:VAL:HG21	1:C:174:MET:CE	2.48	0.44
2:H:153:ASN:HD21	2:H:192:THR:N	2.09	0.44
1:A:4:MET:HE2	1:A:90:GLN:HB3	2.00	0.44
2:F:93:VAL:HG13	2:F:100(G):VAL:O	2.18	0.44
1:G:135:LEU:N	1:G:135:LEU:HD12	2.33	0.44
3:K:606:GLN:O	3:K:607:ILE:CG2	2.63	0.44
1:A:11:LEU:HD12	1:A:103:LEU:HA	2.00	0.43
2:B:12:VAL:HG11	2:B:82(A):LEU:CD1	2.49	0.43
2:B:197:HIS:HD2	2:B:200:SER:OG	2.00	0.43
2:D:39:GLN:C	2:D:88:ALA:HB1	2.39	0.43
2:D:153:ASN:HD21	2:D:192:THR:N	2.10	0.43
2:F:51:ILE:HG13	2:F:55:THR:HG22	1.99	0.43
1:G:30(E):ARG:C	1:G:30(F):ARG:HG2	2.37	0.43
1:A:37:GLN:HB2	1:A:47:LEU:HD11	2.01	0.43
1:E:178:LEU:HG	1:E:180:LEU:HD13	2.00	0.43
2:B:100(C):TRP:HA	2:B:100(C):TRP:CE3	2.54	0.43
3:I:606:GLN:O	3:I:607:ILE:CG2	2.63	0.43
2:B:52(D):ASN:HD21	3:I:607:ILE:HG22	1.84	0.43
1:C:13:VAL:CG2	1:C:17:GLU:HB2	2.49	0.43
3:J:606:GLN:HA	8:J:435:HOH:O	2.17	0.43
1:C:3:VAL:HB	1:C:26:SER:HB3	2.01	0.43
1:G:13:VAL:HG21	1:G:19:VAL:HG22	2.01	0.43
2:B:6:GLU:HA	2:B:21:SER:O	2.18	0.43
2:D:38:ARG:NE	2:D:48:LEU:HD21	2.33	0.43
2:F:52(C):VAL:HG23	8:F:611:HOH:O	2.17	0.43
1:G:33:LEU:HG	1:G:71:PHE:CG	2.54	0.43
1:A:107:ARG:HD2	1:A:139:TYR:CG	2.53	0.43
1:C:30(A):ASN:O	1:C:30(E):ARG:N	2.51	0.43
1:C:50:TRP:O	1:C:51:ALA:HB3	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:32:TYR:O	1:E:90:GLN:HA	2.19	0.43
2:D:52(A):ASN:HD21	3:J:607:ILE:HG21	1.80	0.42
1:C:189:ASN:HD22	1:C:210:ARG:H	1.67	0.42
1:E:93:ASN:ND2	3:K:602:THR:H	2.12	0.42
3:J:606:GLN:O	3:J:607:ILE:CG2	2.63	0.42
2:H:87:SER:O	2:H:88:ALA:HB2	2.19	0.42
1:A:135:LEU:HD23	1:A:143:ILE:CD1	2.50	0.42
1:C:48:ILE:HD13	1:C:64:GLY:N	2.35	0.42
1:G:50:TRP:O	1:G:51:ALA:HB3	2.20	0.42
1:G:93:ASN:O	1:G:94:LEU:HB2	2.19	0.42
6:P:1:NAG:H83	6:P:1:NAG:O3	2.19	0.42
1:E:135:LEU:N	1:E:135:LEU:HD12	2.35	0.42
1:G:189:ASN:HD22	1:G:210:ARG:H	1.66	0.42
1:A:13:VAL:HG22	1:A:14:SER:N	2.34	0.42
1:C:30(E):ARG:HG3	1:C:30(E):ARG:NH1	2.33	0.42
1:E:30(B):SER:O	1:E:30(E):ARG:HD2	2.19	0.42
1:A:50:TRP:CZ2	2:B:100(B):ARG:HA	2.54	0.42
2:D:94:ARG:HB3	2:D:100(G):VAL:CG1	2.50	0.42
1:E:47:LEU:HD22	1:E:58:VAL:HG13	2.00	0.42
1:C:103:LEU:HD23	1:C:103:LEU:C	2.40	0.42
1:G:189:ASN:ND2	1:G:210:ARG:H	2.17	0.42
1:A:93:ASN:ND2	3:I:602:THR:HG23	2.35	0.41
2:B:29:PHE:HB3	8:B:610:HOH:O	2.18	0.41
1:E:1:ASP:N	8:E:749:HOH:O	2.53	0.41
1:E:54:ARG:NE	1:E:60:ASP:HA	2.35	0.41
1:G:179:THR:O	1:G:180:LEU:HD12	2.20	0.41
1:A:189:ASN:HD22	1:A:210:ARG:H	1.66	0.41
2:B:8:GLY:N	2:D:73:GLN:HE22	2.15	0.41
2:D:11:LEU:CD2	2:D:114:THR:HG22	2.47	0.41
2:F:203:LYS:CE	2:H:31:ASP:OD1	2.65	0.41
2:H:154:SER:N	2:H:194:ASN:ND2	2.59	0.41
1:A:48:ILE:HG23	1:A:53:THR:O	2.20	0.41
1:A:21:MET:HG3	1:A:73:LEU:HB3	2.02	0.41
1:C:135:LEU:N	1:C:135:LEU:HD12	2.34	0.41
2:D:29:PHE:CD2	2:D:74:SER:HA	2.56	0.41
1:C:189:ASN:ND2	1:C:210:ARG:H	2.18	0.41
2:F:52(A):ASN:ND2	3:K:607:ILE:HG23	2.15	0.41
1:E:83:LEU:O	1:E:84:ALA:HB2	2.20	0.41
1:A:30(C):LYS:NZ	1:A:30(C):LYS:CB	2.83	0.41
1:A:135:LEU:HD12	1:A:135:LEU:N	2.36	0.41
1:A:189:ASN:ND2	1:A:210:ARG:H	2.18	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:87:SER:O	2:B:88:ALA:HB2	2.21	0.41
2:D:52(D):ASN:ND2	3:J:607:ILE:CG2	2.83	0.41
2:D:100(B):ARG:HB3	2:D:100(D):TYR:CE1	2.56	0.41
1:E:189:ASN:HD22	1:E:210:ARG:H	1.68	0.41
1:E:189:ASN:ND2	1:E:210:ARG:H	2.19	0.41
1:A:21:MET:CG	1:A:73:LEU:HB3	2.50	0.41
2:D:30:ILE:HG22	2:D:71:ASP:CB	2.51	0.41
1:E:75:ILE:HG21	1:E:78:VAL:HG12	2.02	0.41
2:H:117:PRO:HB3	2:H:143:TYR:HB3	2.02	0.41
1:A:117:PHE:HA	1:A:118:PRO:HD3	1.85	0.41
2:B:52(C):VAL:HG21	3:I:607:ILE:CD1	2.51	0.41
2:B:100(B):ARG:HB3	2:B:100(D):TYR:CE1	2.55	0.41
1:C:31:ASN:O	1:C:50:TRP:HA	2.21	0.41
1:C:179:THR:O	1:C:180:LEU:HD12	2.21	0.41
2:D:34:MET:HB3	2:D:76:LEU:HD22	2.02	0.41
2:F:83:ARG:HD3	2:F:83:ARG:HA	1.81	0.41
1:C:35:TRP:CE2	1:C:73:LEU:HB2	2.56	0.41
1:G:22:THR:HG22	1:G:23:CYS:N	2.36	0.41
1:A:71:PHE:CD1	1:A:71:PHE:N	2.88	0.40
2:H:164:PHE:HA	2:H:165:PRO:HD3	1.97	0.40
1:A:114:VAL:HA	1:A:134:PHE:O	2.22	0.40
1:C:32:TYR:HB3	1:C:91:SER:HB3	2.04	0.40
1:E:22:THR:CG2	1:E:23:CYS:N	2.85	0.40
2:F:76:LEU:HD23	2:F:92:CYS:SG	2.61	0.40
1:A:94:LEU:O	1:A:95:ARG:HG3	2.22	0.40
1:C:114:VAL:HA	1:C:134:PHE:O	2.21	0.40
2:D:100(D):TYR:HE2	2:D:100(F):ASP:HB3	1.86	0.40
2:H:34:MET:HB3	2:H:76:LEU:HD22	2.03	0.40
1:C:14:SER:O	1:C:17:GLU:HG3	2.22	0.40
1:G:135:LEU:HD23	1:G:143:ILE:CD1	2.51	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	215/217 (99%)	206 (96%)	9 (4%)	0	100	100
1	C	215/217 (99%)	209 (97%)	6 (3%)	0	100	100
1	E	215/217 (99%)	210 (98%)	5 (2%)	0	100	100
1	G	215/217 (99%)	207 (96%)	8 (4%)	0	100	100
2	B	212/222 (96%)	200 (94%)	12 (6%)	0	100	100
2	D	212/222 (96%)	205 (97%)	7 (3%)	0	100	100
2	F	212/222 (96%)	208 (98%)	4 (2%)	0	100	100
2	H	212/222 (96%)	206 (97%)	6 (3%)	0	100	100
3	I	5/7 (71%)	5 (100%)	0	0	100	100
3	J	5/7 (71%)	5 (100%)	0	0	100	100
3	K	5/7 (71%)	5 (100%)	0	0	100	100
3	L	5/7 (71%)	5 (100%)	0	0	100	100
All	All	1728/1784 (97%)	1671 (97%)	57 (3%)	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	193/193 (100%)	190 (98%)	3 (2%)	58	74
1	C	193/193 (100%)	190 (98%)	3 (2%)	58	74
1	E	193/193 (100%)	190 (98%)	3 (2%)	58	74
1	G	193/193 (100%)	189 (98%)	4 (2%)	48	66
2	B	189/191 (99%)	184 (97%)	5 (3%)	41	58
2	D	189/191 (99%)	184 (97%)	5 (3%)	41	58
2	F	189/191 (99%)	185 (98%)	4 (2%)	48	66

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	H	189/191 (99%)	182 (96%)	7 (4%)	29	43
3	I	7/7 (100%)	7 (100%)	0	100	100
3	J	7/7 (100%)	7 (100%)	0	100	100
3	K	7/7 (100%)	7 (100%)	0	100	100
3	L	7/7 (100%)	7 (100%)	0	100	100
All	All	1556/1564 (100%)	1522 (98%)	34 (2%)	47	65

All (34) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	11	LEU
1	A	107	ARG
1	A	189	ASN
2	B	50	PHE
2	B	100(D)	TYR
2	B	114	THR
2	B	147	PRO
2	B	175	LEU
1	C	1	ASP
1	C	91	SER
1	C	189	ASN
2	D	50	PHE
2	D	100(D)	TYR
2	D	114	THR
2	D	145	PRO
2	D	147	PRO
1	E	30(F)	ARG
1	E	60	ASP
1	E	189	ASN
2	F	50	PHE
2	F	100(D)	TYR
2	F	114	THR
2	F	147	PRO
1	G	30(F)	ARG
1	G	103	LEU
1	G	107	ARG
1	G	189	ASN
2	H	50	PHE
2	H	54	THR
2	H	109	VAL

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Mol	Chain	Res	Type
2	H	110	SER
2	H	111	SER
2	H	145	PRO
2	H	147	PRO

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (52) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	31	ASN
1	A	42	GLN
1	A	79	GLN
1	A	93	ASN
1	A	165	GLN
1	A	189	ASN
1	A	211	ASN
2	B	13	GLN
2	B	32	ASN
2	B	52(A)	ASN
2	B	52(D)	ASN
2	B	153	ASN
2	B	194	ASN
2	B	197	HIS
1	C	31	ASN
1	C	42	GLN
1	C	79	GLN
1	C	165	GLN
1	C	189	ASN
1	C	211	ASN
2	D	52(A)	ASN
2	D	52(D)	ASN
2	D	73	GLN
2	D	81	ASN
2	D	153	ASN
2	D	194	ASN
2	D	197	HIS
1	E	42	GLN
1	E	79	GLN
1	E	93	ASN
1	E	165	GLN
1	E	189	ASN
1	E	211	ASN
2	F	3	ASN

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Mol	Chain	Res	Type
2	F	52(A)	ASN
2	F	52(D)	ASN
2	F	153	ASN
2	F	194	ASN
2	F	197	HIS
1	G	31	ASN
1	G	42	GLN
1	G	79	GLN
1	G	93	ASN
1	G	165	GLN
1	G	189	ASN
1	G	211	ASN
2	H	52(A)	ASN
2	H	52(D)	ASN
2	H	73	GLN
2	H	153	ASN
2	H	194	ASN
2	H	197	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

11 monosaccharides are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
4	NAG	M	1	2,4	14,14,15	0.55	0	17,19,21	0.75	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	NAG	M	2	4	14,14,15	0.55	0	17,19,21	0.78	1 (5%)
4	BMA	M	3	4	11,11,12	0.94	1 (9%)	15,15,17	1.02	1 (6%)
5	NAG	N	1	2,5	14,14,15	0.63	0	17,19,21	0.82	1 (5%)
5	NDG	N	2	5	14,14,15	0.72	0	17,19,21	0.70	0
4	NAG	O	1	2,4	14,14,15	0.68	0	17,19,21	0.75	0
4	NAG	O	2	4	14,14,15	0.48	0	17,19,21	0.81	1 (5%)
4	BMA	O	3	4	11,11,12	0.82	0	15,15,17	0.76	0
6	NAG	P	1	2,6	14,14,15	0.61	0	17,19,21	0.76	1 (5%)
6	NAG	P	2	6	14,14,15	0.74	0	17,19,21	1.22	2 (11%)
6	MAN	P	3	6	11,11,12	0.99	1 (9%)	15,15,17	0.92	2 (13%)

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. '2' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	M	1	2,4	-	3/6/23/26	0/1/1/1
4	NAG	M	2	4	-	4/6/23/26	0/1/1/1
4	BMA	M	3	4	-	2/2/19/22	0/1/1/1
5	NAG	N	1	2,5	-	4/6/23/26	0/1/1/1
5	NDG	N	2	5	-	3/6/23/26	0/1/1/1
4	NAG	O	1	2,4	-	2/6/23/26	0/1/1/1
4	NAG	O	2	4	-	4/6/23/26	0/1/1/1
4	BMA	O	3	4	-	0/2/19/22	0/1/1/1
6	NAG	P	1	2,6	-	4/6/23/26	0/1/1/1
6	NAG	P	2	6	-	4/6/23/26	0/1/1/1
6	MAN	P	3	6	-	0/2/19/22	0/1/1/1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	P	3	MAN	O5-C5	2.04	1.47	1.43
4	M	3	BMA	O5-C1	2.03	1.47	1.43

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	P	2	NAG	C4-C3-C2	-2.97	106.66	111.02
4	O	2	NAG	C2-N2-C7	-2.53	119.50	122.90
6	P	2	NAG	C2-N2-C7	-2.45	119.61	122.90
4	M	3	BMA	C2-C3-C4	-2.44	106.57	110.86
6	P	1	NAG	C2-N2-C7	-2.31	119.81	122.90
6	P	3	MAN	C3-C4-C5	-2.26	106.14	110.23
4	M	2	NAG	C2-N2-C7	-2.13	120.04	122.90
6	P	3	MAN	C2-C3-C4	-2.11	107.14	110.86
5	N	1	NAG	C2-N2-C7	-2.06	120.14	122.90

There are no chirality outliers.

All (30) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	M	2	NAG	C8-C7-N2-C2
4	M	2	NAG	O7-C7-N2-C2
4	O	2	NAG	C8-C7-N2-C2
4	O	2	NAG	O7-C7-N2-C2
5	N	1	NAG	C8-C7-N2-C2
5	N	1	NAG	O7-C7-N2-C2
5	N	2	NDG	C8-C7-N2-C2
5	N	2	NDG	O7-C7-N2-C2
6	P	1	NAG	C8-C7-N2-C2
6	P	1	NAG	O7-C7-N2-C2
6	P	2	NAG	O7-C7-N2-C2
6	P	2	NAG	C8-C7-N2-C2
4	M	2	NAG	O5-C5-C6-O6
4	M	3	BMA	O5-C5-C6-O6
4	M	1	NAG	O5-C5-C6-O6
4	M	2	NAG	C4-C5-C6-O6
4	M	3	BMA	C4-C5-C6-O6
4	M	1	NAG	C4-C5-C6-O6
4	O	2	NAG	O5-C5-C6-O6
6	P	2	NAG	O5-C5-C6-O6
4	O	1	NAG	C8-C7-N2-C2
4	O	1	NAG	O7-C7-N2-C2
5	N	1	NAG	C4-C5-C6-O6
5	N	1	NAG	O5-C5-C6-O6
4	O	2	NAG	C4-C5-C6-O6
6	P	2	NAG	C4-C5-C6-O6
6	P	1	NAG	C4-C5-C6-O6
6	P	1	NAG	O5-C5-C6-O6
5	N	2	NDG	O5-C5-C6-O6

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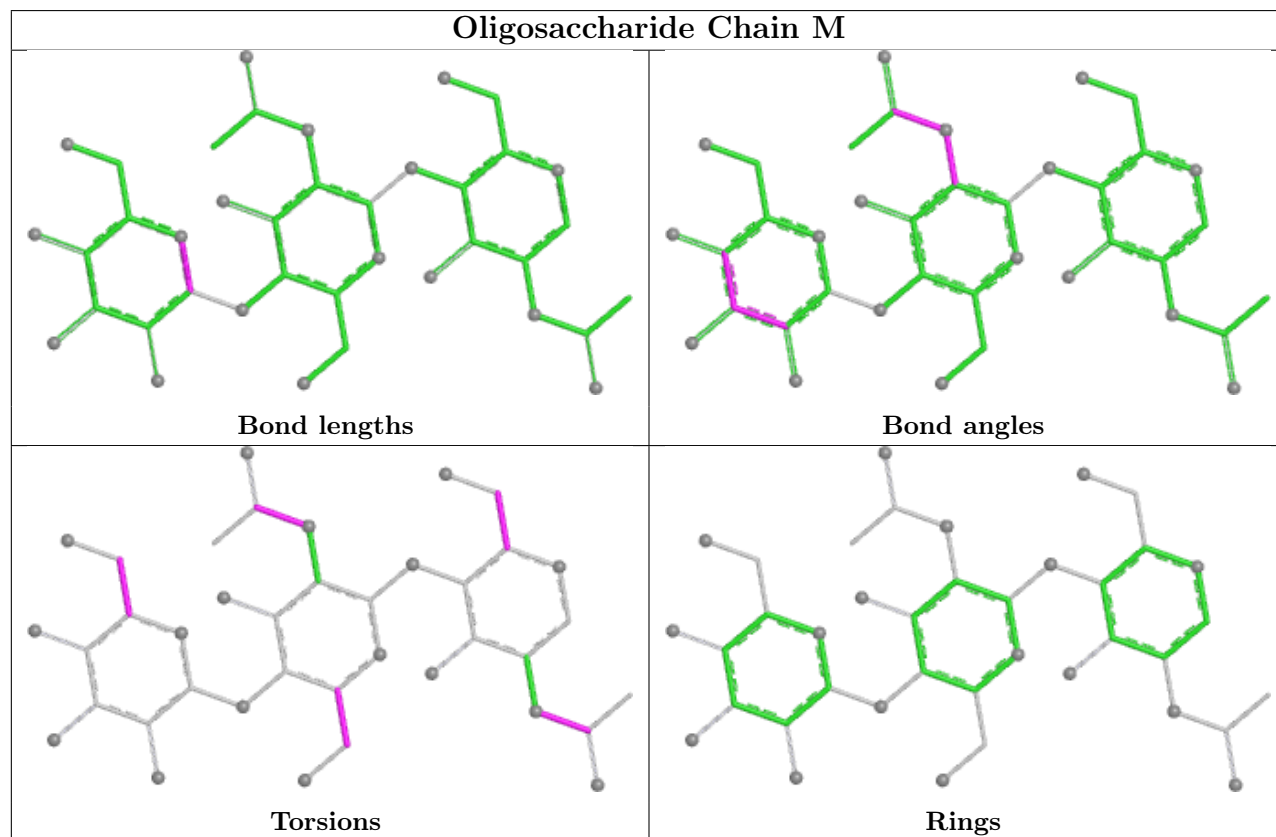
Mol	Chain	Res	Type	Atoms
4	M	1	NAG	O7-C7-N2-C2

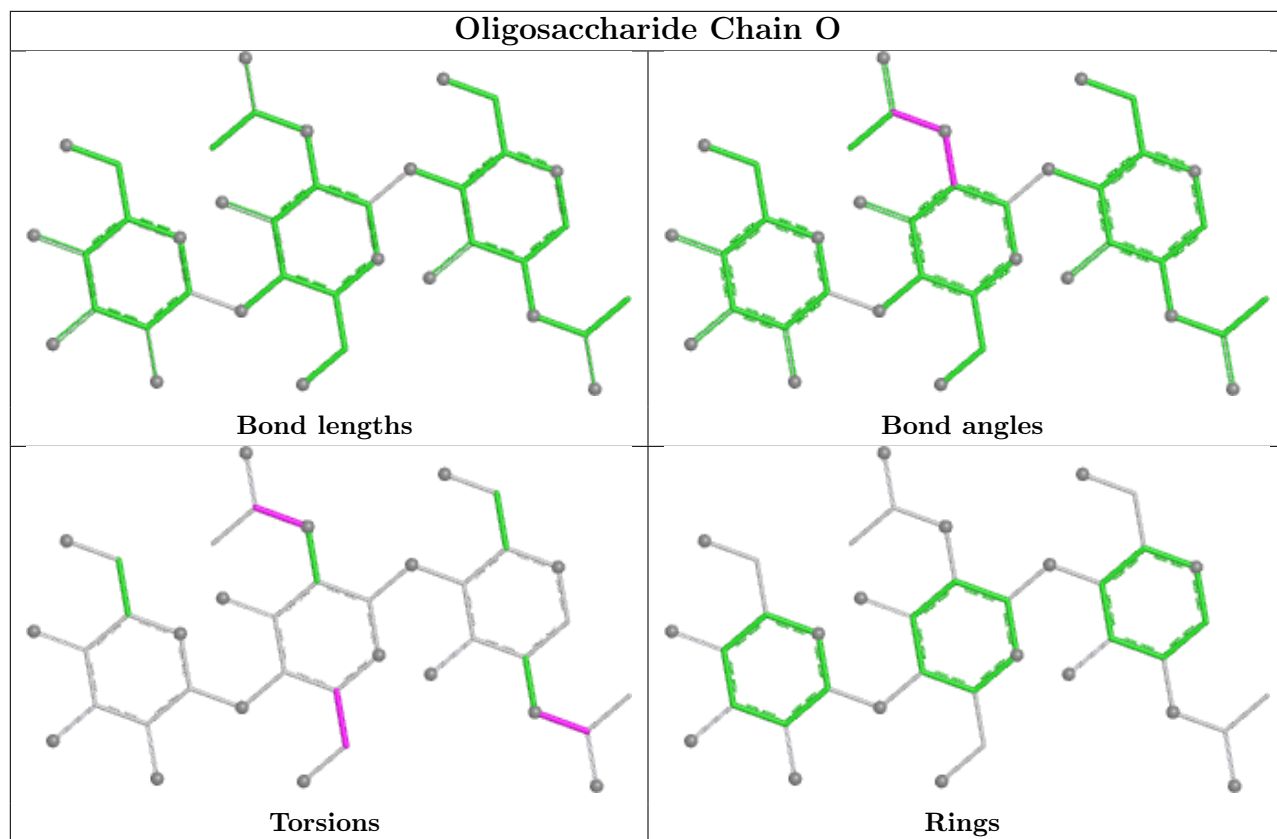
There are no ring outliers.

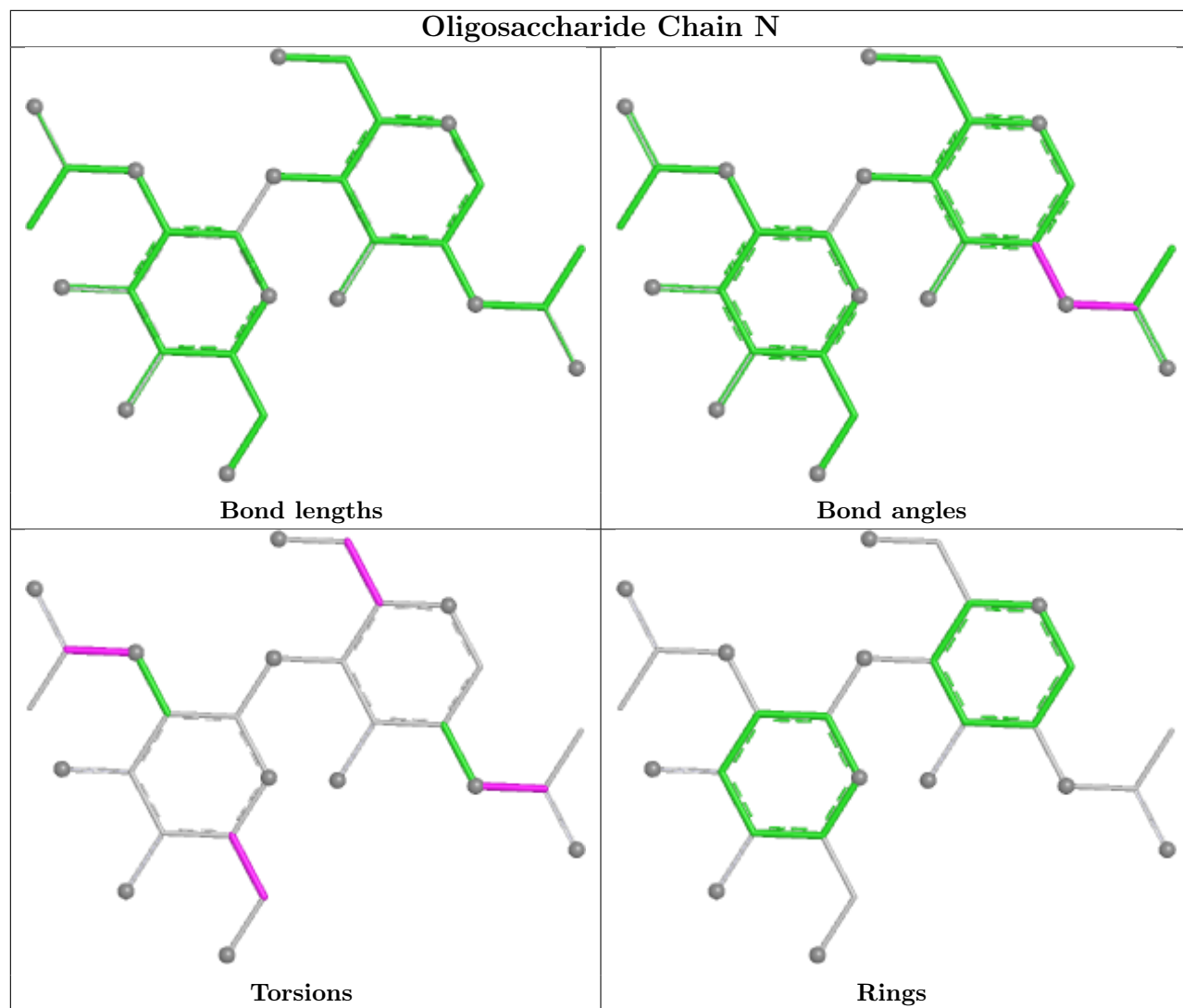
7 monomers are involved in 10 short contacts:

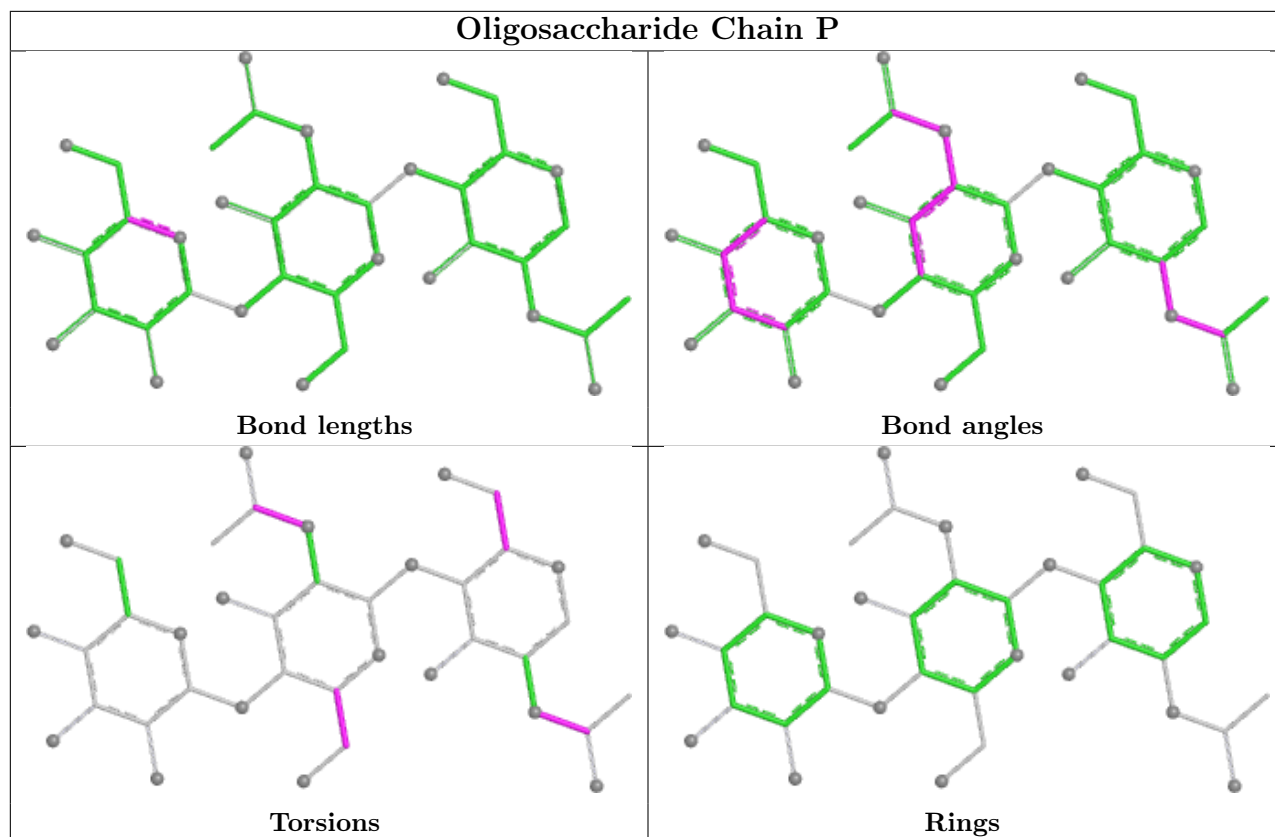
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	P	2	NAG	3	0
4	O	1	NAG	1	0
5	N	2	NDG	1	0
5	N	1	NAG	1	0
6	P	1	NAG	1	0
6	P	3	MAN	3	0
4	M	1	NAG	4	0

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](#)

7 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
7	SO4	A	704	-	4,4,4	0.34	0	6,6,6	0.18	0
7	SO4	C	703	-	4,4,4	0.38	0	6,6,6	0.12	0
7	SO4	E	701	-	4,4,4	0.39	0	6,6,6	0.11	0
7	SO4	C	705	-	4,4,4	0.36	0	6,6,6	0.13	0
7	SO4	E	706	-	4,4,4	0.38	0	6,6,6	0.10	0
7	SO4	A	702	-	4,4,4	0.40	0	6,6,6	0.10	0
7	SO4	G	707	-	4,4,4	0.39	0	6,6,6	0.07	0

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

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	217/217 (100%)	0.33	15 (6%) 24 26	21, 41, 74, 117	0
1	C	217/217 (100%)	0.47	32 (14%) 7 8	19, 40, 102, 134	0
1	E	217/217 (100%)	0.20	13 (5%) 29 31	20, 37, 81, 152	0
1	G	217/217 (100%)	0.15	13 (5%) 29 31	19, 36, 80, 119	0
2	B	216/222 (97%)	0.65	33 (15%) 6 7	23, 43, 90, 129	0
2	D	216/222 (97%)	0.17	20 (9%) 16 17	17, 34, 86, 125	0
2	F	216/222 (97%)	-0.11	4 (1%) 66 67	17, 32, 63, 104	0
2	H	216/222 (97%)	-0.17	3 (1%) 73 74	16, 31, 59, 126	0
3	I	7/7 (100%)	0.90	1 (14%) 7 8	42, 55, 61, 67	0
3	J	7/7 (100%)	0.67	1 (14%) 7 8	29, 36, 66, 74	0
3	K	7/7 (100%)	0.61	1 (14%) 7 8	35, 36, 50, 66	0
3	L	7/7 (100%)	0.27	1 (14%) 7 8	32, 33, 59, 72	0
All	All	1760/1784 (98%)	0.22	137 (7%) 20 22	16, 37, 82, 152	0

All (137) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	D	184	SER	5.5
2	D	187	PRO	5.0
2	B	156	SER	4.8
1	E	211	ASN	4.7
2	D	188	SER	4.6
2	F	113	LYS	4.4
2	B	191	VAL	4.4
3	J	607	ILE	4.4
1	E	1	ASP	4.2
1	A	122	GLU	4.1
1	A	125	THR	3.9

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Mol	Chain	Res	Type	RSRZ
2	B	190	THR	3.9
1	A	151	GLY	3.9
1	E	190	SER	3.8
1	C	180	LEU	3.7
2	B	155	GLY	3.7
2	D	190	THR	3.7
1	G	1	ASP	3.7
1	A	121	SER	3.5
1	C	124	LEU	3.5
2	D	185	THR	3.5
2	B	204	VAL	3.4
2	B	199	ALA	3.4
1	C	152	SER	3.4
3	K	607	ILE	3.4
2	B	203	LYS	3.4
1	G	162	TRP	3.4
2	B	187	PRO	3.3
1	E	68	GLY	3.3
1	E	156	ASN	3.3
1	C	190	SER	3.2
2	D	189	GLU	3.2
2	D	208	ILE	3.2
2	B	192	THR	3.2
3	L	607	ILE	3.2
1	C	118	PRO	3.1
1	A	156	ASN	3.1
2	B	61	VAL	3.1
2	D	192	THR	3.1
2	D	207	LYS	3.1
1	C	150	ASP	3.0
1	C	125	THR	3.0
1	C	186	GLU	2.9
2	H	189	GLU	2.9
1	C	181	THR	2.9
1	C	208	PHE	2.9
1	E	125	THR	2.9
1	C	151	GLY	2.9
2	B	150	VAL	2.8
1	C	128	GLY	2.8
2	H	131	ASN	2.8
2	B	120	TYR	2.8
2	D	113	LYS	2.8

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Mol	Chain	Res	Type	RSRZ
2	B	197	HIS	2.8
1	A	1	ASP	2.8
1	A	211	ASN	2.8
1	G	211	ASN	2.8
1	C	179	THR	2.8
2	D	209	VAL	2.7
1	A	189	ASN	2.7
1	C	126	SER	2.7
2	D	191	VAL	2.7
2	B	196	ALA	2.7
1	E	209	ASN	2.7
2	B	205	ASP	2.7
1	C	210	ARG	2.6
2	B	209	VAL	2.6
2	B	193	CYS	2.6
1	A	126	SER	2.6
2	B	132	SER	2.6
2	D	133	MET	2.6
1	G	201	THR	2.6
1	C	189	ASN	2.6
1	C	156	ASN	2.6
1	C	209	ASN	2.6
1	E	129	ALA	2.5
1	C	187	ARG	2.5
1	E	162	TRP	2.5
1	G	180	LEU	2.5
1	C	121	SER	2.5
2	F	209	VAL	2.5
1	G	200	SER	2.5
2	B	154	SER	2.5
2	D	183	SER	2.5
1	G	145	VAL	2.5
2	D	171	ASP	2.4
1	C	149	ILE	2.4
2	B	159	SER	2.4
2	B	149	THR	2.4
2	D	156	SER	2.4
2	D	181	VAL	2.4
1	E	168	LYS	2.4
2	B	207	LYS	2.4
1	G	156	ASN	2.3
1	C	188	HIS	2.3

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Mol	Chain	Res	Type	RSRZ
1	A	146	LYS	2.3
1	C	211	ASN	2.3
1	G	209	ASN	2.3
1	G	182	LYS	2.3
1	G	208	PHE	2.3
1	C	91	SER	2.3
1	A	128	GLY	2.3
1	C	127	GLY	2.3
2	B	131	ASN	2.2
2	D	157	LEU	2.2
2	B	148	VAL	2.2
2	B	118	SER	2.2
3	I	607	ILE	2.2
1	E	210	ARG	2.2
1	A	152	SER	2.2
2	F	98	SER	2.2
1	C	162	TRP	2.2
2	D	131	ASN	2.2
2	B	198	PRO	2.2
1	C	168	LYS	2.2
1	A	127	GLY	2.1
1	C	184	GLU	2.1
1	G	189	ASN	2.1
2	B	121	PRO	2.1
1	E	189	ASN	2.1
2	B	186	TRP	2.1
2	B	194	ASN	2.1
1	C	131	VAL	2.1
2	B	208	ILE	2.1
2	D	138	CYS	2.1
1	C	129	ALA	2.1
1	C	30(E)	ARG	2.0
1	E	151	GLY	2.0
2	B	188	SER	2.0
1	A	141	LYS	2.0
1	C	182	LYS	2.0
2	F	30	ILE	2.0
2	H	133	MET	2.0
1	A	120	SER	2.0
1	G	77	SER	2.0
2	B	184	SER	2.0
2	B	138	CYS	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](#)

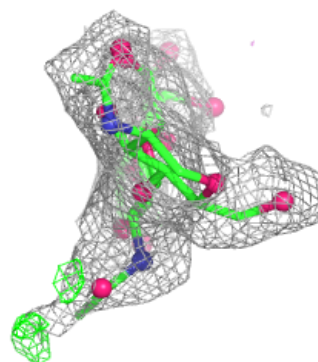
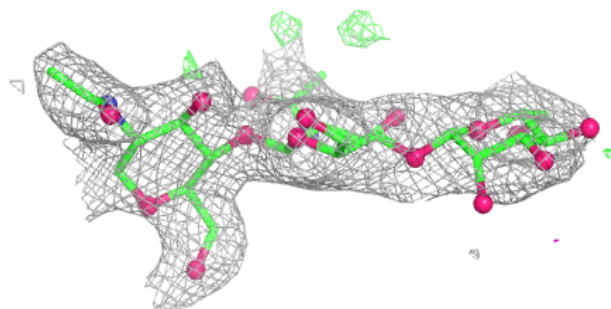
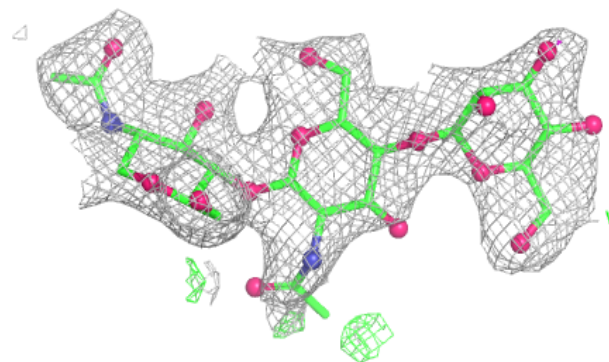
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
4	BMA	O	3	11/12	0.27	0.19	90,90,90,90	0
4	BMA	M	3	11/12	0.43	0.16	93,93,93,93	0
5	NDG	N	2	14/15	0.55	0.18	89,94,96,96	0
4	NAG	M	2	14/15	0.61	0.17	85,90,92,92	0
6	MAN	P	3	11/12	0.61	0.13	80,80,80,80	0
6	NAG	P	2	14/15	0.68	0.15	76,81,82,83	0
4	NAG	O	2	14/15	0.71	0.14	79,84,85,86	0
5	NAG	N	1	14/15	0.73	0.22	76,81,82,83	0
4	NAG	M	1	14/15	0.82	0.11	51,56,58,58	0
6	NAG	P	1	14/15	0.84	0.14	52,57,59,59	0
4	NAG	O	1	14/15	0.87	0.10	38,43,45,45	0

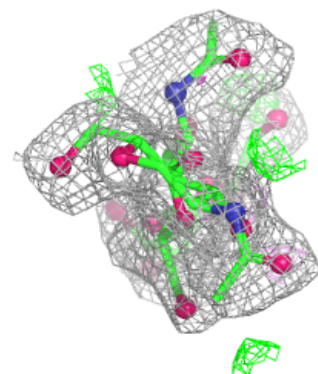
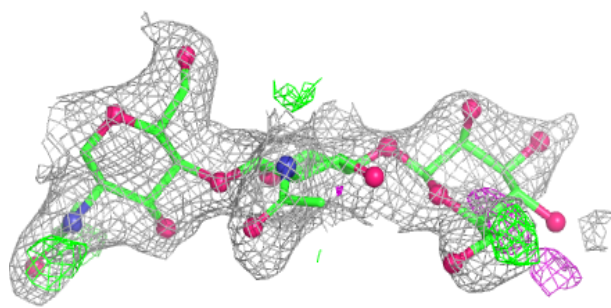
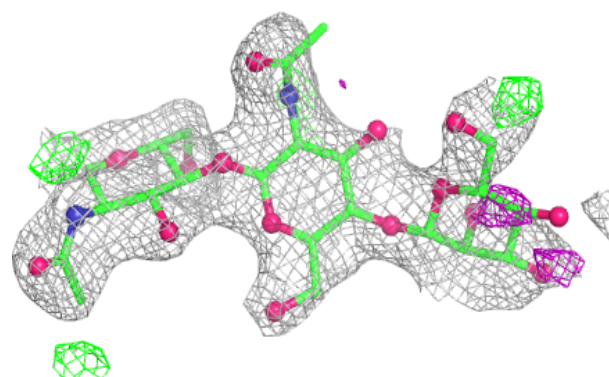
The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around Chain M:

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

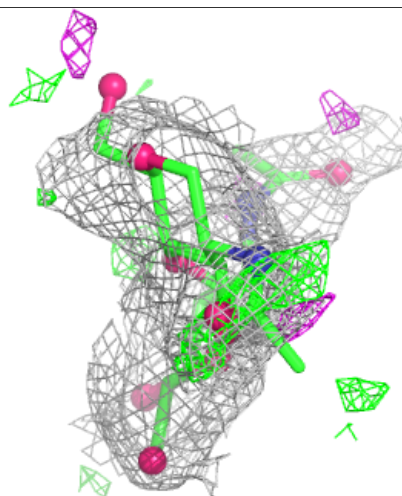
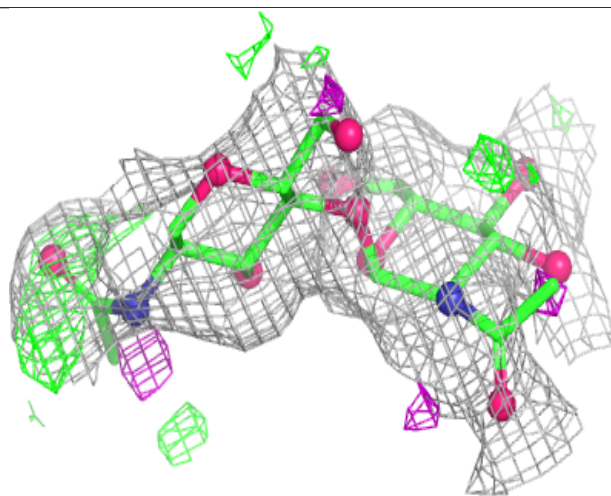
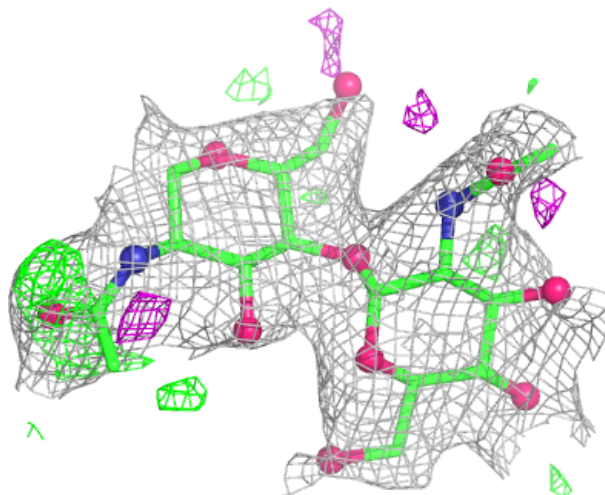
**Electron density around Chain O:**

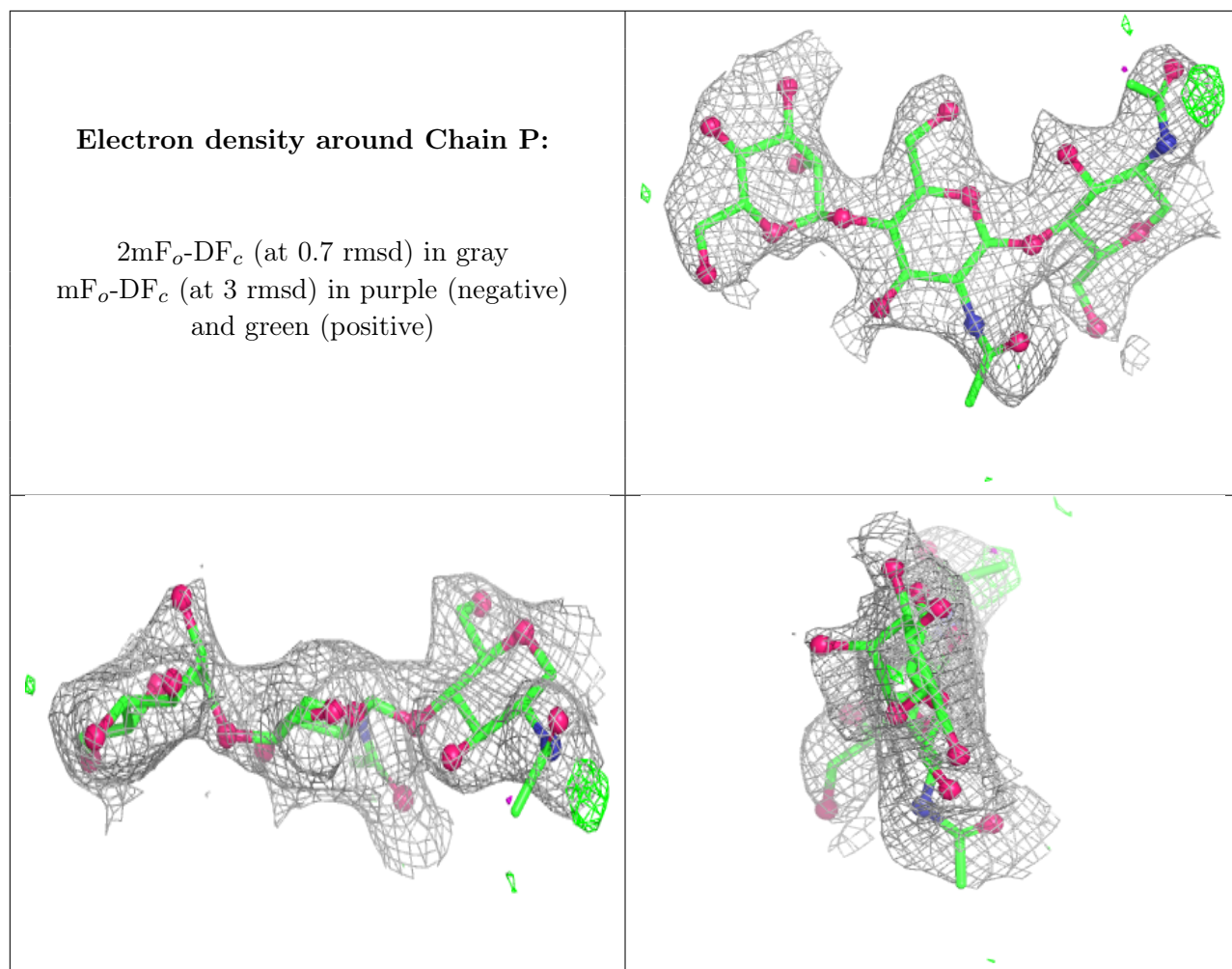
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around Chain N:

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





6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
7	SO4	A	702	5/5	0.74	0.13	46,47,47,48	5
7	SO4	E	701	5/5	0.90	0.09	46,47,47,48	5
7	SO4	C	703	5/5	0.92	0.09	46,47,47,47	5
7	SO4	A	704	5/5	0.94	0.08	46,47,47,47	5
7	SO4	G	707	5/5	0.94	0.07	46,47,47,47	5
7	SO4	E	706	5/5	0.95	0.07	46,47,47,47	5
7	SO4	C	705	5/5	0.95	0.06	46,47,47,47	5

6.5 Other polymers [i](#)

There are no such residues in this entry.