



wwPDB EM Validation Summary Report ⓘ

Mar 8, 2026 – 05:43 AM UTC

PDB ID : 8F77 / pdb_00008f77
EMDB ID : EMD-28897
Title : LRRC8A(T48D):C conformation 2 top focus
Authors : Kern, D.M.; Brohawn, S.G.
Deposited on : 2022-11-18
Resolution : 3.15 Å(reported)

This is a wwPDB EM Validation Summary Report for a publicly released PDB entry.

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

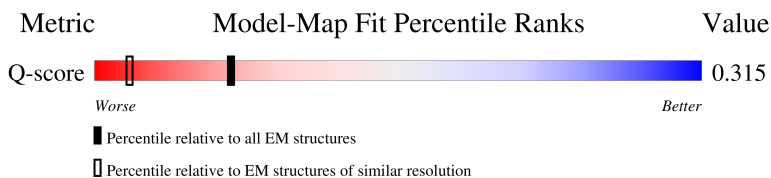
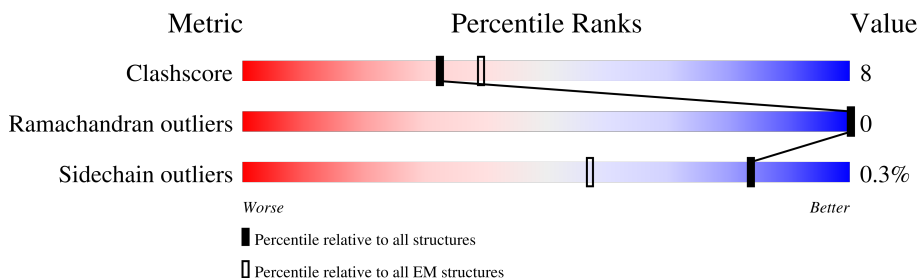
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

1 Overall quality at a glance i

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

The reported resolution of this entry is 3.15 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.



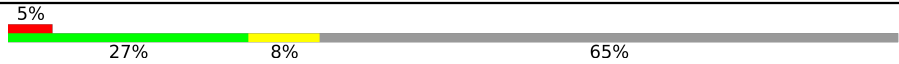

Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	14486 (2.65 - 3.65)

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

Mol	Chain	Length	Quality of chain
1	A	911	<p>12% (red), 60% (green), 18% (yellow), 21% (grey)</p>
1	B	911	<p>19% (red), 60% (green), 18% (yellow), 21% (grey)</p>
1	C	911	<p>5% (red), 27% (green), 6% (yellow), 67% (grey)</p>
1	D	911	<p>30% (green), 66% (grey)</p>

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Mol	Chain	Length	Quality of chain
1	E	911	 <p>5% 27% 8% 65%</p>
2	F	813	 <p>40% 65% 22% 13%</p>

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 25678 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 Volume-regulated anion channel subunit LRRC8A, Soluble cytochrome b562.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	717	5916	3849	996	1046	25	0	0
1	B	716	5912	3847	995	1045	25	0	0
1	C	305	2560	1693	407	443	17	0	0
1	D	314	2637	1740	423	457	17	0	0
1	E	316	2652	1749	426	460	17	0	0

There are 65 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	48	ASP	THR	engineered mutation	UNP Q80WG5
A	68O	TRP	MET	conflict	UNP P0ABE7
A	72F	ILE	HIS	conflict	UNP P0ABE7
A	72J	LEU	PRO	conflict	UNP Q80WG5
A	811	SER	-	expression tag	UNP Q80WG5
A	812	ASN	-	expression tag	UNP Q80WG5
A	813	SER	-	expression tag	UNP Q80WG5
A	814	LEU	-	expression tag	UNP Q80WG5
A	815	GLU	-	expression tag	UNP Q80WG5
A	816	VAL	-	expression tag	UNP Q80WG5
A	817	LEU	-	expression tag	UNP Q80WG5
A	818	PHE	-	expression tag	UNP Q80WG5
A	819	GLN	-	expression tag	UNP Q80WG5
B	48	ASP	THR	engineered mutation	UNP Q80WG5
B	68O	TRP	MET	conflict	UNP P0ABE7
B	72F	ILE	HIS	conflict	UNP P0ABE7
B	72J	LEU	PRO	conflict	UNP Q80WG5
B	811	SER	-	expression tag	UNP Q80WG5
B	812	ASN	-	expression tag	UNP Q80WG5

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Chain	Residue	Modelled	Actual	Comment	Reference
B	813	SER	-	expression tag	UNP Q80WG5
B	814	LEU	-	expression tag	UNP Q80WG5
B	815	GLU	-	expression tag	UNP Q80WG5
B	816	VAL	-	expression tag	UNP Q80WG5
B	817	LEU	-	expression tag	UNP Q80WG5
B	818	PHE	-	expression tag	UNP Q80WG5
B	819	GLN	-	expression tag	UNP Q80WG5
C	48	ASP	THR	engineered mutation	UNP Q80WG5
C	68O	TRP	MET	conflict	UNP P0ABE7
C	72F	ILE	HIS	conflict	UNP P0ABE7
C	72J	LEU	PRO	conflict	UNP Q80WG5
C	811	SER	-	expression tag	UNP Q80WG5
C	812	ASN	-	expression tag	UNP Q80WG5
C	813	SER	-	expression tag	UNP Q80WG5
C	814	LEU	-	expression tag	UNP Q80WG5
C	815	GLU	-	expression tag	UNP Q80WG5
C	816	VAL	-	expression tag	UNP Q80WG5
C	817	LEU	-	expression tag	UNP Q80WG5
C	818	PHE	-	expression tag	UNP Q80WG5
C	819	GLN	-	expression tag	UNP Q80WG5
D	48	ASP	THR	engineered mutation	UNP Q80WG5
D	68O	TRP	MET	conflict	UNP P0ABE7
D	72F	ILE	HIS	conflict	UNP P0ABE7
D	72J	LEU	PRO	conflict	UNP Q80WG5
D	811	SER	-	expression tag	UNP Q80WG5
D	812	ASN	-	expression tag	UNP Q80WG5
D	813	SER	-	expression tag	UNP Q80WG5
D	814	LEU	-	expression tag	UNP Q80WG5
D	815	GLU	-	expression tag	UNP Q80WG5
D	816	VAL	-	expression tag	UNP Q80WG5
D	817	LEU	-	expression tag	UNP Q80WG5
D	818	PHE	-	expression tag	UNP Q80WG5
D	819	GLN	-	expression tag	UNP Q80WG5
E	48	ASP	THR	engineered mutation	UNP Q80WG5
E	68O	TRP	MET	conflict	UNP P0ABE7
E	72F	ILE	HIS	conflict	UNP P0ABE7
E	72J	LEU	PRO	conflict	UNP Q80WG5
E	811	SER	-	expression tag	UNP Q80WG5
E	812	ASN	-	expression tag	UNP Q80WG5
E	813	SER	-	expression tag	UNP Q80WG5
E	814	LEU	-	expression tag	UNP Q80WG5
E	815	GLU	-	expression tag	UNP Q80WG5

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Chain	Residue	Modelled	Actual	Comment	Reference
E	816	VAL	-	expression tag	UNP Q80WG5
E	817	LEU	-	expression tag	UNP Q80WG5
E	818	PHE	-	expression tag	UNP Q80WG5
E	819	GLN	-	expression tag	UNP Q80WG5

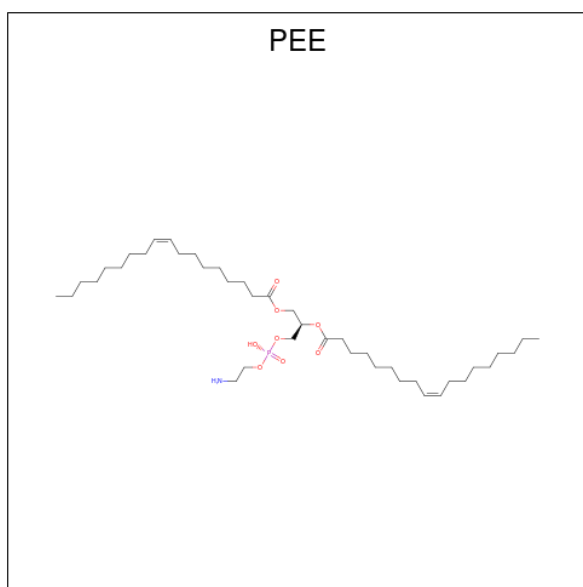
- Molecule 2 is a protein called Volume-regulated anion channel subunit LRRC8C.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	F	704	5751	3745	940	1029	37	0	0

There are 10 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	804	SER	-	expression tag	UNP Q8R502
F	805	ASN	-	expression tag	UNP Q8R502
F	806	SER	-	expression tag	UNP Q8R502
F	807	GLU	-	expression tag	UNP Q8R502
F	808	ASN	-	expression tag	UNP Q8R502
F	809	LEU	-	expression tag	UNP Q8R502
F	810	TYR	-	expression tag	UNP Q8R502
F	811	PHE	-	expression tag	UNP Q8R502
F	812	GLN	-	expression tag	UNP Q8R502
F	813	GLY	-	expression tag	UNP Q8R502

- Molecule 3 is 1,2-dioleoyl-sn-glycero-3-phosphoethanolamine (CCD ID: PEE) (formula: C₄₁H₇₈NO₈P).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
3	A	1	26	18	1	6	1	0
3	A	1	13	11		2		0
3	A	1	13	11		2		0
3	B	1	26	18	1	6	1	0
3	B	1	11	9		2		0
3	B	1	10	8		2		0
3	C	1	26	18	1	6	1	0
3	D	1	16	14		2		0
3	D	1	9	7		2		0
3	E	1	16	14		2		0
3	E	1	10	8		2		0
3	E	1	9	7		2		0
3	F	1	40	30	1	8	1	0
3	F	1	11	9		2		0

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Mol	Chain	Residues	Atoms			AltConf
			Total	C	O	
3	F	1	8	6	2	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		AltConf
4	A	1	Total 1	O 1	0
4	B	1	Total 1	O 1	0
4	C	1	Total 1	O 1	0
4	D	1	Total 1	O 1	0
4	E	1	Total 1	O 1	0
4	F	1	Total 1	O 1	0

H635	L636	R637	K638	L639	T640	V641	L642	K643	L644	W645	Y646	N647	S648	I649	A650	Y651	I652	P653	E654	H655	I656	K657	K658	L659	T660	S661	L662	E663	R664	L665	F666	F667	S668	H669	N670	K671	V672	E673	V674	L675	F676	S677	H678	L679	F680	L681	C682	M683	K684	I685	R686	Y687	L688	D689	L690	S691	Y692	N693	D694
I695	R696	F697	I698	P699	P700	E701	I702	G703	V704	L705	Q706	S707	L708	I713	N716	E719	S720	L721	P722	D723	E724	L725	Y726	F727	C728	K729	K730	L731	K732	T733	L734	K735	I736	N739	S740	L741	S742	V743	L744	S745	P746	K747	I748	G749	N750	L751	L752	F753	L754	S755	Y756	L757	D758	I759					
N762	H763	F764	E765	V766	L767	P768	P769	E770	L771	G772	D773	C774	R775	A776	L777	K778	R779	A780	G781	L782	V783	V784	E785	D786	A787	L788	F789	E790	T791	L792	P793	S794	D795	V796	R797	E798	Q799	M800	K801	A802	D803	SER	ASN	SER	GLU	ASN	LEU	TYR	PHE	GLN	GLY								

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	71198	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	4.362	Depositor
Minimum map value	-1.849	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.059	Depositor
Recommended contour level	0.35	Depositor
Map size (\AA)	435.968, 435.968, 435.968	wwPDB
Map dimensions	416, 416, 416	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.048, 1.048, 1.048	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: PEE

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	0.22	0/6049	0.42	0/8198
1	B	0.23	0/6045	0.46	1/8193 (0.0%)
1	C	0.20	0/2635	0.42	0/3568
1	D	0.16	0/2712	0.37	0/3671
1	E	0.17	0/2727	0.38	0/3692
2	F	0.20	0/5877	0.43	0/7943
All	All	0.21	0/26045	0.42	1/35265 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	685	ARG	N-CA-C	7.66	122.66	113.16

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	5916	0	6071	115	0
1	B	5912	0	6068	114	0
1	C	2560	0	2543	37	0
1	D	2637	0	2626	25	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	E	2652	0	2641	46	0
2	F	5751	0	5887	128	0
3	A	52	0	69	0	0
3	B	47	0	59	0	0
3	C	26	0	33	0	0
3	D	25	0	34	0	0
3	E	35	0	46	0	0
3	F	59	0	76	0	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0
4	D	1	0	0	0	0
4	E	1	0	0	0	0
4	F	1	0	0	0	0
All	All	25678	0	26153	440	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 8.

The worst 5 of 440 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:762:ARG:HD2	2:F:424:ASN:CG	1.57	1.26
1:A:762:ARG:HD2	2:F:424:ASN:ND2	1.69	1.06
1:A:640:ARG:NH2	1:B:719:ARG:HG2	1.83	0.94
1:A:640:ARG:HH21	1:B:719:ARG:HG2	1.41	0.86
1:B:686:LYS:HA	1:B:709:ASN:HB2	1.65	0.78

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	711/911 (78%)	685 (96%)	26 (4%)	0	100	100
1	B	710/911 (78%)	672 (95%)	38 (5%)	0	100	100
1	C	299/911 (33%)	292 (98%)	7 (2%)	0	100	100
1	D	308/911 (34%)	296 (96%)	12 (4%)	0	100	100
1	E	310/911 (34%)	303 (98%)	7 (2%)	0	100	100
2	F	698/813 (86%)	672 (96%)	26 (4%)	0	100	100
All	All	3036/5368 (57%)	2920 (96%)	116 (4%)	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	665/830 (80%)	663 (100%)	2 (0%)	86	85
1	B	665/830 (80%)	662 (100%)	3 (0%)	81	82
1	C	283/830 (34%)	283 (100%)	0	100	100
1	D	292/830 (35%)	291 (100%)	1 (0%)	86	85
1	E	294/830 (35%)	294 (100%)	0	100	100
2	F	659/756 (87%)	657 (100%)	2 (0%)	86	85
All	All	2858/4906 (58%)	2850 (100%)	8 (0%)	84	85

5 of 8 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	F	609	PHE
2	F	366	VAL
1	B	733	LEU
1	B	687	LEU
1	D	281	TYR

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

Mol	Chain	Res	Type
2	F	492	ASN
2	F	799	GLN
2	F	606	HIS
1	B	764	ASN
2	F	447	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

15 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	PEE	F	902	-	10,10,50	0.59	0	10,10,55	0.78	0
3	PEE	E	902	-	9,9,50	0.62	0	9,9,55	0.79	0
3	PEE	B	903	-	9,9,50	1.70	2 (22%)	9,9,55	1.63	2 (22%)
3	PEE	F	903	-	7,7,50	0.69	0	7,7,55	0.86	0
3	PEE	B	902	-	10,10,50	0.60	0	10,10,55	0.78	0
3	PEE	C	901	-	25,25,50	1.53	3 (12%)	27,28,55	1.15	1 (3%)
3	PEE	E	903	-	8,8,50	0.62	0	8,8,55	0.85	0
3	PEE	F	901	-	39,39,50	0.79	2 (5%)	42,44,55	0.64	1 (2%)
3	PEE	B	901	-	25,25,50	1.52	3 (12%)	27,28,55	1.16	1 (3%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	PEE	A	902	-	12,12,50	1.10	1 (8%)	12,12,55	1.13	1 (8%)
3	PEE	D	902	-	8,8,50	0.62	0	8,8,55	0.85	0
3	PEE	E	901	-	15,15,50	1.10	1 (6%)	15,15,55	0.89	0
3	PEE	A	901	-	25,25,50	1.52	3 (12%)	27,28,55	1.17	1 (3%)
3	PEE	A	903	-	12,12,50	1.10	1 (8%)	12,12,55	1.13	1 (8%)
3	PEE	D	901	-	15,15,50	1.64	3 (20%)	15,15,55	1.41	2 (13%)

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	PEE	F	902	-	-	6/8/8/54	-
3	PEE	E	902	-	-	4/7/7/54	-
3	PEE	B	903	-	-	4/7/7/54	-
3	PEE	F	903	-	-	4/5/5/54	-
3	PEE	B	902	-	-	4/8/8/54	-
3	PEE	C	901	-	-	12/26/26/54	-
3	PEE	E	903	-	-	1/6/6/54	-
3	PEE	F	901	-	-	8/43/43/54	-
3	PEE	B	901	-	-	12/26/26/54	-
3	PEE	A	902	-	-	7/10/10/54	-
3	PEE	D	902	-	-	4/6/6/54	-
3	PEE	E	901	-	-	10/13/13/54	-
3	PEE	A	901	-	-	13/26/26/54	-
3	PEE	A	903	-	-	6/10/10/54	-
3	PEE	D	901	-	-	11/13/13/54	-

The worst 5 of 19 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	901	PEE	P-O4P	4.85	1.78	1.59
3	C	901	PEE	P-O4P	4.82	1.78	1.59
3	B	901	PEE	P-O4P	4.74	1.77	1.59
3	D	901	PEE	O4-C10	4.27	1.36	1.22
3	B	903	PEE	O4-C10	4.26	1.36	1.22

The worst 5 of 10 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	901	PEE	O2P-P-O1P	4.47	133.24	112.44
3	A	901	PEE	O2P-P-O1P	4.47	133.22	112.44
3	B	901	PEE	O2P-P-O1P	4.45	133.13	112.44
3	B	903	PEE	O2-C10-C11	3.39	124.70	114.00
3	D	901	PEE	O2-C10-C11	3.35	124.60	114.00

There are no chirality outliers.

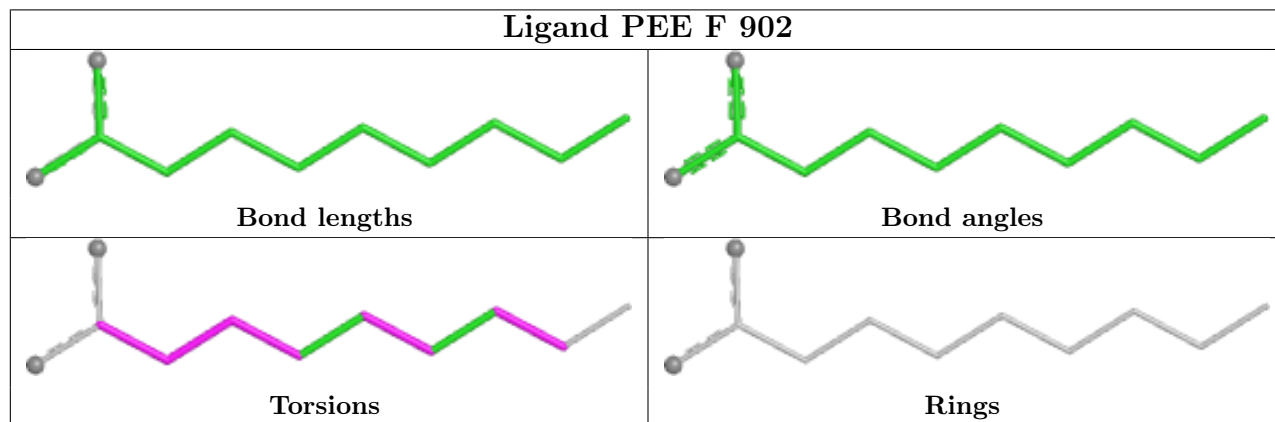
5 of 106 torsion outliers are listed below:

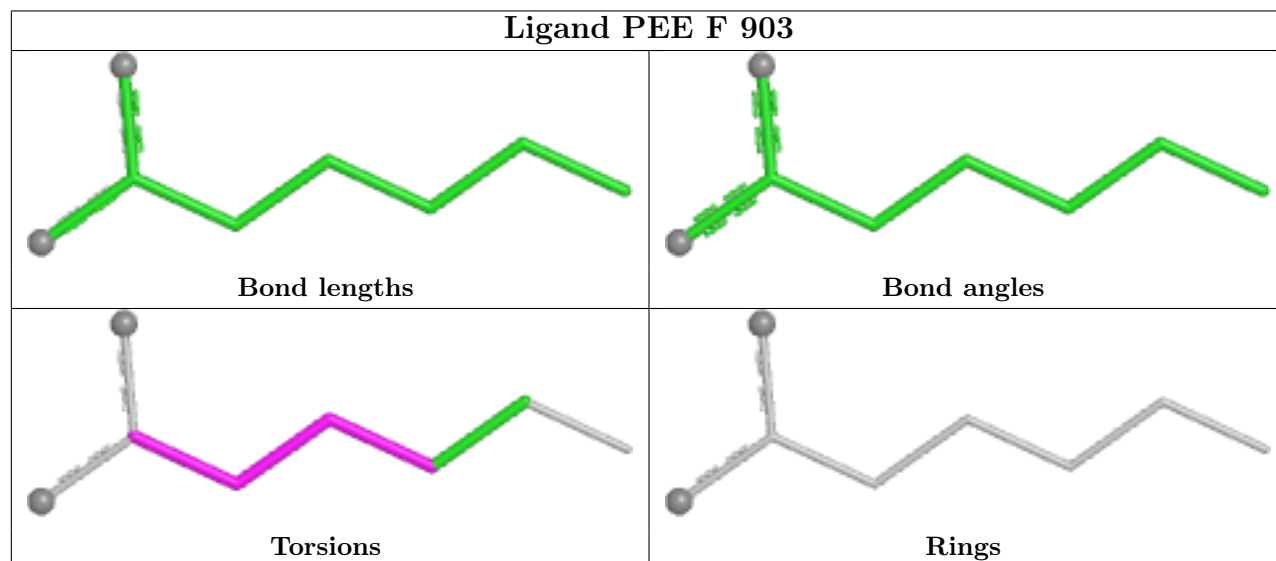
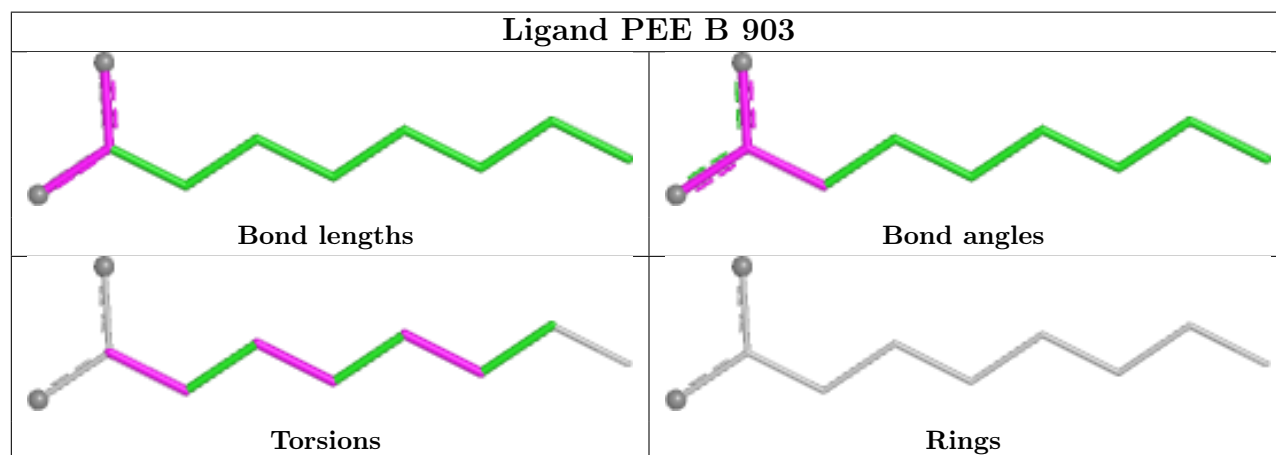
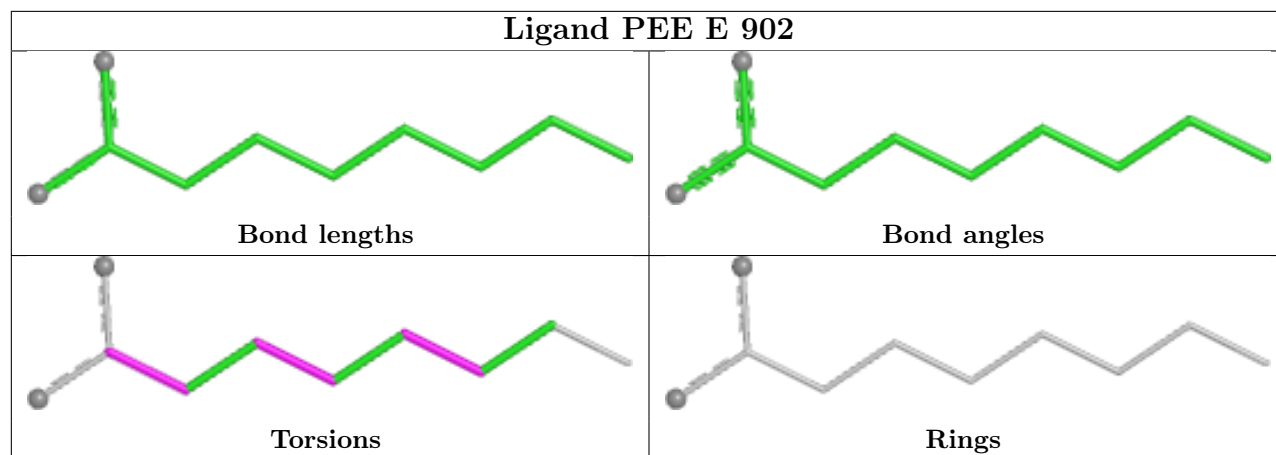
Mol	Chain	Res	Type	Atoms
3	A	901	PEE	C1-O3P-P-O2P
3	A	901	PEE	C4-O4P-P-O3P
3	A	901	PEE	C4-O4P-P-O2P
3	A	901	PEE	O4P-C4-C5-N
3	B	901	PEE	O3P-C1-C2-O2

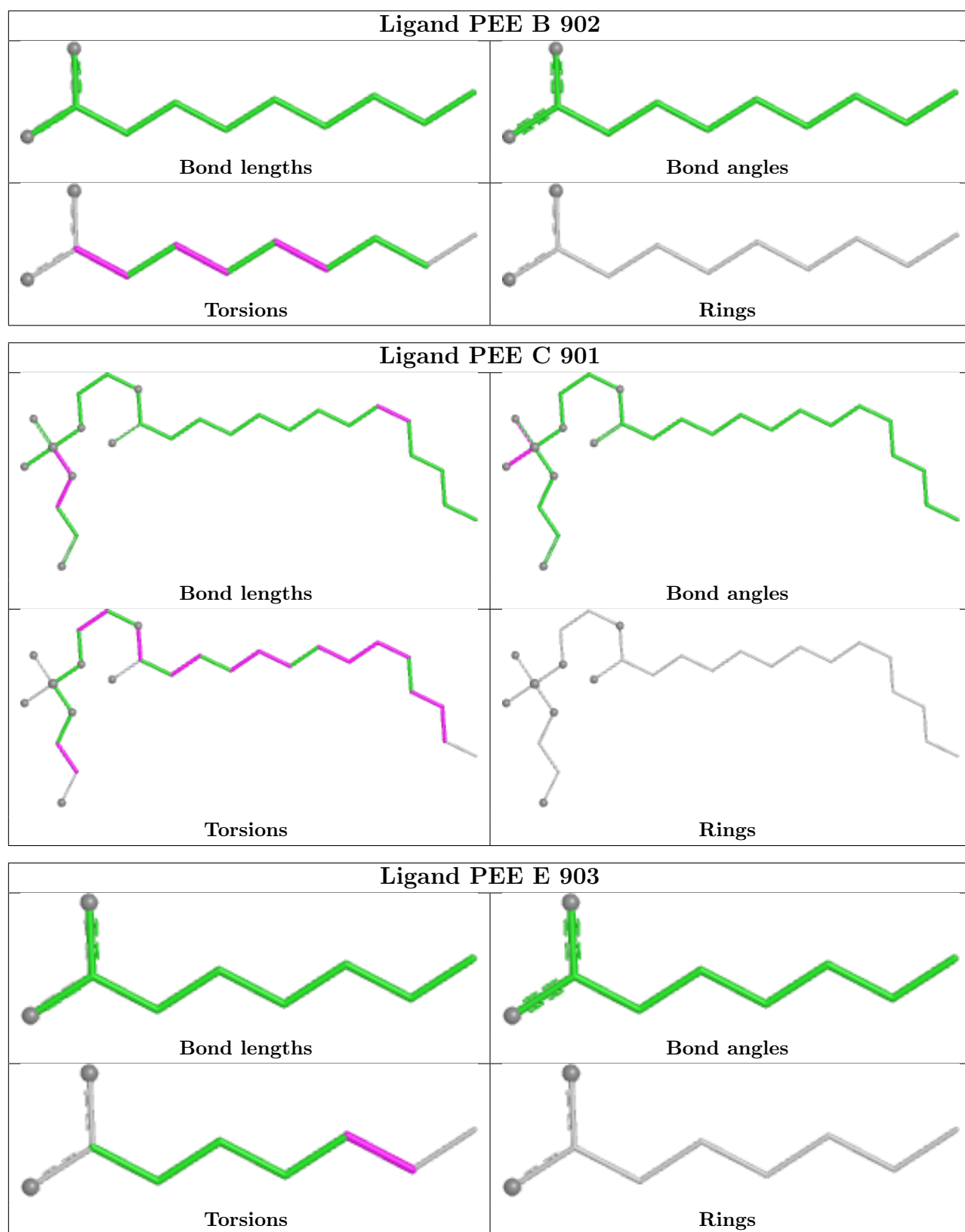
There are no ring outliers.

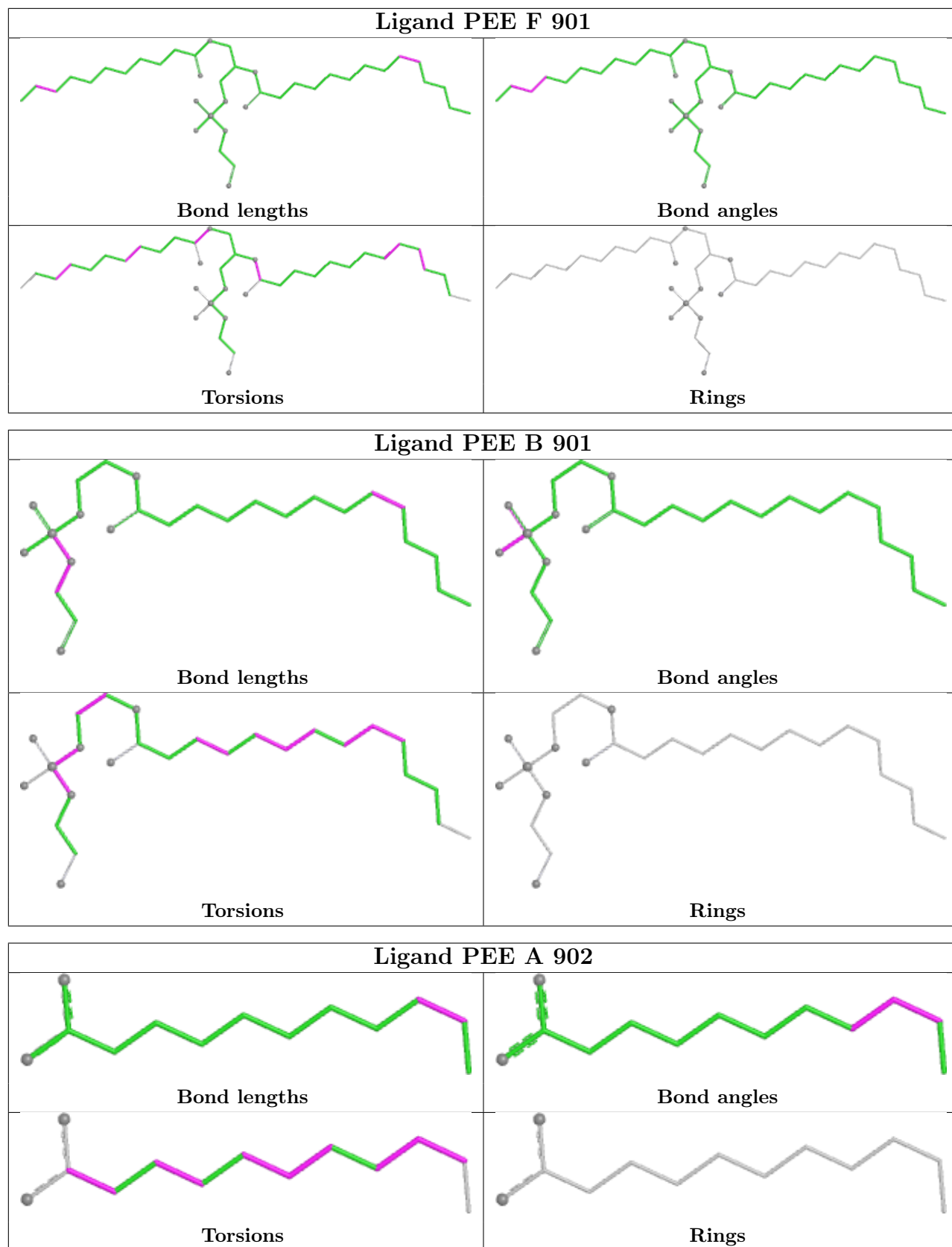
No monomer is involved in short contacts.

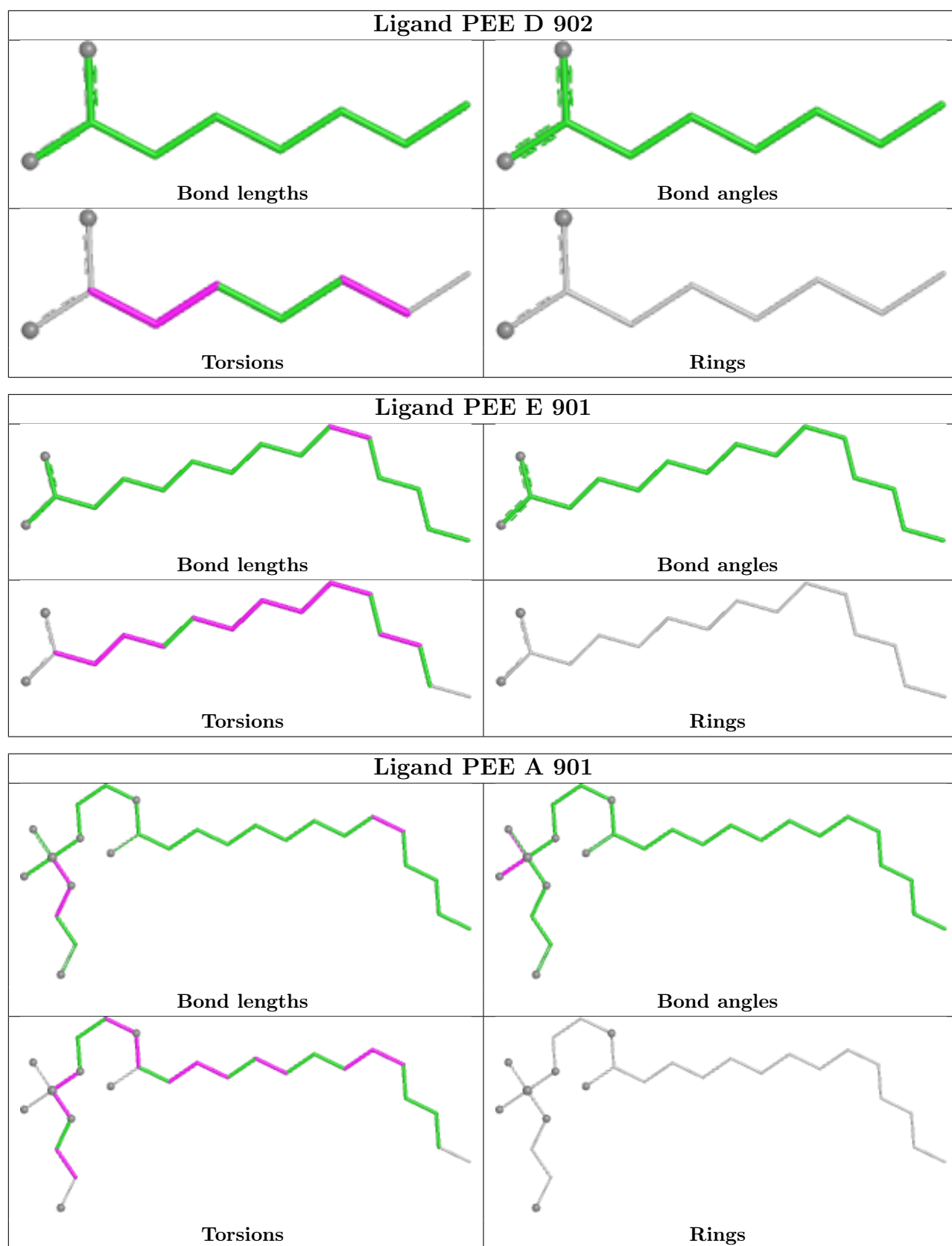
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

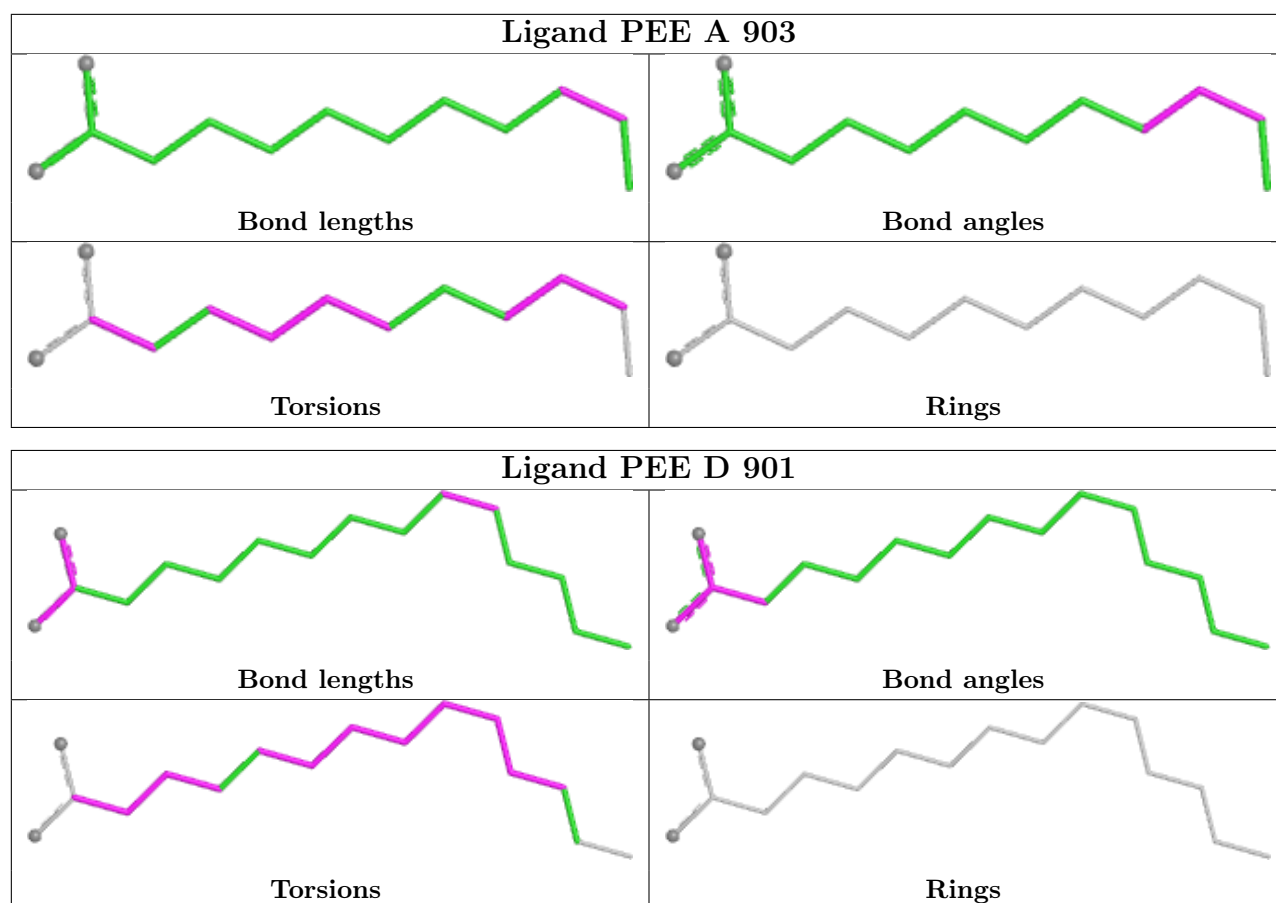












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

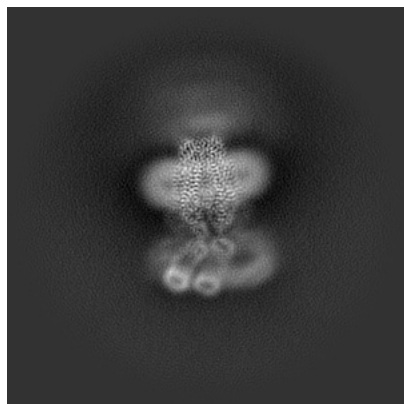
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-28897. These allow visual inspection of the internal detail of the map and identification of artifacts.

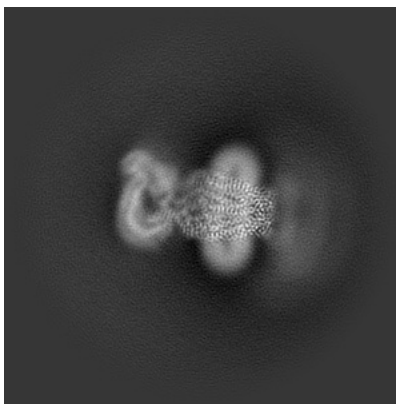
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

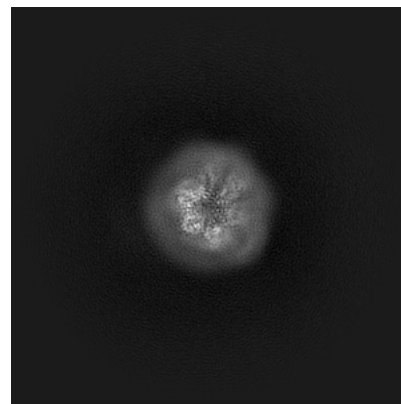
6.1.1 Primary map



X

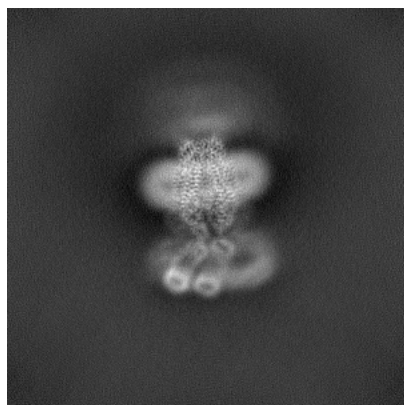


Y

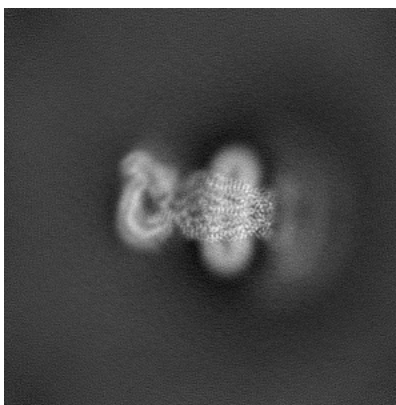


Z

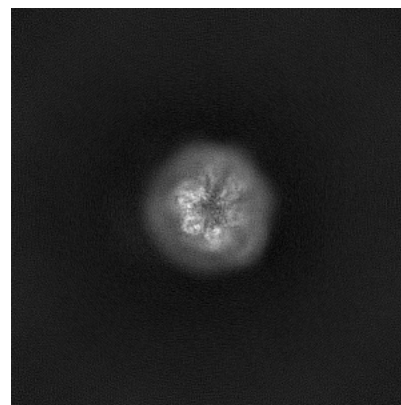
6.1.2 Raw map



X



Y

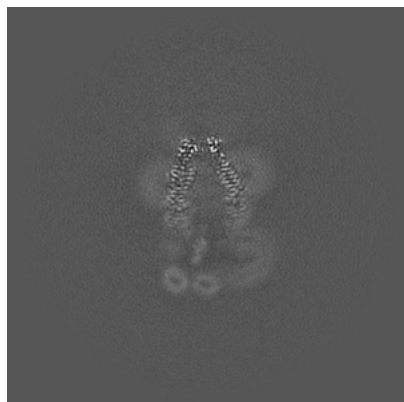


Z

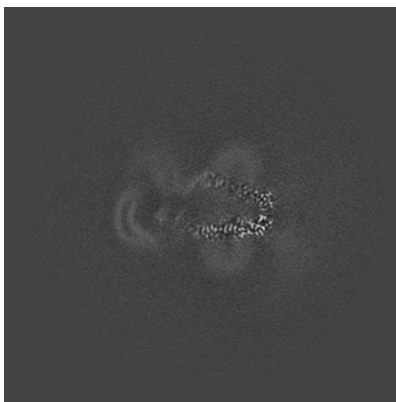
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

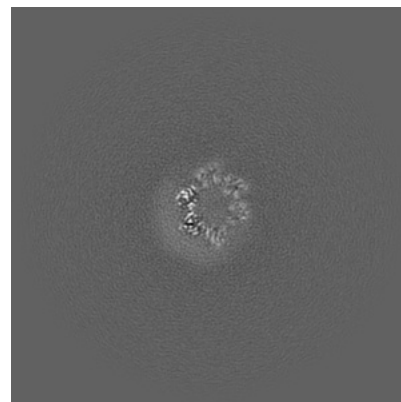
6.2.1 Primary map



X Index: 208



Y Index: 208

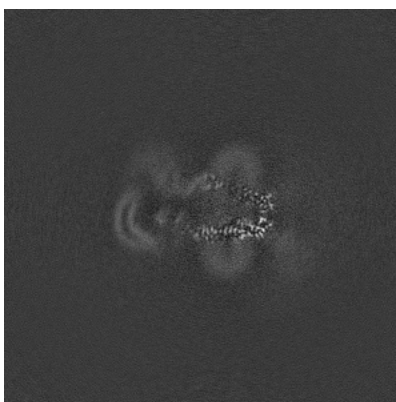


Z Index: 208

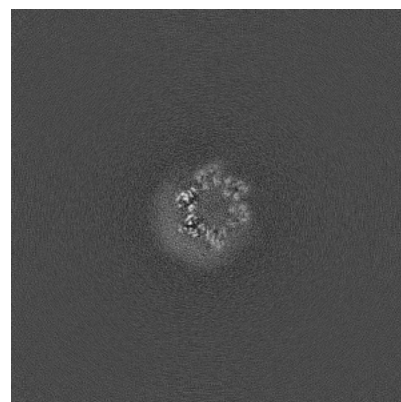
6.2.2 Raw map



X Index: 208



Y Index: 208

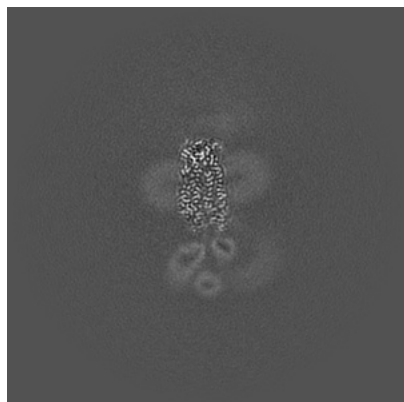


Z Index: 208

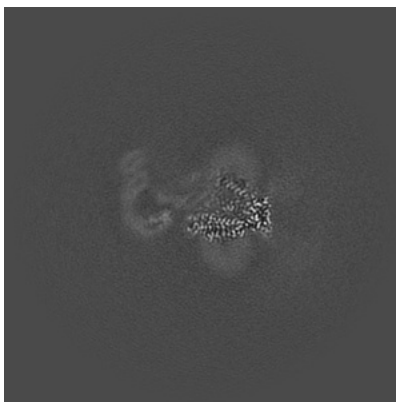
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

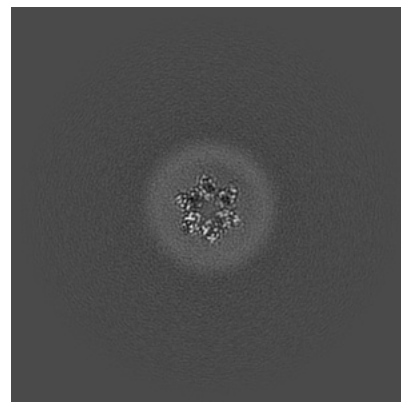
6.3.1 Primary map



X Index: 187

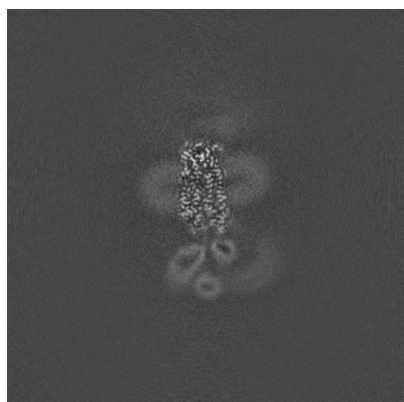


Y Index: 188

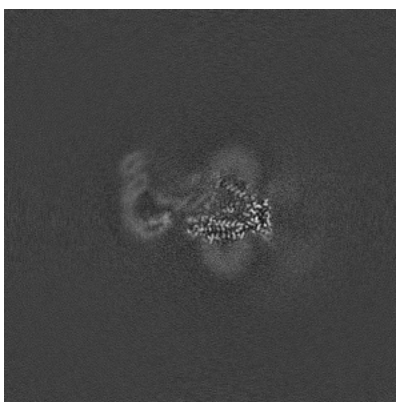


Z Index: 245

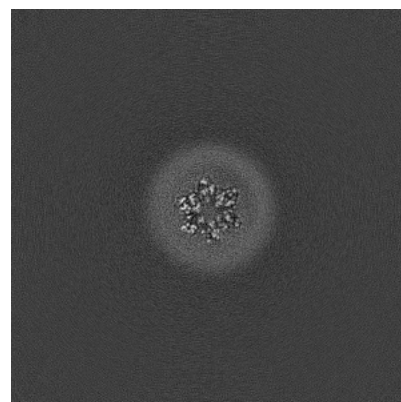
6.3.2 Raw map



X Index: 187



Y Index: 188

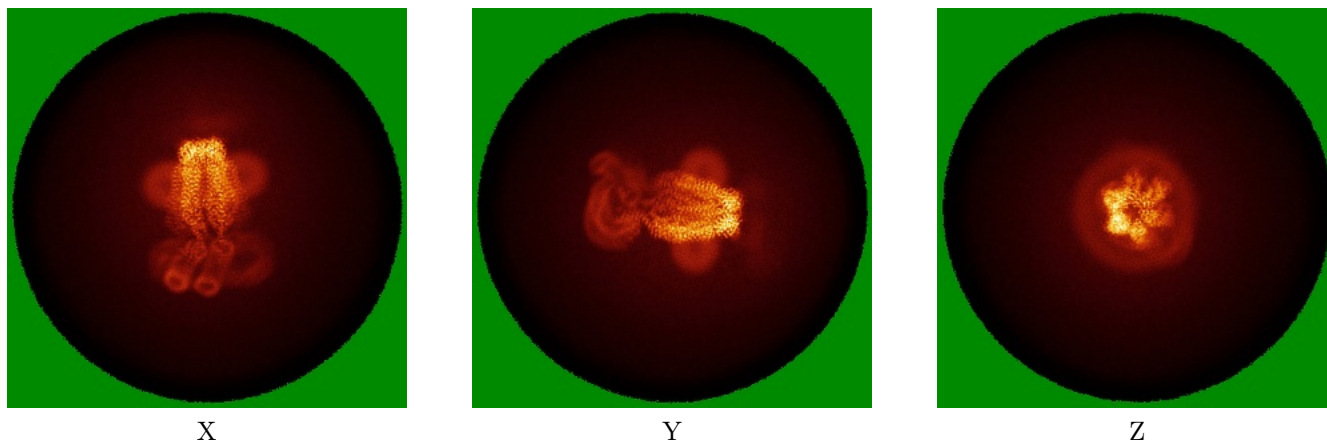


Z Index: 247

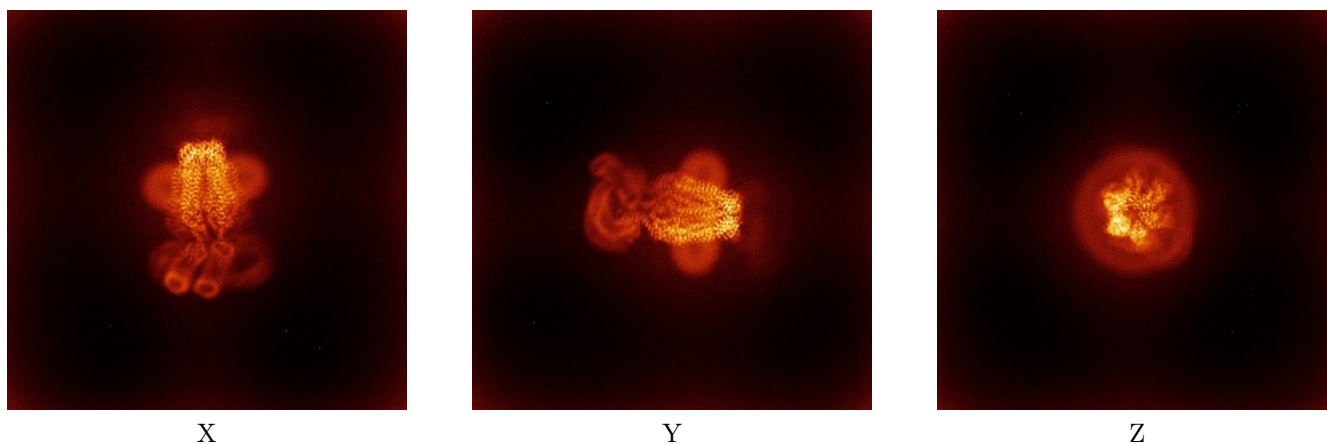
The images above show the largest variance slices of the map in three orthogonal directions.

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](#)

This section was not generated.

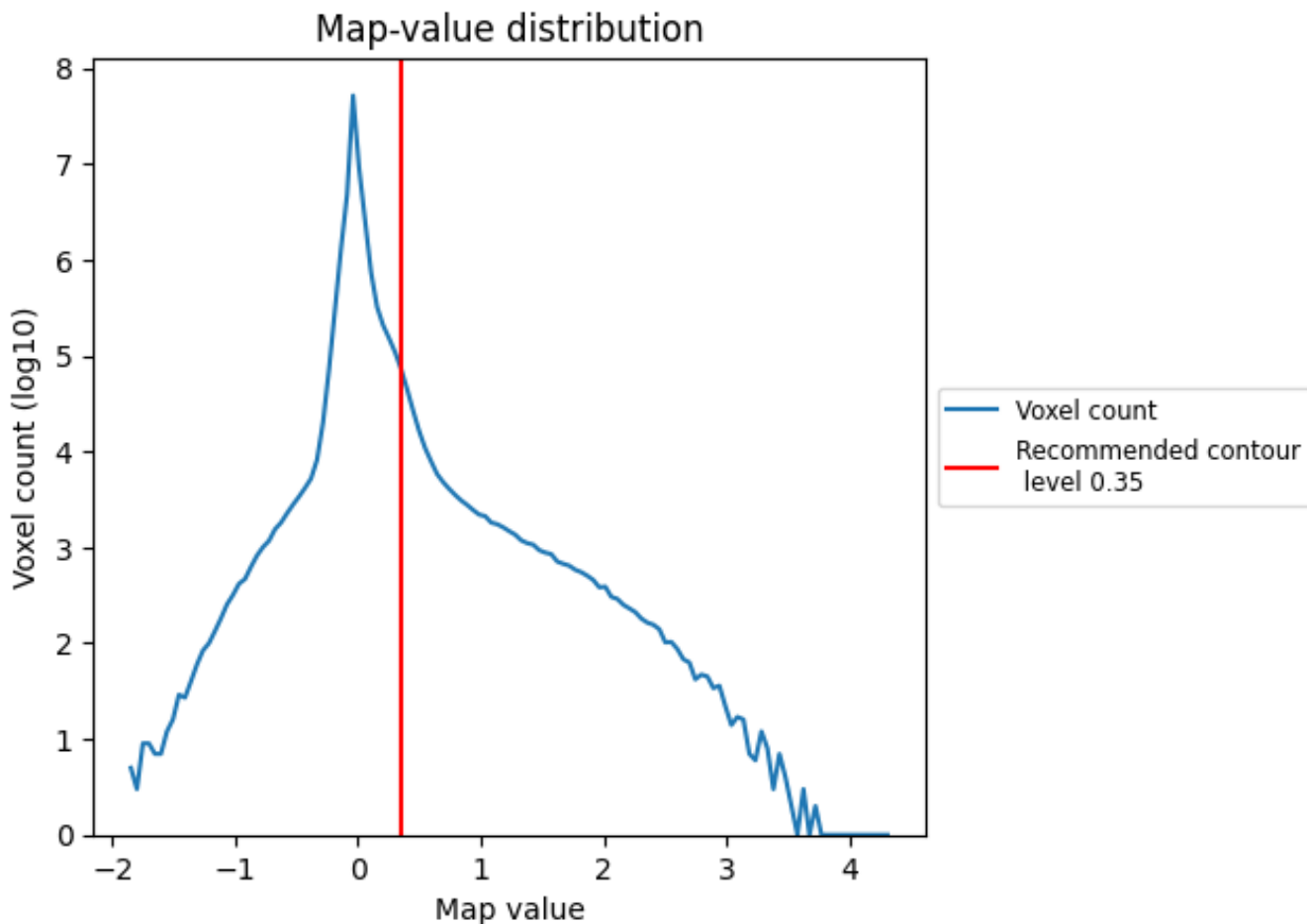
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

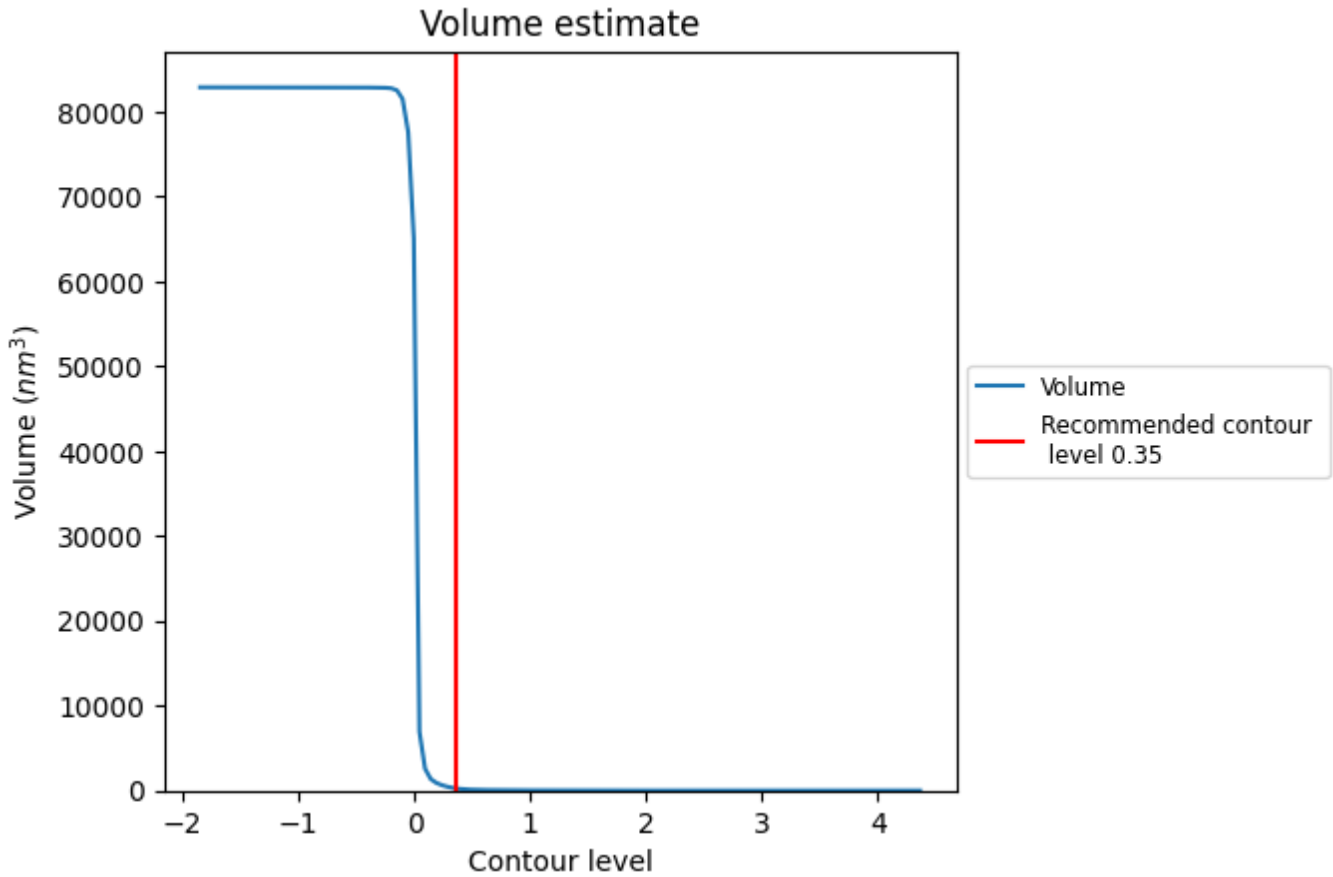
This section contains the results of statistical analysis of the map.

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.

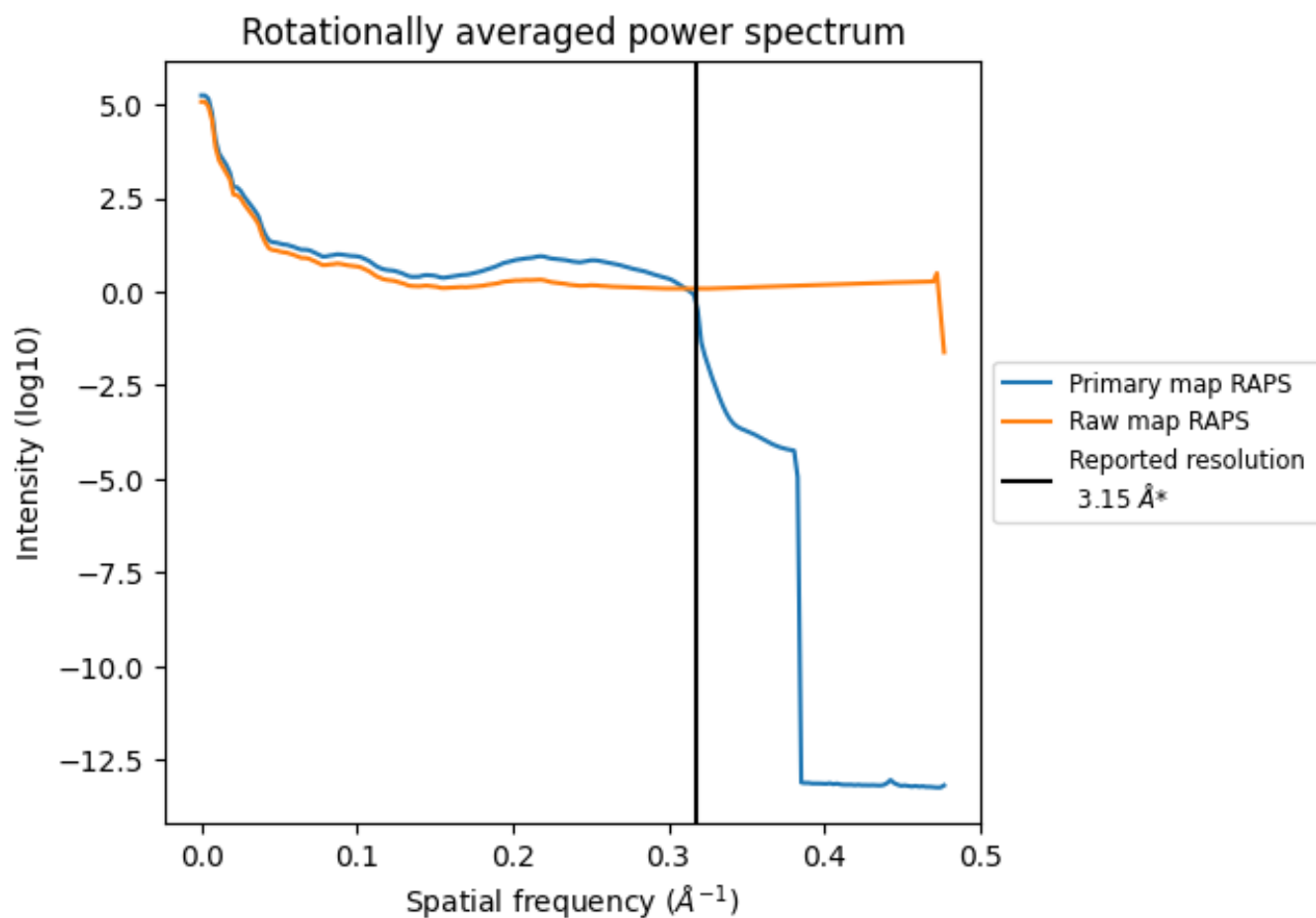
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 275 nm^3 ; this corresponds to an approximate mass of 248 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](#)

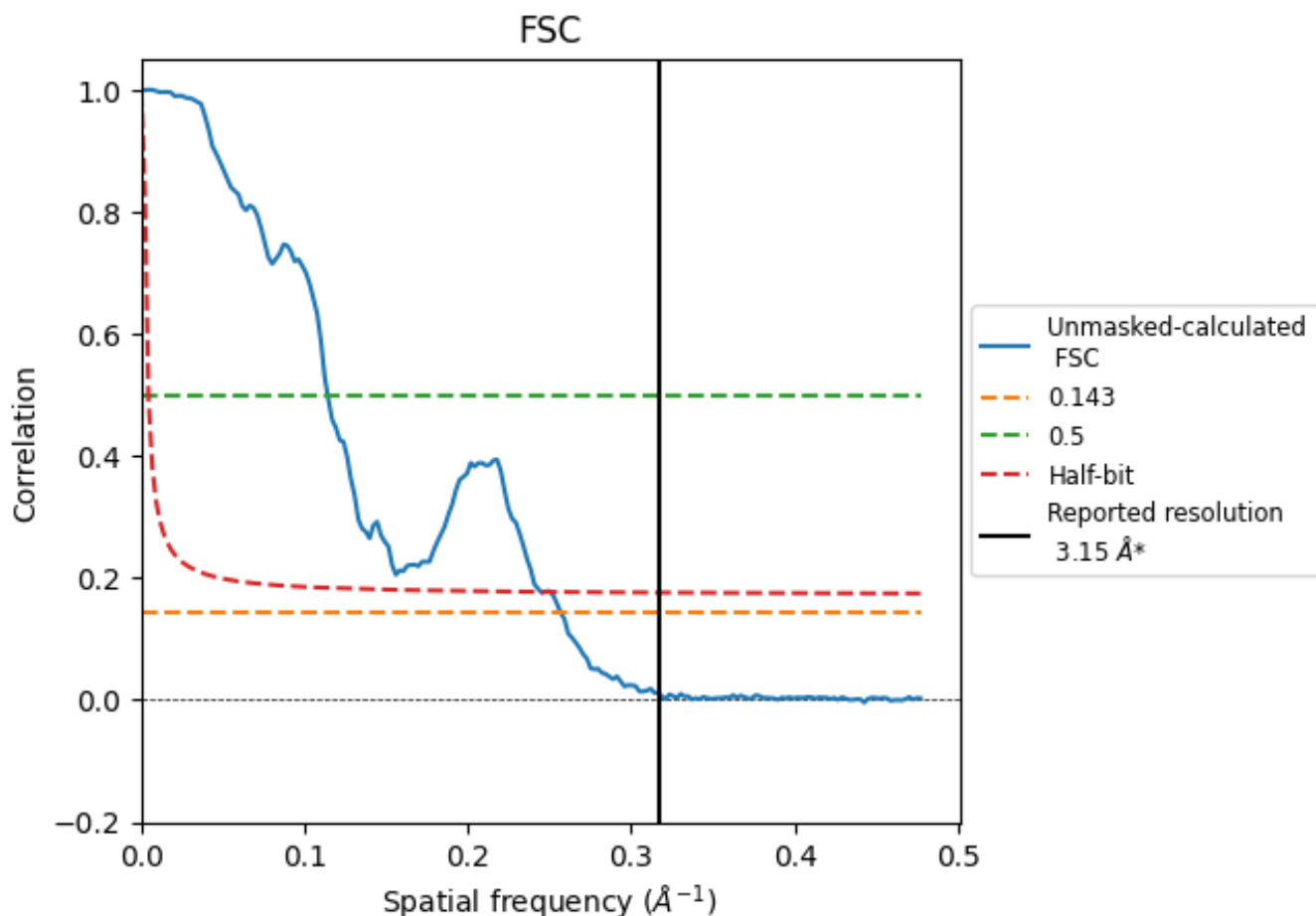


*Reported resolution corresponds to spatial frequency of 0.317 Å⁻¹

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 0.317\AA^{-1}

8.2 Resolution estimates [i](#)

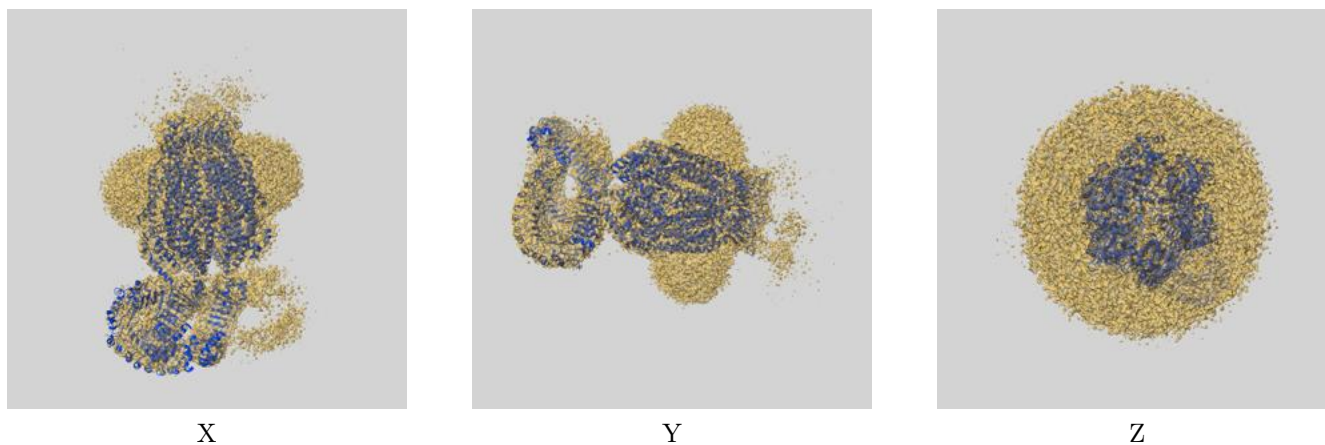
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.15	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.89	8.76	4.08

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.89 differs from the reported value 3.15 by more than 10 %

9 Map-model fit [i](#)

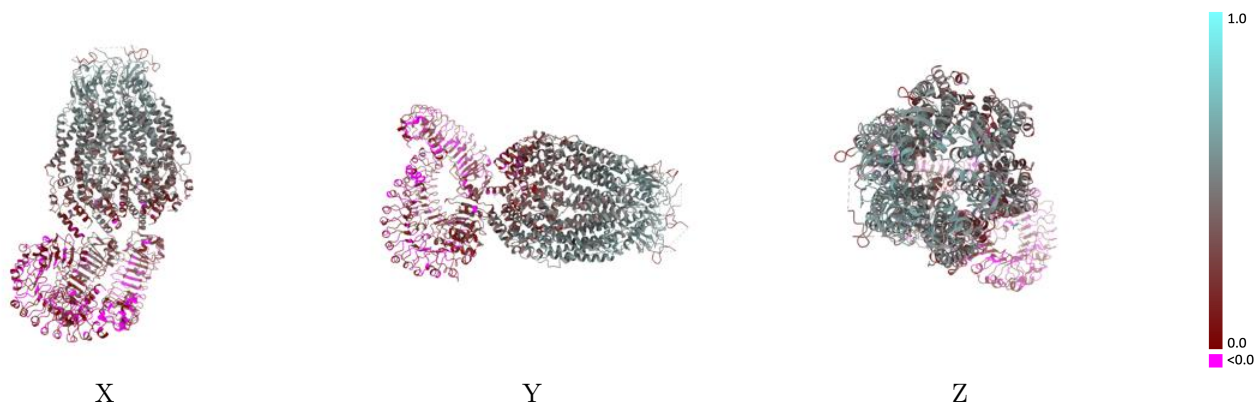
This section contains information regarding the fit between EMDB map EMD-28897 and PDB model 8F77. Per-residue inclusion information can be found in section 3 on page 9.

9.1 Map-model overlay [i](#)



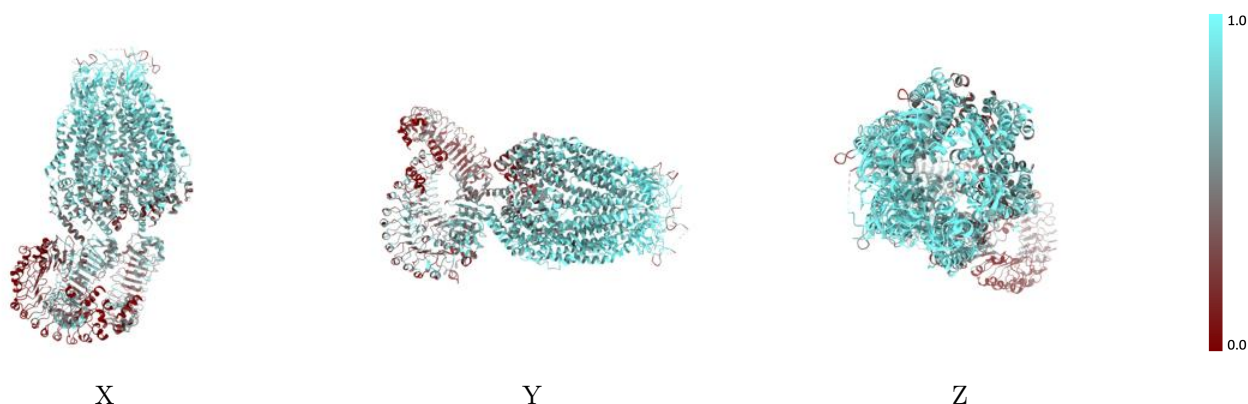
The images above show the 3D surface view of the map at the recommended contour level 0.35 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



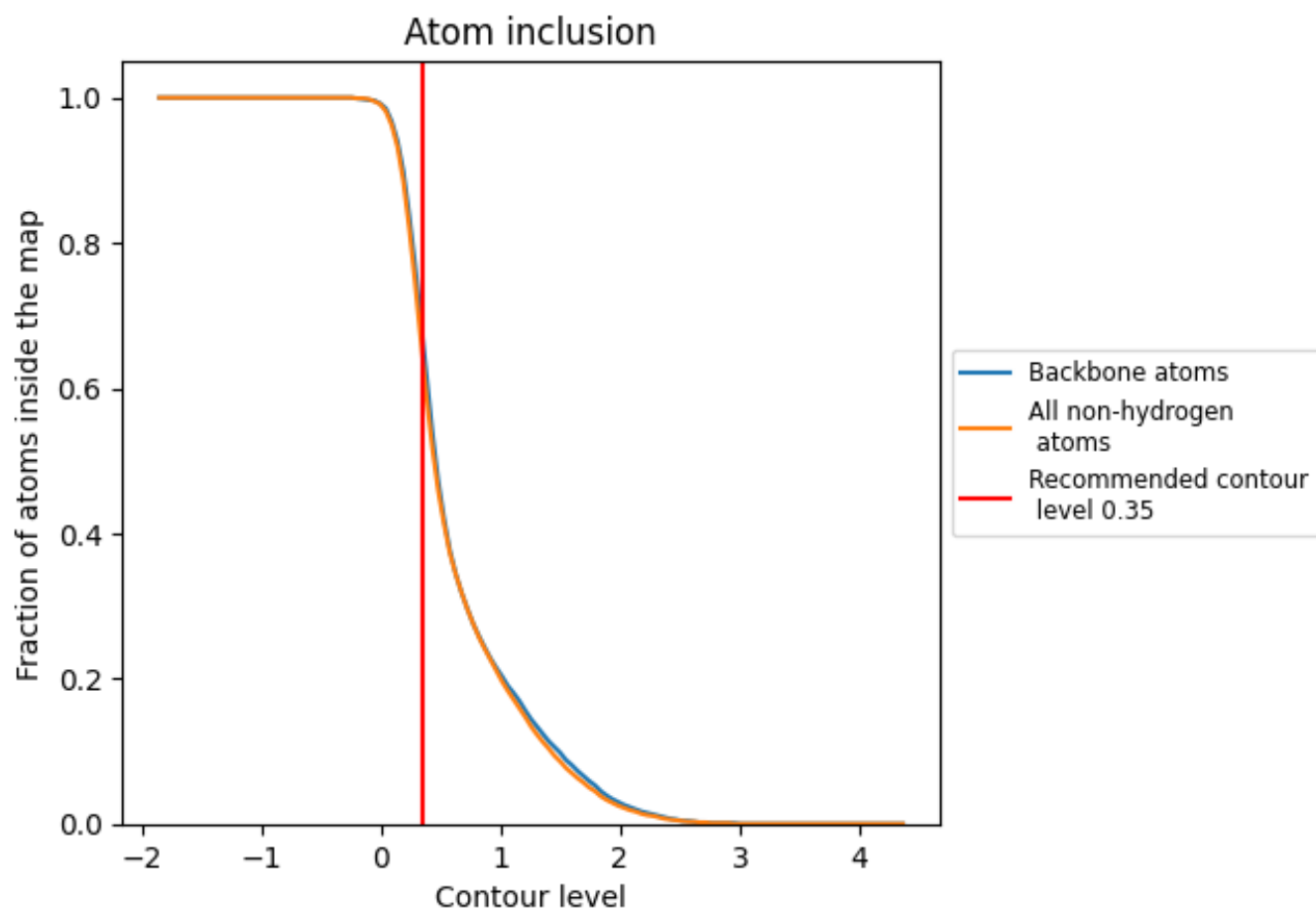
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.35).















9.4 Atom inclusion [i](#)



At the recommended contour level, 67% of all backbone atoms, 64% 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 (0.35) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6410	 0.3150
A	 0.6990	 0.3130
B	 0.6380	 0.2720
C	 0.7280	 0.4250
D	 0.7720	 0.4300
E	 0.7150	 0.4060
F	 0.4790	 0.2180

