



# wwPDB EM Validation Summary Report ⓘ

Aug 5, 2024 – 08:34 AM EDT

PDB ID : 8E6S  
EMDB ID : EMD-27924  
Title : Human TRPM2 ion channel in 1 mM dADPR and Ca<sup>2+</sup>  
Authors : Wang, L.; Fu, T.M.; Xia, S.; Wu, H.  
Deposited on : 2022-08-23  
Resolution : 4.60 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](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.dev92  
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 : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.37.1

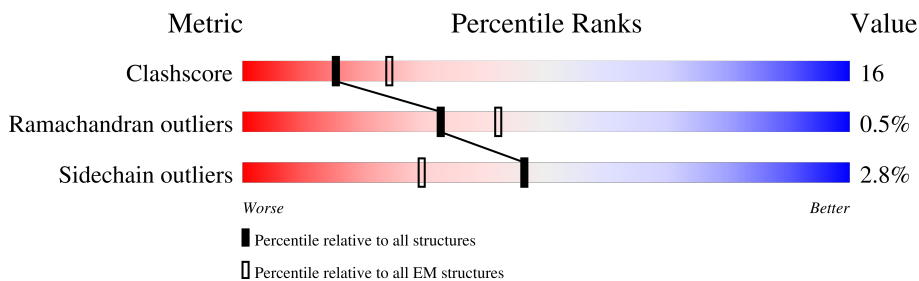
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 4.60 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	1503	
1	B	1503	
1	C	1503	
1	D	1503	

## 2 Entry composition [i](#)

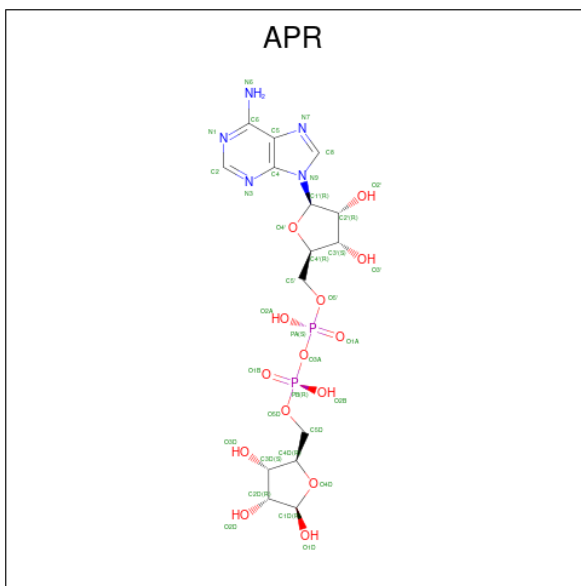
There are 5 unique types of molecules in this entry. The entry contains 42336 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Transient receptor potential cation channel subfamily M member 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1330	Total	C	N	O	S	0	0
			10521	6791	1829	1851	50		
1	B	1330	Total	C	N	O	S	0	0
			10521	6791	1829	1851	50		
1	C	1330	Total	C	N	O	S	0	0
			10521	6791	1829	1851	50		
1	D	1330	Total	C	N	O	S	0	0
			10521	6791	1829	1851	50		

- Molecule 2 is ADENOSINE-5-DIPHOSPHORIBOSE (three-letter code: APR) (formula: C<sub>15</sub>H<sub>23</sub>N<sub>5</sub>O<sub>14</sub>P<sub>2</sub>) (labeled as "Ligand of Interest" by depositor).



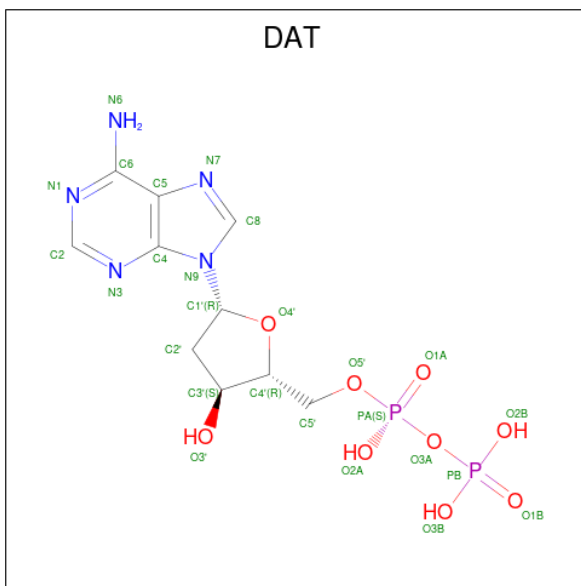
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
2	A	1	Total	C	N	O	P	0
			35	15	5	13	2	
2	B	1	Total	C	N	O	P	0
			35	15	5	13	2	

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Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
2	C	1	Total	C	N	O	P	0
			35	15	5	13	2	
2	D	1	Total	C	N	O	P	0
			35	15	5	13	2	

- Molecule 3 is 2'-DEOXYADENOSINE-5'-DIPHOSPHATE (three-letter code: DAT) (formula: C<sub>10</sub>H<sub>15</sub>N<sub>5</sub>O<sub>9</sub>P<sub>2</sub>).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
3	A	1	Total	C	N	O	P	0
			26	10	5	9	2	
3	B	1	Total	C	N	O	P	0
			26	10	5	9	2	
3	C	1	Total	C	N	O	P	0
			26	10	5	9	2	
3	D	1	Total	C	N	O	P	0
			26	10	5	9	2	

- Molecule 4 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
			Total	Zn	
4	A	1	Total	Zn	0
			1	1	
4	B	1	Total	Zn	0
			1	1	
4	C	1	Total	Zn	0
			1	1	

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Mol	Chain	Residues	Atoms		AltConf
4	D	1	Total 1	Zn 1	0

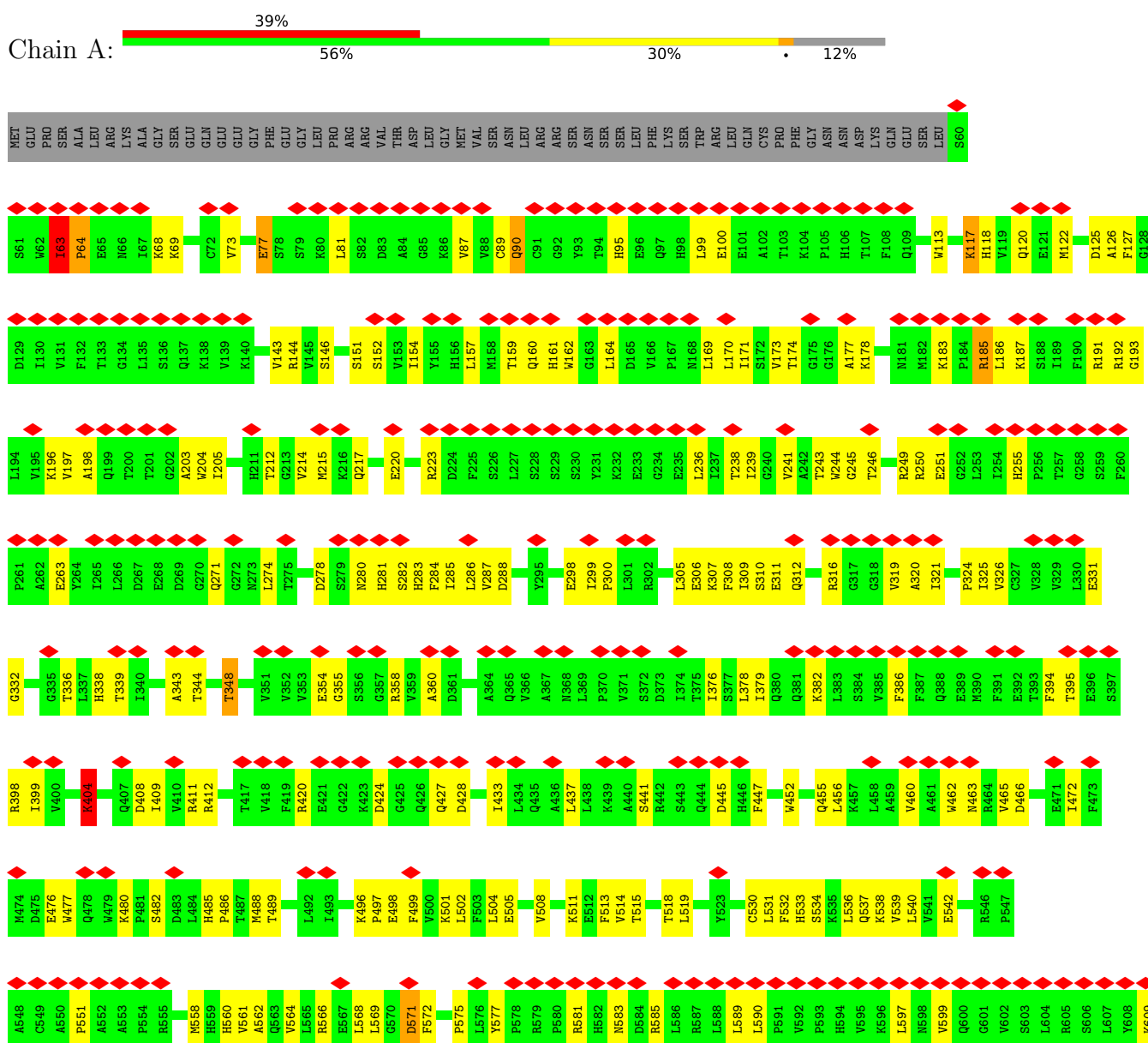
- Molecule 5 is CALCIUM ION (three-letter code: CA) (formula: Ca).

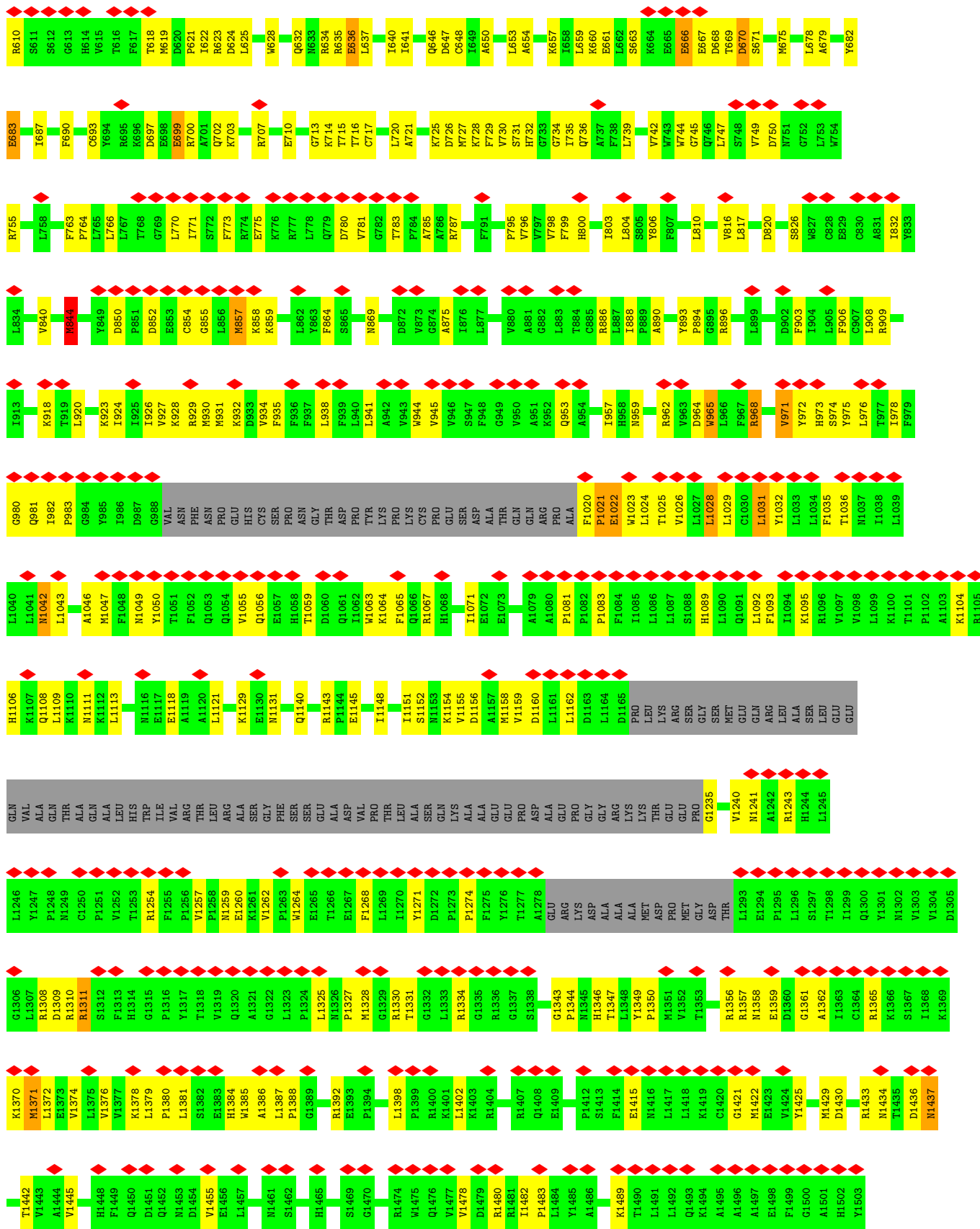
Mol	Chain	Residues	Atoms		AltConf
5	A	1	Total 1	Ca 1	0
5	B	1	Total 1	Ca 1	0
5	C	1	Total 1	Ca 1	0
5	D	1	Total 1	Ca 1	0

### 3 Residue-property plots

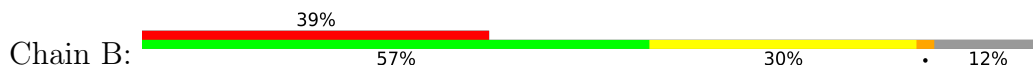
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: Transient receptor potential cation channel subfamily M member 2





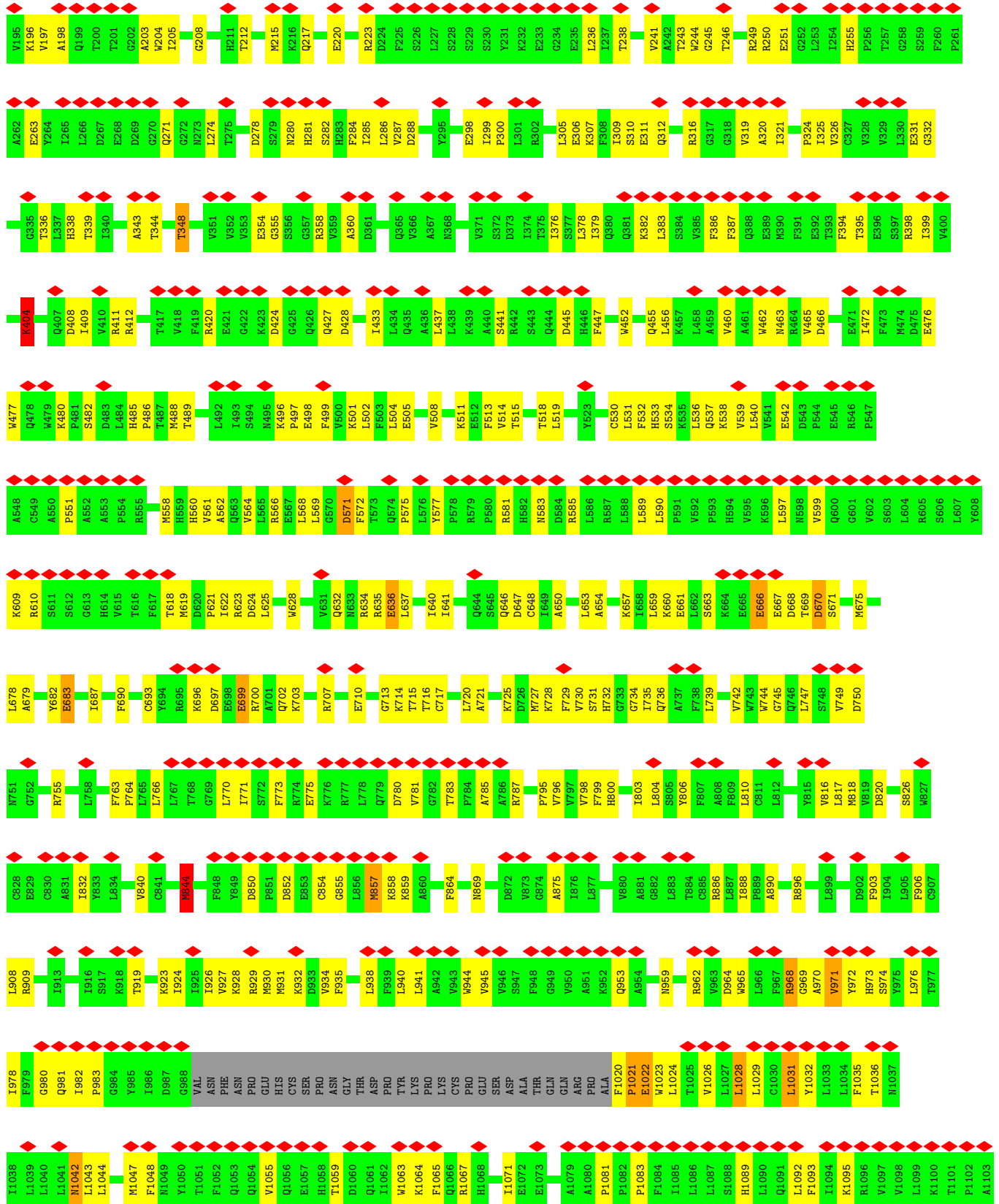
• Molecule 1: Transient receptor potential cation channel subfamily M member 2

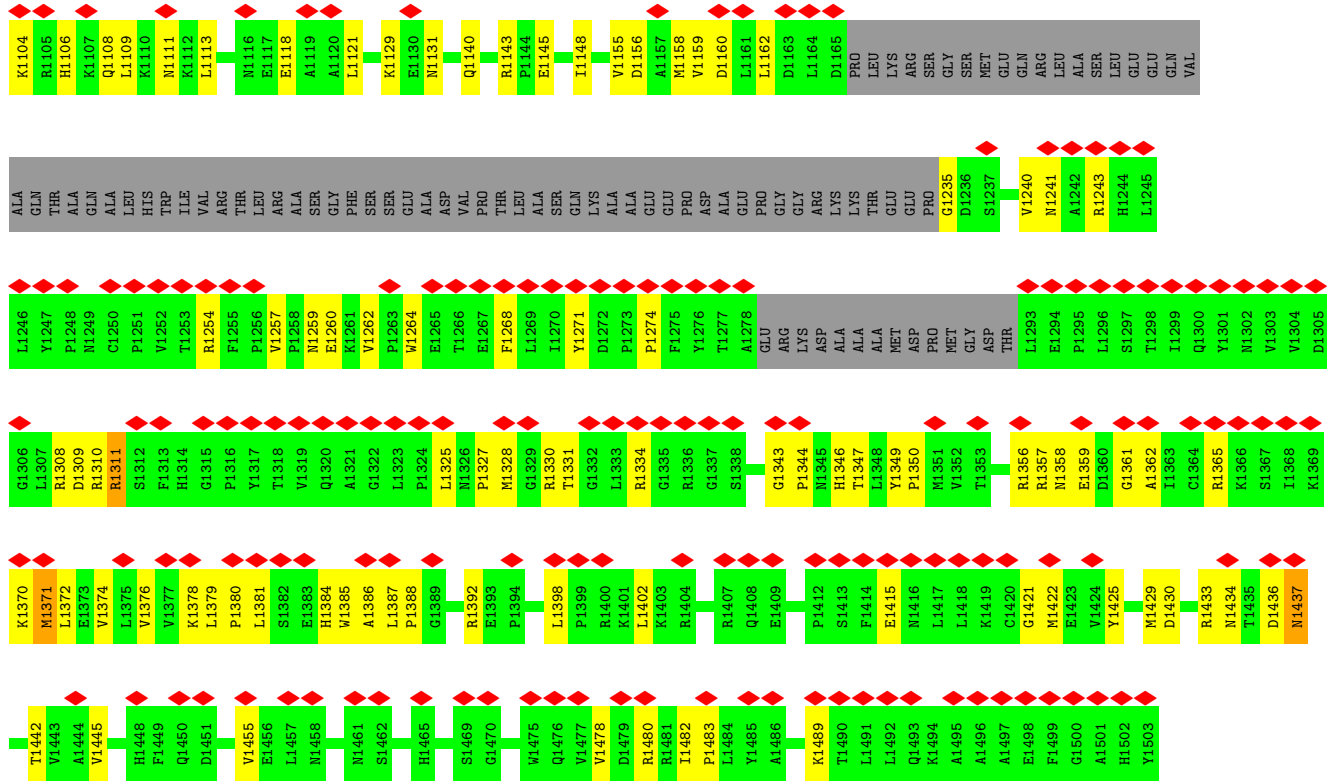


MET	GLU	PRU	SER	ALA	LEU	ARG	LYS	ALA	GLY	SER	GLN	GLU	GLU	GLY	PHE	GLU	GLY	LEU	PRU	ARG	ARG	VAL	THR	ASP	LEU	GLY	MET	VAL	SER	ASN	LEU	ARG	ARG	ARG	SER	SER	SER	SER	SER	LEU	PHE	LYS	SER	TRP	ARG	LEU	GLN	CYS	PRO	PHE	GLY	ASN	ASN	ASP	LYS	GLN	GLU	SER	SER	S60																																																											
S61	M62	I63	P64	E65	N66	I67	K68	K69	C72	V73	E77	S78	S79	K80	L81	S82	D83	A84	G85	K86	V87	C88	Q89	C91	G92	Y93	Y93	T94	H95	E96	Q97	H98	L99	E100	E101	A102	T103	T104	P105	H106	T107	F108	Q109	W113	K117	H118	V119	Q120	E121	M122	D125	A126	F127	G128																																																																	
D129	I130	V131	F132	T133	G134	L135	S136	Q137	K138	V139	K140	K141	Y142	V143	R144	V145	S146	S151	S152	Y153	Y154	Y155	H156	L157	M158	T159	Q160	H161	Y162	G163	L164	D165	V166	P167	M168	L169	L170	I171	V172	T173	T174	G175	G176	A177	K178	M181	M182	K183	P184	R185	L186	K187	S188	R191	R192	G193																																																															
K196	V197	A198	Q199	T200	T201	A203	W204	L205	G208	H211	T212	K215	K216	Q217	E220	R223	D224	F225	S226	L227	S228	S229	S230	Y231	K232	E233	G234	E235	L236	I237	T238	L239	G240	E311	V241	A242	T243	W244	G245	T246	R249	R250	E251	L253	I254	H255	P256	T257	G258	S259	F260																																																																				
P261	A262	E263	Y264	L266	D267	E268	D269	G270	Q271	G272	M273	L274	T275	D278	N280	H281	S282	H283	F284	L285	L286	V287	D288	Y295	E298	T299	F300	L301	R302	L305	E306	K307	F308	L309	S310	E311	Q312	R316	G317	G318	V319	A320	I321	P324	I325	V326	C327	V328	V329	L330	E331																																																																				
G332	G335	T336	L337	H338	T339	L340	A343	T344	T348	V351	M273	V352	V353	E354	G355	G356	G357	R358	A360	D361	A364	Q365	V366	A367	R368	L369	F370	V371	S372	I373	T374	L375	L376	S377	L378	I379	Q380	Q381	K382	L383	S384	V385	F386	F387	Q388	E389	R390	F391	E392	T393	F394	T395	E396	S397																																																																	
R398	I399	W400	K404	G407	D408	I409	R411	R412	T417	V418	F419	R420	E421	G422	R423	D424	G425	D426	D428	I433	L434	Q435	A436	L437	L438	K439	A440	S441	R442	S443	Q444	H445	H446	F447	W452	Q455	L458	A459	W460	A461	W462	N463	R464	V465	D466	E471	I472	F473	W474																																																																						
W477	Q478	W479	K480	P481	S482	D483	L484	H485	P486	F487	M488	T489	L492	I493	K496	P497	E498	F499	V500	K501	L502	F503	L504	E505	V508	K511	E512	F513	V514	T515	T518	L519	Y523	C530	L531	F532	H533	S534	K535	L536	Q537	K538	V539	L540	V541	E542	R546	P547	A548	G549																																																																					
A550	P551	A552	A553	P554	R555	M558	H559	H560	V561	P562	R563	D564	L565	V566	L568	L569	G570	D571	F572	P575	L576	Y577	P578	R579	P580	R581	H582	M583	D584	R585	L586	R587	L588	L589	L590	P591	V592	P593	H594	V595	K596	Q597	D668	T669	D670	M598	V599	Q600	V601	V602	S603	L604	R605	S606	L607	Y608	K609	R610	S611																																																												
S612	G613	H614	V615	T616	F617	T618	M619	D620	I622	R623	D624	L625	W628	Q632	R633	R634	R635	E636	L637	I640	I641	Q644	S645	Q646	D647	C648	I649	A650	L653	A654	K657	I658	L659	K660	E661	L662	K664	E665	E666	E667	D668	T669	D670	S671	W675	L678	A679	W682	L683	L684	L685	L686	L687	L688	L689	L690	L691	L692	L693	L694	L695	L696	L697	L698	L699	L700	L701	L702	L703	L704	L705	L706	L707	L708	L709	L710	L711	L712	L713	L714	L715	L716	L717	L718	L719	L720	L721	L722	L723	L724	L725	L726	L727	L728	L729	L730	L731	L732	L733	L734	L735	L736	L737	L738	L739	L740	L741	L742	L743	L744	L745	L746	L747	L748	L749	L750	L751	L752	L753
E688	I687	F690	C693	H694	R695	K696	D697	E698	E699	R700	A701	S702	K703	R707	E710	G713	K714	T715	T716	C717	L720	A721	A724	K725	I726	M727	K728	F729	V730	S731	H732	G733	F734	I735	Q736	A737	F738	L739	W742	W743	W744	G745	Q746	L747	S748	V749	D750	W751	G752	L753																																																																					
W754	R755	L758	F763	P764	L765	L766	L767	T768	G769	R770	I771	S772	F773	F774	E775	K776	R777	L778	Q779	D780	V781	G782	T783	P784	A785	A786	R787	F791	P795	V796	W797	V798	F799	H800	I803	L804	Y806	F807	A808	F809	L810	V816	L817	H818	D820	W826	W827	C828	E829	C830																																																																					
A831	I832	Y833	L834	L839	V840	R844	Y849	D850	P851	D852	E853	C854	G855	M857	K858	K859	L862	Y863	F864	N869	D872	V873	G874	A875	I876	F879	V880	A881	C882	L883	T884	C885	R886	L887	I888	P889	A890	Y893	P894	G895	R896	L899	F903	F906	C907	L908	R909																																																																								

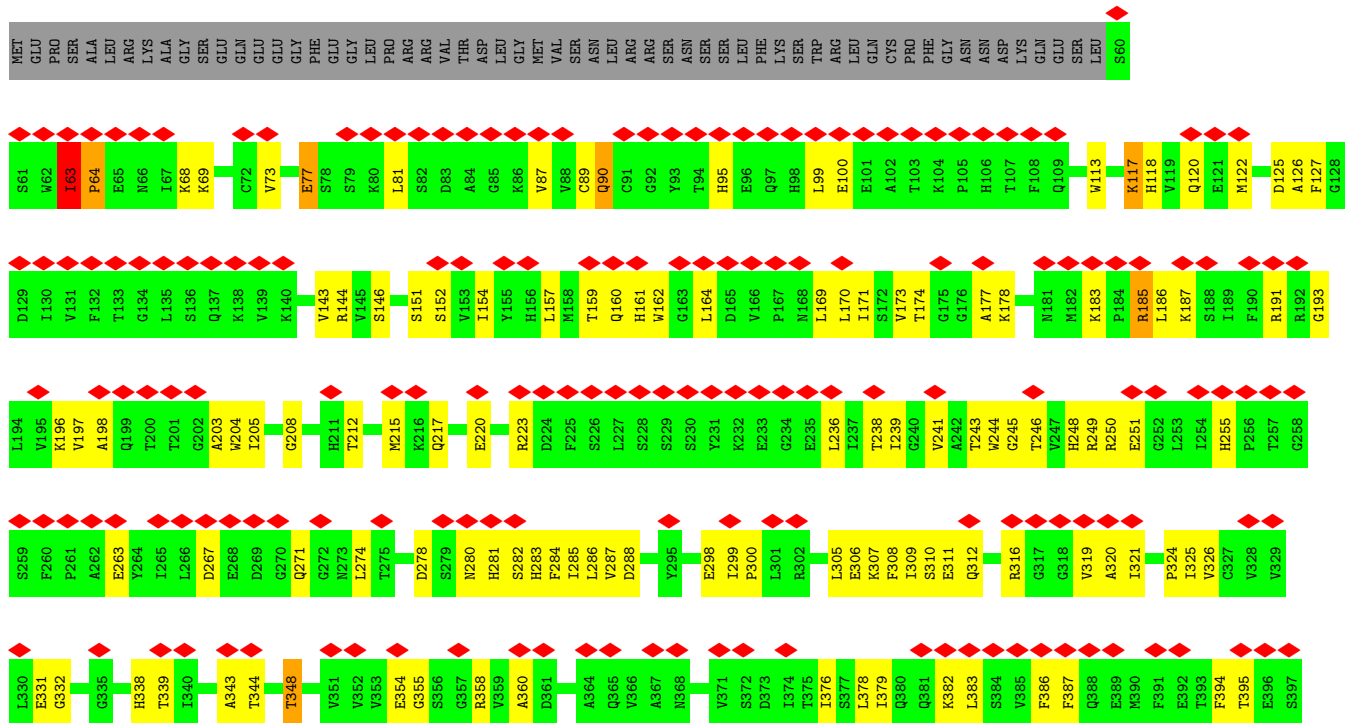
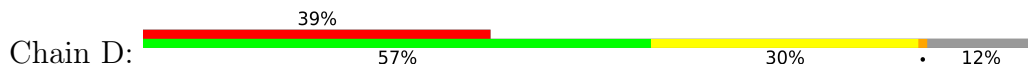




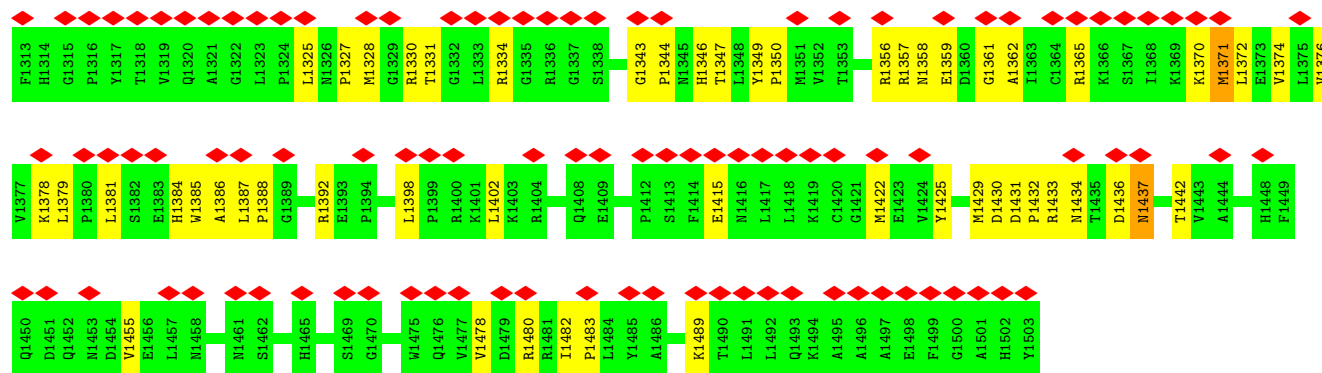




• Molecule 1: Transient receptor potential cation channel subfamily M member 2







## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	95674	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 ( $e^-/\text{\AA}^2$ )	49	Depositor
Minimum defocus (nm)	8000	Depositor
Maximum defocus (nm)	22000	Depositor
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.852	Depositor
Minimum map value	-0.361	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.029	Depositor
Recommended contour level	0.169	Depositor
Map size ( $\text{\AA}$ )	388.80002, 388.80002, 388.80002	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	1.08, 1.08, 1.08	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: CA, ZN, DAT, APR

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	0.27	0/10787	0.58	4/14658 (0.0%)
1	B	0.27	0/10787	0.58	4/14658 (0.0%)
1	C	0.27	0/10787	0.58	4/14658 (0.0%)
1	D	0.27	0/10787	0.58	4/14658 (0.0%)
All	All	0.27	0/43148	0.58	16/58632 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	6
1	B	0	6
1	C	0	6
1	D	0	6
All	All	0	24

There are no bond length outliers.

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

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	844	MET	CA-CB-CG	7.08	125.33	113.30
1	A	844	MET	CA-CB-CG	7.05	125.29	113.30
1	C	844	MET	CA-CB-CG	7.05	125.28	113.30
1	B	844	MET	CA-CB-CG	7.04	125.27	113.30
1	B	63	ILE	C-N-CD	-6.70	105.86	120.60

There are no chirality outliers.

5 of 24 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	63	ILE	Peptide
1	A	666	GLU	Peptide
1	A	965	TRP	Peptide
1	A	968	ARG	Peptide
1	A	971	VAL	Peptide

## 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	10521	0	10407	376	0
1	B	10521	0	10407	391	0
1	C	10521	0	10407	376	0
1	D	10521	0	10407	354	0
2	A	35	0	19	1	0
2	B	35	0	19	1	0
2	C	35	0	19	1	0
2	D	35	0	19	0	0
3	A	26	0	12	1	0
3	B	26	0	12	1	0
3	C	26	0	12	1	0
3	D	26	0	12	1	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
5	A	1	0	0	0	0
5	B	1	0	0	0	0
5	C	1	0	0	0	0
5	D	1	0	0	0	0
All	All	42336	0	41752	1385	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 16.

The worst 5 of 1385 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:1022:GLU:HB3	1:D:975:TYR:N	1.66	1.09
1:C:1022:GLU:HB3	1:D:975:TYR:H	0.84	0.99
1:C:1022:GLU:CB	1:D:975:TYR:H	1.78	0.95
1:B:981:GLN:NE2	1:C:981:GLN:OE1	1.99	0.95
1:A:1024:LEU:H	1:B:972:TYR:C	1.70	0.94

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	1322/1503 (88%)	1169 (88%)	147 (11%)	6 (0%)	29	68
1	B	1322/1503 (88%)	1170 (88%)	145 (11%)	7 (0%)	29	68
1	C	1322/1503 (88%)	1171 (89%)	144 (11%)	7 (0%)	29	68
1	D	1322/1503 (88%)	1171 (89%)	145 (11%)	6 (0%)	29	68
All	All	5288/6012 (88%)	4681 (88%)	581 (11%)	26 (0%)	32	68

5 of 26 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	64	PRO
1	A	87	VAL
1	B	64	PRO
1	B	87	VAL
1	C	64	PRO

### 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	1109/1318 (84%)	1078 (97%)	31 (3%)	43	65
1	B	1109/1318 (84%)	1078 (97%)	31 (3%)	43	65
1	C	1109/1318 (84%)	1078 (97%)	31 (3%)	43	65
1	D	1109/1318 (84%)	1078 (97%)	31 (3%)	43	65
All	All	4436/5272 (84%)	4312 (97%)	124 (3%)	46	65

5 of 124 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	1311	ARG
1	D	857	MET
1	C	666	GLU
1	D	844	MET
1	D	1160	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 17 such sidechains are listed below:

Mol	Chain	Res	Type
1	D	156	HIS
1	D	732	HIS
1	B	156	HIS
1	B	537	GLN
1	B	732	HIS

### 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

Of 16 ligands modelled in this entry, 8 are monoatomic - leaving 8 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
2	APR	B	1601	-	34,38,39	0.57	0	39,58,60	0.84	2 (5%)
3	DAT	B	1602	-	24,28,28	0.74	0	28,43,43	0.87	1 (3%)
2	APR	D	1601	-	34,38,39	0.58	0	39,58,60	0.84	2 (5%)
2	APR	C	1601	-	34,38,39	0.57	0	39,58,60	0.84	2 (5%)
2	APR	A	1601	-	34,38,39	0.58	0	39,58,60	0.84	2 (5%)
3	DAT	D	1602	-	24,28,28	0.74	0	28,43,43	0.87	1 (3%)
3	DAT	C	1602	-	24,28,28	0.75	0	28,43,43	0.87	1 (3%)
3	DAT	A	1602	-	24,28,28	0.74	0	28,43,43	0.87	1 (3%)

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
2	APR	B	1601	-	-	1/18/50/54	0/4/4/4
3	DAT	B	1602	-	-	1/12/28/28	0/3/3/3
2	APR	D	1601	-	-	1/18/50/54	0/4/4/4
2	APR	C	1601	-	-	1/18/50/54	0/4/4/4
2	APR	A	1601	-	-	1/18/50/54	0/4/4/4
3	DAT	D	1602	-	-	1/12/28/28	0/3/3/3
3	DAT	C	1602	-	-	1/12/28/28	0/3/3/3
3	DAT	A	1602	-	-	1/12/28/28	0/3/3/3

There are no bond length outliers.

The worst 5 of 12 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	1601	APR	C1D-C2D-C3D	-3.00	98.54	102.30

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1601	APR	C1D-C2D-C3D	-3.00	98.55	102.30
2	B	1601	APR	C1D-C2D-C3D	-2.98	98.57	102.30
2	C	1601	APR	C1D-C2D-C3D	-2.97	98.59	102.30
2	D	1601	APR	C5-C6-N6	2.31	123.87	120.35

There are no chirality outliers.

5 of 8 torsion outliers are listed below:

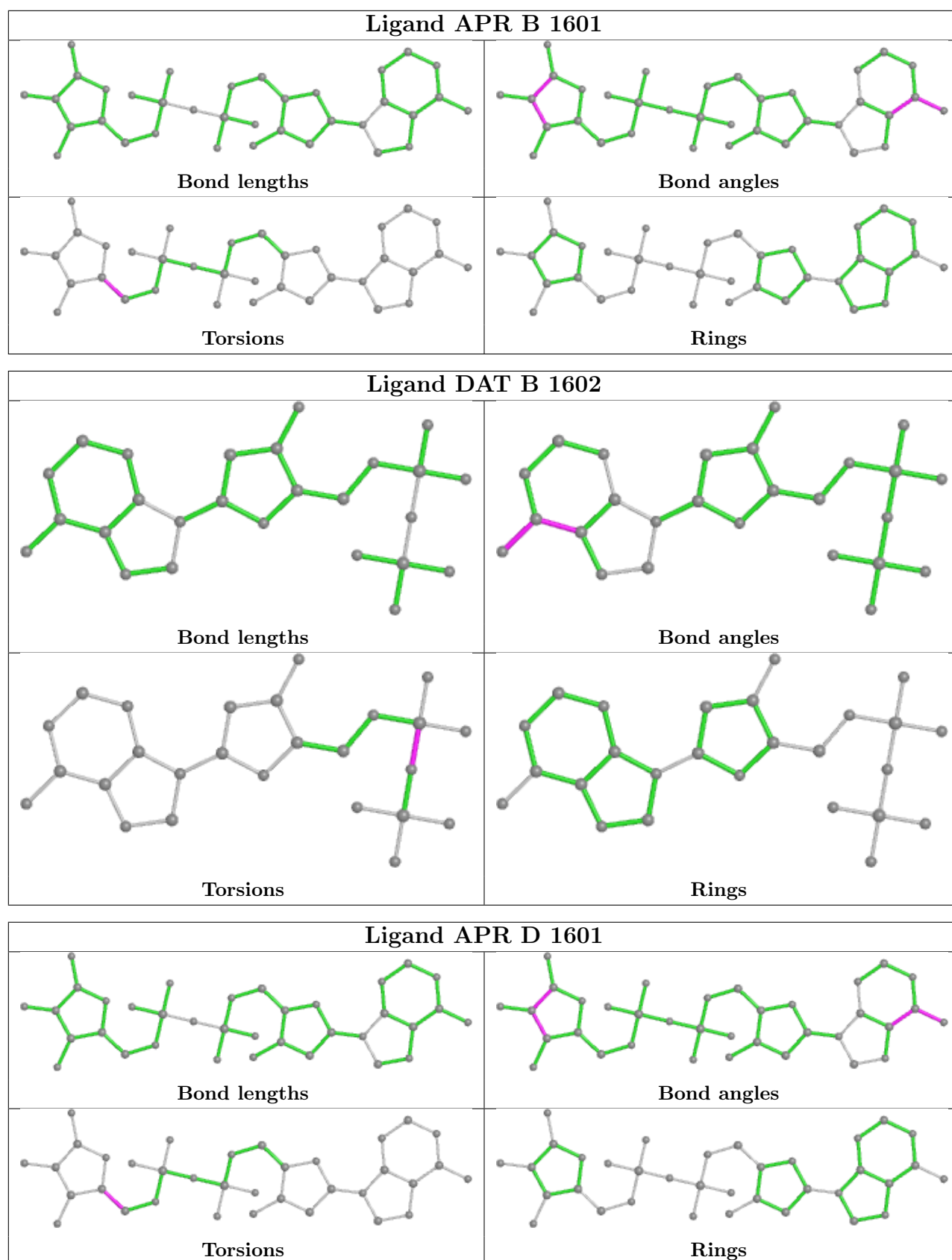
Mol	Chain	Res	Type	Atoms
3	A	1602	DAT	PB-O3A-PA-O5'
3	B	1602	DAT	PB-O3A-PA-O5'
3	C	1602	DAT	PB-O3A-PA-O5'
3	D	1602	DAT	PB-O3A-PA-O5'
2	A	1601	APR	O4D-C4D-C5D-O5D

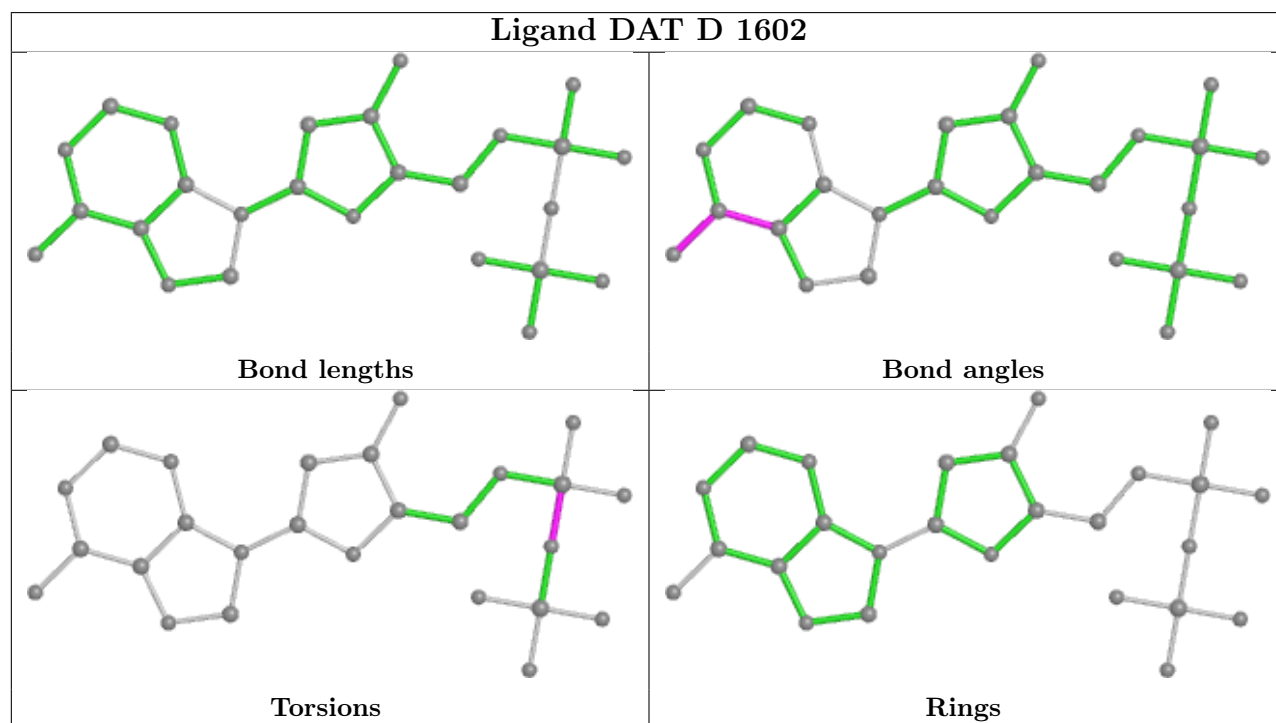
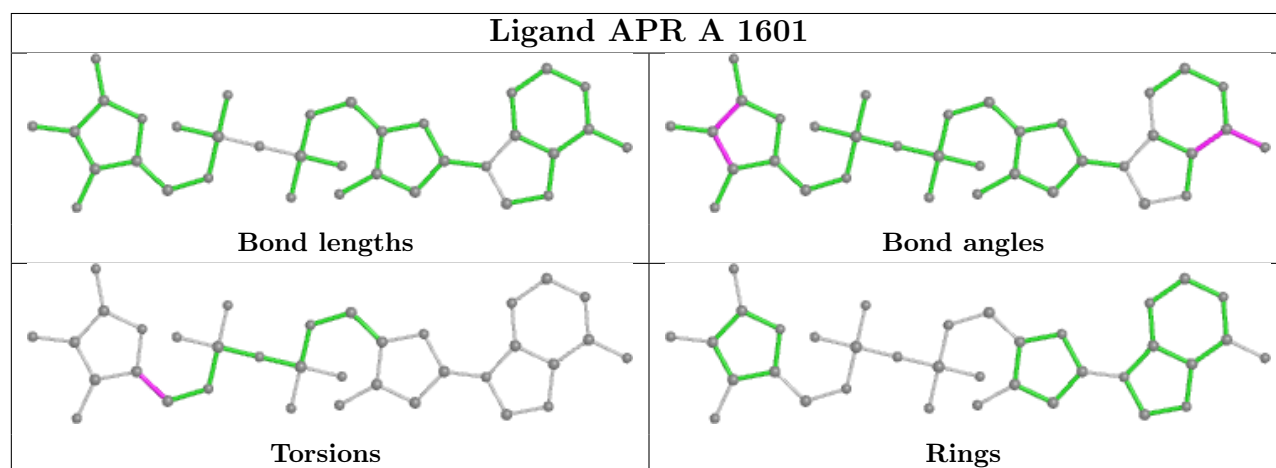
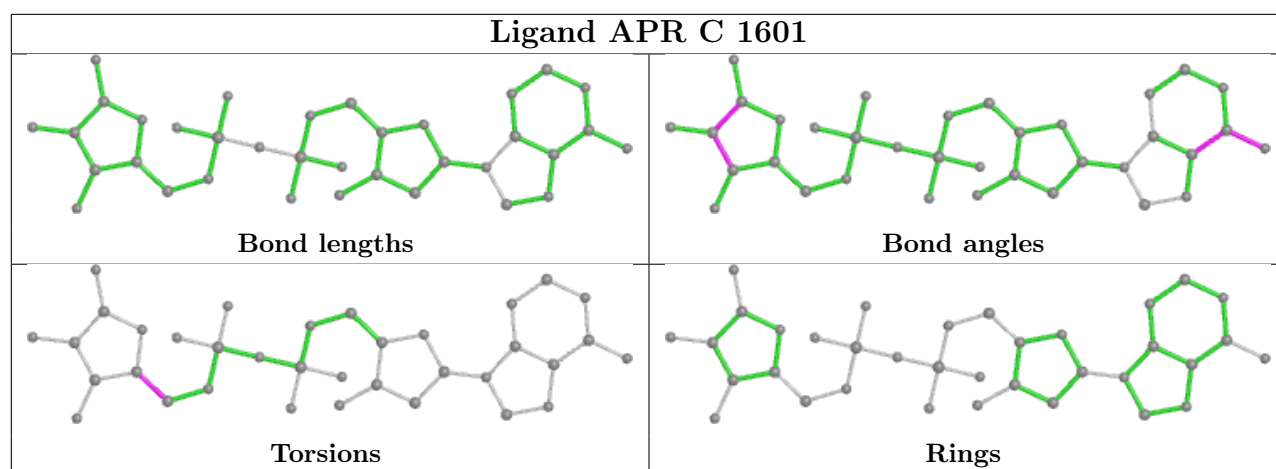
There are no ring outliers.

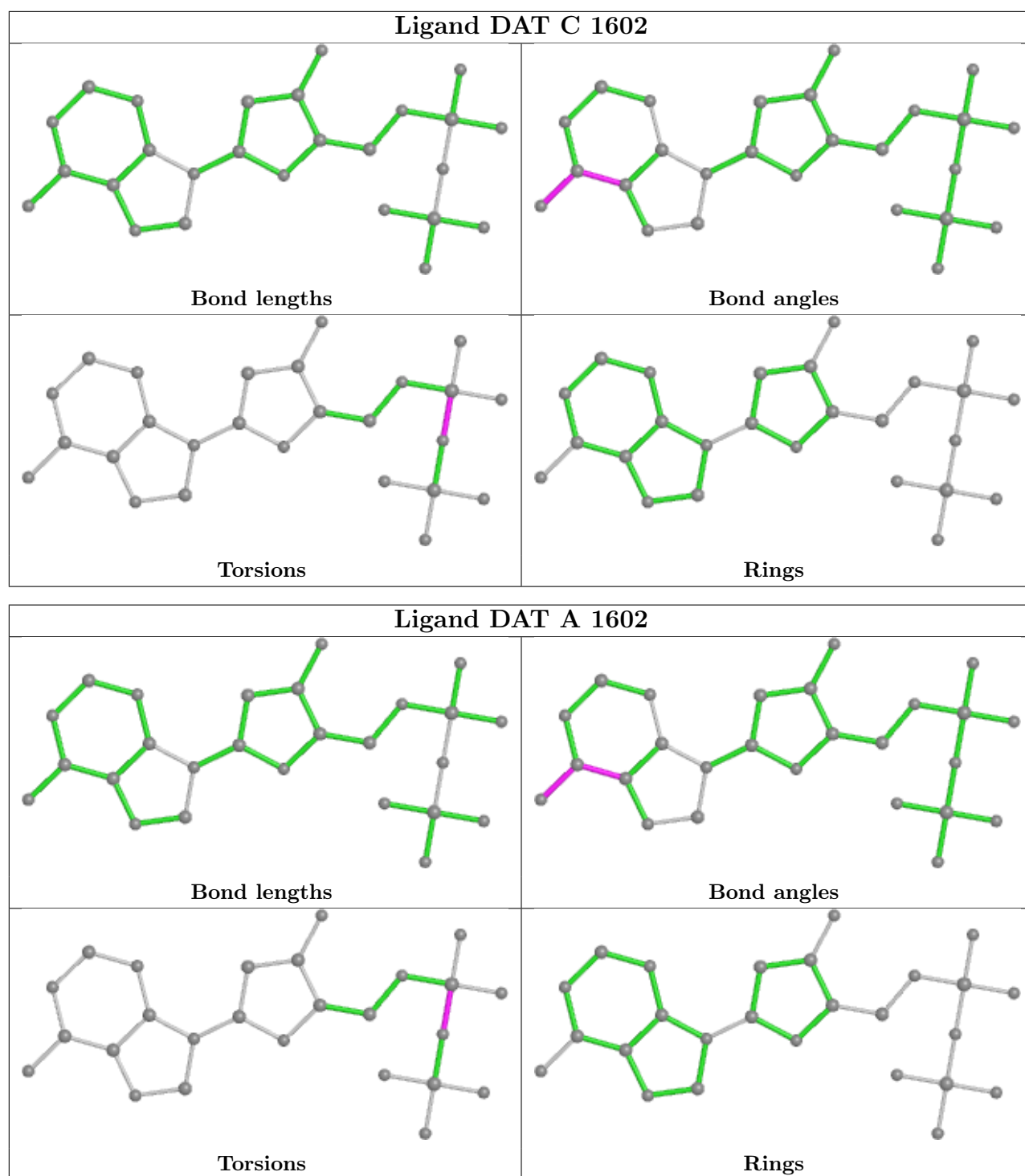
7 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	1601	APR	1	0
3	B	1602	DAT	1	0
2	C	1601	APR	1	0
2	A	1601	APR	1	0
3	D	1602	DAT	1	0
3	C	1602	DAT	1	0
3	A	1602	DAT	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

There are no chain breaks in this entry.



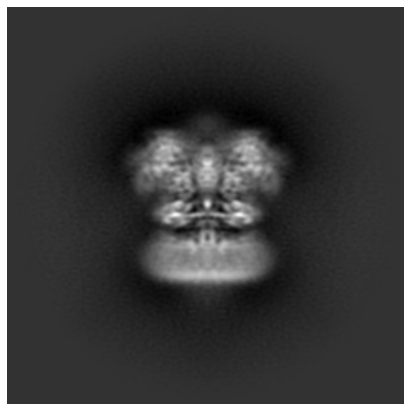
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-27924. These allow visual inspection of the internal detail of the map and identification of artifacts.

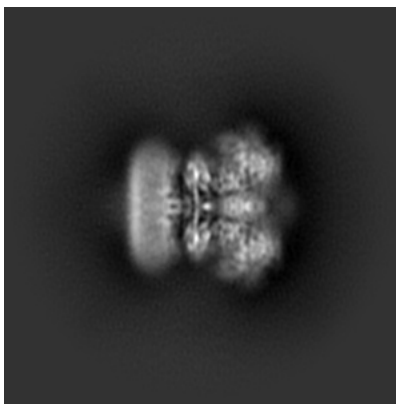
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

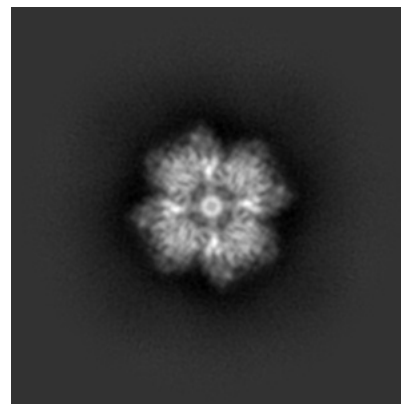
#### 6.1.1 Primary map



X

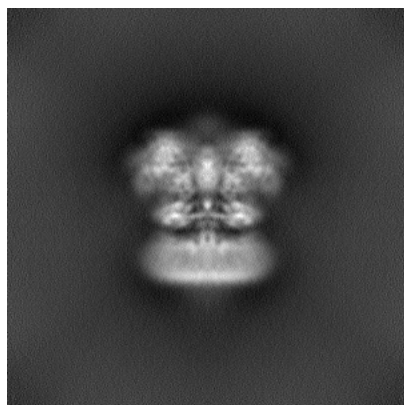


Y

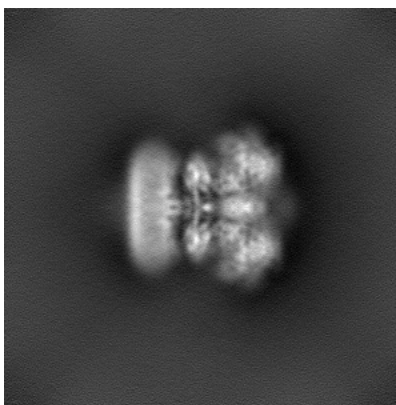


Z

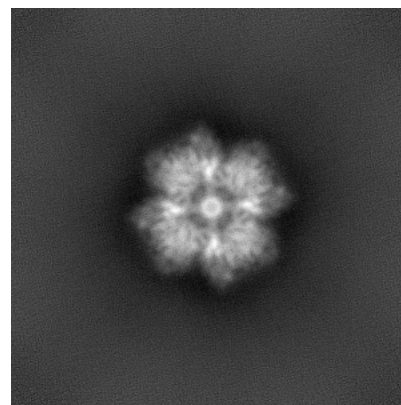
#### 6.1.2 Raw map



X



Y

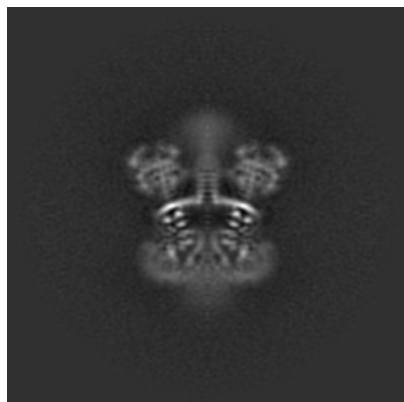


Z

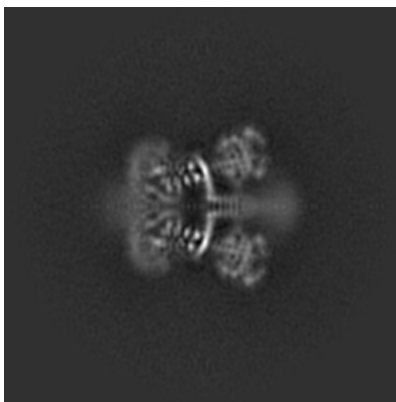
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

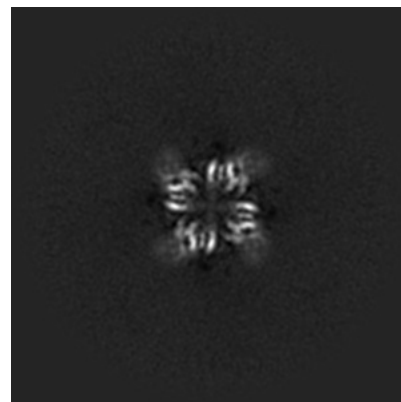
### 6.2.1 Primary map



X Index: 180

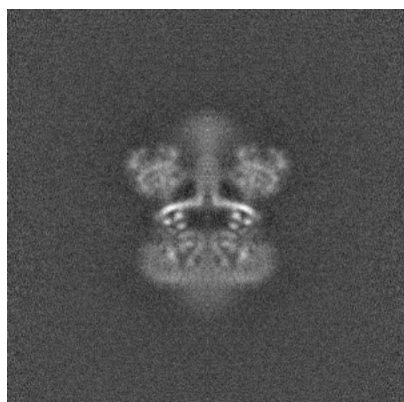


Y Index: 180

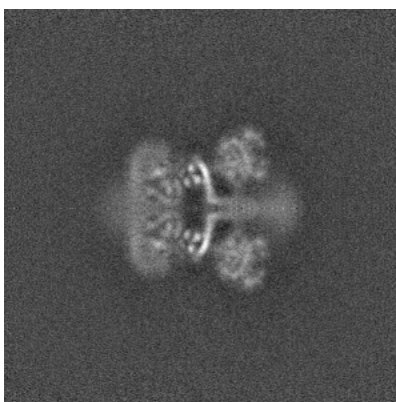


Z Index: 180

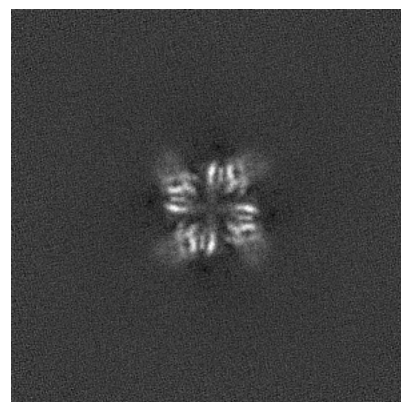
### 6.2.2 Raw map



X Index: 180



Y Index: 180

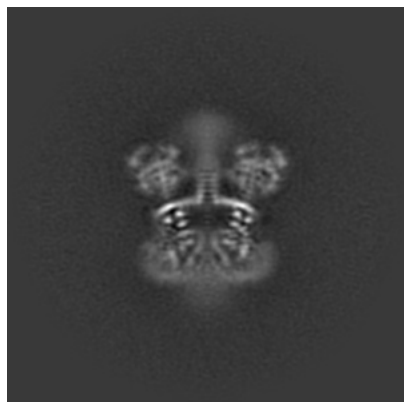


Z Index: 180

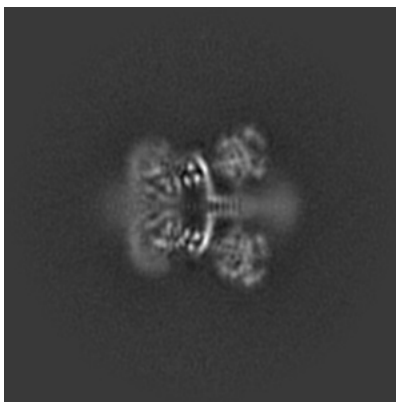
The images above show central slices of the map in three orthogonal directions.

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

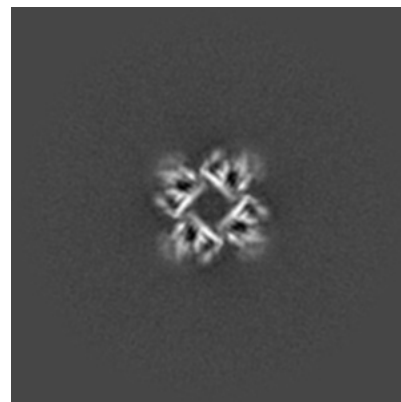
### 6.3.1 Primary map



X Index: 179

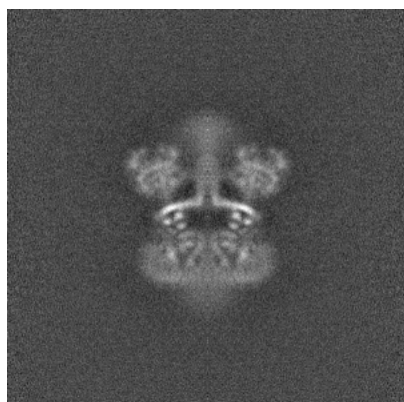


Y Index: 179

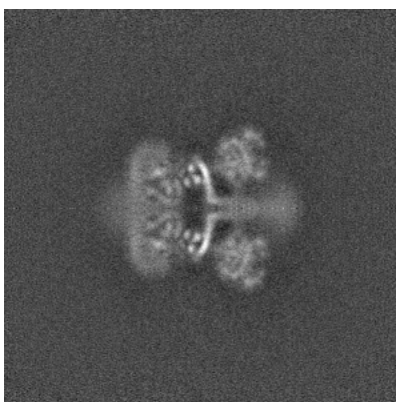


Z Index: 173

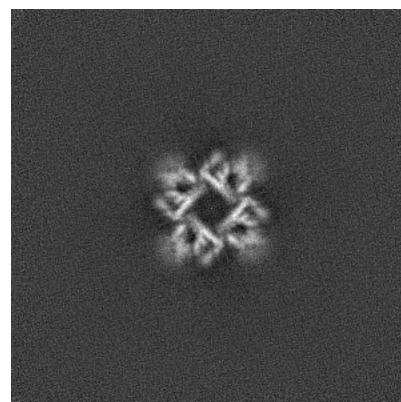
### 6.3.2 Raw map



X Index: 180



Y Index: 180

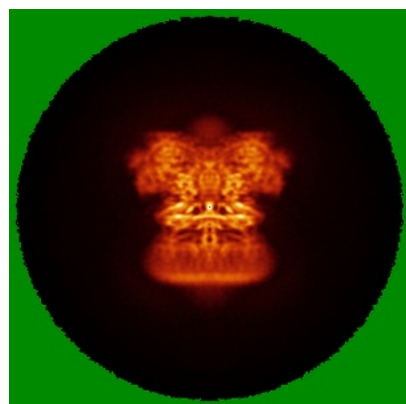


Z Index: 173

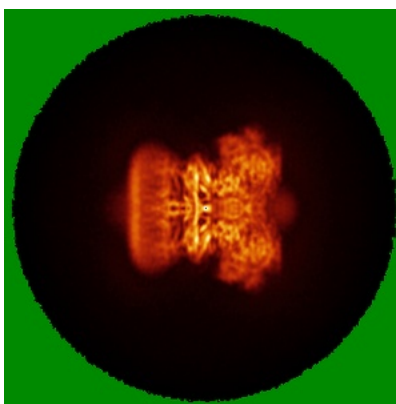
The images above show the largest variance slices of the map in three orthogonal directions.

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

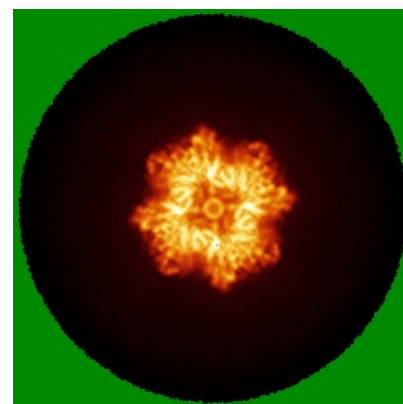
### 6.4.1 Primary map



X

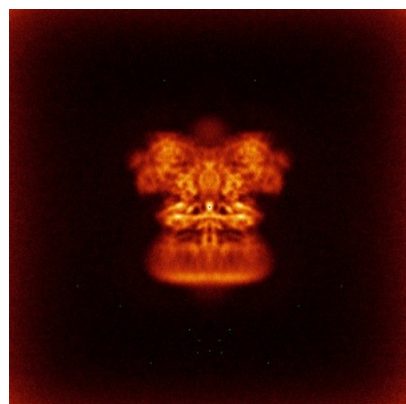


Y

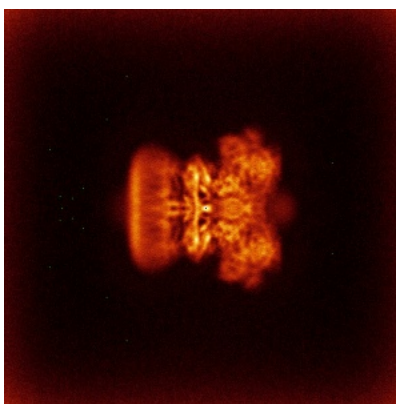


Z

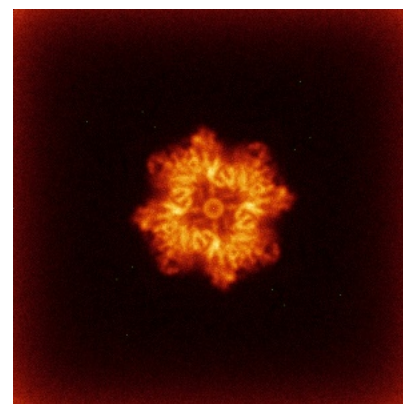
### 6.4.2 Raw map



X



Y

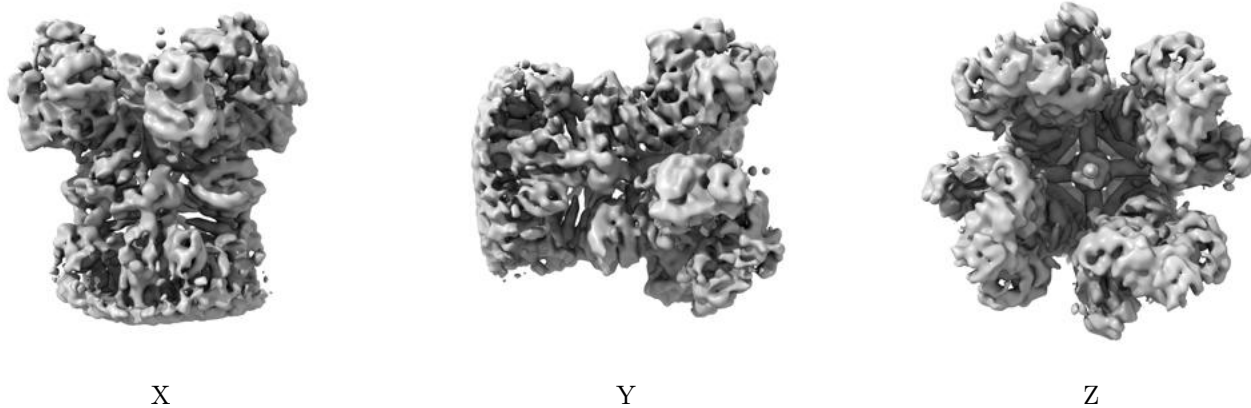


Z

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

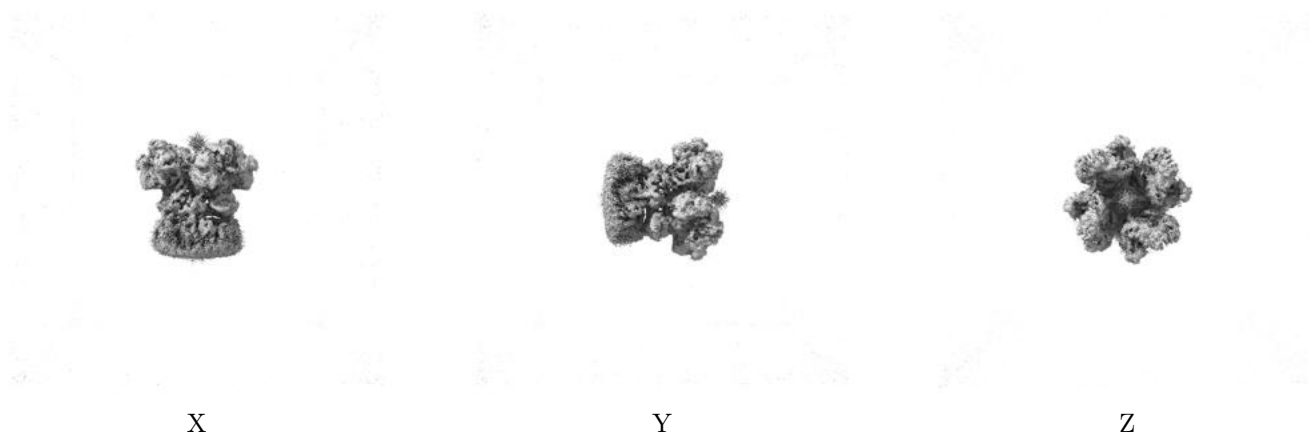
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.169. 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.

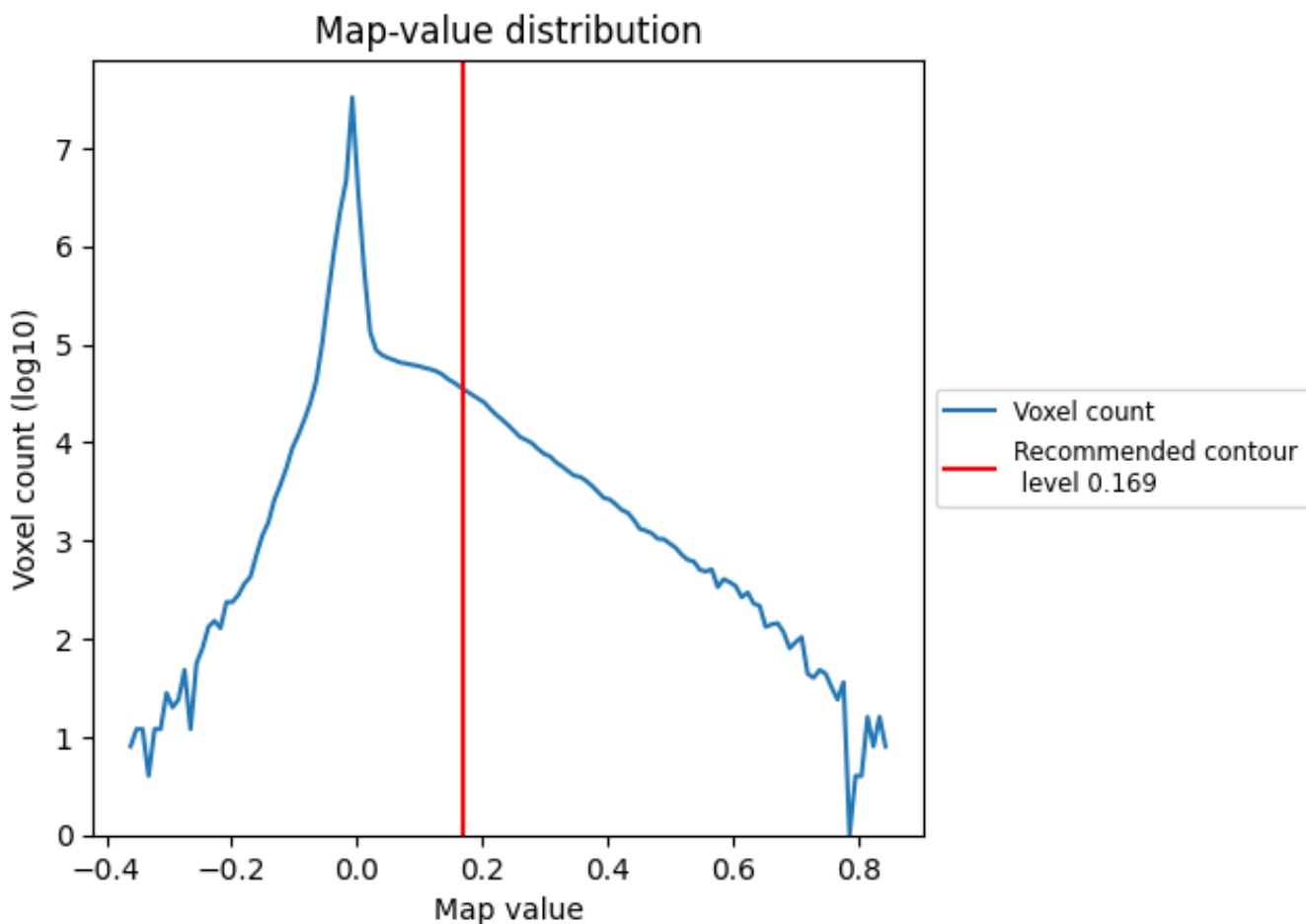
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

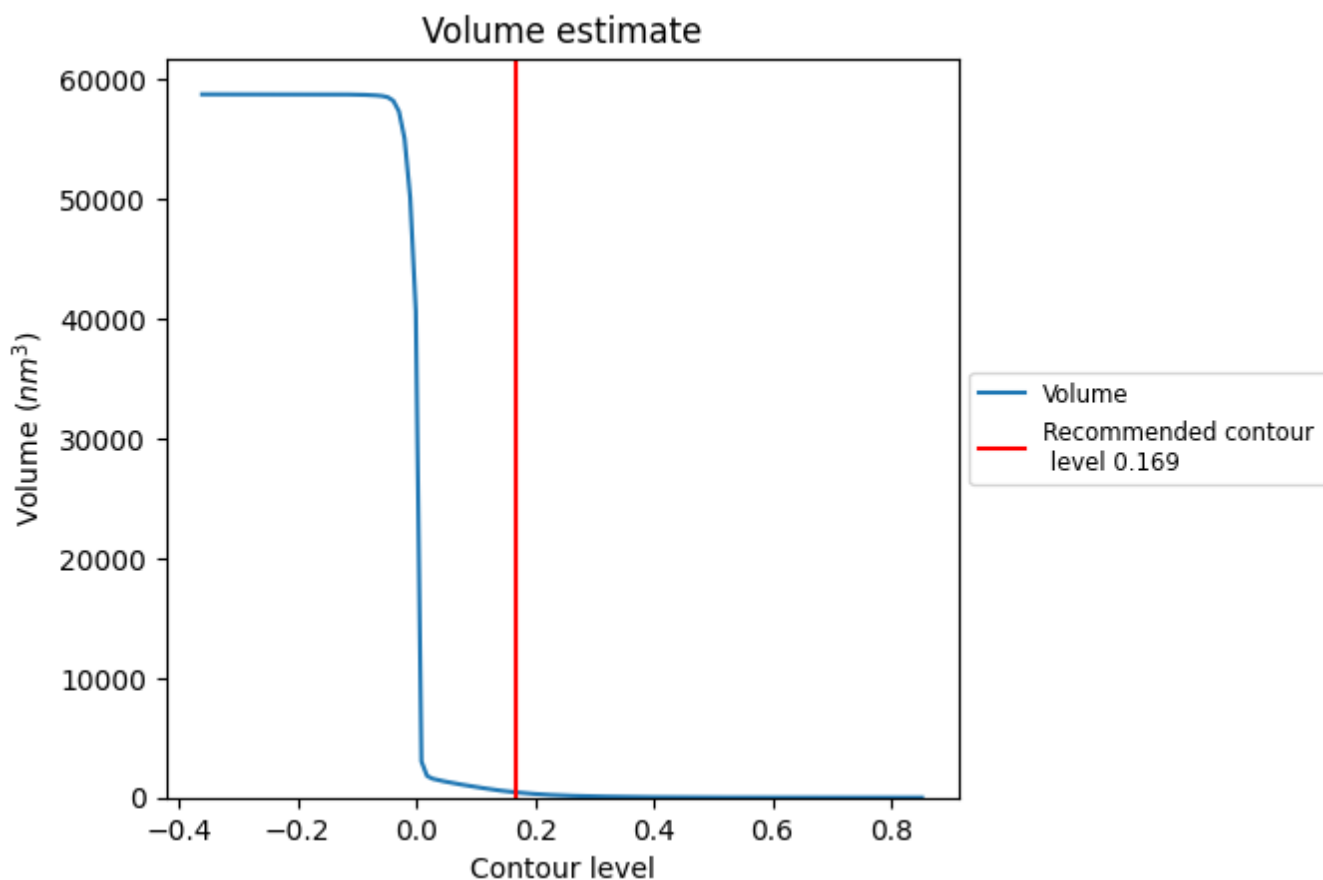
This section contains the results of statistical analysis of the map.

### 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.

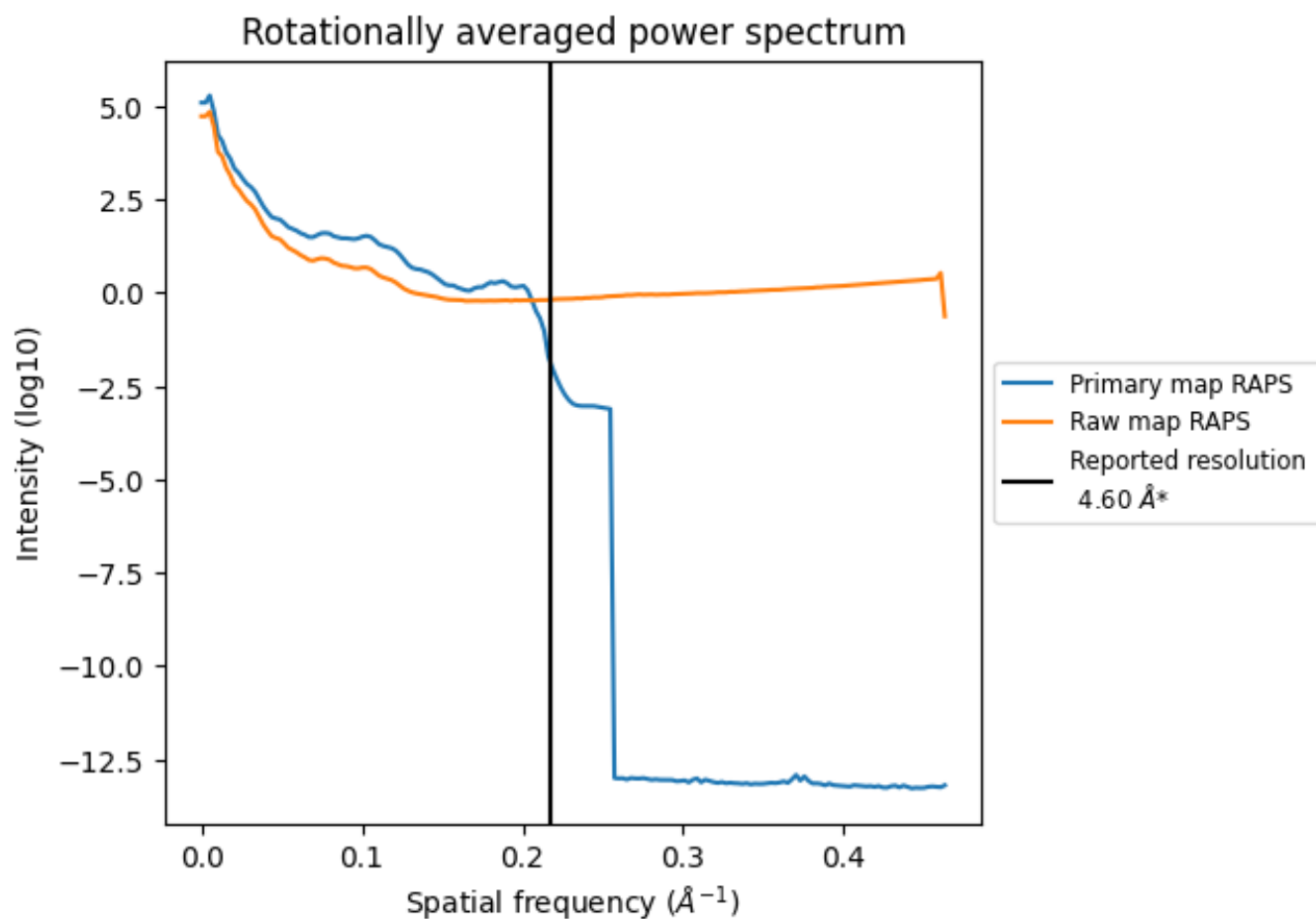
## 7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 431 nm<sup>3</sup>; this corresponds to an approximate mass of 390 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](#)



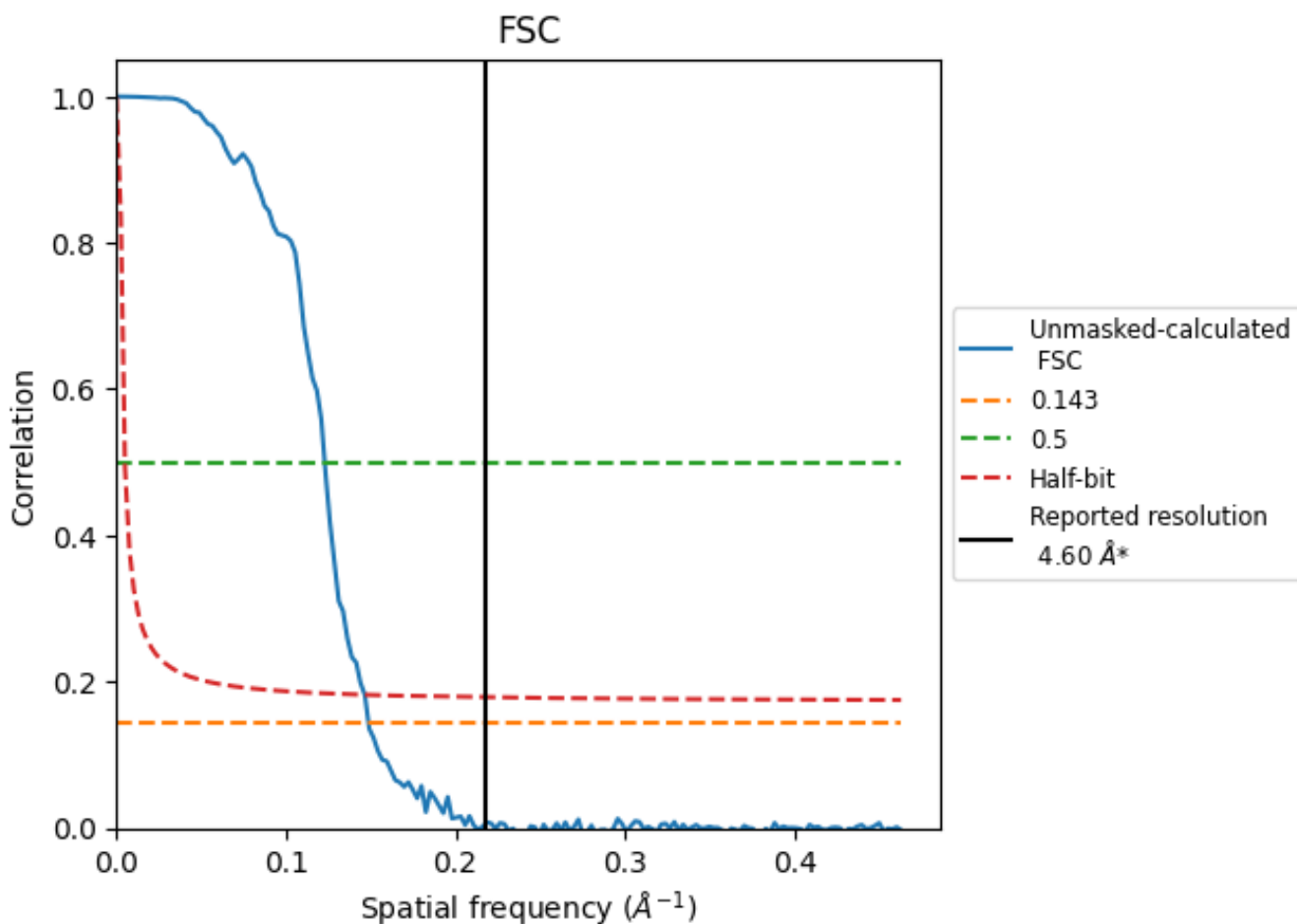
\*Reported resolution corresponds to spatial frequency of 0.217 Å<sup>-1</sup>



## 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 0.217 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

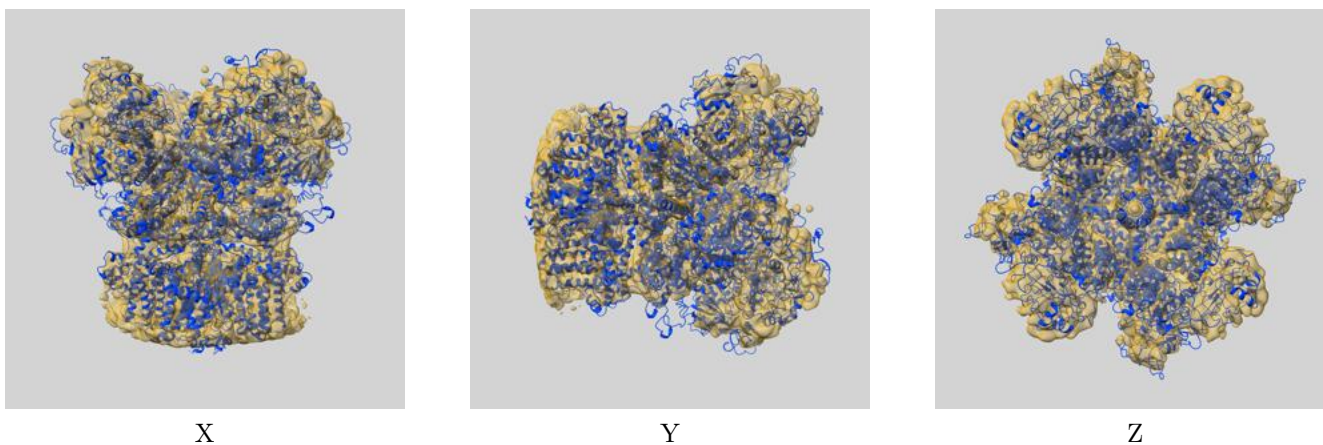
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.60	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	6.72	8.14	6.82

\*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 6.72 differs from the reported value 4.6 by more than 10 %

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

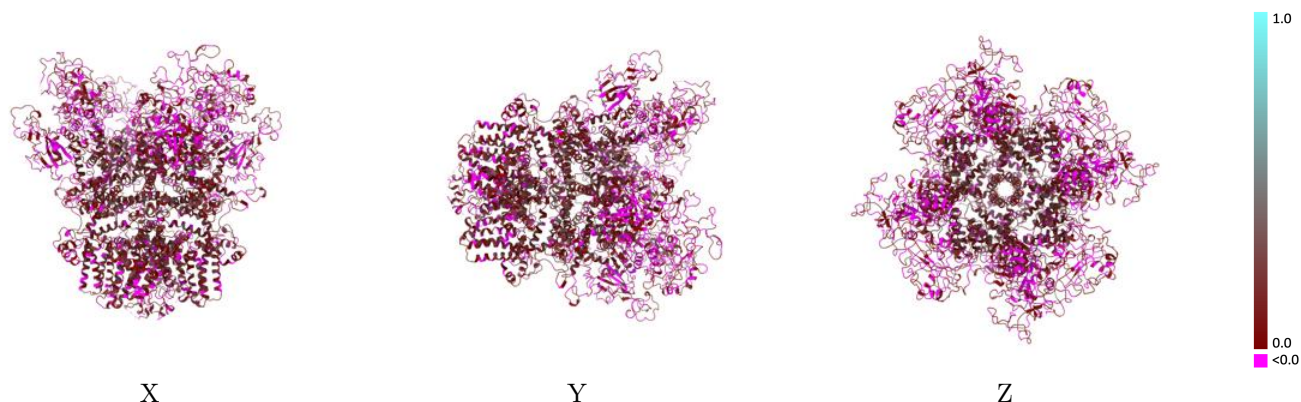
This section contains information regarding the fit between EMDB map EMD-27924 and PDB model 8E6S. Per-residue inclusion information can be found in section 3 on page 6.

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



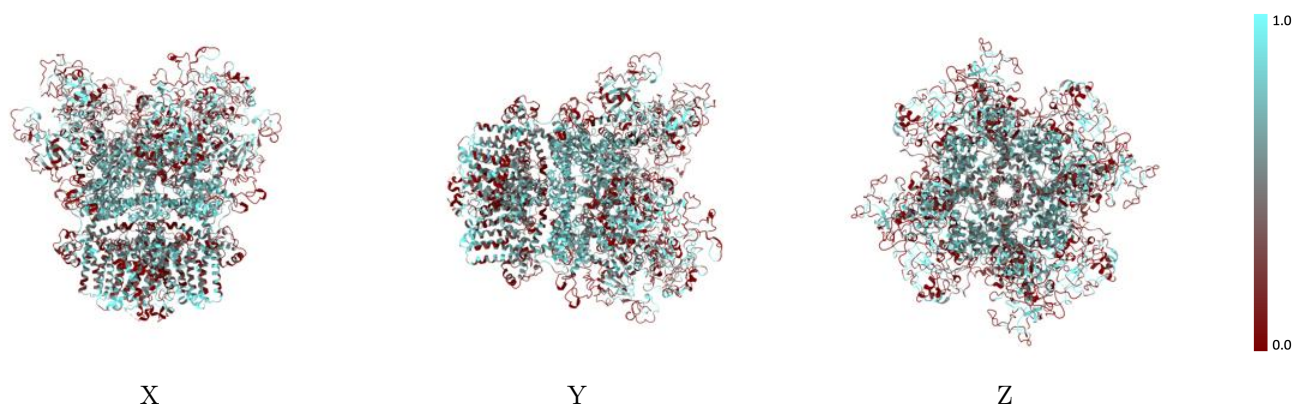
The images above show the 3D surface view of the map at the recommended contour level 0.169 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



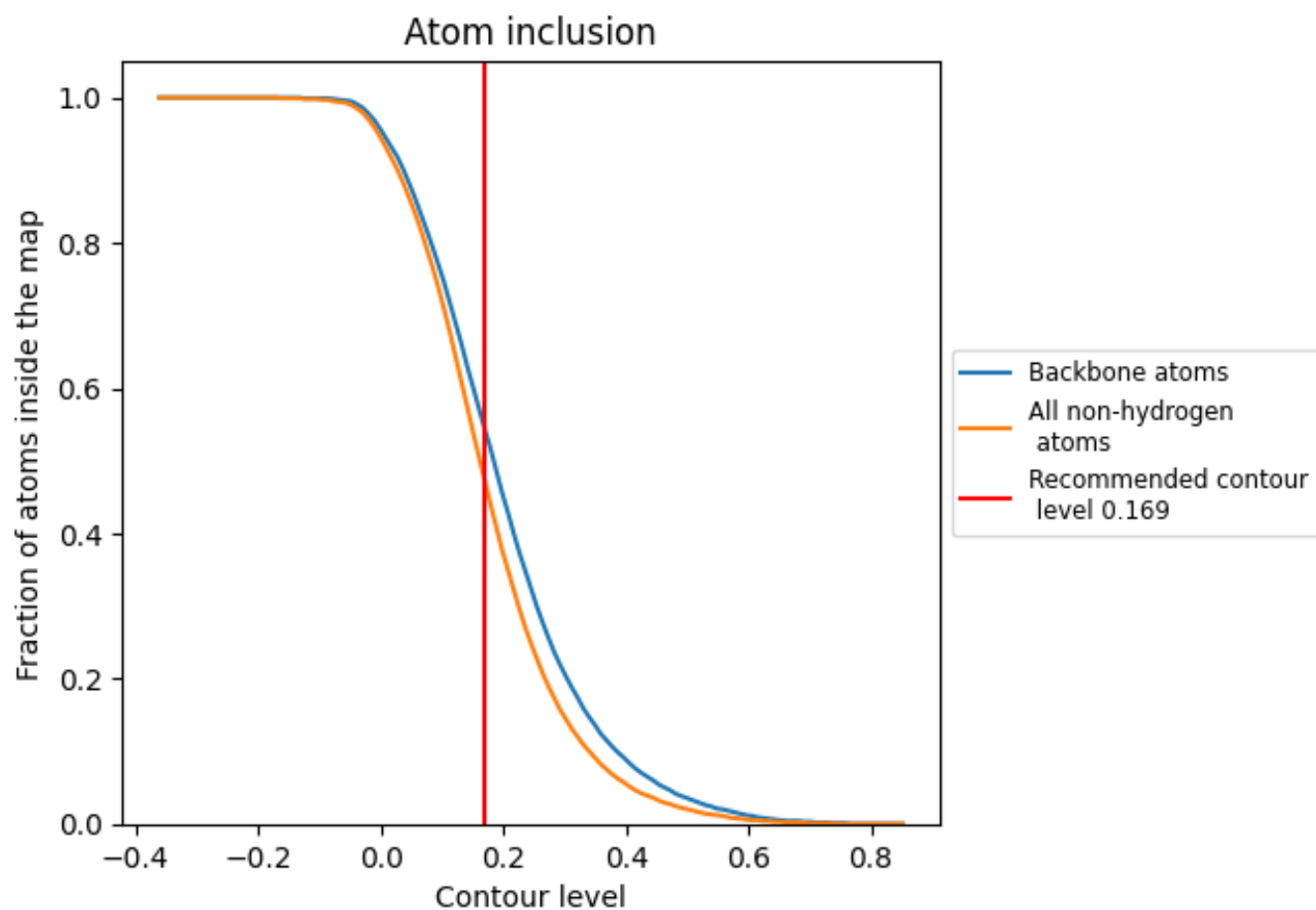
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.169).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 55% of all backbone atoms, 48% 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 (0.169) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	■ 0.4750	■ 0.0970
A	■ 0.4750	■ 0.0990
B	■ 0.4760	■ 0.0970
C	■ 0.4710	■ 0.0940
D	■ 0.4760	■ 0.0970

