



# wwPDB EM Validation Summary Report ⓘ

May 12, 2024 – 12:36 am BST

PDB ID : 6RQT  
EMDB ID : EMD-4985  
Title : RNA Polymerase I-tWH-Rrn3-DNA  
Authors : Mueller, C.W.; Sadian, Y.; Tafur, L.  
Deposited on : 2019-05-16  
Resolution : 4.00 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:

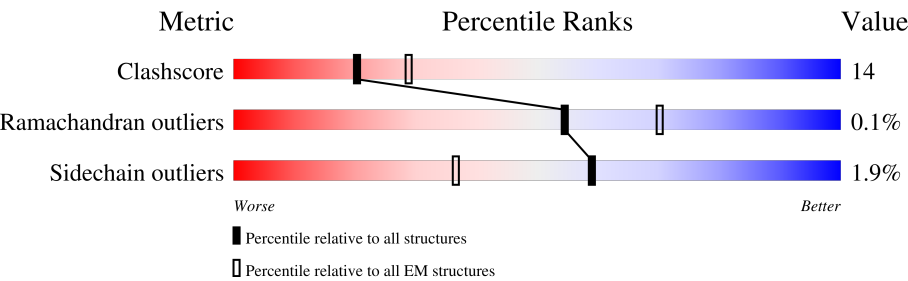
EMDB validation analysis : 0.0.1.dev92  
MolProbity : 4.02b-467  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36.2

# 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 4.00 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.



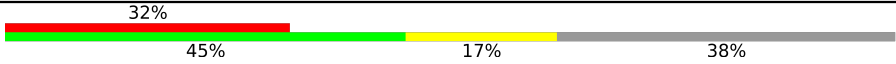
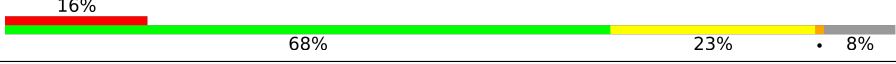
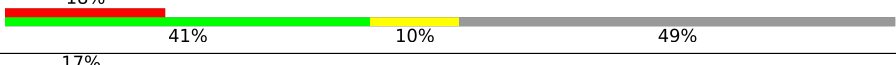


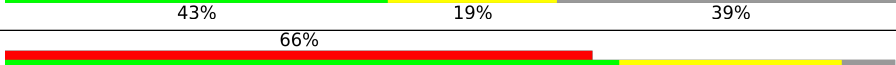
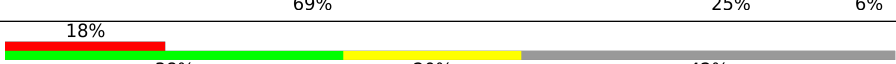
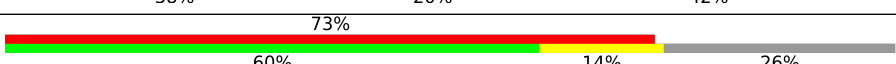

Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	T	70	<div><div>13%</div><div>13%</div><div>13%</div><div>74%</div></div>
2	U	70	<div><div>11%</div><div>16%</div><div>80%</div></div>
3	A	1664	<div><div>17%</div><div>62%</div><div>25%</div><div>12%</div></div>
4	B	1203	<div><div>16%</div><div>64%</div><div>32%</div><div>2%</div></div>
5	C	335	<div><div>14%</div><div>62%</div><div>29%</div><div>9%</div></div>
6	D	137	<div><div>25%</div><div>28%</div><div>15%</div><div>57%</div></div>
7	E	215	<div><div>24%</div><div>74%</div><div>25%</div></div>
8	F	155	<div><div>12%</div><div>47%</div><div>17%</div><div>35%</div></div>

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Mol	Chain	Length	Quality of chain
9	G	326	
10	H	146	
11	I	125	
12	J	70	
13	K	142	
14	L	70	
15	M	415	
16	N	233	
17	O	627	

## 2 Entry composition

There are 18 unique types of molecules in this entry. The entry contains 39820 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 DNA chain called Template strand.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	T	18	Total	C	N	O	P	0	0
			364	175	59	112	18		

- Molecule 2 is a DNA chain called Nontemplate strand.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	U	14	Total	C	N	O	P	0	0
			293	139	59	81	14		

- Molecule 3 is a protein called DNA-directed RNA polymerase I subunit RPA190.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	A	1466	Total	C	N	O	S	0	0
			11571	7309	2012	2188	62		

- Molecule 4 is a protein called DNA-directed RNA polymerase I subunit RPA135.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	B	1170	Total	C	N	O	S	0	0
			9301	5888	1625	1737	51		

- Molecule 5 is a protein called DNA-directed RNA polymerases I and III subunit RPAC1.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	C	304	Total	C	N	O	S	0	0
			2418	1536	414	460	8		

- Molecule 6 is a protein called DNA-directed RNA polymerase I subunit RPA14.

Mol	Chain	Residues	Atoms				AltConf	Trace
6	D	59	Total	C	N	O	0	0
			467	293	80	94		

- Molecule 7 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC1.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	E	214	Total	C	N	O	S	0	0
			1751	1111	309	320	11		

- Molecule 8 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC2.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	F	100	Total	C	N	O	S	0	0
			823	522	144	154	3		

- Molecule 9 is a protein called DNA-directed RNA polymerase I subunit RPA43.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	G	202	Total	C	N	O	S	0	0
			1600	1026	276	293	5		

- Molecule 10 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC3.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	H	134	Total	C	N	O	S	0	0
			1075	677	182	212	4		

- Molecule 11 is a protein called DNA-directed RNA polymerase I subunit RPA12.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	I	64	Total	C	N	O	S	0	0
			472	295	78	95	4		

- Molecule 12 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC5.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	J	69	Total	C	N	O	S	0	0
			569	362	101	100	6		

- Molecule 13 is a protein called DNA-directed RNA polymerases I and III subunit RPAC2.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	K	100	Total	C	N	O	S	0	0
			785	491	129	160	5		

- Molecule 14 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC4.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	L	43	Total	C	N	O	S	0	0
			344	211	69	60	4		

- Molecule 15 is a protein called DNA-directed RNA polymerase I subunit RPA49.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	M	392	Total	C	N	O	S	0	0
			3100	1978	526	592	4		

- Molecule 16 is a protein called DNA-directed RNA polymerase I subunit RPA34.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	N	135	Total	C	N	O	S	0	0
			1070	685	175	206	4		

- Molecule 17 is a protein called RNA polymerase I-specific transcription initiation factor RRN3.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	O	463	Total	C	N	O	S	0	0
			3811	2473	623	694	21		

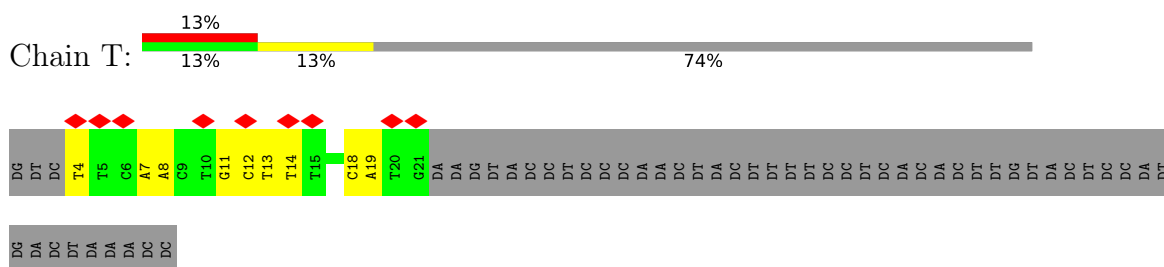
- Molecule 18 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
18	A	2	Total	Zn	0
			2	2	
18	B	1	Total	Zn	0
			1	1	
18	I	1	Total	Zn	0
			1	1	
18	J	1	Total	Zn	0
			1	1	
18	L	1	Total	Zn	0
			1	1	

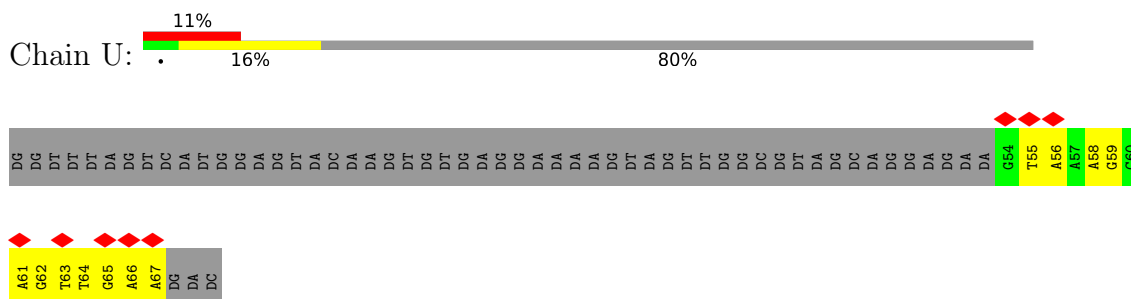
### 3 Residue-property plots [i](#)

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.

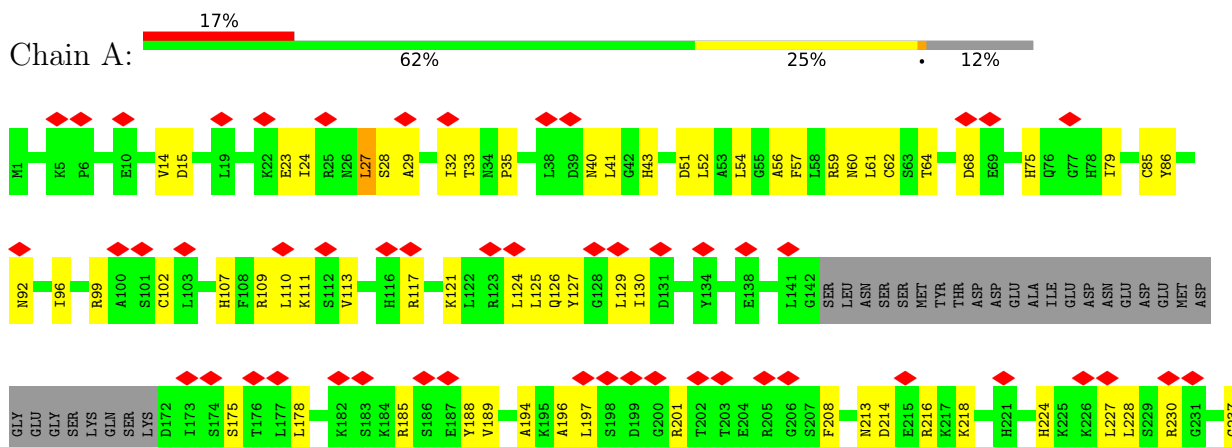
- Molecule 1: Template strand



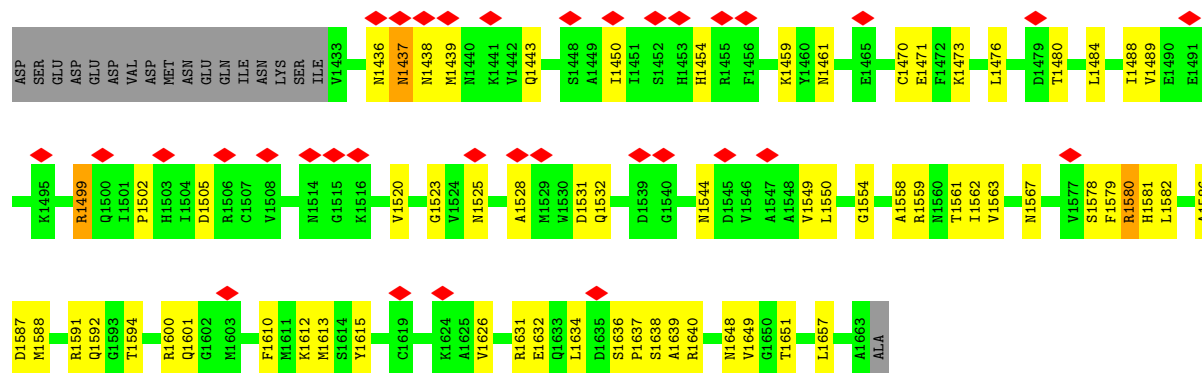
- Molecule 2: Nontemplate strand



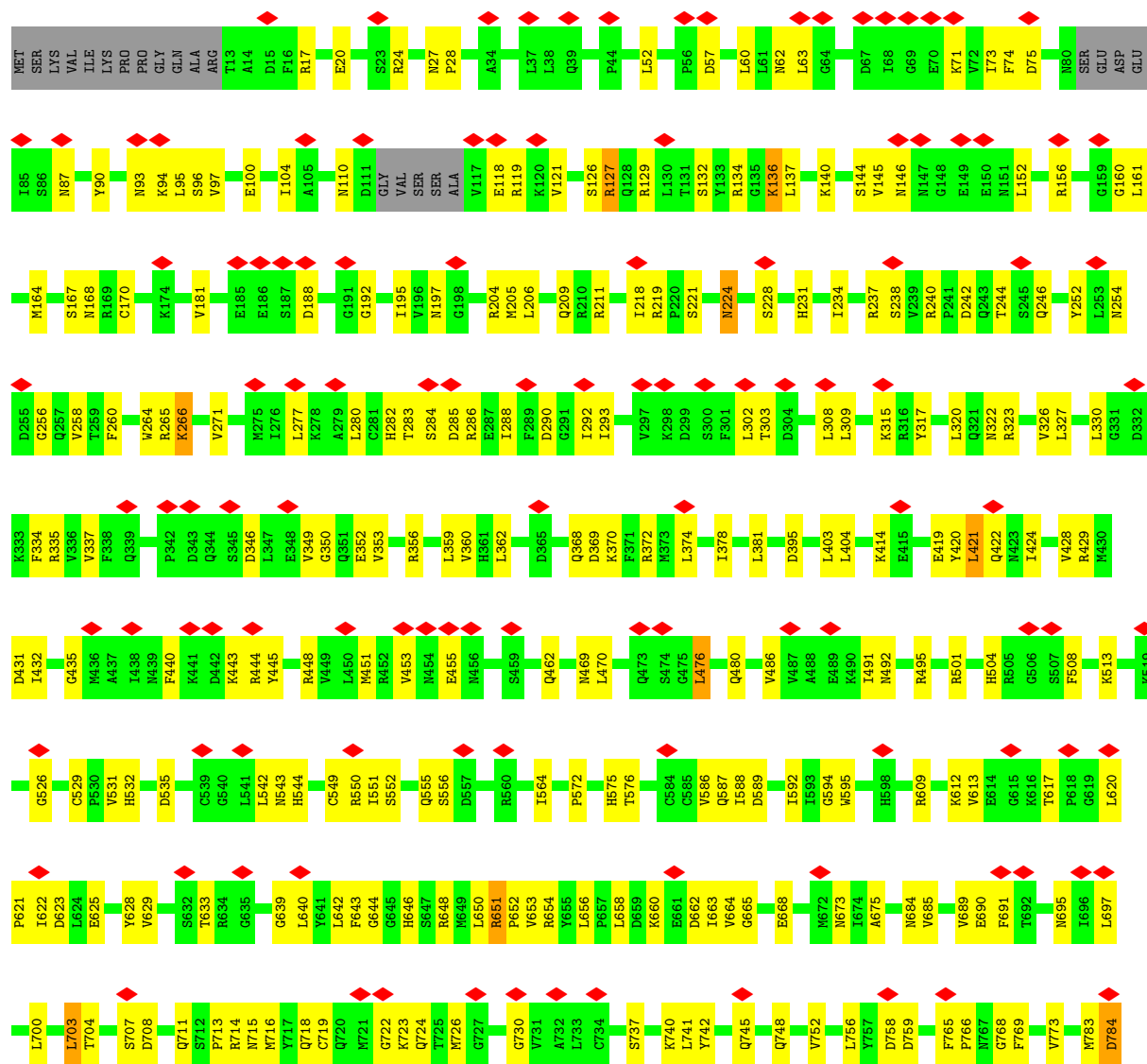
- Molecule 3: DNA-directed RNA polymerase I subunit RPA190

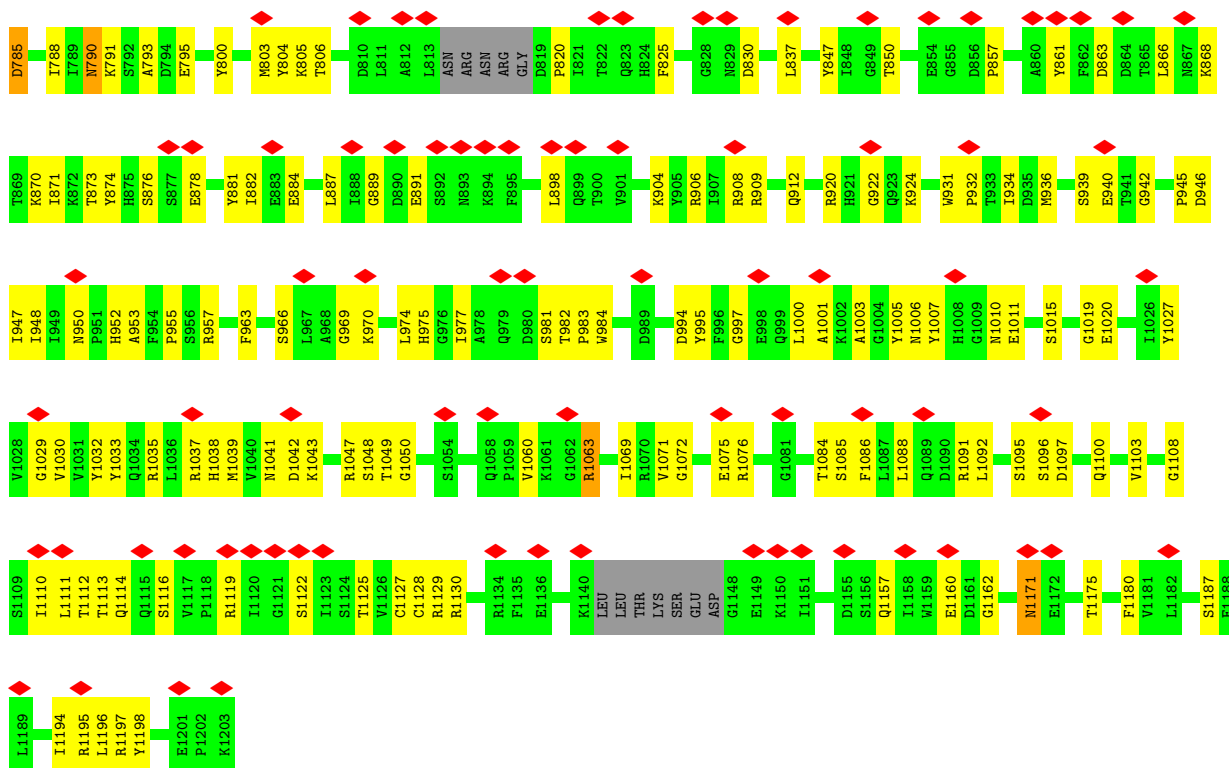




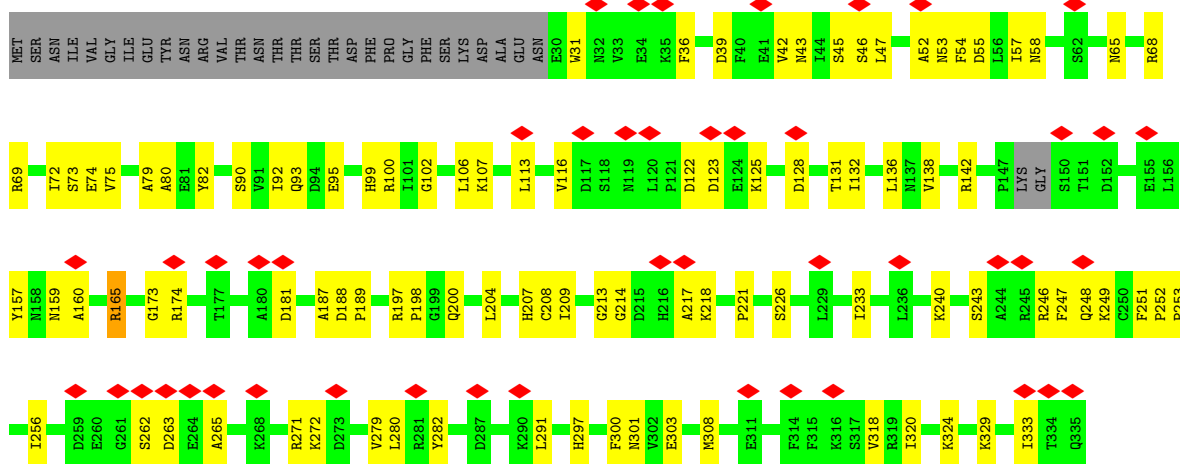


• Molecule 4: DNA-directed RNA polymerase I subunit RPA135

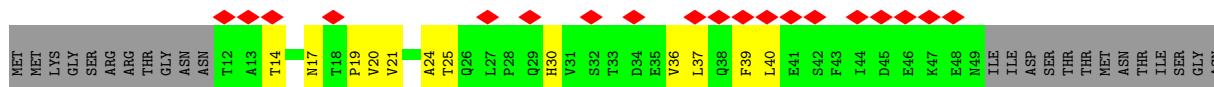




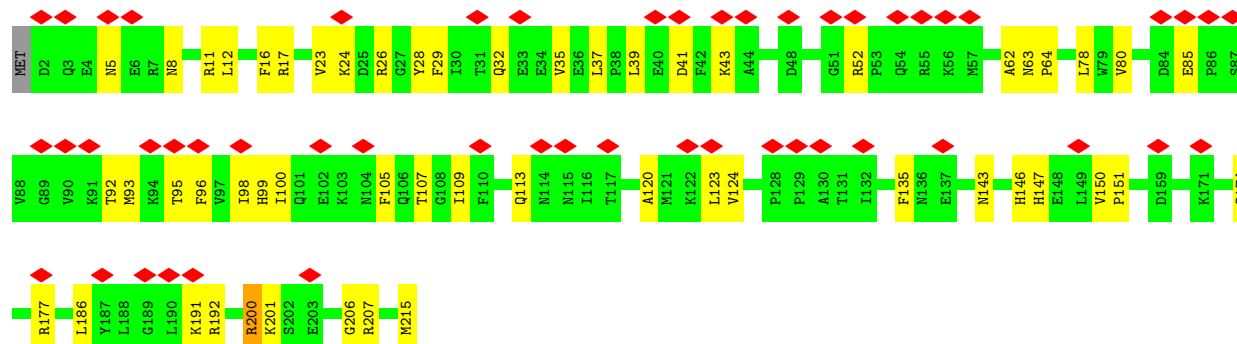
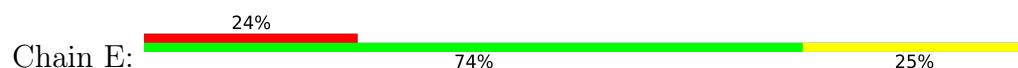
- Molecule 5: DNA-directed RNA polymerases I and III subunit RPAC1



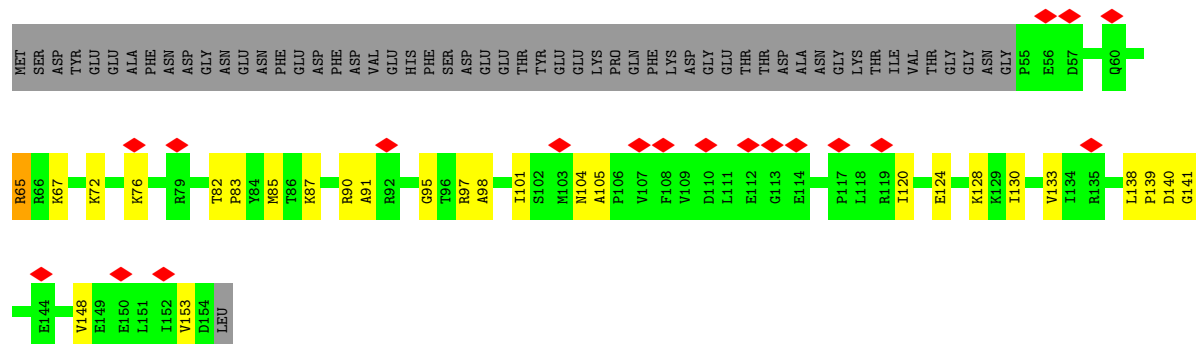
- Molecule 6: DNA-directed RNA polymerase I subunit RPA14



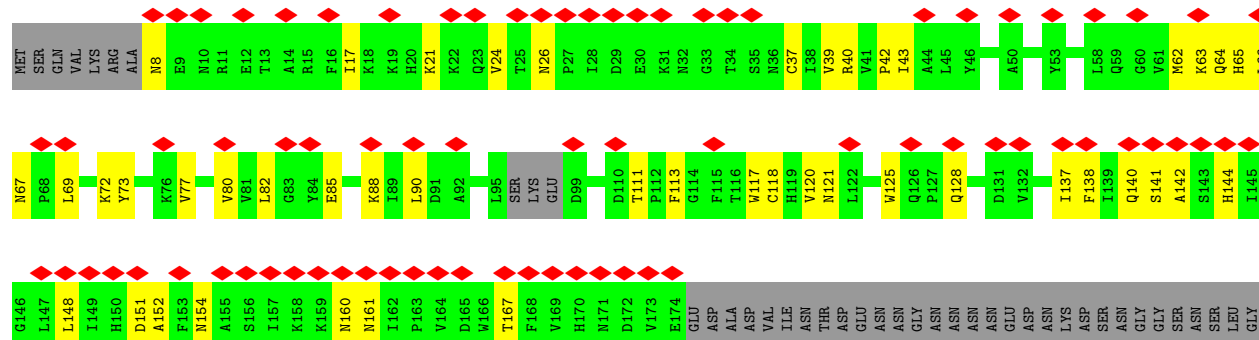
- Molecule 7: DNA-directed RNA polymerases I, II, and III subunit RPABC1

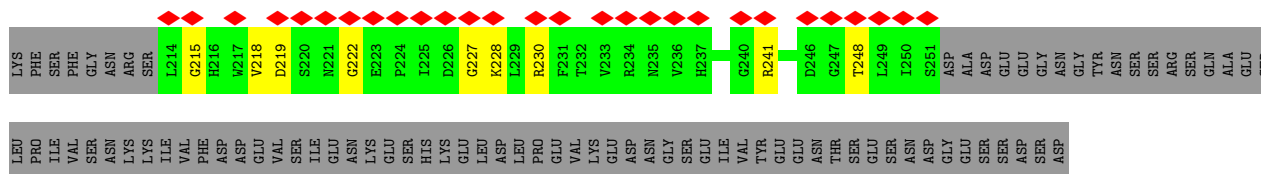


- Molecule 8: DNA-directed RNA polymerases I, II, and III subunit RPABC2

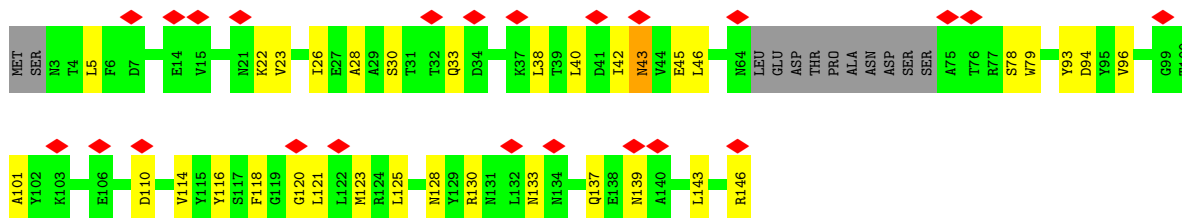


- Molecule 9: DNA-directed RNA polymerase I subunit RPA43

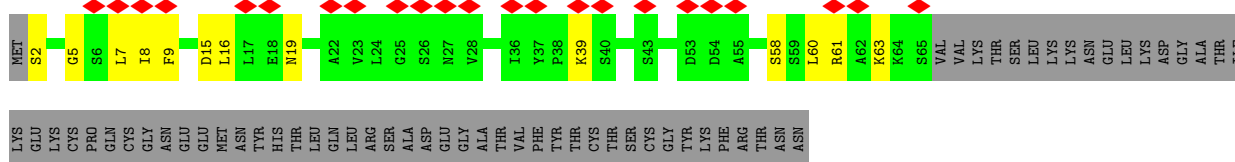




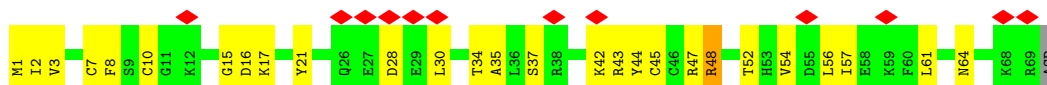
• Molecule 10: DNA-directed RNA polymerases I, II, and III subunit RPABC3



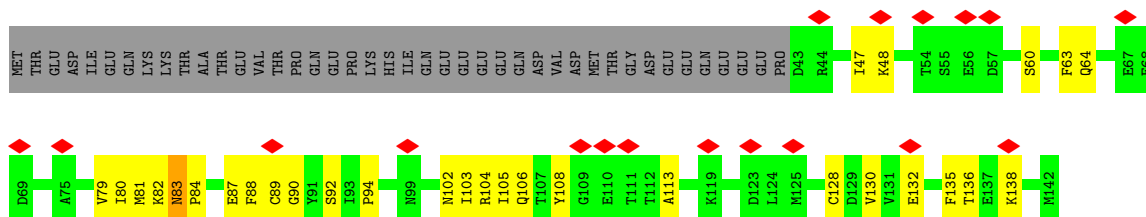
• Molecule 11: DNA-directed RNA polymerase I subunit RPA12



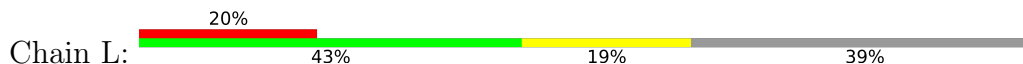
• Molecule 12: DNA-directed RNA polymerases I, II, and III subunit RPABC5

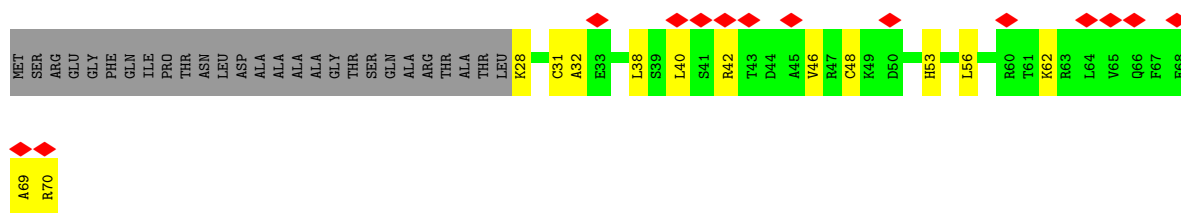


• Molecule 13: DNA-directed RNA polymerases I and III subunit RPAC2

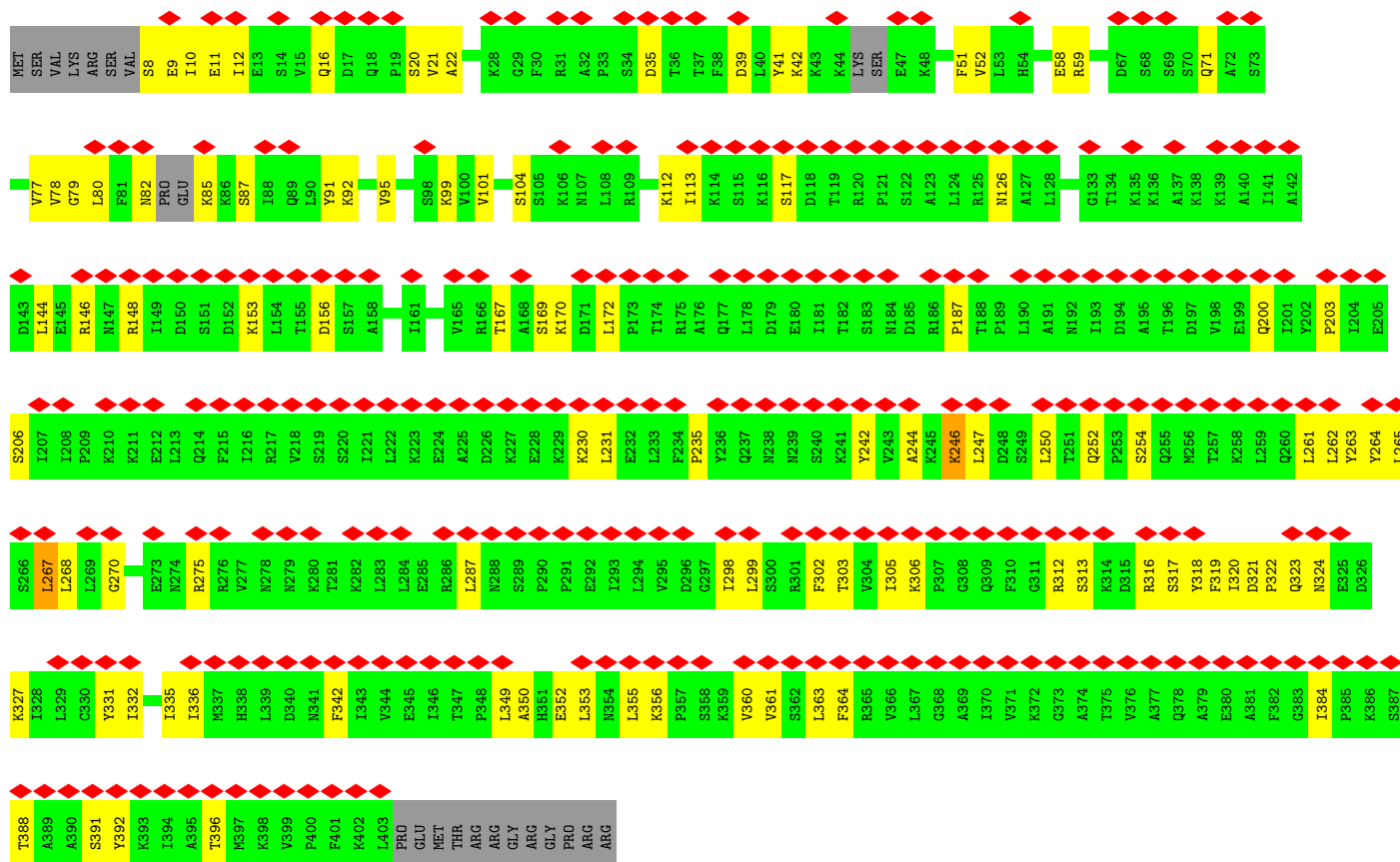


• Molecule 14: DNA-directed RNA polymerases I, II, and III subunit RPABC4

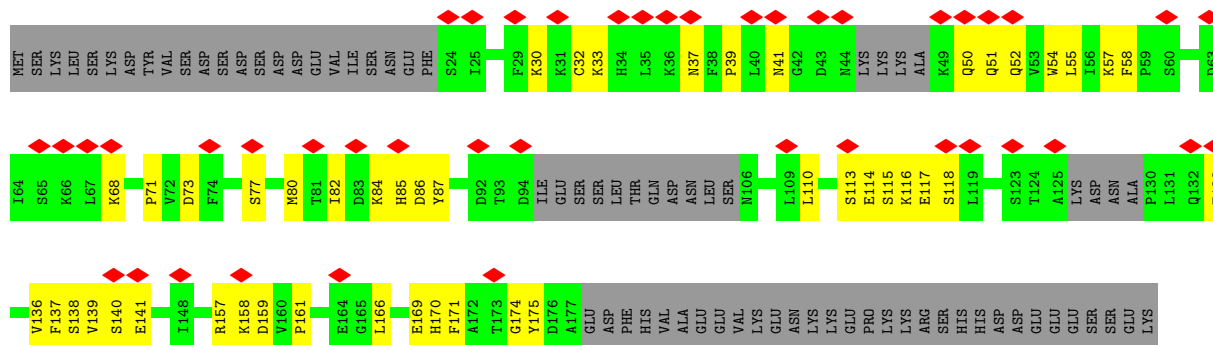




• Molecule 15: DNA-directed RNA polymerase I subunit RPA49



• Molecule 16: DNA-directed RNA polymerase I subunit RPA34



## Chain 0:



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	9789	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 ( $e^-/\text{\AA}^2$ )	1.57175	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	0.286	Depositor
Minimum map value	-0.181	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.014	Depositor
Recommended contour level	0.05	Depositor
Map size (Å)	233.5168, 233.5168, 233.5168	wwPDB
Map dimensions	176, 176, 176	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.3268, 1.3268, 1.3268	Depositor

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ZN

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	T	0.54	0/405	0.93	1/622 (0.2%)
2	U	0.46	0/330	0.71	0/508
3	A	0.40	0/11782	0.67	0/15913
4	B	0.44	1/9506 (0.0%)	0.69	0/12847
5	C	0.39	0/2469	0.66	0/3347
6	D	0.31	0/473	0.62	0/641
7	E	0.40	0/1787	0.63	0/2406
8	F	0.38	0/838	0.64	0/1129
9	G	0.34	0/1637	0.62	0/2226
10	H	0.41	0/1093	0.66	0/1480
11	I	0.36	0/478	0.72	0/647
12	J	0.48	0/578	0.76	0/775
13	K	0.38	0/795	0.63	0/1072
14	L	0.33	0/346	0.67	0/457
15	M	0.33	0/3150	0.65	0/4247
16	N	0.38	0/1090	0.71	0/1466
17	O	0.28	0/3897	0.55	0/5268
All	All	0.39	1/40654 (0.0%)	0.66	1/55051 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	121	VAL	C-N	-5.01	1.22	1.34

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	T	11	DG	P-O3'-C3'	5.31	126.07	119.70

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	T	364	0	206	17	0
2	U	293	0	158	15	0
3	A	11571	0	11653	369	0
4	B	9301	0	9193	343	0
5	C	2418	0	2401	74	0
6	D	467	0	468	16	0
7	E	1751	0	1776	36	0
8	F	823	0	841	16	0
9	G	1600	0	1600	38	0
10	H	1075	0	1046	24	0
11	I	472	0	474	7	0
12	J	569	0	587	23	0
13	K	785	0	782	23	0
14	L	344	0	365	8	0
15	M	3100	0	3210	109	0
16	N	1070	0	1085	61	0
17	O	3811	0	3804	53	0
18	A	2	0	0	0	0
18	B	1	0	0	0	0
18	I	1	0	0	0	0
18	J	1	0	0	0	0
18	L	1	0	0	0	0
All	All	39820	0	39649	1077	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 14.

The worst 5 of 1077 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)
3:A:912:VAL:HG22	3:A:913:PRO:CD	1.52	1.37
4:B:1005:TYR:HE1	16:N:171:PHE:CZ	1.54	1.26

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:618:TYR:CD1	4:B:783:MET:HE1	1.70	1.25
3:A:41:LEU:HD12	3:A:43:HIS:ND1	1.53	1.21
4:B:1005:TYR:OH	16:N:169:GLU:HG3	1.39	1.21

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	
3	A	1450/1664 (87%)	1234 (85%)	212 (15%)	4 (0%)	41	75
4	B	1160/1203 (96%)	980 (84%)	177 (15%)	3 (0%)	41	75
5	C	300/335 (90%)	269 (90%)	31 (10%)	0	100	100
6	D	55/137 (40%)	50 (91%)	5 (9%)	0	100	100
7	E	212/215 (99%)	192 (91%)	20 (9%)	0	100	100
8	F	98/155 (63%)	87 (89%)	11 (11%)	0	100	100
9	G	196/326 (60%)	168 (86%)	28 (14%)	0	100	100
10	H	130/146 (89%)	112 (86%)	18 (14%)	0	100	100
11	I	62/125 (50%)	49 (79%)	13 (21%)	0	100	100
12	J	67/70 (96%)	59 (88%)	8 (12%)	0	100	100
13	K	98/142 (69%)	87 (89%)	11 (11%)	0	100	100
14	L	41/70 (59%)	36 (88%)	5 (12%)	0	100	100
15	M	386/415 (93%)	303 (78%)	83 (22%)	0	100	100
16	N	127/233 (54%)	96 (76%)	31 (24%)	0	100	100
17	O	457/627 (73%)	392 (86%)	65 (14%)	0	100	100
All	All	4839/5863 (82%)	4114 (85%)	718 (15%)	7 (0%)	54	84

5 of 7 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	A	913	PRO
3	A	757	ASN
4	B	784	ASP
4	B	684	ASN
3	A	530	TRP

### 5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	A	1293/1465 (88%)	1263 (98%)	30 (2%)	50	70
4	B	1025/1053 (97%)	1008 (98%)	17 (2%)	60	78
5	C	269/296 (91%)	265 (98%)	4 (2%)	65	80
6	D	56/116 (48%)	55 (98%)	1 (2%)	59	77
7	E	196/197 (100%)	190 (97%)	6 (3%)	40	63
8	F	90/137 (66%)	86 (96%)	4 (4%)	28	55
9	G	180/291 (62%)	177 (98%)	3 (2%)	60	78
10	H	117/128 (91%)	114 (97%)	3 (3%)	46	67
11	I	56/110 (51%)	53 (95%)	3 (5%)	22	50
12	J	64/65 (98%)	63 (98%)	1 (2%)	62	79
13	K	90/130 (69%)	88 (98%)	2 (2%)	52	71
14	L	38/57 (67%)	35 (92%)	3 (8%)	12	39
15	M	350/371 (94%)	344 (98%)	6 (2%)	60	78
16	N	125/220 (57%)	123 (98%)	2 (2%)	62	79
17	O	427/576 (74%)	427 (100%)	0	100	100
All	All	4376/5212 (84%)	4291 (98%)	85 (2%)	59	75

5 of 85 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
7	E	215	MET
12	J	48	ARG

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type
8	F	67	LYS
10	H	43	ASN
14	L	42	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 81 such sidechains are listed below:

Mol	Chain	Res	Type
7	E	153	HIS
15	M	351	HIS
9	G	8	ASN
10	H	43	ASN
16	N	52	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 monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 6 ligands modelled in this entry, 6 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 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.

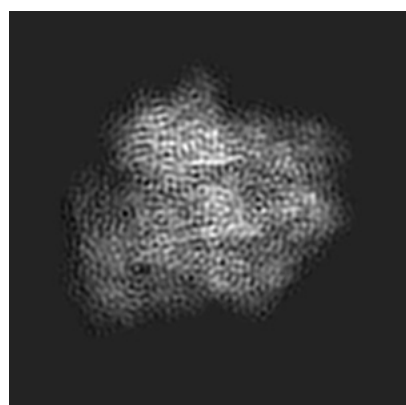
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-4985. These allow visual inspection of the internal detail of the map and identification of artifacts.

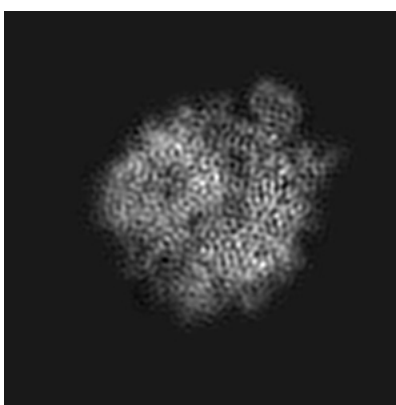
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

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

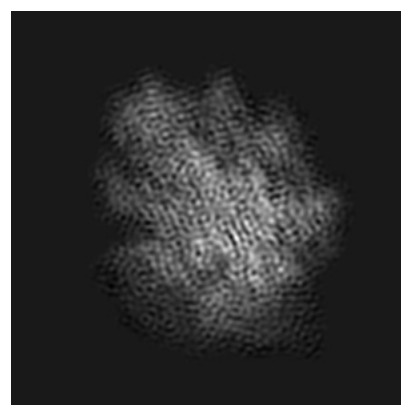
#### 6.1.1 Primary map



X



Y

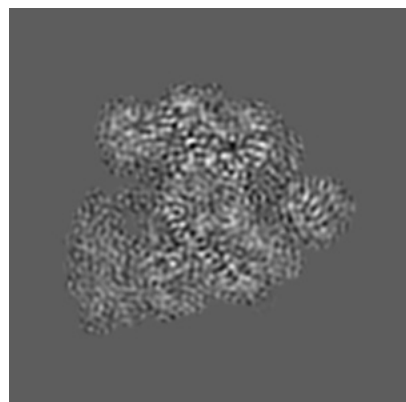


Z

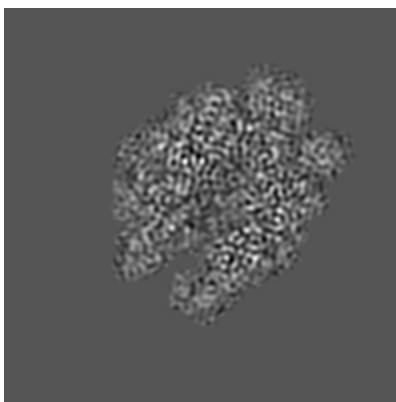
The images above show the map projected in three orthogonal directions.

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

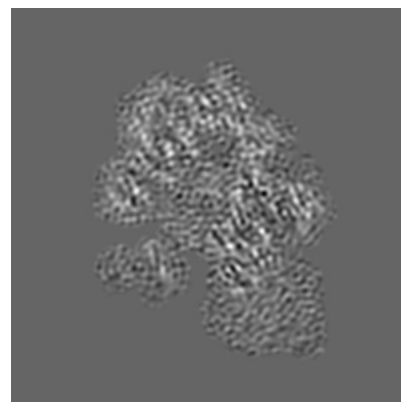
#### 6.2.1 Primary map



X Index: 88



Y Index: 88

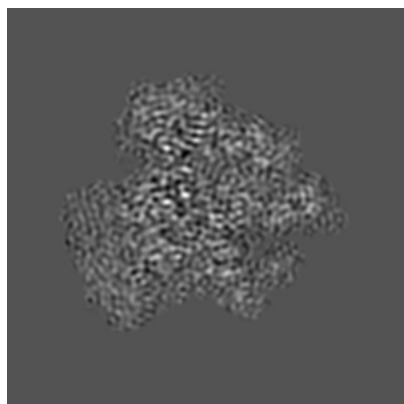


Z Index: 88

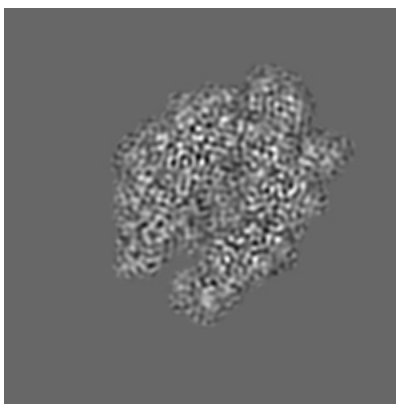
The images above show central slices of the map in three orthogonal directions.

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

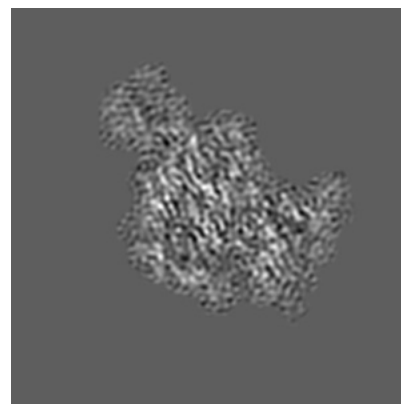
### 6.3.1 Primary map



X Index: 101



Y Index: 89

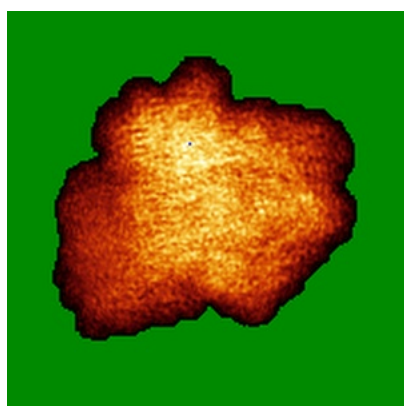


Z Index: 110

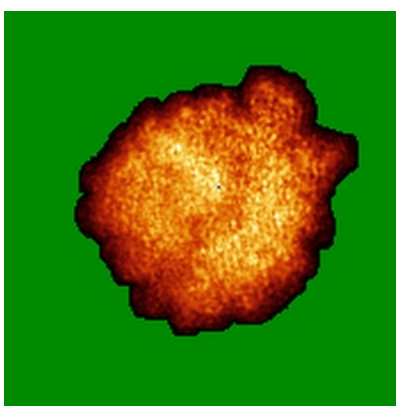
The images above show the largest variance slices of the map in three orthogonal directions.

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

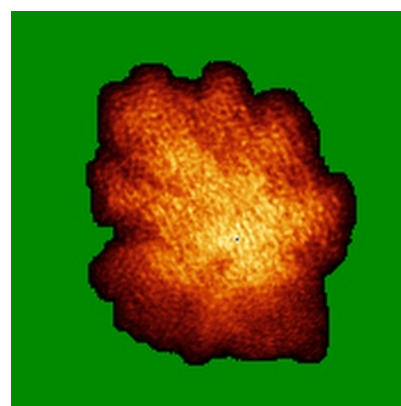
### 6.4.1 Primary map



X



Y

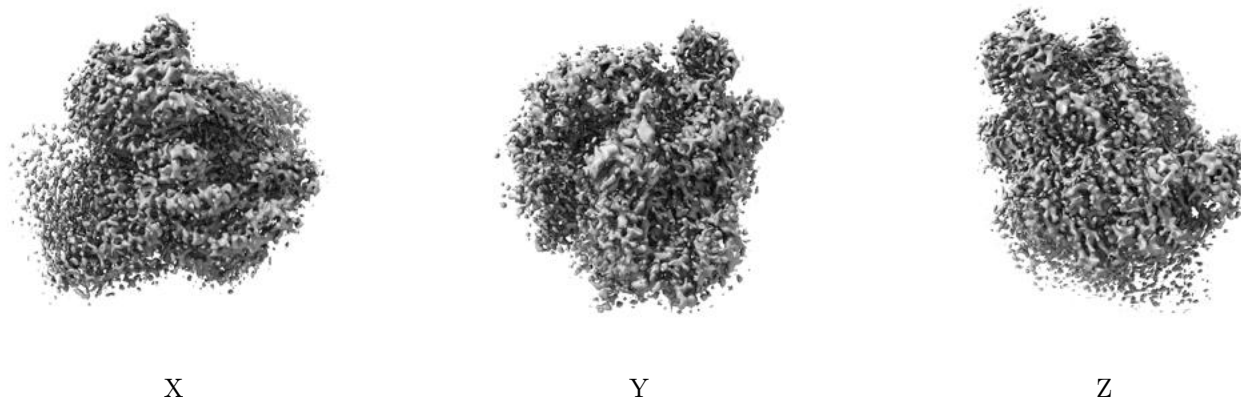


Z

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

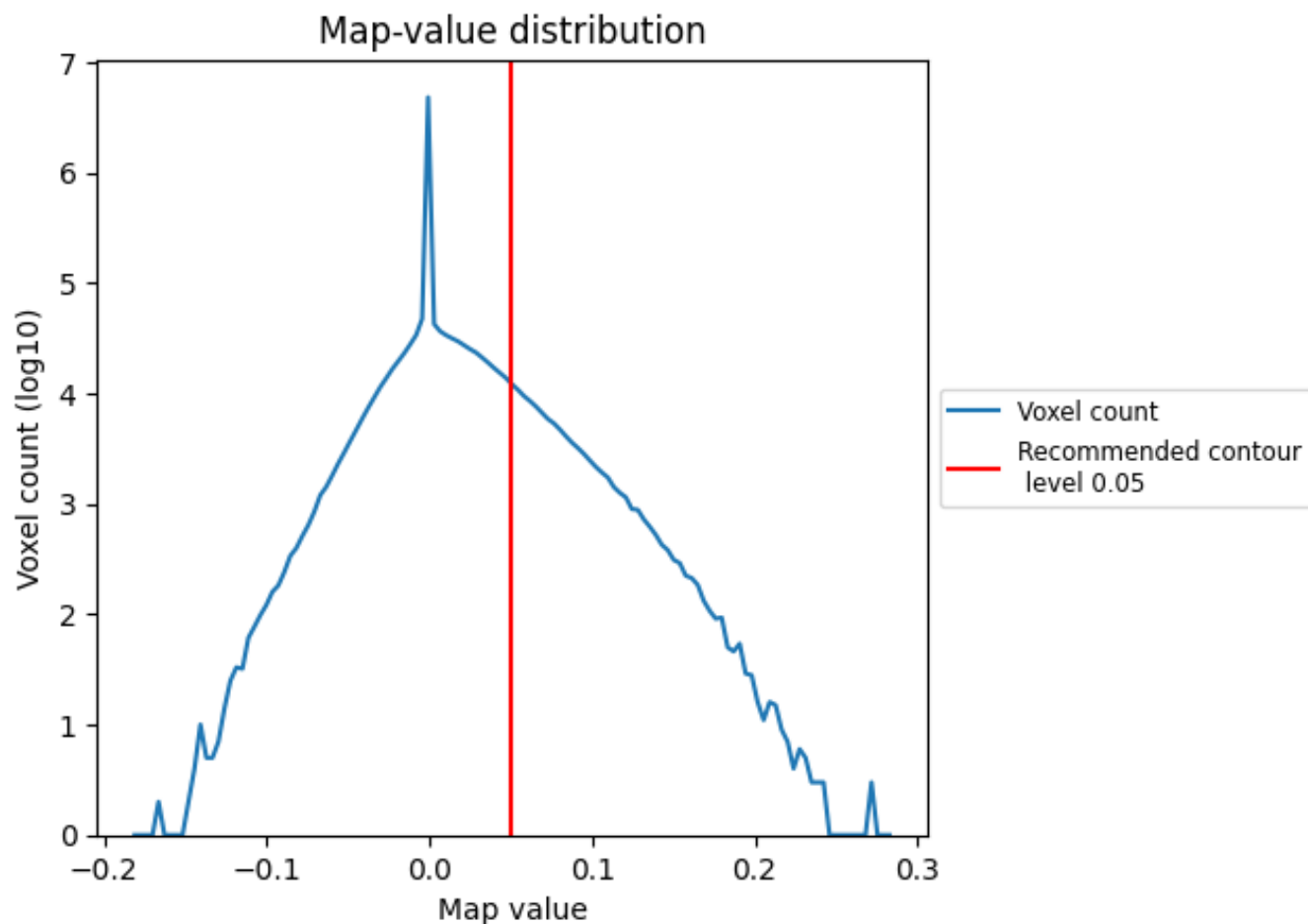
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

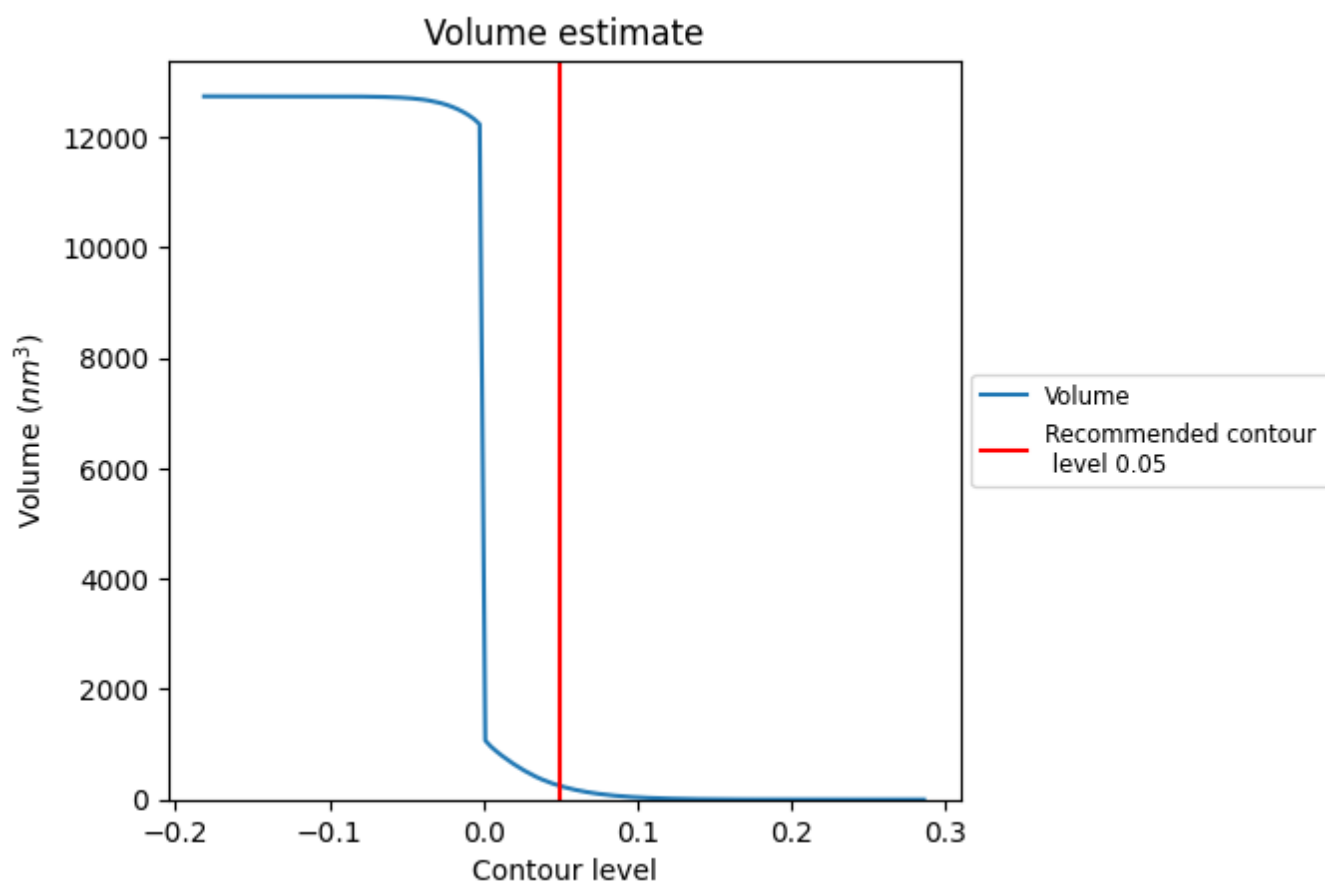
This section contains the results of statistical analysis of the map.

### 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.

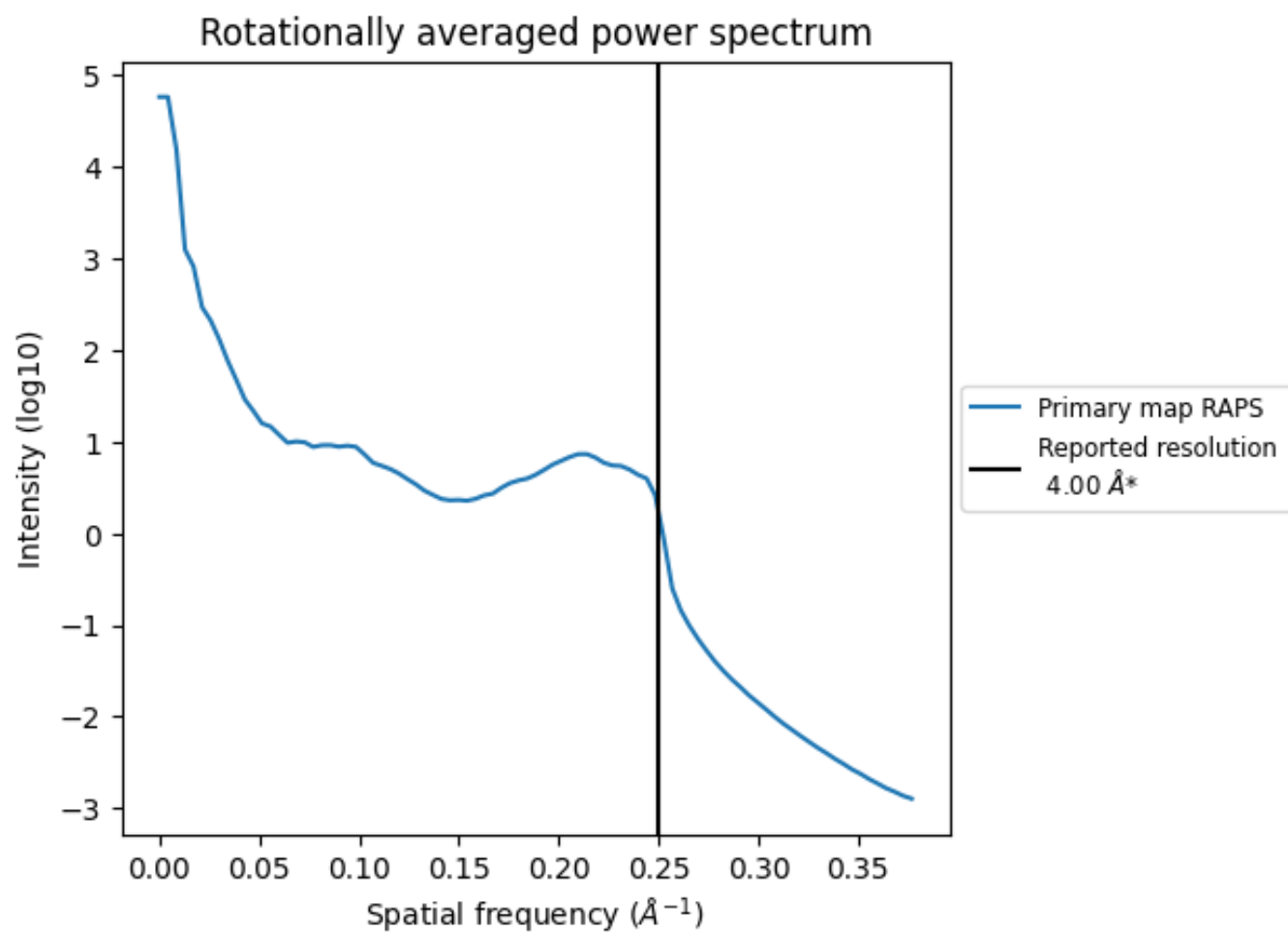
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 247 nm<sup>3</sup>; this corresponds to an approximate mass of 223 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

### 7.3 Rotationally averaged power spectrum ⓘ



\*Reported resolution corresponds to spatial frequency of 0.250 Å<sup>-1</sup>

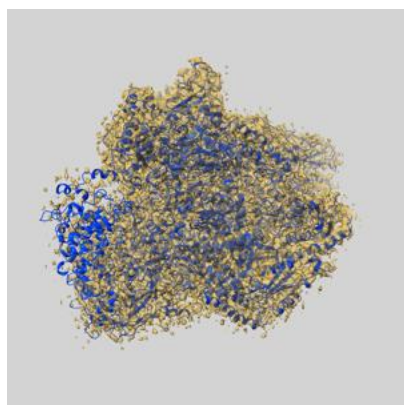
## 8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

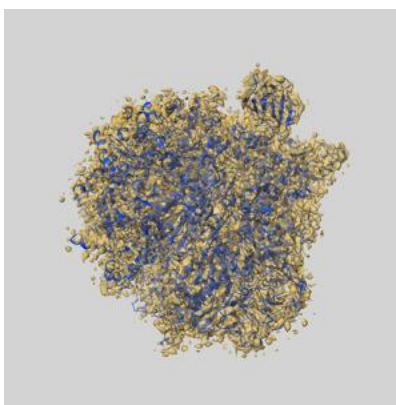
## 9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-4985 and PDB model 6RQT. Per-residue inclusion information can be found in section [3](#) on page [7](#).

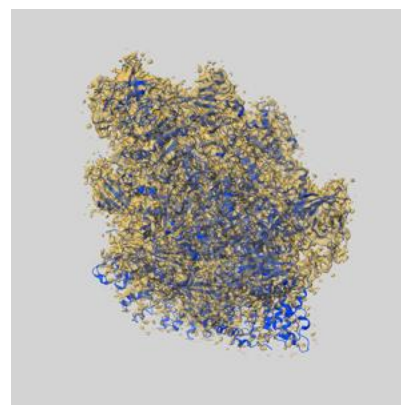
### 9.1 Map-model overlay [i](#)



X



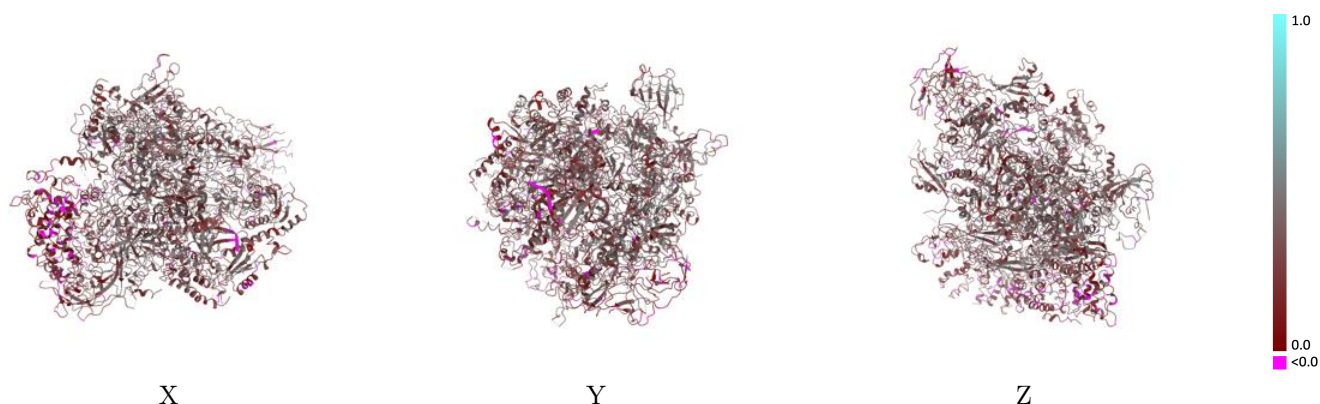
Y



Z

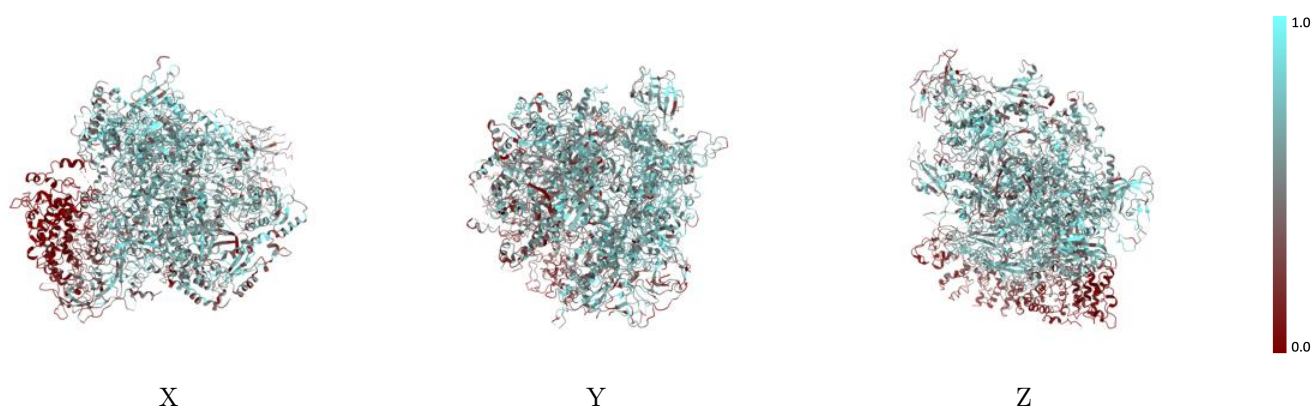
The images above show the 3D surface view of the map at the recommended contour level 0.05 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



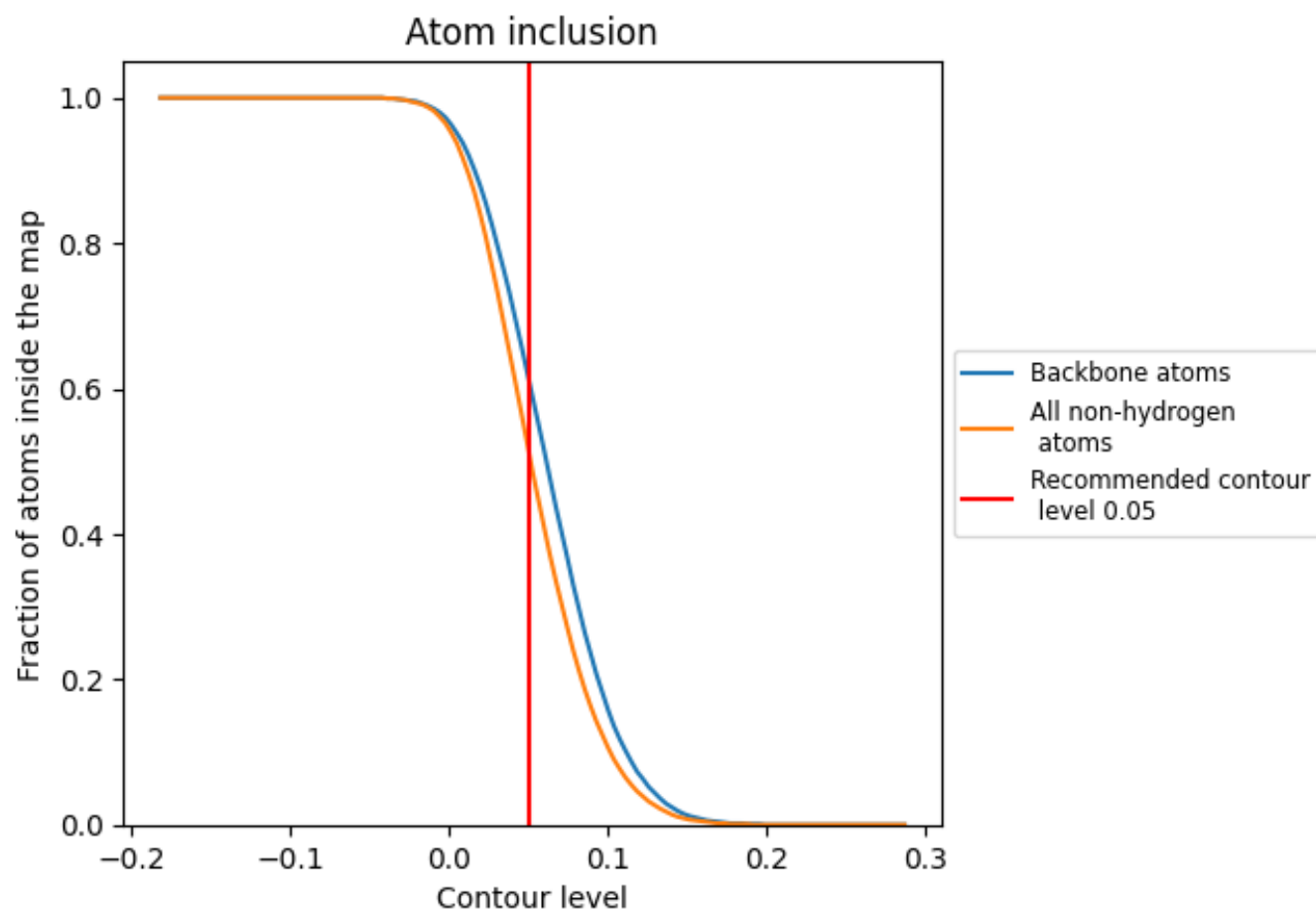
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.05).





































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 62% of all backbone atoms, 52% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary

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

Chain	Atom inclusion	Q-score
All	 0.5160	 0.2950
A	 0.6030	 0.3270
B	 0.6300	 0.3340
C	 0.6380	 0.3400
D	 0.4040	 0.2660
E	 0.5860	 0.3040
F	 0.6120	 0.3580
G	 0.4050	 0.2720
H	 0.6290	 0.3260
I	 0.5130	 0.3020
J	 0.6740	 0.3220
K	 0.6130	 0.3220
L	 0.5270	 0.2890
M	 0.2760	 0.2050
N	 0.4870	 0.2550
O	 0.0590	 0.1670
T	 0.3820	 0.1360
U	 0.3480	 0.1270

