



wwPDB EM Validation Summary Report ⓘ

May 18, 2024 – 07:17 pm BST

PDB ID : 6RWE
EMDB ID : EMD-10038
Title : RNA Polymerase I Open Complex conformation 2
Authors : Mueller, C.W.; Sadian, Y.; Tafur, L.
Deposited on : 2019-06-04
Resolution : 3.00 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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

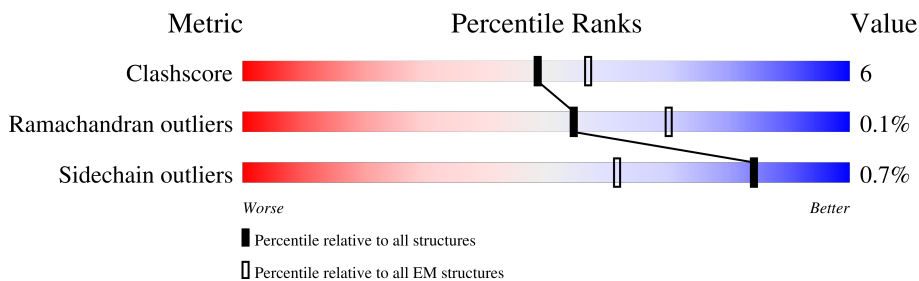
EMDB validation analysis : 0.0.1.dev92
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

1 Overall quality at a glance

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

The reported resolution of this entry is 3.00 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.



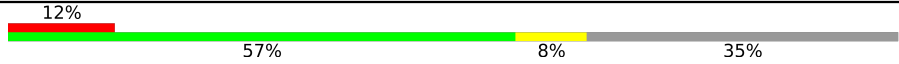

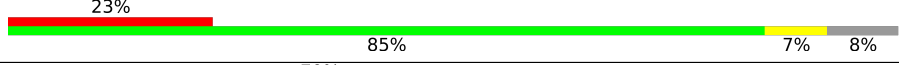
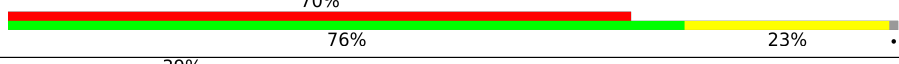


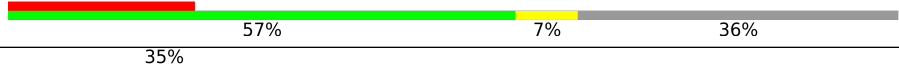


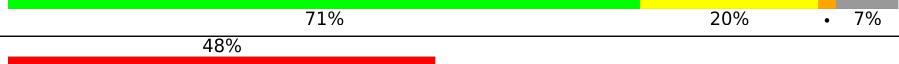


Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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 ≥ 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	
2	U	70	
3	M	415	
4	A	1664	
5	B	1203	
6	C	335	
7	D	137	
8	E	215	

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Mol	Chain	Length	Quality of chain
9	F	155	
10	G	326	
11	H	146	
12	I	125	
13	J	70	
14	K	142	
15	L	70	
16	N	233	
17	O	627	
18	Q	514	
19	S	894	
20	R	507	

2 Entry composition

There are 21 unique types of molecules in this entry. The entry contains 53719 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
			Total	C	N	O	P		
1	T	50	1000	481	164	305	50	0	0

- Molecule 2 is a DNA chain called Nontemplate strand.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	U	45	944	447	192	261	44	0	0

- Molecule 3 is a protein called DNA-directed RNA polymerase I subunit RPA49.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	M	392	3100	1978	525	593	4	0	0

- Molecule 4 is a protein called DNA-directed RNA polymerase I subunit RPA190.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	A	1464	11558	7303	2011	2183	61	0	0

- Molecule 5 is a protein called DNA-directed RNA polymerase I subunit RPA135.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	B	1180	9371	5923	1644	1754	50	0	0

- Molecule 6 is a protein called DNA-directed RNA polymerases I and III subunit RPAC1.

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

- Molecule 7 is a protein called DNA-directed RNA polymerase I subunit RPA14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	D	70	Total	C	N	O	S	0	0
			551	340	100	109	2		

- Molecule 8 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	E	215	Total	C	N	O	S	0	0
			1759	1116	310	321	12		

- Molecule 9 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC2.

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

- Molecule 10 is a protein called DNA-directed RNA polymerase I subunit RPA43.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	G	199	Total	C	N	O	S	0	0
			1576	1012	273	286	5		

- Molecule 11 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	H	134	Total	C	N	O	S	0	0
			1072	676	181	211	4		

- Molecule 12 is a protein called DNA-directed RNA polymerase I subunit RPA12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	I	124	Total	C	N	O	S	0	0
			942	584	160	189	9		

- Molecule 13 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC5.

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

- Molecule 14 is a protein called DNA-directed RNA polymerases I and III subunit RPAC2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	K	103	810	506	132	167	5	0	0

- Molecule 15 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	L	45	359	221	71	63	4	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	N	139	1103	706	179	214	4	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	O	499	4086	2636	661	767	22	0	0

- Molecule 18 is a protein called RNA polymerase I-specific transcription initiation factor RRN7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	Q	477	3936	2529	675	712	20	0	0

- Molecule 19 is a protein called RNA polymerase I-specific transcription initiation factor RRN6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	S	610	4963	3160	842	950	11	0	0

- Molecule 20 is a protein called RNA polymerase I-specific transcription initiation factor RRN11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	R	330	2771	1791	489	480	11	0	0

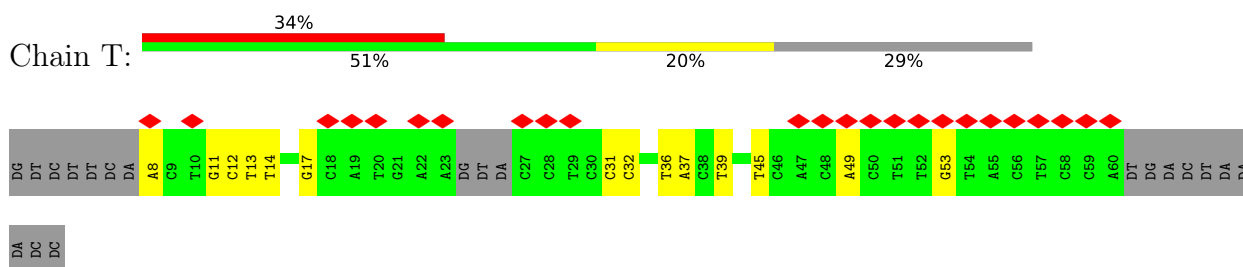
- Molecule 21 is ZINC ION (three-letter code: ZN) (formula: Zn).

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

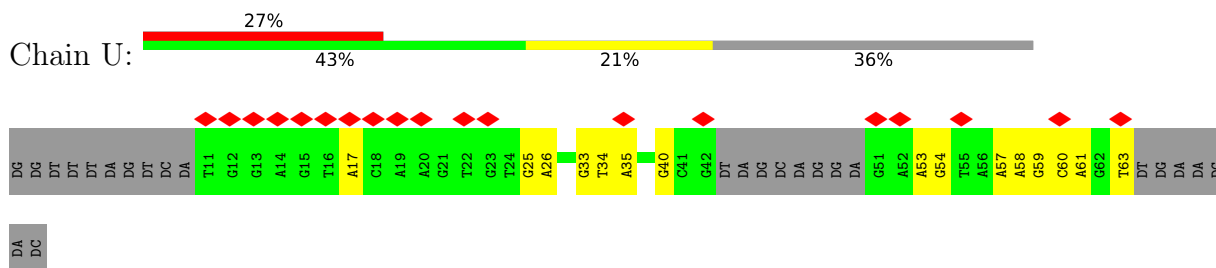
3 Residue-property plots

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.

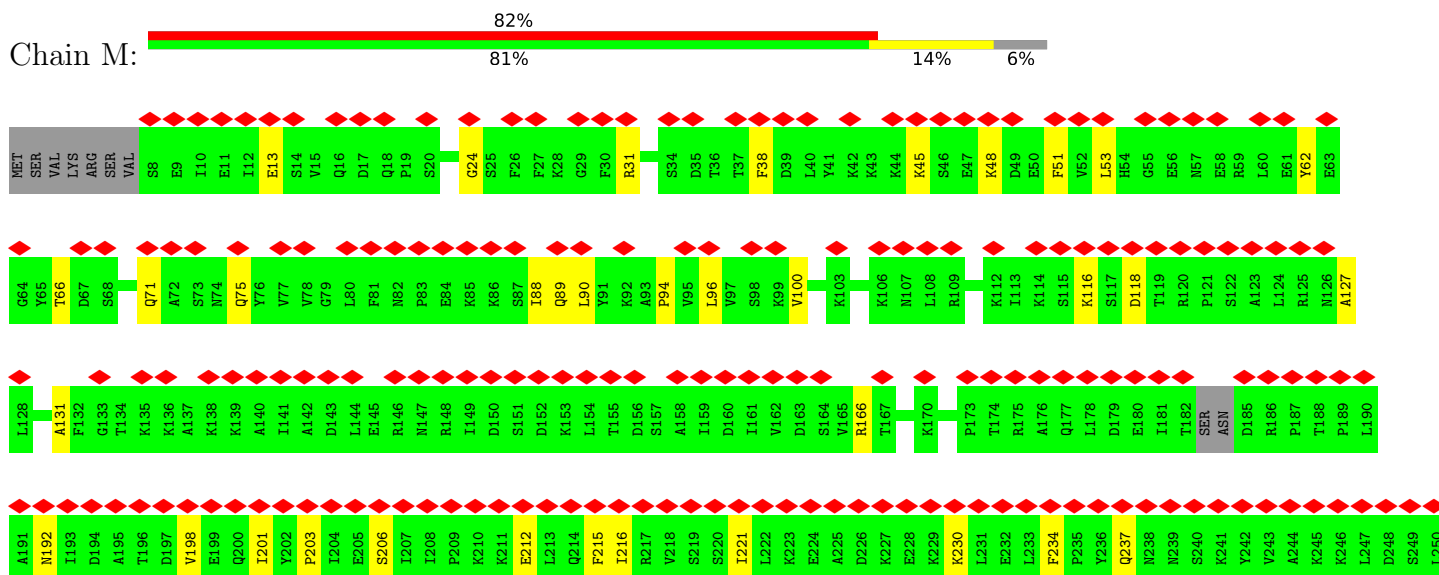
- Molecule 1: Template strand

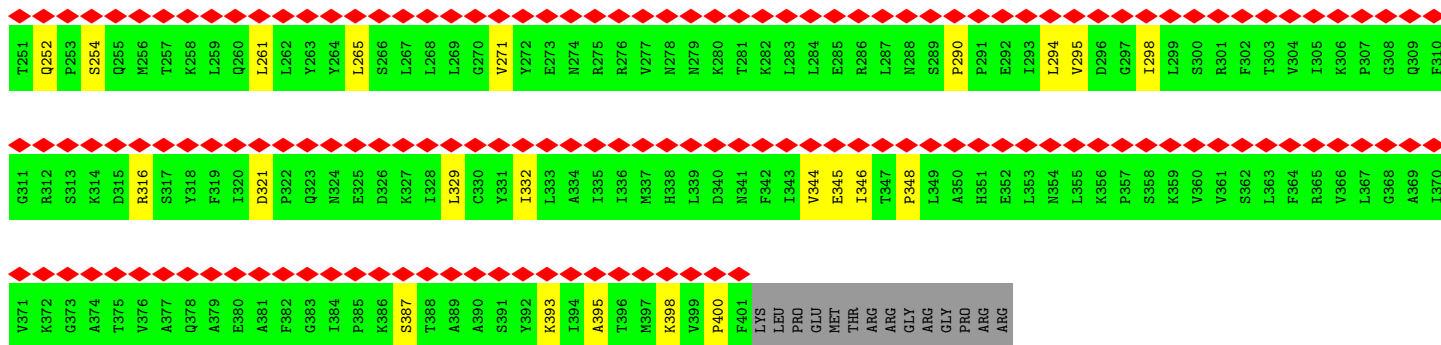


- Molecule 2: Nontemplate strand

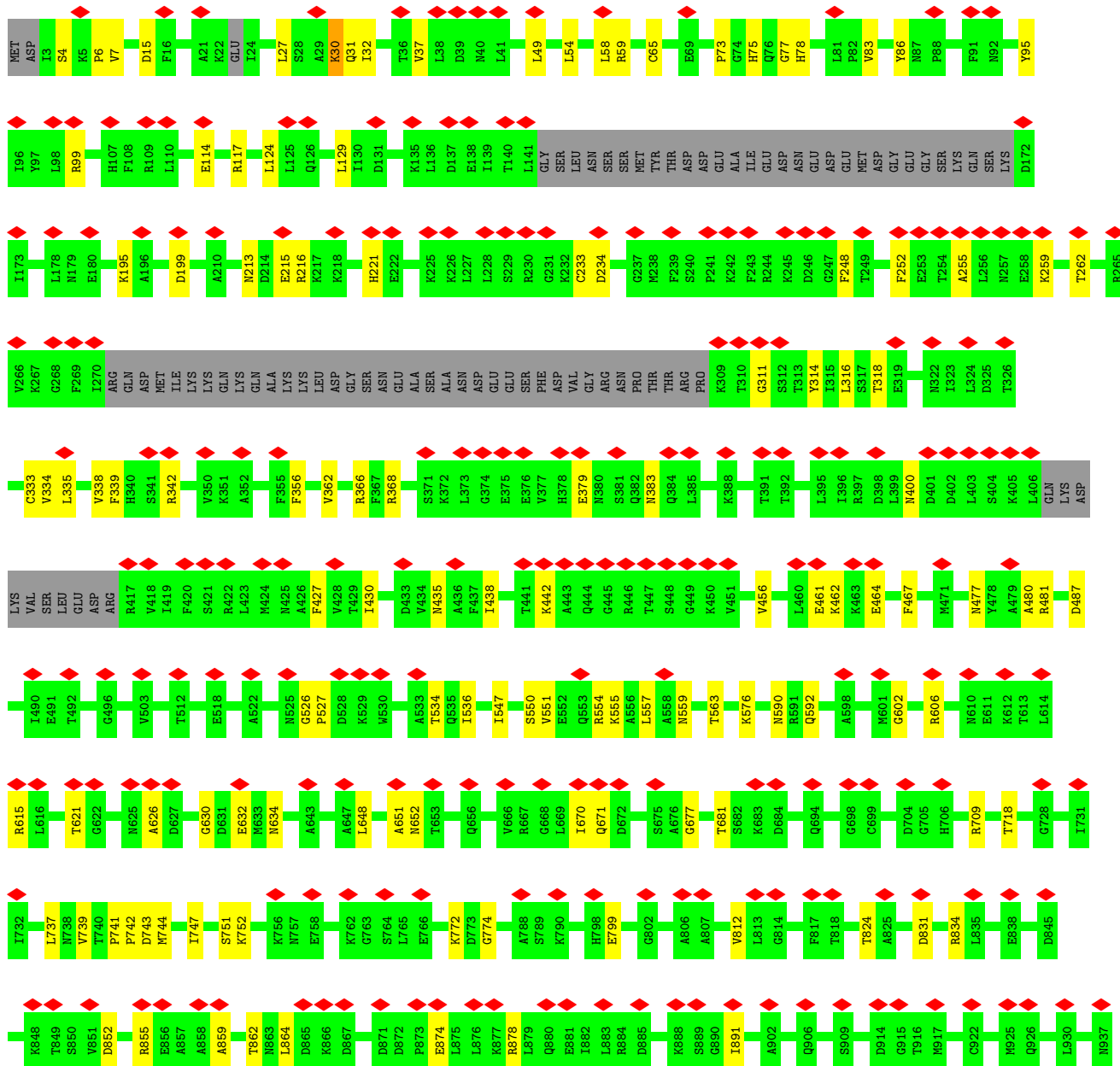
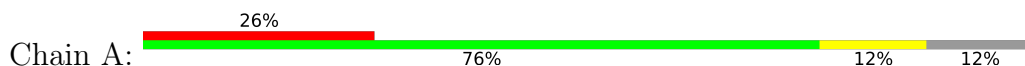


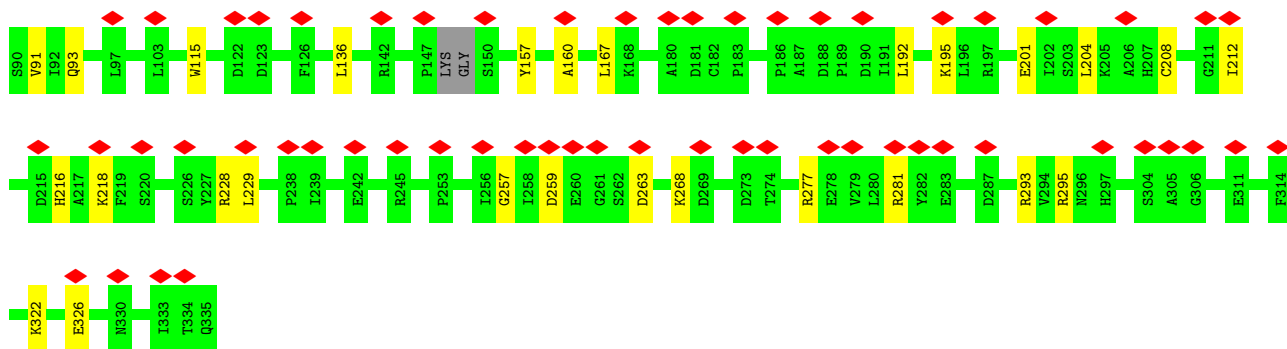
- Molecule 3: DNA-directed RNA polymerase I subunit RPA49



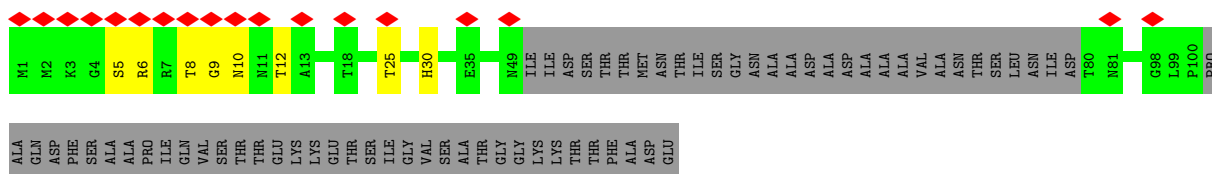


• Molecule 4: DNA-directed RNA polymerase I subunit RPA190

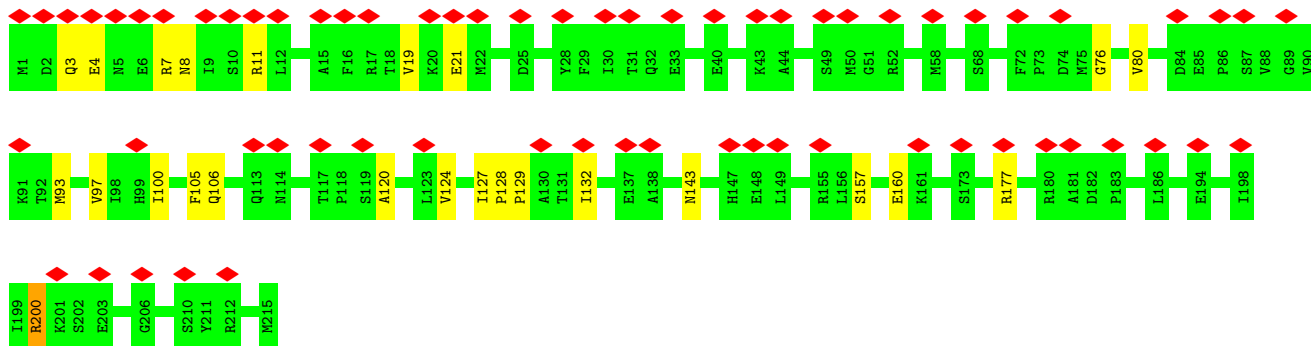
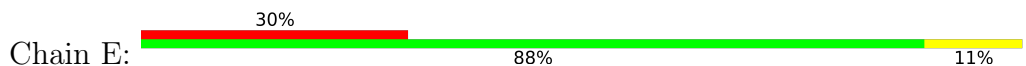




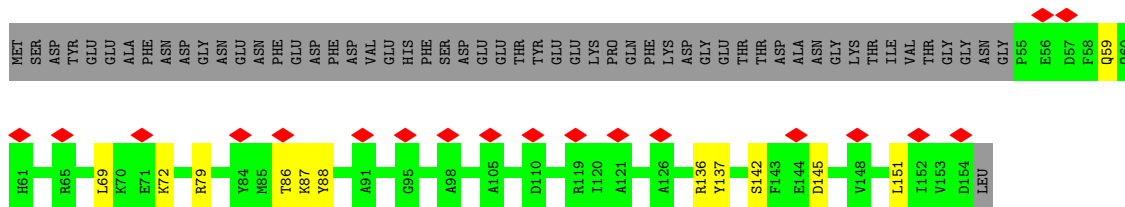
• Molecule 7: DNA-directed RNA polymerase I subunit RPA14



• Molecule 8: DNA-directed RNA polymerases I, II, and III subunit RPABC1

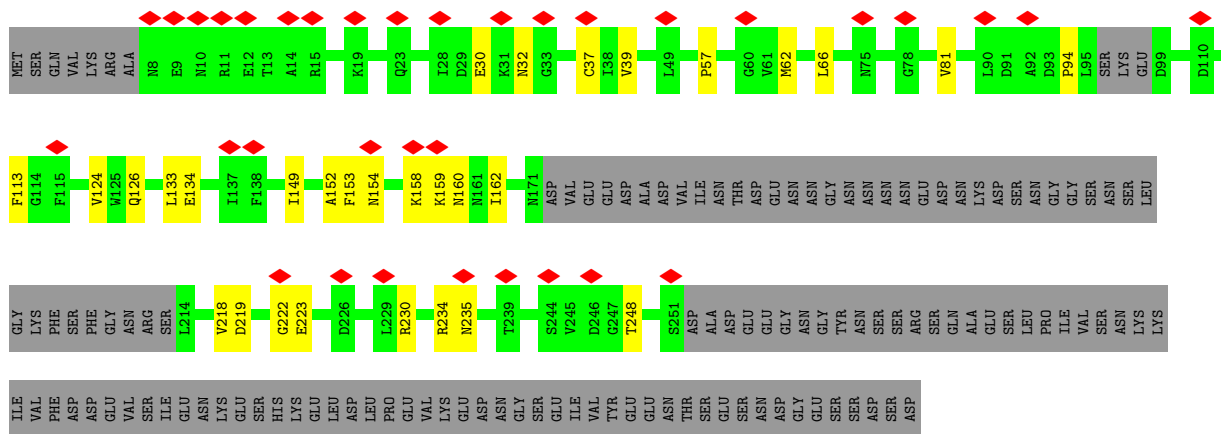


• Molecule 9: DNA-directed RNA polymerases I, II, and III subunit RPABC2

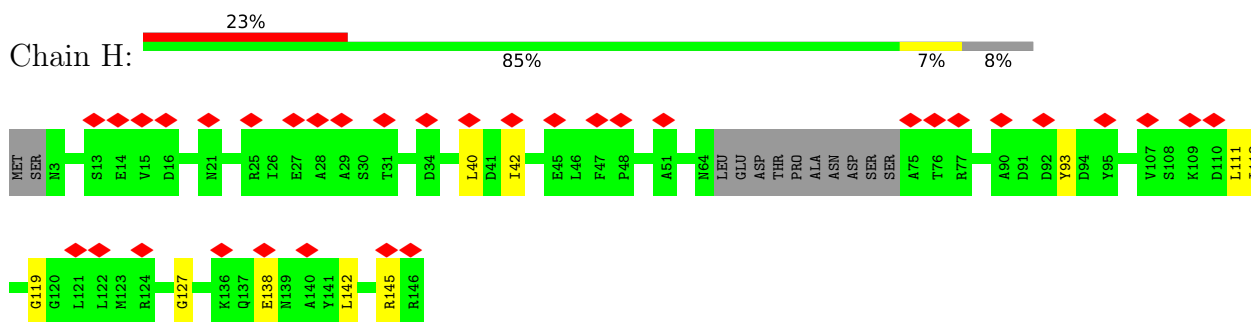


• Molecule 10: DNA-directed RNA polymerase I subunit RPA43

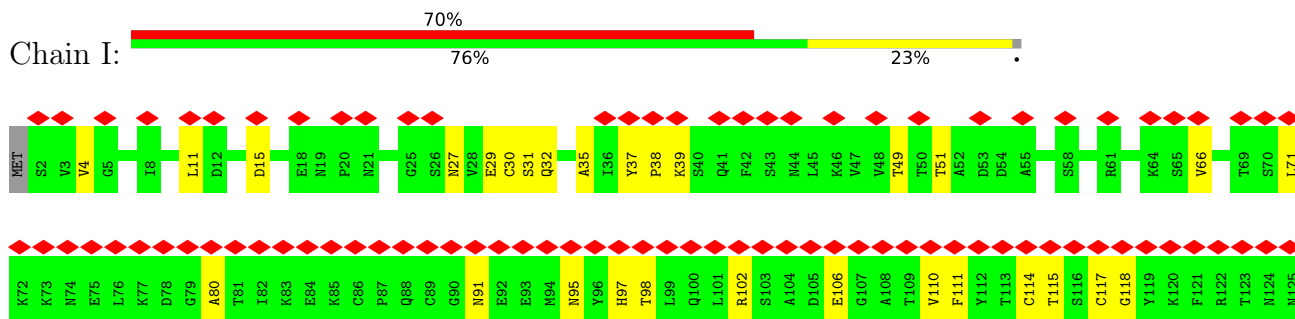




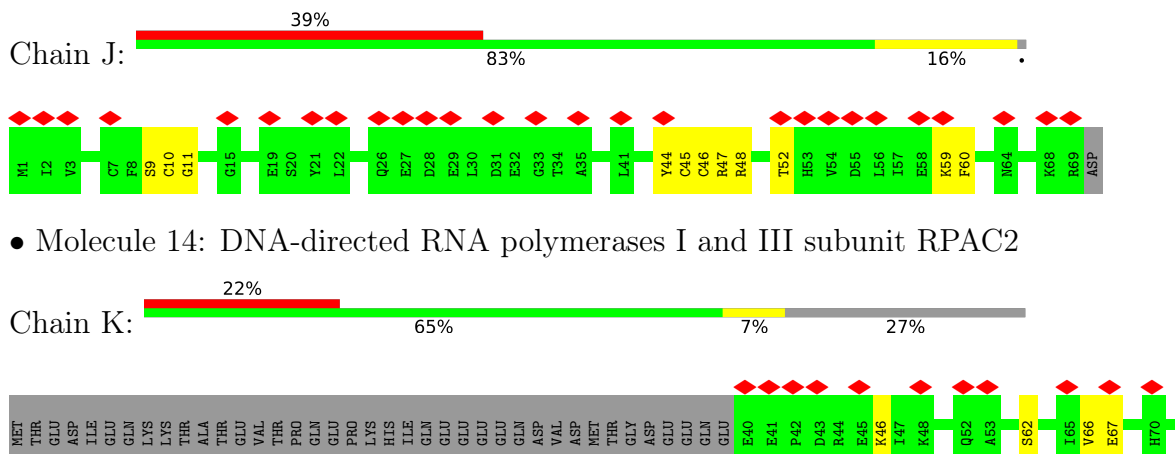
• Molecule 11: DNA-directed RNA polymerases I, II, and III subunit RPABC3



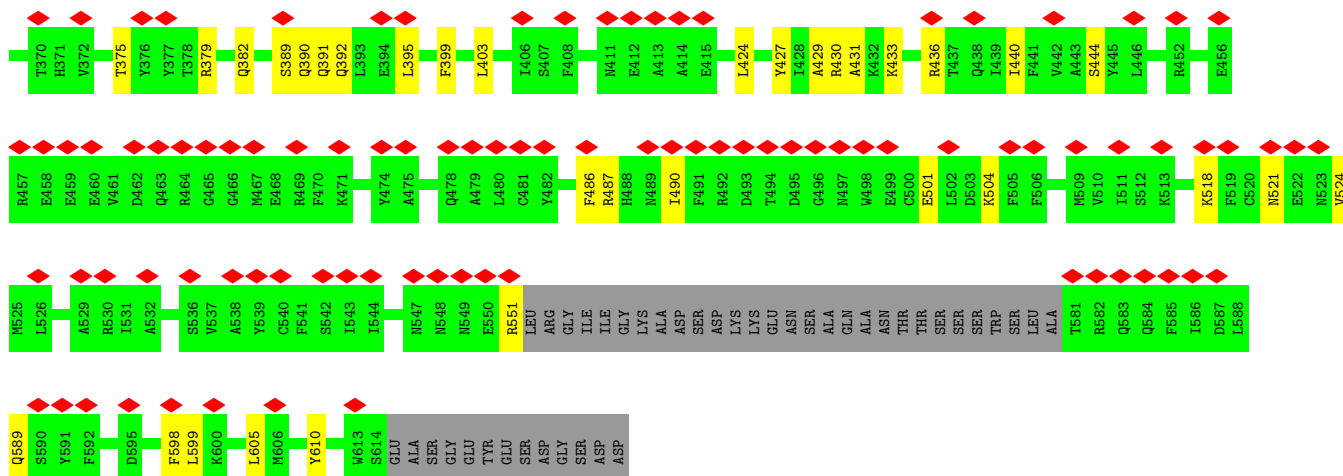
• Molecule 12: DNA-directed RNA polymerase I subunit RPA12



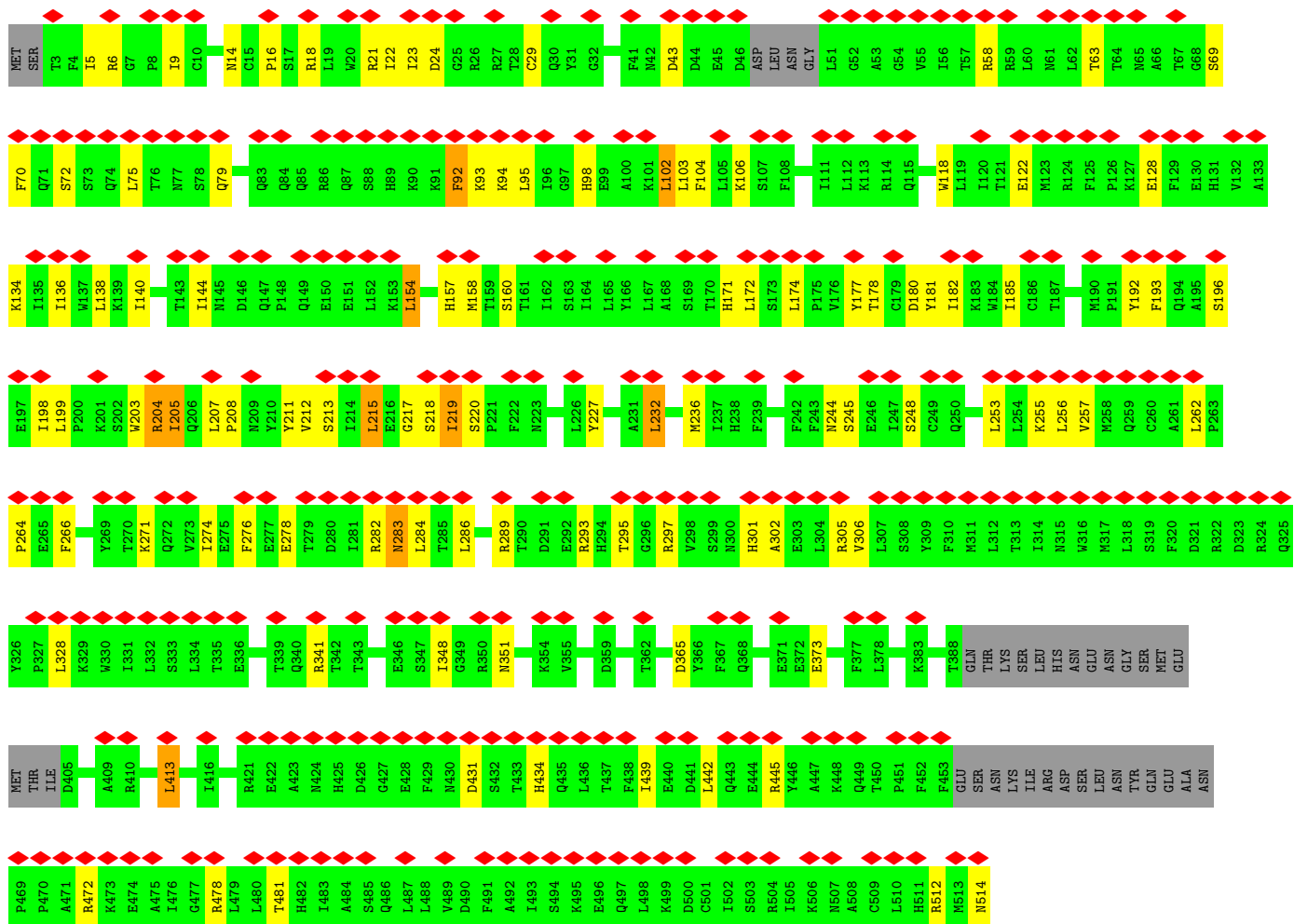
• Molecule 13: DNA-directed RNA polymerases I, II, and III subunit RPABC5



• Molecule 14: DNA-directed RNA polymerases I and III subunit RPAC2



• Molecule 18: RNA polymerase I-specific transcription initiation factor RRN7



• Molecule 19: RNA polymerase I-specific transcription initiation factor RRN6



MET	L64	VAL	Q185	G249	TRP	B376	L442	P505	THR	G627	Q687	L752
SER	L65	ASP	Y186	A250	ASP	R377	D443	T506	PRO	Y628	D688	F753
GLU	L66	VAL	C66	S251	LEU	S378	G507	F508	ILE	R629	Q689	F754
GLY	D67	GLN	I187	E252	GLN	K379	D444	E509	ILE	L630	D690	P755
ILE	T68	ASN	Q188	E253	GLN	R380	D445	T510	ILE	S631	V691	I756
PRO	D68	ASP	T189	S254	PHE	R381	D446	T511	ASP	I632	V692	Q757
SER	ALA	SER	A190	T254	A316	I317	T447	I511	ASP	H671	N758	N758
SER	ILE	MET	S191	G255	I318	D394	T448	L512	GLU	P572	F693	F759
SER	ARG	PHE	D192	R256	I319	F395	L449	T513	SER	E573	T694	N759
ASP	TYR	VAL	L193	R257	D319	M396	R450	L514	ARG	W574	G695	N759
VAL	ILE	GLY	R194	R257	I320	M397	R451	L514	ARG	A575	G696	N759
LEU	ASN	SER	N195	S258	I321	N398	T452	D615	ASP	W576	F697	R762
GLY	ASN	CYS	N195	N259	G322	M398	Y453	HIS	ASP	S576	E697	S763
SER	ASP	ASP	Y196	N260	R323	R399	Q454	ILE	ASP	L577	K698	S763
SER	ASP	THR	R197	L260	R323	R399	Q454	ASP	GLU	L577	K698	G766
GLN	PRO	VAL	L198	V261	G327	T391	K455	ASP	GLU	F578	N699	P767
L16	VAL	VAL	D198	G262	R328	E392	K456	GLU	GLU	N579	L700	P767
G17	LEU	VAL	G199	G263	K331	E393	K457	GLU	GLU	N580	F703	P768
V18	GLN	SER	G199	T263	R332	A396	K458	SER	ARG	A581	L704	Q769
G19	GLU	PHE	T200	T264	F333	K397	P459	ARG	ARG	E583	L704	D770
V20	SER	GLN	E201	T265	R334	M401	D460	GLU	GLU	D584	H705	I771
Q21	ASP	ASP	I202	T266	F334	I402	H461	GLU	ASP	R584	E706	I772
Q22	ALA	TYR	I203	E266	R335	R403	I462	ALA	ASP	E585	E707	S773
G23	ASP	PRO	A204	N267	R335	R403	L463	ASP	GLY	K586	V708	S774
A24	ASP	PRO	Y205	S268	ASN	R403	L464	GLY	ASN	E587	P709	W775
S24	ASP	ASP	A206	F269	ASN	R403	L464	ASN	ASN	S588	Q710	D776
L25	LEU	SER	A206	Q270	LYS	K406	V465	ASP	ASP	L589	L711	M777
L26	ILE	LEU	A206	Q270	LYS	R407	V466	ASP	ASP	G590	D712	D778
Y26	THR	THR	S207	G206	ARG	I408	Y469	ASP	ASP	V593	L713	L713
Y27	THR	ARG	S207	K209	LYS	R408	S470	ASP	ASP	D594	F714	F714
C28	ASP	ASN	S207	K209	LYS	R408	M471	ASP	ASP	F594	Y715	Y715
Q29	ASP	ASP	S207	K209	LEU	D409	K474	ASP	ASP	L594	N716	N716
E30	ASP	ASP	S207	K209	GLN	D410	R475	ASP	ASP	L594	K717	K717
N31	GLU	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	L718	L718
X31	GLU	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	L719	L719
Y32	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	Q720	Q720
T33	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	P721	P721
T34	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	W722	W722
T35	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	V723	V723
K34	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	L724	L724
K35	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	W725	W725
K36	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	S726	S726
K36	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	P727	P727
Q37	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	Q728	Q728
S38	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	N729	N729
K39	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	E730	E730
P40	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	L731	L731
Q41	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	I736	I736
Q41	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	P737	P737
W42	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	F738	F738
L43	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	L739	L739
R44	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	I740	I740
P45	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	L741	L741
T49	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	W742	W742
L50	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	S743	S743
A51	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	L744	L744
E52	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	A745	A745
D53	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	L746	L746
A64	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	W747	W747
L55	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	L748	L748
D56	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	W749	W749
L57	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	L750	L750
H58	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	L751	L751
I59	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	L752	L752
K62	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	L753	L753
S63	THR	THR	S207	K209	GLN	D411	R476	ASP	ASP	L594	L754	L754

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	59963	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	0.453	Depositor
Minimum map value	-0.237	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.011	Depositor
Recommended contour level	0.045	Depositor
Map size (\AA)	380.16, 380.16, 380.16	wwPDB
Map dimensions	288, 288, 288	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.32, 1.32, 1.32	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:
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	0.55	0/1113	0.91	1/1707 (0.1%)
2	U	0.44	0/1065	0.80	0/1645
3	M	0.30	0/3152	0.55	0/4252
4	A	0.49	1/11769 (0.0%)	0.59	0/15896
5	B	0.54	0/9578	0.63	0/12948
6	C	0.51	0/2469	0.59	0/3347
7	D	0.37	0/557	0.54	0/750
8	E	0.42	0/1795	0.52	0/2416
9	F	0.51	1/838 (0.1%)	0.57	0/1129
10	G	0.40	0/1613	0.57	0/2193
11	H	0.49	0/1090	0.60	0/1476
12	I	0.34	0/955	0.56	0/1288
13	J	0.59	0/578	0.68	0/775
14	K	0.48	0/821	0.58	0/1108
15	L	0.48	0/361	0.70	0/478
16	N	0.35	0/1124	0.56	0/1512
17	O	0.34	0/4173	0.55	0/5645
18	Q	0.36	0/4028	0.61	0/5441
19	S	0.34	0/5065	0.61	0/6859
20	R	0.42	0/2836	0.60	0/3817
All	All	0.45	2/54980 (0.0%)	0.61	1/74682 (0.0%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1022	CYS	CB-SG	-5.05	1.73	1.81
9	F	137	TYR	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	49	DA	O3'-P-O5'	6.08	115.55	104.00

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	T	1000	0	568	22	0
2	U	944	0	507	31	0
3	M	3100	0	3207	34	0
4	A	11558	0	11648	133	0
5	B	9371	0	9238	109	0
6	C	2418	0	2401	21	0
7	D	551	0	558	6	0
8	E	1759	0	1788	15	0
9	F	823	0	841	6	0
10	G	1576	0	1581	22	0
11	H	1072	0	1042	6	0
12	I	942	0	931	19	0
13	J	569	0	586	6	0
14	K	810	0	801	5	0
15	L	359	0	381	4	0
16	N	1103	0	1106	13	0
17	O	4086	0	4024	44	0
18	Q	3936	0	3918	110	0
19	S	4963	0	4890	103	0
20	R	2771	0	2844	50	0
21	A	2	0	0	0	0
21	B	1	0	0	0	0
21	I	2	0	0	0	0
21	J	1	0	0	0	0
21	L	1	0	0	0	0
21	Q	1	0	0	0	0
All	All	53719	0	52860	646	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 6.

The worst 5 of 646 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)
19:S:31:ASN:OD1	19:S:32:TYR:N	1.97	0.96
18:Q:92:PHE:CD1	18:Q:205:ILE:HG21	2.02	0.95
18:Q:218:SER:HB3	20:R:207:ASN:OD1	1.70	0.92
18:Q:92:PHE:CD1	18:Q:205:ILE:CG2	2.57	0.88
19:S:450:ARG:HH11	19:S:450:ARG:HG2	1.40	0.87

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	M	388/415 (94%)	356 (92%)	32 (8%)	0	100	100
4	A	1448/1664 (87%)	1368 (94%)	79 (6%)	1 (0%)	51	85
5	B	1174/1203 (98%)	1103 (94%)	71 (6%)	0	100	100
6	C	300/335 (90%)	289 (96%)	11 (4%)	0	100	100
7	D	66/137 (48%)	62 (94%)	4 (6%)	0	100	100
8	E	213/215 (99%)	207 (97%)	6 (3%)	0	100	100
9	F	98/155 (63%)	93 (95%)	4 (4%)	1 (1%)	15	53
10	G	193/326 (59%)	182 (94%)	11 (6%)	0	100	100
11	H	130/146 (89%)	117 (90%)	13 (10%)	0	100	100
12	I	122/125 (98%)	108 (88%)	14 (12%)	0	100	100
13	J	67/70 (96%)	64 (96%)	3 (4%)	0	100	100
14	K	101/142 (71%)	96 (95%)	5 (5%)	0	100	100
15	L	43/70 (61%)	41 (95%)	2 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
16	N	131/233 (56%)	114 (87%)	16 (12%)	1 (1%)	19	57
17	O	493/627 (79%)	453 (92%)	40 (8%)	0	100	100
18	Q	469/514 (91%)	415 (88%)	53 (11%)	1 (0%)	47	82
19	S	594/894 (66%)	517 (87%)	77 (13%)	0	100	100
20	R	322/507 (64%)	289 (90%)	32 (10%)	1 (0%)	41	76
All	All	6352/7778 (82%)	5874 (92%)	473 (7%)	5 (0%)	54	85

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
20	R	195	LEU
18	Q	283	ASN
4	A	1458	THR
9	F	87	LYS
16	N	118	SER

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	
3	M	350/371 (94%)	349 (100%)	1 (0%)	92	97
4	A	1292/1465 (88%)	1287 (100%)	5 (0%)	91	97
5	B	1030/1053 (98%)	1027 (100%)	3 (0%)	92	97
6	C	269/296 (91%)	267 (99%)	2 (1%)	84	94
7	D	65/116 (56%)	65 (100%)	0	100	100
8	E	197/197 (100%)	196 (100%)	1 (0%)	88	96
9	F	90/137 (66%)	90 (100%)	0	100	100
10	G	177/291 (61%)	177 (100%)	0	100	100
11	H	116/128 (91%)	115 (99%)	1 (1%)	78	92
12	I	109/110 (99%)	109 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
13	J	64/65 (98%)	62 (97%)	2 (3%)	40	75
14	K	93/130 (72%)	93 (100%)	0	100	100
15	L	40/57 (70%)	40 (100%)	0	100	100
16	N	128/220 (58%)	128 (100%)	0	100	100
17	O	457/576 (79%)	456 (100%)	1 (0%)	93	98
18	Q	436/476 (92%)	423 (97%)	13 (3%)	41	75
19	S	563/828 (68%)	557 (99%)	6 (1%)	73	90
20	R	313/474 (66%)	306 (98%)	7 (2%)	52	81
All	All	5789/6990 (83%)	5747 (99%)	42 (1%)	84	94

5 of 42 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
18	Q	413	LEU
20	R	157	MET
19	S	49	THR
19	S	379	LYS
20	R	183	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
4	A	78	HIS
4	A	221	HIS
4	A	1447	GLN
5	B	893	ASN
7	D	88	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 8 ligands modelled in this entry, 8 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.

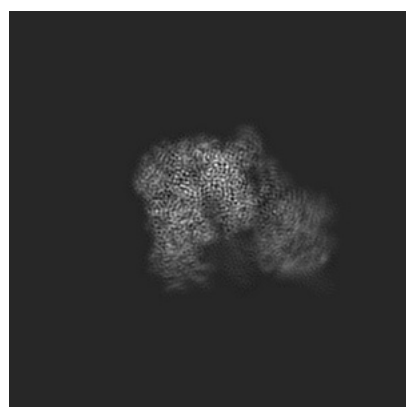
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-10038. These allow visual inspection of the internal detail of the map and identification of artifacts.

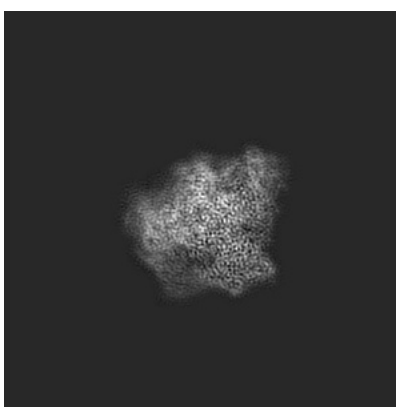
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

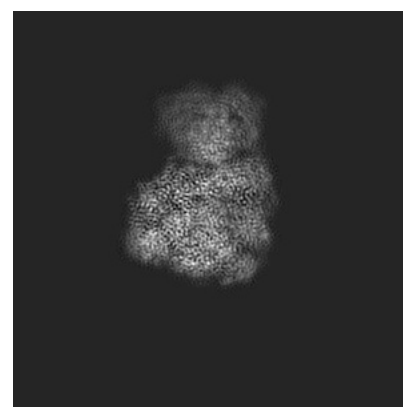
6.1.1 Primary map



X



Y

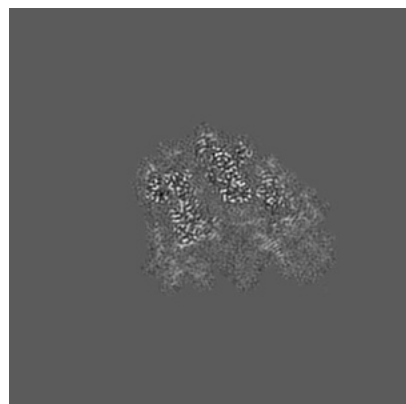


Z

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

6.2 Central slices [i](#)

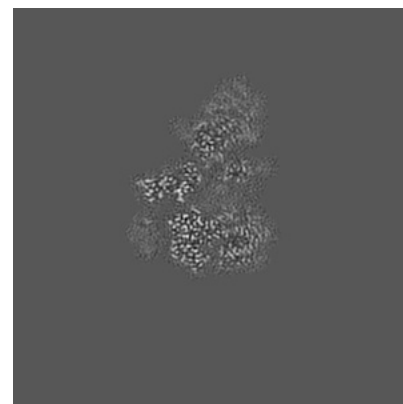
6.2.1 Primary map



X Index: 144



Y Index: 144

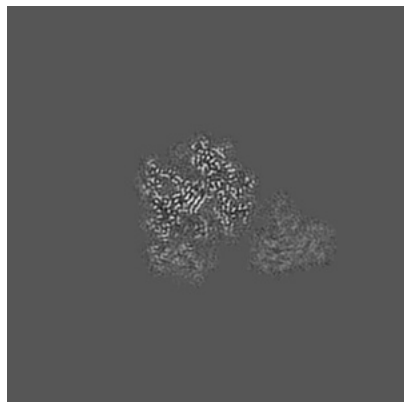


Z Index: 144

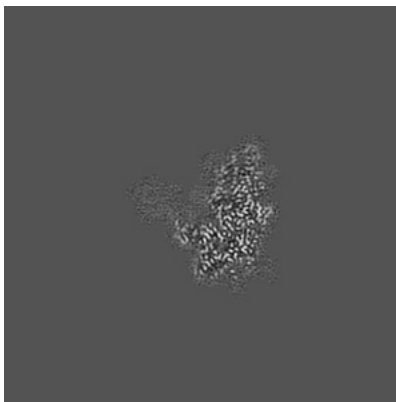
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

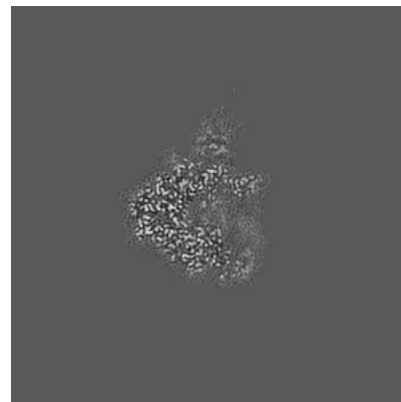
6.3.1 Primary map



X Index: 125



Y Index: 156

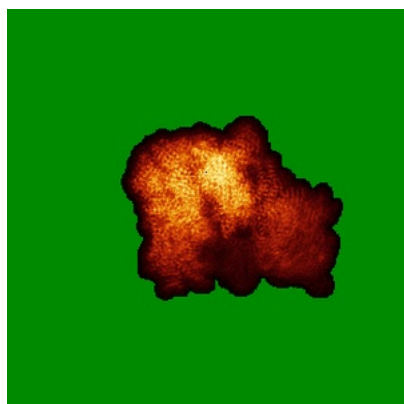


Z Index: 161

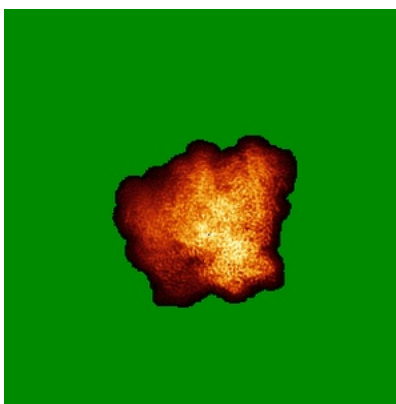
The images above show the largest variance slices of the map in three orthogonal directions.

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

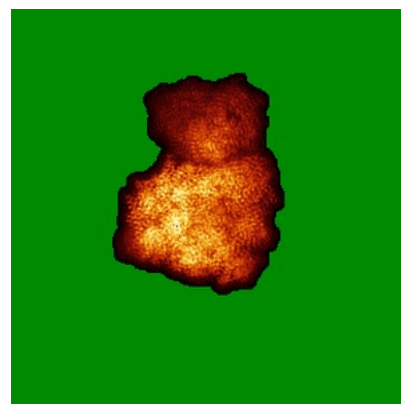
6.4.1 Primary map



X



Y

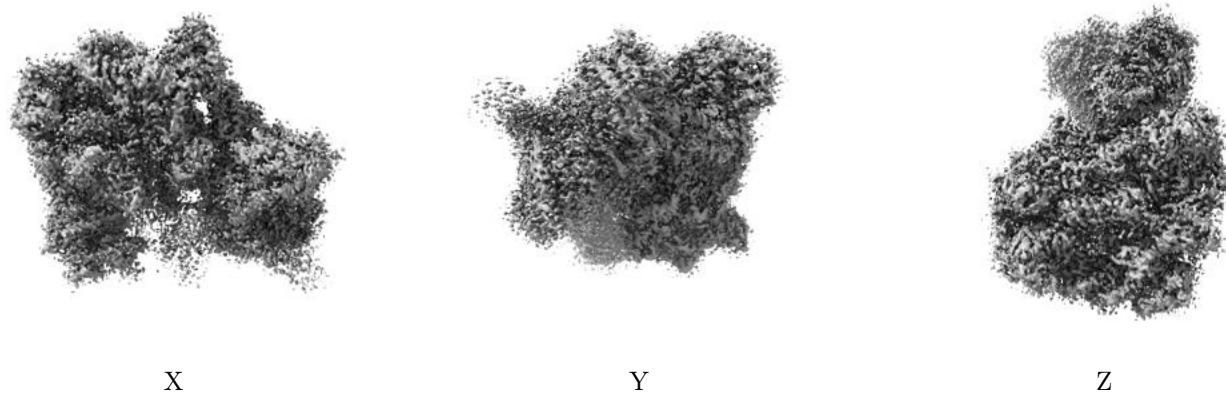


Z

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

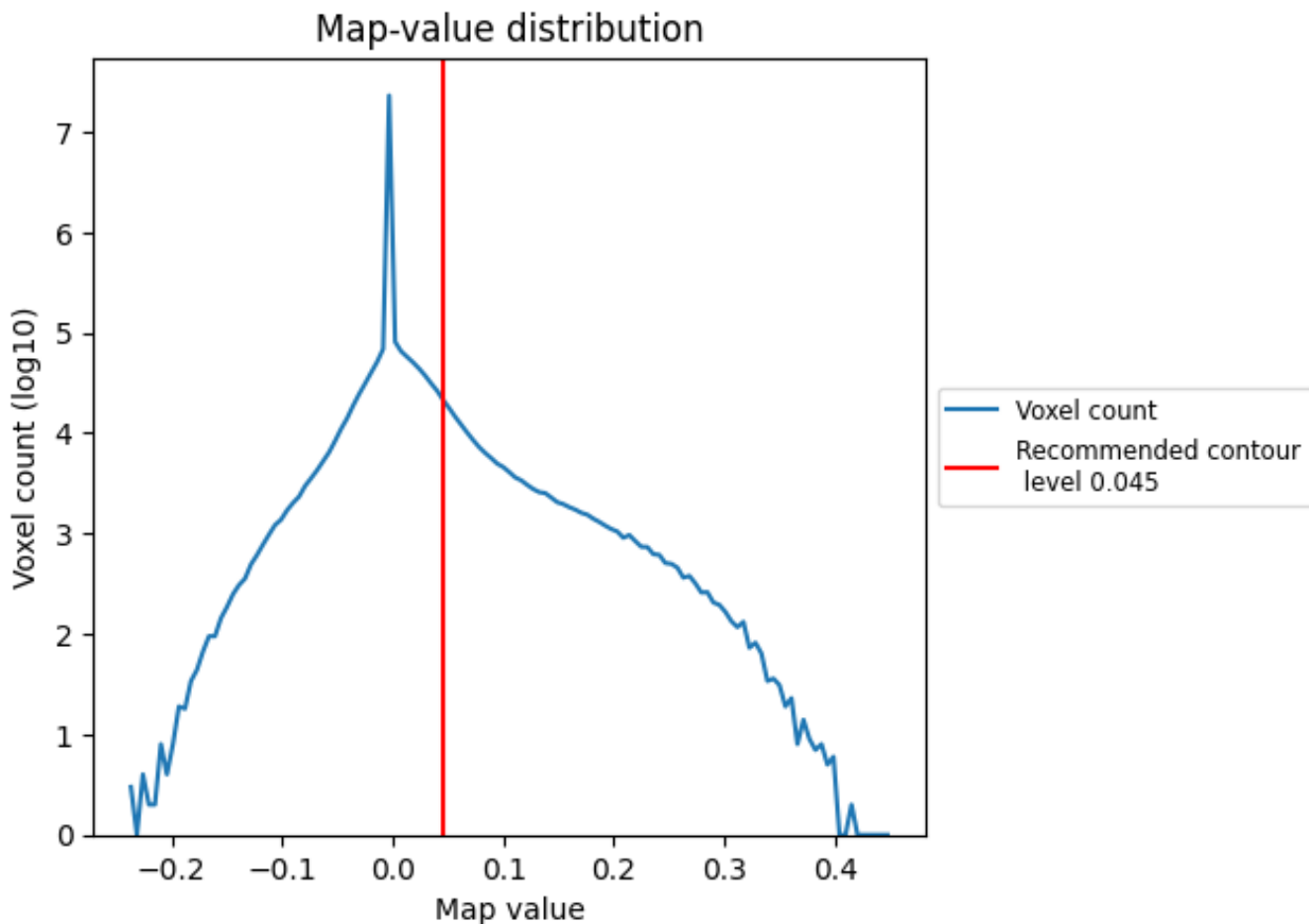
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

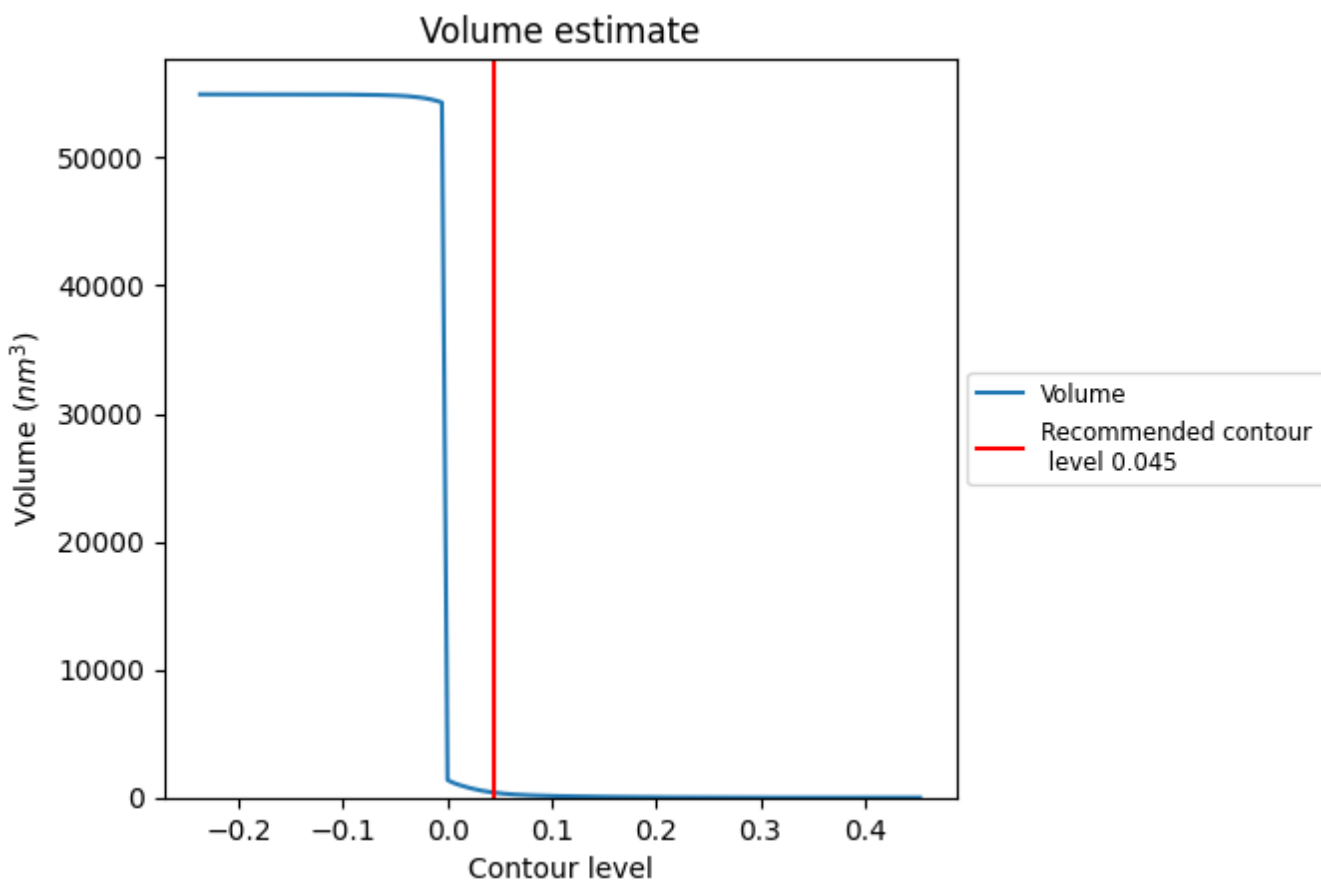
This section contains the results of statistical analysis of the map.

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.

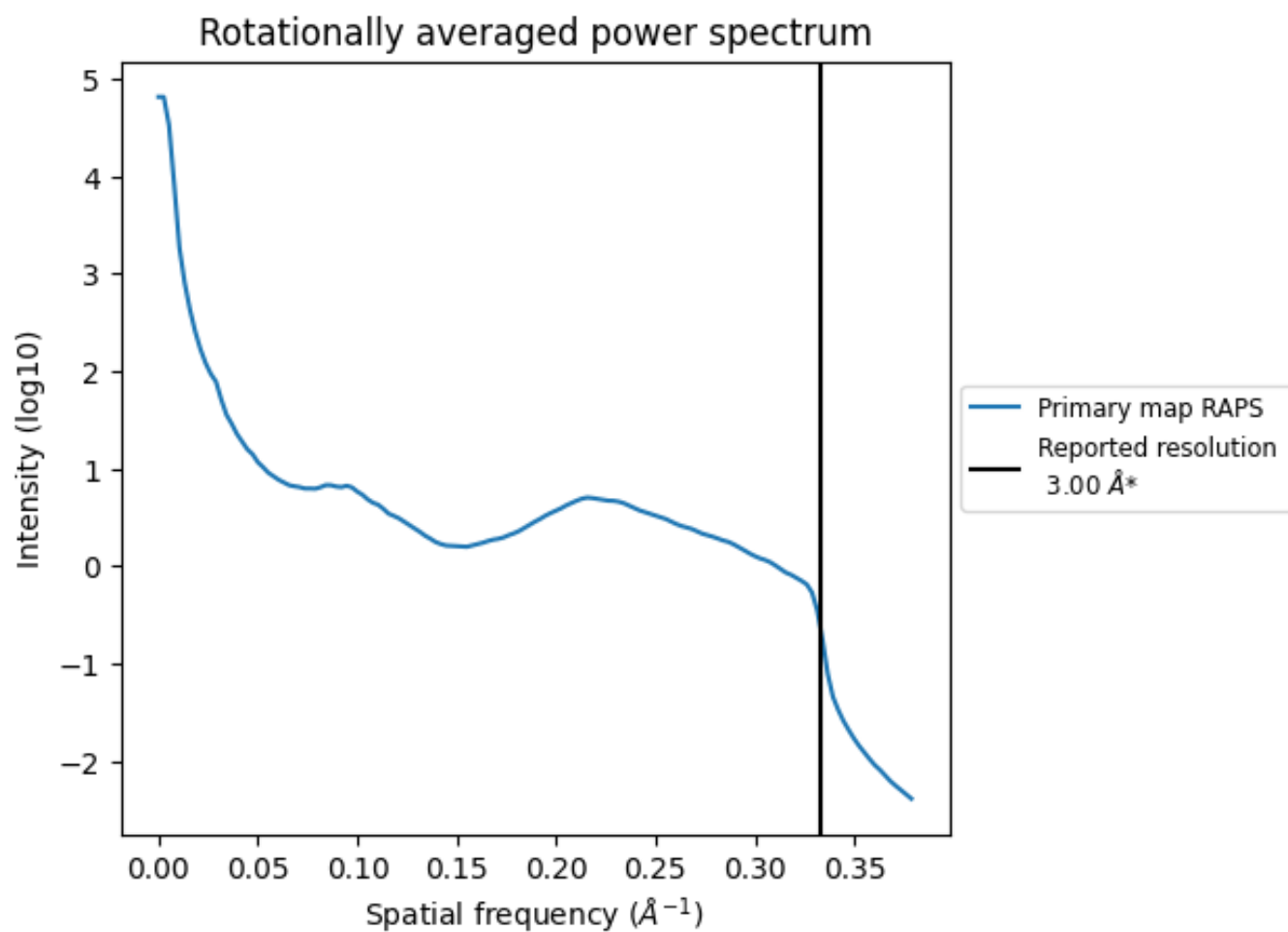
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 385 nm³; this corresponds to an approximate mass of 348 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 0.333 Å⁻¹

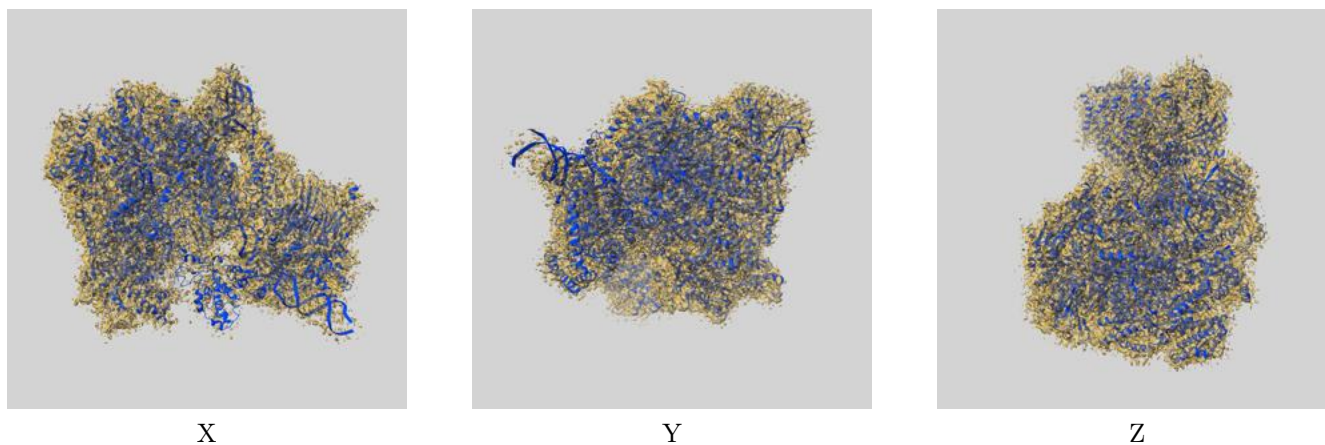
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

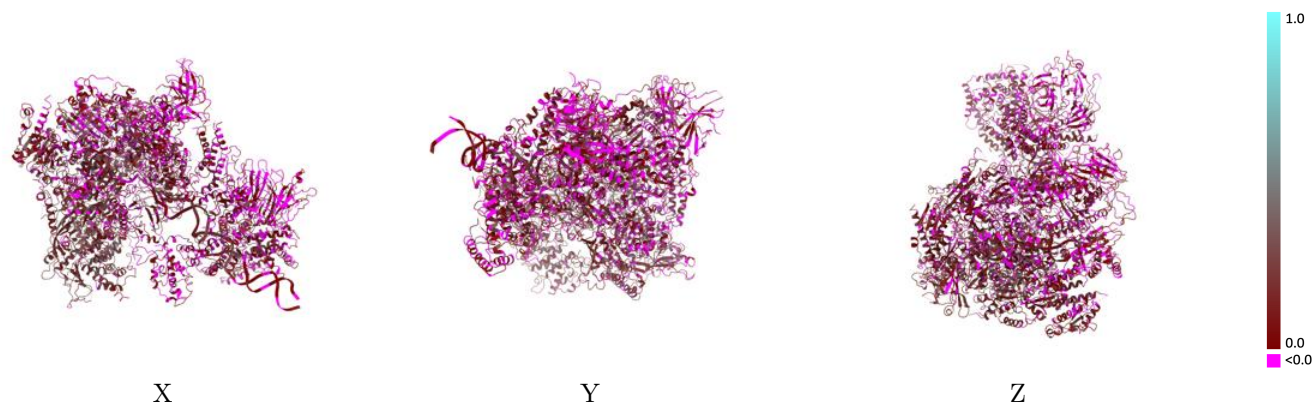
This section contains information regarding the fit between EMDB map EMD-10038 and PDB model 6RWE. Per-residue inclusion information can be found in section [3](#) on page [8](#).

9.1 Map-model overlay [i](#)



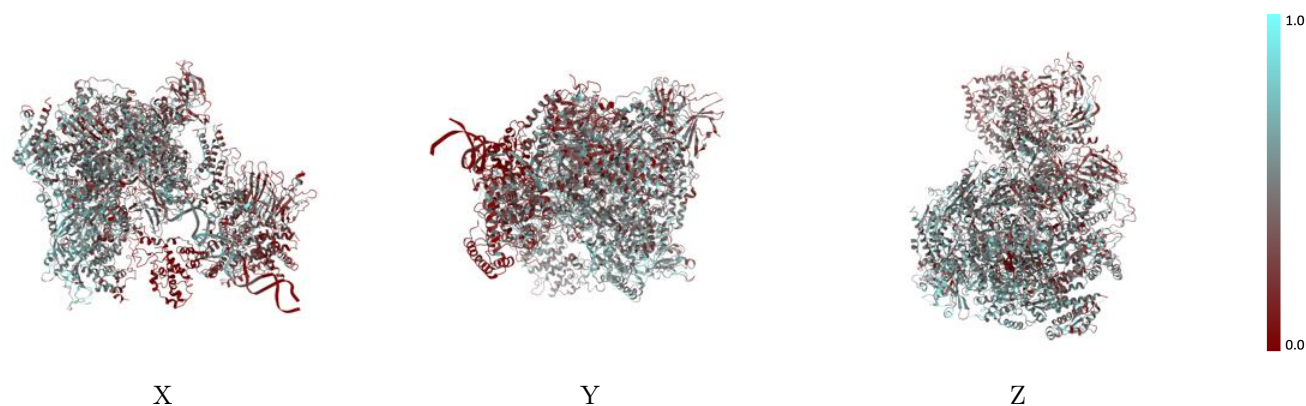
The images above show the 3D surface view of the map at the recommended contour level 0.045 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



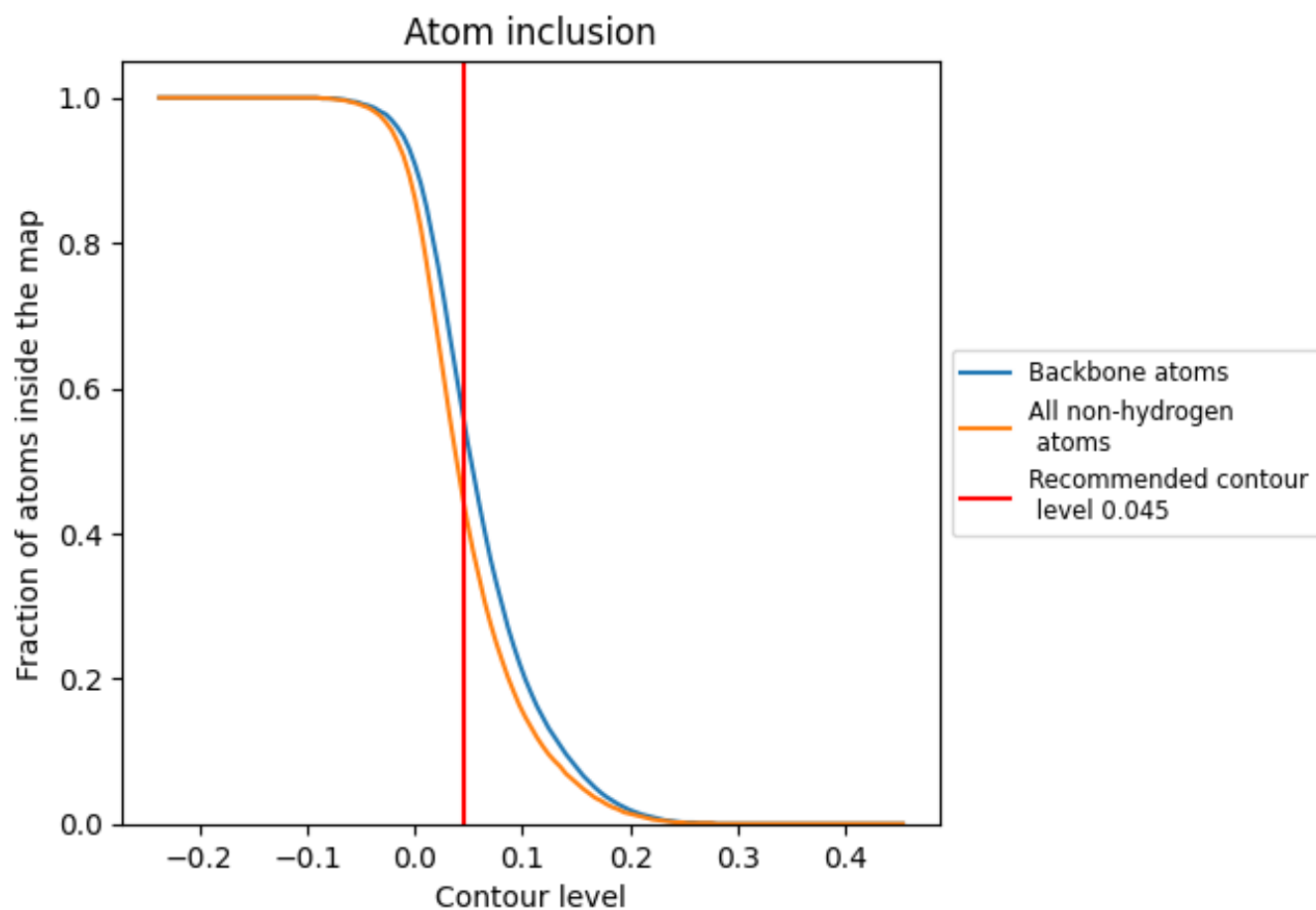
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.045).











































9.4 Atom inclusion [i](#)



At the recommended contour level, 56% of all backbone atoms, 45% 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 (0.045) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.4460	 0.1120
A	 0.5290	 0.1360
B	 0.4990	 0.1040
C	 0.5530	 0.1420
D	 0.5410	 0.2240
E	 0.5220	 0.1210
F	 0.6160	 0.2060
G	 0.5840	 0.2200
H	 0.5670	 0.1660
I	 0.2730	 0.0640
J	 0.4750	 0.0500
K	 0.5470	 0.1750
L	 0.5270	 0.1000
M	 0.1440	 0.0350
N	 0.3520	 0.0390
O	 0.4410	 0.1800
Q	 0.3400	 0.0880
R	 0.4280	 0.0650
S	 0.3020	 0.0370
T	 0.3920	 0.1100
U	 0.4020	 0.1240

