Full wwPDB EM Validation Report (i)

Apr 24, 2023 – 12:36 PM JST

PDB ID	:	8HC7
EMDB ID	:	EMD-34654
Title	:	SARS-CoV-2 Omicron BA.1 spike trimer (6P) complex with YB9-258 Fab, focused refinement of RBD-dimer region
Authors	:	Liu, B.; Gao, X.; Chen, Q.; Li, Z.; Su, M.; He, J.; Xiong, X.
Deposited on	:	2022-11-01
Resolution	:	4.54 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 (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references (1)) were used in the production of this report:

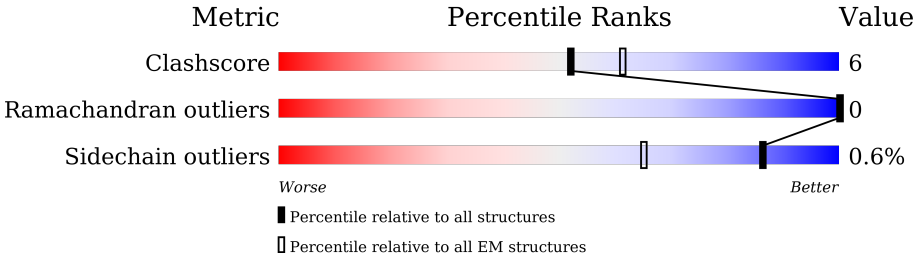
EMDB validation analysis	:	0.0.1.dev50
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.32.2

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 4.54 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	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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 <=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	C	510	9%, 72%, 13%, 16%
2	A	267	5%, 84%, 16%
3	H	115	54%, 81%, 19%
4	L	107	51%, 87%, 13%

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 7373 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 Spike protein S1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	C	430	3480	2260	577	630	13	0	0

There are 29 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	67	VAL	ALA	variant	UNP P0DTC2
C	?	-	HIS	deletion	UNP P0DTC2
C	?	-	VAL	deletion	UNP P0DTC2
C	95	ILE	THR	variant	UNP P0DTC2
C	?	-	GLY	deletion	UNP P0DTC2
C	?	-	VAL	deletion	UNP P0DTC2
C	?	-	TYR	deletion	UNP P0DTC2
C	142	ASP	TYR	variant	UNP P0DTC2
C	210A	ILE	-	insertion	UNP P0DTC2
C	210B	VAL	-	insertion	UNP P0DTC2
C	210C	ARG	ASN	variant	UNP P0DTC2
C	210D	GLU	LEU	variant	UNP P0DTC2
C	210E	PRO	VAL	variant	UNP P0DTC2
C	210F	GLU	ARG	variant	UNP P0DTC2
C	339	ASP	GLY	variant	UNP P0DTC2
C	371	LEU	SER	variant	UNP P0DTC2
C	373	PRO	SER	variant	UNP P0DTC2
C	375	PHE	SER	variant	UNP P0DTC2
C	417	ASN	LYS	variant	UNP P0DTC2
C	440	LYS	ASN	variant	UNP P0DTC2
C	446	SER	GLY	variant	UNP P0DTC2
C	477	ASN	SER	variant	UNP P0DTC2
C	478	LYS	THR	variant	UNP P0DTC2
C	484	ALA	GLU	variant	UNP P0DTC2
C	493	ARG	GLN	variant	UNP P0DTC2
C	496	SER	GLY	variant	UNP P0DTC2
C	498	ARG	GLN	variant	UNP P0DTC2
C	501	TYR	ASN	variant	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
C	505	HIS	TYR	variant	UNP P0DTC2

- Molecule 2 is a protein called Spike protein S1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	A	267	2134	1370	362	393	9	0	0

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	339	ASP	GLY	variant	UNP P0DTC2
A	371	LEU	SER	variant	UNP P0DTC2
A	373	PRO	SER	variant	UNP P0DTC2
A	375	PHE	SER	variant	UNP P0DTC2
A	417	ASN	LYS	variant	UNP P0DTC2
A	440	LYS	ASN	variant	UNP P0DTC2
A	446	SER	GLY	variant	UNP P0DTC2
A	477	ASN	SER	variant	UNP P0DTC2
A	478	LYS	THR	variant	UNP P0DTC2
A	484	ALA	GLU	variant	UNP P0DTC2
A	493	ARG	GLN	variant	UNP P0DTC2
A	496	SER	GLY	variant	UNP P0DTC2
A	498	ARG	GLN	variant	UNP P0DTC2
A	501	TYR	ASN	variant	UNP P0DTC2
A	505	HIS	TYR	variant	UNP P0DTC2
A	547	LYS	THR	variant	UNP P0DTC2

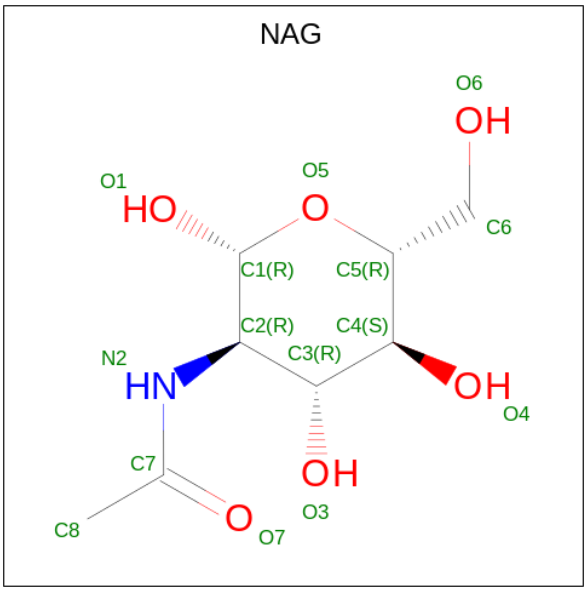
- Molecule 3 is a protein called Heavy chain variable region of YB9-258.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	H	115	868	545	151	168	4	0	0

- Molecule 4 is a protein called Light chain variable region of YB9-258.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	L	107	793	499	132	159	3	0	0

- Molecule 5 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$) (labeled as "Ligand of Interest" by depositor).



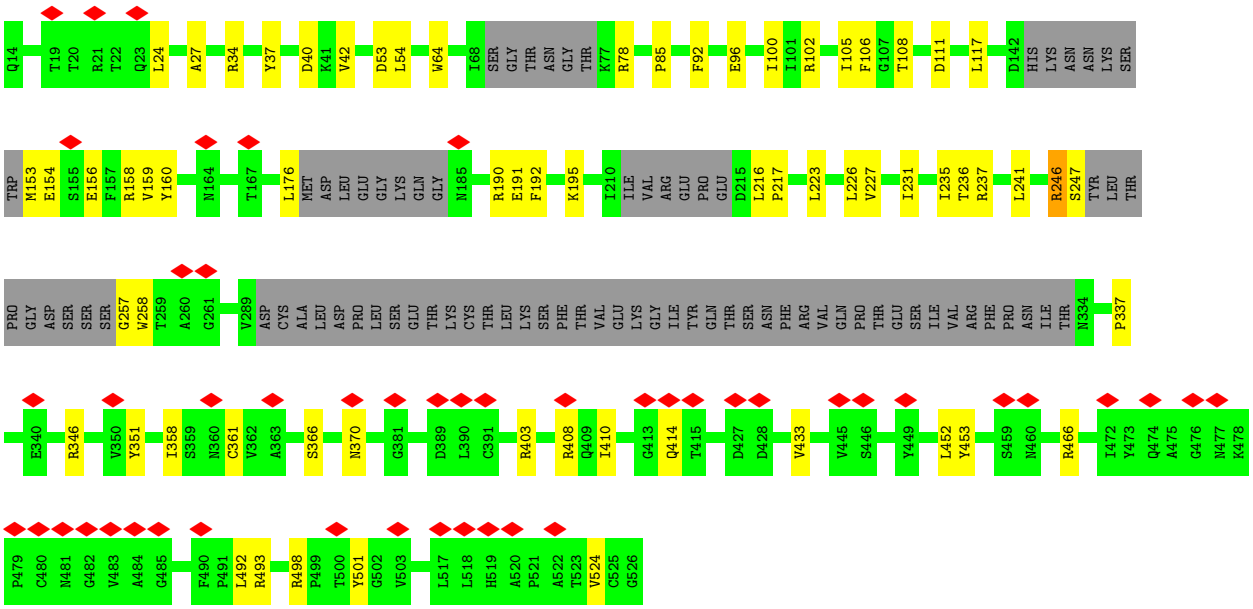
Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
5	C	1	14	8	1	5	0
			Total	C	N	O	
5	C	1	14	8	1	5	0
			Total	C	N	O	
5	C	1	14	8	1	5	0
			Total	C	N	O	
5	C	1	14	8	1	5	0
			Total	C	N	O	
5	C	1	14	8	1	5	0
			Total	C	N	O	
5	C	1	14	8	1	5	0
			Total	C	N	O	
5	A	1	14	8	1	5	0

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.

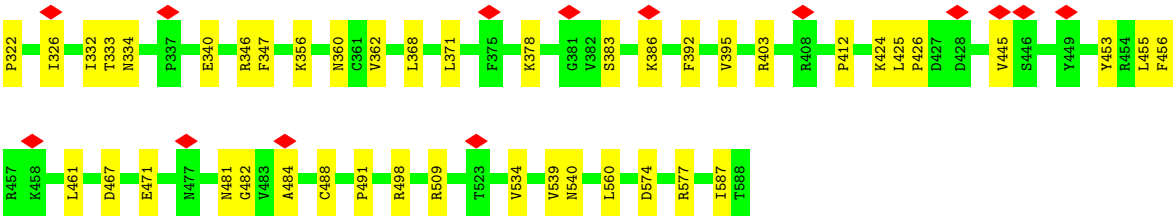
- Molecule 1: Spike protein S1

Chain C:



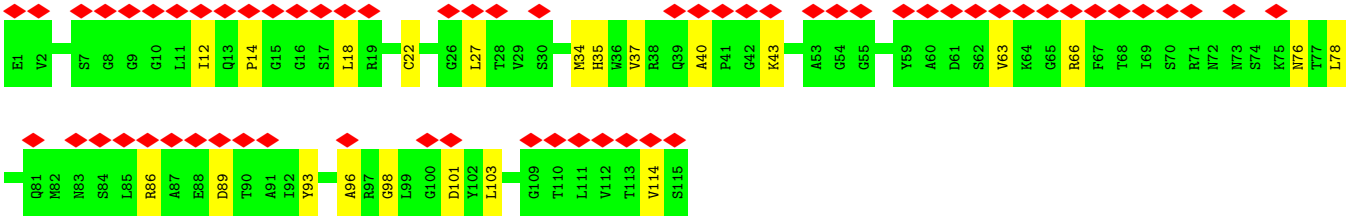
- Molecule 2: Spike protein S1

Chain A:



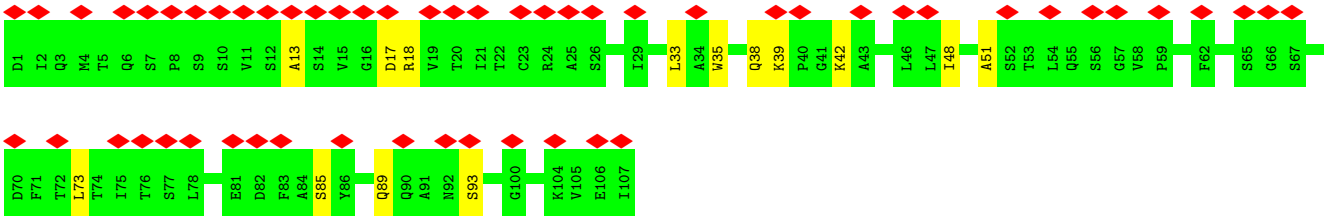
- Molecule 3: Heavy chain variable region of YB9-258

Chain H:



• Molecule 4: Light chain variable region of YB9-258

Chain L:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	287435	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TALOS ARCTICA	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/Å^2$)	60	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	3.502	Depositor
Minimum map value	-1.491	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.049	Depositor
Recommended contour level	0.6	Depositor
Map size (Å)	422.4, 422.4, 422.4	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.65, 1.65, 1.65	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: 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	C	0.25	0/3578	0.51	0/4865
2	A	0.26	0/2191	0.52	0/2978
3	H	0.25	0/885	0.56	0/1199
4	L	0.26	0/810	0.54	0/1103
All	All	0.26	0/7464	0.52	0/10145

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

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	C	3480	0	3348	41	0
2	A	2134	0	2074	24	0
3	H	868	0	846	13	0
4	L	793	0	776	8	0
5	A	14	0	13	0	0
5	C	84	0	78	1	0
All	All	7373	0	7135	83	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 6.

All (83) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:247:SER:HG	1:C:257:GLY:N	1.73	0.86
3:H:40:ALA:HB3	3:H:43:LYS:HB2	1.80	0.63
3:H:98:GLY:HA3	3:H:103:LEU:HA	1.83	0.61
1:C:403:ARG:HD2	4:L:93:SER:HB3	1.82	0.60
2:A:412:PRO:HD3	2:A:425:LEU:HD23	1.85	0.59
3:H:63:VAL:HG12	3:H:66:ARG:HH12	1.67	0.58
1:C:37:TYR:HB3	1:C:223:LEU:HD23	1.86	0.57
1:C:366:SER:O	1:C:370:ASN:ND2	2.39	0.56
2:A:383:SER:HB2	2:A:386:LYS:HB2	1.87	0.56
3:H:27:LEU:O	3:H:76:ASN:ND2	2.38	0.56
1:C:452:LEU:HD23	1:C:492:LEU:HB3	1.87	0.56
2:A:560:LEU:O	2:A:577:ARG:NH2	2.38	0.56
1:C:108:THR:O	1:C:237:ARG:NH1	2.39	0.55
4:L:35:TRP:HD1	4:L:48:ILE:HD11	1.71	0.55
1:C:493:ARG:NH1	3:H:101:ASP:OD2	2.39	0.55
1:C:156:GLU:OE2	1:C:158:ARG:NH1	2.40	0.54
3:H:14:PRO:HG3	3:H:114:VAL:HB	1.89	0.54
1:C:53:ASP:OD2	1:C:195:LYS:NZ	2.39	0.54
2:A:392:PHE:HE2	2:A:395:VAL:HG12	1.73	0.53
3:H:89:ASP:O	3:H:93:TYR:OH	2.25	0.53
2:A:424:LYS:NZ	2:A:461:LEU:O	2.41	0.52
1:C:92:PHE:HB3	1:C:192:PHE:HB2	1.90	0.52
1:C:153:MET:O	1:C:246:ARG:NH1	2.38	0.52
2:A:333:THR:OG1	2:A:360:ASN:O	2.27	0.52
1:C:96:GLU:OE2	1:C:100:ILE:N	2.37	0.51
3:H:101:ASP:O	4:L:89:GLN:NE2	2.41	0.50
4:L:33:LEU:HB3	4:L:51:ALA:HB2	1.94	0.50
4:L:18:ARG:NH2	4:L:73:LEU:O	2.45	0.50
4:L:39:LYS:HB3	4:L:42:LYS:HB2	1.94	0.50
1:C:105:ILE:HG12	1:C:241:LEU:HD11	1.93	0.49
1:C:410:ILE:HG21	1:C:433:VAL:HG11	1.93	0.49
1:C:246:ARG:HA	1:C:258:TRP:H	1.78	0.49
1:C:236:THR:HG21	5:C:1304:NAG:H62	1.93	0.49
1:C:34:ARG:NH1	1:C:191:GLU:OE2	2.47	0.48
1:C:102:ARG:NH2	1:C:154:GLU:OE1	2.45	0.48
2:A:346:ARG:NH1	2:A:347:PHE:O	2.45	0.48
1:C:216:LEU:HD12	1:C:217:PRO:HD2	1.95	0.48
2:A:484:ALA:HB3	2:A:488:CYS:H	1.79	0.48
2:A:425:LEU:HD12	2:A:426:PRO:HD2	1.96	0.48
2:A:467:ASP:N	2:A:467:ASP:OD1	2.46	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:37:TYR:OH	1:C:54:LEU:O	2.28	0.47
3:H:22:CYS:HB3	3:H:78:LEU:HB3	1.96	0.47
2:A:322:PRO:HA	2:A:540:ASN:H	1.79	0.46
1:C:176:LEU:HD22	1:C:190:ARG:HE	1.81	0.46
1:C:27:ALA:HB3	1:C:64:TRP:HB3	1.97	0.46
1:C:34:ARG:HG3	1:C:216:LEU:HD21	1.98	0.46
1:C:498:ARG:HB2	1:C:501:TYR:CE1	2.51	0.45
2:A:332:ILE:HD11	2:A:362:VAL:HA	1.98	0.45
1:C:24:LEU:HD12	1:C:78:ARG:HH12	1.81	0.45
1:C:337:PRO:HD2	1:C:358:ILE:HD11	1.99	0.45
2:A:481:ASN:OD1	2:A:482:GLY:N	2.49	0.45
2:A:456:PHE:HD2	2:A:491:PRO:HA	1.82	0.45
1:C:247:SER:H	1:C:257:GLY:HA2	1.82	0.45
1:C:102:ARG:HA	1:C:102:ARG:HD2	1.89	0.45
1:C:117:LEU:HD21	1:C:231:ILE:HG12	1.99	0.45
3:H:35:HIS:HB3	3:H:96:ALA:HB3	2.00	0.44
4:L:38:GLN:HB3	4:L:85:SER:HB2	1.99	0.44
2:A:445:VAL:O	2:A:498:ARG:NH2	2.51	0.44
4:L:13:ALA:HB1	4:L:17:ASP:HB3	2.01	0.43
1:C:159:VAL:HG23	1:C:160:TYR:HD1	1.83	0.43
2:A:471:GLU:OE1	2:A:471:GLU:N	2.42	0.43
1:C:85:PRO:HA	1:C:237:ARG:HG3	1.99	0.43
1:C:226:LEU:HG	1:C:227:VAL:HG23	2.00	0.43
2:A:574:ASP:HA	2:A:587:ILE:HB	2.00	0.43
2:A:340:GLU:OE1	2:A:356:LYS:NZ	2.52	0.42
1:C:361:CYS:H	1:C:524:VAL:HG22	1.84	0.42
3:H:34:MET:HG3	3:H:78:LEU:HD13	2.01	0.42
1:C:40:ASP:HB3	1:C:42:VAL:HG22	2.01	0.42
2:A:453:TYR:HE2	2:A:455:LEU:HD13	1.85	0.42
1:C:106:PHE:HB3	1:C:235:ILE:HD12	2.02	0.42
1:C:111:ASP:N	1:C:111:ASP:OD1	2.52	0.41
2:A:425:LEU:HD12	2:A:425:LEU:HA	1.93	0.41
1:C:346:ARG:HA	1:C:346:ARG:HD2	1.97	0.41
1:C:108:THR:HA	1:C:236:THR:HG22	2.01	0.41
3:H:12:ILE:HG13	3:H:18:LEU:HD22	2.02	0.41
2:A:326:ILE:HG23	2:A:534:VAL:H	1.86	0.41
1:C:351:TYR:HB3	1:C:453:TYR:HA	2.03	0.41
1:C:408:ARG:HD2	1:C:414:GLN:HE22	1.86	0.40
2:A:326:ILE:HD11	2:A:539:VAL:HG23	2.01	0.40
1:C:466:ARG:HA	1:C:466:ARG:HD2	1.82	0.40
2:A:368:LEU:HA	2:A:371:LEU:HB2	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:334:ASN:OD1	2:A:334:ASN:N	2.53	0.40
3:H:35:HIS:HE1	3:H:37:VAL:HB	1.87	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all 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	C	416/510 (82%)	403 (97%)	13 (3%)	0	100	100
2	A	265/267 (99%)	249 (94%)	16 (6%)	0	100	100
3	H	113/115 (98%)	108 (96%)	5 (4%)	0	100	100
4	L	105/107 (98%)	97 (92%)	8 (8%)	0	100	100
All	All	899/999 (90%)	857 (95%)	42 (5%)	0	100	100

There are no Ramachandran outliers to report.

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	C	383/456 (84%)	382 (100%)	1 (0%)	92	95
2	A	236/236 (100%)	233 (99%)	3 (1%)	69	82
3	H	91/91 (100%)	90 (99%)	1 (1%)	73	85

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
4	L	87/87 (100%)	87 (100%)	0	100	100
All	All	797/870 (92%)	792 (99%)	5 (1%)	86	92

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	246	ARG
2	A	378	LYS
2	A	403	ARG
2	A	509	ARG
3	H	86	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	370	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)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

7 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the

expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
5	NAG	C	1302	1	14,14,15	0.26	0	17,19,21	0.38	0
5	NAG	C	1301	1	14,14,15	0.26	0	17,19,21	0.44	0
5	NAG	C	1304	1	14,14,15	0.24	0	17,19,21	0.44	0
5	NAG	C	1303	1	14,14,15	0.29	0	17,19,21	0.43	0
5	NAG	C	1305	1	14,14,15	0.24	0	17,19,21	0.43	0
5	NAG	A	601	2	14,14,15	0.26	0	17,19,21	0.45	0
5	NAG	C	1306	1	14,14,15	0.25	0	17,19,21	0.43	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	C	1302	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1301	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1304	1	-	0/6/23/26	0/1/1/1
5	NAG	C	1303	1	-	0/6/23/26	0/1/1/1
5	NAG	C	1305	1	-	2/6/23/26	0/1/1/1
5	NAG	A	601	2	-	1/6/23/26	0/1/1/1
5	NAG	C	1306	1	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	C	1302	NAG	O5-C5-C6-O6
5	C	1306	NAG	O5-C5-C6-O6
5	C	1302	NAG	C4-C5-C6-O6
5	C	1306	NAG	C4-C5-C6-O6
5	C	1301	NAG	O5-C5-C6-O6
5	C	1305	NAG	O5-C5-C6-O6
5	C	1301	NAG	C4-C5-C6-O6
5	A	601	NAG	O5-C5-C6-O6
5	C	1305	NAG	C4-C5-C6-O6

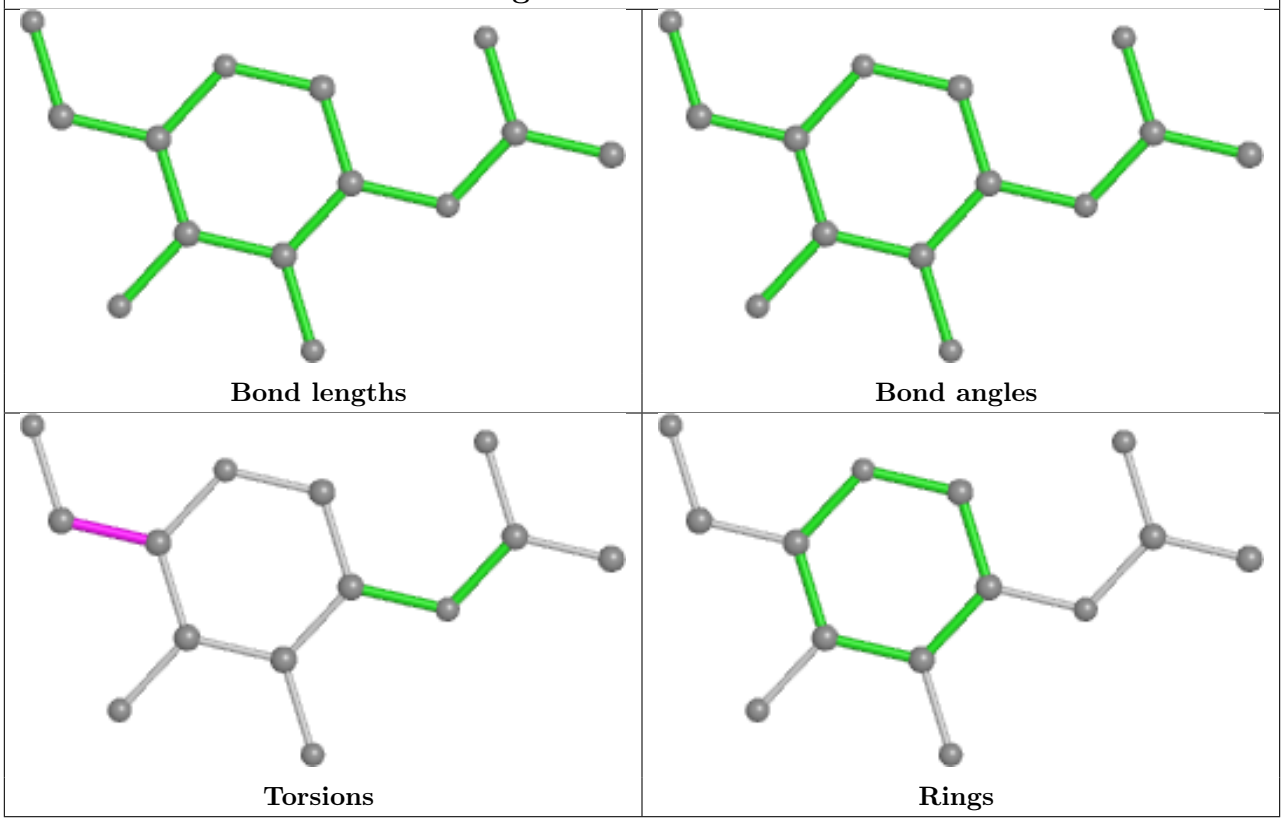
There are no ring outliers.

1 monomer is involved in 1 short contact:

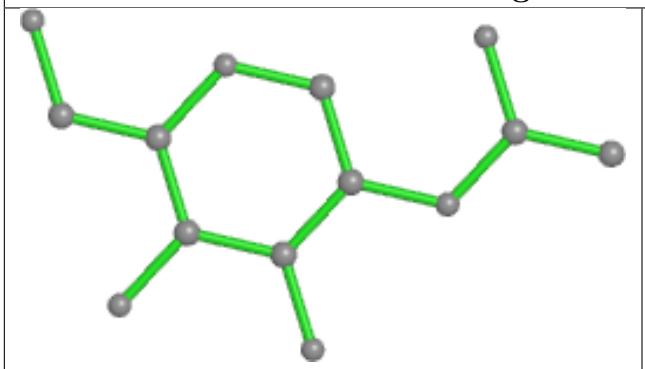
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	C	1304	NAG	1	0

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

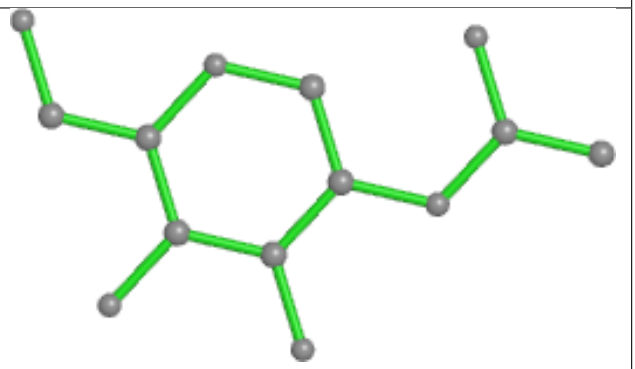
Ligand NAG C 1302



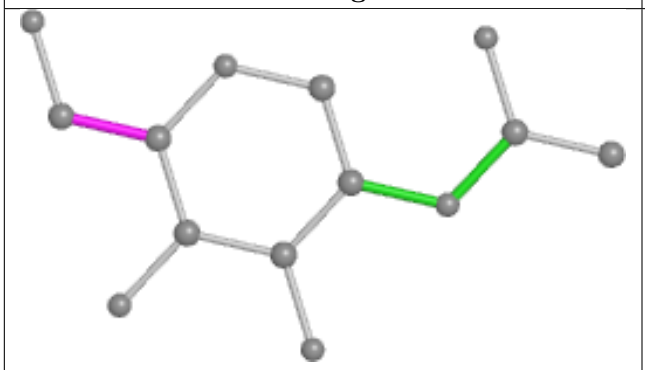
Ligand NAG C 1301



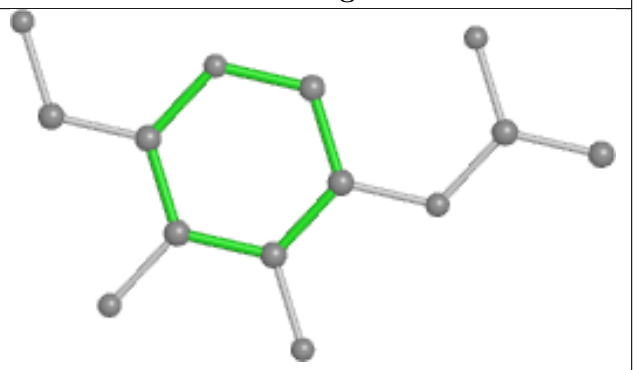
Bond lengths



Bond angles

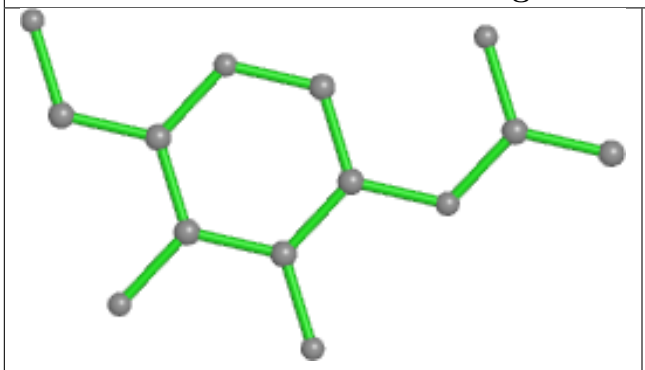


Torsions

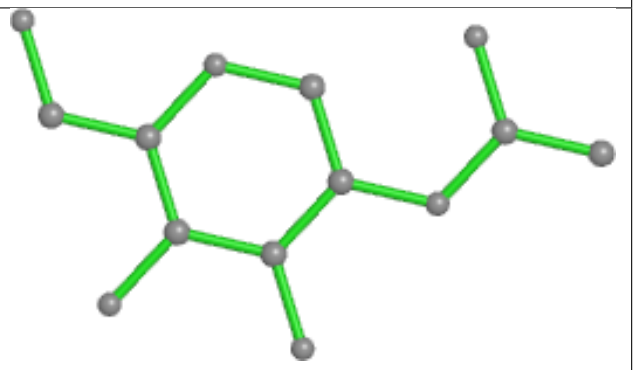


Rings

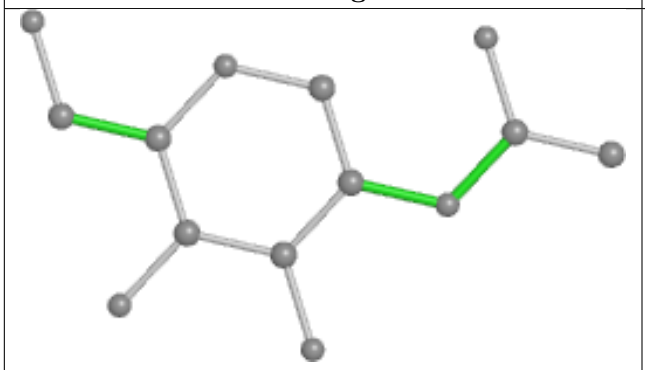
Ligand NAG C 1304



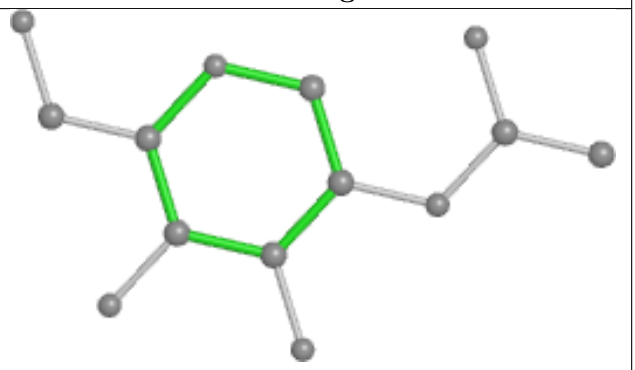
Bond lengths



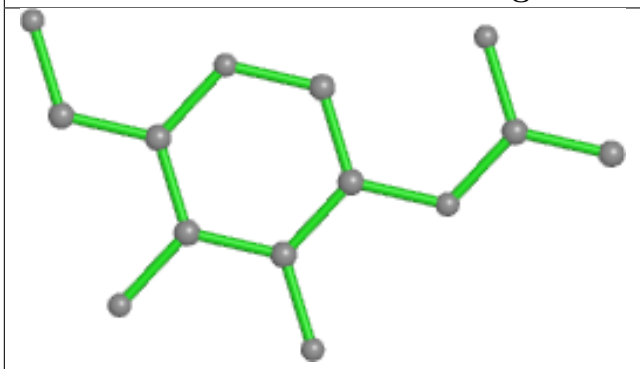
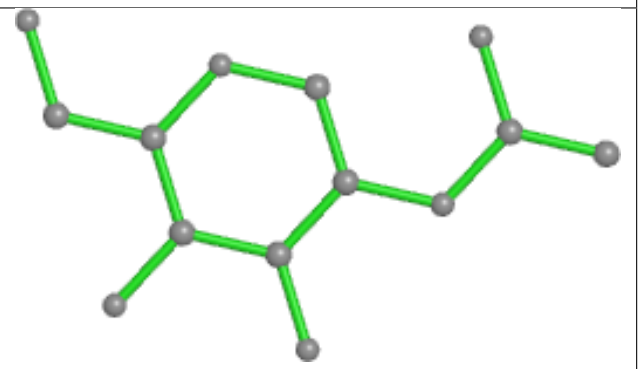
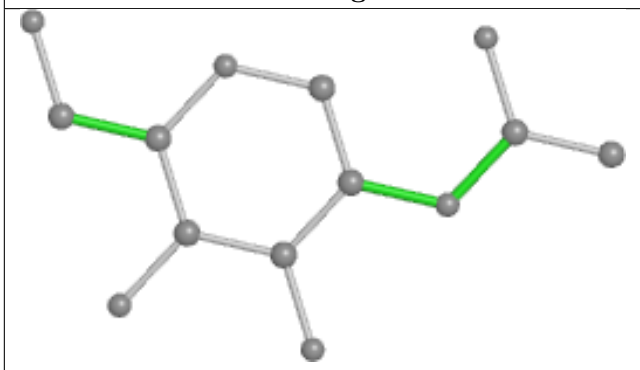
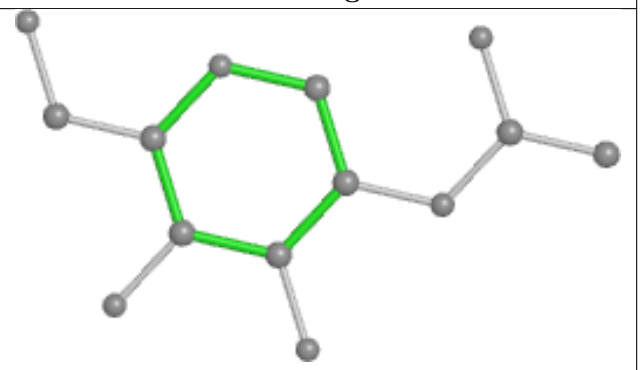
Bond angles

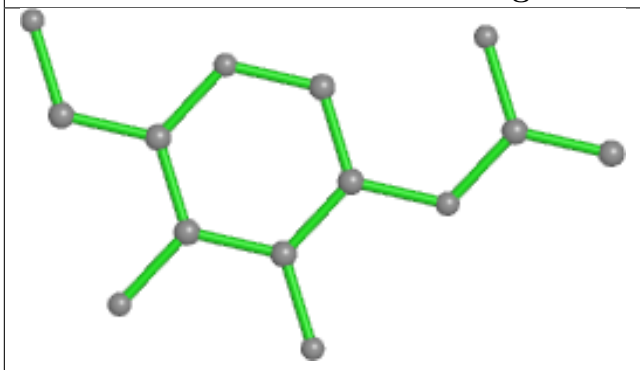
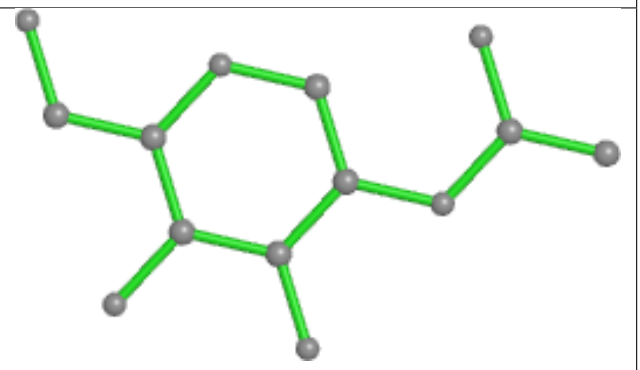
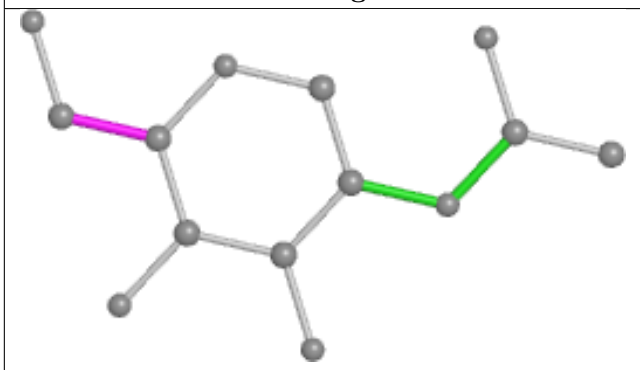
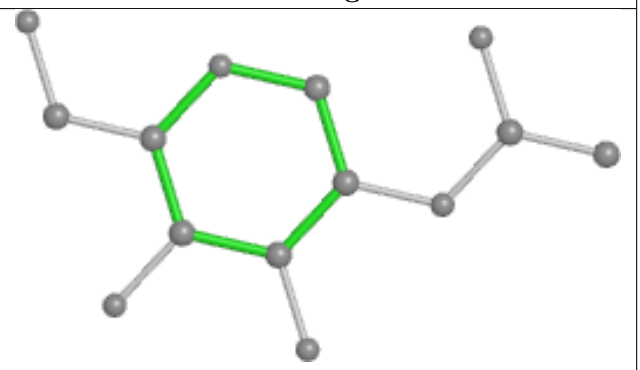


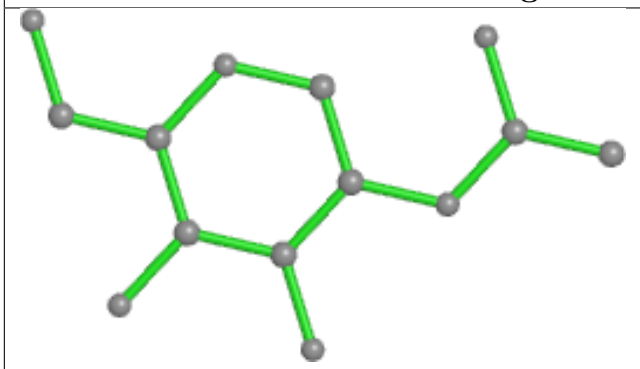
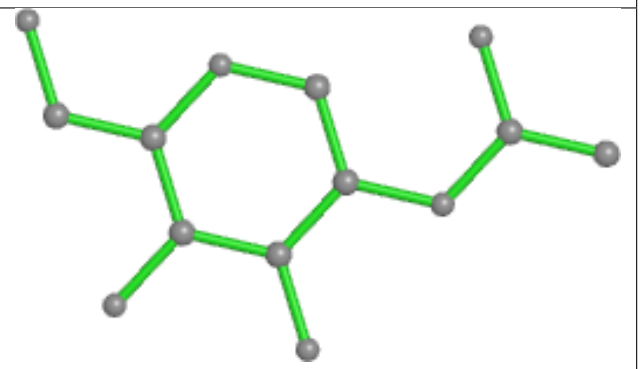
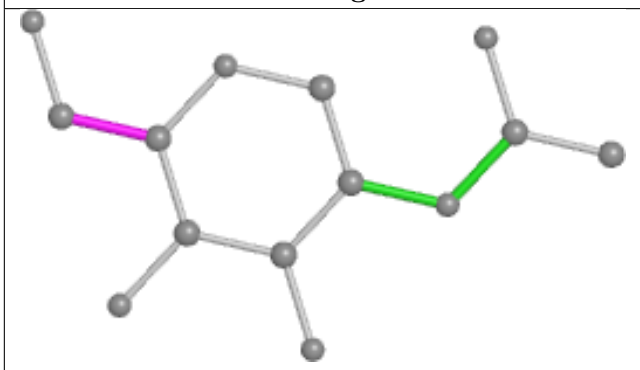
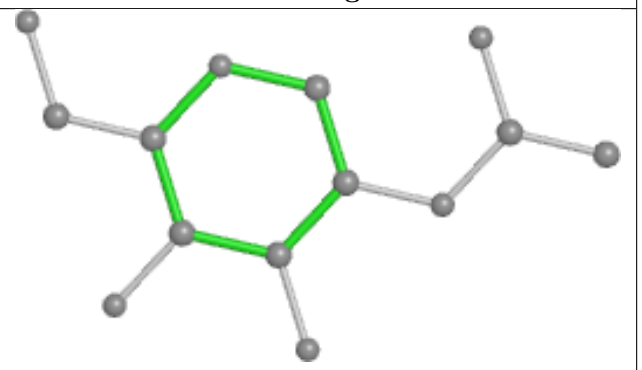
Torsions

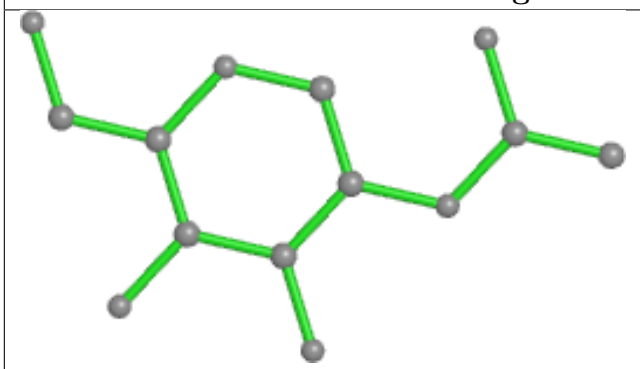
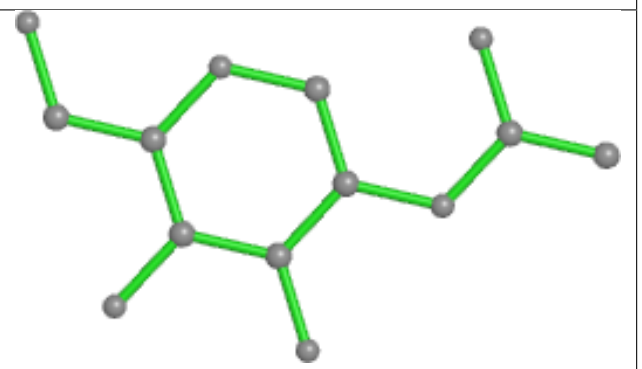
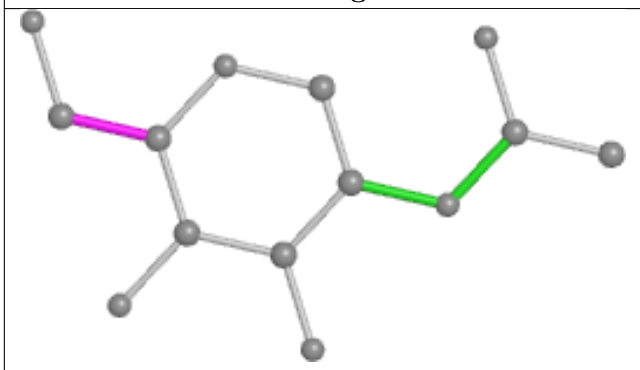
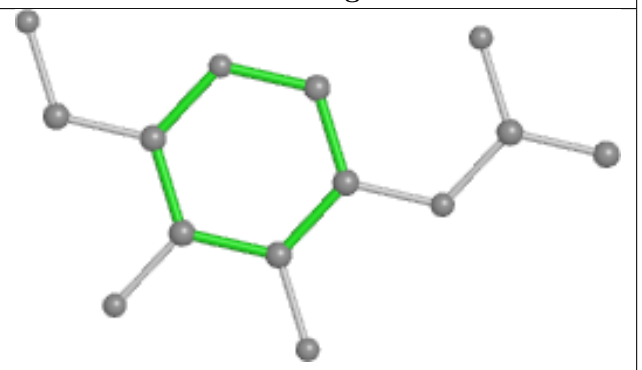


Rings

Ligand NAG C 1303	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand NAG C 1305	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand NAG A 601	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand NAG C 1306	
 Bond lengths	 Bond angles
 Torsions	 Rings

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.

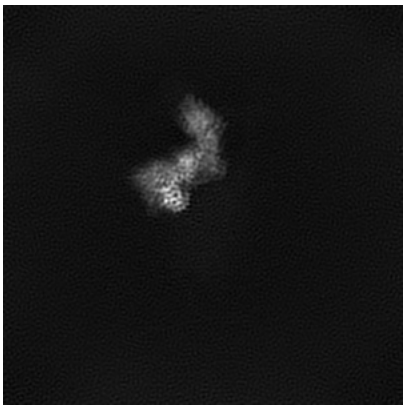
6 Map visualisation (i)

This section contains visualisations of the EMDB entry EMD-34654. These allow visual inspection of the internal detail of the map and identification of artifacts.

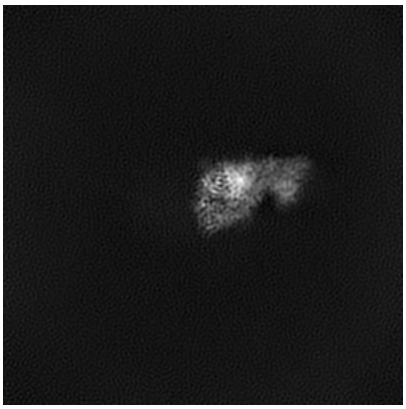
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections (i)

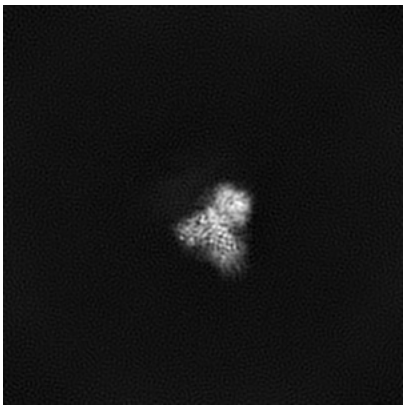
6.1.1 Primary map



X

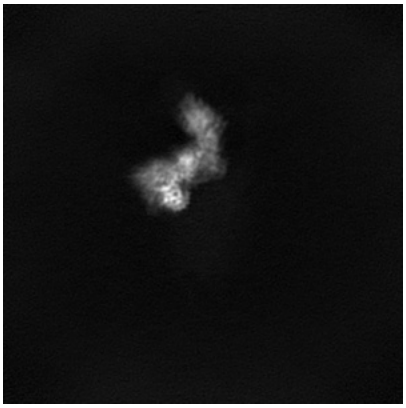


Y

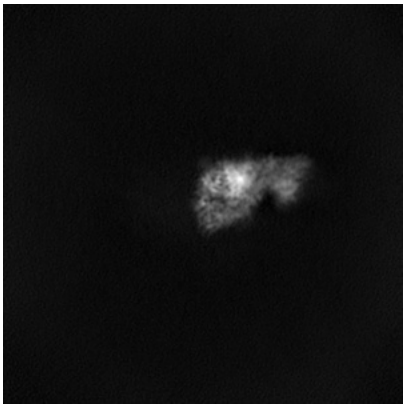


Z

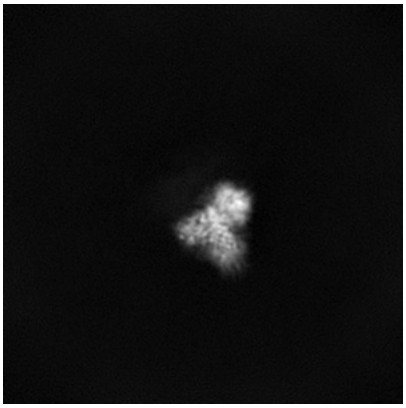
6.1.2 Raw map



X



Y

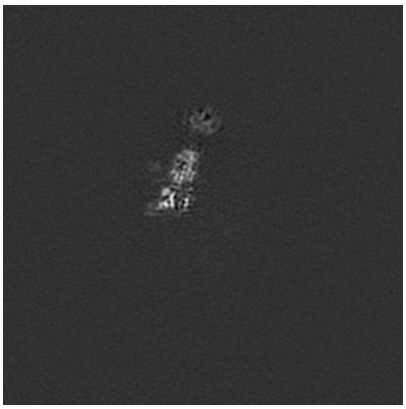


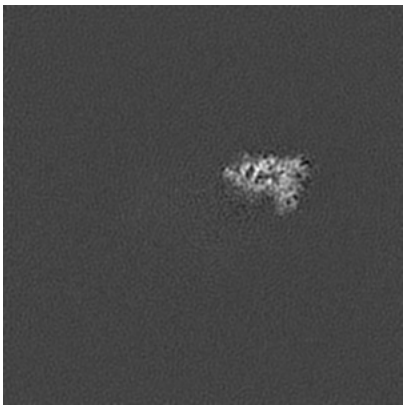
Z

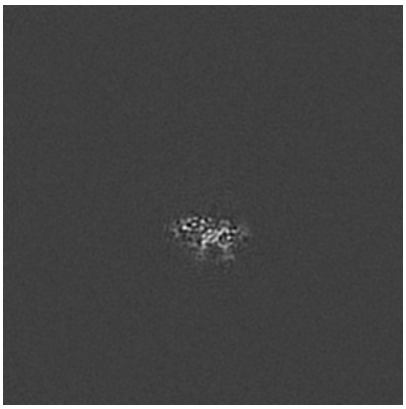
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

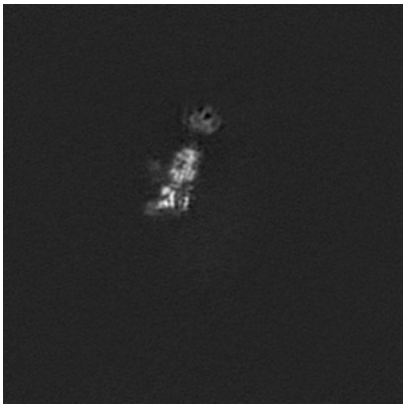
6.2.1 Primary map

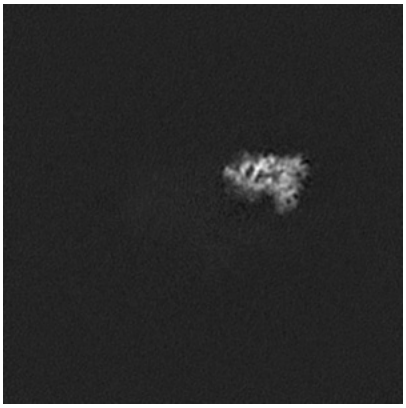

X Index: 128

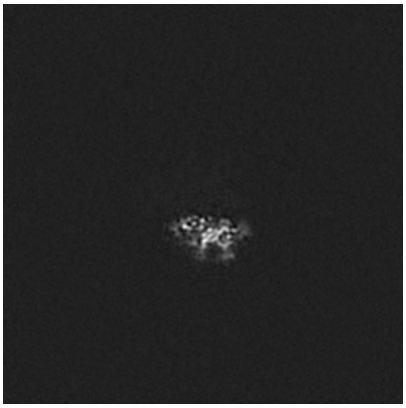

Y Index: 128


Z Index: 128

6.2.2 Raw map


X Index: 128


Y Index: 128

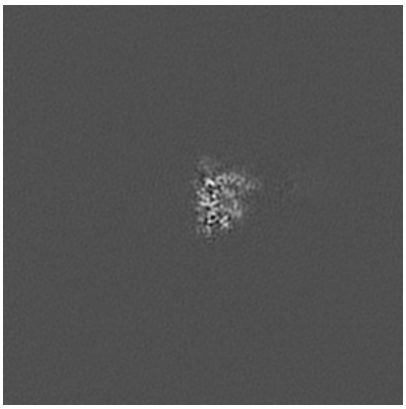

Z Index: 128

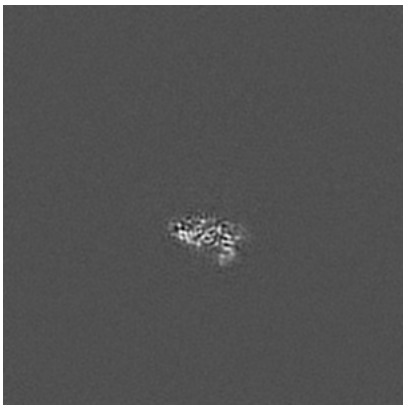
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

6.3.1 Primary map

X Index: 141

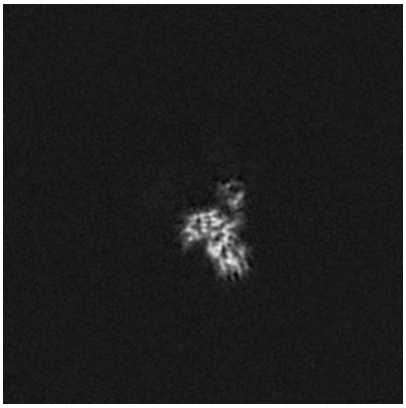

Y Index: 108


Z Index: 131

6.3.2 Raw map

X Index: 141

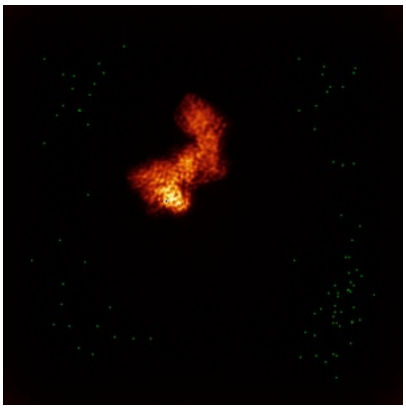
Y Index: 108


Z Index: 146

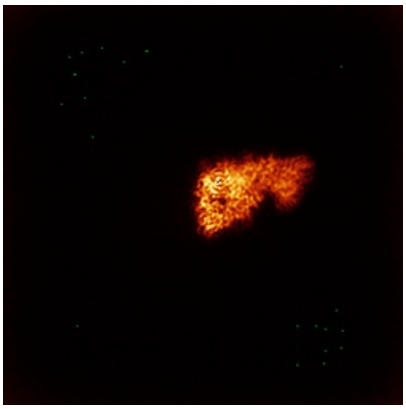
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

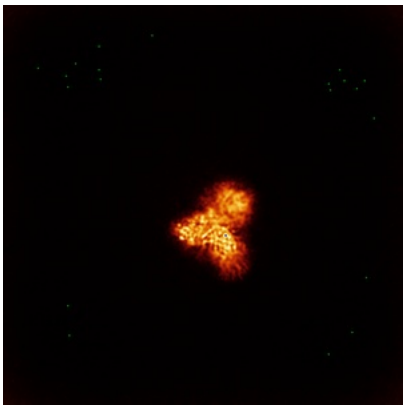
6.4.1 Primary map



X

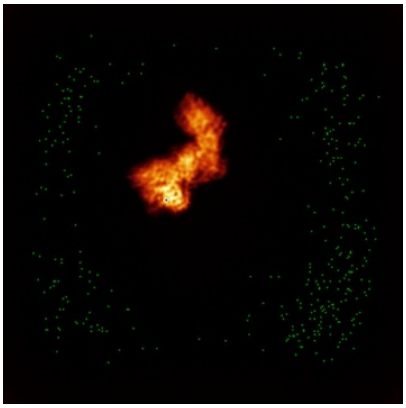


Y

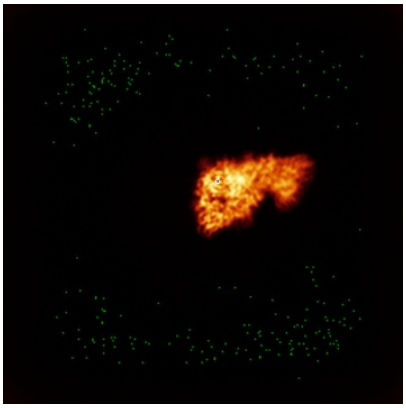


Z

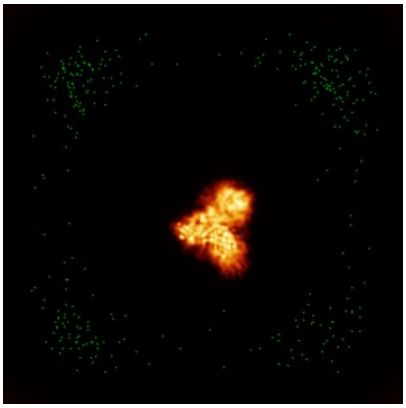
6.4.2 Raw map



X



Y

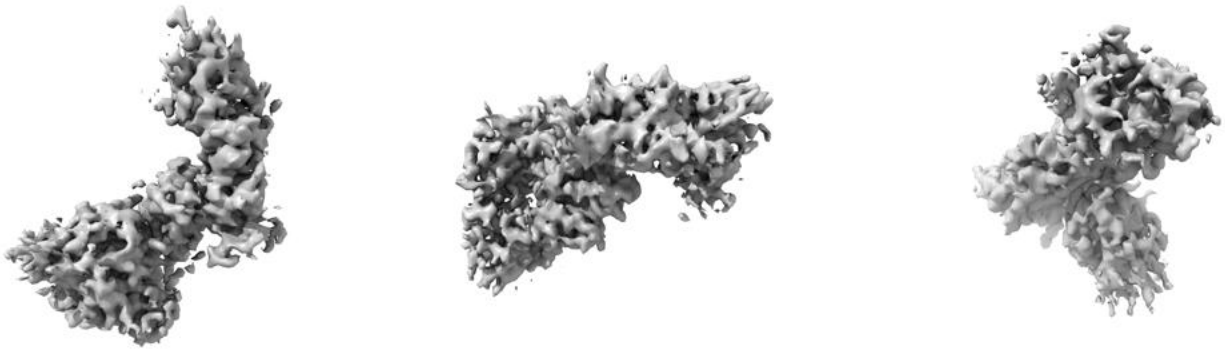


Z

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)

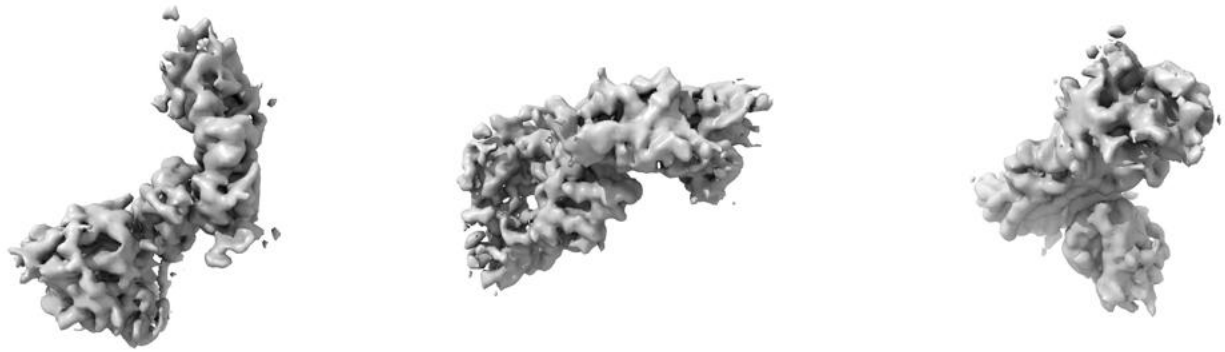
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.6. 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.

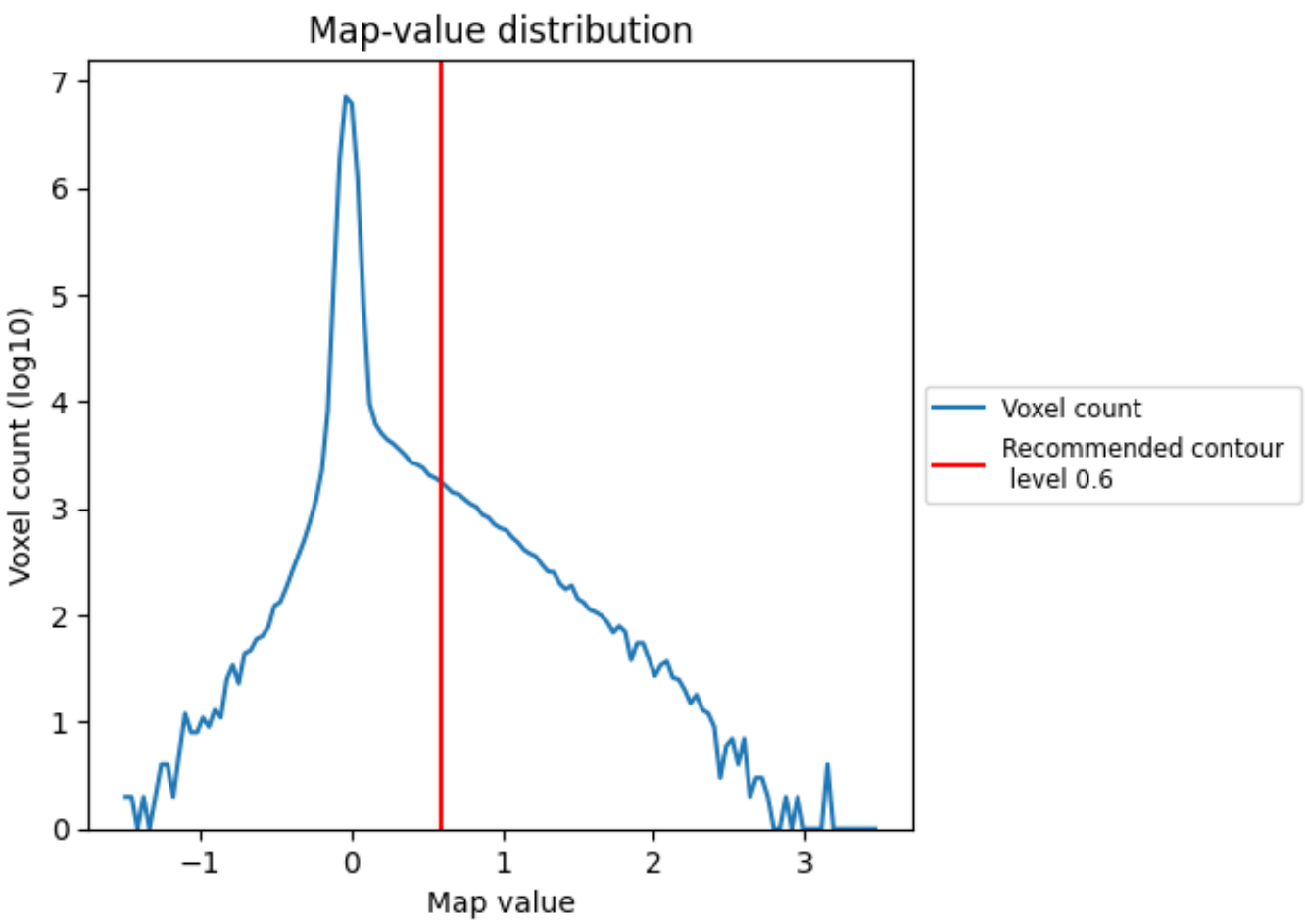
6.6 Mask visualisation (i)

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

7 Map analysis (i)

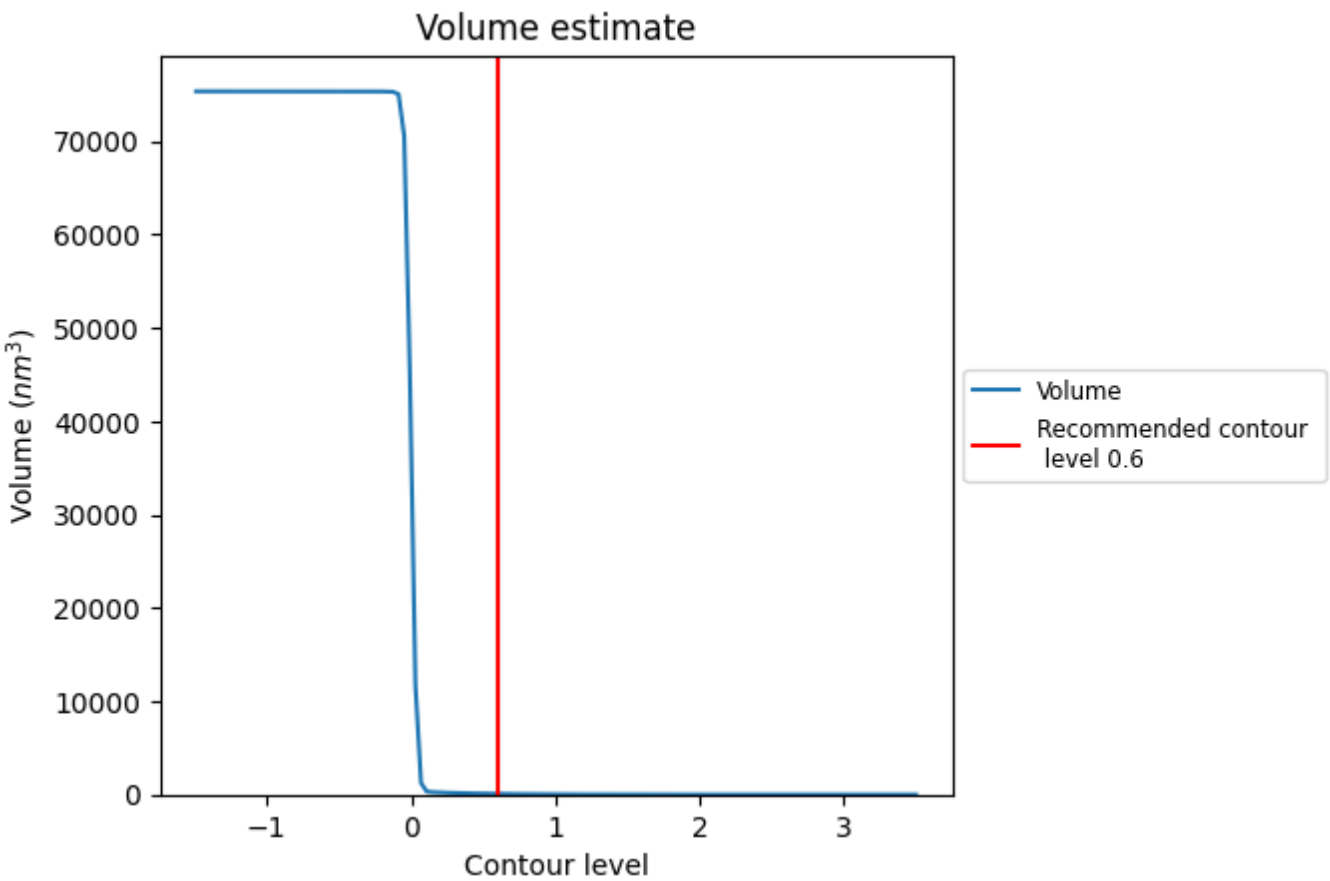
This section contains the results of statistical analysis of the map.

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.

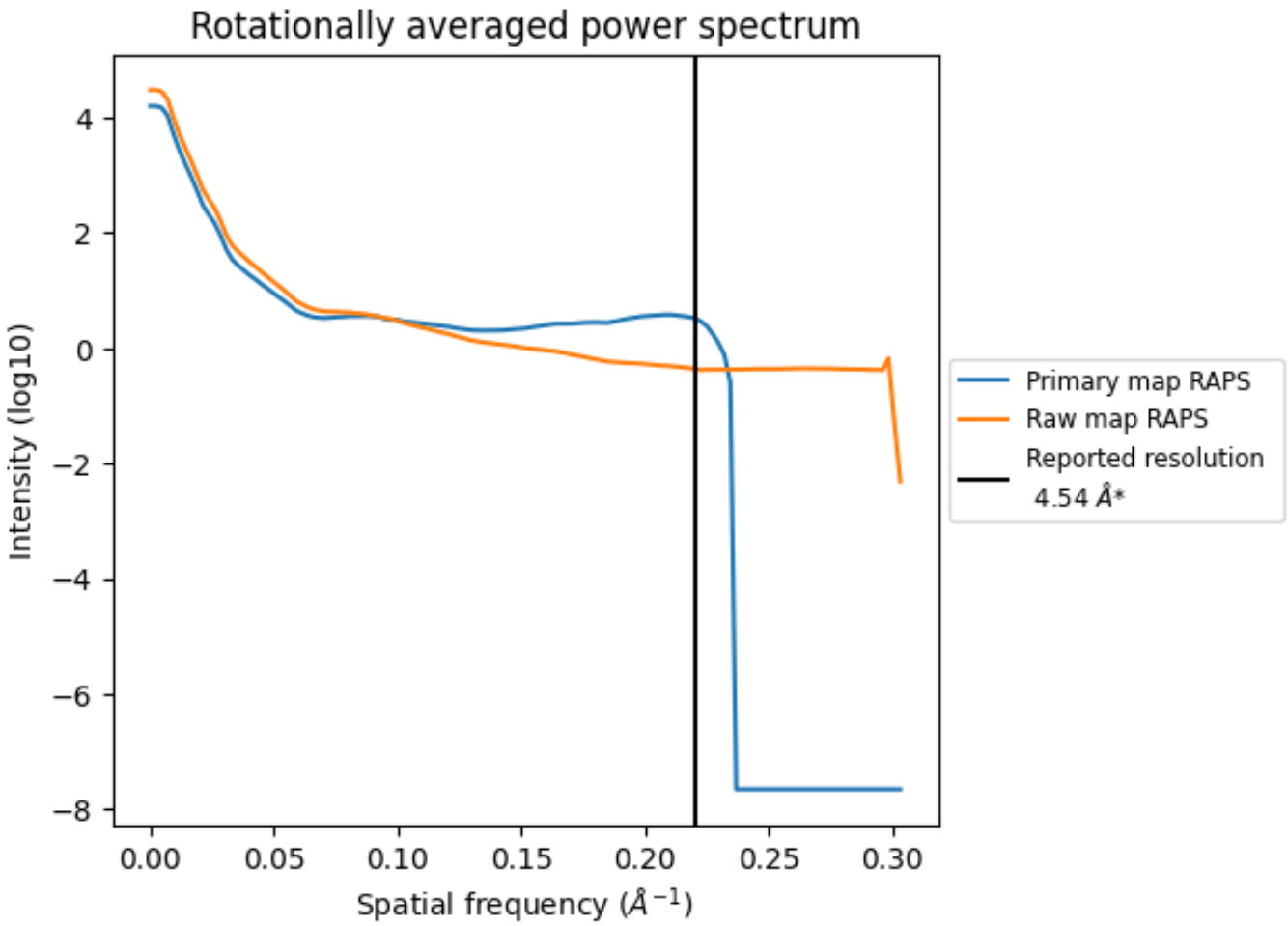
7.2 Volume estimate (i)



The volume at the recommended contour level is 80 nm^3; this corresponds to an approximate mass of 72 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)

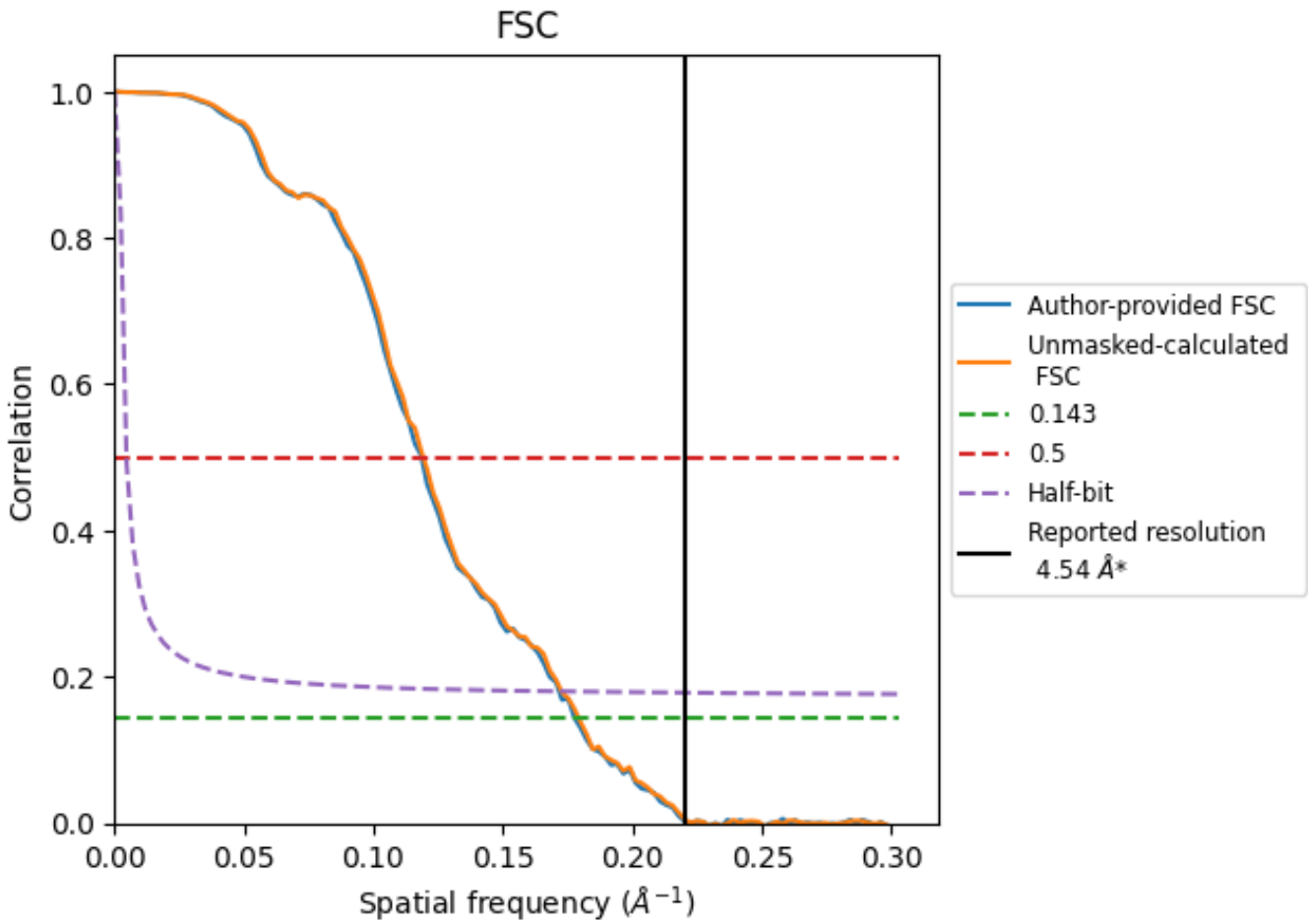


*Reported resolution corresponds to spatial frequency of 0.220 Å^{-1}

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 0.220 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.54	-	-
Author-provided FSC curve	5.63	8.44	5.82
Unmasked-calculated*	5.58	8.39	5.79

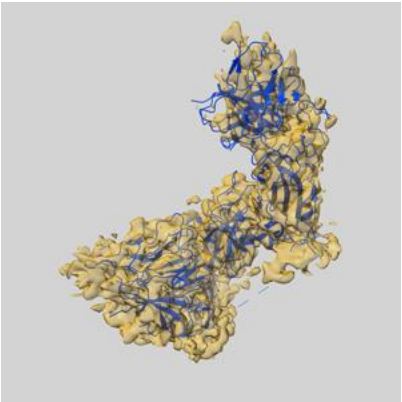
*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from author-provided FSC intersecting FSC 0.143 CUT-OFF 5.63 differs from the reported value 4.54 by more than 10 %

The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 5.58 differs from the reported value 4.54 by more than 10 %

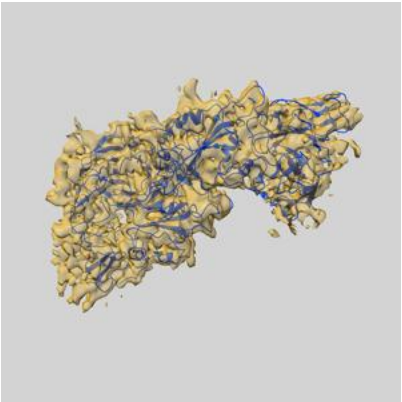
9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-34654 and PDB model 8HC7. Per-residue inclusion information can be found in section 3 on page 6.

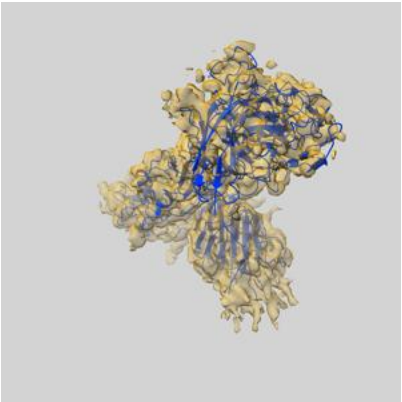
9.1 Map-model overlay (i)



X



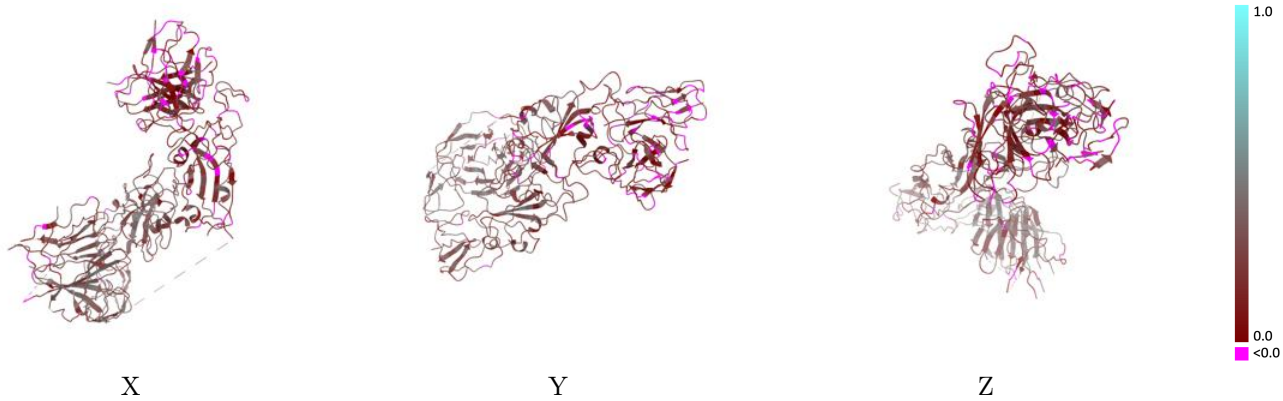
Y



Z

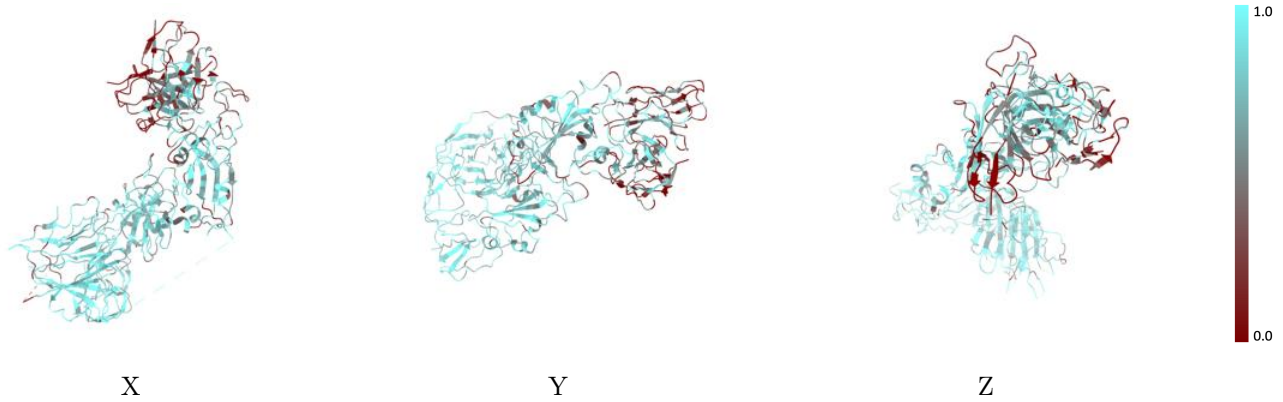
The images above show the 3D surface view of the map at the recommended contour level 0.6 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model (i)



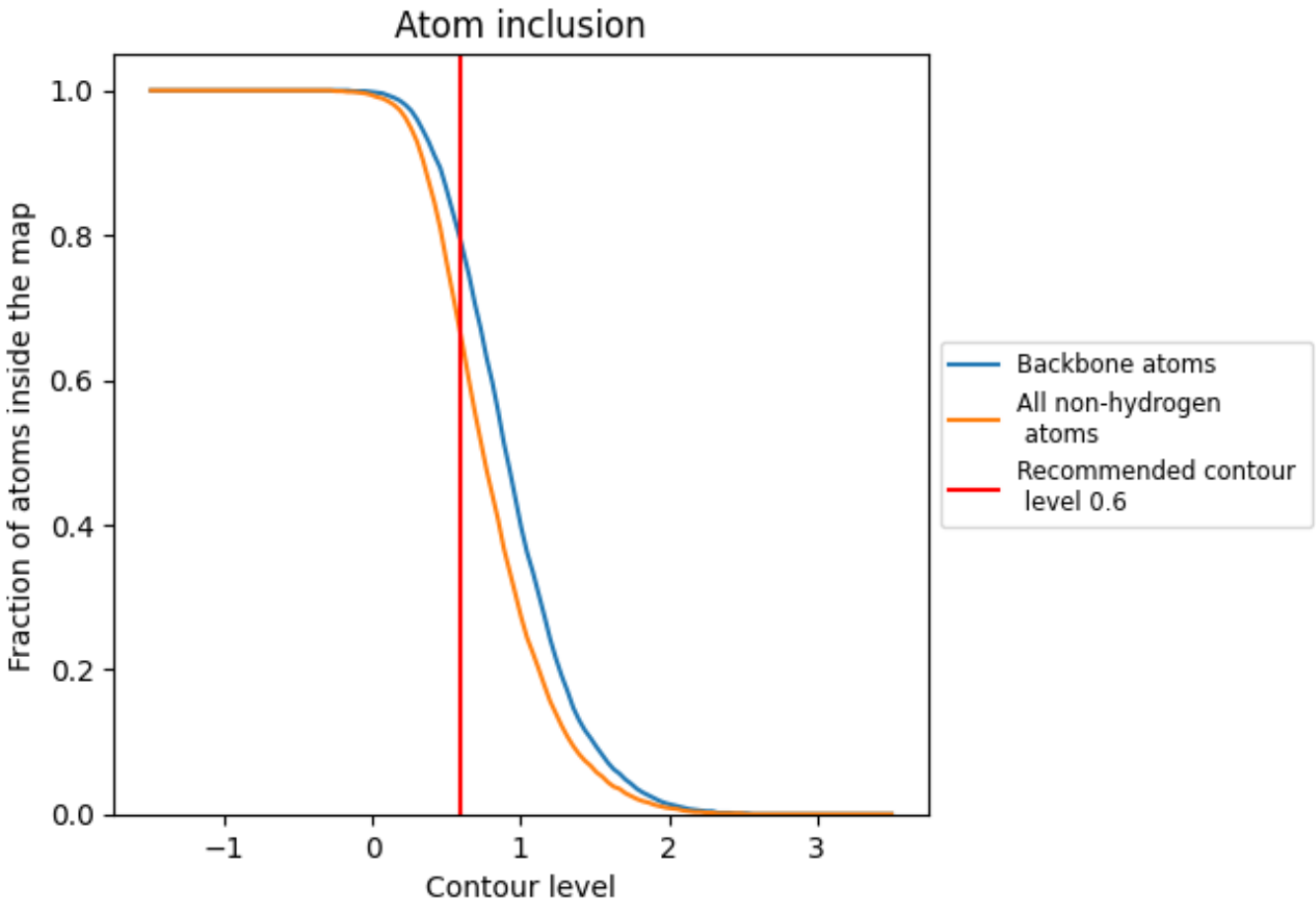
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.6).

9.4 Atom inclusion (i)



At the recommended contour level, 79% of all backbone atoms, 66% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.6) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6590	0.2340
A	0.7550	0.2810
C	0.7200	0.2560
H	0.3880	0.1300
L	0.4220	0.1230