



wwPDB EM Validation Summary Report ⓘ

Nov 19, 2022 – 09:20 pm GMT

PDB ID : 6EU2
EMDB ID : EMD-3957
Title : Apo RNA Polymerase III - open conformation (oPOL3)
Authors : Abascal-Palacios, G.; Ramsay, E.P.; Beuron, F.; Morris, E.; Vannini, A.
Deposited on : 2017-10-27
Resolution : 3.40 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.dev43
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.2

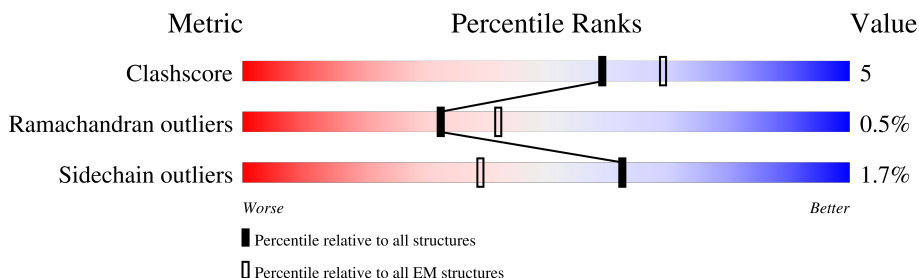
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.40 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	A	1460	
2	B	1149	
3	C	335	
4	D	161	
5	E	215	
6	F	155	
7	G	212	
8	H	146	

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Mol	Chain	Length	Quality of chain
9	I	110	
10	J	70	
11	K	142	
12	L	70	
13	M	282	
14	N	422	
15	O	654	
16	P	317	
17	Q	251	

2 Entry composition

There are 19 unique types of molecules in this entry. The entry contains 38329 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 DNA-directed RNA polymerase III subunit RPC1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1402	Total	C	N	O	S	0	0
			10980	6924	1930	2068	58		

- Molecule 2 is a protein called DNA-directed RNA polymerase III subunit RPC2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	1114	Total	C	N	O	S	0	0
			8788	5558	1516	1654	60		

- Molecule 3 is a protein called DNA-directed RNA polymerases I and III subunit RPAC1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	335	Total	C	N	O	S	0	0
			2655	1681	454	511	9		

- Molecule 4 is a protein called DNA-directed RNA polymerase III subunit RPC9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	119	Total	C	N	O	S	0	0
			977	628	156	187	6		

- Molecule 5 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		
5	E	215	Total	C	N	O	S	0	0
			1759	1116	310	321	12		

- Molecule 6 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		
6	F	83	Total	C	N	O	S	0	0
			671	429	114	125	3		

- Molecule 7 is a protein called DNA-directed RNA polymerase III subunit RPC8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	G	191	Total	C	N	O	S	0	0
			1544	1007	250	281	6		

- Molecule 8 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		
8	H	140	Total	C	N	O	S	0	0
			1120	703	188	224	5		

- Molecule 9 is a protein called DNA-directed RNA polymerase III subunit RPC10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	I	42	Total	C	N	O	S	0	0
			321	204	47	64	6		

- Molecule 10 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		
10	J	68	Total	C	N	O	S	0	0
			558	356	97	99	6		

- Molecule 11 is a protein called DNA-directed RNA polymerases I and III subunit RPAC2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	K	101	Total	C	N	O	S	0	0
			792	496	130	161	5		

- Molecule 12 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		
12	L	45	Total	C	N	O	S	0	0
			358	221	71	62	4		

- Molecule 13 is a protein called DNA-directed RNA polymerase III subunit RPC5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	M	165	Total	C	N	O	S	0	0
			1347	862	229	255	1		

- Molecule 14 is a protein called DNA-directed RNA polymerase III subunit RPC4.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	105	Total	C	N	O	S	0	0
			802	508	144	147	3		

- Molecule 15 is a protein called DNA-directed RNA polymerase III subunit RPC3.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	O	537	Total	C	N	O	S	0	0
			4315	2748	738	810	19		

- Molecule 16 is a protein called DNA-directed RNA polymerase III subunit RPC6.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	P	123	Total	C	N	O	S	0	0
			1024	667	161	192	4		

- Molecule 17 is a protein called DNA-directed RNA polymerase III subunit RPC7.

Mol	Chain	Residues	Atoms				AltConf	Trace
17	Q	40	Total	C	N	O	0	0
			311	204	50	57		

- 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	

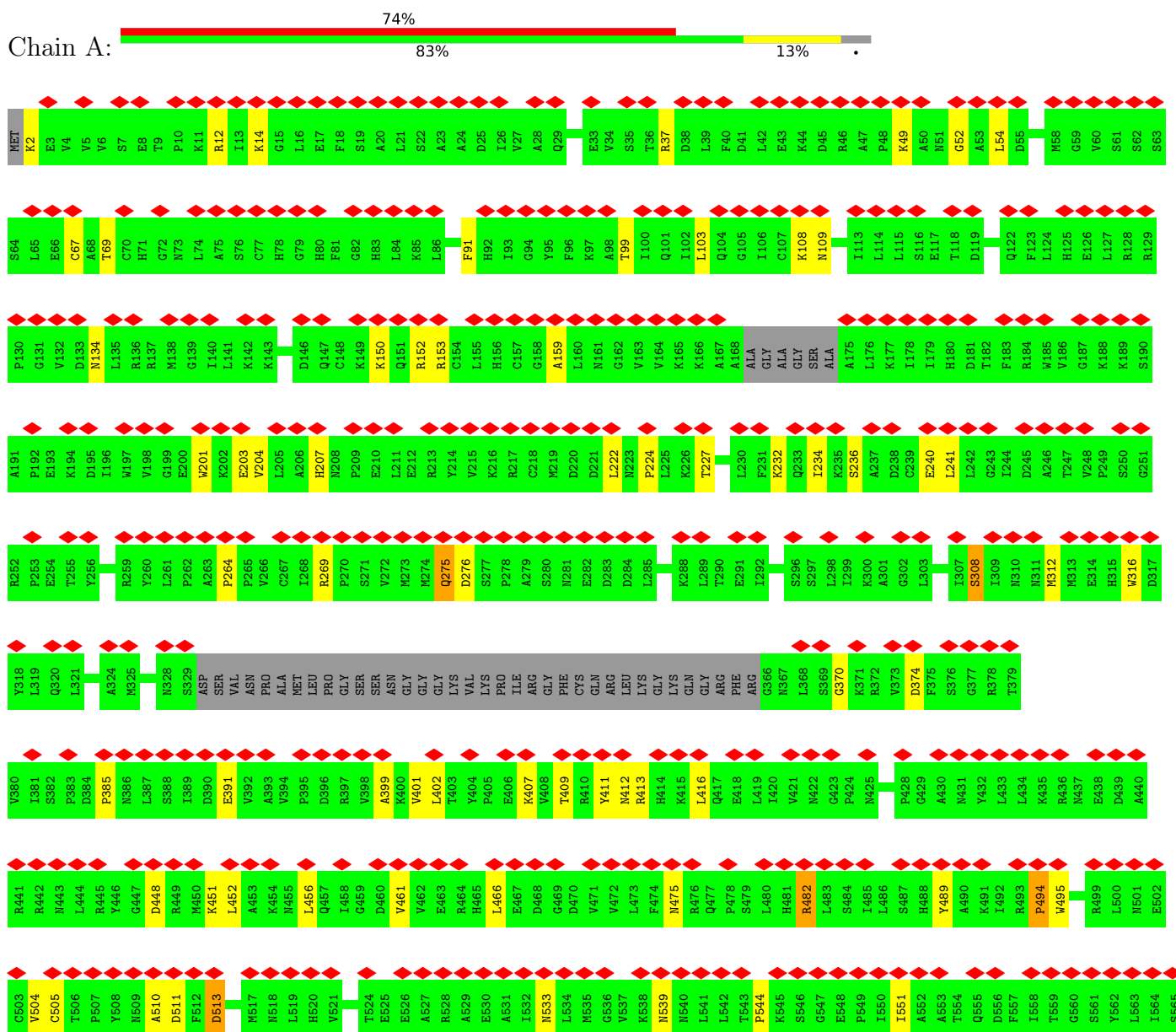
- Molecule 19 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
19	A	1	Total	Mg	0
			1	1	

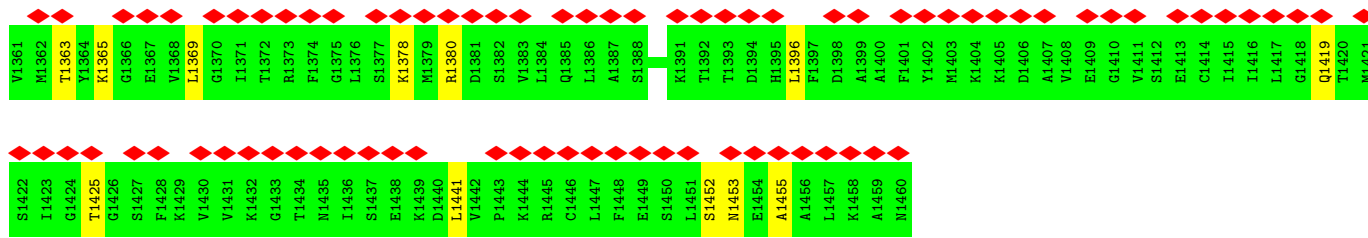
3 Residue-property plots

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.

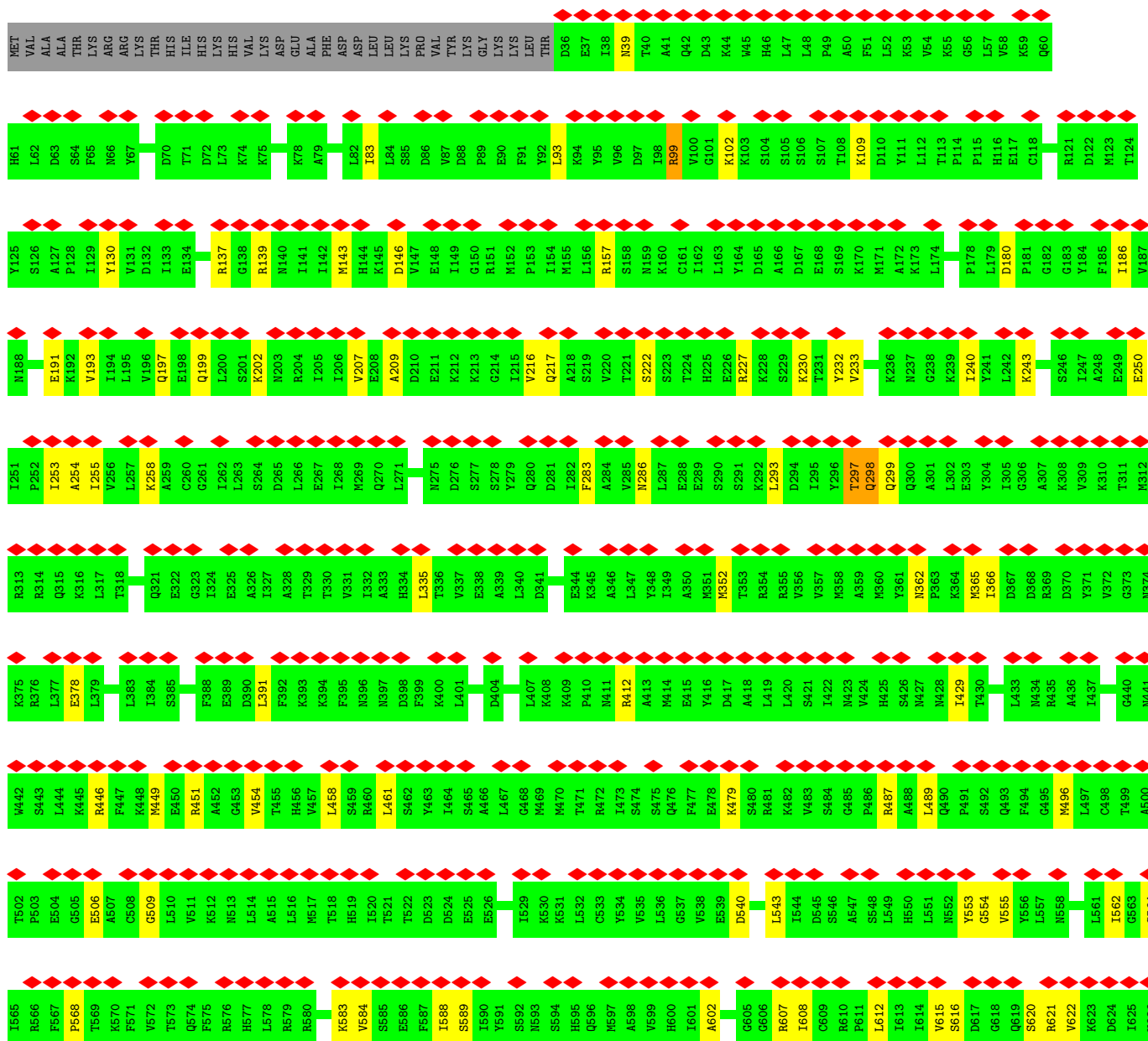
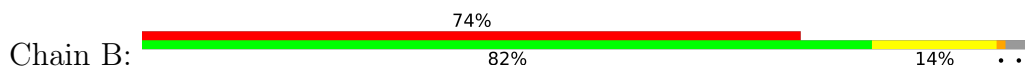
- Molecule 1: DNA-directed RNA polymerase III subunit RPC1

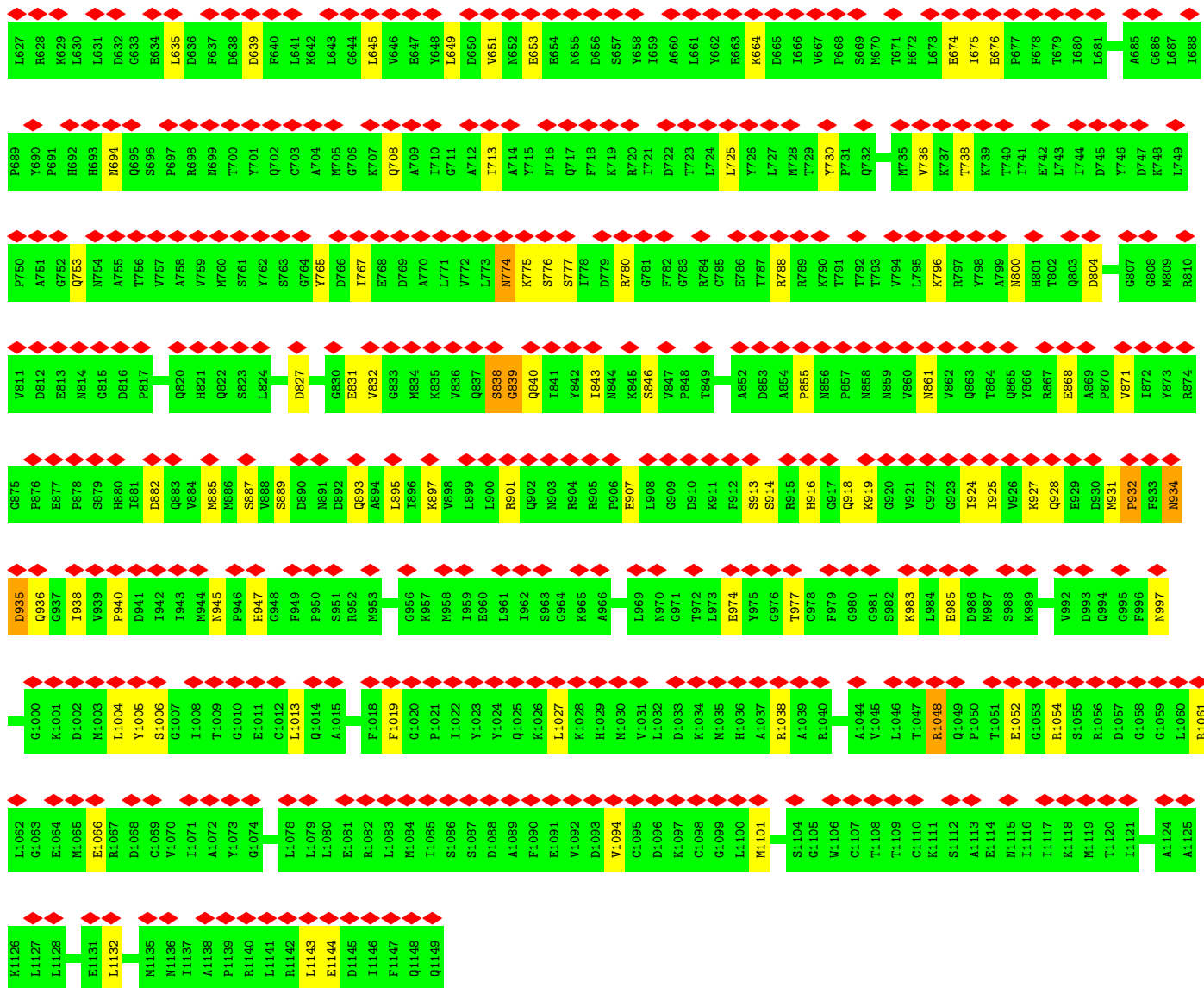


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LYS	ALA	LYS	SER	ILE	THR	SER	LYS	ALA	GLU	PRO	S1252	E1253	N1254	D1255	V1256	F1257	Y1258	R1259	M1260	Q1261	L1262	L1263	R1264	R1265	A1266	L1267	P1268	D1269	V1270	V1271	V1272	K1273	G1274	L1275	P1276	D1277	L1278	I1279	R1280	A1281	V1282	I1283	N1284	I1285	R1286	D1287	G1288	D1289	K1290	R1291	E1292	L1293	L1294	V1295	E1296	G1297	Y1298	G1299	
H566	K567	D568	S569	F570	Y571	D572	R573	A574	T575	L576	L579	L580	S581	M582	M583	S584	D585	G586	I587	E588	H589	F590	D591	I592	P593	P594	P595	A596	L597	M598	K599	P600	Y601	Y602	L603	W604	T605	G606	K607	Q608	V609	F610	S611	L612	L613	I614	K615	P616	M617	H618	M619	S620	P621	V622	V623	I624	N625		
D627	A628	K629	M630	K631	V632	F633	V634	P635	P636	K637	S638	K639	K640	L641	P642	M643	E644	M645	S646	Q647	N648	D649	G650	F651	V652	I653	I654	R655	S656	Q657	Q658	I659	L660	S661	G662	V663	M664	D665	K666	S667	V668	L669	G670	D671	F672	K673	K674	H675	S676	V677	F678	T679	H680	I681	L682	R683	D684	P687	
Q688	E689	A690	N691	A693	M694	N695	R696	M697	A698	K699	L700	C701	A702	R703	F704	L705	G706	N707	R708	G709	F710	S711	I712	N715	D716	A720	D721	D722	L723	K724	L725	K726	K727	E728	E729	L730	V731	E732	I733	A734	Y735	G736	K737	C738	D739	E740	L741	I742	T743	H744	F745	N746	K747	G748	E749	L750			
E751	T752	Q753	P754	G755	C756	N757	E758	E759	Q760	T761	L762	A764	K765	R703	G767	L769	L770	S771	K772	V773	R774	E775	V777	G778	D779	C781	I782	N783	E784	L785	D786	N787	W788	N789	L792	I793	M794	A795	T796	C797	G798	G801	S802	T803	L804	N805	V806	H807	L744	Q808	M809	V810	A811	V812					
V813	G814	Q815	Q816	I817	I818	S819	N820	R822	V823	P824	D825	G826	F827	Q828	D829	R830	S831	L832	P833	H834	F835	P836	K837	N838	S839	K840	T841	P842	Q843	S844	K845	G846	F847	V848	R849	N850	S851	F852	F853	G854	G855	L856	P858	P859	E860	F861	L862	F863	H864	A865	I866	G868	R869	E870	G871	L872			
V873	D874	T875	A876	V877	K878	T879	A880	E881	T882	G883	V884	M885	S886	R887	R888	L889	M890	K891	S892	D895	L896	S897	C898	Q899	Y900	D901	N902	T903	V904	R905	T906	S907	A908	N909	G910	I911	Q913	F914	T915	Y916	G917	G918	D919	G920	L921	D922	P923	L924	E927	G928	N929	A930	Q931	P932	V933	N934			
F935	N936	R937	S938	Y939	D940	H941	A942	Y943	N944	T945	T946	F947	N948	N949	Q950	D951	K952	G953	L954	L955	P956	Y957	A958	I959	N960	E961	T962	A963	N964	E965	P966	L967	G968	P969	L970	E971	R972	R973	L974	Y975	R976	Y977	D978	N979	S980	G981	C982	L983	Y984	K985	R986	E987	D988	L989	N990	K991	A992	E993	Y994
V995	D996	Q997	D999	A1000	E1001	R1002	D1003	F1004	Y1005	H1006	S1007	L1008	R1009	E1010	Y1011	I1012	N1013	G1014	K1015	A1016	T1017	A1018	N1021	L1022	R1023	K1024	S1025	R1026	G1027	M1028	L1029	G1030	L1031	L1032	E1033	P1034	P1035	A1036	K1037	E1038	L1039	Q1040	G1041	I1042	D1043	P1044	D1045	E1046	T1047	V1048	P1049	D1050	N1051	V1052	K1053	T1054	S1055		
V1056	S1057	Q1058	L1059	Y1060	R1061	I1062	S1063	E1064	K1065	S1066	V1067	R1068	K1069	F1070	L1071	E1072	I1073	A1074	L1075	F1076	K1077	Y1078	R1079	K1080	A1081	R1082	L1083	E1084	P1085	T1086	T1087	A1088	I1089	G1090	A1091	I1092	G1093	Q1095	S1096	I1097	G1098	E1099	P1100	T1102	M1104	T1105	L1106	K1107	T1108	F1109	H1110	F1111	A1112	G1113	V1114	A1115			
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D1179	M1180	L1181	S1182	F1183	I1184	Q1185	V1186	R1187	I1188	D1189	L1190	G1191	T1192	I1193	D1194	K1195	L1196	Q1197	L1198	E1199	L1200	T1201	I1202	E1203	D1204	I1205	A1206	L1209	T1210	R1211	A1212	S1213	K1214	L1215	K1216	I1217	Q1218	A1219	S1220	D1221	V1222	N1223	I1224	I1225	G1226	K1227	D1228	R1229	I1230	A1231	N1232	M1233	V1234	F1235	P1236	GLU	GLY	TYR	
L1300	R1301	D1302	V1303	M1304	C1305	T1306	D1307	G1308	V1309	L1310	G1311	S1312	R1313	T1314	T1315	T1316	M1317	M1318	V1319	L1320	E1321	F1322	V1323	V1324	L1325	G1326	G1327	L1328	E1329	A1330	A1331	R1332	S1333	S1334	L1335	L1336	R1337	E1338	I1339	M1340	S1341	S1344	M1345	H1346	G1347	M1348	S1349	D1351	P1352	R1353	H1354	I1355	Q1356	L1357	L1358	G1359	D1360		

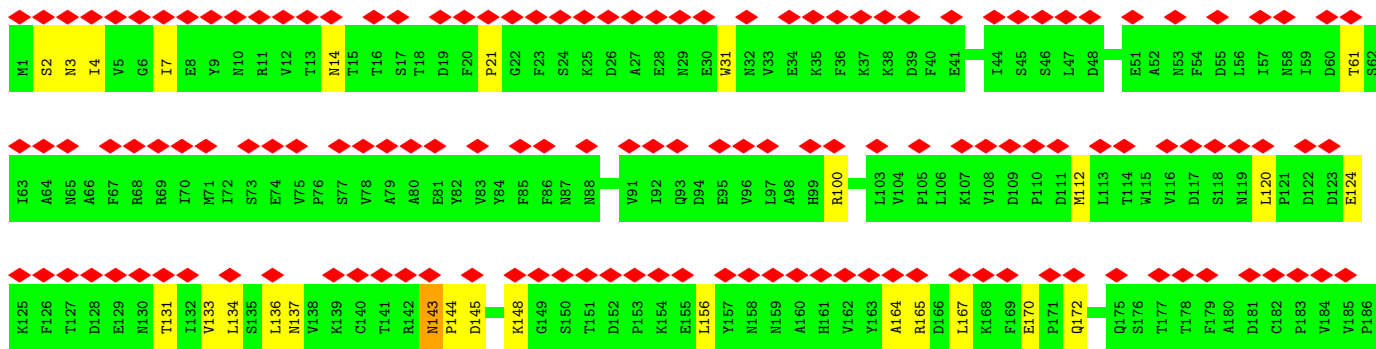
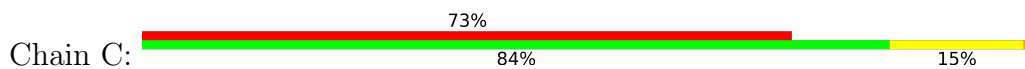


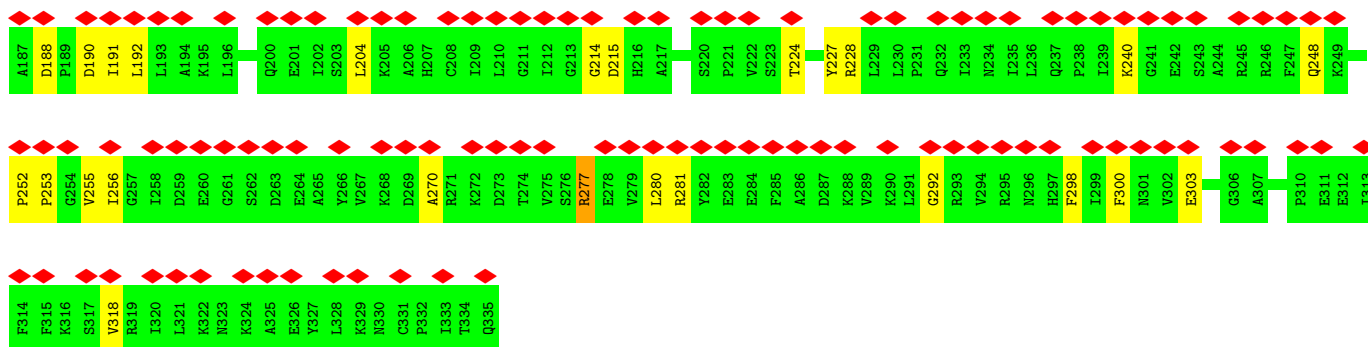
• Molecule 2: DNA-directed RNA polymerase III subunit RPC2



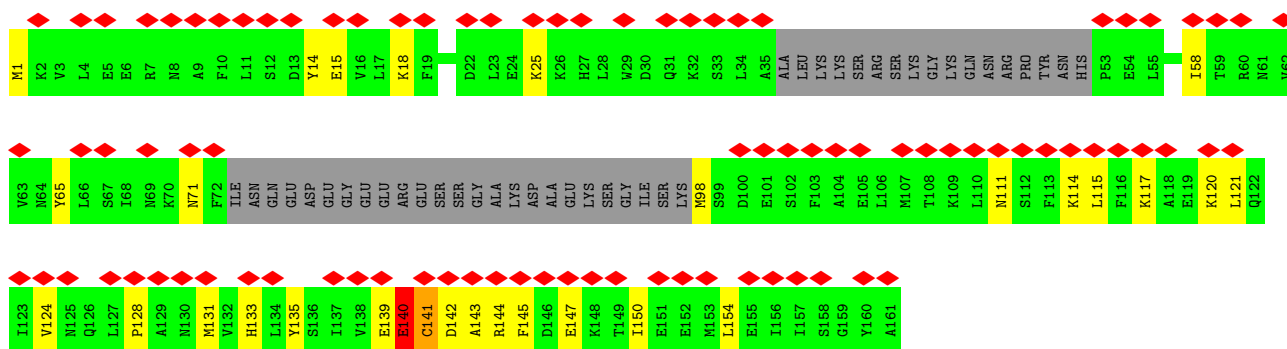


• Molecule 3: DNA-directed RNA polymerases I and III subunit RPAC1

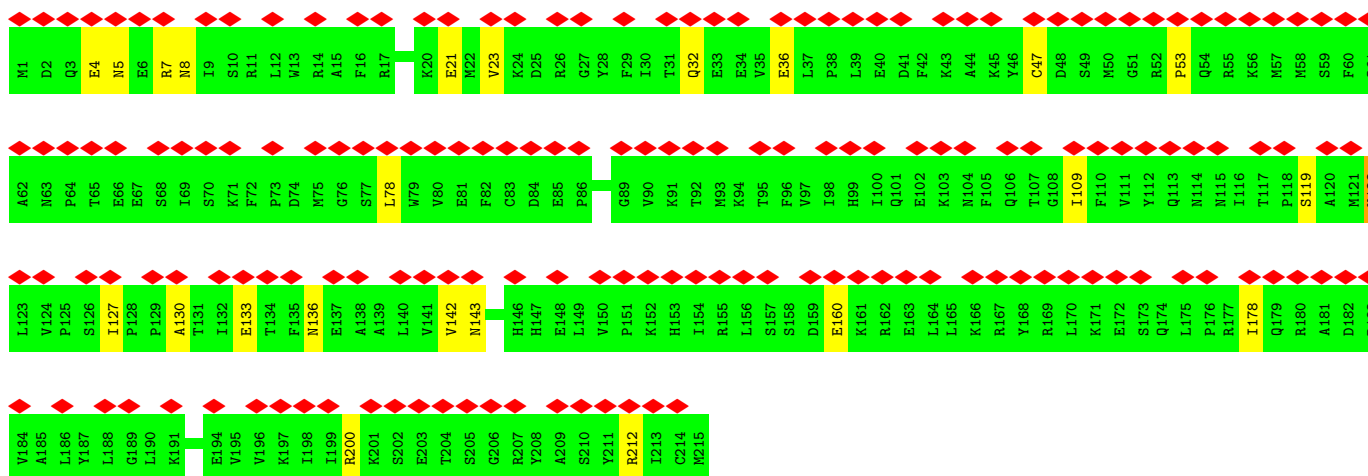
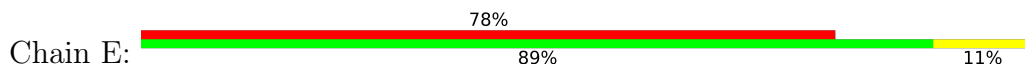




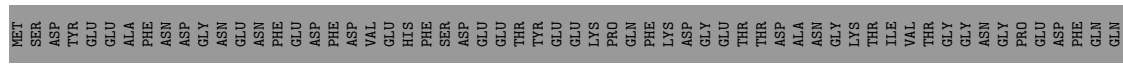
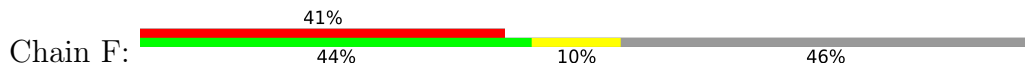
• Molecule 4: DNA-directed RNA polymerase III subunit RPC9

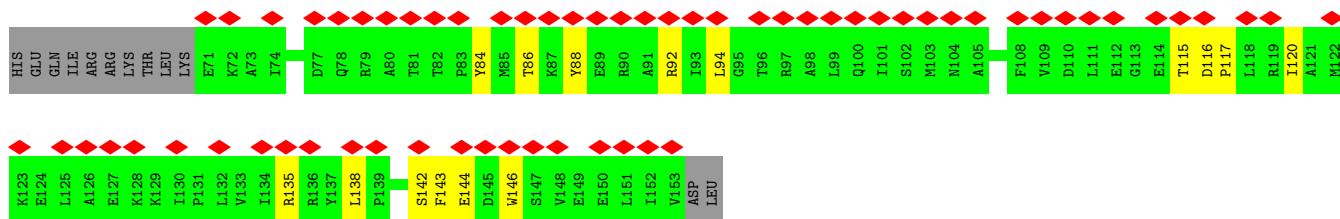


• Molecule 5: DNA-directed RNA polymerases I, II, and III subunit RPABC1

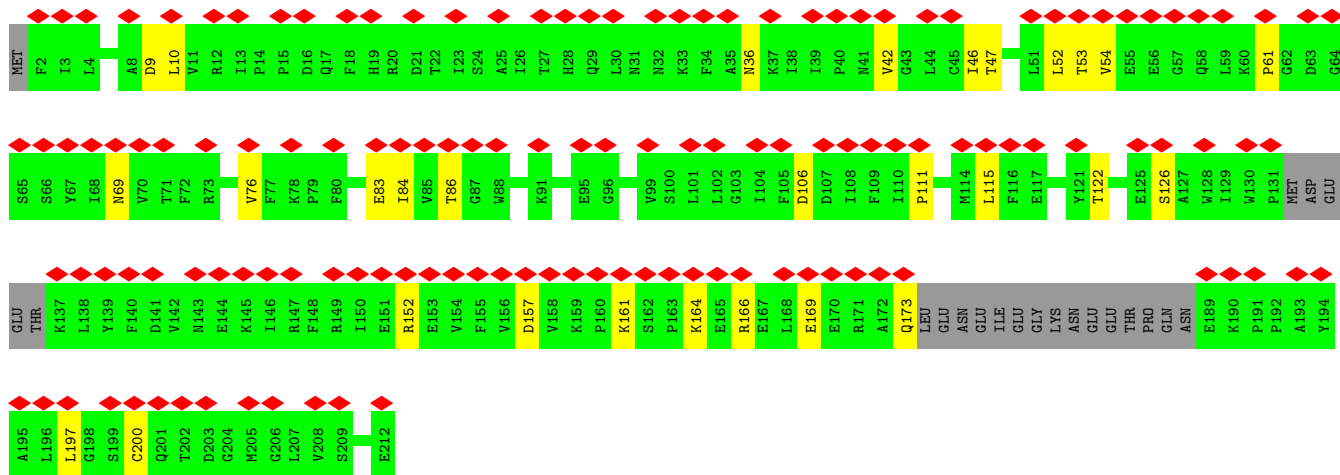
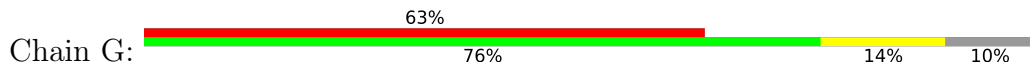


• Molecule 6: DNA-directed RNA polymerases I, II, and III subunit RPABC2

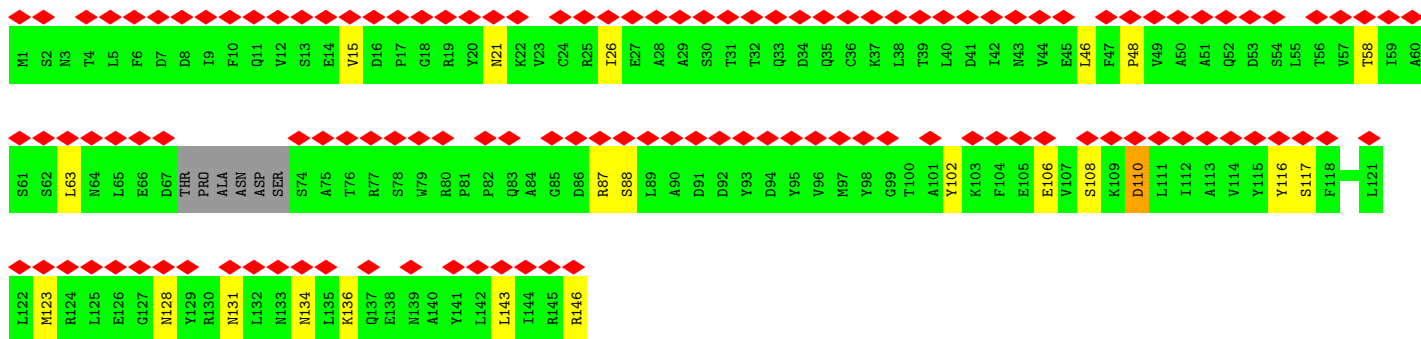
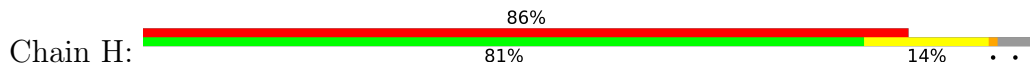




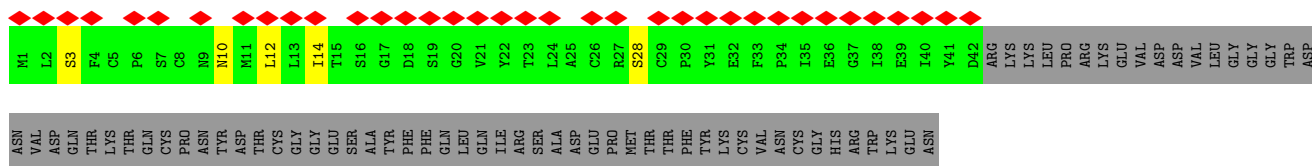
• Molecule 7: DNA-directed RNA polymerase III subunit RPC8



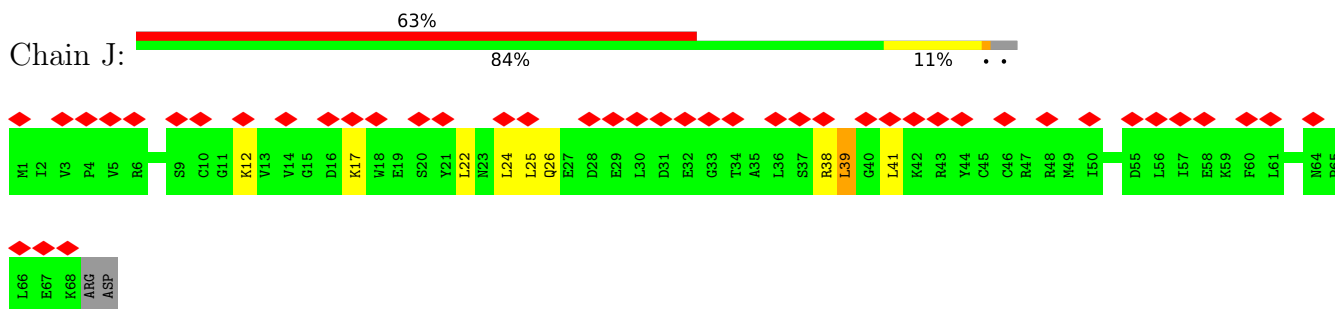
• Molecule 8: DNA-directed RNA polymerases I, II, and III subunit RPABC3



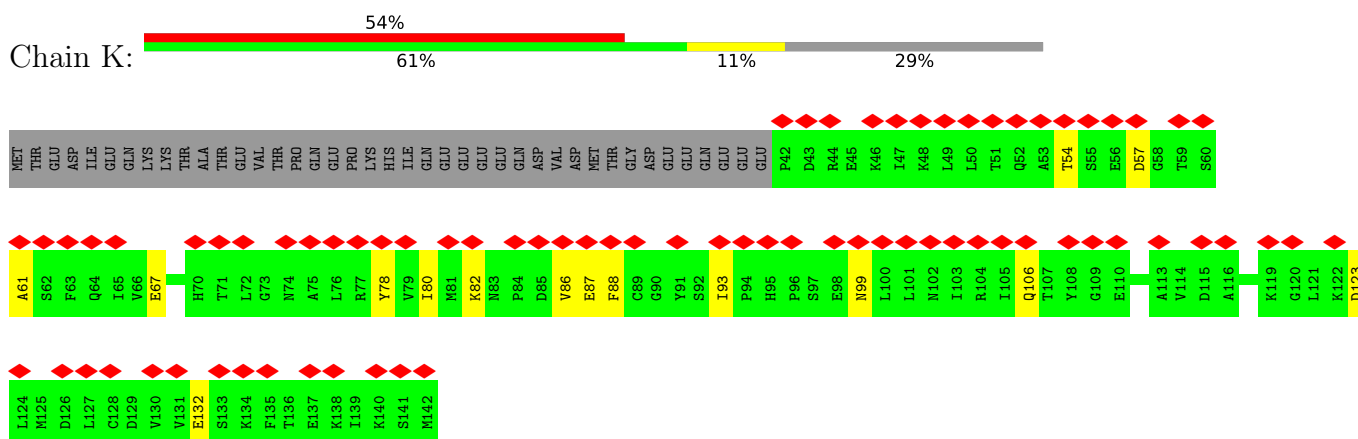
• Molecule 9: DNA-directed RNA polymerase III subunit RPC10



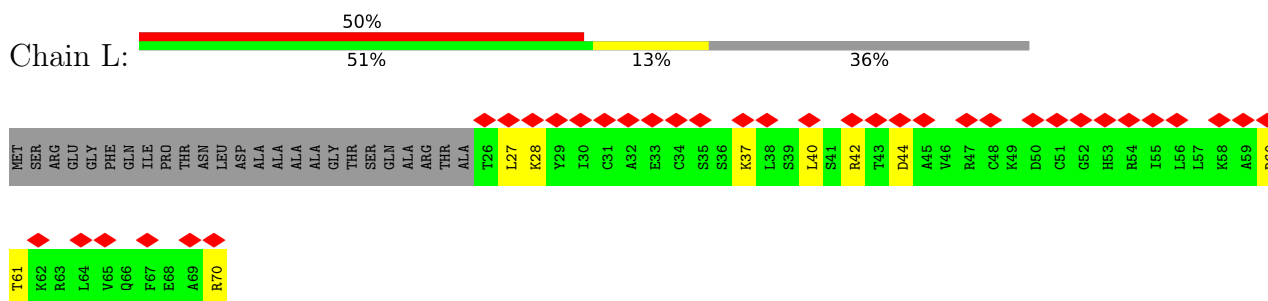
- Molecule 10: DNA-directed RNA polymerases I, II, and III subunit RPABC5



- Molecule 11: DNA-directed RNA polymerases I and III subunit RPAC2

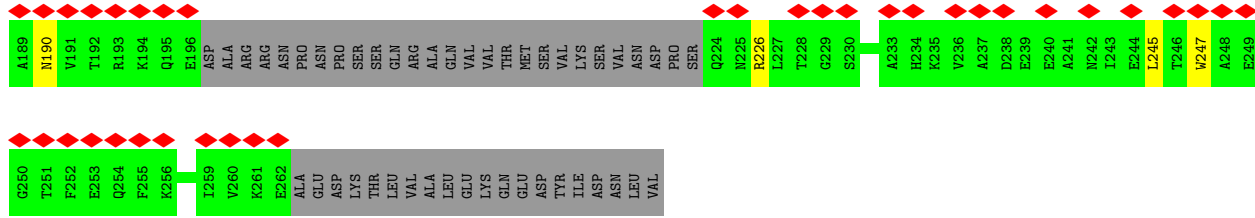


- Molecule 12: DNA-directed RNA polymerases I, II, and III subunit RPABC4

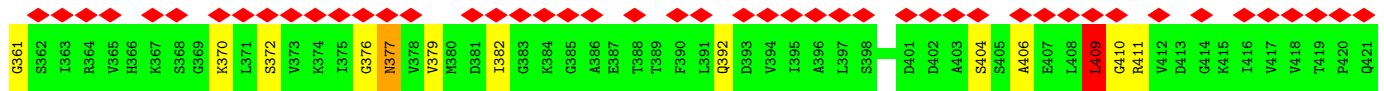
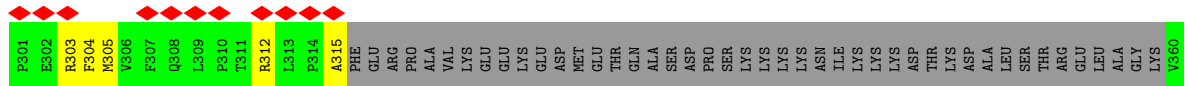
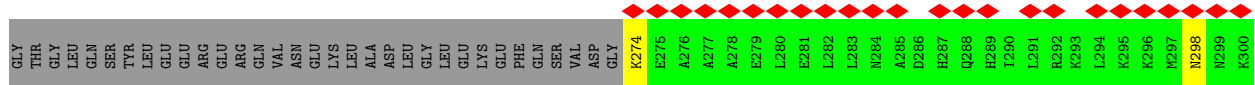
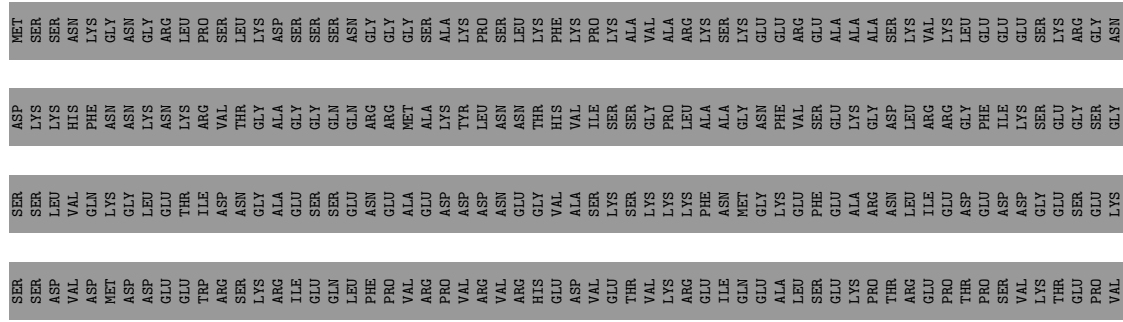


- Molecule 13: DNA-directed RNA polymerase III subunit RPC5

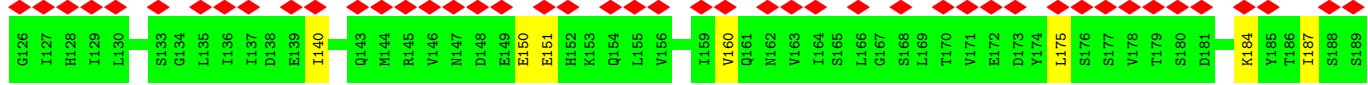
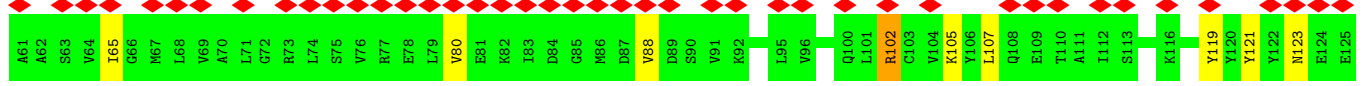
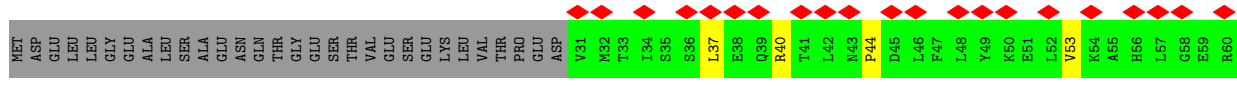




• Molecule 14: DNA-directed RNA polymerase III subunit RPC4



• Molecule 15: DNA-directed RNA polymerase III subunit RPC3



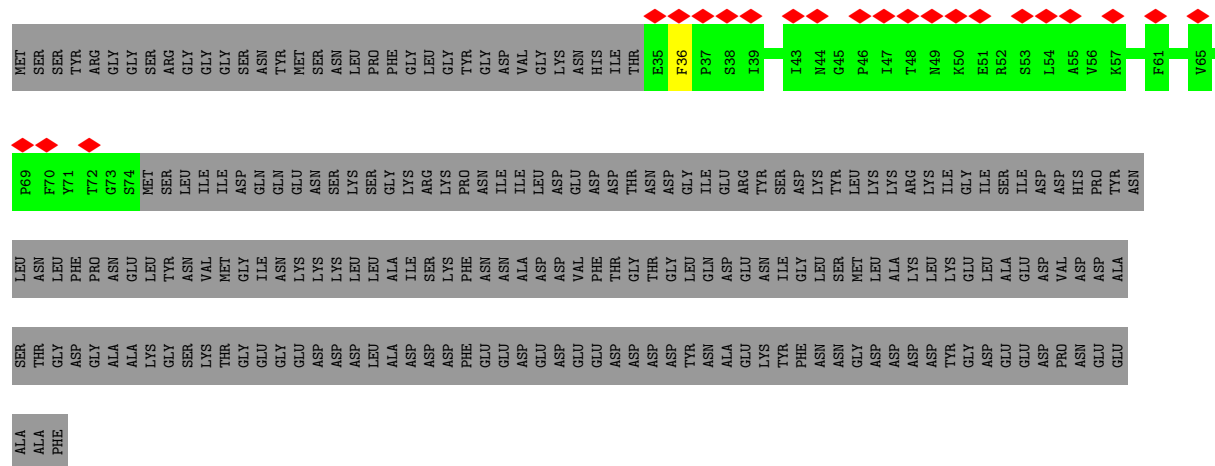
The table displays a comprehensive list of residues for Molecule 16. Each entry consists of a residue code (e.g., LEU, ARG, GLY) and a corresponding residue ID (e.g., L190, F191, Y192). The residues are color-coded based on their validation status: green for high quality, yellow for medium, and grey for low quality or unclassified. Red diamond symbols are positioned above and below the residue codes to indicate specific validation metrics or errors.

• Molecule 16: DNA-directed RNA polymerase III subunit RPC6



This section continues the residue validation data for Chain P. It lists residue codes and IDs, color-coded by validation status. Red diamond symbols are present above and below the residue codes. The residues include a mix of amino acids like MET, SER, GLY, ILE, VAL, LYS, etc., with IDs ranging from F185 to V246.

• Molecule 17: DNA-directed RNA polymerase III subunit RPC7



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	54213	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 ($e^-/\text{\AA}^2$)	40	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	0.356	Depositor
Minimum map value	-0.168	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.009	Depositor
Recommended contour level	0.04	Depositor
Map size (Å)	323.4, 323.4, 323.4	wwPDB
Map dimensions	308, 308, 308	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.05, 1.05, 1.05	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, MG

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.28	0/11176	0.59	5/15104 (0.0%)
2	B	0.28	0/8943	0.59	2/12068 (0.0%)
3	C	0.28	0/2711	0.55	1/3676 (0.0%)
4	D	0.27	0/991	0.59	0/1328
5	E	0.29	0/1795	0.52	0/2416
6	F	0.28	0/683	0.58	0/923
7	G	0.27	0/1583	0.56	0/2146
8	H	0.29	0/1138	0.61	1/1540 (0.1%)
9	I	0.28	0/328	0.63	0/445
10	J	0.29	0/567	0.63	1/761 (0.1%)
11	K	0.27	0/803	0.61	1/1083 (0.1%)
12	L	0.27	0/360	0.67	0/478
13	M	0.29	0/1378	0.62	0/1863
14	N	0.29	0/810	0.72	1/1088 (0.1%)
15	O	0.27	0/4379	0.60	0/5906
16	P	0.35	0/1050	0.79	1/1424 (0.1%)
17	Q	0.36	0/320	0.66	0/434
All	All	0.28	0/39015	0.60	13/52683 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	7
2	B	0	7
3	C	0	1
8	H	0	1
12	L	0	1
13	M	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
14	N	0	3
15	O	0	1
16	P	0	6
All	All	0	28

There are no bond length outliers.

The worst 5 of 13 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
16	P	265	LEU	CA-CB-CG	8.06	133.84	115.30
14	N	409	LEU	N-CA-C	-7.53	90.66	111.00
1	A	276	ASP	CB-CG-OD1	6.57	124.22	118.30
3	C	156	LEU	CA-CB-CG	6.21	129.59	115.30
2	B	335	LEU	CA-CB-CG	6.07	129.26	115.30

There are no chirality outliers.

5 of 28 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	275	GLN	Peptide
1	A	308	SER	Peptide
1	A	494	PRO	Peptide
1	A	511	ASP	Peptide
1	A	631	LYS	Peptide

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	10980	0	11097	109	0
2	B	8788	0	8903	94	0
3	C	2655	0	2628	26	0
4	D	977	0	983	27	0
5	E	1759	0	1788	13	0
6	F	671	0	692	11	0
7	G	1544	0	1540	20	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
8	H	1120	0	1089	13	0
9	I	321	0	305	3	0
10	J	558	0	573	5	0
11	K	792	0	790	10	0
12	L	358	0	382	6	0
13	M	1347	0	1315	14	0
14	N	802	0	851	12	0
15	O	4315	0	4484	48	0
16	P	1024	0	992	21	0
17	Q	311	0	315	2	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
19	A	1	0	0	0	0
All	All	38329	0	38727	372	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 5.

The worst 5 of 372 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:D:135:TYR:CE1	4:D:142:ASP:HA	1.58	1.37
4:D:135:TYR:CZ	4:D:142:ASP:HB3	1.68	1.27
4:D:135:TYR:HE1	4:D:142:ASP:CA	1.52	1.22
4:D:135:TYR:CE1	4:D:142:ASP:CA	2.23	1.19
4:D:143:ALA:O	4:D:145:PHE:N	1.79	1.15

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	1394/1460 (96%)	1219 (87%)	167 (12%)	8 (1%)	25	57
2	B	1112/1149 (97%)	980 (88%)	127 (11%)	5 (0%)	34	67
3	C	333/335 (99%)	299 (90%)	33 (10%)	1 (0%)	41	72
4	D	113/161 (70%)	97 (86%)	13 (12%)	3 (3%)	5	26
5	E	213/215 (99%)	195 (92%)	18 (8%)	0	100	100
6	F	81/155 (52%)	68 (84%)	13 (16%)	0	100	100
7	G	185/212 (87%)	159 (86%)	26 (14%)	0	100	100
8	H	136/146 (93%)	117 (86%)	19 (14%)	0	100	100
9	I	40/110 (36%)	34 (85%)	6 (15%)	0	100	100
10	J	66/70 (94%)	58 (88%)	8 (12%)	0	100	100
11	K	99/142 (70%)	88 (89%)	11 (11%)	0	100	100
12	L	43/70 (61%)	36 (84%)	7 (16%)	0	100	100
13	M	161/282 (57%)	120 (74%)	39 (24%)	2 (1%)	13	41
14	N	101/422 (24%)	80 (79%)	21 (21%)	0	100	100
15	O	531/654 (81%)	468 (88%)	62 (12%)	1 (0%)	47	78
16	P	119/317 (38%)	72 (60%)	42 (35%)	5 (4%)	3	18
17	Q	38/251 (15%)	32 (84%)	6 (16%)	0	100	100
All	All	4765/6151 (78%)	4122 (86%)	618 (13%)	25 (0%)	32	61

5 of 25 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	839	GLY
2	B	935	ASP
4	D	140	GLU
4	D	144	ARG
16	P	308	GLU

5.3.2 Protein sidechains [i](#)

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

The Analysed column shows the number of residues for which the sidechain conformation was

analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	1215/1257 (97%)	1199 (99%)	16 (1%)	69	84
2	B	975/1006 (97%)	961 (99%)	14 (1%)	67	83
3	C	296/296 (100%)	289 (98%)	7 (2%)	49	74
4	D	110/145 (76%)	105 (96%)	5 (4%)	27	58
5	E	197/197 (100%)	193 (98%)	4 (2%)	55	77
6	F	73/137 (53%)	73 (100%)	0	100	100
7	G	170/190 (90%)	169 (99%)	1 (1%)	86	94
8	H	123/128 (96%)	121 (98%)	2 (2%)	62	81
9	I	38/98 (39%)	37 (97%)	1 (3%)	46	72
10	J	63/65 (97%)	62 (98%)	1 (2%)	62	81
11	K	91/130 (70%)	91 (100%)	0	100	100
12	L	40/57 (70%)	40 (100%)	0	100	100
13	M	143/249 (57%)	139 (97%)	4 (3%)	43	70
14	N	88/360 (24%)	83 (94%)	5 (6%)	20	50
15	O	492/593 (83%)	482 (98%)	10 (2%)	55	77
16	P	116/285 (41%)	115 (99%)	1 (1%)	78	90
17	Q	35/212 (16%)	35 (100%)	0	100	100
All	All	4265/5405 (79%)	4194 (98%)	71 (2%)	62	80

5 of 71 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
14	N	312	ARG
14	N	409	LEU
15	O	286	ARG
2	B	664	LYS
2	B	479	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 61 such sidechains are listed below:

Mol	Chain	Res	Type
2	B	1049	GLN
15	O	337	GLN
4	D	126	GLN

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Mol	Chain	Res	Type
15	O	254	ASN
15	O	631	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 7 ligands modelled in this entry, 7 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.

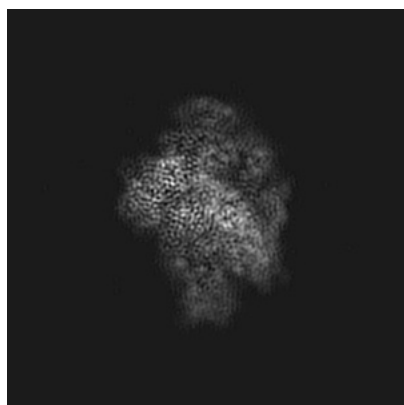
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-3957. These allow visual inspection of the internal detail of the map and identification of artifacts.

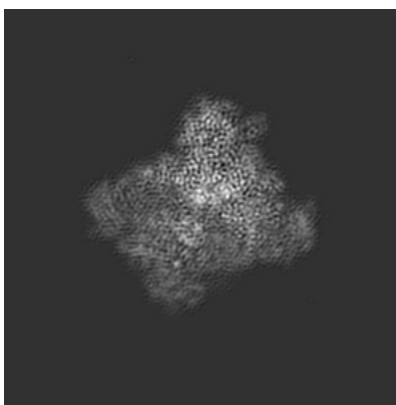
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

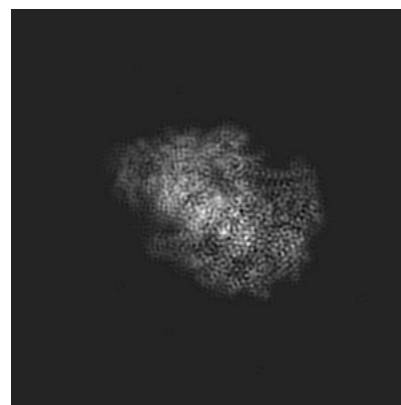
6.1.1 Primary map



X



Y

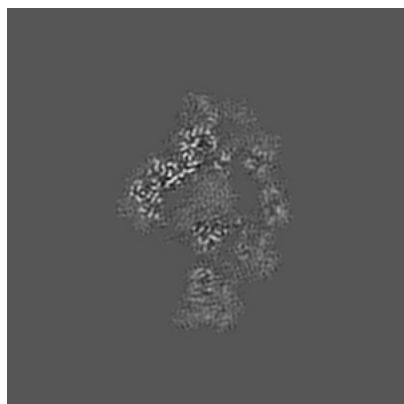


Z

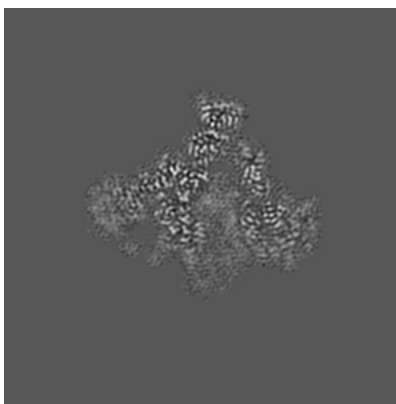
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

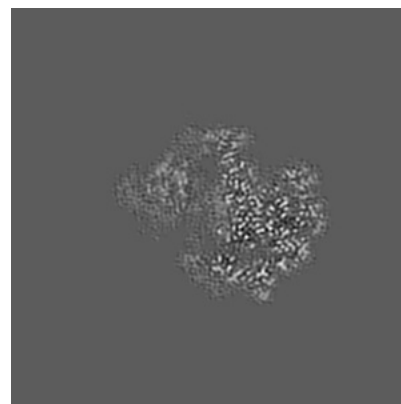
6.2.1 Primary map



X Index: 154



Y Index: 154

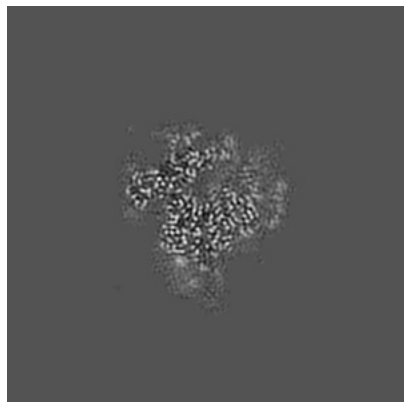


Z Index: 154

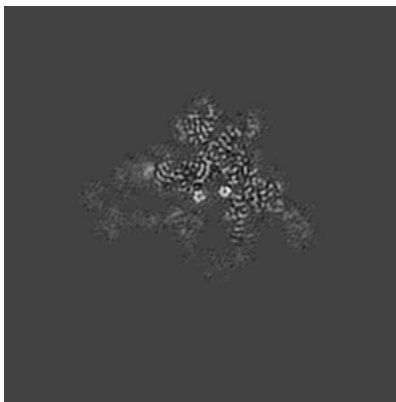
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

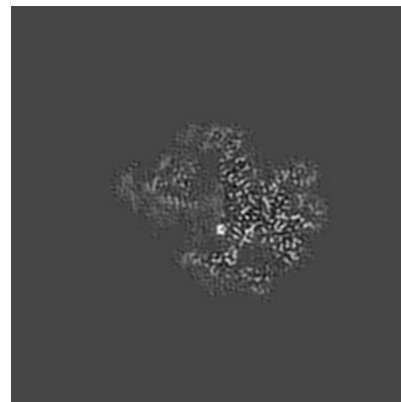
6.3.1 Primary map



X Index: 177



Y Index: 135

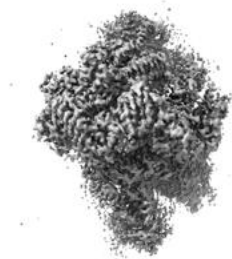


Z Index: 152

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

6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.04. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

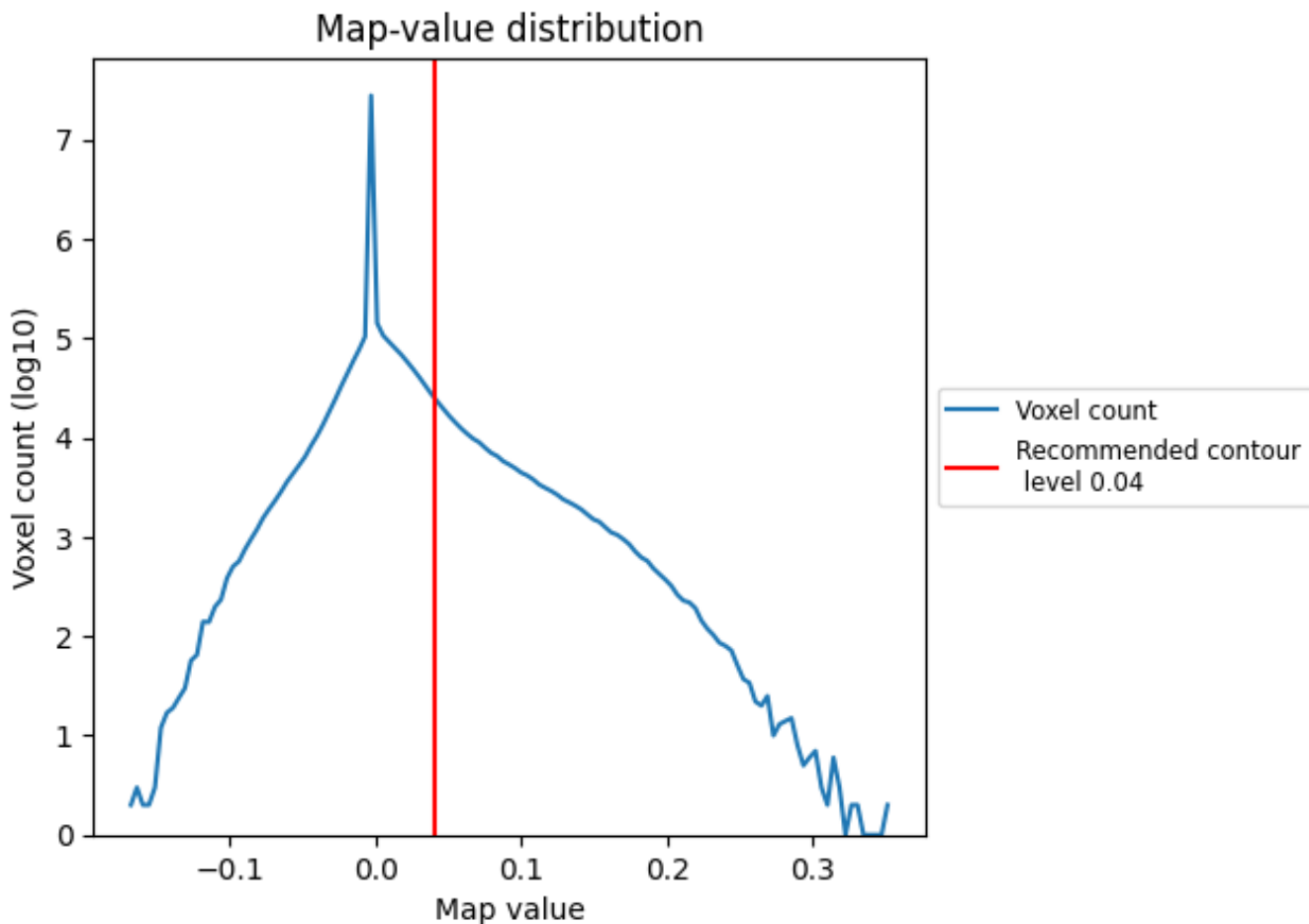
6.5 Mask visualisation

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

7 Map analysis [i](#)

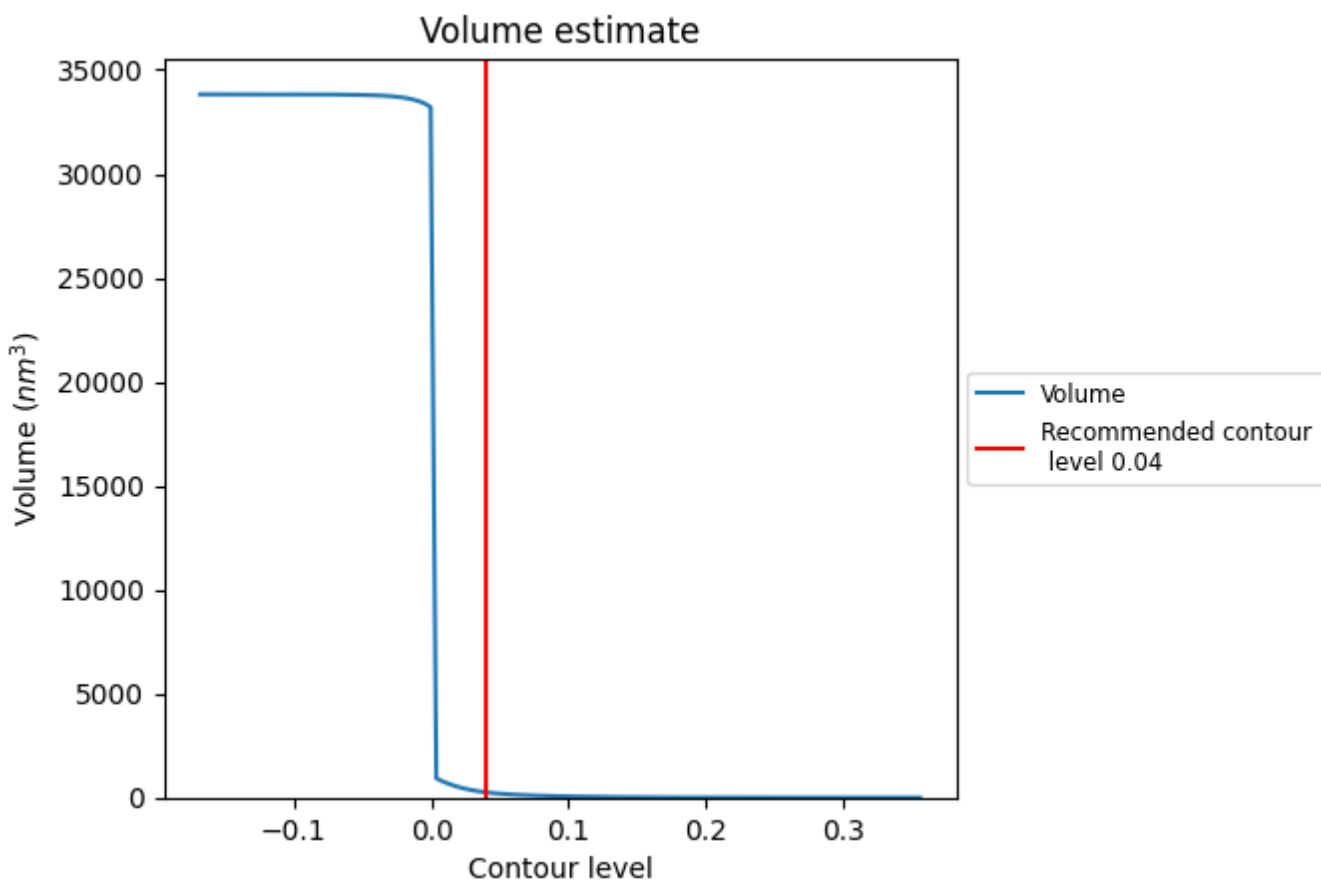
This section contains the results of statistical analysis of the map.

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.

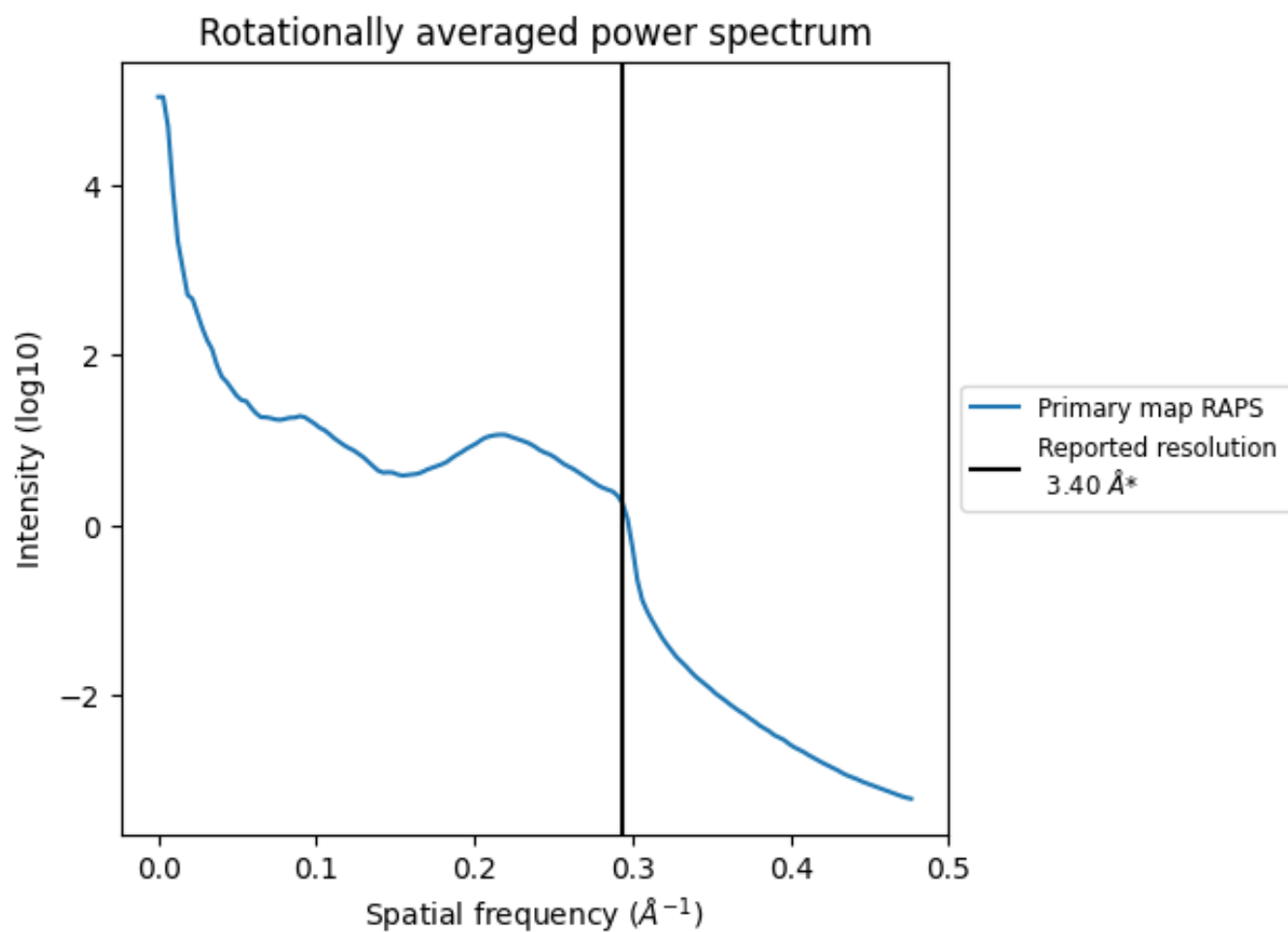
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 250 nm³; this corresponds to an approximate mass of 226 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](#)

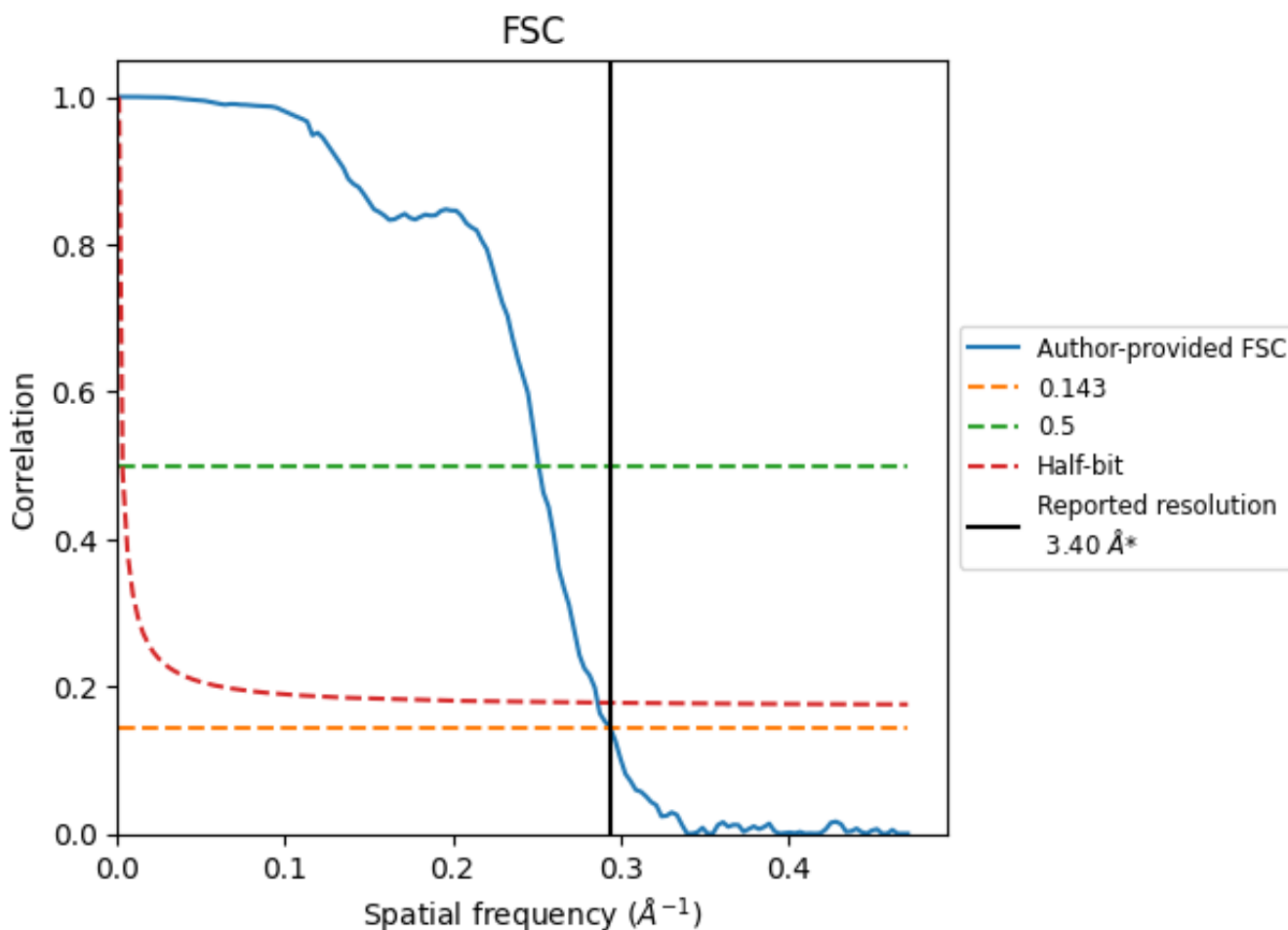


*Reported resolution corresponds to spatial frequency of 0.294\AA^{-1}

8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.294 Å⁻¹

8.2 Resolution estimates [i](#)

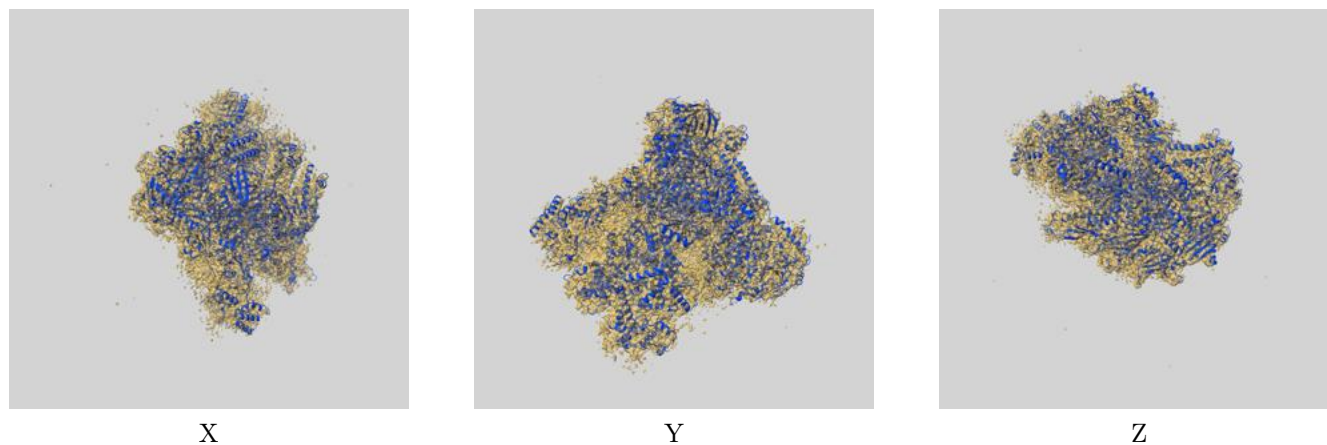
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.40	-	-
Author-provided FSC curve	3.40	3.98	3.49
Unmasked-calculated*	-	-	-

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

9 Map-model fit [i](#)

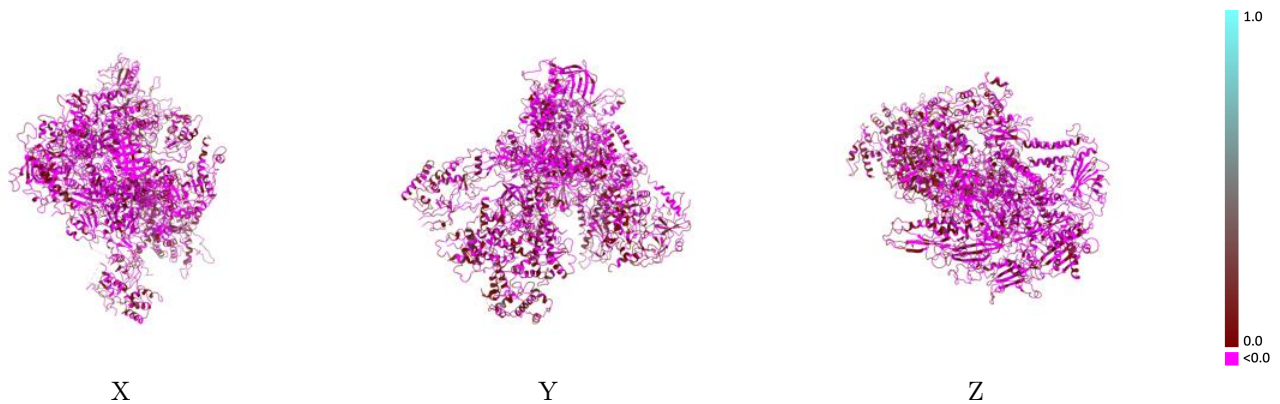
This section contains information regarding the fit between EMDB map EMD-3957 and PDB model 6EU2. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay [i](#)



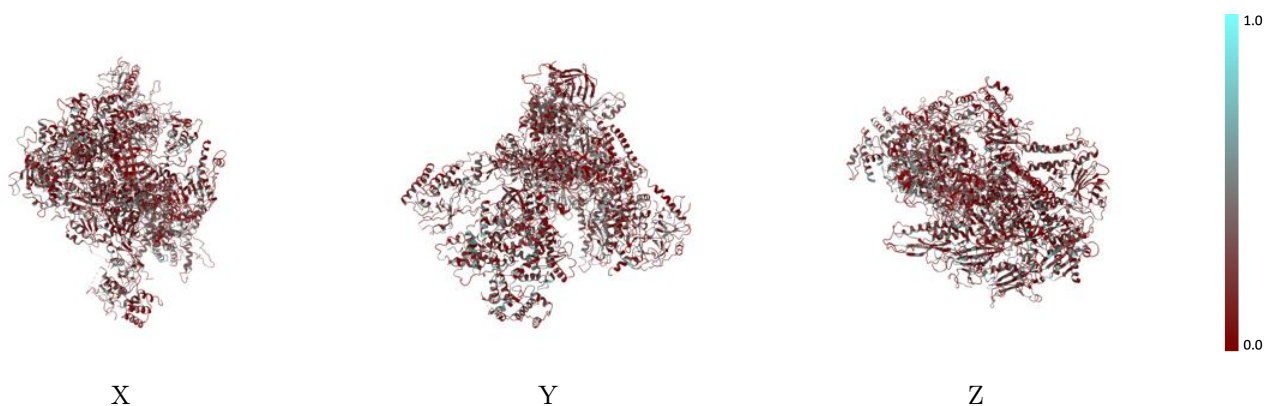
The images above show the 3D surface view of the map at the recommended contour level 0.04 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



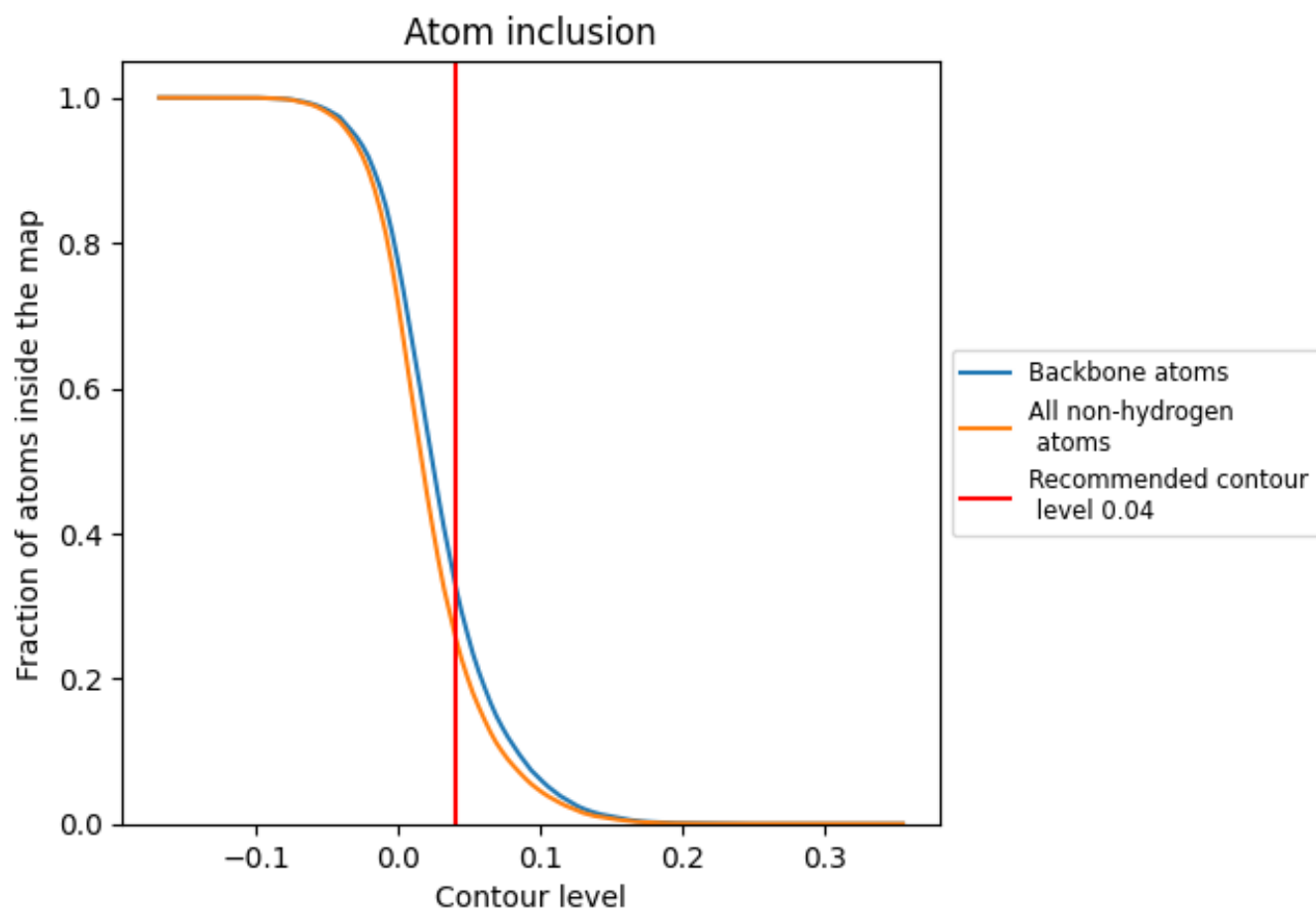
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.04).





































9.4 Atom inclusion [i](#)



At the recommended contour level, 33% of all backbone atoms, 26% 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 (0.04) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.2610	 -0.0350
A	 0.2499	 -0.0460
B	 0.2576	 -0.0620
C	 0.2734	 -0.0670
D	 0.2723	 0.0430
E	 0.2337	 -0.0410
F	 0.2665	 -0.0560
G	 0.2782	 -0.0060
H	 0.1960	 -0.0960
I	 0.1640	 -0.0440
J	 0.2928	 -0.0540
K	 0.2644	 -0.0740
L	 0.3064	 -0.0190
M	 0.2666	 0.0540
N	 0.2311	 -0.0310
O	 0.2924	 0.0130
P	 0.2990	 0.0370
Q	 0.3713	 0.1120

