



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2026 – 12:21 PM UTC

PDB ID : 5J6S / pdb_00005j6s
Title : Crystal structure of Endoplasmic Reticulum Aminopeptidase 2 (ERAP2) in complex with a hydroxamic derivative ligand
Authors : Saridakis, E.; Giastas, P.; Mpakali, A.; Deprez-Poulain, R.; Stratikos, E.
Deposited on : 2016-04-05
Resolution : 2.80 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtrriage (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

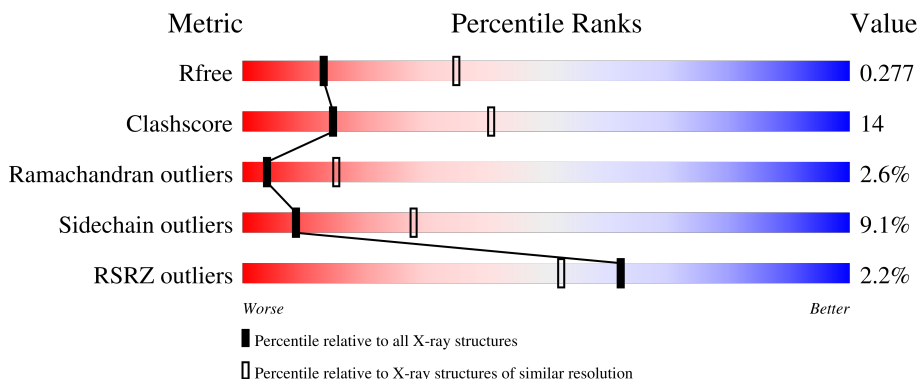
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 Å.

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



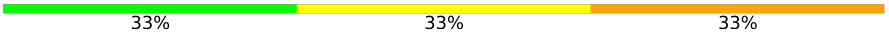

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	3866 (2.80-2.80)
Clashscore	190562	4276 (2.80-2.80)
Ramachandran outliers	187476	4196 (2.80-2.80)
Sidechain outliers	187428	4198 (2.80-2.80)
RSRZ outliers	180081	3869 (2.80-2.80)

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

Mol	Chain	Length	Quality of chain
1	A	967	 62% 28% 6%
1	B	967	 54% 32% 5% 9%
2	C	2	 50% 50%
2	E	2	 50% 50%
3	D	3	 67% 33%

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Mol	Chain	Length	Quality of chain
3	G	3	 33% 33% 33%
4	F	5	 20% 40% 40%

2 Entry composition i

There are 8 unique types of molecules in this entry. The entry contains 15067 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 Endoplasmic reticulum aminopeptidase 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	910	7413	4777	1229	1375	32	0	2	0
1	B	880	7185	4633	1197	1327	28	0	1	0

There are 16 discrepancies between the modelled and reference sequences:

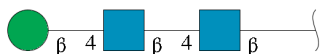
Chain	Residue	Modelled	Actual	Comment	Reference
A	392	ASN	LYS	variant	UNP Q6P179
A	961	ARG	-	expression tag	UNP Q6P179
A	962	HIS	-	expression tag	UNP Q6P179
A	963	HIS	-	expression tag	UNP Q6P179
A	964	HIS	-	expression tag	UNP Q6P179
A	965	HIS	-	expression tag	UNP Q6P179
A	966	HIS	-	expression tag	UNP Q6P179
A	967	HIS	-	expression tag	UNP Q6P179
B	392	ASN	LYS	variant	UNP Q6P179
B	961	ARG	-	expression tag	UNP Q6P179
B	962	HIS	-	expression tag	UNP Q6P179
B	963	HIS	-	expression tag	UNP Q6P179
B	964	HIS	-	expression tag	UNP Q6P179
B	965	HIS	-	expression tag	UNP Q6P179
B	966	HIS	-	expression tag	UNP Q6P179
B	967	HIS	-	expression tag	UNP Q6P179

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



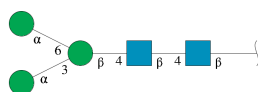
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	C	2	Total	C	N	O	0	0	0
			28	16	2	10			
2	E	2	Total	C	N	O	0	0	0
			28	16	2	10			

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



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	D	3	Total	C	N	O	0	0	0
			39	22	2	15			
3	G	3	Total	C	N	O	0	0	0
			39	22	2	15			

- Molecule 4 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
4	F	5	Total	C	N	O	0	0	0
			61	34	2	25			

- Molecule 5 is ZINC ION (CCD ID: ZN) (formula: Zn).

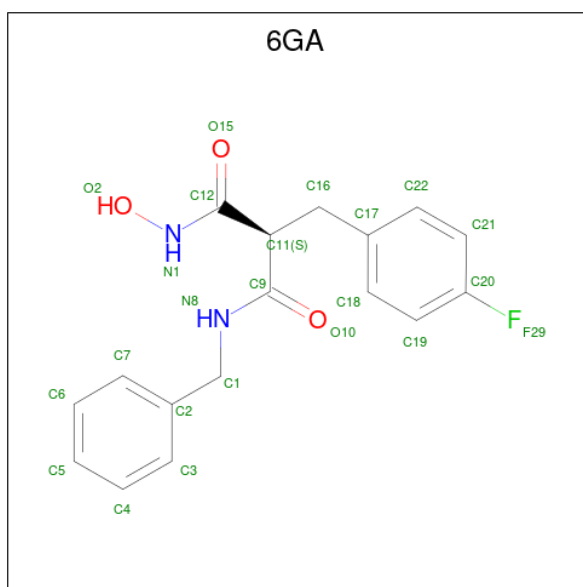
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	1	Total	Zn	0	0
			1	1		
5	B	1	Total	Zn	0	0
			1	1		

- Molecule 6 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: C₈H₁₅NO₆).



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

- Molecule 7 is (2S)-N 1 -benzyl-2-[(4-fluorophenyl)methyl]-N 3 -hydroxypropanediamide (CCD ID: 6GA) (formula: C₁₇H₁₇FN₂O₃).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	F	N	O		
7	A	1	46	34	2	4	6	0	1
7	B	1	23	17	1	2	3	0	0

- Molecule 8 is water.


Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
8	A	34	34	34	0	0
8	B	15	15	15	0	0

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

Chain E:  50% 50%

MAG1
MAG2

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

Chain D:  67% 33%

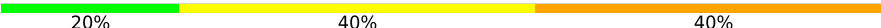
MAG1
MAG2
BMA3

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

Chain G:  33% 33% 33%

MAG1
MAG2
BMA3

- Molecule 4: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain F:  20% 40% 40%

MAG1
MAG2
BMA3
MAN4
MAN5

4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	73.54Å 134.33Å 127.58Å 90.00° 91.71° 90.00°	Depositor
Resolution (Å)	73.51 – 2.80 73.51 – 2.80	Depositor EDS
% Data completeness (in resolution range)	99.5 (73.51-2.80) 99.5 (73.51-2.80)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.87 (at 2.82Å)	Xtrriage
Refinement program	PHENIX 1.8.4_1496	Depositor
R, R_{free}	0.205 , 0.276 0.215 , 0.277	Depositor DCC
R_{free} test set	3076 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å ²)	75.8	Xtrriage
Anisotropy	0.234	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 46.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	0.029 for h,-k,-l	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	15067	wwPDB-VP
Average B, all atoms (Å ²)	74.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.64% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, BMA, MAN, 6GA, NAG

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# $ Z > 5$	RMSZ	# $ Z > 5$
1	A	0.70	0/7605	0.98	14/10307 (0.1%)
1	B	0.55	1/7365 (0.0%)	0.94	11/9981 (0.1%)
All	All	0.63	1/14970 (0.0%)	0.96	25/20288 (0.1%)

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	B	0	1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	196	VAL	CA-CB	5.21	1.59	1.55

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	655	ARG	CA-C-N	7.11	128.73	119.84
1	B	655	ARG	C-N-CA	7.11	128.73	119.84
1	B	328	ILE	CA-C-N	6.87	126.56	119.56
1	B	328	ILE	C-N-CA	6.87	126.56	119.56
1	B	62	PHE	CA-C-N	6.62	126.12	119.24
1	B	62	PHE	C-N-CA	6.62	126.12	119.24
1	A	332	ALA	CA-C-N	-6.44	114.09	120.98
1	A	332	ALA	C-N-CA	-6.44	114.09	120.98
1	A	74	ILE	N-CA-C	6.21	113.70	107.55
1	A	605	LEU	CA-C-N	6.13	132.74	121.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	605	LEU	C-N-CA	6.13	132.74	121.70
1	A	577	TRP	N-CA-C	6.08	117.91	111.28
1	A	87	THR	N-CA-C	-5.99	105.63	113.12
1	B	352	ASP	CA-C-N	5.98	127.32	119.84
1	B	352	ASP	C-N-CA	5.98	127.32	119.84
1	B	937	THR	N-CA-C	-5.61	108.23	114.62
1	A	140	LEU	N-CA-C	5.37	117.15	108.34
1	B	924	GLN	N-CA-C	-5.35	106.51	114.64
1	A	729	TYR	N-CA-C	-5.34	103.44	110.33
1	A	764	ALA	CA-C-N	-5.29	113.23	119.84
1	A	764	ALA	C-N-CA	-5.29	113.23	119.84
1	B	922	GLU	N-CA-C	-5.10	103.41	110.35
1	A	56	ALA	N-CA-C	5.08	117.71	109.79
1	A	400	GLU	N-CA-C	-5.08	105.66	111.14
1	A	54	PRO	N-CA-C	5.00	118.35	110.80

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	889	LEU	Peptide

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	7413	0	7339	191	0
1	B	7185	0	7127	216	0
2	C	28	0	25	0	0
2	E	28	0	25	0	0
3	D	39	0	34	1	0
3	G	39	0	34	1	0
4	F	61	0	52	2	0
5	A	1	0	0	0	0
5	B	1	0	0	0	0
6	A	84	0	78	1	0
6	B	70	0	65	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	A	46	0	0	2	0
7	B	23	0	0	0	0
8	A	34	0	0	9	0
8	B	15	0	0	6	0
All	All	15067	0	14779	412	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 14.

All (412) 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)
6:A:1010:NAG:O4	8:A:1101:HOH:O	1.88	0.91
1:A:88:SER:OG	8:A:1102:HOH:O	1.92	0.88
1:B:72:VAL:HG23	1:B:73:VAL:HG23	1.57	0.85
1:A:273:SER:O	4:F:5:MAN:O4	1.95	0.84
1:A:278:THR:HG22	1:A:280:SER:H	1.43	0.84
1:B:622:LYS:HZ3	1:B:654:LEU:HA	1.47	0.79
1:B:205:ARG:HH21	1:B:212:ASP:HB3	1.49	0.78
1:A:570:VAL:HG12	1:A:577:TRP:HD1	1.48	0.77
1:A:605:LEU:HA	1:A:606:LYS:HB2	1.64	0.77
1:A:889:LEU:H	1:A:890:GLY:HA3	1.49	0.76
1:A:837:LEU:HD22	1:A:862:ILE:HG12	1.69	0.75
1:B:152:VAL:HG11	1:B:156:LEU:HD11	1.70	0.73
1:A:590:LEU:HD11	1:A:605:LEU:HD13	1.71	0.73
1:A:113:LYS:HD2	1:A:146:GLU:HG2	1.70	0.72
1:B:464:MET:HG3	1:B:629:GLY:HA2	1.72	0.72
1:B:219:ASN:OD1	8:B:1101:HOH:O	2.08	0.71
1:A:962:HIS:O	8:A:1103:HOH:O	2.08	0.71
1:A:138:LYS:HB3	1:A:151:LEU:HB2	1.73	0.70
1:B:70:PRO:HB2	1:B:72:VAL:HG22	1.72	0.70
1:B:802:THR:OG1	1:B:836:LYS:NZ	2.23	0.70
1:A:512:GLY:O	1:A:514:CYS:N	2.25	0.70
1:B:563:GLN:HE22	1:B:585:LEU:HA	1.57	0.70
1:A:298:TYR:HH	1:A:365:THR:HG1	1.39	0.69
1:B:565:ARG:NH1	1:B:584:TYR:OH	2.25	0.69
1:A:311:GLU:HG2	1:A:317:TYR:HA	1.75	0.69
1:A:571:PHE:HZ	1:A:947:LYS:HG2	1.56	0.69
1:B:802:THR:HG23	1:B:836:LYS:HZ1	1.58	0.68
1:A:338:ASN:HB2	1:A:341:LEU:O	1.94	0.68
1:A:732:PRO:HB2	1:A:736:ARG:HH21	1.59	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:622:LYS:NZ	1:B:654:LEU:HA	2.09	0.67
1:B:742:LYS:O	1:B:751:ARG:NH2	2.27	0.67
1:A:515:HIS:CD2	1:A:517:ASP:H	2.12	0.67
1:A:390:TRP:HE1	1:A:492:ASN:ND2	1.93	0.67
1:B:856:ALA:HB1	1:B:896:MET:HG2	1.76	0.67
1:A:945:LEU:HD22	1:A:949:LEU:HD22	1.76	0.66
1:B:150:LEU:HD11	1:B:166:MET:HE2	1.77	0.66
1:A:82:VAL:HG12	1:A:84:PRO:HD3	1.77	0.66
1:A:790:VAL:HG12	1:A:794:VAL:HG23	1.76	0.66
1:A:67:LEU:O	8:A:1104:HOH:O	2.13	0.66
1:A:122:LEU:HD11	1:A:162:TYR:HB3	1.77	0.65
1:B:591:THR:OG1	1:B:624:ASN:O	2.13	0.65
1:A:205:ARG:HH21	1:A:212:ASP:HB3	1.61	0.64
1:B:83:HIS:HB3	1:B:92:VAL:HG23	1.79	0.64
1:A:108:ILE:HB	1:A:150:LEU:HB2	1.78	0.64
1:A:122:LEU:HB2	1:A:137:LEU:HD11	1.79	0.63
1:B:465:LEU:HD13	1:B:538:MET:HE2	1.79	0.63
1:A:571:PHE:N	1:A:574:ASP:OD2	2.31	0.63
1:B:239:VAL:HG12	1:B:240:LYS:HG2	1.80	0.63
1:A:465:LEU:HD22	1:A:538:MET:HE2	1.81	0.63
1:A:129:ARG:NH2	1:A:155:LYS:O	2.28	0.62
1:B:625:VAL:C	1:B:627:SER:H	2.08	0.62
1:B:95:GLU:HG2	1:B:168:PHE:HE2	1.63	0.62
1:B:946:GLU:OE2	1:B:947:LYS:HE2	1.99	0.62
1:B:408:TYR:HB3	1:B:411:LEU:HD12	1.82	0.62
1:A:877:ARG:HG2	1:A:917:PHE:CD1	2.35	0.61
1:A:571:PHE:CZ	1:A:947:LYS:HG2	2.35	0.61
1:A:537:MET:HG3	1:A:587:HIS:HB3	1.81	0.61
1:A:354:LYS:HE2	1:A:785:ASN:OD1	2.00	0.61
1:A:697:LEU:HD12	1:A:746:TRP:HZ3	1.65	0.61
1:A:145:HIS:HB3	1:A:147:GLN:HG3	1.82	0.61
1:A:169:GLN:NE2	8:A:1106:HOH:O	2.28	0.61
1:A:905:PHE:HB2	1:A:938:ILE:HD13	1.82	0.61
1:A:739:TRP:CE3	1:A:790:VAL:HG11	2.36	0.61
1:B:82:VAL:HG12	1:B:84:PRO:HD3	1.84	0.60
1:B:568:GLN:HG2	1:B:940:LYS:HD2	1.83	0.60
1:B:312:LYS:O	1:B:315:ASP:N	2.33	0.60
1:B:739:TRP:NE1	1:B:769:LYS:HG2	2.17	0.60
1:B:776:GLN:HB3	1:B:784:LEU:HD22	1.83	0.60
1:A:659:ARG:NH1	1:A:690:GLU:OE2	2.35	0.59
1:B:863:ALA:HA	1:B:869:GLN:HA	1.83	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:108:ILE:HB	1:B:150:LEU:HB2	1.84	0.59
1:B:140:LEU:HD22	1:B:151:LEU:HD11	1.83	0.59
1:A:508:PHE:O	1:A:510:SER:N	2.34	0.59
1:A:729:TYR:O	1:A:731:LYS:N	2.36	0.59
1:A:537:MET:O	1:A:540:THR:OG1	2.16	0.58
1:A:390:TRP:HE1	1:A:492:ASN:HD22	1.50	0.58
1:B:332:ALA:HB3	1:B:333:PRO:HD3	1.84	0.58
1:B:338:ASN:HB2	1:B:341:LEU:O	2.04	0.58
1:A:80:LEU:HB3	1:A:222:ILE:HD13	1.86	0.58
1:B:226:ARG:HG3	1:B:227:GLU:O	2.03	0.58
1:B:375:GLN:HA	1:B:379:ASN:HD22	1.69	0.58
1:A:873:TRP:CZ2	1:A:877:ARG:HD3	2.39	0.58
1:B:236:MET:HE1	1:B:320:LEU:HD22	1.86	0.58
1:B:622:LYS:HZ3	1:B:654:LEU:HD23	1.69	0.58
1:B:386:TRP:CD1	1:B:446:ILE:HD13	2.39	0.57
1:B:566:PHE:HE1	1:B:672:ALA:HB2	1.69	0.57
1:B:110:LEU:HD11	1:B:166:MET:HE1	1.86	0.57
1:B:837:LEU:HB2	1:B:871:LEU:HD21	1.85	0.57
1:B:258:LYS:HG2	8:B:1101:HOH:O	2.05	0.56
1:B:607:SER:OG	1:B:608:LYS:N	2.38	0.56
3:G:2:NAG:H83	3:G:2:NAG:H3	1.88	0.56
1:A:570:VAL:HG12	1:A:577:TRP:CD1	2.36	0.56
1:A:393:GLU:HA	1:A:393:GLU:OE2	2.03	0.56
1:B:870:GLN:OE1	1:B:910:LYS:NZ	2.38	0.56
1:A:135:LYS:HE2	1:A:136:GLU:HG3	1.87	0.56
1:B:543:LEU:HB2	8:B:1107:HOH:O	2.06	0.56
1:A:197:THR:HB	1:A:199:PHE:CE1	2.40	0.55
1:B:358:ALA:HB2	1:B:748:ARG:NE	2.22	0.55
1:A:452:GLU:CD	1:A:452:GLU:H	2.14	0.55
1:B:92:VAL:HG12	1:B:169:GLN:HG2	1.88	0.55
1:A:245:GLU:HG2	1:A:246:GLY:H	1.71	0.55
1:A:805:TRP:CD2	1:A:836:LYS:HD3	2.42	0.55
1:B:620:TRP:NE1	1:B:646:GLN:OE1	2.29	0.55
1:A:559:LEU:HD21	1:A:621:VAL:HG21	1.88	0.55
1:B:840:LEU:HB3	1:B:858:LEU:HD21	1.88	0.55
1:A:96:LYS:NZ	8:A:1105:HOH:O	2.26	0.55
1:A:311:GLU:CG	1:A:317:TYR:HA	2.36	0.54
1:A:813:GLU:HG2	1:A:849:VAL:HG13	1.88	0.54
1:B:336:MET:HB3	1:B:343:THR:OG1	2.07	0.54
1:A:563:GLN:HE21	1:A:605:LEU:HD23	1.73	0.54
1:A:526:ALA:O	1:A:530:GLU:N	2.28	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:915:LYS:HB2	1:B:915:LYS:NZ	2.22	0.54
1:A:57:THR:HG21	1:A:141:SER:HB3	1.89	0.54
1:B:817:SER:O	1:B:821:GLN:HG3	2.08	0.54
1:A:623:PHE:N	1:A:635:TYR:OH	2.39	0.53
1:B:202:THR:HG22	1:B:205:ARG:CZ	2.38	0.53
1:B:564:GLU:OE1	1:B:674:ARG:NH2	2.40	0.53
1:B:873:TRP:CZ2	1:B:877:ARG:HD3	2.43	0.53
1:A:141:SER:HA	1:A:148:ILE:HG22	1.91	0.53
1:B:235:ASN:ND2	1:B:259:MET:HE1	2.23	0.53
1:B:484:LYS:N	8:B:1105:HOH:O	2.32	0.53
1:B:388:ASP:CG	1:B:492:ASN:HB2	2.34	0.53
1:B:602:ARG:O	1:B:603:HIS:HB2	2.08	0.53
1:A:298:TYR:CE1	1:A:361:LYS:HE3	2.44	0.53
1:A:732:PRO:HB2	1:A:736:ARG:NH2	2.23	0.52
1:B:202:THR:O	1:B:204:ALA:N	2.38	0.52
1:B:551:VAL:HG21	1:B:674:ARG:HH12	1.74	0.52
1:A:374:HIS:CE1	1:A:393:GLU:OE2	2.62	0.52
1:A:434:ARG:HH22	1:A:454:SER:HB3	1.73	0.52
1:B:294:ASN:O	1:B:297:HIS:ND1	2.43	0.52
1:A:278:THR:HB	1:A:282:VAL:H	1.74	0.52
1:B:741:ASP:OD2	1:B:788:THR:HB	2.10	0.52
1:B:592:TYR:CE1	1:B:601:HIS:HB2	2.45	0.52
1:A:236:MET:HB3	1:A:237:PRO:HD2	1.92	0.52
1:A:397:LYS:O	1:A:400:GLU:HB2	2.10	0.52
1:A:727:LEU:O	1:A:731:LYS:HB2	2.11	0.52
1:B:792:LYS:HB2	1:B:823:LYS:HG2	1.92	0.52
1:B:614:LEU:HD12	1:B:615:PRO:HD2	1.91	0.51
1:B:843:LEU:O	1:B:846:GLU:HG2	2.10	0.51
1:A:238:LYS:NZ	8:A:1107:HOH:O	2.36	0.51
1:B:387:ASN:OD1	1:B:387:ASN:N	2.42	0.51
1:A:436:ILE:HD11	1:A:542:THR:HG22	1.92	0.51
1:B:877:ARG:HA	1:B:917:PHE:CE1	2.45	0.51
1:A:366:ARG:HG2	1:A:400:GLU:OE1	2.10	0.51
1:A:877:ARG:HG2	1:A:917:PHE:CE1	2.45	0.51
1:B:219:ASN:HB3	1:B:255:THR:HG22	1.93	0.51
1:A:95:GLU:HG2	1:A:168:PHE:HE1	1.76	0.51
1:A:845:MET:O	1:A:886:LYS:HE3	2.11	0.51
1:B:659:ARG:NH1	1:B:690:GLU:OE1	2.43	0.51
1:B:738:SER:O	1:B:751:ARG:HD3	2.11	0.51
1:B:537:MET:HB2	1:B:587:HIS:HB2	1.92	0.50
1:B:690:GLU:OE2	1:B:691:THR:N	2.45	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:515:HIS:CG	1:A:516:SER:N	2.78	0.50
1:A:832:LYS:HD2	1:A:867:LYS:HG3	1.93	0.50
1:B:547:ILE:HD11	1:B:632:ILE:HG12	1.94	0.50
1:A:334:GLY:HA2	1:A:345:ARG:HG3	1.92	0.50
1:B:625:VAL:HA	1:B:658:ASP:OD2	2.11	0.50
1:A:257:VAL:HG11	1:A:487:TYR:CE1	2.46	0.50
1:A:285:SER:HB2	1:A:324:ASP:OD1	2.11	0.50
1:B:217:LYS:HE3	1:B:489:ASN:OD1	2.11	0.50
1:B:392:ASN:OD1	1:B:392:ASN:N	2.44	0.50
1:A:697:LEU:HD12	1:A:746:TRP:CZ3	2.45	0.50
1:A:729:TYR:C	1:A:731:LYS:H	2.19	0.50
1:B:710:MET:HE1	1:B:945:LEU:HD21	1.94	0.50
1:A:605:LEU:HA	1:A:606:LYS:CB	2.36	0.50
1:A:607:SER:OG	1:A:608:LYS:N	2.37	0.50
1:B:64:TRP:HB2	1:B:109:ILE:CD1	2.42	0.50
1:B:180:TYR:OH	1:B:330:ASP:O	2.28	0.50
1:A:110:LEU:O	1:A:148:ILE:HG12	2.12	0.50
1:B:310:TYR:CZ	1:B:373:ALA:HB2	2.47	0.50
1:A:65:GLN:OE1	1:A:65:GLN:N	2.45	0.49
1:A:355:THR:OG1	1:A:820:GLU:HB2	2.11	0.49
1:B:464:MET:HE1	1:B:541:TRP:CE2	2.47	0.49
1:B:771:ALA:O	1:B:775:SER:OG	2.29	0.49
1:A:245:GLU:HG2	1:A:246:GLY:N	2.27	0.49
1:A:358:ALA:HB2	1:A:748:ARG:CZ	2.42	0.49
1:A:776:GLN:O	1:A:780:SER:OG	2.25	0.49
1:B:235:ASN:CG	1:B:259:MET:HE1	2.37	0.49
1:A:323:LEU:HD21	1:A:372:LEU:HD22	1.93	0.49
1:B:714:ASN:O	1:B:716:SER:N	2.45	0.49
1:B:822:ASN:OD1	8:B:1102:HOH:O	2.18	0.49
1:B:716:SER:HA	1:B:719:SER:HB3	1.95	0.49
1:A:157:THR:HB	1:A:160:LEU:HD12	1.94	0.48
1:B:69:LEU:HD22	1:B:109:ILE:HG22	1.95	0.48
1:B:103:ASN:OD1	6:B:1010:NAG:N2	2.46	0.48
1:B:635:TYR:HB3	1:B:639:GLY:HA3	1.95	0.48
1:B:697:LEU:HD21	1:B:750:LEU:HD12	1.94	0.48
1:B:884:LEU:O	1:B:884:LEU:HD23	2.13	0.48
1:A:720:GLU:HG2	1:A:724:ARG:NH2	2.28	0.48
1:A:738:SER:O	1:A:751:ARG:HD2	2.14	0.48
1:A:434:ARG:HD2	1:A:438:LYS:HD3	1.94	0.48
1:B:731:LYS:N	1:B:732:PRO:HD2	2.27	0.48
1:A:65:GLN:H	1:A:65:GLN:CD	2.22	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:213:GLU:HG2	1:B:385:TRP:HZ3	1.77	0.48
1:B:567:LEU:HD22	1:B:580:LEU:HD13	1.95	0.48
1:B:739:TRP:HE3	1:B:790:VAL:HG11	1.79	0.48
1:B:584:TYR:HB3	1:B:586:TRP:CZ3	2.49	0.48
1:A:197:THR:HG23	1:A:266:TYR:O	2.14	0.48
1:A:484:LYS:HE2	1:A:485:PHE:CZ	2.48	0.48
1:A:393:GLU:OE1	7:A:1015[B]:6GA:O15	2.32	0.48
1:A:500:SER:OG	1:A:535:LYS:HB2	2.14	0.48
1:B:406:ALA:O	1:B:409:PRO:HD3	2.14	0.48
1:A:472:GLU:O	1:A:476:LYS:HG2	2.14	0.48
1:B:64:TRP:HB2	1:B:109:ILE:HD12	1.96	0.48
1:A:450:PHE:HB3	1:A:892[A]:TYR:OH	2.14	0.47
1:B:378:GLY:HA2	1:B:392:ASN:ND2	2.29	0.47
1:A:96:LYS:HE2	1:A:163:TYR:HB3	1.95	0.47
1:B:793:ILE:O	1:B:796:SER:OG	2.31	0.47
1:A:293:ARG:O	1:A:296:THR:OG1	2.23	0.47
1:B:63:PRO:HB3	1:B:107:PHE:CD2	2.50	0.47
1:B:933:THR:O	1:B:937:THR:OG1	2.29	0.47
1:A:526:ALA:HB1	1:A:530:GLU:HG3	1.96	0.47
1:B:316:ILE:HB	1:B:376:TRP:HE1	1.79	0.47
1:B:414:ASP:OD2	1:B:657:LYS:NZ	2.48	0.47
1:A:366:ARG:NH2	8:A:1111:HOH:O	2.48	0.47
1:A:411:LEU:HD23	1:A:411:LEU:HA	1.72	0.47
1:A:557:CYS:O	1:A:614:LEU:N	2.48	0.47
1:B:232:ALA:O	1:B:253:PHE:HZ	1.98	0.47
1:B:481:TYR:N	8:B:1105:HOH:O	2.48	0.47
1:B:739:TRP:CZ3	1:B:755:LEU:HD13	2.49	0.47
1:B:214:PRO:HG3	1:B:386:TRP:CZ2	2.50	0.47
1:B:722:LEU:HG	1:B:956:LEU:HD11	1.95	0.47
1:A:519:LYS:HG2	1:A:520:MET:H	1.80	0.47
1:A:732:PRO:O	1:A:736:ARG:HG3	2.15	0.47
1:A:322:LYS:NZ	1:A:324:ASP:OD2	2.35	0.46
1:B:560:ARG:HA	1:B:611:THR:HG22	1.97	0.46
3:D:1:NAG:H62	3:D:2:NAG:C7	2.45	0.46
1:A:548:PRO:HB3	1:A:586:TRP:CE3	2.51	0.46
1:A:776:GLN:HB3	1:A:784:LEU:HD13	1.97	0.46
1:B:479:ILE:C	1:B:481:TYR:H	2.23	0.46
1:B:540:THR:O	1:B:544:GLN:HB2	2.15	0.46
1:B:656:PRO:HG3	1:B:659:ARG:HH21	1.80	0.46
1:A:571:PHE:CD2	1:A:673:GLY:HA3	2.50	0.46
1:B:278:THR:HG21	1:B:307:LEU:HD23	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:915:LYS:HB2	1:B:915:LYS:HZ3	1.80	0.46
1:B:403:ALA:O	1:B:407:THR:OG1	2.33	0.46
1:A:132:LYS:HA	1:A:133:PRO:HA	1.54	0.46
1:A:398:TYR:OH	1:A:466:LYS:HD3	2.16	0.46
1:A:509:THR:OG1	1:A:510:SER:N	2.49	0.46
1:A:659:ARG:HH11	1:A:690:GLU:CD	2.23	0.46
1:B:272:HIS:CD2	1:B:290:PRO:HB3	2.50	0.46
1:A:604:ILE:HG22	1:A:605:LEU:O	2.15	0.46
1:B:375:GLN:HA	1:B:379:ASN:ND2	2.30	0.46
1:B:387:ASN:HB3	1:B:439:PRO:HA	1.97	0.46
1:A:577:TRP:CZ3	1:A:581:GLN:HG3	2.51	0.46
1:A:64:TRP:CD2	1:A:70:PRO:HG3	2.51	0.46
1:A:622:LYS:HE3	1:A:658:ASP:HB3	1.98	0.46
1:A:475:GLN:O	1:A:479:ILE:HG13	2.16	0.45
1:A:731:LYS:N	1:A:732:PRO:HD2	2.31	0.45
1:B:548:PRO:HB3	1:B:586:TRP:CE3	2.51	0.45
1:A:67:LEU:HA	1:A:145:HIS:CD2	2.51	0.45
1:B:959:ASN:HA	1:B:963:HIS:HB3	1.98	0.45
1:A:257:VAL:HG12	1:A:258:LYS:H	1.82	0.45
1:B:128:SER:HA	1:B:131:MET:HB3	1.96	0.45
1:B:313:TYR:CZ	1:B:475:GLN:HG3	2.51	0.45
1:B:812:TYR:HB2	1:B:824:ILE:HG21	1.97	0.45
1:B:826:TYR:OH	1:B:865:ARG:NH2	2.47	0.45
1:A:521:THR:HG22	1:A:522:SER:H	1.82	0.45
1:B:574:ASP:O	1:B:577:TRP:HB3	2.16	0.45
1:A:683:MET:O	1:A:683:MET:HG2	2.15	0.45
1:A:930:ILE:HD12	1:A:930:ILE:HA	1.76	0.45
1:A:755:LEU:HD23	1:A:755:LEU:HA	1.77	0.45
1:A:884:LEU:HD23	1:A:884:LEU:HA	1.68	0.45
1:B:625:VAL:O	1:B:627:SER:N	2.50	0.45
1:B:889:LEU:O	1:B:928:LEU:HD11	2.17	0.45
1:A:442:THR:HB	1:A:445:GLN:H	1.80	0.45
1:A:802:THR:OG1	1:A:836:LYS:NZ	2.24	0.45
1:B:156:LEU:HD23	1:B:162:TYR:CE2	2.52	0.45
1:B:298:TYR:CE1	1:B:361:LYS:HE3	2.52	0.45
1:B:422:PHE:HA	1:B:425:ILE:HD12	1.99	0.45
1:A:655:ARG:O	1:A:658:ASP:HB2	2.17	0.45
1:B:160:LEU:HD12	1:B:160:LEU:HA	1.67	0.45
1:B:622:LYS:HZ3	1:B:654:LEU:CD2	2.29	0.45
1:B:55:VAL:HG22	1:B:56:ALA:H	1.82	0.44
1:B:101:VAL:HG23	1:B:160:LEU:O	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:620:TRP:CZ3	1:B:622:LYS:HE2	2.52	0.44
1:B:434:ARG:HH12	1:B:449:MET:HE1	1.81	0.44
1:B:451:ASP:OD1	1:B:453:VAL:HB	2.16	0.44
1:B:622:LYS:HD3	1:B:654:LEU:HD22	1.99	0.44
1:A:239:VAL:HG22	1:A:254:GLU:HG2	2.00	0.44
1:A:305:LYS:HE3	1:A:408:TYR:CZ	2.52	0.44
1:A:397:LYS:HB3	1:A:459:ALA:HB2	1.99	0.44
1:A:95:GLU:HG2	1:A:168:PHE:CE1	2.51	0.44
1:B:452:GLU:H	1:B:452:GLU:CD	2.26	0.44
1:B:725:TYR:CE1	1:B:729:TYR:HD2	2.35	0.44
1:A:571:PHE:CE2	1:A:673:GLY:HA3	2.52	0.44
1:B:74:ILE:HA	1:B:75:PRO:HD2	1.83	0.44
1:B:328:ILE:HA	1:B:329:PRO:HD3	1.81	0.44
1:B:763:HIS:CE1	1:B:765:PRO:HD2	2.52	0.44
1:A:635:TYR:HB3	1:A:639:GLY:HA3	1.99	0.44
1:A:889:LEU:O	1:A:928:LEU:HD11	2.17	0.44
1:B:651:HIS:O	1:B:654:LEU:HB2	2.17	0.44
1:B:813:GLU:HB3	1:B:849:VAL:HG13	2.00	0.44
1:B:605:LEU:O	1:B:607:SER:N	2.51	0.44
1:B:537:MET:HB2	1:B:587:HIS:CB	2.48	0.44
1:A:515:HIS:CG	1:A:516:SER:H	2.36	0.44
1:B:77:HIS:ND1	1:B:219:ASN:HB2	2.33	0.44
1:B:595:SER:HB3	1:B:618:THR:HB	1.99	0.44
1:B:790:VAL:HG12	1:B:794:VAL:HG23	1.99	0.44
1:A:540:THR:HG22	1:A:544:GLN:OE1	2.18	0.43
1:A:577:TRP:O	1:A:581:GLN:HG2	2.18	0.43
1:B:552:VAL:HB	1:B:635:TYR:HD1	1.83	0.43
1:B:784:LEU:HG	1:B:785:ASN:N	2.33	0.43
1:B:921:LEU:HD23	1:B:921:LEU:HA	1.84	0.43
1:A:211:PHE:O	1:A:213:GLU:N	2.51	0.43
1:A:294:ASN:OD1	1:A:294:ASN:N	2.46	0.43
1:B:77:HIS:CE1	1:B:219:ASN:HB2	2.53	0.43
1:B:449:MET:HE3	1:B:449:MET:HB3	1.83	0.43
1:A:563:GLN:NE2	1:A:605:LEU:HD23	2.33	0.43
1:A:906:SER:O	1:A:942:ILE:HG12	2.19	0.43
1:B:63:PRO:HB3	1:B:107:PHE:CE2	2.53	0.43
1:B:100:LEU:HD13	1:B:161:LYS:HE2	2.01	0.43
4:F:3:BMA:H62	4:F:5:MAN:H5	2.00	0.43
1:B:666:VAL:HG21	1:B:683:MET:HE1	1.99	0.43
1:A:331:PHE:CE2	1:A:333:PRO:HG2	2.53	0.43
1:A:479:ILE:CG2	1:A:483:LYS:HE3	2.49	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:311:GLU:HG2	1:B:317:TYR:HA	2.01	0.43
1:B:880:TRP:CZ2	1:B:884:LEU:HD12	2.53	0.43
1:B:603:HIS:CG	1:B:604:ILE:H	2.37	0.43
1:B:843:LEU:HD22	1:B:849:VAL:HB	2.01	0.43
1:A:592:TYR:CE1	1:A:601:HIS:HB2	2.54	0.43
1:B:464:MET:CG	1:B:629:GLY:HA2	2.44	0.43
1:B:877:ARG:HG2	1:B:917:PHE:CD1	2.53	0.43
1:A:718:ILE:HD12	1:A:949:LEU:HD11	2.00	0.42
1:A:744:SER:HB2	1:A:745:VAL:H	1.70	0.42
1:A:95:GLU:O	1:A:165:ALA:HA	2.19	0.42
1:A:492:ASN:OD1	1:A:496:TRP:NE1	2.51	0.42
1:B:326:ILE:HG23	1:B:328:ILE:HD11	2.01	0.42
1:B:696:LEU:HD23	1:B:750:LEU:HD11	2.01	0.42
1:A:138:LYS:CB	1:A:151:LEU:HB2	2.47	0.42
1:A:499:LEU:HD23	1:A:499:LEU:HA	1.94	0.42
1:B:448:GLU:HA	1:B:895:ARG:HH21	1.83	0.42
1:B:662:LEU:O	1:B:666:VAL:HG23	2.19	0.42
1:A:659:ARG:HD2	1:A:690:GLU:OE1	2.19	0.42
7:A:1015[B]:6GA:C18	7:A:1015[B]:6GA:C12	2.98	0.42
1:A:77:HIS:CD2	1:A:78:TYR:N	2.88	0.42
1:B:54:PRO:O	1:B:55:VAL:HB	2.19	0.42
1:B:720:GLU:O	1:B:724:ARG:HG3	2.19	0.42
1:B:926:SER:O	1:B:931:PHE:HE2	2.02	0.42
1:A:226:ARG:HD2	1:A:230:HIS:O	2.20	0.42
1:B:130:TYR:HE2	1:B:153:PRO:HG2	1.83	0.42
1:B:433:SER:O	1:B:545:LYS:HD3	2.20	0.42
1:B:448:GLU:OE2	1:B:928:LEU:HA	2.20	0.42
1:B:894:ILE:HD13	1:B:894:ILE:HA	1.90	0.42
1:A:93:ALA:HB3	1:A:168:PHE:CE2	2.54	0.42
1:A:299:ALA:O	1:A:303:SER:OG	2.21	0.42
1:B:544:GLN:NE2	1:B:585:LEU:O	2.52	0.42
1:B:665:ASP:O	1:B:669:LEU:HG	2.20	0.42
1:A:91:PHE:CE2	1:A:170:ALA:HB3	2.55	0.42
1:B:127:ASP:OD1	1:B:129:ARG:HD2	2.19	0.42
1:B:260:SER:OG	1:B:382:THR:HG21	2.20	0.41
1:B:859:LEU:HA	1:B:859:LEU:HD23	1.81	0.41
1:A:54:PRO:HG2	1:A:65:GLN:HA	2.01	0.41
1:A:113:LYS:HD2	1:A:146:GLU:CG	2.45	0.41
1:A:162:TYR:N	1:A:162:TYR:CD1	2.88	0.41
1:B:446:ILE:O	1:B:449:MET:HB2	2.20	0.41
1:B:545:LYS:HE3	1:B:565:ARG:HH12	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:352:ASP:HA	1:A:353:PRO:HD3	1.92	0.41
1:A:780:SER:OG	1:A:784:LEU:HB2	2.20	0.41
1:B:213:GLU:HG2	1:B:385:TRP:CZ3	2.54	0.41
1:B:622:LYS:HD2	1:B:658:ASP:OD1	2.20	0.41
1:B:649:GLN:HB2	1:B:650:ASN:H	1.75	0.41
1:B:856:ALA:C	1:B:896:MET:HE2	2.45	0.41
1:A:141:SER:OG	1:A:143:PRO:HD3	2.21	0.41
1:B:122:LEU:O	1:B:130:TYR:HB3	2.20	0.41
1:B:135:LYS:HD3	1:B:135:LYS:HA	1.90	0.41
1:B:669:LEU:HA	1:B:669:LEU:HD23	1.81	0.41
1:B:833:HIS:HB3	1:B:836:LYS:HB2	2.02	0.41
1:A:485:PHE:O	1:A:486:SER:C	2.64	0.41
1:B:56:ALA:HA	1:B:57:THR:HA	1.84	0.41
1:B:312:LYS:HB3	1:B:312:LYS:HE2	1.72	0.41
1:B:704:GLU:HG2	1:B:708:HIS:CD2	2.55	0.41
1:B:185:ARG:HG2	1:B:186:THR:N	2.35	0.41
1:B:197:THR:HB	1:B:199:PHE:CE1	2.56	0.41
1:A:137:LEU:HD23	1:A:137:LEU:HA	1.86	0.41
1:A:184:TYR:CE1	1:A:192:ARG:HB2	2.56	0.41
1:A:220:PHE:O	1:A:256:THR:HG23	2.20	0.41
1:A:687:LEU:HD11	1:A:699:GLY:HA3	2.03	0.41
1:B:93:ALA:HB3	1:B:168:PHE:CE1	2.56	0.41
1:B:197:THR:HG23	1:B:266:TYR:O	2.21	0.41
1:B:352:ASP:O	1:B:356:SER:N	2.53	0.41
1:B:366:ARG:HD3	1:B:413:PHE:CZ	2.55	0.41
1:B:555:ASP:HB2	1:B:560:ARG:NH1	2.36	0.41
1:B:820:GLU:O	1:B:824:ILE:HG13	2.21	0.41
1:B:845:MET:HE3	1:B:845:MET:HB3	1.82	0.41
1:A:283:LYS:NZ	8:A:1108:HOH:O	2.36	0.41
1:A:949:LEU:HB3	1:A:950:PRO:HD3	2.03	0.41
1:B:634:HIS:NE2	1:B:674:ARG:HB3	2.36	0.41
1:A:57:THR:CG2	1:A:141:SER:HB3	2.51	0.40
1:A:217:LYS:NZ	1:A:488:ARG:O	2.48	0.40
1:A:318:TYR:HA	1:A:319:PRO:HD3	1.77	0.40
1:A:521:THR:C	1:A:523:ASN:H	2.28	0.40
1:A:778:MET:HG3	1:A:807:TYR:CD2	2.56	0.40
1:A:798:GLY:O	1:A:804:GLY:HA3	2.21	0.40
1:B:202:THR:HB	1:B:203:GLN:H	1.57	0.40
1:B:277:PHE:HA	1:B:282:VAL:O	2.21	0.40
1:B:551:VAL:HG22	1:B:634:HIS:HB3	2.02	0.40
1:B:610:ASP:OD1	1:B:611:THR:N	2.54	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:197:THR:HB	1:A:199:PHE:CZ	2.56	0.40
1:A:371:GLU:O	1:A:374:HIS:HB2	2.21	0.40
1:A:465:LEU:HD12	1:A:465:LEU:HA	1.86	0.40
1:A:791:LEU:HD23	1:A:791:LEU:HA	1.89	0.40
1:B:293:ARG:O	1:B:296:THR:OG1	2.37	0.40
1:B:481:TYR:CE1	1:B:495:LEU:HA	2.56	0.40
1:A:390:TRP:CE2	1:A:391:LEU:HD23	2.56	0.40
1:A:718:ILE:O	1:A:722:LEU:HB2	2.21	0.40
1:B:351:PHE:CE1	1:B:356:SER:HB2	2.57	0.40
1:B:790:VAL:HG12	1:B:790:VAL:O	2.21	0.40
1:A:845:MET:HB3	1:A:845:MET:HE3	1.78	0.40
1:A:889:LEU:N	1:A:890:GLY:HA3	2.22	0.40
1:B:397:LYS:HB3	1:B:459:ALA:HB2	2.03	0.40
1:B:634:HIS:ND1	1:B:669:LEU:HD13	2.36	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	910/967 (94%)	798 (88%)	90 (10%)	22 (2%)	4	17
1	B	877/967 (91%)	748 (85%)	105 (12%)	24 (3%)	4	15
All	All	1787/1934 (92%)	1546 (86%)	195 (11%)	46 (3%)	4	15

All (46) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	212	ASP
1	A	416	TYR
1	A	513	VAL
1	A	888	ASP

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Mol	Chain	Res	Type
1	A	924	GLN
1	B	55	VAL
1	B	438	LYS
1	B	715	ILE
1	A	509	THR
1	A	510	SER
1	A	582	GLU
1	A	606	LYS
1	B	203	GLN
1	B	216	PHE
1	B	239	VAL
1	B	406	ALA
1	B	603	HIS
1	B	606	LYS
1	B	608	LYS
1	B	625	VAL
1	A	216	PHE
1	A	730	PHE
1	A	744	SER
1	A	923	ALA
1	B	60	GLU
1	B	76	LEU
1	B	626	ASP
1	B	650	ASN
1	A	155	LYS
1	A	338	ASN
1	A	511	GLY
1	B	202	THR
1	B	312	LYS
1	B	616	GLU
1	B	617	LYS
1	B	962	HIS
1	A	142	TYR
1	A	415	ASP
1	A	508	PHE
1	B	656	PRO
1	A	60	GLU
1	B	866	PRO
1	A	715	ILE
1	B	534	VAL
1	A	133	PRO
1	B	201	PRO

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	820/870 (94%)	749 (91%)	71 (9%)	9	30
1	B	793/870 (91%)	718 (90%)	75 (10%)	8	26
All	All	1613/1740 (93%)	1467 (91%)	146 (9%)	9	28

All (146) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	60	GLU
1	A	68	ARG
1	A	72	VAL
1	A	87	THR
1	A	92	VAL
1	A	105	THR
1	A	106	GLN
1	A	110	LEU
1	A	121	THR
1	A	140	LEU
1	A	152	VAL
1	A	153	PRO
1	A	169	GLN
1	A	181	LYS
1	A	193	ILE
1	A	212	ASP
1	A	242	ILE
1	A	257	VAL
1	A	259	MET
1	A	273	SER
1	A	275	SER
1	A	311	GLU
1	A	321	SER
1	A	383	MET
1	A	441	GLU
1	A	442	THR
1	A	452	GLU

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Mol	Chain	Res	Type
1	A	466	LYS
1	A	480	GLN
1	A	510	SER
1	A	513	VAL
1	A	521	THR
1	A	522	SER
1	A	525	LEU
1	A	533	GLU
1	A	534	VAL
1	A	540	THR
1	A	543	LEU
1	A	563	GLN
1	A	578	ARG
1	A	587	HIS
1	A	590	LEU
1	A	592	TYR
1	A	594	THR
1	A	605	LEU
1	A	609	THR
1	A	619	SER
1	A	627	SER
1	A	632	ILE
1	A	642	GLN
1	A	683	MET
1	A	684	THR
1	A	686	TYR
1	A	691	THR
1	A	692	SER
1	A	698	GLU
1	A	729	TYR
1	A	733	VAL
1	A	744	SER
1	A	793	ILE
1	A	802	THR
1	A	818	SER
1	A	842	GLU
1	A	864	ARG
1	A	871	LEU
1	A	888	ASP
1	A	891	SER
1	A	930	ILE
1	A	938	ILE

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Mol	Chain	Res	Type
1	A	949	LEU
1	A	960	THR
1	B	96	LYS
1	B	99	VAL
1	B	101	VAL
1	B	109	ILE
1	B	110	LEU
1	B	121	THR
1	B	140	LEU
1	B	152	VAL
1	B	183	THR
1	B	193	ILE
1	B	194	LEU
1	B	202	THR
1	B	231	ILE
1	B	233	LEU
1	B	236	MET
1	B	242	ILE
1	B	274	LEU
1	B	275	SER
1	B	280	SER
1	B	285	SER
1	B	311	GLU
1	B	321	SER
1	B	339	TRP
1	B	359	SER
1	B	374	HIS
1	B	389	ILE
1	B	392	ASN
1	B	395	PHE
1	B	407	THR
1	B	436	ILE
1	B	441	GLU
1	B	464	MET
1	B	472	GLU
1	B	475	GLN
1	B	534	VAL
1	B	537	MET
1	B	547	ILE
1	B	561	LEU
1	B	567	LEU
1	B	568	GLN

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Mol	Chain	Res	Type
1	B	573	GLU
1	B	574	ASP
1	B	588	ILE
1	B	599	VAL
1	B	608	LYS
1	B	618	THR
1	B	622	LYS
1	B	625	VAL
1	B	648	ASN
1	B	655	ARG
1	B	658	ASP
1	B	686	TYR
1	B	705	SER
1	B	717	ASP
1	B	719	SER
1	B	722	LEU
1	B	738	SER
1	B	759	CYS
1	B	767	ILE
1	B	775	SER
1	B	776	GLN
1	B	789	ASP
1	B	802	THR
1	B	813	GLU
1	B	833	HIS
1	B	835	GLU
1	B	836	LYS
1	B	865	ARG
1	B	871	LEU
1	B	893	ASP
1	B	904	HIS
1	B	907	SER
1	B	911	LEU
1	B	913	GLU
1	B	915	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	111	HIS
1	A	447	GLN
1	A	515	HIS

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Mol	Chain	Res	Type
1	A	948	ASN
1	B	203	GLN
1	B	375	GLN
1	B	379	ASN
1	B	821	GLN
1	B	948	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](#)

15 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	C	1	1,2	14,14,15	0.66	1 (7%)	17,19,21	0.45	0
2	NAG	C	2	2	14,14,15	0.38	0	17,19,21	0.42	0
3	NAG	D	1	1,3	14,14,15	0.57	0	17,19,21	0.67	0
3	NAG	D	2	3	14,14,15	1.13	1 (7%)	17,19,21	1.31	1 (5%)
3	BMA	D	3	3	11,11,12	1.09	2 (18%)	15,15,17	1.93	4 (26%)
2	NAG	E	1	1,2	14,14,15	0.66	1 (7%)	17,19,21	0.66	0
2	NAG	E	2	2	14,14,15	0.49	0	17,19,21	0.38	0
4	NAG	F	1	1,4	14,14,15	0.60	0	17,19,21	0.39	0
4	NAG	F	2	4	14,14,15	0.68	1 (7%)	17,19,21	0.70	0
4	BMA	F	3	4	11,11,12	1.36	2 (18%)	15,15,17	0.68	0
4	MAN	F	4	4	11,11,12	1.33	2 (18%)	15,15,17	1.02	1 (6%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	MAN	F	5	4	11,11,12	1.75	3 (27%)	15,15,17	1.63	2 (13%)
3	NAG	G	1	1,3	14,14,15	0.43	0	17,19,21	0.58	0
3	NAG	G	2	3	14,14,15	0.40	0	17,19,21	1.51	3 (17%)
3	BMA	G	3	3	11,11,12	1.39	2 (18%)	15,15,17	1.89	3 (20%)

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	C	1	1,2	-	2/6/23/26	0/1/1/1
2	NAG	C	2	2	-	2/6/23/26	0/1/1/1
3	NAG	D	1	1,3	-	0/6/23/26	0/1/1/1
3	NAG	D	2	3	-	2/6/23/26	0/1/1/1
3	BMA	D	3	3	-	0/2/19/22	0/1/1/1
2	NAG	E	1	1,2	-	2/6/23/26	0/1/1/1
2	NAG	E	2	2	-	3/6/23/26	0/1/1/1
4	NAG	F	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	F	2	4	-	2/6/23/26	0/1/1/1
4	BMA	F	3	4	-	1/2/19/22	0/1/1/1
4	MAN	F	4	4	-	0/2/19/22	0/1/1/1
4	MAN	F	5	4	-	0/2/19/22	0/1/1/1
3	NAG	G	1	1,3	-	2/6/23/26	0/1/1/1
3	NAG	G	2	3	-	5/6/23/26	0/1/1/1
3	BMA	G	3	3	-	0/2/19/22	0/1/1/1

All (15) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	2	NAG	O5-C1	3.95	1.50	1.43
4	F	5	MAN	C4-C5	3.66	1.60	1.53
4	F	5	MAN	C1-C2	2.83	1.59	1.52
3	G	3	BMA	C1-C2	2.82	1.58	1.52
4	F	3	BMA	O5-C1	-2.78	1.39	1.43
4	F	5	MAN	O5-C5	2.53	1.48	1.43
4	F	3	BMA	C2-C3	2.44	1.56	1.52
3	G	3	BMA	O5-C1	2.37	1.47	1.43
2	E	1	NAG	O5-C1	-2.33	1.39	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	1	NAG	O5-C1	-2.32	1.39	1.43
3	D	3	BMA	C1-C2	2.14	1.57	1.52
4	F	4	MAN	O5-C5	2.13	1.47	1.43
3	D	3	BMA	O5-C1	2.10	1.47	1.43
4	F	2	NAG	O5-C1	-2.09	1.40	1.43
4	F	4	MAN	C2-C3	2.06	1.55	1.52

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	3	BMA	C1-O5-C5	5.55	119.62	112.19
3	G	3	BMA	C1-O5-C5	5.47	119.52	112.19
3	G	2	NAG	C2-N2-C7	4.88	129.44	122.90
3	D	2	NAG	C1-O5-C5	4.72	118.51	112.19
4	F	5	MAN	C1-O5-C5	4.68	118.46	112.19
4	F	4	MAN	C1-O5-C5	2.79	115.93	112.19
3	D	3	BMA	O5-C1-C2	2.70	117.24	110.79
3	G	3	BMA	O5-C1-C2	2.47	116.68	110.79
3	D	3	BMA	C1-C2-C3	2.36	113.08	109.64
3	G	3	BMA	C3-C4-C5	-2.31	106.04	110.23
3	G	2	NAG	C1-O5-C5	2.27	115.22	112.19
3	G	2	NAG	C1-C2-N2	2.18	113.86	110.43
3	D	3	BMA	C3-C4-C5	-2.02	106.57	110.23
4	F	5	MAN	O2-C2-C3	-2.01	105.99	110.15

There are no chirality outliers.

All (23) torsion outliers are listed below:

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

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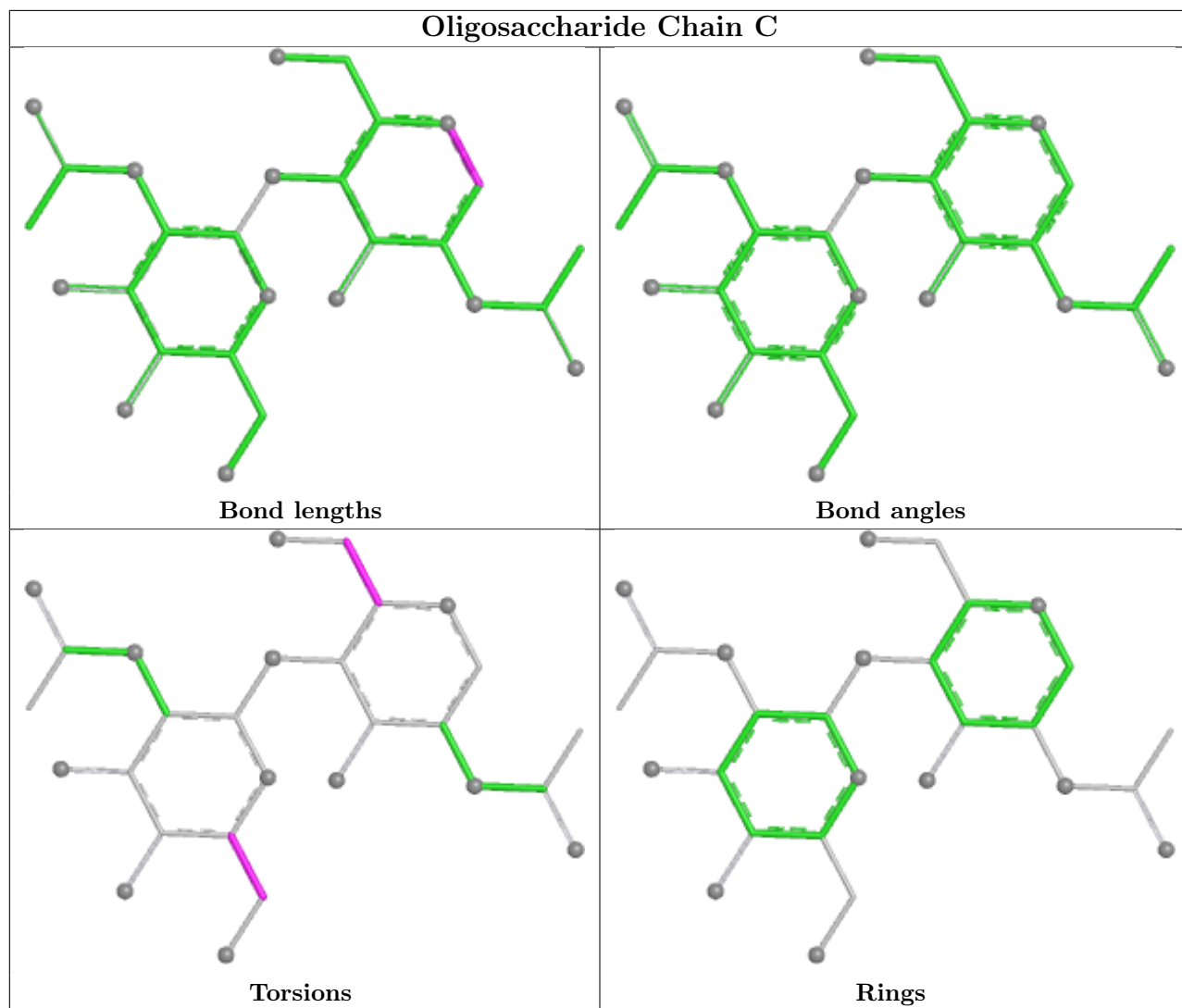
Mol	Chain	Res	Type	Atoms
3	D	2	NAG	C4-C5-C6-O6
2	C	1	NAG	C4-C5-C6-O6
4	F	2	NAG	C4-C5-C6-O6
4	F	2	NAG	O5-C5-C6-O6
4	F	3	BMA	O5-C5-C6-O6
3	D	2	NAG	O5-C5-C6-O6
3	G	2	NAG	C4-C5-C6-O6
3	G	2	NAG	O5-C5-C6-O6
3	G	2	NAG	C3-C2-N2-C7
2	E	2	NAG	C3-C2-N2-C7

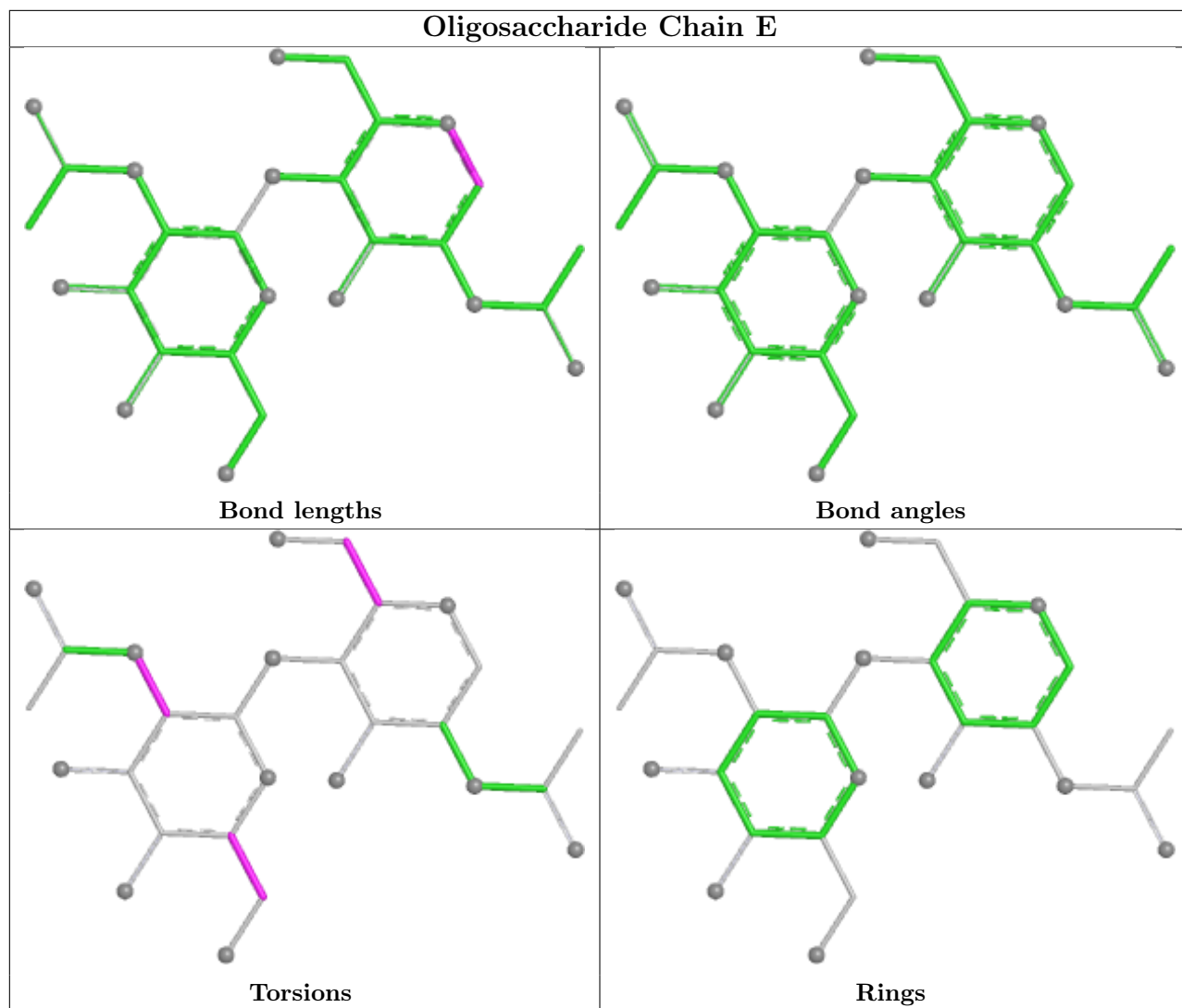
There are no ring outliers.

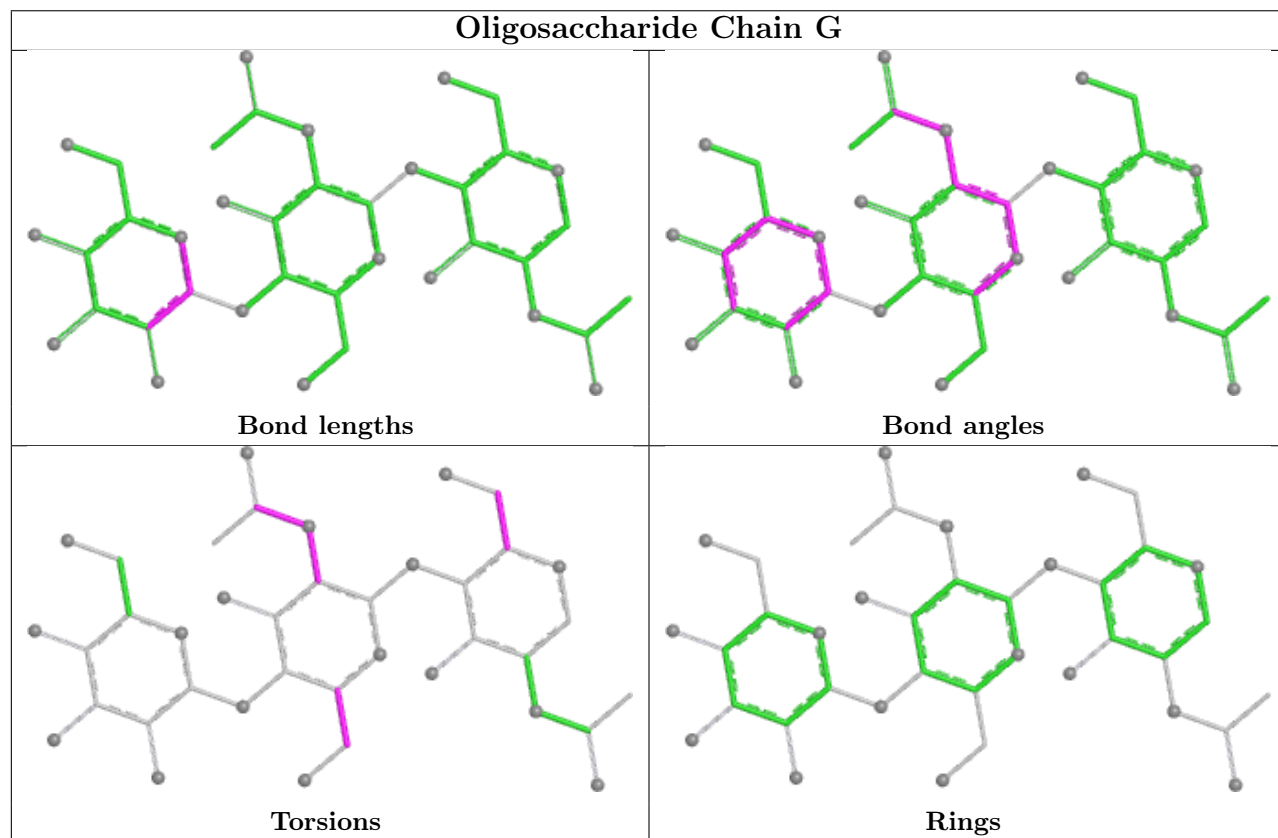
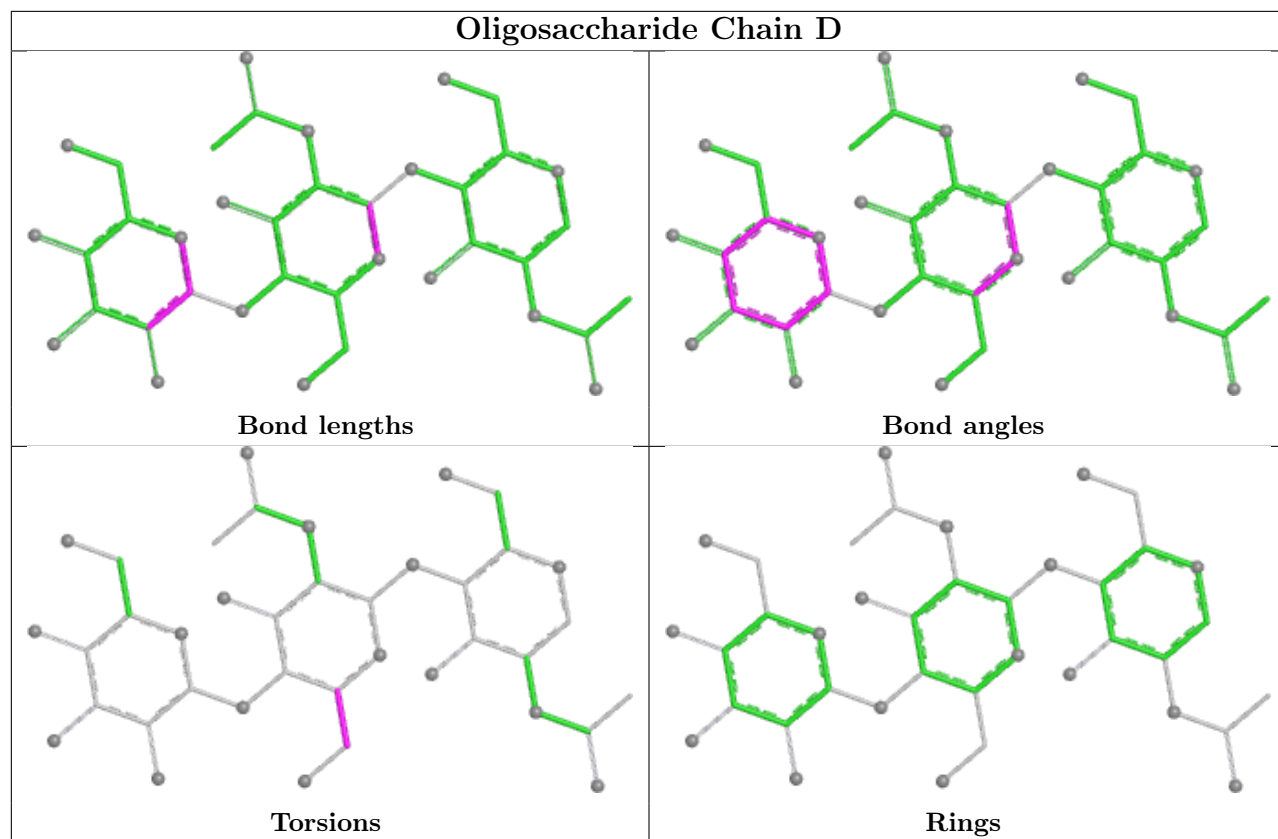
5 monomers are involved in 4 short contacts:

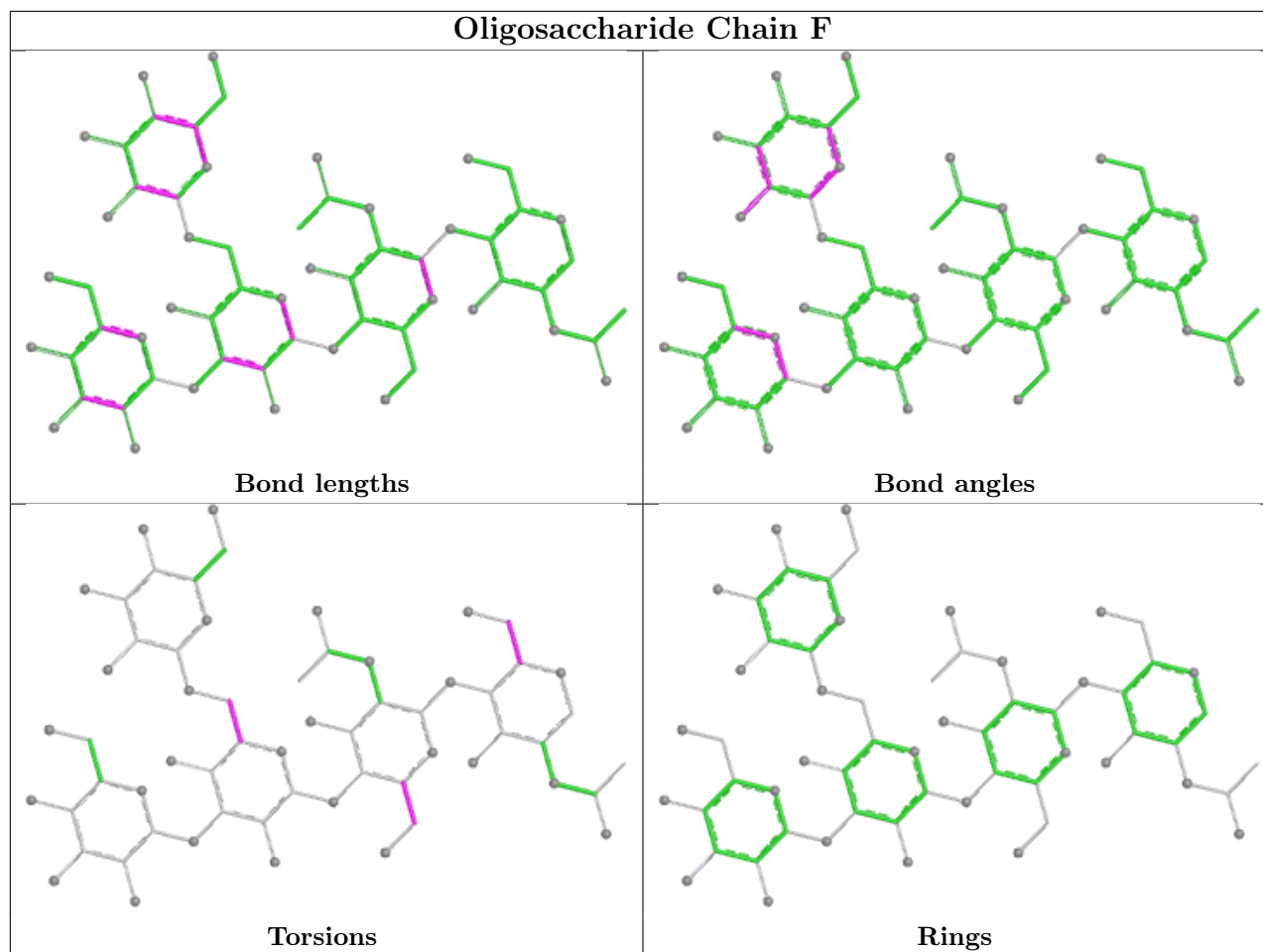
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	F	5	MAN	2	0
4	F	3	BMA	1	0
3	G	2	NAG	1	0
3	D	2	NAG	1	0
3	D	1	NAG	1	0

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](#)

Of 16 ligands modelled in this entry, 2 are monoatomic - leaving 14 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# $ Z > 2$	Counts	RMSZ	# $ Z > 2$
6	NAG	A	1011	1	14,14,15	0.50	0	17,19,21	0.39	0
6	NAG	A	1009	1	14,14,15	0.34	0	17,19,21	0.77	1 (5%)
6	NAG	A	1010	1	14,14,15	0.31	0	17,19,21	0.50	0
7	6GA	B	1015	5	21,24,24	0.78	0	23,31,31	3.01	4 (17%)
6	NAG	B	1010	1	14,14,15	0.67	1 (7%)	17,19,21	0.55	0
7	6GA	A	1015[B]	5	21,24,24	0.88	1 (4%)	23,31,31	2.28	6 (26%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
7	6GA	A	1015[A]	5	21,24,24	0.87	1 (4%)	23,31,31	1.57	4 (17%)
6	NAG	B	1011	1	14,14,15	0.59	0	17,19,21	0.46	0
6	NAG	B	1012	1	14,14,15	0.48	0	17,19,21	0.98	1 (5%)
6	NAG	A	1012	1	14,14,15	0.45	0	17,19,21	0.58	0
6	NAG	A	1013	1	14,14,15	0.63	0	17,19,21	0.79	1 (5%)
6	NAG	A	1014	1	14,14,15	0.23	0	17,19,21	0.94	1 (5%)
6	NAG	B	1013	1	14,14,15	0.32	0	17,19,21	0.57	0
6	NAG	B	1014	1	14,14,15	0.36	0	17,19,21	0.54	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	NAG	A	1011	1	-	2/6/23/26	0/1/1/1
6	NAG	A	1009	1	-	1/6/23/26	0/1/1/1
6	NAG	A	1010	1	-	0/6/23/26	0/1/1/1
7	6GA	B	1015	5	-	8/19/19/19	0/2/2/2
6	NAG	B	1010	1	-	2/6/23/26	0/1/1/1
7	6GA	A	1015[B]	5	-	6/19/19/19	0/2/2/2
7	6GA	A	1015[A]	5	-	6/19/19/19	0/2/2/2
6	NAG	B	1011	1	-	2/6/23/26	0/1/1/1
6	NAG	B	1012	1	-	0/6/23/26	0/1/1/1
6	NAG	A	1012	1	-	2/6/23/26	0/1/1/1
6	NAG	A	1013	1	-	1/6/23/26	0/1/1/1
6	NAG	A	1014	1	-	2/6/23/26	0/1/1/1
6	NAG	B	1013	1	-	2/6/23/26	0/1/1/1
6	NAG	B	1014	1	-	2/6/23/26	0/1/1/1

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	A	1015[A]	6GA	C9-N8	-2.77	1.27	1.33
6	B	1010	NAG	C1-C2	2.24	1.55	1.52
7	A	1015[B]	6GA	C9-N8	-2.06	1.28	1.33

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	B	1015	6GA	C1-N8-C9	13.12	140.31	122.29
7	A	1015[B]	6GA	C1-N8-C9	8.11	133.42	122.29
7	A	1015[B]	6GA	C17-C16-C11	3.80	121.28	113.31
7	A	1015[A]	6GA	C18-C19-C20	3.52	121.99	118.38
6	B	1012	NAG	C1-O5-C5	3.39	116.73	112.19
7	A	1015[B]	6GA	C2-C1-N8	-3.34	106.03	113.07
7	A	1015[A]	6GA	C21-C20-C19	-3.29	118.49	122.80
7	A	1015[A]	6GA	C1-N8-C9	3.09	126.54	122.29
6	A	1014	NAG	C1-O5-C5	3.06	116.28	112.19
7	B	1015	6GA	C18-C19-C20	2.92	121.38	118.38
6	A	1009	NAG	C1-O5-C5	2.77	115.90	112.19
7	B	1015	6GA	C21-C20-C19	-2.61	119.38	122.80
7	A	1015[A]	6GA	C2-C1-N8	-2.40	108.00	113.07
7	A	1015[B]	6GA	C16-C17-C22	-2.25	116.72	120.90
7	A	1015[B]	6GA	C16-C17-C18	2.21	125.01	120.90
7	B	1015	6GA	O10-C9-N8	-2.16	118.40	122.98
7	A	1015[B]	6GA	C21-C20-C19	-2.03	120.13	122.80
6	A	1013	NAG	C2-N2-C7	2.01	125.59	122.90

There are no chirality outliers.

All (36) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	A	1013	NAG	C1-C2-N2-C7
7	A	1015[A]	6GA	C16-C11-C9-O10
7	A	1015[A]	6GA	C16-C11-C9-N8
7	A	1015[A]	6GA	C12-C11-C16-C17
7	A	1015[B]	6GA	C16-C11-C9-O10
7	A	1015[B]	6GA	C16-C11-C9-N8
7	A	1015[B]	6GA	C12-C11-C16-C17
7	B	1015	6GA	C16-C11-C9-O10
7	B	1015	6GA	C16-C11-C9-N8
7	B	1015	6GA	C11-C9-N8-C1
7	B	1015	6GA	C9-C11-C16-C17
7	B	1015	6GA	C12-C11-C16-C17
6	A	1011	NAG	C4-C5-C6-O6
6	B	1010	NAG	O5-C5-C6-O6
6	B	1014	NAG	O5-C5-C6-O6
7	B	1015	6GA	O10-C9-N8-C1
6	A	1012	NAG	O5-C5-C6-O6
6	B	1010	NAG	C4-C5-C6-O6
6	A	1014	NAG	C4-C5-C6-O6
6	A	1011	NAG	O5-C5-C6-O6

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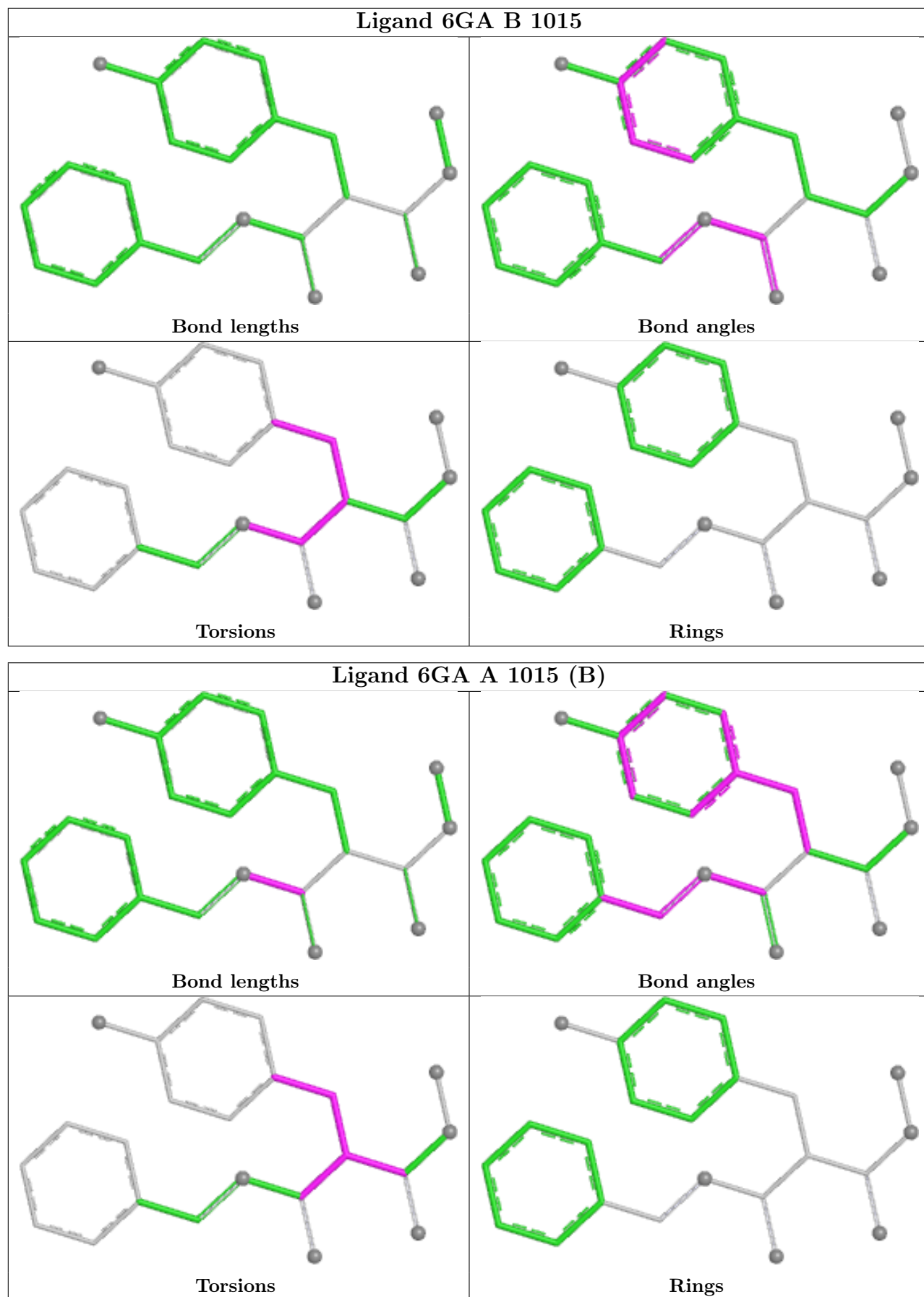
Mol	Chain	Res	Type	Atoms
6	A	1012	NAG	C4-C5-C6-O6
6	B	1014	NAG	C4-C5-C6-O6
7	A	1015[A]	6GA	C11-C16-C17-C18
6	A	1014	NAG	O5-C5-C6-O6
7	A	1015[A]	6GA	C11-C16-C17-C22
6	B	1013	NAG	O5-C5-C6-O6
6	B	1013	NAG	C4-C5-C6-O6
7	A	1015[B]	6GA	C11-C16-C17-C18
7	A	1015[B]	6GA	C11-C16-C17-C22
6	B	1011	NAG	O5-C5-C6-O6
7	B	1015	6GA	C11-C16-C17-C18
7	B	1015	6GA	C11-C16-C17-C22
7	A	1015[A]	6GA	C9-C11-C16-C17
6	B	1011	NAG	C3-C2-N2-C7
6	A	1009	NAG	C1-C2-N2-C7
7	A	1015[B]	6GA	C16-C11-C12-N1

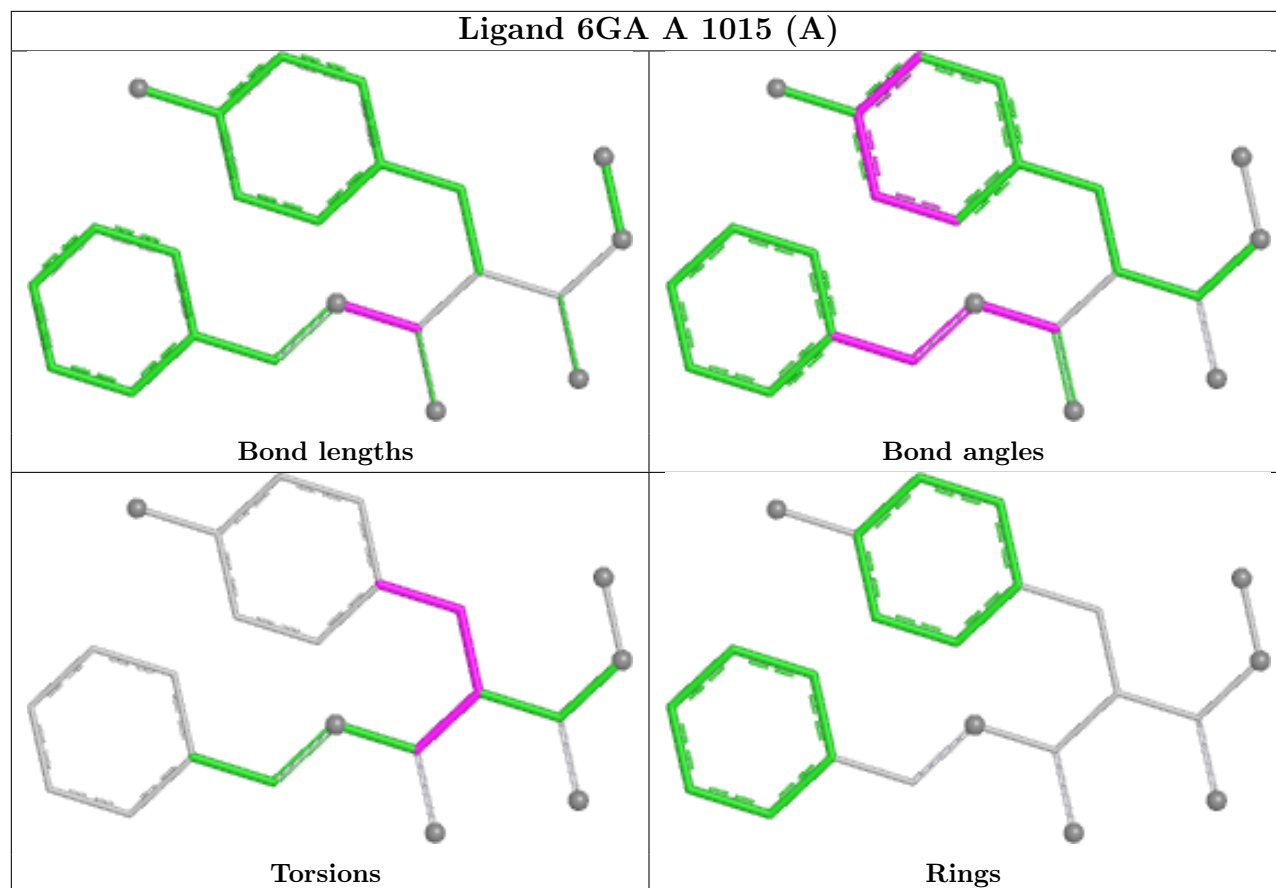
There are no ring outliers.

3 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	1010	NAG	1	0
6	B	1010	NAG	1	0
7	A	1015[B]	6GA	2	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for 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	910/967 (94%)	-0.26	11 (1%) 76 68	25, 57, 101, 156	2 (0%)
1	B	880/967 (91%)	0.20	28 (3%) 50 40	37, 82, 132, 164	1 (0%)
All	All	1790/1934 (92%)	-0.03	39 (2%) 62 52	25, 69, 126, 164	3 (0%)

All (39) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	510	SER	3.6
1	B	245[A]	GLU	3.3
1	B	667	PHE	3.2
1	B	158	PRO	3.1
1	A	511	GLY	3.0
1	B	122	LEU	2.8
1	B	754	LEU	2.7
1	B	440	ALA	2.7
1	B	612	LEU	2.7
1	B	86	LEU	2.6
1	A	504	LEU	2.6
1	B	570	VAL	2.5
1	A	523	ASN	2.5
1	B	156	LEU	2.5
1	B	538	MET	2.4
1	B	547	ILE	2.4
1	B	611	THR	2.4
1	B	580	LEU	2.4
1	A	528	LEU	2.3
1	B	132	LYS	2.3
1	A	536	GLU	2.3
1	B	640	TRP	2.3
1	B	588	ILE	2.3
1	B	105	THR	2.3

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Mol	Chain	Res	Type	RSRZ
1	B	441	GLU	2.2
1	B	610	ASP	2.2
1	B	124	SER	2.2
1	A	537	MET	2.2
1	B	539	THR	2.2
1	B	160	LEU	2.2
1	B	159	HIS	2.1
1	B	157	THR	2.1
1	B	188	GLY	2.1
1	A	144	ALA	2.1
1	A	513	VAL	2.1
1	B	613	ASP	2.1
1	A	503	CYS	2.0
1	A	529	GLY	2.0
1	B	958	VAL	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, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

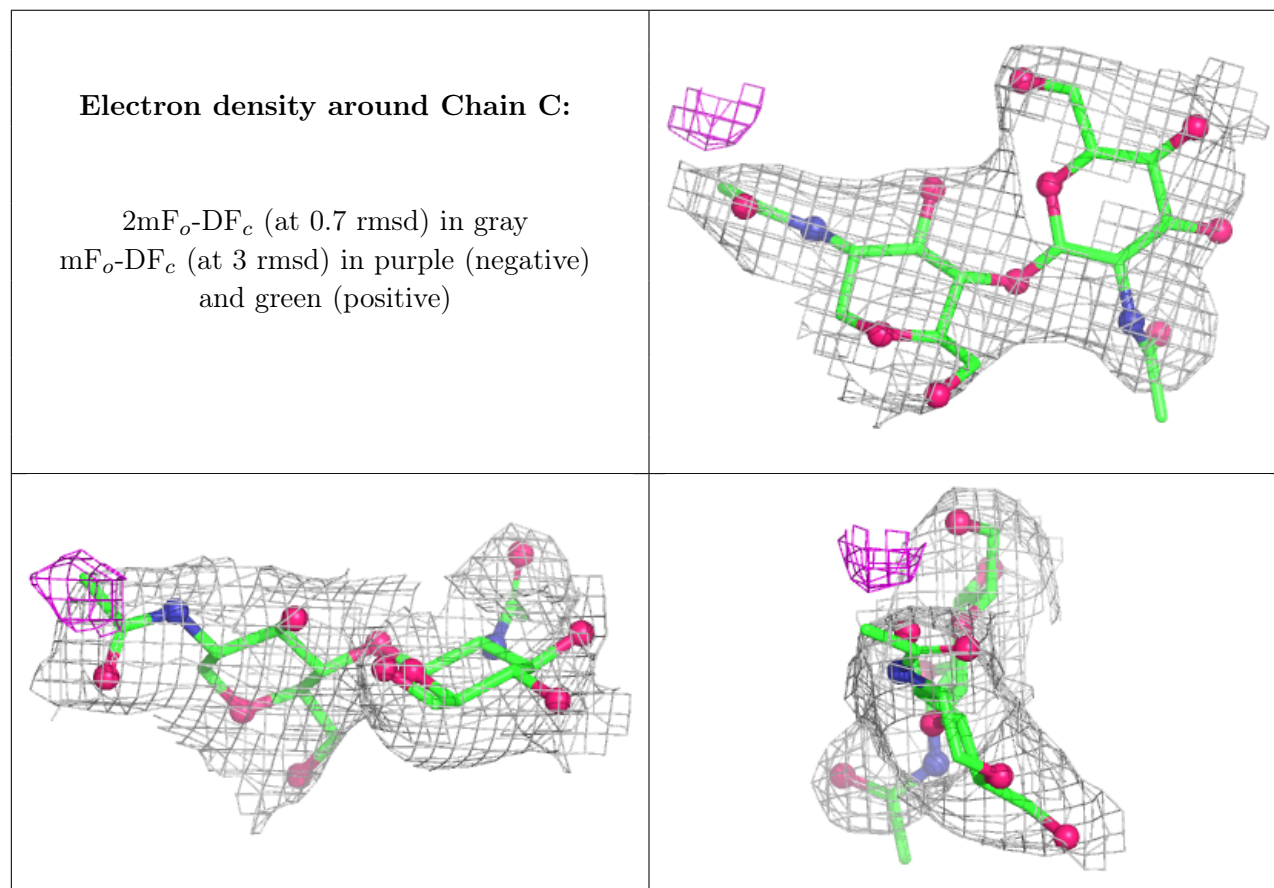
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	BMA	D	3	11/12	0.39	0.13	105,111,121,125	0
3	BMA	G	3	11/12	0.39	0.13	114,119,122,122	0
3	NAG	G	2	14/15	0.60	0.12	72,102,112,117	0
4	MAN	F	4	11/12	0.62	0.10	101,107,116,118	0
2	NAG	E	2	14/15	0.64	0.11	103,113,121,126	0
4	MAN	F	5	11/12	0.66	0.12	72,83,90,94	0
4	BMA	F	3	11/12	0.74	0.08	89,95,102,104	0
2	NAG	C	2	14/15	0.79	0.10	86,100,108,117	0
4	NAG	F	2	14/15	0.80	0.10	48,79,88,90	0
3	NAG	G	1	14/15	0.81	0.10	73,84,92,102	0
2	NAG	E	1	14/15	0.84	0.10	80,93,105,108	0
3	NAG	D	2	14/15	0.86	0.07	53,74,93,104	0
4	NAG	F	1	14/15	0.91	0.08	49,61,70,73	0

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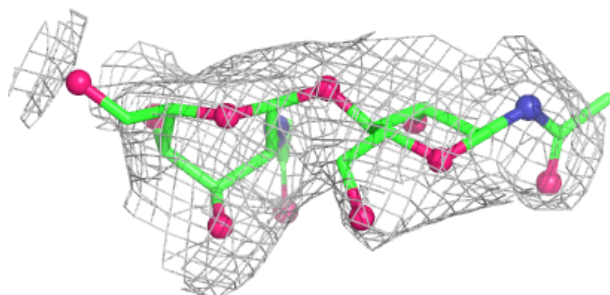
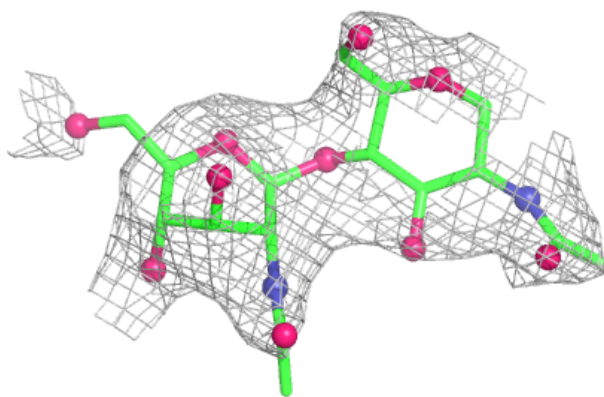
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	NAG	C	1	14/15	0.93	0.08	52,77,86,86	0
3	NAG	D	1	14/15	0.95	0.08	46,57,61,69	0

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.

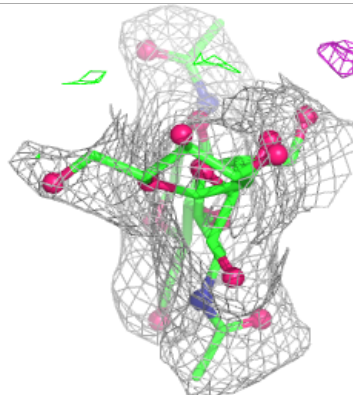
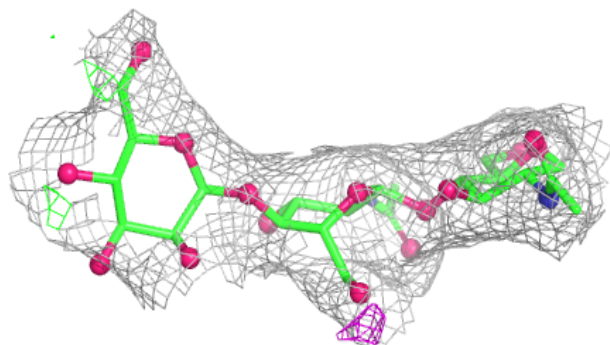
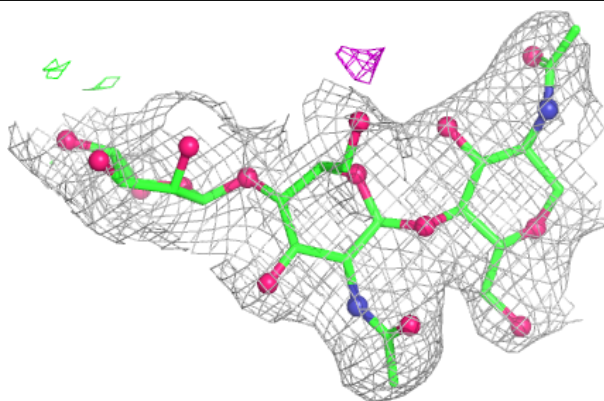


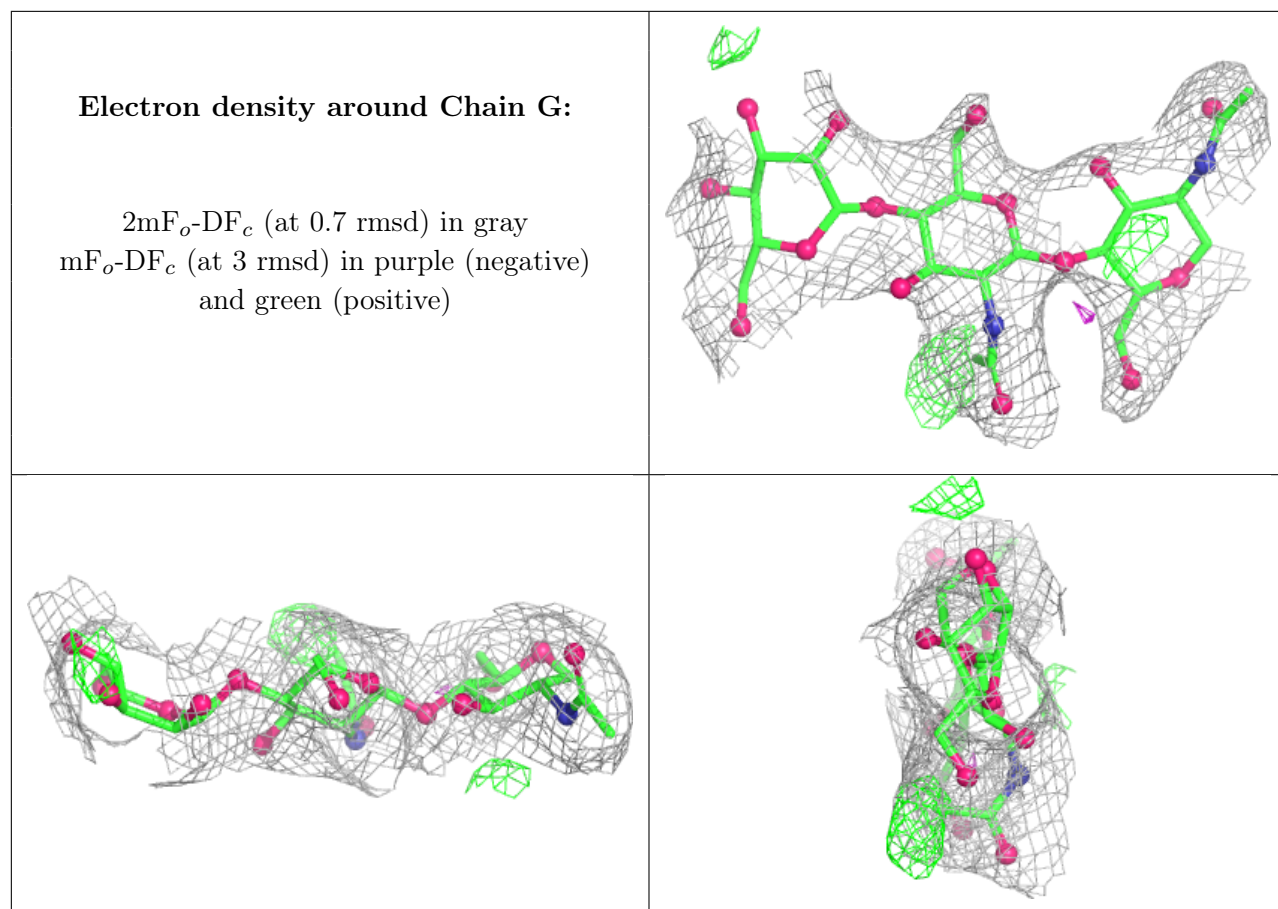
Electron density around Chain E:

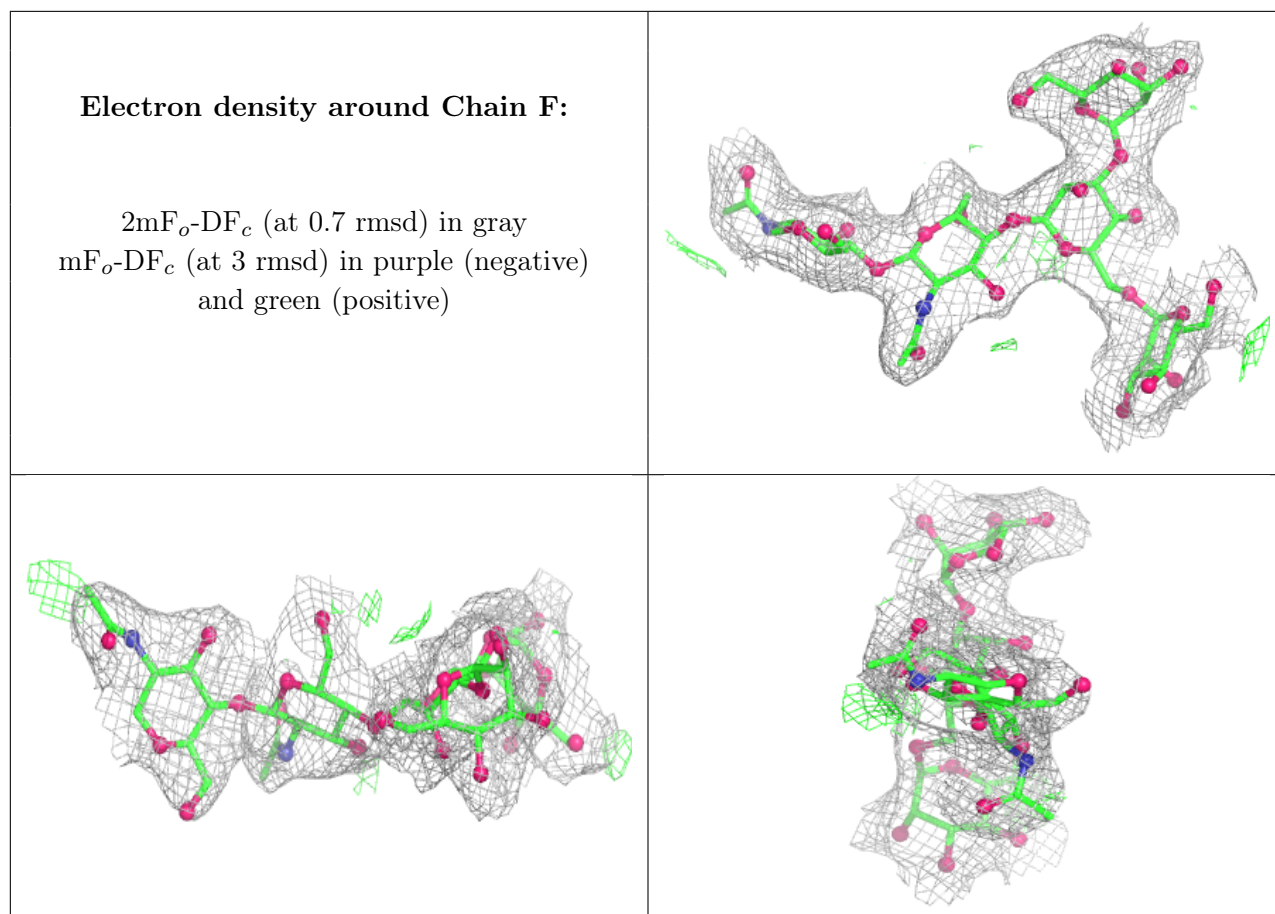
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

**Electron density around Chain D:**

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







6.4 Ligands [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.

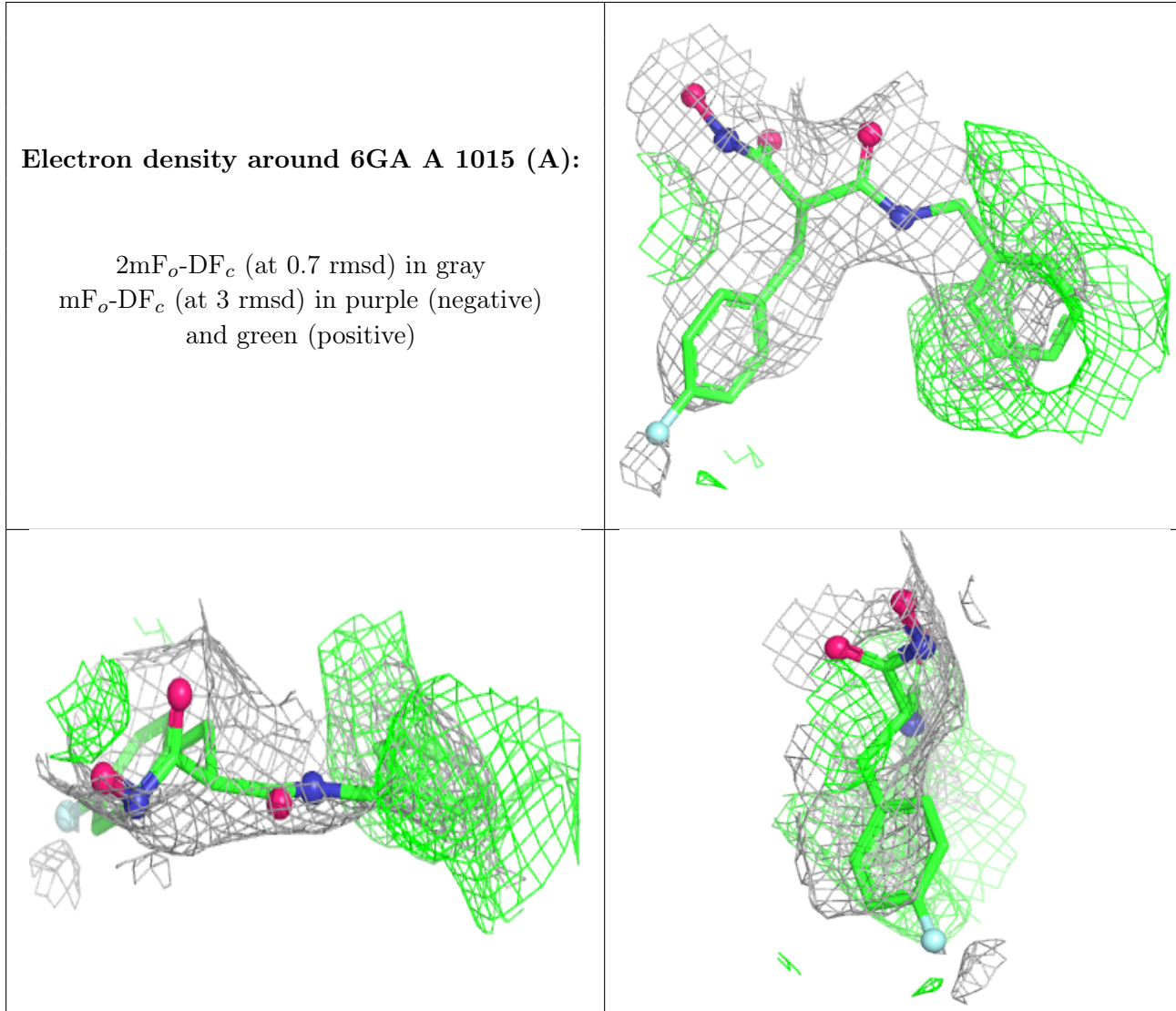
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
6	NAG	B	1010	14/15	0.21	0.12	137,150,158,163	0
6	NAG	A	1012	14/15	0.62	0.11	83,104,121,124	0
6	NAG	A	1013	14/15	0.65	0.12	80,89,97,99	0
6	NAG	B	1012	14/15	0.69	0.11	92,107,116,117	0
6	NAG	A	1011	14/15	0.70	0.09	99,112,121,122	0
6	NAG	B	1013	14/15	0.71	0.10	107,115,122,122	0
6	NAG	B	1014	14/15	0.72	0.11	95,118,127,129	0
7	6GA	A	1015[A]	23/23	0.75	0.30	41,47,51,51	23
7	6GA	A	1015[B]	23/23	0.75	0.30	44,49,52,57	23
6	NAG	B	1011	14/15	0.76	0.11	113,126,132,133	0
6	NAG	A	1010	14/15	0.77	0.09	102,110,113,116	0
7	6GA	B	1015	23/23	0.81	0.17	65,74,80,83	23

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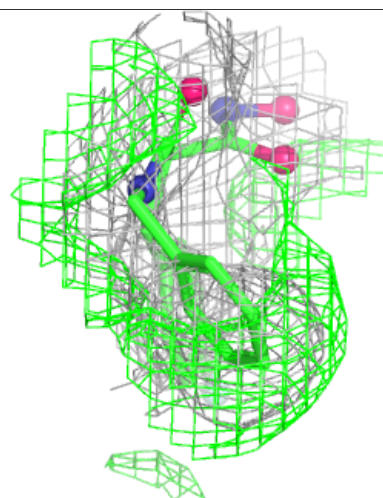
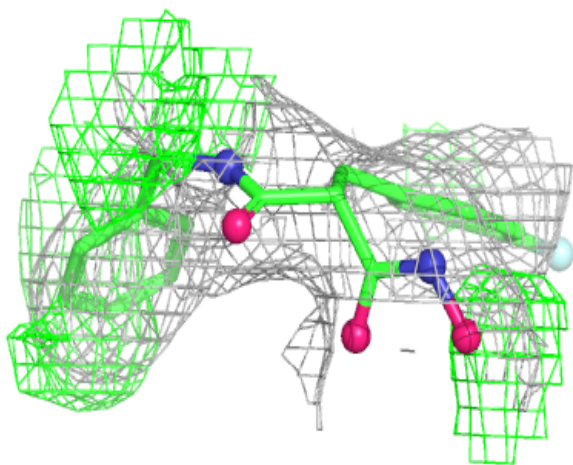
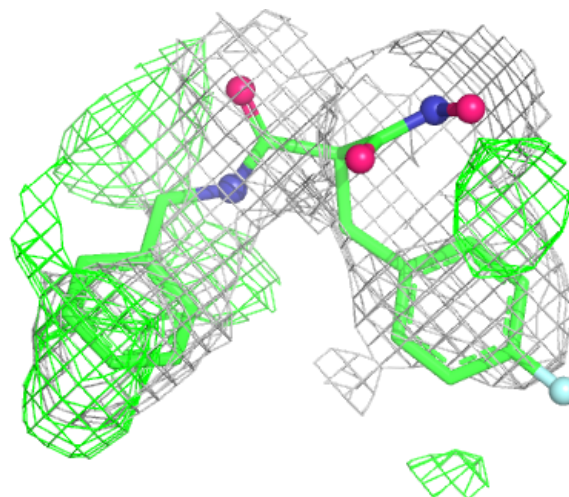
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
6	NAG	A	1009	14/15	0.82	0.09	83,88,96,97	0
6	NAG	A	1014	14/15	0.92	0.07	84,89,100,102	0
5	ZN	A	1001	1/1	1.00	0.03	37,37,37,37	0
5	ZN	B	1001	1/1	1.00	0.02	54,54,54,54	0

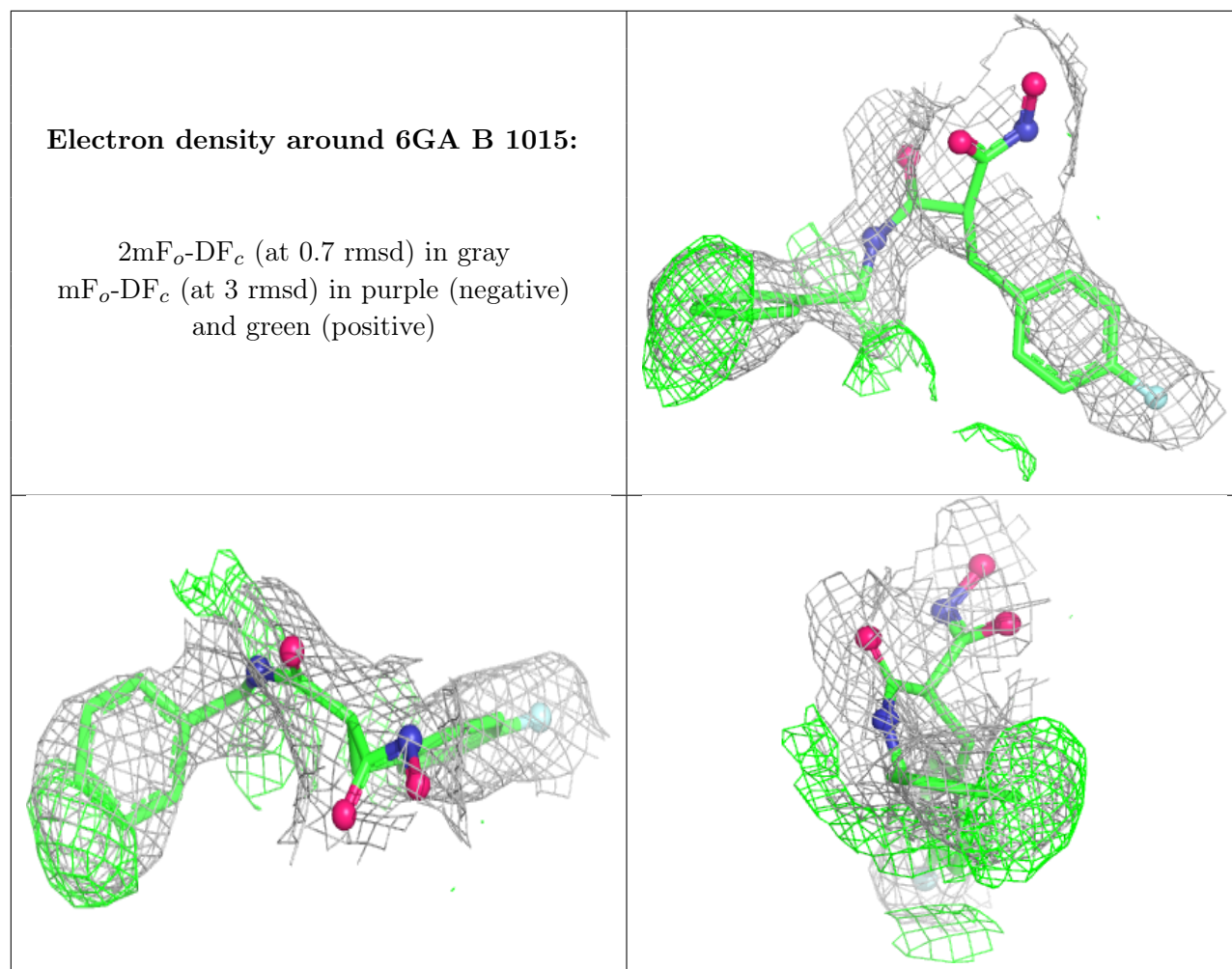
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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



Electron density around 6GA A 1015 (B):

$2mF_o-DF_c$ (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.