



# wwPDB EM Validation Summary Report ⓘ

Jan 1, 2025 – 07:16 PM EST

PDB ID : 8Z8Z  
EMDB ID : EMD-39851  
Title : Cryo-EM structure of LYCHOS  
Authors : Xiong, Q.; Zhu, Z.; Li, T.; Zhou, Z.; Chao, Y.; Qu, Q.; Li, D.  
Deposited on : 2024-04-22  
Resolution : 2.11 Å(reported)

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A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

EMDB validation analysis : 0.0.1.dev113  
Mogul : 2022.3.0, CSD as543be (2022)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.40

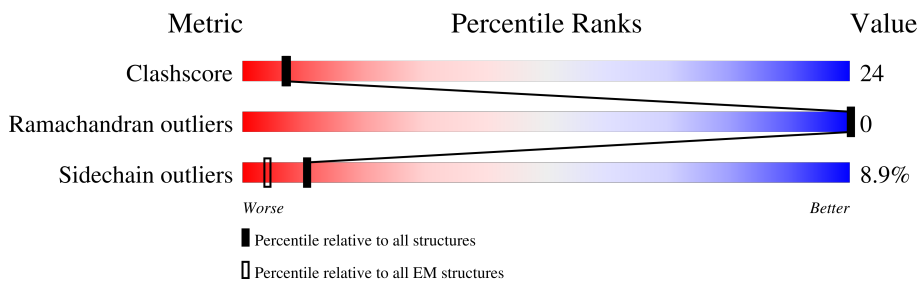
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 2.11 Å.

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



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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1144	
1	B	1144	

## 2 Entry composition [i](#)

There are 8 unique types of molecules in this entry. The entry contains 9410 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.

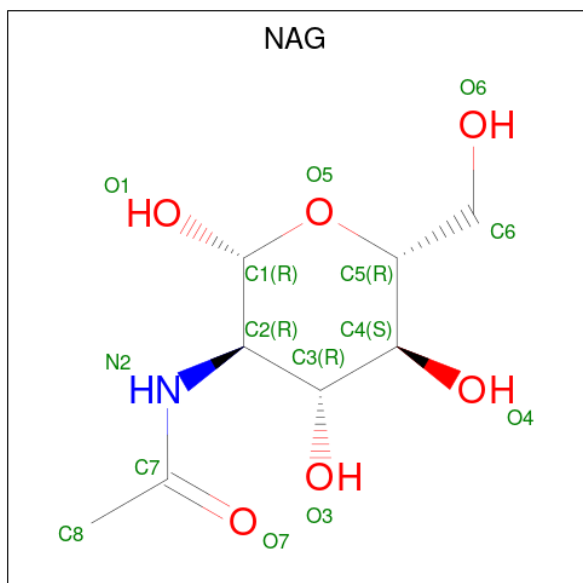
- Molecule 1 is a protein called Lysosomal cholesterol signaling protein,Fluorescent Protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	579	Total	C	N	O	S	0	0
			4409	2952	680	750	27		
1	B	579	Total	C	N	O	S	0	0
			4409	2952	680	750	27		

There are 6 discrepancies between the modelled and reference sequences:

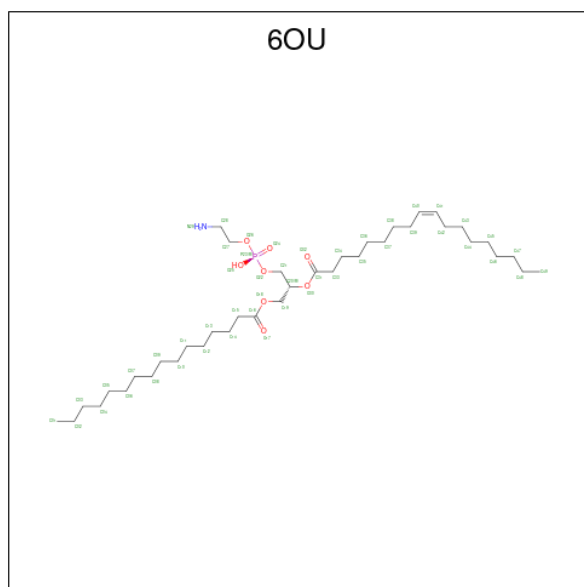
Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	MET	-	initiating methionine	UNP Q7Z3F1
A	-1	GLY	-	expression tag	UNP Q7Z3F1
A	0	SER	-	expression tag	UNP Q7Z3F1
B	-2	MET	-	initiating methionine	UNP Q7Z3F1
B	-1	GLY	-	expression tag	UNP Q7Z3F1
B	0	SER	-	expression tag	UNP Q7Z3F1

- Molecule 2 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula:  $C_8H_{15}NO_6$ ).



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

- Molecule 3 is [(2 {R})-1-[2-azanylethoxy(oxidanyl)phosphoryl]oxy-3-hexadecanoyloxy-prop an-2-yl] ( {Z})-octadec-9-enoate (three-letter code: 6OU) (formula: C<sub>39</sub>H<sub>76</sub>NO<sub>8</sub>P).



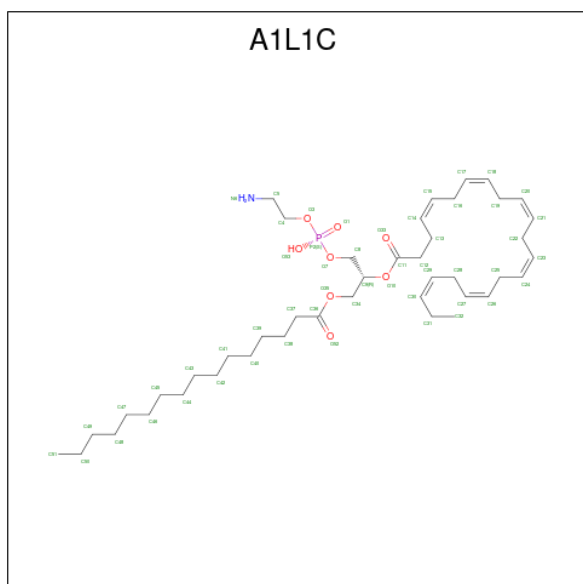
Mol	Chain	Residues	Atoms					AltConf
3	A	1	Total	C	N	O	P	0
			49	39	1	8	1	
3	A	1	Total	C	N	O	P	0
			49	39	1	8	1	
3	A	1	Total	C	N	O	P	0
			49	39	1	8	1	
3	B	1	Total	C	N	O	P	0
			49	39	1	8	1	
3	B	1	Total	C	N	O	P	0
			49	39	1	8	1	
3	B	1	Total	C	N	O	P	0
			49	39	1	8	1	

- Molecule 4 is CHOLESTEROL (three-letter code: CLR) (formula: C<sub>27</sub>H<sub>46</sub>O).



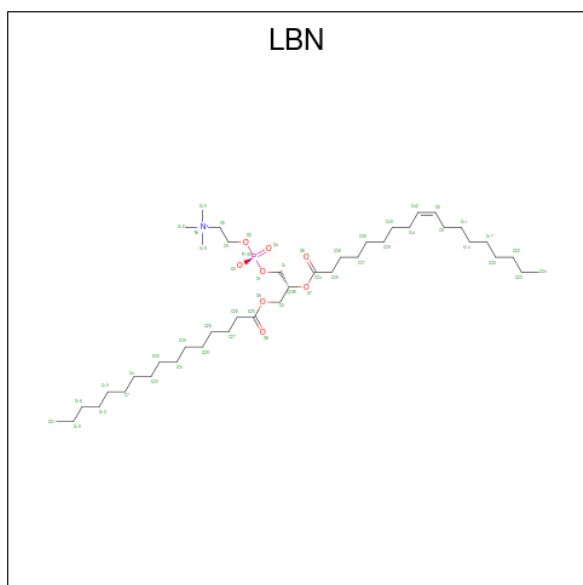
Mol	Chain	Residues	Atoms		AltConf
4	A	1	Total	C O	0
			28	27 1	
4	B	1	Total	C O	0
			28	27 1	

- Molecule 5 is [(2 {R})-1-[2-azanylethoxy(oxidanyl)phosphoryl]oxy-3-hexadecanoyloxy-p ropan-2-yl] (4 {Z},7 {Z},10 {Z},13 {Z},16 {Z},19 {Z})-docosa-4,7,10,13,16,19-hexaeno ate (three-letter code: A1L1C) (formula: C<sub>43</sub>H<sub>74</sub>NO<sub>8</sub>P) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
5	A	1	53	43	1	8	1	0
5	B	1	53	43	1	8	1	0

- Molecule 6 is 1-palmitoyl-2-oleoyl-sn-glycero-3-phosphocholine (three-letter code: LBN) (formula:  $C_{42}H_{82}NO_8P$ ).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
6	A	1	52	42	1	8	1	0
6	B	1	52	42	1	8	1	0

- Molecule 7 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms		AltConf
			Total	Na	
7	A	1	1	1	0
7	B	1	1	1	0

- Molecule 8 is water.

Mol	Chain	Residues	Atoms		AltConf
			Total	O	
8	A	1	1	1	0

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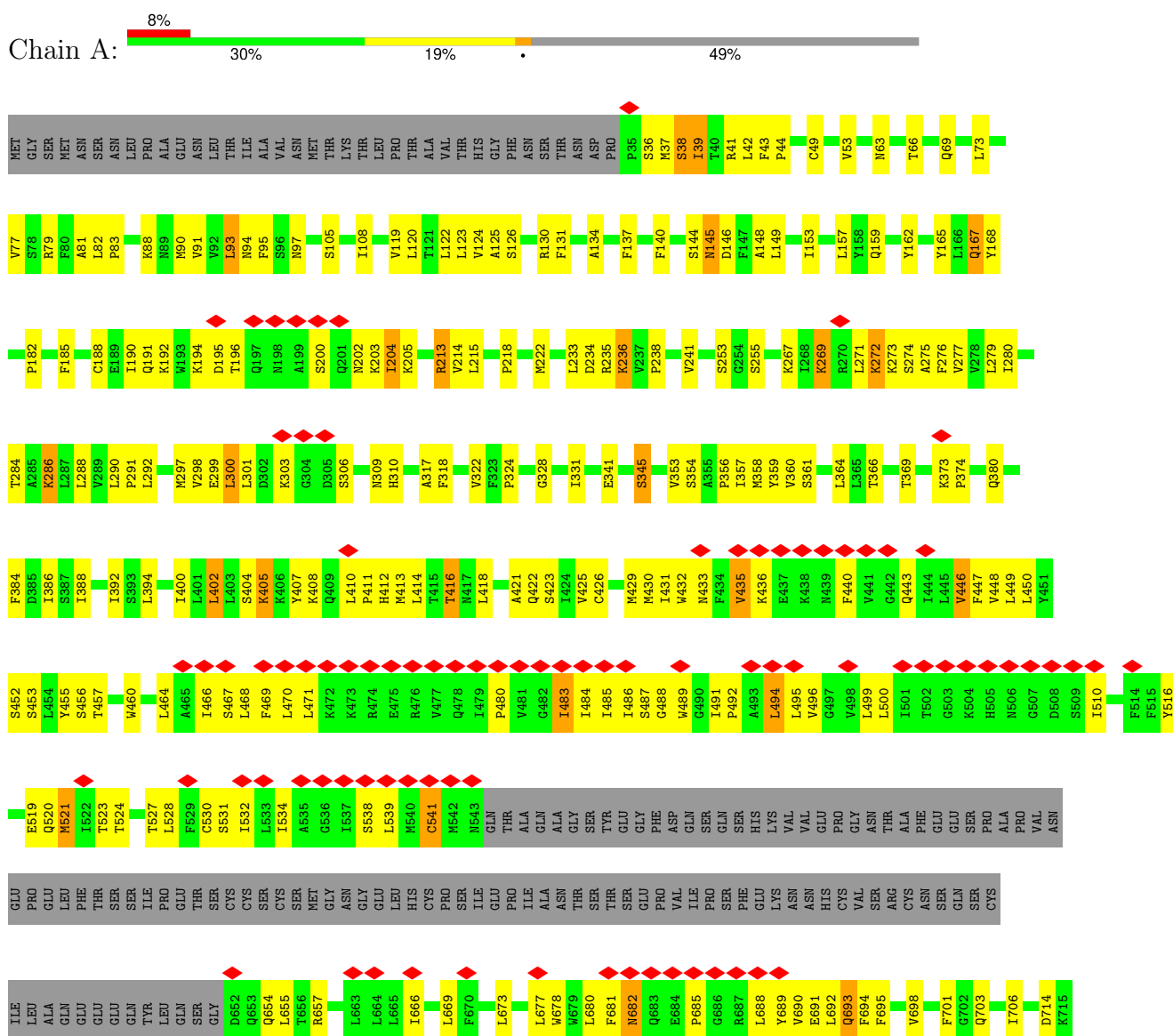
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Mol	Chain	Residues	Atoms		AltConf
8	B	1	Total	O	0
			1	1	

### 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 rectangle in the sample, but not in the model, are shown in grey.

- Molecule 1: Lysosomal cholesterol signaling protein,Fluorescent Protein







ILE	LEU	ASP	ALA	PRO	GLY	LYS	GLU	SER
LEU	TRP	TYR	VAL	ALA	CYS	ARG	GLN	SER
HIS	GLY	PHE	ASN	ILE	ASP	ARG	TYR	ILE
ASP	GLY	LYS	GLY	ASN	LEU	ARG	LEU	PRO
LYS	TRP	ALA	HIS	ASN	SER	PHE	GLN	THR
ASP	PRO	PHE	PHE	THR	LEU	LEU	GLY	SER
ASN	GLY	PRO	VAL	LEU	ILE	GLN	D652	CYS
LYS	MET	GLY	ILE	GLN	ILE	ASN	Q653	CYS
VAL	TYR	TYR	GLY	GLY	GLU	ASN	Q654	SER
ARG	VAL	SER	GLY	ARG	VAL	LYS	L655	CYS
LEU	GLY	TRP	GLY	TYR	GLY	ASP	F686	SER
TYR	ASP	GLY	ILE	LYS	LEU	THR	R657	MET
GLY	GLY	ARG	GLY	GLY	ALA	ALA	L663	GLY
HIS	VAL	SER	LYS	ILE	SER	GLU	L664	ASN
ALA	LEU	MET	PRO	GLU	ARG	ARG	L665	GLY
GLU	GLY	THR	TYR	HIS	GLY	ASP	L666	LEU
ALA	ALA	TYR	GLY	SER	GLY	SER	L666	HIS
ARG	ASP	GLY	GLY	SER	ALA	PRO	L669	CYS
TYR	VAL	ASP	THR	PRO	VAL	VAL	L669	PRO
SER	GLY	GLN	GLN	PRO	ILE	SER	F670	ASN
GLY	MET	GLY	THR	SER	TYR	GLU	F670	ILE
GLY	ALA	ILE	HIS	HIS	GLY	GLY	L673	PRO
SER	LEU	ILE	ASP	PRO	ARG	ILE	L673	GLU
GLY	LEU	ALA	LEU	LYS	ARG	LYS	L677	ILE
GLY	GLY	THR	THR	THR	VAL	THR	W678	ALA
GLY	GLY	SER	VAL	VAL	GLY	THR	F681	ASN
ALA	GLY	ILE	GLY	THR	GLY	GLY	W682	THR
TRP	HIS	THR	ALA	LEU	VAL	PHE	Q683	THR
SER	TYR	MET	PRO	LEU	ILE	ILE	Q683	SER
HIS	ARG	GLY	LEU	LEU	GLN	HIS	E684	GLY
PRO	CYS	GLY	PRO	PHE	PRO	TYR	E684	PRO
ASN	GLN	ASP	ASN	ASN	GLN	ILE	P685	VAL
PHE	ASN	PHE	SER	GLY	THR	ARG	G686	ILE
GLY	LYS	LYS	TYR	PRO	ASN	ASP	R687	PRO
LYS	THR	PHE	ASP	GLY	LEU	LEU	L688	SER
GLY	THR	TYR	ILE	GLY	TYR	CYS	Y689	PHE
GLY	TYR	GLY	LEU	GLY	TYR	ILE	V690	GLY
GLY	LYS	ILE	THR	GLY	PHE	ARG	E691	LYS
SER	ALA	ARG	ALA	GLY	ARG	ASN	L692	ASN
GLY	LYS	ASP	PHE	ALA	ASP	ILE	Q693	ASN
GLY	GLY	GLY	PHE	PHE	GLU	VAL	F694	HIS
SER	VAL	THR	THR	VAL	TYR	LYS	F695	CYS
GLY	ARG	ASN	GLY	GLY	PHE	ARG	W698	VAL
SER	PRO	PHE	ASN	LYS	TYR	ARG	F701	CYS
ALA	ASP	PRO	ALA	PRO	ARG	ARG	G702	ASN
TRP	ALA	ASN	PHE	ALA	PHE	GLY	Q703	SER
SER	HIS	GLY	THR	LYS	LEU	ALA	Q703	GLN
HIS	GLY	PRO	THR	ILE	LYS	LYS	I706	CYS
PRO	VAL	VAL	TYR	LYS	SER	THR	I706	ILE
ASP	GLN	MET	PRO	LEU	PRO	ALA	D714	LEU
PHE	HIS	GLN	GLU	ARG	GLY	GLY	K715	ALA
GLY	ARG	LYS	ASP	MET	THR	THR	H716	GLN
LYS	ILE	ILE	ILE	ILE	GLY	PHE	H716	GLY
GLY	GLY	THR	THR	THR	THR	THR	L717	GLU
LYS	LYS	LYS	LYS	LYS	LYS	LYS	I718	PHE
GLY	GLY	GLY	GLY	GLY	GLY	GLY	I718	GLY
LYS	ILE	ILE	ILE	ILE	ILE	ILE	L720	GLY
GLY	GLY	GLY	GLY	GLY	GLY	GLY	P721	GLY
LYS	GLY	GLY	GLY	GLY	GLY	GLY	PHE	GLY

## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C2	Depositor
Number of particles used	355557	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 ( $e^-/\text{\AA}^2$ )	50	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	4.076	Depositor
Minimum map value	-2.436	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.080	Depositor
Recommended contour level	0.592	Depositor
Map size ( $\text{\AA}$ )	335.52, 335.52, 335.52	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	0.932, 0.932, 0.932	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: LBN, NA, A1L1C, 6OU, CLR, NAG

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	A	0.75	0/4517	0.59	0/6159
1	B	0.75	0/4517	0.59	0/6159
All	All	0.75	0/9034	0.59	0/12318

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	A	4409	0	4477	210	0
1	B	4409	0	4477	204	0
2	A	14	0	13	0	0
2	B	14	0	13	0	0
3	A	147	0	0	0	0
3	B	147	0	0	0	0
4	A	28	0	45	20	0
4	B	28	0	45	17	0
5	A	53	0	0	6	0
5	B	53	0	0	5	0
6	A	52	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	B	52	0	0	1	0
7	A	1	0	0	0	0
7	B	1	0	0	0	0
8	A	1	0	0	0	0
8	B	1	0	0	0	0
All	All	9410	0	9070	435	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 24.

The worst 5 of 435 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:471:LEU:HD13	1:B:655:LEU:HD11	1.24	1.18
1:A:471:LEU:HD13	1:A:655:LEU:HD11	1.24	1.12
1:B:471:LEU:HD13	1:B:655:LEU:CD1	1.80	1.11
1:A:471:LEU:HD13	1:A:655:LEU:CD1	1.80	1.11
4:A:1205:CLR:H12	5:A:1206:A1L1C:C40	1.88	1.02

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	575/1144 (50%)	561 (98%)	14 (2%)	0	100	100
1	B	575/1144 (50%)	561 (98%)	14 (2%)	0	100	100
All	All	1150/2288 (50%)	1122 (98%)	28 (2%)	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	A	467/986 (47%)	425 (91%)	42 (9%)	8 5
1	B	467/986 (47%)	426 (91%)	41 (9%)	8 5
All	All	934/1972 (47%)	851 (91%)	83 (9%)	10 5

5 of 83 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	269	LYS
1	B	431	ILE
1	B	272	LYS
1	B	400	ILE
1	B	483	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 18 such sidechains are listed below:

Mol	Chain	Res	Type
1	B	443	GLN
1	B	703	GLN
1	B	683	GLN
1	A	703	GLN
1	B	337	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 oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
5	A1L1C	A	1206	-	52,52,52	0.33	0	55,57,57	0.43	0
2	NAG	A	1201	1	14,14,15	0.39	0	17,19,21	0.41	0
3	6OU	A	1204	-	48,48,48	0.91	4 (8%)	51,53,53	0.99	4 (7%)
4	CLR	A	1205	-	31,31,31	3.91	16 (51%)	48,48,48	2.06	16 (33%)
5	A1L1C	B	1207	-	52,52,52	0.33	0	55,57,57	0.43	0
4	CLR	B	1206	-	31,31,31	3.90	16 (51%)	48,48,48	2.06	15 (31%)
3	6OU	A	1203	-	48,48,48	0.94	2 (4%)	51,53,53	1.12	3 (5%)
3	6OU	B	1205	-	48,48,48	0.91	4 (8%)	51,53,53	0.99	4 (7%)
6	LBN	B	1201	-	51,51,51	1.06	5 (9%)	57,59,59	0.95	3 (5%)
3	6OU	B	1204	-	48,48,48	0.94	2 (4%)	51,53,53	1.12	3 (5%)
3	6OU	B	1203	-	48,48,48	0.93	2 (4%)	51,53,53	1.09	4 (7%)
3	6OU	A	1202	-	48,48,48	0.93	2 (4%)	51,53,53	1.09	4 (7%)
2	NAG	B	1202	1	14,14,15	0.39	0	17,19,21	0.41	0
6	LBN	A	1207	-	51,51,51	1.06	6 (11%)	57,59,59	0.95	3 (5%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	A1L1C	A	1206	-	-	23/56/56/56	-
2	NAG	A	1201	1	-	2/6/23/26	0/1/1/1
3	6OU	A	1204	-	-	31/52/52/52	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	CLR	A	1205	-	-	9/10/68/68	0/4/4/4
5	A1L1C	B	1207	-	-	22/56/56/56	-
4	CLR	B	1206	-	-	9/10/68/68	0/4/4/4
3	6OU	A	1203	-	-	30/52/52/52	-
3	6OU	B	1205	-	-	31/52/52/52	-
6	LBN	B	1201	-	-	27/55/55/55	-
3	6OU	B	1204	-	-	30/52/52/52	-
3	6OU	B	1203	-	-	25/52/52/52	-
3	6OU	A	1202	-	-	25/52/52/52	-
2	NAG	B	1202	1	-	2/6/23/26	0/1/1/1
6	LBN	A	1207	-	-	27/55/55/55	-

The worst 5 of 59 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1205	CLR	C11-C9	9.05	1.68	1.53
4	B	1206	CLR	C11-C9	9.01	1.68	1.53
4	A	1205	CLR	C12-C13	-8.57	1.39	1.54
4	B	1206	CLR	C12-C13	-8.57	1.39	1.54
4	A	1205	CLR	C10-C9	-7.62	1.43	1.56

The worst 5 of 59 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	1206	CLR	C15-C14-C8	-5.34	110.59	119.10
4	A	1205	CLR	C15-C14-C8	-5.33	110.60	119.10
4	A	1205	CLR	C13-C17-C20	-5.27	111.36	119.50
4	B	1206	CLR	C13-C17-C20	-5.25	111.39	119.50
4	A	1205	CLR	C11-C9-C8	-4.21	105.90	111.78

There are no chirality outliers.

5 of 293 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	1202	6OU	C27-O26-P23-O24
3	A	1202	6OU	C27-O26-P23-O25
3	A	1202	6OU	C33-C31-O30-C20
3	A	1203	6OU	C27-O26-P23-O22
3	A	1203	6OU	C27-O26-P23-O24

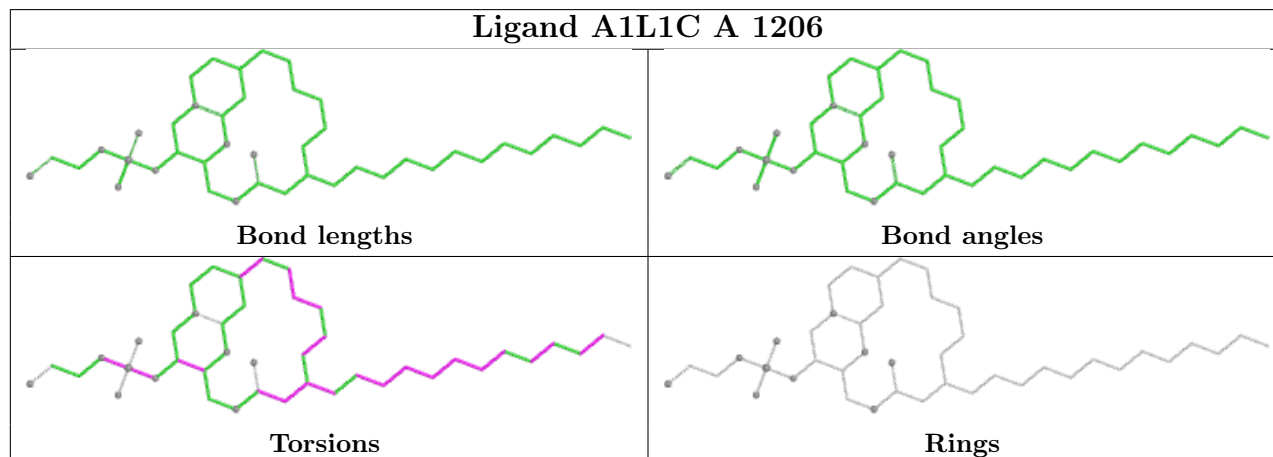


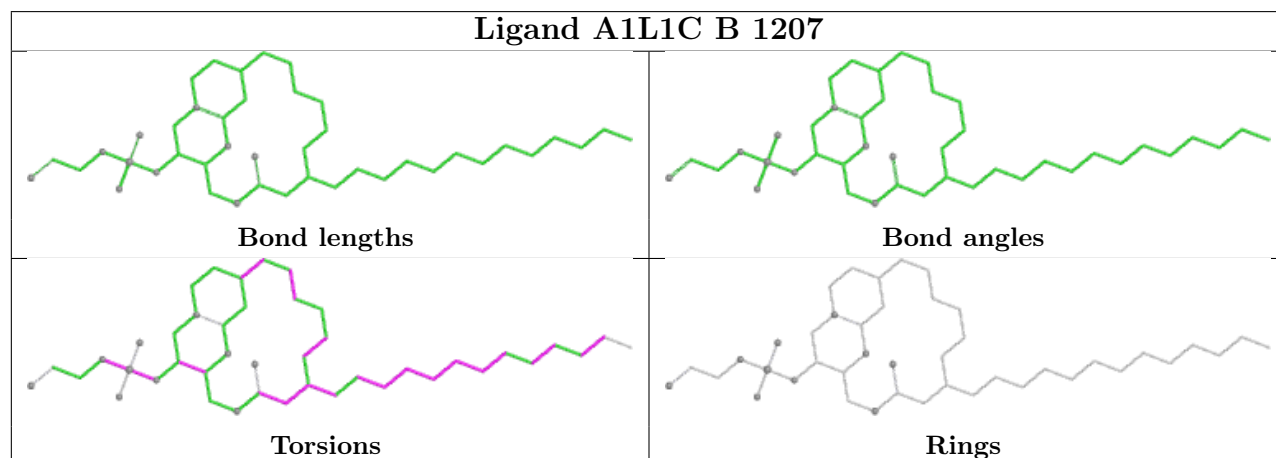
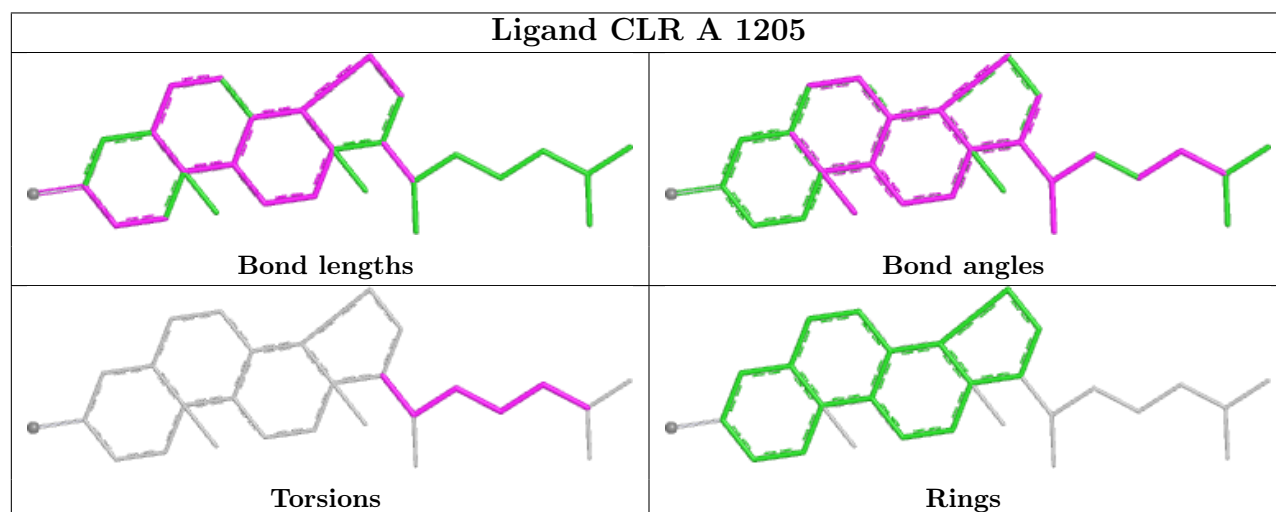
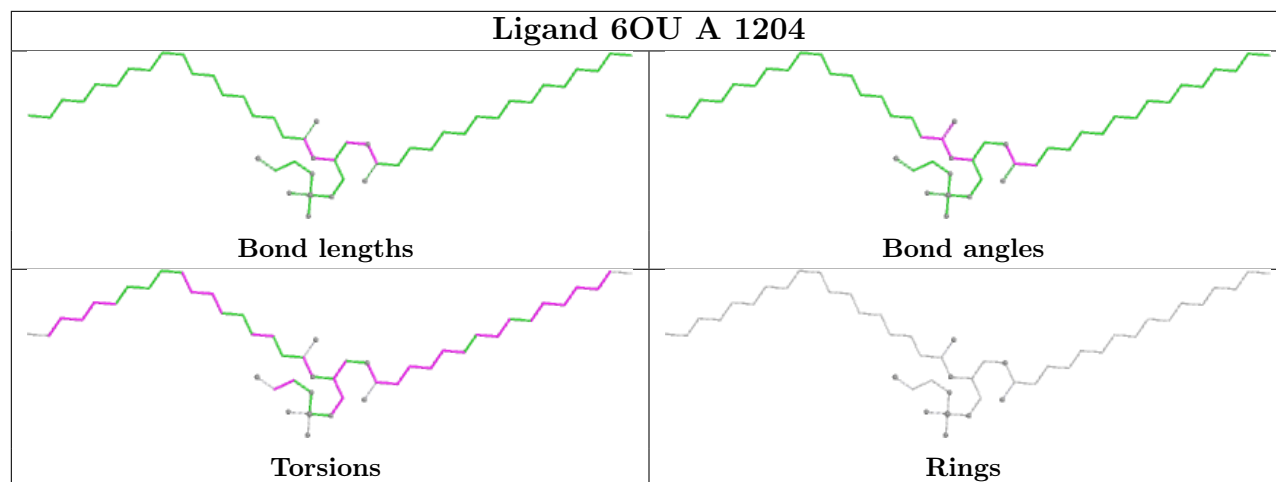
There are no ring outliers.

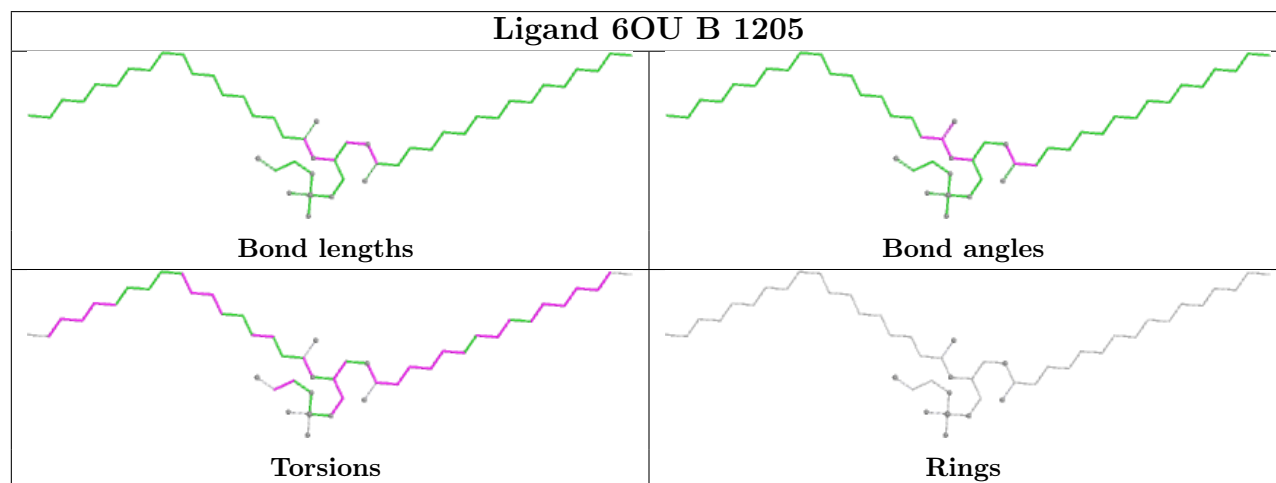
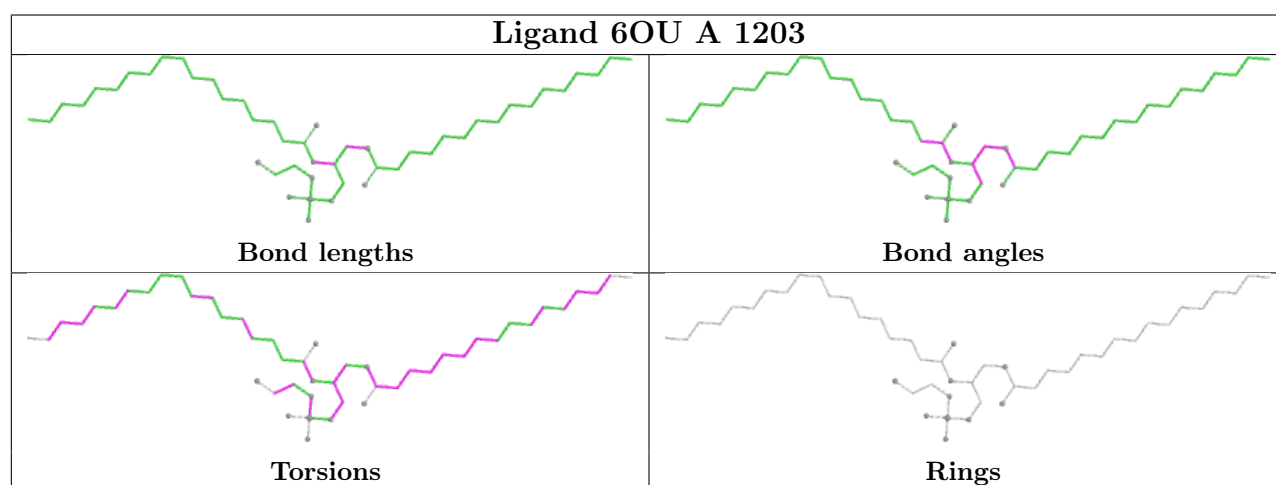
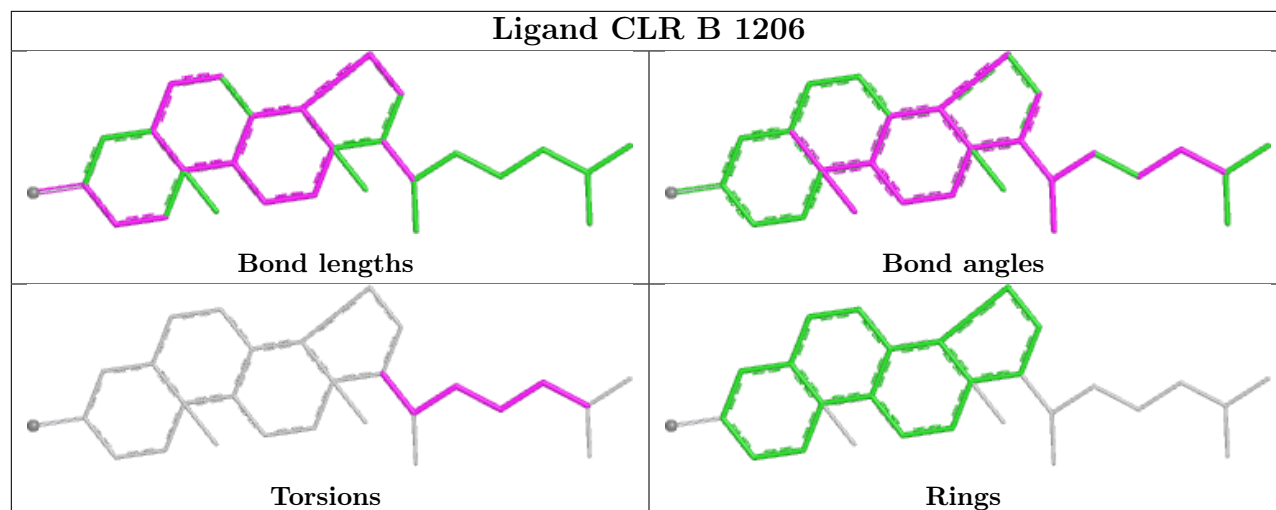
6 monomers are involved in 39 short contacts:

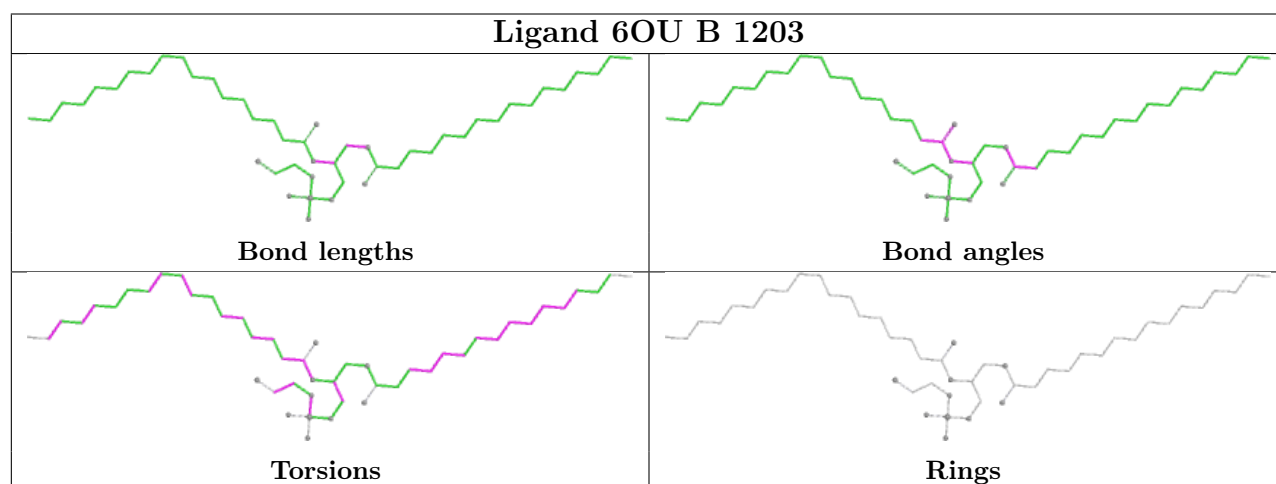
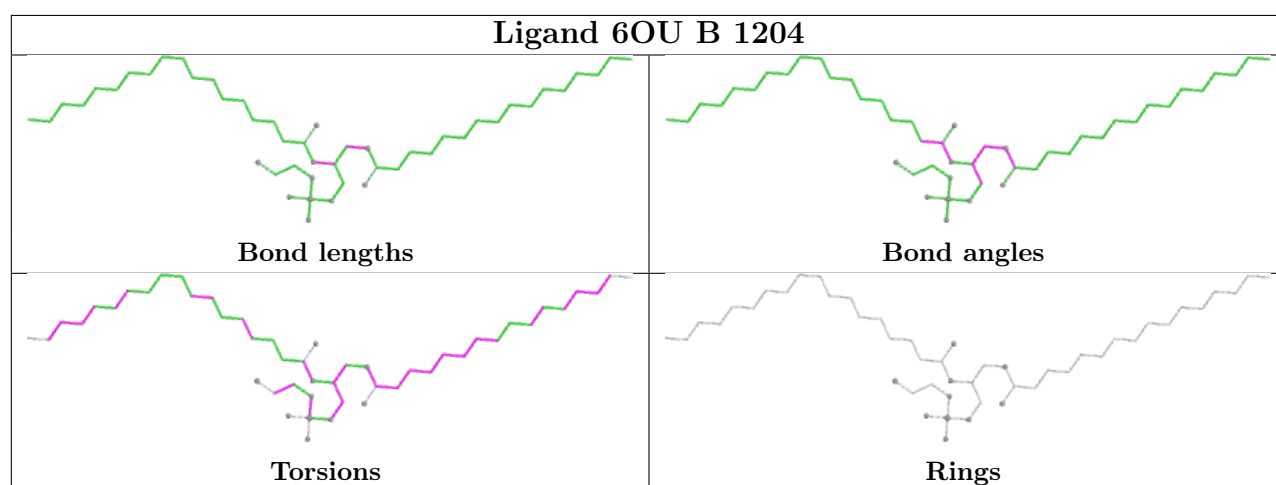
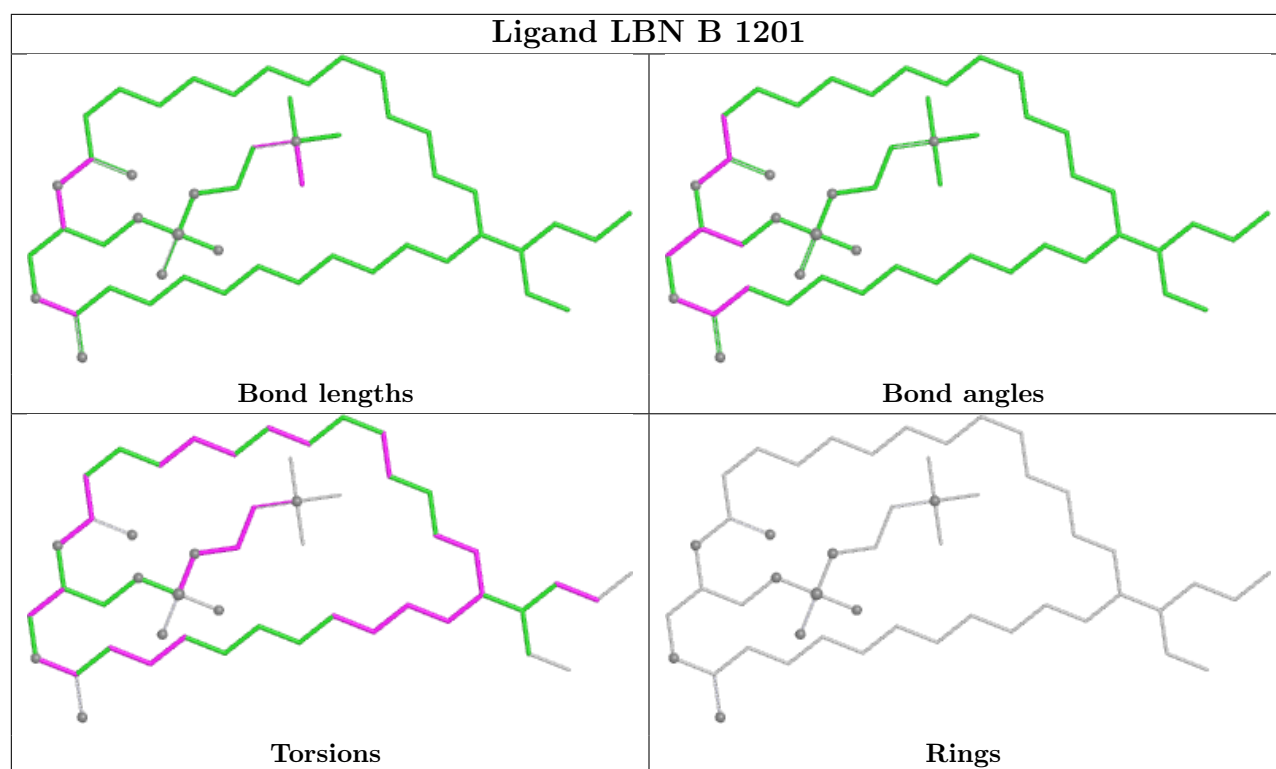
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	1206	A1L1C	6	0
4	A	1205	CLR	20	0
5	B	1207	A1L1C	5	0
4	B	1206	CLR	17	0
6	B	1201	LBN	1	0
6	A	1207	LBN	1	0

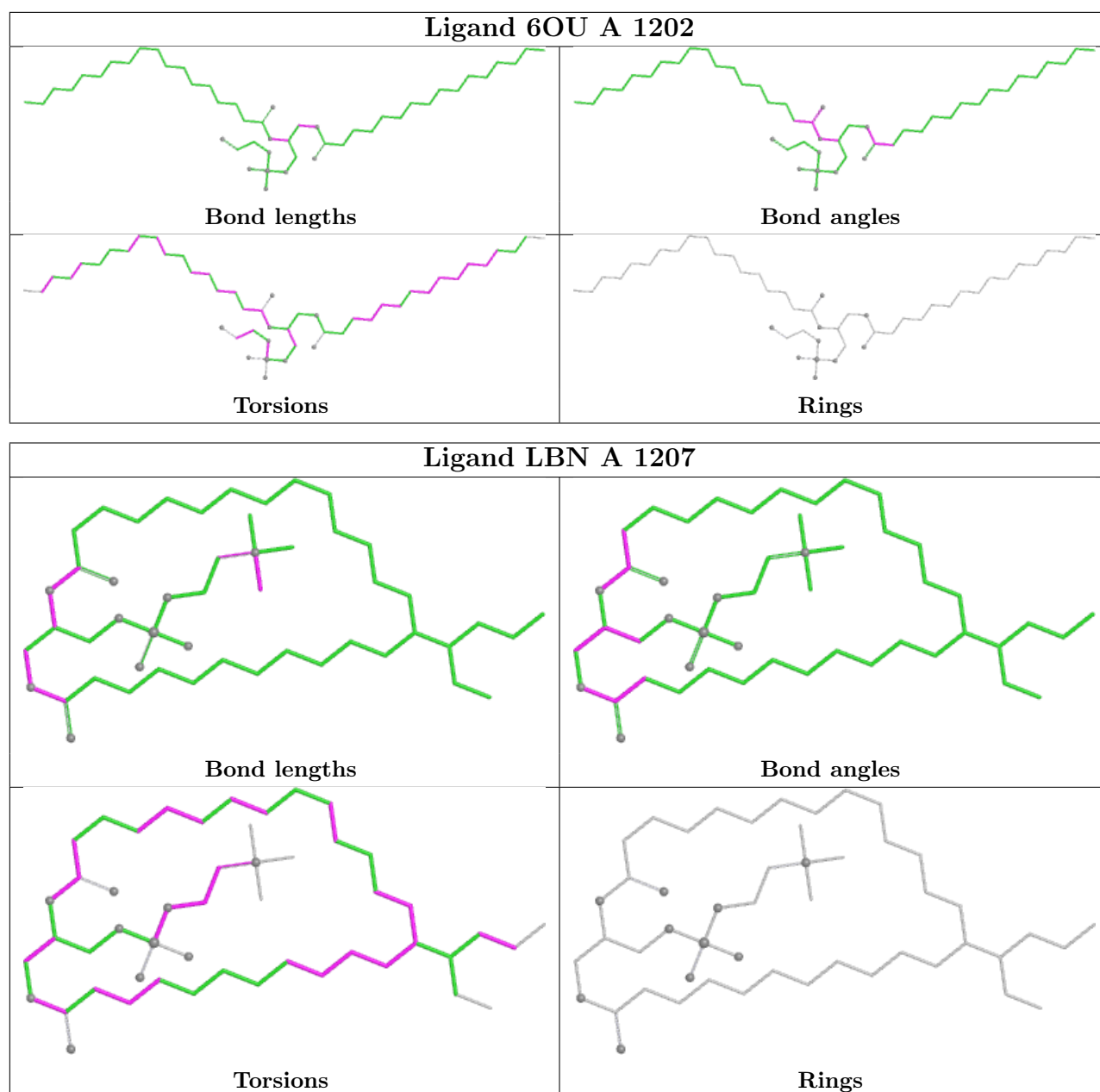
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.











## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

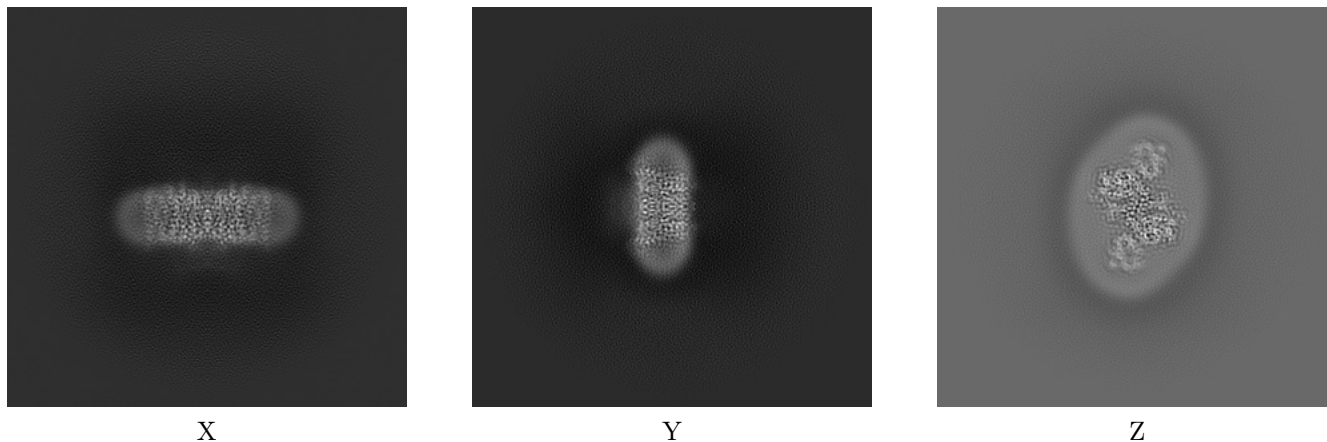
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-39851. These allow visual inspection of the internal detail of the map and identification of artifacts.

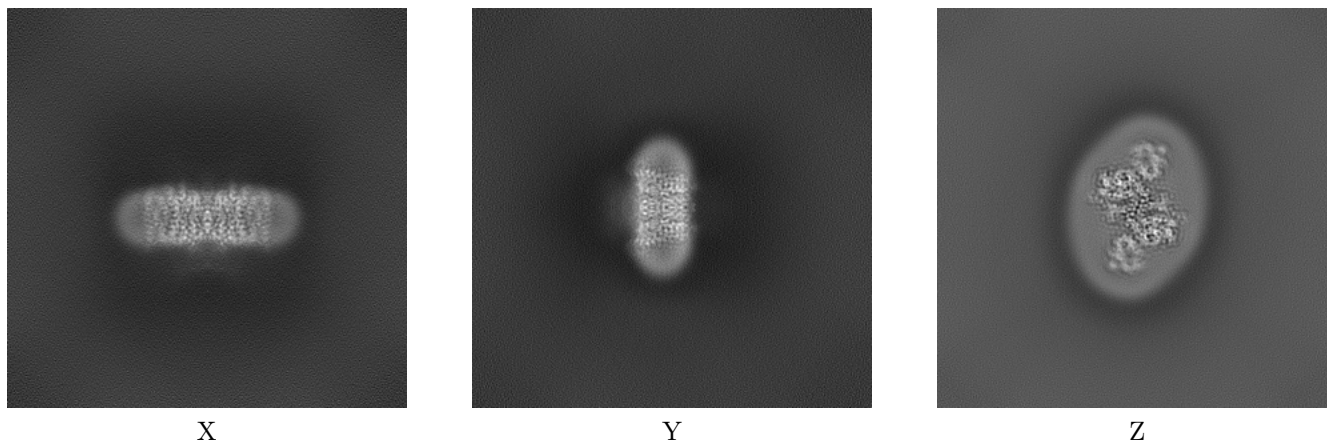
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

#### 6.1.1 Primary map



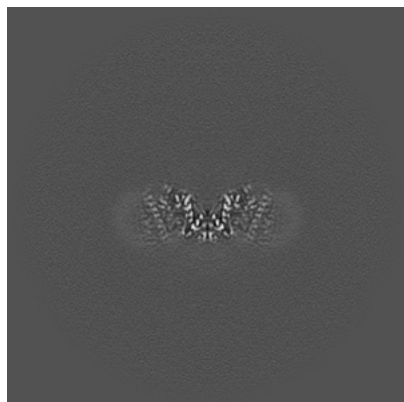
#### 6.1.2 Raw map



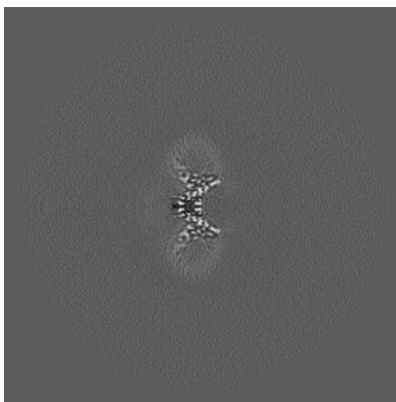
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

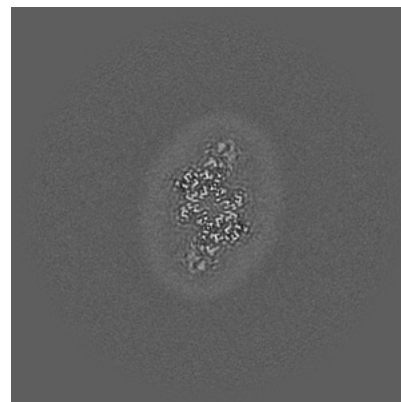
### 6.2.1 Primary map



X Index: 180

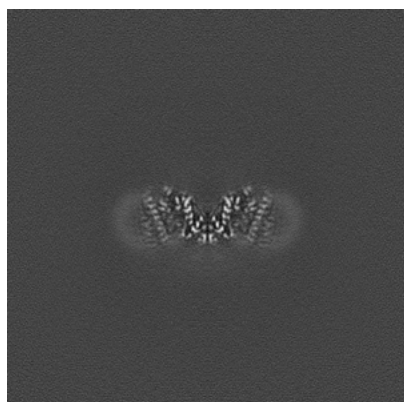


Y Index: 180

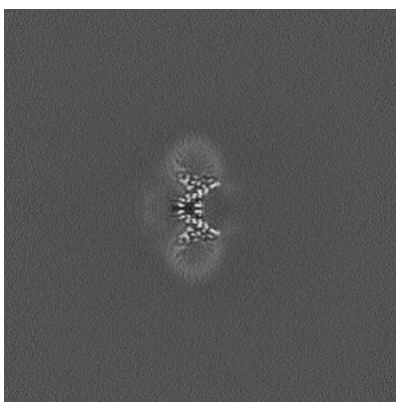


Z Index: 180

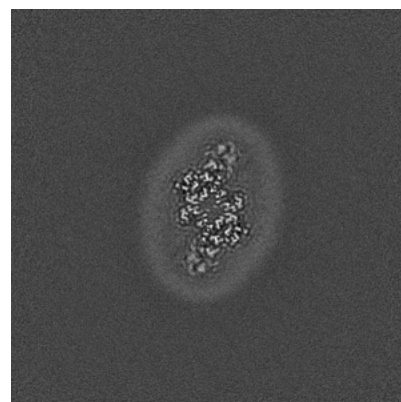
### 6.2.2 Raw map



X Index: 180



Y Index: 180



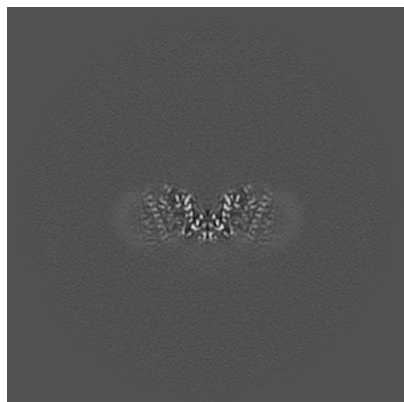
Z Index: 180

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

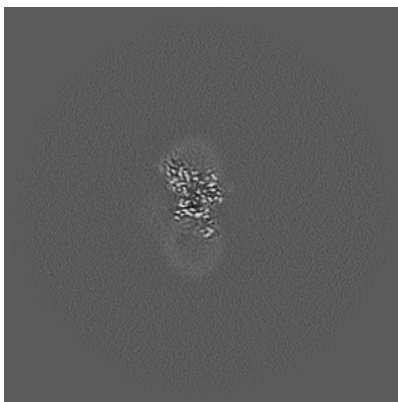


## 6.3 Largest variance slices [i](#)

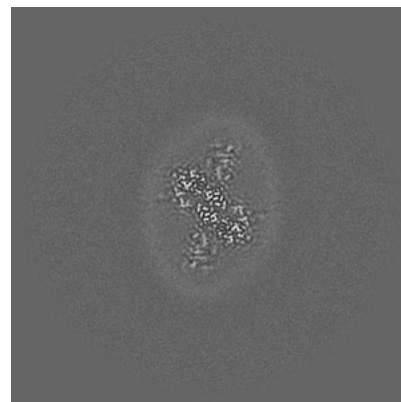
### 6.3.1 Primary map



X Index: 180

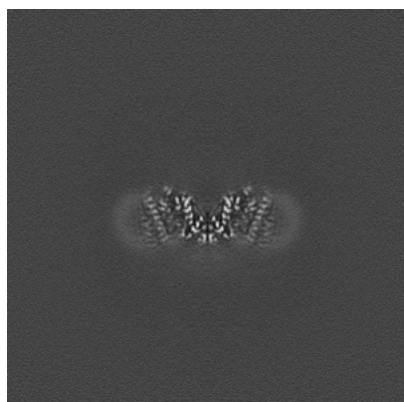


Y Index: 168

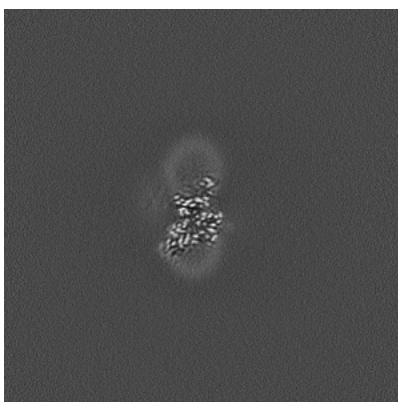


Z Index: 164

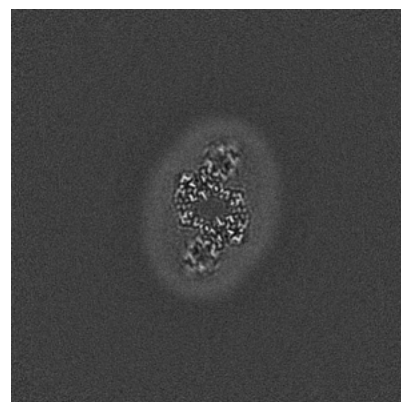
### 6.3.2 Raw map



X Index: 180



Y Index: 192



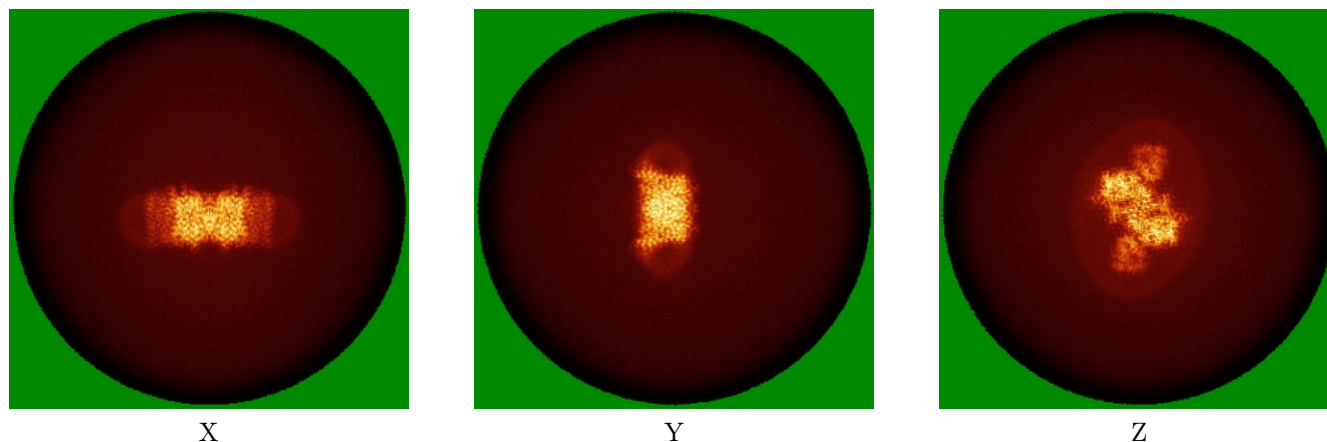
Z Index: 184

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

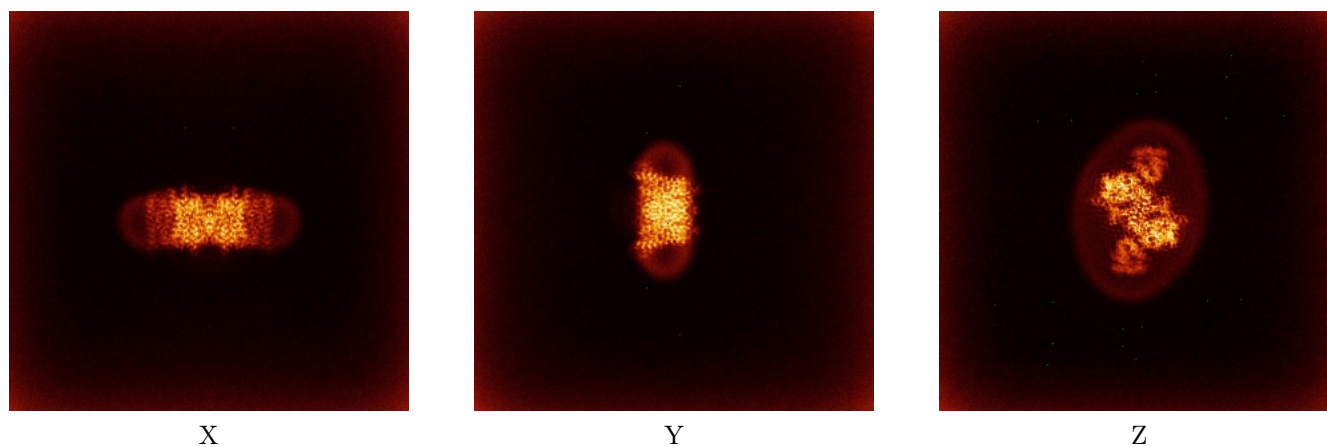


## 6.4 Orthogonal standard-deviation projections (False-color) [i](#)

### 6.4.1 Primary map



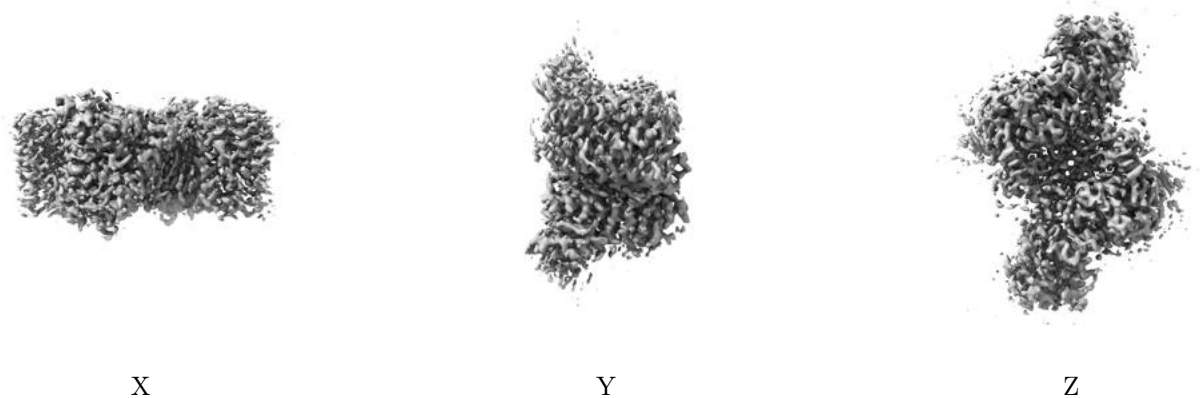
### 6.4.2 Raw map



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.

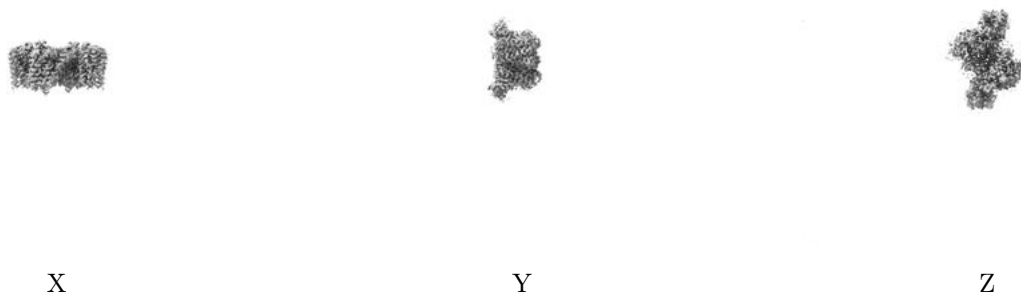
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.592. 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



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.

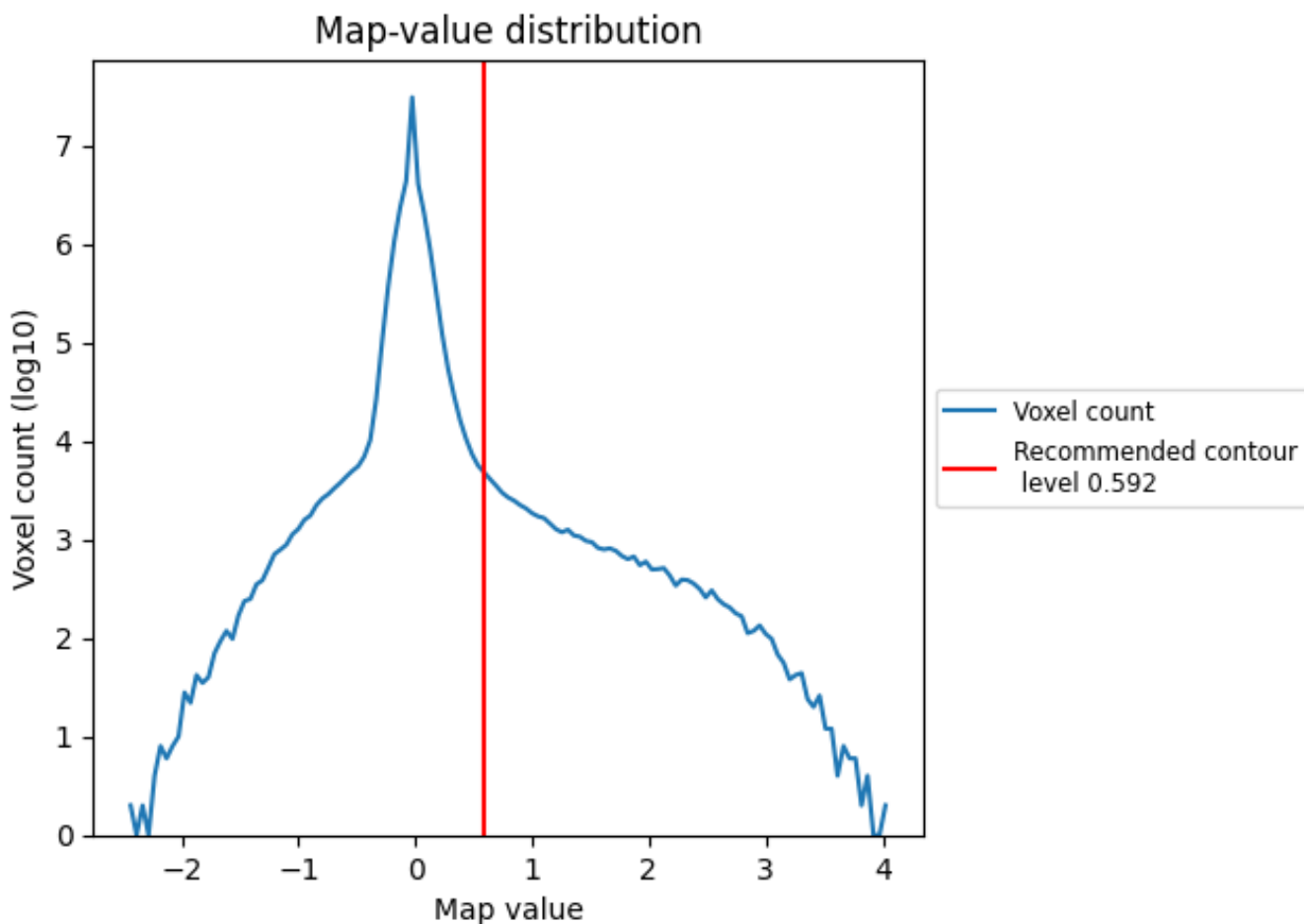
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

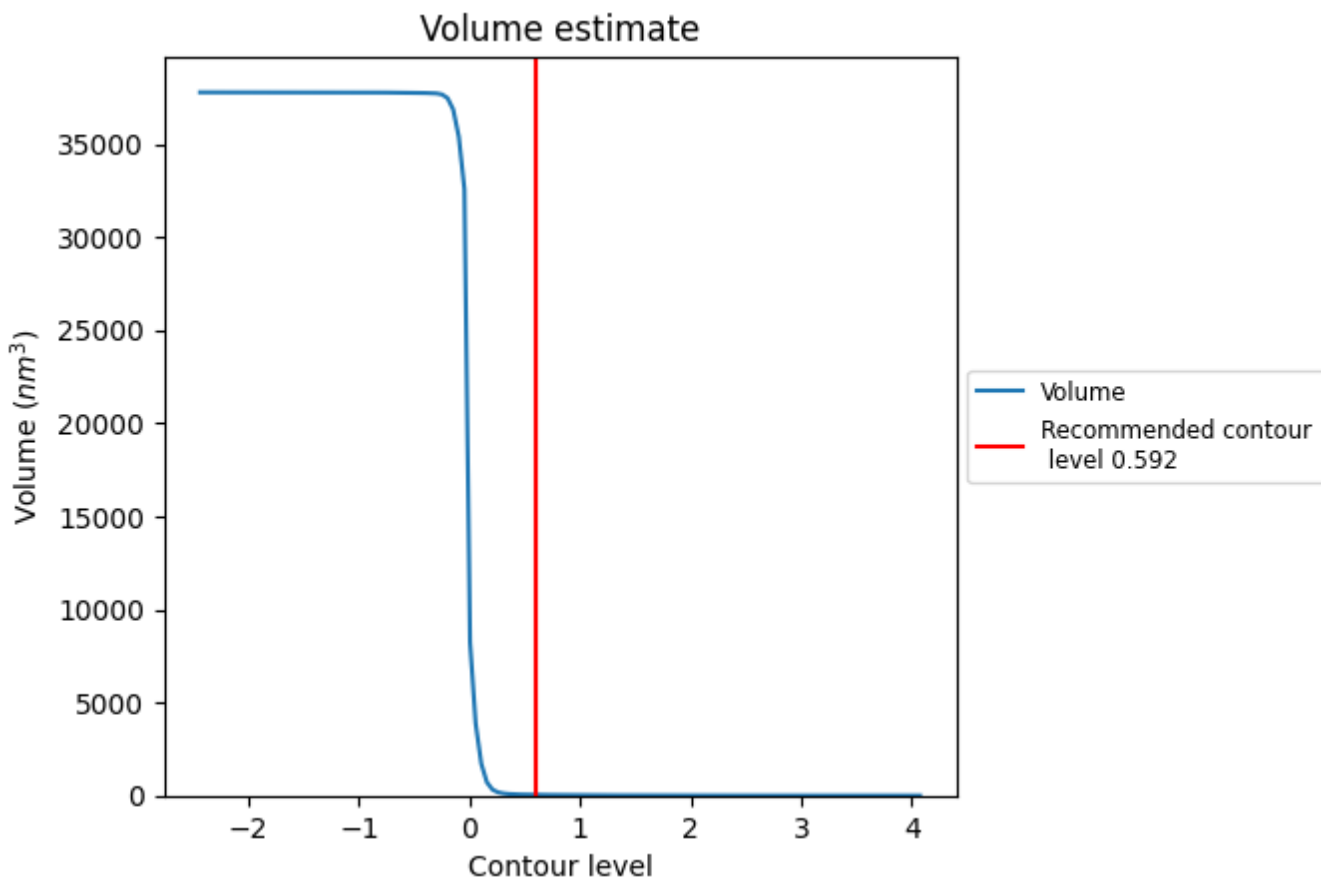
This section contains the results of statistical analysis of the map.

### 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.

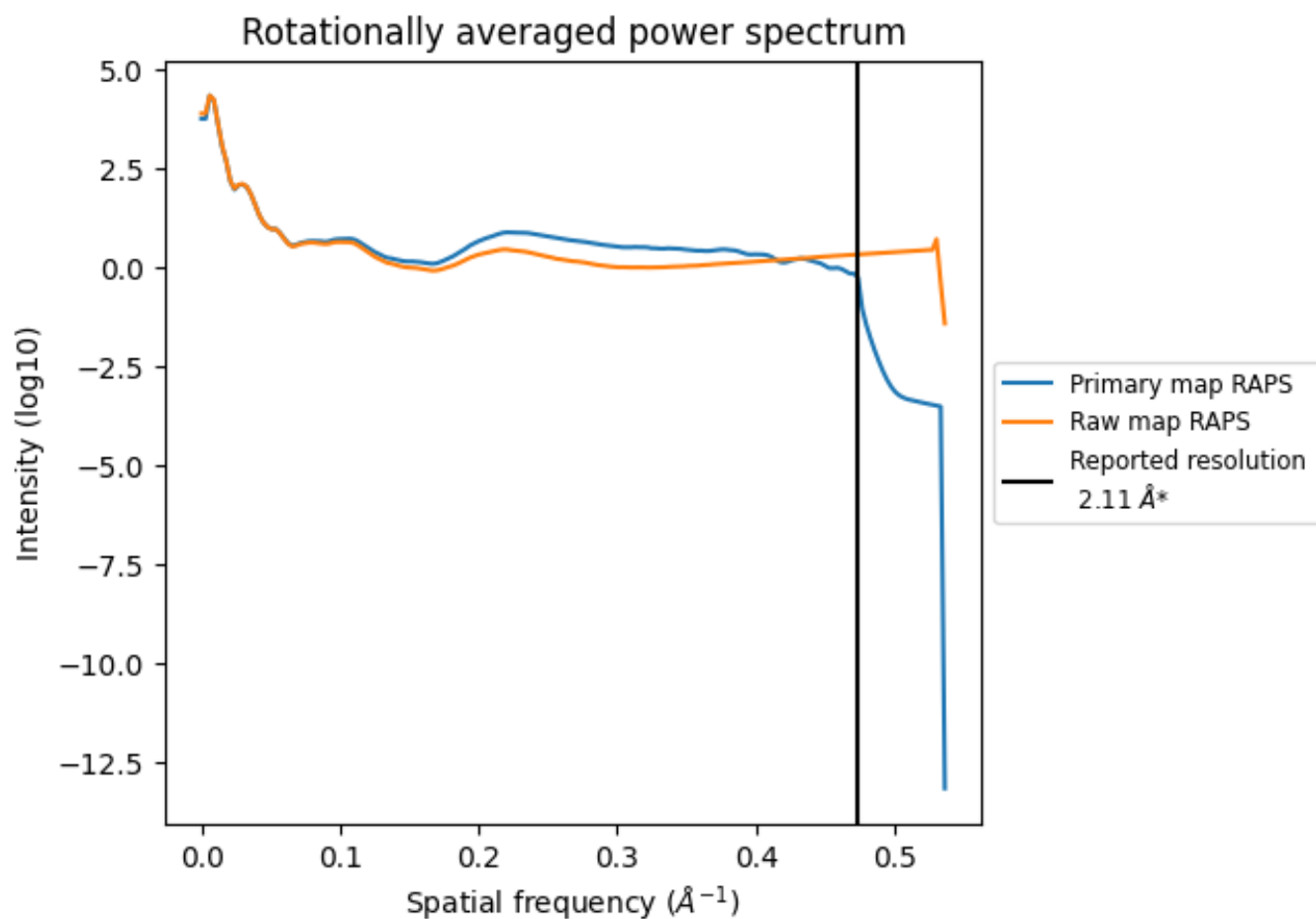
## 7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 42 nm<sup>3</sup>; this corresponds to an approximate mass of 38 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](#)

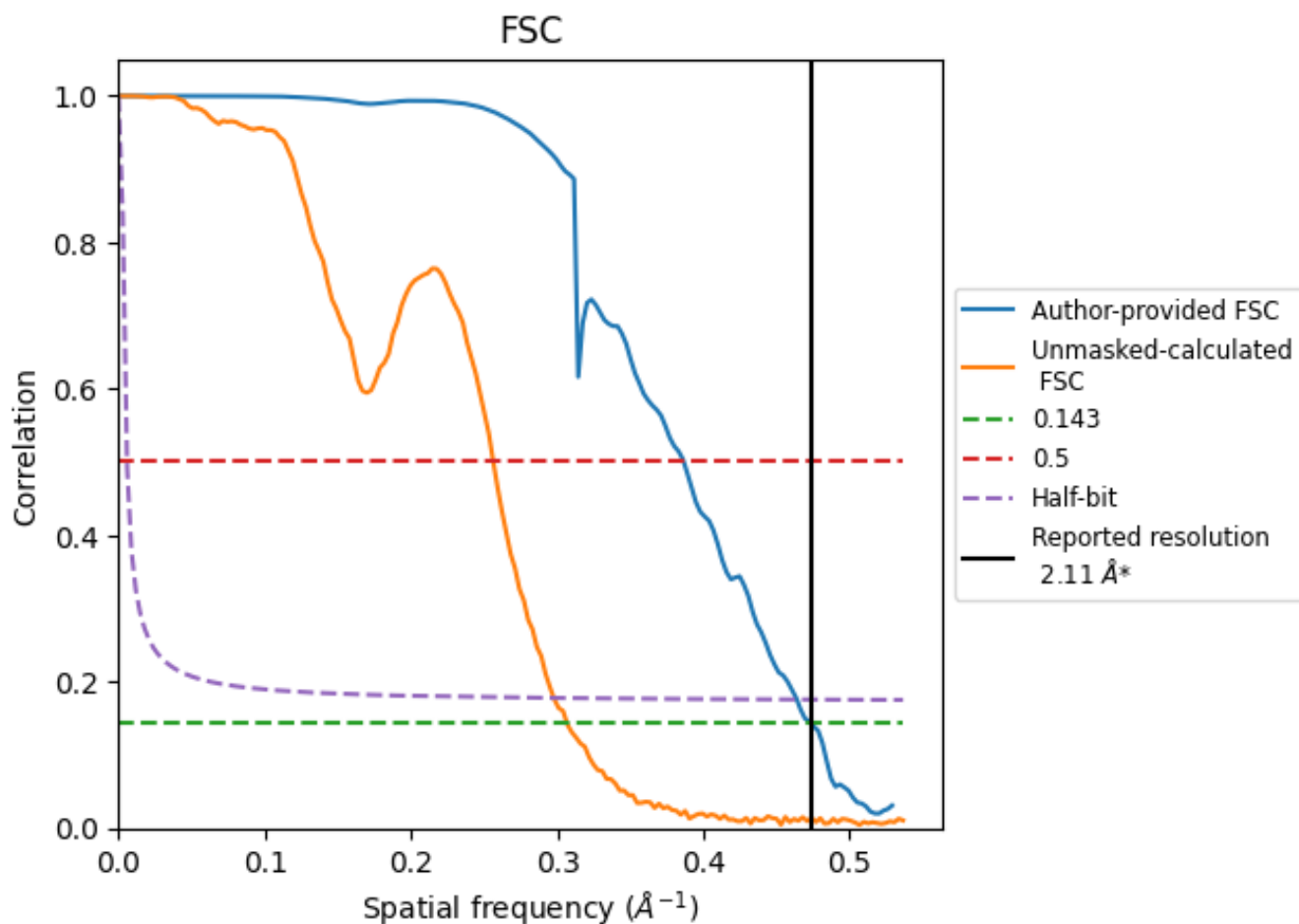


\*Reported resolution corresponds to spatial frequency of 0.474 Å<sup>-1</sup>

## 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 0.474 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

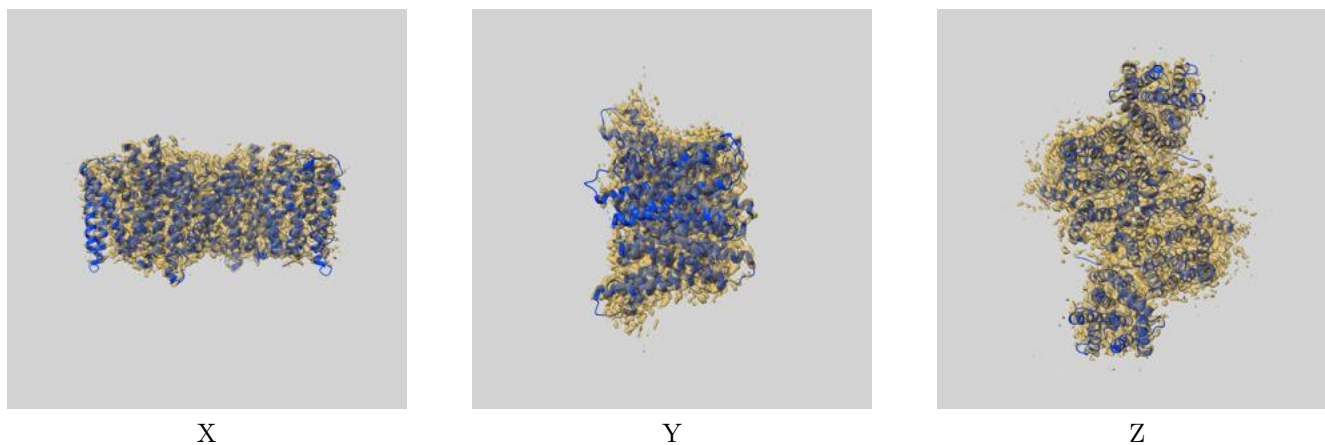
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.11	-	-
Author-provided FSC curve	2.11	2.59	2.16
Unmasked-calculated*	3.26	3.90	3.36

\*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 3.26 differs from the reported value 2.11 by more than 10 %

## 9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-39851 and PDB model 8Z8Z. Per-residue inclusion information can be found in section 3 on page 8.

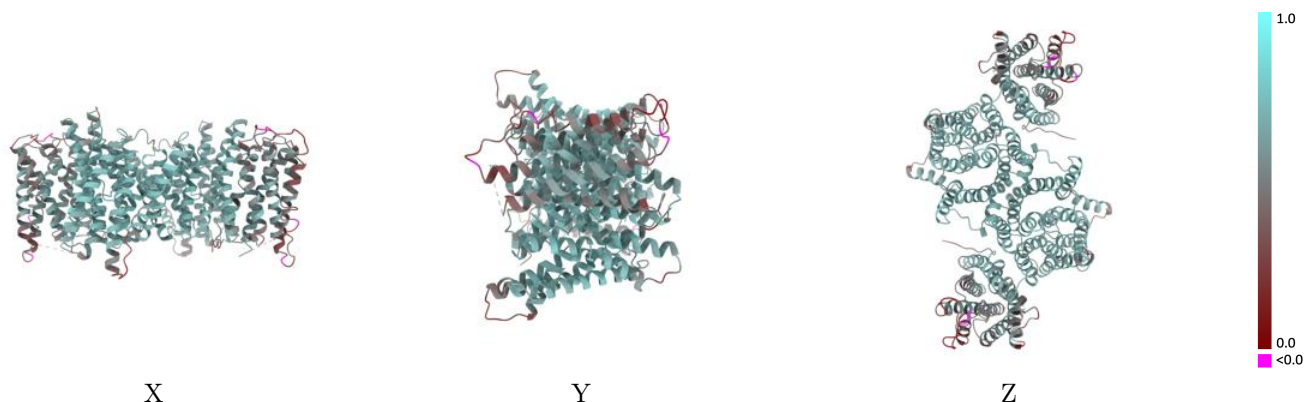
### 9.1 Map-model overlay [i](#)



The images above show the 3D surface view of the map at the recommended contour level 0.592 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

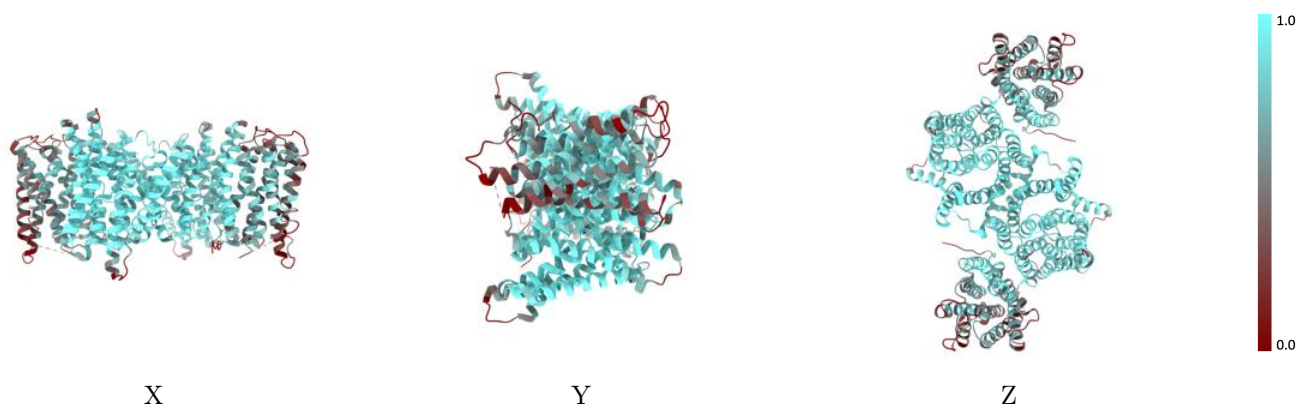


## 9.2 Q-score mapped to coordinate model [i](#)



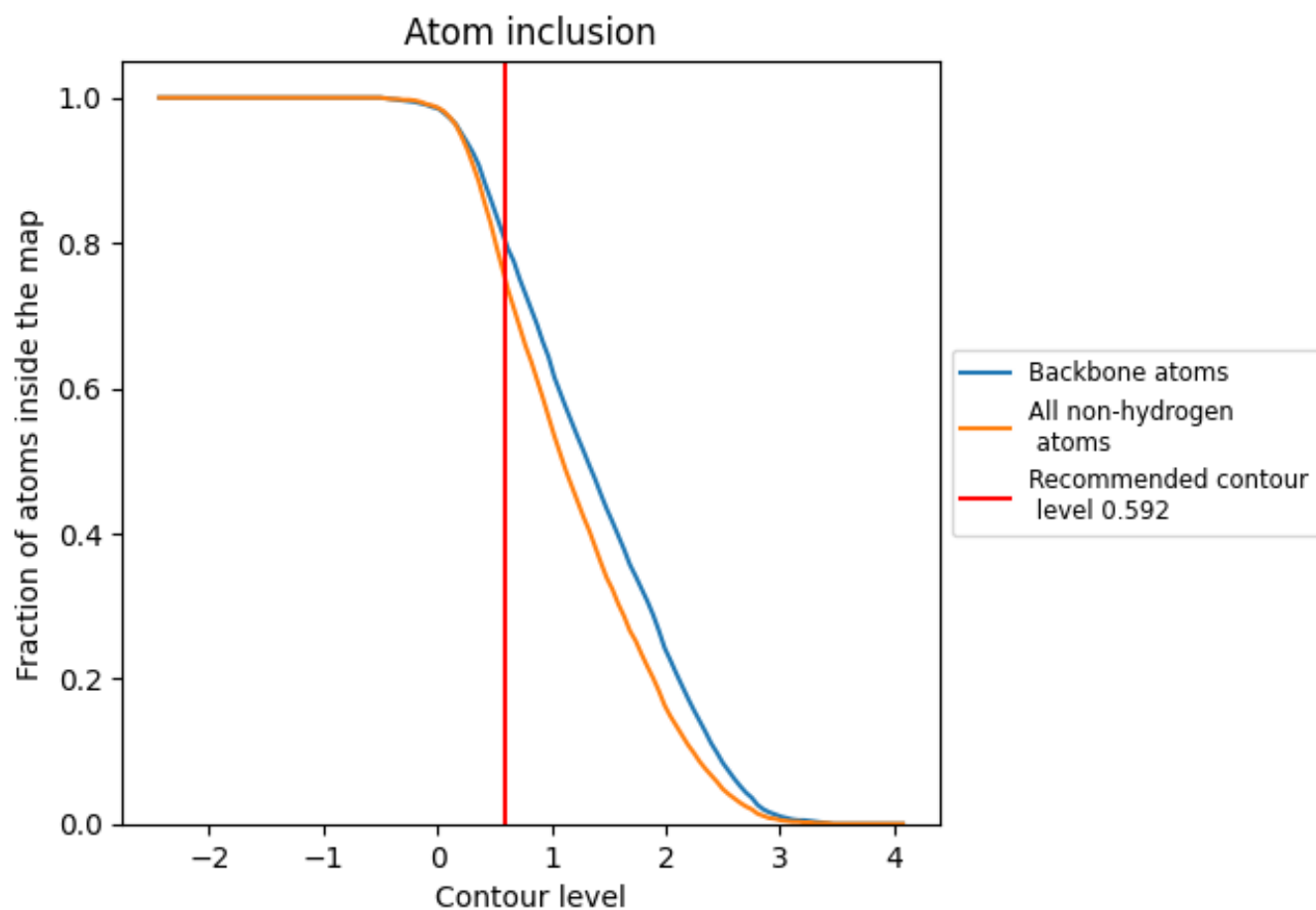
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.592).







## 9.4 Atom inclusion [i](#)



At the recommended contour level, 80% of all backbone atoms, 75% 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 (0.592) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7500	 0.5890
A	 0.7510	 0.5890
B	 0.7510	 0.5880

