



Full wwPDB EM Validation Report ⓘ

Nov 19, 2024 – 04:36 PM JST

PDB ID : 8X0K
EMDB ID : EMD-37980
Title : Cryo-EM structure of Semliki Forest virus in complex with its receptor
VLDLR(2-fold)
Authors : Gao, F.G.; Liu, S.
Deposited on : 2023-11-04
Resolution : 3.50 Å(reported)

This is a Full wwPDB EM 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/EMValidationReportHelp>

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:

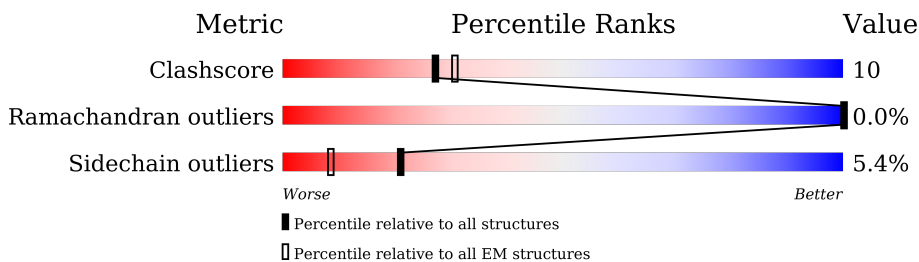
EMDB validation analysis : 0.0.1.dev113
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

1 Overall quality at a glance

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.50 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the 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 EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	162	6% (red), 60% (green), 37% (yellow), 0% (orange), 0% (grey)
1	E	162	12% (red), 64% (green), 33% (yellow), 0% (orange), 0% (grey)
1	I	162	16% (red), 60% (green), 39% (yellow), 0% (orange), 0% (grey)
1	M	162	6% (red), 63% (green), 35% (yellow), 0% (orange), 0% (grey)
2	B	418	0% (red), 71% (green), 28% (yellow), 0% (orange), 0% (grey)
2	F	418	0% (red), 72% (green), 27% (yellow), 0% (orange), 0% (grey)
2	J	418	0% (red), 74% (green), 24% (yellow), 0% (orange), 0% (grey)
2	N	418	0% (red), 70% (green), 29% (yellow), 0% (orange), 0% (grey)

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Mol	Chain	Length	Quality of chain
3	C	438	 87% 12%
3	G	438	 80% 18%
3	K	438	 79% 19%
3	O	438	 83% 17%
4	D	37	 35% 76% 24%
4	H	37	 49% 84% 16%
4	L	37	 51% 84% 14%
4	P	37	 73% 92% 8%
5	Q	2	 100%
5	R	2	 50% 50%
5	S	2	 100%
5	T	2	 100%
5	U	2	 50% 50%
5	V	2	 50% 50%
5	W	2	 100%
5	X	2	 50% 50%

2 Entry composition [i](#)

There are 7 unique types of molecules in this entry. The entry contains 32740 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 Capsid protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	162	1249	781	227	232	9	0	0
1	E	162	1249	781	227	232	9	0	0
1	I	162	1249	781	227	232	9	0	0
1	M	162	1249	781	227	232	9	0	0

- Molecule 2 is a protein called Spike glycoprotein E2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	418	3256	2056	575	600	25	0	0
2	F	418	3256	2056	575	600	25	0	0
2	J	418	3256	2056	575	600	25	0	0
2	N	418	3256	2056	575	600	25	0	0

- Molecule 3 is a protein called Spike glycoprotein E1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	438	3329	2109	559	636	25	0	0
3	G	438	3329	2109	559	636	25	0	0
3	K	438	3329	2109	559	636	25	0	0
3	O	438	3329	2109	559	636	25	0	0

- Molecule 4 is a protein called Very low-density lipoprotein receptor.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	37	Total	C	N	O	S	0	0
			280	160	51	63	6		
4	H	37	Total	C	N	O	S	0	0
			280	160	51	63	6		
4	L	37	Total	C	N	O	S	0	0
			280	160	51	63	6		
4	P	37	Total	C	N	O	S	0	0
			280	160	51	63	6		

- Molecule 5 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				AltConf	Trace
5	Q	2	Total	C	N	O	0	0
			28	16	2	10		
5	R	2	Total	C	N	O	0	0
			28	16	2	10		
5	S	2	Total	C	N	O	0	0
			28	16	2	10		
5	T	2	Total	C	N	O	0	0
			28	16	2	10		
5	U	2	Total	C	N	O	0	0
			28	16	2	10		
5	V	2	Total	C	N	O	0	0
			28	16	2	10		
5	W	2	Total	C	N	O	0	0
			28	16	2	10		
5	X	2	Total	C	N	O	0	0
			28	16	2	10		

- Molecule 6 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C₈H₁₅NO₆) (labeled as "Ligand of Interest" by depositor).



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

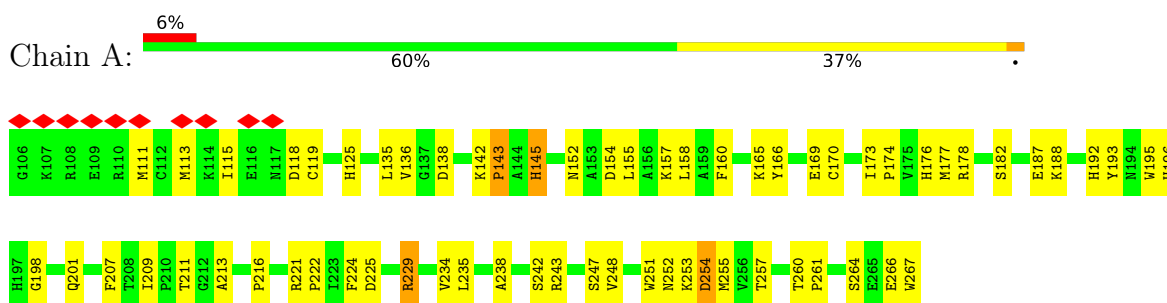
- Molecule 7 is CALCIUM ION (three-letter code: CA) (formula: Ca) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
			Total	Ca	
7	D	1	Total 1	1	0
7	H	1	Total 1	1	0
7	L	1	Total 1	1	0
7	P	1	Total 1	1	0

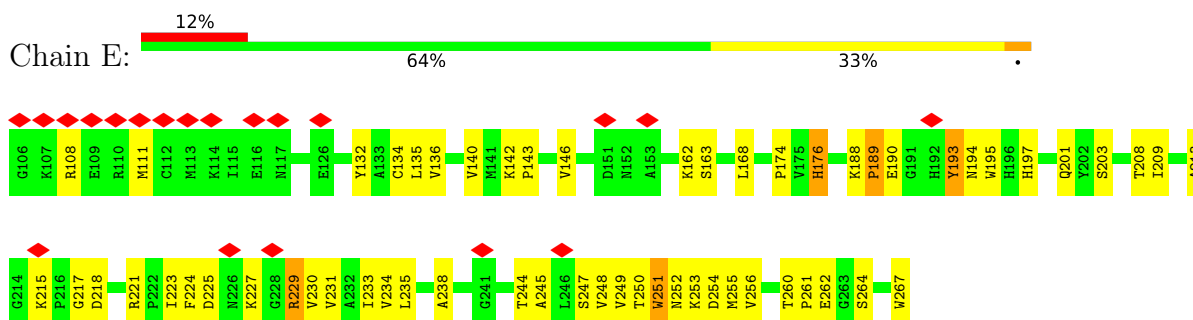
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map 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 diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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.

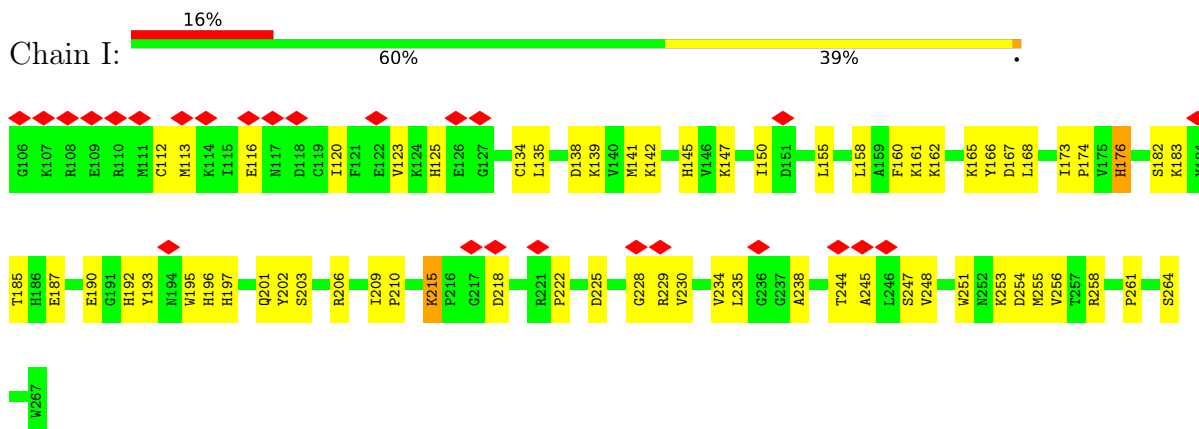
- Molecule 1: Capsid protein



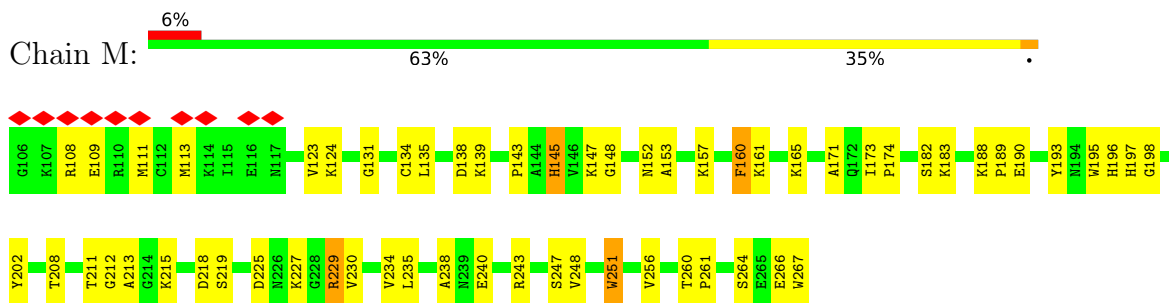
- Molecule 1: Capsid protein



- Molecule 1: Capsid protein



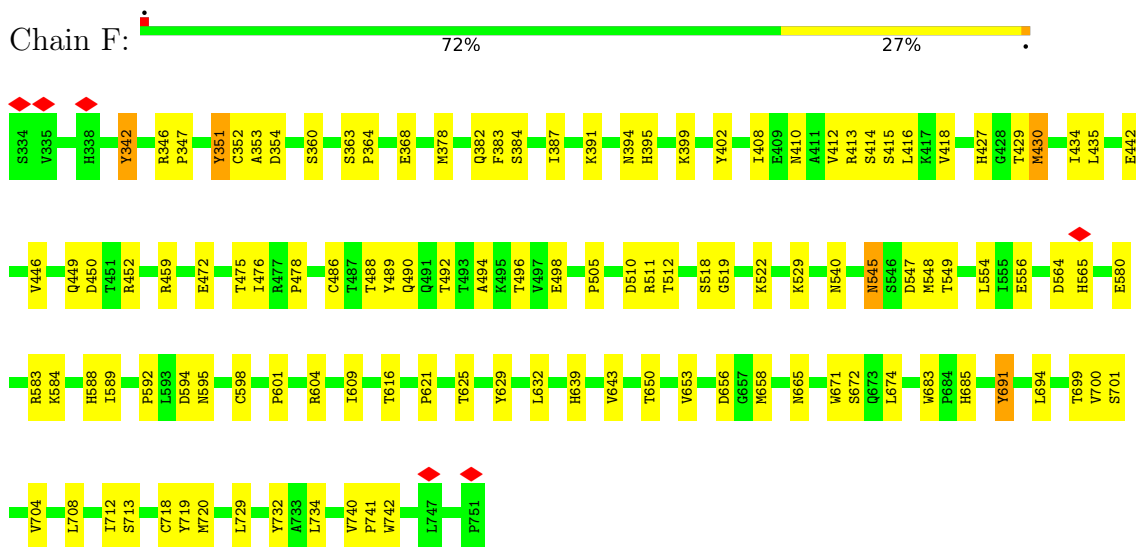
- Molecule 1: Capsid protein



• Molecule 2: Spike glycoprotein E2

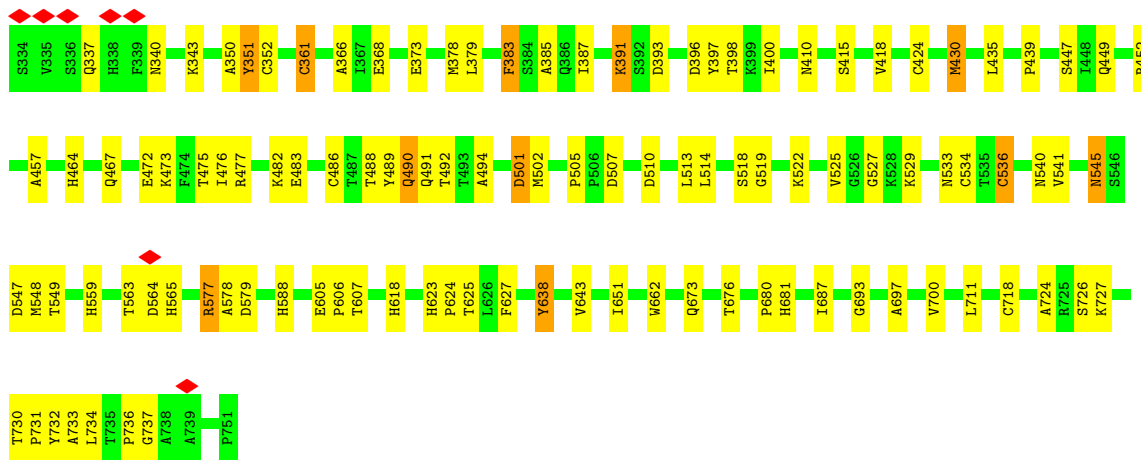


• Molecule 2: Spike glycoprotein E2

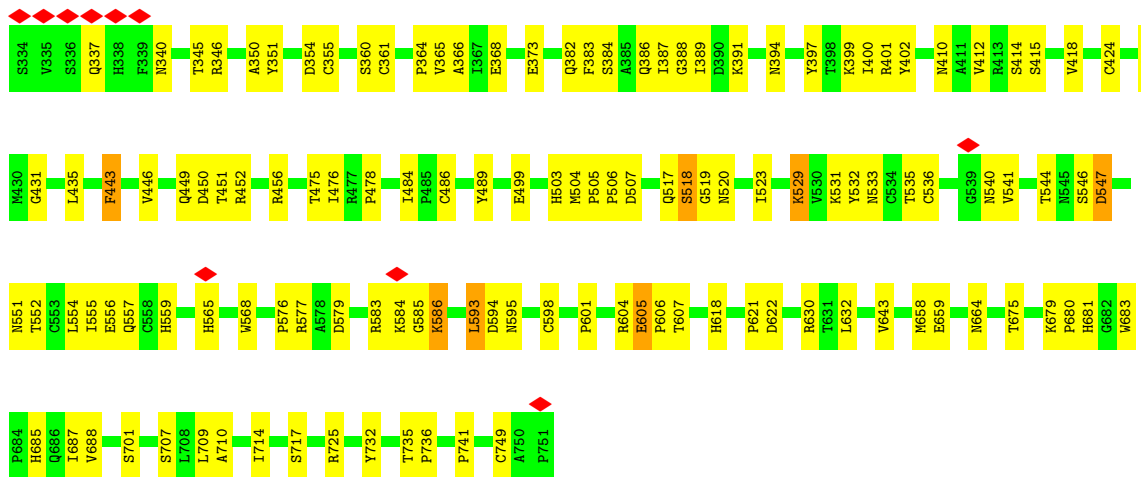


• Molecule 2: Spike glycoprotein E2

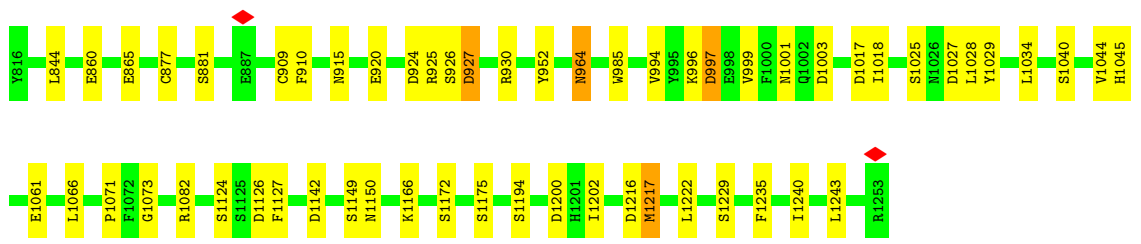
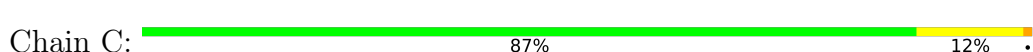




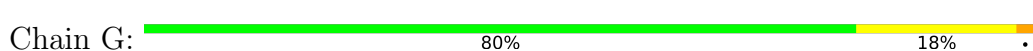
• Molecule 2: Spike glycoprotein E2

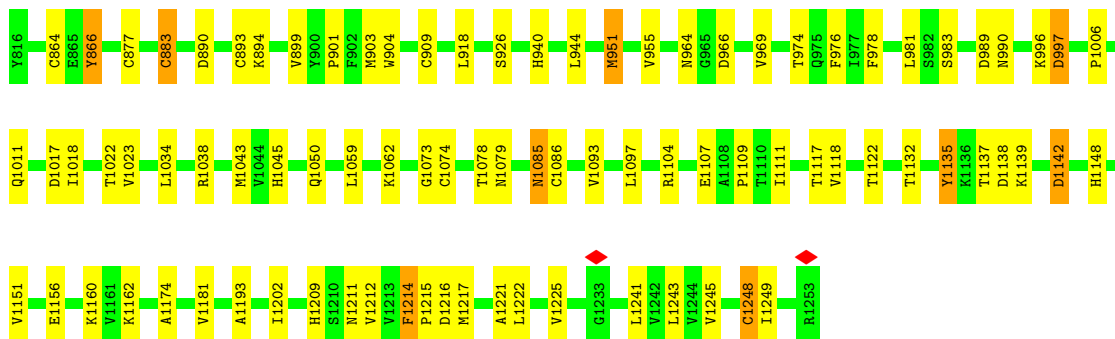


• Molecule 3: Spike glycoprotein E1

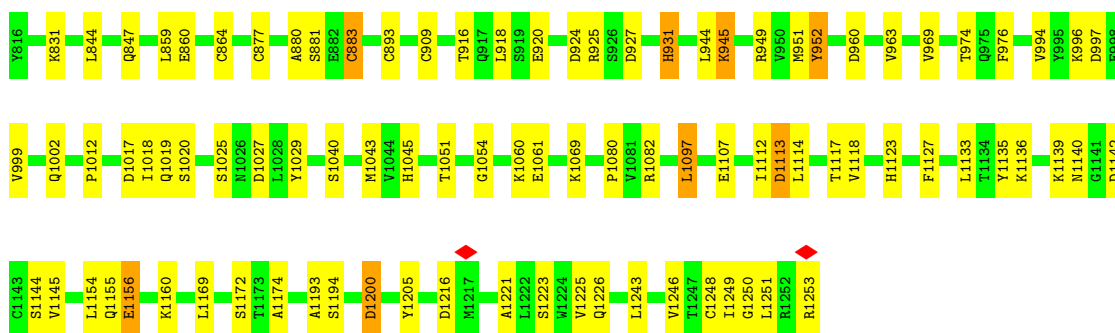
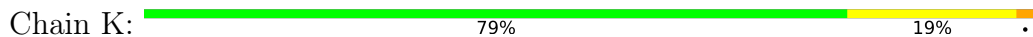


• Molecule 3: Spike glycoprotein E1

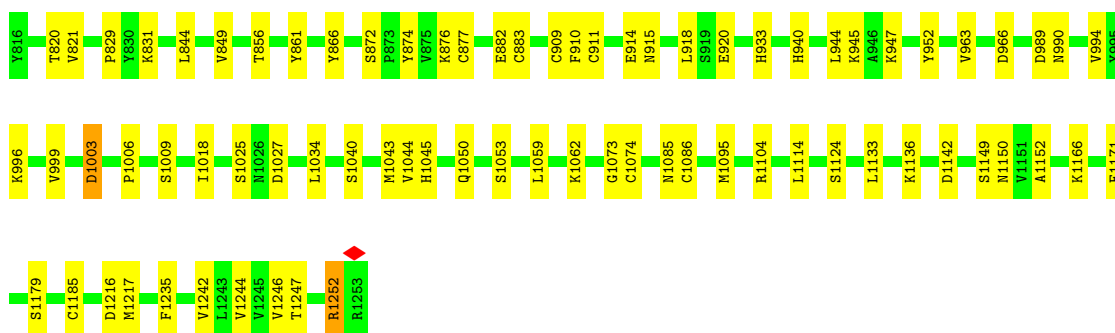
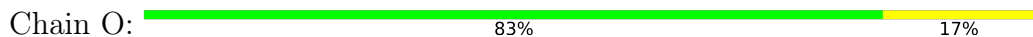




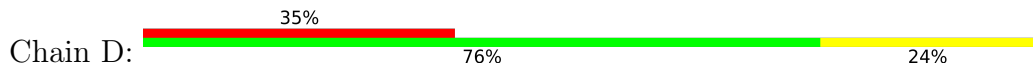
• Molecule 3: Spike glycoprotein E1



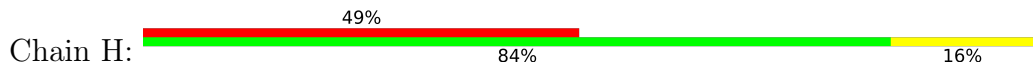
• Molecule 3: Spike glycoprotein E1

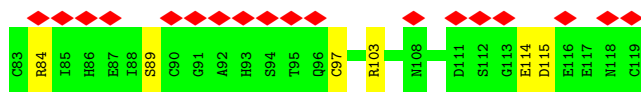


• Molecule 4: Very low-density lipoprotein receptor

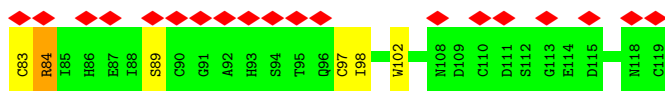
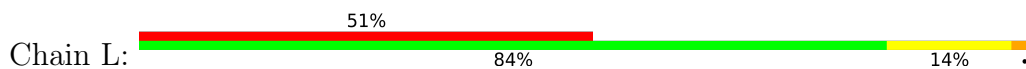


• Molecule 4: Very low-density lipoprotein receptor

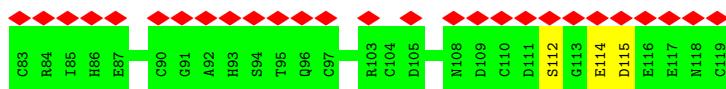
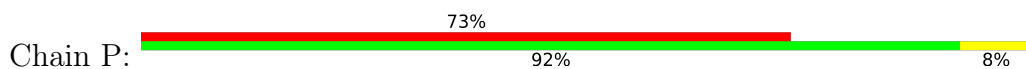




- Molecule 4: Very low-density lipoprotein receptor



- Molecule 4: Very low-density lipoprotein receptor



- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain U:  50% 50%

MAG1
MAG2

- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain V:  50% 50%

MAG1
MAG2

- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain W:  100%

MAG1
MAG2

- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain X:  50% 50%

MAG1
MAG2

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	787942	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	1.25	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	5000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	2.112	Depositor
Minimum map value	-0.002	Depositor
Average map value	0.008	Depositor
Map value standard deviation	0.068	Depositor
Recommended contour level	0.1	Depositor
Map size (\AA)	404.80002, 404.80002, 404.80002	wwPDB
Map dimensions	368, 368, 368	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.1, 1.1, 1.1	Depositor

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: CA, 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	0.30	0/1277	0.62	1/1719 (0.1%)
1	E	0.28	0/1277	0.58	1/1719 (0.1%)
1	I	0.29	0/1277	0.56	0/1719
1	M	0.29	0/1277	0.58	0/1719
2	B	0.30	0/3349	0.56	1/4569 (0.0%)
2	F	0.29	0/3349	0.53	0/4569
2	J	0.30	0/3349	0.59	1/4569 (0.0%)
2	N	0.30	0/3349	0.57	1/4569 (0.0%)
3	C	0.30	0/3415	0.53	1/4660 (0.0%)
3	G	0.30	0/3415	0.52	0/4660
3	K	0.29	0/3415	0.51	0/4660
3	O	0.30	0/3415	0.51	1/4660 (0.0%)
4	D	0.22	0/284	0.46	0/383
4	H	0.22	0/284	0.47	0/383
4	L	0.22	0/284	0.45	0/383
4	P	0.21	0/284	0.45	0/383
All	All	0.30	0/33300	0.54	7/45324 (0.0%)

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	143	PRO	CA-N-CD	-10.29	97.10	111.50
2	B	731	PRO	CA-N-CD	-6.46	102.45	111.50
2	J	361	CYS	CA-CB-SG	6.04	124.87	114.00
2	N	529	LYS	CA-CB-CG	5.64	125.80	113.40
3	O	1003	ASP	CB-CG-OD2	5.46	123.21	118.30
3	C	997	ASP	CB-CG-OD1	5.23	123.00	118.30
1	E	189	PRO	CA-N-CD	-5.13	104.32	111.50

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	1249	0	1232	40	0
1	E	1249	0	1232	40	0
1	I	1249	0	1232	49	0
1	M	1249	0	1232	41	0
2	B	3256	0	3165	75	0
2	F	3256	0	3165	65	0
2	J	3256	0	3165	69	0
2	N	3256	0	3164	81	0
3	C	3329	0	3242	35	0
3	G	3329	0	3242	53	0
3	K	3329	0	3242	53	0
3	O	3329	0	3242	47	0
4	D	280	0	229	3	0
4	H	280	0	229	4	0
4	L	280	0	229	5	0
4	P	280	0	229	2	0
5	Q	28	0	25	0	0
5	R	28	0	25	1	0
5	S	28	0	25	1	0
5	T	28	0	25	0	0
5	U	28	0	25	1	0
5	V	28	0	25	2	0
5	W	28	0	25	0	0
5	X	28	0	25	1	0
6	C	14	0	13	0	0
6	G	14	0	13	0	0
6	K	14	0	13	0	0
6	O	14	0	13	0	0
7	D	1	0	0	0	0
7	H	1	0	0	0	0
7	L	1	0	0	0	0
7	P	1	0	0	0	0
All	All	32740	0	31723	616	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 10.

All (616) 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:A:234:VAL:HA	1:A:248:VAL:HG12	1.59	0.83
2:F:346:ARG:HH12	2:F:505:PRO:HG3	1.45	0.81
2:B:505:PRO:HG2	2:B:565:HIS:HB3	1.65	0.78
1:I:166:TYR:HB2	1:I:168:LEU:HD22	1.65	0.78
2:J:505:PRO:HG2	2:J:565:HIS:HB3	1.65	0.78
1:I:238:ALA:HB2	1:I:264:SER:HA	1.66	0.77
1:I:165:LYS:HZ3	1:I:166:TYR:HE2	1.30	0.77
2:B:594:ASP:OD1	2:B:595:ASN:N	2.19	0.74
2:N:499:GLU:OE1	2:N:499:GLU:N	2.19	0.74
1:E:190:GLU:HG2	1:E:203:SER:HA	1.71	0.73
1:E:209:ILE:HD11	1:E:213:ALA:HB3	1.71	0.73
2:F:594:ASP:OD1	2:F:595:ASN:N	2.22	0.73
1:M:173:ILE:HD12	1:M:174:PRO:HD2	1.70	0.72
2:N:418:VAL:HG23	2:N:424:CYS:HB2	1.72	0.72
1:I:209:ILE:HG22	1:I:244:THR:HB	1.71	0.71
2:B:394:ASN:OD1	2:B:395:HIS:N	2.23	0.71
2:B:607:THR:HB	2:B:618:HIS:HB2	1.73	0.71
2:N:402:TYR:OH	2:N:450:ASP:OD1	2.06	0.70
2:N:505:PRO:HG2	2:N:565:HIS:HB3	1.73	0.70
1:A:143:PRO:HD2	1:A:143:PRO:O	1.91	0.70
2:N:391:LYS:HG2	2:N:410:ASN:HD21	1.55	0.70
3:C:994:VAL:HG22	3:C:999:VAL:HG12	1.74	0.70
2:N:520:ASN:HB3	2:N:551:ASN:HA	1.73	0.70
3:G:1151:VAL:HA	3:G:1212:VAL:HG11	1.74	0.69
1:M:225:ASP:OD1	1:M:229:ARG:N	2.24	0.69
2:N:373:GLU:OE1	2:N:489:TYR:OH	2.11	0.69
2:N:559:HIS:HB2	3:O:910:PHE:CE1	2.28	0.69
1:A:173:ILE:HD12	1:A:174:PRO:HD2	1.74	0.68
2:B:559:HIS:HB2	3:C:910:PHE:HE2	1.58	0.68
2:N:725:ARG:NH1	2:N:749:CYS:O	2.27	0.68
3:O:994:VAL:HG22	3:O:999:VAL:HG12	1.76	0.67
2:J:577:ARG:NH2	3:K:920:GLU:OE2	2.25	0.67
1:M:230:VAL:HG22	1:M:251:TRP:HH2	1.60	0.66
2:F:518:SER:OG	2:F:519:GLY:N	2.28	0.66
1:I:141:MET:CE	1:I:168:LEU:HD12	2.26	0.66
1:E:189:PRO:O	1:E:193:TYR:OH	2.09	0.66
3:O:1216:ASP:OD2	3:O:1217:MET:N	2.28	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:418:VAL:HG12	2:F:446:VAL:HG22	1.78	0.65
1:E:142:LYS:NZ	1:E:146:VAL:O	2.28	0.65
3:G:1074:CYS:HB3	3:G:1086:CYS:HA	1.77	0.65
1:A:238:ALA:HB2	1:A:264:SER:HA	1.77	0.65
1:E:262:GLU:N	1:E:262:GLU:OE1	2.29	0.65
3:C:920:GLU:N	3:C:920:GLU:OE1	2.28	0.65
2:N:536:CYS:O	2:N:540:ASN:ND2	2.30	0.65
4:D:90:CYS:SG	4:D:96:GLN:NE2	2.69	0.65
1:M:261:PRO:O	1:M:264:SER:OG	2.15	0.64
2:F:505:PRO:HG2	2:F:565:HIS:HB3	1.79	0.64
2:J:467:GLN:NE2	2:J:473:LYS:HD3	2.11	0.64
2:F:394:ASN:OD1	2:F:395:HIS:N	2.31	0.64
3:K:1250:GLY:HA2	3:K:1253:ARG:HD2	1.79	0.64
3:C:1126:ASP:OD1	3:C:1127:PHE:N	2.29	0.64
2:N:418:VAL:HG12	2:N:446:VAL:HG22	1.79	0.64
3:K:844:LEU:HD13	3:K:952:TYR:HB3	1.79	0.64
2:N:389:ILE:HB	2:N:401:ARG:HE	1.63	0.64
2:B:731:PRO:HD2	2:B:732:TYR:H	1.63	0.64
2:N:387:ILE:HG13	2:N:400:ILE:HG12	1.79	0.64
3:G:1148:HIS:HB2	3:G:1181:VAL:HG13	1.79	0.64
2:N:594:ASP:OD1	2:N:595:ASN:N	2.30	0.64
2:F:621:PRO:HG3	2:F:643:VAL:HG12	1.79	0.64
2:N:632:LEU:HD23	3:O:1073:GLY:HA3	1.79	0.63
1:A:255:MET:SD	1:A:255:MET:N	2.70	0.63
2:B:725:ARG:NH1	2:B:749:CYS:SG	2.67	0.63
2:F:556:GLU:OE1	2:F:556:GLU:N	2.24	0.63
1:A:247:SER:HB2	1:A:260:THR:HG22	1.79	0.63
1:A:253:LYS:HG3	1:A:254:ASP:OD1	1.99	0.63
1:I:168:LEU:HD11	2:J:734:LEU:HD13	1.80	0.62
2:J:522:LYS:NZ	2:J:547:ASP:OD1	2.26	0.62
1:A:254:ASP:O	2:B:735:THR:OG1	2.13	0.62
3:K:1107:GLU:N	3:K:1107:GLU:OE1	2.31	0.62
2:B:518:SER:OG	2:B:519:GLY:N	2.30	0.62
1:A:188:LYS:HZ1	1:A:207:PHE:HE1	1.48	0.62
1:A:145:HIS:HD2	1:A:266:GLU:HB3	1.65	0.62
2:B:337:GLN:NE2	2:B:340:ASN:OD1	2.32	0.62
3:O:882:GLU:OE2	3:O:883:CYS:N	2.32	0.61
2:J:607:THR:HB	2:J:618:HIS:HB2	1.82	0.61
1:A:266:GLU:N	1:A:266:GLU:OE1	2.34	0.61
2:J:492:THR:HG22	2:J:494:ALA:H	1.65	0.61
3:K:920:GLU:OE1	3:K:920:GLU:N	2.34	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:K:969:VAL:HG23	3:K:976:PHE:HB2	1.83	0.61
1:A:193:TYR:HD1	1:A:225:ASP:HA	1.66	0.60
1:A:225:ASP:OD1	1:A:229:ARG:N	2.29	0.60
1:E:225:ASP:OD2	1:E:229:ARG:NE	2.32	0.60
2:F:522:LYS:HE3	2:F:547:ASP:HB3	1.82	0.60
1:I:141:MET:HE1	1:I:168:LEU:HD12	1.83	0.60
1:E:195:TRP:CH2	1:E:197:HIS:HB2	2.37	0.60
1:I:225:ASP:OD1	1:I:229:ARG:N	2.32	0.60
1:E:225:ASP:OD1	1:E:229:ARG:N	2.34	0.60
3:O:1074:CYS:HB3	3:O:1086:CYS:HA	1.83	0.60
2:N:368:GLU:HB2	2:N:382:GLN:HG2	1.84	0.60
3:O:1025:SER:OG	3:O:1027:ASP:OD1	2.20	0.60
2:J:424:CYS:SG	2:J:439:PRO:HD2	2.42	0.59
2:B:659:GLU:OE2	2:B:669:ARG:NH1	2.34	0.59
2:J:518:SER:OG	2:J:519:GLY:N	2.33	0.59
2:J:536:CYS:O	2:J:540:ASN:ND2	2.36	0.59
2:N:605:GLU:OE2	2:N:606:PRO:HD2	2.03	0.59
3:C:1017:ASP:OD1	3:C:1018:ILE:N	2.36	0.59
1:M:211:THR:H	1:M:243:ARG:HA	1.67	0.59
2:N:518:SER:OG	2:N:519:GLY:N	2.35	0.59
2:F:478:PRO:HG3	2:F:601:PRO:HB3	1.84	0.59
1:I:195:TRP:CH2	1:I:197:HIS:HB2	2.38	0.59
1:I:174:PRO:HB2	1:I:176:HIS:CD2	2.37	0.59
1:E:261:PRO:O	1:E:264:SER:OG	2.21	0.58
1:A:135:LEU:O	1:A:182:SER:OG	2.20	0.58
2:B:365:VAL:HG11	2:B:448:ILE:HG12	1.85	0.58
2:B:490:GLN:NE2	2:B:594:ASP:OD2	2.36	0.58
4:P:112:SER:OG	4:P:114:GLU:OE2	2.19	0.58
1:E:135:LEU:HG	1:E:140:VAL:HG22	1.84	0.58
3:G:974:THR:HG23	3:G:1097:LEU:HA	1.84	0.58
1:E:235:LEU:HD11	1:E:249:VAL:HG12	1.83	0.58
1:I:165:LYS:NZ	1:I:166:TYR:HE2	1.99	0.58
3:O:1142:ASP:OD2	3:O:1142:ASP:N	2.36	0.58
2:F:708:LEU:O	2:F:712:ILE:HG22	2.04	0.58
2:J:415:SER:HB2	2:J:449:GLN:HG3	1.86	0.58
2:J:726:SER:O	2:J:730:THR:HG23	2.03	0.58
1:M:134:CYS:SG	1:M:135:LEU:N	2.77	0.58
2:F:402:TYR:OH	2:F:450:ASP:OD1	2.08	0.58
1:I:203:SER:O	1:I:206:ARG:HB2	2.04	0.58
2:J:490:GLN:OE1	2:J:491:GLN:N	2.35	0.58
2:F:548:MET:SD	2:F:549:THR:N	2.76	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:238:ALA:HB2	1:M:264:SER:HA	1.86	0.57
2:N:579:ASP:N	2:N:579:ASP:OD1	2.35	0.57
2:B:627:PHE:HZ	2:B:651:ILE:HD11	1.68	0.57
3:C:924:ASP:OD1	3:C:925:ARG:N	2.35	0.57
1:A:261:PRO:O	1:A:264:SER:OG	2.22	0.57
1:M:247:SER:HB3	1:M:261:PRO:HD2	1.86	0.57
2:N:604:ARG:NH2	2:N:622:ASP:OD2	2.37	0.57
2:B:517:GLN:O	2:B:520:ASN:ND2	2.37	0.57
2:J:472:GLU:HG3	2:J:625:THR:HG22	1.86	0.57
3:C:1001:ASN:HD21	3:C:1066:LEU:HD22	1.69	0.57
1:M:113:MET:N	1:M:113:MET:SD	2.77	0.57
3:O:1149:SER:OG	3:O:1150:ASN:N	2.37	0.57
2:N:621:PRO:HG3	2:N:643:VAL:HG12	1.87	0.57
2:F:472:GLU:HG2	2:F:625:THR:HG22	1.86	0.57
1:E:227:LYS:HB2	1:E:229:ARG:HD3	1.87	0.57
3:K:1118:VAL:HG11	3:K:1193:ALA:HB2	1.86	0.56
1:A:209:ILE:HD12	1:A:213:ALA:HB3	1.87	0.56
3:G:1142:ASP:OD1	3:G:1142:ASP:N	2.36	0.56
2:J:467:GLN:HE21	2:J:473:LYS:HD3	1.69	0.56
1:I:234:VAL:HA	1:I:248:VAL:HG12	1.88	0.56
2:N:389:ILE:HB	2:N:401:ARG:NE	2.19	0.56
1:E:142:LYS:HD2	1:E:143:PRO:HD2	1.88	0.56
1:A:152:ASN:OD1	1:A:155:LEU:N	2.21	0.56
2:N:345:THR:OG1	2:N:386:GLN:NE2	2.37	0.56
3:O:909:CYS:SG	3:O:915:ASN:ND2	2.79	0.56
3:K:1017:ASP:OD1	3:K:1018:ILE:N	2.38	0.56
3:O:1059:LEU:O	3:O:1062:LYS:NZ	2.39	0.55
2:F:351:TYR:HE2	3:G:1043:MET:SD	2.29	0.55
2:J:525:VAL:HG13	2:J:527:GLY:H	1.70	0.55
3:O:849:VAL:HG23	3:O:947:LYS:HB3	1.88	0.55
2:B:673:GLN:NE2	3:C:1200:ASP:O	2.40	0.55
3:C:844:LEU:HD23	3:C:952:TYR:HB3	1.89	0.55
2:J:337:GLN:NE2	2:J:340:ASN:OD1	2.39	0.55
2:B:501:ASP:OD2	2:B:501:ASP:N	2.34	0.55
1:I:116:GLU:HG3	1:I:196:HIS:CD2	2.42	0.55
1:A:211:THR:OG1	1:A:242:SER:O	2.18	0.54
2:N:583:ARG:HH12	2:N:586:LYS:HG3	1.72	0.54
2:N:595:ASN:HB2	5:X:1:NAG:N2	2.21	0.54
2:F:580:GLU:OE1	2:F:584:LYS:NZ	2.29	0.54
3:G:1137:THR:OG1	3:G:1138:ASP:N	2.40	0.54
2:B:366:ALA:HA	2:B:458:CYS:SG	2.46	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:545:ASN:O	2:F:545:ASN:ND2	2.37	0.54
3:G:1118:VAL:HG11	3:G:1193:ALA:HB2	1.90	0.54
3:O:874:TYR:HB3	3:O:918:LEU:HB3	1.88	0.54
2:J:548:MET:SD	2:J:549:THR:N	2.81	0.54
1:M:135:LEU:O	1:M:182:SER:OG	2.13	0.54
1:E:234:VAL:HA	1:E:248:VAL:HG12	1.89	0.54
1:A:178:ARG:HB3	1:M:240:GLU:HG2	1.89	0.54
1:E:168:LEU:HD11	2:F:734:LEU:HD22	1.89	0.54
3:G:1245:VAL:O	3:G:1249:ILE:HG22	2.08	0.54
1:E:230:VAL:HG22	1:E:251:TRP:HH2	1.73	0.53
1:I:209:ILE:HG13	1:I:210:PRO:HD2	1.89	0.53
2:N:568:TRP:CZ3	2:N:585:GLY:HA3	2.44	0.53
3:G:866:TYR:HB3	3:G:1018:ILE:HD13	1.91	0.53
3:G:1241:LEU:O	3:G:1245:VAL:HG12	2.08	0.53
1:M:251:TRP:HD1	1:M:256:VAL:HG12	1.73	0.53
2:J:529:LYS:HD2	2:J:564:ASP:OD1	2.08	0.53
2:J:638:TYR:CD2	3:K:1069:LYS:HG3	2.43	0.53
3:K:1112:ILE:HG12	3:K:1113:ASP:OD2	2.08	0.53
2:N:489:TYR:HE1	2:N:593:LEU:HD12	1.72	0.53
2:F:604:ARG:HD3	3:K:1051:THR:HA	1.91	0.53
3:K:994:VAL:HG22	3:K:999:VAL:HG12	1.91	0.53
2:N:630:ARG:NH1	2:N:659:GLU:OE2	2.42	0.53
3:O:1242:VAL:O	3:O:1246:VAL:HG23	2.09	0.53
2:B:677:GLU:OE1	2:B:677:GLU:N	2.42	0.52
3:K:927:ASP:OD2	3:K:927:ASP:N	2.42	0.52
2:N:499:GLU:HG3	2:N:586:LYS:HD3	1.90	0.52
3:O:856:THR:HG23	3:O:940:HIS:HB2	1.91	0.52
2:F:529:LYS:N	2:F:564:ASP:OD2	2.36	0.52
2:J:533:ASN:HA	2:J:541:VAL:HG13	1.90	0.52
1:E:162:LYS:HD2	1:E:163:SER:N	2.23	0.52
1:E:218:ASP:OD1	1:E:221:ARG:NH1	2.43	0.52
3:G:989:ASP:OD1	3:G:990:ASN:N	2.37	0.52
3:K:1135:TYR:C	3:K:1136:LYS:HD3	2.30	0.52
3:K:1140:ASN:ND2	4:L:97:CYS:O	2.40	0.52
2:B:681:HIS:NE2	3:C:1194:SER:HB2	2.25	0.52
2:F:492:THR:HG22	2:F:494:ALA:H	1.74	0.52
3:G:1038:ARG:HG2	3:G:1038:ARG:HH11	1.75	0.52
2:F:632:LEU:HD23	3:G:1073:GLY:HA3	1.90	0.52
1:M:193:TYR:HD2	1:M:225:ASP:HA	1.74	0.52
2:N:523:ILE:O	2:N:547:ASP:HA	2.10	0.52
2:F:510:ASP:OD2	2:F:511:ARG:N	2.43	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:O:1006:PRO:HG2	3:O:1009:SER:HB3	1.93	0.52
2:B:731:PRO:HD2	2:B:732:TYR:N	2.24	0.51
3:K:931:HIS:CD2	5:V:1:NAG:H83	2.45	0.51
3:C:999:VAL:HG23	3:C:1066:LEU:HB3	1.92	0.51
1:M:195:TRP:HB3	1:M:198:GLY:O	2.09	0.51
1:I:141:MET:HE2	1:I:168:LEU:HD12	1.92	0.51
1:I:235:LEU:HB3	1:I:247:SER:O	2.09	0.51
3:K:883:CYS:HB3	3:K:918:LEU:HD11	1.91	0.51
3:K:1145:VAL:HG21	3:K:1169:LEU:HD21	1.92	0.51
2:N:388:GLY:C	2:N:389:ILE:HD13	2.31	0.51
2:B:477:ARG:NH1	2:F:353:ALA:O	2.43	0.51
1:I:193:TYR:CD2	1:I:225:ASP:HA	2.46	0.51
1:I:192:HIS:ND1	1:I:201:GLN:OE1	2.44	0.51
3:K:1017:ASP:OD1	3:K:1018:ILE:HG23	2.09	0.51
1:A:136:VAL:HG11	1:A:251:TRP:CH2	2.45	0.51
2:N:337:GLN:NE2	2:N:340:ASN:OD1	2.41	0.51
2:N:365:VAL:HG12	2:N:365:VAL:O	2.10	0.51
2:B:680:PRO:O	2:B:681:HIS:ND1	2.44	0.51
2:F:415:SER:O	2:F:415:SER:OG	2.25	0.51
3:G:1135:TYR:HH	3:G:1162:LYS:H	1.58	0.51
2:F:616:THR:HG22	2:F:650:THR:HG22	1.93	0.51
3:G:883:CYS:HB3	3:G:918:LEU:HD11	1.93	0.51
3:K:974:THR:HG23	3:K:1097:LEU:HA	1.93	0.51
2:N:507:ASP:OD2	2:N:507:ASP:N	2.43	0.51
1:A:157:LYS:HD3	1:A:157:LYS:N	2.25	0.51
2:N:551:ASN:OD1	2:N:552:THR:N	2.43	0.51
3:C:1025:SER:OG	3:C:1027:ASP:OD1	2.30	0.50
1:M:227:LYS:HB2	1:M:229:ARG:HD3	1.93	0.50
2:N:484:ILE:O	2:N:598:CYS:HB3	2.11	0.50
2:F:364:PRO:O	2:F:384:SER:OG	2.28	0.50
3:K:1017:ASP:OD2	3:K:1054:GLY:N	2.44	0.50
2:N:607:THR:HB	2:N:618:HIS:HB2	1.93	0.50
1:I:195:TRP:CZ2	1:I:197:HIS:HB2	2.46	0.50
1:I:120:ILE:HD11	1:I:222:PRO:HG3	1.93	0.50
1:A:173:ILE:HD11	1:A:177:MET:HG3	1.93	0.50
1:E:174:PRO:HB2	1:E:176:HIS:CD2	2.46	0.50
2:F:351:TYR:HE1	2:F:360:SER:HB2	1.76	0.50
3:K:1140:ASN:HD21	4:L:98:ILE:HA	1.77	0.50
1:A:154:ASP:OD1	1:A:154:ASP:N	2.45	0.50
2:B:373:GLU:OE1	2:B:489:TYR:OH	2.30	0.50
2:F:691:TYR:HB3	2:F:699:THR:HG21	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:K:945:LYS:NZ	3:K:945:LYS:HB3	2.26	0.50
2:N:717:SER:OG	3:O:1235:PHE:HE2	1.94	0.50
1:I:155:LEU:HA	1:I:158:LEU:HD23	1.93	0.50
2:B:525:VAL:HG22	2:B:527:GLY:H	1.75	0.50
2:B:559:HIS:HB2	3:C:910:PHE:CE2	2.43	0.50
1:E:194:ASN:N	1:E:224:PHE:O	2.44	0.50
3:K:1114:LEU:HD11	3:K:1133:LEU:HD12	1.94	0.50
1:I:113:MET:HA	1:I:116:GLU:HG2	1.93	0.50
1:M:193:TYR:CD2	1:M:225:ASP:HA	2.47	0.50
2:N:484:ILE:O	2:N:598:CYS:CB	2.60	0.50
3:G:893:CYS:SG	3:G:894:LYS:N	2.85	0.49
3:O:920:GLU:N	3:O:920:GLU:OE1	2.45	0.49
1:I:187:GLU:OE2	1:I:229:ARG:NH2	2.46	0.49
3:O:876:LYS:NZ	3:O:877:CYS:O	2.43	0.49
1:E:188:LYS:HZ1	1:E:231:VAL:HA	1.76	0.49
1:I:165:LYS:HD2	1:I:165:LYS:O	2.12	0.49
2:J:483:GLU:OE1	2:J:483:GLU:HA	2.11	0.49
2:J:490:GLN:OE1	2:J:492:THR:N	2.45	0.49
3:K:1136:LYS:HD3	3:K:1136:LYS:N	2.27	0.49
3:C:1142:ASP:N	3:C:1142:ASP:OD1	2.45	0.49
3:G:899:VAL:HG13	3:G:901:PRO:HD3	1.94	0.49
1:M:139:LYS:HG3	2:N:736:PRO:HA	1.94	0.49
3:K:880:ALA:HA	3:K:916:THR:HG21	1.93	0.49
3:C:1217:MET:HA	3:C:1222:LEU:HD12	1.94	0.49
3:K:831:LYS:NZ	3:K:1154:LEU:O	2.45	0.49
1:A:178:ARG:HH21	1:M:240:GLU:HB3	1.78	0.49
1:I:123:VAL:HG23	1:I:150:ILE:HA	1.94	0.49
2:J:418:VAL:O	2:J:424:CYS:HB2	2.13	0.49
2:J:673:GLN:NE2	3:K:1200:ASP:O	2.46	0.49
2:B:720:MET:CE	3:C:1240:ILE:HD13	2.43	0.49
1:E:134:CYS:SG	1:E:135:LEU:N	2.86	0.49
2:J:529:LYS:HG3	2:J:563:THR:HB	1.94	0.49
1:M:190:GLU:N	1:M:190:GLU:OE1	2.46	0.49
2:N:710:ALA:O	2:N:714:ILE:HG22	2.13	0.49
1:M:160:PHE:HA	1:M:171:ALA:HB2	1.95	0.49
2:N:450:ASP:OD1	2:N:451:THR:N	2.45	0.49
2:B:510:ASP:OD2	2:B:511:ARG:N	2.45	0.49
3:C:1082:ARG:HH11	3:C:1082:ARG:HG2	1.78	0.49
2:J:373:GLU:OE1	2:J:489:TYR:OH	2.31	0.49
1:M:152:ASN:OD1	1:M:153:ALA:N	2.46	0.49
2:J:391:LYS:H	2:J:410:ASN:HD21	1.60	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:233:ILE:HD12	1:E:234:VAL:H	1.77	0.48
2:N:412:VAL:HG22	2:N:414:SER:H	1.77	0.48
3:O:829:PRO:HB2	3:O:831:LYS:NZ	2.28	0.48
3:O:911:CYS:HB3	3:O:914:GLU:HB2	1.95	0.48
2:B:566:LYS:N	2:B:566:LYS:HD2	2.28	0.48
2:F:629:TYR:CE2	2:F:639:HIS:HB3	2.48	0.48
1:I:138:ASP:OD1	2:J:737:GLY:N	2.43	0.48
1:M:219:SER:OG	1:M:267:TRP:O	2.31	0.48
3:C:1149:SER:OG	3:C:1150:ASN:N	2.46	0.48
3:G:1074:CYS:CB	3:G:1086:CYS:HA	2.43	0.48
3:K:1127:PHE:HA	3:K:1172:SER:HB2	1.94	0.48
2:B:418:VAL:O	2:B:424:CYS:HB2	2.12	0.48
1:E:225:ASP:HB3	1:E:231:VAL:HG11	1.95	0.48
1:M:123:VAL:HG12	1:M:131:GLY:O	2.13	0.48
1:M:138:ASP:OD1	1:M:138:ASP:N	2.46	0.48
3:C:1028:LEU:HD12	3:C:1029:TYR:N	2.28	0.48
1:E:247:SER:HB3	1:E:260:THR:HG23	1.95	0.48
3:G:1017:ASP:OD2	3:G:1018:ILE:N	2.46	0.48
1:I:215:LYS:HG3	1:I:218:ASP:HB2	1.95	0.48
2:B:445:GLN:HG3	2:B:459:ARG:HB3	1.95	0.48
3:C:865:GLU:O	3:C:926:SER:HB3	2.14	0.48
3:O:989:ASP:OD1	3:O:990:ASN:N	2.40	0.48
3:G:1079:ASN:O	3:G:1079:ASN:ND2	2.46	0.48
2:N:368:GLU:HA	2:N:368:GLU:OE1	2.14	0.48
2:N:555:ILE:HG13	2:N:556:GLU:N	2.27	0.48
2:B:632:LEU:HD23	3:C:1073:GLY:HA3	1.96	0.48
1:E:108:ARG:O	1:E:111:MET:HG3	2.14	0.47
2:N:559:HIS:HB2	3:O:910:PHE:HE1	1.79	0.47
4:H:114:GLU:N	4:H:114:GLU:OE1	2.45	0.47
2:B:621:PRO:HG3	2:B:643:VAL:HG12	1.96	0.47
2:F:656:ASP:O	2:F:671:TRP:NE1	2.47	0.47
1:I:225:ASP:OD1	1:I:228:GLY:N	2.46	0.47
2:N:577:ARG:HB2	3:O:872:SER:HB2	1.96	0.47
2:J:624:PRO:HA	2:J:643:VAL:O	2.14	0.47
3:K:949:ARG:HG3	3:K:949:ARG:HH11	1.78	0.47
4:L:89:SER:HA	4:L:97:CYS:HA	1.96	0.47
2:J:387:ILE:HG12	2:J:400:ILE:HG13	1.96	0.47
2:J:680:PRO:O	2:J:681:HIS:ND1	2.47	0.47
5:S:1:NAG:H62	5:S:2:NAG:HN2	1.80	0.47
1:E:217:GLY:N	1:E:267:TRP:O	2.46	0.47
2:F:700:VAL:O	2:F:704:VAL:HG12	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:166:TYR:CB	1:I:168:LEU:HD22	2.41	0.47
1:I:183:LYS:O	1:I:229:ARG:HB3	2.15	0.47
2:J:724:ALA:HB2	3:K:1243:LEU:HD13	1.96	0.47
1:M:197:HIS:ND1	1:M:213:ALA:O	2.47	0.47
1:E:250:THR:OG1	1:E:251:TRP:N	2.48	0.47
1:I:134:CYS:SG	1:I:135:LEU:N	2.88	0.47
2:J:430:MET:CE	2:J:430:MET:HA	2.45	0.47
1:I:116:GLU:HG3	1:I:196:HIS:HD2	1.77	0.47
2:B:507:ASP:N	2:B:507:ASP:OD2	2.48	0.46
1:E:251:TRP:HD1	1:E:256:VAL:HG22	1.80	0.46
3:G:997:ASP:HA	3:G:1078:THR:HG21	1.97	0.46
1:M:147:LYS:HD3	1:M:148:GLY:N	2.30	0.46
2:B:510:ASP:OD2	2:B:512:THR:HG22	2.15	0.46
2:J:510:ASP:OD2	2:J:513:LEU:HG	2.16	0.46
2:J:727:LYS:NZ	3:K:1246:VAL:HG12	2.29	0.46
3:K:931:HIS:HD2	5:V:1:NAG:H83	1.80	0.46
2:F:653:VAL:HG12	2:F:672:SER:HB3	1.96	0.46
2:B:529:LYS:HZ2	2:B:543:THR:HG22	1.81	0.46
2:N:576:PRO:HD3	3:O:1044:VAL:HG21	1.96	0.46
3:O:844:LEU:HD23	3:O:952:TYR:HB3	1.96	0.46
3:G:1006:PRO:HB2	3:O:966:ASP:O	2.15	0.46
2:N:503:HIS:ND1	2:N:504:MET:N	2.64	0.46
2:B:595:ASN:HB2	5:R:1:NAG:N2	2.30	0.46
2:J:398:THR:O	2:J:398:THR:OG1	2.33	0.46
2:N:535:THR:HG23	2:N:557:GLN:OE1	2.15	0.46
2:B:576:PRO:HD3	3:C:1044:VAL:HG21	1.98	0.46
3:G:951:MET:HA	3:G:955:VAL:O	2.15	0.46
2:J:547:ASP:OD2	2:J:548:MET:N	2.49	0.46
2:B:568:TRP:CZ2	2:B:584:LYS:HG3	2.51	0.46
3:G:1011:GLN:OE1	3:G:1011:GLN:HA	2.15	0.46
3:K:1160:LYS:HB3	4:L:102:TRP:CZ2	2.50	0.46
2:N:399:LYS:NZ	2:N:410:ASN:HD22	2.13	0.46
2:F:412:VAL:HG22	2:F:414:SER:H	1.81	0.46
2:F:475:THR:O	2:F:476:ILE:HD13	2.15	0.46
3:G:1034:LEU:HD12	3:G:1050:GLN:HB2	1.98	0.46
1:M:234:VAL:HA	1:M:248:VAL:HG12	1.98	0.46
1:A:119:CYS:HG	1:A:182:SER:HG	1.64	0.45
1:A:201:GLN:HE21	1:A:243:ARG:HH12	1.64	0.45
2:B:430:MET:HA	2:B:430:MET:CE	2.46	0.45
2:N:475:THR:O	2:N:476:ILE:HD13	2.15	0.45
2:B:546:SER:OG	2:B:548:MET:SD	2.71	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:732:TYR:HD1	2:F:740:VAL:HG22	1.81	0.45
1:M:189:PRO:HD2	1:M:193:TYR:OH	2.17	0.45
2:N:415:SER:HB2	2:N:449:GLN:HG3	1.98	0.45
2:N:506:PRO:HG3	2:N:576:PRO:O	2.16	0.45
3:G:944:LEU:HD22	3:G:981:LEU:HD22	1.97	0.45
2:J:501:ASP:OD1	2:J:501:ASP:N	2.49	0.45
3:K:1019:GLN:HG3	3:K:1029:TYR:HD2	1.81	0.45
2:N:364:PRO:O	2:N:384:SER:OG	2.34	0.45
2:N:568:TRP:CE2	2:N:584:LYS:HG3	2.51	0.45
1:A:195:TRP:HB3	1:A:198:GLY:O	2.16	0.45
3:G:1059:LEU:O	3:G:1062:LYS:NZ	2.49	0.45
2:J:502:MET:HE3	2:J:502:MET:HA	1.97	0.45
1:M:195:TRP:CD1	1:M:196:HIS:N	2.84	0.45
2:N:387:ILE:HD13	2:N:429:THR:OG1	2.16	0.45
3:O:1104:ARG:HE	3:O:1104:ARG:HB3	1.67	0.45
4:H:103:ARG:HA	4:H:115:ASP:HB2	1.98	0.45
1:A:222:PRO:HG2	1:A:224:PHE:CE2	2.51	0.45
2:F:351:TYR:CE1	2:F:360:SER:HB2	2.52	0.45
2:J:577:ARG:HG3	2:J:578:ALA:O	2.16	0.45
3:K:1012:PRO:HB2	3:K:1051:THR:HG21	1.99	0.45
3:K:1080:PRO:O	3:K:1082:ARG:NH1	2.50	0.45
3:G:864:CYS:O	3:G:1018:ILE:HD11	2.16	0.45
3:G:1038:ARG:HG2	3:G:1038:ARG:NH1	2.31	0.45
3:K:877:CYS:HB3	3:K:909:CYS:HB3	1.56	0.45
3:K:924:ASP:OD2	3:K:925:ARG:N	2.49	0.45
2:N:517:GLN:O	2:N:519:GLY:N	2.50	0.45
1:A:118:ASP:OD1	1:A:118:ASP:N	2.48	0.45
3:C:927:ASP:OD1	3:C:927:ASP:N	2.50	0.45
1:A:138:ASP:OD1	1:A:138:ASP:N	2.50	0.45
2:B:511:ARG:O	2:B:511:ARG:HD3	2.16	0.45
1:E:132:TYR:HD2	1:E:221:ARG:HG2	1.81	0.45
1:I:253:LYS:HB2	1:I:254:ASP:H	1.61	0.45
2:J:687:ILE:HG21	3:K:1221:ALA:HB2	1.98	0.45
2:N:478:PRO:HG3	2:N:601:PRO:HB3	1.99	0.45
1:A:111:MET:O	1:A:115:ILE:HG12	2.17	0.45
2:F:490:GLN:HA	2:F:490:GLN:OE1	2.17	0.45
3:G:1248:CYS:SG	3:G:1249:ILE:N	2.90	0.45
3:K:996:LYS:HA	3:K:996:LYS:HD3	1.70	0.45
1:M:161:LYS:HD2	1:M:161:LYS:HA	1.79	0.45
1:A:221:ARG:O	1:A:234:VAL:HG12	2.17	0.45
2:B:568:TRP:CH2	2:B:585:GLY:HA3	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:N:584:LYS:HD3	2:N:584:LYS:HA	1.68	0.45
2:B:387:ILE:HB	2:B:400:ILE:HG12	1.99	0.44
2:F:653:VAL:HG22	2:F:658:MET:HB3	1.99	0.44
2:J:343:LYS:HG2	2:J:393:ASP:OD1	2.17	0.44
2:J:731:PRO:HG2	2:J:732:TYR:HD1	1.80	0.44
3:K:944:LEU:HD23	3:K:963:VAL:HB	1.98	0.44
2:B:615:VAL:HG12	3:C:1202:ILE:HD13	1.99	0.44
2:J:681:HIS:NE2	3:K:1194:SER:HB2	2.32	0.44
2:F:683:TRP:HB2	2:F:685:HIS:CE1	2.52	0.44
3:G:1109:PRO:HA	3:G:1139:LYS:HZ3	1.81	0.44
2:J:350:ALA:HB3	2:J:366:ALA:HB3	1.99	0.44
2:B:352:CYS:HB3	2:B:355:CYS:HB3	1.99	0.44
3:K:1155:GLN:HG2	3:K:1156:GLU:OE1	2.17	0.44
2:F:399:LYS:HE3	2:F:410:ASN:HB3	2.00	0.44
2:N:503:HIS:HE2	2:N:577:ARG:HG3	1.82	0.44
3:O:996:LYS:HD3	3:O:996:LYS:HA	1.73	0.44
2:B:456:ARG:HD2	2:B:456:ARG:HA	1.83	0.44
2:F:498:GLU:HB2	2:F:589:ILE:HD11	1.99	0.44
3:C:996:LYS:HA	3:C:996:LYS:HD2	1.84	0.44
1:E:209:ILE:HG23	1:E:244:THR:HB	2.00	0.44
3:G:1174:ALA:HB2	3:G:1209:HIS:CE1	2.53	0.44
3:G:1202:ILE:HD13	3:G:1202:ILE:HA	1.84	0.44
3:G:1216:ASP:OD1	3:G:1217:MET:N	2.51	0.44
1:M:247:SER:HB3	1:M:260:THR:HA	2.00	0.44
2:B:506:PRO:HG3	2:B:576:PRO:O	2.17	0.44
2:B:516:GLN:HG2	2:B:555:ILE:HG12	2.00	0.44
3:G:877:CYS:HB3	3:G:909:CYS:HB3	1.84	0.44
2:N:732:TYR:HE1	2:N:741:PRO:HD3	1.83	0.44
3:O:866:TYR:HB3	3:O:1018:ILE:HD13	1.99	0.44
2:B:346:ARG:NH1	2:B:569:GLN:OE1	2.51	0.44
2:B:629:TYR:CE1	2:B:639:HIS:HB3	2.53	0.44
2:F:408:ILE:HD12	2:F:408:ILE:N	2.33	0.44
1:A:165:LYS:HE2	1:A:166:TYR:HE1	1.82	0.43
1:E:253:LYS:NZ	1:E:254:ASP:HB2	2.33	0.43
1:I:182:SER:OG	1:I:230:VAL:HG23	2.18	0.43
2:B:461:GLN:OE1	2:J:623:HIS:NE2	2.52	0.43
2:B:476:ILE:HD11	2:F:459:ARG:HD2	2.01	0.43
3:C:877:CYS:HB3	3:C:909:CYS:HB3	1.66	0.43
3:G:996:LYS:HE2	3:G:996:LYS:HB2	1.88	0.43
1:I:193:TYR:CE2	1:I:225:ASP:HA	2.53	0.43
1:I:139:LYS:HG3	2:J:736:PRO:HA	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:J:383:PHE:CE2	2:J:385:ALA:HB3	2.53	0.43
2:J:676:THR:OG1	2:J:693:GLY:HA3	2.18	0.43
2:N:533:ASN:OD1	2:N:541:VAL:HG22	2.19	0.43
3:O:877:CYS:HB3	3:O:909:CYS:HB3	1.77	0.43
2:J:396:ASP:OD2	2:J:397:TYR:N	2.51	0.43
2:J:475:THR:HG22	2:J:476:ILE:HG12	2.00	0.43
2:J:579:ASP:OD1	2:J:579:ASP:N	2.51	0.43
3:K:1123:HIS:HB2	3:K:1174:ALA:HA	2.00	0.43
1:M:256:VAL:HG13	2:N:735:THR:OG1	2.19	0.43
2:N:456:ARG:HA	2:N:456:ARG:HD2	1.83	0.43
1:A:235:LEU:HD23	1:A:235:LEU:HA	1.83	0.43
2:F:486:CYS:SG	2:F:598:CYS:N	2.91	0.43
2:N:399:LYS:HZ1	2:N:410:ASN:ND2	2.15	0.43
2:N:685:HIS:O	2:N:688:VAL:HG12	2.18	0.43
2:B:679:LYS:HD2	2:B:679:LYS:HA	1.70	0.43
3:G:1117:THR:HG23	3:G:1132:THR:HG22	2.01	0.43
3:G:1221:ALA:O	3:G:1225:VAL:HG12	2.18	0.43
3:O:1114:LEU:HD11	3:O:1133:LEU:HD22	1.99	0.43
1:I:167:ASP:HB2	1:I:258:ARG:HH22	1.83	0.43
1:A:142:LYS:O	1:A:169:GLU:HG2	2.19	0.43
2:B:388:GLY:C	2:B:389:ILE:HD13	2.39	0.43
2:B:415:SER:HB2	2:B:449:GLN:HG3	2.01	0.43
2:B:478:PRO:HG3	2:B:601:PRO:HB3	2.00	0.43
3:O:849:VAL:CG2	3:O:947:LYS:HB3	2.49	0.43
4:D:111:ASP:OD1	4:D:112:SER:OG	2.36	0.43
3:C:1166:LYS:HE2	3:C:1166:LYS:HB2	1.82	0.43
2:N:351:TYR:CE1	2:N:360:SER:HB2	2.54	0.43
2:F:351:TYR:HD1	2:F:352:CYS:N	2.17	0.43
2:J:541:VAL:HG11	5:U:1:NAG:H82	2.01	0.43
2:B:732:TYR:HE1	2:B:741:PRO:HD3	1.82	0.42
2:F:346:ARG:HG3	2:F:347:PRO:O	2.18	0.42
2:F:378:MET:SD	2:F:427:HIS:ND1	2.86	0.42
3:O:820:THR:OG1	3:O:821:VAL:N	2.52	0.42
2:F:674:LEU:HD22	2:F:694:LEU:HD11	2.00	0.42
1:I:125:HIS:NE2	1:I:147:LYS:HE2	2.34	0.42
2:J:491:GLN:N	2:J:491:GLN:OE1	2.53	0.42
1:M:157:LYS:HE2	1:M:157:LYS:HB2	1.81	0.42
4:D:87:GLU:HB3	4:D:97:CYS:SG	2.59	0.42
2:F:342:TYR:HE2	2:F:430:MET:SD	2.42	0.42
3:G:964:ASN:OD1	3:G:966:ASP:HB3	2.19	0.42
3:G:978:PHE:CD1	3:G:1093:VAL:HG22	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:J:368:GLU:OE1	2:J:368:GLU:HA	2.19	0.42
2:N:346:ARG:HG2	2:N:568:TRP:O	2.19	0.42
2:N:583:ARG:HH22	2:N:586:LYS:HE2	1.85	0.42
2:B:343:LYS:HG3	2:B:393:ASP:OD1	2.18	0.42
1:E:215:LYS:HA	1:E:215:LYS:HD3	1.87	0.42
2:N:387:ILE:HG22	2:N:431:GLY:O	2.20	0.42
2:B:353:ALA:O	2:J:477:ARG:NH1	2.53	0.42
2:B:742:TRP:O	2:B:746:ILE:HG23	2.19	0.42
2:B:742:TRP:CZ3	3:O:1252:ARG:HB2	2.55	0.42
2:F:415:SER:OG	2:F:449:GLN:HB2	2.20	0.42
3:G:903:MET:HG2	3:G:904:TRP:HD1	1.84	0.42
3:O:1136:LYS:HB3	3:O:1136:LYS:HE3	1.84	0.42
4:P:115:ASP:OD1	4:P:115:ASP:N	2.49	0.42
2:F:732:TYR:HE1	2:F:741:PRO:HD3	1.85	0.42
3:G:1122:THR:O	3:G:1122:THR:OG1	2.35	0.42
3:G:1156:GLU:N	3:G:1156:GLU:OE1	2.53	0.42
2:B:555:ILE:HD13	2:B:555:ILE:HA	1.88	0.42
2:F:510:ASP:OD2	2:F:512:THR:N	2.39	0.42
2:F:522:LYS:HD3	2:F:549:THR:OG1	2.19	0.42
1:I:190:GLU:HA	1:I:202:TYR:CD2	2.55	0.42
2:N:350:ALA:HB3	2:N:366:ALA:HB3	2.02	0.42
3:O:1034:LEU:HD12	3:O:1050:GLN:HB2	2.01	0.42
2:F:387:ILE:HD13	2:F:429:THR:HB	2.02	0.42
2:J:627:PHE:HZ	2:J:651:ILE:HD11	1.84	0.42
1:M:109:GLU:O	1:M:113:MET:HG2	2.20	0.42
2:B:584:LYS:HA	2:B:584:LYS:HD3	1.67	0.42
2:F:488:THR:OG1	2:F:489:TYR:N	2.53	0.42
2:F:609:ILE:HD13	2:F:609:ILE:HA	1.91	0.42
3:G:981:LEU:HD12	3:G:981:LEU:HA	1.88	0.42
3:G:1214:PHE:HD1	3:G:1215:PRO:HD2	1.85	0.42
1:I:112:CYS:O	1:I:116:GLU:HG2	2.20	0.42
2:J:379:LEU:HD21	2:J:464:HIS:CE1	2.54	0.42
1:M:160:PHE:HA	1:M:160:PHE:HD1	1.78	0.42
2:N:683:TRP:O	2:N:687:ILE:HD12	2.20	0.42
2:F:496:THR:HG21	2:F:592:PRO:HB3	2.01	0.42
3:G:1085:ASN:N	3:G:1085:ASN:OD1	2.53	0.42
1:I:185:THR:HG21	1:I:229:ARG:CZ	2.50	0.42
3:C:985:TRP:HZ2	3:C:1071:PRO:HG2	1.84	0.41
1:E:195:TRP:HB2	1:E:223:ILE:HD12	2.02	0.41
1:E:245:ALA:HB1	1:E:261:PRO:HG2	2.02	0.41
2:F:435:LEU:HD21	2:F:489:TYR:HB3	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:J:488:THR:OG1	2:J:489:TYR:N	2.52	0.41
3:K:1082:ARG:HG2	3:K:1082:ARG:HH11	1.85	0.41
3:O:1166:LYS:HB2	3:O:1166:LYS:HE2	1.80	0.41
3:O:1244:VAL:HA	3:O:1247:THR:HG22	2.02	0.41
1:A:165:LYS:HE2	1:A:166:TYR:CE1	2.55	0.41
1:E:201:GLN:OE1	1:E:201:GLN:N	2.52	0.41
2:F:729:LEU:HD23	2:F:729:LEU:O	2.19	0.41
3:G:969:VAL:HG23	3:G:976:PHE:HB2	2.01	0.41
3:G:1022:THR:OG1	3:G:1023:VAL:N	2.53	0.41
1:I:166:TYR:HB2	1:I:168:LEU:CD2	2.45	0.41
2:J:545:ASN:OD1	2:J:545:ASN:N	2.53	0.41
2:N:583:ARG:HD2	2:N:584:LYS:N	2.35	0.41
2:B:564:ASP:O	2:B:566:LYS:NZ	2.39	0.41
2:F:416:LEU:HD21	2:F:434:ILE:HD13	2.01	0.41
3:K:1221:ALA:O	3:K:1225:VAL:HG12	2.20	0.41
1:M:188:LYS:HG2	1:M:202:TYR:CE2	2.55	0.41
2:N:583:ARG:HH12	2:N:586:LYS:NZ	2.19	0.41
2:F:391:LYS:H	2:F:410:ASN:HD21	1.68	0.41
1:I:161:LYS:HE2	2:J:733:ALA:HB3	2.03	0.41
2:N:503:HIS:NE2	2:N:577:ARG:HG3	2.36	0.41
4:H:84:ARG:HD2	4:H:84:ARG:HA	1.87	0.41
2:B:350:ALA:HB3	2:B:366:ALA:HB3	2.02	0.41
2:F:368:GLU:HB2	2:F:382:GLN:HG2	2.02	0.41
2:N:679:LYS:HD2	2:N:679:LYS:HA	1.68	0.41
1:A:216:PRO:HA	1:A:267:TRP:HB3	2.03	0.41
2:B:402:TYR:OH	2:B:450:ASP:OD1	2.24	0.41
2:B:679:LYS:HE3	2:B:680:PRO:HD2	2.01	0.41
2:J:351:TYR:HE2	3:K:1043:MET:SD	2.44	0.41
2:J:447:SER:HB2	2:J:457:ALA:HB2	2.02	0.41
2:J:605:GLU:OE1	2:J:606:PRO:HD2	2.19	0.41
2:J:697:ALA:O	2:J:700:VAL:HG12	2.21	0.41
1:M:145:HIS:ND1	1:M:266:GLU:OE1	2.54	0.41
2:N:443:PHE:C	2:N:443:PHE:CD1	2.94	0.41
1:A:192:HIS:CE1	1:A:201:GLN:HB3	2.56	0.41
3:C:1127:PHE:HA	3:C:1172:SER:HB2	2.01	0.41
1:I:173:ILE:H	1:I:173:ILE:HG12	1.69	0.41
2:J:643:VAL:HG21	2:J:662:TRP:HZ3	1.85	0.41
2:N:680:PRO:O	2:N:681:HIS:ND1	2.53	0.41
3:O:1152:ALA:HB1	3:O:1171:PHE:HD2	1.86	0.41
2:B:683:TRP:HB2	2:B:685:HIS:CE1	2.56	0.41
2:B:724:ALA:HB2	3:C:1243:LEU:HD13	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:720:MET:HG3	3:G:1243:LEU:HD22	2.02	0.41
3:G:1111:ILE:HD12	3:G:1135:TYR:HD2	1.84	0.41
1:I:245:ALA:HB1	1:I:261:PRO:HG3	2.01	0.41
3:K:1123:HIS:O	3:K:1123:HIS:ND1	2.54	0.41
1:M:143:PRO:HB3	1:M:235:LEU:HD23	2.02	0.41
1:M:211:THR:HB	1:M:212:GLY:H	1.66	0.41
3:O:1059:LEU:HD12	3:O:1062:LYS:HZ2	1.85	0.41
4:H:89:SER:HA	4:H:97:CYS:HA	2.03	0.41
1:A:173:ILE:HD12	1:A:174:PRO:CD	2.48	0.41
1:E:201:GLN:HG2	1:E:208:THR:HB	2.03	0.41
2:F:554:LEU:HD12	2:F:554:LEU:HA	1.78	0.41
1:I:138:ASP:OD1	1:I:138:ASP:N	2.54	0.41
3:K:1223:SER:O	3:K:1226:GLN:HG3	2.21	0.41
3:K:1251:LEU:HD23	3:K:1251:LEU:HA	1.91	0.41
2:N:532:TYR:HE1	2:N:544:THR:HG23	1.86	0.41
3:C:860:GLU:HA	3:C:860:GLU:OE1	2.21	0.40
3:C:909:CYS:HB2	3:C:915:ASN:HD21	1.86	0.40
3:C:1034:LEU:HD12	3:C:1034:LEU:HA	1.86	0.40
1:I:123:VAL:HG23	1:I:150:ILE:HD12	2.02	0.40
3:K:859:LEU:HD12	3:K:860:GLU:N	2.35	0.40
2:B:399:LYS:NZ	2:B:410:ASN:OD1	2.33	0.40
2:B:514:LEU:HB3	2:B:555:ILE:HD12	2.04	0.40
2:J:378:MET:HE2	2:J:435:LEU:HG	2.02	0.40
3:K:1249:ILE:HD13	3:K:1249:ILE:HA	1.86	0.40
1:M:108:ARG:O	1:M:111:MET:HG3	2.20	0.40
3:O:944:LEU:HD23	3:O:945:LYS:N	2.37	0.40
1:A:196:HIS:CE1	1:A:221:ARG:HH22	2.39	0.40
2:B:380:LYS:HE3	2:B:380:LYS:HB2	1.89	0.40
2:B:474:PHE:HE2	2:B:600:VAL:HG12	1.86	0.40
3:C:1061:GLU:HG3	3:C:1061:GLU:O	2.20	0.40
1:E:238:ALA:HB2	1:E:264:SER:HA	2.02	0.40
1:E:252:ASN:C	1:E:252:ASN:OD1	2.60	0.40
1:I:251:TRP:HD1	1:I:256:VAL:HG12	1.85	0.40
1:M:208:THR:HG22	1:M:243:ARG:HE	1.87	0.40
3:O:944:LEU:HD22	3:O:963:VAL:HB	2.04	0.40
4:L:83:CYS:HB3	4:L:84:ARG:H	1.53	0.40
2:B:347:PRO:HD3	2:B:386:GLN:OE1	2.22	0.40
1:E:136:VAL:HG13	1:E:230:VAL:HG11	2.02	0.40
3:O:1059:LEU:HD12	3:O:1059:LEU:HA	1.87	0.40
3:C:964:ASN:O	3:C:964:ASN:ND2	2.44	0.40
3:G:1104:ARG:HG3	3:G:1107:GLU:OE2	2.22	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:1214:PHE:CD1	3:G:1215:PRO:HD2	2.56	0.40
2:J:559:HIS:C	2:J:559:HIS:ND1	2.75	0.40
2:N:351:TYR:HE2	3:O:1043:MET:SD	2.45	0.40
3:O:1040:SER:O	3:O:1043:MET:HB2	2.21	0.40
3:O:1059:LEU:HD12	3:O:1062:LYS:NZ	2.37	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 PDB entries followed by that with respect to all EM entries.

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	160/162 (99%)	152 (95%)	8 (5%)	0	100	100
1	E	160/162 (99%)	147 (92%)	13 (8%)	0	100	100
1	I	160/162 (99%)	150 (94%)	10 (6%)	0	100	100
1	M	160/162 (99%)	147 (92%)	13 (8%)	0	100	100
2	B	416/418 (100%)	392 (94%)	24 (6%)	0	100	100
2	F	416/418 (100%)	393 (94%)	23 (6%)	0	100	100
2	J	416/418 (100%)	397 (95%)	19 (5%)	0	100	100
2	N	416/418 (100%)	395 (95%)	20 (5%)	1 (0%)	44	75
3	C	436/438 (100%)	424 (97%)	12 (3%)	0	100	100
3	G	436/438 (100%)	421 (97%)	15 (3%)	0	100	100
3	K	436/438 (100%)	429 (98%)	7 (2%)	0	100	100
3	O	436/438 (100%)	425 (98%)	10 (2%)	1 (0%)	44	75
4	D	35/37 (95%)	33 (94%)	2 (6%)	0	100	100
4	H	35/37 (95%)	35 (100%)	0	0	100	100
4	L	35/37 (95%)	35 (100%)	0	0	100	100
4	P	35/37 (95%)	35 (100%)	0	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
All	All	4188/4220 (99%)	4010 (96%)	176 (4%)	2 (0%)	100 100

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	N	518	SER
3	O	1185	CYS

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 PDB entries followed by that with respect to all EM entries.

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	132/132 (100%)	120 (91%)	12 (9%)	7 30
1	E	132/132 (100%)	127 (96%)	5 (4%)	28 57
1	I	132/132 (100%)	125 (95%)	7 (5%)	19 46
1	M	132/132 (100%)	123 (93%)	9 (7%)	13 39
2	B	358/358 (100%)	336 (94%)	22 (6%)	15 43
2	F	358/358 (100%)	338 (94%)	20 (6%)	17 45
2	J	358/358 (100%)	337 (94%)	21 (6%)	16 44
2	N	358/358 (100%)	334 (93%)	24 (7%)	13 40
3	C	372/372 (100%)	358 (96%)	14 (4%)	28 57
3	G	372/372 (100%)	355 (95%)	17 (5%)	23 52
3	K	372/372 (100%)	342 (92%)	30 (8%)	9 33
3	O	372/372 (100%)	362 (97%)	10 (3%)	40 65
4	D	33/33 (100%)	30 (91%)	3 (9%)	7 30
4	H	33/33 (100%)	33 (100%)	0	100 100
4	L	33/33 (100%)	32 (97%)	1 (3%)	36 63
4	P	33/33 (100%)	33 (100%)	0	100 100
All	All	3580/3580 (100%)	3385 (95%)	195 (5%)	21 46

All (195) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	113	MET
1	A	125	HIS
1	A	145	HIS
1	A	158	LEU
1	A	160	PHE
1	A	170	CYS
1	A	176	HIS
1	A	187	GLU
1	A	229	ARG
1	A	252	ASN
1	A	254	ASP
1	A	257	THR
2	B	348	TYR
2	B	352	CYS
2	B	355	CYS
2	B	363	SER
2	B	368	GLU
2	B	383	PHE
2	B	397	TYR
2	B	410	ASN
2	B	414	SER
2	B	430	MET
2	B	452	ARG
2	B	486	CYS
2	B	557	GLN
2	B	579	ASP
2	B	598	CYS
2	B	623	HIS
2	B	626	LEU
2	B	628	SER
2	B	635	ASP
2	B	707	SER
2	B	708	LEU
2	B	719	TYR
3	C	881	SER
3	C	927	ASP
3	C	930	ARG
3	C	964	ASN
3	C	997	ASP
3	C	1003	ASP
3	C	1040	SER
3	C	1045	HIS

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Mol	Chain	Res	Type
3	C	1124	SER
3	C	1175	SER
3	C	1216	ASP
3	C	1217	MET
3	C	1229	SER
3	C	1235	PHE
1	E	176	HIS
1	E	193	TYR
1	E	229	ARG
1	E	251	TRP
1	E	255	MET
2	F	342	TYR
2	F	351	TYR
2	F	354	ASP
2	F	363	SER
2	F	383	PHE
2	F	413	ARG
2	F	430	MET
2	F	442	GLU
2	F	452	ARG
2	F	540	ASN
2	F	545	ASN
2	F	583	ARG
2	F	588	HIS
2	F	665	ASN
2	F	691	TYR
2	F	701	SER
2	F	713	SER
2	F	718	CYS
2	F	719	TYR
2	F	742	TRP
3	G	866	TYR
3	G	883	CYS
3	G	890	ASP
3	G	926	SER
3	G	940	HIS
3	G	951	MET
3	G	983	SER
3	G	997	ASP
3	G	1045	HIS
3	G	1085	ASN
3	G	1135	TYR

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Mol	Chain	Res	Type
3	G	1142	ASP
3	G	1160	LYS
3	G	1211	ASN
3	G	1214	PHE
3	G	1222	LEU
3	G	1248	CYS
1	I	142	LYS
1	I	145	HIS
1	I	160	PHE
1	I	162	LYS
1	I	176	HIS
1	I	215	LYS
1	I	255	MET
2	J	351	TYR
2	J	352	CYS
2	J	361	CYS
2	J	383	PHE
2	J	391	LYS
2	J	430	MET
2	J	452	ARG
2	J	482	LYS
2	J	486	CYS
2	J	490	GLN
2	J	501	ASP
2	J	507	ASP
2	J	514	LEU
2	J	534	CYS
2	J	536	CYS
2	J	545	ASN
2	J	577	ARG
2	J	588	HIS
2	J	638	TYR
2	J	711	LEU
2	J	718	CYS
3	K	847	GLN
3	K	864	CYS
3	K	881	SER
3	K	883	CYS
3	K	893	CYS
3	K	931	HIS
3	K	945	LYS
3	K	951	MET

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Mol	Chain	Res	Type
3	K	952	TYR
3	K	960	ASP
3	K	997	ASP
3	K	1002	GLN
3	K	1020	SER
3	K	1025	SER
3	K	1027	ASP
3	K	1040	SER
3	K	1045	HIS
3	K	1060	LYS
3	K	1061	GLU
3	K	1097	LEU
3	K	1113	ASP
3	K	1117	THR
3	K	1139	LYS
3	K	1142	ASP
3	K	1144	SER
3	K	1156	GLU
3	K	1200	ASP
3	K	1205	TYR
3	K	1216	ASP
3	K	1248	CYS
1	M	124	LYS
1	M	145	HIS
1	M	160	PHE
1	M	165	LYS
1	M	183	LYS
1	M	215	LYS
1	M	218	ASP
1	M	229	ARG
1	M	251	TRP
2	N	354	ASP
2	N	355	CYS
2	N	361	CYS
2	N	383	PHE
2	N	394	ASN
2	N	397	TYR
2	N	435	LEU
2	N	443	PHE
2	N	452	ARG
2	N	486	CYS
2	N	529	LYS

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Mol	Chain	Res	Type
2	N	531	LYS
2	N	546	SER
2	N	547	ASP
2	N	554	LEU
2	N	586	LYS
2	N	593	LEU
2	N	605	GLU
2	N	658	MET
2	N	664	ASN
2	N	675	THR
2	N	701	SER
2	N	707	SER
2	N	709	LEU
3	O	861	TYR
3	O	933	HIS
3	O	1003	ASP
3	O	1045	HIS
3	O	1053	SER
3	O	1085	ASN
3	O	1095	MET
3	O	1124	SER
3	O	1179	SER
3	O	1252	ARG
4	D	83	CYS
4	D	84	ARG
4	D	118	ASN
4	L	84	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	145	HIS
1	E	176	HIS
1	I	176	HIS
2	J	337	GLN
2	J	340	ASN
3	K	931	HIS
2	N	410	ASN
2	N	689	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

16 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	$\# Z > 2$
5	NAG	Q	1	2,5	14,14,15	0.29	0	17,19,21	0.42	0
5	NAG	Q	2	5	14,14,15	0.16	0	17,19,21	0.45	0
5	NAG	R	1	2,5	14,14,15	0.28	0	17,19,21	0.47	0
5	NAG	R	2	5	14,14,15	0.26	0	17,19,21	0.43	0
5	NAG	S	1	2,5	14,14,15	0.28	0	17,19,21	0.44	0
5	NAG	S	2	5	14,14,15	0.18	0	17,19,21	0.47	0
5	NAG	T	1	2,5	14,14,15	0.53	0	17,19,21	0.62	0
5	NAG	T	2	5	14,14,15	0.23	0	17,19,21	0.43	0
5	NAG	U	1	2,5	14,14,15	0.25	0	17,19,21	0.41	0
5	NAG	U	2	5	14,14,15	0.19	0	17,19,21	0.42	0
5	NAG	V	1	2,5	14,14,15	0.35	0	17,19,21	0.74	1 (5%)
5	NAG	V	2	5	14,14,15	0.24	0	17,19,21	0.39	0
5	NAG	W	1	2,5	14,14,15	0.21	0	17,19,21	0.38	0
5	NAG	W	2	5	14,14,15	0.19	0	17,19,21	0.44	0
5	NAG	X	1	2,5	14,14,15	0.30	0	17,19,21	0.52	0
5	NAG	X	2	5	14,14,15	0.25	0	17,19,21	0.45	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
5	NAG	Q	1	2,5	-	2/6/23/26	0/1/1/1
5	NAG	Q	2	5	-	2/6/23/26	0/1/1/1
5	NAG	R	1	2,5	-	2/6/23/26	0/1/1/1
5	NAG	R	2	5	-	2/6/23/26	0/1/1/1
5	NAG	S	1	2,5	-	1/6/23/26	0/1/1/1
5	NAG	S	2	5	-	2/6/23/26	0/1/1/1
5	NAG	T	1	2,5	-	2/6/23/26	0/1/1/1
5	NAG	T	2	5	-	2/6/23/26	0/1/1/1
5	NAG	U	1	2,5	-	2/6/23/26	0/1/1/1
5	NAG	U	2	5	-	2/6/23/26	0/1/1/1
5	NAG	V	1	2,5	-	0/6/23/26	0/1/1/1
5	NAG	V	2	5	-	2/6/23/26	0/1/1/1
5	NAG	W	1	2,5	-	2/6/23/26	0/1/1/1
5	NAG	W	2	5	-	2/6/23/26	0/1/1/1
5	NAG	X	1	2,5	-	2/6/23/26	0/1/1/1
5	NAG	X	2	5	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	V	1	NAG	C1-O5-C5	2.48	115.55	112.19

There are no chirality outliers.

All (29) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	S	2	NAG	C4-C5-C6-O6
5	Q	2	NAG	O5-C5-C6-O6
5	W	2	NAG	O5-C5-C6-O6
5	T	2	NAG	O5-C5-C6-O6
5	W	1	NAG	O5-C5-C6-O6
5	R	2	NAG	O5-C5-C6-O6
5	Q	1	NAG	O5-C5-C6-O6
5	S	2	NAG	O5-C5-C6-O6
5	X	2	NAG	O5-C5-C6-O6
5	U	1	NAG	C4-C5-C6-O6
5	W	1	NAG	C4-C5-C6-O6
5	Q	2	NAG	C4-C5-C6-O6

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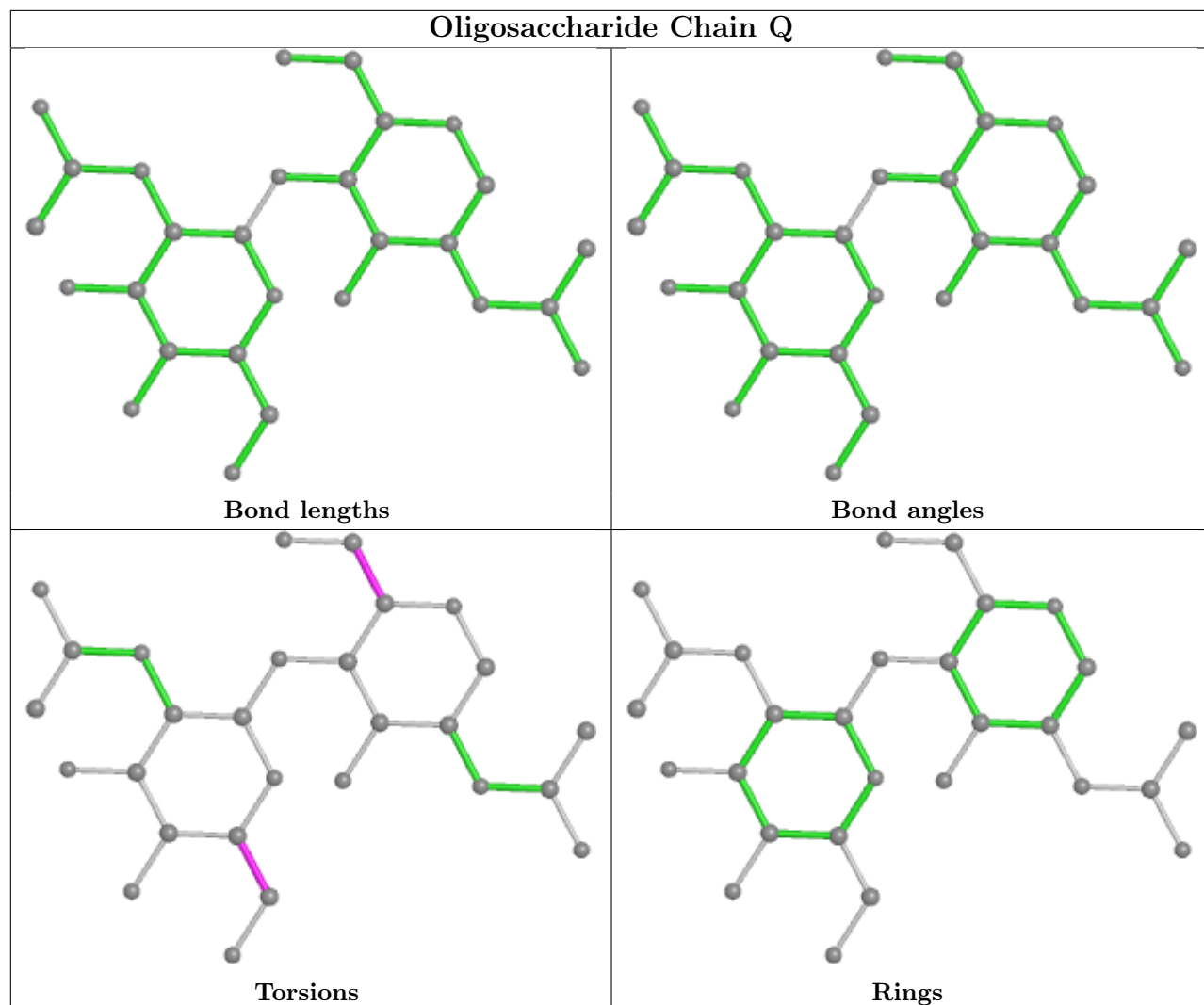
Mol	Chain	Res	Type	Atoms
5	R	2	NAG	C4-C5-C6-O6
5	W	2	NAG	C4-C5-C6-O6
5	Q	1	NAG	C4-C5-C6-O6
5	V	2	NAG	C4-C5-C6-O6
5	U	1	NAG	O5-C5-C6-O6
5	T	2	NAG	C4-C5-C6-O6
5	V	2	NAG	O5-C5-C6-O6
5	U	2	NAG	O5-C5-C6-O6
5	U	2	NAG	C4-C5-C6-O6
5	T	1	NAG	C4-C5-C6-O6
5	X	2	NAG	C4-C5-C6-O6
5	T	1	NAG	O5-C5-C6-O6
5	X	1	NAG	C4-C5-C6-O6
5	S	1	NAG	C4-C5-C6-O6
5	R	1	NAG	C4-C5-C6-O6
5	X	1	NAG	O5-C5-C6-O6
5	R	1	NAG	O5-C5-C6-O6

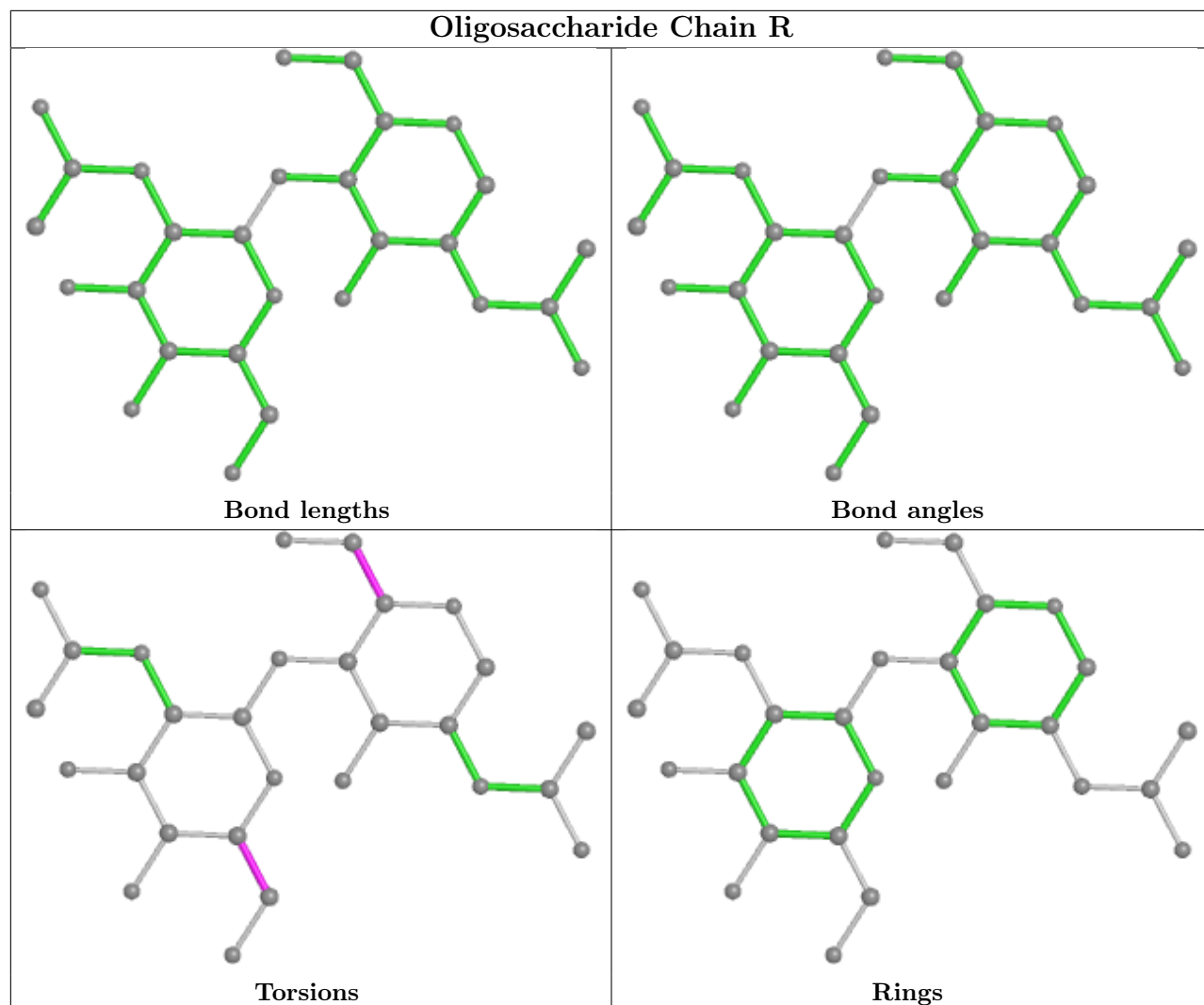
There are no ring outliers.

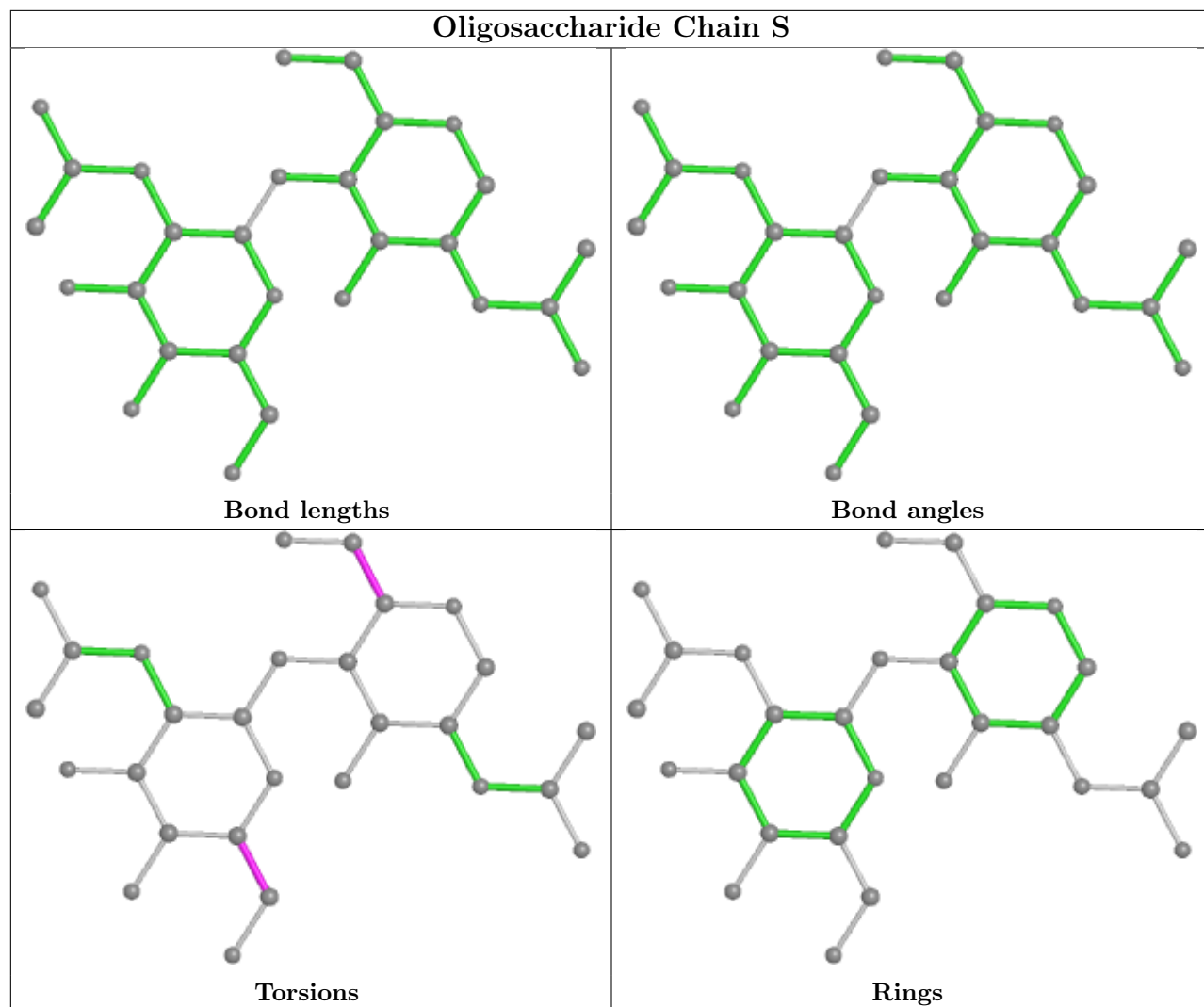
6 monomers are involved in 6 short contacts:

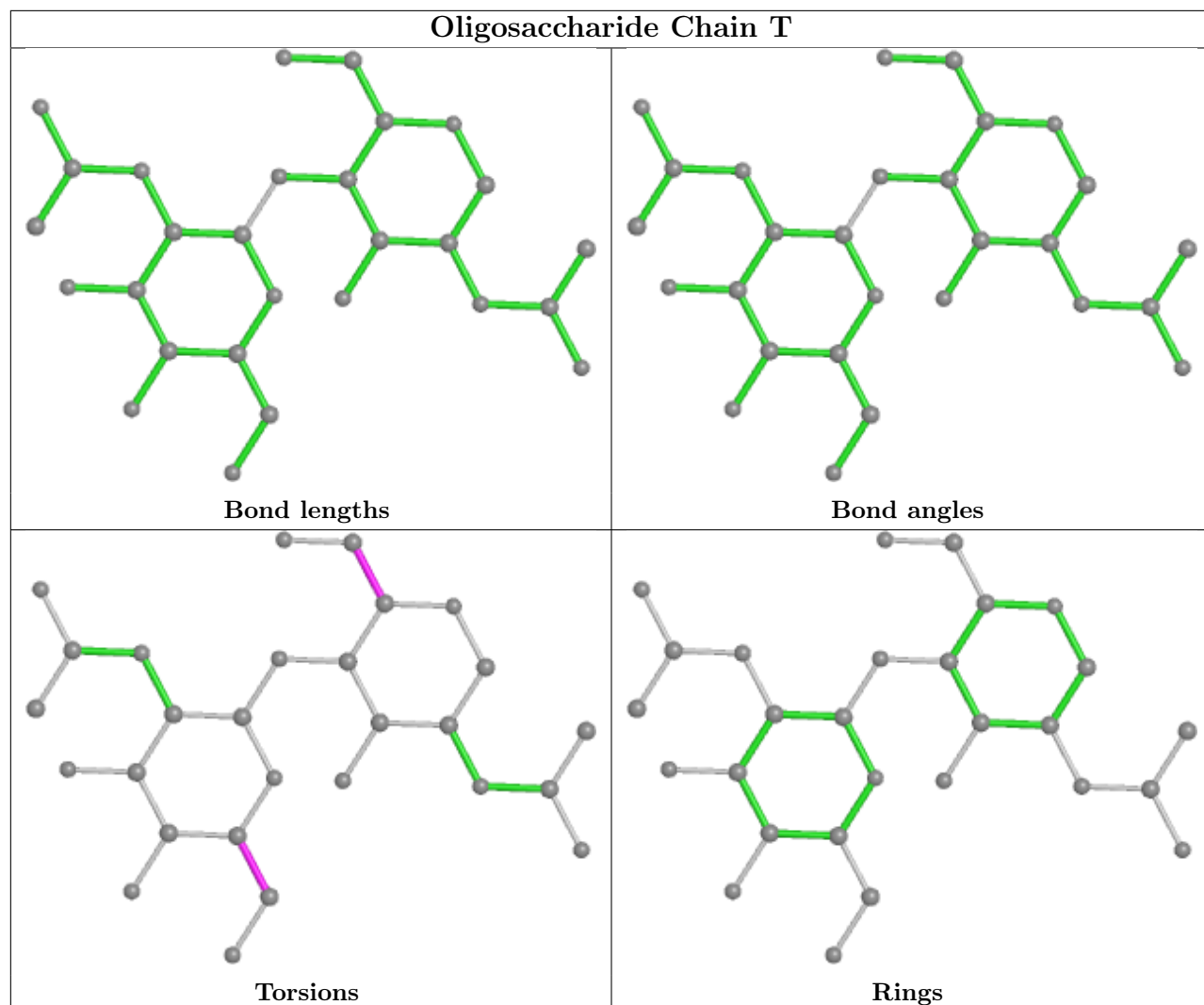
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	S	1	NAG	1	0
5	X	1	NAG	1	0
5	S	2	NAG	1	0
5	V	1	NAG	2	0
5	R	1	NAG	1	0
5	U	1	NAG	1	0

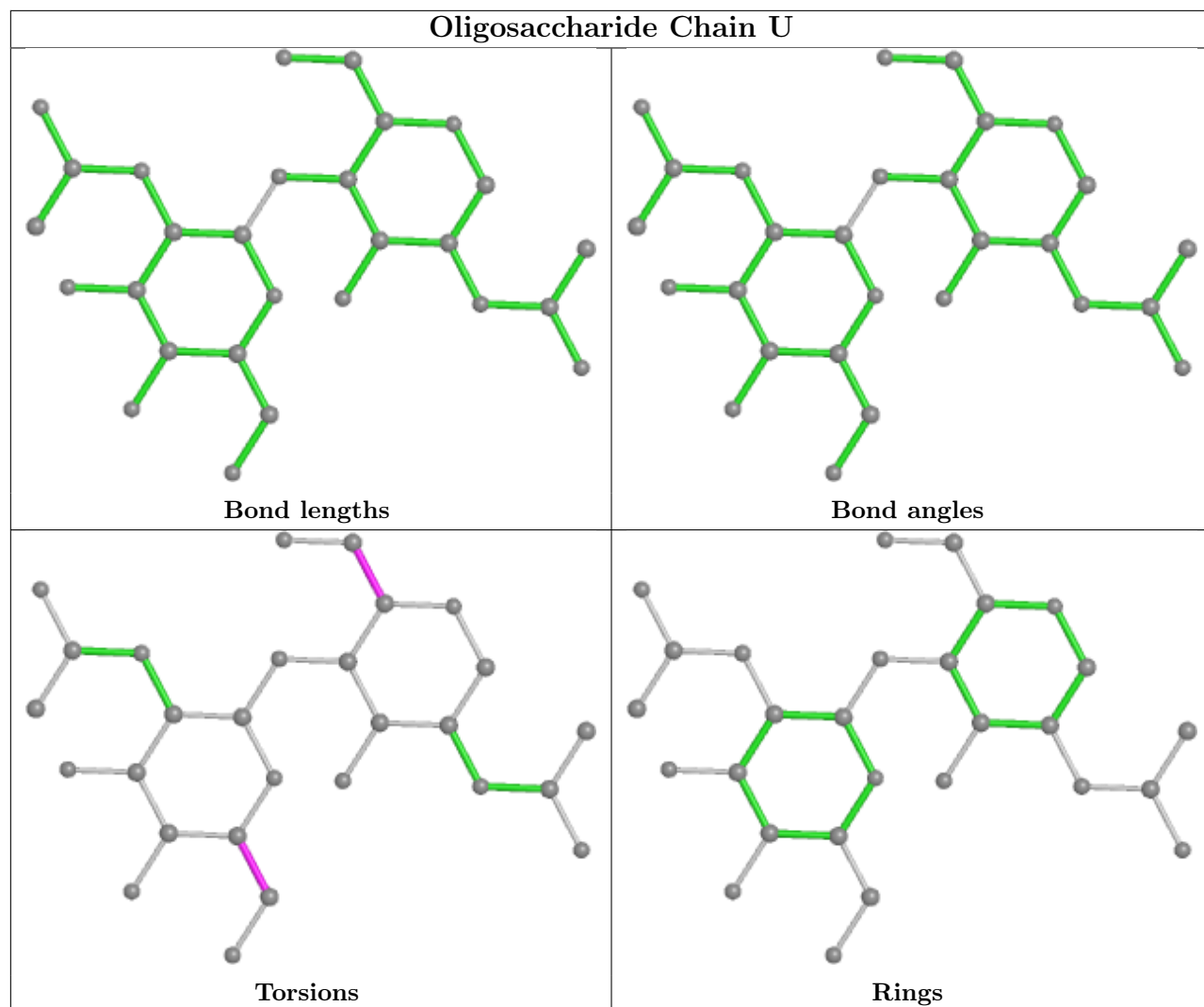
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

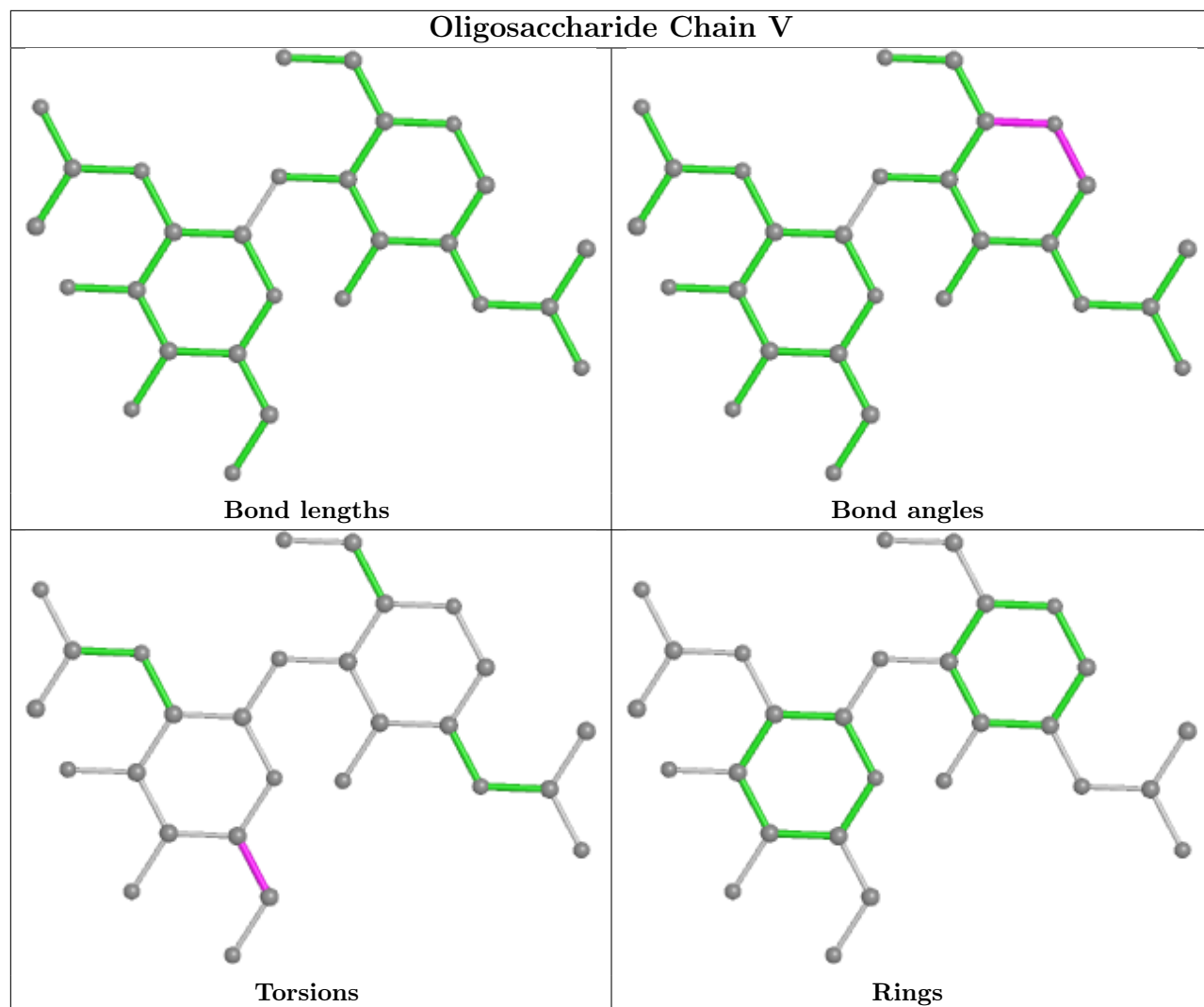


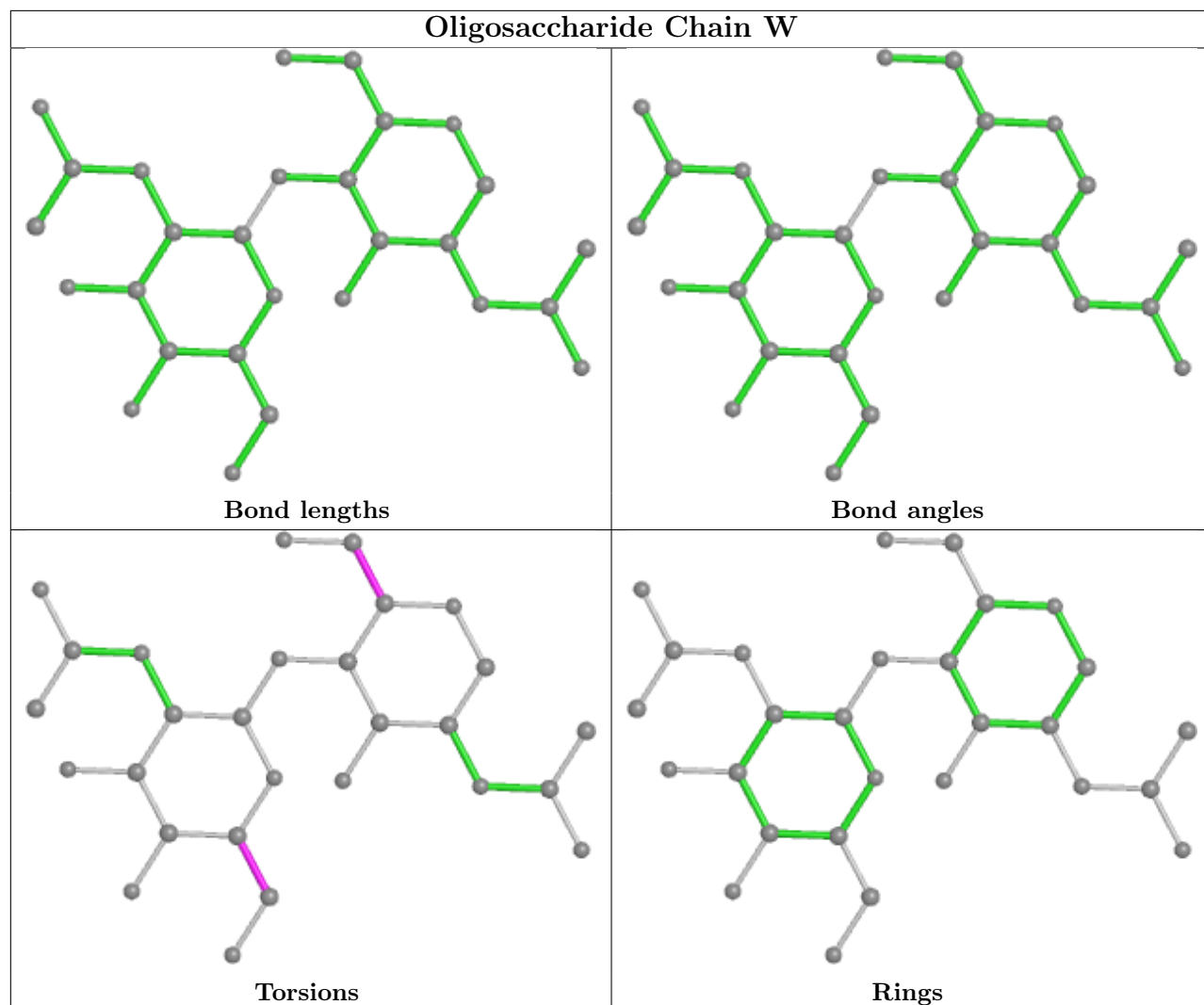


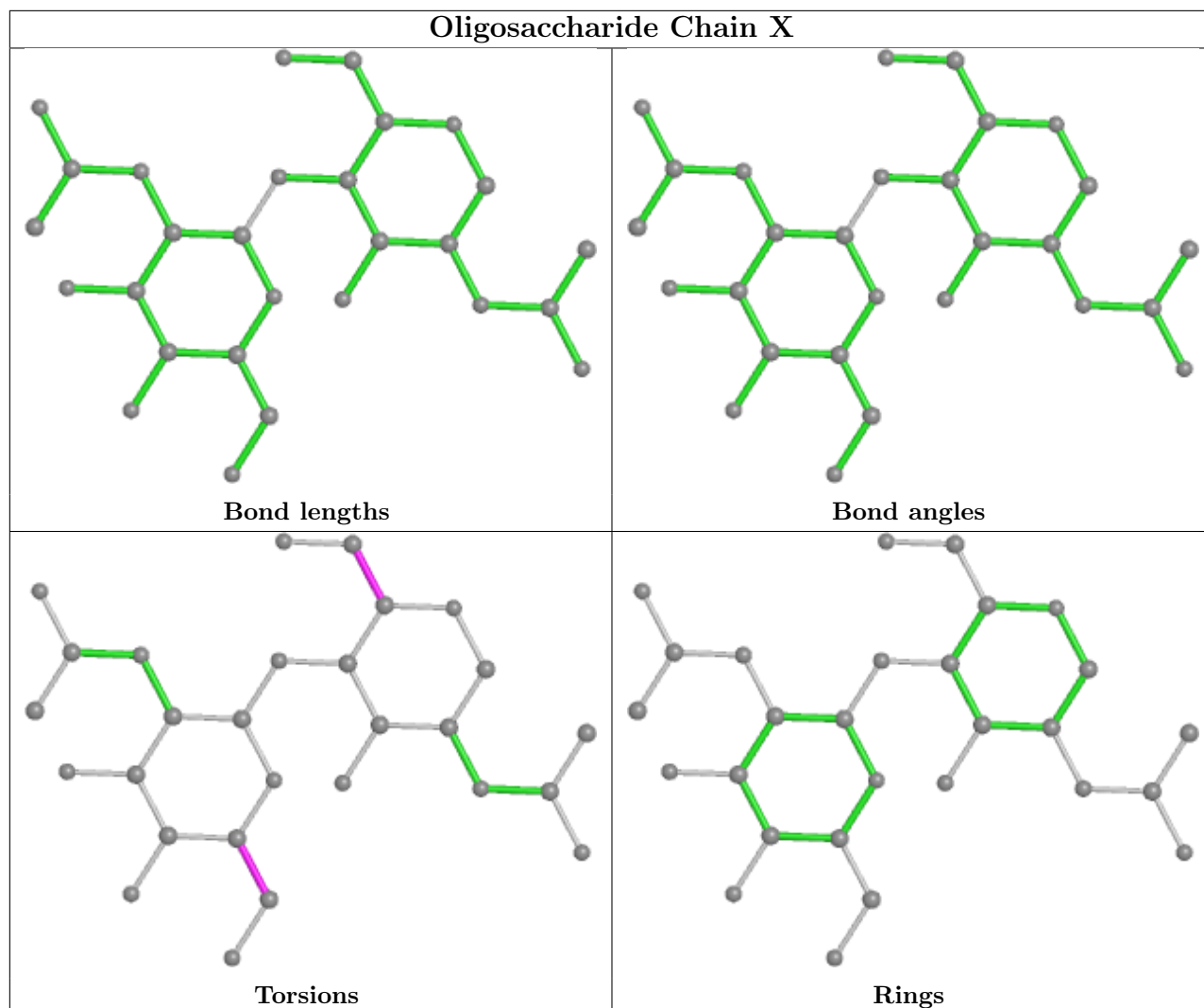












5.6 Ligand geometry [i](#)

Of 8 ligands modelled in this entry, 4 are monoatomic - leaving 4 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	O	1701	3	14,14,15	0.16	0	17,19,21	0.46	0
6	NAG	K	1701	3	14,14,15	0.22	0	17,19,21	0.50	0
6	NAG	C	1701	3	14,14,15	0.17	0	17,19,21	0.56	0
6	NAG	G	1701	3	14,14,15	0.29	0	17,19,21	0.68	1 (5%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	NAG	O	1701	3	-	2/6/23/26	0/1/1/1
6	NAG	K	1701	3	-	2/6/23/26	0/1/1/1
6	NAG	C	1701	3	-	0/6/23/26	0/1/1/1
6	NAG	G	1701	3	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	G	1701	NAG	C1-O5-C5	2.44	115.50	112.19

There are no chirality outliers.

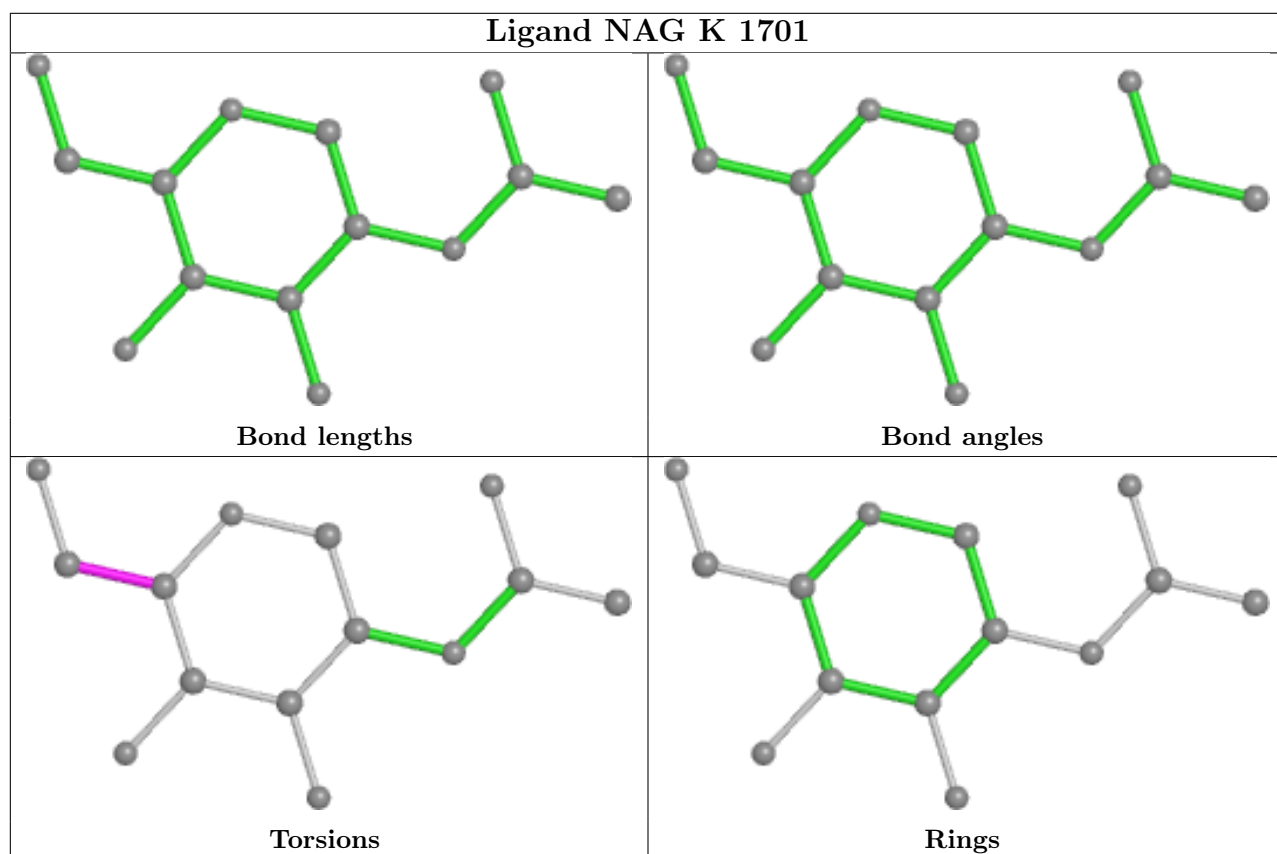
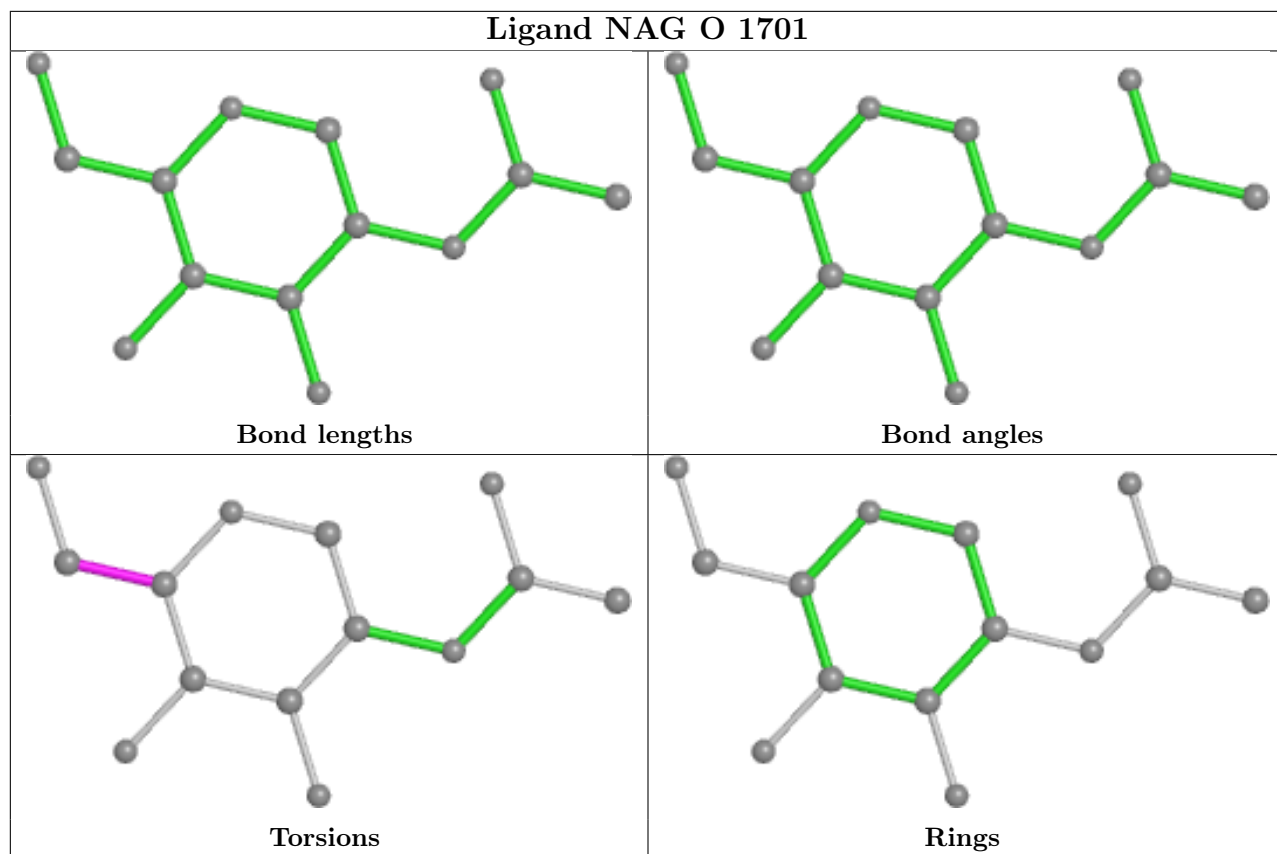
All (4) torsion outliers are listed below:

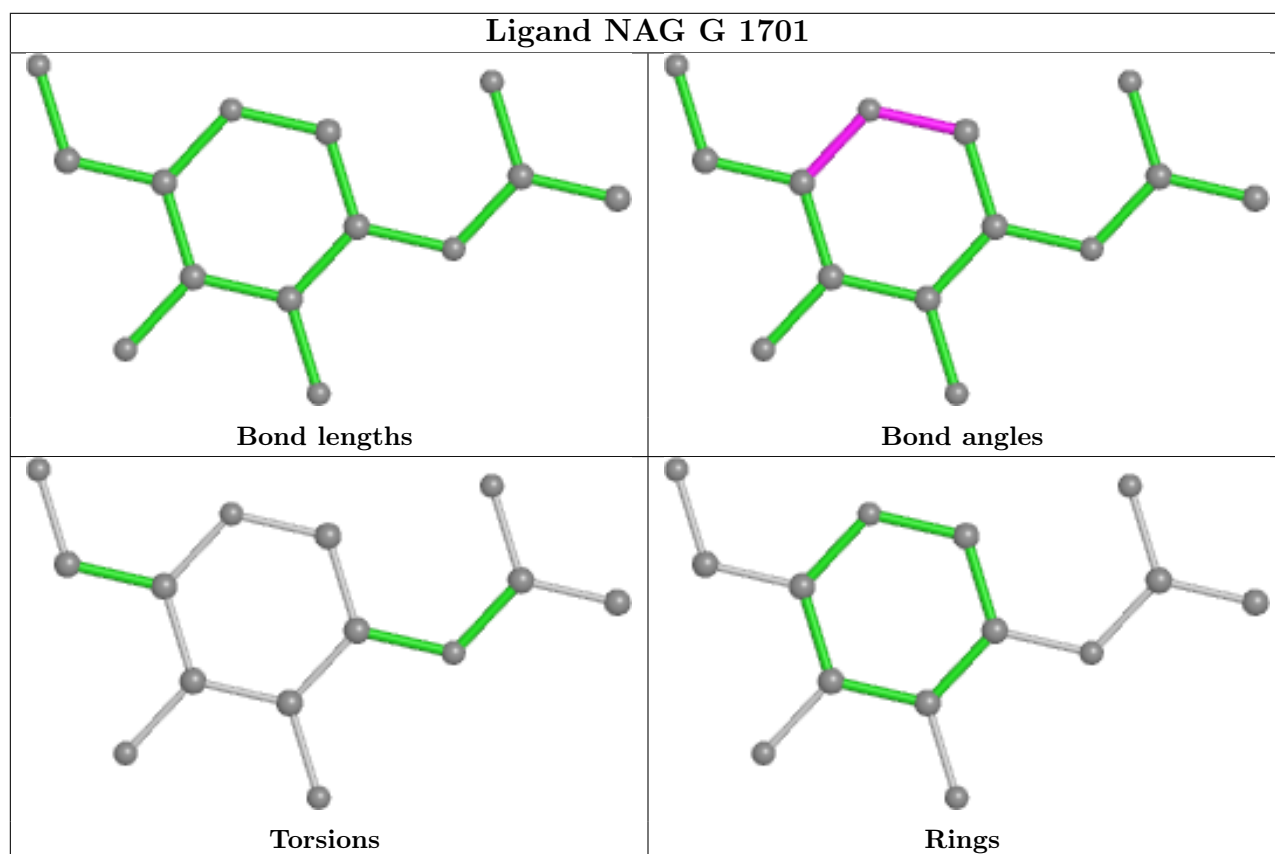
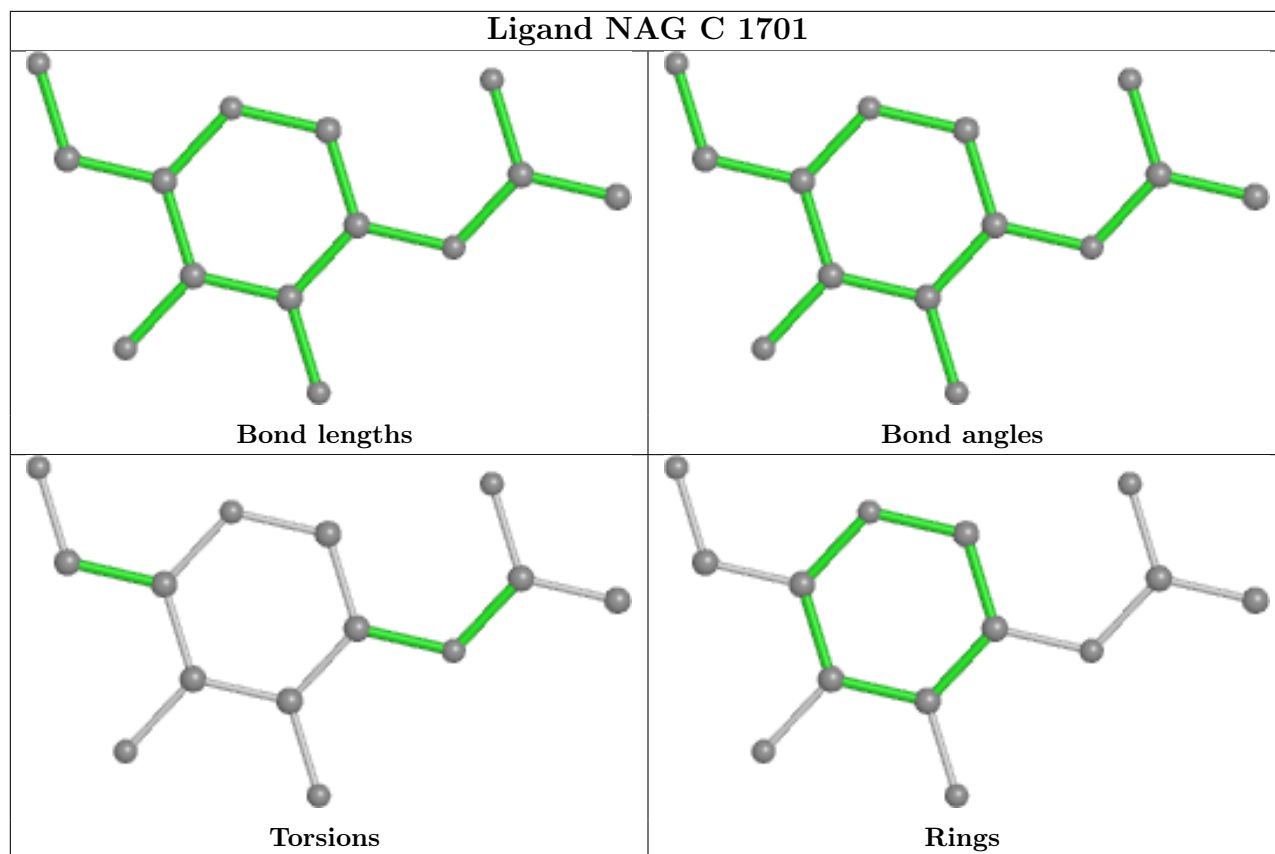
Mol	Chain	Res	Type	Atoms
6	K	1701	NAG	C4-C5-C6-O6
6	O	1701	NAG	C4-C5-C6-O6
6	K	1701	NAG	O5-C5-C6-O6
6	O	1701	NAG	O5-C5-C6-O6

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 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.

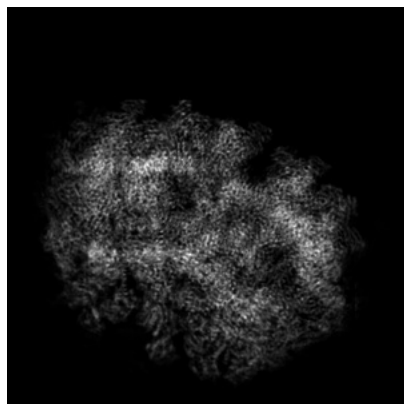
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-37980. These allow visual inspection of the internal detail of the map and identification of artifacts.

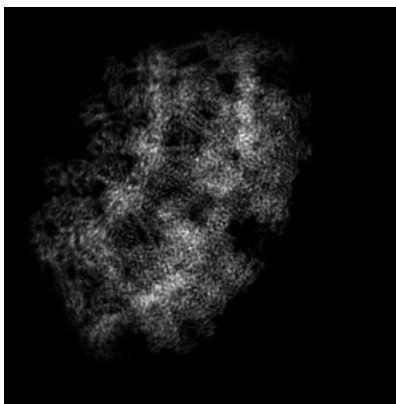
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

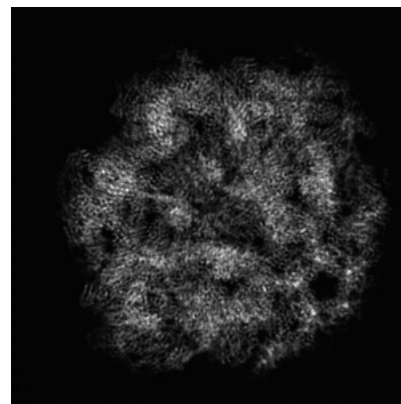
6.1.1 Primary map



X

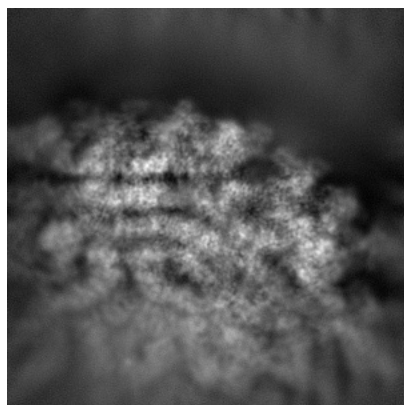


Y

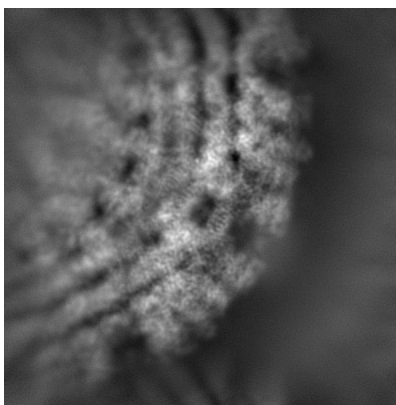


Z

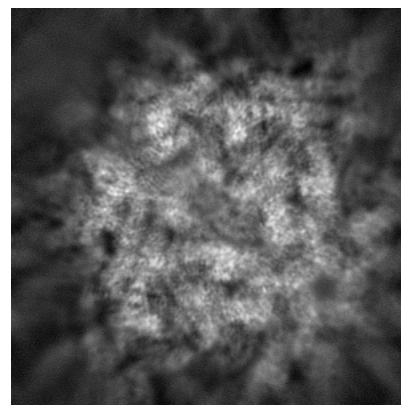
6.1.2 Raw map



X



Y

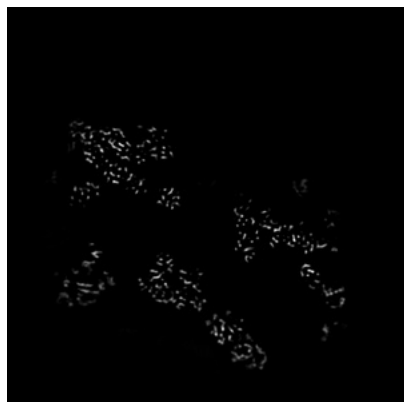


Z

The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

6.2.1 Primary map



X Index: 184

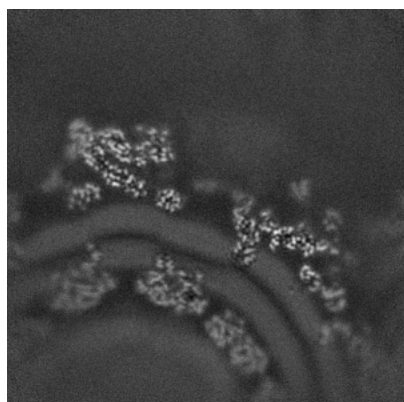


Y Index: 184

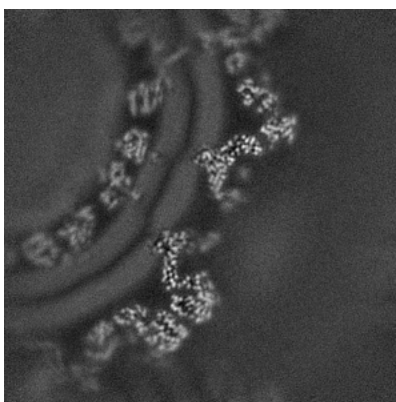


Z Index: 184

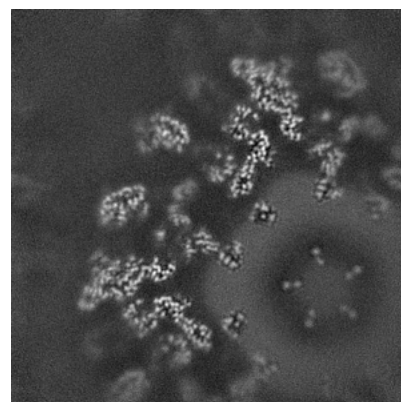
6.2.2 Raw map



X Index: 184



Y Index: 184



Z Index: 184

The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

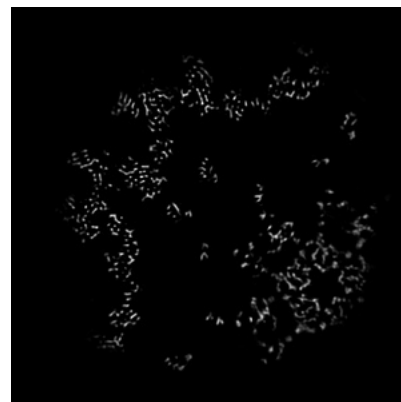
6.3.1 Primary map



X Index: 237

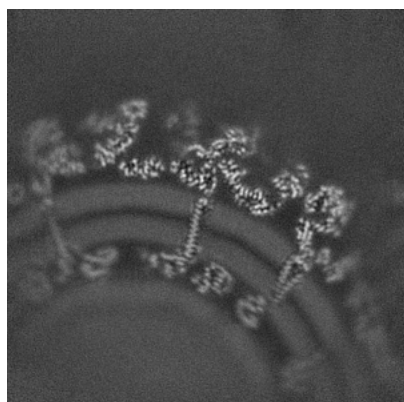


Y Index: 136

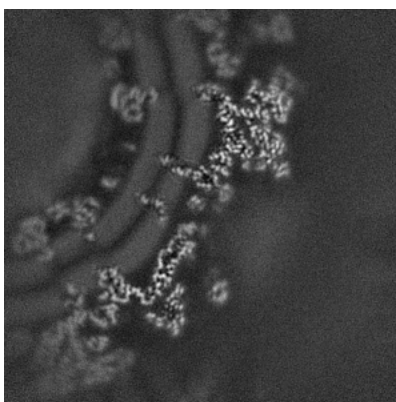


Z Index: 143

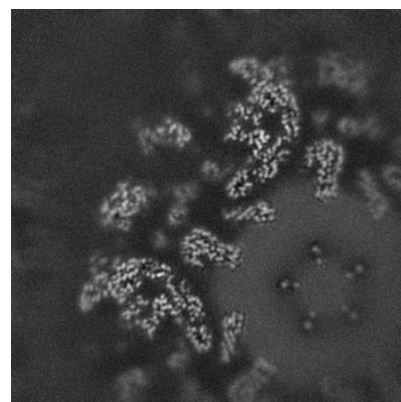
6.3.2 Raw map



X Index: 237



Y Index: 208

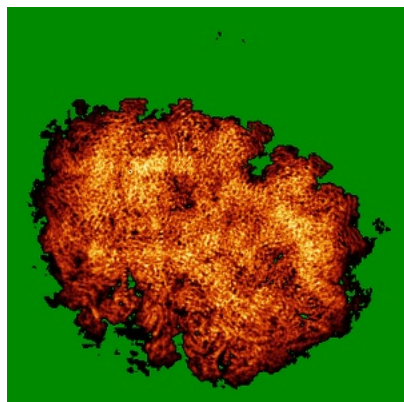


Z Index: 188

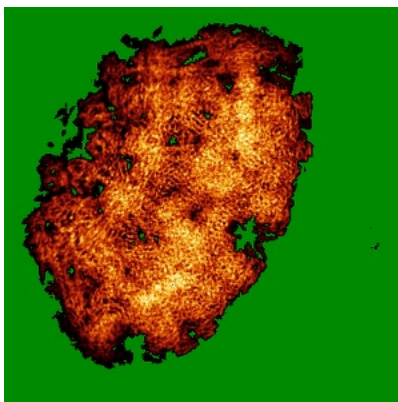
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

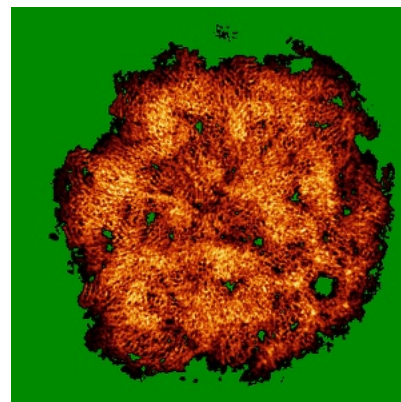
6.4.1 Primary map



X

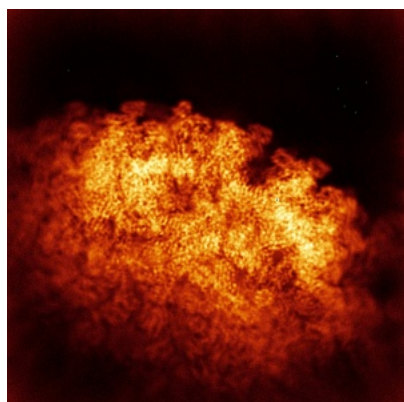


Y

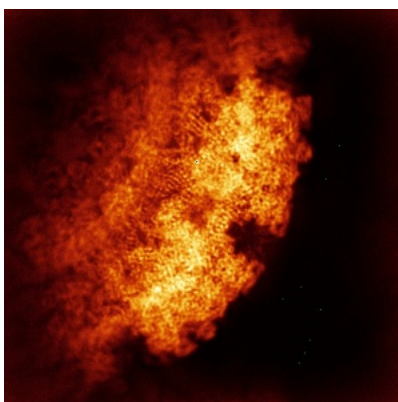


Z

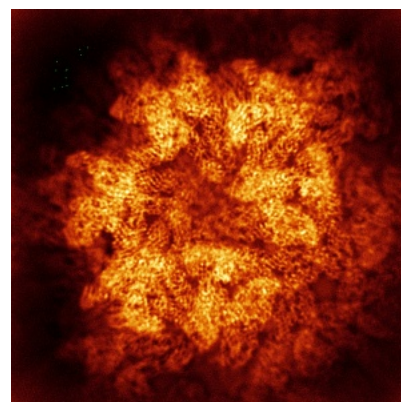
6.4.2 Raw map



X



Y



Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views [i](#)

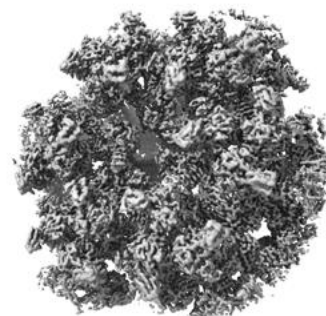
6.5.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.1. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X



Y



Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

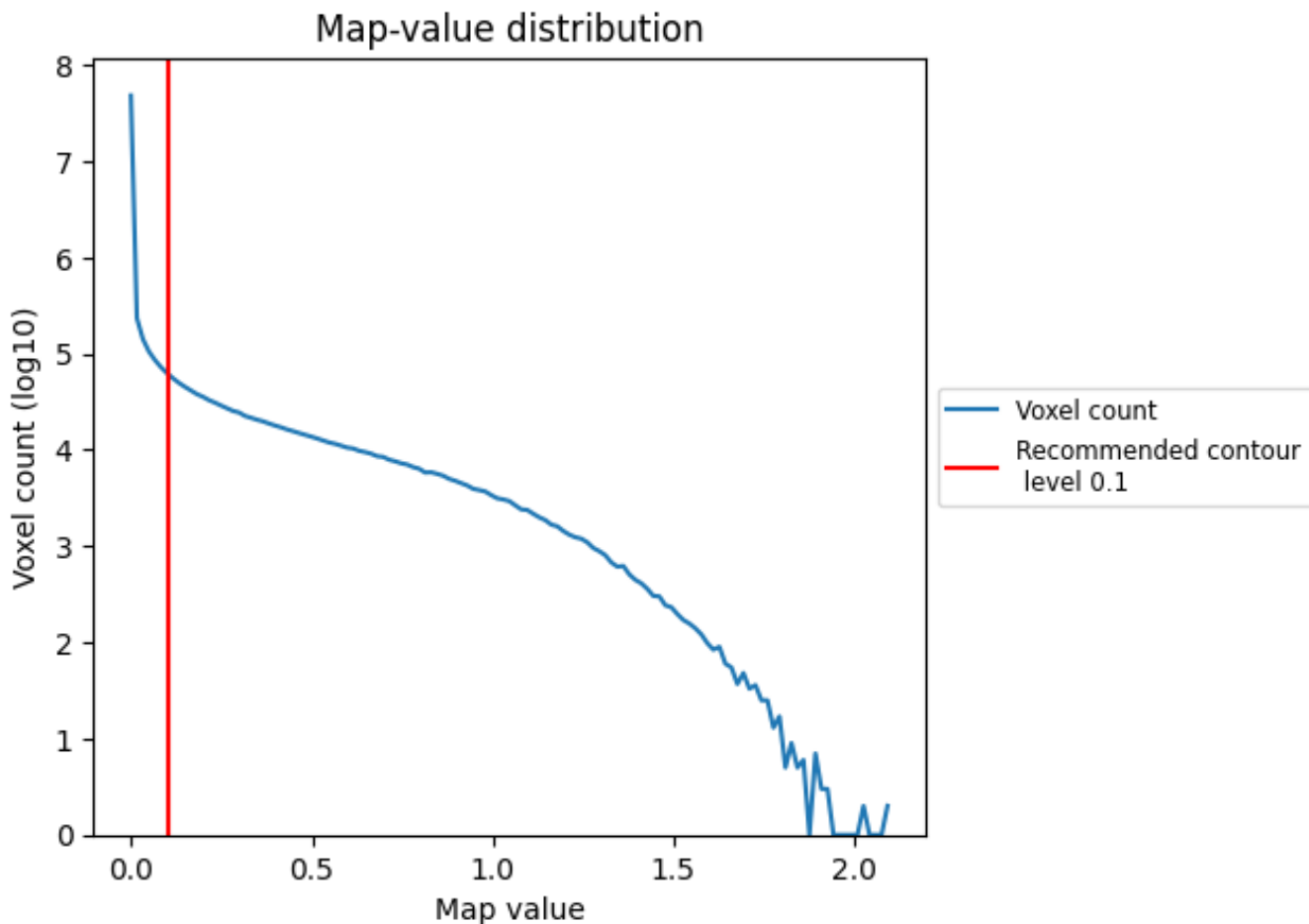
6.6 Mask visualisation [i](#)

This section was not generated. No masks/segmentation were deposited.

7 Map analysis [i](#)

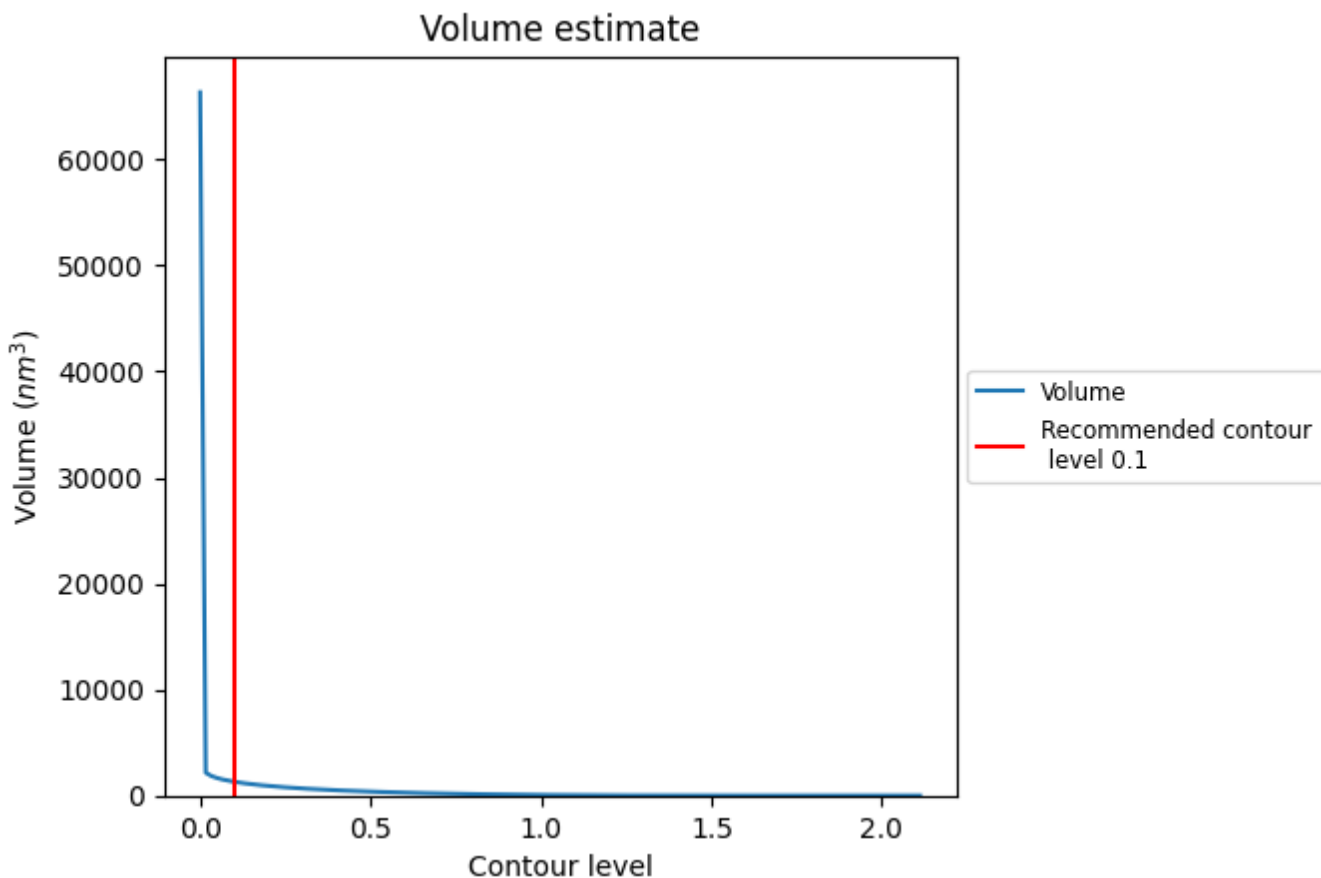
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

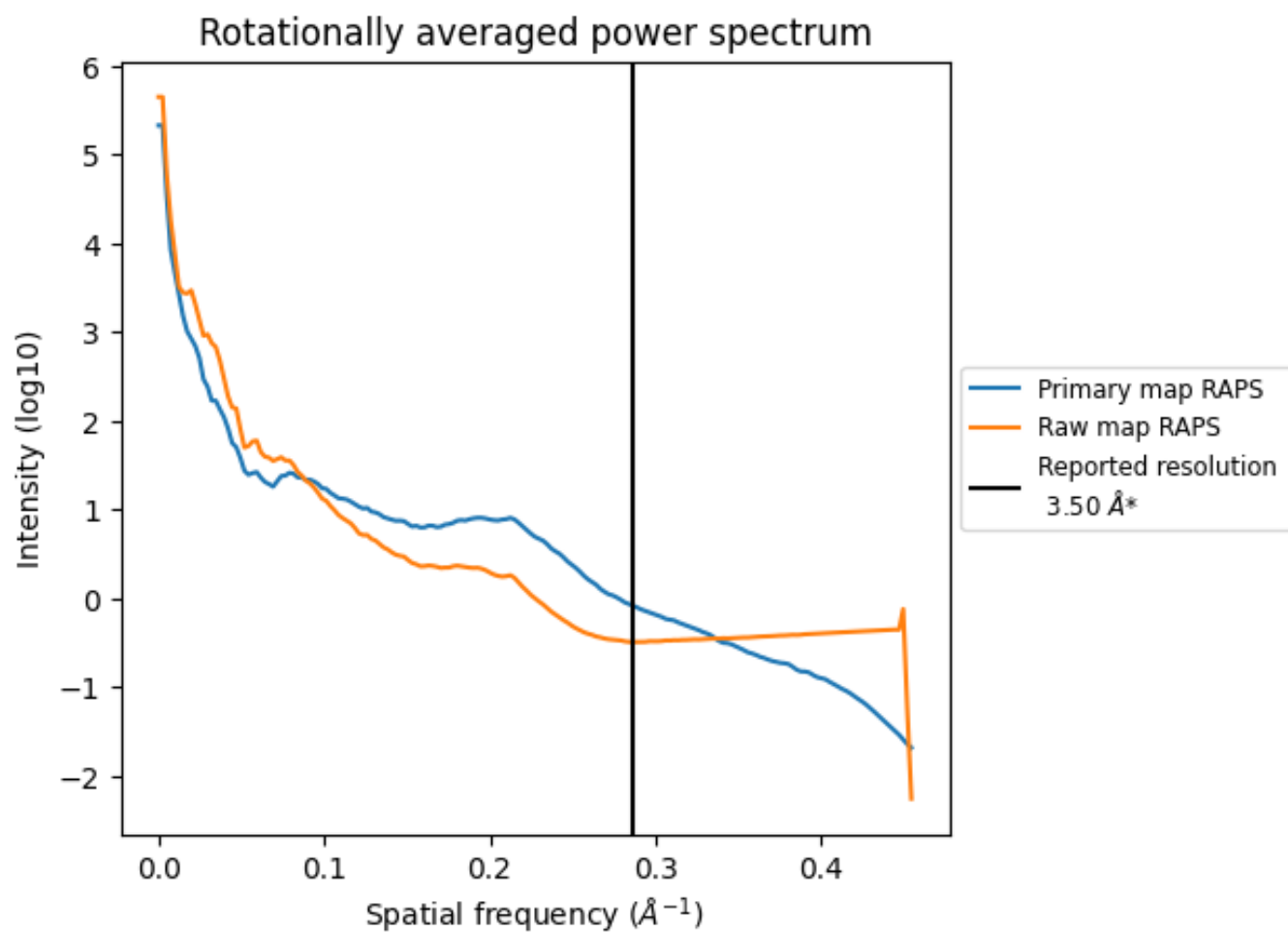
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1293 nm^3 ; this corresponds to an approximate mass of 1168 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum i

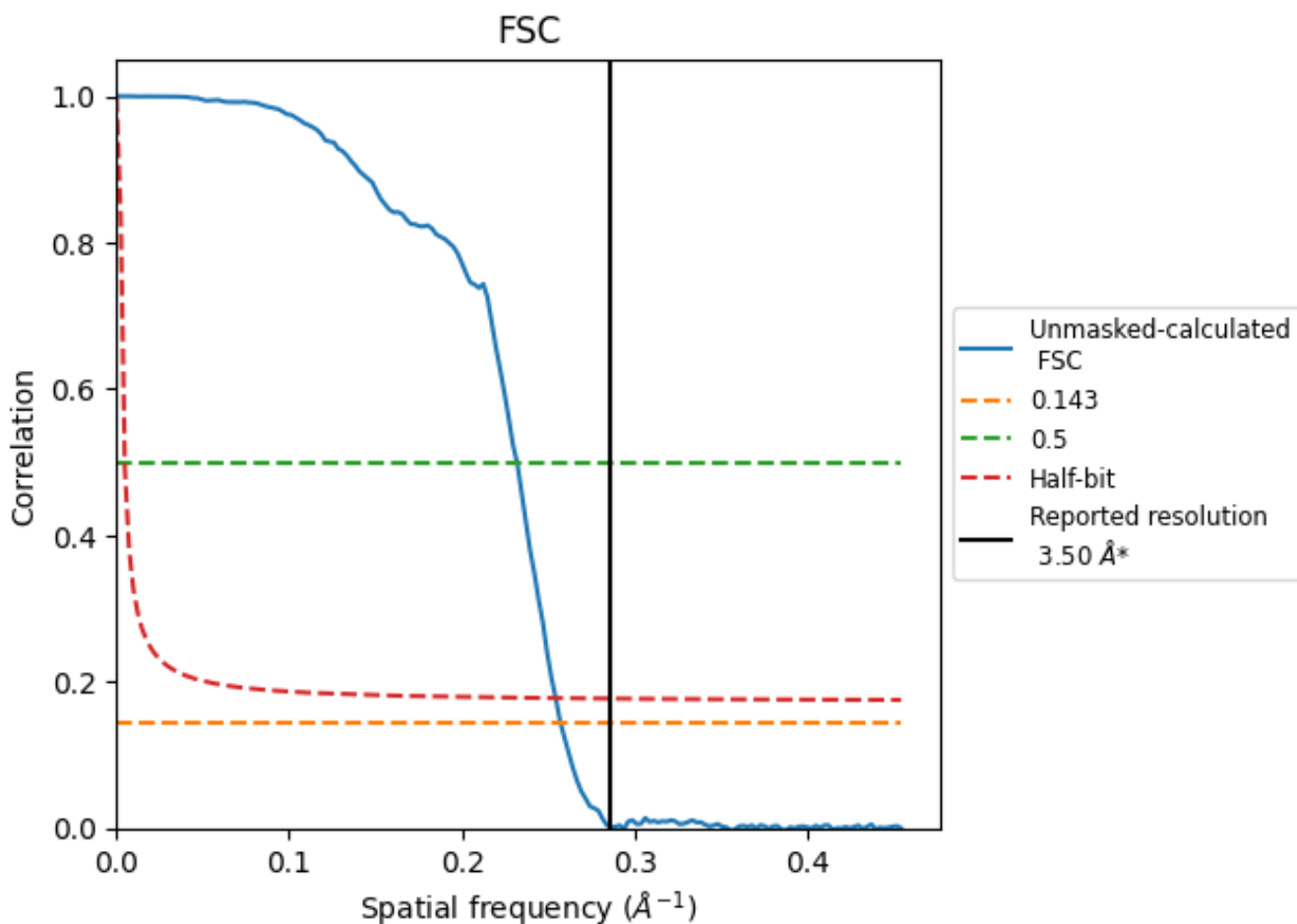


*Reported resolution corresponds to spatial frequency of 0.286 Å⁻¹

8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.286 \AA^{-1}

8.2 Resolution estimates [i](#)

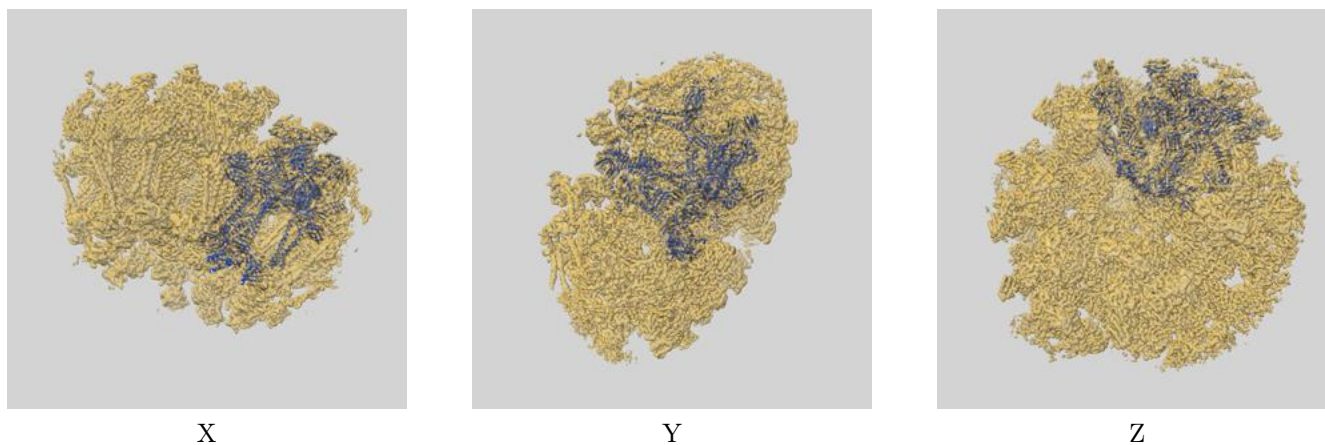
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.50	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.89	4.31	3.93

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.89 differs from the reported value 3.5 by more than 10 %

9 Map-model fit [i](#)

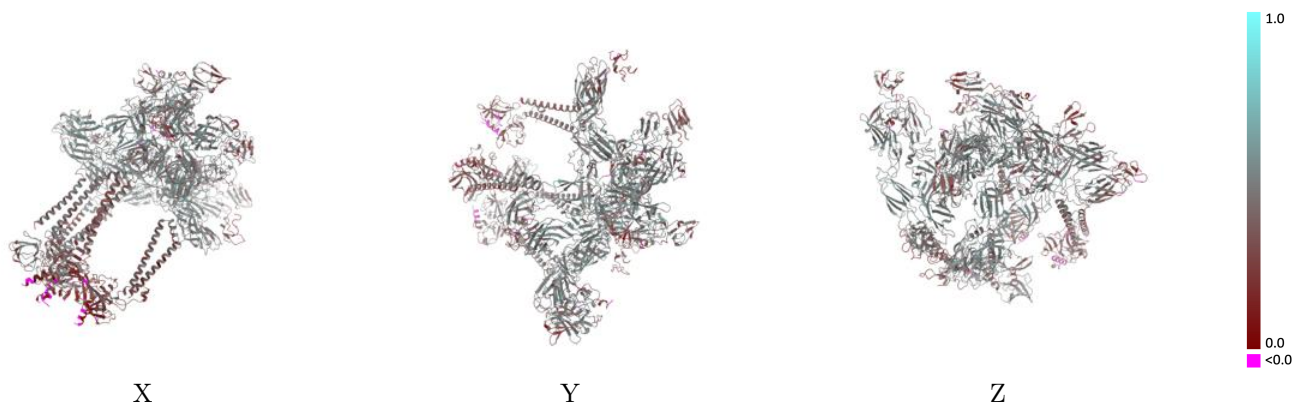
This section contains information regarding the fit between EMDB map EMD-37980 and PDB model 8X0K. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay [i](#)



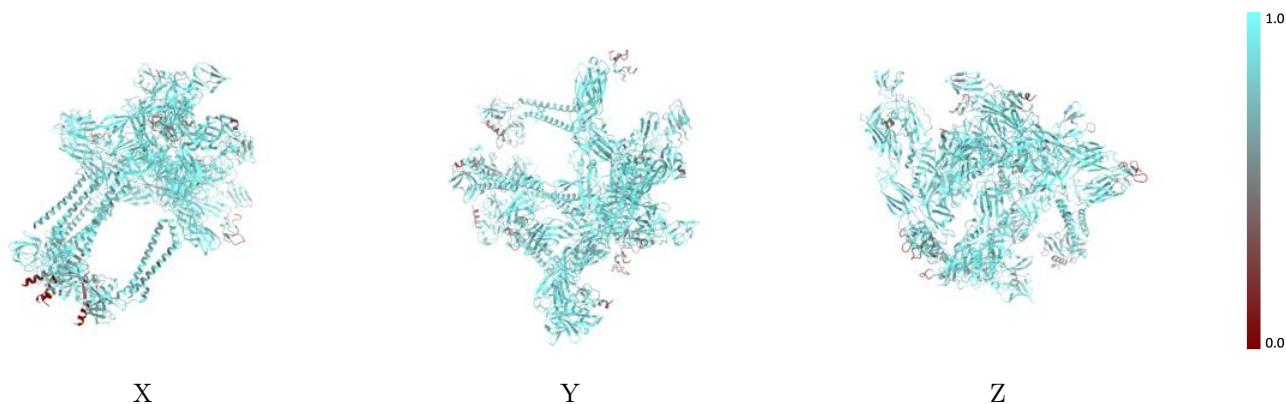
The images above show the 3D surface view of the map at the recommended contour level 0.1 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



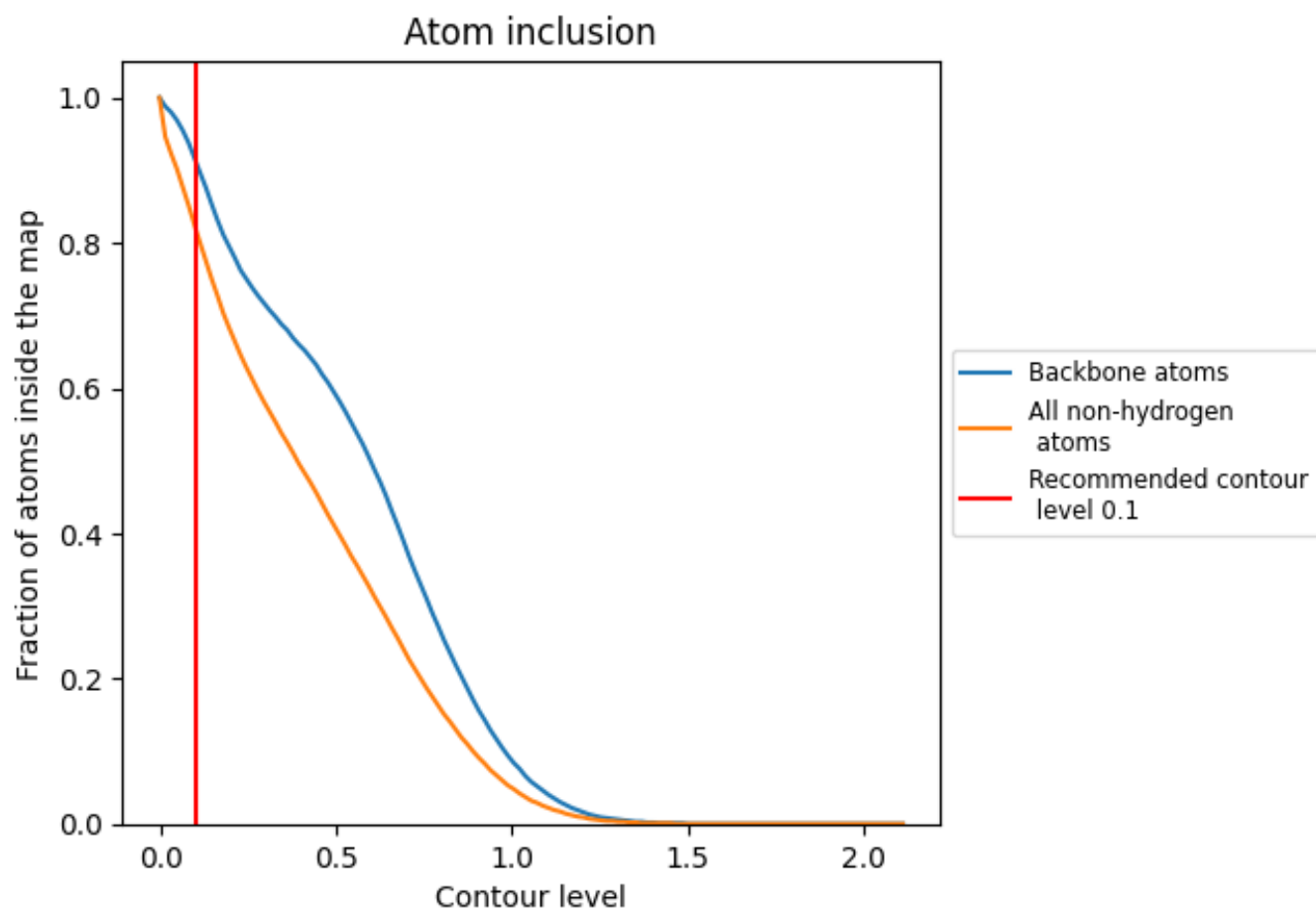
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.1).



















































9.4 Atom inclusion [i](#)



At the recommended contour level, 91% of all backbone atoms, 82% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.1) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8210	 0.4360
A	 0.7820	 0.3820
B	 0.8460	 0.4590
C	 0.8860	 0.4960
D	 0.5400	 0.2870
E	 0.6880	 0.2720
F	 0.8470	 0.4530
G	 0.8800	 0.4830
H	 0.4420	 0.2530
I	 0.6540	 0.2560
J	 0.8330	 0.4440
K	 0.8680	 0.4550
L	 0.3990	 0.2000
M	 0.7590	 0.3610
N	 0.8300	 0.4540
O	 0.8730	 0.4870
P	 0.2680	 0.2520
Q	 0.7860	 0.5000
R	 0.6430	 0.3170
S	 0.7860	 0.4590
T	 0.7140	 0.3470
U	 0.8210	 0.4670
V	 0.6790	 0.3120
W	 0.8570	 0.4650
X	 0.6430	 0.3630

