



# wwPDB EM Validation Summary Report ⓘ

Mar 27, 2023 – 01:08 PM EDT

PDB ID : 7RJT  
EMDB ID : EMD-24490  
Title : Aplysia Slo1 with Barium  
Authors : Zhu, J.; Srivastava, S.; Cachau, R.; Holmgren, M.  
Deposited on : 2021-07-21  
Resolution : 2.93 Å (reported)  
Based on initial model : 5TJ6

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

We welcome your comments at [validation@mail.wwpdb.org](mailto: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>.

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

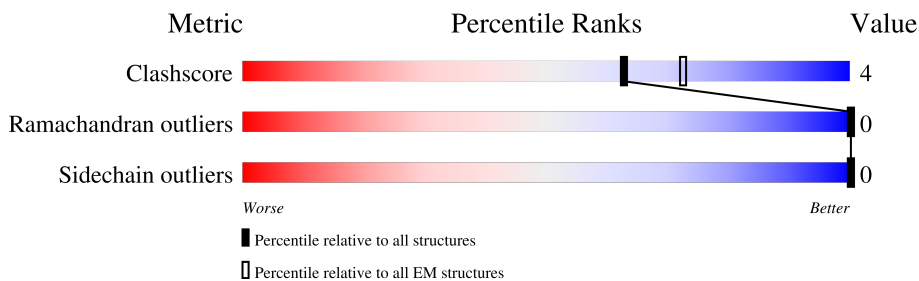
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 2.93 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 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	1079	
1	B	1079	
1	C	1079	
1	D	1079	

## 2 Entry composition i

There are 5 unique types of molecules in this entry. The entry contains 28972 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 BK channel.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	902	7188	4645	1192	1307	44	0	0
1	B	902	7188	4645	1192	1307	44	0	0
1	C	902	7188	4645	1192	1307	44	0	0
1	D	902	7188	4645	1192	1307	44	0	0

There are 40 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	2	ALA	THR	conflict	UNP Q5QJC5
A	1071	SER	-	expression tag	UNP Q5QJC5
A	1072	ASN	-	expression tag	UNP Q5QJC5
A	1073	PHE	-	expression tag	UNP Q5QJC5
A	1074	LEU	-	expression tag	UNP Q5QJC5
A	1075	GLU	-	expression tag	UNP Q5QJC5
A	1076	VAL	-	expression tag	UNP Q5QJC5
A	1077	LEU	-	expression tag	UNP Q5QJC5
A	1078	PHE	-	expression tag	UNP Q5QJC5
A	1079	GLN	-	expression tag	UNP Q5QJC5
B	2	ALA	THR	conflict	UNP Q5QJC5
B	1071	SER	-	expression tag	UNP Q5QJC5
B	1072	ASN	-	expression tag	UNP Q5QJC5
B	1073	PHE	-	expression tag	UNP Q5QJC5
B	1074	LEU	-	expression tag	UNP Q5QJC5
B	1075	GLU	-	expression tag	UNP Q5QJC5
B	1076	VAL	-	expression tag	UNP Q5QJC5
B	1077	LEU	-	expression tag	UNP Q5QJC5
B	1078	PHE	-	expression tag	UNP Q5QJC5
B	1079	GLN	-	expression tag	UNP Q5QJC5
C	2	ALA	THR	conflict	UNP Q5QJC5
C	1071	SER	-	expression tag	UNP Q5QJC5

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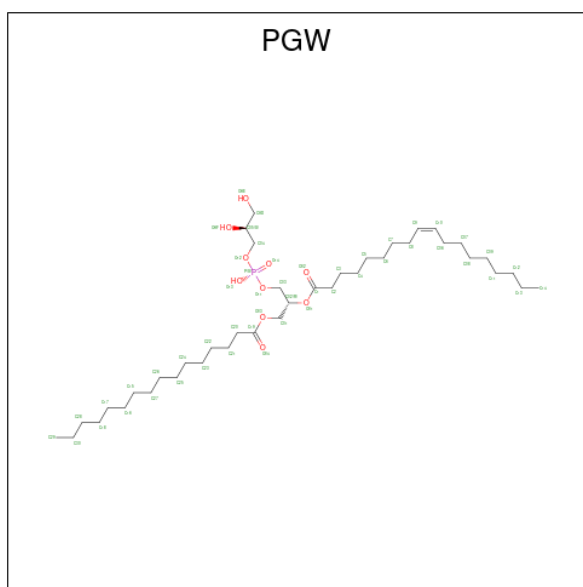
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Chain	Residue	Modelled	Actual	Comment	Reference
C	1072	ASN	-	expression tag	UNP Q5QJC5
C	1073	PHE	-	expression tag	UNP Q5QJC5
C	1074	LEU	-	expression tag	UNP Q5QJC5
C	1075	GLU	-	expression tag	UNP Q5QJC5
C	1076	VAL	-	expression tag	UNP Q5QJC5
C	1077	LEU	-	expression tag	UNP Q5QJC5
C	1078	PHE	-	expression tag	UNP Q5QJC5
C	1079	GLN	-	expression tag	UNP Q5QJC5
D	2	ALA	THR	conflict	UNP Q5QJC5
D	1071	SER	-	expression tag	UNP Q5QJC5
D	1072	ASN	-	expression tag	UNP Q5QJC5
D	1073	PHE	-	expression tag	UNP Q5QJC5
D	1074	LEU	-	expression tag	UNP Q5QJC5
D	1075	GLU	-	expression tag	UNP Q5QJC5
D	1076	VAL	-	expression tag	UNP Q5QJC5
D	1077	LEU	-	expression tag	UNP Q5QJC5
D	1078	PHE	-	expression tag	UNP Q5QJC5
D	1079	GLN	-	expression tag	UNP Q5QJC5

- Molecule 2 is BARIUM ION (three-letter code: BA) (formula: Ba) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms	AltConf
2	A	3	Total Ba 3 3	0
2	B	2	Total Ba 2 2	0
2	C	2	Total Ba 2 2	0
2	D	2	Total Ba 2 2	0

- Molecule 3 is (1R)-2-[[[S]-[[[2S]-2,3-dihydroxypropyl]oxy](hydroxy)phosphoryl]oxy]-1-[(hexadecanoyloxy)methyl]ethyl (9Z)-octadec-9-enoate (three-letter code: PGW) (formula: C<sub>40</sub>H<sub>77</sub>O<sub>10</sub>P).



Mol	Chain	Residues	Atoms	AltConf
3	A	1	Total C 9 9	0
3	A	1	Total C 9 9	0
3	A	1	Total C 9 9	0
3	A	1	Total C O P 19 12 6 1	0
3	B	1	Total C 9 9	0
3	B	1	Total C 9 9	0
3	B	1	Total C 9 9	0
3	B	1	Total C O P 19 12 6 1	0
3	C	1	Total C 9 9	0
3	C	1	Total C 9 9	0
3	C	1	Total C 9 9	0
3	C	1	Total C O P 19 12 6 1	0
3	D	1	Total C 9 9	0
3	D	1	Total C 9 9	0

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Mol	Chain	Residues	Atoms	AltConf
3	D	1	Total C 9 9	0
3	D	1	Total C O P 19 12 6 1	0

- Molecule 4 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms	AltConf
4	A	3	Total K 3 3	0

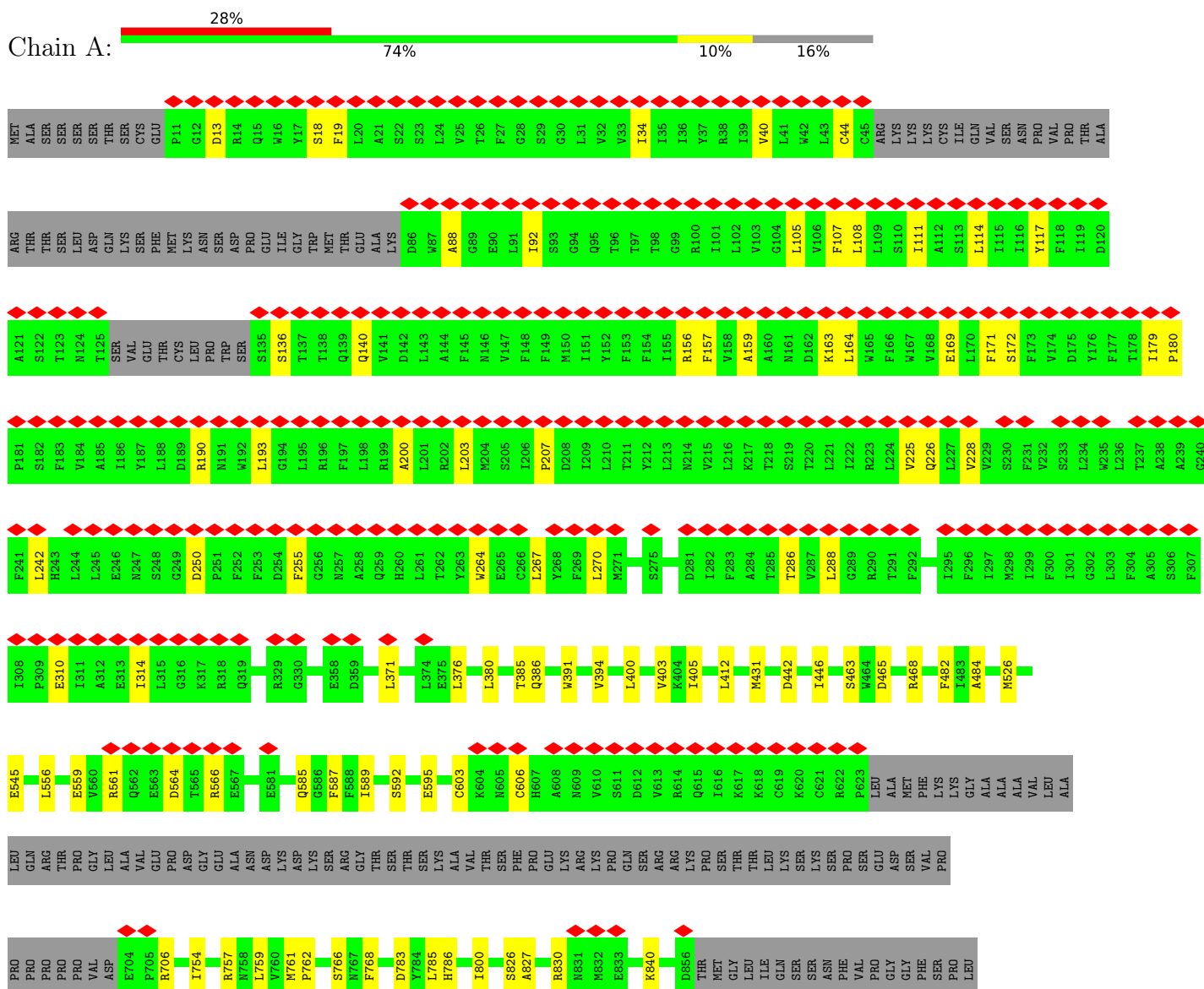
- Molecule 5 is water.

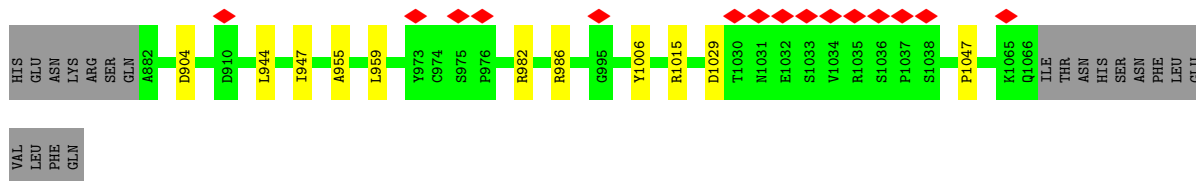
Mol	Chain	Residues	Atoms	AltConf
5	A	6	Total O 6 6	0
5	B	6	Total O 6 6	0
5	C	6	Total O 6 6	0
5	D	6	Total O 6 6	0

### 3 Residue-property plots

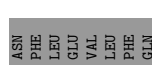
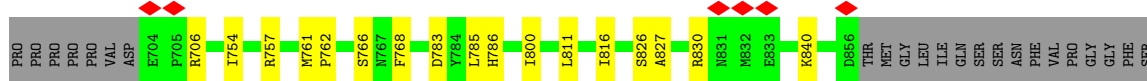
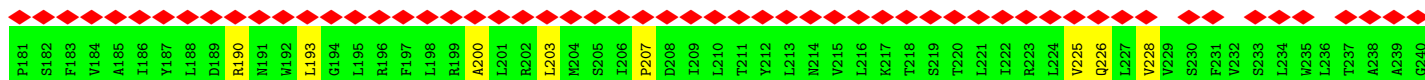
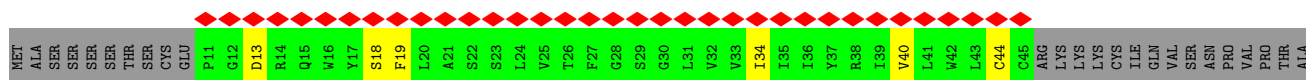
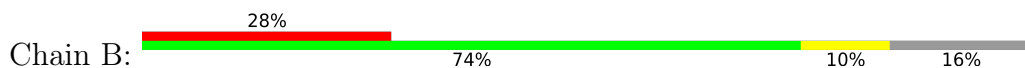
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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



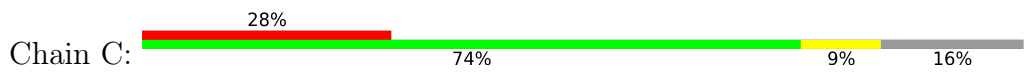


• Molecule 1: BK channel



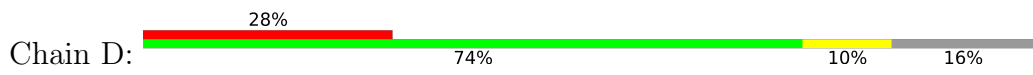
• Molecule 1: BK channel





MET	ALA	THR	SER	SER	SER	THR	SER	CYS	GLU	P11	G12	D13	R14	Q15	W16	Y17	S18	F19	L20	A21	S22	S23	L24	V25	T26	F27	G28	S29	G30	L31	V32	V33	I34	I35	I36	Y37	R38	I39	V40	L41	W42	L43	C44	C45	ARG	LYS	LYS	LYS	CYS	ILE	GLN	VAL	SER	ASN	PRO	VAL	PRO	THR	ALA	
ARG	THR	THR	SER	LEU	GLN	LYS	SER	PHE	GLU	THR	CYS	LEU	ASN	SER	ASP	PRO	GLU	ILE	GLY	TRP	MET	THR	GLU	ALA	LYS	D86	W87	A88	G89	E90	L91	I92	S93	G94	Q95	T96	T97	T98	G99	R100	I101	L102	V103	G104	L105	V106	F107	L108	L109	S110	I111	A112	C113	L114	I115	I116	Y117	F118	I119	D120
A121	S122	T123	M124	T125	SER	VAL	GLU	THR	CYS	PRO	TRP	SER	S135	S136	T137	T138	Q139	Q140	V141	D142	L143	A144	F145	N146	V147	F148	F149	M150	I151	I152	T153	F154	I155	R156	F157	V158	A159	A160	M161	D162	K163	L164	W165	F166	W167	W168	E169	L170	F171	S172	F173	V174	D175	Y176	F177	I178	I179	P180		
P181	S182	F183	V184	A185	I186	Y187	L188	D189	R190	M191	W192	L193	G194	L195	R196	F197	L198	R199	A200	L201	R202	L203	M204	S205	I206	P207	D208	I209	L210	T211	Y212	L213	M214	V215	L216	K217	T218	S219	T220	L221	R222	R223	L224	V225	Q226	L227	V228	V229	S230	F231	V232	S233	L234	W235	T236	T237	A238	G239		
F241	L242	H243	L244	L245	E246	M247	S248	G249	D250	P251	F252	F253	D254	F255	G256	M257	A258	Q259	H260	L261	T262	Y263	M264	E265	C266	L267	Y268	F269	L270	W271	S275	D281	T282	F283	A284	T285	T286	V287	L288	G289	R290	L291	F292	L295	F296	L297	W298	L299	F300	I301	G302	F304	A305	F307						
I308	P309	E310	I311	A312	E313	I314	L315	G316	K317	R318	Q319	R329	G330	E338	D339	L371	L374	E375	L376	L380	T385	Q386	K391	V394	L400	Y403	K404	L405	L412	M431	L446	S463	W464	D465	R468	F482	L483	A484	M526	E545																				
L556	E559	V560	R561	Q562	E563	D564	T565	R566	R567	E581	G585	S586	F587	F588	L589	S592	E595	C603	K604	M605	C606	H607	A608	M609	V610	S611	D612	V613	R614	Q615	I616	K617	F618	C619	K620	C621	R622	F623	LEU	ALA	MET	PHE	LYS	GLY	ALA	ALA	VAL	LEU	ALA	GLN										
ARG	THR	PRO	GLY	LEU	ALA	VAL	PRO	ASP	GLY	ALA	ASN	ASP	ASP	LYS	ARG	SER	GLY	THR	THR	THR	LYS	VAL	THR	SER	PHE	PRO	GLU	ARG	LYS	PRO	GLN	SER	ARG	LYS	THR	THR	MET	GLY	LEU	ILE	GLN	SER	ASN	PHE	VAL	PRO	PRO	PRO	PRO	PRO										
PRO	PRO	VAL	ASP	E704	P705	R706	I754	R757	N758	L759	W760	M761	P762	S766	N767	F768	D783	Y784	L785	I800	S826	A827	R830	N831	M832	E833	K840	D856	THR	MET	GLY	LEU	ILE	GLN	SER	ASN	ASN	PHE	VAL	PRO	GLY	PHE	SER	PRO	LEU	HIS	GLU													
ASN	LYS	ARG	SER	A882	D904	D910	L983	L944	I947	A955	L959	Y973	C974	S975	P976	N981	R982	R983	R984	C985	R986	G995	Y1006	R1015	D1029	T1030	M1031	E1032	S1033	V1034	R1035	S1036	P1037	S1038	P1047	K1065	Q1066	ILE	THR	ASN	HIS	SER	ASN																	
PHE	LEU	GLU	VAL	LEU	PHE	GLN																																																						

• Molecule 1: BK channel



MET	ALA	THR	SER	SER	SER	THR	SER	CYS	GLU	P11	G12	D13	R14	Q15	W16	Y17	S18	F19	L20	A21	S22	S23	L24	V25	T26	F27	G28	S29	G30	L31	V32	V33	I34	I35	I36	Y37	R38	I39	V40	L41	W42	L43	C44	C45	ARG	LYS	LYS	LYS	CYS	ILE	GLN	VAL	SER	ASN	PRO	VAL	PRO	THR	ALA	
ARG	THR	THR	SER	LEU	GLN	LYS	SER	PHE	GLU	THR	CYS	LEU	ASN	SER	ASP	PRO	GLU	ILE	GLY	TRP	MET	THR	GLU	ALA	LYS	D86	W87	A88	G89	E90	L91	I92	S93	G94	Q95	T96	T97	T98	G99	R100	I101	L102	V103	G104	L105	V106	F107	L108	L109	S110	I111	A112	C113	L114	I115	I116	Y117	F118	I119	D120

A121	A122	S122	T123	N124	T125	SER	VAL	GLU	THR	CYS	LEU	PRO	TRP	SER	S135	S136	T137	T138	Q139	Q140	V141	D142	L143	A144	F145	N146	V147	F148	F149	M150	I151	F152	F153	F154	I155	R156	F157	V158	A159	A160	N161	D162	K163	L164	W165	F166	W167	V168	E169	L170	F171	S172	F173	V174	D175	Y176	F177	T178	I179	P180
P181	S182	F183	V184	A185	I186	Y187	L188	D189	R190	N191	W192	L193	G194	L195	R196	F197	L198	R199	A200	L201	R202	L203	M204	S205	V206	P207	D208	I209	L210	T211	Y212	L213	N214	V215	L216	K217	T218	S219	T220	L221	I222	R223	L224	V225	Q226	L227	V228	V229	S230	F231	V232	S233	L234	W235	L236	T237	A238	A239	G240	
F241	L242	H243	L244	L245	E246	N247	S248	G249	D250	P251	F252	F253	D254	F255	G256	N257	A258	Q259	H260	L261	T262	Y263	W264	E265	C266	L267	Y268	F269	L270	M271	S275	D281	I282	F283	A284	T285	T286	V287	L288	G289	R290	T291	F292	I295	F296	I297	M298	I299	F300	I301	G302	L303	F304	A305	F307					
I308	P309	E310	I311	A312	E313	I314	L315	G316	K317	R318	Q319	R329	G330	L349	K355	E358	D359	L371	L374	E375	L376	L380	T385	Q386	W391	V394	L400	V403	K404	I405	L412	M431	D442	I446	S463	W464	D465	R468	F482																					
M526	E545	L556	E559	V560	Q562	E563	D564	T565	R566	E567	E581	Q585	G586	E587	F588	I589	S592	A593	E594	C603	K604	M605	C606	H607	A608	N609	V610	S611	D612	V613	R614	Q615	I616	K617	K618	C619	K620	C621	R622	P623	LEU	ALA	MET	PHE	LYS	GLY	ALA	ALA	VAL											
LEU	ALA	LEU	GLN	ARG	THR	PRO	GLY	LEU	ALA	VAL	GLU	PRO	ASP	GLY	GLU	ALA	ASN	ASP	LYS	ASP	LYS	SER	ARG	GLY	THR	SER	THR	SER	LYS	ALA	VAL	THR	SER	PHE	PRO	GLU	LYS	ARG	ARG	ARG	LYS	PRO	SER	THR	THR	THR	LEU	LYS	LYS	LYS	PRO	SER	GLU	ASP	SER					
VAL	PRO	PRO	PRO	PRO	PRO	PRO	VAL	ASP	E704	F705	I754	R757	M761	F762	S766	M767	F768	D783	Y784	L785	H786	I800	L811	I816	S826	A827	R830	M831	M832	E833	K840	D856	THR	MET	GLY	LEU	ILE	GLN	SER	SER	ASN	PHE	VAL	PRO	GLY	GLY	PHE													
SER	PRO	LEU	HIS	GLU	ASN	LYS	ARG	SER	GLN	A882	D904	D910	L944	I947	A955	L959	Y973	C974	S975	P976	R982	R986	D994	G995	Y1006	R1015	T1030	M1031	E1032	S1033	V1034	R1035	S1036	P1037	S1038	P1047	K1065	Q1066	ILE	THR	ASN	SER	HIS	ASN																
PHE	LEU	GLU	VAL	LEU	PHE	GLN																																																						

## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C4	Depositor
Number of particles used	594822	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	50	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	44.755	Depositor
Minimum map value	-19.147	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	5.0	Depositor
Map size ( $\text{\AA}$ )	292.89728, 292.89728, 292.89728	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	1.14413, 1.14413, 1.14413	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: K, BA, PGW

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	0.25	0/7358	0.46	0/9986
1	B	0.25	0/7358	0.46	0/9986
1	C	0.25	0/7358	0.46	0/9986
1	D	0.25	0/7358	0.46	0/9986
All	All	0.25	0/29432	0.46	0/39944

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	7188	0	7141	65	0
1	B	7188	0	7141	66	0
1	C	7188	0	7141	63	0
1	D	7188	0	7141	66	0
2	A	3	0	0	0	0
2	B	2	0	0	0	0
2	C	2	0	0	0	0
2	D	2	0	0	0	0
3	A	46	0	57	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	46	0	57	2	0
3	C	46	0	57	1	0
3	D	46	0	57	2	0
4	A	3	0	0	0	0
5	A	6	0	0	0	0
5	B	6	0	0	0	0
5	C	6	0	0	0	0
5	D	6	0	0	0	0
All	All	28972	0	28792	256	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 4.

The worst 5 of 256 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:757:ARG:NH1	1:C:761:MET:SD	2.61	0.73
1:B:757:ARG:NH1	1:B:761:MET:SD	2.61	0.73
1:A:757:ARG:NH1	1:A:761:MET:SD	2.61	0.73
1:D:757:ARG:NH1	1:D:761:MET:SD	2.61	0.72
1:D:156:ARG:HH12	1:D:171:PHE:HD2	1.42	0.68

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	892/1079 (83%)	869 (97%)	23 (3%)	0	100 100
1	B	892/1079 (83%)	869 (97%)	23 (3%)	0	100 100
1	C	892/1079 (83%)	869 (97%)	23 (3%)	0	100 100

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	D	892/1079 (83%)	869 (97%)	23 (3%)	0	100	100
All	All	3568/4316 (83%)	3476 (97%)	92 (3%)	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	787/945 (83%)	787 (100%)	0	100	100
1	B	787/945 (83%)	787 (100%)	0	100	100
1	C	787/945 (83%)	787 (100%)	0	100	100
1	D	787/945 (83%)	787 (100%)	0	100	100
All	All	3148/3780 (83%)	3148 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 16 such sidechains are listed below:

Mol	Chain	Res	Type
1	D	894	ASN
1	D	429	ASN
1	C	398	ASN
1	D	398	ASN
1	B	897	ASN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 28 ligands modelled in this entry, 12 are monoatomic - leaving 16 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
3	PGW	A	1105	-	8,8,50	0.70	0	7,7,56	0.38	0
3	PGW	A	1104	-	8,8,50	0.69	0	7,7,56	0.38	0
3	PGW	B	1103	-	8,8,50	1.49	1 (12%)	7,7,56	0.91	0
3	PGW	B	1104	-	8,8,50	0.69	0	7,7,56	0.38	0
3	PGW	B	1105	-	8,8,50	0.70	0	7,7,56	0.38	0
3	PGW	B	1106	-	18,18,50	2.27	3 (16%)	21,21,56	1.47	1 (4%)
3	PGW	C	1106	-	18,18,50	2.27	3 (16%)	21,21,56	1.47	1 (4%)
3	PGW	C	1105	-	8,8,50	0.70	0	7,7,56	0.39	0
3	PGW	D	1105	-	8,8,50	0.70	0	7,7,56	0.38	0
3	PGW	A	1106	-	18,18,50	2.26	3 (16%)	21,21,56	1.47	1 (4%)
3	PGW	C	1104	-	8,8,50	0.69	0	7,7,56	0.38	0
3	PGW	C	1103	-	8,8,50	1.49	1 (12%)	7,7,56	0.91	0
3	PGW	D	1106	-	18,18,50	2.27	3 (16%)	21,21,56	1.47	1 (4%)
3	PGW	D	1103	-	8,8,50	1.49	1 (12%)	7,7,56	0.91	0
3	PGW	D	1104	-	8,8,50	0.69	0	7,7,56	0.39	0
3	PGW	A	1103	-	8,8,50	1.49	1 (12%)	7,7,56	0.91	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	PGW	A	1105	-	-	6/6/6/55	-
3	PGW	A	1104	-	-	6/6/6/55	-
3	PGW	B	1103	-	-	5/6/6/55	-
3	PGW	B	1104	-	-	6/6/6/55	-
3	PGW	B	1105	-	-	6/6/6/55	-
3	PGW	B	1106	-	-	14/17/17/55	-
3	PGW	C	1106	-	-	14/17/17/55	-
3	PGW	C	1105	-	-	6/6/6/55	-
3	PGW	D	1105	-	-	6/6/6/55	-
3	PGW	A	1106	-	-	14/17/17/55	-
3	PGW	C	1104	-	-	6/6/6/55	-
3	PGW	C	1103	-	-	5/6/6/55	-
3	PGW	D	1106	-	-	14/17/17/55	-
3	PGW	D	1103	-	-	5/6/6/55	-
3	PGW	D	1104	-	-	6/6/6/55	-
3	PGW	A	1103	-	-	5/6/6/55	-

The worst 5 of 16 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	1106	PGW	P-O14	7.12	1.73	1.50
3	D	1106	PGW	P-O14	7.12	1.73	1.50
3	A	1106	PGW	P-O14	7.12	1.73	1.50
3	B	1106	PGW	P-O14	7.12	1.73	1.50
3	C	1106	PGW	P-O11	4.46	1.74	1.60

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	1106	PGW	O13-P-O12	5.05	126.94	107.64
3	B	1106	PGW	O13-P-O12	5.05	126.94	107.64
3	D	1106	PGW	O13-P-O12	5.03	126.88	107.64
3	A	1106	PGW	O13-P-O12	5.03	126.88	107.64

There are no chirality outliers.

5 of 124 torsion outliers are listed below:



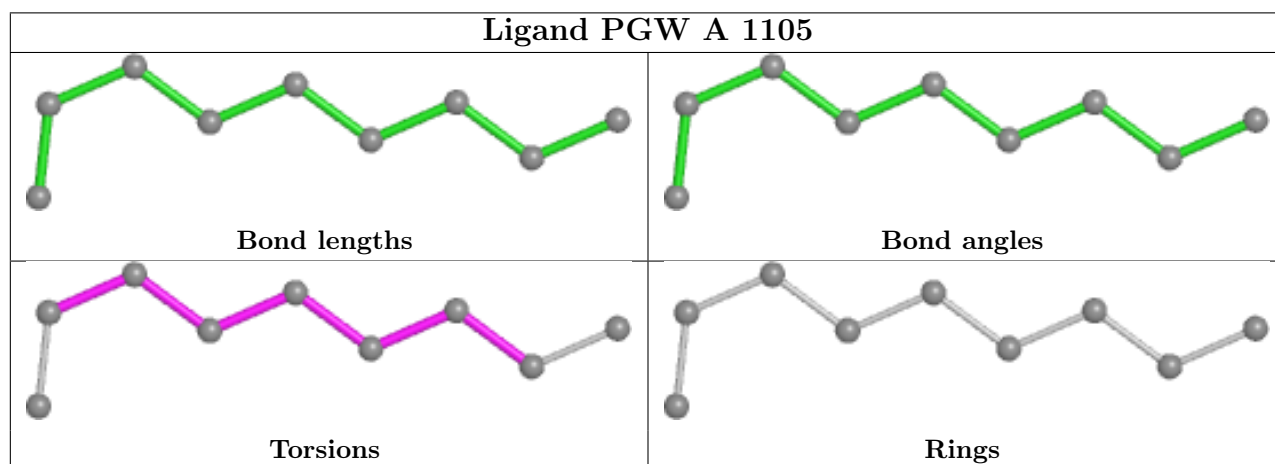
Mol	Chain	Res	Type	Atoms
3	A	1106	PGW	C03-O11-P-O13
3	B	1106	PGW	C03-O11-P-O13
3	C	1106	PGW	C03-O11-P-O13
3	D	1106	PGW	C03-O11-P-O13
3	A	1104	PGW	C5-C6-C7-C8

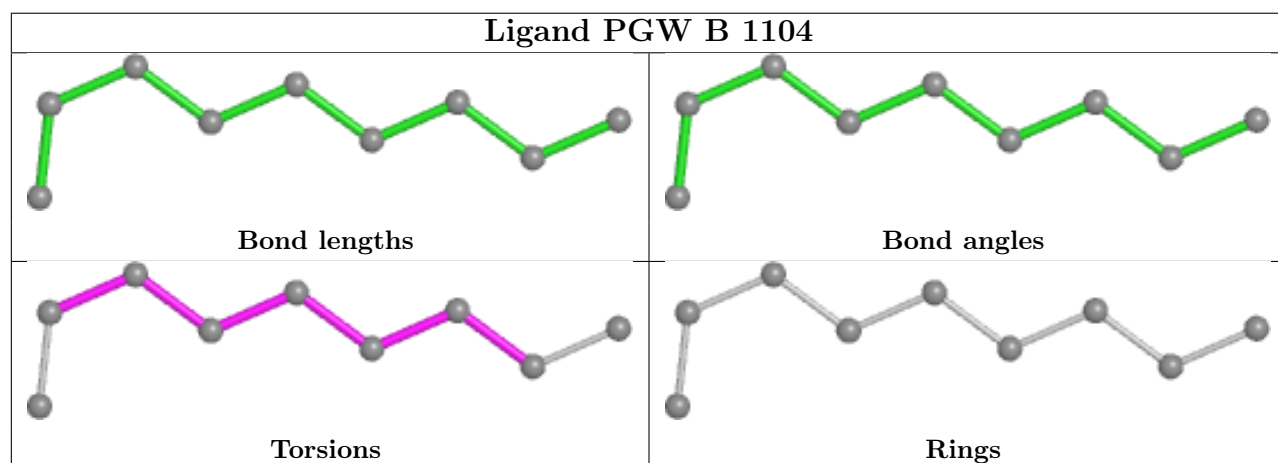
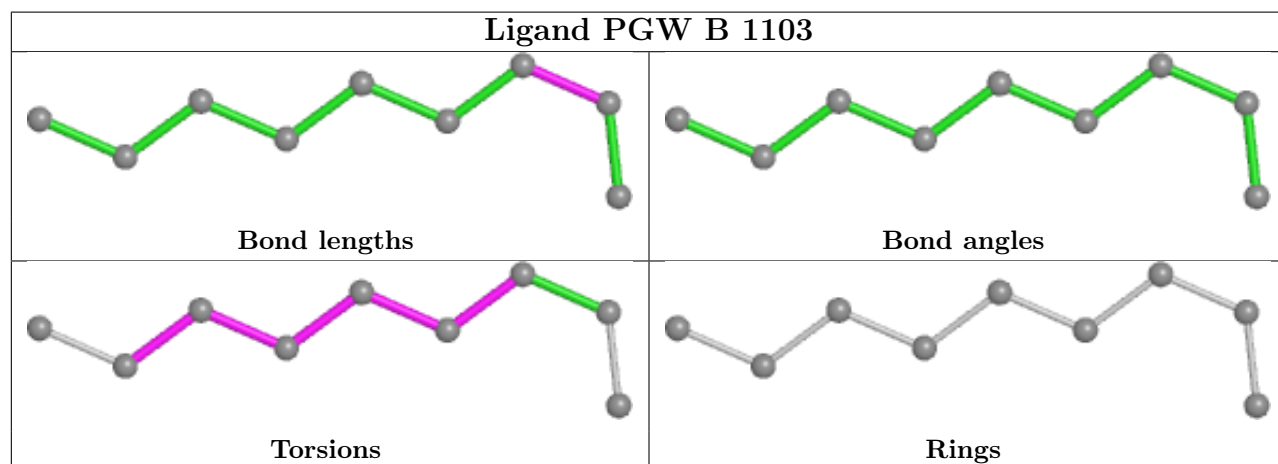
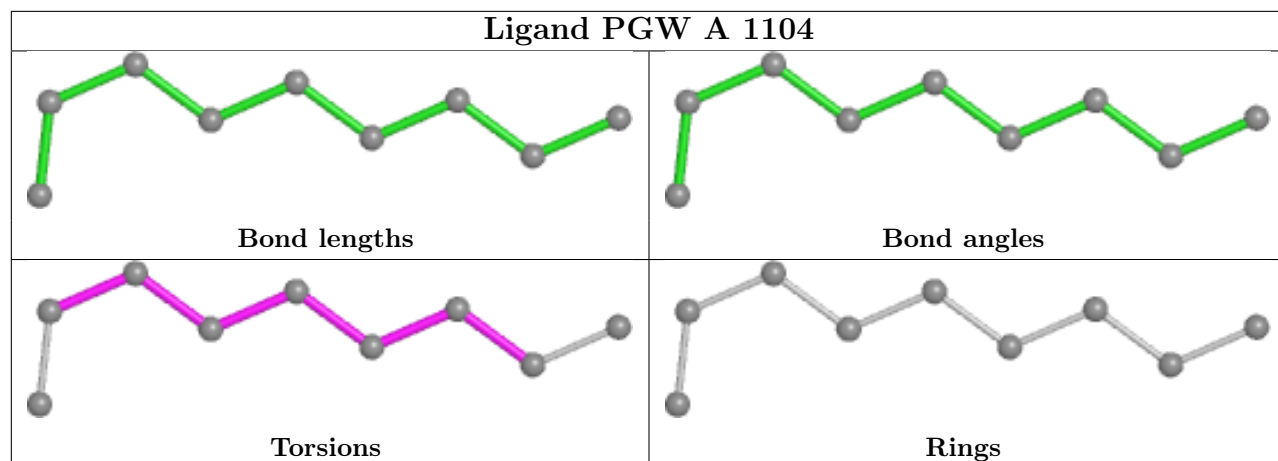
There are no ring outliers.

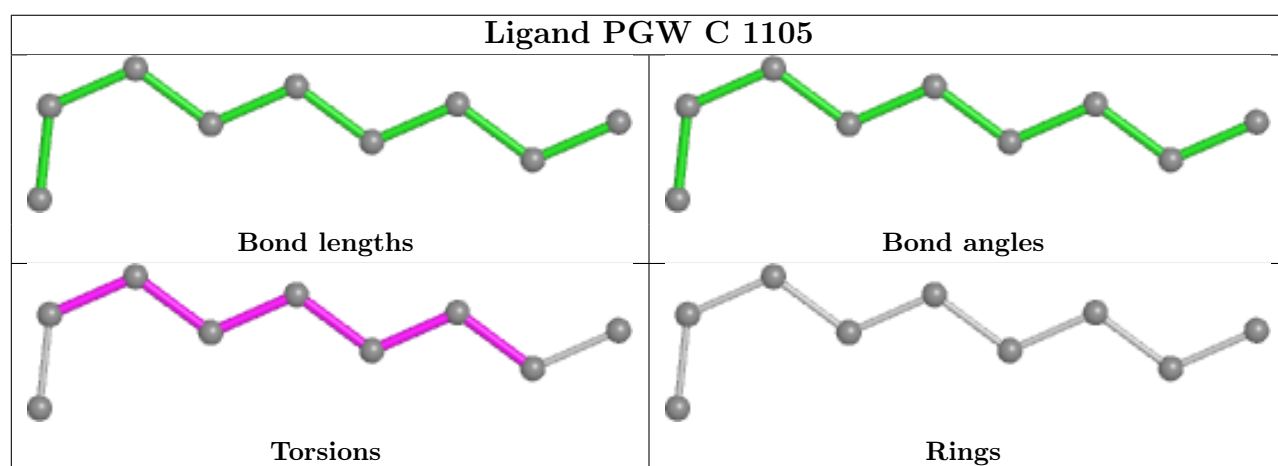
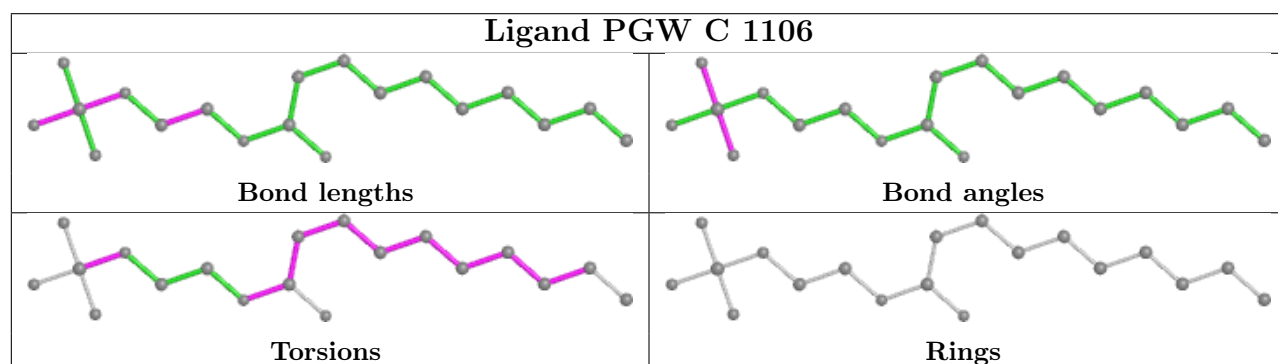
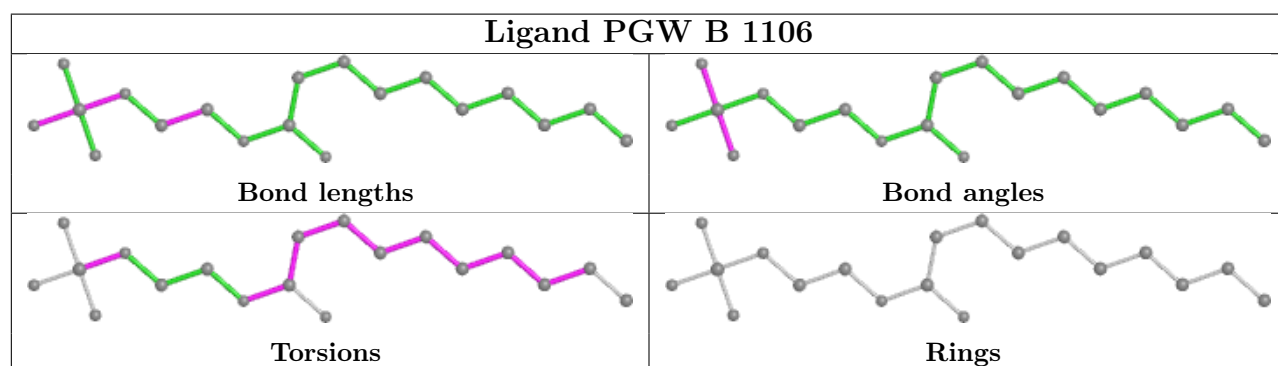
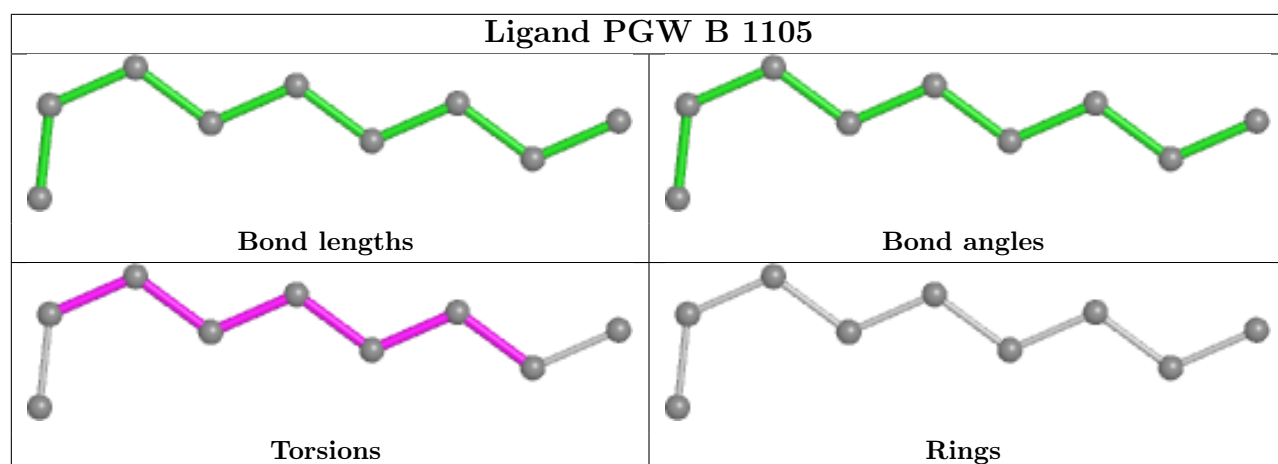
4 monomers are involved in 7 short contacts:

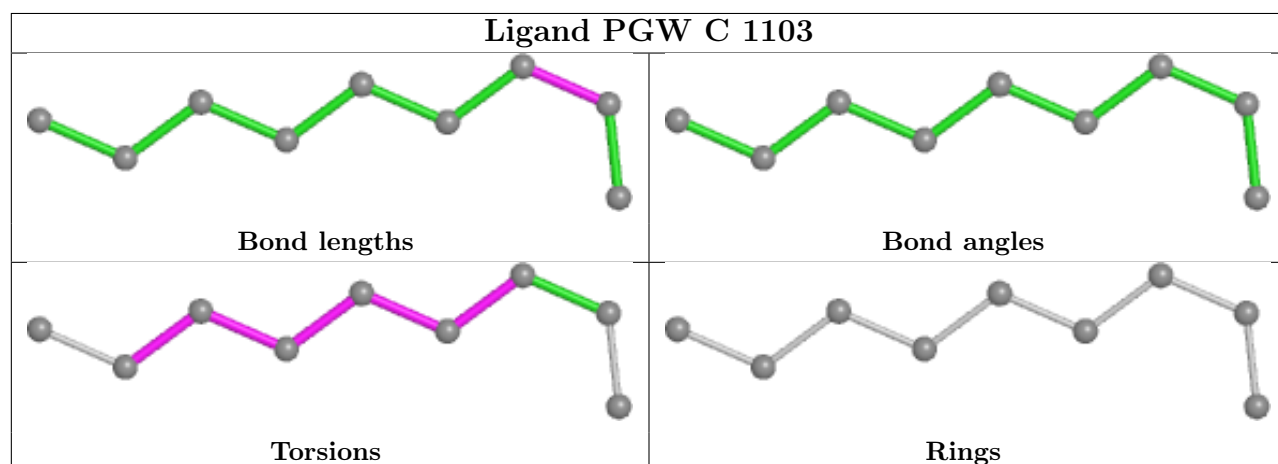
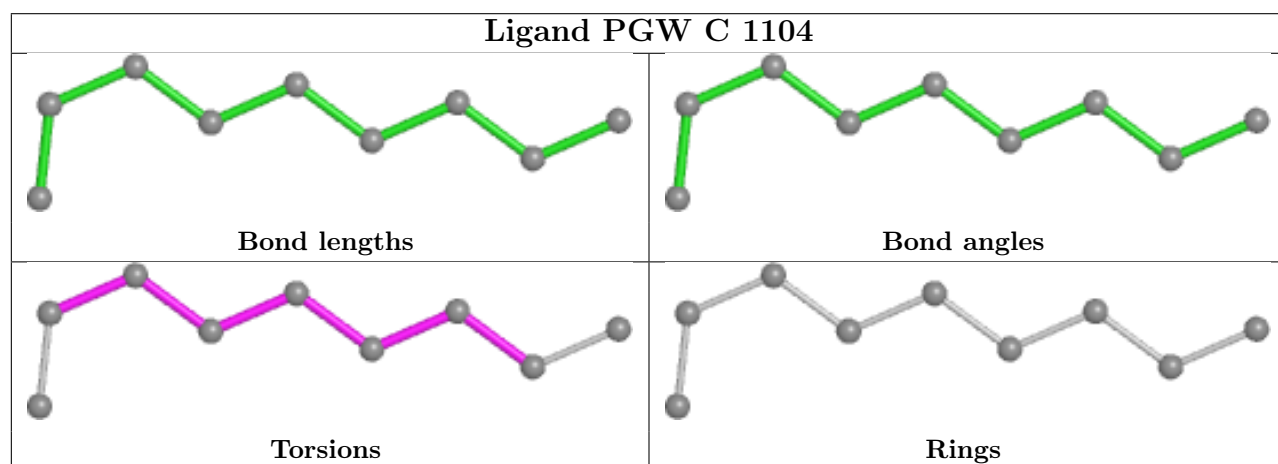
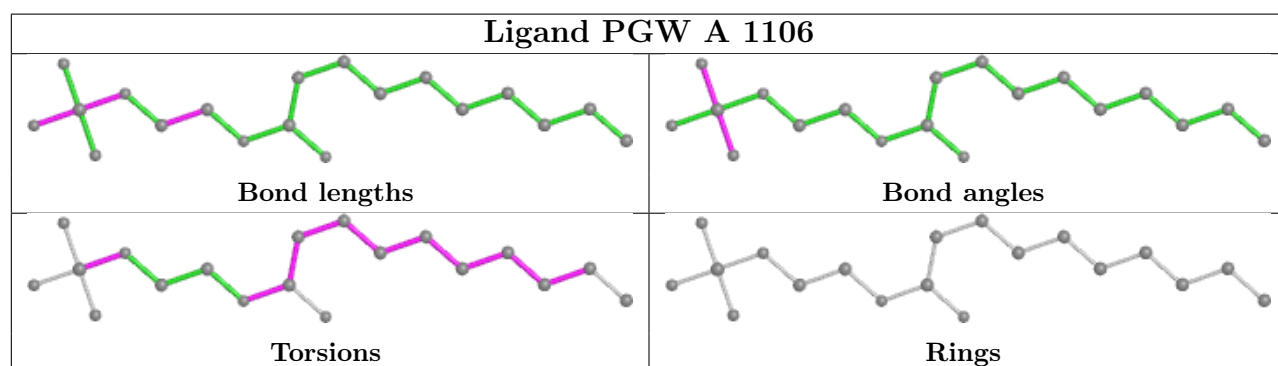
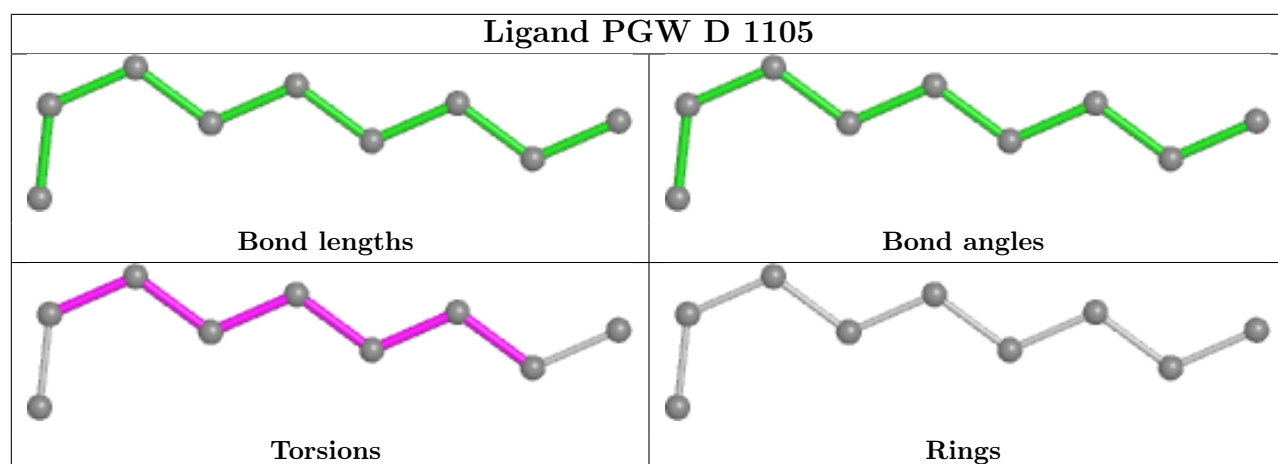
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	1106	PGW	2	0
3	C	1106	PGW	1	0
3	A	1106	PGW	2	0
3	D	1106	PGW	2	0

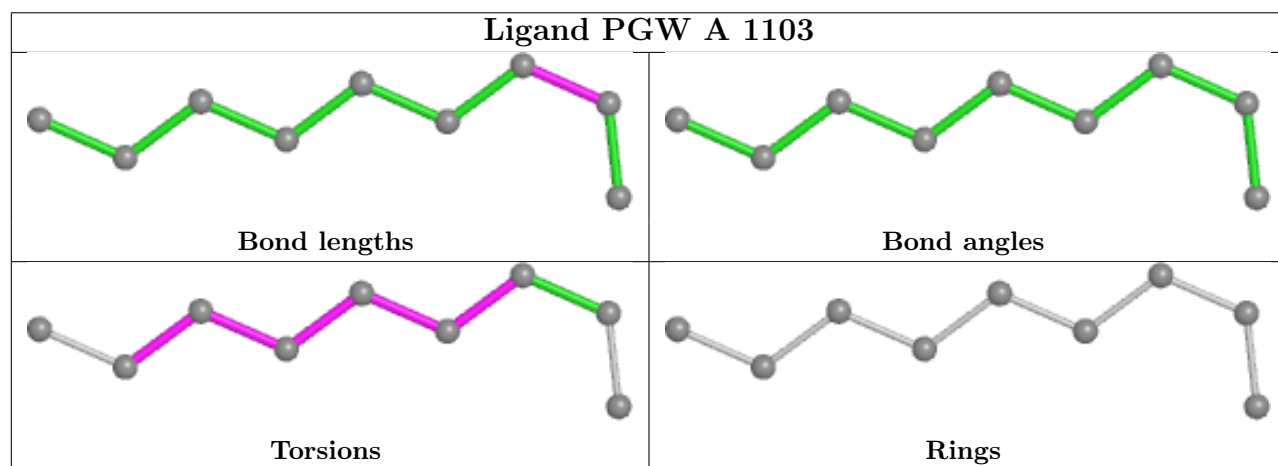
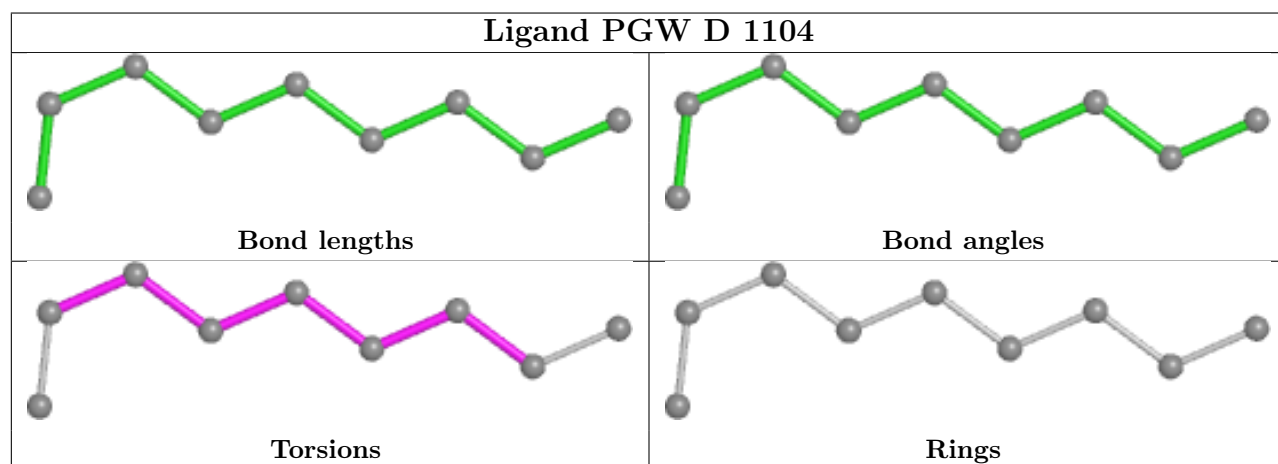
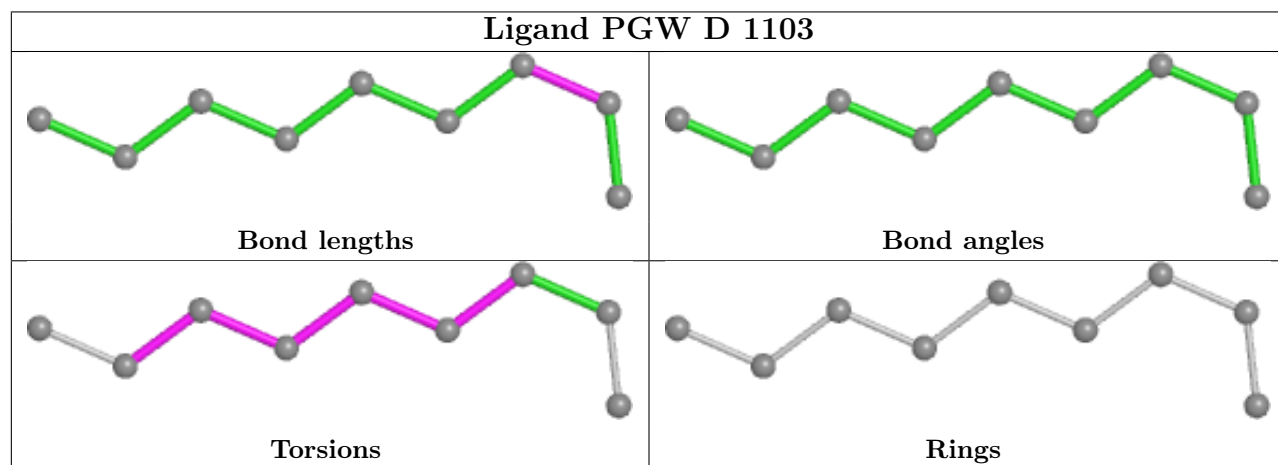
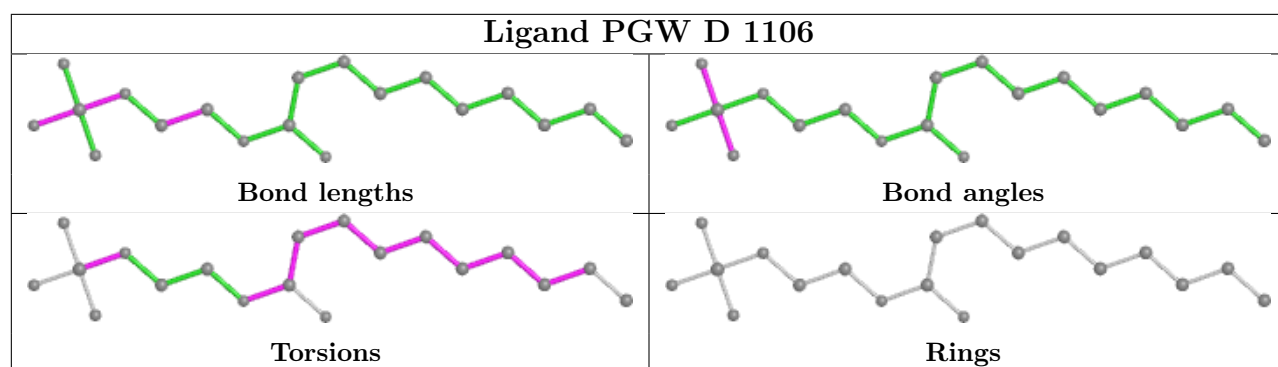
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. 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.

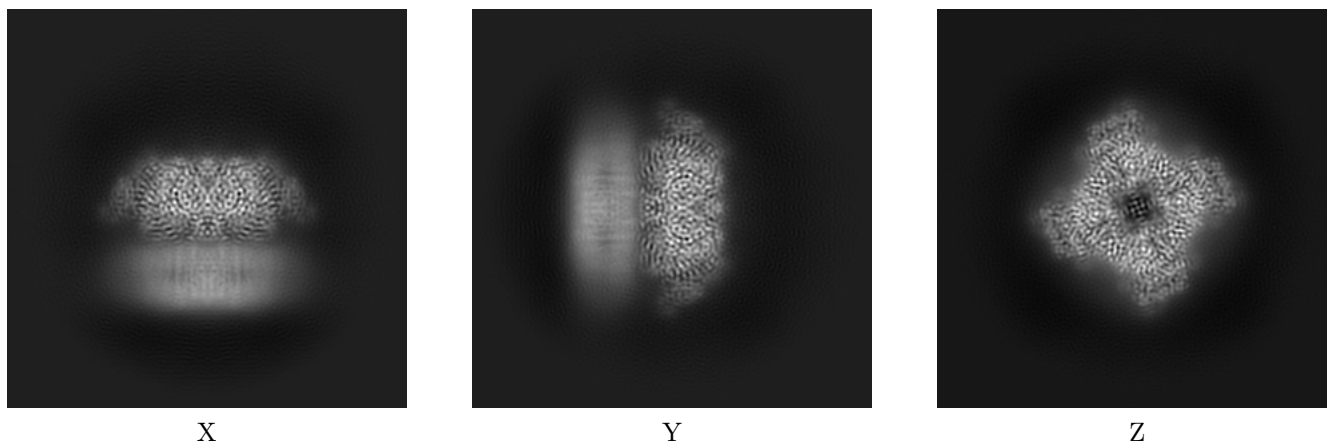
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-24490. These allow visual inspection of the internal detail of the map and identification of artifacts.

No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

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

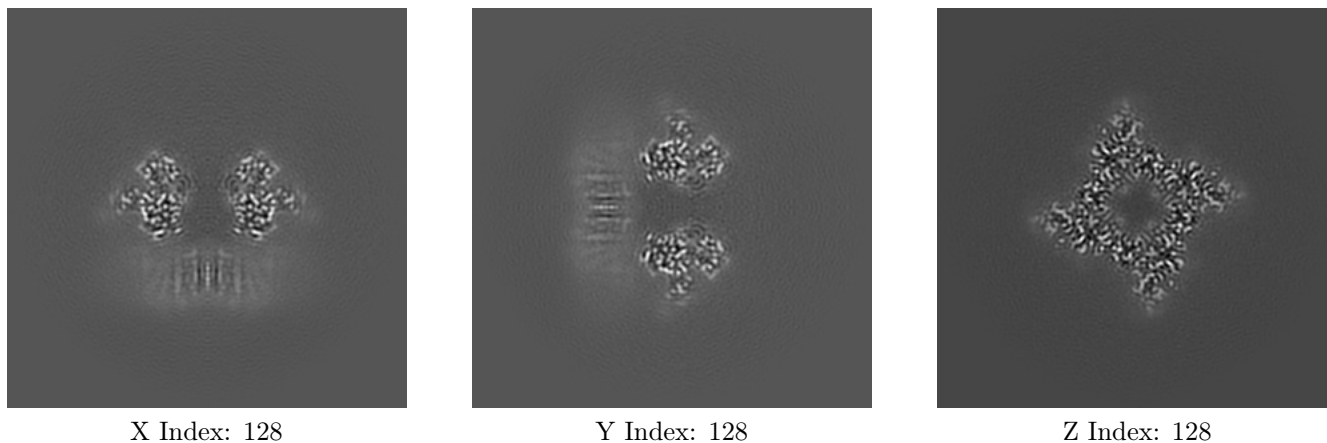
#### 6.1.1 Primary map



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

### 6.2 Central slices [i](#)

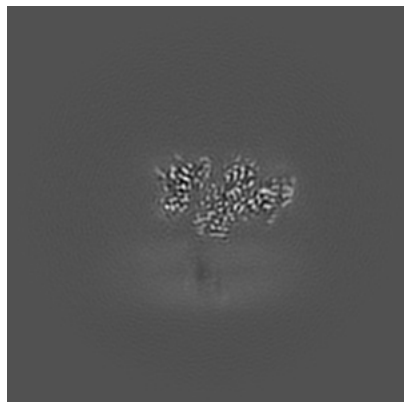
#### 6.2.1 Primary map



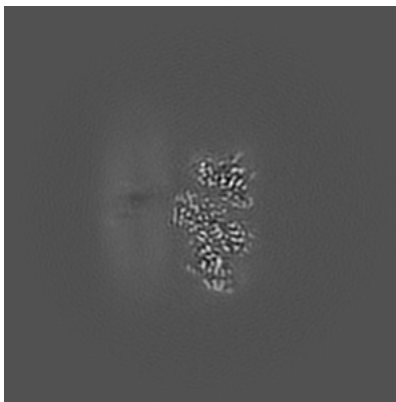
The images above show central slices of the map in three orthogonal directions.

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

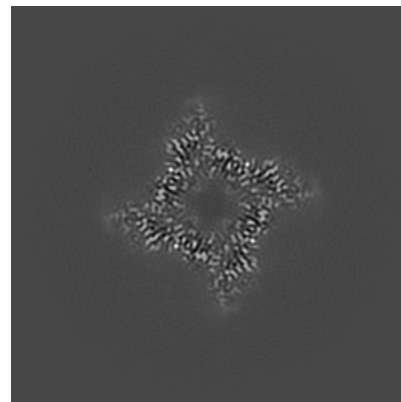
### 6.3.1 Primary map



X Index: 106



Y Index: 106

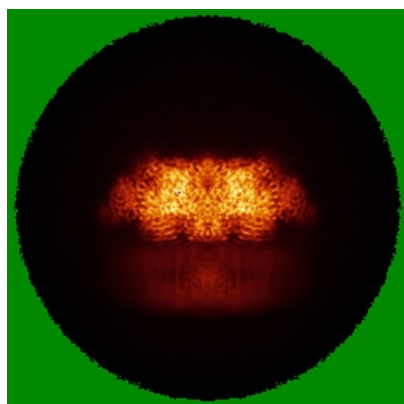


Z Index: 127

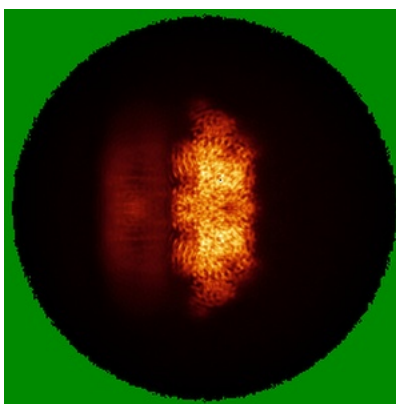
The images above show the largest variance slices of the map in three orthogonal directions.

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

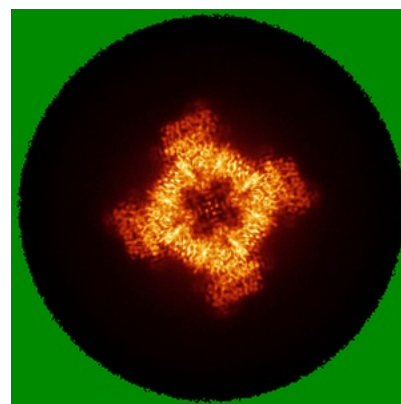
### 6.4.1 Primary map



X



Y



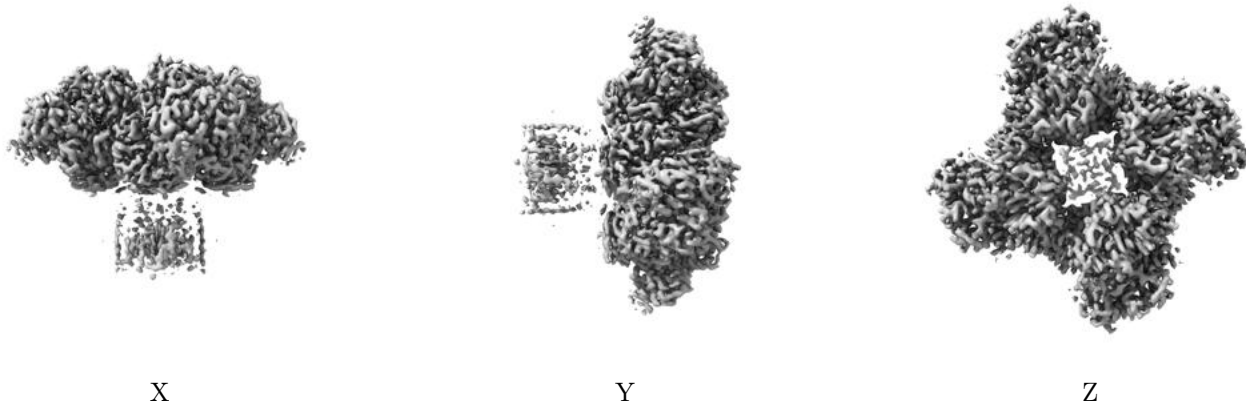
Z

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 5.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

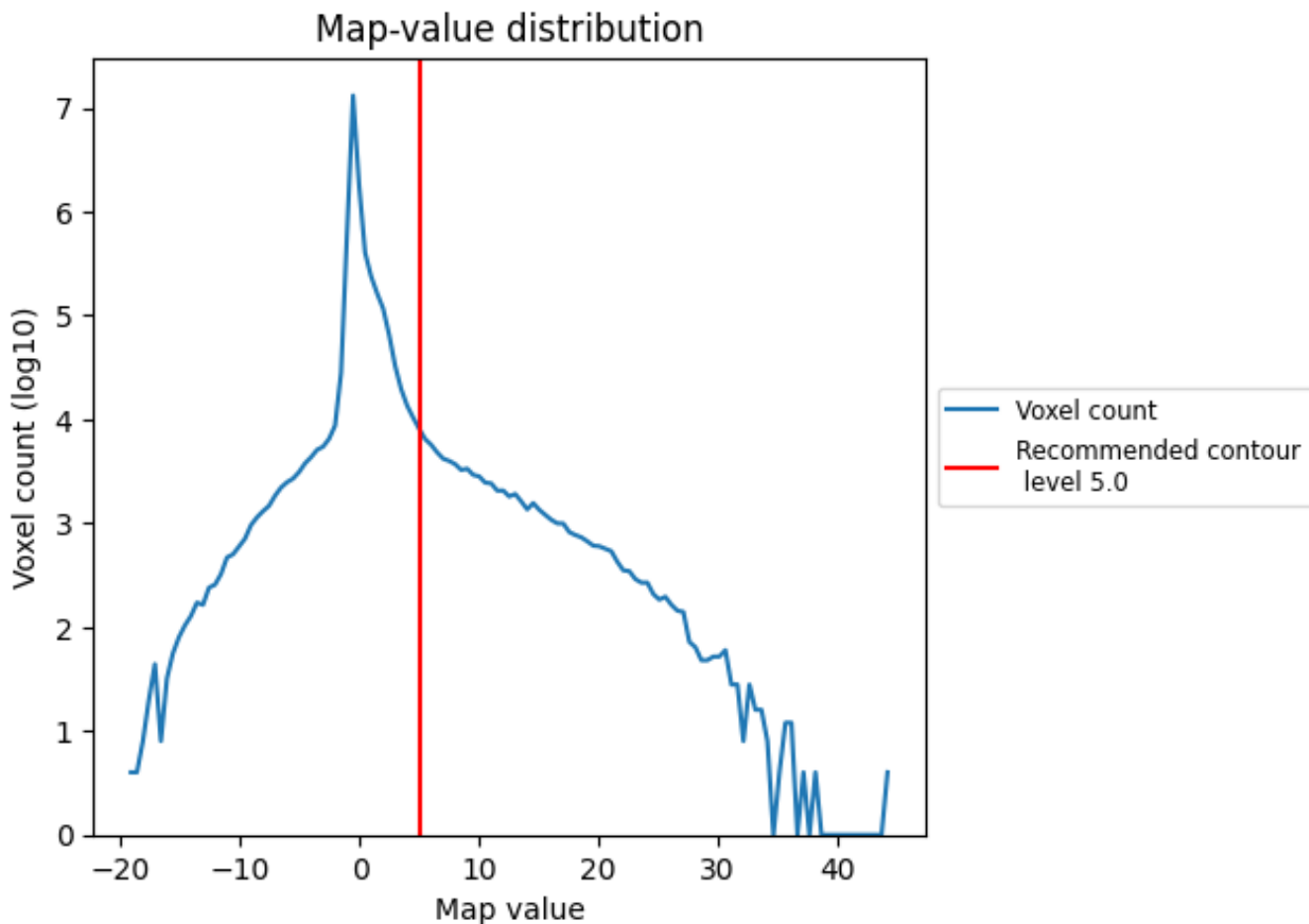
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

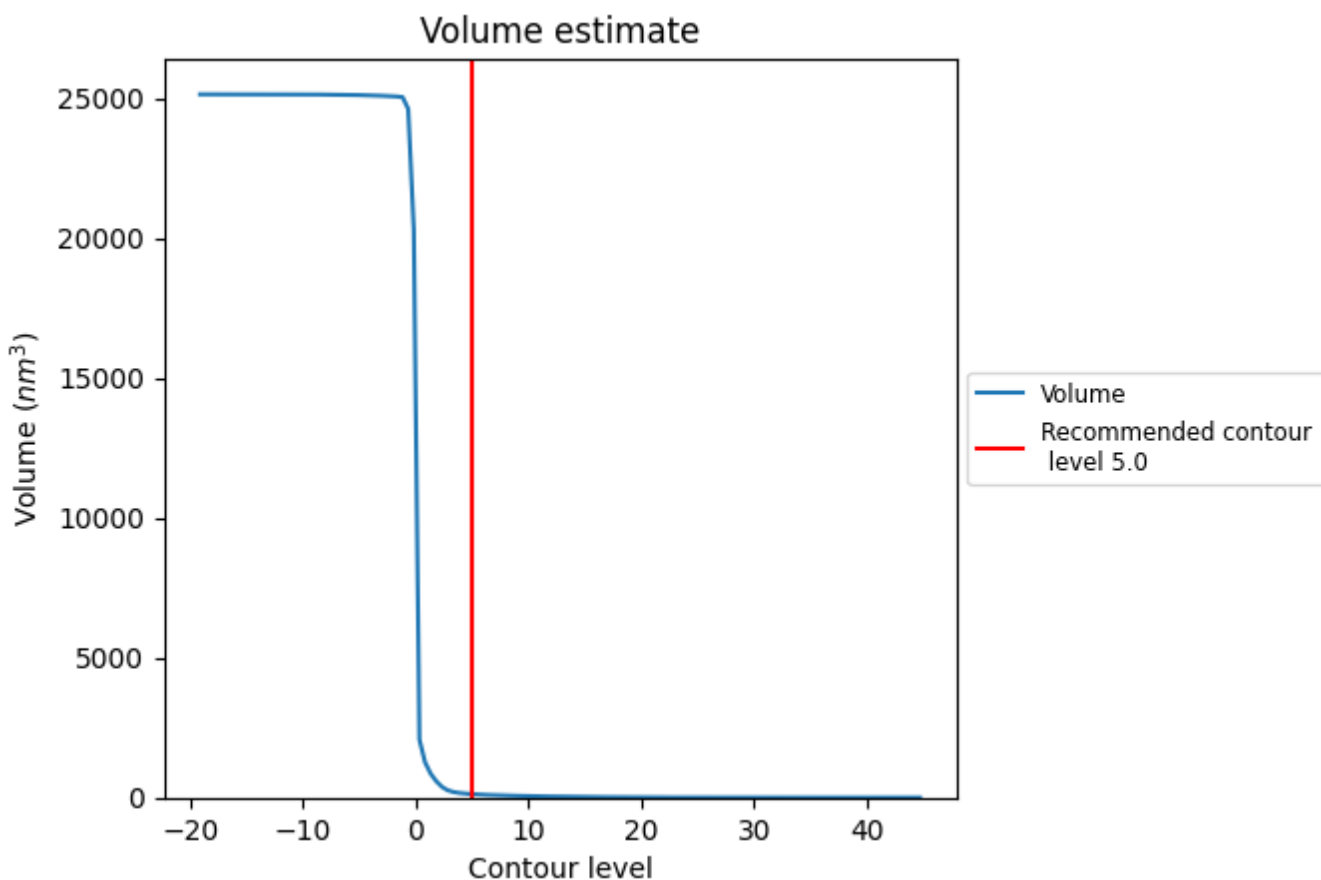
This section contains the results of statistical analysis of the map.

### 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.

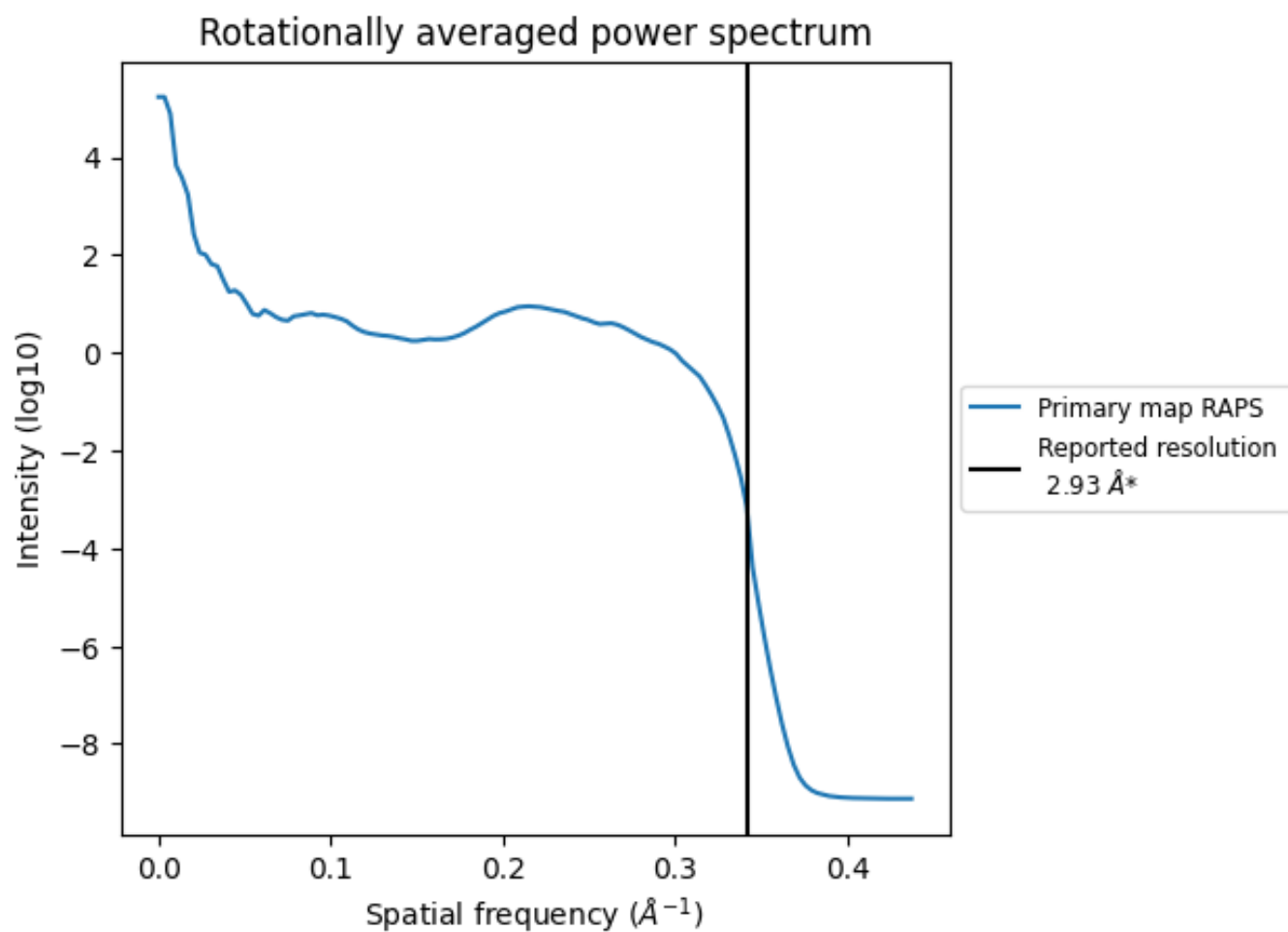
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 122 nm<sup>3</sup>; this corresponds to an approximate mass of 110 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](#)

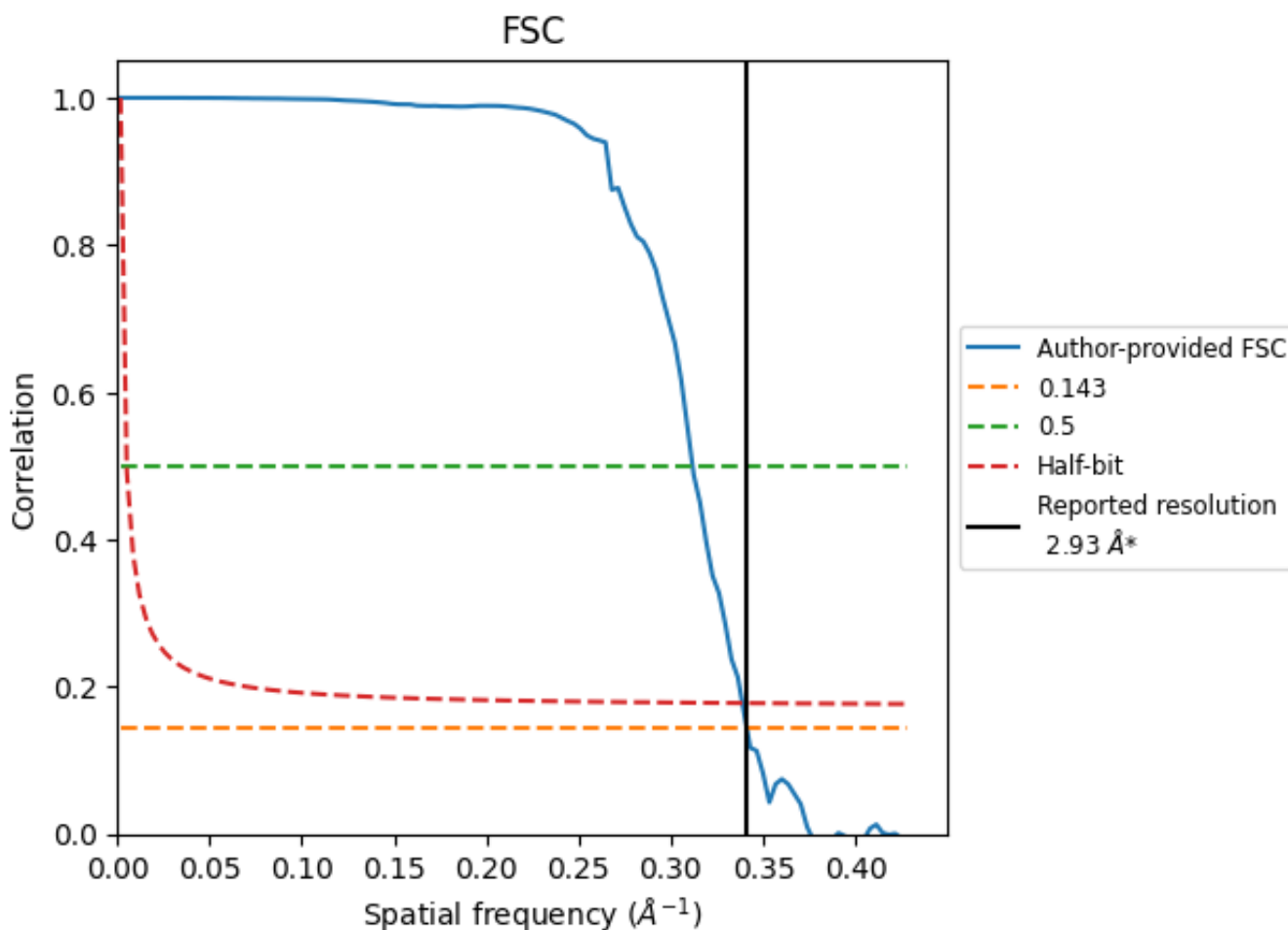


\*Reported resolution corresponds to spatial frequency of 0.341 Å<sup>-1</sup>

## 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 0.341 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

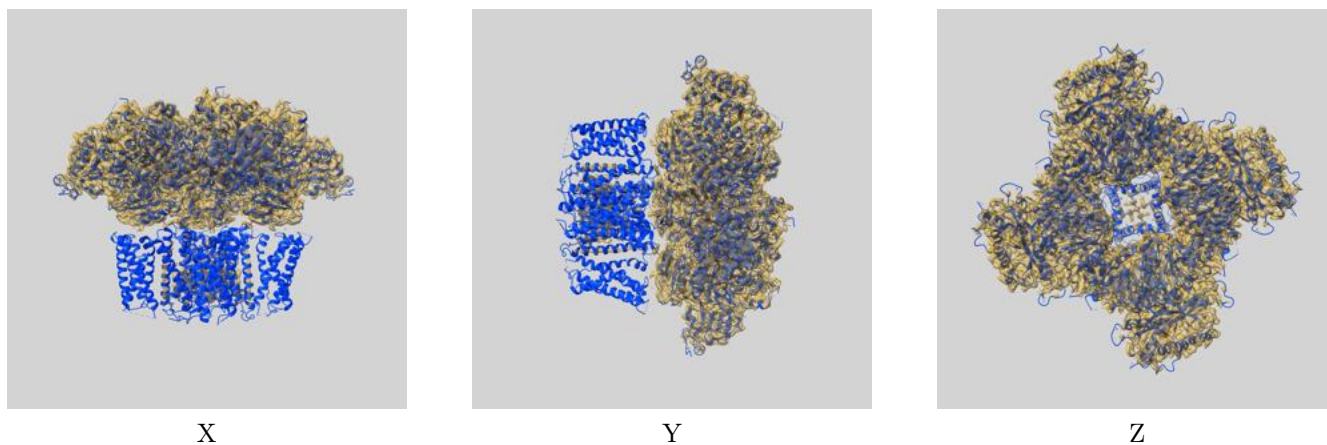
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.93	-	-
Author-provided FSC curve	2.93	3.21	2.95
Unmasked-calculated*	-	-	-

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

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

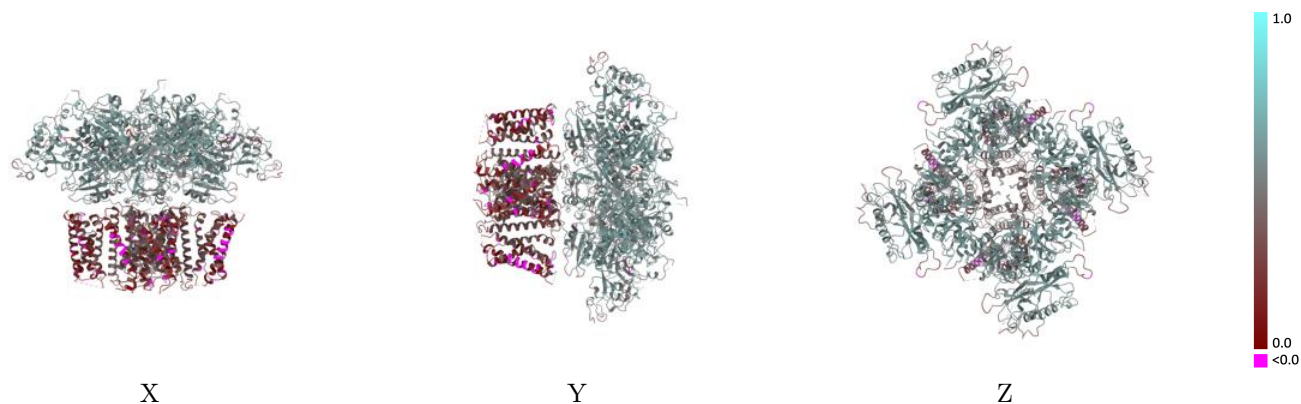
This section contains information regarding the fit between EMDB map EMD-24490 and PDB model 7RJT. Per-residue inclusion information can be found in section 3 on page 7.

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



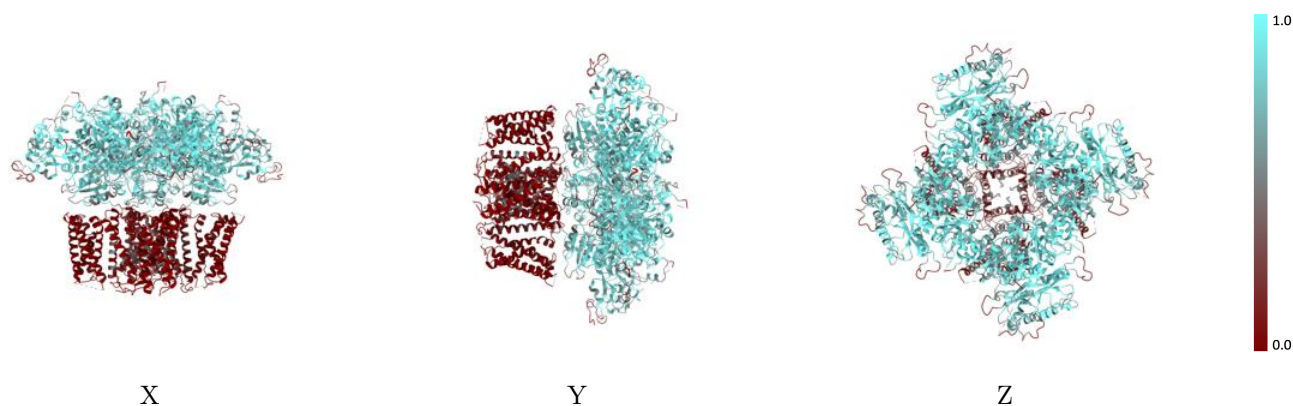
The images above show the 3D surface view of the map at the recommended contour level 5.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 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.

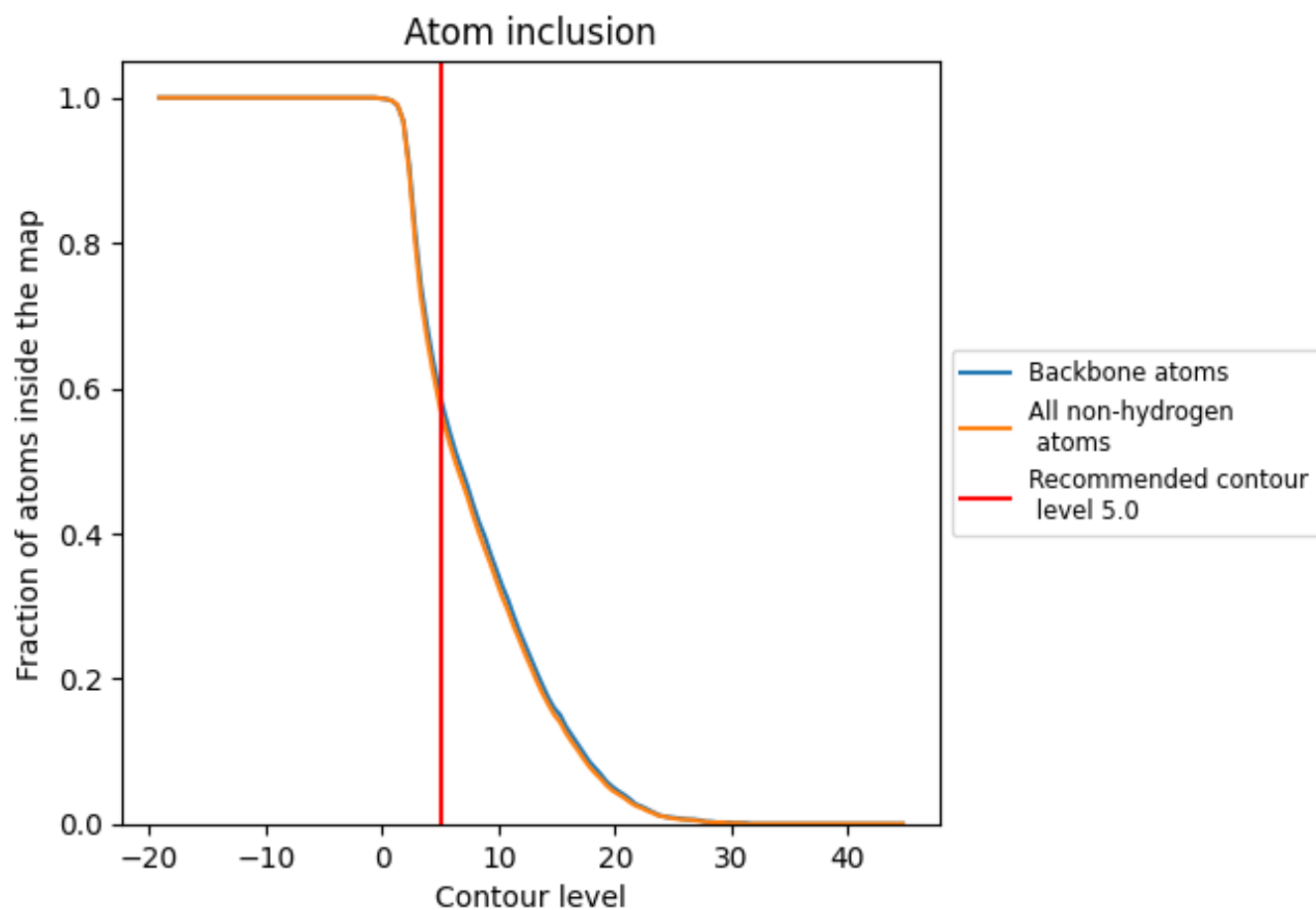
## 9.3 Atom inclusion mapped to coordinate model [\(i\)](#)



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 (5.0).













## 9.4 Atom inclusion [i](#)



At the recommended contour level, 59% of all backbone atoms, 57% 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 (5.0) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5710	 0.4560
A	 0.5740	 0.4560
B	 0.5740	 0.4550
C	 0.5740	 0.4560
D	 0.5740	 0.4560

