



wwPDB EM Validation Summary Report ⓘ

May 12, 2024 – 07:17 am BST

PDB ID : 6RUO
EMDB ID : EMD-10007
Title : RNA Polymerase I Open Complex conformation 1
Authors : Mueller, C.W.; Sadian, Y.; Tafur, L.
Deposited on : 2019-05-28
Resolution : 3.50 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

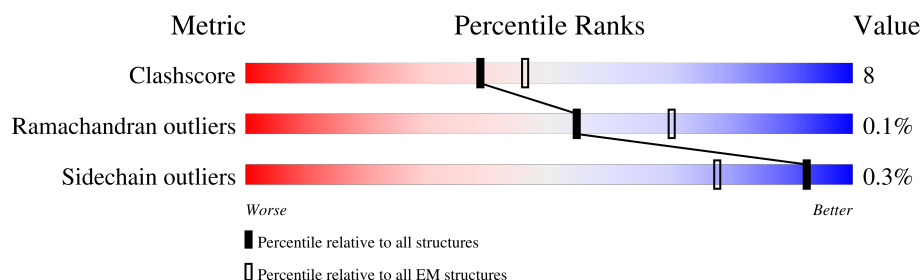
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.50 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	Q	514	
2	M	415	
3	A	1664	
4	B	1203	
5	C	335	
6	D	137	
7	E	215	
8	F	155	

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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	N	233	
16	O	627	
17	S	894	
18	R	507	
19	T	70	
20	U	70	

2 Entry composition

There are 21 unique types of molecules in this entry. The entry contains 50792 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 RNA polymerase I-specific transcription initiation factor RRN7.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	Q	430	Total	C	N	O	S	0	0
			3572	2306	602	644	20		

- Molecule 2 is a protein called DNA-directed RNA polymerase I subunit RPA49.

Mol	Chain	Residues	Atoms				AltConf	Trace
2	M	107	Total	C	N	O	0	0
			850	540	141	169		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
3	A	1465	Total	C	N	O	S	0	0
			11567	7308	2012	2186	61		

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

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

- 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	70	Total	C	N	O	S	0	0
			551	340	100	109	2		

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

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

- 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	199	Total	C	N	O	S	0	0
			1576	1012	273	286	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
			1072	676	181	211	4		

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

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

- 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	103	Total	C	N	O	S	0	0
			810	506	132	167	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	45	Total	C	N	O	S	0	0
			359	221	71	63	4		

- Molecule 15 is a protein called DNA-directed RNA polymerase I subunit RPA34.

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

- Molecule 16 is a protein called RNA polymerase I-specific transcription initiation factor RRN3.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	O	462	Total	C	N	O	S	0	0
			3807	2471	622	693	21		

- Molecule 17 is a protein called RNA polymerase I-specific transcription initiation factor RRN6.

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

- Molecule 18 is a protein called RNA polymerase I-specific transcription initiation factor RRN11.

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

- Molecule 19 is a DNA chain called Template strand.

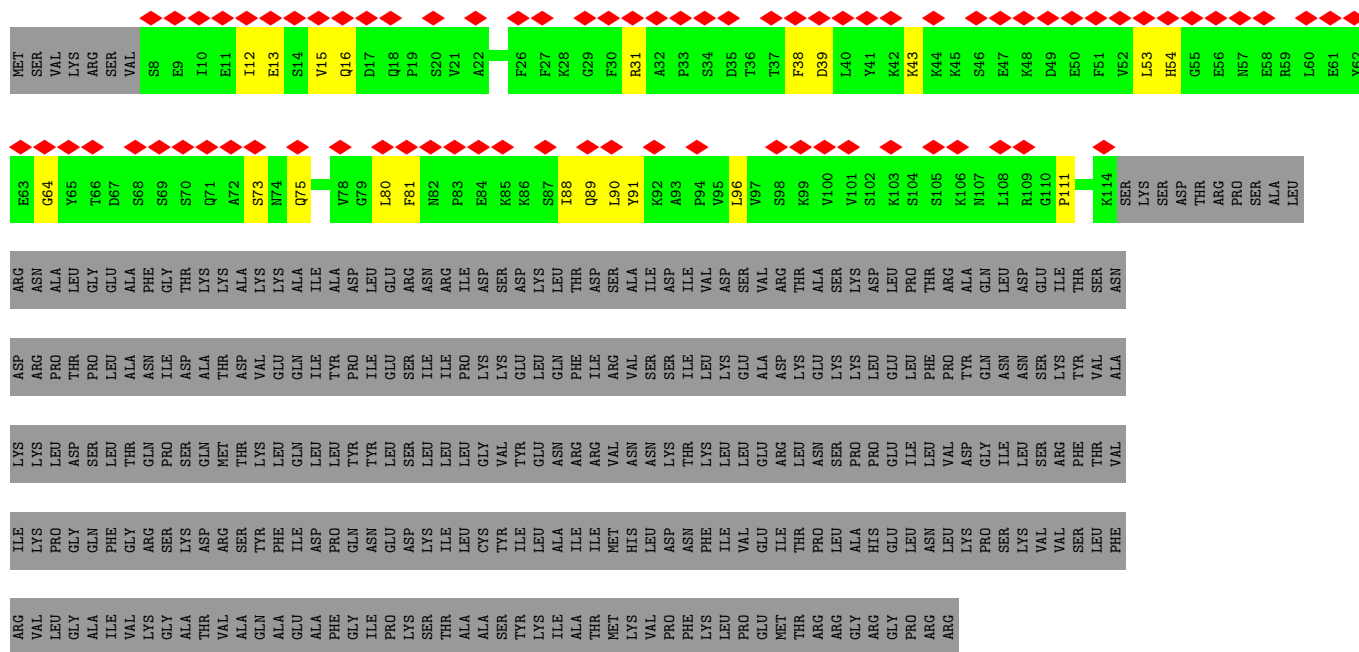
Mol	Chain	Residues	Atoms					AltConf	Trace
19	T	50	Total	C	N	O	P	0	0
			1000	481	164	305	50		

- Molecule 20 is a DNA chain called Nontemplate strand.

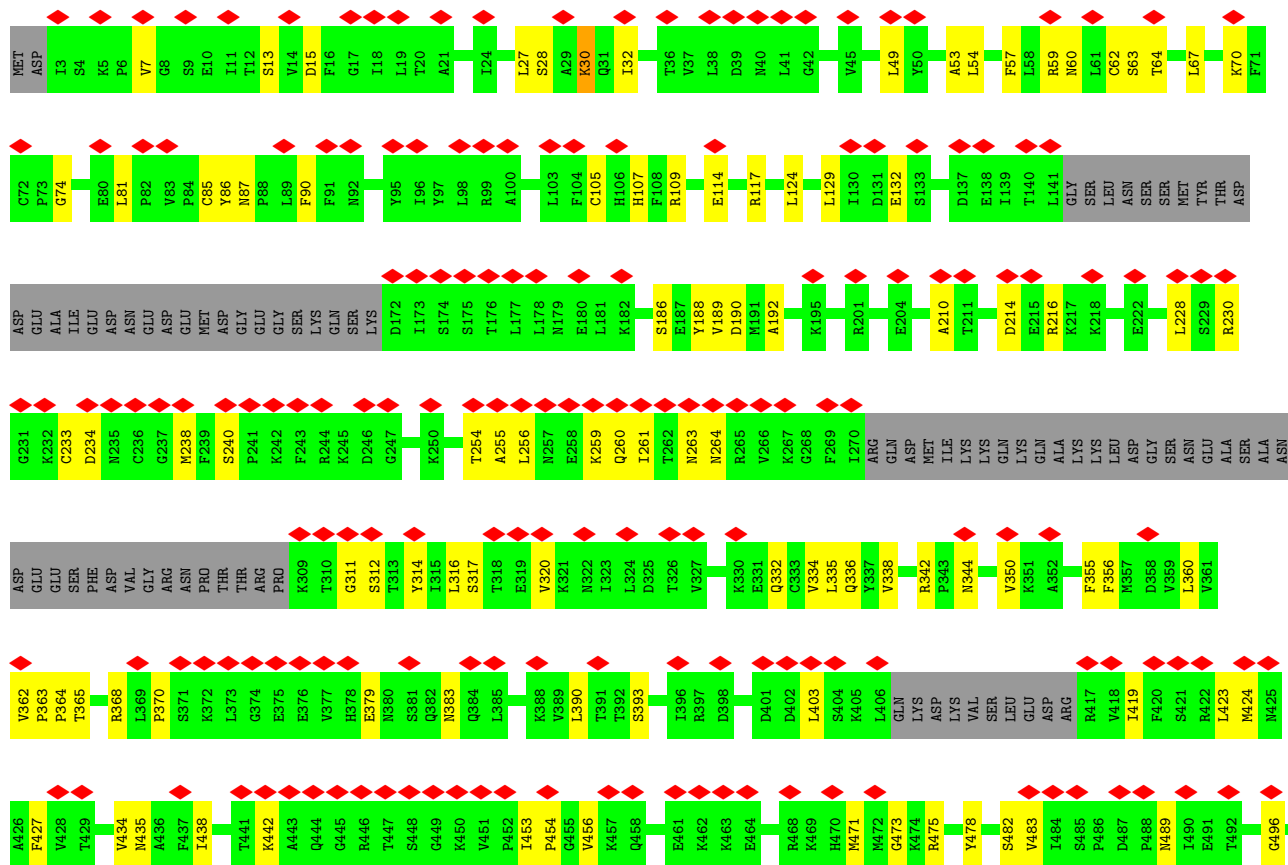
Mol	Chain	Residues	Atoms					AltConf	Trace
20	U	43	Total	C	N	O	P	0	0
			901	427	182	250	42		

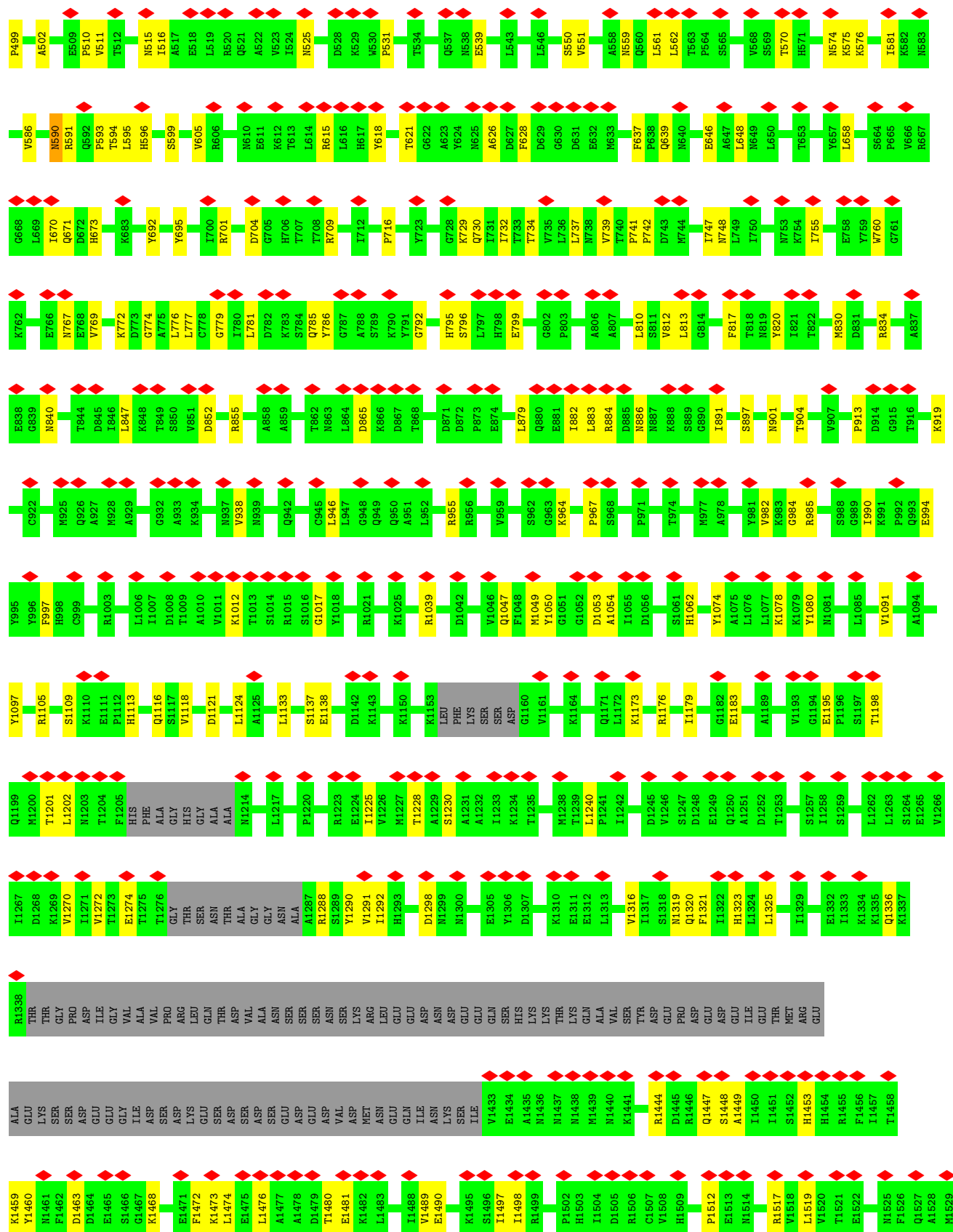
- Molecule 21 is ZINC ION (three-letter code: ZN) (formula: Zn).

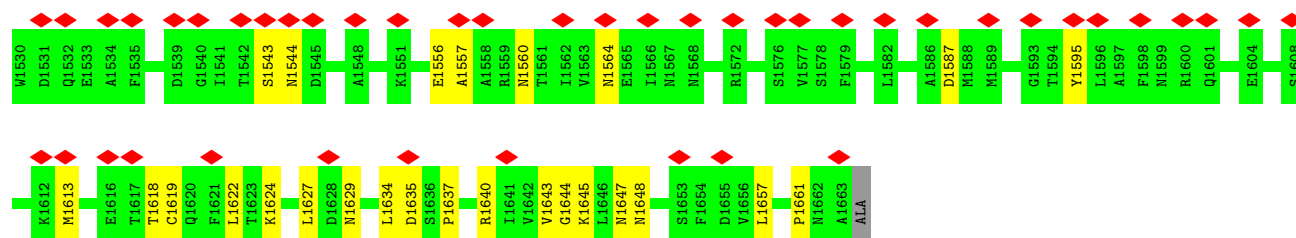
Mol	Chain	Residues	Atoms		AltConf
21	Q	1	Total 1	Zn 1	0
21	A	2	Total 2	Zn 2	0
21	B	1	Total 1	Zn 1	0
21	I	2	Total 2	Zn 2	0
21	J	1	Total 1	Zn 1	0
21	L	1	Total 1	Zn 1	0



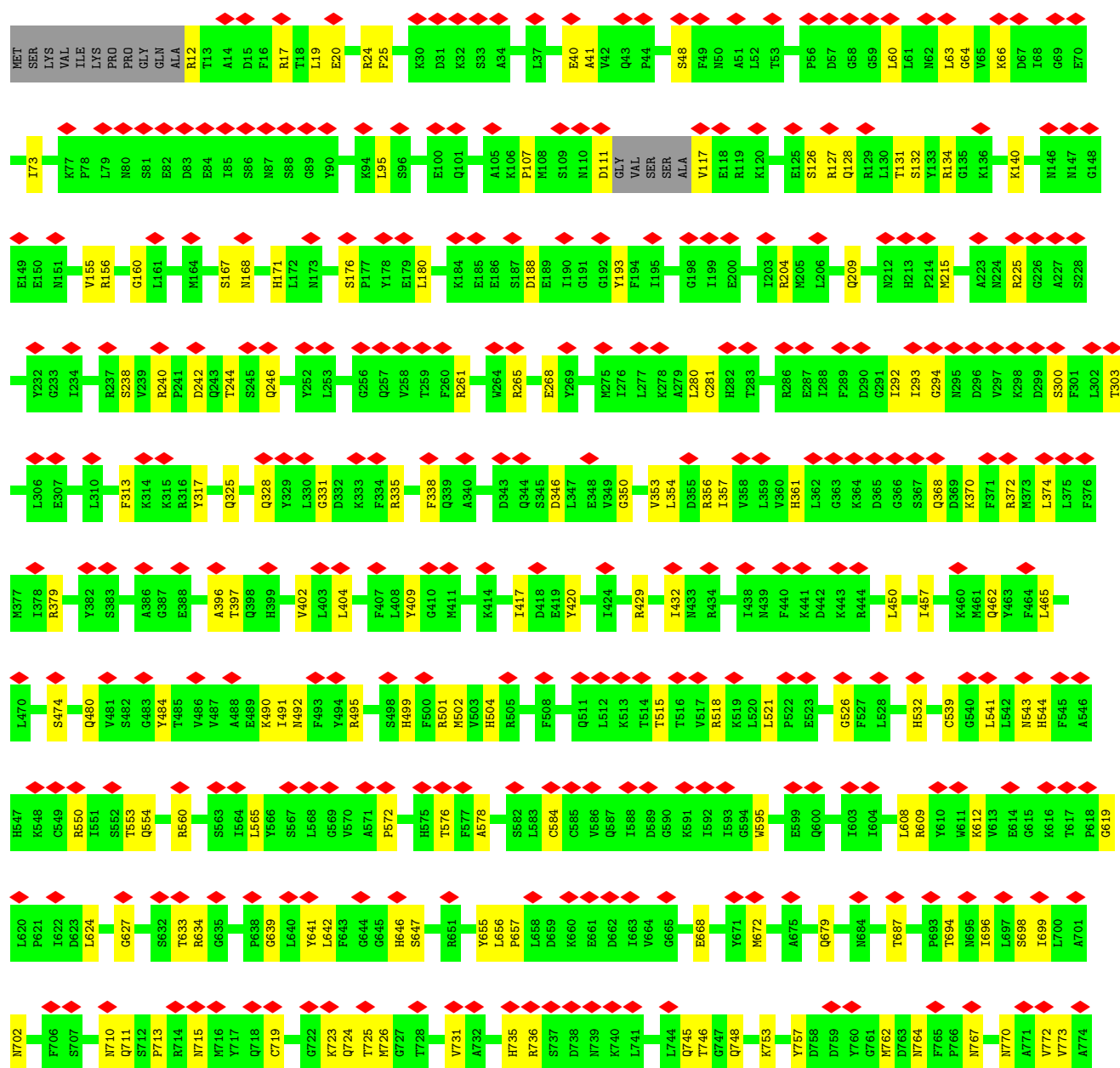
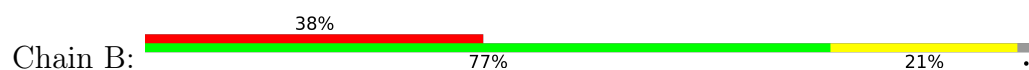
• Molecule 3: DNA-directed RNA polymerase I subunit RPA190

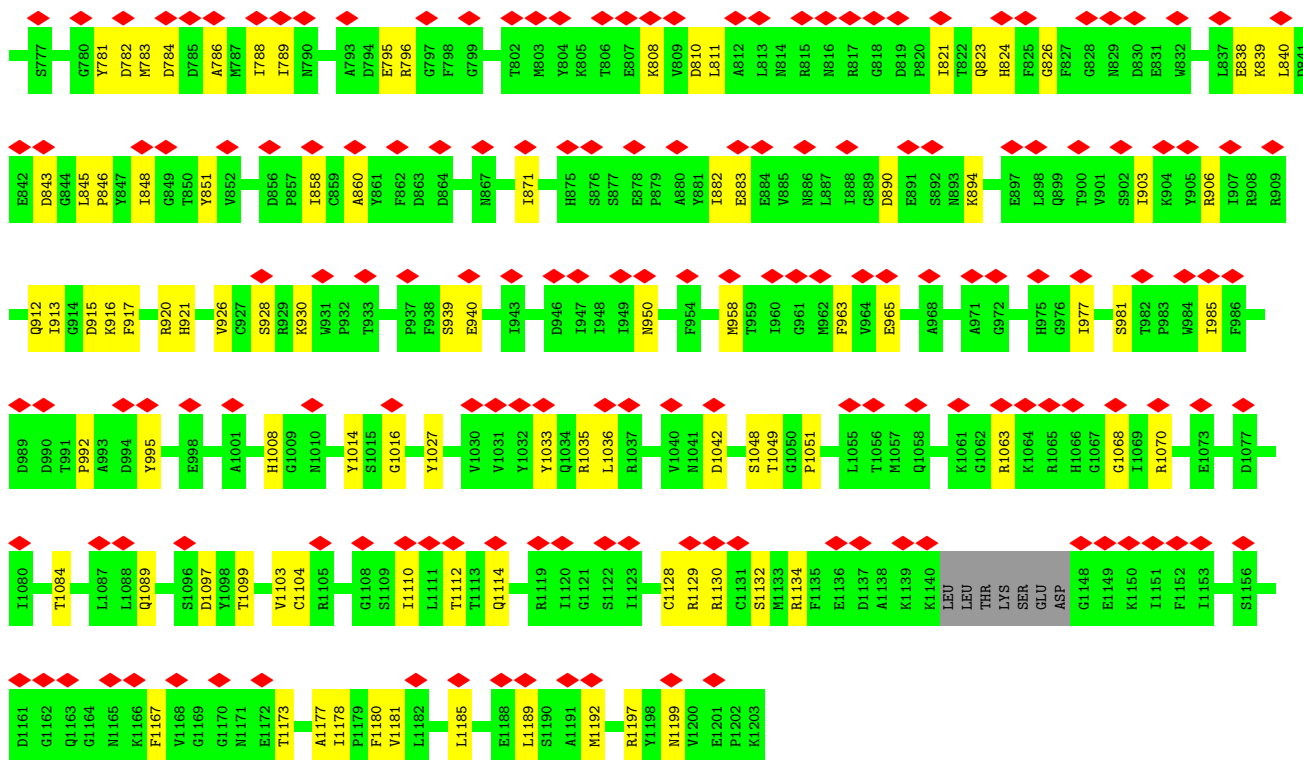




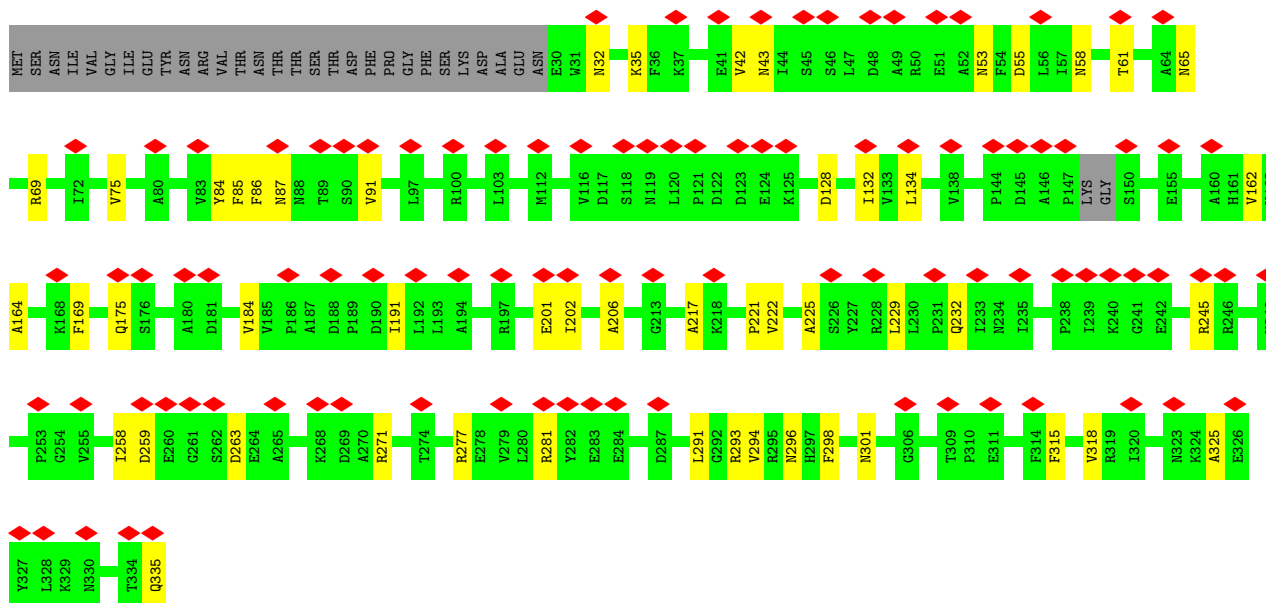
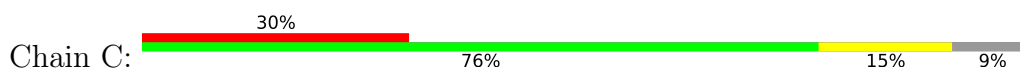


• Molecule 4: DNA-directed RNA polymerase I subunit RPA135

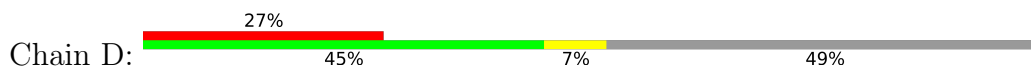


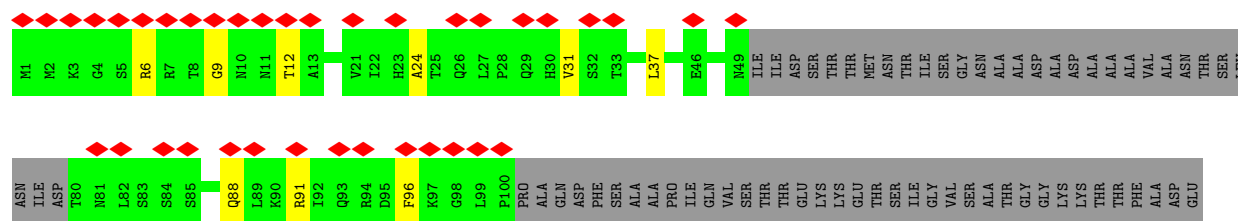


• Molecule 5: DNA-directed RNA polymerases I and III subunit RPAC1

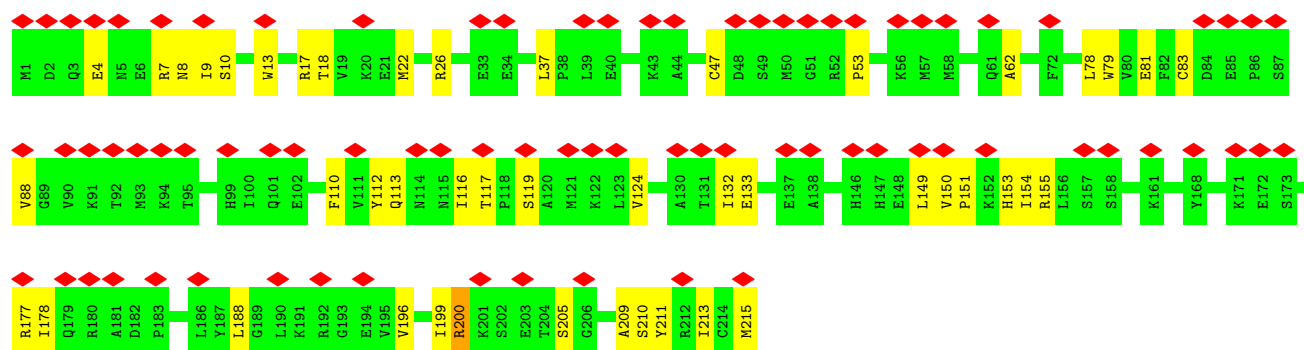
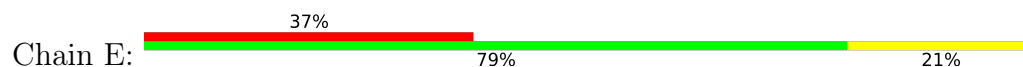


• Molecule 6: DNA-directed RNA polymerase I subunit RPA14

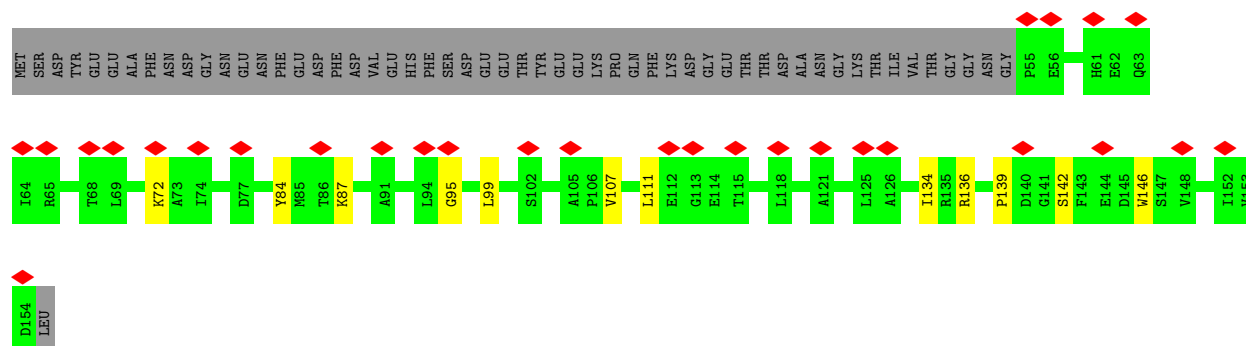




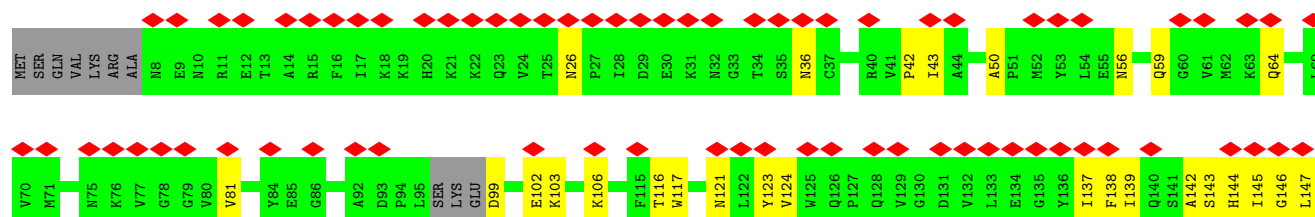
• Molecule 7: DNA-directed RNA polymerases I, II, and III subunit RPABC1

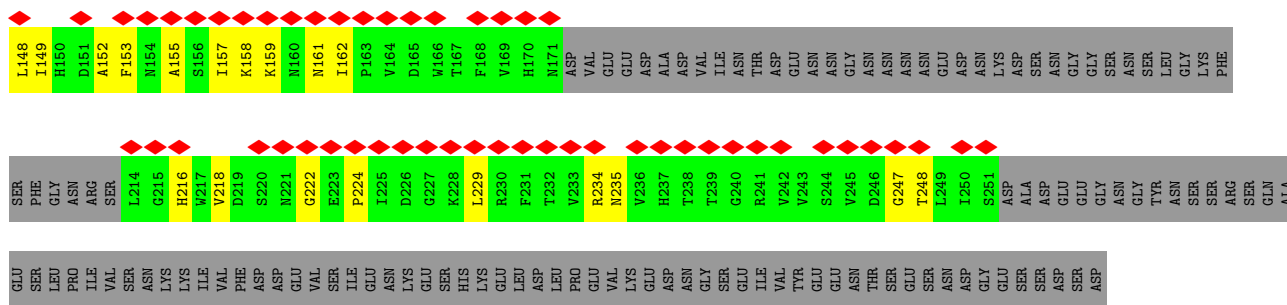


• Molecule 8: DNA-directed RNA polymerases I, II, and III subunit RPABC2

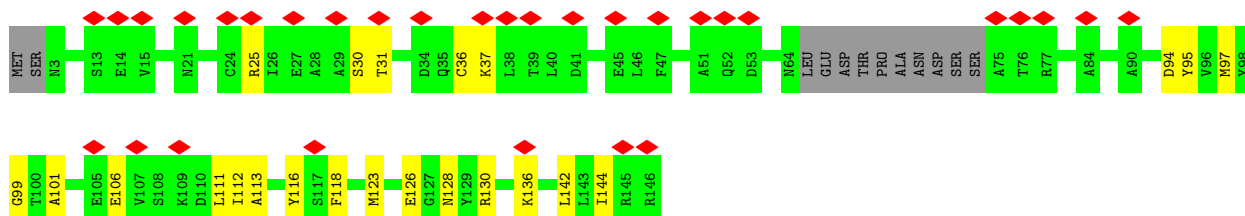
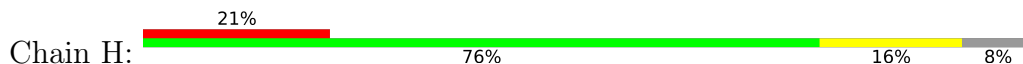


• Molecule 9: DNA-directed RNA polymerase I subunit RPA43

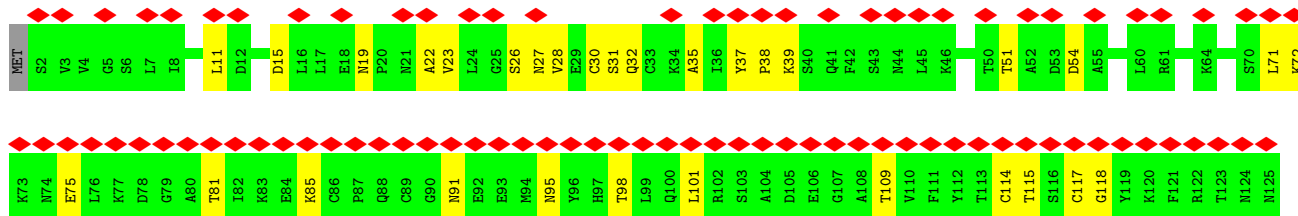




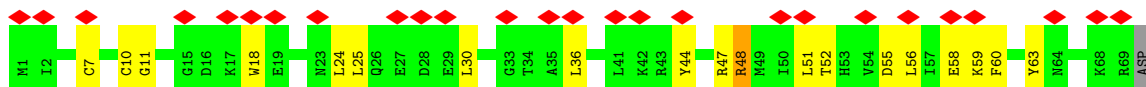
- Molecule 10: DNA-directed RNA polymerases I, II, and III subunit RPABC3



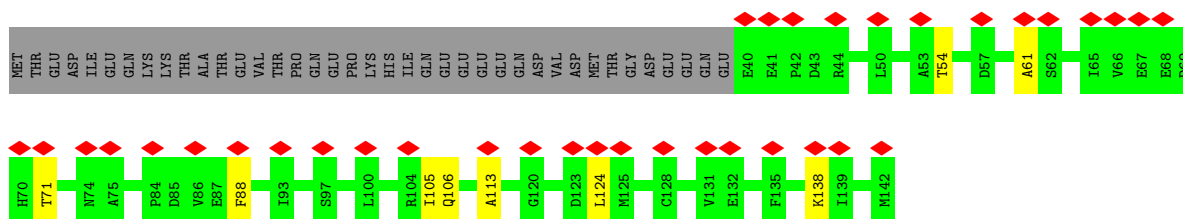
- Molecule 11: DNA-directed RNA polymerase I subunit RPA12

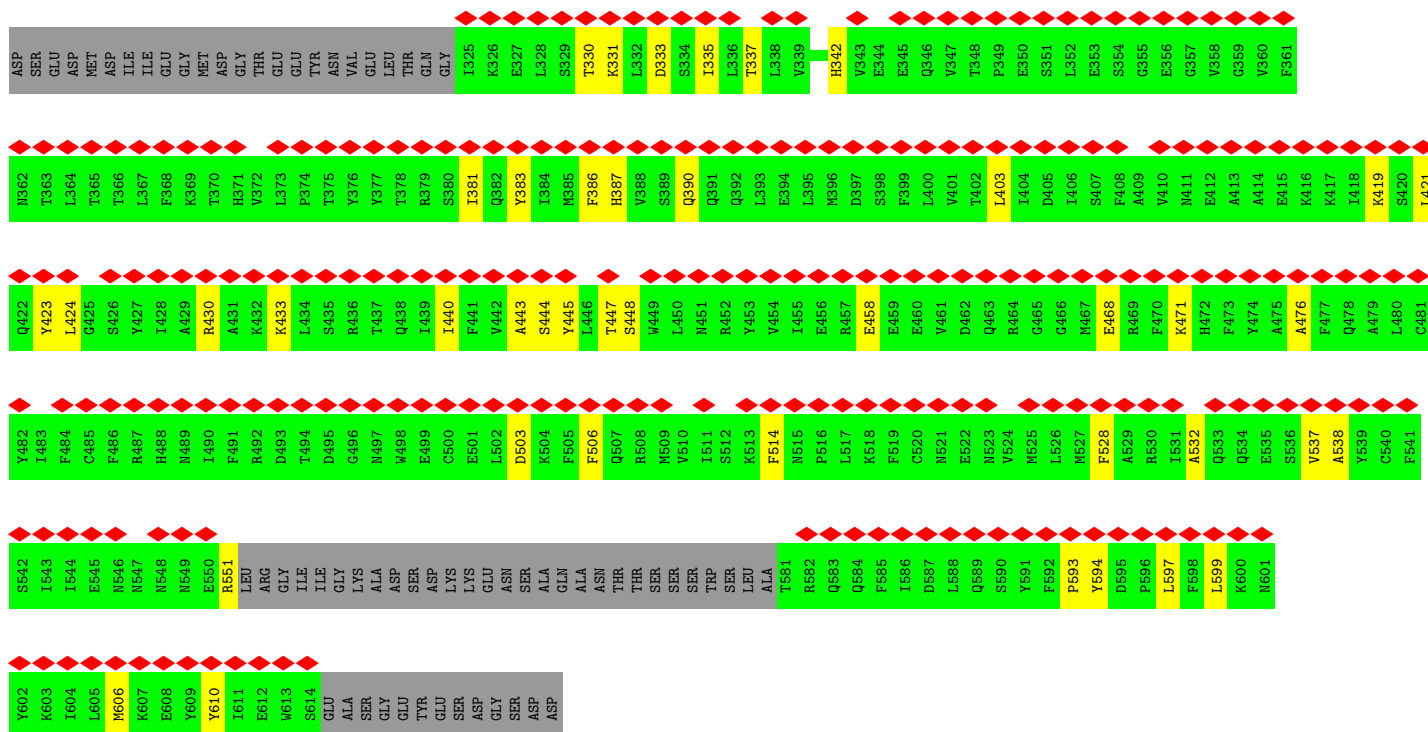


- Molecule 12: DNA-directed RNA polymerases I, II, and III subunit RPABC5



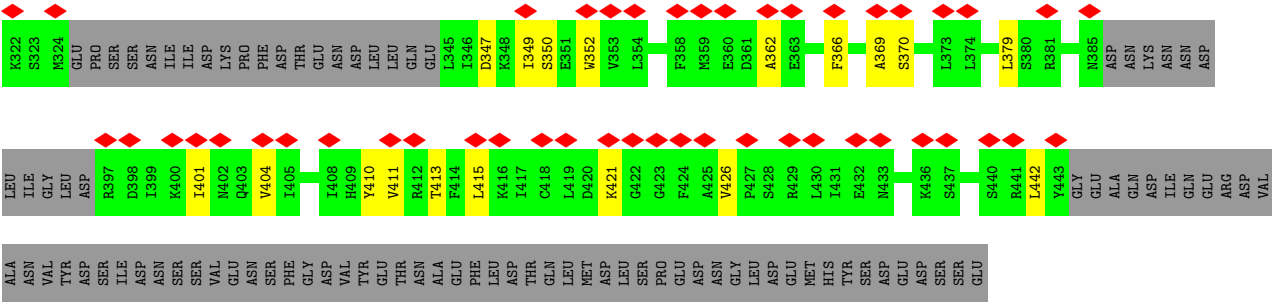
- Molecule 13: DNA-directed RNA polymerases I and III subunit RPAC2



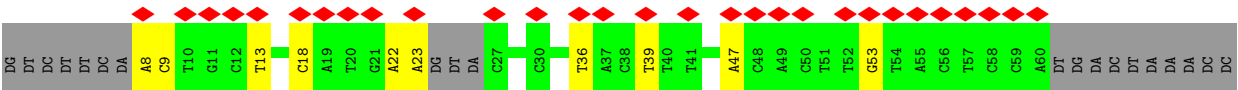


• Molecule 17: RNA polymerase I-specific transcription initiation factor RRN6

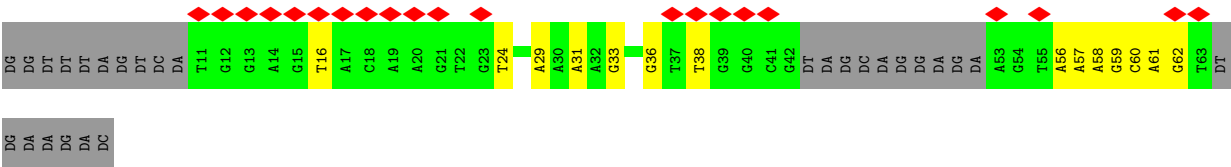




• Molecule 19: Template strand



• Molecule 20: Nontemplate strand



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	75851	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	0.272	Depositor
Minimum map value	-0.140	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.005	Depositor
Recommended contour level	0.03	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

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	Q	0.33	0/3661	0.60	0/4950
2	M	0.37	0/866	0.59	0/1162
3	A	0.41	0/11778	0.60	0/15908
4	B	0.44	0/9578	0.62	0/12948
5	C	0.43	0/2469	0.61	0/3347
6	D	0.32	0/557	0.58	0/750
7	E	0.39	0/1795	0.55	0/2416
8	F	0.39	0/838	0.58	0/1129
9	G	0.34	0/1613	0.57	0/2193
10	H	0.45	0/1090	0.67	0/1476
11	I	0.34	0/955	0.62	0/1288
12	J	0.50	0/578	0.63	0/775
13	K	0.42	0/821	0.64	0/1108
14	L	0.42	0/361	0.73	0/478
15	N	0.32	0/1124	0.58	0/1512
16	O	0.29	0/3893	0.54	0/5263
17	S	0.33	0/5065	0.63	0/6859
18	R	0.35	0/2836	0.59	0/3817
19	T	0.70	0/1113	1.04	0/1707
20	U	0.62	0/1016	0.91	0/1569
All	All	0.40	0/52007	0.62	0/70655

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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	Q	3572	0	3541	66	0
2	M	850	0	850	17	0
3	A	11567	0	11655	201	0
4	B	9371	0	9242	185	0
5	C	2418	0	2401	40	0
6	D	551	0	558	12	0
7	E	1759	0	1788	27	0
8	F	823	0	841	6	0
9	G	1576	0	1581	34	0
10	H	1072	0	1042	14	0
11	I	942	0	932	20	0
12	J	569	0	586	17	0
13	K	810	0	801	6	0
14	L	359	0	381	16	0
15	N	1103	0	1106	27	0
16	O	3807	0	3801	62	0
17	S	4963	0	4890	93	0
18	R	2771	0	2844	46	0
19	T	1000	0	568	11	0
20	U	901	0	485	15	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	50792	0	49893	778	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 8.

The worst 5 of 778 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)
4:B:731:VAL:HG11	12:J:56:LEU:CD2	1.74	1.18

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:O:237:ILE:HG21	16:O:381:ILE:CD1	1.74	1.17
4:B:731:VAL:CG1	12:J:56:LEU:HD21	1.75	1.15
16:O:237:ILE:CG2	16:O:381:ILE:HD13	1.78	1.13
3:A:30:LYS:HE3	4:B:1129:ARG:HH22	0.98	1.13

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	Q	422/514 (82%)	379 (90%)	42 (10%)	1 (0%)	47	81
2	M	105/415 (25%)	93 (89%)	12 (11%)	0	100	100
3	A	1449/1664 (87%)	1326 (92%)	123 (8%)	0	100	100
4	B	1174/1203 (98%)	1045 (89%)	128 (11%)	1 (0%)	51	84
5	C	300/335 (90%)	264 (88%)	36 (12%)	0	100	100
6	D	66/137 (48%)	64 (97%)	2 (3%)	0	100	100
7	E	213/215 (99%)	198 (93%)	15 (7%)	0	100	100
8	F	98/155 (63%)	89 (91%)	8 (8%)	1 (1%)	15	54
9	G	193/326 (59%)	170 (88%)	23 (12%)	0	100	100
10	H	130/146 (89%)	120 (92%)	10 (8%)	0	100	100
11	I	122/125 (98%)	103 (84%)	19 (16%)	0	100	100
12	J	67/70 (96%)	56 (84%)	11 (16%)	0	100	100
13	K	101/142 (71%)	88 (87%)	13 (13%)	0	100	100
14	L	43/70 (61%)	37 (86%)	6 (14%)	0	100	100
15	N	131/233 (56%)	107 (82%)	24 (18%)	0	100	100
16	O	456/627 (73%)	411 (90%)	45 (10%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
17	S	594/894 (66%)	513 (86%)	81 (14%)	0	100	100
18	R	322/507 (64%)	290 (90%)	32 (10%)	0	100	100
All	All	5986/7778 (77%)	5353 (89%)	630 (10%)	3 (0%)	54	84

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	Q	280	ASP
8	F	87	LYS
4	B	397	THR

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	
1	Q	396/476 (83%)	393 (99%)	3 (1%)	81	91
2	M	97/371 (26%)	97 (100%)	0	100	100
3	A	1293/1465 (88%)	1291 (100%)	2 (0%)	93	98
4	B	1030/1053 (98%)	1030 (100%)	0	100	100
5	C	269/296 (91%)	268 (100%)	1 (0%)	91	96
6	D	65/116 (56%)	65 (100%)	0	100	100
7	E	197/197 (100%)	195 (99%)	2 (1%)	76	88
8	F	90/137 (66%)	90 (100%)	0	100	100
9	G	177/291 (61%)	177 (100%)	0	100	100
10	H	116/128 (91%)	115 (99%)	1 (1%)	78	90
11	I	109/110 (99%)	109 (100%)	0	100	100
12	J	64/65 (98%)	62 (97%)	2 (3%)	40	70
13	K	93/130 (72%)	93 (100%)	0	100	100
14	L	40/57 (70%)	39 (98%)	1 (2%)	47	75
15	N	128/220 (58%)	128 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
16	O	427/576 (74%)	427 (100%)	0	100	100
17	S	563/828 (68%)	559 (99%)	4 (1%)	84	93
18	R	313/474 (66%)	312 (100%)	1 (0%)	92	97
All	All	5467/6990 (78%)	5450 (100%)	17 (0%)	92	97

5 of 17 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
17	S	475	ARG
18	R	207	ASN
7	E	200	ARG
10	H	25	ARG
12	J	48	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 59 such sidechains are listed below:

Mol	Chain	Res	Type
4	B	575	HIS
18	R	221	HIS
4	B	1114	GLN
18	R	207	ASN
17	S	185	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry

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

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

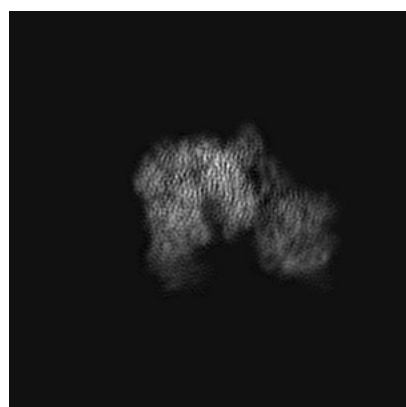
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-10007. These allow visual inspection of the internal detail of the map and identification of artifacts.

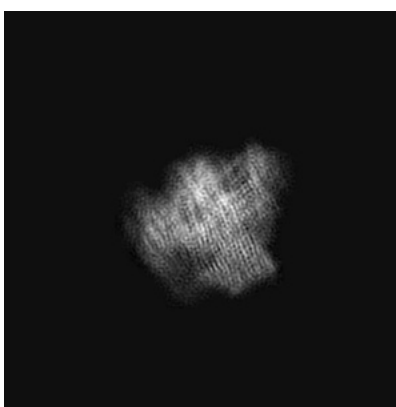
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

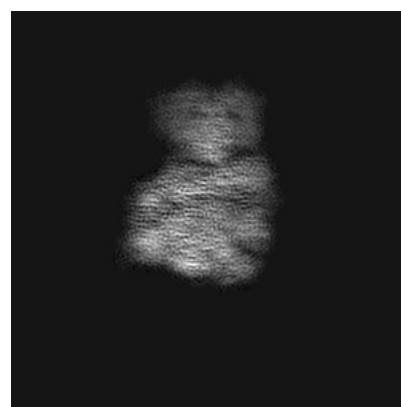
6.1.1 Primary map



X



Y

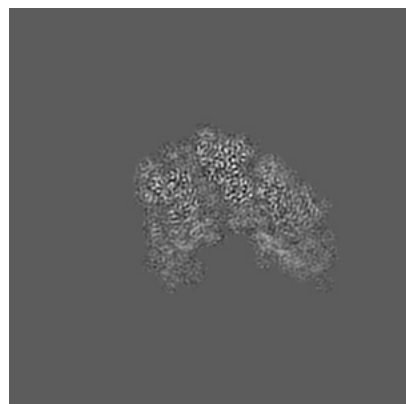


Z

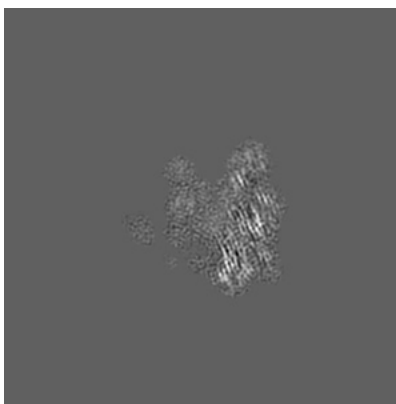
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

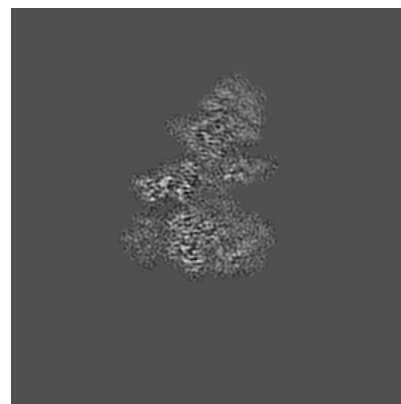
6.2.1 Primary map



X Index: 144



Y Index: 144

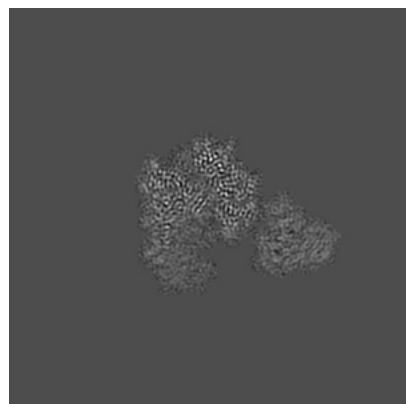


Z Index: 144

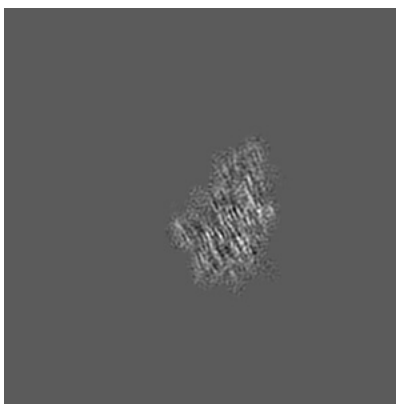
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

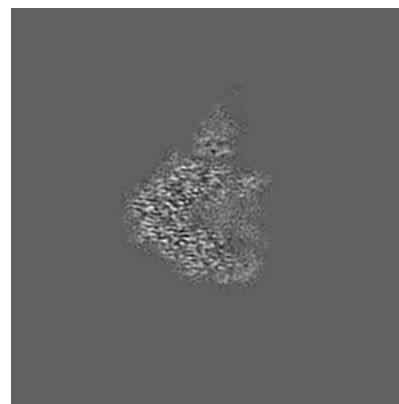
6.3.1 Primary map



X Index: 127



Y Index: 157

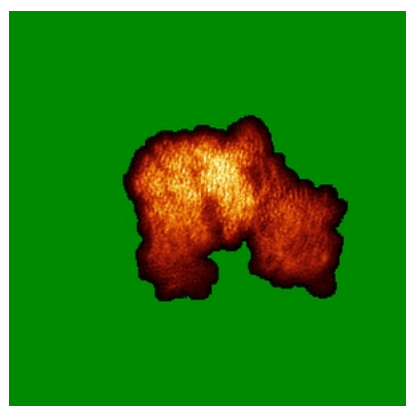


Z Index: 161

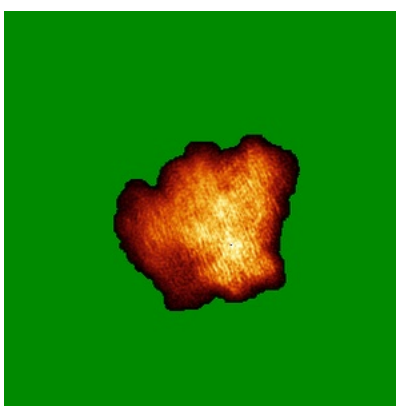
The images above show the largest variance slices of the map in three orthogonal directions.

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

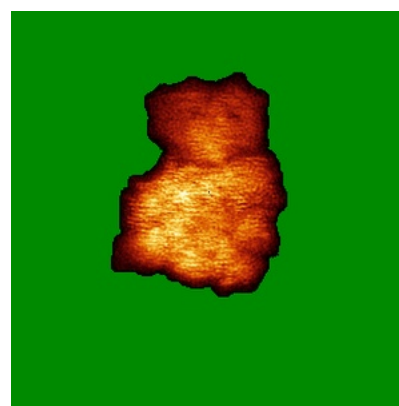
6.4.1 Primary map



X



Y

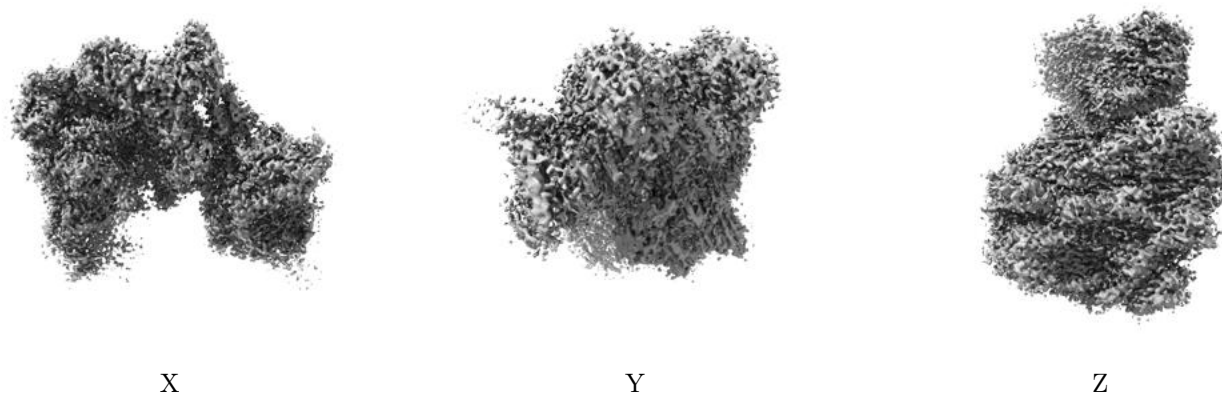


Z

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

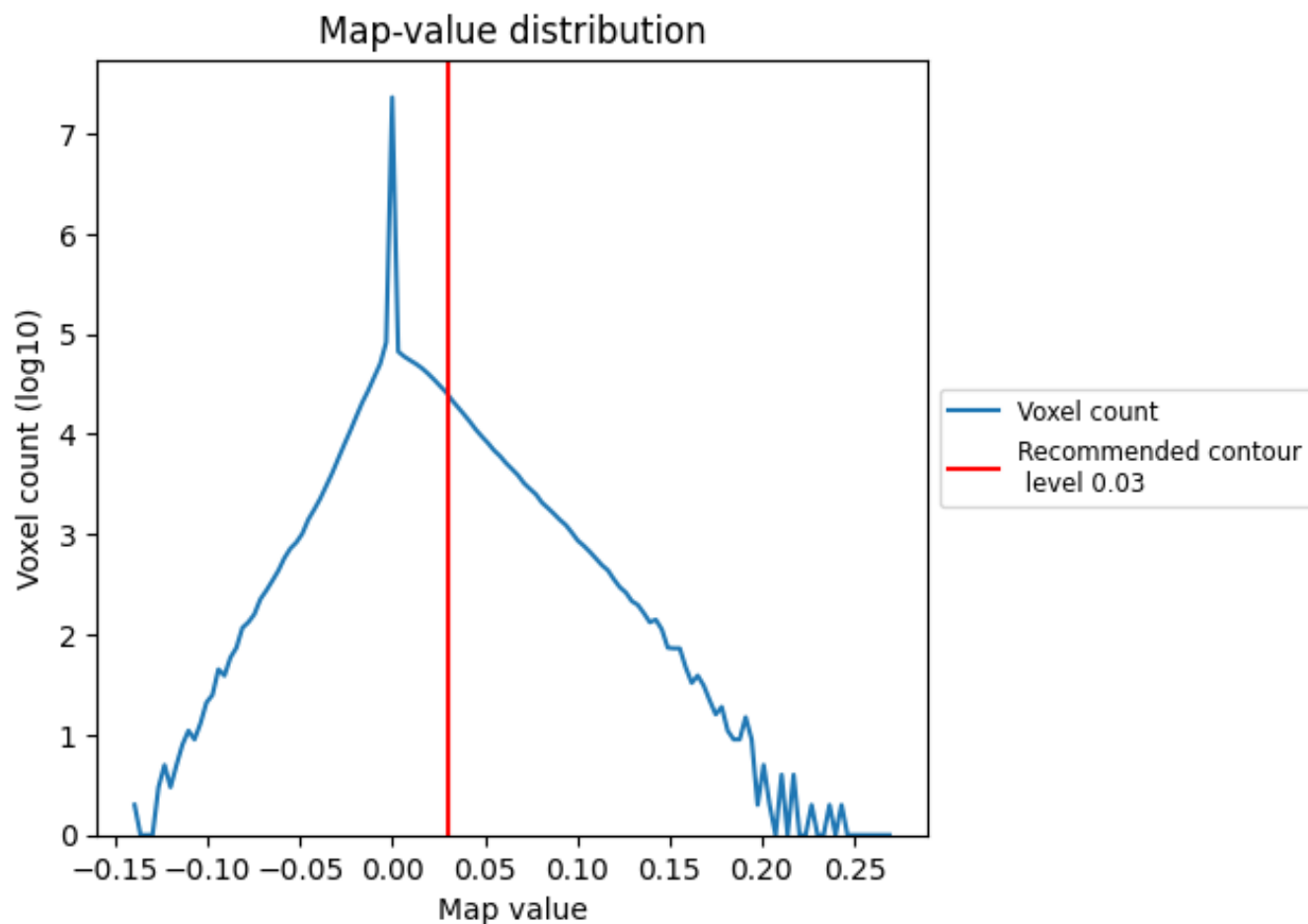
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

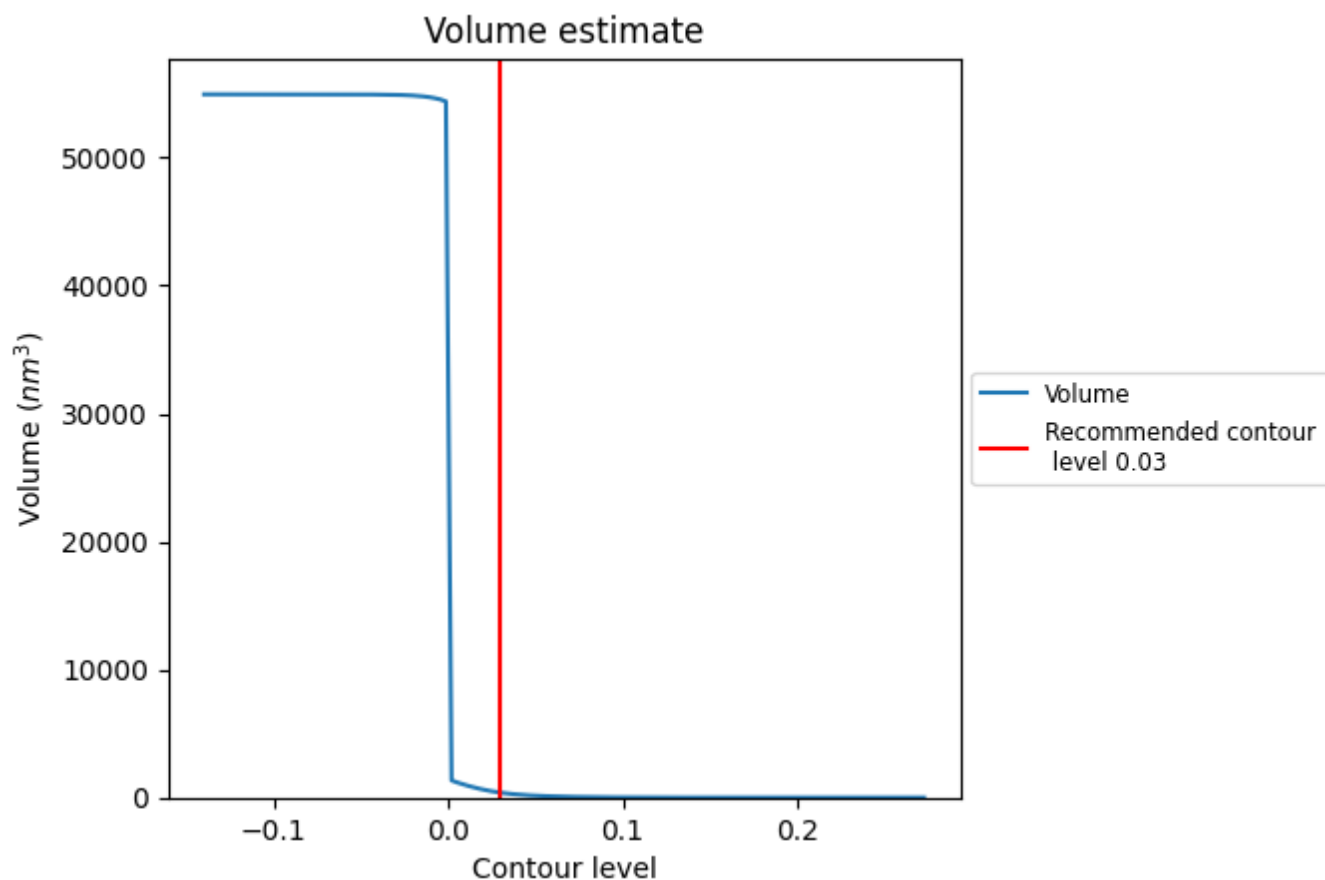
This section contains the results of statistical analysis of the map.

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.

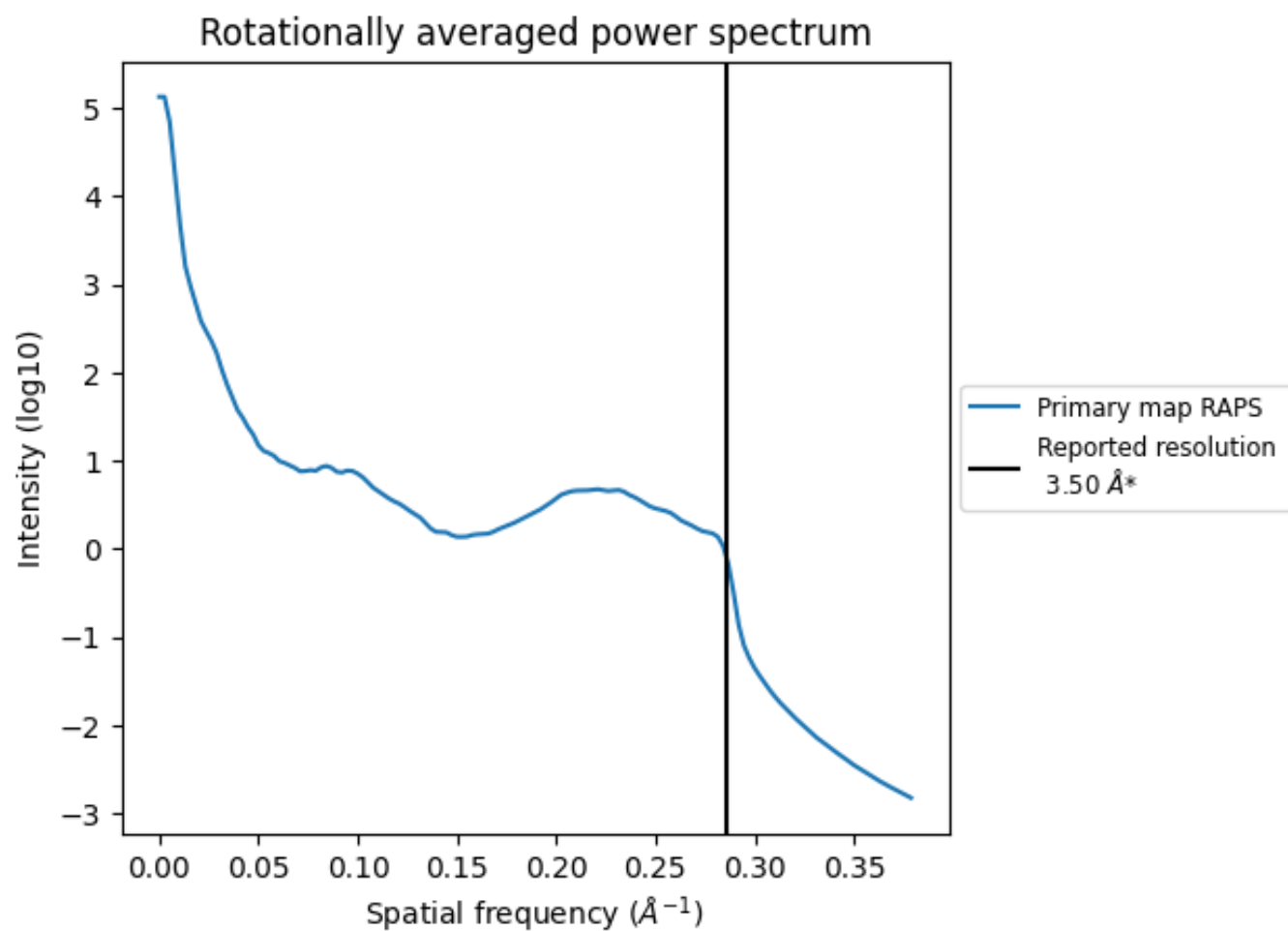
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 384 nm^3 ; this corresponds to an approximate mass of 347 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 0.286 Å⁻¹

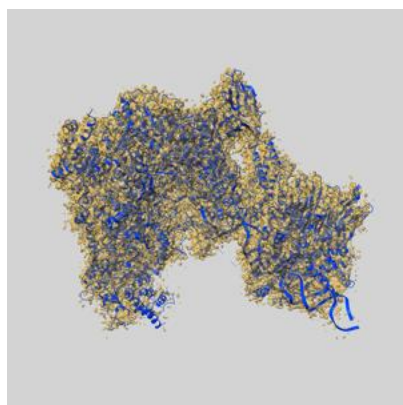
8 Fourier-Shell correlation

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

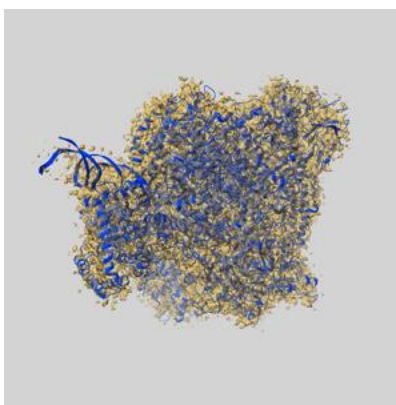
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-10007 and PDB model 6RUO. Per-residue inclusion information can be found in [section 3](#) on [page 8](#).

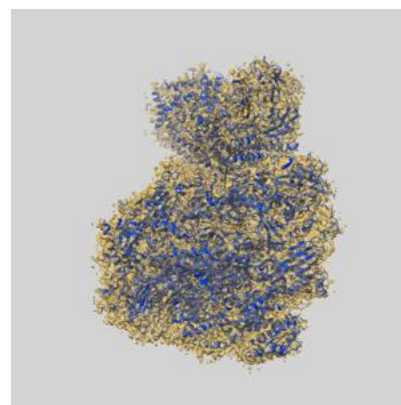
9.1 Map-model overlay [i](#)



X



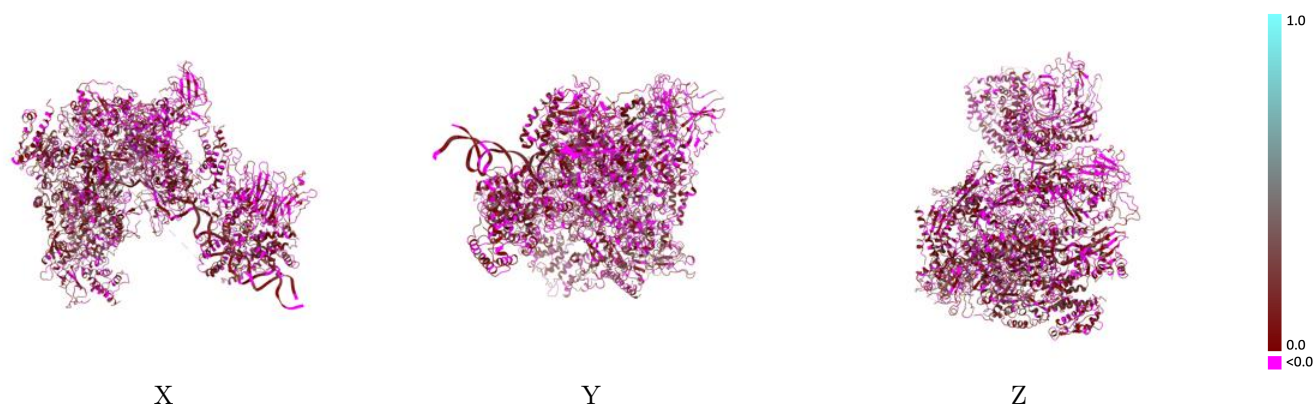
Y



Z

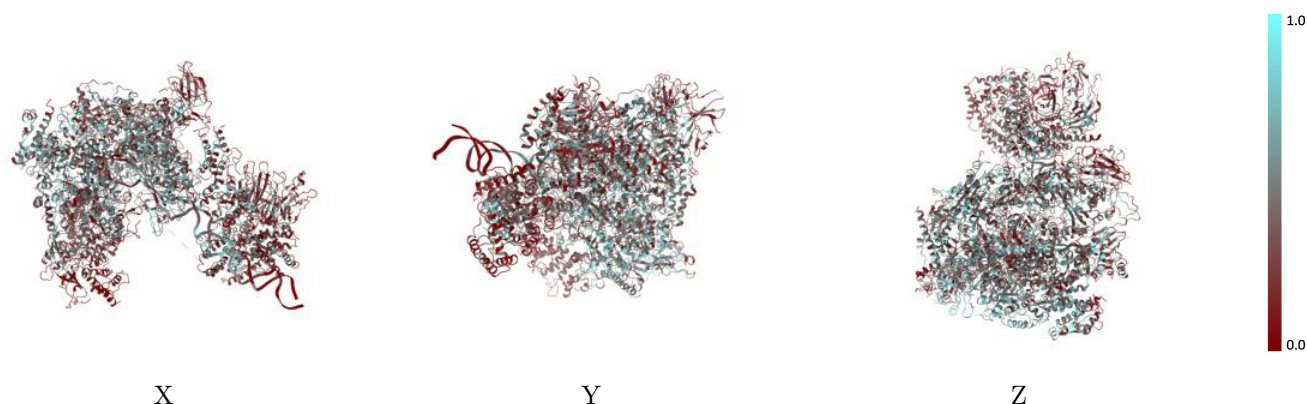
The images above show the 3D surface view of the map at the recommended contour level 0.03 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



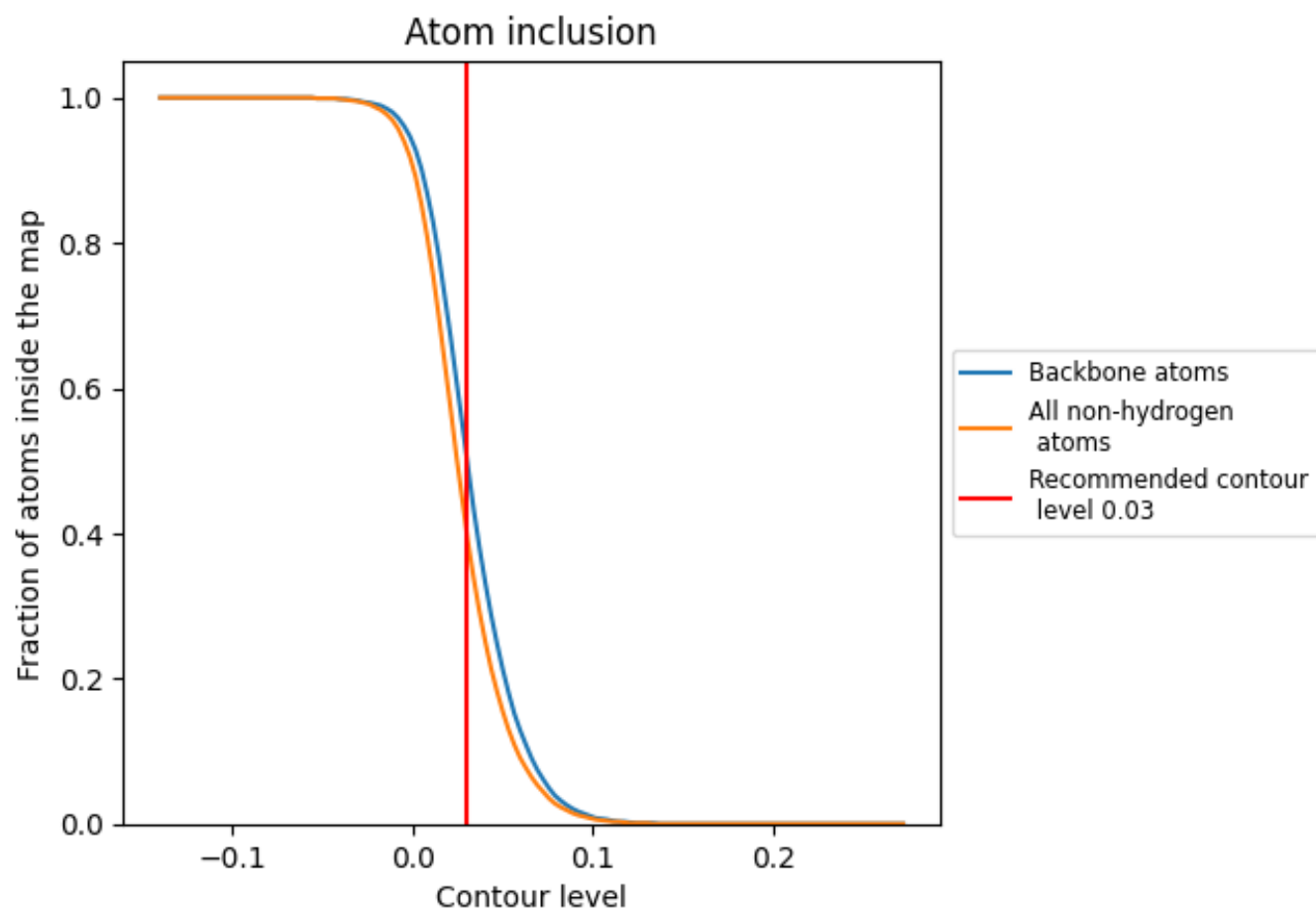
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.03).











































9.4 Atom inclusion [i](#)



At the recommended contour level, 51% of all backbone atoms, 40% 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 (0.03) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.4050	 0.0890
A	 0.4960	 0.1120
B	 0.4780	 0.0900
C	 0.5220	 0.1060
D	 0.3410	 0.1150
E	 0.5030	 0.1180
F	 0.5330	 0.1540
G	 0.3320	 0.1270
H	 0.5770	 0.1550
I	 0.2790	 0.0650
J	 0.4870	 0.0340
K	 0.5160	 0.1200
L	 0.5300	 0.0910
M	 0.2850	 -0.0050
N	 0.2860	 0.0230
O	 0.1240	 0.0980
Q	 0.3150	 0.0740
R	 0.3710	 0.0490
S	 0.2870	 0.0380
T	 0.3430	 0.0830
U	 0.3860	 0.1040

