WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB EM Validation Report (i)

Jul 10, 2023 – 04:59 pm BST

|		
PDB ID	:	8H0X
EMDB ID	:	EMD-34417
Title	:	Structure of SARS-CoV-1 Spike Protein with Engineered x1 Disulfide (S370C and D967C), Locked-1 Conformation
Authors	:	Zhang, X.; Li, Z.; Liu, Y.; Wang, J.; Fu, L.; Wang, P.; He, J.; Xiong, X.
Deposited on	:	2022-09-30
Resolution	:	2.57 Å(reported)
Based on initial model	:	7XTZ

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 2.57 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	Percentile Ranks	Value
Clashscore		2
Ramachandran outliers		0
Sidechain outliers		1.4%

Worse　　　　　*Better*

▮ Percentile relative to all structures
▯ Percentile relative to all EM structures
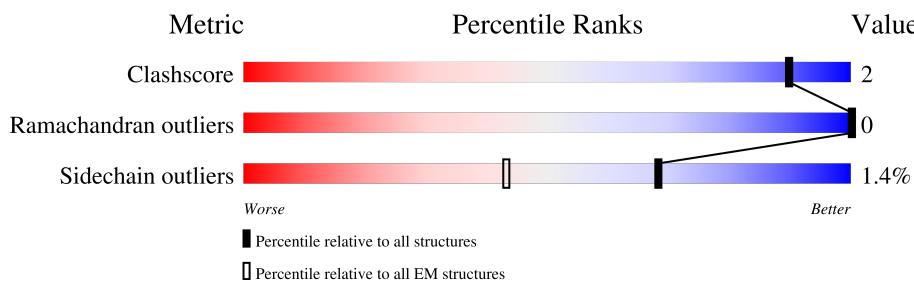
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	A	1232	80%　　　•　16%
1	B	1232	79%　　　5%　16%
1	C	1232	80%　　　•　16%

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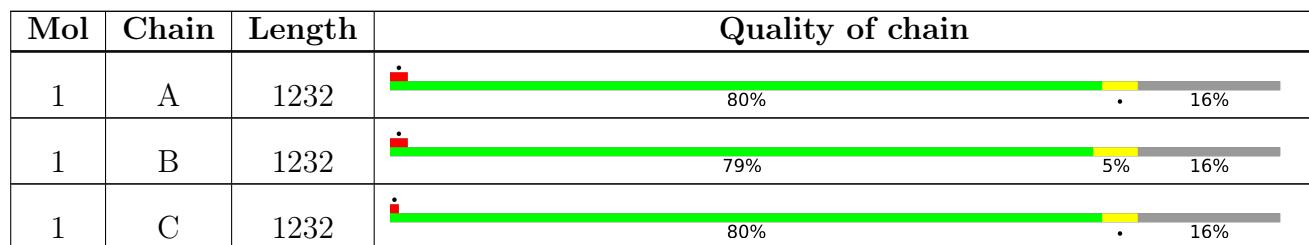
2   Entry composition ⓘ

There are 4 unique types of molecules in this entry. The entry contains 25122 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 glycoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	1039	Total	C	N	O	S	0	0
			8115	5191	1343	1534	47		
1	B	1039	Total	C	N	O	S	0	0
			8115	5191	1343	1534	47		
1	C	1039	Total	C	N	O	S	0	0
			8115	5191	1343	1534	47		

There are 165 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	11	GLU	-	expression tag	UNP P59594
A	12	THR	-	expression tag	UNP P59594
A	13	GLY	-	expression tag	UNP P59594
A	14	THR	-	expression tag	UNP P59594
A	370	CYS	SER	engineered mutation	UNP P59594
A	967	CYS	ASP	engineered mutation	UNP P59594
A	1194	GLY	-	expression tag	UNP P59594
A	1195	SER	-	expression tag	UNP P59594
A	1196	GLY	-	expression tag	UNP P59594
A	1197	ARG	-	expression tag	UNP P59594
A	1198	GLU	-	expression tag	UNP P59594
A	1199	ASN	-	expression tag	UNP P59594
A	1200	LEU	-	expression tag	UNP P59594
A	1201	TYR	-	expression tag	UNP P59594
A	1202	PHE	-	expression tag	UNP P59594
A	1203	GLN	-	expression tag	UNP P59594
A	1204	GLY	-	expression tag	UNP P59594
A	1205	GLY	-	expression tag	UNP P59594
A	1206	GLY	-	expression tag	UNP P59594
A	1207	GLY	-	expression tag	UNP P59594
A	1208	SER	-	expression tag	UNP P59594
A	1209	GLY	-	expression tag	UNP P59594
A	1210	TYR	-	expression tag	UNP P59594
A	1211	ILE	-	expression tag	UNP P59594

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Chain	Residue	Modelled	Actual	Comment	Reference
A	1212	PRO	-	expression tag	UNP P59594
A	1213	GLU	-	expression tag	UNP P59594
A	1214	ALA	-	expression tag	UNP P59594
A	1215	PRO	-	expression tag	UNP P59594
A	1216	ARG	-	expression tag	UNP P59594
A	1217	ASP	-	expression tag	UNP P59594
A	1218	GLY	-	expression tag	UNP P59594
A	1219	GLN	-	expression tag	UNP P59594
A	1220	ALA	-	expression tag	UNP P59594
A	1221	TYR	-	expression tag	UNP P59594
A	1222	VAL	-	expression tag	UNP P59594
A	1223	ARG	-	expression tag	UNP P59594
A	1224	LYS	-	expression tag	UNP P59594
A	1225	ASP	-	expression tag	UNP P59594
A	1226	GLY	-	expression tag	UNP P59594
A	1227	GLU	-	expression tag	UNP P59594
A	1228	TRP	-	expression tag	UNP P59594
A	1229	VAL	-	expression tag	UNP P59594
A	1230	LEU	-	expression tag	UNP P59594
A	1231	LEU	-	expression tag	UNP P59594
A	1232	SER	-	expression tag	UNP P59594
A	1233	THR	-	expression tag	UNP P59594
A	1234	PHE	-	expression tag	UNP P59594
A	1235	LEU	-	expression tag	UNP P59594
A	1236	GLY	-	expression tag	UNP P59594
A	1237	HIS	-	expression tag	UNP P59594
A	1238	HIS	-	expression tag	UNP P59594
A	1239	HIS	-	expression tag	UNP P59594
A	1240	HIS	-	expression tag	UNP P59594
A	1241	HIS	-	expression tag	UNP P59594
A	1242	HIS	-	expression tag	UNP P59594
B	11	GLU	-	expression tag	UNP P59594
B	12	THR	-	expression tag	UNP P59594
B	13	GLY	-	expression tag	UNP P59594
B	14	THR	-	expression tag	UNP P59594
B	370	CYS	SER	engineered mutation	UNP P59594
B	967	CYS	ASP	engineered mutation	UNP P59594
B	1194	GLY	-	expression tag	UNP P59594
B	1195	SER	-	expression tag	UNP P59594
B	1196	GLY	-	expression tag	UNP P59594
B	1197	ARG	-	expression tag	UNP P59594
B	1198	GLU	-	expression tag	UNP P59594

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Chain	Residue	Modelled	Actual	Comment	Reference
B	1199	ASN	-	expression tag	UNP P59594
B	1200	LEU	-	expression tag	UNP P59594
B	1201	TYR	-	expression tag	UNP P59594
B	1202	PHE	-	expression tag	UNP P59594
B	1203	GLN	-	expression tag	UNP P59594
B	1204	GLY	-	expression tag	UNP P59594
B	1205	GLY	-	expression tag	UNP P59594
B	1206	GLY	-	expression tag	UNP P59594
B	1207	GLY	-	expression tag	UNP P59594
B	1208	SER	-	expression tag	UNP P59594
B	1209	GLY	-	expression tag	UNP P59594
B	1210	TYR	-	expression tag	UNP P59594
B	1211	ILE	-	expression tag	UNP P59594
B	1212	PRO	-	expression tag	UNP P59594
B	1213	GLU	-	expression tag	UNP P59594
B	1214	ALA	-	expression tag	UNP P59594
B	1215	PRO	-	expression tag	UNP P59594
B	1216	ARG	-	expression tag	UNP P59594
B	1217	ASP	-	expression tag	UNP P59594
B	1218	GLY	-	expression tag	UNP P59594
B	1219	GLN	-	expression tag	UNP P59594
B	1220	ALA	-	expression tag	UNP P59594
B	1221	TYR	-	expression tag	UNP P59594
B	1222	VAL	-	expression tag	UNP P59594
B	1223	ARG	-	expression tag	UNP P59594
B	1224	LYS	-	expression tag	UNP P59594
B	1225	ASP	-	expression tag	UNP P59594
B	1226	GLY	-	expression tag	UNP P59594
B	1227	GLU	-	expression tag	UNP P59594
B	1228	TRP	-	expression tag	UNP P59594
B	1229	VAL	-	expression tag	UNP P59594
B	1230	LEU	-	expression tag	UNP P59594
B	1231	LEU	-	expression tag	UNP P59594
B	1232	SER	-	expression tag	UNP P59594
B	1233	THR	-	expression tag	UNP P59594
B	1234	PHE	-	expression tag	UNP P59594
B	1235	LEU	-	expression tag	UNP P59594
B	1236	GLY	-	expression tag	UNP P59594
B	1237	HIS	-	expression tag	UNP P59594
B	1238	HIS	-	expression tag	UNP P59594
B	1239	HIS	-	expression tag	UNP P59594
B	1240	HIS	-	expression tag	UNP P59594

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Chain	Residue	Modelled	Actual	Comment	Reference
B	1241	HIS	-	expression tag	UNP P59594
B	1242	HIS	-	expression tag	UNP P59594
C	11	GLU	-	expression tag	UNP P59594
C	12	THR	-	expression tag	UNP P59594
C	13	GLY	-	expression tag	UNP P59594
C	14	THR	-	expression tag	UNP P59594
C	370	CYS	SER	engineered mutation	UNP P59594
C	967	CYS	ASP	engineered mutation	UNP P59594
C	1194	GLY	-	expression tag	UNP P59594
C	1195	SER	-	expression tag	UNP P59594
C	1196	GLY	-	expression tag	UNP P59594
C	1197	ARG	-	expression tag	UNP P59594
C	1198	GLU	-	expression tag	UNP P59594
C	1199	ASN	-	expression tag	UNP P59594
C	1200	LEU	-	expression tag	UNP P59594
C	1201	TYR	-	expression tag	UNP P59594
C	1202	PHE	-	expression tag	UNP P59594
C	1203	GLN	-	expression tag	UNP P59594
C	1204	GLY	-	expression tag	UNP P59594
C	1205	GLY	-	expression tag	UNP P59594
C	1206	GLY	-	expression tag	UNP P59594
C	1207	GLY	-	expression tag	UNP P59594
C	1208	SER	-	expression tag	UNP P59594
C	1209	GLY	-	expression tag	UNP P59594
C	1210	TYR	-	expression tag	UNP P59594
C	1211	ILE	-	expression tag	UNP P59594
C	1212	PRO	-	expression tag	UNP P59594
C	1213	GLU	-	expression tag	UNP P59594
C	1214	ALA	-	expression tag	UNP P59594
C	1215	PRO	-	expression tag	UNP P59594
C	1216	ARG	-	expression tag	UNP P59594
C	1217	ASP	-	expression tag	UNP P59594
C	1218	GLY	-	expression tag	UNP P59594
C	1219	GLN	-	expression tag	UNP P59594
C	1220	ALA	-	expression tag	UNP P59594
C	1221	TYR	-	expression tag	UNP P59594
C	1222	VAL	-	expression tag	UNP P59594
C	1223	ARG	-	expression tag	UNP P59594
C	1224	LYS	-	expression tag	UNP P59594
C	1225	ASP	-	expression tag	UNP P59594
C	1226	GLY	-	expression tag	UNP P59594
C	1227	GLU	-	expression tag	UNP P59594

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Chain	Residue	Modelled	Actual	Comment	Reference
C	1228	TRP	-	expression tag	UNP P59594
C	1229	VAL	-	expression tag	UNP P59594
C	1230	LEU	-	expression tag	UNP P59594
C	1231	LEU	-	expression tag	UNP P59594
C	1232	SER	-	expression tag	UNP P59594
C	1233	THR	-	expression tag	UNP P59594
C	1234	PHE	-	expression tag	UNP P59594
C	1235	LEU	-	expression tag	UNP P59594
C	1236	GLY	-	expression tag	UNP P59594
C	1237	HIS	-	expression tag	UNP P59594
C	1238	HIS	-	expression tag	UNP P59594
C	1239	HIS	-	expression tag	UNP P59594
C	1240	HIS	-	expression tag	UNP P59594
C	1241	HIS	-	expression tag	UNP P59594
C	1242	HIS	-	expression tag	UNP P59594

- Molecule 2 is LINOLEIC ACID (three-letter code: EIC) (formula: $C_{18}H_{32}O_2$).
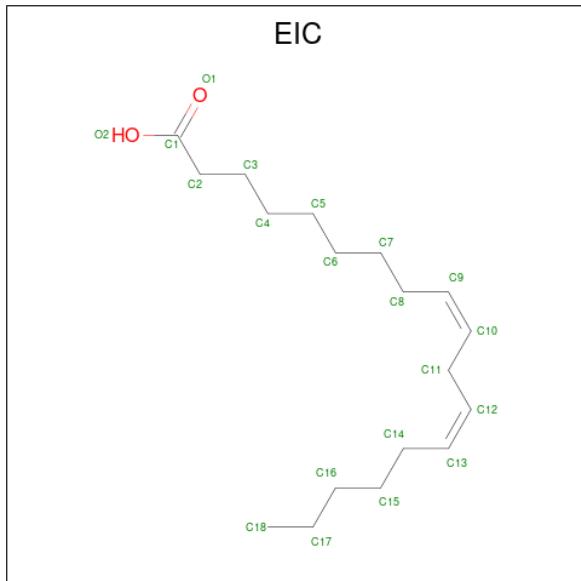
Mol	Chain	Residues	Atoms			AltConf
2	A	1	Total	C	O	0
			20	18	2	
2	A	1	Total	C	O	0
			20	18	2	
2	B	1	Total	C	O	0
			20	18	2	

- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula:

$C_8H_{15}NO_6$).

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

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

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

- Molecule 4 is BILIVERDINE IX ALPHA (three-letter code: BLA) (formula: $C_{33}H_{34}N_4O_6$).
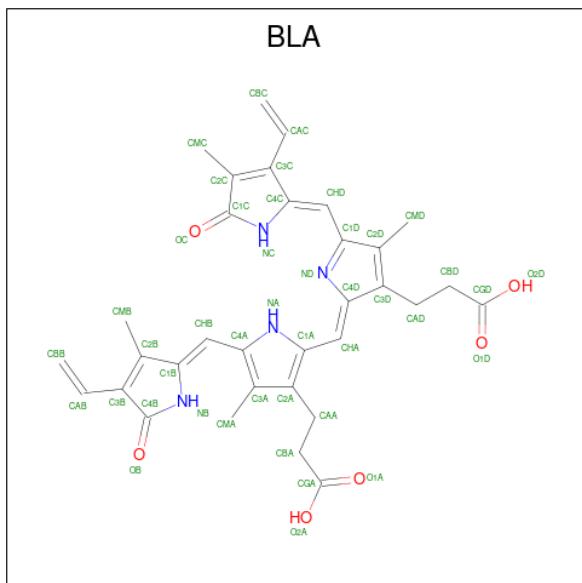
Mol	Chain	Residues	Atoms				AltConf
4	A	1	Total	C	N	O	0
			43	33	4	6	
4	B	1	Total	C	N	O	0
			43	33	4	6	
4	C	1	Total	C	N	O	0
			43	33	4	6	

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and 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 glycoprotein
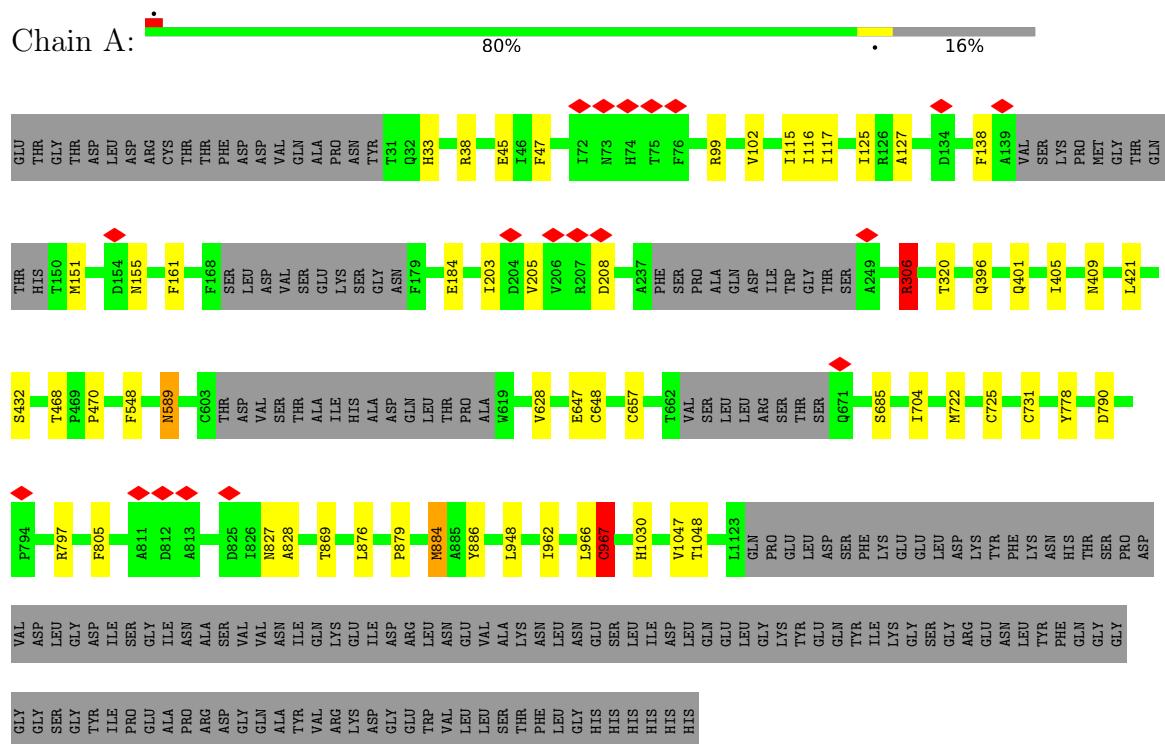
• Molecule 1: Spike glycoprotein
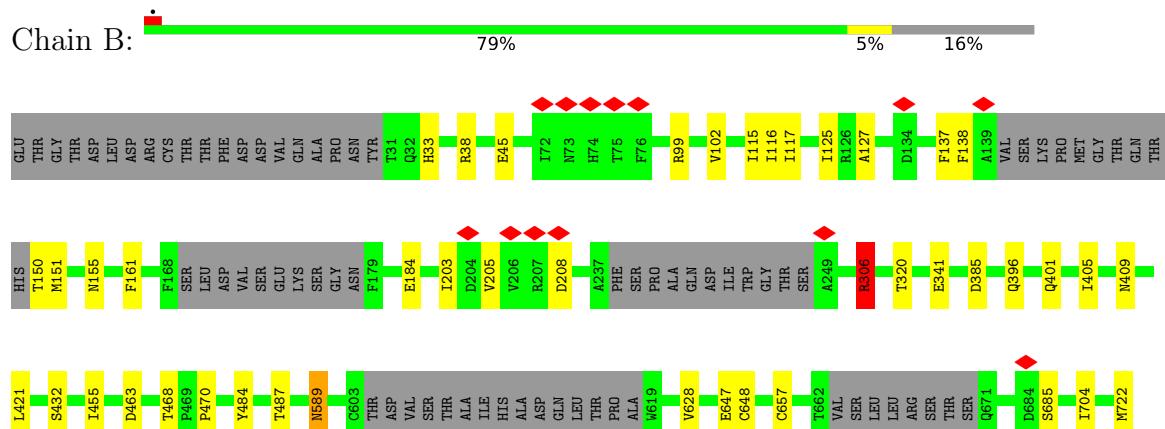
• Molecule 1: Spike glycoprotein

Chain C:

80%   •   16%
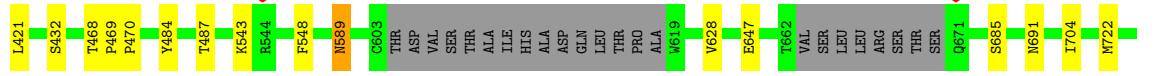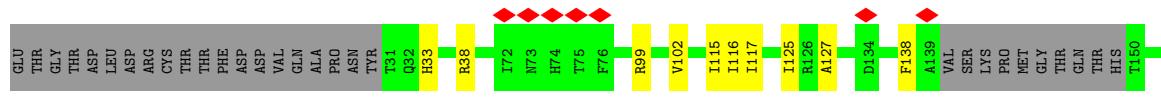
4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C3	Depositor
Number of particles used	58285	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	60	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	81000	Depositor
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.358	Depositor
Minimum map value	-0.176	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.007	Depositor
Recommended contour level	0.05	Depositor
Map size (Å)	367.92, 367.92, 367.92	wwPDB
Map dimensions	336, 336, 336	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.095, 1.095, 1.095	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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

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	0.33	0/8305	0.54	5/11293 (0.0%)
1	B	0.33	0/8305	0.54	5/11293 (0.0%)
1	C	0.33	0/8305	0.54	5/11293 (0.0%)
All	All	0.33	0/24915	0.54	15/33879 (0.0%)

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

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

There are no bond length outliers.

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	884	MET	CB-CG-SD	7.12	133.75	112.40
1	A	884	MET	CB-CG-SD	7.11	133.74	112.40
1	B	884	MET	CB-CG-SD	7.09	133.68	112.40
1	B	306	ARG	NE-CZ-NH2	6.17	123.38	120.30
1	A	306	ARG	NE-CZ-NH2	6.04	123.32	120.30
1	C	306	ARG	NE-CZ-NH2	6.00	123.30	120.30
1	C	967	CYS	CA-CB-SG	5.98	124.77	114.00
1	B	967	CYS	CA-CB-SG	5.97	124.75	114.00
1	A	967	CYS	CA-CB-SG	5.96	124.74	114.00
1	B	884	MET	CG-SD-CE	5.78	109.45	100.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	884	MET	CG-SD-CE	5.78	109.45	100.20
1	A	884	MET	CG-SD-CE	5.76	109.42	100.20
1	C	948	LEU	CA-CB-CG	5.17	127.20	115.30
1	B	948	LEU	CA-CB-CG	5.17	127.19	115.30
1	A	948	LEU	CA-CB-CG	5.17	127.18	115.30

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	967	CYS	Peptide
1	B	967	CYS	Peptide
1	C	967	CYS	Peptide

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	8115	0	7889	28	0
1	B	8115	0	7889	29	0
1	C	8115	0	7889	29	0
2	A	40	0	62	2	0
2	B	20	0	31	1	0
3	A	196	0	182	0	0
3	B	196	0	182	0	0
3	C	196	0	182	1	0
4	A	43	0	32	1	0
4	B	43	0	32	1	0
4	C	43	0	32	1	0
All	All	25122	0	24402	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 2.

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:B:38:ARG:NH2	1:B:184:GLU:OE2	2.32	0.63
1:C:38:ARG:NH2	1:C:184:GLU:OE2	2.32	0.62
1:A:38:ARG:NH2	1:A:184:GLU:OE2	2.32	0.62
1:C:589:ASN:OD1	1:C:589:ASN:N	2.26	0.62
1:C:117:ILE:HD12	1:C:138:PHE:HZ	1.65	0.61
1:A:117:ILE:HD12	1:A:138:PHE:HZ	1.65	0.61
1:B:117:ILE:HD12	1:B:138:PHE:HZ	1.65	0.60
1:B:455:ILE:HG23	3:C:1305:NAG:H82	1.84	0.58
1:B:468:THR:HG22	1:B:470:PRO:HD2	1.87	0.57
1:A:589:ASN:OD1	1:A:589:ASN:N	2.26	0.56
1:C:468:THR:HG22	1:C:470:PRO:HD2	1.86	0.56
1:A:468:THR:HG22	1:A:470:PRO:HD2	1.87	0.56
1:C:396:GLN:HA	1:C:401:GLN:HG2	1.90	0.53
1:B:396:GLN:HA	1:B:401:GLN:HG2	1.90	0.53
1:A:396:GLN:HA	1:A:401:GLN:HG2	1.90	0.52
1:C:405:ILE:HD13	1:C:409:ASN:HD22	1.75	0.52
1:B:405:ILE:HD13	1:B:409:ASN:HD22	1.75	0.52
1:B:589:ASN:OD1	1:B:589:ASN:N	2.26	0.52
1:A:405:ILE:HD13	1:A:409:ASN:HD22	1.74	0.51
1:C:203:ILE:HD12	1:C:205:VAL:HG22	1.93	0.51
1:A:45:GLU:HG3	1:C:548:PHE:HD2	1.76	0.51
1:B:138:PHE:CE1	1:B:150:THR:HG22	2.46	0.51
1:B:203:ILE:HD12	1:B:205:VAL:HG22	1.93	0.51
1:A:102:VAL:HG22	1:A:115:ILE:HG12	1.93	0.50
1:B:102:VAL:HG22	1:B:115:ILE:HG12	1.93	0.50
1:C:102:VAL:HG22	1:C:115:ILE:HG12	1.93	0.50
1:A:203:ILE:HD12	1:A:205:VAL:HG22	1.93	0.50
1:C:127:ALA:HB3	1:C:161:PHE:HB3	1.95	0.49
1:B:127:ALA:HB3	1:B:161:PHE:HB3	1.95	0.49
1:A:648:CYS:HB2	1:A:657:CYS:HB3	1.72	0.48
2:B:1316:EIC:H52	1:C:421:LEU:HD21	1.96	0.48
1:A:421:LEU:HD21	2:A:1301:EIC:H52	1.96	0.48
1:A:127:ALA:HB3	1:A:161:PHE:HB3	1.95	0.47
1:B:827:ASN:OD1	1:B:828:ALA:N	2.47	0.47
2:A:1317:EIC:H52	1:B:421:LEU:HD21	1.96	0.47
1:B:1030:HIS:HA	1:B:1048:THR:HG22	1.97	0.47
1:A:1030:HIS:HA	1:A:1048:THR:HG22	1.97	0.47
4:A:1316:BLA:HA	4:A:1316:BLA:HB	1.63	0.46
1:A:827:ASN:OD1	1:A:828:ALA:N	2.47	0.46
1:C:827:ASN:OD1	1:C:828:ALA:N	2.47	0.46
1:A:869:THR:HG21	1:A:876:LEU:HD12	1.97	0.46
1:B:869:THR:HG21	1:B:876:LEU:HD12	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:B:1315:BLA:HA	4:B:1315:BLA:HB	1.63	0.46
4:C:1315:BLA:HA	4:C:1315:BLA:HB	1.63	0.46
1:A:790:ASP:OD1	1:A:790:ASP:N	2.45	0.46
1:C:1030:HIS:HA	1:C:1048:THR:HG22	1.97	0.46
1:C:725:CYS:HB3	1:C:731:CYS:HB3	1.80	0.45
1:C:869:THR:HG21	1:C:876:LEU:HD12	1.97	0.45
1:C:116:ILE:HG23	1:C:125:ILE:HG12	1.98	0.45
1:A:116:ILE:HG23	1:A:125:ILE:HG12	1.98	0.45
1:A:967:CYS:HB2	1:C:370:CYS:HB2	1.24	0.45
1:B:968:LYS:NZ	1:C:415:ASP:HB3	2.33	0.44
1:A:704:ILE:HG12	1:A:1047:VAL:HG22	2.00	0.44
1:B:116:ILE:HG23	1:B:125:ILE:HG12	1.98	0.44
1:B:33:HIS:ND1	1:B:208:ASP:OD1	2.51	0.44
1:C:797:ARG:HH12	1:C:805:PHE:HB2	1.83	0.44
1:B:725:CYS:HB3	1:B:731:CYS:HB3	1.80	0.44
1:C:33:HIS:ND1	1:C:208:ASP:OD1	2.51	0.44
1:A:548:PHE:HD2	1:B:45:GLU:HG3	1.82	0.43
1:B:137:PHE:CZ	1:B:151:MET:HG3	2.53	0.43
1:B:306:ARG:HH21	1:B:306:ARG:HG3	1.84	0.43
1:A:725:CYS:HB3	1:A:731:CYS:HB3	1.80	0.43
1:A:33:HIS:ND1	1:A:208:ASP:OD1	2.51	0.43
1:B:797:ARG:HH12	1:B:805:PHE:HB2	1.83	0.43
1:C:704:ILE:HG12	1:C:1047:VAL:HG22	2.00	0.43
1:B:704:ILE:HG12	1:B:1047:VAL:HG22	2.00	0.43
1:C:306:ARG:HH21	1:C:306:ARG:HG3	1.84	0.43
1:A:306:ARG:HH21	1:A:306:ARG:HG3	1.84	0.43
1:A:797:ARG:HH12	1:A:805:PHE:HB2	1.83	0.43
1:A:879:PRO:HB3	1:C:691:ASN:HA	2.00	0.43
1:C:790:ASP:OD1	1:C:790:ASP:N	2.45	0.42
1:C:99:ARG:HG3	1:C:138:PHE:HD2	1.84	0.41
1:A:99:ARG:HG3	1:A:138:PHE:HD2	1.84	0.41
1:B:99:ARG:HG3	1:B:138:PHE:HD2	1.84	0.41
1:C:341:GLU:O	1:C:385:ASP:HA	2.21	0.41
1:B:484:TYR:HB2	1:B:487:THR:HG23	2.03	0.41
1:B:648:CYS:HB2	1:B:657:CYS:HB3	1.72	0.41
1:C:484:TYR:HB2	1:C:487:THR:HG23	2.03	0.41
1:B:341:GLU:O	1:B:385:ASP:HA	2.20	0.41
1:B:463:ASP:OD1	1:B:463:ASP:N	2.53	0.40
1:C:468:THR:HA	1:C:469:PRO:HD3	1.95	0.40
1:A:47:PHE:CE2	1:C:543:LYS:HD3	2.56	0.40
1:A:962:ILE:HG23	1:A:966:LEU:HD12	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	1027/1232 (83%)	992 (97%)	35 (3%)	0	100	100
1	B	1027/1232 (83%)	992 (97%)	35 (3%)	0	100	100
1	C	1027/1232 (83%)	994 (97%)	33 (3%)	0	100	100
All	All	3081/3696 (83%)	2978 (97%)	103 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	898/1065 (84%)	885 (99%)	13 (1%)	67	84
1	B	898/1065 (84%)	886 (99%)	12 (1%)	69	85
1	C	898/1065 (84%)	886 (99%)	12 (1%)	69	85
All	All	2694/3195 (84%)	2657 (99%)	37 (1%)	68	84

All (37) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	151	MET
1	A	155	ASN

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Mol	Chain	Res	Type
1	A	306	ARG
1	A	320	THR
1	A	432	SER
1	A	589	ASN
1	A	628	VAL
1	A	647	GLU
1	A	685	SER
1	A	722	MET
1	A	778	TYR
1	A	884	MET
1	A	886	TYR
1	B	155	ASN
1	B	306	ARG
1	B	320	THR
1	B	432	SER
1	B	589	ASN
1	B	628	VAL
1	B	647	GLU
1	B	685	SER
1	B	722	MET
1	B	778	TYR
1	B	884	MET
1	B	886	TYR
1	C	155	ASN
1	C	306	ARG
1	C	320	THR
1	C	432	SER
1	C	589	ASN
1	C	628	VAL
1	C	647	GLU
1	C	685	SER
1	C	722	MET
1	C	778	TYR
1	C	884	MET
1	C	886	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3　RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5   Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6   Ligand geometry ⓘ

48 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
3	NAG	A	1303	1	14,14,15	0.21	0	17,19,21	0.51	0
3	NAG	B	1302	1	14,14,15	0.22	0	17,19,21	0.50	0
3	NAG	B	1312	1	14,14,15	0.30	0	17,19,21	0.42	0
3	NAG	C	1306	1	14,14,15	0.33	0	17,19,21	0.40	0
3	NAG	A	1302	1	14,14,15	0.28	0	17,19,21	0.42	0
3	NAG	B	1305	1	14,14,15	0.34	0	17,19,21	0.49	0
3	NAG	C	1314	1	14,14,15	0.30	0	17,19,21	0.37	0
3	NAG	B	1308	1	14,14,15	0.31	0	17,19,21	0.43	0
3	NAG	B	1311	1	14,14,15	0.28	0	17,19,21	0.52	0
3	NAG	A	1312	1	14,14,15	0.27	0	17,19,21	0.52	0
3	NAG	C	1309	1	14,14,15	0.23	0	17,19,21	0.51	0
3	NAG	B	1314	1	14,14,15	0.30	0	17,19,21	0.36	0
3	NAG	B	1301	1	14,14,15	0.28	0	17,19,21	0.42	0
3	NAG	B	1313	1	14,14,15	0.32	0	17,19,21	0.42	0
3	NAG	A	1305	1	14,14,15	0.22	0	17,19,21	0.54	0
2	EIC	B	1316	-	19,19,19	0.55	0	19,19,19	1.00	0
3	NAG	B	1303	1	14,14,15	0.24	0	17,19,21	0.48	0
3	NAG	C	1301	1	14,14,15	0.27	0	17,19,21	0.41	0
3	NAG	C	1313	1	14,14,15	0.32	0	17,19,21	0.42	0
3	NAG	B	1309	1	14,14,15	0.23	0	17,19,21	0.51	0
3	NAG	B	1310	1	14,14,15	0.28	0	17,19,21	0.46	0
3	NAG	C	1311	1	14,14,15	0.28	0	17,19,21	0.52	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
3	NAG	A	1308	1	14,14,15	0.26	0	17,19,21	0.58	0
2	EIC	A	1317	-	19,19,19	0.54	0	19,19,19	0.99	0
3	NAG	C	1305	1	14,14,15	0.35	0	17,19,21	0.48	0
3	NAG	C	1308	1	14,14,15	0.31	0	17,19,21	0.44	0
3	NAG	A	1314	1	14,14,15	0.33	0	17,19,21	0.42	0
3	NAG	A	1313	1	14,14,15	0.28	0	17,19,21	0.42	0
3	NAG	A	1304	1	14,14,15	0.24	0	17,19,21	0.48	0
3	NAG	C	1307	1	14,14,15	0.26	0	17,19,21	0.58	0
3	NAG	B	1306	1	14,14,15	0.34	0	17,19,21	0.40	0
3	NAG	C	1303	1	14,14,15	0.23	0	17,19,21	0.48	0
3	NAG	C	1304	1	14,14,15	0.22	0	17,19,21	0.54	0
3	NAG	C	1310	1	14,14,15	0.27	0	17,19,21	0.46	0
3	NAG	B	1307	1	14,14,15	0.24	0	17,19,21	0.57	0
2	EIC	A	1301	-	19,19,19	0.54	0	19,19,19	0.99	0
3	NAG	C	1312	1	14,14,15	0.28	0	17,19,21	0.42	0
4	BLA	B	1315	-	42,46,46	3.57	20 (47%)	53,67,67	1.68	9 (16%)
3	NAG	A	1315	1	14,14,15	0.29	0	17,19,21	0.37	0
3	NAG	A	1311	1	14,14,15	0.28	0	17,19,21	0.45	0
4	BLA	C	1315	-	42,46,46	3.56	20 (47%)	53,67,67	1.68	9 (16%)
3	NAG	B	1304	1	14,14,15	0.22	0	17,19,21	0.53	0
3	NAG	A	1310	1	14,14,15	0.23	0	17,19,21	0.49	0
4	BLA	A	1316	-	42,46,46	3.57	20 (47%)	53,67,67	1.68	9 (16%)
3	NAG	A	1307	1	14,14,15	0.33	0	17,19,21	0.40	0
3	NAG	A	1306	1	14,14,15	0.34	0	17,19,21	0.49	0
3	NAG	C	1302	1	14,14,15	0.21	0	17,19,21	0.51	0
3	NAG	A	1309	1	14,14,15	0.31	0	17,19,21	0.44	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
3	NAG	A	1303	1	-	1/6/23/26	0/1/1/1
3	NAG	B	1302	1	-	1/6/23/26	0/1/1/1
3	NAG	B	1312	1	-	2/6/23/26	0/1/1/1
3	NAG	C	1306	1	-	0/6/23/26	0/1/1/1
3	NAG	A	1302	1	-	2/6/23/26	0/1/1/1
3	NAG	B	1305	1	-	0/6/23/26	0/1/1/1
3	NAG	C	1314	1	-	2/6/23/26	0/1/1/1
3	NAG	B	1308	1	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	B	1311	1	-	2/6/23/26	0/1/1/1
3	NAG	A	1312	1	-	2/6/23/26	0/1/1/1
3	NAG	C	1309	1	-	2/6/23/26	0/1/1/1
3	NAG	B	1314	1	-	2/6/23/26	0/1/1/1
3	NAG	B	1301	1	-	2/6/23/26	0/1/1/1
3	NAG	B	1313	1	-	2/6/23/26	0/1/1/1
3	NAG	A	1305	1	-	2/6/23/26	0/1/1/1
2	EIC	B	1316	-	-	5/17/17/17	-
3	NAG	B	1303	1	-	1/6/23/26	0/1/1/1
3	NAG	C	1301	1	-	2/6/23/26	0/1/1/1
3	NAG	C	1313	1	-	2/6/23/26	0/1/1/1
3	NAG	B	1309	1	-	2/6/23/26	0/1/1/1
3	NAG	B	1310	1	-	0/6/23/26	0/1/1/1
3	NAG	C	1311	1	-	2/6/23/26	0/1/1/1
3	NAG	A	1308	1	-	0/6/23/26	0/1/1/1
2	EIC	A	1317	-	-	5/17/17/17	-
3	NAG	C	1305	1	-	0/6/23/26	0/1/1/1
3	NAG	C	1308	1	-	0/6/23/26	0/1/1/1
3	NAG	A	1314	1	-	2/6/23/26	0/1/1/1
3	NAG	A	1313	1	-	2/6/23/26	0/1/1/1
3	NAG	A	1304	1	-	1/6/23/26	0/1/1/1
3	NAG	C	1307	1	-	0/6/23/26	0/1/1/1
3	NAG	B	1306	1	-	0/6/23/26	0/1/1/1
3	NAG	C	1303	1	-	1/6/23/26	0/1/1/1
3	NAG	C	1304	1	-	2/6/23/26	0/1/1/1
3	NAG	C	1310	1	-	0/6/23/26	0/1/1/1
3	NAG	B	1307	1	-	0/6/23/26	0/1/1/1
2	EIC	A	1301	-	-	5/17/17/17	-
3	NAG	C	1312	1	-	2/6/23/26	0/1/1/1
4	BLA	B	1315	-	-	7/26/74/74	0/4/4/4
3	NAG	A	1315	1	-	2/6/23/26	0/1/1/1
3	NAG	A	1311	1	-	0/6/23/26	0/1/1/1
4	BLA	C	1315	-	-	7/26/74/74	0/4/4/4
3	NAG	B	1304	1	-	2/6/23/26	0/1/1/1
3	NAG	A	1310	1	-	2/6/23/26	0/1/1/1
4	BLA	A	1316	-	-	7/26/74/74	0/4/4/4
3	NAG	A	1307	1	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	A	1306	1	-	0/6/23/26	0/1/1/1
3	NAG	C	1302	1	-	1/6/23/26	0/1/1/1
3	NAG	A	1309	1	-	0/6/23/26	0/1/1/1

All (60) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1316	BLA	C1B-NB	9.68	1.54	1.37
4	B	1315	BLA	C1B-NB	9.66	1.54	1.37
4	C	1315	BLA	C1B-NB	9.63	1.53	1.37
4	B	1315	BLA	C4C-NC	9.53	1.53	1.37
4	A	1316	BLA	C4C-NC	9.52	1.53	1.37
4	C	1315	BLA	C4C-NC	9.51	1.53	1.37
4	C	1315	BLA	C1C-NC	7.30	1.53	1.38
4	A	1316	BLA	C1C-NC	7.29	1.53	1.38
4	B	1315	BLA	C1C-NC	7.28	1.53	1.38
4	C	1315	BLA	C4B-NB	7.12	1.53	1.38
4	B	1315	BLA	C4B-NB	7.10	1.52	1.38
4	A	1316	BLA	C4B-NB	7.10	1.52	1.38
4	A	1316	BLA	C4D-ND	5.96	1.51	1.38
4	B	1315	BLA	C4D-ND	5.94	1.51	1.38
4	C	1315	BLA	C4D-ND	5.93	1.51	1.38
4	B	1315	BLA	CHD-C1D	5.53	1.53	1.40
4	C	1315	BLA	CHD-C1D	5.52	1.53	1.40
4	A	1316	BLA	CHD-C1D	5.48	1.53	1.40
4	A	1316	BLA	C1D-ND	5.19	1.48	1.36
4	B	1315	BLA	C1D-ND	5.19	1.48	1.36
4	B	1315	BLA	C3D-C2D	5.18	1.47	1.36
4	A	1316	BLA	C3D-C2D	5.17	1.47	1.36
4	C	1315	BLA	C1D-ND	5.17	1.48	1.36
4	C	1315	BLA	C3D-C2D	5.16	1.47	1.36
4	C	1315	BLA	C4D-C3D	4.85	1.53	1.45
4	B	1315	BLA	C4D-C3D	4.84	1.53	1.45
4	A	1316	BLA	C4D-C3D	4.82	1.53	1.45
4	A	1316	BLA	C4A-CHB	3.30	1.53	1.41
4	C	1315	BLA	C4A-CHB	3.28	1.53	1.41
4	B	1315	BLA	C4A-CHB	3.28	1.53	1.41
4	C	1315	BLA	C1A-CHA	3.22	1.53	1.41
4	B	1315	BLA	C1A-CHA	3.22	1.53	1.41
4	A	1316	BLA	C1A-CHA	3.21	1.53	1.41
4	A	1316	BLA	CHA-C4D	-3.20	1.32	1.35
4	B	1315	BLA	CHA-C4D	-3.10	1.32	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	C	1315	BLA	CHA-C4D	-3.08	1.32	1.35
4	C	1315	BLA	OC-C1C	-2.92	1.18	1.23
4	A	1316	BLA	OC-C1C	-2.87	1.18	1.23
4	B	1315	BLA	OC-C1C	-2.87	1.18	1.23
4	B	1315	BLA	C3C-C2C	2.62	1.42	1.37
4	B	1315	BLA	OB-C4B	-2.62	1.18	1.23
4	C	1315	BLA	OB-C4B	-2.62	1.18	1.23
4	C	1315	BLA	C3C-C2C	2.62	1.42	1.37
4	A	1316	BLA	OB-C4B	-2.60	1.18	1.23
4	A	1316	BLA	C3C-C2C	2.59	1.42	1.37
4	A	1316	BLA	C3B-C2B	2.58	1.42	1.37
4	C	1315	BLA	C1B-C2B	2.56	1.49	1.45
4	B	1315	BLA	C1B-C2B	2.55	1.49	1.45
4	A	1316	BLA	C1B-C2B	2.55	1.49	1.45
4	A	1316	BLA	C3C-C4C	2.50	1.49	1.45
4	C	1315	BLA	C3B-C2B	2.50	1.42	1.37
4	B	1315	BLA	C3B-C2B	2.49	1.42	1.37
4	B	1315	BLA	C3C-C4C	2.49	1.49	1.45
4	C	1315	BLA	C3C-C4C	2.46	1.49	1.45
4	B	1315	BLA	CHD-C4C	-2.41	1.32	1.38
4	A	1316	BLA	CHD-C4C	-2.38	1.32	1.38
4	C	1315	BLA	CHD-C4C	-2.37	1.32	1.38
4	A	1316	BLA	CAC-C3C	2.06	1.53	1.47
4	C	1315	BLA	CAC-C3C	2.05	1.53	1.47
4	B	1315	BLA	CAC-C3C	2.03	1.53	1.47

All (27) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	B	1315	BLA	C1A-CHA-C4D	-6.67	120.84	128.81
4	C	1315	BLA	C1A-CHA-C4D	-6.66	120.85	128.81
4	A	1316	BLA	C1A-CHA-C4D	-6.64	120.88	128.81
4	A	1316	BLA	C3D-C4D-ND	-3.44	105.05	110.05
4	C	1315	BLA	C3D-C4D-ND	-3.39	105.11	110.05
4	B	1315	BLA	C3D-C4D-ND	-3.39	105.12	110.05
4	C	1315	BLA	C4C-CHD-C1D	-2.99	120.78	128.08
4	B	1315	BLA	C4C-CHD-C1D	-2.97	120.82	128.08
4	A	1316	BLA	C4C-CHD-C1D	-2.97	120.83	128.08
4	A	1316	BLA	CBA-CAA-C2A	-2.74	107.95	112.62
4	C	1315	BLA	CBA-CAA-C2A	-2.73	107.97	112.62
4	B	1315	BLA	CBA-CAA-C2A	-2.72	107.97	112.62
4	B	1315	BLA	C4C-NC-C1C	-2.59	107.37	110.67

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	1316	BLA	C4C-NC-C1C	-2.57	107.39	110.67
4	C	1315	BLA	C4C-NC-C1C	-2.57	107.40	110.67
4	C	1315	BLA	CAD-CBD-CGD	-2.54	108.13	113.60
4	B	1315	BLA	CAD-CBD-CGD	-2.52	108.18	113.60
4	A	1316	BLA	CAD-CBD-CGD	-2.50	108.21	113.60
4	C	1315	BLA	C3B-C2B-C1B	2.43	110.97	108.03
4	A	1316	BLA	C4D-C3D-C2D	2.41	109.46	106.78
4	A	1316	BLA	C3B-C2B-C1B	2.41	110.95	108.03
4	B	1315	BLA	C3B-C2B-C1B	2.40	110.93	108.03
4	B	1315	BLA	C4D-C3D-C2D	2.33	109.36	106.78
4	C	1315	BLA	C4D-C3D-C2D	2.32	109.35	106.78
4	B	1315	BLA	C4B-C3B-C2B	2.28	110.85	107.92
4	C	1315	BLA	C4B-C3B-C2B	2.26	110.83	107.92
4	A	1316	BLA	C4B-C3B-C2B	2.23	110.79	107.92

There are no chirality outliers.

All (84) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	1316	BLA	NA-C1A-CHA-C4D
4	A	1316	BLA	C2A-C1A-CHA-C4D
4	A	1316	BLA	C2C-C3C-CAC-CBC
4	A	1316	BLA	C4C-C3C-CAC-CBC
4	B	1315	BLA	NA-C1A-CHA-C4D
4	B	1315	BLA	C2A-C1A-CHA-C4D
4	B	1315	BLA	C2C-C3C-CAC-CBC
4	B	1315	BLA	C4C-C3C-CAC-CBC
4	C	1315	BLA	NA-C1A-CHA-C4D
4	C	1315	BLA	C2A-C1A-CHA-C4D
4	C	1315	BLA	C2C-C3C-CAC-CBC
4	C	1315	BLA	C4C-C3C-CAC-CBC
3	A	1312	NAG	O5-C5-C6-O6
3	B	1311	NAG	O5-C5-C6-O6
3	C	1311	NAG	O5-C5-C6-O6
3	A	1313	NAG	O5-C5-C6-O6
3	B	1312	NAG	O5-C5-C6-O6
3	C	1312	NAG	O5-C5-C6-O6
3	A	1305	NAG	C4-C5-C6-O6
3	B	1304	NAG	C4-C5-C6-O6
3	C	1304	NAG	C4-C5-C6-O6
3	A	1310	NAG	O5-C5-C6-O6
3	B	1309	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
3	C	1309	NAG	O5-C5-C6-O6
3	A	1305	NAG	O5-C5-C6-O6
3	B	1304	NAG	O5-C5-C6-O6
3	C	1304	NAG	O5-C5-C6-O6
3	A	1312	NAG	C4-C5-C6-O6
3	B	1311	NAG	C4-C5-C6-O6
3	C	1311	NAG	C4-C5-C6-O6
3	A	1313	NAG	C4-C5-C6-O6
3	B	1312	NAG	C4-C5-C6-O6
3	C	1312	NAG	C4-C5-C6-O6
3	A	1310	NAG	C4-C5-C6-O6
3	A	1314	NAG	C4-C5-C6-O6
3	B	1309	NAG	C4-C5-C6-O6
3	B	1313	NAG	C4-C5-C6-O6
3	C	1309	NAG	C4-C5-C6-O6
3	C	1313	NAG	C4-C5-C6-O6
3	A	1315	NAG	O5-C5-C6-O6
3	B	1314	NAG	O5-C5-C6-O6
3	C	1314	NAG	O5-C5-C6-O6
3	A	1315	NAG	C4-C5-C6-O6
3	A	1314	NAG	O5-C5-C6-O6
3	B	1313	NAG	O5-C5-C6-O6
3	C	1313	NAG	O5-C5-C6-O6
3	B	1314	NAG	C4-C5-C6-O6
3	C	1314	NAG	C4-C5-C6-O6
3	A	1303	NAG	O5-C5-C6-O6
3	B	1302	NAG	O5-C5-C6-O6
3	C	1302	NAG	O5-C5-C6-O6
3	A	1304	NAG	O5-C5-C6-O6
3	B	1303	NAG	O5-C5-C6-O6
3	C	1303	NAG	O5-C5-C6-O6
3	A	1302	NAG	C4-C5-C6-O6
3	B	1301	NAG	C4-C5-C6-O6
3	C	1301	NAG	C4-C5-C6-O6
2	A	1301	EIC	C13-C14-C15-C16
2	A	1317	EIC	C13-C14-C15-C16
2	B	1316	EIC	C13-C14-C15-C16
3	A	1302	NAG	O5-C5-C6-O6
3	B	1301	NAG	O5-C5-C6-O6
3	C	1301	NAG	O5-C5-C6-O6
2	A	1317	EIC	O2-C1-C2-C3
2	B	1316	EIC	O2-C1-C2-C3

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Mol	Chain	Res	Type	Atoms
2	A	1301	EIC	O2-C1-C2-C3
4	A	1316	BLA	CAA-CBA-CGA-O1A
4	B	1315	BLA	CAA-CBA-CGA-O1A
4	C	1315	BLA	CAA-CBA-CGA-O1A
2	A	1317	EIC	O1-C1-C2-C3
2	B	1316	EIC	O1-C1-C2-C3
2	A	1301	EIC	O1-C1-C2-C3
4	C	1315	BLA	CAA-CBA-CGA-O2A
4	A	1316	BLA	CAA-CBA-CGA-O2A
4	B	1315	BLA	CAA-CBA-CGA-O2A
2	A	1301	EIC	C7-C8-C9-C10
2	A	1317	EIC	C7-C8-C9-C10
2	B	1316	EIC	C7-C8-C9-C10
4	A	1316	BLA	C2A-CAA-CBA-CGA
4	B	1315	BLA	C2A-CAA-CBA-CGA
4	C	1315	BLA	C2A-CAA-CBA-CGA
2	A	1301	EIC	C12-C13-C14-C15
2	A	1317	EIC	C12-C13-C14-C15
2	B	1316	EIC	C12-C13-C14-C15

There are no ring outliers.

7 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	1316	EIC	1	0
2	A	1317	EIC	1	0
3	C	1305	NAG	1	0
2	A	1301	EIC	1	0
4	B	1315	BLA	1	0
4	C	1315	BLA	1	0
4	A	1316	BLA	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 EIC B 1316

Bond lengths · Bond angles · Torsions · Rings

Ligand EIC A 1317

Bond lengths · Bond angles · Torsions · Rings

Ligand EIC A 1301

Bond lengths

Bond angles

Torsions

Rings

Ligand BLA B 1315

Bond lengths

Bond angles

Torsions

Rings

Ligand BLA C 1315

Bond lengths

Bond angles

Torsions

Rings

Ligand BLA A 1316

Bond lengths

Bond angles

Torsions

Rings
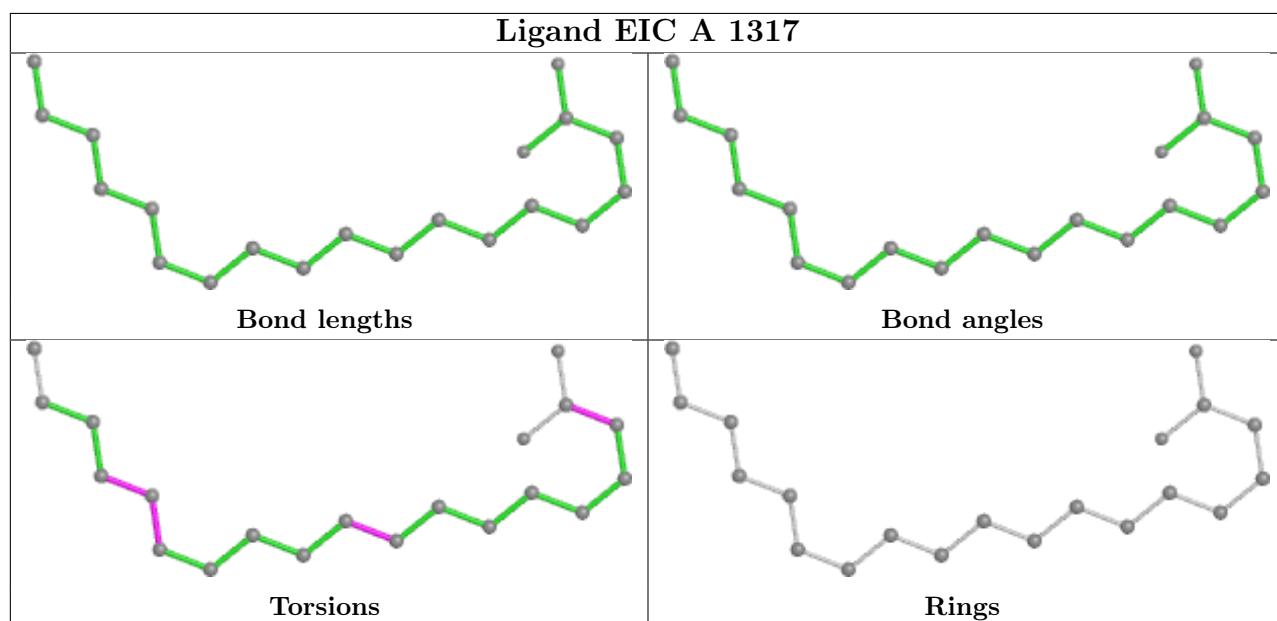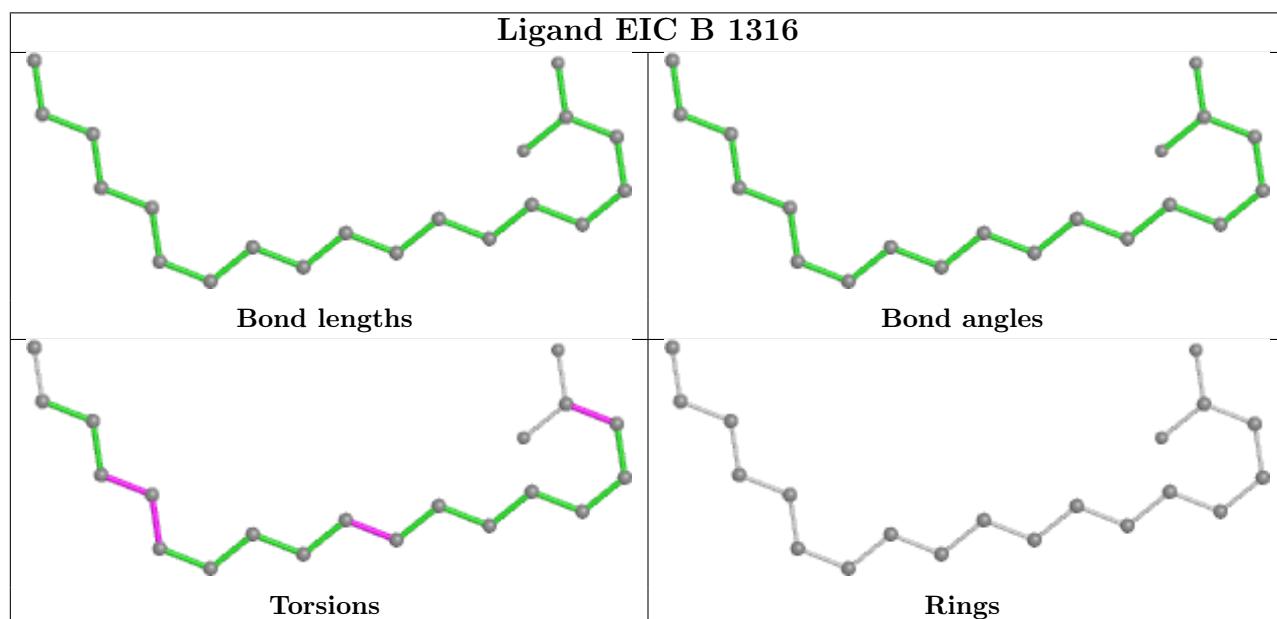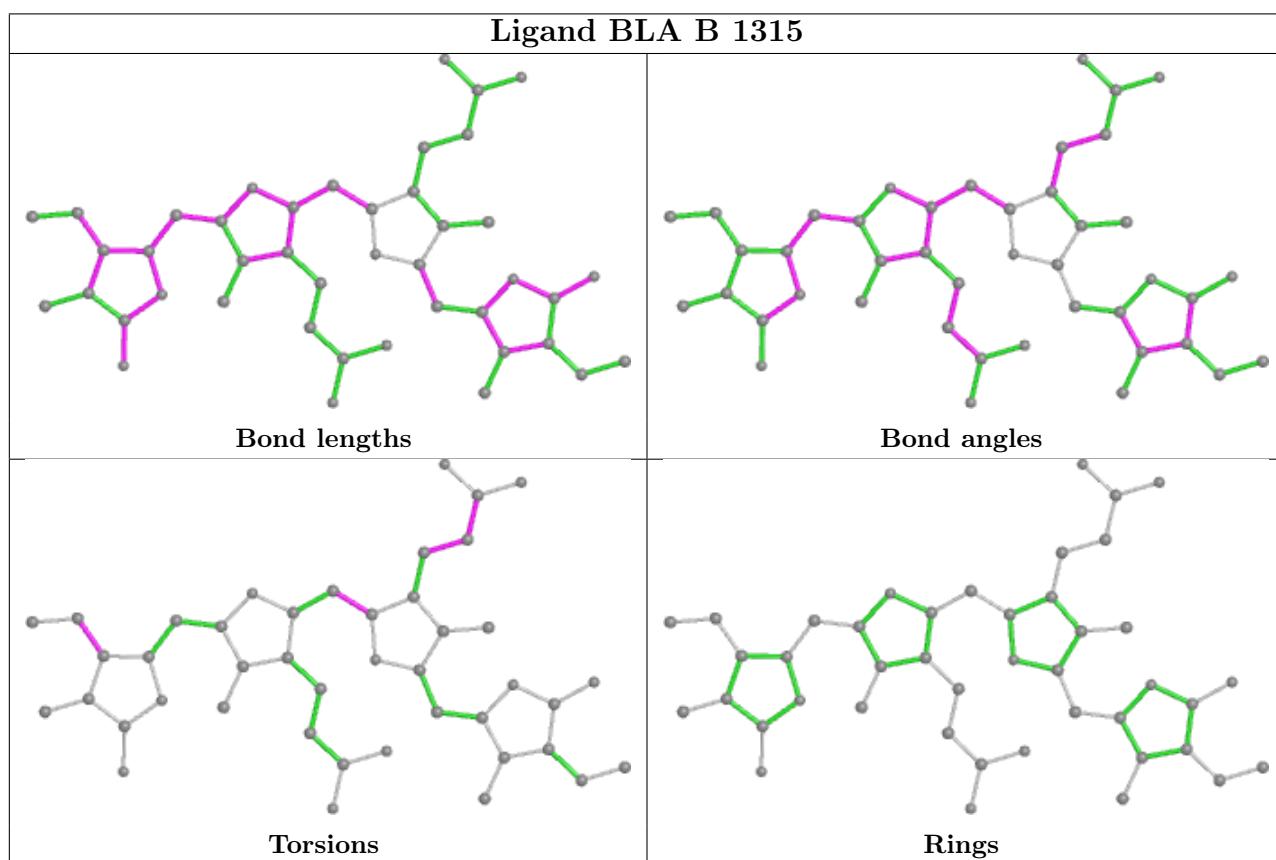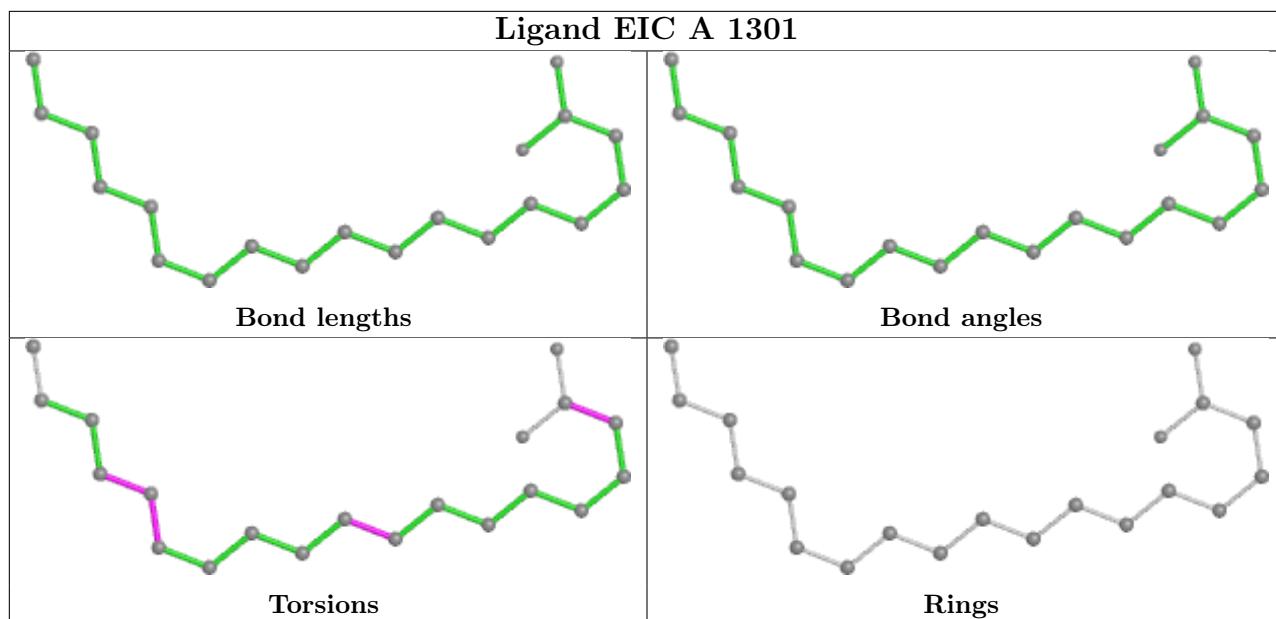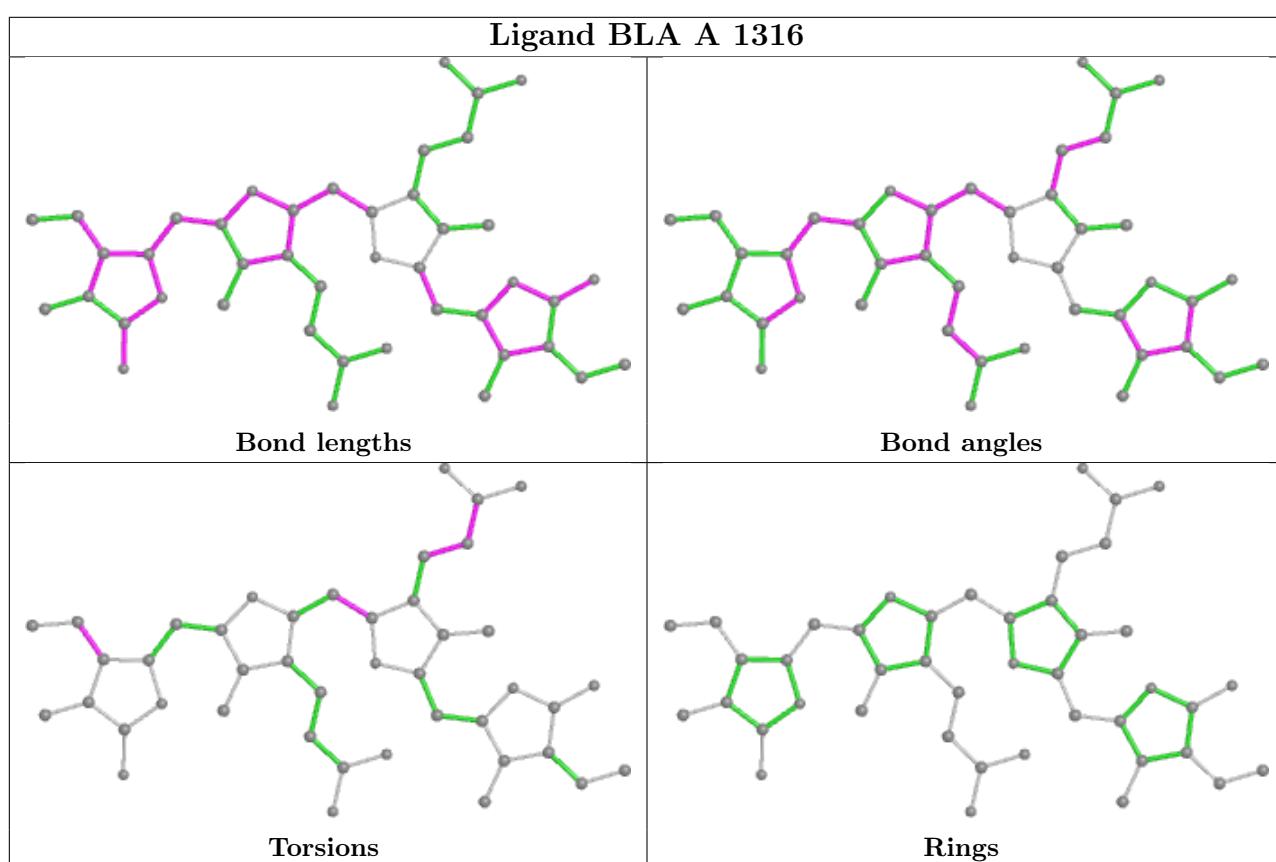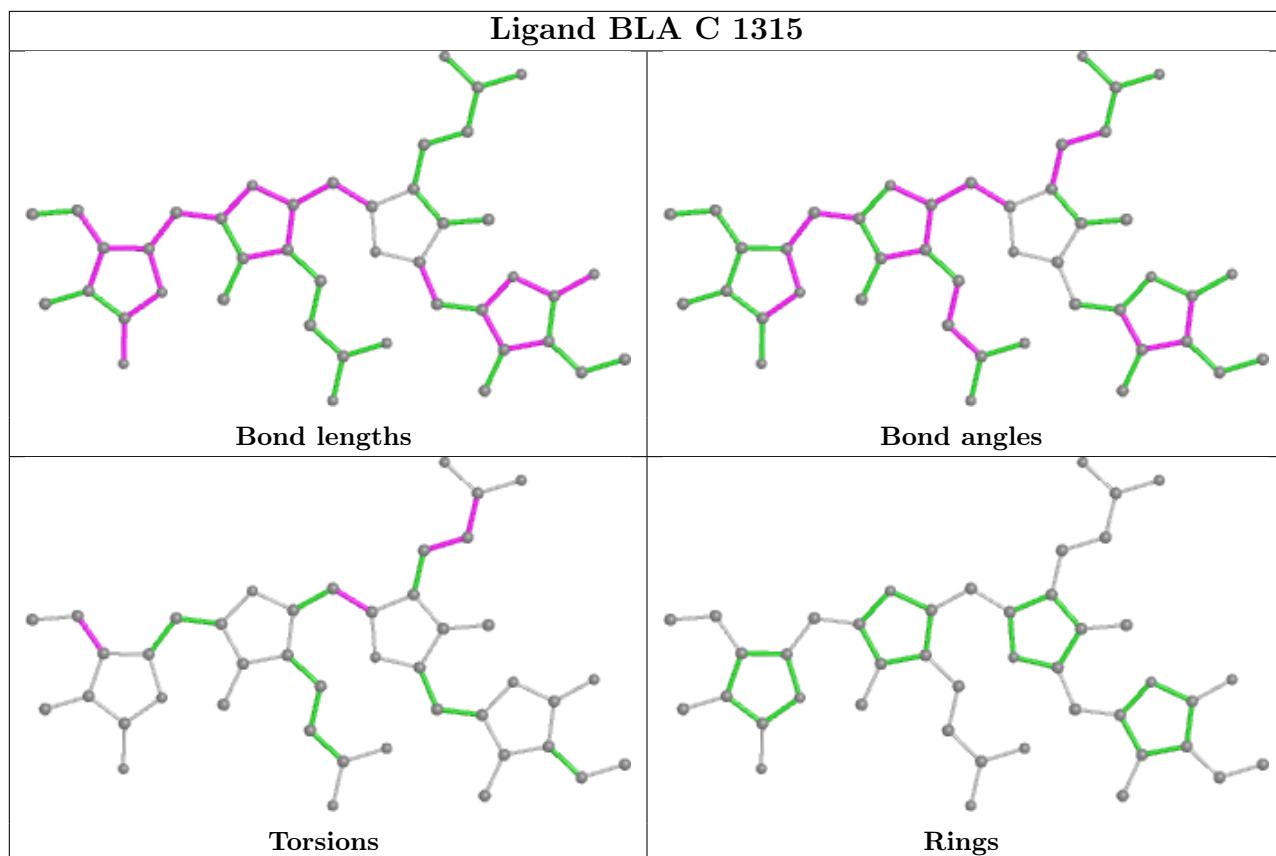
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6   Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-34417. 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 ⓘ
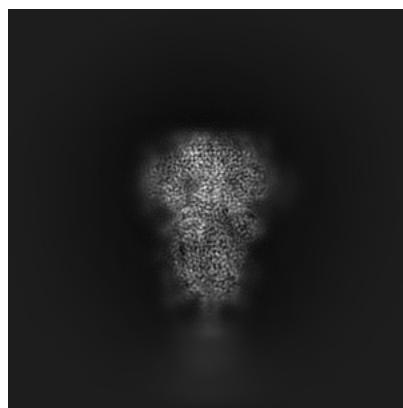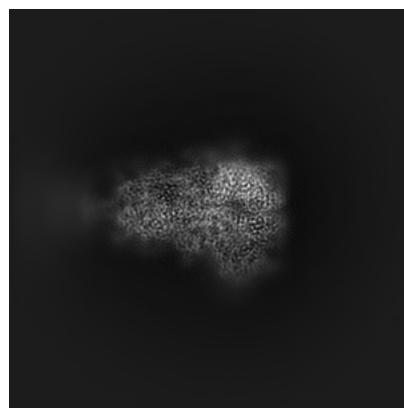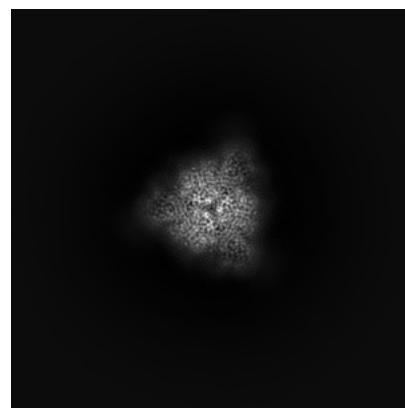
6.1.1   Primary map

X   Y   Z

6.1.2   Raw map

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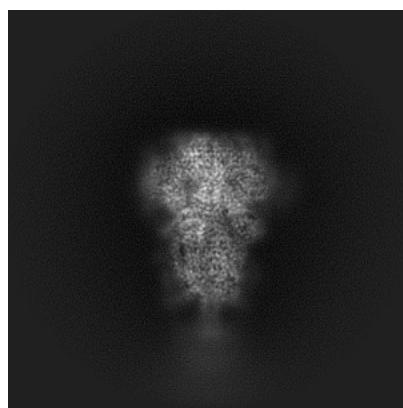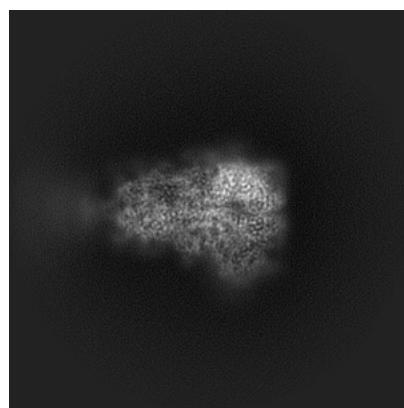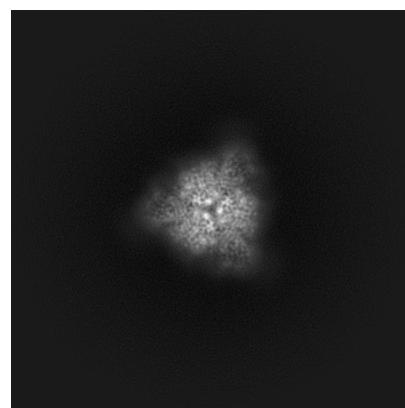
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
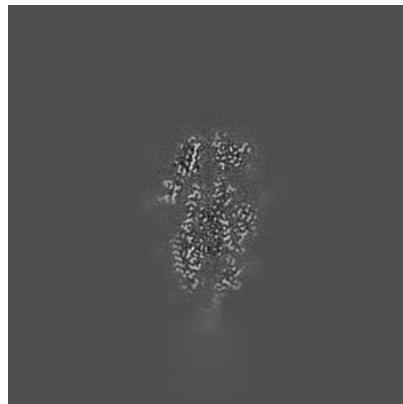
6.2.1 Primary map
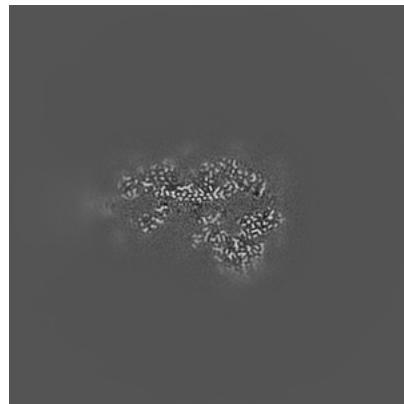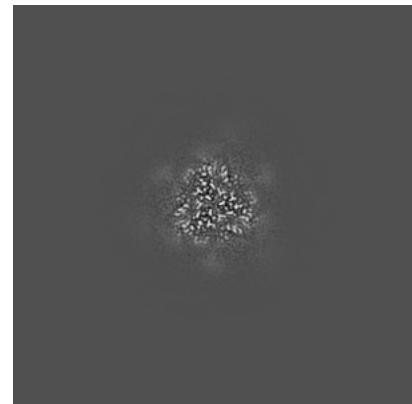
X Index: 168	Y Index: 168	Z Index: 168

6.2.2 Raw map
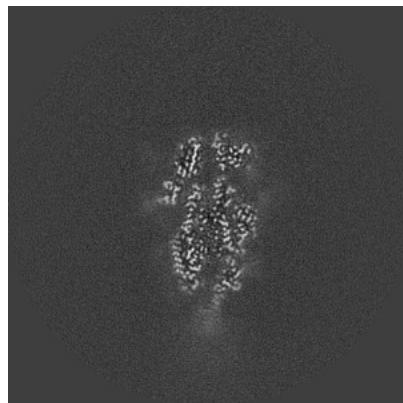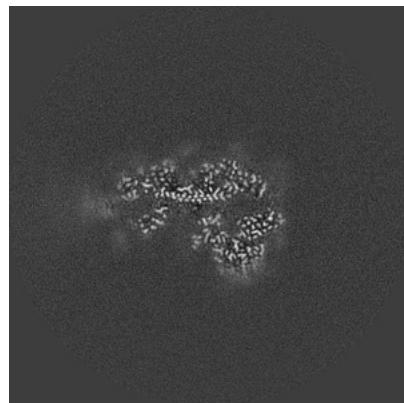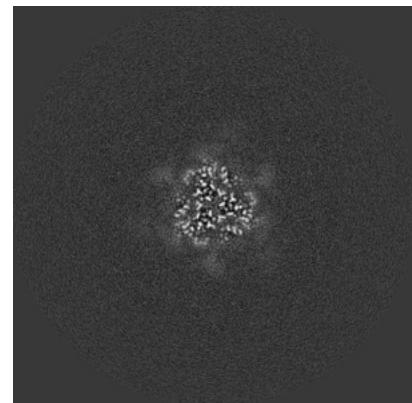
X Index: 168	Y Index: 168	Z Index: 168

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

6.3 Largest variance slices ⓘ

6.3.1 Primary map
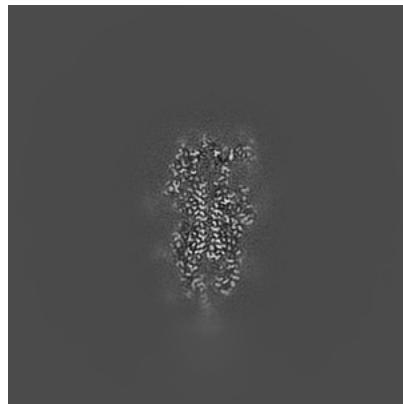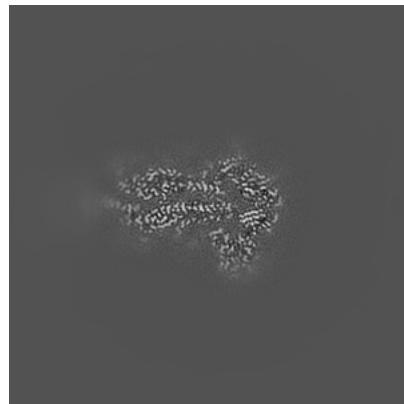
X Index: 163	Y Index: 175	Z Index: 201
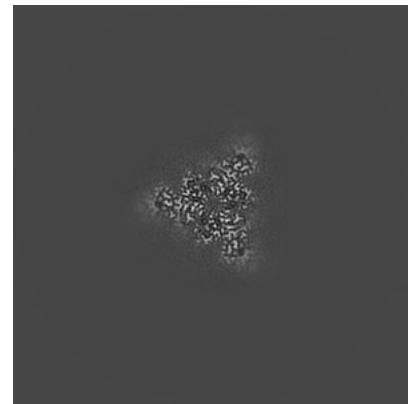
6.3.2 Raw map
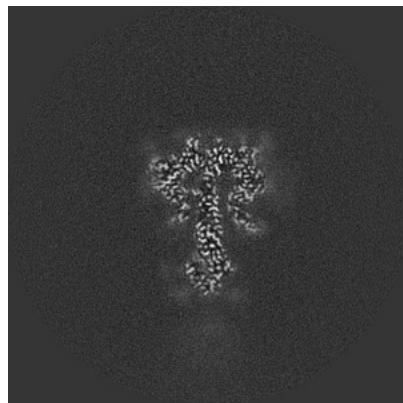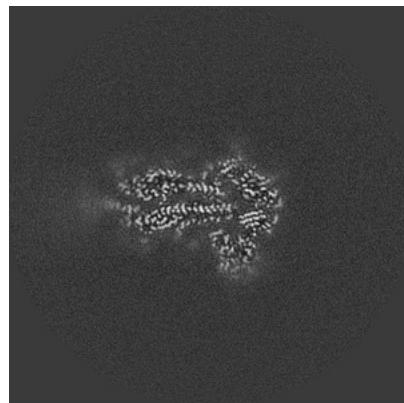
X Index: 181	Y Index: 175	Z Index: 201
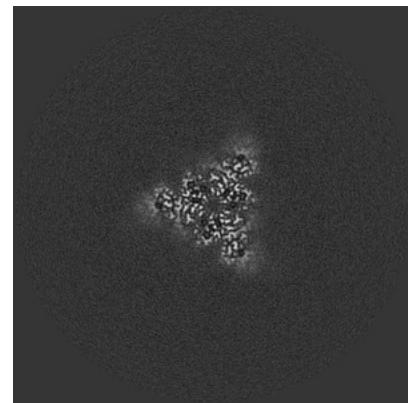
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map
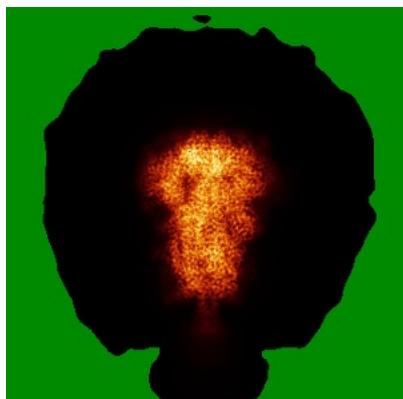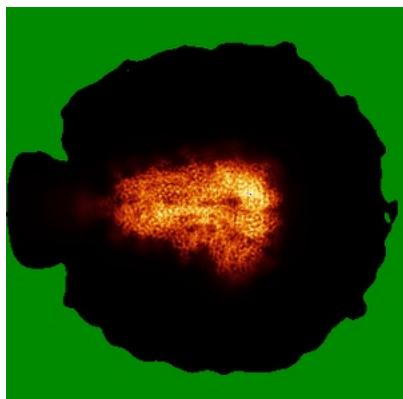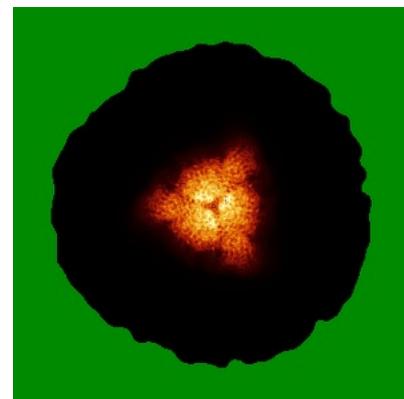
| X | Y | Z |

6.4.2 Raw map

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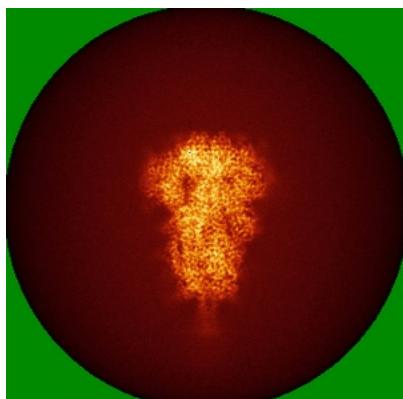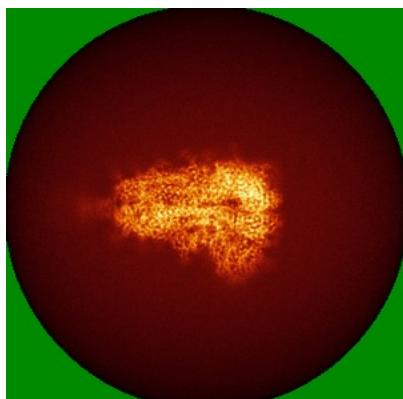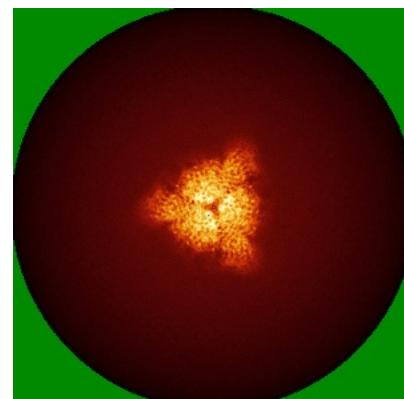
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5   Orthogonal surface views ⓘ

6.5.1   Primary map

| X | Y | Z |
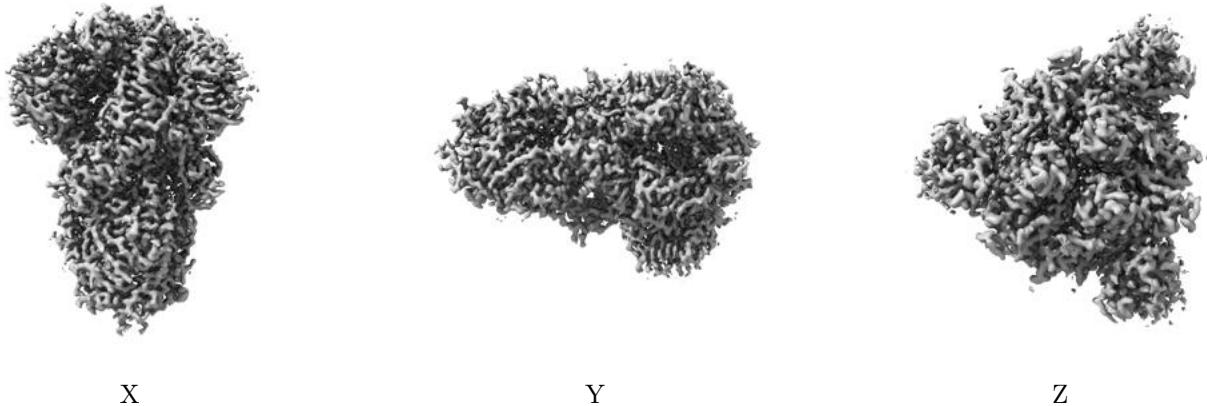
The images above show the 3D surface view of the map at the recommended contour level 0.05. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2   Raw map

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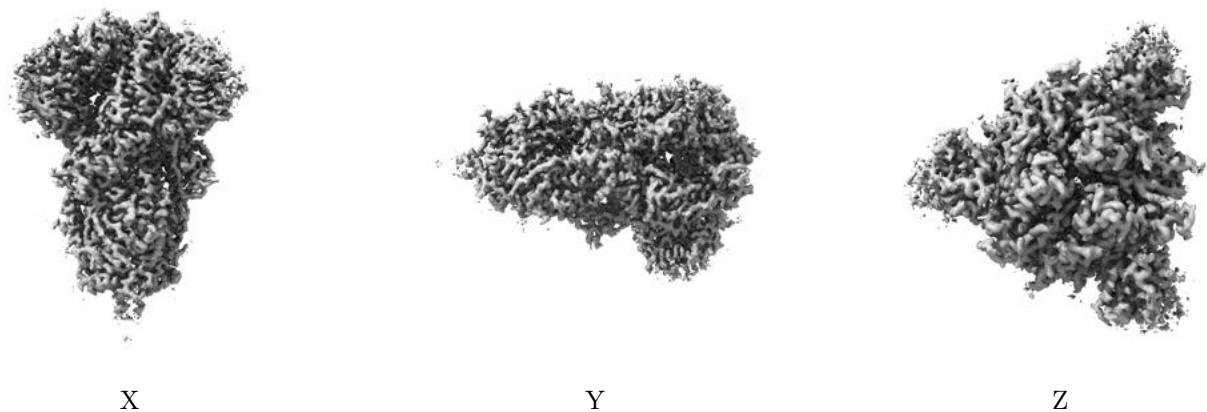
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6 Mask visualisation ⓘ

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

A mask typically either:

- Encompasses the whole structure

- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

6.6.1 emd_34417_msk_1.map ⓘ

X   Y   Z
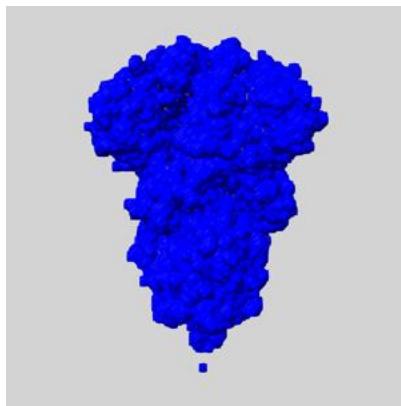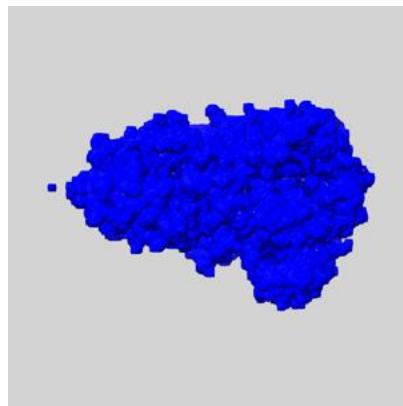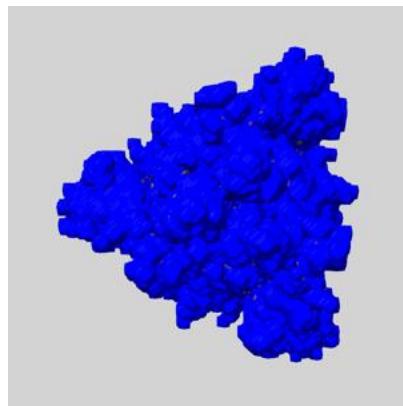
7 Map analysis ⓘ

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

7.1 Map-value distribution ⓘ

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 ⓘ
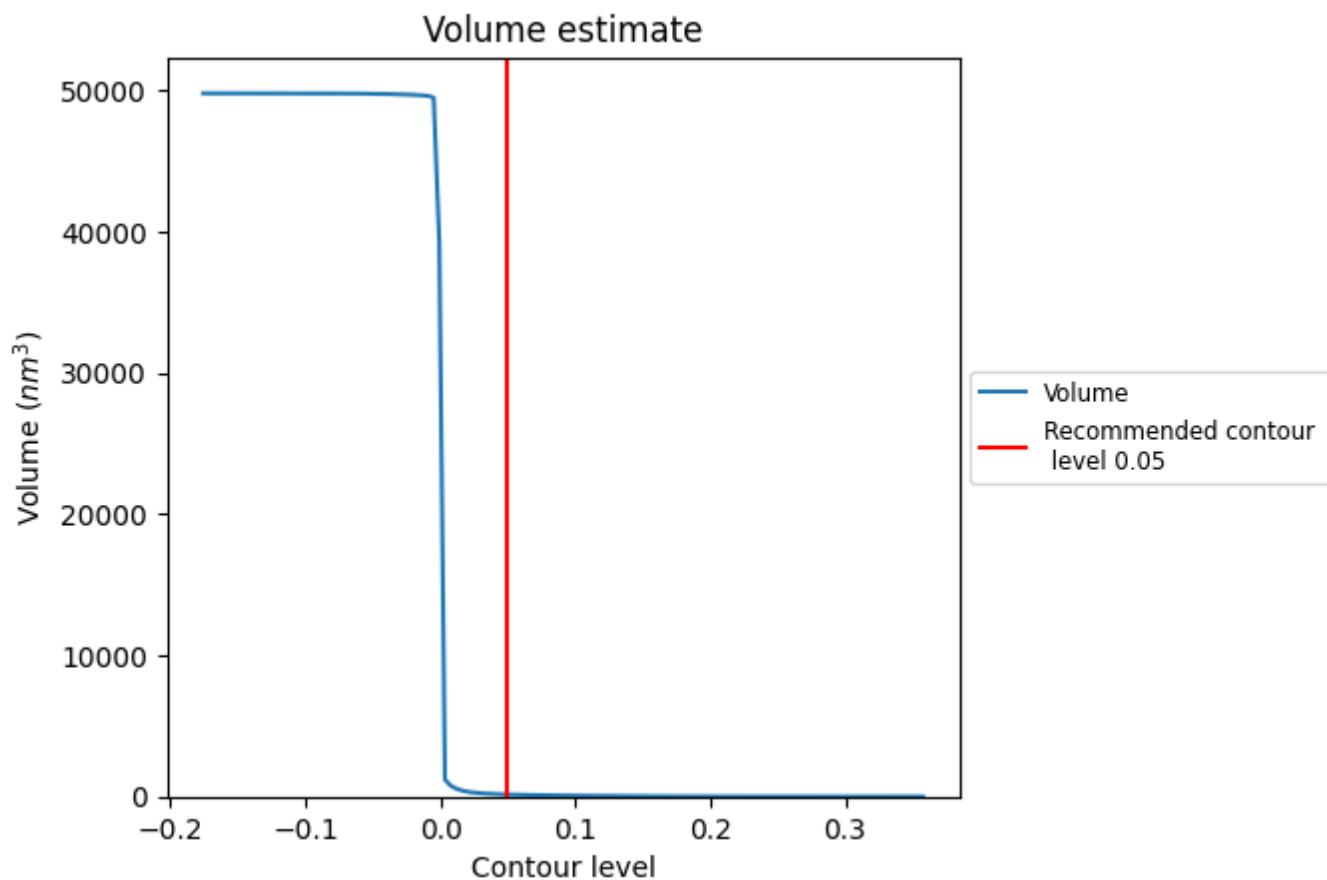
The volume at the recommended contour level is 146 nm^3; this corresponds to an approximate mass of 131 kDa.

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 ⓘ
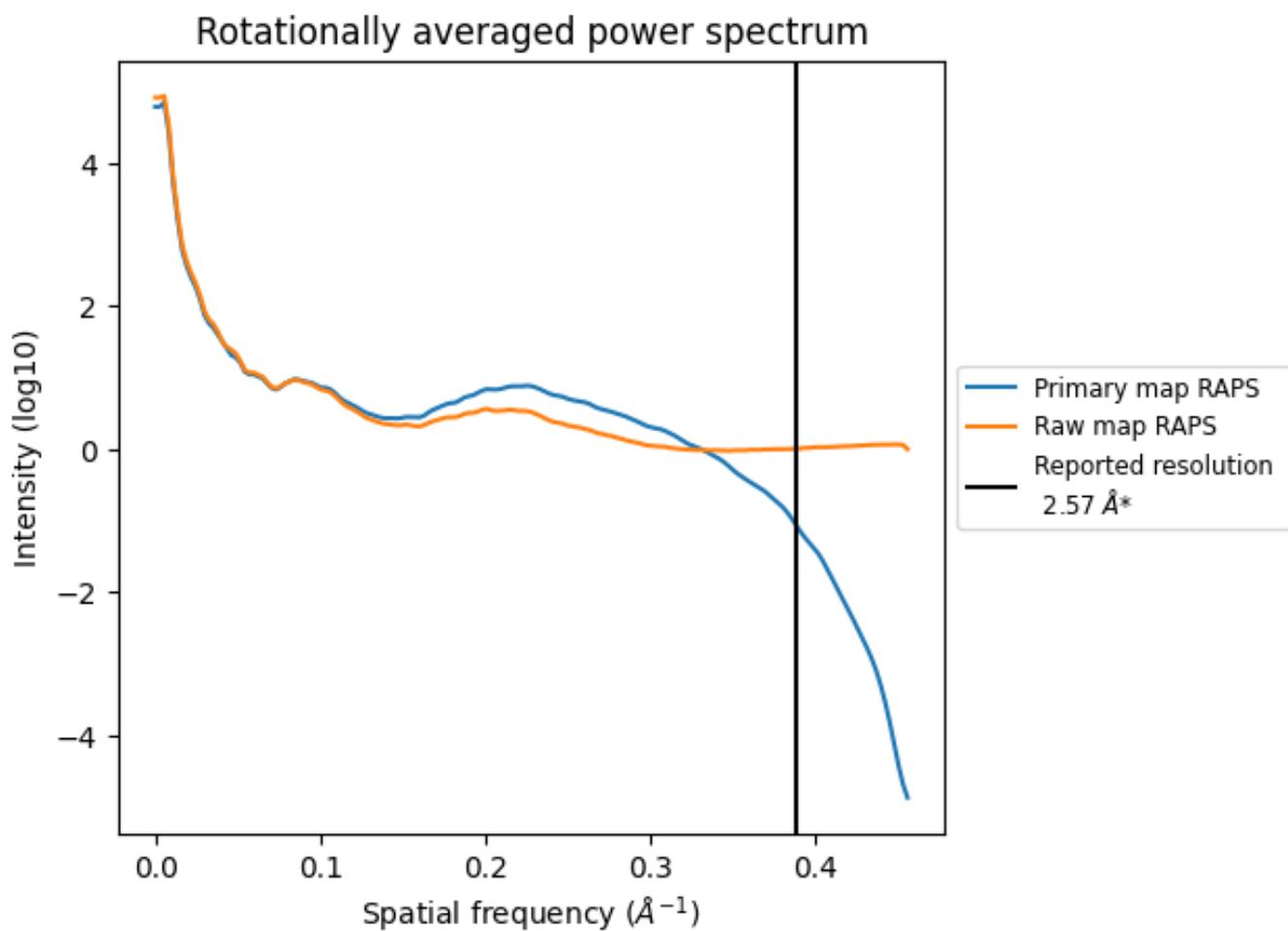
*Reported resolution corresponds to spatial frequency of 0.389 Å^{-1}

8 Fourier-Shell correlation ⓘ

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 ⓘ
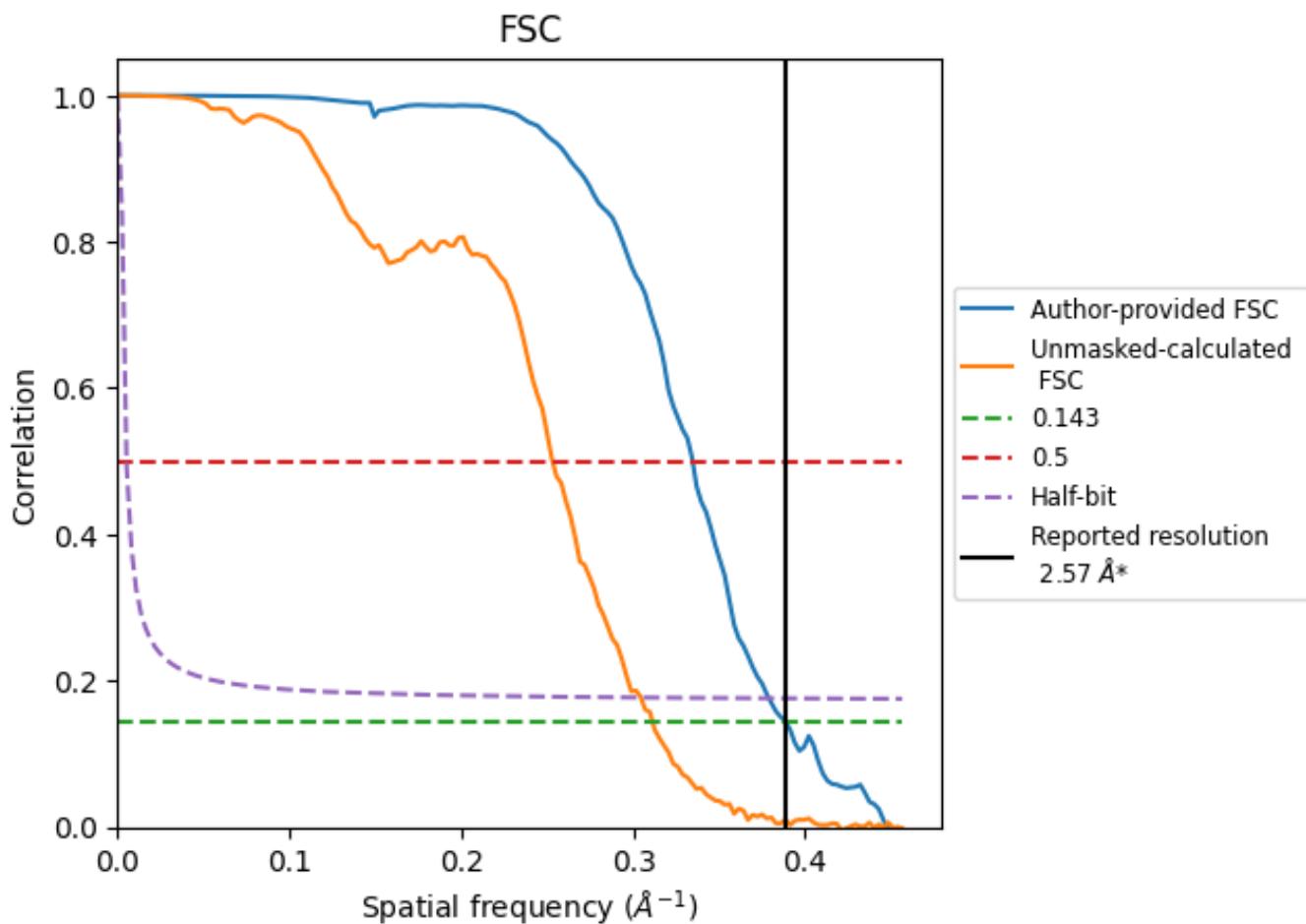
*Reported resolution corresponds to spatial frequency of 0.389 Å^{-1}

8.2 Resolution estimates ⓘ

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.57	-	-
Author-provided FSC curve	2.57	2.99	2.64
Unmasked-calculated*	3.21	3.95	3.28

*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 3.21 differs from the reported value 2.57 by more than 10 %

9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-34417 and PDB model 8H0X. Per-residue inclusion information can be found in section 3 on page 11.

9.1 Map-model overlay (i)

X	Y	Z
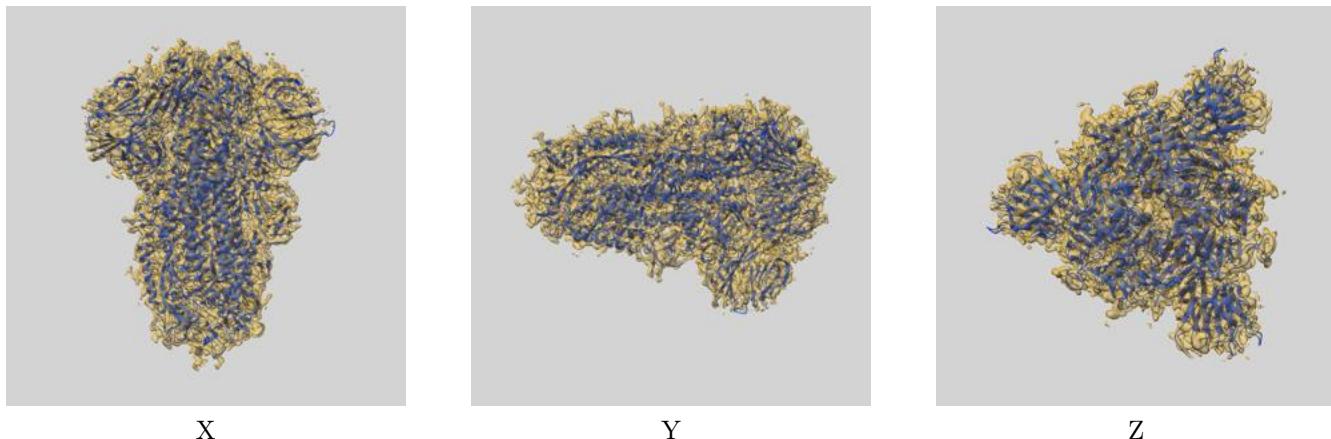
The images above show the 3D surface view of the map at the recommended contour level 0.05 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model ⓘ

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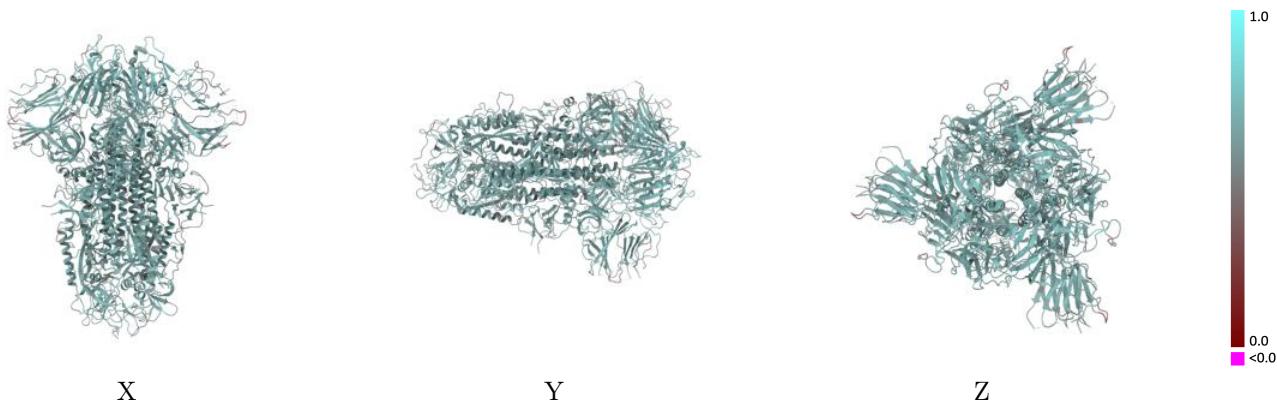
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

X   Y   Z
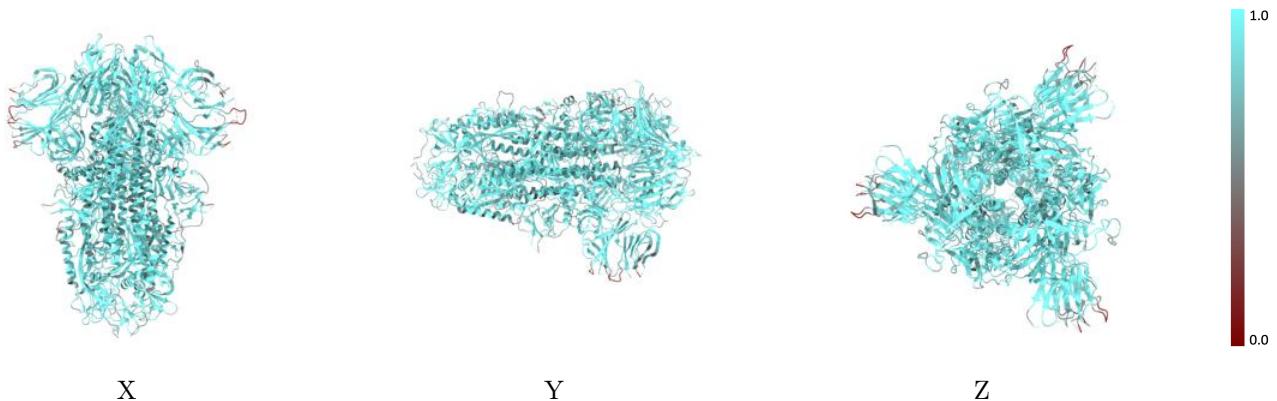
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.05).

9.4   Atom inclusion ⓘ
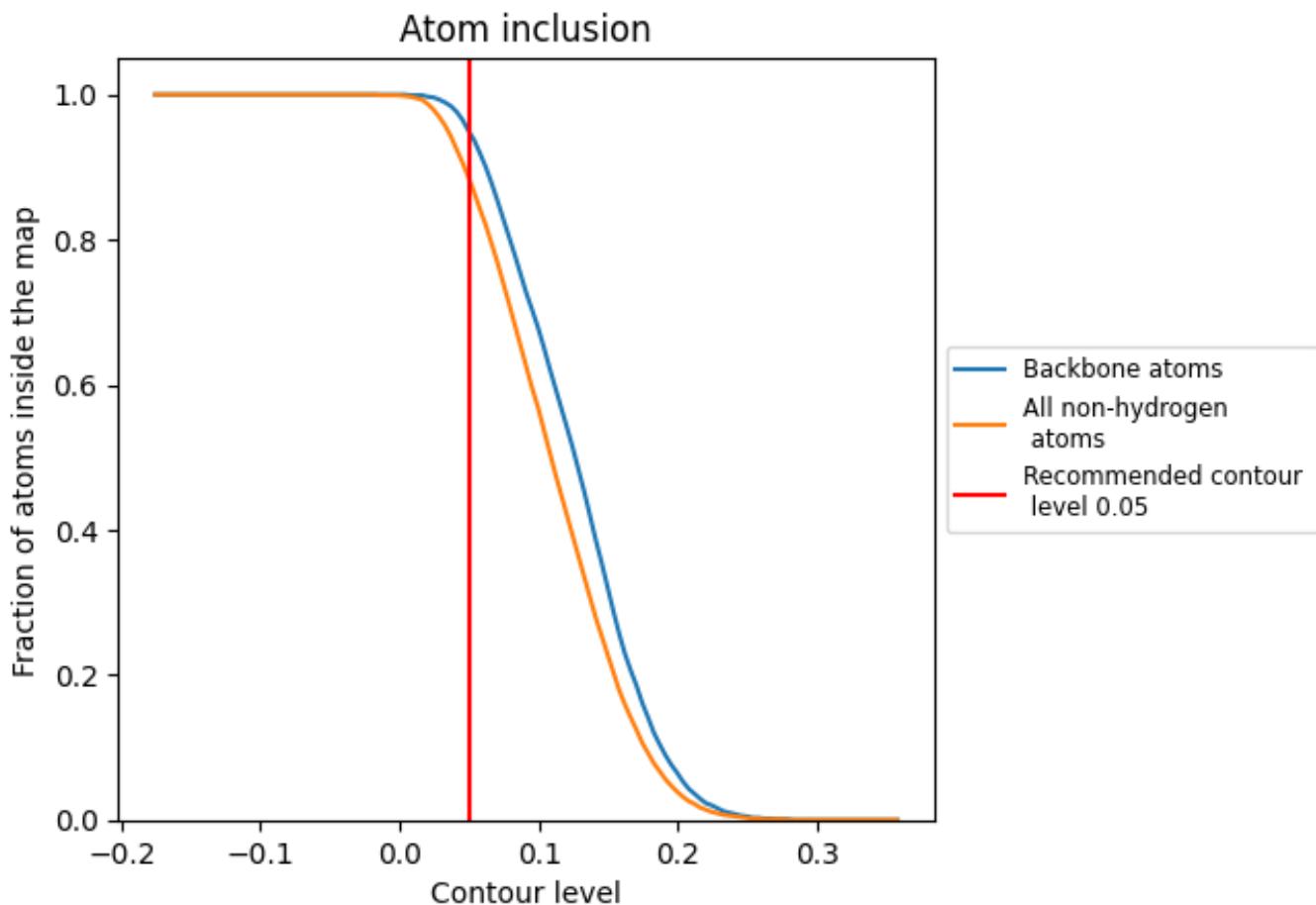
At the recommended contour level, 95% of all backbone atoms, 88% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.05) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8830	0.6140
A	0.8850	0.6160
B	0.8810	0.6130
C	0.8820	0.6120

1.0

0.0
<0.0