Full wwPDB X-ray Structure Validation Report ⓘ

Aug 7, 2020 – 05:48 AM BST

PDB ID	:	2WR7
Title	:	the structure of influenza H2 human singapore hemagglutinin with human receptor
Authors	:	Liu, J.; Stevens, D.J.; Haire, L.F.; Walker, P.A.; Coombs, P.J.; Russell, R.J.; Gamblin, S.J.; Skehel, J.J.
Deposited on	:	2009-08-30
Resolution	:	2.50 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

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

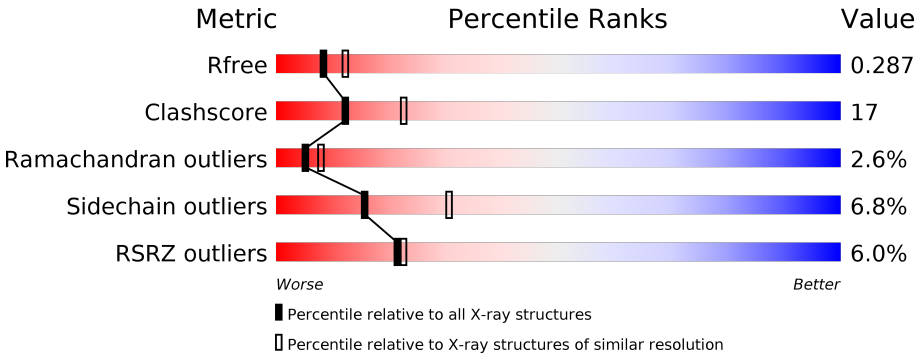
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.13.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry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

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.50 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	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)
RSRZ outliers	127900	4559 (2.50-2.50)

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

Mol	Chain	Length	Quality of chain
1	A	506	5% 61% 28% 7%
1	B	506	4% 63% 27%
1	C	506	8% 61% 27% 8%
2	D	4	25% 75%

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 crite-

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	GAL	D	1	-	-	-	X
2	GAL	D	3	X	-	-	-

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 11656 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 HEMAGGLUTININ.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	473	Total	C	N	O	S	0	0	0
			3722	2336	640	723	23			
1	B	486	Total	C	N	O	S	0	0	0
			3842	2413	659	746	24			
1	C	467	Total	C	N	O	S	0	0	0
			3687	2318	635	710	24			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	155	GLU	LYS	conflict	UNP B4UR26
A	347	ILE	VAL	conflict	UNP B4UR26
B	155	GLU	LYS	conflict	UNP B4UR26
B	347	ILE	VAL	conflict	UNP B4UR26
C	155	GLU	LYS	conflict	UNP B4UR26
C	347	ILE	VAL	conflict	UNP B4UR26

- Molecule 2 is an oligosaccharide called N-acetyl-alpha-neuraminic acid-(2-6)-beta-D-galacto pyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-3)-beta-D-galactopyranose.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	D	4	Total	C	N	O	0	0	0
			57	31	2	24			

- Molecule 3 is water.

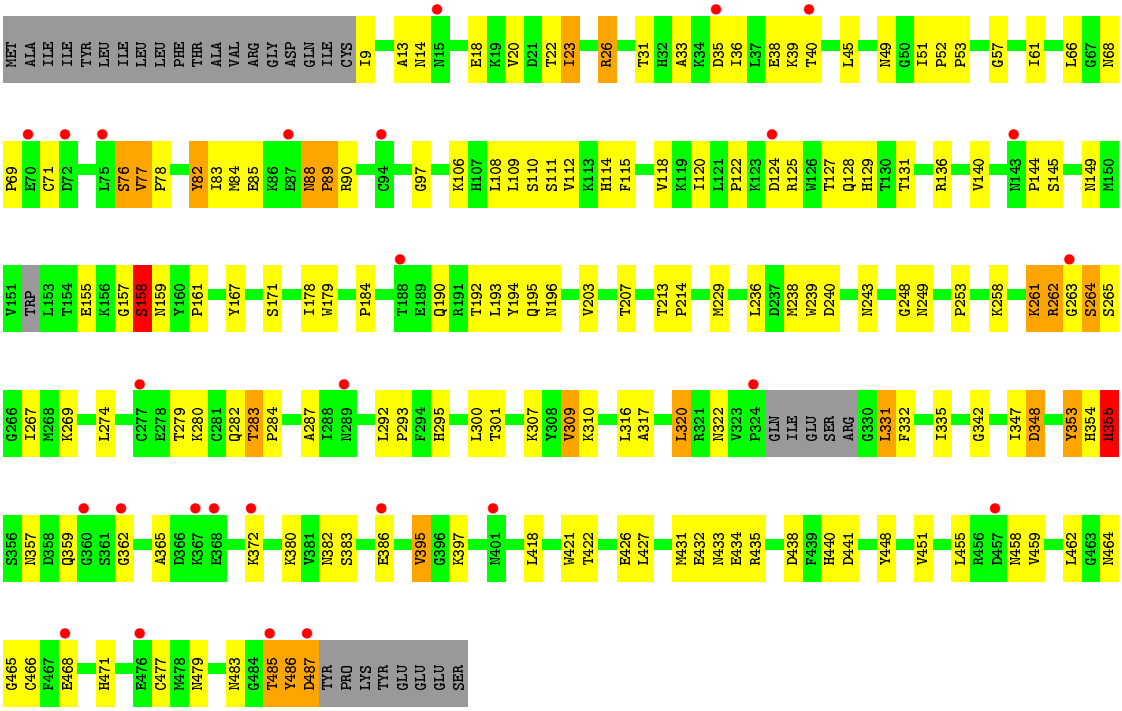
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	86	Total O 86 86	0	0
3	B	142	Total O 142 142	0	0
3	C	120	Total O 120 120	0	0

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.

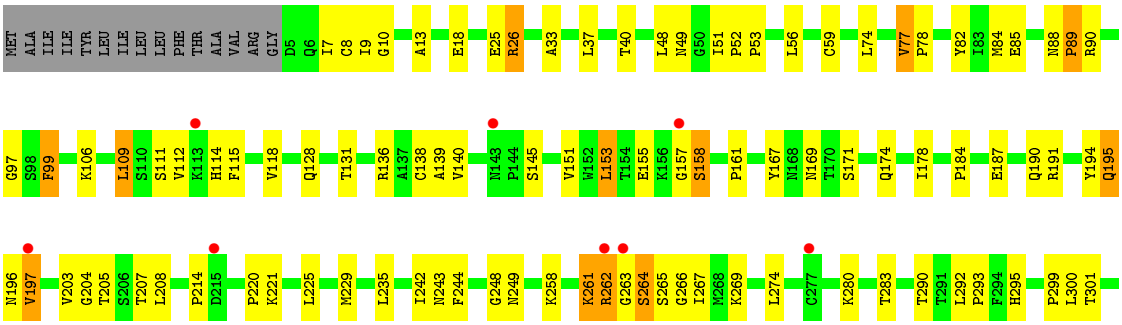
- Molecule 1: HEMAGGLUTININ

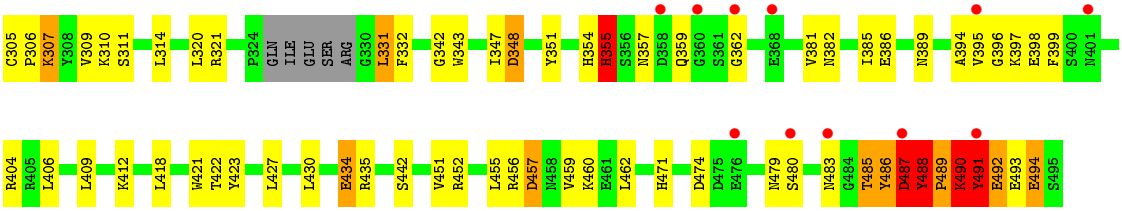
Chain A:



- Molecule 1: HEMAGGLUTININ

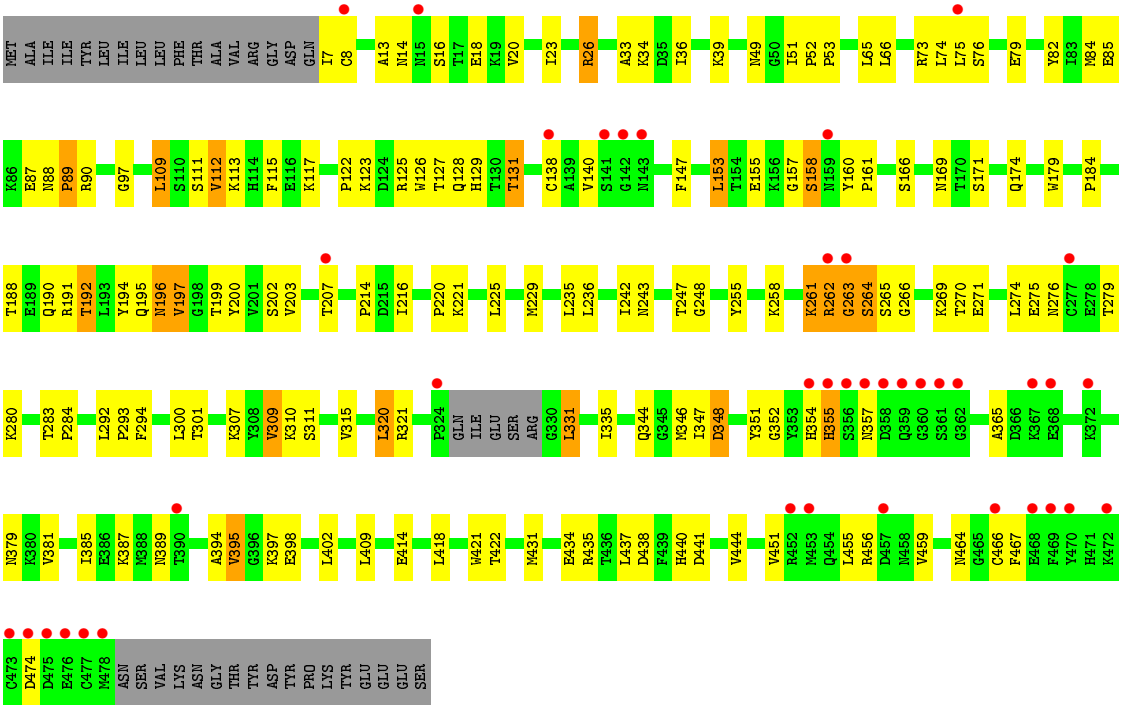
Chain B:





• Molecule 1: HEMAGGLUTININ

Chain C:



• Molecule 2: N-acetyl-alpha-neuraminic acid-(2-6)-beta-D-galactopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-3)-beta-D-galactopyranose

Chain D:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	80.17Å 123.68Å 222.16Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	8.00 – 2.50 8.00 – 2.50	Depositor EDS
% Data completeness (in resolution range)	99.7 (8.00-2.50) 99.7 (8.00-2.50)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.76 (at 2.49Å)	Xtriage
Refinement program	PHENIX (PHENIX.REFINE)	Depositor
R, R_{free}	0.239 , 0.296 0.229 , 0.287	Depositor DCC
R_{free} test set	3743 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å^2)	53.7	Xtriage
Anisotropy	0.978	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 63.8	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	11656	wwPDB-VP
Average B, all atoms (Å^2)	62.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.25% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: SIA, GAL, 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	0.46	0/3803	0.61	1/5143 (0.0%)
1	B	0.53	0/3929	0.69	2/5316 (0.0%)
1	C	0.46	0/3770	0.60	0/5100
All	All	0.49	0/11502	0.63	3/15559 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	316	LEU	CA-CB-CG	6.14	129.43	115.30
1	B	488	TYR	N-CA-CB	5.85	121.13	110.60
1	B	488	TYR	CA-CB-CG	-5.08	103.75	113.40

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3722	0	3589	120	0
1	B	3842	0	3694	150	0
1	C	3687	0	3563	121	0
2	D	57	0	49	3	0
3	A	86	0	0	8	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	142	0	0	10	0
3	C	120	0	0	9	0
All	All	11656	0	10895	377	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 17.

All (377) 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:C:283:THR:HG22	1:C:301:THR:HG22	1.48	0.91
1:C:8:CYS:HB2	1:C:354:HIS:HB3	1.50	0.91
1:B:490:LYS:HD2	1:B:490:LYS:O	1.72	0.88
1:C:155:GLU:OE1	1:C:195:GLN:HG2	1.74	0.87
1:B:111:SER:HB2	1:B:265:SER:HB3	1.54	0.86
1:C:138:CYS:SG	3:C:2050:HOH:O	2.33	0.86
1:C:261:LYS:HA	1:C:262:ARG:HB2	1.57	0.86
1:B:261:LYS:HA	1:B:262:ARG:HB2	1.58	0.85
1:A:36:ILE:HA	1:A:292:LEU:HD22	1.58	0.84
1:A:320:LEU:H	1:A:320:LEU:HD23	1.41	0.84
1:C:261:LYS:HB2	1:C:262:ARG:HB3	1.59	0.82
1:C:53:PRO:HG2	1:C:84:MET:HE2	1.61	0.82
1:B:493:GLU:HA	1:B:494:GLU:HB2	1.61	0.82
1:B:491:TYR:N	1:B:492:GLU:O	2.13	0.81
1:B:480:SER:HB2	1:B:486:TYR:H	1.45	0.81
1:B:493:GLU:HA	1:B:494:GLU:CB	2.11	0.80
1:C:261:LYS:HA	1:C:262:ARG:CB	2.12	0.80
1:B:53:PRO:HD2	1:B:274:LEU:HD22	1.63	0.79
1:A:380:LYS:HE2	1:A:432:GLU:OE2	1.81	0.79
1:B:112:VAL:HG11	1:B:115:PHE:HB2	1.65	0.79
1:A:112:VAL:HG11	1:A:115:PHE:HB2	1.65	0.78
1:A:261:LYS:HA	1:A:262:ARG:CB	2.14	0.78
1:B:261:LYS:HB2	1:B:262:ARG:HB3	1.65	0.78
1:C:111:SER:HB2	1:C:265:SER:HB3	1.66	0.78
1:C:320:LEU:HD23	1:C:320:LEU:H	1.48	0.78
1:A:348:ASP:HB2	1:A:365:ALA:HB3	1.64	0.77
1:B:53:PRO:HG2	1:B:84:MET:CE	2.14	0.77
1:B:452:ARG:HD2	3:B:2128:HOH:O	1.83	0.77
1:C:357:ASN:HD21	1:C:474:ASP:HA	1.49	0.77
1:B:155:GLU:OE1	1:B:195:GLN:HG2	1.86	0.75
1:B:310:LYS:HG3	1:B:418:LEU:HD21	1.69	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:485:THR:O	1:B:486:TYR:O	2.05	0.74
1:C:53:PRO:HG2	1:C:84:MET:CE	2.16	0.74
1:A:53:PRO:HG2	1:A:84:MET:CE	2.19	0.73
1:B:53:PRO:HG2	1:B:84:MET:HE2	1.70	0.73
1:B:487:ASP:HA	1:B:488:TYR:CB	2.19	0.72
1:A:53:PRO:HD2	1:A:274:LEU:HD22	1.69	0.72
1:A:455:LEU:HD13	1:A:459:VAL:HG11	1.72	0.72
1:B:357:ASN:HB3	1:B:359:GLN:H	1.54	0.72
1:C:184:PRO:HG2	1:C:190:GLN:HE21	1.55	0.72
1:B:471:HIS:CE1	1:B:490:LYS:HE3	2.25	0.72
1:B:397:LYS:HE2	3:B:2114:HOH:O	1.89	0.71
1:A:348:ASP:HB2	1:A:365:ALA:CB	2.21	0.71
1:C:184:PRO:HG2	1:C:190:GLN:NE2	2.06	0.70
1:A:127:THR:HA	3:A:2024:HOH:O	1.91	0.70
1:C:335:ILE:HD12	1:C:441:ASP:HA	1.73	0.70
1:A:184:PRO:HG2	1:A:190:GLN:HE21	1.57	0.70
1:B:487:ASP:HA	1:B:488:TYR:HB2	1.73	0.70
1:B:293:PRO:HG3	1:B:385:ILE:HA	1.76	0.69
1:C:309:VAL:HG13	1:C:311:SER:H	1.56	0.69
1:A:45:LEU:HB3	3:A:2018:HOH:O	1.92	0.68
1:A:171:SER:HB2	1:A:258:LYS:HD2	1.74	0.68
1:C:88:ASN:O	1:C:89:PRO:O	2.11	0.68
1:C:174:GLN:OE1	1:C:235:LEU:HD13	1.94	0.68
1:C:261:LYS:CA	1:C:262:ARG:CB	2.72	0.68
1:B:184:PRO:HG2	1:B:190:GLN:HE21	1.58	0.67
1:A:310:LYS:HE3	1:A:418:LEU:HD21	1.77	0.67
1:B:264:SER:HB3	3:B:2082:HOH:O	1.94	0.66
1:A:261:LYS:CA	1:A:262:ARG:CB	2.74	0.66
1:B:389:ASN:HD21	1:C:310:LYS:NZ	1.93	0.66
1:A:22:THR:HG22	1:A:433:ASN:HB3	1.77	0.66
1:C:261:LYS:CB	1:C:262:ARG:HB3	2.26	0.65
1:B:490:LYS:O	1:B:490:LYS:CD	2.45	0.65
1:B:106:LYS:HB3	1:B:267:ILE:HD11	1.79	0.64
1:A:53:PRO:HG2	1:A:84:MET:HE3	1.80	0.64
1:A:9:ILE:HD11	1:A:451:VAL:HG21	1.80	0.63
1:B:354:HIS:O	1:B:362:GLY:O	2.15	0.63
1:A:354:HIS:O	1:A:362:GLY:O	2.15	0.63
1:C:395:VAL:O	1:C:397:LYS:HG3	1.99	0.63
1:A:13:ALA:HB2	1:A:342:GLY:HA3	1.81	0.62
1:B:49:ASN:HD21	1:B:280:LYS:HG2	1.64	0.62
1:A:128:GLN:N	3:A:2024:HOH:O	2.33	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:127:THR:O	1:A:128:GLN:HB2	2.00	0.61
1:B:187:GLU:OE2	1:B:191:ARG:NH1	2.32	0.61
1:B:292:LEU:O	1:B:306:PRO:HB3	2.01	0.61
1:B:489:PRO:O	1:B:490:LYS:HB3	2.01	0.60
1:C:191:ARG:HD2	3:C:2066:HOH:O	2.00	0.60
1:B:261:LYS:HA	1:B:262:ARG:CB	2.31	0.60
1:B:487:ASP:CG	1:B:489:PRO:HD2	2.22	0.60
1:B:491:TYR:H	1:B:492:GLU:C	2.04	0.60
1:A:426:GLU:HB3	1:C:387:LYS:HD2	1.83	0.60
1:A:106:LYS:HB3	1:A:267:ILE:HD11	1.83	0.60
1:A:155:GLU:OE1	1:A:195:GLN:HG2	2.01	0.60
1:B:310:LYS:HE3	1:B:418:LEU:HD21	1.84	0.59
1:B:488:TYR:CD2	1:B:488:TYR:C	2.75	0.59
1:C:111:SER:HB2	1:C:265:SER:CB	2.31	0.59
1:C:320:LEU:HD23	1:C:320:LEU:N	2.16	0.59
1:A:395:VAL:O	1:A:397:LYS:HG3	2.02	0.59
1:A:178:ILE:O	1:A:253:PRO:HG3	2.02	0.59
1:B:493:GLU:CA	1:B:494:GLU:HB2	2.31	0.58
1:C:191:ARG:NH2	1:C:197:VAL:HG21	2.19	0.58
1:A:193:LEU:HD11	2:D:4:SIA:H92	1.84	0.58
1:A:435:ARG:HH21	1:B:434:GLU:CD	2.06	0.58
1:A:49:ASN:HD21	1:A:280:LYS:HG2	1.69	0.58
1:B:261:LYS:HB2	1:B:262:ARG:CB	2.34	0.58
1:C:26:ARG:NH2	3:C:2009:HOH:O	2.36	0.58
1:C:455:LEU:HD13	1:C:459:VAL:HG11	1.86	0.58
1:B:26:ARG:NH2	3:B:2002:HOH:O	2.36	0.57
1:C:157:GLY:O	1:C:158:SER:CB	2.52	0.57
1:C:440:HIS:O	1:C:444:VAL:HG23	2.05	0.57
1:C:129:HIS:CE1	1:C:161:PRO:O	2.57	0.57
1:C:293:PRO:HB2	1:C:294:PHE:CD1	2.39	0.57
1:A:335:ILE:HD12	1:A:441:ASP:HA	1.87	0.57
1:B:264:SER:CB	3:B:2082:HOH:O	2.52	0.56
1:B:492:GLU:HA	1:B:493:GLU:CB	2.35	0.56
1:C:129:HIS:HE1	1:C:161:PRO:O	1.87	0.56
1:C:355:HIS:CG	1:C:355:HIS:O	2.58	0.56
1:C:7:ILE:HA	1:C:355:HIS:HA	1.87	0.56
1:A:53:PRO:HG2	1:A:84:MET:HE2	1.86	0.56
1:B:455:LEU:HD13	1:B:459:VAL:HG11	1.87	0.56
1:B:261:LYS:CA	1:B:262:ARG:HB2	2.33	0.56
1:C:66:LEU:O	1:C:147:PHE:HB3	2.06	0.56
1:C:464:ASN:OD1	1:C:466:CYS:HB2	2.06	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:97:GLY:HA3	1:C:229:MET:O	2.06	0.56
1:A:332:PHE:HB2	1:A:441:ASP:CG	2.27	0.55
1:A:136:ARG:HG3	1:A:144:PRO:HG3	1.88	0.55
1:B:494:GLU:HA	1:B:494:GLU:OE1	2.05	0.55
1:A:310:LYS:NZ	1:C:389:ASN:HD21	2.05	0.55
1:A:179:TRP:CE2	1:A:203:VAL:HG21	2.41	0.55
1:B:261:LYS:CA	1:B:262:ARG:CB	2.84	0.55
1:A:122:PRO:HG2	1:A:125:ARG:NH1	2.21	0.55
1:B:295:HIS:HB3	1:B:306:PRO:HG2	1.89	0.55
1:A:483:ASN:ND2	3:A:2083:HOH:O	2.39	0.55
1:B:136:ARG:HD2	3:B:2047:HOH:O	2.06	0.55
1:B:490:LYS:H	1:B:491:TYR:HB2	1.71	0.55
1:A:243:ASN:HD22	1:B:220:PRO:HD3	1.71	0.55
1:A:157:GLY:O	1:A:158:SER:HB2	2.06	0.54
1:B:248:GLY:C	1:B:249:ASN:HD22	2.11	0.54
1:A:485:THR:O	1:A:486:TYR:O	2.26	0.54
1:B:77:VAL:HG12	1:B:78:PRO:CD	2.37	0.54
1:C:127:THR:O	1:C:128:GLN:HB2	2.08	0.54
1:C:188:THR:O	1:C:192:THR:OG1	2.25	0.54
1:B:8:CYS:HB2	1:B:354:HIS:HB3	1.90	0.54
1:B:25:GLU:OE2	1:B:321:ARG:NH2	2.38	0.54
1:A:248:GLY:C	1:A:249:ASN:HD22	2.11	0.54
1:A:310:LYS:HE3	1:A:418:LEU:CD2	2.38	0.54
1:C:112:VAL:HG11	1:C:115:PHE:HB2	1.89	0.54
1:C:307:LYS:HG2	1:C:421:TRP:CE2	2.42	0.54
1:C:36:ILE:HA	1:C:292:LEU:HD22	1.90	0.54
1:A:479:ASN:O	1:A:483:ASN:HB2	2.08	0.53
1:C:138:CYS:HB2	3:C:2050:HOH:O	2.09	0.53
1:C:301:THR:O	1:C:394:ALA:O	2.27	0.53
1:C:122:PRO:HD2	1:C:125:ARG:HD2	1.90	0.53
1:C:310:LYS:HG3	1:C:418:LEU:HD21	1.90	0.53
1:A:284:PRO:HD3	1:A:300:LEU:O	2.08	0.52
1:C:346:MET:SD	1:C:352:GLY:HA3	2.49	0.52
1:A:310:LYS:HG3	1:A:418:LEU:HD21	1.90	0.52
1:B:491:TYR:HE2	1:B:494:GLU:OE2	1.92	0.52
1:B:494:GLU:OE1	1:B:494:GLU:CA	2.58	0.52
1:A:45:LEU:HD23	1:A:282:GLN:NE2	2.24	0.52
1:B:412:LYS:NZ	3:B:2113:HOH:O	2.43	0.52
1:B:460:LYS:HE2	1:B:462:LEU:CD2	2.39	0.52
1:A:353:TYR:N	1:A:353:TYR:CD1	2.77	0.52
1:B:490:LYS:O	1:B:490:LYS:CG	2.58	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:131:THR:HG23	1:C:131:THR:O	2.09	0.52
1:A:49:ASN:ND2	1:A:280:LYS:HG2	2.24	0.52
1:B:491:TYR:CE2	1:B:494:GLU:OE2	2.63	0.52
1:C:117:LYS:HD3	1:C:255:TYR:CD2	2.44	0.52
1:B:88:ASN:O	1:B:89:PRO:O	2.27	0.52
1:A:26:ARG:HD2	1:C:379:ASN:OD1	2.08	0.52
1:C:26:ARG:NH2	3:C:2008:HOH:O	2.42	0.52
1:C:53:PRO:HG3	1:C:82:TYR:CZ	2.45	0.52
1:C:117:LYS:HD3	1:C:255:TYR:CG	2.45	0.51
1:C:437:LEU:O	3:C:2117:HOH:O	2.18	0.51
1:A:283:THR:HG22	1:A:301:THR:HG22	1.93	0.51
1:A:36:ILE:HA	1:A:292:LEU:CD2	2.36	0.51
1:C:293:PRO:HB2	1:C:294:PHE:CE1	2.46	0.51
1:B:487:ASP:OD1	1:B:489:PRO:HD2	2.10	0.51
1:C:179:TRP:CE2	1:C:203:VAL:HG21	2.45	0.51
1:A:23:ILE:HD12	1:A:431:MET:HG2	1.93	0.51
1:B:10:GLY:HA3	1:B:343:TRP:CH2	2.46	0.51
1:B:348:ASP:OD1	1:B:348:ASP:N	2.43	0.50
1:C:309:VAL:HG22	1:C:422:THR:HA	1.94	0.50
1:A:61:ILE:HD12	1:A:106:LYS:HD2	1.91	0.50
1:A:108:LEU:HD13	1:B:404:ARG:NH1	2.26	0.50
1:B:203:VAL:HG22	1:B:244:PHE:CD2	2.47	0.50
1:A:435:ARG:HH12	1:B:435:ARG:HH11	1.59	0.50
1:B:77:VAL:HG12	1:B:78:PRO:HD3	1.94	0.50
1:C:23:ILE:HD12	1:C:431:MET:HG2	1.93	0.50
1:A:382:ASN:O	1:A:386:GLU:HG2	2.11	0.50
1:B:191:ARG:NH2	1:B:197:VAL:HG21	2.26	0.50
1:A:140:VAL:HG12	1:A:145:SER:HB2	1.94	0.50
1:C:335:ILE:HD12	1:C:441:ASP:CA	2.40	0.50
1:A:111:SER:HB2	1:A:265:SER:HB3	1.94	0.50
1:C:157:GLY:O	1:C:158:SER:HB2	2.11	0.50
1:A:157:GLY:O	1:A:158:SER:CB	2.60	0.50
1:A:77:VAL:HG12	1:A:78:PRO:CD	2.42	0.50
1:B:309:VAL:CG2	1:B:422:THR:HA	2.42	0.50
1:A:464:ASN:OD1	1:A:466:CYS:HB2	2.11	0.49
1:A:77:VAL:HG12	1:A:78:PRO:HD2	1.94	0.49
1:C:8:CYS:HB2	1:C:354:HIS:CB	2.31	0.49
1:A:20:VAL:HB	1:A:433:ASN:ND2	2.27	0.49
1:A:53:PRO:HG3	1:A:82:TYR:CZ	2.47	0.49
1:B:85:GLU:O	1:B:269:LYS:HA	2.12	0.49
1:B:331:LEU:HD13	3:B:2126:HOH:O	2.11	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:399:PHE:CE1	1:B:406:LEU:HG	2.48	0.49
1:B:99:PHE:HZ	1:B:178:ILE:HD13	1.78	0.49
1:C:381:VAL:HG12	1:C:385:ILE:HD12	1.94	0.49
1:C:321:ARG:CB	3:C:2091:HOH:O	2.60	0.49
1:C:196:ASN:N	1:C:196:ASN:ND2	2.60	0.49
1:C:200:TYR:CE2	1:C:247:THR:HG23	2.47	0.49
1:A:18:GLU:HG2	1:A:33:ALA:HB3	1.94	0.49
1:A:38:GLU:O	1:A:295:HIS:HA	2.13	0.49
1:B:394:ALA:O	1:B:395:VAL:HB	2.11	0.49
1:B:184:PRO:HG2	1:B:190:GLN:NE2	2.24	0.49
1:C:171:SER:HB2	1:C:258:LYS:HE3	1.94	0.49
1:A:435:ARG:HH11	1:C:435:ARG:NH1	2.10	0.49
1:C:85:GLU:O	1:C:269:LYS:HA	2.12	0.49
1:A:111:SER:HB2	1:A:265:SER:CB	2.42	0.49
1:A:36:ILE:CA	1:A:292:LEU:HD22	2.38	0.49
1:B:18:GLU:HG2	1:B:33:ALA:HB3	1.93	0.49
1:B:460:LYS:HG2	1:B:462:LEU:HD23	1.95	0.49
1:A:184:PRO:HG2	1:A:190:GLN:NE2	2.28	0.49
1:A:236:LEU:CD1	1:A:240:ASP:HB3	2.43	0.49
1:A:372:LYS:HE3	3:A:2027:HOH:O	2.11	0.49
1:B:194:TYR:O	1:B:196:ASN:N	2.37	0.49
1:B:37:LEU:HB2	1:B:314:LEU:HD12	1.95	0.49
1:C:331:LEU:HD22	1:C:438:ASP:OD2	2.13	0.48
1:C:348:ASP:HB2	1:C:365:ALA:HB3	1.94	0.48
1:C:261:LYS:CA	1:C:262:ARG:HB3	2.40	0.48
1:A:68:ASN:O	1:A:71:CYS:HB2	2.13	0.48
1:B:488:TYR:HD2	1:B:489:PRO:HD3	1.78	0.48
1:B:9:ILE:HD11	1:B:451:VAL:HG21	1.95	0.48
1:C:18:GLU:HG2	1:C:33:ALA:HB3	1.94	0.48
1:C:138:CYS:CB	3:C:2050:HOH:O	2.60	0.48
1:C:451:VAL:HG12	1:C:467:PHE:CE1	2.49	0.48
1:B:53:PRO:HG2	1:B:84:MET:HE3	1.91	0.48
1:C:123:LYS:HD3	1:C:131:THR:HG23	1.95	0.48
1:C:75:LEU:O	1:C:76:SER:HB2	2.12	0.48
1:C:51:ILE:HG23	1:C:52:PRO:HD2	1.96	0.48
1:A:320:LEU:H	1:A:320:LEU:CD2	2.21	0.47
1:B:265:SER:OG	1:B:266:GLY:N	2.45	0.47
1:A:120:ILE:HG22	1:A:167:TYR:CZ	2.49	0.47
1:B:389:ASN:HD21	1:C:310:LYS:HZ2	1.60	0.47
1:C:265:SER:OG	1:C:266:GLY:N	2.47	0.47
1:A:462:LEU:HD21	1:A:468:GLU:HB2	1.94	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:112:VAL:N	1:B:262:ARG:HD3	2.30	0.47
1:B:128:GLN:HB3	1:B:161:PRO:HG2	1.96	0.47
1:A:243:ASN:ND2	1:B:220:PRO:HD3	2.29	0.47
1:A:22:THR:HB	1:A:434:GLU:HB3	1.95	0.47
1:A:435:ARG:NH1	1:B:435:ARG:HH11	2.12	0.47
1:B:480:SER:HB2	1:B:486:TYR:N	2.22	0.47
1:A:434:GLU:HB2	3:A:2071:HOH:O	2.14	0.47
1:B:205:THR:HG22	1:B:242:ILE:HA	1.97	0.47
1:A:108:LEU:HD12	1:A:261:LYS:HE2	1.97	0.46
1:A:14:ASN:OD1	1:A:322:ASN:ND2	2.48	0.46
1:B:480:SER:HB2	1:B:485:THR:HB	1.96	0.46
1:C:53:PRO:HG3	1:C:82:TYR:CE2	2.50	0.46
1:B:138:CYS:O	1:B:145:SER:HB3	2.15	0.46
1:C:155:GLU:OE1	1:C:195:GLN:CG	2.56	0.46
1:C:49:ASN:HD21	1:C:280:LYS:HG2	1.81	0.46
1:A:66:LEU:O	1:A:149:ASN:HB2	2.15	0.46
1:B:483:ASN:HB3	1:B:485:THR:OG1	2.15	0.46
1:B:310:LYS:HE3	1:B:418:LEU:CD2	2.44	0.46
1:B:56:LEU:O	1:B:59:CYS:HB2	2.16	0.46
1:C:190:GLN:NE2	1:C:216:ILE:HD11	2.31	0.46
1:A:309:VAL:HG22	1:A:422:THR:HA	1.97	0.46
1:B:300:LEU:HD22	1:B:396:GLY:HA2	1.97	0.46
1:C:166:SER:HB3	1:C:243:ASN:OD1	2.16	0.46
1:A:20:VAL:HG21	1:A:317:ALA:HB2	1.98	0.46
3:B:2104:HOH:O	1:C:418:LEU:HD23	2.14	0.46
1:A:35:ASP:OD2	1:A:39:LYS:HE2	2.16	0.46
1:A:88:ASN:O	1:A:89:PRO:O	2.34	0.46
1:C:169:ASN:HB2	1:C:236:LEU:CD2	2.45	0.46
1:B:456:ARG:HB3	1:B:457:ASP:H	1.45	0.45
2:D:1:GAL:H62	2:D:1:GAL:H2	1.98	0.45
1:B:204:GLY:HA2	1:B:208:LEU:O	2.16	0.45
1:A:236:LEU:HD12	1:A:240:ASP:HB3	1.98	0.45
1:A:448:TYR:CE1	1:A:465:GLY:HA2	2.52	0.45
1:B:381:VAL:HG12	1:B:385:ILE:HD12	1.98	0.45
1:B:310:LYS:CG	1:B:418:LEU:HD21	2.44	0.45
1:B:51:ILE:HD13	1:B:262:ARG:HH22	1.82	0.45
1:B:395:VAL:O	1:B:397:LYS:HG3	2.16	0.45
1:C:160:TYR:CZ	1:C:248:GLY:HA2	2.51	0.45
1:A:194:TYR:O	1:A:196:ASN:N	2.46	0.44
1:B:479:ASN:O	1:B:483:ASN:HB2	2.17	0.44
1:B:214:PRO:HG3	1:B:249:ASN:CG	2.37	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:389:ASN:HD21	1:C:310:LYS:HZ3	1.65	0.44
1:C:200:TYR:CE2	1:C:247:THR:CG2	3.00	0.44
1:B:158:SER:O	1:B:195:GLN:HG3	2.18	0.44
1:B:332:PHE:CE1	1:B:442:SER:HB2	2.53	0.44
1:B:18:GLU:HG2	1:B:33:ALA:CB	2.48	0.44
1:B:7:ILE:HA	1:B:355:HIS:HA	1.99	0.44
1:C:221:LYS:HA	1:C:225:LEU:O	2.18	0.44
1:A:83:ILE:HD12	1:A:110:SER:HA	1.99	0.44
1:B:171:SER:HB2	1:B:258:LYS:HD2	1.98	0.44
1:C:79:GLU:HG3	1:C:113:LYS:O	2.18	0.44
1:C:199:THR:OG1	1:C:214:PRO:HG2	2.17	0.44
1:A:78:PRO:O	1:A:114:HIS:HA	2.18	0.44
1:B:487:ASP:CA	1:B:488:TYR:CB	2.93	0.44
1:A:155:GLU:OE2	1:A:192:THR:O	2.35	0.44
1:C:20:VAL:HG12	1:C:315:VAL:HG12	1.99	0.44
1:C:191:ARG:HH21	1:C:197:VAL:HG21	1.82	0.43
1:A:129:HIS:CE1	1:A:161:PRO:HD2	2.53	0.43
1:B:203:VAL:HG22	1:B:244:PHE:HD2	1.83	0.43
1:B:489:PRO:O	1:B:490:LYS:CB	2.64	0.43
1:C:284:PRO:HD3	1:C:300:LEU:O	2.17	0.43
1:B:136:ARG:HA	1:B:139:ALA:HB2	2.00	0.43
1:C:122:PRO:HG2	1:C:125:ARG:CZ	2.48	0.43
1:B:423:TYR:CE2	1:B:427:LEU:HD22	2.53	0.43
1:A:97:GLY:HA3	1:A:229:MET:O	2.19	0.43
1:A:354:HIS:O	1:A:355:HIS:ND1	2.51	0.43
1:A:487:ASP:CG	1:A:487:ASP:O	2.56	0.43
1:B:97:GLY:HA3	1:B:229:MET:O	2.19	0.43
1:B:305:CYS:C	1:B:306:PRO:O	2.57	0.43
1:A:213:THR:HA	1:A:214:PRO:HD3	1.88	0.43
1:A:279:THR:OG1	1:A:287:ALA:HB1	2.18	0.43
1:B:221:LYS:HA	1:B:225:LEU:O	2.19	0.43
1:B:299:PRO:O	1:B:395:VAL:HG11	2.19	0.43
1:B:357:ASN:HD21	1:B:474:ASP:HA	1.84	0.43
1:C:394:ALA:O	1:C:395:VAL:HB	2.19	0.43
1:C:65:LEU:HD11	1:C:109:LEU:HD21	2.00	0.43
1:A:357:ASN:HB3	1:A:359:GLN:H	1.84	0.43
1:B:109:LEU:HD12	1:B:109:LEU:HA	1.87	0.43
1:B:301:THR:O	1:B:394:ALA:O	2.36	0.43
1:C:307:LYS:HG2	1:C:421:TRP:CD2	2.54	0.43
1:C:74:LEU:HA	1:C:74:LEU:HD23	1.79	0.43
3:A:2086:HOH:O	2:D:2:NAG:H83	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:13:ALA:HB2	1:B:342:GLY:HA3	2.01	0.43
1:C:194:TYR:O	1:C:195:GLN:HB2	2.19	0.43
1:A:458:ASN:ND2	1:A:458:ASN:N	2.66	0.42
1:C:270:THR:OG1	1:C:271:GLU:N	2.52	0.42
1:B:307:LYS:HG2	1:B:421:TRP:CG	2.54	0.42
1:B:53:PRO:HG3	1:B:82:TYR:CZ	2.54	0.42
1:A:320:LEU:HB3	1:A:440:HIS:CG	2.54	0.42
1:A:307:LYS:HG2	1:A:421:TRP:CE2	2.54	0.42
1:B:51:ILE:CD1	1:B:262:ARG:HH22	2.31	0.42
1:B:78:PRO:O	1:B:114:HIS:HA	2.19	0.42
1:C:262:ARG:HG3	1:C:263:GLY:N	2.34	0.42
1:C:263:GLY:O	1:C:264:SER:HB3	2.18	0.42
1:B:490:LYS:H	1:B:491:TYR:CB	2.31	0.42
1:C:275:GLU:O	1:C:276:ASN:HB3	2.20	0.42
1:A:426:GLU:CB	1:C:387:LYS:HD2	2.49	0.42
1:A:122:PRO:HG2	1:A:125:ARG:CZ	2.49	0.42
1:A:458:ASN:HB3	1:A:471:HIS:HD2	1.84	0.42
1:B:151:VAL:HG12	1:B:153:LEU:HD13	2.01	0.42
1:C:129:HIS:CE1	1:C:161:PRO:HD2	2.54	0.42
1:B:157:GLY:O	1:B:158:SER:CB	2.68	0.42
1:B:292:LEU:HA	1:B:293:PRO:HD3	1.98	0.42
1:A:179:TRP:CD2	1:A:203:VAL:HG21	2.54	0.42
1:A:331:LEU:HB2	1:A:438:ASP:OD1	2.20	0.42
1:A:69:PRO:C	1:A:71:CYS:H	2.23	0.42
1:C:402:LEU:HD23	1:C:402:LEU:HA	1.95	0.42
1:A:238:MET:O	1:A:239:TRP:CB	2.67	0.41
1:B:10:GLY:HA3	1:B:343:TRP:CZ3	2.55	0.41
1:B:48:LEU:O	1:B:49:ASN:HB2	2.20	0.41
1:A:85:GLU:O	1:A:269:LYS:HA	2.20	0.41
1:B:307:LYS:HE2	3:B:2118:HOH:O	2.20	0.41
1:B:309:VAL:HG22	1:B:422:THR:HA	2.02	0.41
1:C:310:LYS:HE3	1:C:418:LEU:HD21	2.02	0.41
1:C:87:GLU:O	3:C:2030:HOH:O	2.22	0.41
1:B:84:MET:HE1	1:B:274:LEU:HB2	2.02	0.41
1:B:307:LYS:HG2	1:B:421:TRP:CD2	2.55	0.41
1:A:383:SER:HB3	1:B:430:LEU:CD1	2.50	0.41
1:B:74:LEU:HA	1:B:74:LEU:HD23	1.87	0.41
1:C:14:ASN:OD1	1:C:16:SER:HB3	2.20	0.41
1:B:331:LEU:HD12	1:B:331:LEU:HA	1.75	0.41
1:C:53:PRO:HD2	1:C:274:LEU:HD22	2.03	0.41
1:B:56:LEU:HD23	1:B:56:LEU:HA	1.90	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:13:ALA:O	1:C:344:GLN:HA	2.21	0.41
1:A:292:LEU:HA	1:A:293:PRO:HD3	1.76	0.41
1:C:348:ASP:HB2	1:C:365:ALA:CB	2.51	0.41
1:A:331:LEU:HD22	1:A:438:ASP:OD2	2.20	0.41
1:B:300:LEU:HD22	1:B:396:GLY:CA	2.51	0.41
1:B:174:GLN:OE1	1:B:235:LEU:HD13	2.21	0.40
1:A:128:GLN:NE2	3:A:2032:HOH:O	2.54	0.40
1:B:53:PRO:HD2	1:B:274:LEU:CD2	2.43	0.40
1:B:243:ASN:HD22	1:C:220:PRO:HD3	1.87	0.40
1:A:120:ILE:HG22	1:A:167:TYR:CE1	2.56	0.40
1:A:51:ILE:HA	1:A:52:PRO:HD3	1.91	0.40
1:B:382:ASN:O	1:B:386:GLU:HG2	2.21	0.40
1:C:113:LYS:O	1:C:113:LYS:HG2	2.21	0.40
1:C:126:TRP:CD2	1:C:153:LEU:HD21	2.57	0.40
1:C:166:SER:HA	1:C:242:ILE:O	2.21	0.40
1:B:167:TYR:CE2	1:B:169:ASN:HA	2.56	0.40
1:A:348:ASP:HB2	1:A:365:ALA:HB2	2.02	0.40
1:B:300:LEU:HD23	1:B:395:VAL:HG12	2.02	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	467/506 (92%)	429 (92%)	25 (5%)	13 (3%)	5 7
1	B	482/506 (95%)	442 (92%)	24 (5%)	16 (3%)	4 5
1	C	463/506 (92%)	428 (92%)	27 (6%)	8 (2%)	9 16
All	All	1412/1518 (93%)	1299 (92%)	76 (5%)	37 (3%)	5 8

All (37) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	89	PRO
1	A	158	SER
1	A	262	ARG
1	A	485	THR
1	A	486	TYR
1	B	89	PRO
1	B	158	SER
1	B	262	ARG
1	B	486	TYR
1	B	488	TYR
1	B	490	LYS
1	B	491	TYR
1	C	89	PRO
1	C	158	SER
1	C	262	ARG
1	A	90	ARG
1	B	487	ASP
1	B	492	GLU
1	A	355	HIS
1	B	195	GLN
1	A	31	THR
1	A	76	SER
1	A	263	GLY
1	B	90	ARG
1	B	263	GLY
1	B	264	SER
1	C	90	ARG
1	C	395	VAL
1	B	355	HIS
1	B	485	THR
1	B	489	PRO
1	C	264	SER
1	C	456	ARG
1	A	264	SER
1	C	263	GLY
1	A	395	VAL
1	A	57	GLY

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	411/443 (93%)	384 (93%)	27 (7%)	16	32
1	B	424/443 (96%)	393 (93%)	31 (7%)	14	27
1	C	407/443 (92%)	380 (93%)	27 (7%)	16	32
All	All	1242/1329 (94%)	1157 (93%)	85 (7%)	16	30

All (85) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	23	ILE
1	A	26	ARG
1	A	40	THR
1	A	76	SER
1	A	77	VAL
1	A	82	TYR
1	A	88	ASN
1	A	109	LEU
1	A	118	VAL
1	A	124	ASP
1	A	131	THR
1	A	158	SER
1	A	159	ASN
1	A	207	THR
1	A	261	LYS
1	A	264	SER
1	A	283	THR
1	A	309	VAL
1	A	320	LEU
1	A	331	LEU
1	A	347	ILE
1	A	348	ASP
1	A	353	TYR
1	A	355	HIS
1	A	427	LEU
1	A	477	CYS
1	A	487	ASP
1	B	26	ARG
1	B	40	THR
1	B	52	PRO
1	B	77	VAL

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Mol	Chain	Res	Type
1	B	99	PHE
1	B	109	LEU
1	B	118	VAL
1	B	131	THR
1	B	140	VAL
1	B	153	LEU
1	B	197	VAL
1	B	207	THR
1	B	261	LYS
1	B	283	THR
1	B	290	THR
1	B	307	LYS
1	B	311	SER
1	B	320	LEU
1	B	331	LEU
1	B	347	ILE
1	B	348	ASP
1	B	351	TYR
1	B	355	HIS
1	B	398	GLU
1	B	409	LEU
1	B	434	GLU
1	B	457	ASP
1	B	487	ASP
1	B	490	LYS
1	B	491	TYR
1	B	494	GLU
1	C	26	ARG
1	C	34	LYS
1	C	39	LYS
1	C	73	ARG
1	C	109	LEU
1	C	112	VAL
1	C	131	THR
1	C	140	VAL
1	C	153	LEU
1	C	192	THR
1	C	196	ASN
1	C	197	VAL
1	C	202	SER
1	C	207	THR
1	C	261	LYS

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Mol	Chain	Res	Type
1	C	279	THR
1	C	309	VAL
1	C	320	LEU
1	C	331	LEU
1	C	347	ILE
1	C	348	ASP
1	C	351	TYR
1	C	355	HIS
1	C	398	GLU
1	C	409	LEU
1	C	414	GLU
1	C	434	GLU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (28) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	49	ASN
1	A	114	HIS
1	A	129	HIS
1	A	190	GLN
1	A	249	ASN
1	A	282	GLN
1	A	389	ASN
1	A	391	GLN
1	A	454	GLN
1	A	458	ASN
1	B	49	ASN
1	B	100	ASN
1	B	107	HIS
1	B	129	HIS
1	B	190	GLN
1	B	249	ASN
1	B	357	ASN
1	B	389	ASN
1	B	454	GLN
1	B	458	ASN
1	C	49	ASN
1	C	129	HIS
1	C	190	GLN
1	C	196	ASN
1	C	249	ASN
1	C	357	ASN

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Mol	Chain	Res	Type
1	C	389	ASN
1	C	458	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)

4 monosaccharides are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	GAL	D	1	2	12,12,12	0.61	0	17,17,17	1.23	1 (5%)
2	NAG	D	2	2	14,14,15	0.42	0	17,19,21	2.05	5 (29%)
2	GAL	D	3	2	11,11,12	0.49	0	15,15,17	2.66	3 (20%)
2	SIA	D	4	2	17,20,21	0.69	0	21,28,31	1.25	1 (4%)

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	GAL	D	1	2	-	1/2/22/22	0/1/1/1
2	NAG	D	2	2	-	1/6/23/26	0/1/1/1
2	GAL	D	3	2	1/1/4/5	2/2/19/22	0/1/1/1
2	SIA	D	4	2	-	3/14/34/38	0/1/1/1

There are no bond length outliers.

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	D	3	GAL	O5-C1-C2	7.38	122.17	110.77
2	D	3	GAL	C1-O5-C5	5.83	120.09	112.19
2	D	2	NAG	C2-N2-C7	4.93	129.92	122.90
2	D	2	NAG	O5-C1-C2	-4.71	103.84	111.29
2	D	4	SIA	C6-O6-C2	3.77	119.40	111.34
2	D	3	GAL	C1-C2-C3	2.89	113.22	109.67
2	D	1	GAL	C4-C3-C2	-2.50	106.45	110.82
2	D	2	NAG	C8-C7-N2	-2.36	112.10	116.10
2	D	2	NAG	O7-C7-N2	2.13	125.87	121.95
2	D	2	NAG	C1-O5-C5	2.03	114.94	112.19

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	D	3	GAL	C1

All (7) torsion outliers are listed below:

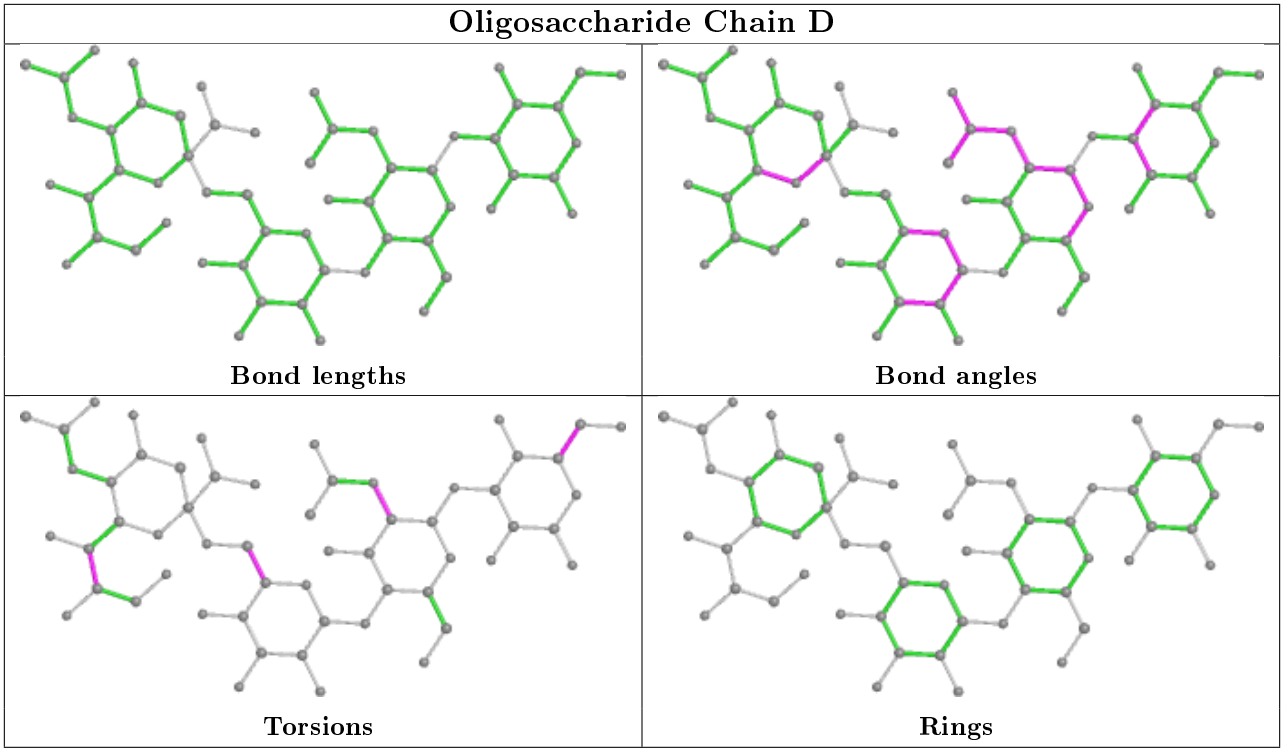
Mol	Chain	Res	Type	Atoms
2	D	2	NAG	C1-C2-N2-C7
2	D	3	GAL	O5-C5-C6-O6
2	D	3	GAL	C4-C5-C6-O6
2	D	1	GAL	O5-C5-C6-O6
2	D	4	SIA	C6-C7-C8-O8
2	D	4	SIA	O7-C7-C8-C9
2	D	4	SIA	O7-C7-C8-O8

There are no ring outliers.

3 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	D	2	NAG	1	0
2	D	1	GAL	1	0
2	D	4	SIA	1	0

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



5.6 Ligand geometry

There are no ligands in this entry.

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

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	473/506 (93%)	0.10	27 (5%)	23	25	31, 63, 103, 163	0
1	B	486/506 (96%)	-0.15	19 (3%)	39	42	30, 50, 83, 154	0
1	C	467/506 (92%)	0.15	40 (8%)	10	10	33, 57, 125, 263	0
All	All	1426/1518 (93%)	0.03	86 (6%)	21	22	30, 56, 104, 263	0

All (86) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	487	ASP	11.1
1	C	477	CYS	10.6
1	C	358	ASP	10.1
1	C	474	ASP	7.5
1	C	476	GLU	7.5
1	C	360	GLY	7.3
1	C	362	GLY	5.6
1	C	356	SER	5.6
1	A	487	ASP	5.6
1	C	457	ASP	5.3
1	C	359	GLN	4.4
1	A	277	CYS	4.3
1	C	473	CYS	4.2
1	C	468	GLU	4.1
1	C	368	GLU	4.1
1	C	357	ASN	4.0
1	A	401	ASN	3.9
1	C	472	LYS	3.9
1	A	362	GLY	3.8
1	C	324	PRO	3.7
1	C	143	ASN	3.7
1	A	40	THR	3.4
1	A	263	GLY	3.3

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Mol	Chain	Res	Type	RSRZ
1	C	361	SER	3.3
1	A	289	ASN	3.3
1	A	368	GLU	3.3
1	A	75	LEU	3.3
1	A	457	ASP	3.2
1	A	87	GLU	3.2
1	A	468	GLU	3.2
1	C	390	THR	3.1
1	A	372	LYS	3.1
1	B	113	LYS	3.0
1	A	360	GLY	3.0
1	B	263	GLY	3.0
1	C	262	ARG	3.0
1	C	15	ASN	2.9
1	C	466	CYS	2.9
1	A	386	GLU	2.9
1	B	360	GLY	2.8
1	C	475	ASP	2.8
1	C	263	GLY	2.8
1	B	491	TYR	2.8
1	C	141	SER	2.8
1	B	358	ASP	2.8
1	C	75	LEU	2.7
1	A	485	THR	2.7
1	C	469	PHE	2.7
1	C	354	HIS	2.7
1	C	478	MET	2.7
1	C	470	TYR	2.6
1	B	262	ARG	2.6
1	B	401	ASN	2.6
1	A	35	ASP	2.5
1	C	138	CYS	2.5
1	A	476	GLU	2.4
1	C	453	MET	2.4
1	A	15	ASN	2.4
1	C	367	LYS	2.4
1	C	372	LYS	2.4
1	B	362	GLY	2.4
1	B	368	GLU	2.4
1	B	157	GLY	2.3
1	C	8	CYS	2.3
1	B	395	VAL	2.3

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Mol	Chain	Res	Type	RSRZ
1	A	143	ASN	2.3
1	B	483	ASN	2.3
1	C	277	CYS	2.3
1	B	215	ASP	2.3
1	C	355	HIS	2.3
1	A	324	PRO	2.2
1	A	188	THR	2.2
1	C	452	ARG	2.2
1	A	70	GLU	2.2
1	B	277	CYS	2.2
1	A	367	LYS	2.1
1	B	143	ASN	2.1
1	A	94	CYS	2.1
1	B	480	SER	2.1
1	C	207	THR	2.1
1	C	142	GLY	2.1
1	B	197	VAL	2.1
1	A	124	ASP	2.1
1	B	476	GLU	2.0
1	C	159	ASN	2.0
1	A	72	ASP	2.0

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

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

6.3 Carbohydrates (i)

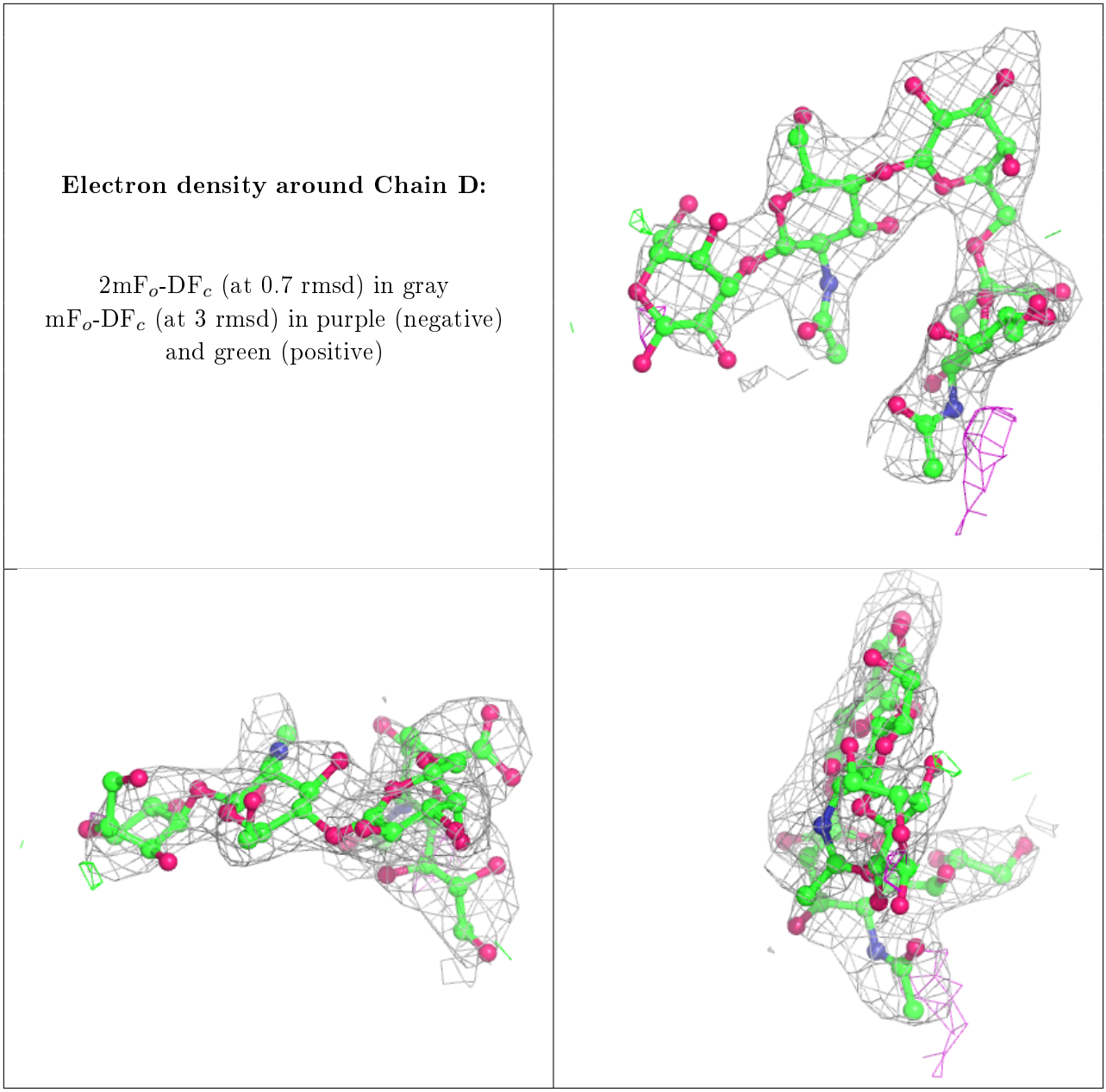
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9'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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	GAL	D	1	12/12	0.67	0.44	80,80,80,80	0
2	NAG	D	2	14/15	0.86	0.24	80,80,80,80	0
2	GAL	D	3	11/12	0.88	0.19	80,80,80,80	0
2	SIA	D	4	20/21	0.89	0.18	80,80,80,80	0

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

Electron density around Chain D:

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



6.4 Ligands

There are no ligands in this entry.

6.5 Other polymers

There are no such residues in this entry.