



Full wwPDB X-ray Structure Validation Report ⓘ

Jun 12, 2024 – 11:03 PM EDT

PDB ID : 1KX1
Title : Rat mannose protein A complexed with Man6-GlcNAc2-Asn
Authors : Ng, K.K.; Kolatkar, A.R.; Park-Snyder, S.; Feinberg, H.; Clark, D.A.; Drickamer, K.; Weis, W.I.
Deposited on : 2002-01-30
Resolution : 2.80 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 : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.36.2
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) : 2.36.2

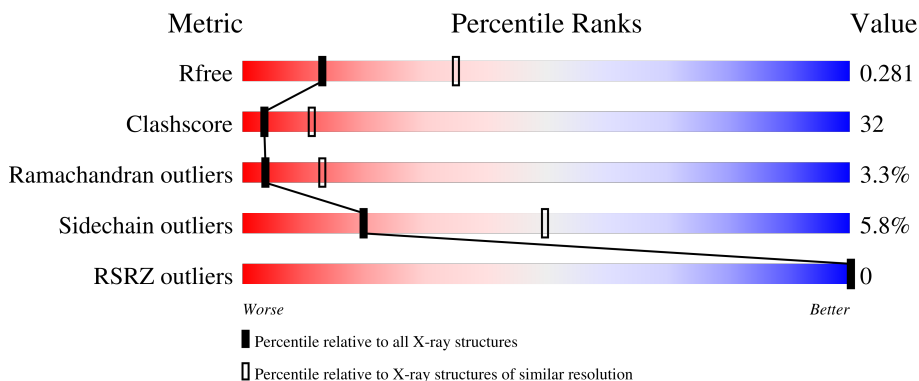
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 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.




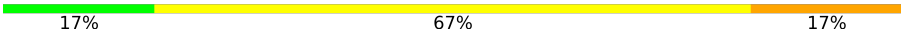

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

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	149	 50% 44% 5%
1	B	149	 52% 43% 5%
1	C	149	 48% 42% 10%
1	D	149	 49% 48%
1	E	149	 50% 48%

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Mol	Chain	Length	Quality of chain
1	F	149	 47% 48% 5%
2	G	6	 17% 67% 17%
2	H	6	 33% 50% 17%

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	MAN	G	1	X	-	-	-
2	MAN	G	4	-	-	X	-
2	MAN	H	1	X	-	-	-

2 Entry composition [i](#)

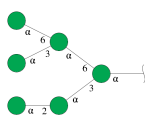
There are 5 unique types of molecules in this entry. The entry contains 7139 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 MANNOSE-BINDING PROTEIN A.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	149	1153	721	198	226	8	0	0	0
1	B	149	1153	721	198	226	8	0	0	0
1	C	149	1153	721	198	226	8	0	0	0
1	D	149	1153	721	198	226	8	0	0	0
1	E	149	1153	721	198	226	8	0	0	0
1	F	149	1153	721	198	226	8	0	0	0

- Molecule 2 is an oligosaccharide called alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]alpha-D-mannopyranose-(1-6)]alpha-D-mannopyranose.



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	Trace
			Total	C	O			
2	G	6	67	36	31	0	0	0
2	H	6	67	36	31	0	0	0

- Molecule 3 is CALCIUM ION (three-letter code: CA) (formula: Ca).

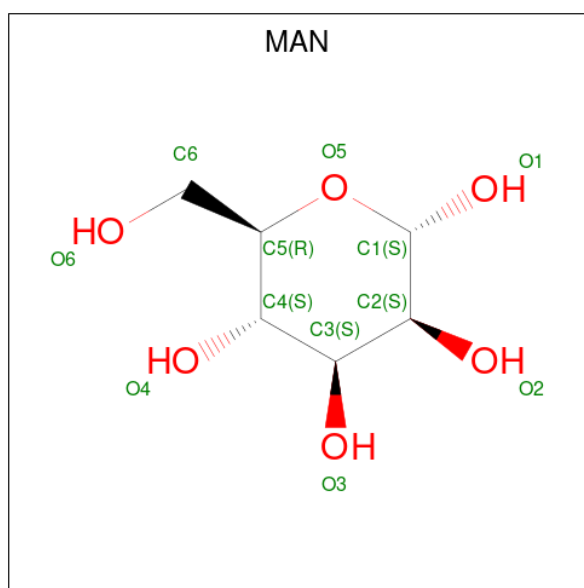
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Ca		
3	A	3	3	3	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	B	3	Total Ca 3 3	0	0
3	C	3	Total Ca 3 3	0	0
3	D	3	Total Ca 3 3	0	0
3	E	3	Total Ca 3 3	0	0
3	F	3	Total Ca 3 3	0	0

- Molecule 4 is alpha-D-mannopyranose (three-letter code: MAN) (formula: C₆H₁₂O₆).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total C O 12 6 6	0	0
4	E	1	Total C O 12 6 6	0	0

- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	9	Total O 9 9	0	0
5	B	11	Total O 11 11	0	0

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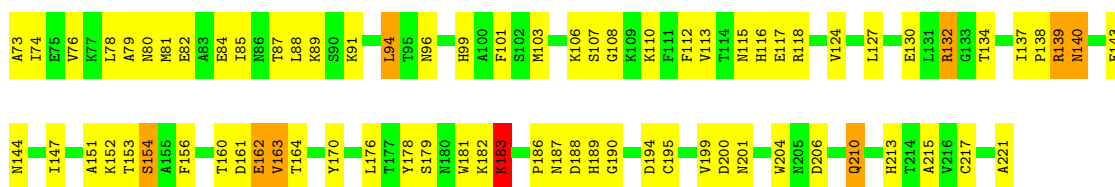
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	C	8	Total O 8 8	0	0
5	D	5	Total O 5 5	0	0
5	E	8	Total O 8 8	0	0
5	F	4	Total O 4 4	0	0

3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

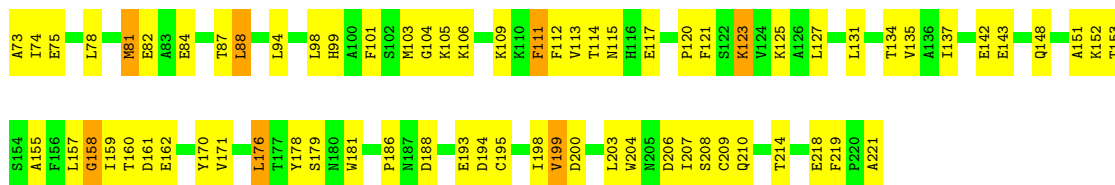
- Molecule 1: MANNOSE-BINDING PROTEIN A

Chain A: 



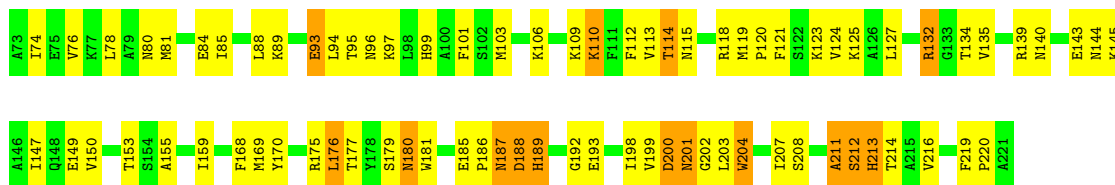
- Molecule 1: MANNOSE-BINDING PROTEIN A

Chain B: 



- Molecule 1: MANNOSE-BINDING PROTEIN A

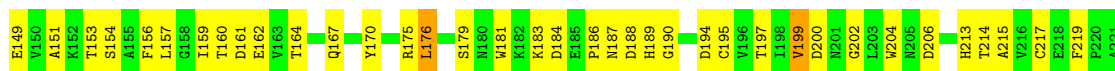
Chain C: 



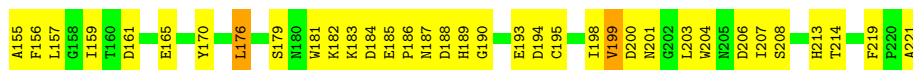
- Molecule 1: MANNOSE-BINDING PROTEIN A

Chain D: 

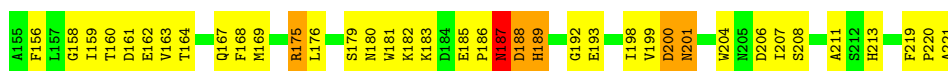




- Molecule 1: MANNULOSE-BINDING PROTEIN A



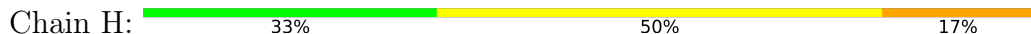
- Molecule 1: MANNULOSE-BINDING PROTEIN A



- Molecule 2: alpha-D-mannopyranose-(1-2)-[alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]alpha-D-mannopyranose-(1-6)]alpha-D-mannopyranose



- Molecule 2: alpha-D-mannopyranose-(1-2)-[alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]alpha-D-mannopyranose-(1-6)]alpha-D-mannopyranose



4 Data and refinement statistics i

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	61.80Å 255.56Å 61.79Å 90.00° 119.60° 90.00°	Depositor
Resolution (Å)	37.04 – 2.80 37.03 – 2.81	Depositor EDS
% Data completeness (in resolution range)	91.1 (37.04-2.80) 91.1 (37.03-2.81)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.04	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.32 (at 2.81Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.242 , 0.287 0.239 , 0.281	Depositor DCC
R_{free} test set	3533 reflections (9.34%)	wwPDB-VP
Wilson B-factor (Å ²)	33.9	Xtriage
Anisotropy	0.202	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.29 , 5.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtriage
Estimated twinning fraction	0.031 for l,k,-h-l 0.031 for -h-l,k,h 0.034 for -h-l,-k,l 0.036 for h,-k,-h-l 0.478 for l,-k,h	Xtriage
F_o, F_c correlation	0.90	EDS
Total number of atoms	7139	wwPDB-VP
Average B, all atoms (Å ²)	38.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.84% 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: MAN, CA

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	0.41	0/1173	0.62	0/1579
1	B	0.43	0/1173	0.66	0/1579
1	C	0.42	0/1173	0.64	0/1579
1	D	0.40	0/1173	0.60	0/1579
1	E	0.43	0/1173	0.64	0/1579
1	F	0.39	0/1173	0.61	0/1579
All	All	0.41	0/7038	0.63	0/9474

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1153	0	1133	87	0
1	B	1153	0	1133	72	0
1	C	1153	0	1133	78	0
1	D	1153	0	1133	85	0
1	E	1153	0	1133	83	0
1	F	1153	0	1133	81	0
2	G	67	0	55	7	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	H	67	0	56	5	0
3	A	3	0	0	0	0
3	B	3	0	0	0	0
3	C	3	0	0	0	0
3	D	3	0	0	0	0
3	E	3	0	0	0	0
3	F	3	0	0	0	0
4	B	12	0	11	0	0
4	E	12	0	11	1	0
5	A	9	0	0	0	0
5	B	11	0	0	1	0
5	C	8	0	0	3	0
5	D	5	0	0	0	0
5	E	8	0	0	0	0
5	F	4	0	0	1	0
All	All	7139	0	6931	444	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 32.

All (444) 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:D:106:LYS:HD2	1:E:117:GLU:HG3	1.38	1.05
1:F:138:PRO:HG3	1:F:147:ILE:HD12	1.37	1.04
1:B:207:ILE:HG13	1:B:208:SER:H	1.25	0.97
1:A:118:ARG:HH22	1:A:154:SER:HB3	1.32	0.94
1:B:199:VAL:HG23	1:B:200:ASP:H	1.31	0.93
1:F:193:GLU:OE1	2:H:3:MAN:H62	1.72	0.90
2:H:2:MAN:O3	2:H:3:MAN:H2	1.76	0.86
1:A:88:LEU:HD23	1:C:88:LEU:HD23	1.59	0.85
1:C:110:LYS:HE2	1:C:143:GLU:OE2	1.78	0.83
1:C:179:SER:HA	1:C:204:TRP:CH2	2.14	0.83
1:D:118:ARG:NH2	1:D:153:THR:HG22	1.93	0.83
1:A:118:ARG:NH2	1:A:153:THR:HG22	1.94	0.82
1:C:120:PRO:HD2	1:C:123:LYS:HG3	1.59	0.82
1:A:89:LYS:HG2	1:C:88:LEU:HD11	1.62	0.82
1:E:207:ILE:HG13	1:E:208:SER:H	1.46	0.81
1:C:168:PHE:CE1	1:C:186:PRO:HG3	2.15	0.81
1:E:111:PHE:CE2	1:E:219:PHE:HB2	2.16	0.80
1:F:179:SER:HA	1:F:204:TRP:CH2	2.17	0.80

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:181:TRP:HA	1:B:204:TRP:HB2	1.64	0.80
1:C:109:LYS:HA	5:C:308:HOH:O	1.82	0.79
1:D:88:LEU:HD23	1:F:88:LEU:HD13	1.65	0.79
1:D:175:ARG:NH2	1:D:175:ARG:HB2	1.98	0.79
1:A:118:ARG:HH21	1:A:153:THR:HG22	1.46	0.78
1:B:120:PRO:HD2	1:B:123:LYS:HG3	1.64	0.78
2:H:4:MAN:H2	2:H:5:MAN:H5	1.65	0.77
2:G:4:MAN:H2	2:G:5:MAN:H5	1.67	0.75
1:B:207:ILE:HG13	1:B:208:SER:N	2.01	0.75
1:C:207:ILE:HG12	1:C:208:SER:N	2.02	0.74
1:A:156:PHE:CD1	1:A:213:HIS:HB2	2.22	0.74
1:A:154:SER:OG	1:A:213:HIS:ND1	2.15	0.74
1:E:73:ALA:HB1	1:E:76:VAL:HB	1.70	0.72
1:A:139:ARG:HH21	1:A:139:ARG:HG3	1.53	0.72
1:A:210:GLN:N	1:A:210:GLN:HE21	1.87	0.72
1:E:170:TYR:CE1	1:E:176:LEU:HA	2.25	0.72
1:F:167:GLN:HG3	1:F:175:ARG:HE	1.54	0.71
1:F:187:ASN:C	1:F:187:ASN:HD22	1.92	0.71
1:C:81:MET:O	1:C:85:ILE:HG12	1.90	0.71
1:B:104:GLY:O	1:B:106:LYS:HE3	1.89	0.71
1:B:159:ILE:HD13	1:B:176:LEU:HD11	1.73	0.71
1:C:93:GLU:OE1	1:C:97:LYS:HE2	1.90	0.71
1:D:175:ARG:HB2	1:D:175:ARG:HH21	1.56	0.70
1:A:108:GLY:O	1:A:221:ALA:HB1	1.92	0.70
1:E:181:TRP:HA	1:E:204:TRP:HB2	1.71	0.70
1:D:160:THR:HB	1:D:162:GLU:HG3	1.73	0.70
1:A:156:PHE:CE1	1:A:213:HIS:HB2	2.27	0.69
1:E:105:LYS:NZ	1:E:109:LYS:O	2.24	0.69
1:C:155:ALA:HB2	1:C:214:THR:HB	1.73	0.69
1:C:207:ILE:HG12	1:C:208:SER:H	1.58	0.69
1:F:163:VAL:HG13	1:F:164:THR:N	2.08	0.69
1:B:105:LYS:HZ1	1:B:221:ALA:HA	1.58	0.69
1:D:161:ASP:OD1	1:D:194:ASP:HA	1.93	0.69
1:B:111:PHE:CE2	1:B:219:PHE:HB2	2.29	0.68
1:A:161:ASP:OD1	1:A:194:ASP:HA	1.94	0.67
1:B:121:PHE:CE2	1:B:125:LYS:HE3	2.29	0.67
1:B:105:LYS:NZ	1:B:109:LYS:O	2.27	0.67
1:A:81:MET:SD	1:B:82:GLU:HG2	2.36	0.66
1:E:134:THR:HG22	1:E:135:VAL:N	2.11	0.66
1:C:110:LYS:HE2	1:C:143:GLU:CD	2.16	0.65
1:C:114:THR:HB	1:C:216:VAL:HG22	1.78	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:182:LYS:HE2	1:F:185:GLU:HG3	1.79	0.65
1:C:211:ALA:O	1:C:212:SER:HB2	1.96	0.65
1:E:113:VAL:HG12	1:E:114:THR:N	2.11	0.65
1:B:105:LYS:NZ	1:B:221:ALA:HA	2.11	0.65
1:D:74:ILE:HG22	1:D:74:ILE:O	1.96	0.65
1:D:138:PRO:HD3	1:D:157:LEU:HD22	1.78	0.65
1:A:163:VAL:HG23	1:A:164:THR:H	1.62	0.64
1:F:159:ILE:HG21	1:F:176:LEU:HD11	1.78	0.64
1:E:182:LYS:HD3	1:E:203:LEU:HD13	1.79	0.64
1:D:110:LYS:HE2	1:D:143:GLU:CD	2.18	0.64
1:F:163:VAL:HG13	1:F:164:THR:H	1.62	0.63
1:D:101:PHE:HE1	1:E:127:LEU:HD21	1.63	0.63
1:F:187:ASN:HD22	1:F:189:HIS:H	1.45	0.63
2:G:1:MAN:H61	2:G:4:MAN:H5	1.80	0.63
1:D:73:ALA:C	1:D:75:GLU:H	2.02	0.63
1:E:207:ILE:HG13	1:E:208:SER:N	2.13	0.63
1:D:101:PHE:CE1	1:E:127:LEU:HD21	2.34	0.63
1:C:76:VAL:HG12	1:C:80:ASN:HD21	1.63	0.62
1:C:168:PHE:HE1	1:C:186:PRO:HG3	1.61	0.62
1:A:200:ASP:O	1:A:201:ASN:HB2	1.99	0.62
1:C:145:LYS:O	1:C:149:GLU:HG2	1.99	0.62
1:F:187:ASN:O	1:F:189:HIS:N	2.33	0.62
1:D:88:LEU:HD21	1:E:88:LEU:HB3	1.82	0.62
1:D:99:HIS:NE2	1:F:99:HIS:HD2	1.97	0.62
1:D:124:VAL:HG13	1:D:215:ALA:HB1	1.81	0.62
1:A:139:ARG:HH21	1:A:139:ARG:CG	2.13	0.62
1:C:74:ILE:O	1:C:78:LEU:HD13	2.00	0.62
1:D:74:ILE:HD13	1:E:75:GLU:OE1	2.00	0.62
1:F:160:THR:HB	1:F:162:GLU:HG3	1.81	0.62
1:D:118:ARG:HH22	1:D:153:THR:HG22	1.62	0.61
1:E:88:LEU:HD21	1:F:89:LYS:HG3	1.82	0.61
1:E:193:GLU:HG2	1:E:207:ILE:C	2.20	0.61
1:B:199:VAL:HG23	1:B:200:ASP:N	2.09	0.61
1:E:120:PRO:HD2	1:E:123:LYS:HG3	1.82	0.61
1:D:81:MET:SD	1:E:82:GLU:HG2	2.39	0.61
1:E:179:SER:HA	1:E:204:TRP:CZ3	2.35	0.61
1:A:124:VAL:HG22	1:A:215:ALA:HB2	1.83	0.61
1:C:119:MET:HG3	1:C:124:VAL:HG23	1.82	0.60
1:B:113:VAL:HG12	1:B:114:THR:N	2.16	0.60
1:A:137:ILE:HD13	1:A:170:TYR:HD2	1.64	0.60
1:F:159:ILE:CG2	1:F:176:LEU:HD11	2.31	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:117:GLU:HB3	1:E:119:MET:CE	2.31	0.60
1:A:106:LYS:HB3	1:B:117:GLU:OE2	2.01	0.60
1:C:159:ILE:HG23	1:C:176:LEU:HD21	1.82	0.60
1:D:97:LYS:HZ1	1:E:130:GLU:CD	2.05	0.60
1:E:161:ASP:OD1	1:E:194:ASP:HA	2.01	0.60
1:C:187:ASN:ND2	1:C:189:HIS:HB2	2.17	0.60
1:F:186:PRO:HB2	5:F:38:HOH:O	2.02	0.60
1:E:123:LYS:HE3	1:E:123:LYS:HA	1.84	0.59
1:F:167:GLN:CG	1:F:175:ARG:HE	2.15	0.58
1:C:76:VAL:HG12	1:C:80:ASN:ND2	2.18	0.58
1:C:199:VAL:O	1:C:201:ASN:N	2.36	0.58
1:C:121:PHE:CE2	1:C:125:LYS:HE2	2.39	0.58
1:B:170:TYR:CE1	1:B:176:LEU:HA	2.39	0.58
1:C:159:ILE:CG2	1:C:176:LEU:HD21	2.33	0.58
1:E:101:PHE:CD1	1:F:115:ASN:HB3	2.38	0.58
1:A:189:HIS:ND1	1:A:190:GLY:N	2.51	0.58
1:D:118:ARG:HH12	1:D:154:SER:HB3	1.68	0.57
2:G:1:MAN:H61	2:G:4:MAN:C5	2.33	0.57
1:B:113:VAL:HG12	1:B:114:THR:H	1.68	0.57
1:A:127:LEU:HD12	1:A:127:LEU:O	2.04	0.57
1:C:84:GLU:O	1:C:88:LEU:HD13	2.04	0.57
1:E:91:LYS:HB3	1:F:92:LEU:HD21	1.86	0.57
1:B:88:LEU:HD21	1:C:89:LYS:HG2	1.86	0.57
1:E:134:THR:CG2	1:E:135:VAL:N	2.68	0.57
1:B:134:THR:CG2	1:B:135:VAL:N	2.68	0.57
1:A:110:LYS:HE2	1:A:143:GLU:CD	2.24	0.56
1:D:78:LEU:HD23	1:D:78:LEU:O	2.06	0.56
1:A:80:ASN:O	1:A:84:GLU:HG2	2.06	0.56
1:A:195:CYS:O	1:A:206:ASP:HA	2.05	0.56
1:F:119:MET:HG3	1:F:124:VAL:HG23	1.87	0.56
1:A:127:LEU:HD21	1:C:101:PHE:HE1	1.70	0.56
1:B:134:THR:HG22	1:B:135:VAL:O	2.05	0.56
1:F:187:ASN:ND2	1:F:189:HIS:H	2.03	0.56
1:D:124:VAL:HG22	1:D:215:ALA:HB2	1.88	0.56
1:E:148:GLN:HB2	1:E:198:ILE:HD11	1.89	0.55
1:B:199:VAL:HG22	1:B:203:LEU:O	2.06	0.55
1:D:88:LEU:HD23	1:F:88:LEU:CD1	2.34	0.55
1:D:151:ALA:C	1:D:153:THR:H	2.09	0.55
1:D:189:HIS:ND1	1:D:190:GLY:N	2.55	0.55
1:B:148:GLN:HB2	1:B:198:ILE:HD11	1.89	0.55
1:C:187:ASN:O	1:C:189:HIS:N	2.40	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:145:LYS:HA	1:E:148:GLN:HE21	1.72	0.54
1:D:130:GLU:HG2	1:F:97:LYS:HZ1	1.72	0.54
1:D:156:PHE:CD1	1:D:213:HIS:HB2	2.42	0.54
1:F:181:TRP:CD2	1:F:186:PRO:HD3	2.41	0.54
1:D:117:GLU:OE1	1:F:107:SER:N	2.37	0.54
1:B:160:THR:OG1	1:B:162:GLU:HG3	2.07	0.54
1:D:130:GLU:HG2	1:F:97:LYS:NZ	2.23	0.54
1:E:157:LEU:HD21	1:E:198:ILE:HB	1.89	0.54
1:B:84:GLU:O	1:B:88:LEU:HD23	2.07	0.54
1:A:118:ARG:NH2	1:A:154:SER:HB3	2.14	0.54
1:E:78:LEU:HD12	1:E:78:LEU:H	1.73	0.54
1:C:200:ASP:O	1:C:201:ASN:HB2	2.08	0.54
1:C:187:ASN:C	1:C:189:HIS:H	2.11	0.53
1:F:146:ALA:O	1:F:150:VAL:HG23	2.08	0.53
1:A:94:LEU:HD21	1:B:131:LEU:HA	1.90	0.53
1:A:181:TRP:CZ3	1:A:186:PRO:HB3	2.44	0.53
1:C:118:ARG:HA	1:C:213:HIS:O	2.08	0.53
1:E:138:PRO:HB3	1:E:147:ILE:HD12	1.90	0.53
1:B:105:LYS:HB2	1:B:111:PHE:HB3	1.90	0.53
1:B:106:LYS:HE2	1:C:115:ASN:O	2.08	0.53
1:F:169:MET:SD	1:F:175:ARG:HG2	2.49	0.53
1:A:73:ALA:O	1:A:76:VAL:N	2.42	0.52
1:A:115:ASN:O	1:A:116:HIS:HB2	2.09	0.52
1:A:127:LEU:HD21	1:C:101:PHE:CE1	2.45	0.52
1:F:105:LYS:HD2	1:F:111:PHE:CD2	2.44	0.52
1:A:179:SER:HB2	1:A:181:TRP:CD1	2.45	0.52
1:A:78:LEU:O	1:A:82:GLU:HG2	2.10	0.52
1:B:158:GLY:O	1:B:171:VAL:HG13	2.09	0.52
1:C:180:ASN:OD1	1:C:203:LEU:HD23	2.10	0.52
1:F:145:LYS:HG2	1:F:149:GLU:OE2	2.10	0.52
1:E:105:LYS:HZ1	1:E:221:ALA:HA	1.74	0.52
1:C:134:THR:HG22	1:C:135:VAL:O	2.10	0.52
1:D:94:LEU:O	1:D:94:LEU:HD13	2.10	0.52
1:D:105:LYS:HD2	1:D:111:PHE:CE2	2.45	0.52
1:A:85:ILE:O	1:A:89:LYS:HG3	2.09	0.52
1:D:151:ALA:O	1:D:153:THR:N	2.40	0.52
1:D:89:LYS:HG2	1:F:88:LEU:HD21	1.90	0.51
1:D:181:TRP:CD2	1:D:186:PRO:HD3	2.45	0.51
1:D:127:LEU:HD11	1:F:101:PHE:CE1	2.45	0.51
1:D:195:CYS:O	1:D:206:ASP:HA	2.10	0.51
1:B:157:LEU:O	1:B:159:ILE:N	2.42	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:99:HIS:CE1	1:C:103:MET:SD	3.04	0.51
1:A:181:TRP:CD2	1:A:186:PRO:HD3	2.45	0.51
1:D:156:PHE:CE1	1:D:213:HIS:HB2	2.45	0.51
1:A:132:ARG:HG2	1:A:132:ARG:HH21	1.76	0.51
1:B:101:PHE:CD1	1:C:115:ASN:HB3	2.45	0.51
1:D:133:GLY:HA3	1:D:219:PHE:CE1	2.46	0.51
1:E:117:GLU:OE1	1:E:119:MET:HE2	2.11	0.51
1:D:105:LYS:HD2	1:D:111:PHE:CD2	2.46	0.51
1:D:175:ARG:HH21	1:D:175:ARG:CB	2.24	0.50
1:D:183:LYS:O	1:D:184:ASP:HB2	2.10	0.50
1:C:181:TRP:CD2	1:C:186:PRO:HD3	2.46	0.50
1:E:195:CYS:O	1:E:206:ASP:HA	2.11	0.50
1:E:117:GLU:HB3	1:E:119:MET:HE3	1.92	0.50
1:F:168:PHE:CE1	1:F:186:PRO:HG3	2.46	0.50
1:F:100:ALA:HB1	1:F:105:LYS:HD3	1.91	0.50
1:A:78:LEU:O	1:A:78:LEU:HD23	2.10	0.50
1:E:170:TYR:CZ	1:E:176:LEU:HA	2.46	0.50
1:B:160:THR:CB	1:B:162:GLU:HG3	2.42	0.50
1:D:187:ASN:OD1	1:D:189:HIS:HB2	2.12	0.50
1:E:110:LYS:HE2	1:E:143:GLU:CD	2.32	0.50
1:A:179:SER:HA	1:A:204:TRP:CH2	2.47	0.50
1:C:132:ARG:HH21	1:C:132:ARG:HG2	1.77	0.50
1:E:189:HIS:CD2	1:E:190:GLY:N	2.80	0.50
1:F:109:LYS:C	1:F:221:ALA:HA	2.32	0.50
1:B:193:GLU:HG2	1:B:207:ILE:HA	1.94	0.49
1:E:109:LYS:HE3	1:E:142:GLU:OE2	2.12	0.49
1:F:163:VAL:CG1	1:F:164:THR:N	2.75	0.49
2:H:2:MAN:H4	2:H:3:MAN:H3	1.93	0.49
1:A:96:ASN:HD21	1:C:95:THR:CG2	2.25	0.49
1:A:181:TRP:HA	1:A:204:TRP:HB2	1.94	0.49
1:A:210:GLN:N	1:A:210:GLN:NE2	2.59	0.49
1:E:88:LEU:HD11	1:F:89:LYS:HG2	1.94	0.49
1:E:105:LYS:HB2	1:E:111:PHE:HB3	1.94	0.49
1:D:89:LYS:CG	1:F:88:LEU:HD21	2.42	0.49
1:F:99:HIS:CE1	1:F:103:MET:SD	3.05	0.49
1:D:79:ALA:O	1:D:82:GLU:HB2	2.12	0.49
1:A:84:GLU:HA	1:A:84:GLU:OE1	2.13	0.49
1:E:201:ASN:HD22	1:E:203:LEU:HD12	1.77	0.49
1:B:181:TRP:CE2	1:B:186:PRO:HD3	2.48	0.49
1:A:138:PRO:HB3	1:A:144:ASN:HA	1.95	0.49
1:B:161:ASP:OD1	1:B:194:ASP:HA	2.13	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:118:ARG:NH2	1:D:153:THR:CG2	2.72	0.49
1:A:88:LEU:HD21	1:B:88:LEU:HB3	1.95	0.48
1:C:99:HIS:O	1:C:103:MET:HG3	2.13	0.48
1:E:113:VAL:CG1	1:E:114:THR:N	2.75	0.48
1:A:140:ASN:HA	1:A:178:TYR:CD2	2.49	0.48
1:E:185:GLU:OE2	1:E:185:GLU:HA	2.13	0.48
1:F:167:GLN:HG3	1:F:175:ARG:NE	2.26	0.48
1:F:199:VAL:O	1:F:201:ASN:N	2.45	0.48
1:D:81:MET:HB3	1:F:81:MET:HE1	1.96	0.48
1:D:145:LYS:O	1:D:149:GLU:HG3	2.13	0.48
1:E:111:PHE:HE2	1:E:219:PHE:HB2	1.73	0.48
1:E:181:TRP:CE2	1:E:186:PRO:HD3	2.49	0.48
1:E:183:LYS:O	1:E:184:ASP:HB2	2.13	0.48
1:A:118:ARG:CZ	1:A:213:HIS:HA	2.43	0.48
1:C:187:ASN:C	1:C:189:HIS:N	2.67	0.48
1:E:73:ALA:HB1	1:E:76:VAL:CB	2.41	0.48
1:D:97:LYS:NZ	1:E:130:GLU:CD	2.66	0.48
1:A:160:THR:HB	1:A:162:GLU:HG2	1.95	0.48
1:C:132:ARG:HH21	1:C:132:ARG:CG	2.27	0.48
1:F:160:THR:CB	1:F:162:GLU:HG3	2.44	0.48
1:A:110:LYS:N	1:A:221:ALA:HB2	2.29	0.48
1:B:157:LEU:C	1:B:159:ILE:H	2.18	0.48
1:D:170:TYR:CZ	1:D:176:LEU:HD12	2.49	0.48
1:F:99:HIS:HE1	1:F:103:MET:SD	2.37	0.48
1:A:103:MET:CE	1:A:113:VAL:HG21	2.44	0.47
1:E:85:ILE:O	1:E:89:LYS:HG3	2.13	0.47
1:B:115:ASN:ND2	1:B:117:GLU:HB2	2.30	0.47
1:B:199:VAL:CG2	1:B:200:ASP:H	2.09	0.47
1:B:78:LEU:O	1:B:82:GLU:HG3	2.14	0.47
1:B:111:PHE:H	1:B:111:PHE:HD2	1.62	0.47
1:B:155:ALA:HB2	1:B:214:THR:HB	1.94	0.47
1:C:143:GLU:O	1:C:147:ILE:HG13	2.15	0.47
1:E:186:PRO:HB2	1:E:206:ASP:OD1	2.15	0.47
1:A:81:MET:O	1:A:85:ILE:HD13	2.14	0.47
1:F:73:ALA:O	1:F:75:GLU:N	2.48	0.47
1:F:187:ASN:C	1:F:187:ASN:ND2	2.64	0.47
1:B:105:LYS:CB	1:B:111:PHE:HB3	2.44	0.47
1:B:125:LYS:HD3	5:B:42:HOH:O	2.13	0.47
1:B:195:CYS:O	1:B:206:ASP:HA	2.15	0.47
1:A:130:GLU:HG2	1:C:97:LYS:HZ1	1.80	0.47
1:A:139:ARG:CG	1:A:139:ARG:NH2	2.74	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:210:GLN:NE2	1:A:210:GLN:CA	2.77	0.47
1:D:73:ALA:O	1:D:75:GLU:N	2.47	0.47
1:D:110:LYS:HE3	1:D:112:PHE:CZ	2.50	0.47
1:F:200:ASP:O	1:F:201:ASN:HB2	2.15	0.47
1:B:157:LEU:HD21	1:B:198:ILE:HB	1.96	0.47
1:B:73:ALA:O	1:B:75:GLU:N	2.48	0.47
1:C:188:ASP:HB2	5:C:307:HOH:O	2.15	0.47
1:D:94:LEU:HD13	1:D:94:LEU:C	2.35	0.47
1:D:164:THR:O	1:D:167:GLN:HB3	2.15	0.47
1:C:188:ASP:O	1:C:192:GLY:HA2	2.14	0.47
1:D:118:ARG:CZ	1:D:213:HIS:HA	2.44	0.47
1:F:111:PHE:CE2	1:F:219:PHE:HB2	2.49	0.47
1:A:87:THR:O	1:A:91:LYS:HG3	2.15	0.46
1:B:121:PHE:HE2	1:B:125:LYS:HE3	1.77	0.46
1:D:118:ARG:NH1	1:D:213:HIS:HA	2.31	0.46
1:E:199:VAL:HG22	1:E:203:LEU:O	2.16	0.46
2:G:1:MAN:C6	2:G:4:MAN:H5	2.45	0.46
2:G:4:MAN:H2	2:G:5:MAN:C5	2.41	0.46
1:C:121:PHE:CD2	1:C:125:LYS:HE2	2.50	0.46
1:B:151:ALA:O	1:B:152:LYS:HB2	2.15	0.46
1:B:188:ASP:HA	1:B:193:GLU:HB2	1.98	0.46
1:F:181:TRP:CE2	1:F:186:PRO:HD3	2.50	0.46
1:A:139:ARG:HB2	1:A:143:GLU:OE2	2.15	0.46
1:F:188:ASP:OD1	1:F:192:GLY:HA2	2.16	0.46
1:C:181:TRP:CE2	1:C:186:PRO:HD3	2.51	0.46
1:D:130:GLU:CD	1:F:97:LYS:HZ2	2.19	0.46
1:B:186:PRO:HB2	1:B:206:ASP:OD1	2.16	0.46
1:B:134:THR:HG22	1:B:135:VAL:N	2.31	0.46
1:B:142:GLU:HG2	1:B:143:GLU:N	2.28	0.46
1:D:116:HIS:HA	1:D:214:THR:HG23	1.97	0.46
1:D:139:ARG:HH21	1:D:139:ARG:HG3	1.80	0.46
1:B:151:ALA:C	1:B:153:THR:H	2.19	0.46
1:D:187:ASN:O	1:D:188:ASP:C	2.54	0.46
1:A:85:ILE:HD11	1:C:85:ILE:HD11	1.97	0.46
1:C:198:ILE:HD11	1:C:202:GLY:HA2	1.98	0.46
1:D:176:LEU:HD12	1:D:176:LEU:HA	1.73	0.46
1:F:81:MET:HB3	1:F:81:MET:HE2	1.83	0.46
1:F:163:VAL:CG1	1:F:164:THR:H	2.27	0.46
1:C:170:TYR:CZ	1:C:176:LEU:HA	2.51	0.45
1:C:185:GLU:HA	1:C:186:PRO:C	2.36	0.45
1:E:198:ILE:HG23	1:E:198:ILE:O	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:187:ASN:ND2	1:F:189:HIS:HB2	2.31	0.45
1:F:207:ILE:HG12	1:F:208:SER:N	2.32	0.45
1:A:88:LEU:O	1:A:91:LYS:N	2.48	0.45
1:C:144:ASN:OD1	1:C:198:ILE:HD12	2.17	0.45
1:E:193:GLU:HG2	1:E:207:ILE:CA	2.46	0.45
1:B:103:MET:HE2	1:B:113:VAL:HG13	1.99	0.45
1:D:138:PRO:HB3	1:D:144:ASN:HA	1.99	0.45
1:D:181:TRP:HA	1:D:204:TRP:HB2	1.97	0.45
1:E:156:PHE:CD1	1:E:213:HIS:HB2	2.52	0.45
1:B:160:THR:HB	1:B:162:GLU:HG3	1.99	0.45
1:C:219:PHE:HA	1:C:220:PRO:HD3	1.76	0.45
1:E:115:ASN:O	1:E:116:HIS:HB2	2.17	0.45
1:F:193:GLU:OE1	2:H:3:MAN:O4	2.35	0.45
1:A:153:THR:O	1:A:154:SER:C	2.55	0.45
1:C:175:ARG:HH21	1:C:175:ARG:HG3	1.81	0.45
1:F:207:ILE:HG12	1:F:208:SER:H	1.82	0.45
1:A:96:ASN:HD21	1:C:95:THR:HG23	1.81	0.45
1:E:156:PHE:CE1	1:E:213:HIS:HB2	2.52	0.45
1:F:151:ALA:O	1:F:152:LYS:HB2	2.16	0.45
1:B:135:VAL:O	1:B:137:ILE:HG13	2.17	0.45
1:C:109:LYS:HE3	5:C:306:HOH:O	2.17	0.45
1:D:78:LEU:HD23	1:D:78:LEU:C	2.36	0.45
1:E:105:LYS:CB	1:E:111:PHE:HB3	2.47	0.45
1:F:151:ALA:C	1:F:153:THR:H	2.20	0.45
1:A:124:VAL:HG13	1:A:215:ALA:HB1	1.99	0.44
1:A:101:PHE:CZ	1:B:114:THR:HA	2.52	0.44
1:A:187:ASN:O	1:A:188:ASP:C	2.54	0.44
1:C:112:PHE:O	1:C:113:VAL:HG23	2.17	0.44
1:E:101:PHE:CE1	1:F:115:ASN:HB3	2.52	0.44
1:E:157:LEU:O	1:E:159:ILE:N	2.44	0.44
1:C:119:MET:O	1:C:212:SER:HA	2.17	0.44
1:D:73:ALA:C	1:D:75:GLU:N	2.70	0.44
1:D:159:ILE:HD13	1:D:176:LEU:HD11	1.98	0.44
1:D:84:GLU:OE1	1:D:84:GLU:HA	2.18	0.44
1:E:117:GLU:O	1:E:214:THR:HA	2.16	0.44
1:C:207:ILE:CG1	1:C:208:SER:N	2.79	0.44
1:A:210:GLN:HE21	1:A:210:GLN:CA	2.29	0.44
1:D:87:THR:O	1:D:91:LYS:HG3	2.17	0.44
1:E:108:GLY:O	1:E:221:ALA:HB1	2.18	0.44
1:A:118:ARG:HH21	1:A:153:THR:CG2	2.23	0.44
1:A:124:VAL:HG22	1:A:215:ALA:CB	2.48	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:137:ILE:HG12	1:F:158:GLY:HA3	1.99	0.44
1:D:164:THR:HB	1:D:167:GLN:HB3	1.98	0.43
1:F:187:ASN:O	1:F:188:ASP:C	2.56	0.43
2:G:4:MAN:C2	2:G:5:MAN:H5	2.44	0.43
1:C:96:ASN:HD22	1:C:96:ASN:HA	1.65	0.43
1:C:180:ASN:OD1	1:C:203:LEU:HA	2.18	0.43
1:F:156:PHE:CZ	1:F:211:ALA:O	2.71	0.43
1:A:81:MET:C	1:C:81:MET:HE3	2.38	0.43
1:A:103:MET:HE2	1:A:113:VAL:HG21	1.98	0.43
1:B:207:ILE:CG1	1:B:208:SER:H	2.13	0.43
1:E:78:LEU:HD12	1:E:78:LEU:N	2.33	0.43
1:F:135:VAL:O	1:F:137:ILE:HG13	2.18	0.43
1:A:99:HIS:O	1:A:103:MET:HG2	2.19	0.43
1:A:118:ARG:HH22	1:A:154:SER:CB	2.16	0.43
1:B:179:SER:HA	1:B:204:TRP:CH2	2.53	0.43
1:D:81:MET:HB3	1:F:81:MET:CE	2.49	0.43
1:E:157:LEU:C	1:E:159:ILE:H	2.19	0.43
1:F:164:THR:O	1:F:167:GLN:HB3	2.19	0.43
1:A:79:ALA:O	1:A:82:GLU:HB2	2.19	0.43
1:B:98:LEU:HA	1:B:98:LEU:HD12	1.80	0.43
1:B:105:LYS:HB2	1:B:111:PHE:CB	2.49	0.43
1:C:127:LEU:O	1:C:127:LEU:HD12	2.19	0.43
1:F:118:ARG:HA	1:F:213:HIS:O	2.19	0.43
1:F:105:LYS:HD2	1:F:111:PHE:CE2	2.54	0.43
1:F:105:LYS:NZ	1:F:109:LYS:O	2.49	0.43
1:D:96:ASN:HD22	1:D:96:ASN:HA	1.63	0.43
1:A:96:ASN:ND2	1:C:95:THR:HG23	2.34	0.42
1:A:182:LYS:O	1:A:183:LYS:C	2.57	0.42
1:B:179:SER:HA	1:B:204:TRP:CZ3	2.53	0.42
1:E:187:ASN:ND2	4:E:50:MAN:O3	2.47	0.42
1:E:199:VAL:HG23	1:E:200:ASP:H	1.83	0.42
1:E:200:ASP:O	1:E:203:LEU:HB2	2.19	0.42
1:B:112:PHE:CD1	1:B:218:GLU:HB3	2.54	0.42
1:E:145:LYS:HA	1:E:148:GLN:NE2	2.35	0.42
1:D:156:PHE:HA	1:D:197:THR:HG22	2.01	0.42
1:D:81:MET:O	1:D:85:ILE:HG13	2.19	0.42
1:E:182:LYS:HB3	1:E:185:GLU:HG3	2.01	0.42
1:C:139:ARG:O	1:C:140:ASN:HB3	2.20	0.42
1:C:155:ALA:HB1	1:C:214:THR:O	2.19	0.42
1:D:157:LEU:O	1:D:159:ILE:N	2.51	0.42
1:F:139:ARG:O	1:F:140:ASN:HB3	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:181:TRP:CE3	1:A:186:PRO:HD3	2.55	0.42
1:C:169:MET:SD	1:C:175:ARG:HG2	2.60	0.42
1:D:99:HIS:HB3	1:D:103:MET:CE	2.50	0.42
1:A:112:PHE:HA	1:A:217:CYS:O	2.19	0.42
1:B:99:HIS:O	1:B:103:MET:HG2	2.20	0.42
1:D:179:SER:HA	1:D:204:TRP:CH2	2.54	0.42
1:F:144:ASN:OD1	1:F:198:ILE:HD12	2.20	0.42
1:F:182:LYS:HG2	1:F:183:LYS:N	2.35	0.42
1:A:99:HIS:CE1	1:C:99:HIS:HD2	2.37	0.42
1:A:108:GLY:C	1:A:221:ALA:HB1	2.40	0.42
1:F:219:PHE:HA	1:F:220:PRO:HD3	1.77	0.42
1:B:123:LYS:HE3	1:B:123:LYS:HA	2.01	0.41
1:C:188:ASP:O	1:C:189:HIS:O	2.38	0.41
1:E:134:THR:CG2	1:E:135:VAL:H	2.32	0.41
1:E:188:ASP:HA	1:E:193:GLU:HB2	2.01	0.41
1:A:107:SER:N	1:B:117:GLU:OE2	2.54	0.41
1:D:160:THR:CB	1:D:162:GLU:HG3	2.46	0.41
1:E:155:ALA:HB2	1:E:214:THR:HB	2.01	0.41
1:A:101:PHE:CD1	1:B:115:ASN:HB3	2.56	0.41
1:D:97:LYS:HZ3	1:E:130:GLU:CG	2.32	0.41
1:D:112:PHE:HA	1:D:217:CYS:O	2.20	0.41
1:F:110:LYS:HD2	1:F:143:GLU:CD	2.41	0.41
1:A:88:LEU:O	1:A:89:LYS:C	2.59	0.41
1:C:212:SER:C	1:C:213:HIS:ND1	2.74	0.41
1:E:179:SER:HA	1:E:204:TRP:CH2	2.55	0.41
1:F:153:THR:HG22	1:F:154:SER:H	1.86	0.41
1:E:120:PRO:O	1:E:124:VAL:HG23	2.21	0.41
1:E:131:LEU:HD23	1:E:131:LEU:HA	1.86	0.41
1:E:199:VAL:HG23	1:E:200:ASP:N	2.36	0.41
1:D:85:ILE:O	1:D:89:LYS:HG3	2.20	0.41
1:F:186:PRO:HB3	1:F:206:ASP:HB3	2.02	0.41
1:A:81:MET:HE1	1:B:81:MET:HB3	2.03	0.41
1:A:112:PHE:CD1	1:A:147:ILE:HG12	2.56	0.41
1:A:151:ALA:O	1:A:153:THR:N	2.54	0.41
1:B:94:LEU:HD22	1:B:94:LEU:HA	1.92	0.41
1:C:185:GLU:HA	1:C:186:PRO:O	2.21	0.41
1:D:88:LEU:O	1:D:89:LYS:C	2.59	0.41
1:F:187:ASN:C	1:F:189:HIS:N	2.74	0.41
1:A:101:PHE:CE1	1:B:127:LEU:HD21	2.56	0.41
1:A:117:GLU:HB2	1:C:106:LYS:HD3	2.03	0.41
1:D:120:PRO:O	1:D:124:VAL:HG23	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:153:THR:HG22	1:D:154:SER:N	2.36	0.41
1:E:80:ASN:O	1:E:83:ALA:HB3	2.21	0.41
1:E:161:ASP:OD2	1:E:165:GLU:OE2	2.39	0.41
1:D:200:ASP:C	1:D:202:GLY:H	2.24	0.40
1:F:79:ALA:O	1:F:82:GLU:HB2	2.21	0.40
1:A:115:ASN:O	1:A:116:HIS:CB	2.69	0.40
1:C:193:GLU:OE1	2:G:3:MAN:O4	2.39	0.40
1:E:113:VAL:HG12	1:E:114:THR:H	1.85	0.40
1:F:161:ASP:HB3	1:F:168:PHE:CD2	2.56	0.40
1:F:162:GLU:HG3	1:F:162:GLU:H	1.71	0.40
1:A:88:LEU:HD12	1:A:88:LEU:HA	1.78	0.40
1:A:127:LEU:HD12	1:A:127:LEU:C	2.42	0.40
1:C:99:HIS:HE1	1:C:103:MET:SD	2.43	0.40
1:D:107:SER:N	1:E:117:GLU:OE2	2.52	0.40
1:B:113:VAL:CG1	1:B:114:THR:N	2.84	0.40
1:E:159:ILE:HG23	1:E:176:LEU:HD11	2.03	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	147/149 (99%)	124 (84%)	17 (12%)	6 (4%)	3	9
1	B	147/149 (99%)	134 (91%)	9 (6%)	4 (3%)	5	17
1	C	147/149 (99%)	126 (86%)	12 (8%)	9 (6%)	1	4
1	D	147/149 (99%)	123 (84%)	22 (15%)	2 (1%)	11	34
1	E	147/149 (99%)	128 (87%)	18 (12%)	1 (1%)	22	53
1	F	147/149 (99%)	128 (87%)	12 (8%)	7 (5%)	2	7
All	All	882/894 (99%)	763 (86%)	90 (10%)	29 (3%)	4	13

All (29) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	74	ILE
1	C	189	HIS
1	C	200	ASP
1	C	201	ASN
1	C	211	ALA
1	F	188	ASP
1	C	188	ASP
1	C	212	SER
1	D	74	ILE
1	E	199	VAL
1	F	74	ILE
1	F	201	ASN
1	A	152	LYS
1	C	180	ASN
1	C	187	ASN
1	F	187	ASN
1	F	200	ASP
1	A	74	ILE
1	B	209	CYS
1	C	153	THR
1	A	140	ASN
1	A	183	LYS
1	D	199	VAL
1	F	189	HIS
1	A	154	SER
1	F	126	ALA
1	B	199	VAL
1	B	158	GLY
1	A	199	VAL

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	126/126 (100%)	117 (93%)	9 (7%)	14 39

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	126/126 (100%)	118 (94%)	8 (6%)	18	46
1	C	126/126 (100%)	116 (92%)	10 (8%)	12	34
1	D	126/126 (100%)	121 (96%)	5 (4%)	31	65
1	E	126/126 (100%)	120 (95%)	6 (5%)	25	58
1	F	126/126 (100%)	120 (95%)	6 (5%)	25	58
All	All	756/756 (100%)	712 (94%)	44 (6%)	20	50

All (44) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	94	LEU
1	A	132	ARG
1	A	134	THR
1	A	139	ARG
1	A	162	GLU
1	A	163	VAL
1	A	176	LEU
1	A	183	LYS
1	A	210	GLN
1	B	81	MET
1	B	87	THR
1	B	88	LEU
1	B	111	PHE
1	B	123	LYS
1	B	176	LEU
1	B	178	TYR
1	B	210	GLN
1	C	93	GLU
1	C	94	LEU
1	C	110	LYS
1	C	114	THR
1	C	132	ARG
1	C	150	VAL
1	C	176	LEU
1	C	177	THR
1	C	204	TRP
1	C	213	HIS
1	D	127	LEU
1	D	132	ARG
1	D	145	LYS

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Mol	Chain	Res	Type
1	D	176	LEU
1	D	199	VAL
1	E	75	GLU
1	E	81	MET
1	E	90	SER
1	E	94	LEU
1	E	123	LYS
1	E	176	LEU
1	F	94	LEU
1	F	110	LYS
1	F	153	THR
1	F	175	ARG
1	F	180	ASN
1	F	187	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (23) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	86	ASN
1	A	96	ASN
1	A	99	HIS
1	A	148	GLN
1	A	210	GLN
1	B	86	ASN
1	B	148	GLN
1	C	80	ASN
1	C	86	ASN
1	C	96	ASN
1	C	148	GLN
1	D	86	ASN
1	D	96	ASN
1	E	86	ASN
1	E	96	ASN
1	E	148	GLN
1	E	201	ASN
1	F	86	ASN
1	F	96	ASN
1	F	99	HIS
1	F	148	GLN
1	F	180	ASN
1	F	187	ASN

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](#)

12 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	MAN	G	1	2	12,12,12	0.40	0	17,17,17	0.41	0
2	MAN	G	2	2	11,11,12	0.45	0	15,15,17	0.69	1 (6%)
2	MAN	G	3	2,3	11,11,12	0.46	0	15,15,17	0.51	0
2	MAN	G	4	2	11,11,12	0.56	0	15,15,17	0.86	1 (6%)
2	MAN	G	5	2	11,11,12	0.44	0	15,15,17	0.56	0
2	MAN	G	6	2,3	11,11,12	0.37	0	15,15,17	0.76	0
2	MAN	H	1	2	12,12,12	0.35	0	17,17,17	0.45	0
2	MAN	H	2	2	11,11,12	0.45	0	15,15,17	0.86	1 (6%)
2	MAN	H	3	2,3	11,11,12	0.56	0	15,15,17	0.47	0
2	MAN	H	4	2	11,11,12	0.55	0	15,15,17	0.63	0
2	MAN	H	5	2	11,11,12	0.45	0	15,15,17	0.51	0
2	MAN	H	6	2,3	11,11,12	0.46	0	15,15,17	0.53	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	MAN	G	1	2	1/1/5/5	2/2/22/22	0/1/1/1
2	MAN	G	2	2	-	2/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	MAN	G	3	2,3	-	0/2/19/22	0/1/1/1
2	MAN	G	4	2	-	0/2/19/22	0/1/1/1
2	MAN	G	5	2	-	1/2/19/22	0/1/1/1
2	MAN	G	6	2,3	-	0/2/19/22	0/1/1/1
2	MAN	H	1	2	1/1/5/5	2/2/22/22	0/1/1/1
2	MAN	H	2	2	-	2/2/19/22	0/1/1/1
2	MAN	H	3	2,3	-	2/2/19/22	0/1/1/1
2	MAN	H	4	2	-	1/2/19/22	0/1/1/1
2	MAN	H	5	2	-	0/2/19/22	0/1/1/1
2	MAN	H	6	2,3	-	2/2/19/22	0/1/1/1

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	H	2	MAN	C1-O5-C5	2.47	115.54	112.19
2	G	4	MAN	C1-O5-C5	2.36	115.39	112.19
2	G	2	MAN	C1-O5-C5	2.05	114.96	112.19

All (2) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	G	1	MAN	C1
2	H	1	MAN	C1

All (14) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	H	1	MAN	O5-C5-C6-O6
2	G	2	MAN	C4-C5-C6-O6
2	H	1	MAN	C4-C5-C6-O6
2	G	2	MAN	O5-C5-C6-O6
2	G	1	MAN	C4-C5-C6-O6
2	H	3	MAN	C4-C5-C6-O6
2	H	6	MAN	C4-C5-C6-O6
2	G	1	MAN	O5-C5-C6-O6
2	H	3	MAN	O5-C5-C6-O6
2	H	2	MAN	O5-C5-C6-O6
2	H	6	MAN	O5-C5-C6-O6
2	H	2	MAN	C4-C5-C6-O6

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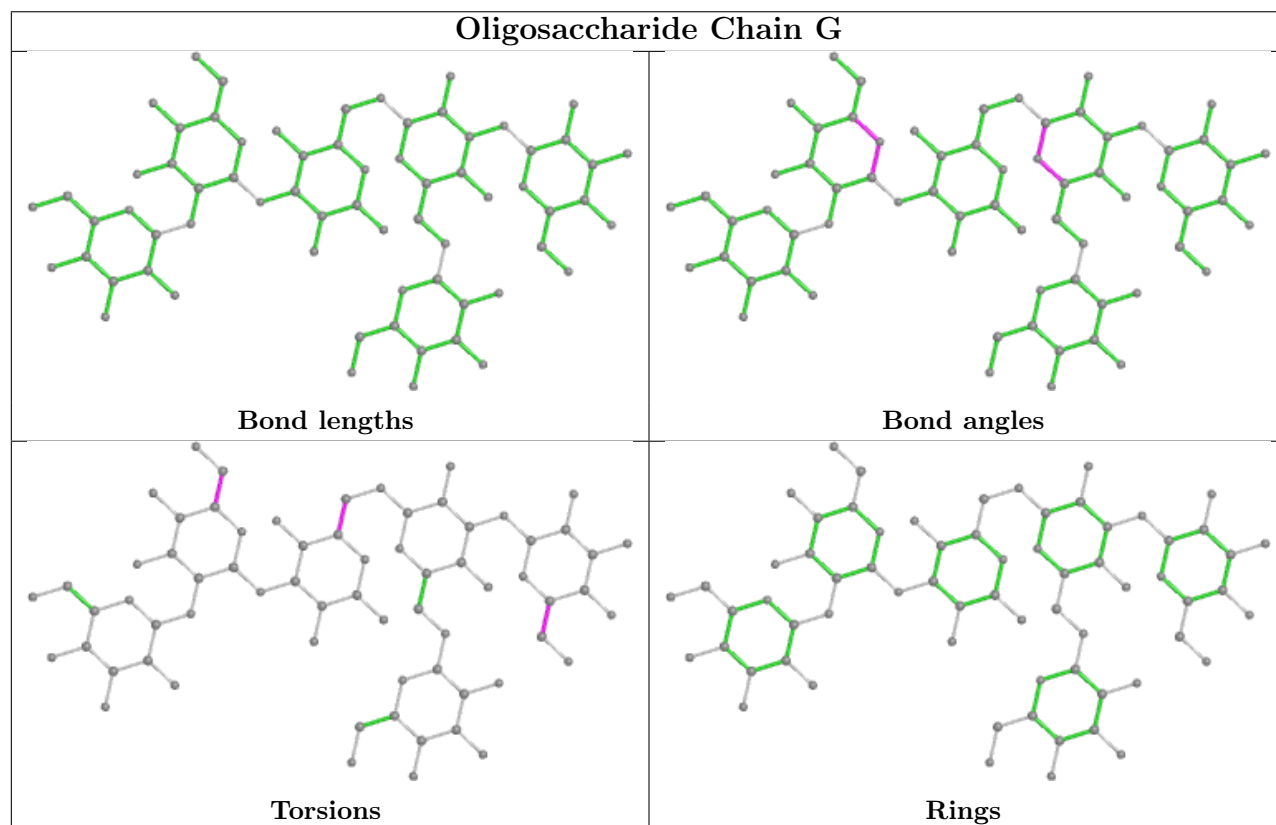
Mol	Chain	Res	Type	Atoms
2	G	5	MAN	O5-C5-C6-O6
2	H	4	MAN	O5-C5-C6-O6

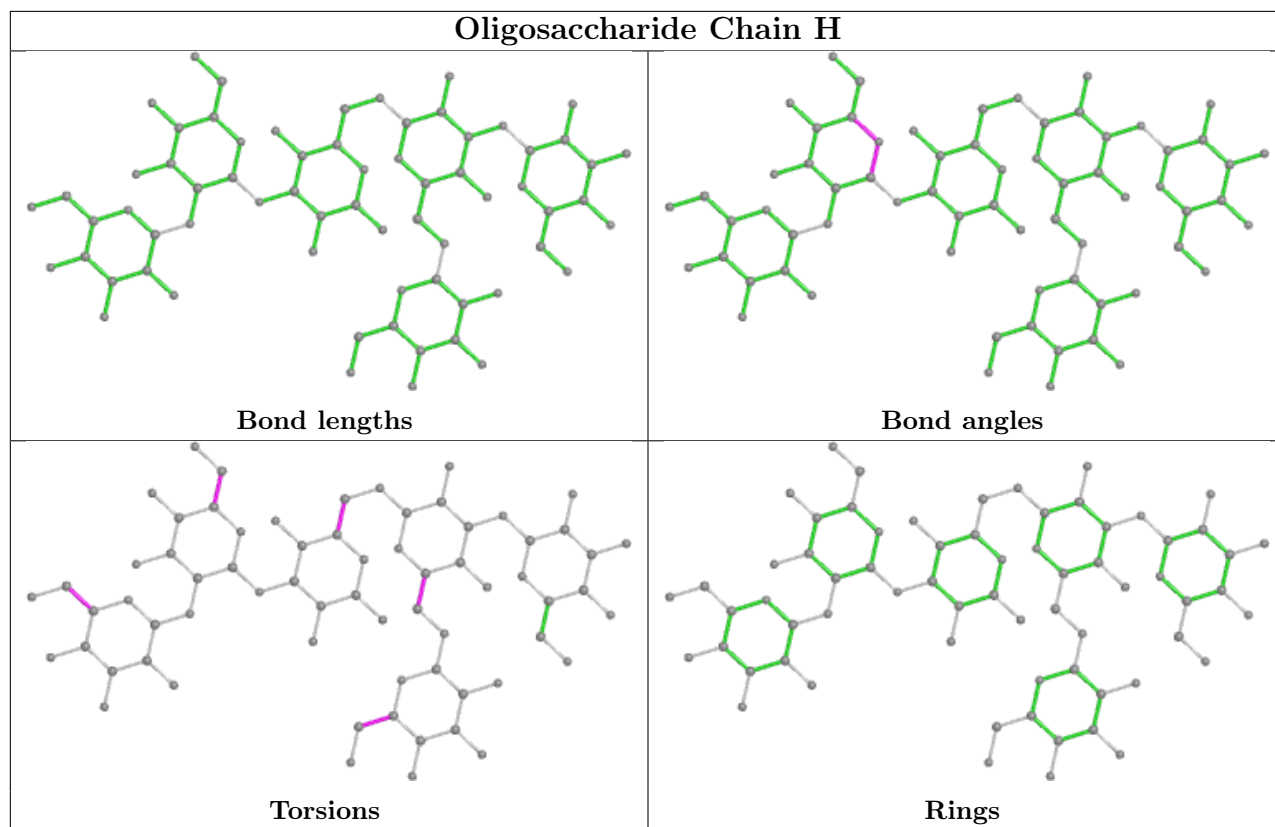
There are no ring outliers.

8 monomers are involved in 12 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	G	1	MAN	3	0
2	G	5	MAN	3	0
2	H	4	MAN	1	0
2	G	4	MAN	6	0
2	H	3	MAN	4	0
2	G	3	MAN	1	0
2	H	5	MAN	1	0
2	H	2	MAN	2	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](#)

Of 20 ligands modelled in this entry, 18 are monoatomic - leaving 2 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
4	MAN	B	20	3	12,12,12	0.35	0	17,17,17	0.54	0
4	MAN	E	50	3	12,12,12	0.38	0	17,17,17	0.37	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
4	MAN	B	20	3	-	0/2/22/22	0/1/1/1
4	MAN	E	50	3	-	0/2/22/22	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.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	E	50	MAN	1	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	149/149 (100%)	-0.42	0 100 100	17, 37, 75, 81	0
1	B	149/149 (100%)	-0.49	0 100 100	15, 32, 71, 77	0
1	C	149/149 (100%)	-0.39	0 100 100	12, 39, 66, 77	0
1	D	149/149 (100%)	-0.39	0 100 100	17, 37, 79, 82	0
1	E	149/149 (100%)	-0.50	0 100 100	18, 31, 68, 72	0
1	F	149/149 (100%)	-0.41	0 100 100	15, 40, 69, 75	0
All	All	894/894 (100%)	-0.44	0 100 100	12, 35, 70, 82	0

There are no RSRZ outliers to report.

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.

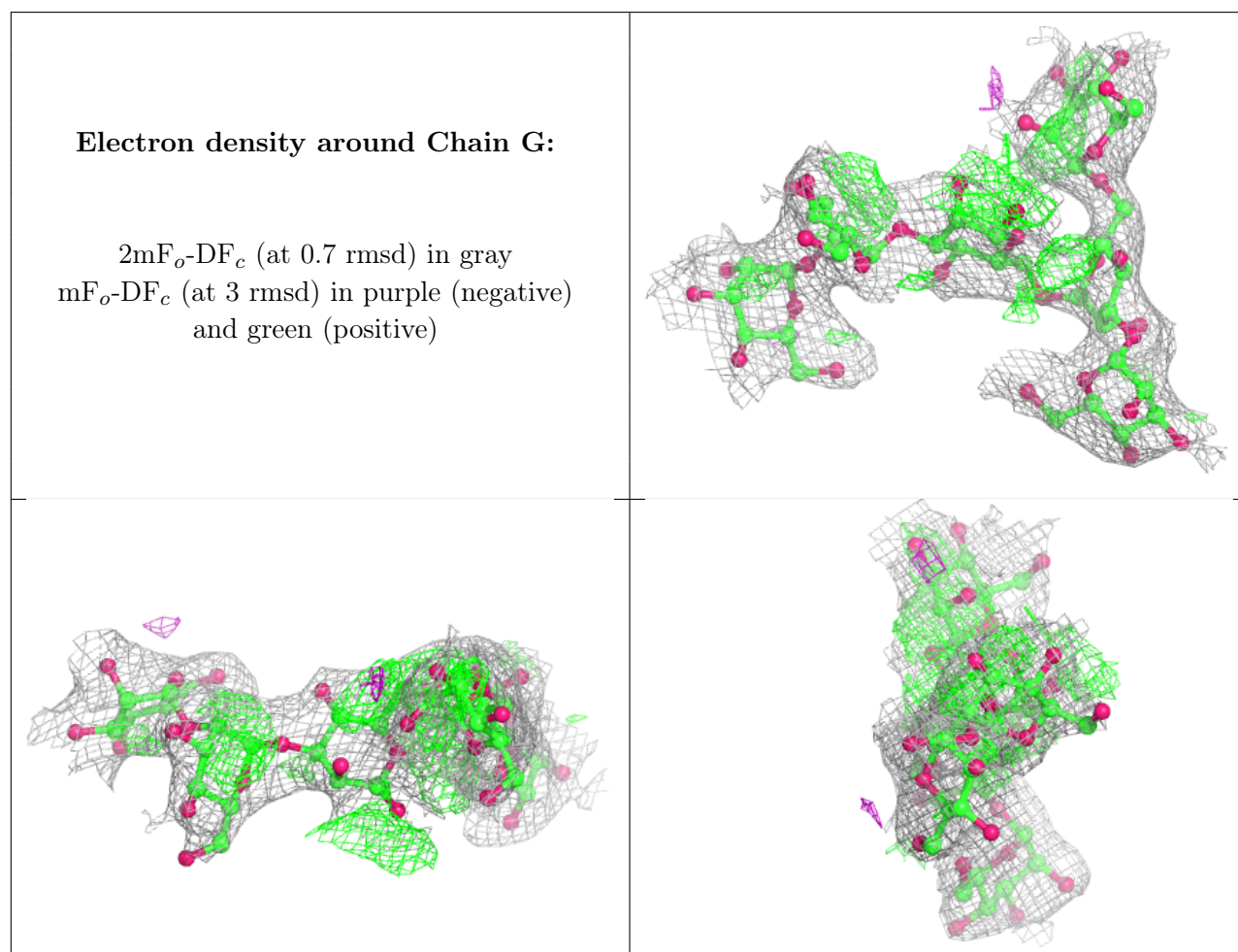
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	MAN	H	1	12/12	0.72	0.20	59,63,65,65	12
2	MAN	G	1	12/12	0.81	0.16	59,63,64,65	12
2	MAN	G	4	11/12	0.82	0.17	59,65,66,66	11
2	MAN	H	2	11/12	0.82	0.21	52,57,58,58	11
2	MAN	H	4	11/12	0.83	0.20	61,66,67,68	11
2	MAN	G	2	11/12	0.84	0.23	53,58,60,60	11

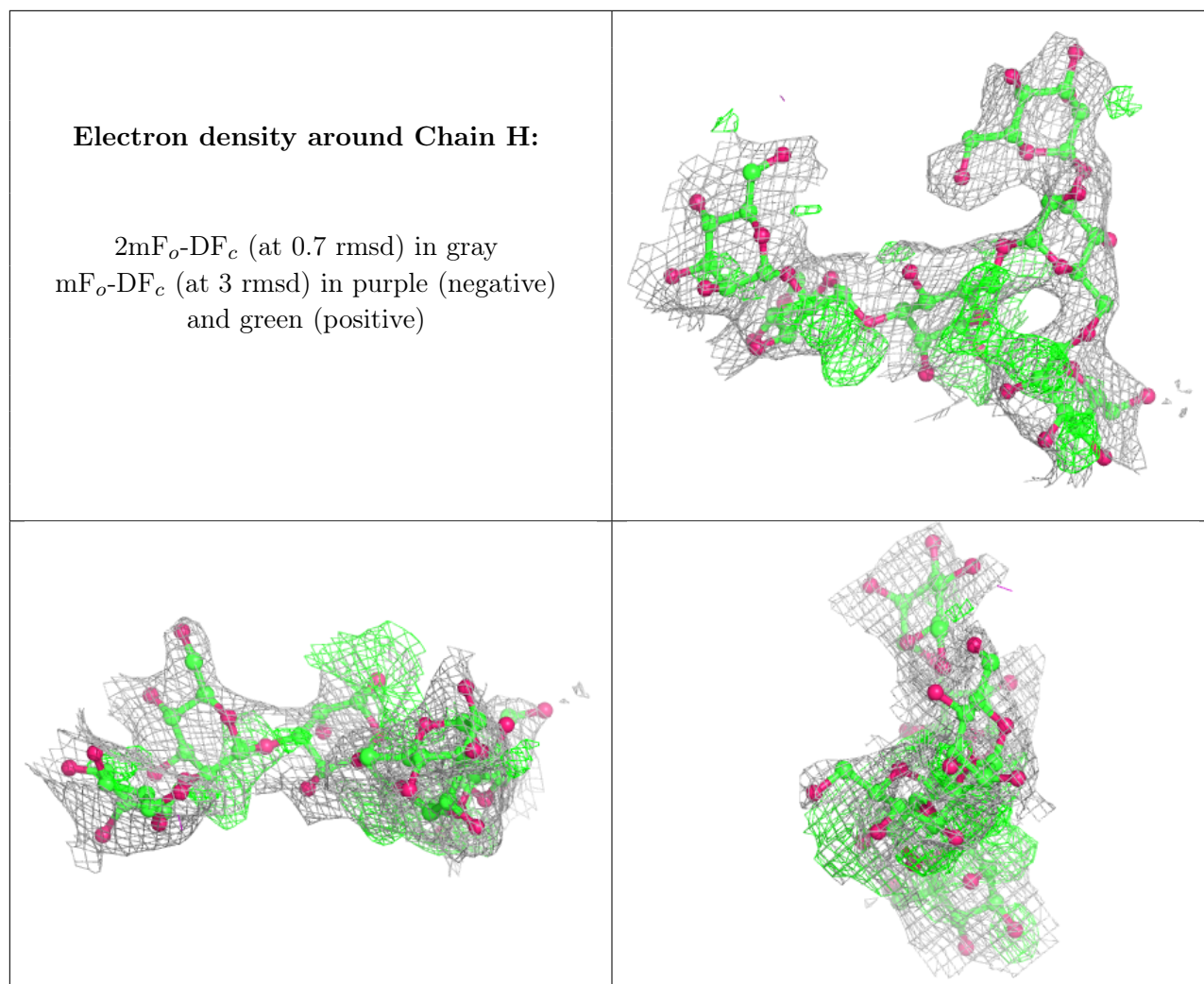
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	MAN	H	5	11/12	0.85	0.24	65,68,68,69	11
2	MAN	G	5	11/12	0.88	0.16	65,66,66,67	11
2	MAN	G	6	11/12	0.88	0.24	52,54,56,56	11
2	MAN	G	3	11/12	0.90	0.17	44,47,49,50	11
2	MAN	H	3	11/12	0.90	0.18	40,45,48,48	11
2	MAN	H	6	11/12	0.91	0.23	53,54,57,57	11

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.





6.4 Ligands [i](#)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	CA	C	302	1/1	0.78	0.08	54,54,54,54	0
3	CA	A	222	1/1	0.83	0.15	46,46,46,46	0
4	MAN	E	50	12/12	0.89	0.17	26,30,32,33	12
4	MAN	B	20	12/12	0.92	0.16	17,24,26,26	12
3	CA	B	222	1/1	0.93	0.10	13,13,13,13	0
3	CA	F	603	1/1	0.94	0.15	59,59,59,59	0
3	CA	E	502	1/1	0.96	0.12	31,31,31,31	0
3	CA	C	303	1/1	0.96	0.13	52,52,52,52	0
3	CA	B	223	1/1	0.97	0.12	30,30,30,30	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
3	CA	D	401	1/1	0.97	0.14	34,34,34,34	0
3	CA	A	224	1/1	0.97	0.14	37,37,37,37	0
3	CA	E	501	1/1	0.98	0.06	22,22,22,22	0
3	CA	C	301	1/1	0.98	0.09	31,31,31,31	0
3	CA	F	601	1/1	0.98	0.10	31,31,31,31	0
3	CA	F	602	1/1	0.98	0.12	46,46,46,46	0
3	CA	B	224	1/1	0.98	0.17	29,29,29,29	0
3	CA	D	402	1/1	0.98	0.10	30,30,30,30	0
3	CA	D	403	1/1	0.98	0.15	38,38,38,38	0
3	CA	E	503	1/1	0.99	0.16	23,23,23,23	0
3	CA	A	223	1/1	0.99	0.10	23,23,23,23	0

6.5 Other polymers [\(i\)](#)

There are no such residues in this entry.