



# Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2026 – 01:22 PM UTC

PDB ID : 4KDO / pdb\_00004kdo  
Title : Crystal structure of the hemagglutinin of ferret-transmissible H5N1 virus in complex with human receptor analog LSTc  
Authors : Lu, X.; Shi, Y.; Zhang, W.; Zhang, Y.; Qi, J.; Gao, G.F.  
Deposited on : 2013-04-25  
Resolution : 2.40 Å(reported)

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

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

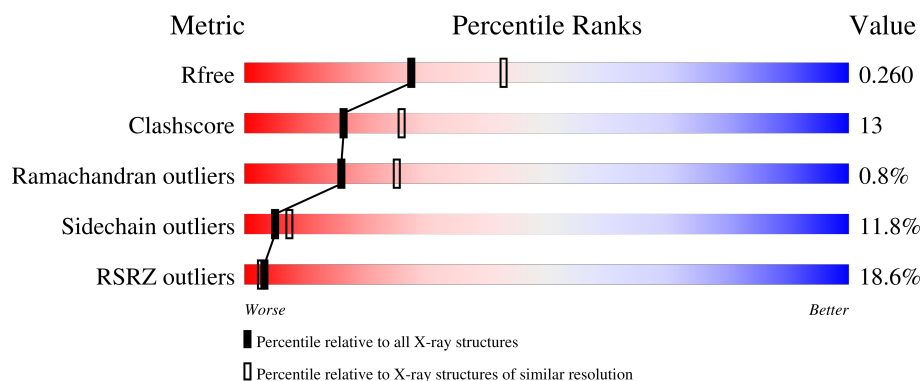
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.40 Å.

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




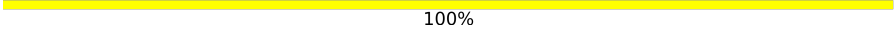

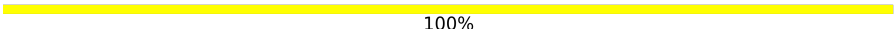

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	180053	4912 (2.40-2.40)
Clashscore	190562	5391 (2.40-2.40)
Ramachandran outliers	187476	5320 (2.40-2.40)
Sidechain outliers	187428	5321 (2.40-2.40)
RSRZ outliers	180081	4916 (2.40-2.40)

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

Mol	Chain	Length	Quality of chain
1	A	322	<div> <div>11%</div> <div> <div></div> <div>67%</div> <div>27%</div> <div>6%</div> </div> </div>
1	C	322	<div> <div>12%</div> <div> <div></div> <div>66%</div> <div>26%</div> <div>7%</div> </div> </div>
1	E	322	<div> <div>13%</div> <div> <div></div> <div>66%</div> <div>28%</div> <div>6%</div> </div> </div>
2	B	175	<div> <div>38%</div> <div> <div></div> <div>70%</div> <div>23%</div> <div>6%</div> </div> </div>
2	D	175	<div> <div>35%</div> <div> <div></div> <div>70%</div> <div>27%</div> <div>..</div> </div> </div>

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Mol	Chain	Length	Quality of chain
2	F	175	
3	G	2	
3	H	2	
3	J	2	
4	I	3	

## 2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 12373 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	322	Total	C	N	O	S	0	0	0
			2559	1621	440	483	15			
1	C	322	Total	C	N	O	S	0	0	0
			2559	1621	440	483	15			
1	E	322	Total	C	N	O	S	0	0	0
			2559	1621	440	483	15			

There are 15 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	4	GLN	-	expression tag	UNP Q6DQ33
A	158	ASP	ASN	engineered mutation	UNP Q6DQ33
A	224	LYS	ASN	engineered mutation	UNP Q6DQ33
A	226	LEU	GLN	engineered mutation	UNP Q6DQ33
A	319	ILE	THR	engineered mutation	UNP Q6DQ33
C	4	GLN	-	expression tag	UNP Q6DQ33
C	158	ASP	ASN	engineered mutation	UNP Q6DQ33
C	224	LYS	ASN	engineered mutation	UNP Q6DQ33
C	226	LEU	GLN	engineered mutation	UNP Q6DQ33
C	319	ILE	THR	engineered mutation	UNP Q6DQ33
E	4	GLN	-	expression tag	UNP Q6DQ33
E	158	ASP	ASN	engineered mutation	UNP Q6DQ33
E	224	LYS	ASN	engineered mutation	UNP Q6DQ33
E	226	LEU	GLN	engineered mutation	UNP Q6DQ33
E	319	ILE	THR	engineered mutation	UNP Q6DQ33

- Molecule 2 is a protein called Hemagglutinin.

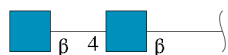
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	175	Total	C	N	O	S	0	0	0
			1416	880	246	282	8			

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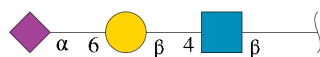
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	D	175	Total	C	N	O	S	0	0	0
			1416	880	246	282	8			
2	F	175	Total	C	N	O	S	0	0	0
			1416	880	246	282	8			

- Molecule 3 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



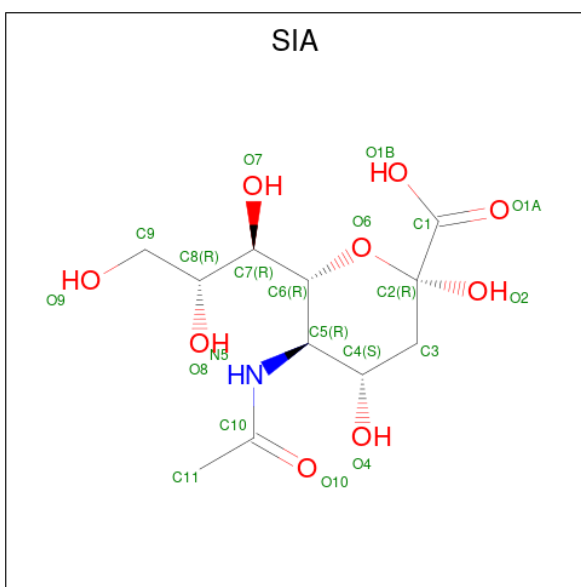
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	G	2	Total	C	N	O	0	0	0
			28	16	2	10			
3	H	2	Total	C	N	O	0	0	0
			28	16	2	10			
3	J	2	Total	C	N	O	0	0	0
			28	16	2	10			

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



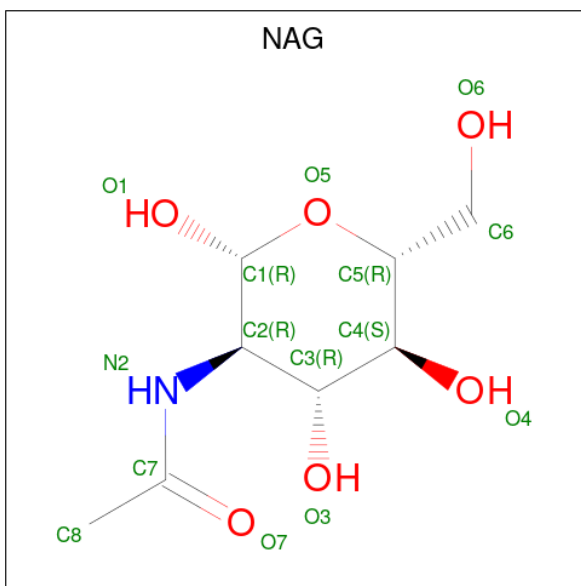
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
4	I	3	Total	C	N	O	0	0	0
			46	25	2	19			

- Molecule 5 is N-acetyl-alpha-neuraminic acid (CCD ID: SIA) (formula: C<sub>11</sub>H<sub>19</sub>NO<sub>9</sub>).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	A	1	Total	C	N	O	0	0
			21	11	1	9		

- Molecule 6 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula:  $C_8H_{15}NO_6$ ).



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

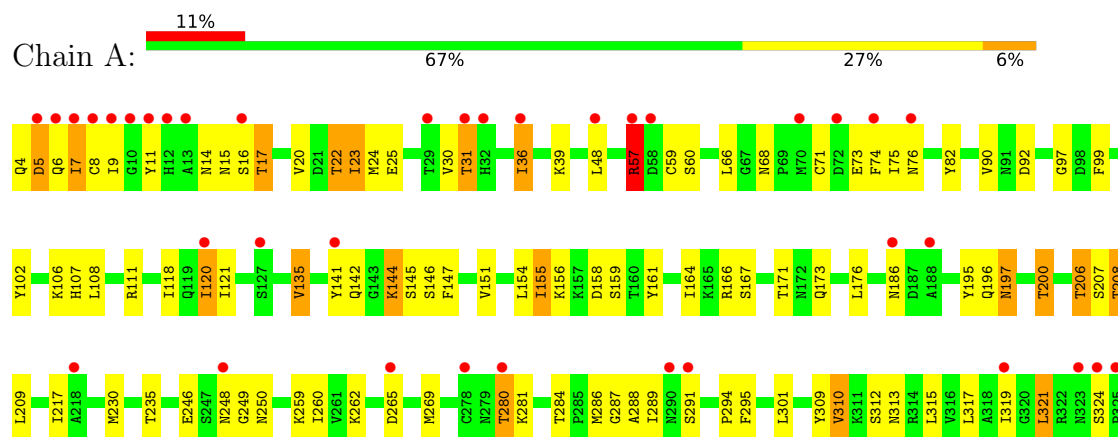
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	80	Total 80	O 80	0	0
7	C	80	Total 80	O 80	0	0
7	E	64	Total 64	O 64	0	0
7	B	24	Total 24	O 24	0	0
7	D	22	Total 22	O 22	0	0
7	F	13	Total 13	O 13	0	0

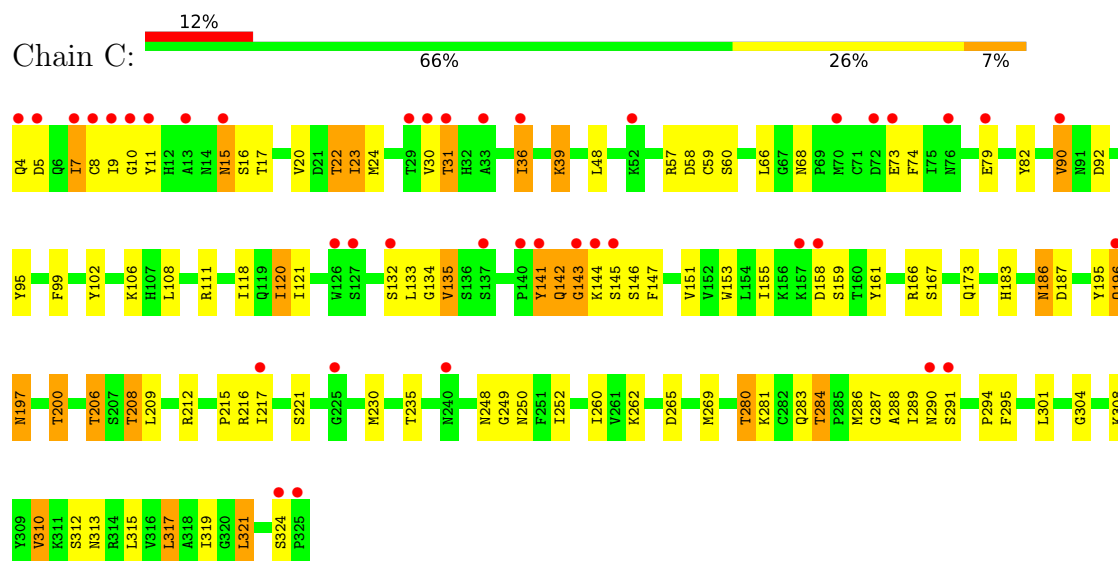
### 3 Residue-property plots [i](#)

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



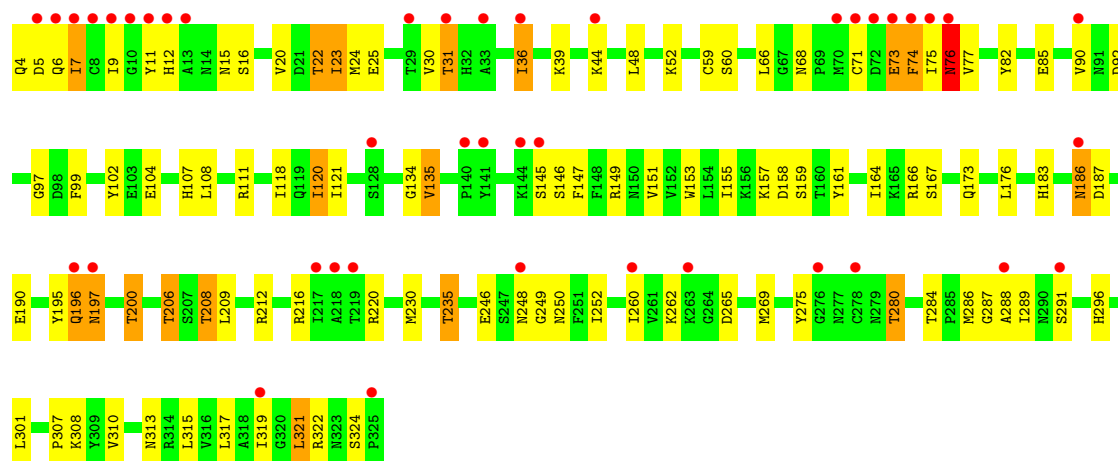
#### • Molecule 1: Hemagglutinin



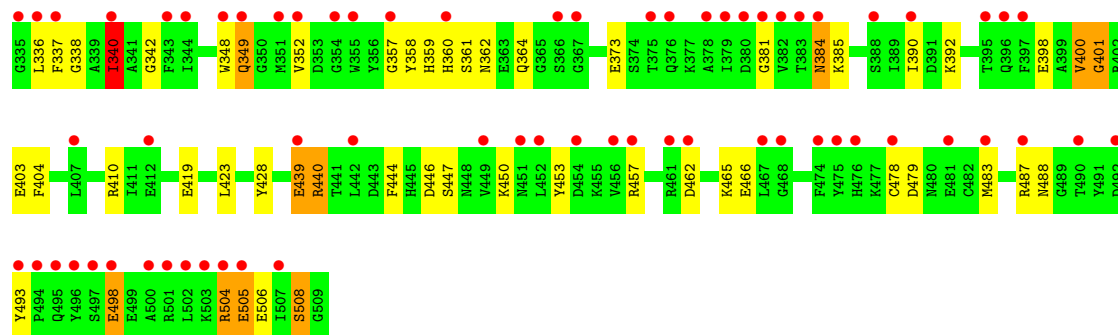
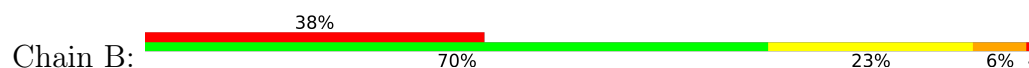
#### • Molecule 1: Hemagglutinin



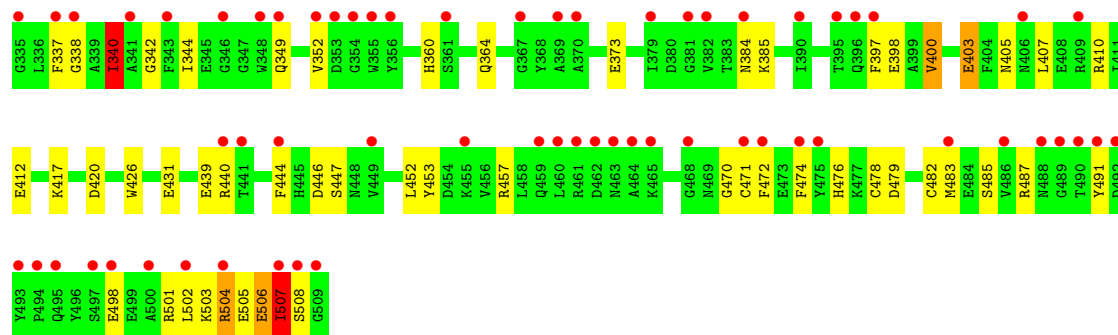




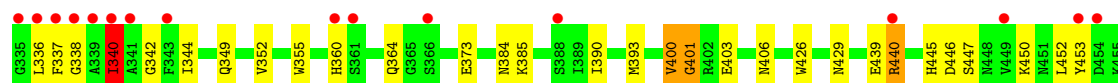
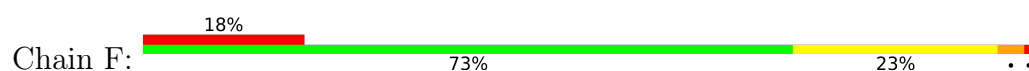
• Molecule 2: Hemagglutinin

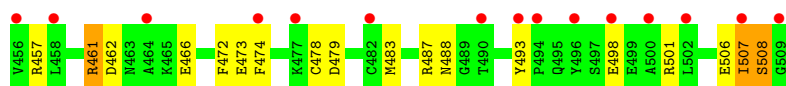


• Molecule 2: Hemagglutinin



• Molecule 2: Hemagglutinin





- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain G: 100%



- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain H: 50%



- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J: 100%



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

Chain I: 33%



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	67.26Å 245.91Å 69.57Å 90.00° 112.96° 90.00°	Depositor
Resolution (Å)	34.18 – 2.40 34.18 – 2.40	Depositor EDS
% Data completeness (in resolution range)	97.2 (34.18-2.40) 97.2 (34.18-2.40)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	3.02 (at 2.39Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.7.3_928)	Depositor
R, $R_{free}$	0.237 , 0.269 0.229 , 0.260	Depositor DCC
$R_{free}$ test set	3969 reflections (4.88%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	49.5	Xtriage
Anisotropy	0.297	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.30 , 46.6	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	0.019 for l,-k,h	Xtriage
$F_o, F_c$ correlation	0.93	EDS
Total number of atoms	12373	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	66.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.41% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

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

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

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

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	0.73	1/2621 (0.0%)	1.11	13/3558 (0.4%)
1	C	0.73	0/2621	1.13	18/3558 (0.5%)
1	E	0.71	0/2621	1.09	10/3558 (0.3%)
2	B	0.61	0/1443	0.91	1/1939 (0.1%)
2	D	0.61	1/1443 (0.1%)	0.89	2/1939 (0.1%)
2	F	0.62	2/1443 (0.1%)	0.88	2/1939 (0.1%)
All	All	0.68	4/12192 (0.0%)	1.04	46/16491 (0.3%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	C	0	2
All	All	0	3

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	F	429	ASN	CG-ND2	-8.41	1.15	1.33
2	F	429	ASN	CG-OD1	-5.30	1.13	1.23
2	D	507	ILE	CA-CB	5.17	1.61	1.54
1	A	73	GLU	C-O	-5.04	1.17	1.23

All (46) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	66	LEU	N-CA-C	-12.06	92.64	110.48

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	66	LEU	N-CA-C	-11.71	93.98	110.50
1	E	66	LEU	N-CA-C	-11.67	93.21	110.48
1	A	73	GLU	CA-C-N	-10.90	103.34	122.64
1	A	73	GLU	C-N-CA	-10.90	103.34	122.64
1	C	57	ARG	NE-CZ-NH2	10.90	129.01	119.20
1	C	57	ARG	NE-CZ-NH1	-10.40	111.10	121.50
1	C	212	ARG	NE-CZ-NH2	10.21	128.38	119.20
1	C	212	ARG	NE-CZ-NH1	-9.69	111.81	121.50
1	C	195	TYR	N-CA-C	-9.15	95.81	109.81
1	E	195	TYR	N-CA-C	-8.90	96.19	109.81
1	A	195	TYR	N-CA-C	-8.84	96.29	109.81
1	A	73	GLU	O-C-N	-8.03	112.90	122.46
1	E	149	ARG	NE-CZ-NH2	7.58	126.02	119.20
2	B	340	ILE	N-CA-C	7.27	118.00	110.36
1	E	149	ARG	NE-CZ-NH1	-7.16	114.34	121.50
1	A	74	PHE	N-CA-C	7.05	120.82	110.17
1	A	57	ARG	CB-CG-CD	7.04	127.50	111.30
1	C	141	TYR	O-C-N	7.03	127.03	120.71
1	C	141	TYR	N-CA-C	6.99	119.23	108.12
1	C	57	ARG	CD-NE-CZ	6.81	133.94	124.40
2	F	340	ILE	N-CA-C	6.63	117.32	110.36
2	F	461	ARG	CB-CA-C	-6.60	108.94	116.54
1	C	212	ARG	CD-NE-CZ	6.55	133.57	124.40
2	D	340	ILE	N-CA-C	6.54	117.22	110.36
1	A	73	GLU	CB-CA-C	-6.42	102.02	112.03
1	A	195	TYR	CA-C-N	-6.35	111.49	122.79
1	A	195	TYR	C-N-CA	-6.35	111.49	122.79
1	A	141	TYR	CA-C-N	-6.25	113.86	122.87
1	A	141	TYR	C-N-CA	-6.25	113.86	122.87
1	E	195	TYR	CA-C-N	-5.99	111.03	122.53
1	E	195	TYR	C-N-CA	-5.99	111.03	122.53
1	C	195	TYR	CA-C-N	-5.95	112.20	122.79
1	C	195	TYR	C-N-CA	-5.95	112.20	122.79
1	A	73	GLU	CA-C-O	-5.94	115.54	122.37
1	C	158	ASP	N-CA-C	-5.94	98.05	108.08
1	C	142	GLN	CB-CG-CD	5.83	122.52	112.60
1	E	235	THR	CB-CA-C	-5.74	97.87	110.67
1	E	158	ASP	N-CA-C	-5.32	100.22	108.31
1	C	68	ASN	CA-C-N	5.25	125.56	119.47
1	C	68	ASN	C-N-CA	5.25	125.56	119.47
1	C	95	TYR	N-CA-C	-5.21	103.20	109.72
2	D	403	GLU	N-CA-C	5.16	119.54	112.88

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	44	LYS	CG-CD-CE	-5.11	99.55	111.30
1	C	141	TYR	CB-CA-C	-5.10	105.04	115.28
1	E	76	ASN	N-CA-CB	5.08	119.07	110.49

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	75	ILE	Peptide
1	C	143	GLY	Peptide
1	C	4	GLN	Peptide

## 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	2559	0	2514	78	1
1	C	2559	0	2513	77	2
1	E	2559	0	2514	83	1
2	B	1416	0	1319	54	0
2	D	1416	0	1319	46	0
2	F	1416	0	1319	51	0
3	G	28	0	25	0	0
3	H	28	0	25	0	0
3	J	28	0	25	0	0
4	I	46	0	40	2	0
5	A	21	0	18	0	0
6	C	14	0	13	0	0
7	A	80	0	0	7	0
7	B	24	0	0	5	0
7	C	80	0	0	10	0
7	D	22	0	0	4	0
7	E	64	0	0	11	0
7	F	13	0	0	2	0
All	All	12373	0	11644	309	2

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including

hydrogen atoms). The all-atom clashscore for this structure is 13.

All (309) 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:7:ILE:HG22	2:D:472:PHE:HB2	1.39	1.04
2:D:398:GLU:OE2	7:D:617:HOH:O	1.81	0.99
1:A:8:CYS:N	2:B:359:HIS:O	2.03	0.91
1:C:206:THR:HG22	1:C:208:THR:H	1.35	0.90
1:E:5:ASP:O	2:F:474:PHE:N	2.02	0.90
1:E:284:THR:HG22	1:E:286:MET:H	1.37	0.90
2:B:498:GLU:OE2	7:B:604:HOH:O	1.92	0.87
1:C:284:THR:HG22	1:C:286:MET:H	1.38	0.85
1:E:206:THR:HG22	1:E:208:THR:H	1.41	0.84
1:C:7:ILE:O	2:D:472:PHE:N	2.10	0.84
1:A:284:THR:HG22	1:A:286:MET:H	1.41	0.83
2:D:503:LYS:O	2:D:507:ILE:N	2.11	0.82
2:B:336:LEU:O	2:F:447:SER:OG	1.98	0.81
1:A:8:CYS:HB2	2:B:359:HIS:HB3	1.61	0.81
1:E:39:LYS:NZ	1:E:313:ASN:O	2.13	0.80
1:C:291:SER:HA	7:C:759:HOH:O	1.81	0.80
2:F:406:ASN:O	7:F:608:HOH:O	1.99	0.80
1:A:206:THR:HG22	1:A:208:THR:H	1.46	0.79
2:B:488:ASN:ND2	7:B:623:HOH:O	2.13	0.79
1:C:8:CYS:HA	2:D:471:CYS:HA	1.63	0.79
2:D:501:ARG:NH1	2:F:508:SER:OG	2.15	0.79
2:D:403:GLU:OE2	7:D:603:HOH:O	2.02	0.77
1:E:275:TYR:OH	7:E:557:HOH:O	2.01	0.77
1:E:157:LYS:NZ	7:E:533:HOH:O	2.19	0.75
1:A:8:CYS:O	2:B:359:HIS:N	2.20	0.75
1:A:39:LYS:NZ	1:A:313:ASN:O	2.16	0.74
1:C:186:ASN:O	7:C:726:HOH:O	2.04	0.74
1:E:11:TYR:OH	2:F:340:ILE:O	2.02	0.74
2:B:465:LYS:HZ3	2:F:461:ARG:HH12	1.32	0.73
1:E:6:GLN:HA	2:F:472:PHE:O	1.89	0.73
1:A:200:THR:HG21	1:A:250:ASN:OD1	1.88	0.73
1:E:5:ASP:HB2	2:F:474:PHE:HB2	1.71	0.73
1:C:9:ILE:N	2:D:470:GLY:O	2.22	0.71
2:B:419:GLU:OE2	7:B:622:HOH:O	2.08	0.70
2:D:412:GLU:OE2	7:D:610:HOH:O	2.09	0.70
1:E:206:THR:HB	1:E:209:LEU:HB3	1.74	0.69
1:E:134:GLY:N	7:E:511:HOH:O	2.22	0.69
2:D:360:HIS:HD2	2:D:487:ARG:HH21	1.39	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:200:THR:HG21	1:E:250:ASN:OD1	1.93	0.69
2:B:360:HIS:HD2	2:B:487:ARG:HH21	1.39	0.69
2:B:360:HIS:HD2	2:B:487:ARG:NH2	1.91	0.69
1:E:85:GLU:OE2	7:E:510:HOH:O	2.10	0.68
7:C:729:HOH:O	4:I:2:GAL:O3	2.11	0.68
1:C:22:THR:HG22	1:C:24:MET:H	1.59	0.68
1:E:9:ILE:HD13	2:F:453:TYR:HA	1.75	0.68
1:E:284:THR:HB	1:E:287:GLY:O	1.95	0.67
2:D:504:ARG:O	2:D:508:SER:N	2.19	0.67
1:C:39:LYS:NZ	1:C:313:ASN:O	2.21	0.66
2:D:360:HIS:HD2	2:D:487:ARG:NH2	1.94	0.66
1:A:6:GLN:N	2:B:361:SER:O	2.25	0.66
1:A:206:THR:HB	1:A:209:LEU:HB3	1.78	0.66
1:C:200:THR:HG21	1:C:250:ASN:OD1	1.95	0.66
1:E:22:THR:HG22	1:E:24:MET:H	1.61	0.66
1:A:7:ILE:HD13	2:B:359:HIS:O	1.96	0.65
1:C:290:ASN:ND2	7:C:742:HOH:O	2.29	0.65
1:E:190:GLU:OE1	7:E:527:HOH:O	2.14	0.65
1:E:12:HIS:HB2	2:F:355:TRP:HA	1.78	0.65
2:D:501:ARG:HH12	2:F:508:SER:CB	2.09	0.65
1:A:107:HIS:ND1	2:B:403:GLU:OE1	2.26	0.64
1:A:197:ASN:N	1:A:197:ASN:OD1	2.31	0.64
1:C:301:LEU:HA	2:D:400:VAL:HG22	1.79	0.64
2:B:465:LYS:NZ	2:F:461:ARG:HH12	1.95	0.64
1:E:104:GLU:OE2	2:B:410:ARG:NE	2.26	0.64
1:A:147:PHE:HZ	1:A:230:MET:HE3	1.63	0.63
1:A:284:THR:HB	1:A:287:GLY:O	1.99	0.63
1:E:52:LYS:HE2	7:E:557:HOH:O	1.99	0.63
1:A:5:ASP:CG	2:B:362:ASN:HA	2.23	0.63
2:F:488:ASN:ND2	7:F:612:HOH:O	2.29	0.63
1:E:74:PHE:HZ	1:E:76:ASN:HD22	1.47	0.62
1:C:135:VAL:HG22	1:C:146:SER:HA	1.81	0.62
1:C:284:THR:HB	1:C:287:GLY:O	2.00	0.62
1:A:147:PHE:CZ	1:A:230:MET:HE3	2.35	0.62
1:C:197:ASN:N	1:C:197:ASN:OD1	2.33	0.62
1:A:289:ILE:HG22	1:A:291:SER:HB3	1.82	0.61
1:E:12:HIS:N	2:F:355:TRP:O	2.28	0.61
1:A:135:VAL:HG22	1:A:146:SER:HA	1.82	0.61
1:C:159:SER:O	1:C:196:GLN:HG3	2.01	0.61
1:E:301:LEU:HA	2:F:400:VAL:HG22	1.83	0.61
1:C:206:THR:HB	1:C:209:LEU:HB3	1.82	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:147:PHE:CZ	1:E:230:MET:HE3	2.36	0.60
1:C:147:PHE:CZ	1:C:230:MET:HE3	2.37	0.60
1:A:22:THR:HG22	1:A:24:MET:H	1.67	0.60
1:C:289:ILE:HG22	1:C:291:SER:HB3	1.82	0.60
1:E:75:ILE:HG12	1:E:77:VAL:HG23	1.85	0.59
1:E:147:PHE:HZ	1:E:230:MET:HE3	1.67	0.59
2:F:340:ILE:HG13	2:F:446:ASP:HA	1.84	0.59
1:A:24:MET:HE2	2:B:439:GLU:OE2	2.02	0.58
1:A:197:ASN:ND2	7:A:519:HOH:O	2.36	0.58
1:C:24:MET:HA	2:B:384:ASN:HB3	1.84	0.58
1:E:289:ILE:HG22	1:E:291:SER:HB3	1.84	0.58
1:A:8:CYS:O	2:B:358:TYR:HA	2.02	0.58
1:C:10:GLY:HA2	2:D:344:ILE:HG21	1.84	0.57
1:A:159:SER:O	1:A:196:GLN:HG3	2.04	0.57
1:A:99:PHE:HB3	1:A:102:TYR:HB2	1.86	0.57
1:C:7:ILE:HB	2:D:474:PHE:HE1	1.70	0.57
1:C:215:PRO:O	7:C:775:HOH:O	2.18	0.57
1:E:321:LEU:HB3	2:F:445:HIS:CD2	2.39	0.57
2:D:340:ILE:HG13	2:D:446:ASP:HA	1.86	0.56
2:D:502:LEU:O	2:D:506:GLU:HB3	2.06	0.56
2:B:340:ILE:HG13	2:B:446:ASP:HA	1.86	0.56
7:E:517:HOH:O	2:B:410:ARG:HB2	2.05	0.56
1:E:159:SER:O	1:E:196:GLN:HG3	2.05	0.56
1:E:9:ILE:O	2:F:344:ILE:HD13	2.05	0.56
1:E:99:PHE:HB3	1:E:102:TYR:HB2	1.87	0.56
2:D:364:GLN:OE1	2:D:479:ASP:HB2	2.06	0.56
1:E:135:VAL:HG22	1:E:146:SER:HA	1.87	0.56
1:C:31:THR:HB	1:C:321:LEU:H	1.71	0.56
1:C:143:GLY:C	1:C:144:LYS:HG3	2.32	0.55
1:A:6:GLN:O	2:B:361:SER:N	2.36	0.55
1:A:107:HIS:HD1	2:B:403:GLU:CD	2.15	0.55
1:C:11:TYR:OH	2:D:340:ILE:O	2.13	0.55
1:E:75:ILE:O	1:E:77:VAL:N	2.38	0.55
1:C:23:ILE:HD12	2:B:385:LYS:HG3	1.89	0.55
1:E:108:LEU:HD12	1:E:262:LYS:HD2	1.89	0.54
1:E:280:THR:HG21	1:E:288:ALA:HB1	1.88	0.54
1:C:135:VAL:HG13	1:C:145:SER:HB3	1.88	0.54
1:C:99:PHE:HB3	1:C:102:TYR:HB2	1.88	0.54
1:C:108:LEU:HD12	1:C:262:LYS:HD2	1.90	0.54
1:E:31:THR:HB	1:E:321:LEU:H	1.73	0.54
1:A:23:ILE:HD12	2:F:385:LYS:HG3	1.90	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:57:ARG:O	7:A:525:HOH:O	2.18	0.54
1:C:7:ILE:HB	2:D:474:PHE:CE1	2.43	0.54
1:A:120:ILE:HG22	1:A:121:ILE:HG13	1.89	0.54
1:A:301:LEU:HA	2:B:400:VAL:HG22	1.89	0.54
1:C:206:THR:HG22	1:C:209:LEU:H	1.73	0.53
2:F:478:CYS:HB3	2:F:483:MET:HE3	1.89	0.53
1:C:141:TYR:CG	1:C:142:GLN:N	2.71	0.53
1:A:108:LEU:HD12	1:A:262:LYS:HD2	1.91	0.53
1:C:280:THR:HG21	1:C:288:ALA:HB1	1.91	0.53
1:E:82:TYR:HE1	1:E:269:MET:HE2	1.74	0.53
2:D:504:ARG:C	2:D:506:GLU:H	2.17	0.53
1:C:24:MET:HB3	2:B:381:GLY:HA2	1.92	0.52
1:A:31:THR:HB	1:A:321:LEU:H	1.74	0.52
1:E:5:ASP:N	7:E:537:HOH:O	2.35	0.52
1:E:74:PHE:CE2	1:E:76:ASN:HB2	2.45	0.52
2:B:398:GLU:OE1	2:D:420:ASP:OD2	2.28	0.52
1:A:135:VAL:HG13	1:A:145:SER:HB3	1.92	0.51
1:E:197:ASN:OD1	1:E:197:ASN:N	2.40	0.51
1:E:6:GLN:HG2	2:F:473:GLU:HA	1.91	0.51
1:E:135:VAL:HG13	1:E:145:SER:HB3	1.92	0.51
1:A:17:THR:O	7:A:575:HOH:O	2.19	0.51
2:B:478:CYS:HB3	2:B:483:MET:HE3	1.92	0.51
1:A:206:THR:HG22	1:A:209:LEU:H	1.74	0.51
1:E:212:ARG:NH2	7:E:513:HOH:O	2.06	0.51
1:C:308:LYS:HD2	2:D:426:TRP:CE2	2.45	0.51
2:F:364:GLN:OE1	2:F:479:ASP:HB2	2.11	0.51
1:A:14:ASN:HA	2:B:349:GLN:NE2	2.26	0.51
2:B:462:ASP:OD1	2:B:493:TYR:OH	2.19	0.51
1:A:82:TYR:HE1	1:A:269:MET:HE2	1.76	0.51
2:B:364:GLN:OE1	2:B:479:ASP:HB2	2.11	0.51
2:B:504:ARG:O	2:B:506:GLU:N	2.44	0.50
1:E:134:GLY:HA3	1:E:153:TRP:HB3	1.92	0.50
1:E:5:ASP:CG	7:E:537:HOH:O	2.54	0.50
1:C:147:PHE:HZ	1:C:230:MET:HE3	1.76	0.50
1:E:7:ILE:HB	2:F:474:PHE:CE1	2.47	0.50
1:C:9:ILE:HD13	2:D:453:TYR:CD1	2.45	0.50
1:C:15:ASN:OD1	1:C:15:ASN:N	2.39	0.50
2:D:478:CYS:HB3	2:D:483:MET:HE3	1.93	0.50
1:A:9:ILE:C	2:B:348:TRP:CH2	2.90	0.49
1:E:200:THR:OG1	1:E:248:ASN:HB3	2.11	0.49
1:E:216:ARG:O	1:E:220:ARG:NH2	2.46	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:161:TYR:CZ	1:E:249:GLY:HA2	2.47	0.49
2:B:337:PHE:CE1	2:B:447:SER:HB2	2.48	0.49
1:A:158:ASP:O	7:A:574:HOH:O	2.20	0.48
2:D:337:PHE:CE1	2:D:447:SER:HB2	2.48	0.48
1:A:280:THR:HG21	1:A:288:ALA:HB1	1.94	0.48
1:C:200:THR:OG1	1:C:248:ASN:HB3	2.13	0.48
1:E:107:HIS:ND1	2:F:403:GLU:OE1	2.42	0.48
1:A:161:TYR:CZ	1:A:249:GLY:HA2	2.49	0.48
1:A:8:CYS:C	2:B:348:TRP:HH2	2.22	0.48
2:D:360:HIS:CD2	2:D:487:ARG:NH2	2.79	0.48
1:C:161:TYR:CZ	1:C:249:GLY:HA2	2.49	0.48
1:A:82:TYR:CE1	1:A:269:MET:HE2	2.48	0.48
1:E:68:ASN:HB3	1:E:71:CYS:SG	2.54	0.48
1:C:79:GLU:HB3	7:C:777:HOH:O	2.14	0.48
2:B:337:PHE:CE2	2:F:337:PHE:HE2	2.32	0.48
2:B:360:HIS:CD2	2:B:487:ARG:NH2	2.78	0.48
2:F:452:LEU:HD12	2:F:452:LEU:HA	1.70	0.48
1:E:24:MET:HE1	2:D:444:PHE:CD1	2.49	0.47
1:C:23:ILE:HG22	1:C:24:MET:HG3	1.96	0.47
1:C:102:TYR:CE2	1:C:106:LYS:HD2	2.49	0.47
2:B:384:ASN:OD1	7:B:619:HOH:O	2.19	0.47
1:E:11:TYR:CZ	2:F:340:ILE:HG23	2.49	0.47
1:C:133:LEU:O	4:I:3:SIA:H113	2.14	0.47
1:E:7:ILE:HB	2:F:474:PHE:HE1	1.78	0.47
2:F:462:ASP:OD1	2:F:493:TYR:OH	2.20	0.47
1:A:164:ILE:O	1:A:246:GLU:HA	2.15	0.47
1:E:164:ILE:O	1:E:246:GLU:HA	2.15	0.47
1:C:82:TYR:CE1	1:C:269:MET:HE2	2.50	0.47
1:A:309:TYR:CD2	2:B:423:LEU:HD13	2.50	0.47
1:E:23:ILE:HG22	1:E:24:MET:HG3	1.97	0.47
2:F:337:PHE:CE1	2:F:447:SER:HB2	2.50	0.46
1:E:7:ILE:HG22	2:F:472:PHE:HB2	1.97	0.46
1:C:82:TYR:HE1	1:C:269:MET:HE2	1.80	0.46
1:C:108:LEU:CD1	1:C:262:LYS:HD2	2.46	0.46
1:E:108:LEU:CD1	1:E:262:LYS:HD2	2.46	0.46
1:E:120:ILE:HG22	1:E:121:ILE:HG13	1.97	0.46
1:C:7:ILE:HG22	2:D:472:PHE:CB	2.28	0.46
1:C:22:THR:CG2	1:C:24:MET:H	2.28	0.46
1:C:206:THR:HG22	1:C:208:THR:N	2.17	0.46
2:F:338:GLY:O	2:F:342:GLY:HA3	2.16	0.46
2:B:508:SER:OG	2:F:501:ARG:NH2	2.37	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:36:ILE:HG22	1:A:315:LEU:CB	2.46	0.46
1:C:5:ASP:O	2:D:474:PHE:N	2.48	0.46
1:C:120:ILE:HG22	1:C:121:ILE:HG13	1.97	0.46
2:F:453:TYR:OH	2:F:466:GLU:OE1	2.28	0.46
2:B:338:GLY:O	2:B:342:GLY:HA3	2.16	0.46
2:D:504:ARG:O	2:D:508:SER:HB3	2.16	0.45
1:A:22:THR:HG22	1:A:25:GLU:H	1.80	0.45
1:E:82:TYR:CE1	1:E:269:MET:HE2	2.50	0.45
1:A:200:THR:OG1	1:A:248:ASN:HB3	2.16	0.45
1:E:206:THR:HG22	1:E:208:THR:N	2.20	0.45
1:E:296:HIS:CD2	1:E:307:PRO:HG2	2.51	0.45
1:A:60:SER:OG	1:A:92:ASP:HA	2.16	0.45
1:A:156:LYS:HD2	1:A:196:GLN:HG2	1.99	0.45
1:E:22:THR:CG2	1:E:24:MET:H	2.29	0.45
1:E:36:ILE:HD11	2:F:390:ILE:CG1	2.47	0.45
7:B:622:HOH:O	2:D:417:LYS:NZ	2.39	0.45
2:F:507:ILE:HD13	2:F:507:ILE:HA	1.69	0.45
2:B:428:TYR:CD1	2:F:393:MET:HA	2.52	0.45
2:B:428:TYR:CE1	2:F:393:MET:HE2	2.51	0.45
2:B:508:SER:CB	2:F:501:ARG:HH22	2.30	0.45
1:A:159:SER:HB3	1:A:196:GLN:HE21	1.82	0.45
1:A:206:THR:HG22	1:A:208:THR:N	2.23	0.45
1:E:7:ILE:O	2:F:472:PHE:N	2.45	0.45
1:C:134:GLY:HA3	1:C:153:TRP:HB3	1.99	0.44
1:A:36:ILE:HD11	2:B:390:ILE:HD11	1.99	0.44
1:A:108:LEU:CD1	1:A:262:LYS:HD2	2.46	0.44
1:E:183:HIS:HB2	1:E:252:ILE:HD11	1.99	0.44
1:E:206:THR:HG22	1:E:209:LEU:H	1.82	0.44
1:A:207:SER:HA	1:C:221:SER:HB2	1.99	0.44
1:C:216:ARG:NH1	7:C:716:HOH:O	2.49	0.44
1:E:321:LEU:HB3	2:F:445:HIS:CG	2.53	0.44
1:C:141:TYR:HA	7:C:766:HOH:O	2.17	0.44
1:E:186:ASN:OD1	1:E:186:ASN:N	2.50	0.43
1:A:23:ILE:HG22	1:A:24:MET:HG3	1.99	0.43
1:C:147:PHE:CE1	1:C:230:MET:HE3	2.53	0.43
1:E:291:SER:HA	7:E:508:HOH:O	2.18	0.43
1:C:321:LEU:HB2	7:C:746:HOH:O	2.18	0.43
1:A:120:ILE:CG2	1:A:121:ILE:HG13	2.48	0.43
1:E:308:LYS:HD2	2:F:426:TRP:CE2	2.54	0.43
1:A:144:LYS:HB3	1:A:144:LYS:HE2	1.87	0.43
1:A:259:LYS:NZ	7:A:577:HOH:O	2.38	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:23:ILE:HD12	2:D:385:LYS:HG3	2.00	0.43
2:B:400:VAL:HA	2:B:401:GLY:HA3	1.85	0.43
1:C:317:LEU:HD12	1:C:317:LEU:HA	1.79	0.43
1:A:171:THR:HA	7:A:568:HOH:O	2.19	0.43
1:A:9:ILE:HA	2:B:357:GLY:O	2.19	0.43
1:A:36:ILE:HG22	1:A:315:LEU:HB3	1.99	0.43
1:A:206:THR:CG2	1:A:207:SER:N	2.82	0.43
1:C:183:HIS:HB2	1:C:252:ILE:HD11	1.99	0.43
1:E:11:TYR:CE2	2:F:340:ILE:HA	2.54	0.43
1:E:36:ILE:HG22	1:E:315:LEU:CB	2.49	0.43
1:E:120:ILE:CG2	1:E:121:ILE:HG13	2.49	0.43
2:B:453:TYR:OH	2:B:466:GLU:OE1	2.31	0.43
1:A:280:THR:HG22	1:A:281:LYS:H	1.83	0.42
2:B:392:LYS:HD2	2:D:431:GLU:HB3	2.01	0.42
2:D:338:GLY:O	2:D:342:GLY:HA3	2.19	0.42
2:D:482:CYS:O	2:D:485:SER:OG	2.31	0.42
2:B:440:ARG:HG3	2:F:440:ARG:NH2	2.34	0.42
2:D:405:ASN:OD1	2:D:407:LEU:N	2.43	0.42
1:A:97:GLY:HA3	1:A:230:MET:O	2.20	0.42
1:A:118:ILE:HG13	1:A:120:ILE:HD13	2.01	0.42
1:C:36:ILE:HG22	1:C:315:LEU:CB	2.50	0.42
1:C:141:TYR:CD2	1:C:142:GLN:HB2	2.54	0.42
2:D:507:ILE:HD13	2:D:507:ILE:HA	1.87	0.42
1:A:294:PRO:HG2	1:A:295:PHE:CD1	2.55	0.42
1:E:22:THR:HG22	1:E:24:MET:N	2.31	0.42
1:C:9:ILE:HD13	2:D:453:TYR:HD1	1.85	0.42
2:F:360:HIS:HD2	2:F:487:ARG:HH21	1.66	0.42
1:A:102:TYR:CE2	1:A:106:LYS:HD2	2.54	0.42
1:A:159:SER:C	1:A:196:GLN:HG3	2.45	0.42
1:C:22:THR:HG22	1:C:24:MET:N	2.29	0.42
1:E:36:ILE:HD11	2:F:390:ILE:HG13	2.02	0.42
2:F:400:VAL:HA	2:F:401:GLY:HA3	1.80	0.42
1:C:58:ASP:OD1	1:C:90:VAL:HG23	2.20	0.41
1:C:269:MET:HE1	1:C:283:GLN:CG	2.50	0.41
1:C:304:GLY:HA2	2:D:397:PHE:CD1	2.54	0.41
2:D:337:PHE:HZ	2:F:336:LEU:HB3	1.85	0.41
1:A:176:LEU:HD12	1:A:176:LEU:HA	1.97	0.41
1:E:11:TYR:HB2	1:E:321:LEU:HD11	2.03	0.41
2:D:447:SER:OG	7:D:615:HOH:O	2.21	0.41
1:C:321:LEU:CB	7:C:746:HOH:O	2.67	0.41
1:A:11:TYR:HB2	1:A:321:LEU:HD11	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:289:ILE:CG2	1:A:291:SER:HB3	2.50	0.41
1:C:310:VAL:CG1	1:C:312:SER:HB3	2.51	0.41
2:D:476:HIS:NE2	2:D:491:TYR:OH	2.48	0.41
1:A:22:THR:CG2	1:A:24:MET:H	2.33	0.41
1:C:7:ILE:HD13	1:C:7:ILE:HA	1.93	0.41
2:B:504:ARG:O	2:B:505:GLU:C	2.62	0.41
1:C:294:PRO:HG2	1:C:295:PHE:CD1	2.55	0.41
1:E:97:GLY:HA3	1:E:230:MET:O	2.21	0.41
2:B:404:PHE:HA	2:D:410:ARG:NH1	2.35	0.41
2:F:508:SER:OG	2:F:508:SER:O	2.37	0.41
1:A:4:GLN:N	7:A:549:HOH:O	2.53	0.41
1:C:24:MET:HE1	2:B:444:PHE:CE1	2.56	0.41
1:C:60:SER:OG	1:C:92:ASP:HA	2.20	0.41
1:C:281:LYS:HE2	1:C:281:LYS:HB3	1.89	0.41
1:E:118:ILE:HG13	1:E:120:ILE:HD13	2.03	0.41
2:D:452:LEU:HD12	2:D:452:LEU:HA	1.72	0.41
1:A:22:THR:HG22	1:A:24:MET:N	2.34	0.41
1:A:310:VAL:CG1	1:A:312:SER:HB3	2.51	0.40
1:C:118:ILE:HG13	1:C:120:ILE:HD13	2.02	0.40
2:B:337:PHE:CE2	2:F:337:PHE:CE2	3.09	0.40
1:A:154:LEU:O	1:A:155:ILE:HD12	2.21	0.40
1:E:9:ILE:CD1	2:F:453:TYR:HA	2.47	0.40
1:E:60:SER:OG	1:E:92:ASP:HA	2.21	0.40
1:E:25:GLU:CD	1:E:322:ARG:HH22	2.29	0.40
1:A:68:ASN:HB3	1:A:71:CYS:SG	2.61	0.40

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:142:GLN:O	1:C:132:SER:OG[1_556]	2.10	0.10
1:C:58:ASP:OD2	1:E:73:GLU:OE1[1_655]	2.14	0.06

## 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	320/322 (99%)	300 (94%)	18 (6%)	2 (1%)	21	32
1	C	320/322 (99%)	301 (94%)	18 (6%)	1 (0%)	36	50
1	E	320/322 (99%)	302 (94%)	16 (5%)	2 (1%)	21	32
2	B	173/175 (99%)	160 (92%)	9 (5%)	4 (2%)	5	6
2	D	173/175 (99%)	162 (94%)	9 (5%)	2 (1%)	10	16
2	F	173/175 (99%)	164 (95%)	8 (5%)	1 (1%)	21	32
All	All	1479/1491 (99%)	1389 (94%)	78 (5%)	12 (1%)	16	25

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	76	ASN
1	E	74	PHE
2	B	504	ARG
2	B	508	SER
2	D	505	GLU
1	C	74	PHE
1	A	5	ASP
1	E	76	ASN
2	B	505	GLU
2	D	504	ARG
2	F	401	GLY
2	B	401	GLY

### 5.3.2 Protein sidechains ⓘ

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	290/290 (100%)	252 (87%)	38 (13%)	4	5
1	C	290/290 (100%)	249 (86%)	41 (14%)	3	4
1	E	290/290 (100%)	251 (87%)	39 (13%)	4	5

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	B	149/149 (100%)	138 (93%)	11 (7%)	13	22
2	D	149/149 (100%)	137 (92%)	12 (8%)	11	18
2	F	149/149 (100%)	135 (91%)	14 (9%)	8	13
All	All	1317/1317 (100%)	1162 (88%)	155 (12%)	5	7

All (155) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	7	ILE
1	A	15	ASN
1	A	16	SER
1	A	17	THR
1	A	20	VAL
1	A	22	THR
1	A	23	ILE
1	A	30	VAL
1	A	31	THR
1	A	36	ILE
1	A	48	LEU
1	A	57	ARG
1	A	59	CYS
1	A	90	VAL
1	A	111	ARG
1	A	120	ILE
1	A	135	VAL
1	A	144	LYS
1	A	151	VAL
1	A	155	ILE
1	A	166	ARG
1	A	167	SER
1	A	173	GLN
1	A	186	ASN
1	A	197	ASN
1	A	200	THR
1	A	206	THR
1	A	208	THR
1	A	217	ILE
1	A	235	THR
1	A	260	ILE
1	A	265	ASP
1	A	280	THR

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Mol	Chain	Res	Type
1	A	310	VAL
1	A	317	LEU
1	A	319	ILE
1	A	321	LEU
1	A	324	SER
1	C	7	ILE
1	C	15	ASN
1	C	16	SER
1	C	17	THR
1	C	20	VAL
1	C	22	THR
1	C	23	ILE
1	C	30	VAL
1	C	31	THR
1	C	36	ILE
1	C	39	LYS
1	C	48	LEU
1	C	59	CYS
1	C	73	GLU
1	C	90	VAL
1	C	111	ARG
1	C	120	ILE
1	C	135	VAL
1	C	151	VAL
1	C	155	ILE
1	C	166	ARG
1	C	167	SER
1	C	173	GLN
1	C	186	ASN
1	C	187	ASP
1	C	196	GLN
1	C	197	ASN
1	C	200	THR
1	C	206	THR
1	C	208	THR
1	C	217	ILE
1	C	235	THR
1	C	260	ILE
1	C	265	ASP
1	C	280	THR
1	C	284	THR
1	C	310	VAL

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Mol	Chain	Res	Type
1	C	317	LEU
1	C	319	ILE
1	C	321	LEU
1	C	324	SER
1	E	4	GLN
1	E	7	ILE
1	E	15	ASN
1	E	16	SER
1	E	20	VAL
1	E	22	THR
1	E	23	ILE
1	E	30	VAL
1	E	31	THR
1	E	36	ILE
1	E	48	LEU
1	E	59	CYS
1	E	73	GLU
1	E	90	VAL
1	E	111	ARG
1	E	120	ILE
1	E	135	VAL
1	E	151	VAL
1	E	155	ILE
1	E	166	ARG
1	E	167	SER
1	E	173	GLN
1	E	176	LEU
1	E	186	ASN
1	E	187	ASP
1	E	196	GLN
1	E	197	ASN
1	E	200	THR
1	E	206	THR
1	E	208	THR
1	E	235	THR
1	E	260	ILE
1	E	265	ASP
1	E	280	THR
1	E	310	VAL
1	E	317	LEU
1	E	319	ILE
1	E	321	LEU

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Mol	Chain	Res	Type
1	E	324	SER
2	B	340	ILE
2	B	349	GLN
2	B	352	VAL
2	B	373	GLU
2	B	384	ASN
2	B	400	VAL
2	B	439	GLU
2	B	440	ARG
2	B	450	LYS
2	B	457	ARG
2	B	498	GLU
2	D	340	ILE
2	D	349	GLN
2	D	352	VAL
2	D	373	GLU
2	D	384	ASN
2	D	400	VAL
2	D	439	GLU
2	D	440	ARG
2	D	457	ARG
2	D	498	GLU
2	D	506	GLU
2	D	507	ILE
2	F	340	ILE
2	F	349	GLN
2	F	352	VAL
2	F	373	GLU
2	F	384	ASN
2	F	400	VAL
2	F	439	GLU
2	F	440	ARG
2	F	450	LYS
2	F	457	ARG
2	F	498	GLU
2	F	506	GLU
2	F	507	ILE
2	F	508	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (20) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	76	ASN
1	A	172	ASN
1	A	196	GLN
1	C	12	HIS
1	C	142	GLN
1	C	172	ASN
1	C	196	GLN
1	C	240	ASN
1	E	6	GLN
1	E	19	GLN
1	E	76	ASN
1	E	196	GLN
1	E	240	ASN
2	B	360	HIS
2	B	384	ASN
2	D	360	HIS
2	D	495	GLN
2	F	360	HIS
2	F	396	GLN
2	F	429	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](#)

9 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
3	NAG	G	1	1,3	14,14,15	0.65	0	17,19,21	1.09	2 (11%)
3	NAG	G	2	3	14,14,15	0.66	0	17,19,21	1.63	3 (17%)
3	NAG	H	1	1,3	14,14,15	0.51	0	17,19,21	1.11	1 (5%)
3	NAG	H	2	3	14,14,15	0.55	0	17,19,21	1.02	0
4	NAG	I	1	4	15,15,15	0.40	0	21,21,21	1.54	3 (14%)
4	GAL	I	2	4	11,11,12	1.05	1 (9%)	15,15,17	1.27	1 (6%)
4	SIA	I	3	4	20,20,21	3.50	9 (45%)	21,28,31	3.53	7 (33%)
3	NAG	J	1	1,3	14,14,15	0.51	0	17,19,21	1.19	2 (11%)
3	NAG	J	2	3	14,14,15	0.57	0	17,19,21	1.47	2 (11%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	G	1	1,3	-	2/6/23/26	0/1/1/1
3	NAG	G	2	3	-	1/6/23/26	0/1/1/1
3	NAG	H	1	1,3	-	0/6/23/26	0/1/1/1
3	NAG	H	2	3	-	0/6/23/26	0/1/1/1
4	NAG	I	1	4	-	2/6/26/26	0/1/1/1
4	GAL	I	2	4	-	2/2/19/22	0/1/1/1
4	SIA	I	3	4	-	0/18/34/38	0/1/1/1
3	NAG	J	1	1,3	-	2/6/23/26	0/1/1/1
3	NAG	J	2	3	-	2/6/23/26	0/1/1/1

All (10) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	I	3	SIA	C7-C6	-10.12	1.40	1.52
4	I	3	SIA	C3-C4	-6.67	1.40	1.52
4	I	3	SIA	C4-C5	-5.26	1.48	1.53
4	I	3	SIA	O4-C4	4.29	1.52	1.43
4	I	3	SIA	C3-C2	-3.97	1.46	1.52
4	I	3	SIA	O6-C6	3.18	1.48	1.44
4	I	3	SIA	O8-C8	-2.63	1.37	1.43
4	I	2	GAL	O5-C1	-2.20	1.40	1.43
4	I	3	SIA	C10-N5	2.14	1.41	1.34
4	I	3	SIA	C11-C10	2.11	1.54	1.50

All (21) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	I	3	SIA	O6-C2-C3	-11.54	95.04	110.56
4	I	3	SIA	O6-C2-C1	8.15	123.11	107.72
3	G	2	NAG	O5-C1-C2	-4.93	103.66	111.29
3	J	2	NAG	C2-N2-C7	-4.58	116.76	122.90
4	I	1	NAG	C1-O5-C5	4.10	121.59	113.65
4	I	3	SIA	O9-C9-C8	4.05	119.66	111.16
4	I	1	NAG	O5-C5-C4	3.60	116.19	109.70
3	G	2	NAG	C2-N2-C7	-3.33	118.44	122.90
4	I	3	SIA	O1B-C1-C2	3.26	121.20	112.71
4	I	3	SIA	C5-N5-C10	-2.84	116.45	123.11
4	I	2	GAL	C1-O5-C5	-2.75	108.50	112.19
3	G	1	NAG	C1-O5-C5	2.70	115.81	112.19
4	I	3	SIA	C11-C10-N5	2.49	120.25	116.12
4	I	3	SIA	O1B-C1-O1A	-2.49	118.43	124.08
3	J	1	NAG	C1-O5-C5	2.41	115.42	112.19
4	I	1	NAG	O5-C1-C2	2.41	111.94	109.52
3	G	2	NAG	C3-C4-C5	2.34	114.48	110.23
3	J	2	NAG	O5-C5-C6	2.32	112.17	107.66
3	J	1	NAG	C2-N2-C7	-2.13	120.04	122.90
3	H	1	NAG	C1-O5-C5	-2.08	109.39	112.19
3	G	1	NAG	O4-C4-C3	-2.02	105.61	110.38

There are no chirality outliers.

All (11) torsion outliers are listed below:

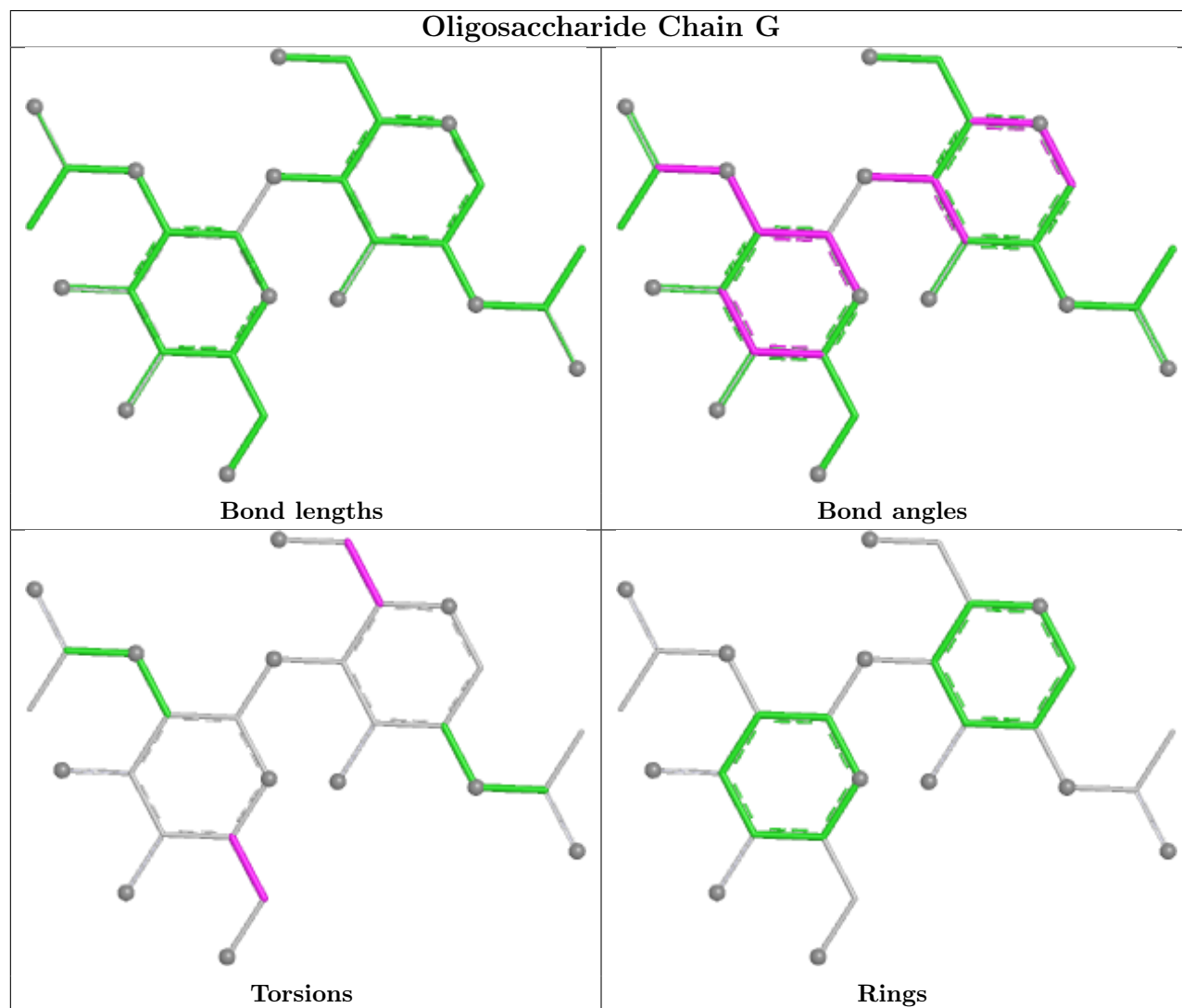
Mol	Chain	Res	Type	Atoms
4	I	1	NAG	O7-C7-N2-C2
3	J	2	NAG	C4-C5-C6-O6
4	I	2	GAL	O5-C5-C6-O6
4	I	2	GAL	C4-C5-C6-O6
4	I	1	NAG	C8-C7-N2-C2
3	J	2	NAG	O5-C5-C6-O6
3	G	2	NAG	C4-C5-C6-O6
3	G	1	NAG	O5-C5-C6-O6
3	J	1	NAG	C8-C7-N2-C2
3	J	1	NAG	O7-C7-N2-C2
3	G	1	NAG	C4-C5-C6-O6

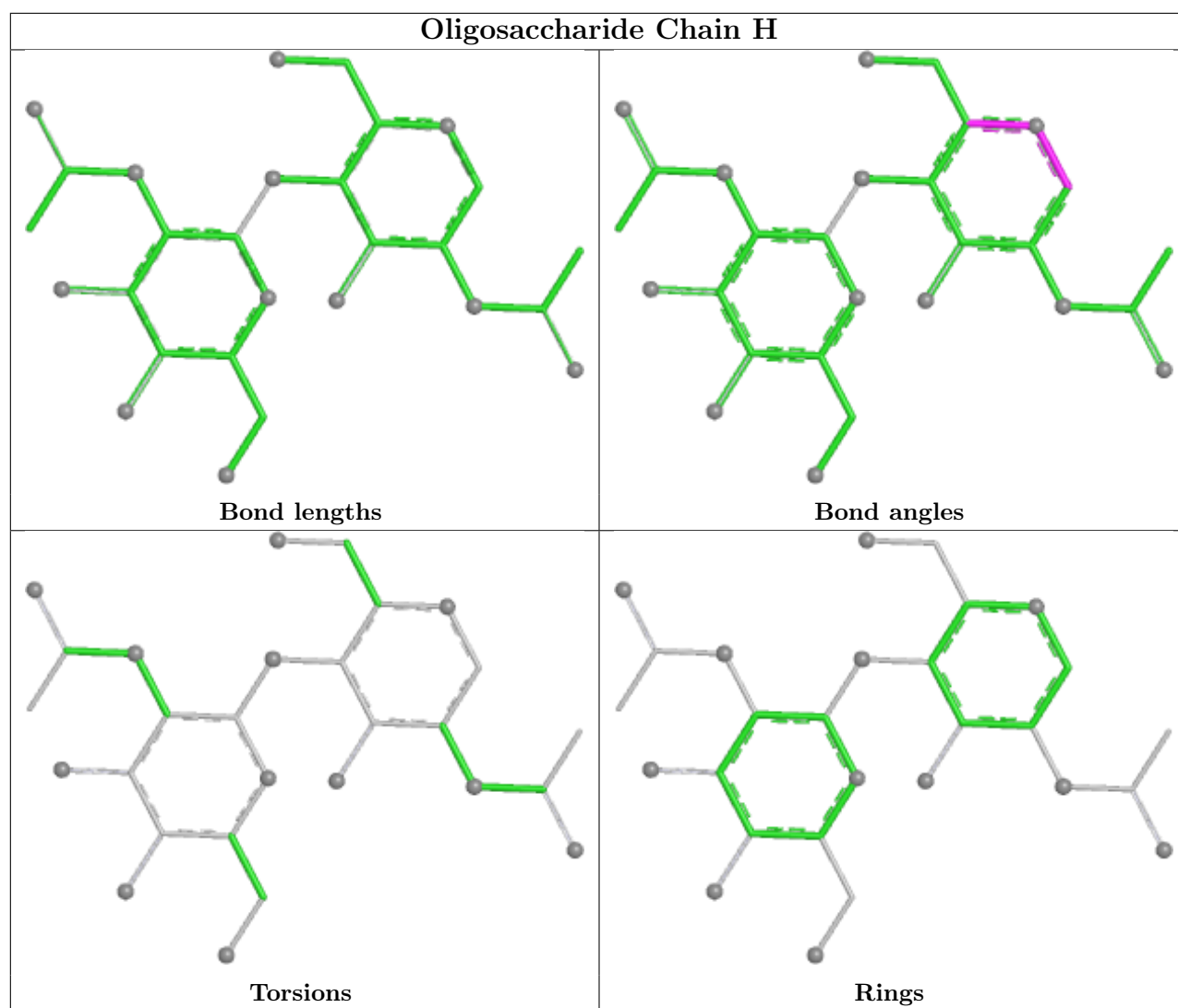
There are no ring outliers.

2 monomers are involved in 2 short contacts:

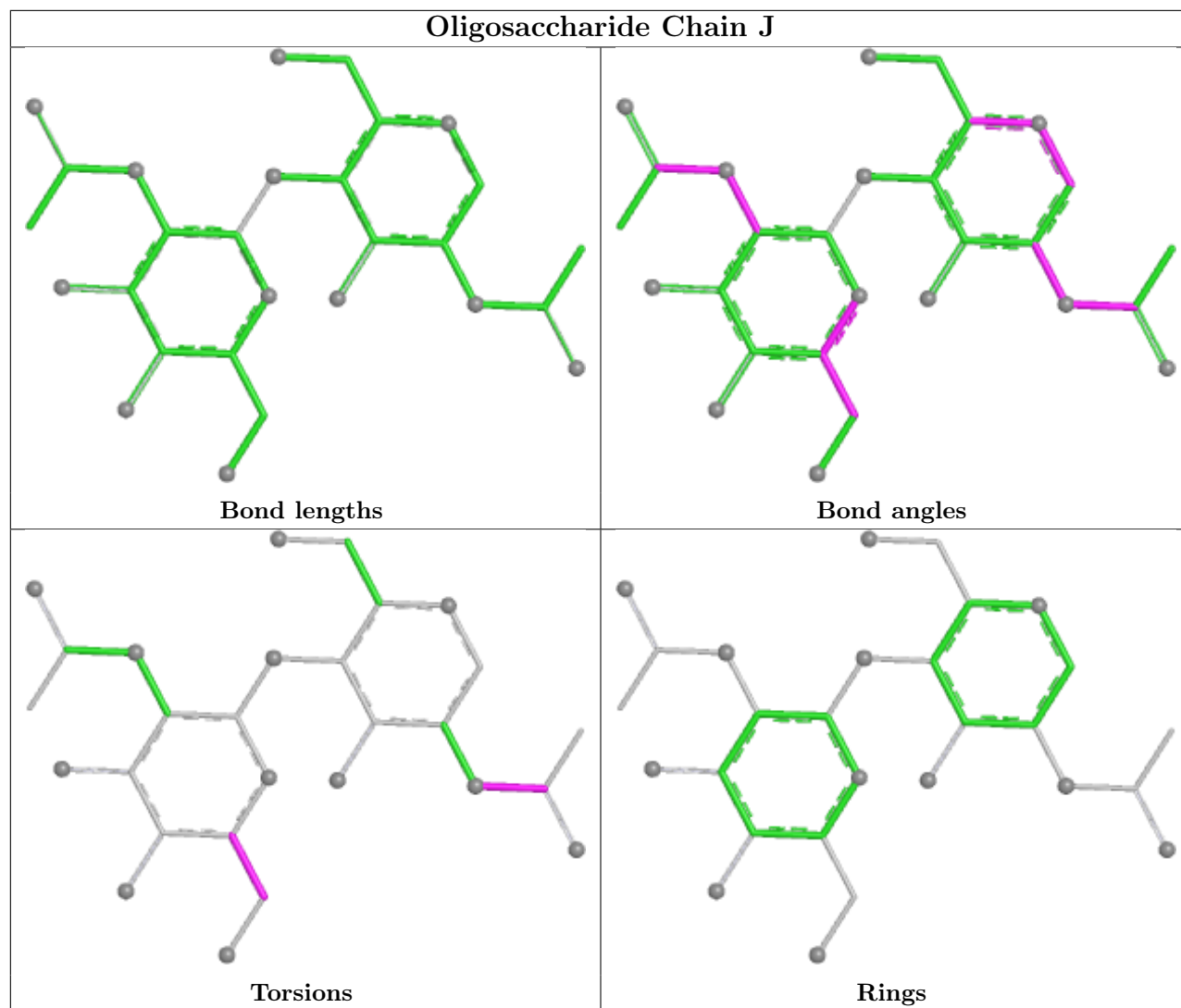
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	I	2	GAL	1	0
4	I	3	SIA	1	0

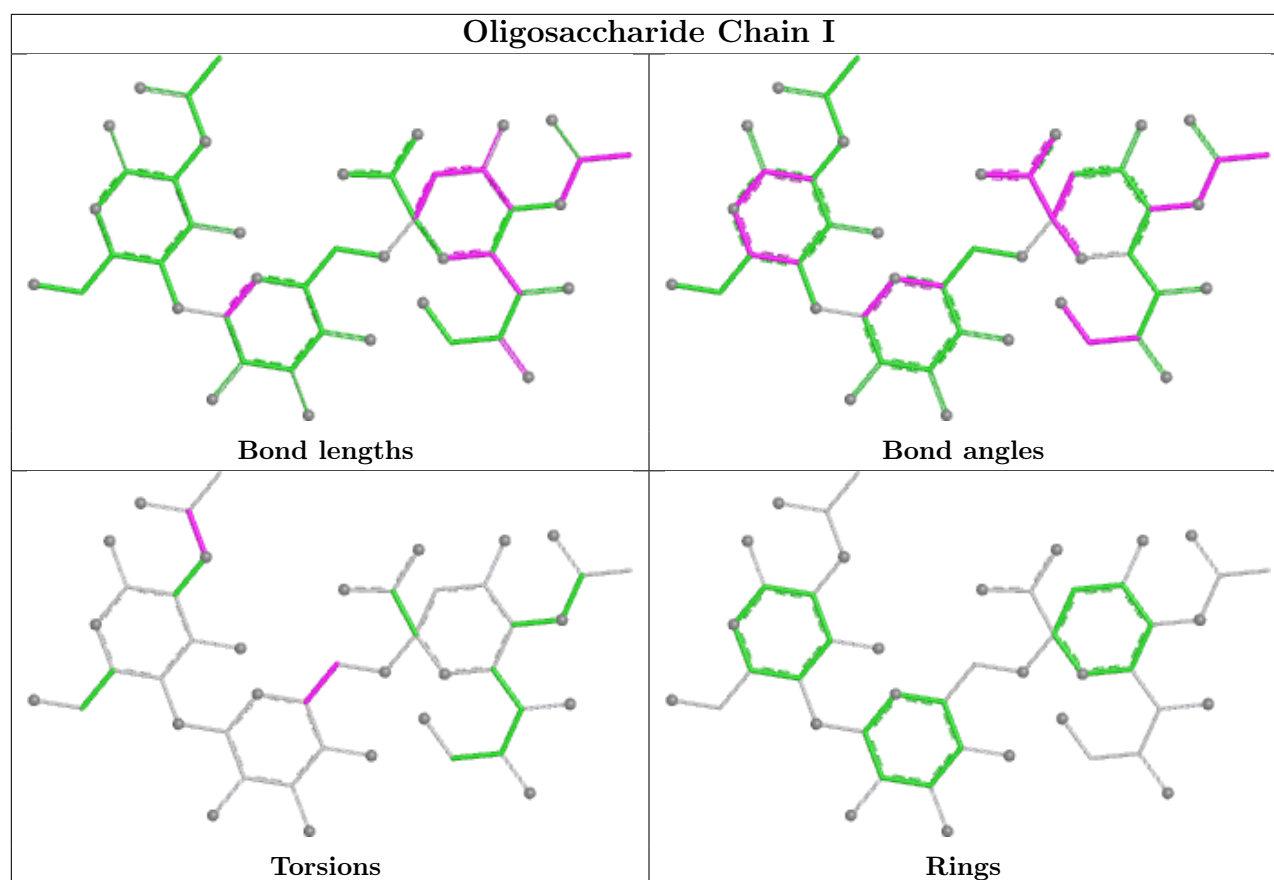
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.











## 5.6 Ligand geometry [i](#)

2 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	$\# Z  > 2$
5	SIA	A	403	-	21,21,21	3.94	8 (38%)	24,31,31	1.97	7 (29%)
6	NAG	C	601	1	14,14,15	0.44	0	17,19,21	1.46	1 (5%)

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
5	SIA	A	403	-	-	2/20/38/38	0/1/1/1
6	NAG	C	601	1	-	2/6/23/26	0/1/1/1

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	403	SIA	C7-C6	-9.27	1.41	1.52
5	A	403	SIA	C3-C4	-9.12	1.39	1.53
5	A	403	SIA	C4-C5	-6.88	1.47	1.53
5	A	403	SIA	O6-C6	6.02	1.53	1.44
5	A	403	SIA	O6-C2	4.67	1.47	1.43
5	A	403	SIA	C3-C2	-4.21	1.46	1.51
5	A	403	SIA	O4-C4	3.96	1.51	1.43
5	A	403	SIA	O8-C8	-2.01	1.39	1.43

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	C	601	NAG	C1-O5-C5	5.13	119.06	112.19
5	A	403	SIA	O6-C6-C7	4.76	114.09	106.65
5	A	403	SIA	C6-C5-N5	-4.01	104.50	110.91
5	A	403	SIA	C8-C7-C6	-3.02	107.39	113.05
5	A	403	SIA	O6-C6-C5	-2.71	107.37	109.84
5	A	403	SIA	O4-C4-C3	2.56	115.93	109.97
5	A	403	SIA	C3-C4-C5	2.36	113.36	109.72
5	A	403	SIA	O7-C7-C6	2.15	114.09	109.44

There are no chirality outliers.

All (4) torsion outliers are listed below:

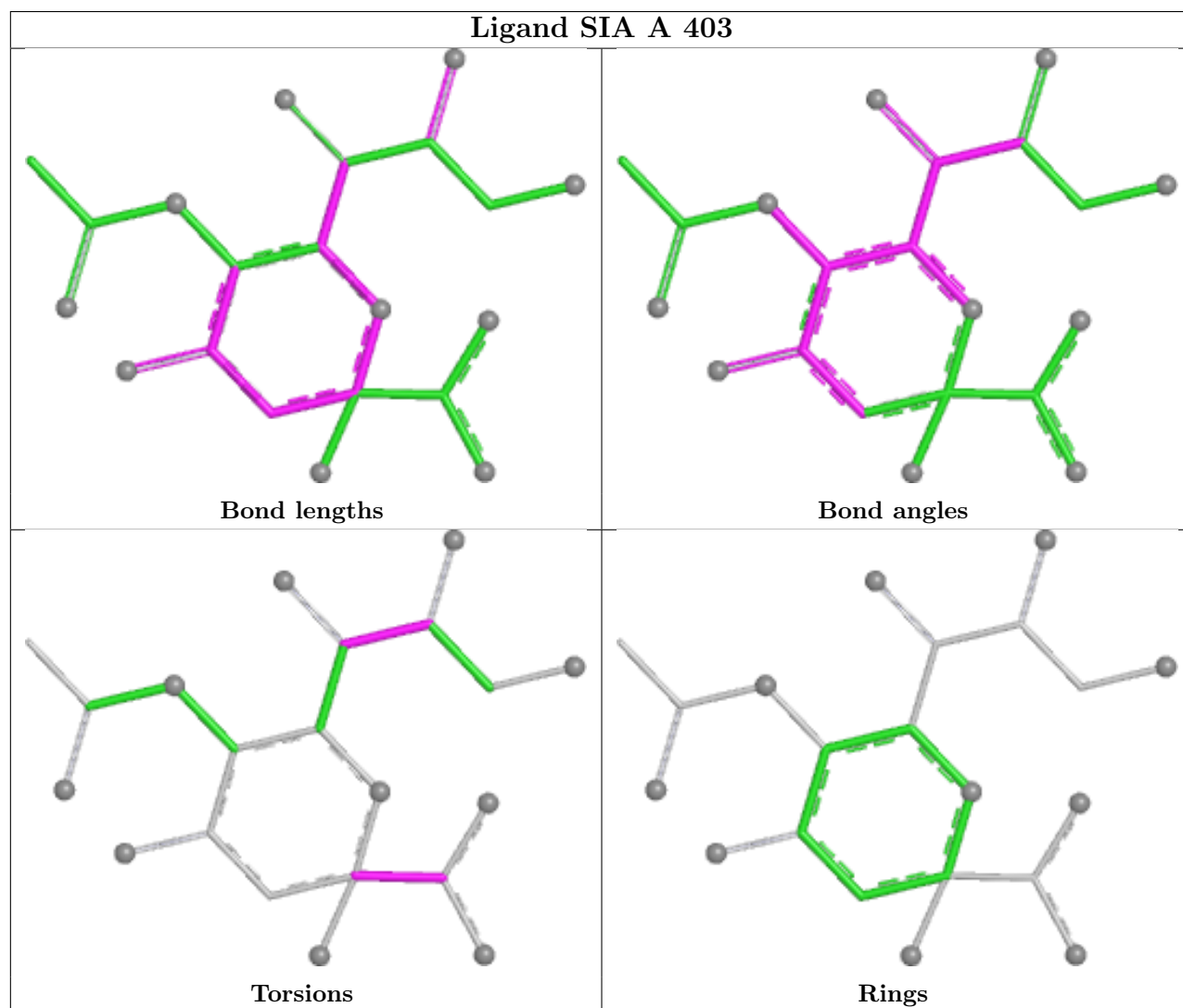
Mol	Chain	Res	Type	Atoms
6	C	601	NAG	O7-C7-N2-C2
6	C	601	NAG	C8-C7-N2-C2
5	A	403	SIA	C6-C7-C8-O8
5	A	403	SIA	O1B-C1-C2-C3

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will

also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

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

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

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> 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 <sup>2</sup> )	Q < 0.9
1	A	322/322 (100%)	0.63	37 (11%)	9 7	24, 48, 89, 162	0
1	C	322/322 (100%)	0.79	40 (12%)	8 6	26, 51, 96, 150	0
1	E	322/322 (100%)	0.89	42 (13%)	7 5	27, 54, 103, 167	0
2	B	175/175 (100%)	1.76	66 (37%)	1 0	34, 78, 126, 170	0
2	D	175/175 (100%)	1.64	62 (35%)	1 1	31, 92, 146, 183	0
2	F	175/175 (100%)	1.10	31 (17%)	4 3	32, 90, 143, 205	0
All	All	1491/1491 (100%)	1.03	278 (18%)	3 3	24, 58, 126, 205	0

All (278) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	141	TYR	8.3
1	C	141	TYR	6.7
1	A	7	ILE	6.4
2	F	482	CYS	6.2
1	E	7	ILE	5.5
1	C	5	ASP	5.5
1	E	75	ILE	5.5
1	C	144	LYS	5.3
2	B	502	LEU	5.1
1	E	31	THR	5.1
1	E	74	PHE	5.0
1	E	217	ILE	5.0
1	E	10	GLY	4.9
2	D	507	ILE	4.9
2	D	335	GLY	4.9
1	A	290	ASN	4.7
1	A	291	SER	4.7
2	B	501	ARG	4.6
2	B	498	GLU	4.6

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Mol	Chain	Res	Type	RSRZ
2	B	388	SER	4.5
1	A	5	ASP	4.5
2	F	509	GLY	4.5
2	B	504	ARG	4.4
2	B	348	TRP	4.4
1	A	72	ASP	4.4
2	D	395	THR	4.4
2	B	490	THR	4.3
2	B	497	SER	4.3
2	D	353	ASP	4.3
1	E	13	ALA	4.2
1	E	71	CYS	4.0
1	A	218	ALA	4.0
1	E	8	CYS	3.9
2	D	381	GLY	3.9
2	D	508	SER	3.9
1	C	70	MET	3.9
2	D	490	THR	3.9
2	B	500	ALA	3.9
2	D	475	TYR	3.8
1	C	143	GLY	3.8
2	D	370	ALA	3.8
1	E	5	ASP	3.7
1	E	9	ILE	3.7
2	F	343	PHE	3.7
1	C	7	ILE	3.7
1	E	70	MET	3.7
2	D	337	PHE	3.7
2	D	502	LEU	3.7
1	E	218	ALA	3.7
2	F	337	PHE	3.6
1	C	126	TRP	3.6
2	D	509	GLY	3.6
2	B	407	LEU	3.6
2	B	451	ASN	3.5
1	C	73	GLU	3.5
2	B	494	PRO	3.5
1	A	16	SER	3.5
2	F	474	PHE	3.5
1	A	278	CYS	3.5
1	A	8	CYS	3.4
1	E	186	ASN	3.4

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Mol	Chain	Res	Type	RSRZ
1	E	276	GLY	3.4
2	B	343	PHE	3.3
1	E	128	SER	3.3
2	D	384	ASN	3.3
1	A	120	ILE	3.3
2	B	375	THR	3.3
2	B	367	GLY	3.3
1	A	32	HIS	3.3
2	D	494	PRO	3.3
2	D	465	LYS	3.3
2	B	395	THR	3.3
2	D	346	GLY	3.2
1	E	197	ASN	3.2
2	B	351	MET	3.2
1	A	323	ASN	3.2
2	B	380	ASP	3.2
1	A	6	GLN	3.2
1	C	127	SER	3.1
2	B	354	GLY	3.1
2	D	396	GLN	3.1
1	A	9	ILE	3.1
2	F	366	SER	3.1
1	E	325	PRO	3.1
1	E	291	SER	3.1
2	D	341	ALA	3.1
1	E	144	LYS	3.1
2	F	449	VAL	3.1
2	B	397	PHE	3.0
2	D	468	GLY	3.0
2	B	503	LYS	3.0
2	B	335	GLY	3.0
2	D	492	ASP	3.0
2	B	378	ALA	3.0
2	B	483	MET	3.0
2	F	507	ILE	3.0
2	B	396	GLN	3.0
2	D	343	PHE	3.0
2	D	493	TYR	2.9
2	F	361	SER	2.9
2	D	369	ALA	2.9
2	D	441	THR	2.9
1	A	10	GLY	2.9

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Mol	Chain	Res	Type	RSRZ
1	C	158	ASP	2.9
1	C	217	ILE	2.9
2	B	507	ILE	2.9
2	D	488	ASN	2.9
1	A	324	SER	2.8
2	B	468	GLY	2.8
2	F	338	GLY	2.8
1	C	29	THR	2.8
1	A	58	ASP	2.8
2	B	492	ASP	2.8
1	C	225	GLY	2.8
1	E	140	PRO	2.8
2	B	442	LEU	2.8
2	B	452	LEU	2.8
2	D	379	ILE	2.8
2	D	409	ARG	2.8
2	D	440	ARG	2.8
2	D	464	ALA	2.8
1	C	132	SER	2.8
1	A	186	ASN	2.7
2	B	454	ASP	2.7
2	F	336	LEU	2.7
2	B	496	TYR	2.7
2	D	338	GLY	2.7
2	F	335	GLY	2.7
2	B	366	SER	2.7
2	F	493	TYR	2.7
1	A	127	SER	2.7
1	C	137	SER	2.7
2	D	500	ALA	2.7
1	C	31	THR	2.7
1	A	13	ALA	2.6
1	C	9	ILE	2.6
2	D	459	GLN	2.6
2	F	477	LYS	2.6
1	E	248	ASN	2.6
2	D	361	SER	2.6
2	F	340	ILE	2.6
2	B	360	HIS	2.6
2	F	360	HIS	2.6
1	C	4	GLN	2.6
2	B	449	VAL	2.6

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Mol	Chain	Res	Type	RSRZ
1	A	319	ILE	2.6
1	E	36	ILE	2.6
2	B	467	LEU	2.6
2	B	357	GLY	2.6
2	B	495	GLN	2.5
1	C	79	GLU	2.5
2	D	348	TRP	2.5
1	E	219	THR	2.5
1	C	324	SER	2.5
2	B	456	VAL	2.5
1	E	11	TYR	2.5
2	D	460	LEU	2.5
1	E	33	ALA	2.5
2	B	383	THR	2.5
2	D	397	PHE	2.5
1	C	291	SER	2.5
2	B	475	TYR	2.5
2	F	502	LEU	2.5
1	C	76	ASN	2.5
2	B	478	CYS	2.5
1	C	145	SER	2.5
1	E	90	VAL	2.5
2	B	352	VAL	2.5
2	D	352	VAL	2.5
2	D	498	GLU	2.5
2	B	481	GLU	2.4
2	B	505	GLU	2.4
1	C	30	VAL	2.4
2	B	340	ILE	2.4
2	D	355	TRP	2.4
1	A	70	MET	2.4
2	D	455	LYS	2.4
2	B	462	ASP	2.4
1	A	74	PHE	2.4
1	C	36	ILE	2.4
2	B	379	ILE	2.4
2	D	382	VAL	2.4
1	C	15	ASN	2.4
2	B	461	ARG	2.4
2	D	461	ARG	2.4
2	B	412	GLU	2.4
1	C	33	ALA	2.4

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Mol	Chain	Res	Type	RSRZ
2	D	489	GLY	2.4
2	F	339	ALA	2.4
1	A	11	TYR	2.4
1	A	141	TYR	2.4
2	B	384	ASN	2.4
2	F	464	ALA	2.4
2	D	497	SER	2.4
2	D	504	ARG	2.4
2	F	494	PRO	2.3
2	F	341	ALA	2.3
1	A	31	THR	2.3
2	B	344	ILE	2.3
1	E	12	HIS	2.3
2	D	463	ASN	2.3
2	F	454	ASP	2.3
2	D	367	GLY	2.3
1	C	13	ALA	2.3
1	A	280	THR	2.3
2	B	349	GLN	2.3
2	D	486	VAL	2.3
2	B	336	LEU	2.3
2	D	471	CYS	2.3
2	F	458	LEU	2.3
1	A	265	ASP	2.3
1	A	188	ALA	2.3
1	C	90	VAL	2.3
2	F	456	VAL	2.3
1	A	76	ASN	2.3
1	E	196	GLN	2.3
2	D	495	GLN	2.3
2	B	474	PHE	2.2
1	A	325	PRO	2.2
2	B	381	GLY	2.2
2	B	487	ARG	2.2
2	B	376	GLN	2.2
2	F	490	THR	2.2
2	F	388	SER	2.2
1	E	76	ASN	2.2
2	B	457	ARG	2.2
2	D	483	MET	2.2
2	B	439	GLU	2.2
2	B	476	HIS	2.2

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Mol	Chain	Res	Type	RSRZ
2	D	356	TYR	2.2
2	B	337	PHE	2.2
2	D	472	PHE	2.2
1	E	72	ASP	2.2
1	C	10	GLY	2.2
2	D	349	GLN	2.2
2	F	500	ALA	2.2
1	E	145	SER	2.2
1	E	260	ILE	2.2
1	E	319	ILE	2.2
1	C	240	ASN	2.2
2	D	462	ASP	2.2
2	F	498	GLU	2.2
2	D	491	TYR	2.1
2	B	390	ILE	2.1
2	D	474	PHE	2.1
1	A	12	HIS	2.1
1	C	196	GLN	2.1
1	E	6	GLN	2.1
2	D	354	GLY	2.1
1	E	29	THR	2.1
1	E	288	ALA	2.1
1	A	57	ARG	2.1
1	A	36	ILE	2.1
2	D	406	ASN	2.1
1	C	325	PRO	2.1
2	D	449	VAL	2.1
1	C	8	CYS	2.1
1	A	248	ASN	2.1
1	C	11	TYR	2.1
1	C	72	ASP	2.1
2	B	355	TRP	2.1
1	E	278	CYS	2.1
1	A	48	LEU	2.1
1	C	290	ASN	2.1
2	D	390	ILE	2.1
2	F	496	TYR	2.1
2	B	382	VAL	2.1
2	F	440	ARG	2.1
1	C	157	LYS	2.0
1	E	73	GLU	2.0
1	C	140	PRO	2.0

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Mol	Chain	Res	Type	RSRZ
2	B	493	TYR	2.0
2	F	453	TYR	2.0
2	D	444	PHE	2.0
1	E	44	LYS	2.0
1	E	263	LYS	2.0
1	A	29	THR	2.0
1	C	52	LYS	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](#)

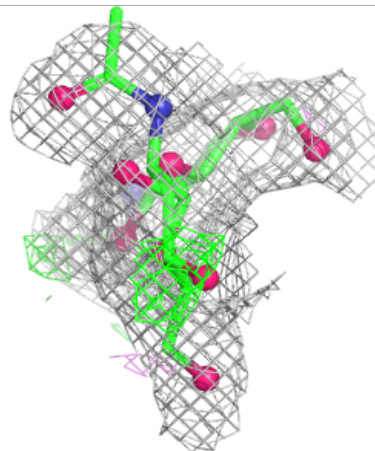
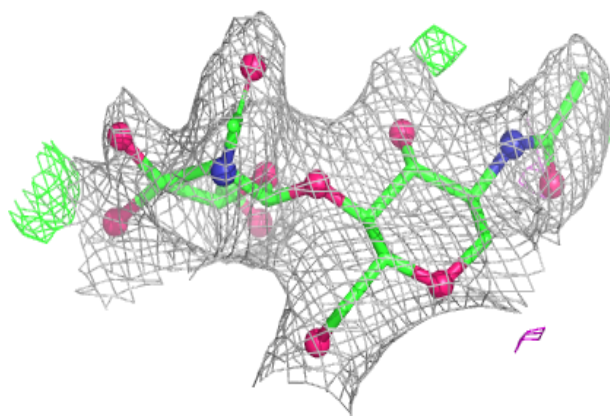
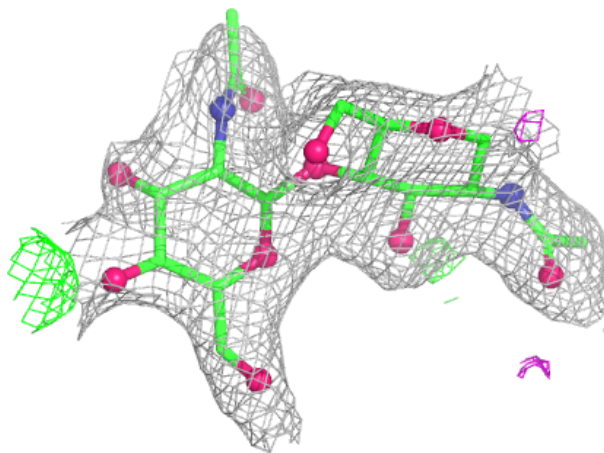
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
4	NAG	I	1	15/15	0.67	0.15	119,129,140,147	0
3	NAG	H	2	14/15	0.75	0.13	86,97,111,112	0
3	NAG	G	2	14/15	0.81	0.11	65,79,88,93	0
4	GAL	I	2	11/12	0.82	0.10	81,96,111,112	0
3	NAG	J	2	14/15	0.83	0.12	85,107,117,122	0
3	NAG	H	1	14/15	0.86	0.11	55,68,85,86	0
3	NAG	G	1	14/15	0.89	0.09	37,50,65,67	0
3	NAG	J	1	14/15	0.91	0.10	45,58,69,75	0
4	SIA	I	3	20/21	0.91	0.11	46,60,74,74	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.

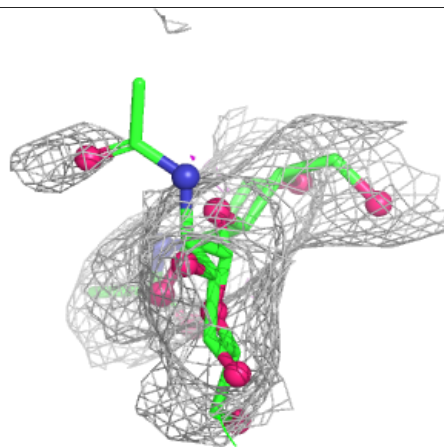
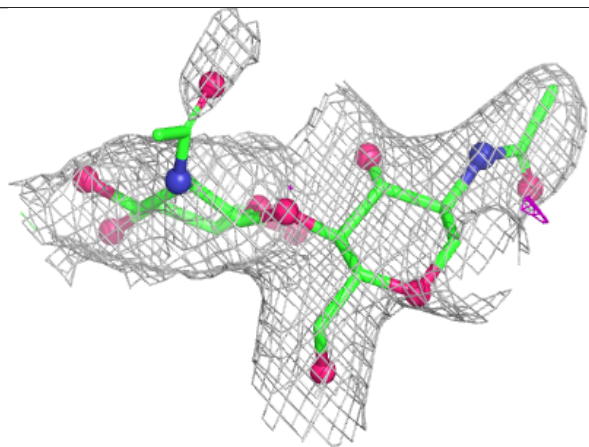
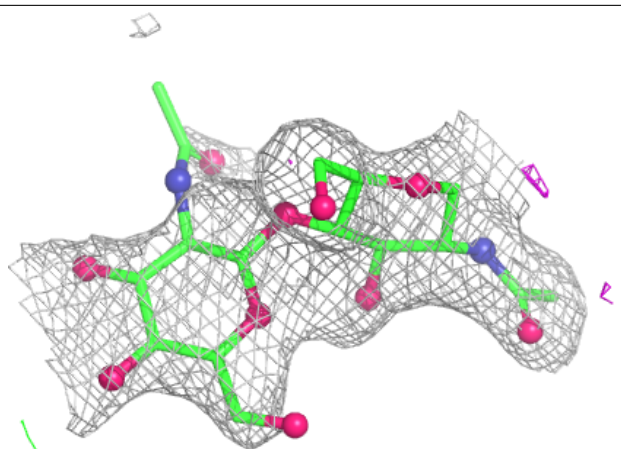
**Electron density around Chain G:**

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



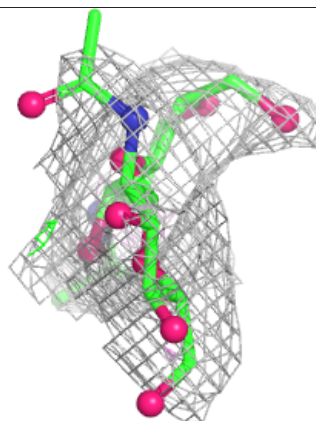
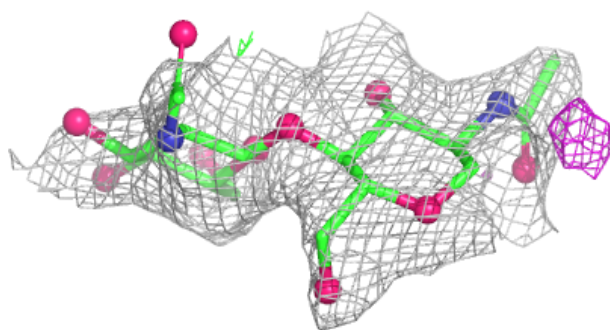
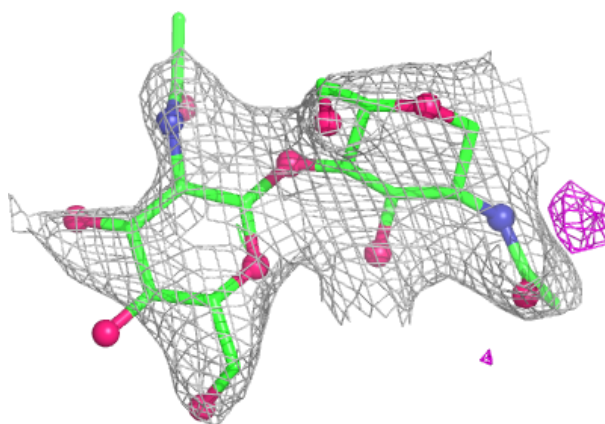
**Electron density around Chain H:**

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

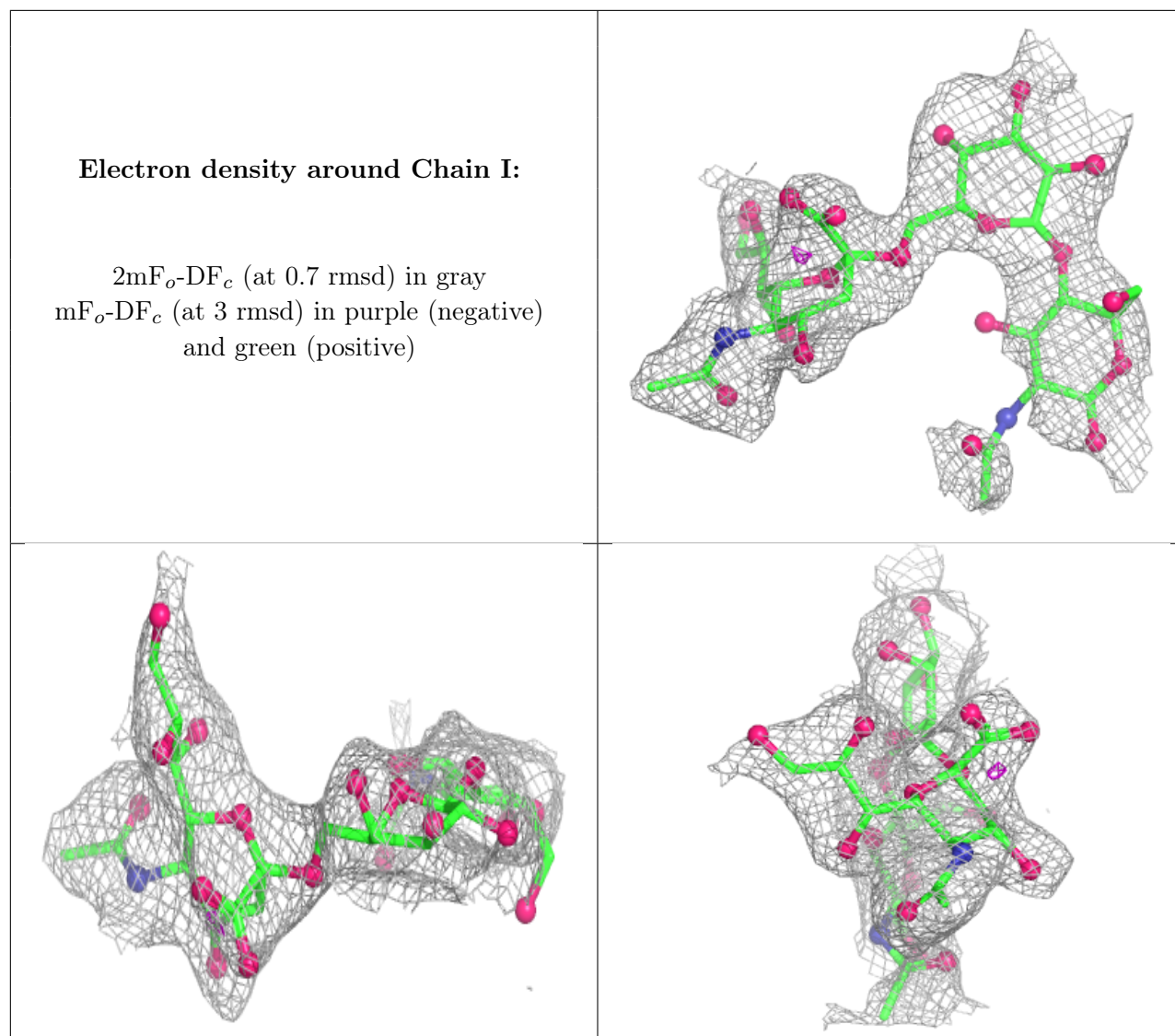


**Electron density around Chain J:**

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







## 6.4 Ligands [i](#)

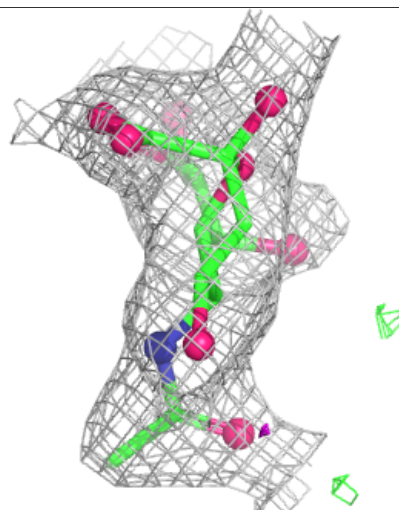
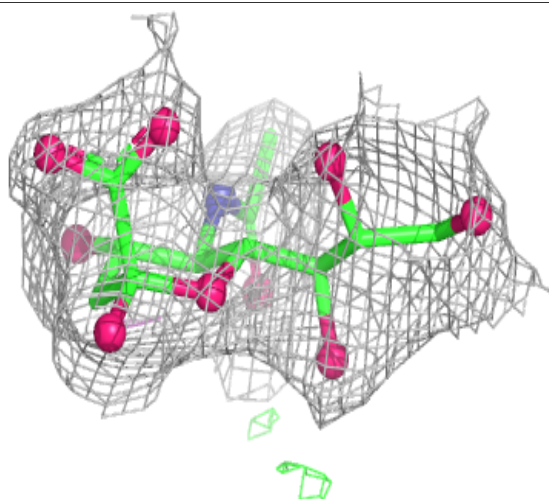
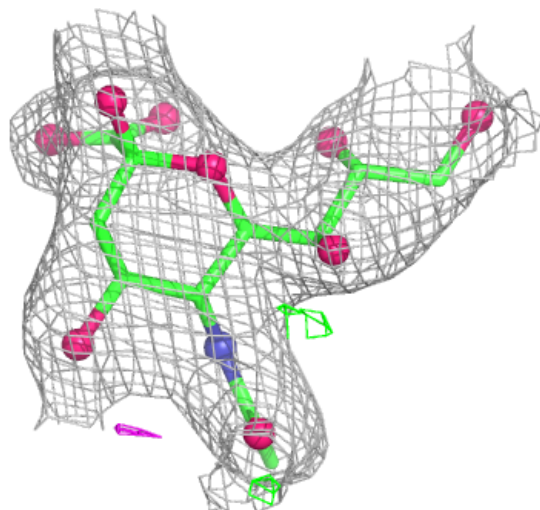
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
6	NAG	C	601	14/15	0.67	0.15	98,114,123,128	0
5	SIA	A	403	21/21	0.89	0.11	51,57,68,69	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

**Electron density around SIA A 403:**

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



## 6.5 Other polymers [i](#)

There are no such residues in this entry.