Full wwPDB X-ray Structure Validation Report (i)

Feb 20, 2024 – 06:18 AM EST

PDB ID	:	4LQ1
Title	:	Crystal Structure of E.Coli Branching Enzyme in complex with maltohexaose
Authors	:	Feng, L.; Geiger, J.H.
Deposited on	:	2013-07-17
Resolution	:	2.55 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 (i) 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 (1)) were used in the production of this report:

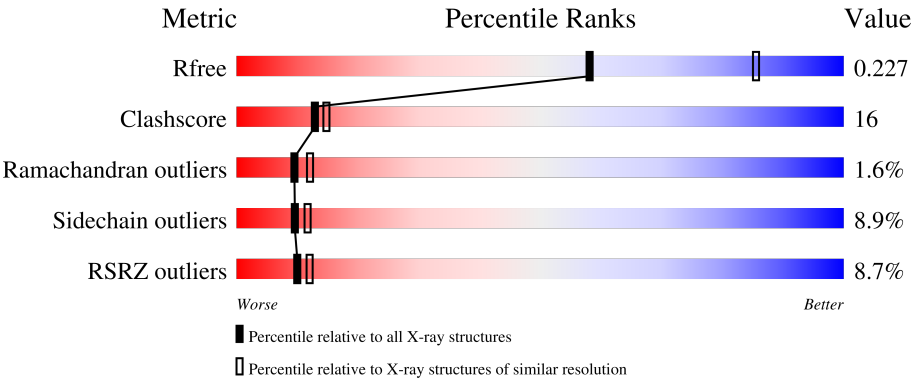
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 2.55 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	1284 (2.56-2.52)
Clashscore	141614	1332 (2.56-2.52)
Ramachandran outliers	138981	1315 (2.56-2.52)
Sidechain outliers	138945	1315 (2.56-2.52)
RSRZ outliers	127900	1272 (2.56-2.52)

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 <=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	612	16% 63% 28% 5% ·
1	B	612	11% 71% 22% · ·
1	C	612	5% 68% 22% 5% ·
1	D	612	2% 73% 19% · ·
2	E	2	50% 50%

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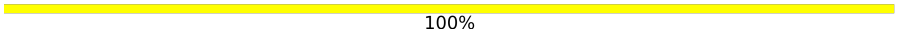
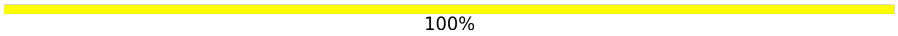
Mol	Chain	Length	Quality of chain
2	F	2	
2	G	2	
2	H	2	
2	I	2	

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 20219 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.

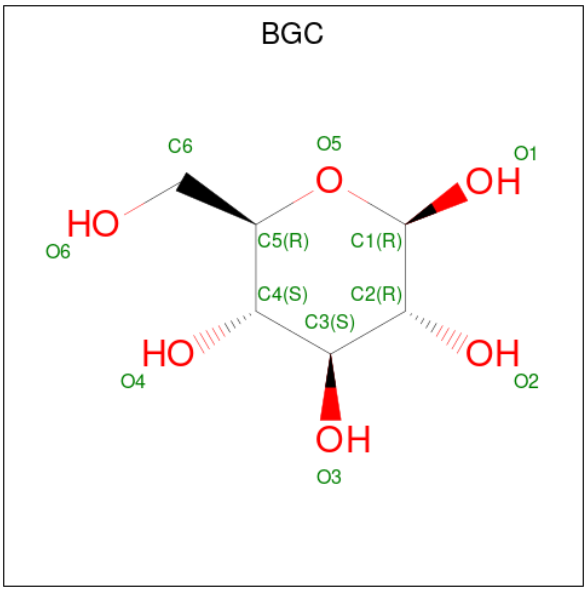
- Molecule 1 is a protein called 1,4-alpha-glucan branching enzyme GlgB.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	586	Total	C	N	O	S	0	1	0
			4817	3080	854	867	16			
1	B	596	Total	C	N	O	S	0	1	0
			4904	3132	871	885	16			
1	C	589	Total	C	N	O	S	0	0	0
			4840	3094	858	872	16			
1	D	593	Total	C	N	O	S	0	8	0
			4954	3163	886	888	17			

- Molecule 2 is an oligosaccharide called alpha-D-glucopyranose-(1-4)-alpha-D-glucopyranose.

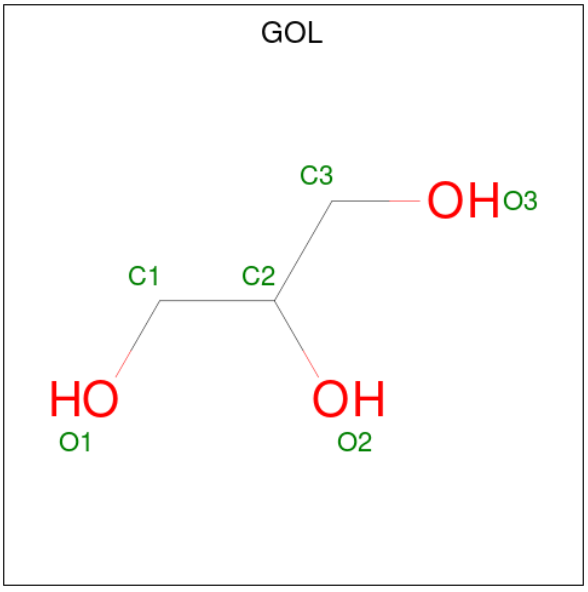
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	Trace
2	E	2	Total	C	O	0	0	0
			23	12	11			
2	F	2	Total	C	O	0	0	0
			23	12	11			
2	G	2	Total	C	O	0	0	0
			23	12	11			
2	H	2	Total	C	O	0	0	0
			23	12	11			
2	I	2	Total	C	O	0	0	0
			23	12	11			

- Molecule 3 is beta-D-glucopyranose (three-letter code: BGC) (formula: $C_6H_{12}O_6$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 12 6 6	0	0

- Molecule 4 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total C O 6 3 3	0	0
4	C	1	Total C O 6 3 3	0	0
4	D	1	Total C O 6 3 3	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	D	1	Total	C	O	0	0
			6	3	3		

- Molecule 5 is water.

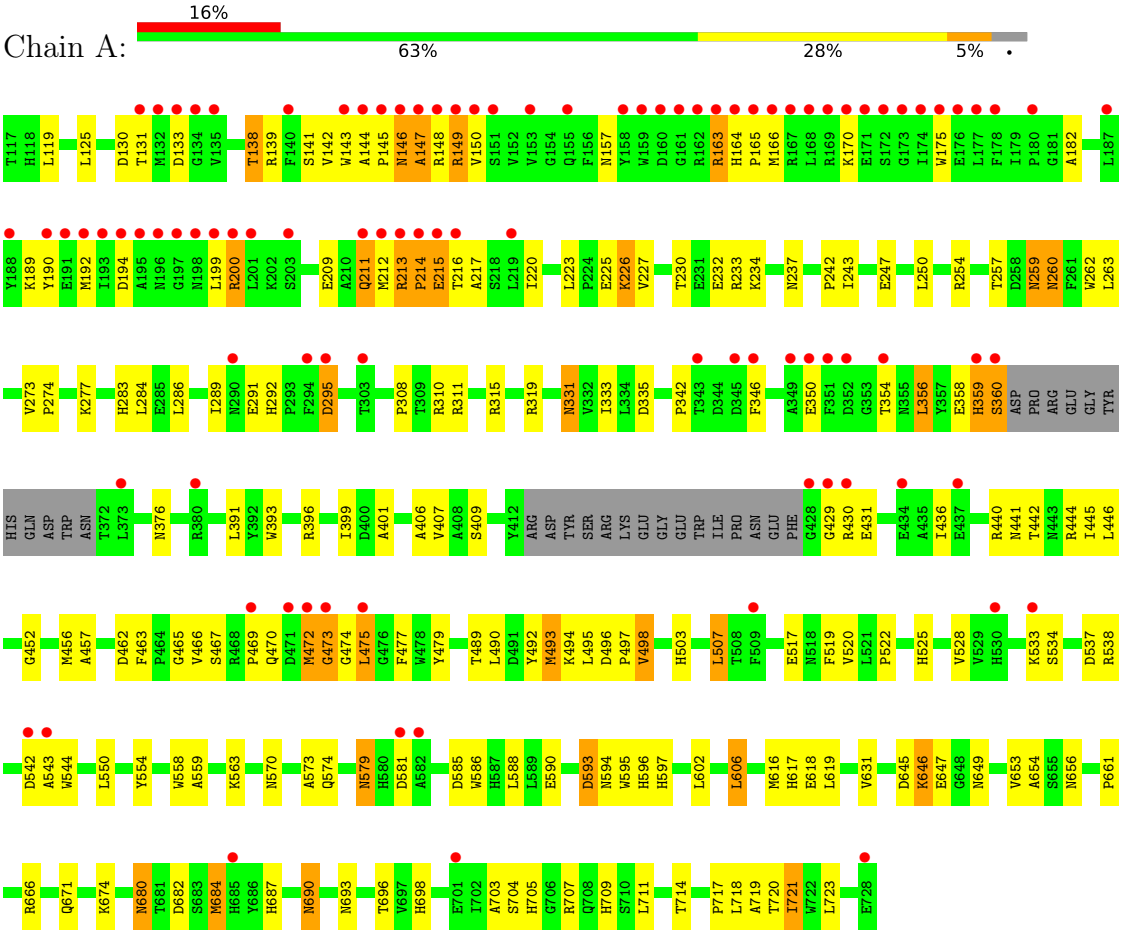
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	61	Total	O	0	0
			61	61		
5	B	101	Total	O	0	0
			101	101		
5	C	159	Total	O	0	0
			159	159		
5	D	232	Total	O	0	0
			232	232		

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.

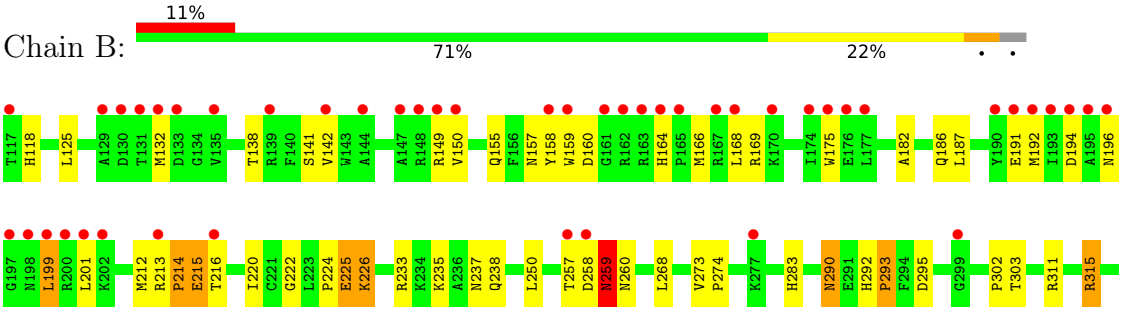
• Molecule 1: 1,4-alpha-glucan branching enzyme GlgB

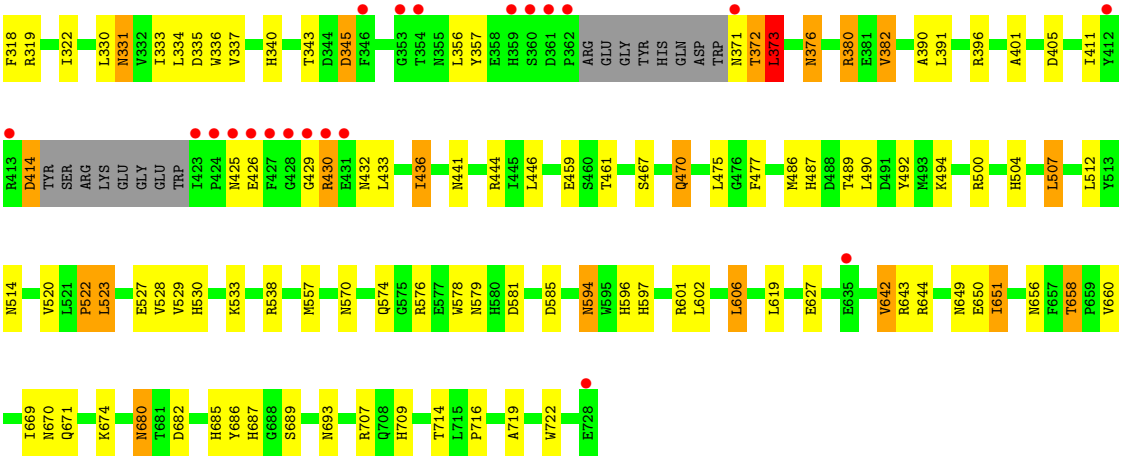
Chain A:



• Molecule 1: 1,4-alpha-glucan branching enzyme GlgB

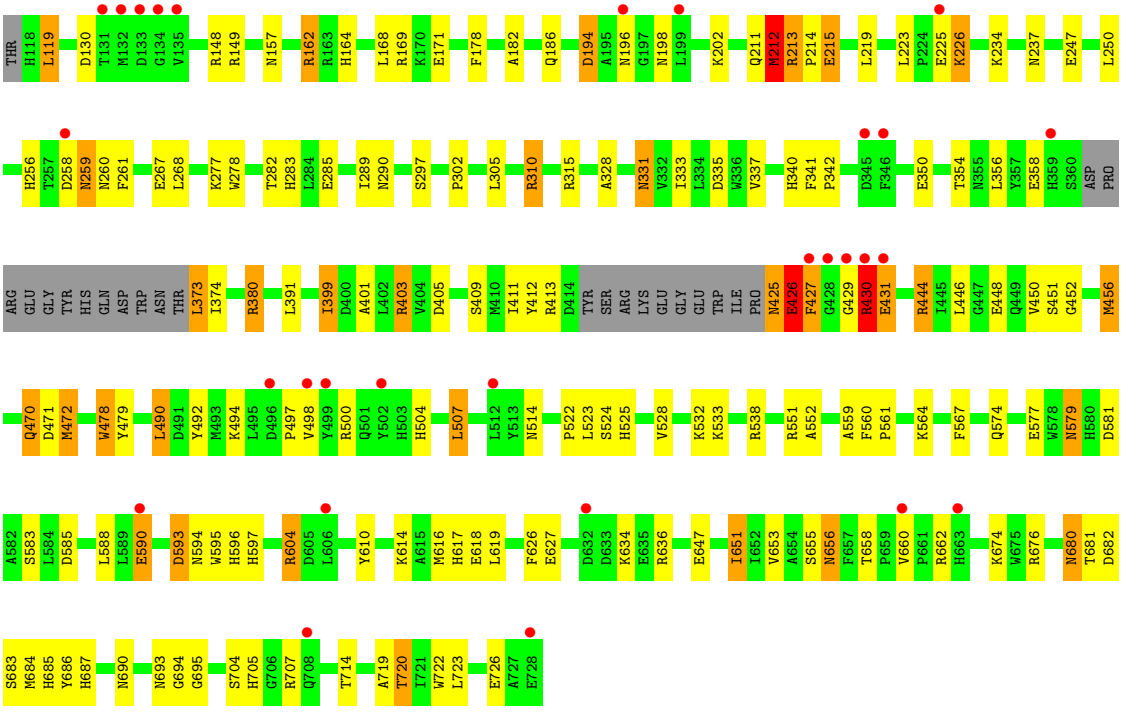
Chain B:





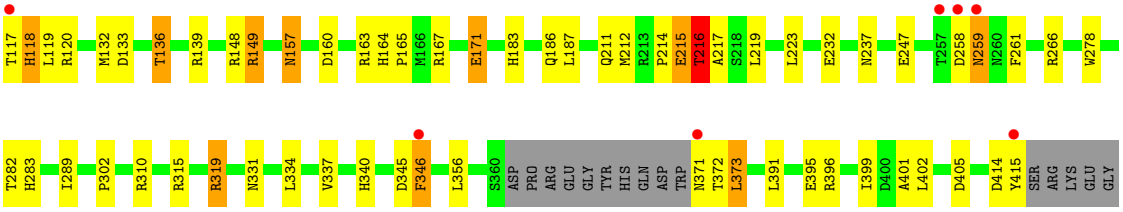
• Molecule 1: 1,4-alpha-glucan branching enzyme GlgB

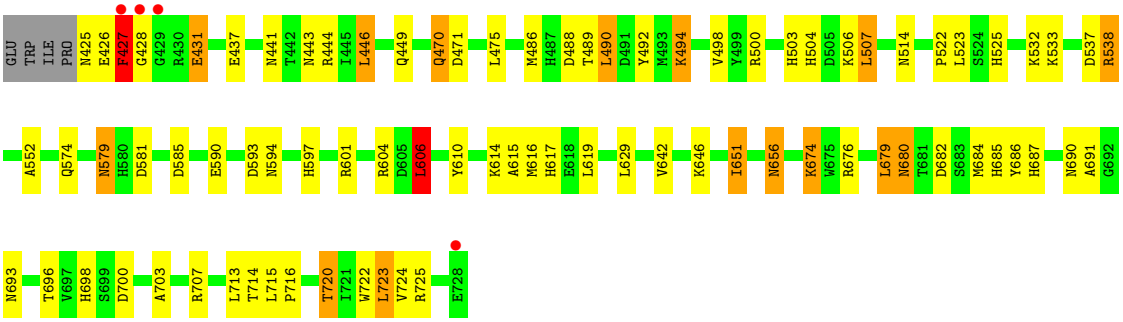
Chain C:



• Molecule 1: 1,4-alpha-glucan branching enzyme GlgB

Chain D:





• Molecule 2: alpha-D-glucopyranose-(1-4)-alpha-D-glucopyranose

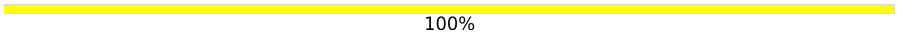
Chain E:

• Molecule 2: alpha-D-glucopyranose-(1-4)-alpha-D-glucopyranose

Chain F:

• Molecule 2: alpha-D-glucopyranose-(1-4)-alpha-D-glucopyranose

Chain G:

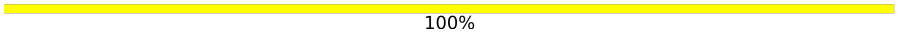


• Molecule 2: alpha-D-glucopyranose-(1-4)-alpha-D-glucopyranose

Chain H:

• Molecule 2: alpha-D-glucopyranose-(1-4)-alpha-D-glucopyranose

Chain I:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	93.69Å 104.11Å 186.71Å 90.00° 91.85° 90.00°	Depositor
Resolution (Å)	50.00 – 2.55 42.70 – 2.55	Depositor EDS
% Data completeness (in resolution range)	95.9 (50.00-2.55) 95.9 (42.70-2.55)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	5.34 (at 2.54Å)	Xtriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.178 , 0.224 0.181 , 0.227	Depositor DCC
R_{free} test set	11224 reflections (10.05%)	wwPDB-VP
Wilson B-factor (Å^2)	49.3	Xtriage
Anisotropy	0.445	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 58.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.30$	Xtriage
Estimated twinning fraction	0.032 for h,-k,-l	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	20219	wwPDB-VP
Average B, all atoms (Å^2)	75.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.56% 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: BGC, GOL, GLC

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	0.37	0/4970	0.52	0/6749
1	B	0.42	0/5061	0.57	1/6874 (0.0%)
1	C	0.53	0/4993	0.62	1/6778 (0.0%)
1	D	0.64	0/5112	0.73	4/6937 (0.1%)
All	All	0.50	0/20136	0.62	6/27338 (0.0%)

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	446	LEU	C-N-CA	-6.61	108.42	122.30
1	D	723	LEU	CA-CB-CG	6.07	129.26	115.30
1	D	538	ARG	NE-CZ-NH2	-5.88	117.36	120.30
1	C	403	ARG	NE-CZ-NH1	-5.63	117.48	120.30
1	D	606	LEU	CA-CB-CG	5.27	127.43	115.30
1	B	158	TYR	CB-CG-CD1	-5.20	117.88	121.00

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	4817	0	4547	153	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	4904	0	4616	149	0
1	C	4840	0	4565	178	0
1	D	4954	0	4664	151	0
2	E	23	0	21	0	0
2	F	23	0	21	1	0
2	G	23	0	21	1	0
2	H	23	0	21	0	0
2	I	23	0	21	0	0
3	A	12	0	12	0	0
4	B	6	0	8	0	0
4	C	6	0	8	0	0
4	D	12	0	16	0	0
5	A	61	0	0	7	0
5	B	101	0	0	9	0
5	C	159	0	0	10	0
5	D	232	0	0	24	0
All	All	20219	0	18541	630	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 16.

All (630) 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:B:527:GLU:O	1:B:538:ARG:NH2	1.75	1.20
1:C:380:ARG:HG2	5:C:972:HOH:O	1.43	1.19
1:B:380:ARG:HG2	1:B:380:ARG:HH21	1.12	1.12
1:C:444:ARG:HG2	1:C:444:ARG:HH21	1.08	1.11
1:A:212:MET:HG2	1:A:213:ARG:H	1.12	1.10
1:D:214:PRO:HA	1:D:215:GLU:O	1.53	1.08
1:A:200:ARG:HG2	1:A:200:ARG:HH11	1.16	1.07
1:C:211:GLN:HA	1:C:212:MET:HB2	1.31	1.06
1:C:162:ARG:HG3	1:C:162:ARG:HH11	1.13	1.06
1:C:426:GLU:HG3	1:C:427:PHE:CD2	1.91	1.05
1:B:430:ARG:H	1:B:430:ARG:HD3	1.19	1.05
1:D:215:GLU:HB2	1:D:217:ALA:H	1.21	1.04
1:D:441:ASN:ND2	1:D:444:ARG:HH11	1.54	1.04
1:A:200:ARG:HH11	1:A:200:ARG:CG	1.70	1.04
1:B:292:HIS:O	1:B:311:ARG:NH1	1.89	1.03
1:D:373:LEU:HD22	1:D:373:LEU:H	1.22	1.03
1:C:470:GLN:HE21	1:C:470:GLN:N	1.60	1.00

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:426:GLU:HG3	1:C:427:PHE:HD2	1.26	0.99
1:C:470:GLN:H	1:C:470:GLN:NE2	1.60	0.99
1:D:215:GLU:HB3	1:D:216:THR:OG1	1.60	0.99
1:C:658:THR:HG22	1:C:660:VAL:H	1.23	0.97
1:D:171:GLU:HG3	5:D:1040:HOH:O	1.64	0.96
1:B:670:ASN:HD21	1:B:707:ARG:HE	1.11	0.95
1:D:441:ASN:HD21	1:D:444:ARG:NH1	1.63	0.95
1:A:232:GLU:HG2	5:A:934:HOH:O	1.68	0.94
1:D:693:ASN:HD21	1:D:713:LEU:HB2	1.32	0.94
1:D:164:HIS:HE1	5:D:1010:HOH:O	1.49	0.94
1:D:470:GLN:H	1:D:470:GLN:HE21	0.95	0.94
1:B:470:GLN:H	1:B:470:GLN:NE2	1.65	0.93
1:B:470:GLN:HE21	1:B:470:GLN:N	1.66	0.93
1:B:380:ARG:HH21	1:B:380:ARG:CG	1.80	0.93
1:C:444:ARG:HG2	1:C:444:ARG:NH2	1.76	0.93
1:D:337:VAL:HG23	1:D:337:VAL:O	1.67	0.92
1:C:225:GLU:O	1:C:226:LYS:CB	2.19	0.90
1:C:157:ASN:HD21	1:C:164:HIS:CD2	1.89	0.90
1:C:574:GLN:NE2	1:C:585:ASP:H	1.69	0.90
1:C:225:GLU:O	1:C:226:LYS:HB3	1.69	0.89
1:A:212:MET:HG2	1:A:213:ARG:N	1.88	0.89
1:A:544:TRP:HE3	5:A:919:HOH:O	1.56	0.89
1:B:670:ASN:ND2	1:B:707:ARG:HE	1.71	0.88
1:B:594:ASN:H	1:B:597:HIS:HD2	1.21	0.88
1:D:215:GLU:HB2	1:D:217:ALA:N	1.89	0.88
1:C:693:ASN:HD21	1:C:714:THR:H	1.21	0.87
1:C:310:ARG:HG2	1:C:310:ARG:HH11	1.38	0.87
1:C:211:GLN:CA	1:C:212:MET:HB2	2.04	0.86
1:C:310:ARG:HH11	1:C:310:ARG:CG	1.88	0.86
1:A:214:PRO:O	1:A:215:GLU:HB2	1.75	0.86
1:A:212:MET:CG	1:A:213:ARG:H	1.85	0.85
1:C:213:ARG:HB3	1:C:214:PRO:HA	1.59	0.85
1:A:225:GLU:O	1:A:226:LYS:HB3	1.75	0.85
1:D:470:GLN:H	1:D:470:GLN:NE2	1.74	0.84
1:B:651:ILE:CD1	1:B:722:TRP:HB3	2.06	0.84
1:B:372:THR:O	1:B:373:LEU:HD23	1.78	0.83
1:C:429:GLY:HA2	1:C:430:ARG:HG3	1.59	0.83
1:C:237:ASN:ND2	1:C:283:HIS:HE1	1.76	0.83
1:C:590:GLU:HA	1:C:590:GLU:OE2	1.76	0.83
1:B:658:THR:CG2	1:B:660:VAL:H	1.92	0.83
1:B:225:GLU:O	1:B:226:LYS:HB2	1.79	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:658:THR:HG22	1:B:660:VAL:H	1.43	0.82
1:A:574:GLN:NE2	1:A:585:ASP:H	1.77	0.82
1:D:616:MET:SD	1:D:651:ILE:HG12	2.19	0.81
1:B:237:ASN:ND2	1:B:283:HIS:HE1	1.78	0.81
1:B:470:GLN:H	1:B:470:GLN:HE21	0.84	0.81
1:D:247:GLU:OE1	1:D:525:HIS:HD2	1.62	0.81
1:A:200:ARG:HG2	1:A:200:ARG:NH1	1.87	0.81
1:D:693:ASN:ND2	1:D:713:LEU:HB2	1.94	0.81
1:C:651:ILE:CD1	1:C:722:TRP:HB3	2.11	0.81
1:B:191:GLU:HG2	1:B:201:LEU:HD23	1.63	0.80
1:B:430:ARG:HD3	1:B:430:ARG:N	1.96	0.80
1:D:441:ASN:HD21	1:D:444:ARG:HH11	0.84	0.79
1:C:162:ARG:HH11	1:C:162:ARG:CG	1.94	0.79
1:D:427:PHE:HB3	5:D:1007:HOH:O	1.81	0.79
1:D:282:THR:OG1	1:D:283:HIS:HD2	1.66	0.78
1:D:426:GLU:O	1:D:427:PHE:HB3	1.82	0.78
1:C:412:TYR:CD2	1:C:431:GLU:HB3	2.18	0.78
1:A:474:GLY:O	1:A:475:LEU:HB2	1.84	0.77
1:C:674:LYS:NZ	5:C:1011:HOH:O	2.14	0.77
1:B:169:ARG:HG2	1:B:169:ARG:HH11	1.48	0.77
1:D:302:PRO:HG3	1:D:337:VAL:HG21	1.64	0.76
1:C:340:HIS:HE1	1:C:405:ASP:OD2	1.69	0.76
1:D:713:LEU:HD12	1:D:713:LEU:C	2.06	0.76
1:A:709:HIS:HD2	5:A:924:HOH:O	1.67	0.76
1:B:380:ARG:HG2	1:B:380:ARG:NH2	1.92	0.76
1:D:371:ASN:ND2	1:D:372:THR:H	1.84	0.76
1:C:490:LEU:O	1:C:494:LYS:HG3	1.85	0.76
1:C:213:ARG:HB2	1:C:213:ARG:HH11	1.51	0.75
1:B:651:ILE:HD12	1:B:722:TRP:HB3	1.69	0.75
1:D:492:TYR:CZ	1:D:500:ARG:HG2	2.21	0.75
1:C:157:ASN:HD21	1:C:164:HIS:HD2	1.31	0.74
1:A:211:GLN:OE1	1:A:215:GLU:HB3	1.86	0.74
1:C:444:ARG:HH21	1:C:444:ARG:CG	1.91	0.74
1:D:187:LEU:HD23	1:D:219:LEU:HD12	1.69	0.74
1:C:594:ASN:H	1:C:597:HIS:HD2	1.35	0.74
1:B:376:ASN:O	1:B:382:VAL:HG11	1.88	0.74
1:C:429:GLY:CA	1:C:430:ARG:HG3	2.16	0.74
1:D:346:PHE:HD2	1:D:346:PHE:N	1.85	0.74
1:D:470:GLN:HE21	1:D:470:GLN:N	1.79	0.73
1:D:215:GLU:HB3	1:D:216:THR:HG1	1.53	0.73
1:C:399:ILE:HD11	1:C:401:ALA:O	1.88	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:237:ASN:ND2	1:A:283:HIS:HE1	1.86	0.73
1:D:120:ARG:NH1	1:D:395:GLU:OE1	2.20	0.73
1:C:213:ARG:CB	1:C:214:PRO:HA	2.19	0.73
1:B:318:PHE:CZ	1:B:322:ILE:HD11	2.24	0.73
1:C:411:ILE:O	1:C:431:GLU:HB2	1.87	0.73
1:C:532:LYS:C	1:C:533:LYS:HG2	2.08	0.73
1:D:346:PHE:N	1:D:346:PHE:CD2	2.58	0.72
1:A:138:THR:HG22	1:A:182:ALA:O	1.90	0.71
1:C:399:ILE:HD12	1:C:401:ALA:H	1.55	0.71
1:B:257:THR:OG1	5:B:908:HOH:O	2.07	0.71
1:D:149[A]:ARG:HH11	1:D:149[A]:ARG:HB3	1.56	0.71
1:C:341:PHE:CZ	1:C:358:GLU:HB3	2.26	0.71
1:D:340:HIS:HE1	1:D:405:ASP:OD2	1.74	0.70
1:B:372:THR:O	1:B:373:LEU:CD2	2.40	0.69
1:D:214:PRO:CA	1:D:215:GLU:O	2.38	0.69
1:A:472:MET:HG2	1:A:473:GLY:N	2.07	0.69
1:D:247:GLU:OE1	1:D:525:HIS:CD2	2.46	0.69
1:B:212:MET:C	1:B:214:PRO:HA	2.12	0.69
1:B:334:LEU:HD11	5:B:994:HOH:O	1.91	0.69
1:D:149[A]:ARG:HH21	1:D:165:PRO:HB3	1.58	0.68
1:C:636:ARG:HG2	1:C:662:ARG:NH2	2.09	0.68
1:B:693:ASN:HD21	1:B:714:THR:H	1.40	0.68
1:C:213:ARG:HB2	1:C:213:ARG:NH1	2.09	0.68
1:A:292:HIS:O	1:A:311:ARG:NH1	2.27	0.68
1:C:399:ILE:CD1	1:C:401:ALA:O	2.42	0.67
1:D:606:LEU:HD13	1:D:679:LEU:HD11	1.76	0.67
1:C:627:GLU:OE1	1:C:707:ARG:NH2	2.27	0.67
1:D:693:ASN:HD21	1:D:714:THR:H	1.43	0.67
1:D:371:ASN:CG	1:D:372:THR:H	1.96	0.67
1:A:359:HIS:O	1:A:360:SER:HB2	1.95	0.67
1:A:213:ARG:HB2	1:A:214:PRO:CD	2.26	0.66
1:C:157:ASN:ND2	1:C:164:HIS:HD2	1.93	0.66
1:B:430:ARG:H	1:B:430:ARG:CD	2.05	0.66
1:D:373:LEU:HD22	1:D:373:LEU:N	2.01	0.66
1:D:399:ILE:HD11	1:D:402:LEU:CD2	2.25	0.66
1:A:225:GLU:O	1:A:226:LYS:CB	2.44	0.66
1:B:486:MET:CE	1:B:487:HIS:CD2	2.79	0.66
1:A:618:GLU:OE2	1:A:646:LYS:HB2	1.95	0.66
1:B:237:ASN:HD22	1:B:283:HIS:HE1	1.42	0.66
1:C:684:MET:H	1:C:690:ASN:HD22	1.44	0.65
1:D:163:ARG:HD3	5:D:985:HOH:O	1.97	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:616:MET:SD	1:C:651:ILE:HG12	2.36	0.65
1:C:444:ARG:HD3	5:C:982:HOH:O	1.96	0.65
1:C:412:TYR:HD2	1:C:431:GLU:HB3	1.60	0.65
1:B:486:MET:CE	1:B:487:HIS:HD2	2.09	0.65
1:B:224:PRO:HG2	1:B:396:ARG:HB3	1.80	0.64
1:D:149[A]:ARG:HB3	1:D:149[A]:ARG:NH1	2.12	0.64
1:B:651:ILE:HD11	1:B:722:TRP:HB3	1.77	0.64
1:C:532:LYS:O	1:C:533:LYS:HG2	1.96	0.64
1:D:215:GLU:HB3	1:D:216:THR:CB	2.27	0.64
1:B:157:ASN:OD1	1:B:164:HIS:HD2	1.80	0.64
1:B:166:MET:CE	1:B:175:TRP:HB3	2.27	0.64
1:B:380:ARG:CG	1:B:380:ARG:NH2	2.50	0.64
1:C:277:LYS:HD3	1:C:328:ALA:HB1	1.79	0.64
1:C:492:TYR:CE2	1:C:507:LEU:HD21	2.33	0.64
1:C:693:ASN:ND2	1:C:714:THR:H	1.93	0.64
1:C:310:ARG:CG	1:C:310:ARG:NH1	2.57	0.64
1:A:671:GLN:OE1	5:A:930:HOH:O	2.15	0.63
1:A:470:GLN:HA	1:A:474:GLY:HA2	1.80	0.63
1:A:602:LEU:HG	1:A:606:LEU:HD22	1.80	0.63
1:D:258:ASP:O	1:D:259:ASN:ND2	2.31	0.63
1:A:146:ASN:O	1:A:147:ALA:HB3	1.99	0.63
1:A:213:ARG:HB2	1:A:214:PRO:HD3	1.80	0.63
1:D:427:PHE:CG	1:D:427:PHE:O	2.51	0.63
1:B:459:GLU:OE2	1:B:461:THR:OG1	2.16	0.63
1:C:234:LYS:HG2	1:C:452:GLY:HA3	1.79	0.63
1:A:647:GLU:O	1:A:647:GLU:HG3	2.00	0.62
1:C:651:ILE:HD13	1:C:722:TRP:HB3	1.81	0.62
1:D:237:ASN:ND2	1:D:283:HIS:HE1	1.97	0.62
1:B:233:ARG:NH1	5:B:928:HOH:O	2.22	0.62
1:B:166:MET:HE2	1:B:175:TRP:HB3	1.82	0.62
1:D:680:ASN:ND2	1:D:682:ASP:H	1.98	0.62
1:B:594:ASN:H	1:B:597:HIS:CD2	2.11	0.61
1:A:213:ARG:CB	1:A:214:PRO:CD	2.77	0.61
1:D:574:GLN:NE2	1:D:585:ASP:H	1.98	0.61
1:A:469:PRO:HG2	1:A:472:MET:SD	2.40	0.61
1:D:680:ASN:HD22	1:D:680:ASN:C	2.02	0.61
1:C:302:PRO:HG3	1:C:337:VAL:HG21	1.81	0.61
1:C:194:ASP:HB3	1:C:196:ASN:H	1.66	0.61
1:D:117:THR:HB	5:D:1002:HOH:O	2.00	0.61
1:C:574:GLN:HE21	1:C:585:ASP:H	1.46	0.61
1:C:478:TRP:HZ3	5:C:1055:HOH:O	1.84	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:211:GLN:CA	1:C:212:MET:CB	2.77	0.61
1:C:680:ASN:ND2	1:C:682:ASP:H	1.99	0.61
1:D:537:ASP:O	5:D:1091:HOH:O	2.17	0.60
1:A:594:ASN:H	1:A:597:HIS:HD2	1.46	0.60
1:A:149:ARG:HA	1:A:175:TRP:CH2	2.36	0.60
1:D:486:MET:O	1:D:490:LEU:HB2	2.02	0.60
1:C:456:MET:HG3	1:C:479:TYR:HB2	1.82	0.60
1:B:680:ASN:HD22	1:B:682:ASP:H	1.48	0.60
1:C:290:ASN:HD21	1:C:337:VAL:CG2	2.14	0.60
1:C:162:ARG:HG3	1:C:162:ARG:NH1	1.95	0.60
1:C:590:GLU:OE2	1:C:590:GLU:CA	2.50	0.60
1:B:166:MET:CE	1:B:175:TRP:CB	2.79	0.59
1:C:213:ARG:HB3	1:C:214:PRO:CA	2.30	0.59
1:C:213:ARG:CB	1:C:214:PRO:CA	2.80	0.59
1:D:504:HIS:HD2	5:D:986:HOH:O	1.84	0.59
1:C:552:ALA:O	1:C:720:THR:HG21	2.03	0.59
1:C:634:LYS:HE2	5:C:945:HOH:O	2.01	0.59
1:A:574:GLN:HE21	1:A:585:ASP:H	1.47	0.59
1:B:214:PRO:O	1:B:215:GLU:O	2.21	0.59
1:A:237:ASN:HD21	1:A:283:HIS:HE1	1.49	0.58
1:C:335:ASP:OD1	1:C:403:ARG:HD3	2.02	0.58
1:D:373:LEU:H	1:D:373:LEU:CD2	2.07	0.58
1:C:290:ASN:HD21	1:C:337:VAL:HG21	1.68	0.58
1:B:138:THR:HG21	1:B:220:ILE:HG21	1.84	0.58
1:C:532:LYS:O	1:C:533:LYS:CG	2.51	0.58
1:B:191:GLU:HG2	1:B:201:LEU:CD2	2.33	0.58
1:C:680:ASN:HD22	1:C:682:ASP:H	1.48	0.58
1:D:258:ASP:O	1:D:259:ASN:CB	2.52	0.58
1:D:319:ARG:NH2	1:D:396:ARG:O	2.37	0.58
1:A:142:VAL:HG21	1:A:190:TYR:CE1	2.38	0.58
1:C:237:ASN:HD22	1:C:283:HIS:HE1	1.48	0.58
1:D:441:ASN:ND2	1:D:444:ARG:NH1	2.37	0.58
1:B:142:VAL:HG12	1:B:166:MET:HE1	1.85	0.58
1:B:670:ASN:HD21	1:B:707:ARG:NE	1.91	0.58
1:C:350:GLU:HA	1:C:354:THR:O	2.04	0.58
1:C:680:ASN:HD22	1:C:680:ASN:C	2.08	0.58
1:D:337:VAL:O	1:D:337:VAL:CG2	2.42	0.58
1:D:601:ARG:HD2	1:D:685[A]:HIS:NE2	2.19	0.58
1:B:157:ASN:OD1	1:B:164:HIS:CD2	2.56	0.57
1:B:514:ASN:ND2	5:B:958:HOH:O	2.37	0.57
1:D:425:ASN:ND2	5:D:925:HOH:O	2.25	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:234:LYS:HD2	1:A:452:GLY:HA3	1.87	0.57
1:B:601:ARG:HD2	1:B:685[A]:HIS:CE1	2.40	0.57
1:C:337:VAL:HG23	1:C:337:VAL:O	2.04	0.57
1:C:693:ASN:O	1:C:695:GLY:N	2.37	0.57
1:C:225:GLU:OE2	1:C:225:GLU:HA	2.04	0.57
1:C:427:PHE:CG	1:C:427:PHE:O	2.57	0.57
1:B:258:ASP:O	1:B:260:ASN:N	2.38	0.57
1:B:486:MET:HE3	1:B:487:HIS:CD2	2.40	0.57
1:D:693:ASN:HD21	1:D:713:LEU:CB	2.12	0.57
1:D:494:LYS:HB2	1:D:494:LYS:HZ3	1.70	0.57
1:A:213:ARG:CB	1:A:214:PRO:HD3	2.35	0.57
1:C:282:THR:OG1	1:C:283:HIS:HD2	1.87	0.56
1:D:259:ASN:HB3	1:D:261:PHE:H	1.68	0.56
1:A:472:MET:CG	1:A:473:GLY:H	2.19	0.56
1:B:224:PRO:HB2	1:B:319:ARG:NH2	2.20	0.56
1:B:260:ASN:ND2	1:B:260:ASN:O	2.38	0.56
1:B:290:ASN:C	1:B:290:ASN:HD22	2.03	0.56
1:D:494:LYS:HB2	1:D:494:LYS:NZ	2.20	0.56
1:A:674:LYS:HB3	1:A:696:THR:CG2	2.35	0.56
1:C:579:ASN:ND2	1:C:581:ASP:H	2.03	0.56
1:A:358:GLU:OE2	1:A:358:GLU:N	2.33	0.56
1:C:426:GLU:CA	1:C:426:GLU:OE1	2.53	0.56
1:D:215:GLU:CB	1:D:216:THR:CA	2.83	0.56
1:D:606:LEU:CD1	1:D:679:LEU:HD11	2.36	0.56
1:D:691:ALA:HB3	1:D:716:PRO:HB3	1.87	0.55
1:A:528:VAL:HG12	1:A:534:SER:HA	1.87	0.55
1:C:194:ASP:OD1	1:C:198:ASN:HB2	2.07	0.55
1:C:250:LEU:HD22	1:C:268:LEU:HD13	1.88	0.55
1:B:336:TRP:CZ2	1:B:390:ALA:HB2	2.42	0.55
1:C:504:HIS:HD2	5:C:957:HOH:O	1.90	0.55
1:C:579:ASN:HD22	1:C:579:ASN:C	2.10	0.55
1:B:333:ILE:HG12	1:B:401:ALA:HB3	1.89	0.55
1:B:169:ARG:HH11	1:B:169:ARG:CG	2.19	0.55
1:C:259:ASN:ND2	1:C:261:PHE:H	2.04	0.54
1:A:588:LEU:HD13	1:A:596:HIS:CE1	2.42	0.54
1:B:642:VAL:HG22	1:B:650:GLU:HB2	1.89	0.54
1:D:237:ASN:HD22	1:D:283:HIS:HE1	1.55	0.54
1:A:496:ASP:O	1:A:498:VAL:N	2.40	0.54
1:D:676:ARG:HD2	5:D:1038:HOH:O	2.05	0.54
1:A:472:MET:HG2	1:A:473:GLY:H	1.70	0.54
1:A:680:ASN:HD22	1:A:682:ASP:H	1.54	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:528:VAL:HG11	5:B:945:HOH:O	2.07	0.54
1:C:604:ARG:NH2	5:C:958:HOH:O	2.41	0.54
1:D:215:GLU:HB3	1:D:216:THR:CA	2.37	0.54
1:D:399:ILE:HD11	1:D:402:LEU:HD23	1.90	0.54
1:C:373:LEU:N	1:C:373:LEU:CD2	2.71	0.53
1:C:237:ASN:ND2	1:C:283:HIS:CE1	2.68	0.53
1:D:183:HIS:H	1:D:186:GLN:HE21	1.57	0.53
1:C:426:GLU:OE1	1:C:426:GLU:HA	2.08	0.53
1:A:559:ALA:HB1	1:A:653:VAL:HG21	1.90	0.53
1:C:693:ASN:HD21	1:C:714:THR:N	2.00	0.53
1:D:724:VAL:HG22	1:D:725:ARG:N	2.24	0.53
1:B:125:LEU:HD23	1:B:141:SER:HB3	1.91	0.53
1:B:441:ASN:ND2	1:B:444:ARG:HH22	2.07	0.53
1:A:693:ASN:HD21	1:A:714:THR:H	1.57	0.53
1:C:213:ARG:HA	1:C:215:GLU:N	2.24	0.53
1:C:676:ARG:O	1:C:723:LEU:HA	2.09	0.53
1:A:200:ARG:CG	1:A:200:ARG:NH1	2.42	0.53
1:B:273:VAL:HB	1:B:274:PRO:HD3	1.91	0.53
1:A:150:VAL:HG12	1:A:166:MET:SD	2.49	0.53
1:A:680:ASN:HD22	1:A:680:ASN:C	2.12	0.53
1:D:399:ILE:HD11	1:D:402:LEU:HD21	1.90	0.53
1:A:573:ALA:O	1:A:596:HIS:CE1	2.62	0.53
1:B:504:HIS:HD2	5:B:925:HOH:O	1.91	0.53
1:D:503:HIS:HB3	1:D:506:LYS:HD2	1.90	0.53
1:A:200:ARG:HH11	1:A:200:ARG:HG3	1.67	0.52
1:D:132:MET:SD	1:D:139[B]:ARG:NH1	2.76	0.52
1:D:594:ASN:H	1:D:597:HIS:HD2	1.57	0.52
1:A:406:ALA:HB1	1:A:409:SER:HB3	1.90	0.52
1:A:704:SER:OG	1:A:705:HIS:HD2	1.93	0.52
1:A:150:VAL:HG22	1:A:192:MET:HB2	1.91	0.52
1:A:570:ASN:ND2	5:A:907:HOH:O	2.43	0.52
1:C:148:ARG:HG3	1:C:194:ASP:O	2.09	0.52
1:D:120:ARG:NH2	1:D:449:GLN:OE1	2.42	0.52
1:D:183:HIS:H	1:D:186:GLN:NE2	2.07	0.52
1:D:680:ASN:HD22	1:D:682:ASP:H	1.56	0.52
1:A:119:LEU:HD21	1:A:445:ILE:HD13	1.90	0.52
1:A:125:LEU:HD23	1:A:141:SER:HB3	1.92	0.52
1:A:233:ARG:HG2	1:A:331:ASN:ND2	2.25	0.52
1:B:716:PRO:HB2	1:B:719:ALA:HB3	1.92	0.52
1:D:120:ARG:NH1	1:D:395:GLU:CD	2.62	0.52
1:B:166:MET:HE2	1:B:175:TRP:CB	2.40	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:359:HIS:O	1:A:360:SER:CB	2.57	0.52
1:C:676:ARG:NH1	1:C:726:GLU:OE2	2.43	0.52
1:B:594:ASN:N	1:B:597:HIS:HD2	2.00	0.52
1:D:289:ILE:HG13	1:D:334:LEU:HD11	1.91	0.52
1:A:674:LYS:HD2	1:A:696:THR:HG21	1.92	0.51
1:B:295:ASP:OD2	1:B:311:ARG:NH2	2.43	0.51
1:D:117:THR:CA	5:D:1002:HOH:O	2.58	0.51
1:D:371:ASN:CG	1:D:372:THR:N	2.62	0.51
1:A:436:ILE:O	1:A:440:ARG:HG3	2.10	0.51
1:A:594:ASN:H	1:A:597:HIS:CD2	2.27	0.51
1:D:489:THR:HG22	1:D:507:LEU:HD12	1.92	0.51
1:A:146:ASN:HD22	1:A:354:THR:CG2	2.23	0.51
1:A:292:HIS:CD2	1:A:311:ARG:NH1	2.79	0.51
1:C:373:LEU:N	5:C:903:HOH:O	2.43	0.51
1:D:157:ASN:HD22	1:D:157:ASN:C	2.14	0.51
1:B:259:ASN:H	1:B:259:ASN:ND2	2.07	0.51
1:D:629:LEU:HD11	1:D:642:VAL:HG23	1.93	0.51
1:D:674:LYS:NZ	1:D:674:LYS:CB	2.73	0.51
1:B:576:ARG:HH21	1:B:585:ASP:CG	2.14	0.51
1:A:289:ILE:C	1:A:289:ILE:HD12	2.31	0.51
1:C:514:ASN:ND2	5:C:1019:HOH:O	2.43	0.51
1:C:614:LYS:HB3	1:C:618:GLU:HG3	1.93	0.51
1:D:117:THR:CB	5:D:1002:HOH:O	2.59	0.51
1:A:593:ASP:OD2	1:A:687:HIS:HE1	1.93	0.50
1:B:492:TYR:CZ	1:B:500:ARG:HG2	2.46	0.50
1:C:285:GLU:OE1	1:C:403:ARG:HD2	2.11	0.50
1:D:614:LYS:NZ	5:D:1024:HOH:O	2.39	0.50
1:D:693:ASN:ND2	1:D:713:LEU:CB	2.72	0.50
1:A:146:ASN:ND2	1:A:354:THR:HG21	2.26	0.50
1:A:262:TRP:CZ3	1:A:311:ARG:HG2	2.47	0.50
1:C:290:ASN:ND2	1:C:337:VAL:HG22	2.26	0.50
1:C:656:ASN:ND2	1:C:658:THR:H	2.08	0.50
1:D:693:ASN:ND2	1:D:714:THR:H	2.09	0.50
1:A:647:GLU:O	1:A:647:GLU:CG	2.60	0.50
1:C:583:SER:HB3	2:G:1:GLC:H62	1.93	0.50
1:C:588:LEU:HD13	1:C:596:HIS:CE1	2.47	0.50
1:B:302:PRO:HG3	1:B:337:VAL:HG21	1.93	0.50
1:A:163:ARG:O	1:A:165:PRO:HD3	2.11	0.50
1:B:149:ARG:O	1:B:192:MET:HA	2.11	0.50
1:B:441:ASN:HD21	1:B:444:ARG:HH22	1.58	0.50
1:C:256:HIS:HB2	1:C:259:ASN:HD21	1.77	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:166:MET:CE	1:B:175:TRP:HB2	2.42	0.50
1:C:194:ASP:HB2	1:C:198:ASN:N	2.27	0.50
1:D:713:LEU:C	1:D:713:LEU:CD1	2.78	0.50
1:B:293:PRO:HD3	1:B:303:THR:HG23	1.93	0.49
1:C:497:PRO:HA	1:C:500:ARG:HD2	1.92	0.49
1:D:674:LYS:HZ3	1:D:674:LYS:HB3	1.77	0.49
1:A:543:ALA:HB1	1:A:595:TRP:HZ3	1.77	0.49
1:B:340:HIS:HE1	1:B:405:ASP:OD2	1.94	0.49
1:B:670:ASN:ND2	1:B:707:ARG:NE	2.52	0.49
1:C:429:GLY:CA	1:C:430:ARG:CG	2.88	0.49
1:C:685:HIS:CE1	1:D:685[A]:HIS:HD2	2.30	0.49
1:D:425:ASN:OD1	1:D:425:ASN:O	2.30	0.49
1:A:474:GLY:O	1:A:475:LEU:CB	2.59	0.49
1:B:235:LYS:HA	1:B:238:GLN:OE1	2.12	0.49
1:C:656:ASN:HD22	1:C:656:ASN:C	2.16	0.49
1:B:643:ARG:O	1:B:650:GLU:HA	2.12	0.49
1:B:150:VAL:O	1:B:166:MET:HG3	2.12	0.49
1:A:295:ASP:OD2	1:A:295:ASP:N	2.45	0.49
1:B:376:ASN:O	1:B:382:VAL:CG1	2.58	0.49
1:C:426:GLU:CG	1:C:427:PHE:CD2	2.80	0.49
1:B:343:THR:HG22	1:B:373:LEU:HD21	1.95	0.49
1:B:224:PRO:HB2	1:B:319:ARG:HH22	1.78	0.49
1:B:470:GLN:NE2	1:B:470:GLN:N	2.42	0.49
1:D:437:GLU:OE2	1:D:437:GLU:HA	2.12	0.49
1:D:278:TRP:O	1:D:604:ARG:HD2	2.13	0.49
1:D:724:VAL:HG22	1:D:725:ARG:H	1.78	0.48
1:B:345:ASP:OD2	1:B:345:ASP:N	2.47	0.48
1:C:157:ASN:ND2	1:C:164:HIS:CD2	2.67	0.48
1:D:214:PRO:HA	1:D:215:GLU:C	2.30	0.48
1:A:645:ASP:OD1	1:A:649:ASN:ND2	2.36	0.48
1:C:256:HIS:CE1	1:C:267:GLU:OE1	2.66	0.48
1:A:215:GLU:HG3	1:A:216:THR:H	1.78	0.48
1:B:237:ASN:ND2	1:B:283:HIS:CE1	2.70	0.48
1:B:259:ASN:ND2	1:B:259:ASN:N	2.61	0.48
1:A:216:THR:O	1:A:217:ALA:HB2	2.13	0.48
1:B:336:TRP:CH2	1:B:390:ALA:HB2	2.49	0.48
1:A:680:ASN:ND2	1:A:682:ASP:H	2.12	0.48
1:A:247:GLU:OE1	1:A:525:HIS:HD2	1.97	0.48
1:B:529:VAL:CG1	1:B:578:TRP:HE3	2.27	0.48
1:B:579:ASN:ND2	1:B:581:ASP:H	2.10	0.48
1:D:215:GLU:CB	1:D:217:ALA:N	2.70	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:258:ASP:O	1:D:259:ASN:HB2	2.14	0.48
1:C:290:ASN:ND2	1:C:337:VAL:CG2	2.76	0.48
1:C:450:VAL:HG23	1:C:450:VAL:O	2.14	0.48
1:C:560:PHE:CD2	1:C:561:PRO:HD2	2.48	0.48
1:B:570:ASN:ND2	5:B:945:HOH:O	2.45	0.48
1:C:182:ALA:HA	1:C:186:GLN:HE22	1.79	0.48
1:C:686:TYR:O	1:C:687:HIS:HB2	2.13	0.48
1:B:528:VAL:HA	1:B:533:LYS:O	2.14	0.47
1:C:234:LYS:HE2	1:C:451:SER:O	2.14	0.47
1:D:651:ILE:CD1	1:D:722:TRP:HB3	2.44	0.47
1:D:651:ILE:HD13	1:D:722:TRP:HB3	1.95	0.47
1:A:472:MET:O	1:A:473:GLY:C	2.51	0.47
1:C:552:ALA:O	1:C:720:THR:CG2	2.62	0.47
1:C:684:MET:H	1:C:690:ASN:ND2	2.11	0.47
1:A:542:ASP:OD1	1:A:544:TRP:NE1	2.47	0.47
1:B:411:ILE:HB	1:B:436:ILE:HD11	1.96	0.47
1:A:579:ASN:ND2	1:A:581:ASP:H	2.13	0.47
1:B:492:TYR:CZ	1:B:507:LEU:HD22	2.49	0.47
1:C:237:ASN:HD22	1:C:283:HIS:CE1	2.31	0.47
1:D:117:THR:HA	5:D:1002:HOH:O	2.15	0.47
1:D:646:LYS:NZ	1:D:646:LYS:HB2	2.29	0.47
1:D:167:ARG:NH1	5:D:1122:HOH:O	2.47	0.47
1:D:211:GLN:NE2	1:D:217:ALA:HB3	2.29	0.47
1:A:142:VAL:CG2	1:A:190:TYR:CE1	2.97	0.47
1:A:146:ASN:O	1:A:147:ALA:CB	2.63	0.47
1:A:654:ALA:HB3	1:A:721:ILE:HD13	1.97	0.47
1:B:658:THR:CG2	1:B:660:VAL:HB	2.45	0.47
1:B:644:ARG:HG3	1:B:650:GLU:HB3	1.97	0.47
1:A:243:ILE:HB	1:A:563:LYS:HD2	1.97	0.47
1:A:494:LYS:HB3	1:A:494:LYS:HE2	1.78	0.47
1:B:411:ILE:O	1:B:432:ASN:N	2.47	0.47
1:C:333:ILE:HG12	1:C:401:ALA:HB3	1.97	0.47
1:D:646:LYS:NZ	1:D:646:LYS:CB	2.77	0.47
1:A:259:ASN:HD22	1:A:260:ASN:N	2.13	0.46
1:B:191:GLU:CG	1:B:201:LEU:CD2	2.93	0.46
1:B:213:ARG:HD2	1:B:215:GLU:HB2	1.96	0.46
1:B:671:GLN:HB3	1:D:498:VAL:HG11	1.97	0.46
1:C:259:ASN:ND2	1:C:259:ASN:H	2.13	0.46
1:D:532:LYS:O	1:D:533:LYS:HB2	2.15	0.46
1:B:250:LEU:HD22	1:B:268:LEU:HD13	1.96	0.46
1:C:651:ILE:HD11	1:C:722:TRP:HB3	1.96	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:656:ASN:ND2	1:C:656:ASN:C	2.68	0.46
1:D:538:ARG:HD3	5:D:981:HOH:O	2.14	0.46
1:A:130:ASP:OD2	1:A:131:THR:N	2.46	0.46
1:A:146:ASN:HD22	1:A:354:THR:HG21	1.81	0.46
1:A:212:MET:CG	1:A:213:ARG:N	2.59	0.46
1:B:520:VAL:O	1:B:522:PRO:HD3	2.14	0.46
1:B:523:LEU:HD22	1:B:557:MET:SD	2.55	0.46
1:C:256:HIS:HE1	1:C:267:GLU:OE1	1.98	0.46
1:D:552:ALA:HA	1:D:720:THR:HG23	1.97	0.46
1:A:273:VAL:HB	1:A:274:PRO:HD3	1.97	0.46
1:C:429:GLY:HA3	1:C:430:ARG:HG3	1.96	0.46
1:D:215:GLU:HA	1:D:216:THR:HG23	1.96	0.46
1:D:431:GLU:H	1:D:431:GLU:HG2	1.39	0.46
1:D:590:GLU:HA	5:D:990:HOH:O	2.14	0.46
1:A:684:MET:H	1:A:690:ASN:ND2	2.14	0.46
1:C:551:ARG:NH1	1:C:681:THR:O	2.45	0.46
1:C:636:ARG:HG2	1:C:662:ARG:CZ	2.45	0.46
1:B:644:ARG:HA	1:B:649:ASN:O	2.16	0.46
1:C:658:THR:HG22	1:C:660:VAL:N	2.08	0.46
1:B:237:ASN:HD22	1:B:283:HIS:CE1	2.28	0.46
1:B:426:GLU:OE2	1:B:433:LEU:HD12	2.16	0.46
1:A:645:ASP:OD2	1:A:649:ASN:N	2.48	0.46
1:A:717:PRO:O	1:A:718:LEU:C	2.54	0.46
1:D:118[A]:HIS:N	5:D:1002:HOH:O	2.49	0.46
1:D:674:LYS:HZ3	1:D:696:THR:HG21	1.81	0.46
1:A:289:ILE:C	1:A:289:ILE:CD1	2.84	0.46
1:A:359:HIS:CD2	1:A:376:ASN:HA	2.51	0.46
1:A:213:ARG:O	1:A:215:GLU:N	2.49	0.45
1:B:169:ARG:HG2	1:B:169:ARG:NH1	2.23	0.45
1:B:486:MET:HE3	1:B:487:HIS:HD2	1.77	0.45
1:D:118[B]:HIS:N	5:D:1002:HOH:O	2.49	0.45
1:D:187:LEU:CD2	1:D:219:LEU:HD12	2.43	0.45
1:A:661:PRO:HB3	1:A:717:PRO:HD3	1.99	0.45
1:B:182:ALA:HA	1:B:186:GLN:OE1	2.15	0.45
1:C:247:GLU:OE1	1:C:525:HIS:HD2	1.99	0.45
1:C:593:ASP:OD2	1:C:687:HIS:HE1	1.99	0.45
1:A:138:THR:HG21	1:A:220:ILE:HD13	1.96	0.45
1:A:209:GLU:OE2	1:A:310:ARG:NH1	2.49	0.45
1:B:425:ASN:OD1	1:B:429:GLY:N	2.50	0.45
1:B:494:LYS:HB3	1:B:494:LYS:HE2	1.74	0.45
1:B:658:THR:HG23	1:B:660:VAL:H	1.74	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:492:TYR:CE2	1:C:507:LEU:CD2	3.00	0.45
1:C:331:ASN:ND2	5:C:928:HOH:O	2.49	0.45
1:D:593:ASP:OD2	1:D:687:HIS:HE1	1.99	0.45
1:D:713:LEU:HD11	1:D:715:LEU:HD21	1.97	0.45
1:A:133:ASP:OD1	1:A:133:ASP:C	2.55	0.45
1:A:574:GLN:HG3	1:A:585:ASP:HB2	1.98	0.45
1:B:674:LYS:HB2	1:B:674:LYS:HE2	1.55	0.45
1:C:194:ASP:HB2	1:C:198:ASN:H	1.81	0.45
1:C:278:TRP:O	1:C:604:ARG:HD2	2.17	0.45
1:A:254:ARG:HG2	1:A:586:TRP:NE1	2.32	0.45
1:C:211:GLN:HB3	1:C:212:MET:HB3	1.99	0.45
1:C:552:ALA:HA	1:C:720:THR:CG2	2.47	0.45
1:D:136:THR:HG22	5:D:997:HOH:O	2.16	0.45
1:A:441:ASN:OD1	1:A:444:ARG:NH1	2.46	0.45
1:A:631:VAL:HG22	1:A:631:VAL:O	2.17	0.45
1:D:399:ILE:HD12	1:D:401:ALA:H	1.82	0.45
1:A:550:LEU:HD11	1:A:554:TYR:CZ	2.51	0.45
1:C:528:VAL:O	1:C:577:GLU:HB2	2.17	0.45
1:C:533:LYS:O	1:C:538:ARG:NH2	2.49	0.44
1:A:472:MET:CG	1:A:473:GLY:N	2.71	0.44
1:B:467:SER:HA	1:B:477:PHE:O	2.17	0.44
1:B:574:GLN:NE2	1:B:585:ASP:H	2.14	0.44
1:C:211:GLN:HB3	1:C:212:MET:CB	2.47	0.44
1:C:532:LYS:C	1:C:533:LYS:CG	2.83	0.44
1:D:674:LYS:HD2	1:D:698[B]:HIS:CD2	2.53	0.44
1:A:242:PRO:HD3	1:A:617:HIS:CE1	2.52	0.44
1:A:543:ALA:CB	1:A:595:TRP:HZ3	2.31	0.44
1:C:237:ASN:HD21	1:C:283:HIS:HE1	1.58	0.44
1:D:340:HIS:CE1	1:D:405:ASP:OD2	2.63	0.44
1:A:467:SER:OG	1:A:517:GLU:OE2	2.35	0.44
1:B:669:ILE:O	1:B:707:ARG:HD3	2.17	0.44
1:C:399:ILE:CD1	1:C:401:ALA:H	2.28	0.44
1:A:593:ASP:OD2	1:A:687:HIS:CE1	2.69	0.44
1:B:155:GLN:O	5:B:961:HOH:O	2.21	0.44
1:C:426:GLU:CG	1:C:427:PHE:N	2.78	0.44
1:D:656:ASN:ND2	5:D:1043:HOH:O	2.46	0.44
1:A:143:TRP:CH2	1:A:356:LEU:HD22	2.52	0.44
1:C:225:GLU:O	1:C:226:LYS:HB2	2.11	0.44
1:B:627:GLU:OE1	1:B:707:ARG:NH2	2.49	0.44
1:A:148:ARG:H	1:A:148:ARG:HG2	1.54	0.44
1:D:703:ALA:HA	1:D:707:ARG:O	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:142:VAL:CG2	1:A:190:TYR:CZ	3.01	0.44
1:C:194:ASP:HB3	1:C:196:ASN:N	2.33	0.44
1:C:525:HIS:HB3	1:C:567:PHE:CE1	2.53	0.44
1:D:258:ASP:O	1:D:259:ASN:CG	2.55	0.44
1:D:414:ASP:O	1:D:415:TYR:CG	2.71	0.44
1:D:615:ALA:HB3	1:D:651:ILE:HG23	1.98	0.44
1:A:496:ASP:C	1:A:498:VAL:N	2.72	0.43
1:B:658:THR:HG22	1:B:660:VAL:N	2.22	0.43
1:C:655:SER:OG	1:C:720:THR:HB	2.18	0.43
1:C:559:ALA:HB1	1:C:653:VAL:HG21	2.00	0.43
1:C:593:ASP:HA	1:C:597:HIS:CD2	2.52	0.43
1:C:610:TYR:O	1:C:617:HIS:HD2	2.01	0.43
1:A:295:ASP:OD2	1:A:311:ARG:NH2	2.52	0.43
1:A:533:LYS:O	1:A:538:ARG:NH2	2.52	0.43
1:C:130:ASP:HB3	1:C:178:PHE:CE2	2.53	0.43
1:A:289:ILE:O	1:A:308:PRO:HA	2.18	0.43
1:A:489:THR:O	1:A:493:MET:HB2	2.18	0.43
1:B:132:MET:HA	1:B:132:MET:CE	2.49	0.43
1:D:399:ILE:CD1	1:D:402:LEU:HD23	2.48	0.43
1:A:237:ASN:ND2	1:A:283:HIS:CE1	2.76	0.43
1:B:191:GLU:CG	1:B:201:LEU:HD23	2.42	0.43
1:C:472:MET:SD	1:C:472:MET:N	2.91	0.43
1:C:579:ASN:ND2	1:C:579:ASN:C	2.72	0.43
1:A:393:TRP:HB3	1:A:399:ILE:HG13	2.00	0.43
1:A:590:GLU:HA	1:A:590:GLU:OE1	2.19	0.43
1:A:463:PHE:O	1:A:466:VAL:HG23	2.19	0.43
1:B:212:MET:O	1:B:214:PRO:HA	2.18	0.43
1:D:118[A]:HIS:CD2	1:D:118[A]:HIS:H	2.31	0.43
1:A:682:ASP:HB2	1:A:719:ALA:HB2	2.01	0.43
1:B:594:ASN:HD21	1:B:596:HIS:HB2	1.83	0.43
1:C:302:PRO:HG3	1:C:337:VAL:CG2	2.49	0.43
1:A:259:ASN:HD22	1:A:259:ASN:C	2.21	0.43
1:A:467:SER:HA	1:A:477:PHE:O	2.18	0.43
1:C:429:GLY:HA3	1:C:430:ARG:CG	2.49	0.43
1:D:427:PHE:N	1:D:428:GLY:HA2	2.33	0.43
1:A:407:VAL:HG21	1:A:457:ALA:HB1	2.01	0.43
1:B:194:ASP:C	1:B:196:ASN:H	2.22	0.43
1:B:213:ARG:N	1:B:214:PRO:CA	2.82	0.43
1:C:492:TYR:CD2	1:C:507:LEU:HD21	2.54	0.43
1:D:610:TYR:O	1:D:617:HIS:HD2	2.01	0.43
1:A:465:GLY:O	1:A:474:GLY:O	2.37	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:495:LEU:HD13	1:A:503:HIS:CD2	2.54	0.42
1:A:517:GLU:HB2	1:A:519:PHE:CZ	2.53	0.42
1:B:290:ASN:C	1:B:290:ASN:ND2	2.72	0.42
1:C:490:LEU:HD13	1:C:490:LEU:HA	1.86	0.42
2:F:1:GLC:H62	2:F:2:GLC:O5	2.19	0.42
1:A:333:ILE:HG12	1:A:401:ALA:HB3	2.01	0.42
1:A:496:ASP:C	1:A:498:VAL:H	2.21	0.42
1:B:658:THR:HG21	1:B:660:VAL:HB	2.01	0.42
1:C:259:ASN:HD22	1:C:261:PHE:H	1.67	0.42
1:A:223:LEU:HD23	1:A:396:ARG:CZ	2.50	0.42
1:D:579:ASN:ND2	1:D:581:ASP:H	2.18	0.42
1:C:426:GLU:HG3	1:C:427:PHE:N	2.34	0.42
1:C:560:PHE:O	1:C:564:LYS:NZ	2.53	0.42
1:A:284:LEU:HD12	1:A:284:LEU:HA	1.91	0.42
1:B:213:ARG:HD3	1:B:215:GLU:HG3	2.02	0.42
1:D:302:PRO:HG3	1:D:337:VAL:CG2	2.41	0.42
1:A:666:ARG:HA	1:A:711:LEU:O	2.20	0.42
1:B:486:MET:HE1	1:B:487:HIS:CD2	2.53	0.42
1:C:211:GLN:CB	1:C:212:MET:CB	2.97	0.42
1:C:310:ARG:HD2	1:C:310:ARG:O	2.20	0.42
1:C:444:ARG:O	1:C:448:GLU:HG3	2.20	0.42
1:D:171:GLU:CG	5:D:1040:HOH:O	2.43	0.42
1:D:552:ALA:O	1:D:720:THR:CG2	2.68	0.42
1:B:414:ASP:OD2	1:B:414:ASP:N	2.53	0.42
1:C:259:ASN:HD22	1:C:260:ASN:N	2.17	0.41
1:A:250:LEU:HD21	1:A:286:LEU:HD22	2.02	0.41
1:B:213:ARG:CD	1:B:215:GLU:HG3	2.50	0.41
1:B:686:TYR:O	1:B:687:HIS:HB2	2.20	0.41
1:C:682:ASP:HB2	1:C:719:ALA:HB2	2.02	0.41
1:D:514:ASN:ND2	5:D:938:HOH:O	2.52	0.41
1:A:157:ASN:OD1	1:A:164:HIS:CD2	2.74	0.41
1:A:475:LEU:HD12	1:A:475:LEU:HA	1.92	0.41
1:A:492:TYR:CZ	1:A:507:LEU:HD22	2.55	0.41
1:B:199:LEU:HD13	1:B:199:LEU:H	1.84	0.41
1:B:594:ASN:HD22	1:B:596:HIS:H	1.67	0.41
1:A:144:ALA:HA	1:A:145:PRO:HD2	1.92	0.41
1:B:529:VAL:CG1	1:B:578:TRP:CE3	3.03	0.41
1:D:266:ARG:HD3	5:D:1046:HOH:O	2.20	0.41
1:B:222:GLY:O	1:B:315:ARG:NH1	2.41	0.41
1:B:318:PHE:CE2	1:B:322:ILE:HD11	2.53	0.41
1:C:704:SER:OG	1:C:705:HIS:HD2	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:157:ASN:OD1	1:A:164:HIS:HD2	2.03	0.41
1:B:357:TYR:CD1	1:B:382:VAL:HG23	2.56	0.41
1:C:425:ASN:ND2	1:C:425:ASN:N	2.69	0.41
1:C:431:GLU:OE1	1:C:431:GLU:C	2.59	0.41
1:A:230:THR:O	1:A:234:LYS:HG2	2.20	0.41
1:D:212[A]:MET:HG2	1:D:310:ARG:HG2	2.03	0.41
1:D:443:ASN:O	1:D:446:LEU:O	2.39	0.41
1:D:533:LYS:O	1:D:538:ARG:NH2	2.53	0.41
1:D:684:MET:H	1:D:690:ASN:ND2	2.19	0.41
1:A:442:THR:O	1:A:446:LEU:HG	2.21	0.41
1:D:488:ASP:OD2	5:D:1041:HOH:O	2.22	0.41
1:A:456:MET:HG2	1:A:479:TYR:HB2	2.03	0.41
1:A:709:HIS:CD2	5:A:924:HOH:O	2.54	0.41
1:B:169:ARG:CG	1:B:169:ARG:NH1	2.79	0.41
1:B:213:ARG:HB2	1:B:215:GLU:HB2	2.03	0.41
1:B:489:THR:HG22	1:B:507:LEU:HD12	2.02	0.41
1:D:686:TYR:O	1:D:687:HIS:HB2	2.21	0.41
1:B:213:ARG:N	1:B:214:PRO:HA	2.35	0.41
1:D:232:GLU:CD	1:D:232:GLU:H	2.24	0.41
1:A:703:ALA:HA	1:A:707:ARG:O	2.20	0.40
1:D:646:LYS:HB2	1:D:646:LYS:HZ1	1.86	0.40
1:A:227:VAL:HG22	1:A:319:ARG:NH2	2.36	0.40
1:B:693:ASN:ND2	1:B:714:THR:H	2.15	0.40
1:B:709:HIS:HD2	5:B:910:HOH:O	2.02	0.40
1:C:626:PHE:CD2	1:C:626:PHE:C	2.94	0.40
1:A:520:VAL:HG22	1:A:563:LYS:HB2	2.04	0.40
1:C:130:ASP:HB3	1:C:178:PHE:HE2	1.86	0.40
1:C:426:GLU:OE1	1:C:426:GLU:C	2.60	0.40
1:D:160:ASP:OD1	1:D:160:ASP:C	2.60	0.40
1:D:680:ASN:ND2	1:D:680:ASN:C	2.73	0.40
1:A:189:LYS:HE2	1:A:216:THR:O	2.21	0.40
1:B:602:LEU:HG	1:B:606:LEU:HD22	2.04	0.40
1:C:341:PHE:HA	1:C:342:PRO:HD3	1.92	0.40
1:C:551:ARG:HB3	1:C:681:THR:HB	2.03	0.40
1:A:430:ARG:O	1:A:431:GLU:C	2.59	0.40
1:A:654:ALA:HB3	1:A:721:ILE:CD1	2.51	0.40
1:A:698:HIS:HB3	5:A:902:HOH:O	2.22	0.40
1:B:233:ARG:HG2	1:B:331:ASN:HD21	1.86	0.40
1:C:119:LEU:HA	1:C:119:LEU:HD12	1.83	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	581/612 (95%)	529 (91%)	41 (7%)	11 (2%)	8 9
1	B	591/612 (97%)	544 (92%)	35 (6%)	12 (2%)	7 8
1	C	583/612 (95%)	550 (94%)	25 (4%)	8 (1%)	11 15
1	D	595/612 (97%)	568 (96%)	21 (4%)	6 (1%)	15 22
All	All	2350/2448 (96%)	2191 (93%)	122 (5%)	37 (2%)	9 12

All (37) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	213	ARG
1	A	215	GLU
1	A	226	LYS
1	A	475	LEU
1	B	215	GLU
1	B	225	GLU
1	B	226	LYS
1	B	530	HIS
1	C	194	ASP
1	C	226	LYS
1	C	426	GLU
1	C	430	ARG
1	D	215	GLU
1	D	345	ASP
1	D	427	PHE
1	B	259	ASN
1	C	212	MET
1	C	694	GLY
1	D	259	ASN
1	A	522	PRO
1	B	159	TRP
1	B	160	ASP

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Mol	Chain	Res	Type
1	B	373	LEU
1	B	522	PRO
1	C	215	GLU
1	D	216	THR
1	D	522	PRO
1	B	372	THR
1	C	522	PRO
1	A	147	ALA
1	A	342	PRO
1	A	214	PRO
1	A	497	PRO
1	A	429	GLY
1	B	293	PRO
1	A	473	GLY
1	B	214	PRO

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	497/521 (95%)	450 (90%)	47 (10%)	8 10
1	B	507/521 (97%)	469 (92%)	38 (8%)	13 17
1	C	499/521 (96%)	443 (89%)	56 (11%)	6 5
1	D	511/521 (98%)	472 (92%)	39 (8%)	13 17
All	All	2014/2084 (97%)	1834 (91%)	180 (9%)	9 12

All (180) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	138	THR
1	A	139	ARG
1	A	146	ASN
1	A	149	ARG
1	A	163	ARG
1	A	170	LYS

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Mol	Chain	Res	Type
1	A	194	ASP
1	A	199	LEU
1	A	200	ARG
1	A	211	GLN
1	A	257	THR
1	A	259	ASN
1	A	260	ASN
1	A	263	LEU
1	A	277	LYS
1	A	291	GLU
1	A	295	ASP
1	A	315	ARG
1	A	331	ASN
1	A	335	ASP
1	A	346	PHE
1	A	350	GLU
1	A	356	LEU
1	A	359	HIS
1	A	360	SER
1	A	391	LEU
1	A	462	ASP
1	A	472	MET
1	A	490	LEU
1	A	493	MET
1	A	498	VAL
1	A	507	LEU
1	A	537	ASP
1	A	558	TRP
1	A	579	ASN
1	A	593	ASP
1	A	606	LEU
1	A	616	MET
1	A	619	LEU
1	A	646	LYS
1	A	656	ASN
1	A	680	ASN
1	A	684	MET
1	A	690	ASN
1	A	720	THR
1	A	721	ILE
1	A	723	LEU
1	B	118	HIS

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Mol	Chain	Res	Type
1	B	168	LEU
1	B	187	LEU
1	B	199	LEU
1	B	216	THR
1	B	259	ASN
1	B	290	ASN
1	B	315	ARG
1	B	330	LEU
1	B	331	ASN
1	B	335	ASP
1	B	345	ASP
1	B	356	LEU
1	B	371	ASN
1	B	373	LEU
1	B	376	ASN
1	B	380	ARG
1	B	382	VAL
1	B	391	LEU
1	B	414	ASP
1	B	430	ARG
1	B	436	ILE
1	B	446	LEU
1	B	470	GLN
1	B	475	LEU
1	B	490	LEU
1	B	507	LEU
1	B	512	LEU
1	B	523	LEU
1	B	594	ASN
1	B	606	LEU
1	B	619	LEU
1	B	642	VAL
1	B	651	ILE
1	B	656	ASN
1	B	658	THR
1	B	680	ASN
1	B	689	SER
1	C	119	LEU
1	C	149	ARG
1	C	162	ARG
1	C	168	LEU
1	C	169	ARG

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Mol	Chain	Res	Type
1	C	171	GLU
1	C	202	LYS
1	C	212	MET
1	C	213	ARG
1	C	219	LEU
1	C	223	LEU
1	C	258	ASP
1	C	259	ASN
1	C	289	ILE
1	C	297	SER
1	C	305	LEU
1	C	310	ARG
1	C	315	ARG
1	C	331	ASN
1	C	356	LEU
1	C	373	LEU
1	C	374	ILE
1	C	380	ARG
1	C	391	LEU
1	C	399	ILE
1	C	409	SER
1	C	413	ARG
1	C	425	ASN
1	C	426	GLU
1	C	427	PHE
1	C	430	ARG
1	C	431	GLU
1	C	444	ARG
1	C	446	LEU
1	C	456	MET
1	C	470	GLN
1	C	471	ASP
1	C	472	MET
1	C	478	TRP
1	C	490	LEU
1	C	498	VAL
1	C	507	LEU
1	C	523	LEU
1	C	524	SER
1	C	579	ASN
1	C	590	GLU
1	C	593	ASP

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Mol	Chain	Res	Type
1	C	595	TRP
1	C	604	ARG
1	C	619	LEU
1	C	647	GLU
1	C	651	ILE
1	C	656	ASN
1	C	680	ASN
1	C	683	SER
1	C	720	THR
1	D	118[A]	HIS
1	D	118[B]	HIS
1	D	119	LEU
1	D	133	ASP
1	D	136	THR
1	D	148	ARG
1	D	149[A]	ARG
1	D	149[B]	ARG
1	D	157	ASN
1	D	171	GLU
1	D	216	THR
1	D	223	LEU
1	D	315	ARG
1	D	319	ARG
1	D	331	ASN
1	D	346	PHE
1	D	356	LEU
1	D	373	LEU
1	D	391	LEU
1	D	427	PHE
1	D	431	GLU
1	D	470	GLN
1	D	471	ASP
1	D	475	LEU
1	D	490	LEU
1	D	494	LYS
1	D	507	LEU
1	D	523	LEU
1	D	579	ASN
1	D	606	LEU
1	D	619	LEU
1	D	651	ILE
1	D	656	ASN

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Mol	Chain	Res	Type
1	D	674	LYS
1	D	679	LEU
1	D	680	ASN
1	D	700	ASP
1	D	720	THR
1	D	723	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (113) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	146	ASN
1	A	164	HIS
1	A	196	ASN
1	A	237	ASN
1	A	256	HIS
1	A	259	ASN
1	A	260	ASN
1	A	283	HIS
1	A	326	HIS
1	A	331	ASN
1	A	359	HIS
1	A	376	ASN
1	A	384	ASN
1	A	501	GLN
1	A	503	HIS
1	A	525	HIS
1	A	570	ASN
1	A	574	GLN
1	A	579	ASN
1	A	597	HIS
1	A	617	HIS
1	A	656	ASN
1	A	680	ASN
1	A	687	HIS
1	A	690	ASN
1	A	693	ASN
1	A	705	HIS
1	B	157	ASN
1	B	164	HIS
1	B	198	ASN
1	B	237	ASN
1	B	259	ASN

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Mol	Chain	Res	Type
1	B	260	ASN
1	B	283	HIS
1	B	331	ASN
1	B	340	HIS
1	B	376	ASN
1	B	441	ASN
1	B	470	GLN
1	B	487	HIS
1	B	525	HIS
1	B	545	GLN
1	B	570	ASN
1	B	574	GLN
1	B	579	ASN
1	B	580	HIS
1	B	594	ASN
1	B	597	HIS
1	B	617	HIS
1	B	656	ASN
1	B	670	ASN
1	B	680	ASN
1	B	690	ASN
1	B	693	ASN
1	B	705	HIS
1	C	157	ASN
1	C	164	HIS
1	C	183	HIS
1	C	186	GLN
1	C	237	ASN
1	C	256	HIS
1	C	259	ASN
1	C	283	HIS
1	C	290	ASN
1	C	301	GLN
1	C	331	ASN
1	C	340	HIS
1	C	425	ASN
1	C	470	GLN
1	C	504	HIS
1	C	525	HIS
1	C	570	ASN
1	C	574	GLN
1	C	579	ASN

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Mol	Chain	Res	Type
1	C	597	HIS
1	C	600	GLN
1	C	617	HIS
1	C	656	ASN
1	C	680	ASN
1	C	687	HIS
1	C	690	ASN
1	C	693	ASN
1	C	705	HIS
1	D	157	ASN
1	D	164	HIS
1	D	186	GLN
1	D	237	ASN
1	D	256	HIS
1	D	259	ASN
1	D	283	HIS
1	D	331	ASN
1	D	340	HIS
1	D	371	ASN
1	D	425	ASN
1	D	441	ASN
1	D	443	ASN
1	D	470	GLN
1	D	504	HIS
1	D	525	HIS
1	D	545	GLN
1	D	570	ASN
1	D	574	GLN
1	D	579	ASN
1	D	597	HIS
1	D	617	HIS
1	D	649	ASN
1	D	656	ASN
1	D	680	ASN
1	D	687	HIS
1	D	690	ASN
1	D	693	ASN
1	D	705	HIS
1	D	708	GLN

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)

10 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	GLC	E	1	2	12,12,12	0.56	0	17,17,17	0.89	0
2	GLC	E	2	2	11,11,12	0.67	0	15,15,17	1.25	2 (13%)
2	GLC	F	1	2	12,12,12	0.56	0	17,17,17	0.88	0
2	GLC	F	2	2	11,11,12	0.60	0	15,15,17	1.06	1 (6%)
2	GLC	G	1	2	12,12,12	0.59	0	17,17,17	0.70	0
2	GLC	G	2	2	11,11,12	0.69	0	15,15,17	1.30	3 (20%)
2	GLC	H	1	2	12,12,12	0.52	0	17,17,17	0.63	0
2	GLC	H	2	2	11,11,12	0.45	0	15,15,17	2.68	4 (26%)
2	GLC	I	1	2	12,12,12	0.63	0	17,17,17	0.83	1 (5%)
2	GLC	I	2	2	11,11,12	0.74	0	15,15,17	1.50	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. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GLC	E	1	2	-	2/2/22/22	0/1/1/1
2	GLC	E	2	2	-	2/2/19/22	0/1/1/1
2	GLC	F	1	2	-	0/2/22/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GLC	F	2	2	-	0/2/19/22	0/1/1/1
2	GLC	G	1	2	-	1/2/22/22	0/1/1/1
2	GLC	G	2	2	-	2/2/19/22	0/1/1/1
2	GLC	H	1	2	-	2/2/22/22	0/1/1/1
2	GLC	H	2	2	-	1/2/19/22	0/1/1/1
2	GLC	I	1	2	-	2/2/22/22	0/1/1/1
2	GLC	I	2	2	-	0/2/19/22	0/1/1/1

There are no bond length outliers.

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	H	2	GLC	C1-O5-C5	8.36	123.53	112.19
2	H	2	GLC	C2-C3-C4	-4.23	103.58	110.89
2	I	2	GLC	C1-O5-C5	3.47	116.89	112.19
2	I	2	GLC	C1-C2-C3	3.07	113.44	109.67
2	F	2	GLC	C1-O5-C5	3.05	116.32	112.19
2	E	2	GLC	C3-C4-C5	2.67	115.01	110.24
2	G	2	GLC	C2-C3-C4	-2.26	106.99	110.89
2	E	2	GLC	C1-O5-C5	2.21	115.18	112.19
2	H	2	GLC	O5-C5-C6	2.20	110.65	107.20
2	I	1	GLC	O2-C2-C3	-2.13	105.43	110.35
2	G	2	GLC	C3-C4-C5	-2.11	106.47	110.24
2	H	2	GLC	C1-C2-C3	-2.02	107.18	109.67
2	G	2	GLC	O4-C4-C5	2.02	114.30	109.30

There are no chirality outliers.

All (12) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	H	1	GLC	C4-C5-C6-O6
2	E	1	GLC	O5-C5-C6-O6
2	H	1	GLC	O5-C5-C6-O6
2	E	1	GLC	C4-C5-C6-O6
2	E	2	GLC	C4-C5-C6-O6
2	G	2	GLC	C4-C5-C6-O6
2	G	2	GLC	O5-C5-C6-O6
2	E	2	GLC	O5-C5-C6-O6
2	I	1	GLC	O5-C5-C6-O6
2	H	2	GLC	C4-C5-C6-O6

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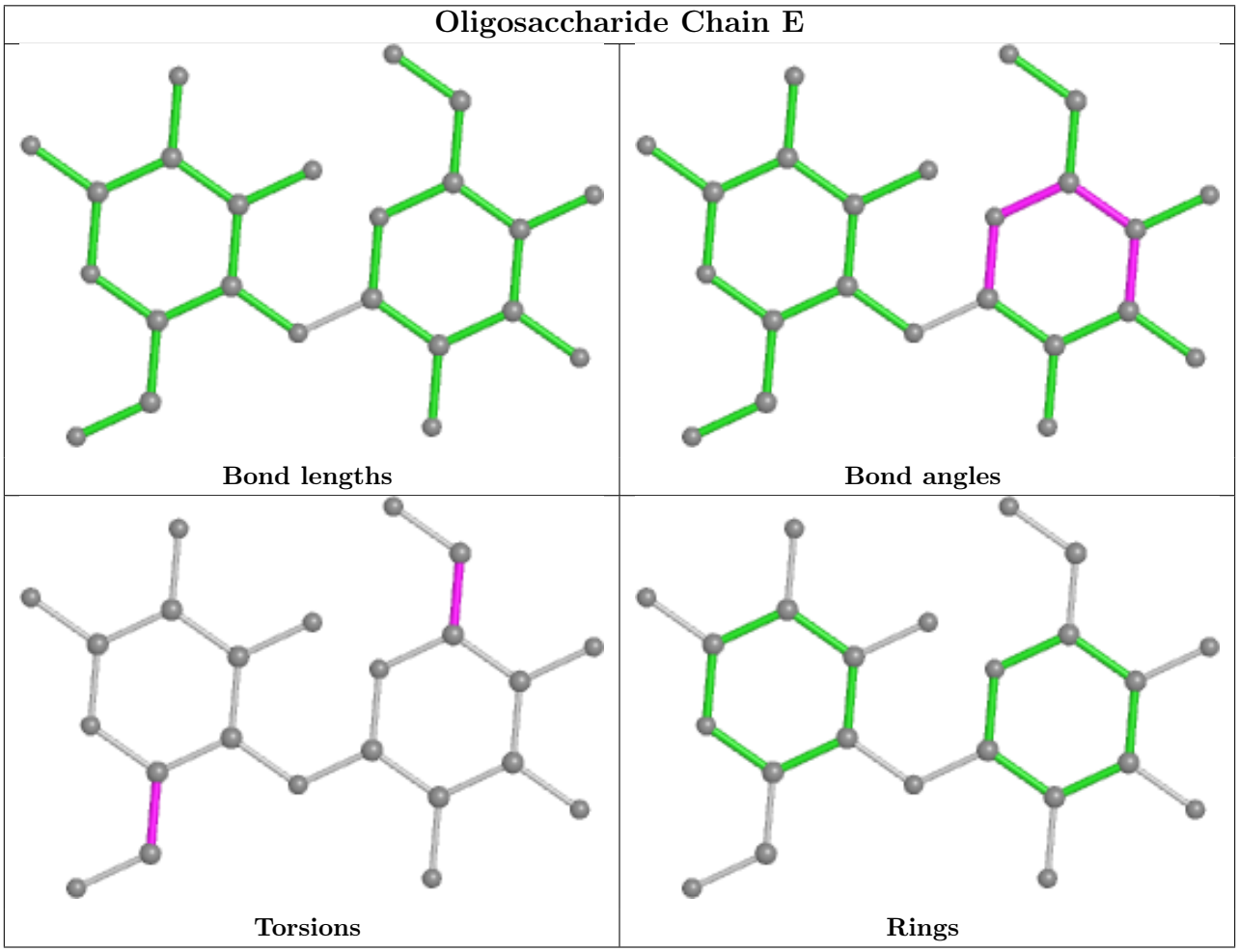
Mol	Chain	Res	Type	Atoms
2	G	1	GLC	O5-C5-C6-O6
2	I	1	GLC	C4-C5-C6-O6

There are no ring outliers.

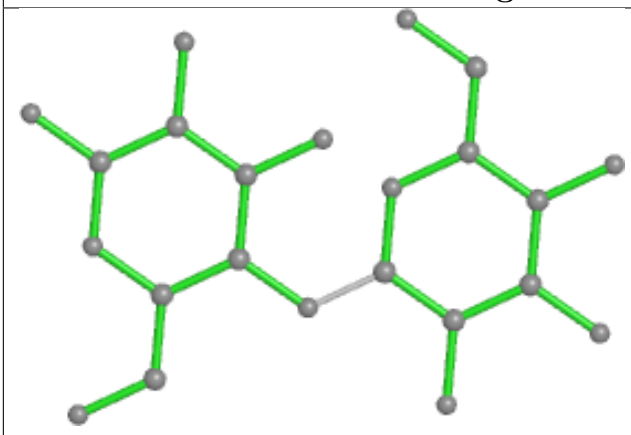
3 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	F	2	GLC	1	0
2	F	1	GLC	1	0
2	G	1	GLC	1	0

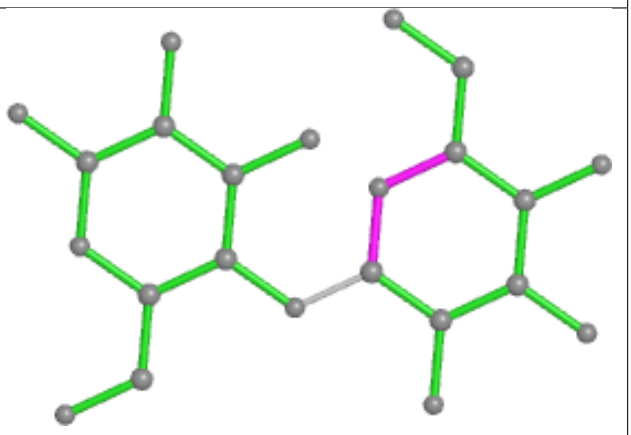
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.



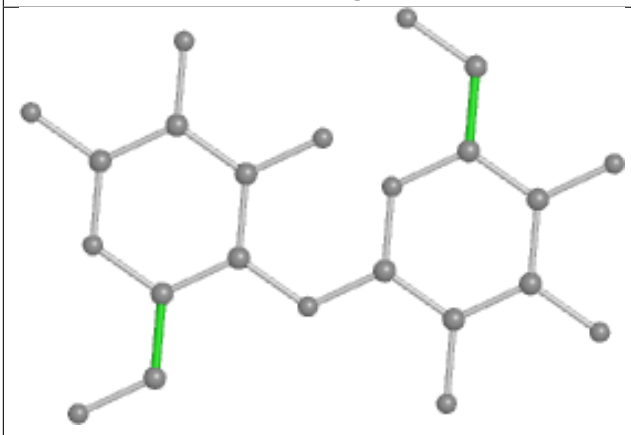
Oligosaccharide Chain F



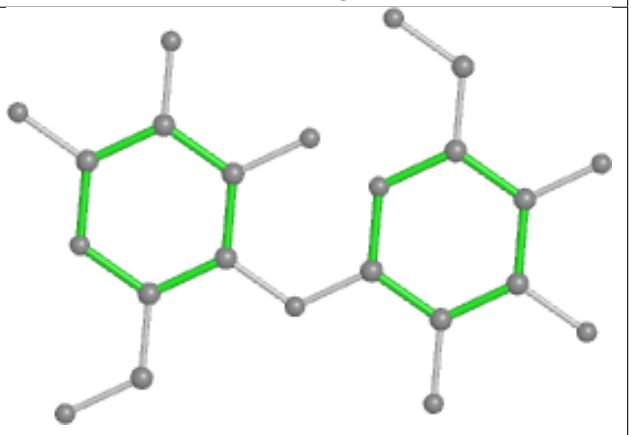
Bond lengths



Bond angles

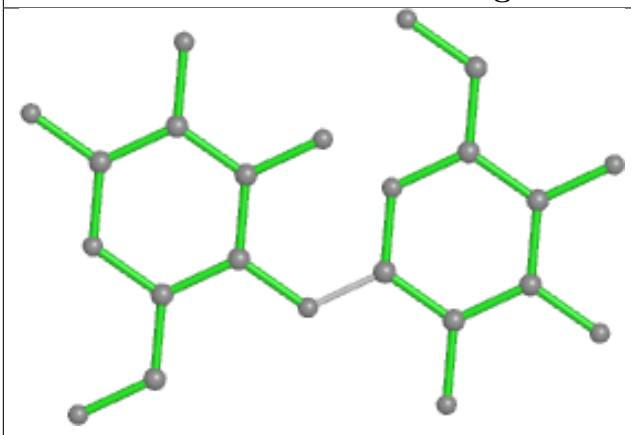


Torsions

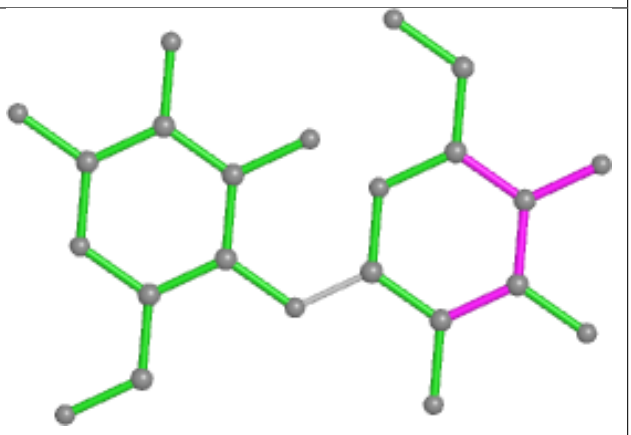


Rings

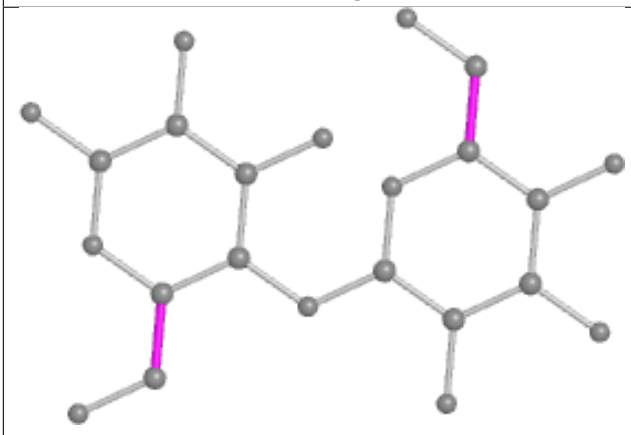
Oligosaccharide Chain G



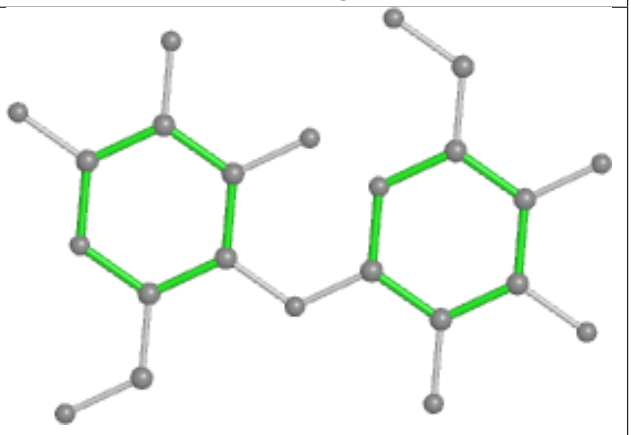
Bond lengths



Bond angles

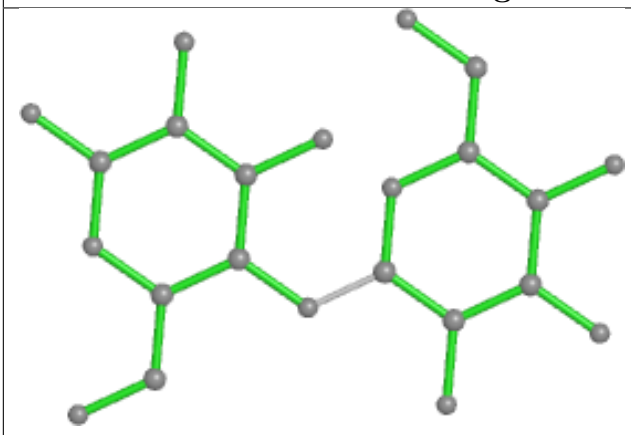


Torsions

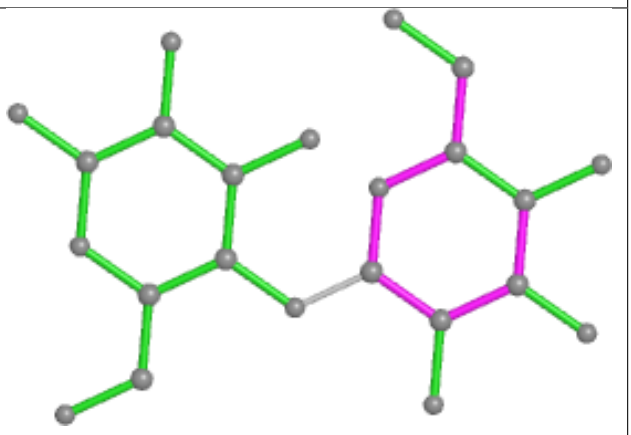


Rings

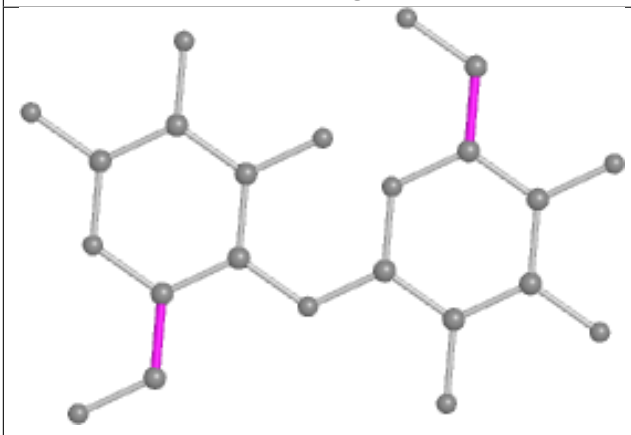
Oligosaccharide Chain H



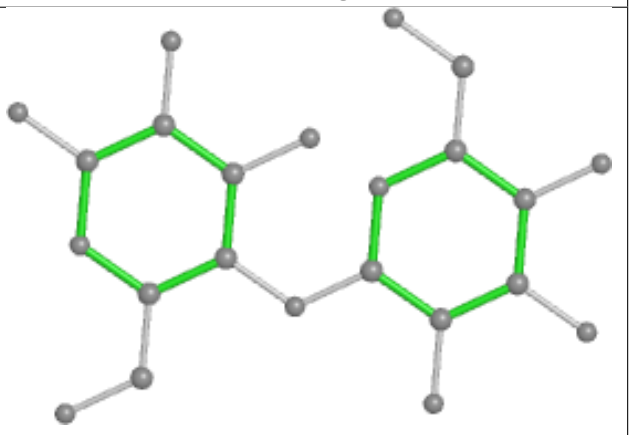
Bond lengths



Bond angles

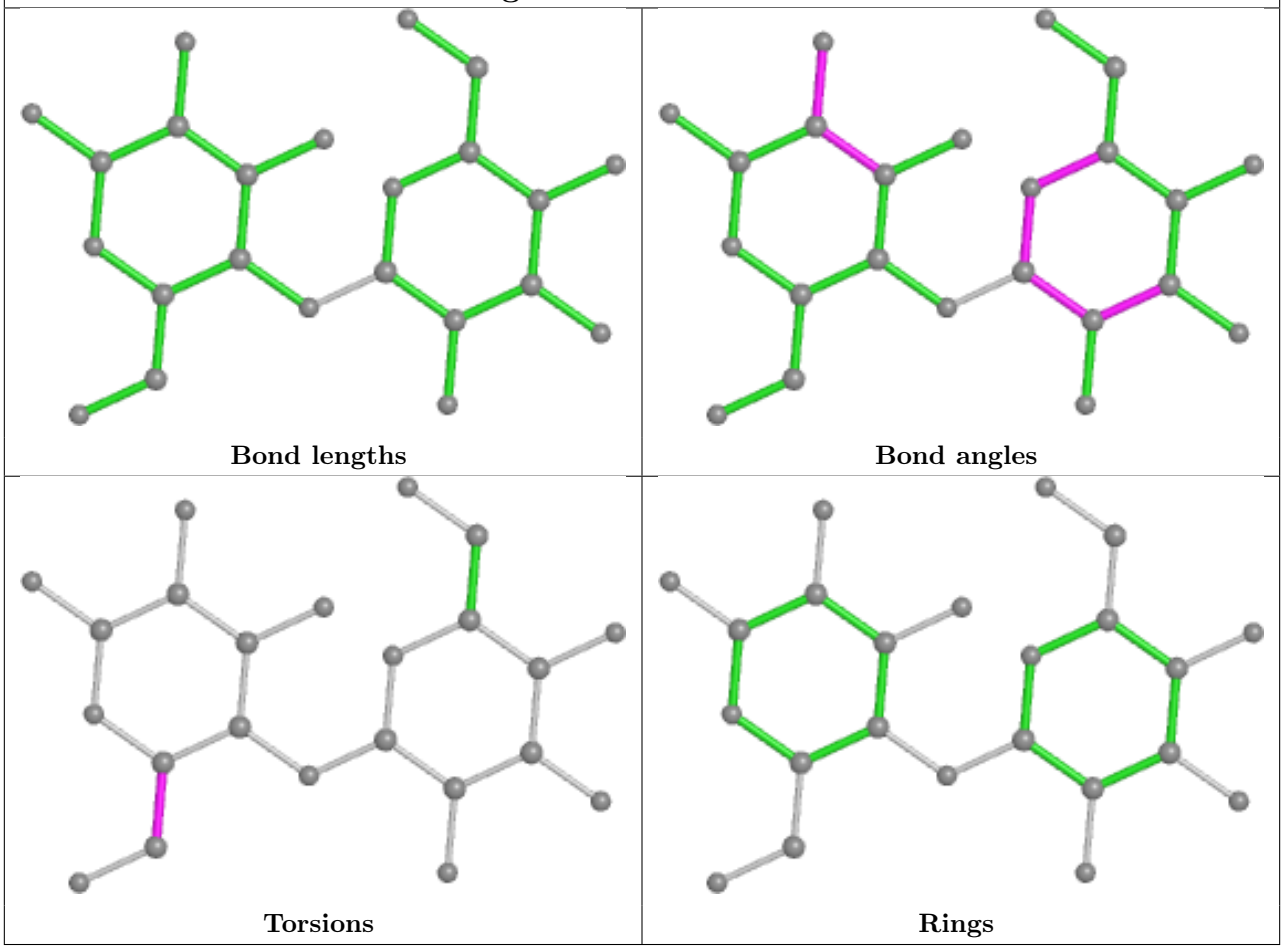


Torsions



Rings

Oligosaccharide Chain I



5.6 Ligand geometry (i)

5 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	$\#\|Z\| > 2$
4	GOL	D	805	-	5,5,5	0.43	0	5,5,5	0.62	0
4	GOL	D	806	-	5,5,5	0.31	0	5,5,5	0.42	0
3	BGC	A	801	-	12,12,12	0.48	0	17,17,17	0.93	1 (5%)
4	GOL	C	805	-	5,5,5	0.58	0	5,5,5	1.33	0
4	GOL	B	803	-	5,5,5	0.39	0	5,5,5	0.44	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	GOL	D	805	-	-	4/4/4/4	-
4	GOL	D	806	-	-	2/4/4/4	-
3	BGC	A	801	-	-	2/2/22/22	0/1/1/1
4	GOL	C	805	-	-	2/4/4/4	-
4	GOL	B	803	-	-	2/4/4/4	-

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	801	BGC	C4-C3-C2	-2.12	107.11	110.82

There are no chirality outliers.

All (12) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	C	805	GOL	O1-C1-C2-C3
4	D	805	GOL	O1-C1-C2-C3
4	D	805	GOL	C1-C2-C3-O3
3	A	801	BGC	O5-C5-C6-O6
4	D	806	GOL	O1-C1-C2-C3
4	C	805	GOL	O1-C1-C2-O2
3	A	801	BGC	C4-C5-C6-O6
4	D	805	GOL	O1-C1-C2-O2
4	D	806	GOL	O1-C1-C2-O2
4	B	803	GOL	O1-C1-C2-O2
4	D	805	GOL	O2-C2-C3-O3
4	B	803	GOL	O1-C1-C2-C3

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
1	A	586/612 (95%)	0.82	97 (16%) 1 1	59, 87, 129, 153	4 (0%)
1	B	596/612 (97%)	0.57	68 (11%) 5 6	58, 82, 123, 153	8 (1%)
1	C	589/612 (96%)	0.36	29 (4%) 29 35	48, 69, 89, 109	6 (1%)
1	D	593/612 (96%)	0.15	11 (1%) 66 73	40, 53, 75, 100	9 (1%)
All	All	2364/2448 (96%)	0.47	205 (8%) 10 12	40, 73, 119, 153	27 (1%)

All (205) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	362	PRO	7.4
1	A	428	GLY	6.9
1	A	175	TRP	6.8
1	A	290	ASN	6.5
1	A	201	LEU	6.4
1	A	149	ARG	6.2
1	A	199	LEU	6.2
1	B	353	GLY	6.1
1	B	199	LEU	5.9
1	C	431	GLU	5.7
1	A	360	SER	5.6
1	B	132	MET	5.6
1	C	132	MET	5.5
1	A	145	PRO	5.5
1	A	144	ALA	5.4
1	A	214	PRO	5.3
1	A	166	MET	5.1
1	A	213	ARG	5.1
1	A	148	ARG	5.1
1	D	371	ASN	5.0
1	A	159	TRP	5.0

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Mol	Chain	Res	Type	RSRZ
1	C	728	GLU	5.0
1	A	212	MET	4.9
1	A	194	ASP	4.9
1	A	195	ALA	4.9
1	B	197	GLY	4.8
1	B	277	LYS	4.8
1	A	197	GLY	4.8
1	D	429	GLY	4.8
1	A	177	LEU	4.7
1	A	170	LYS	4.7
1	A	191	GLU	4.7
1	B	371	ASN	4.7
1	A	146	ASN	4.7
1	A	429	GLY	4.7
1	A	133	ASP	4.6
1	B	430	ARG	4.6
1	A	151	SER	4.6
1	A	158	TYR	4.4
1	A	171	GLU	4.4
1	B	167	ARG	4.4
1	B	427	PHE	4.4
1	B	142	VAL	4.4
1	A	196	ASN	4.3
1	A	472	MET	4.3
1	B	196	ASN	4.3
1	A	473	GLY	4.3
1	A	343	THR	4.3
1	A	150	VAL	4.2
1	B	216	THR	4.2
1	A	193	ILE	4.2
1	C	430	ARG	4.2
1	D	728	GLU	4.1
1	A	294	PHE	4.1
1	B	193	ILE	4.1
1	B	429	GLY	4.1
1	B	177	LEU	4.0
1	B	131	THR	4.0
1	C	427	PHE	4.0
1	A	135	VAL	4.0
1	C	134	GLY	3.9
1	B	133	ASP	3.9
1	C	258	ASP	3.9

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Mol	Chain	Res	Type	RSRZ
1	B	148	ARG	3.9
1	B	361	ASP	3.8
1	B	425	ASN	3.8
1	A	162	ARG	3.8
1	C	135	VAL	3.8
1	D	258	ASP	3.8
1	B	150	VAL	3.7
1	C	346	PHE	3.7
1	B	149	ARG	3.7
1	B	200	ARG	3.7
1	A	211	GLN	3.7
1	B	201	LEU	3.7
1	A	200	ARG	3.6
1	B	175	TRP	3.6
1	D	428	GLY	3.6
1	A	167	ARG	3.6
1	B	144	ALA	3.6
1	A	168	LEU	3.6
1	A	530	HIS	3.6
1	B	158	TYR	3.6
1	B	159	TRP	3.5
1	A	164	HIS	3.5
1	A	190	TYR	3.5
1	A	192	MET	3.4
1	A	354	THR	3.3
1	D	117	THR	3.3
1	B	213	ARG	3.3
1	A	153	VAL	3.3
1	A	132	MET	3.3
1	B	162	ARG	3.3
1	B	191	GLU	3.2
1	B	413	ARG	3.2
1	B	257	THR	3.2
1	A	131	THR	3.2
1	C	429	GLY	3.2
1	B	135	VAL	3.2
1	C	499	TYR	3.2
1	C	428	GLY	3.2
1	A	430	ARG	3.2
1	A	216	THR	3.1
1	C	359	HIS	3.1
1	A	728	GLU	3.1

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Mol	Chain	Res	Type	RSRZ
1	A	147	ALA	3.1
1	B	129	ALA	3.1
1	B	258	ASP	3.1
1	C	133	ASP	3.1
1	C	498	VAL	3.1
1	B	423	ILE	3.1
1	B	194	ASP	3.1
1	A	581	ASP	3.1
1	A	351	PHE	3.1
1	A	143	TRP	3.0
1	B	170	LYS	3.0
1	A	134	GLY	3.0
1	D	427	PHE	3.0
1	C	660	VAL	3.0
1	A	188	TYR	3.0
1	A	178	PHE	2.9
1	B	176	GLU	2.9
1	B	424	PRO	2.9
1	A	346	PHE	2.9
1	B	202	LYS	2.9
1	A	543	ALA	2.9
1	C	502	TYR	2.9
1	B	161	GLY	2.9
1	B	168	LEU	2.8
1	A	172	SER	2.8
1	A	180	PRO	2.8
1	B	174	ILE	2.8
1	A	469	PRO	2.8
1	B	412	TYR	2.8
1	B	360	SER	2.8
1	A	173	GLY	2.8
1	C	606	LEU	2.8
1	B	139	ARG	2.8
1	C	131	THR	2.7
1	A	163	ARG	2.7
1	B	147	ALA	2.7
1	A	140	PHE	2.7
1	D	415	TYR	2.7
1	A	169	ARG	2.7
1	A	215	GLU	2.7
1	B	635	GLU	2.7
1	A	198	ASN	2.7

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Mol	Chain	Res	Type	RSRZ
1	D	346	PHE	2.6
1	A	165	PRO	2.6
1	B	428	GLY	2.6
1	A	352	ASP	2.6
1	B	117	THR	2.6
1	C	512	LEU	2.6
1	B	165	PRO	2.6
1	A	160	ASP	2.6
1	B	164	HIS	2.6
1	C	590	GLU	2.6
1	C	199	LEU	2.5
1	A	471	ASP	2.5
1	A	533	LYS	2.5
1	C	496	ASP	2.5
1	B	346	PHE	2.5
1	A	685[A]	HIS	2.5
1	C	345	ASP	2.4
1	A	349	ALA	2.4
1	B	354	THR	2.4
1	A	174	ILE	2.4
1	B	192	MET	2.4
1	A	295	ASP	2.4
1	A	542	ASP	2.4
1	A	380	ARG	2.4
1	C	632	ASP	2.3
1	D	259	ASN	2.3
1	B	728	GLU	2.3
1	C	708	GLN	2.3
1	A	373	LEU	2.3
1	A	701	GLU	2.3
1	A	303	THR	2.3
1	A	176	GLU	2.2
1	A	434	GLU	2.2
1	D	257	THR	2.2
1	A	203	SER	2.2
1	A	187	LEU	2.2
1	A	161	GLY	2.2
1	A	219	LEU	2.2
1	B	195	ALA	2.2
1	A	345	ASP	2.2
1	A	509	PHE	2.2
1	B	299	GLY	2.2

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Mol	Chain	Res	Type	RSRZ
1	B	163	ARG	2.2
1	B	190	TYR	2.2
1	C	196	ASN	2.1
1	A	437	GLU	2.1
1	B	130	ASP	2.1
1	A	582	ALA	2.1
1	B	426	GLU	2.1
1	A	359	HIS	2.1
1	C	663	HIS	2.1
1	B	359	HIS	2.1
1	B	198	ASN	2.1
1	A	350	GLU	2.0
1	C	225	GLU	2.0
1	A	155	GLN	2.0
1	A	475	LEU	2.0
1	B	431	GLU	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.

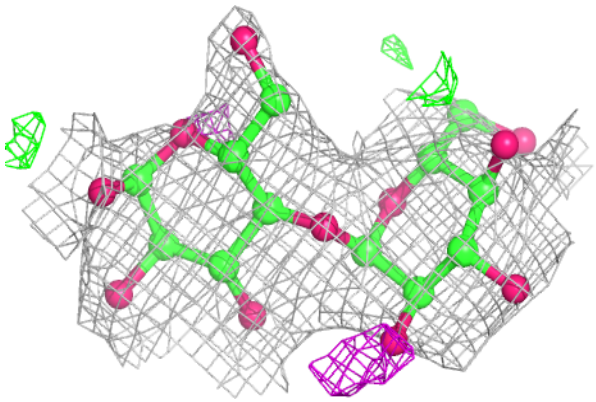
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	GLC	H	2	11/12	0.68	0.29	96,97,98,98	0
2	GLC	E	1	12/12	0.78	0.27	114,114,115,115	0
2	GLC	G	2	11/12	0.86	0.30	85,87,88,88	0
2	GLC	H	1	12/12	0.89	0.30	97,98,98,98	0
2	GLC	E	2	11/12	0.89	0.33	115,115,115,115	0
2	GLC	I	2	11/12	0.89	0.28	72,75,76,77	0
2	GLC	F	2	11/12	0.90	0.28	93,93,94,94	0
2	GLC	I	1	12/12	0.91	0.31	73,74,75,75	0
2	GLC	G	1	12/12	0.92	0.35	88,89,90,90	0
2	GLC	F	1	12/12	0.92	0.26	93,93,94,94	0

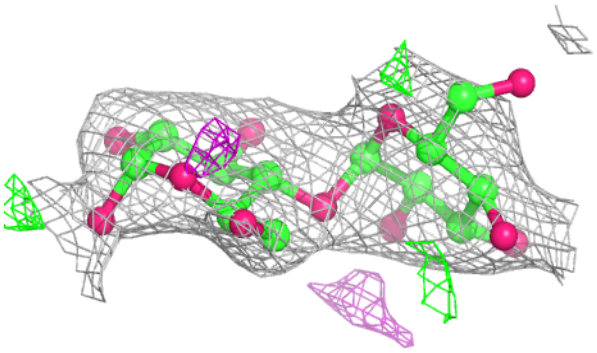
The following is a graphical depiction of the model fit to experimental electron density for oligosac-

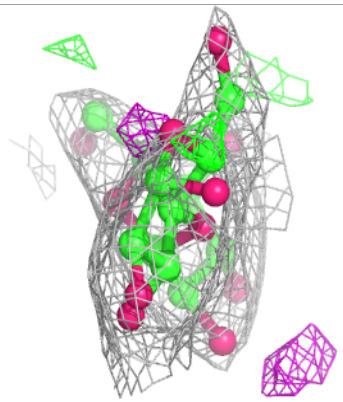
charide. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around Chain E:

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

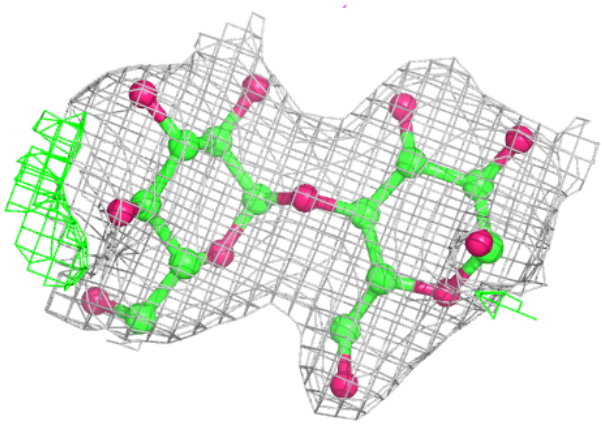


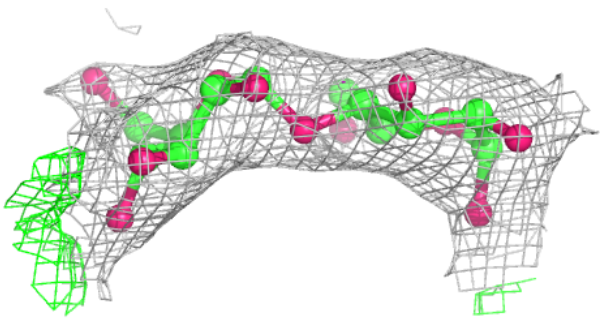


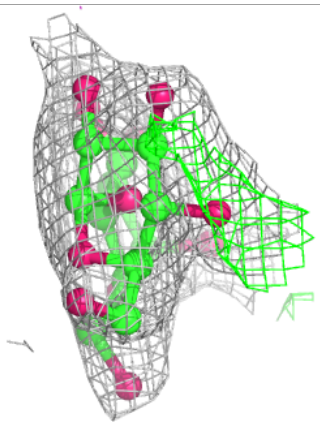


Electron density around Chain F:

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

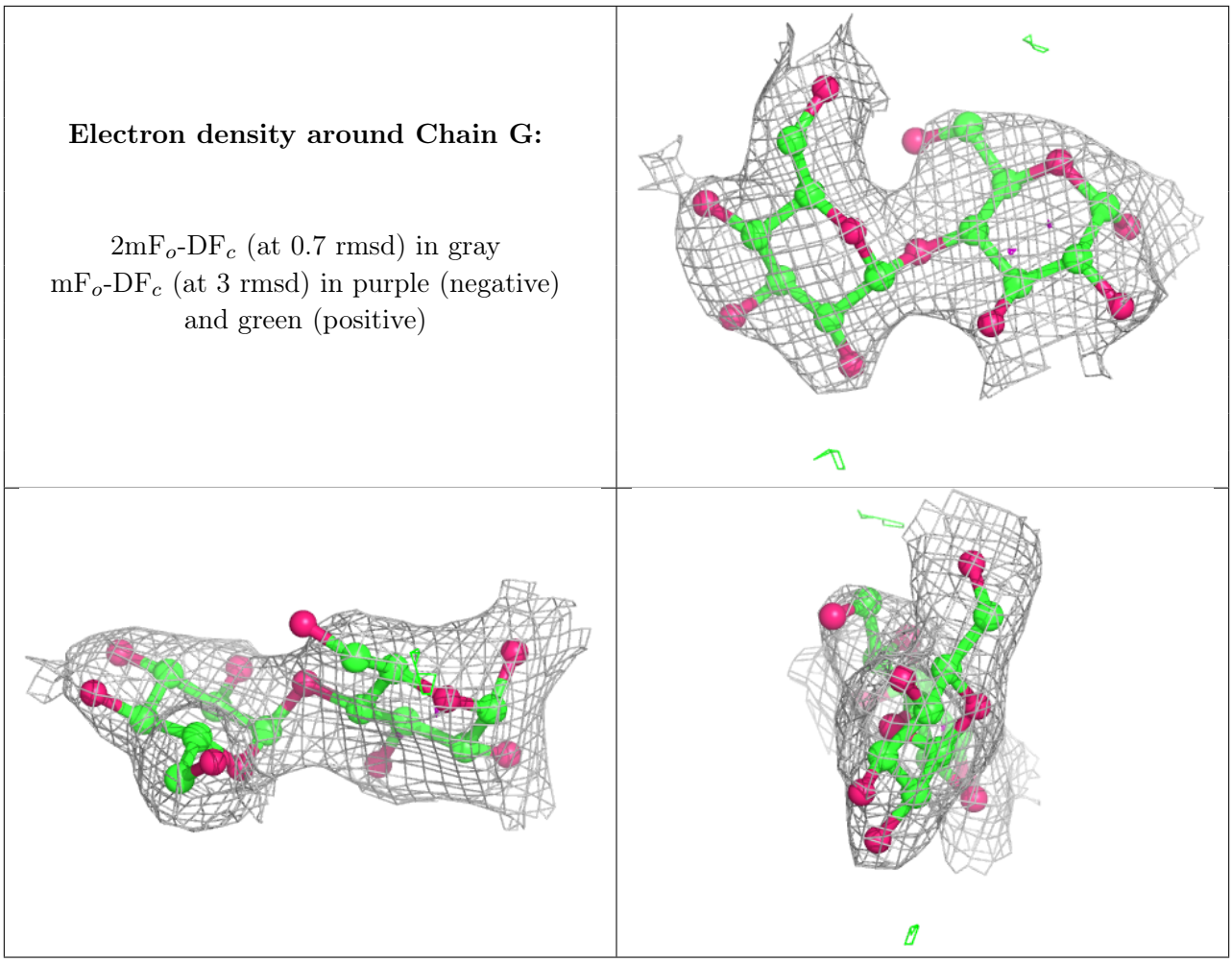






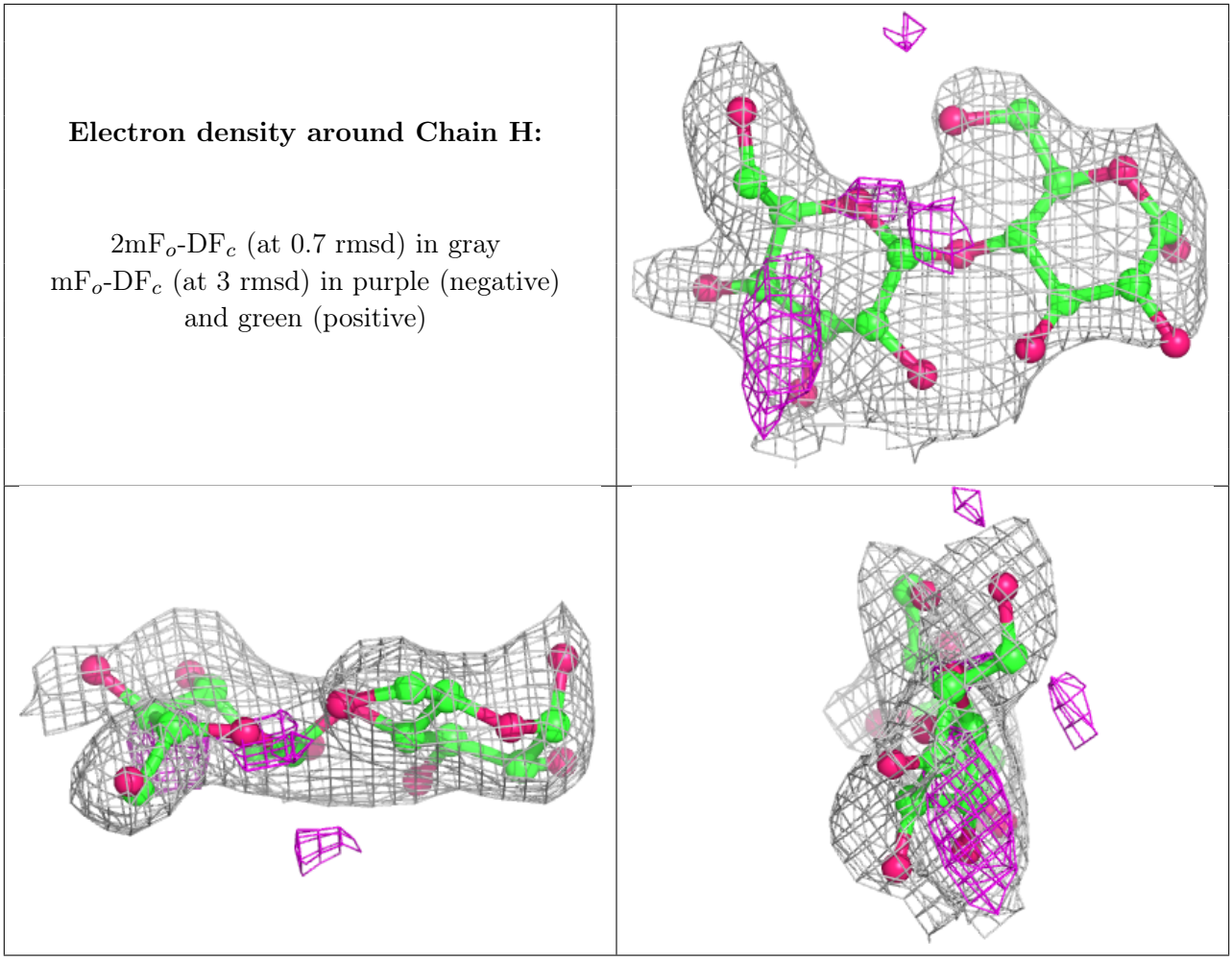
Electron density around Chain G:

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



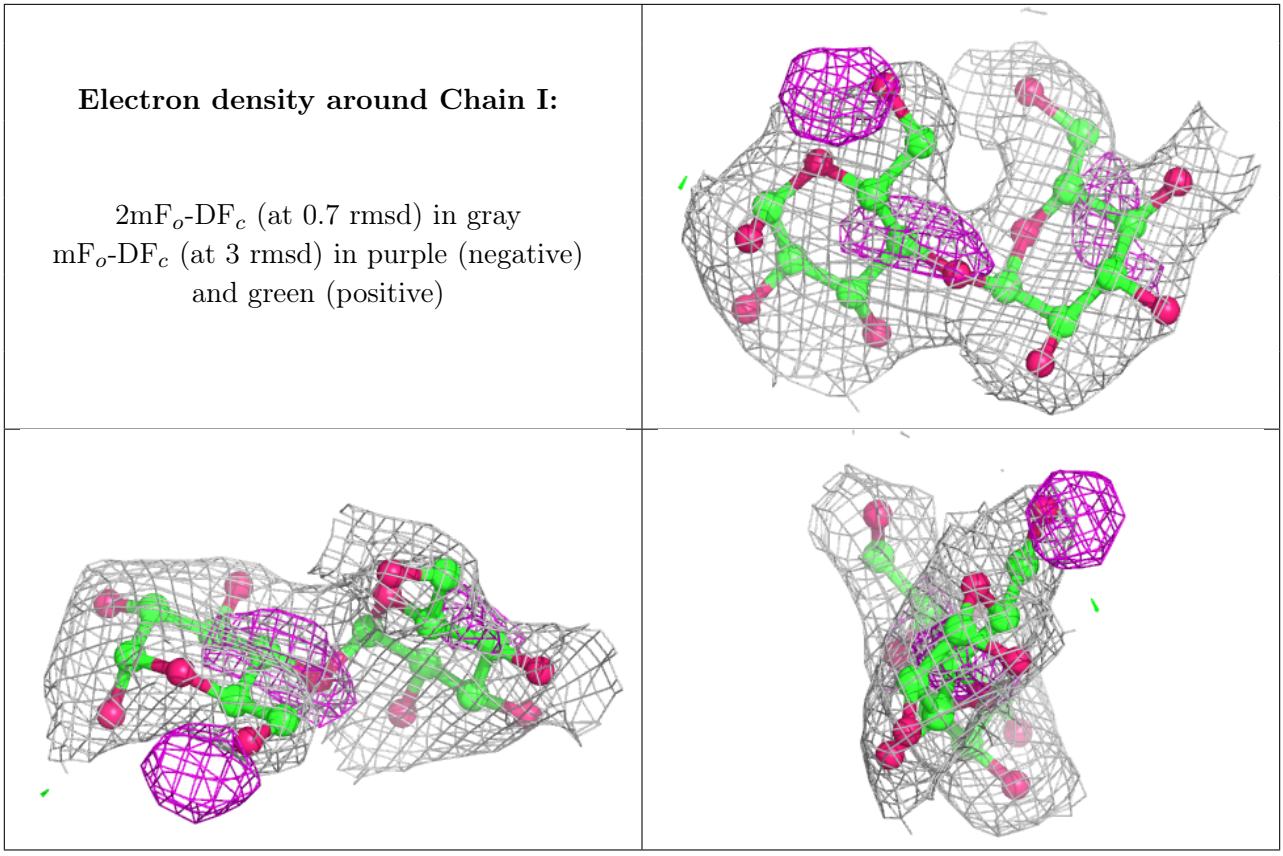
Electron density around Chain H:

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



Electron density around Chain I:

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



6.4 Ligands

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	BGC	A	801	12/12	0.72	0.32	99,99,99,100	0
4	GOL	C	805	6/6	0.75	0.29	70,71,71,71	0
4	GOL	D	805	6/6	0.93	0.14	56,60,61,62	0
4	GOL	B	803	6/6	0.94	0.17	66,68,69,70	0
4	GOL	D	806	6/6	0.97	0.10	60,61,62,63	0

6.5 Other polymers

There are no such residues in this entry.