



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 29, 2026 – 05:35 PM UTC

PDB ID : 6YON / pdb_00006yon
Title : Crystal structure of Endoglucanase S127C/A165C from *Penicillium verrucosum*
Authors : Nemashkalov, V.; Kravchenko, O.; Gabdulkhakov, A.; Tischenko, S.; Rozhkova, A.; Sinitsyn, A.
Deposited on : 2020-04-14
Resolution : 2.60 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity	:	4-5-2 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

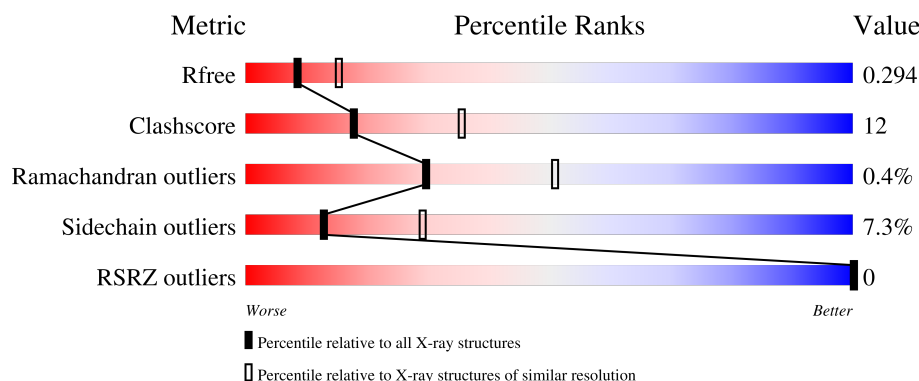
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

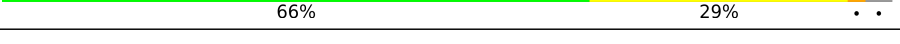
The reported resolution of this entry is 2.60 Å.

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	4008 (2.60-2.60)
Clashscore	190562	4347 (2.60-2.60)
Ramachandran outliers	187476	4277 (2.60-2.60)
Sidechain outliers	187428	4277 (2.60-2.60)
RSRZ outliers	180081	4008 (2.60-2.60)

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

Mol	Chain	Length	Quality of chain
1	A	314	
1	B	314	
1	C	314	
1	D	314	

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Mol	Chain	Length	Quality of chain
2	E	2	 100%
2	F	2	 100%
2	G	2	 100%
2	H	2	 100%

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 9645 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 Endoglucanase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	305	Total	C	N	O	S	0	1	0
			2375	1508	368	486	13			
1	B	305	Total	C	N	O	S	0	1	0
			2375	1508	368	486	13			
1	C	305	Total	C	N	O	S	0	1	0
			2375	1508	368	486	13			
1	D	305	Total	C	N	O	S	0	1	0
			2375	1508	368	486	13			

There are 44 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	ALA	-	conflict	UNP A0A1U7Q1U3
A	2	ASN	-	conflict	UNP A0A1U7Q1U3
A	3	SER	-	conflict	UNP A0A1U7Q1U3
A	4	LYS	-	conflict	UNP A0A1U7Q1U3
A	5	GLU	-	conflict	UNP A0A1U7Q1U3
A	6	VAL	-	conflict	UNP A0A1U7Q1U3
A	7	LYS	-	conflict	UNP A0A1U7Q1U3
A	8	LYS	-	conflict	UNP A0A1U7Q1U3
A	9	ARG	-	conflict	UNP A0A1U7Q1U3
A	127	CYS	SER	engineered mutation	UNP A0A1U7Q1U3
A	165	CYS	ALA	engineered mutation	UNP A0A1U7Q1U3
B	1	ALA	-	conflict	UNP A0A1U7Q1U3
B	2	ASN	-	conflict	UNP A0A1U7Q1U3
B	3	SER	-	conflict	UNP A0A1U7Q1U3
B	4	LYS	-	conflict	UNP A0A1U7Q1U3
B	5	GLU	-	conflict	UNP A0A1U7Q1U3
B	6	VAL	-	conflict	UNP A0A1U7Q1U3
B	7	LYS	-	conflict	UNP A0A1U7Q1U3
B	8	LYS	-	conflict	UNP A0A1U7Q1U3
B	9	ARG	-	conflict	UNP A0A1U7Q1U3
B	127	CYS	SER	engineered mutation	UNP A0A1U7Q1U3

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Chain	Residue	Modelled	Actual	Comment	Reference
B	165	CYS	ALA	engineered mutation	UNP A0A1U7Q1U3
C	1	ALA	-	conflict	UNP A0A1U7Q1U3
C	2	ASN	-	conflict	UNP A0A1U7Q1U3
C	3	SER	-	conflict	UNP A0A1U7Q1U3
C	4	LYS	-	conflict	UNP A0A1U7Q1U3
C	5	GLU	-	conflict	UNP A0A1U7Q1U3
C	6	VAL	-	conflict	UNP A0A1U7Q1U3
C	7	LYS	-	conflict	UNP A0A1U7Q1U3
C	8	LYS	-	conflict	UNP A0A1U7Q1U3
C	9	ARG	-	conflict	UNP A0A1U7Q1U3
C	127	CYS	SER	engineered mutation	UNP A0A1U7Q1U3
C	165	CYS	ALA	engineered mutation	UNP A0A1U7Q1U3
D	1	ALA	-	conflict	UNP A0A1U7Q1U3
D	2	ASN	-	conflict	UNP A0A1U7Q1U3
D	3	SER	-	chromophore	UNP A0A1U7Q1U3
D	4	LYS	-	chromophore	UNP A0A1U7Q1U3
D	5	GLU	-	conflict	UNP A0A1U7Q1U3
D	6	VAL	-	conflict	UNP A0A1U7Q1U3
D	7	LYS	-	conflict	UNP A0A1U7Q1U3
D	8	LYS	-	conflict	UNP A0A1U7Q1U3
D	9	ARG	-	conflict	UNP A0A1U7Q1U3
D	127	CYS	SER	engineered mutation	UNP A0A1U7Q1U3
D	165	CYS	ALA	engineered mutation	UNP A0A1U7Q1U3

- Molecule 2 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
2	E	2	Total	C	N	O	0	0	0
			27	16	2	9			
2	F	2	Total	C	N	O	0	0	0
			28	16	2	10			
2	G	2	Total	C	N	O	0	0	0
			28	16	2	10			
2	H	2	Total	C	N	O	0	0	0
			28	16	2	10			

- Molecule 3 is SULFATE ION (CCD ID: SO4) (formula: O₄S) (labeled as "Ligand of Interest")

by depositor).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	O	S	0	0
			5	4	1		
3	B	1	Total	O	S	0	0
			5	4	1		
3	C	1	Total	O	S	0	0
			5	4	1		
3	D	1	Total	O	S	0	0
			5	4	1		

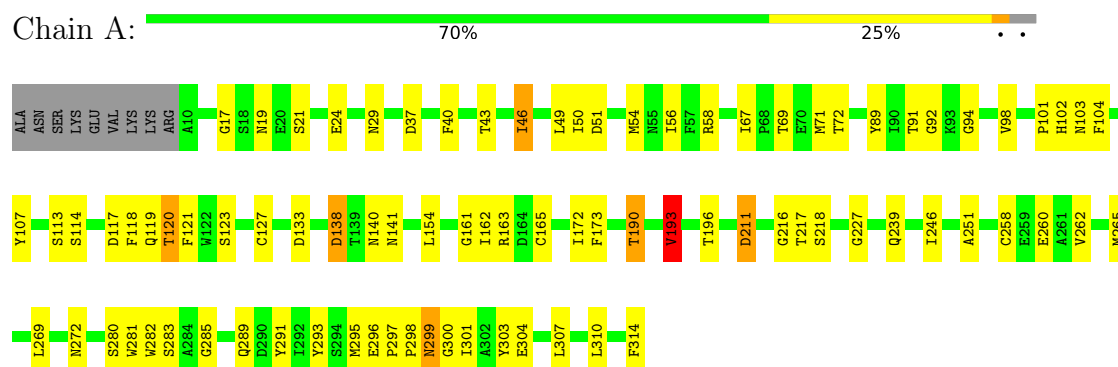
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	4	Total	O	0	0
			4	4		
4	B	2	Total	O	0	0
			2	2		
4	C	3	Total	O	0	0
			3	3		
4	D	5	Total	O	0	0
			5	5		

3 Residue-property plots

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

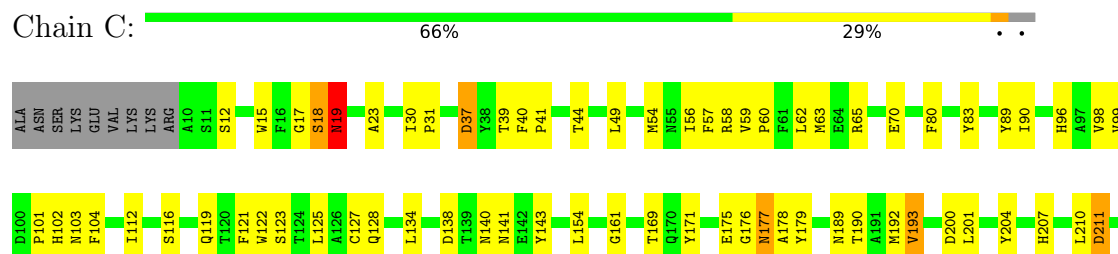
• Molecule 1: Endoglucanase

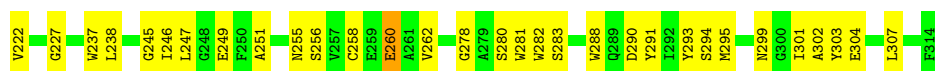


• Molecule 1: Endoglucanase



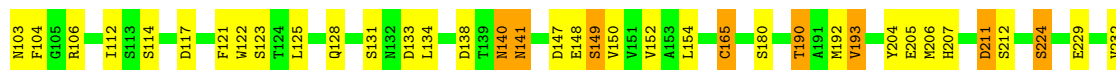
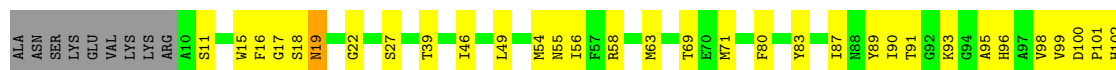
• Molecule 1: Endoglucanase





- Molecule 1: Endoglucanase

Chain D: 68% 26%



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

Chain E: 100%



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

Chain F: 100%



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

Chain G: 100%



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

Chain H: 100%



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	80.50Å 85.69Å 91.15Å 90.00° 89.99° 90.00°	Depositor
Resolution (Å)	49.34 – 2.60 49.34 – 2.60	Depositor EDS
% Data completeness (in resolution range)	99.6 (49.34-2.60) 99.6 (49.34-2.60)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.16 (at 2.39Å)	Xtriage
Refinement program	REFMAC 5.8.0258	Depositor
R, R_{free}	0.236 , 0.292 0.243 , 0.294	Depositor DCC
R_{free} test set	2415 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	38.9	Xtriage
Anisotropy	0.856	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 29.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.53$, $\langle L^2 \rangle = 0.37$	Xtriage
Estimated twinning fraction	0.387 for h,-k,-l	Xtriage
Reported twinning fraction	0.384 for H, K, L 0.616 for -h,-k,l	Depositor
Outliers	20 of 48284 reflections (0.041%)	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	9645	wwPDB-VP
Average B, all atoms (Å ²)	46.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 42.17 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 2.1223e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

¹Intensities estimated from amplitudes.

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

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: NAG, SO4

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	1.06	0/2446	1.49	5/3341 (0.1%)
1	B	1.07	0/2446	1.50	1/3341 (0.0%)
1	C	1.08	0/2446	1.51	6/3341 (0.2%)
1	D	1.08	0/2446	1.49	7/3341 (0.2%)
All	All	1.07	0/9784	1.50	19/13364 (0.1%)

There are no bond length outliers.

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	295	MET	N-CA-C	-6.53	105.27	112.72
1	C	247	LEU	CA-C-N	6.09	126.74	119.98
1	C	247	LEU	C-N-CA	6.09	126.74	119.98
1	C	260	GLU	CA-C-N	5.73	127.88	120.44
1	C	260	GLU	C-N-CA	5.73	127.88	120.44
1	D	46	ILE	N-CA-C	-5.69	104.95	110.42
1	A	251	ALA	CA-C-N	5.60	127.11	121.35
1	A	251	ALA	C-N-CA	5.60	127.11	121.35
1	A	138	ASP	CA-CB-CG	5.46	118.06	112.60
1	A	40	PHE	CB-CA-C	5.35	116.80	108.61
1	B	117	ASP	CA-CB-CG	5.19	117.79	112.60
1	C	19	ASN	CA-C-O	-5.18	115.86	121.87
1	A	46	ILE	N-CA-C	-5.08	104.94	110.23
1	D	149	SER	CA-C-N	5.06	127.03	120.56
1	D	149	SER	C-N-CA	5.06	127.03	120.56
1	D	260	GLU	CA-C-N	5.03	127.28	120.44
1	D	260	GLU	C-N-CA	5.03	127.28	120.44
1	D	264	GLY	CA-C-N	5.00	127.25	120.65
1	D	264	GLY	C-N-CA	5.00	127.25	120.65

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	2375	0	2160	55	0
1	B	2375	0	2160	56	0
1	C	2375	0	2160	61	0
1	D	2375	0	2160	56	0
2	E	27	0	25	0	0
2	F	28	0	25	0	0
2	G	28	0	25	0	0
2	H	28	0	25	0	0
3	A	5	0	0	0	0
3	B	5	0	0	0	0
3	C	5	0	0	0	0
3	D	5	0	0	0	0
4	A	4	0	0	0	0
4	B	2	0	0	0	0
4	C	3	0	0	0	0
4	D	5	0	0	0	0
All	All	9645	0	8740	226	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 12.

All (226) 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:17:GLY:HA3	1:B:56:ILE:O	1.76	0.85
1:C:123:SER:O	1:C:127:CYS:SG	2.41	0.79
1:D:190:THR:O	1:D:193:VAL:HG22	1.84	0.78
1:B:289:GLN:HB3	1:B:290:ASP:OD1	1.84	0.77
1:B:251:ALA:HB1	1:B:293:TYR:CD1	2.18	0.77
1:D:123:SER:O	1:D:165:CYS:SG	2.43	0.76
1:A:123:SER:O	1:A:127:CYS:SG	2.44	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:123:SER:O	1:B:127:CYS:SG	2.44	0.75
1:A:190:THR:O	1:A:193:VAL:HG22	1.87	0.73
1:C:49:LEU:HD13	1:C:54:MET:SD	2.29	0.72
1:C:177:ASN:N	1:C:189:ASN:HD21	1.88	0.72
1:A:211:ASP:OD1	1:A:211:ASP:N	2.25	0.69
1:C:15:TRP:O	1:C:278:GLY:HA3	1.93	0.68
1:A:17:GLY:HA3	1:A:56:ILE:O	1.92	0.68
1:B:300:GLY:O	1:B:303:TYR:HB3	1.95	0.67
1:B:291:TYR:CE2	1:B:293:TYR:HB2	2.29	0.67
1:B:290:ASP:OD1	1:B:290:ASP:N	2.27	0.67
1:D:102:HIS:HA	1:D:141:ASN:HB3	1.78	0.65
1:D:232:VAL:O	1:D:236:THR:HG23	1.97	0.65
1:D:303:TYR:CE1	1:D:307:LEU:HD22	2.32	0.64
1:C:119:GLN:HG3	1:C:161:GLY:CA	2.28	0.64
1:C:143:TYR:O	1:C:177:ASN:ND2	2.31	0.64
1:A:49:LEU:O	1:A:54:MET:HB2	1.98	0.64
1:A:118:PHE:CD2	1:A:154:LEU:HD22	2.33	0.63
1:C:122:TRP:CZ3	1:C:125:LEU:HD23	2.34	0.63
1:A:104:PHE:HA	1:A:141:ASN:O	1.99	0.62
1:A:67:ILE:O	1:A:67:ILE:HG22	1.99	0.62
1:B:29:ASN:ND2	1:B:37:ASP:OD1	2.33	0.61
1:C:56:ILE:HA	1:C:96:HIS:O	2.00	0.61
1:A:295:MET:O	1:A:295:MET:HG3	2.00	0.60
1:D:83:TYR:OH	1:D:99:VAL:HA	2.02	0.60
1:A:303:TYR:CE1	1:A:307:LEU:HD22	2.37	0.59
1:B:281:TRP:CG	1:B:295:MET:HE2	2.37	0.59
1:C:251:ALA:HB1	1:C:293:TYR:CD1	2.36	0.59
1:B:291:TYR:HE2	1:B:293:TYR:HB2	1.67	0.59
1:A:29:ASN:ND2	1:A:37:ASP:OD1	2.36	0.58
1:A:162:ILE:HG21	1:A:172:ILE:HD11	1.85	0.58
1:C:177:ASN:O	1:C:189:ASN:ND2	2.36	0.58
1:B:72:THR:HA	1:B:120:THR:HG22	1.86	0.58
1:A:300:GLY:O	1:A:303:TYR:HB3	2.04	0.57
1:D:251:ALA:HB1	1:D:293:TYR:CD1	2.39	0.57
1:D:148:GLU:O	1:D:152:VAL:HG23	2.05	0.57
1:D:83:TYR:CZ	1:D:87:ILE:HD11	2.40	0.57
1:D:248:GLY:O	1:D:280:SER:OG	2.23	0.57
1:C:101:PRO:HD2	1:C:138:ASP:O	2.06	0.56
1:B:69:THR:HG22	1:B:70:GLU:OE2	2.06	0.56
1:B:291:TYR:O	1:B:301:ILE:CG2	2.54	0.55
1:A:218:SER:O	1:A:293:TYR:OH	2.23	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:291:TYR:O	1:B:301:ILE:HG21	2.07	0.55
1:A:123:SER:OG	1:A:161:GLY:O	2.20	0.55
1:A:50:ILE:O	1:A:51:ASP:C	2.49	0.54
1:D:71:MET:HB2	1:D:121:PHE:HB2	1.90	0.54
1:D:304:GLU:OE2	1:D:304:GLU:HA	2.07	0.54
1:B:15:TRP:HB3	1:B:56:ILE:HG21	1.90	0.54
1:C:291:TYR:HB3	1:C:294:SER:HB2	1.90	0.54
1:B:89:TYR:CE1	1:B:93:LYS:HE2	2.43	0.54
1:A:101:PRO:HD2	1:A:138:ASP:O	2.09	0.53
1:A:21:SER:HB3	1:A:24:GLU:OE2	2.08	0.53
1:B:102:HIS:HA	1:B:141:ASN:HB3	1.91	0.53
1:D:211:ASP:OD1	1:D:211:ASP:N	2.31	0.52
1:C:41:PRO:HG2	1:C:59:VAL:HG13	1.91	0.52
1:C:112:ILE:HG22	1:C:154:LEU:HD21	1.89	0.52
1:B:104:PHE:HA	1:B:141:ASN:O	2.09	0.52
1:C:58:ARG:HG3	1:C:98:VAL:HB	1.92	0.52
1:C:143:TYR:O	1:C:177:ASN:HA	2.09	0.52
1:D:101:PRO:HD2	1:D:138:ASP:O	2.10	0.52
1:A:71:MET:HE2	1:A:107:TYR:CD2	2.45	0.52
1:C:63:MET:HG2	1:C:121:PHE:CE1	2.45	0.52
1:C:258:CYS:O	1:C:262:VAL:HG23	2.10	0.52
1:A:91:THR:O	1:A:94:GLY:N	2.33	0.51
1:B:288:TRP:O	1:B:289:GLN:HB2	2.09	0.51
1:C:19:ASN:ND2	1:C:281:TRP:O	2.44	0.51
1:D:19:ASN:HD22	1:D:19:ASN:N	2.09	0.51
1:B:101:PRO:CD	1:B:138:ASP:O	2.58	0.51
1:D:229:GLU:O	1:D:232:VAL:HG23	2.09	0.51
1:C:255:ASN:OD1	1:C:255:ASN:C	2.52	0.51
1:C:96:HIS:HA	1:C:134:LEU:O	2.10	0.51
1:B:197:ASP:OD2	1:B:200:ASP:N	2.43	0.51
1:A:72:THR:HA	1:A:120:THR:HG22	1.93	0.50
1:A:297:PRO:HB3	1:A:303:TYR:CZ	2.46	0.50
1:D:149:SER:OG	1:D:150:VAL:N	2.42	0.50
1:A:114:SER:CB	1:D:254:ALA:O	2.59	0.50
1:B:83:TYR:OH	1:B:99:VAL:HA	2.11	0.50
1:B:227:GLY:HA3	1:B:265:MET:HB2	1.93	0.49
1:C:83:TYR:OH	1:C:99:VAL:HA	2.12	0.49
1:C:207:HIS:HA	1:C:249:GLU:O	2.12	0.49
1:D:122:TRP:CZ3	1:D:125:LEU:HD23	2.47	0.49
1:B:206:MET:O	1:B:247:LEU:HD12	2.13	0.49
1:A:239:GLN:NE2	1:A:272:ASN:OD1	2.45	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:15:TRP:O	1:B:278:GLY:HA3	2.13	0.49
1:B:69:THR:O	1:B:70:GLU:OE2	2.30	0.49
1:D:96:HIS:HA	1:D:134:LEU:O	2.12	0.49
1:A:165:CYS:SG	1:A:165:CYS:O	2.71	0.49
1:C:62:LEU:HD12	1:C:65:ARG:CZ	2.43	0.49
1:D:63:MET:HG2	1:D:121:PHE:CZ	2.48	0.49
1:D:91:THR:HA	1:D:95:ALA:O	2.13	0.49
1:D:207:HIS:CE1	1:D:249:GLU:OE2	2.65	0.48
1:A:114:SER:OG	1:A:117:ASP:OD2	2.29	0.48
1:D:284:ALA:O	1:D:288:TRP:NE1	2.47	0.48
1:C:102:HIS:HA	1:C:141:ASN:HB3	1.95	0.48
1:B:114:SER:OG	1:B:117:ASP:HB2	2.13	0.48
1:C:177:ASN:O	1:C:178:ALA:HB3	2.13	0.48
1:D:19:ASN:HD22	1:D:19:ASN:H	1.62	0.48
1:D:63:MET:HG2	1:D:121:PHE:CE1	2.49	0.48
1:D:192:MET:O	1:D:204:TYR:OH	2.30	0.48
1:B:96:HIS:HA	1:B:134:LEU:O	2.14	0.47
1:B:248:GLY:O	1:B:280:SER:O	2.32	0.47
1:D:224:SER:HA	1:D:261:ALA:HB2	1.95	0.47
1:A:46:ILE:O	1:A:49:LEU:N	2.45	0.47
1:D:18:SER:OG	1:D:19:ASN:O	2.33	0.47
1:C:237:TRP:CE3	1:C:238:LEU:HD23	2.50	0.47
1:D:17:GLY:O	1:D:280:SER:HA	2.14	0.47
1:B:251:ALA:CB	1:B:293:TYR:CD1	2.95	0.47
1:C:17:GLY:HA3	1:C:56:ILE:O	2.14	0.47
1:C:30:ILE:HA	1:C:31:PRO:C	2.40	0.47
1:C:204:TYR:O	1:C:245:GLY:HA2	2.15	0.47
1:D:89:TYR:O	1:D:90:ILE:C	2.57	0.47
1:A:162:ILE:HG22	1:A:163:ARG:N	2.29	0.47
1:C:49:LEU:O	1:C:54:MET:HB2	2.14	0.47
1:C:256:SER:O	1:C:260:GLU:HB2	2.15	0.47
1:B:98:VAL:HA	1:B:136:ILE:O	2.14	0.47
1:B:104:PHE:HE1	1:B:142:GLU:OE1	1.98	0.47
1:D:180:SER:OG	1:D:205:GLU:O	2.27	0.46
1:C:62:LEU:HD12	1:C:65:ARG:NH1	2.31	0.46
1:D:101:PRO:HB2	1:D:140:ASN:ND2	2.31	0.46
1:C:211:ASP:OD1	1:C:211:ASP:N	2.37	0.46
1:B:21:SER:HB3	1:B:24:GLU:OE2	2.15	0.46
1:A:258:CYS:O	1:A:262:VAL:HG23	2.15	0.46
1:D:58:ARG:HG3	1:D:98:VAL:HB	1.98	0.46
1:A:216:GLY:O	1:A:293:TYR:OH	2.32	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:69:THR:HG22	1:B:70:GLU:HG2	1.98	0.45
1:A:114:SER:HB3	1:D:254:ALA:O	2.16	0.45
1:B:130:LYS:HA	1:B:167:ALA:HB2	1.98	0.45
1:A:281:TRP:CD1	1:A:295:MET:HE2	2.51	0.45
1:B:148:GLU:OE2	1:B:189:ASN:HA	2.17	0.45
1:A:173:PHE:CZ	1:A:246:ILE:HG21	2.51	0.45
1:D:49:LEU:HD13	1:D:54:MET:SD	2.57	0.45
1:C:143:TYR:C	1:C:177:ASN:HD22	2.23	0.45
1:D:101:PRO:CD	1:D:138:ASP:O	2.65	0.45
1:B:303:TYR:CE1	1:B:307:LEU:HD22	2.52	0.45
1:B:228:GLN:O	1:B:232:VAL:HG23	2.17	0.45
1:A:216:GLY:O	1:A:218:SER:N	2.50	0.45
1:A:265:MET:O	1:A:269:LEU:HG	2.17	0.45
1:B:34:GLU:HG3	1:B:38:TYR:CE2	2.51	0.45
1:D:253:GLY:O	1:D:306:TYR:OH	2.25	0.45
1:C:281:TRP:CD1	1:C:282:TRP:N	2.85	0.44
1:D:15:TRP:HA	1:D:55:ASN:OD1	2.16	0.44
1:B:49:LEU:O	1:B:54:MET:HB2	2.18	0.44
1:C:58:ARG:O	1:C:60:PRO:HD3	2.16	0.44
1:C:89:TYR:O	1:C:90:ILE:C	2.60	0.44
1:C:176:GLY:HA2	1:C:192:MET:HE2	2.00	0.44
1:A:71:MET:HB2	1:A:121:PHE:HB2	1.99	0.44
1:A:227:GLY:HA3	1:A:265:MET:HB2	1.99	0.44
1:D:80:PHE:CZ	1:D:128:GLN:HB3	2.53	0.44
1:D:90:ILE:HG22	1:D:95:ALA:HB3	2.00	0.44
1:A:102:HIS:HA	1:A:141:ASN:HB3	1.99	0.44
1:A:280:SER:O	1:A:280:SER:OG	2.35	0.44
1:D:80:PHE:HZ	1:D:128:GLN:HB3	1.83	0.44
1:A:43:THR:HB	1:A:89:TYR:CE2	2.53	0.44
1:A:19:ASN:HA	1:A:58:ARG:O	2.18	0.43
1:B:101:PRO:HD2	1:B:138:ASP:O	2.18	0.43
1:C:49:LEU:HD23	1:C:49:LEU:HA	1.82	0.43
1:D:89:TYR:CZ	1:D:93:LYS:HE3	2.53	0.43
1:A:123:SER:OG	1:A:161:GLY:CA	2.66	0.43
1:D:104:PHE:O	1:D:106:ARG:NH1	2.50	0.43
1:C:301:ILE:HG23	1:C:302:ALA:N	2.33	0.43
1:A:285:GLY:H	1:A:296:GLU:HB2	1.84	0.43
1:B:122:TRP:CH2	1:B:137:PHE:HB3	2.54	0.43
1:B:143:TYR:O	1:B:177:ASN:HA	2.19	0.43
1:B:122:TRP:CZ3	1:B:137:PHE:HB3	2.54	0.43
1:D:141:ASN:ND2	1:D:141:ASN:C	2.77	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:200:ASP:O	1:C:201:LEU:HD23	2.19	0.43
1:C:282:TRP:O	1:C:293:TYR:HB3	2.19	0.42
1:A:295:MET:HE2	1:A:295:MET:HB2	1.92	0.42
1:A:282:TRP:O	1:A:293:TYR:HB3	2.18	0.42
1:B:295:MET:HG3	1:B:295:MET:O	2.19	0.42
1:D:114:SER:OG	1:D:117:ASP:HB2	2.19	0.42
1:A:282:TRP:CD2	1:A:283:SER:HB2	2.55	0.42
1:D:100:ASP:OD2	1:D:102:HIS:ND1	2.37	0.42
1:B:208:GLN:NE2	1:B:209:TYR:O	2.50	0.42
1:D:17:GLY:HA3	1:D:56:ILE:O	2.19	0.42
1:D:256:SER:O	1:D:260:GLU:HB2	2.19	0.42
1:C:169:THR:O	1:C:201:LEU:CD1	2.67	0.42
1:C:178:ALA:O	1:C:179:TYR:HB2	2.20	0.42
1:C:19:ASN:H	1:C:19:ASN:HD22	1.66	0.42
1:C:23:ALA:HB3	1:C:60:PRO:O	2.19	0.42
1:C:37:ASP:OD1	1:C:37:ASP:N	2.53	0.42
1:D:123:SER:C	1:D:165:CYS:SG	3.03	0.42
1:A:298:PRO:HD2	1:A:299:ASN:ND2	2.35	0.42
1:B:226:VAL:O	1:B:230:ARG:HG3	2.20	0.42
1:C:303:TYR:CD1	1:C:307:LEU:HD22	2.54	0.42
1:A:58:ARG:HA	1:A:98:VAL:HB	2.01	0.42
1:C:39:THR:OG1	1:C:40:PHE:N	2.52	0.42
1:B:130:LYS:O	1:B:170:GLN:NE2	2.36	0.41
1:D:83:TYR:CE2	1:D:87:ILE:HD11	2.55	0.41
1:B:71:MET:HG2	1:B:117:ASP:HB3	2.03	0.41
1:D:16:PHE:CE1	1:D:310:LEU:HD22	2.55	0.41
1:A:71:MET:CE	1:A:107:TYR:CD2	3.03	0.41
1:B:269:LEU:HD22	1:B:276:TRP:CD2	2.56	0.41
1:C:80:PHE:CZ	1:C:128:GLN:HB3	2.55	0.41
1:A:291:TYR:CE2	1:A:293:TYR:HB2	2.56	0.41
1:B:30:ILE:HG21	1:B:64:GLU:HB3	2.02	0.41
1:B:297:PRO:HB3	1:B:303:TYR:CZ	2.56	0.41
1:C:18:SER:O	1:C:57:PHE:HA	2.21	0.41
1:D:251:ALA:HA	1:D:281:TRP:CH2	2.56	0.41
1:D:284:ALA:O	1:D:288:TRP:CD1	2.74	0.41
1:A:123:SER:OG	1:A:161:GLY:HA2	2.21	0.41
1:A:298:PRO:HD2	1:A:299:ASN:HD22	1.86	0.41
1:A:310:LEU:O	1:A:314:PHE:CE1	2.74	0.41
1:C:190:THR:O	1:C:193:VAL:HG22	2.21	0.41
1:A:101:PRO:CD	1:A:138:ASP:O	2.69	0.41
1:B:282:TRP:HA	1:B:283:SER:HA	1.90	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:104:PHE:CE1	1:C:141:ASN:ND2	2.89	0.41
1:D:22:GLY:C	1:D:39:THR:O	2.64	0.41
1:B:167:ALA:C	1:B:170:GLN:OE1	2.65	0.40
1:C:63:MET:HE1	1:C:112:ILE:HD11	2.04	0.40
1:C:143:TYR:C	1:C:177:ASN:ND2	2.79	0.40
1:A:118:PHE:CG	1:A:154:LEU:HD22	2.57	0.40
1:B:219:ASP:HB3	1:B:292:ILE:HD12	2.03	0.40
1:B:259:GLU:O	1:B:263:GLU:HG3	2.21	0.40
1:C:171:TYR:HA	1:C:201:LEU:HB3	2.03	0.40
1:D:112:ILE:HG22	1:D:154:LEU:HD21	2.02	0.40
1:C:104:PHE:HA	1:C:141:ASN:O	2.21	0.40
1:C:210:LEU:HD22	1:C:227:GLY:HA2	2.04	0.40
1:C:143:TYR:HE1	1:C:175:GLU:HB2	1.87	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	304/314 (97%)	269 (88%)	31 (10%)	4 (1%)	9	21
1	B	304/314 (97%)	272 (90%)	32 (10%)	0	100	100
1	C	304/314 (97%)	274 (90%)	29 (10%)	1 (0%)	36	58
1	D	304/314 (97%)	265 (87%)	39 (13%)	0	100	100
All	All	1216/1256 (97%)	1080 (89%)	131 (11%)	5 (0%)	30	51

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	217	THR
1	A	133	ASP

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Mol	Chain	Res	Type
1	A	193	VAL
1	A	92	GLY
1	C	222	VAL

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	254/261 (97%)	239 (94%)	15 (6%)	18	38
1	B	254/261 (97%)	235 (92%)	19 (8%)	12	28
1	C	254/261 (97%)	236 (93%)	18 (7%)	13	31
1	D	254/261 (97%)	232 (91%)	22 (9%)	9	21
All	All	1016/1044 (97%)	942 (93%)	74 (7%)	13	29

All (74) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	69	THR
1	A	103	ASN
1	A	113	SER
1	A	119	GLN
1	A	120	THR
1	A	140	ASN
1	A	190	THR
1	A	193	VAL
1	A	196	THR
1	A	211	ASP
1	A	260	GLU
1	A	289	GLN
1	A	299	ASN
1	A	301	ILE
1	A	304	GLU
1	B	11	SER
1	B	12	SER
1	B	47	GLN

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Mol	Chain	Res	Type
1	B	98	VAL
1	B	103	ASN
1	B	113	SER
1	B	120	THR
1	B	130	LYS
1	B	140	ASN
1	B	147	ASP
1	B	149	SER
1	B	190	THR
1	B	194	ASN
1	B	196	THR
1	B	290	ASP
1	B	299	ASN
1	B	301	ILE
1	B	309	ILE
1	B	312	THR
1	C	12	SER
1	C	18	SER
1	C	19	ASN
1	C	37	ASP
1	C	44	THR
1	C	103	ASN
1	C	116	SER
1	C	140	ASN
1	C	177	ASN
1	C	193	VAL
1	C	211	ASP
1	C	246	ILE
1	C	280	SER
1	C	283	SER
1	C	288	TRP
1	C	290	ASP
1	C	299	ASN
1	C	304	GLU
1	D	11	SER
1	D	19	ASN
1	D	27	SER
1	D	69	THR
1	D	103	ASN
1	D	131	SER
1	D	133	ASP
1	D	140	ASN

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Mol	Chain	Res	Type
1	D	141	ASN
1	D	147	ASP
1	D	165	CYS
1	D	190	THR
1	D	193	VAL
1	D	206	MET
1	D	211	ASP
1	D	212	SER
1	D	224	SER
1	D	236	THR
1	D	246	ILE
1	D	272	ASN
1	D	283	SER
1	D	299	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	29	ASN
1	A	128	GLN
1	A	220	GLN
1	A	239	GLN
1	A	299	ASN
1	B	29	ASN
1	B	289	GLN
1	B	299	ASN
1	C	177	ASN
1	C	189	ASN
1	C	289	GLN
1	D	228	GLN
1	D	272	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

8 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	NAG	E	1	2,1	14,14,15	0.61	0	17,19,21	1.53	4 (23%)
2	NAG	E	2	2	13,13,15	0.77	0	16,17,21	1.92	2 (12%)
2	NAG	F	1	2,1	14,14,15	0.70	0	17,19,21	1.54	3 (17%)
2	NAG	F	2	2	14,14,15	0.57	0	17,19,21	1.22	1 (5%)
2	NAG	G	1	2,1	14,14,15	0.54	0	17,19,21	1.91	4 (23%)
2	NAG	G	2	2	14,14,15	0.43	0	17,19,21	1.65	3 (17%)
2	NAG	H	1	2,1	14,14,15	0.56	0	17,19,21	1.74	4 (23%)
2	NAG	H	2	2	14,14,15	0.56	0	17,19,21	1.69	4 (23%)

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	NAG	E	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	E	2	2	-	2/5/22/26	0/1/1/1
2	NAG	F	1	2,1	-	4/6/23/26	0/1/1/1
2	NAG	F	2	2	-	2/6/23/26	0/1/1/1
2	NAG	G	1	2,1	-	4/6/23/26	0/1/1/1
2	NAG	G	2	2	-	2/6/23/26	0/1/1/1
2	NAG	H	1	2,1	-	4/6/23/26	0/1/1/1
2	NAG	H	2	2	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	2	NAG	C7-N2-C2	5.91	123.44	114.43
2	E	2	NAG	C1-O5-C5	4.41	118.10	112.19
2	G	2	NAG	C1-O5-C5	4.35	118.02	112.19
2	H	2	NAG	O5-C5-C6	4.28	115.98	107.66
2	G	1	NAG	C4-C3-C2	-3.79	105.46	111.02
2	G	1	NAG	C8-C7-N2	3.75	122.34	116.12
2	F	1	NAG	O7-C7-N2	-3.44	115.91	121.98
2	H	1	NAG	O5-C5-C6	3.38	114.24	107.66
2	G	1	NAG	O5-C1-C2	-3.28	106.22	111.29
2	H	1	NAG	C8-C7-N2	3.08	121.23	116.12
2	F	1	NAG	O5-C1-C2	-2.90	106.81	111.29
2	F	1	NAG	C8-C7-N2	2.81	120.78	116.12
2	F	2	NAG	O5-C5-C6	2.79	113.09	107.66
2	E	1	NAG	O7-C7-N2	-2.60	117.38	121.98
2	E	1	NAG	C8-C7-N2	2.56	120.36	116.12
2	G	2	NAG	C2-N2-C7	2.41	126.12	122.90
2	H	1	NAG	C1-C2-N2	2.39	114.21	110.43
2	H	2	NAG	O5-C5-C4	-2.39	105.01	110.83
2	H	2	NAG	O4-C4-C5	2.30	115.00	109.32
2	E	1	NAG	O3-C3-C2	-2.25	104.73	109.40
2	H	2	NAG	C3-C4-C5	-2.24	106.17	110.23
2	E	1	NAG	C2-N2-C7	2.23	125.89	122.90
2	H	1	NAG	O4-C4-C3	-2.13	105.35	110.38
2	G	2	NAG	O5-C5-C6	2.09	111.72	107.66
2	G	1	NAG	O3-C3-C2	2.09	113.74	109.40

There are no chirality outliers.

All (22) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	F	2	NAG	O5-C5-C6-O6
2	H	1	NAG	O5-C5-C6-O6
2	H	2	NAG	O5-C5-C6-O6
2	F	1	NAG	C4-C5-C6-O6
2	F	1	NAG	O5-C5-C6-O6
2	H	1	NAG	C4-C5-C6-O6
2	H	2	NAG	C4-C5-C6-O6
2	F	2	NAG	C4-C5-C6-O6
2	E	1	NAG	C8-C7-N2-C2
2	E	1	NAG	O7-C7-N2-C2
2	F	1	NAG	C8-C7-N2-C2
2	F	1	NAG	O7-C7-N2-C2
2	G	1	NAG	C8-C7-N2-C2

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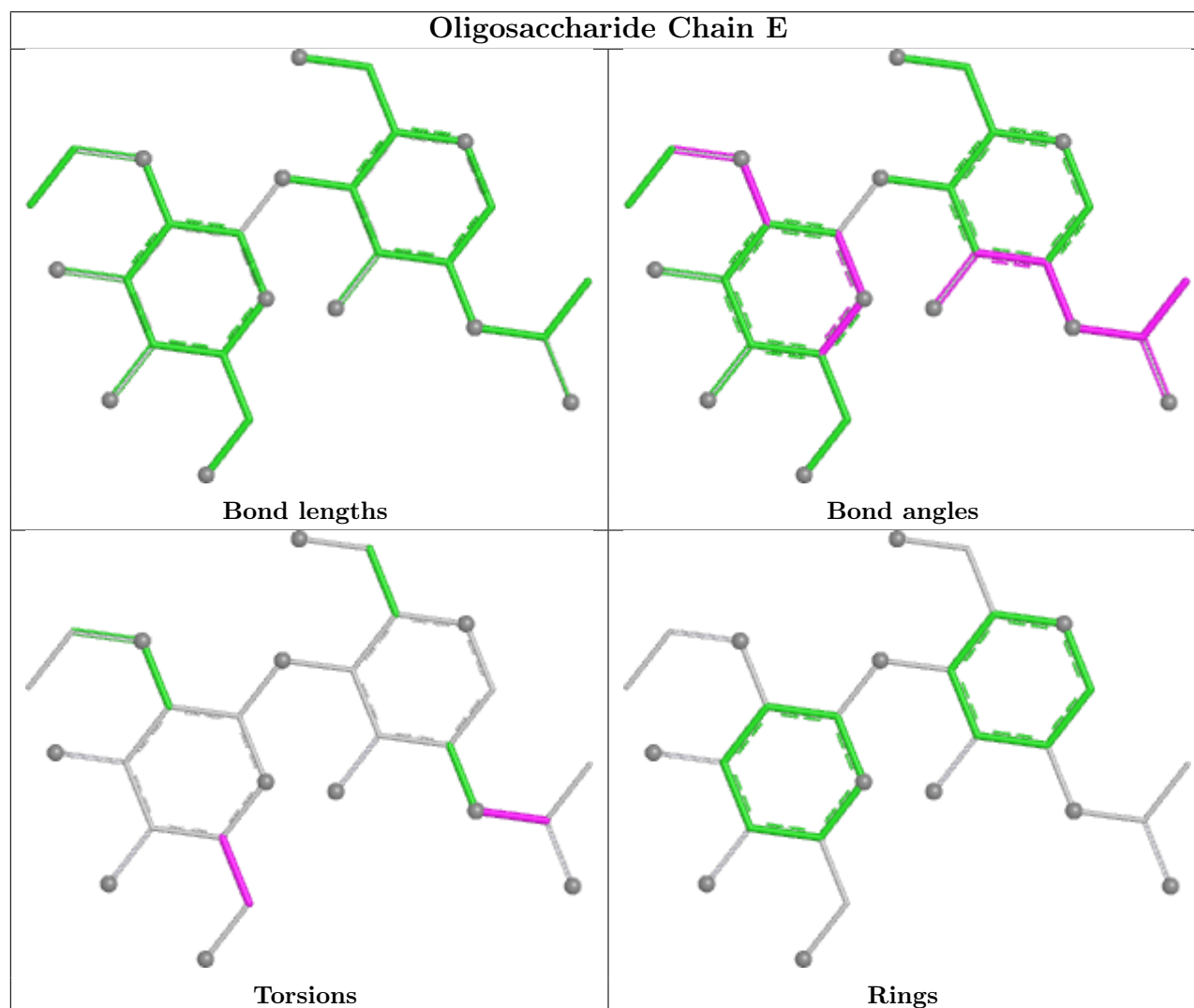
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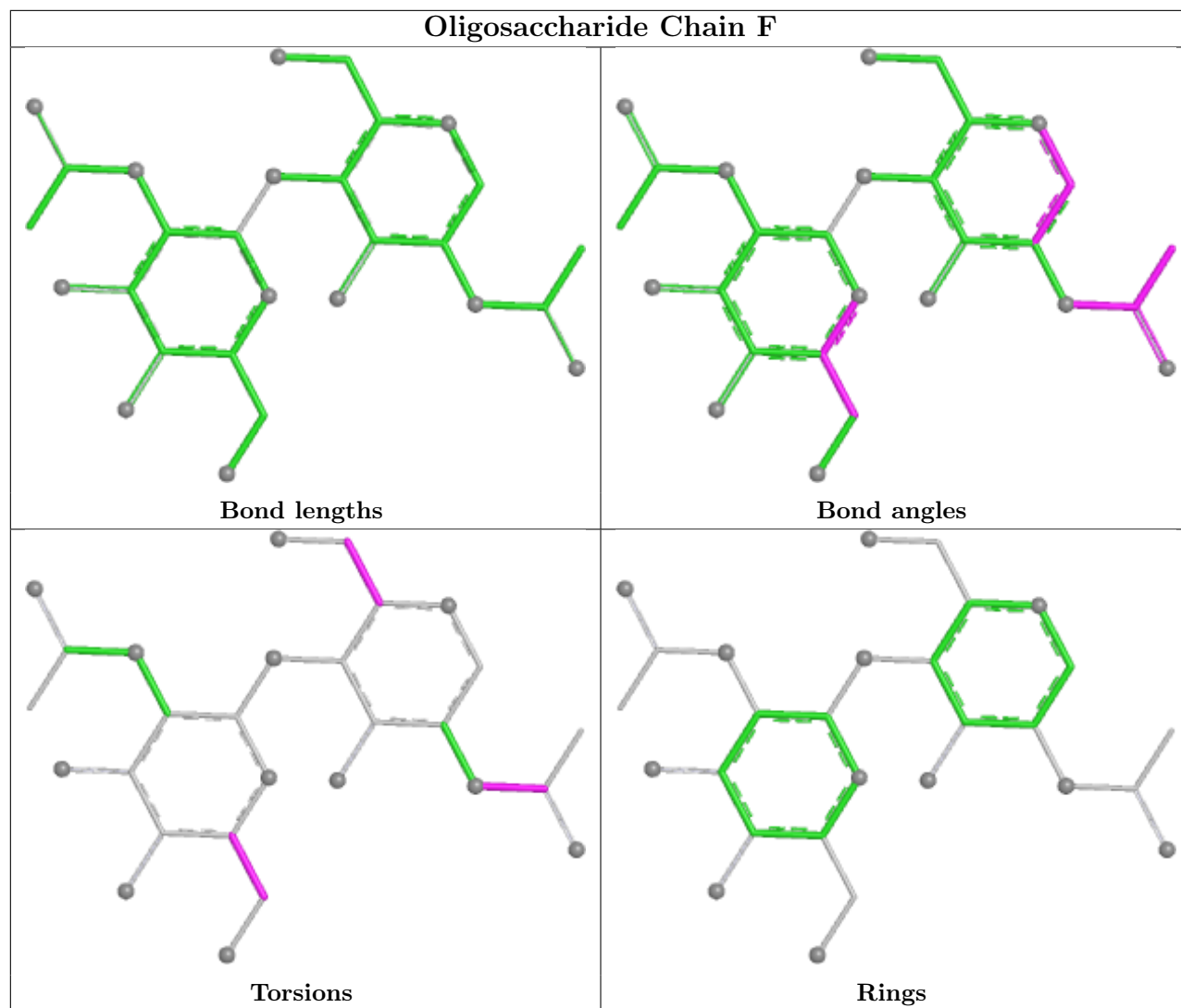
Mol	Chain	Res	Type	Atoms
2	G	1	NAG	O7-C7-N2-C2
2	H	1	NAG	C8-C7-N2-C2
2	H	1	NAG	O7-C7-N2-C2
2	G	1	NAG	C4-C5-C6-O6
2	G	1	NAG	O5-C5-C6-O6
2	E	2	NAG	C4-C5-C6-O6
2	G	2	NAG	C4-C5-C6-O6
2	G	2	NAG	O5-C5-C6-O6
2	E	2	NAG	O5-C5-C6-O6

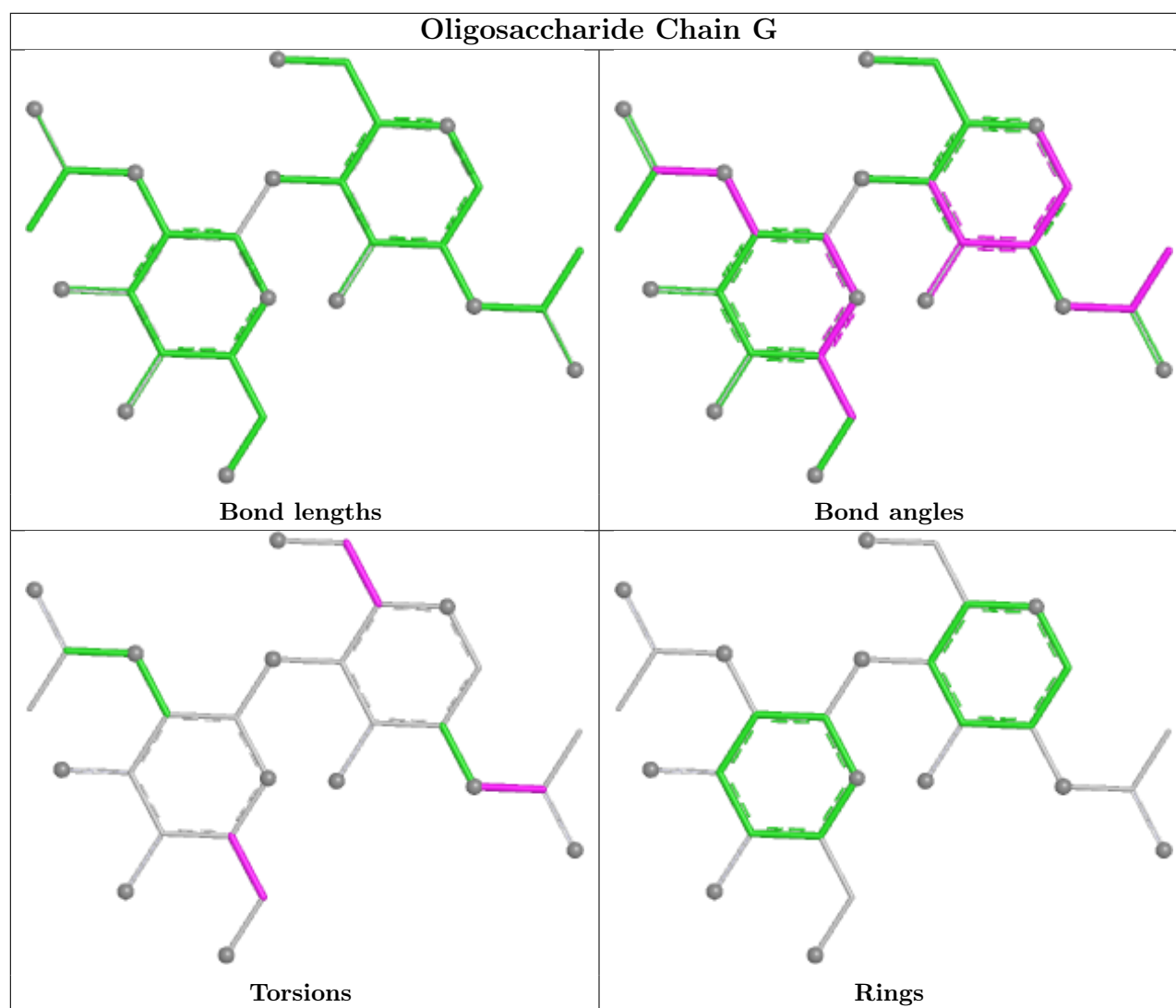
There are no ring outliers.

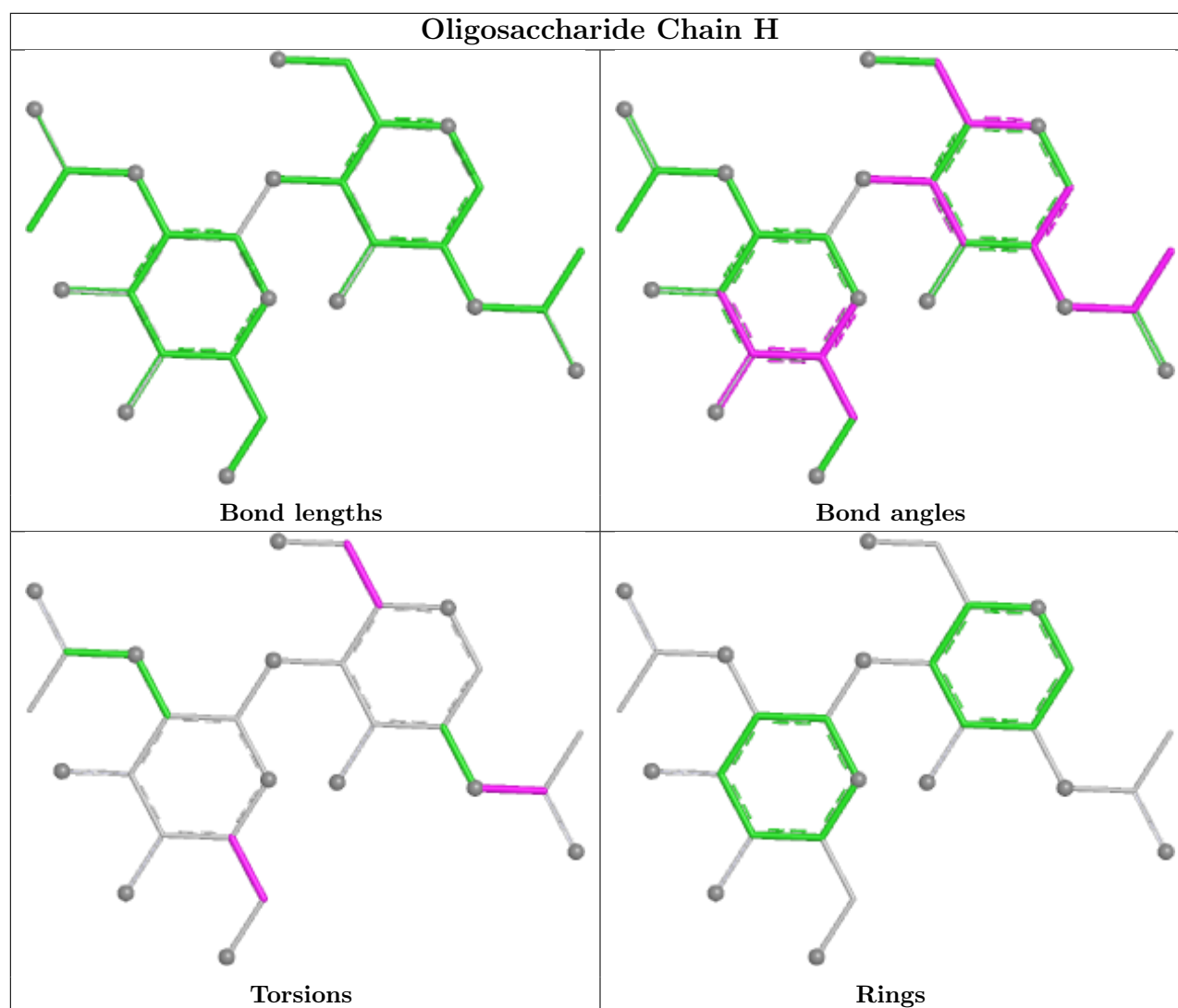
No monomer is involved in short contacts.

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









5.6 Ligand geometry [i](#)

4 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	$\# Z > 2$
3	SO4	A	503	-	4,4,4	0.34	0	6,6,6	0.19	0
3	SO4	C	503	-	4,4,4	0.34	0	6,6,6	0.13	0
3	SO4	B	503	-	4,4,4	0.26	0	6,6,6	0.14	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	SO4	D	503	-	4,4,4	0.31	0	6,6,6	0.09	0

There are no bond length outliers.

There are no bond angle outliers.

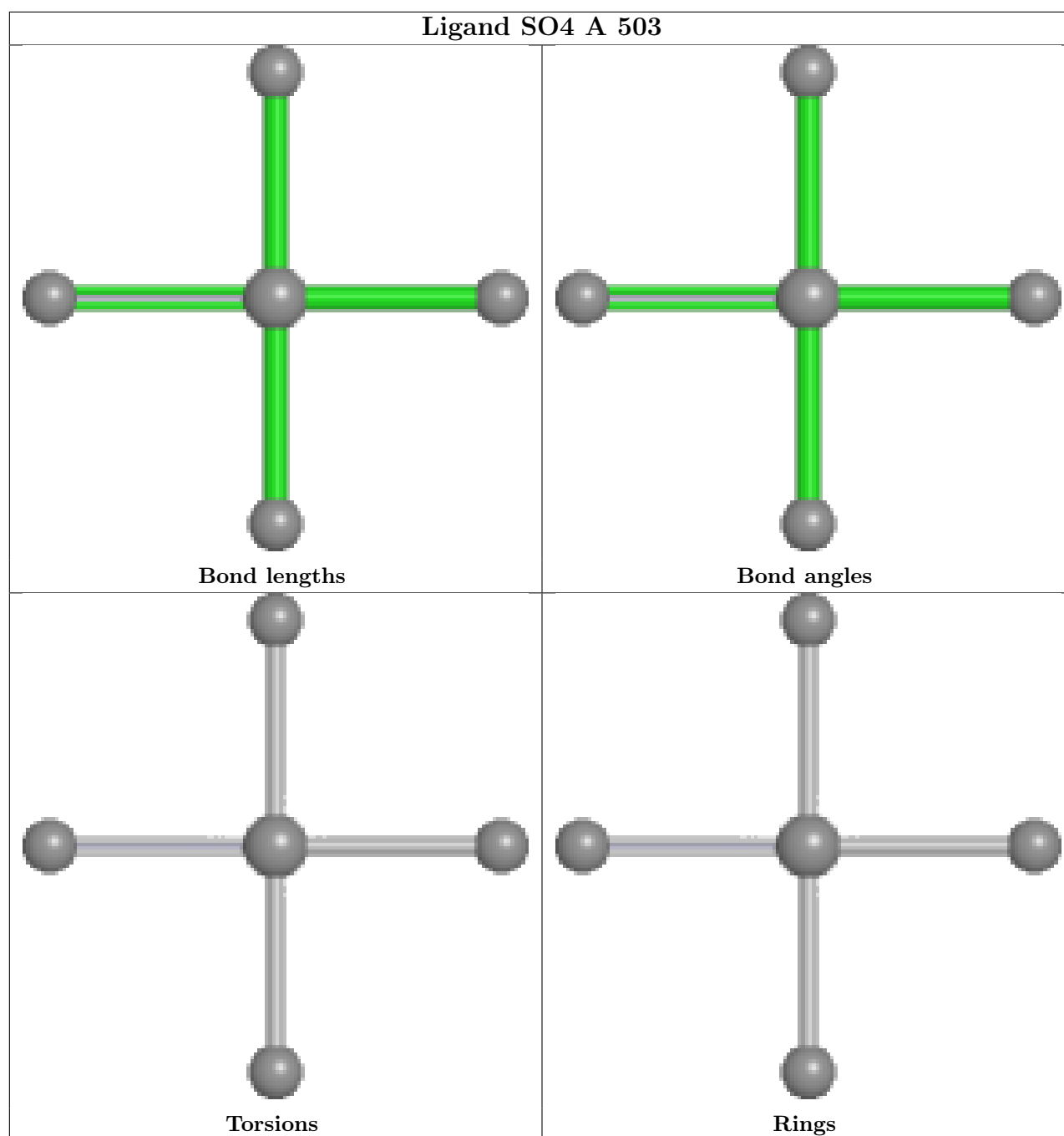
There are no chirality outliers.

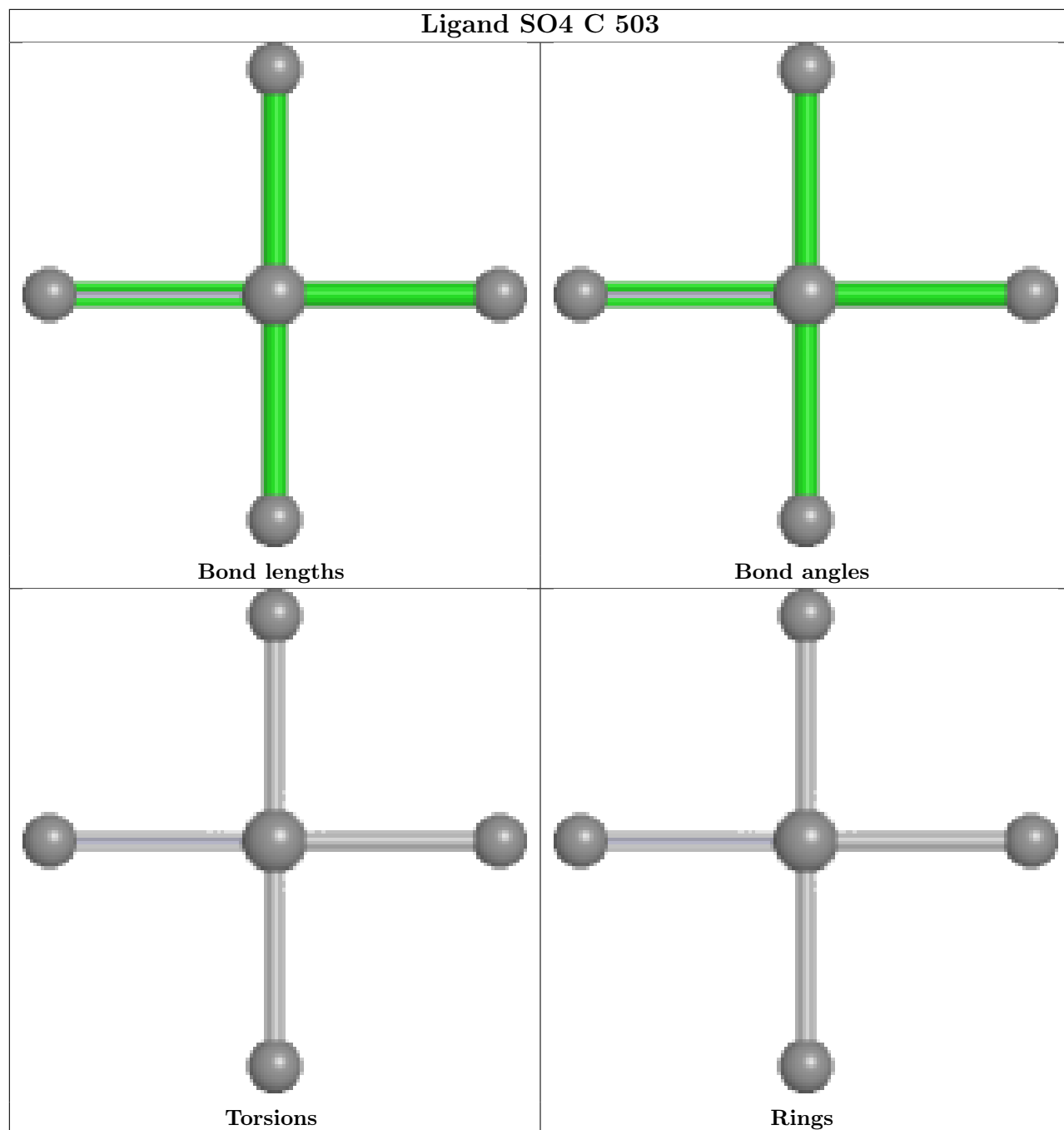
There are no torsion outliers.

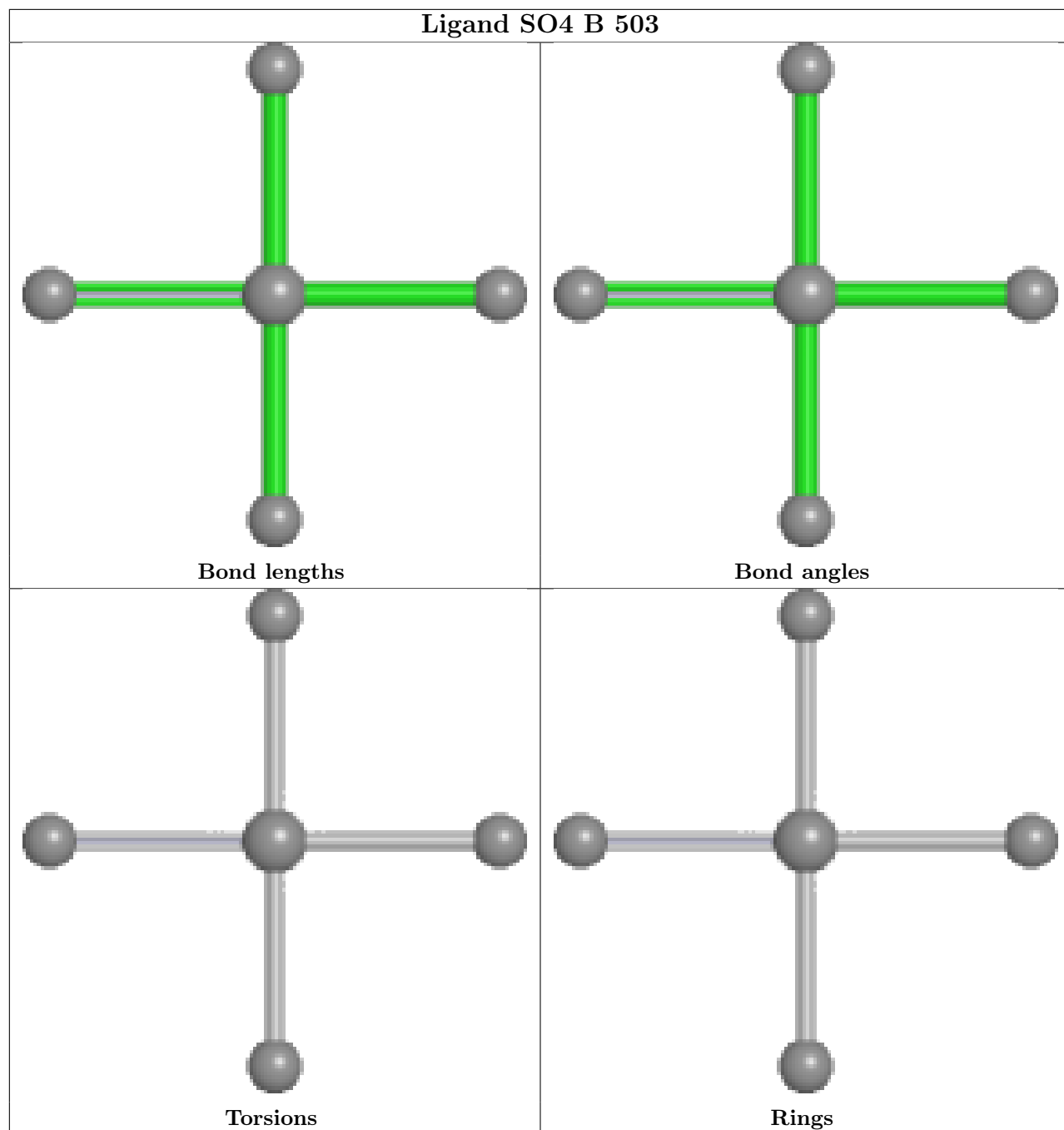
There are no ring outliers.

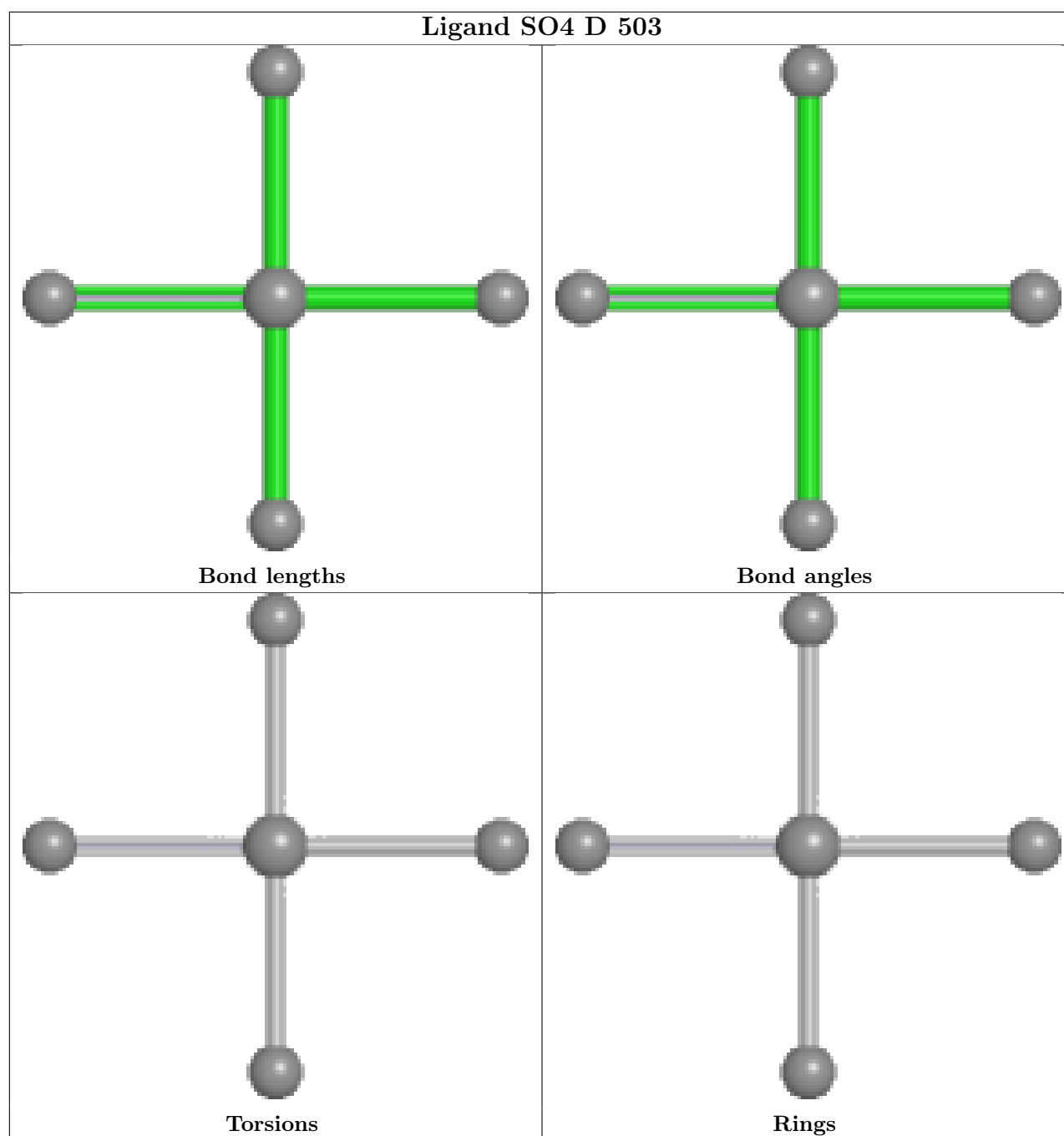
No monomer is involved in short contacts.

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 [i](#)

There are no chain breaks in this entry.

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

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

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	305/314 (97%)	-1.20	0 100 100	25, 45, 64, 83	1 (0%)
1	B	305/314 (97%)	-1.19	0 100 100	27, 48, 64, 86	1 (0%)
1	C	305/314 (97%)	-1.22	0 100 100	21, 46, 63, 81	1 (0%)
1	D	305/314 (97%)	-1.20	0 100 100	24, 46, 64, 100	1 (0%)
All	All	1220/1256 (97%)	-1.20	0 100 100	21, 46, 64, 100	4 (0%)

There are no RSRZ outliers to report.

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

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

6.3 Carbohydrates [i](#)

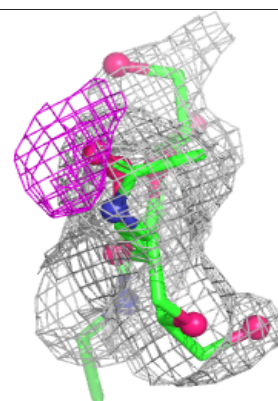
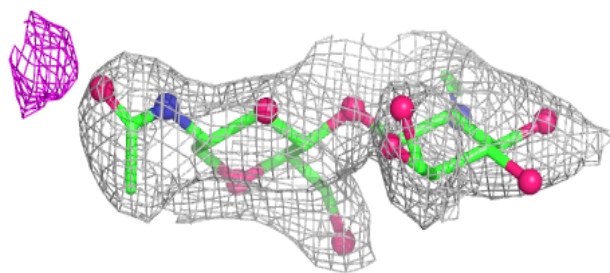
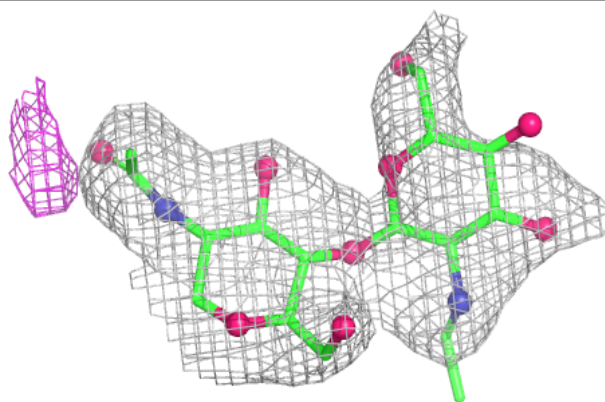
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled ‘Q< 0.9’ lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	NAG	F	2	14/15	0.94	0.09	74,81,87,100	0
2	NAG	E	2	13/15	0.96	0.07	64,68,75,79	0
2	NAG	E	1	14/15	0.97	0.06	44,50,54,59	0
2	NAG	G	1	14/15	0.97	0.06	59,63,72,72	0
2	NAG	G	2	14/15	0.97	0.06	61,72,82,93	0
2	NAG	H	2	14/15	0.97	0.05	68,75,79,83	0
2	NAG	H	1	14/15	0.98	0.04	48,52,57,62	0
2	NAG	F	1	14/15	0.98	0.04	43,49,54,65	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.

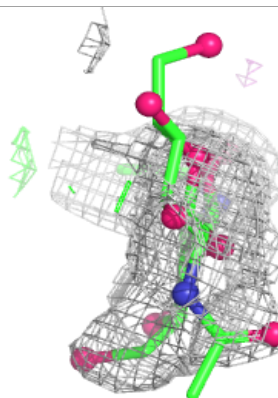
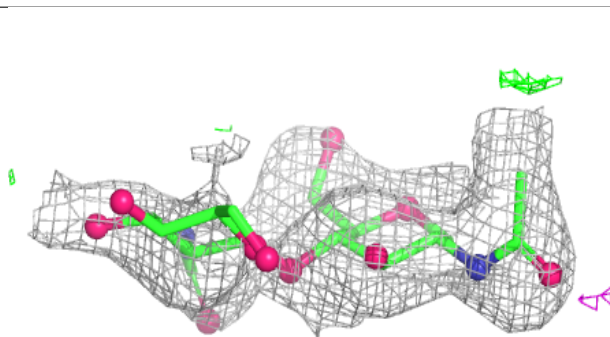
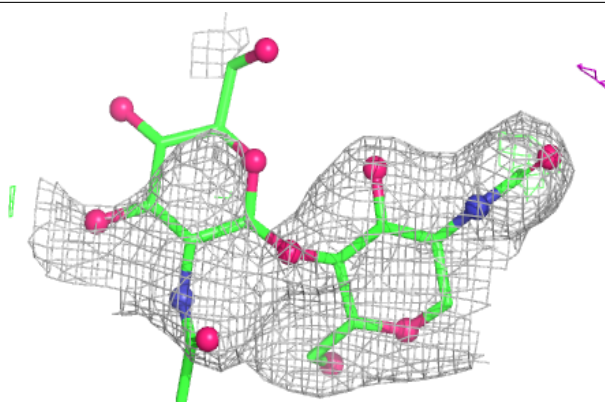
Electron density around Chain E:

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



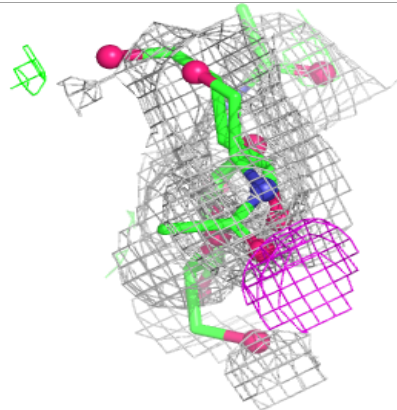
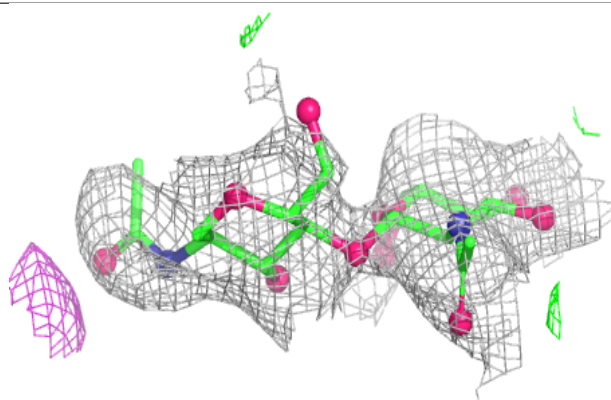
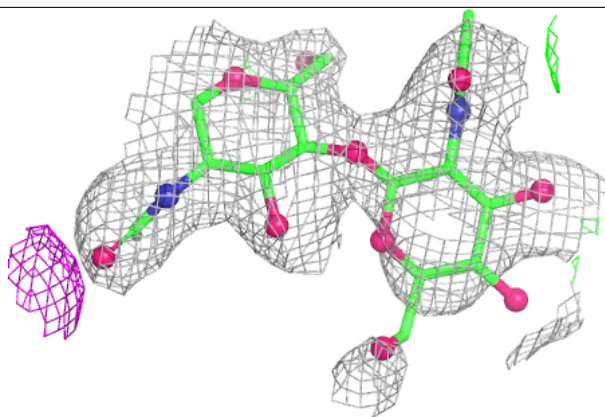
Electron density around Chain F:

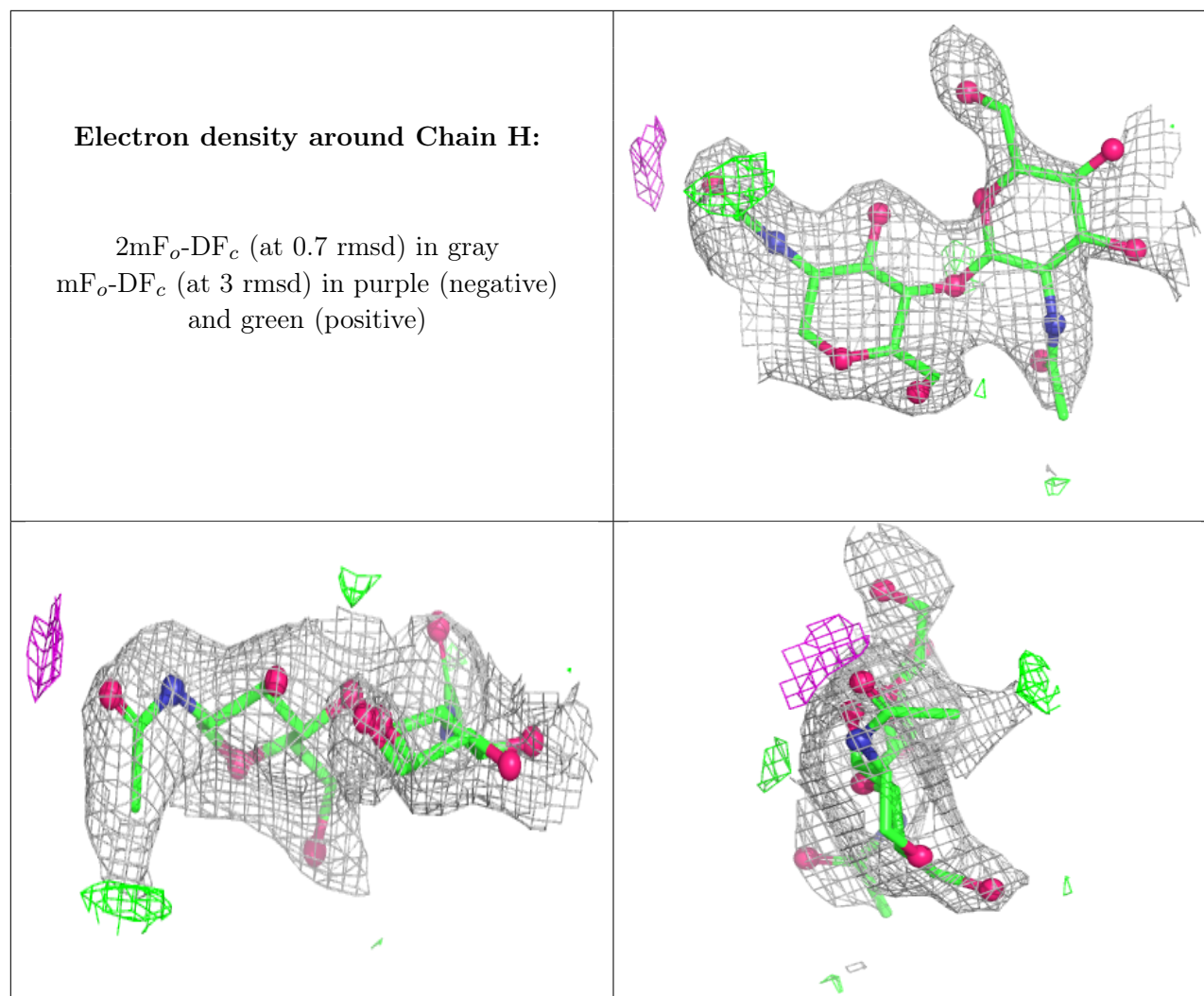
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



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)





6.4 Ligands ⓘ

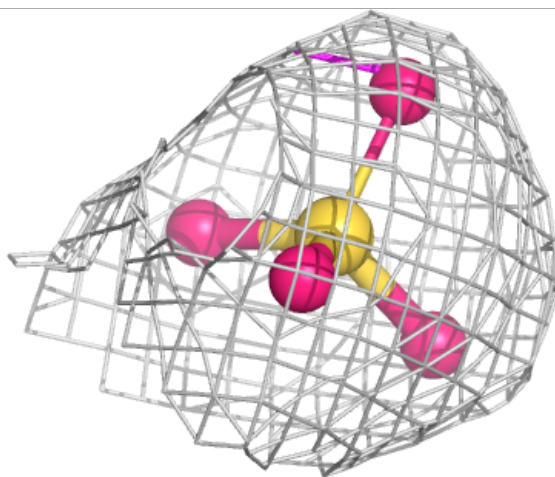
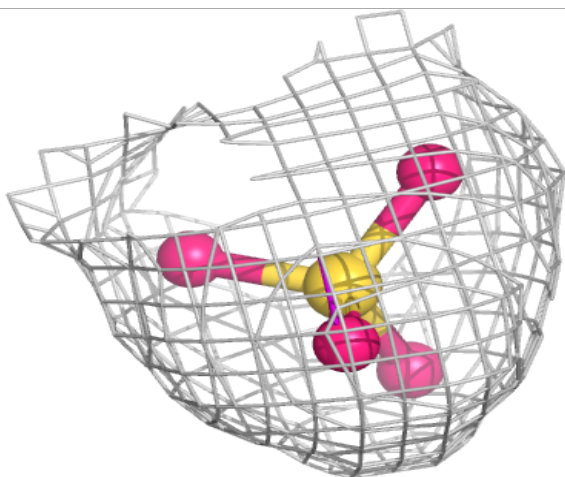
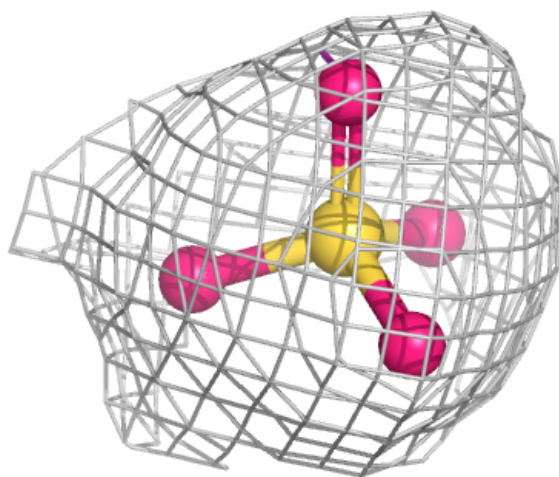
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
3	SO4	A	503	5/5	0.99	0.03	29,31,36,38	0
3	SO4	B	503	5/5	0.99	0.04	30,33,37,39	0
3	SO4	C	503	5/5	0.99	0.03	40,40,43,45	0
3	SO4	D	503	5/5	0.99	0.03	31,32,36,36	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.

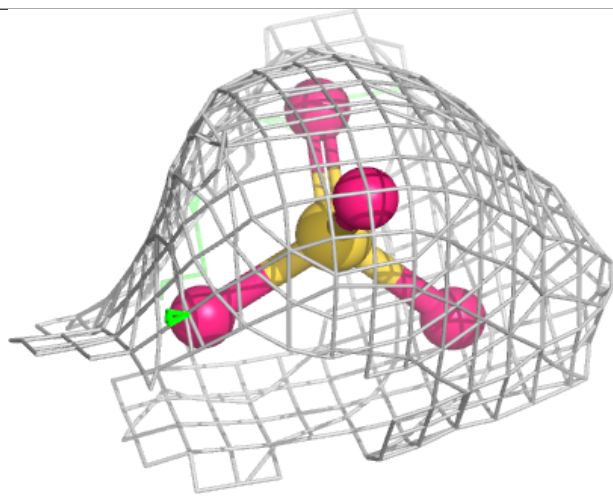
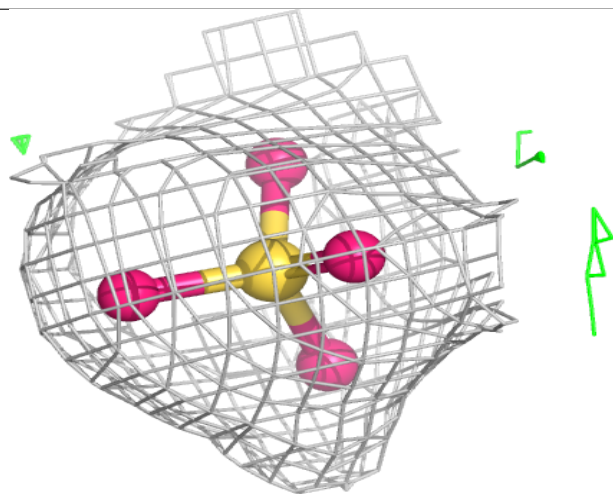
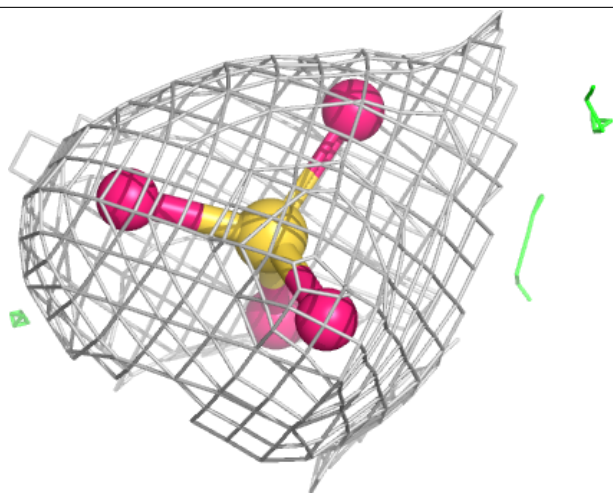
Electron density around SO4 A 503:

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



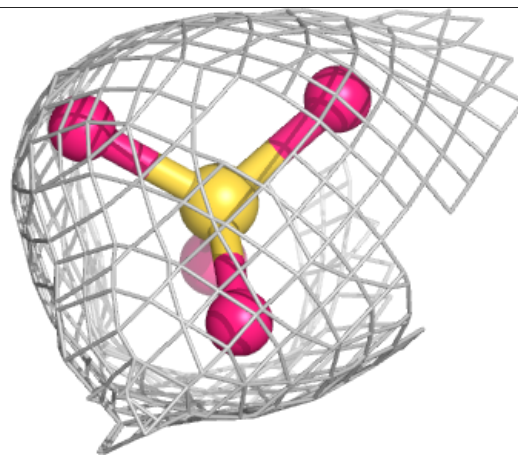
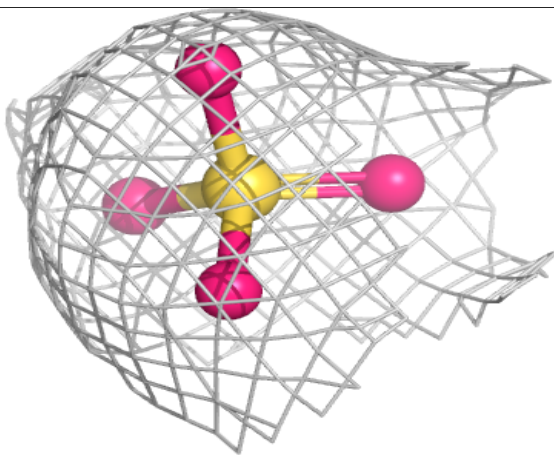
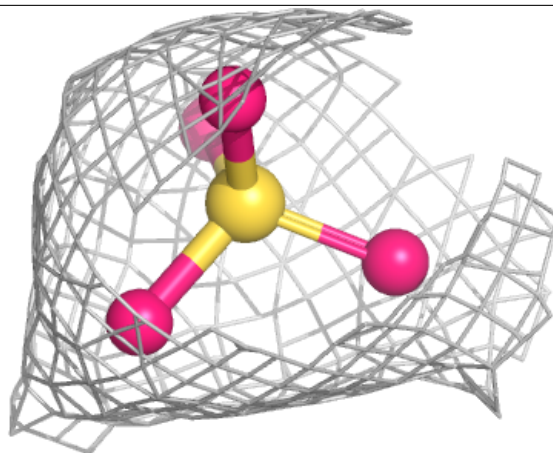
Electron density around SO4 B 503:

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



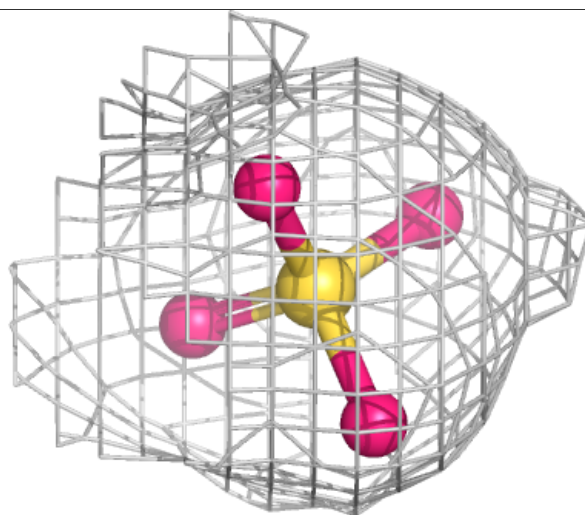
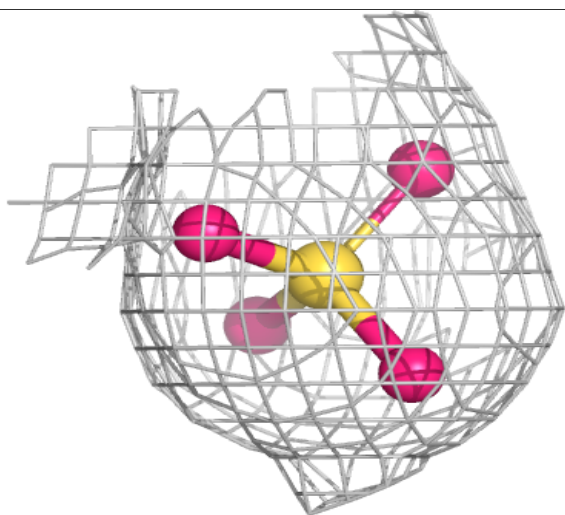
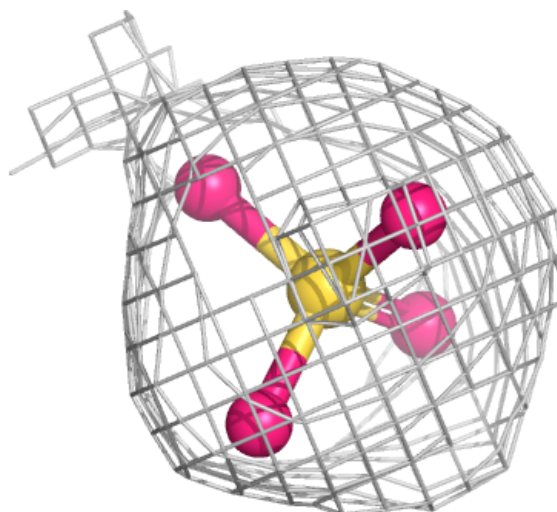
Electron density around SO4 C 503:

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



Electron density around SO4 D 503:

$2mF_o-DF_c$ (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.