



Full wwPDB EM Validation Report ⓘ

Mar 6, 2026 – 07:23 PM UTC

PDB ID : 6EU2 / pdb_00006eu2
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 Full wwPDB EM Validation 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.dev132
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

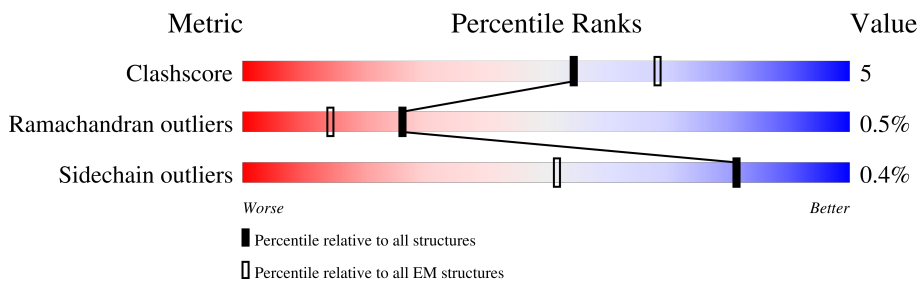
1 Overall quality at a glance i

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	229148	23984
Ramachandran outliers	224038	23583
Sidechain outliers	223484	23102

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 (CCD ID: 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	

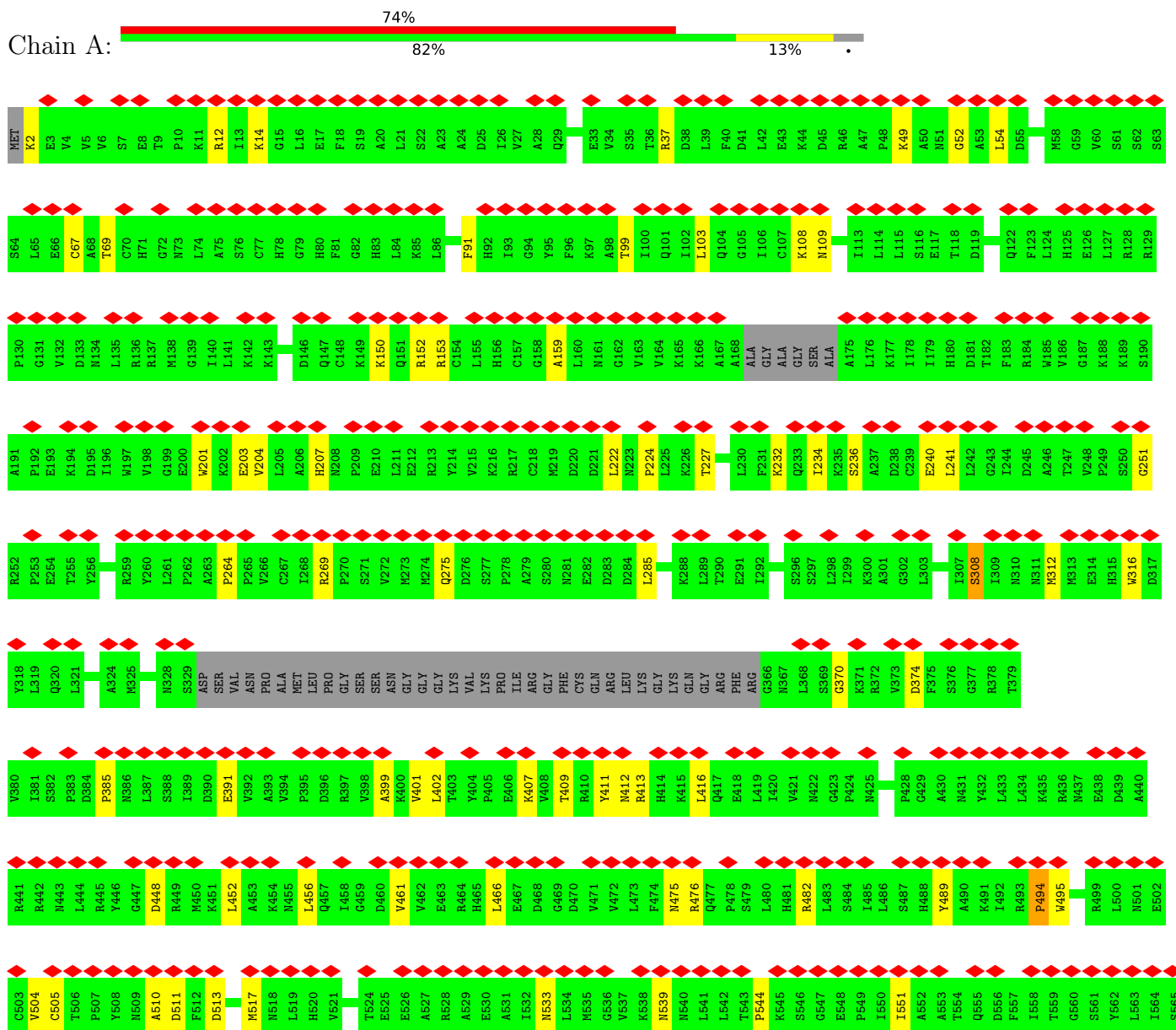
- Molecule 19 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

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

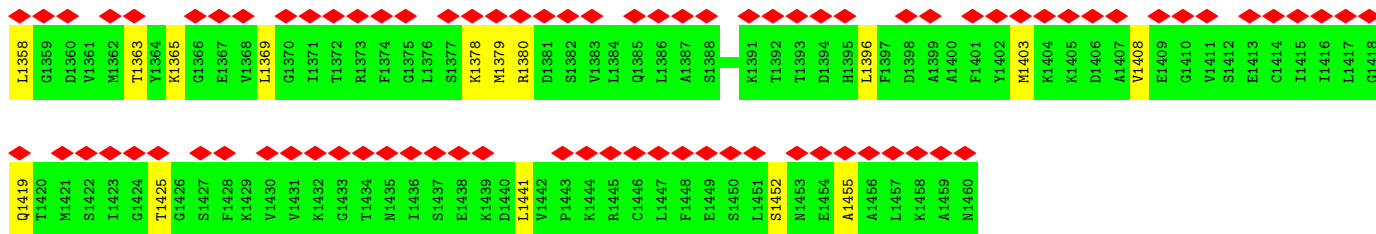
3 Residue-property plots

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.

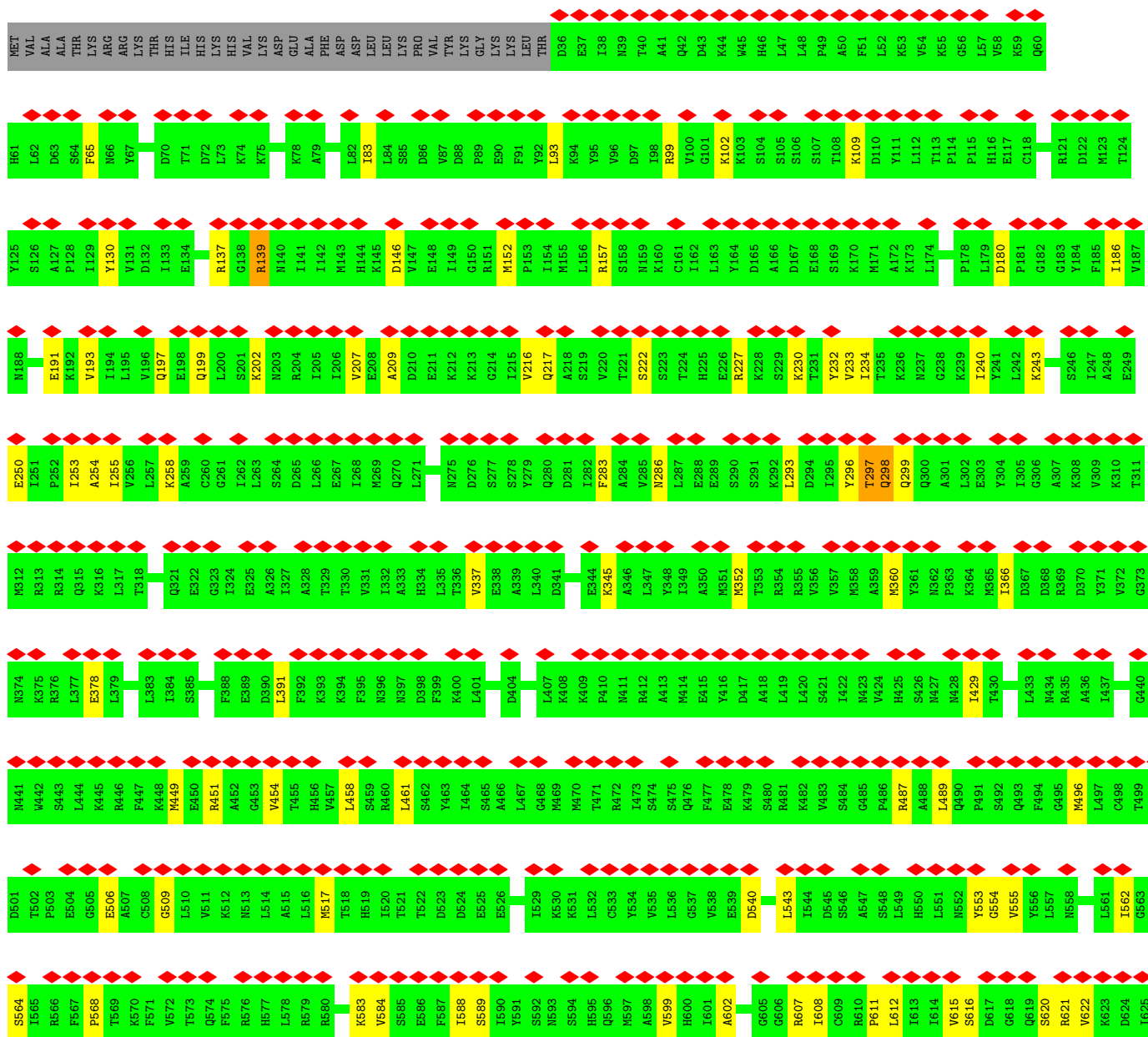
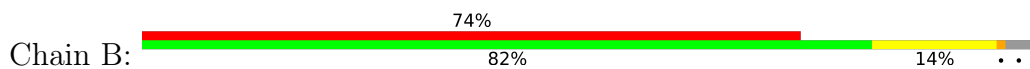
- Molecule 1: DNA-directed RNA polymerase III subunit RPC1

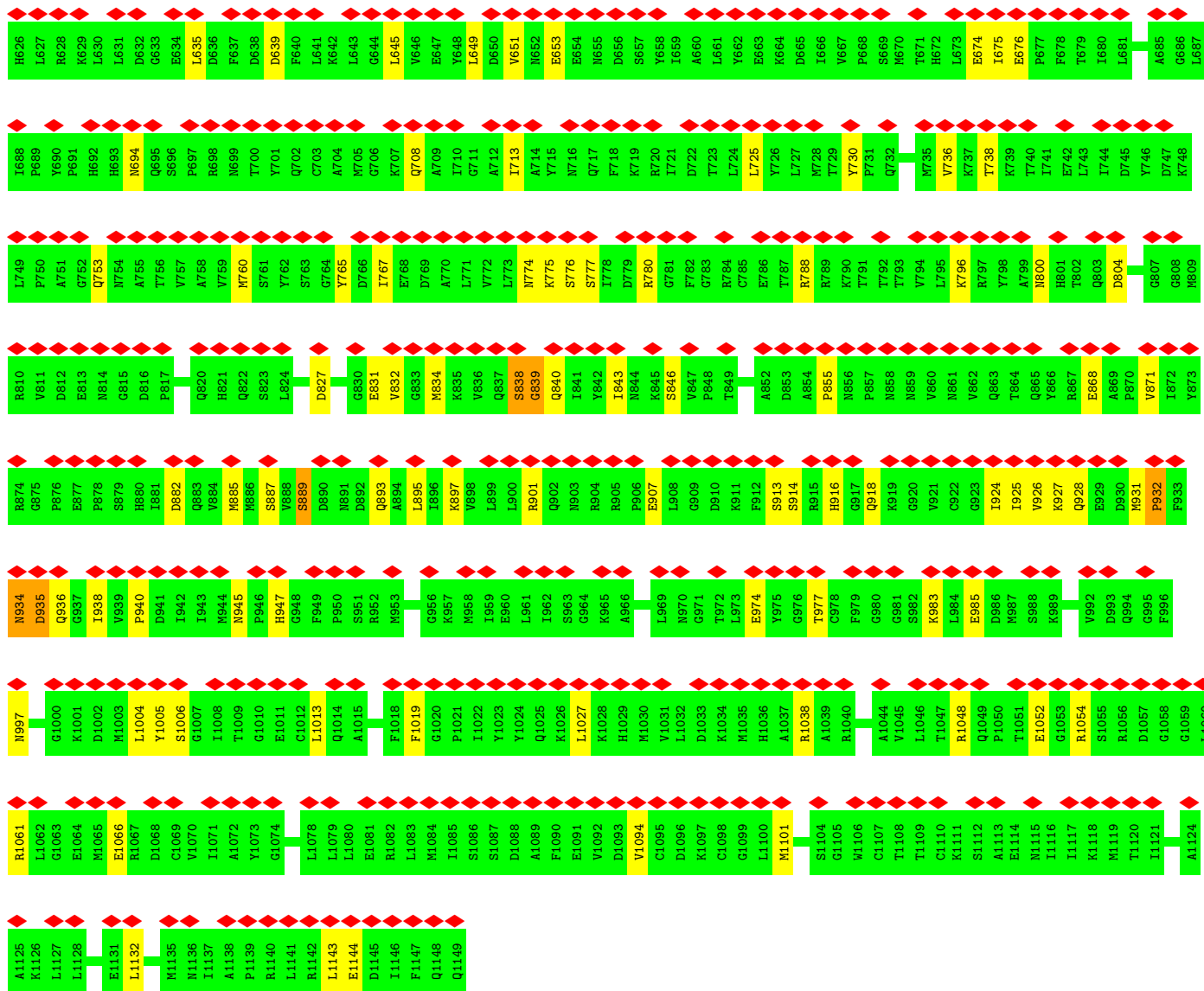


Y1298	GLY	H566	H567	H568	H569	H570	H571	H572	H573	H574	H575	H576	H577	H578	H579	H580	H581	H582	H583	H584	H585	H586	H587	H588	H589	H590	H591	H592	H593	H594	H595	H596	H597	H598	H599	H600	H601	H602	H603	H604	H605	H606	H607	H608	H609	H610	H611	H612	H613	H614	H615	H616	H617	H618	H619	H620	H621	H622	H623	H624	H625	
G1299	TTR	L626	D627	A628	K629	M630	K631	V632	F633	V634	P635	P636	K637	S638	K639	S640	A641	P642	M643	E644	M645	S646	Q647	M648	D649	G650	F651	V652	I653	I654	G655	S656	S657	Q658	I659	L660	S661	G662	V663	M664	D665	K666	S667	V668	L669	Q670	D671	V672	G673	K674	H675	H676	S677	V677	F678	Y679	T680	I681	L682	R683	D684	
L1300	ALA	A688	E689	A690	A691	M692	A693	M694	M695	P696	M697	K698	L700	C701	A702	R703	F704	L705	G706	N707	R708	G709	F710	S711	I712	N715	D716	A720	D721	D722	L723	K724	Q725	K726	K727	E728	E729	L730	V731	E732	L733	V735	A734	D736	H737	C738	D739	S740	L741	I742	F743	L744	F745	N746	R683	D684						
R1301	LYS	L750	E751	T752	Q753	T754	G755	C756	N757	E758	E759	Q760	T761	E763	A764	F765	I766	G767	G768	L769	L770	S771	R772	V773	E775	E776	V777	G778	V779	V780	C781	I782	N783	L784	L785	D786	N787	N788	N789	L792	L793	M794	A795	T796	C797	G798	G801	S802	T803	L804	N805	V806	S807	Q808	N809	V810	A811					
V1302	ILE	V812	V813	G814	Q815	I816	I817	I818	S819	G820	N821	R822	V823	P824	D825	G826	F827	Q828	D829	R830	S831	L832	P833	H834	F835	P836	K837	N838	K840	T841	P842	Q843	S844	K845	G846	F847	A848	N849	N850	S851	F852	F853	S854	G855	L856	S857	P858	P859	E860	F861	L862	F863	H864	A865	E866	S867	G868	R869	E870	G871		
M1304	THR	L872	V873	D874	T875	A876	V877	K878	T879	A880	E881	T882	G883	Y884	M885	S886	R887	R888	L889	M890	K891	S892	L893	E894	D895	L896	R897	A898	Y900	D901	N902	T903	V904	R905	T906	S907	A908	N909	G910	I911	Q913	F914	T915	Y916	G917	G918	D919	G920	L921	D922	F923	L924	F925	H864	E865	E866	Q867	N868	A869	A870	A871	
T1305	ALA	P932	V933	N934	F935	N936	R937	S938	W939	D940	H941	A942	Y943	N944	I945	T946	F947	N948	N949	Q950	D951	K952	G953	L954	L955	P956	R957	A958	M960	E961	T962	A963	E964	E965	I966	L967	G968	P969	L970	E971	R972	R973	L974	V975	R976	K1037	Y977	D978	N979	S980	G981	C982	L983	Y984	K985	R986	E987	D988	L989	N990	K991	
D1306	ALA	A992	E993	Y994	V995	D996	Q997	Y998	D999	A1000	E1001	R1002	D1003	F1004	Y1005	H1006	S1007	R887	R888	L889	M890	K891	S892	L893	E894	D895	L896	R897	A898	Y900	D901	N902	T903	V904	R905	T906	S907	A908	N909	G910	I911	Q913	F914	T915	Y916	G917	G918	D919	G920	L921	D922	F923	L924	F925	H864	E865	E866	Q867	N868	A869	A870	A871
D1307	GLU	K1053	T1054	S1055	V1056	S1057	Q1058	L1059	Y1060	R1061	I1062	S1063	E1064	K1065	S1066	V1067	K1068	F1070	L1071	E1072	I1073	A1074	L1075	F1076	K1077	Y1078	I1079	K1080	A1081	R1082	L1083	E1084	F1085	G1086	T1087	A1088	I1089	G1090	A1091	I1092	G1093	A1094	K1095	S1096	I1097	G1098	E1099	F1100	G1101	T1102	Q1103	M1104	T1105	L1106	K1107	T1108	F1109	H1110	F1111	A1112		
G1308	PRD	G1113	V1114	A1115	S1116	M1117	N1118	V1119	T1120	L1121	P1124	R1125	I1126	K1127	E1128	I1129	I1130	N1131	A1132	S1133	K1134	V1135	I1136	S1137	T1138	P1139	I1140	I1141	N1142	A1143	V1146	N1147	D1148	N1149	D1150	E1151	R1152	A1153	A1154	R1155	V1156	V1157	K1158	G1159	R1160	V1161	E1162	L1165	L1166	S1167	D1168	F1171	Y1172	V1173	Q1174	D1175	V1176					
V1309	S1252	Y1177	K1178	D1179	M1180	L1181	S1182	F1183	I1184	Q1185	V1186	R1187	I1188	D1189	L1190	K1191	T1192	I1193	D1194	K1195	L1196	Q1197	L1198	E1199	L1200	T1201	I1202	E1203	D1204	I1205	A1206	I1209	T1210	R1211	A1212	S1213	K1214	L1215	M1216	I1217	Q1218	A1219	S1220	D1221	V1222	M1223	I1224	I1225	K1226	D1228	R1229	I1230	A1231	I1232	M1233	V1234	F1235	P1236	GLU			
E1310	E1253	R1259	M1260	Q1261	V1256	F1257	Y1258	R1259	N1317	H1318	V1319	L1320	E1321	V1322	F1323	S1324	V1325	L1326	G1327	I1328	E1329	A1330	A1331	R1332	Y1333	S1334	I1335	I1336	R1337	E1338	I1339	M1340	Y1341	T1342	M1343	S1344	N1345	H1346	G1347	M1348	S1349	V1350	D1351	P1352	R1353	H1354	I1355	Q1356	L1357													

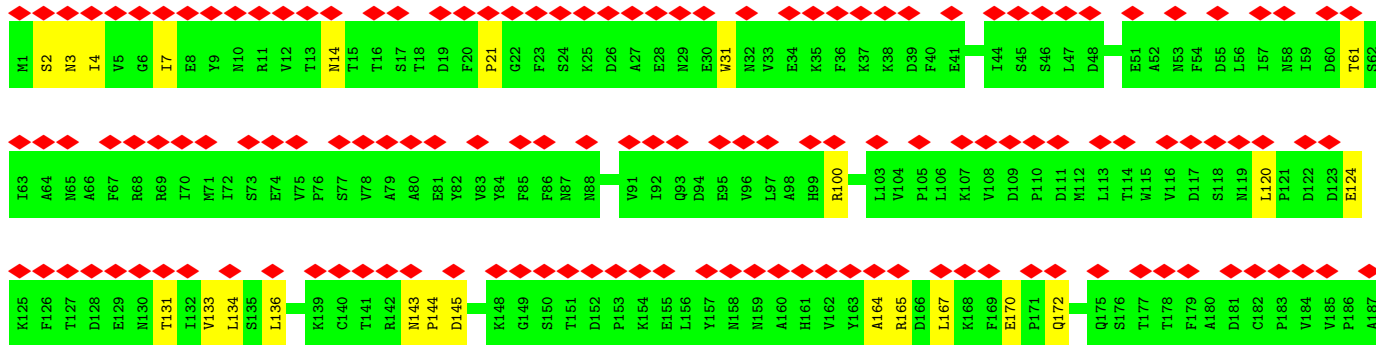
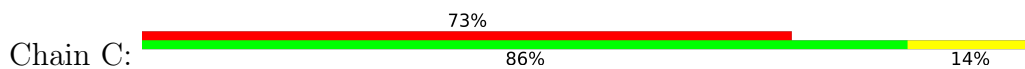


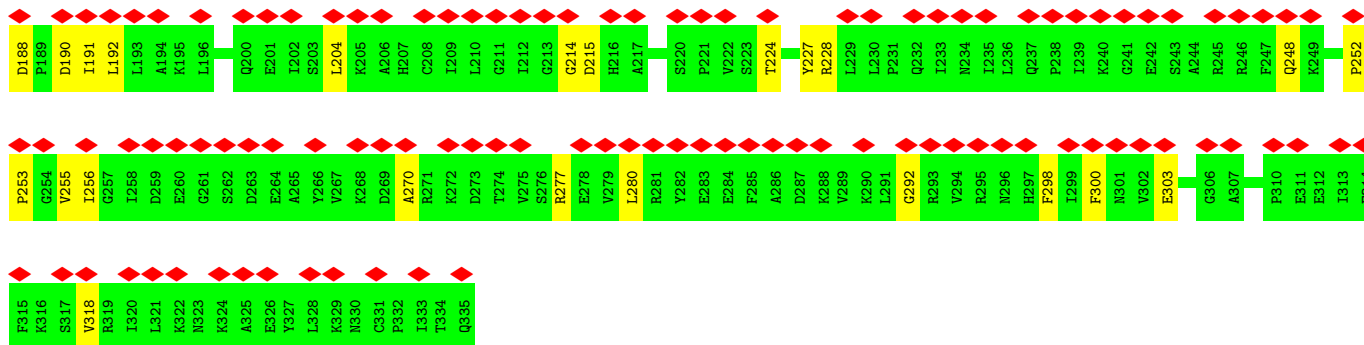
• Molecule 2: DNA-directed RNA polymerase III subunit RPC2



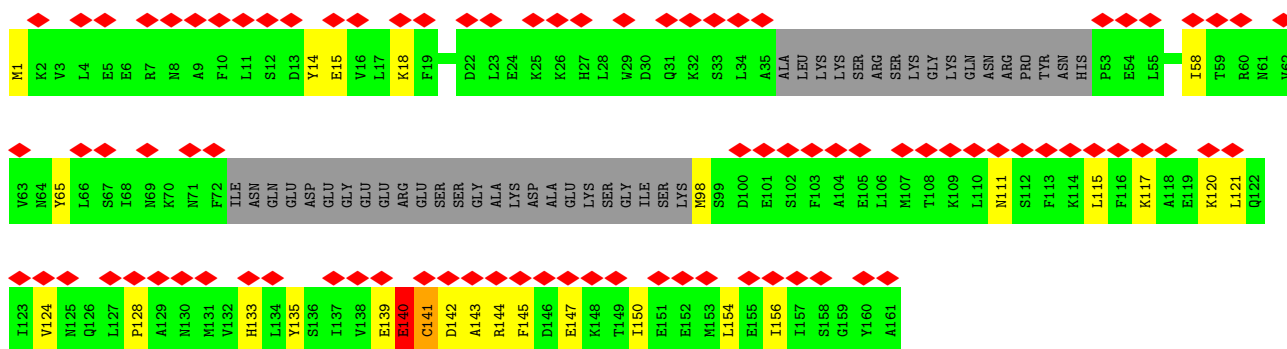


• Molecule 3: DNA-directed RNA polymerases I and III subunit RPAC1

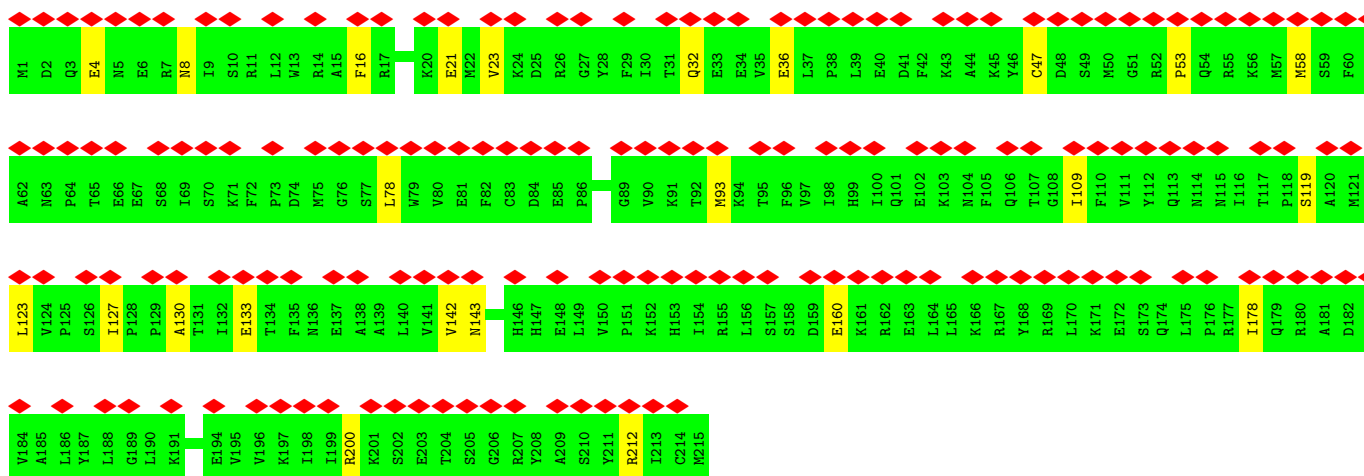
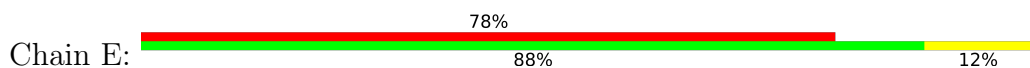




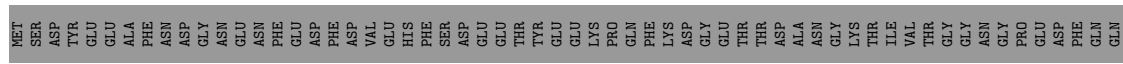
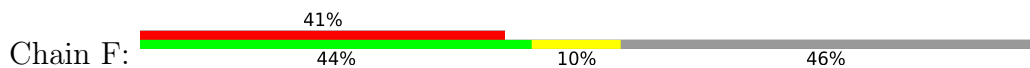
• Molecule 4: DNA-directed RNA polymerase III subunit RPC9

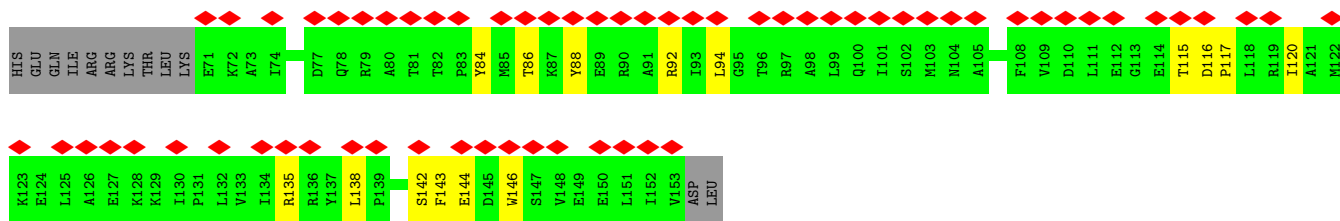


• Molecule 5: DNA-directed RNA polymerases I, II, and III subunit RPABC1

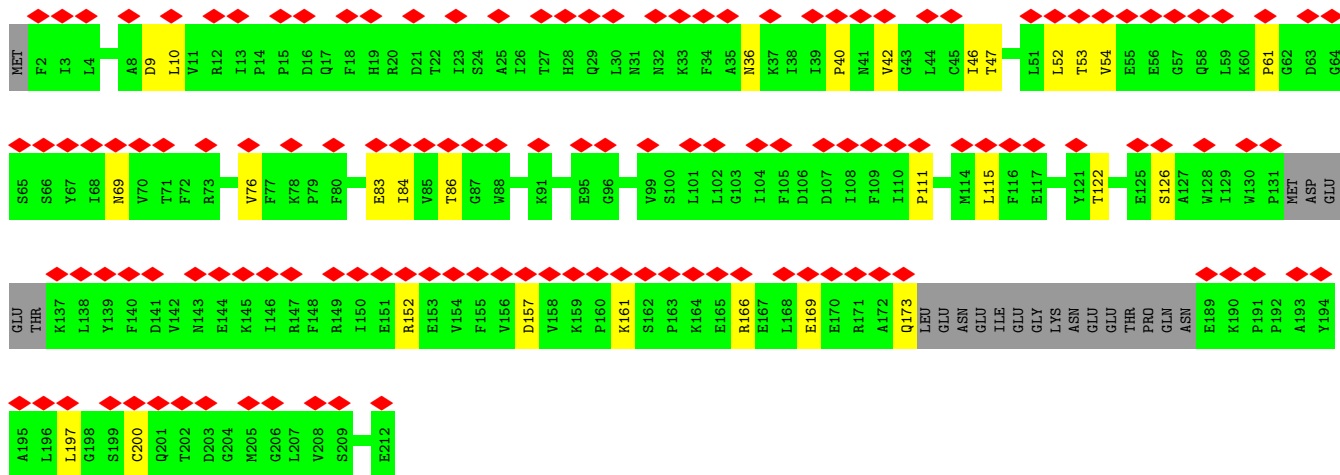
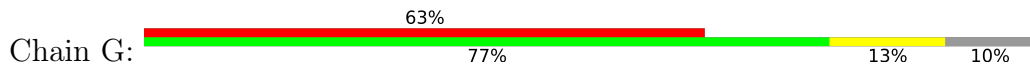


• Molecule 6: DNA-directed RNA polymerases I, II, and III subunit RPABC2

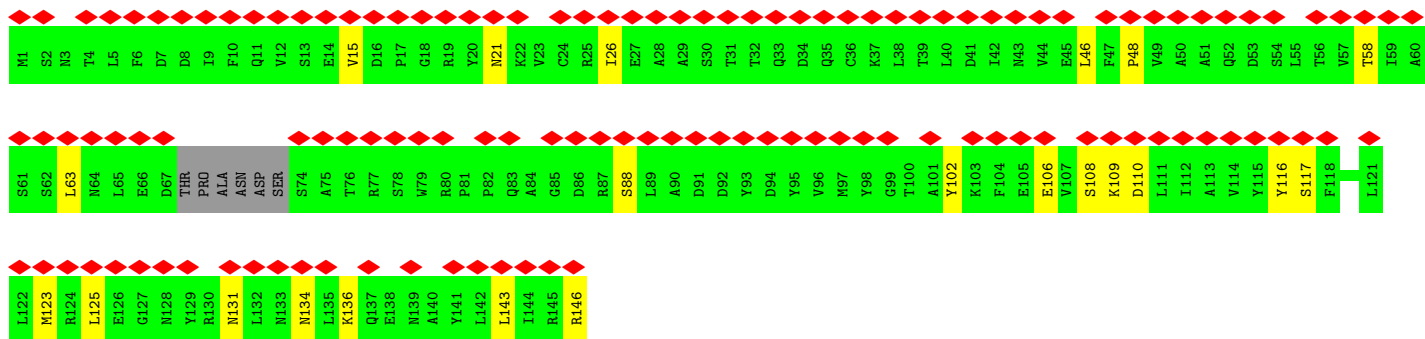
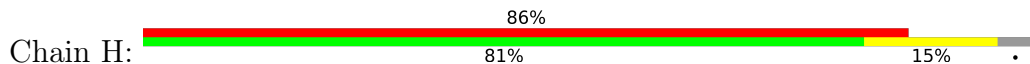




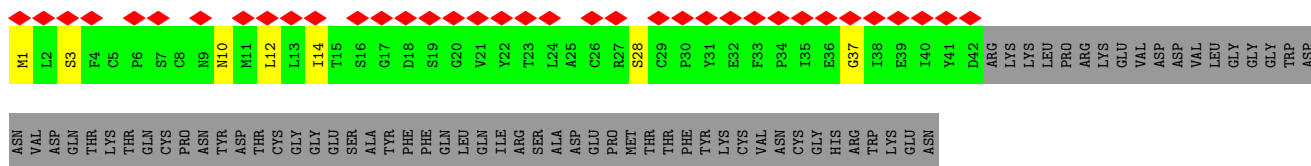
• Molecule 7: DNA-directed RNA polymerase III subunit RPC8

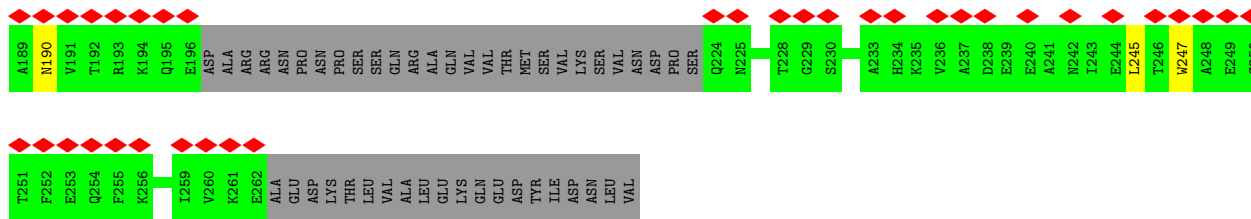


• Molecule 8: DNA-directed RNA polymerases I, II, and III subunit RPABC3

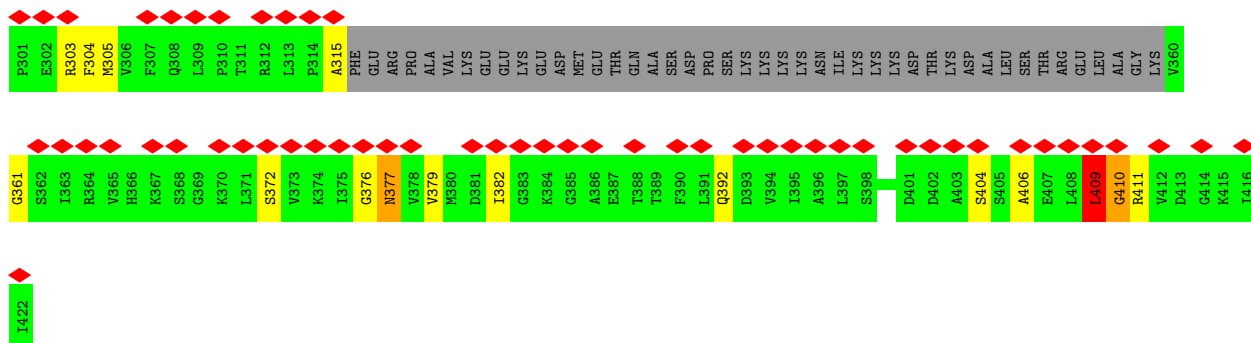
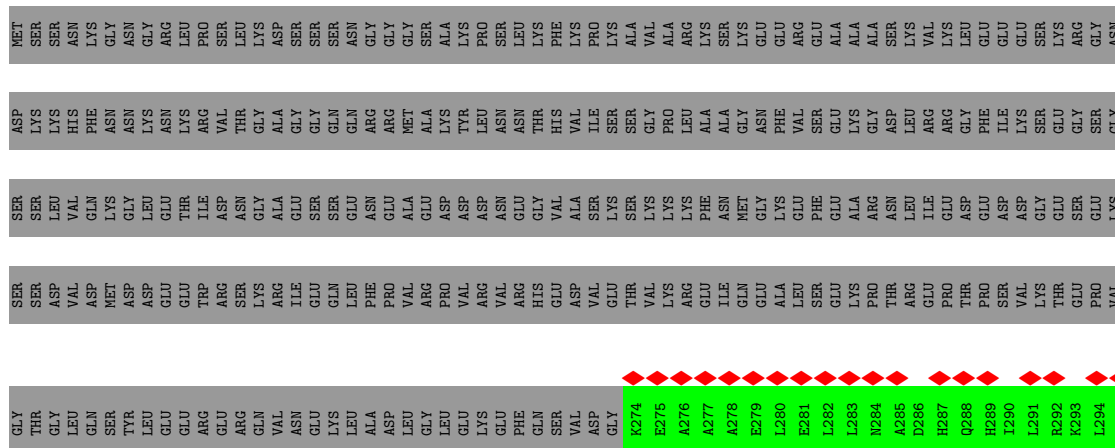


• Molecule 9: DNA-directed RNA polymerase III subunit RPC10

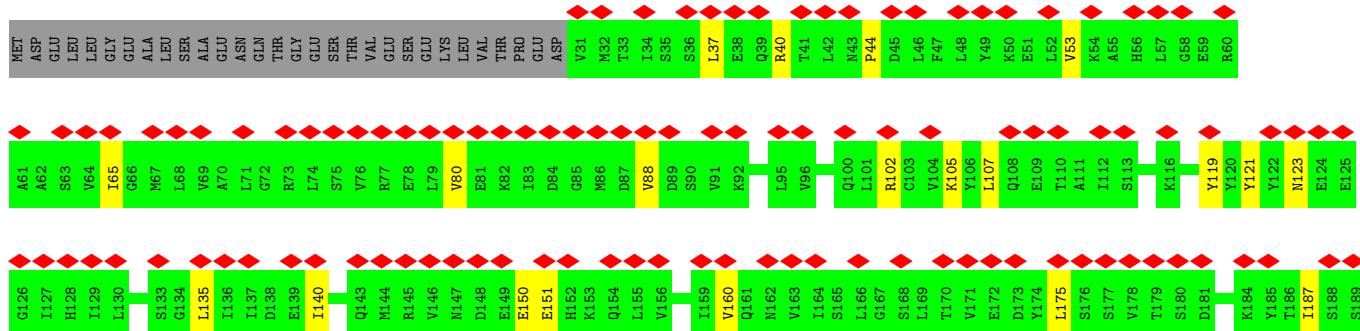


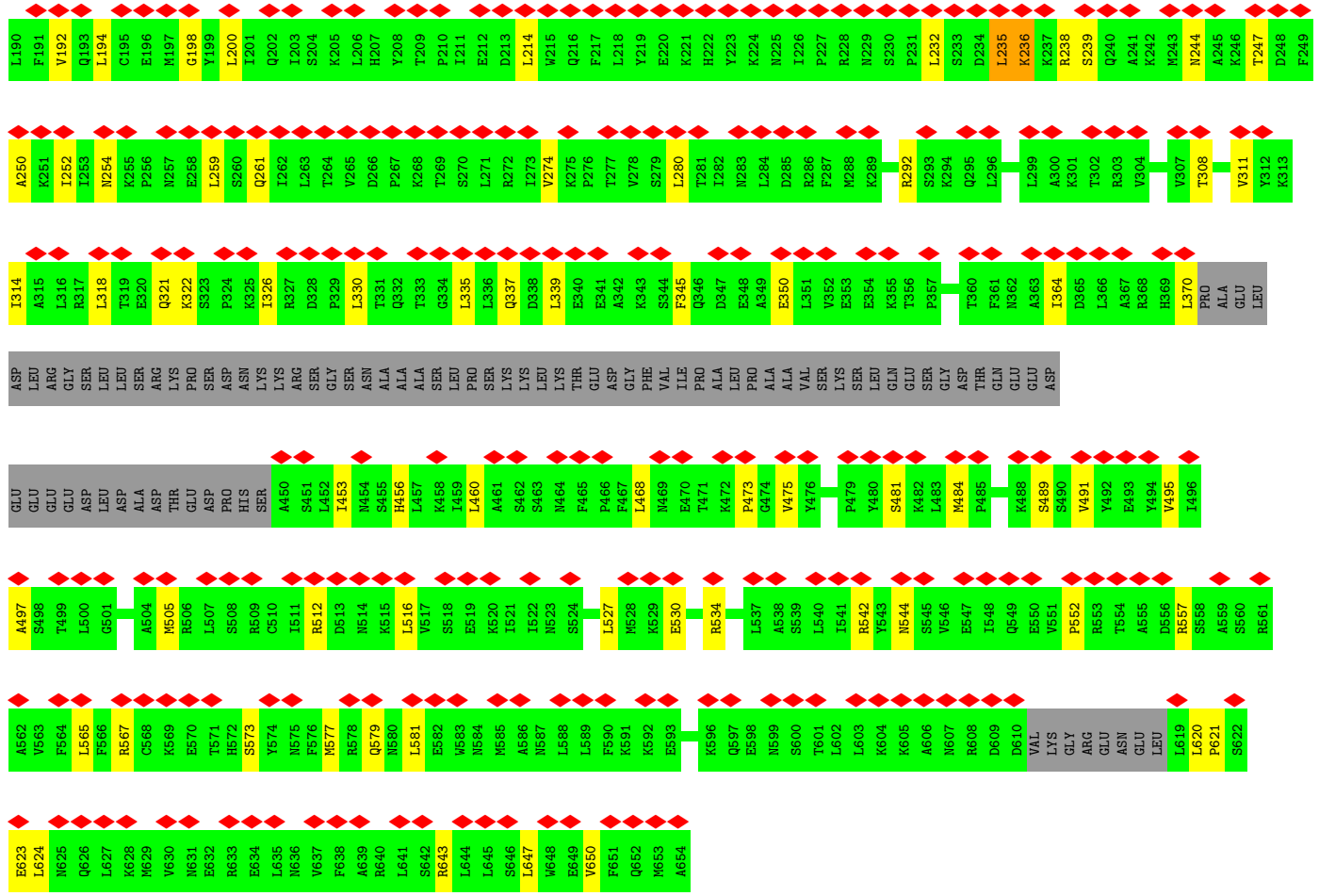


● Molecule 14: DNA-directed RNA polymerase III subunit RPC4

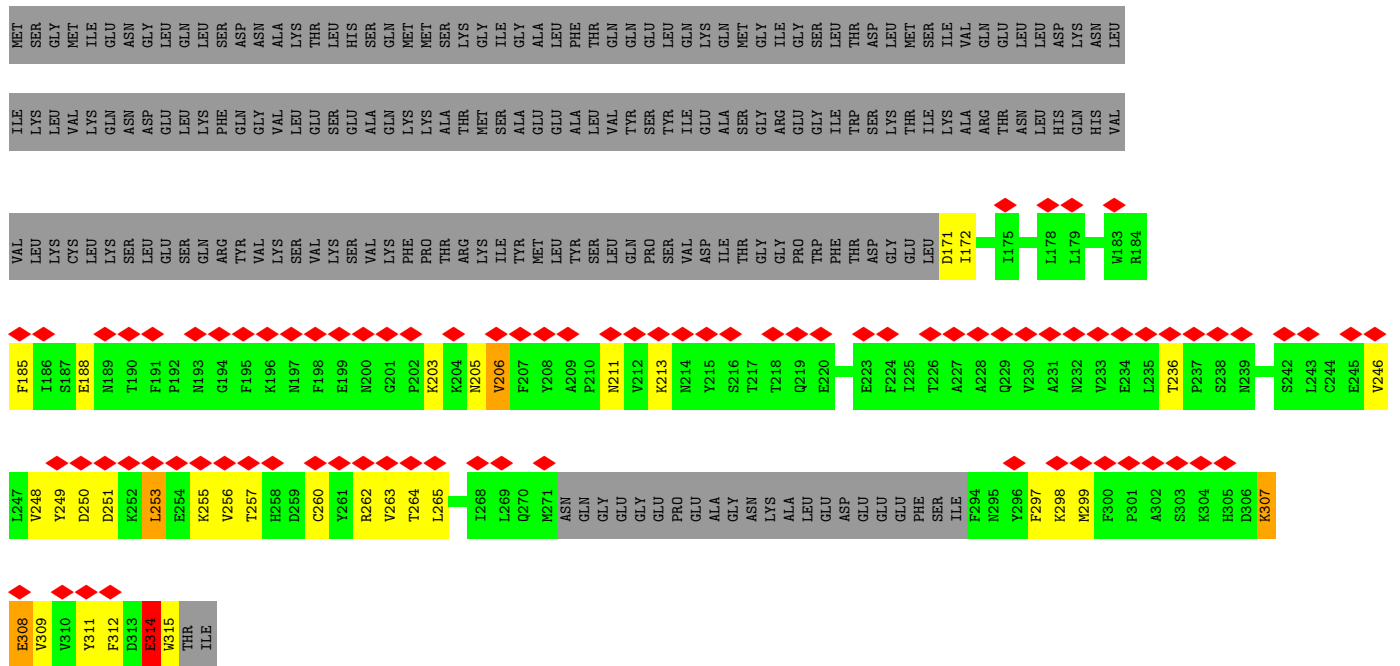


● Molecule 15: DNA-directed RNA polymerase III subunit RPC3

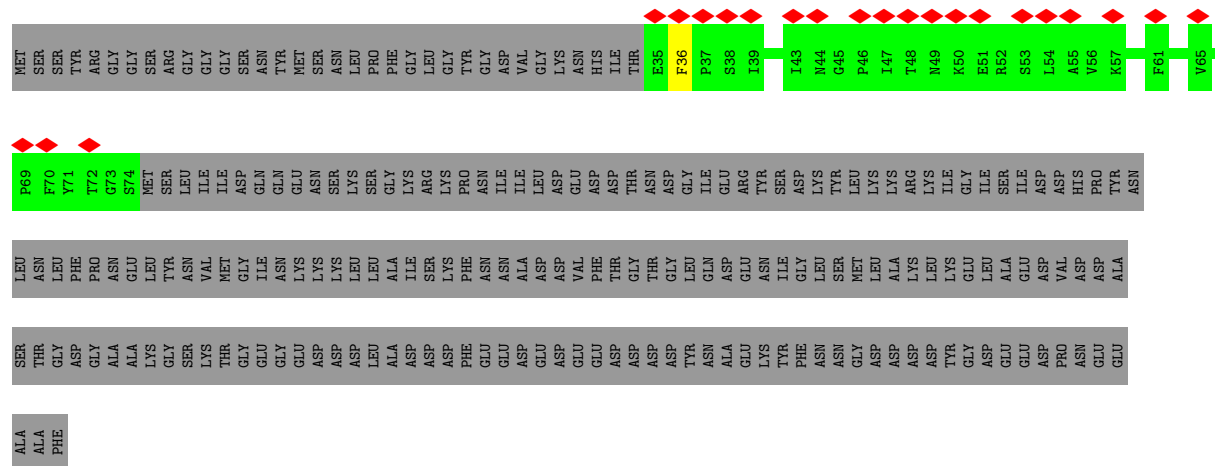




● Molecule 16: DNA-directed RNA polymerase III subunit RPC6



• 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: MG, 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	A	0.21	0/11176	0.56	2/15104 (0.0%)
2	B	0.20	0/8943	0.58	7/12068 (0.1%)
3	C	0.20	0/2711	0.55	0/3676
4	D	0.21	0/991	0.58	0/1328
5	E	0.20	0/1795	0.49	0/2416
6	F	0.21	0/683	0.60	0/923
7	G	0.20	0/1583	0.56	2/2146 (0.1%)
8	H	0.21	0/1138	0.60	2/1540 (0.1%)
9	I	0.17	0/328	0.53	0/445
10	J	0.20	0/567	0.66	0/761
11	K	0.20	0/803	0.62	2/1083 (0.2%)
12	L	0.20	0/360	0.61	0/478
13	M	0.22	0/1378	0.67	2/1863 (0.1%)
14	N	0.26	0/810	0.79	3/1088 (0.3%)
15	O	0.21	0/4379	0.59	2/5906 (0.0%)
16	P	0.33	0/1050	0.95	3/1424 (0.2%)
17	Q	0.37	0/320	0.73	0/434
All	All	0.21	0/39015	0.60	25/52683 (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.

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
14	N	409	LEU	N-CA-C	-9.46	90.66	110.80
15	O	198	GLY	CA-C-N	5.81	129.53	120.82
15	O	198	GLY	C-N-CA	5.81	129.53	120.82
2	B	889	SER	CA-C-N	5.74	129.43	120.82
2	B	889	SER	C-N-CA	5.74	129.43	120.82
11	K	58	GLY	CA-C-N	5.64	129.71	121.31
11	K	58	GLY	C-N-CA	5.64	129.71	121.31
14	N	410	GLY	CA-C-N	5.63	132.29	121.54
14	N	410	GLY	C-N-CA	5.63	132.29	121.54
2	B	839	GLY	N-CA-C	5.31	125.76	113.18
16	P	311	TYR	CA-C-N	5.30	131.67	121.54
16	P	311	TYR	C-N-CA	5.30	131.67	121.54
8	H	109	LYS	CA-C-N	5.27	129.90	122.46
8	H	109	LYS	C-N-CA	5.27	129.90	122.46
2	B	296	TYR	CA-C-N	5.22	131.50	121.54
2	B	296	TYR	C-N-CA	5.22	131.50	121.54
1	A	584	SER	CA-C-N	5.18	131.43	121.54
1	A	584	SER	C-N-CA	5.18	131.43	121.54
2	B	139	ARG	CA-C-N	5.17	129.75	122.46
2	B	139	ARG	C-N-CA	5.17	129.75	122.46
7	G	40	PRO	CA-C-N	5.09	131.26	121.54
7	G	40	PRO	C-N-CA	5.09	131.26	121.54
13	M	114	PRO	CA-C-N	5.06	131.21	121.54
13	M	114	PRO	C-N-CA	5.06	131.21	121.54
16	P	265	LEU	CA-CB-CG	5.01	133.84	116.30

There are no chirality outliers.

All (28) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1351	ASP	Peptide
1	A	275	GLN	Peptide

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Mol	Chain	Res	Type	Group
1	A	308	SER	Peptide
1	A	494	PRO	Peptide
1	A	511	ASP	Peptide
1	A	631	LYS	Peptide
1	A	798	GLY	Peptide
2	B	297	THR	Peptide
2	B	298	GLN	Peptide
2	B	583	LYS	Peptide
2	B	838	SER	Peptide
2	B	889	SER	Peptide
2	B	932	PRO	Peptide
2	B	934	ASN	Peptide
3	C	3	ASN	Peptide
8	H	108	SER	Peptide
12	L	28	LYS	Peptide
13	M	117	HIS	Peptide
14	N	377	ASN	Peptide
14	N	379	VAL	Peptide
14	N	410	GLY	Peptide
15	O	326	ILE	Peptide
16	P	205	ASN	Peptide
16	P	236	THR	Peptide
16	P	253	LEU	Peptide
16	P	264	THR	Peptide
16	P	307	LYS	Peptide
16	P	308	GLU	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	117	0
2	B	8788	0	8903	101	0
3	C	2655	0	2628	26	0
4	D	977	0	983	28	0
5	E	1759	0	1788	15	0
6	F	671	0	692	11	0
7	G	1544	0	1540	19	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
8	H	1120	0	1089	14	0
9	I	321	0	305	4	0
10	J	558	0	573	5	0
11	K	792	0	790	10	0
12	L	358	0	382	7	0
13	M	1347	0	1315	14	0
14	N	802	0	851	12	0
15	O	4315	0	4484	49	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	392	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.

All (392) 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
1:A:232:LYS:NZ	16:P:315:TRP:O	1.83	1.10
4:D:135:TYR:CE1	4:D:142:ASP:CB	2.36	1.08
4:D:139:GLU:O	4:D:140:GLU:O	1.79	1.00
4:D:135:TYR:CZ	4:D:142:ASP:CB	2.50	0.94
4:D:135:TYR:CE1	4:D:142:ASP:HB3	2.02	0.92
16:P:314:GLU:OE1	17:Q:36:PHE:HE2	1.56	0.89
4:D:135:TYR:HE1	4:D:142:ASP:HA	0.72	0.88
4:D:135:TYR:OH	4:D:142:ASP:HB3	1.79	0.81
4:D:14:TYR:HH	4:D:98:MET:N	1.79	0.81
16:P:314:GLU:OE1	17:Q:36:PHE:CE2	2.41	0.73
11:K:88:PHE:HB3	11:K:106:GLN:HB3	1.69	0.73
1:A:475:ASN:HD21	2:B:1066:GLU:HG2	1.59	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:694:ASN:HD21	2:B:916:HIS:HD2	1.41	0.67
2:B:887:SER:HB2	2:B:895:LEU:HB3	1.77	0.67
15:O:516:LEU:HD11	15:O:565:LEU:HB3	1.79	0.64
1:A:1278:ILE:HG13	1:A:1297:GLY:HA3	1.80	0.64
1:A:869:ARG:HH21	2:B:509:GLY:HA2	1.62	0.63
1:A:251:GLY:HA2	1:A:1403:MET:HE1	1.80	0.63
1:A:1369:LEU:HD11	1:A:1378:LYS:HB3	1.81	0.63
15:O:318:LEU:HD11	15:O:370:LEU:HD22	1.81	0.63
15:O:105:LYS:HB2	15:O:121:TYR:HB2	1.81	0.63
2:B:589:SER:HB3	2:B:653:GLU:HG3	1.80	0.62
1:A:37:ARG:HB2	1:A:52:GLY:HA3	1.80	0.62
9:I:1:MET:HE1	9:I:37:GLY:HA3	1.82	0.62
2:B:612:LEU:HD12	2:B:649:LEU:HD12	1.81	0.61
3:C:2:SER:O	3:C:14:ASN:ND2	2.33	0.61
1:A:482:ARG:HH11	1:A:544:PRO:HG3	1.63	0.61
15:O:244:ASN:O	15:O:247:THR:HB	1.99	0.61
4:D:128:PRO:HB3	4:D:133:HIS:HB3	1.83	0.60
8:H:116:TYR:HB2	8:H:123:MET:HB3	1.83	0.60
1:A:703:ARG:NH2	11:K:93:ILE:O	2.35	0.60
15:O:542:ARG:HH21	16:P:314:GLU:HA	1.65	0.60
1:A:1184:ILE:HD12	1:A:1232:ILE:HB	1.83	0.60
1:A:103:LEU:HD21	1:A:222:LEU:HG	1.84	0.60
2:B:788:ARG:NH1	2:B:882:ASP:OD2	2.35	0.60
1:A:869:ARG:HD3	2:B:489:LEU:HB2	1.84	0.59
2:B:776:SER:O	2:B:780:ARG:NH1	2.35	0.59
1:A:448:ASP:HB3	1:A:452:LEU:HD22	1.85	0.59
6:F:138:LEU:HB2	6:F:142:SER:HB2	1.84	0.59
2:B:202:LYS:HB3	2:B:222:SER:HB2	1.85	0.59
1:A:234:ILE:HG22	1:A:236:SER:H	1.68	0.59
16:P:203:LYS:HB2	16:P:206:VAL:HG22	1.85	0.58
2:B:243:LYS:HA	2:B:250:GLU:HG2	1.84	0.58
1:A:505:CYS:HB2	1:A:510:ALA:HB3	1.85	0.58
2:B:675:ILE:HG22	2:B:676:GLU:HG3	1.86	0.58
14:N:303:ARG:HG3	14:N:411:ARG:HB2	1.85	0.58
2:B:217:GLN:HB3	2:B:232:TYR:HB3	1.86	0.58
14:N:409:LEU:N	14:N:409:LEU:HD22	2.18	0.58
8:H:58:THR:HB	8:H:143:LEU:HB2	1.86	0.57
10:J:22:LEU:O	10:J:26:GLN:NE2	2.38	0.57
2:B:227:ARG:NH2	2:B:449:MET:SD	2.78	0.57
4:D:115:LEU:HB2	4:D:120:LYS:HE3	1.87	0.57
1:A:264:PRO:O	1:A:269:ARG:NH1	2.38	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1328:ILE:HG21	5:E:212:ARG:HH22	1.69	0.56
2:B:738:THR:HG23	2:B:977:THR:HA	1.87	0.56
16:P:256:VAL:HG22	16:P:257:THR:HG22	1.88	0.56
1:A:652:VAL:HG22	1:A:662:GLY:HA3	1.88	0.56
1:A:1185:GLN:OE1	1:A:1229:ARG:NH1	2.37	0.56
2:B:588:ILE:HA	2:B:602:ALA:O	2.06	0.56
2:B:612:LEU:HD22	2:B:674:GLU:HA	1.88	0.56
7:G:52:LEU:HD12	7:G:53:THR:HG22	1.88	0.56
8:H:123:MET:HE2	8:H:125:LEU:HD23	1.88	0.56
2:B:607:ARG:HH11	2:B:651:VAL:HB	1.71	0.55
5:E:93:MET:HE2	5:E:123:LEU:HD23	1.89	0.55
1:A:788:TRP:NE1	8:H:21:ASN:OD1	2.36	0.55
3:C:143:ASN:HD22	3:C:144:PRO:HD2	1.72	0.55
1:A:391:GLU:HG2	1:A:489:TYR:HB2	1.87	0.55
2:B:553:TYR:HD2	2:B:568:PRO:HG2	1.72	0.55
15:O:308:THR:HG23	15:O:456:HIS:HB3	1.88	0.55
15:O:236:LYS:O	15:O:239:SER:HB3	2.07	0.55
15:O:620:LEU:HD22	15:O:623:GLU:HG2	1.89	0.55
2:B:730:TYR:O	2:B:753:GLN:NE2	2.37	0.55
4:D:147:GLU:HA	4:D:150:ILE:HG12	1.89	0.54
1:A:826:GLY:H	1:A:831:SER:HA	1.72	0.54
1:A:895:ASP:OD2	1:A:1380:ARG:NH1	2.40	0.54
1:A:1258:TYR:O	1:A:1262:GLN:NE2	2.40	0.54
15:O:192:VAL:HG23	15:O:274:VAL:HG13	1.89	0.54
2:B:391:LEU:HD23	2:B:429:ILE:HA	1.89	0.54
14:N:361:GLY:H	14:N:376:GLY:H	1.55	0.54
2:B:216:VAL:HG22	2:B:233:VAL:HG23	1.89	0.54
4:D:150:ILE:O	4:D:154:LEU:HB2	2.07	0.54
1:A:1328:ILE:HD13	5:E:178:ILE:HG13	1.89	0.54
2:B:109:LYS:NZ	2:B:130:TYR:OH	2.39	0.54
1:A:573:ARG:NH2	11:K:87:GLU:O	2.40	0.53
1:A:966:ILE:HA	1:A:970:LEU:HD12	1.91	0.53
2:B:931:MET:HB3	2:B:940:PRO:HD2	1.91	0.53
1:A:654:ILE:HG12	1:A:659:ILE:HG13	1.91	0.53
2:B:99:ARG:NH2	2:B:146:ASP:OD2	2.41	0.53
15:O:643:ARG:HH12	16:P:297:PHE:HE1	1.56	0.53
2:B:207:VAL:HG22	2:B:217:GLN:HG3	1.90	0.53
13:M:148:LEU:HA	13:M:181:PRO:HA	1.90	0.53
4:D:143:ALA:C	4:D:145:PHE:N	2.62	0.53
13:M:161:ALA:HB3	14:N:305:MET:HB2	1.90	0.53
1:A:955:LEU:HB3	1:A:958:ALA:HB3	1.91	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:M:94:PRO:HA	14:N:392:GLN:HA	1.90	0.53
1:A:407:LYS:HG2	1:A:461:VAL:HG22	1.91	0.53
1:A:370:GLY:O	2:B:1061:ARG:NH1	2.42	0.52
2:B:927:LYS:NZ	3:C:214:GLY:O	2.42	0.52
2:B:234:ILE:HD13	2:B:360:MET:HE2	1.91	0.52
3:C:255:VAL:HG23	3:C:270:ALA:HA	1.90	0.52
2:B:555:VAL:HG23	2:B:562:ILE:HB	1.91	0.52
1:A:1455:ALA:HB2	4:D:111:ASN:HA	1.90	0.52
1:A:813:VAL:HG23	1:A:851:SER:HA	1.92	0.52
1:A:890:MET:HE3	1:A:894:GLU:HG3	1.91	0.52
10:J:12:LYS:HD3	10:J:41:LEU:HD11	1.92	0.52
1:A:873:VAL:HG21	2:B:487:ARG:HB3	1.91	0.52
3:C:165:ARG:NH2	3:C:190:ASP:OD1	2.43	0.52
2:B:197:GLN:HE22	2:B:454:VAL:HG22	1.74	0.52
3:C:248:GLN:HA	3:C:256:ILE:HD11	1.91	0.52
12:L:27:LEU:HD11	12:L:37:LYS:HD2	1.90	0.52
1:A:1441:LEU:HD21	7:G:54:VAL:HG22	1.91	0.52
5:E:32:GLN:HE21	5:E:36:GLU:HG3	1.75	0.52
14:N:409:LEU:N	14:N:409:LEU:CD2	2.73	0.52
1:A:1059:LEU:HD11	8:H:106:GLU:HB2	1.92	0.51
13:M:134:ASP:O	13:M:138:SER:HB2	2.10	0.51
10:J:24:LEU:HD12	10:J:39:LEU:HD12	1.92	0.51
15:O:621:PRO:HA	15:O:624:LEU:HD23	1.92	0.51
1:A:1097:ILE:HG23	1:A:1343:MET:HE1	1.92	0.51
1:A:597:ILE:HB	1:A:603:LEU:HB2	1.92	0.51
7:G:115:LEU:HG	7:G:200:CYS:HB3	1.91	0.51
15:O:292:ARG:HD2	15:O:484:MET:HE1	1.91	0.51
8:H:48:PRO:O	8:H:146:ARG:NH2	2.43	0.51
11:K:80:ILE:HG22	11:K:86:VAL:HG11	1.92	0.51
16:P:298:LYS:HD3	16:P:299:MET:HB2	1.91	0.51
2:B:736:VAL:HG12	2:B:974:GLU:HB2	1.91	0.51
1:A:1150:ASP:O	1:A:1154:ALA:HB2	2.10	0.51
2:B:838:SER:O	2:B:840:GLN:N	2.41	0.51
3:C:134:LEU:HD12	3:C:167:LEU:HB3	1.93	0.51
1:A:533:ASN:O	1:A:539:ASN:ND2	2.44	0.50
2:B:622:VAL:HG22	2:B:645:LEU:HD23	1.92	0.50
7:G:46:ILE:HG22	7:G:47:THR:HG23	1.92	0.50
1:A:1136:ILE:HD11	1:A:1139:PRO:HB3	1.93	0.50
1:A:1329:GLU:OE2	5:E:200:ARG:NE	2.42	0.50
14:N:315:ALA:O	14:N:377:ASN:ND2	2.44	0.50
1:A:1332:ARG:HB3	1:A:1363:THR:HG21	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:O:552:PRO:HG3	15:O:557:ARG:HG2	1.94	0.50
2:B:800:ASN:HD22	2:B:855:PRO:HD2	1.76	0.50
3:C:131:THR:O	3:C:172:GLN:NE2	2.44	0.50
2:B:926:VAL:HB	2:B:931:MET:HE3	1.93	0.50
6:F:117:PRO:HA	6:F:120:ILE:HG12	1.94	0.50
9:I:28:SER:O	13:M:185:TYR:OH	2.29	0.50
1:A:1351:ASP:O	1:A:1353:ARG:N	2.44	0.50
2:B:240:ILE:H	2:B:286:ASN:HD21	1.57	0.50
15:O:542:ARG:HH21	16:P:314:GLU:N	2.10	0.50
15:O:542:ARG:NH2	16:P:314:GLU:HA	2.25	0.50
1:A:1323:PHE:HE1	1:A:1328:ILE:HG13	1.77	0.49
1:A:1058:GLN:NE2	8:H:134:ASN:O	2.45	0.49
2:B:99:ARG:HG3	2:B:102:LYS:HB3	1.93	0.49
15:O:542:ARG:HH21	16:P:314:GLU:CA	2.25	0.49
2:B:940:PRO:HG3	2:B:1019:PHE:HE1	1.77	0.49
2:B:1094:VAL:HG12	2:B:1101:MET:HB3	1.93	0.49
1:A:652:VAL:HG21	1:A:668:VAL:HG21	1.93	0.49
2:B:83:ILE:HD11	2:B:93:LEU:HD13	1.95	0.49
15:O:489:SER:HB2	15:O:512:ARG:HH22	1.77	0.49
1:A:153:ARG:HH22	15:O:339:LEU:HD11	1.77	0.49
1:A:1165:LEU:HD22	1:A:1198:LEU:HD21	1.94	0.49
8:H:102:TYR:O	8:H:136:LYS:NZ	2.46	0.49
15:O:102:ARG:O	15:O:123:ASN:ND2	2.46	0.49
15:O:150:GLU:HG2	15:O:151:GLU:HG3	1.94	0.49
15:O:491:VAL:HG11	15:O:650:VAL:HG11	1.94	0.49
1:A:14:LYS:HD3	2:B:1144:GLU:HB3	1.94	0.49
2:B:461:LEU:HD23	2:B:708:GLN:HA	1.95	0.49
4:D:139:GLU:C	4:D:140:GLU:O	2.55	0.49
5:E:109:ILE:HG22	5:E:133:GLU:HB2	1.95	0.49
15:O:200:LEU:HB3	15:O:280:LEU:HD12	1.95	0.49
1:A:2:LYS:HD3	7:G:36:ASN:HB3	1.95	0.49
1:A:476:ARG:HD2	1:A:517:MET:HE2	1.94	0.49
1:A:978:ASP:HB3	1:A:984:VAL:HG12	1.95	0.49
1:A:1452:SER:O	4:D:117:LYS:NZ	2.40	0.49
1:A:240:GLU:HG3	1:A:241:LEU:HD12	1.94	0.48
7:G:111:PRO:HD3	7:G:197:LEU:HD22	1.94	0.48
1:A:413:ARG:NH1	1:A:456:LEU:O	2.46	0.48
1:A:1425:THR:HG22	6:F:92:ARG:HD2	1.95	0.48
2:B:932:PRO:HG3	2:B:1006:SER:HA	1.96	0.48
2:B:935:ASP:HB3	2:B:1005:TYR:HE2	1.78	0.48
3:C:100:ARG:NH2	3:C:192:LEU:O	2.46	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:188:ASP:OD1	3:C:188:ASP:N	2.46	0.48
13:M:160:ALA:HB2	13:M:173:ILE:HD12	1.95	0.48
2:B:834:MET:HE2	12:L:61:THR:HG21	1.96	0.48
7:G:42:VAL:HG12	7:G:76:VAL:HG11	1.94	0.48
15:O:140:ILE:HD11	15:O:194:LEU:HD11	1.95	0.48
1:A:1112:ALA:HB1	1:A:1116:SER:HB3	1.96	0.48
2:B:831:GLU:HG3	12:L:61:THR:HB	1.96	0.48
3:C:277:ARG:HB2	3:C:280:LEU:HD12	1.95	0.48
9:I:3:SER:HB2	9:I:12:LEU:HD11	1.95	0.48
15:O:350:GLU:OE2	15:O:481:SER:OG	2.30	0.48
6:F:135:ARG:HD2	6:F:143:PHE:HB3	1.94	0.48
1:A:224:PRO:HA	1:A:227:THR:HG22	1.95	0.48
5:E:119:SER:O	5:E:122:LYS:NZ	2.37	0.48
15:O:214:LEU:HD21	15:O:252:ILE:HG21	1.96	0.48
3:C:224:THR:OG1	3:C:303:GLU:OE1	2.31	0.48
11:K:67:GLU:HA	11:K:99:ASN:HB3	1.95	0.48
1:A:67:CYS:HG	1:A:69:THR:HG1	1.48	0.47
2:B:983:LYS:HG3	2:B:985:GLU:H	1.79	0.47
5:E:4:GLU:O	5:E:8:ASN:ND2	2.43	0.47
15:O:259:LEU:HG	15:O:261:GLN:H	1.79	0.47
1:A:203:GLU:OE2	1:A:207:HIS:NE2	2.45	0.47
1:A:623:VAL:HG13	1:A:656:GLY:HA2	1.95	0.47
1:A:1365:LYS:NZ	1:A:1378:LYS:O	2.46	0.47
5:E:21:GLU:OE1	5:E:143:ASN:ND2	2.47	0.47
15:O:335:LEU:HD23	15:O:337:GLN:H	1.79	0.47
1:A:578:GLN:HG3	1:A:582:MET:HE2	1.97	0.47
2:B:554:GLY:HA2	2:B:564:SER:HA	1.97	0.47
5:E:16:PHE:HD1	5:E:58:MET:HE3	1.78	0.47
8:H:15:VAL:HG22	8:H:26:ILE:HG22	1.97	0.47
2:B:827:ASP:HA	12:L:42:ARG:HH12	1.80	0.47
16:P:171:ASP:HA	16:P:172:ILE:HA	1.68	0.47
2:B:157:ARG:NH2	2:B:180:ASP:OD1	2.47	0.47
2:B:934:ASN:O	2:B:936:GLN:N	2.46	0.47
2:B:934:ASN:HD21	2:B:938:ILE:HB	1.79	0.47
2:B:506:GLU:OE1	2:B:1054:ARG:NH1	2.48	0.47
2:B:760:MET:HE1	2:B:932:PRO:HD2	1.95	0.47
2:B:767:ILE:O	2:B:945:ASN:ND2	2.47	0.47
1:A:1097:ILE:HD13	1:A:1358:LEU:HD22	1.97	0.47
4:D:140:GLU:O	4:D:141:CYS:O	2.33	0.47
2:B:299:GLN:HG3	13:M:190:ASN:HD22	1.80	0.47
2:B:1004:LEU:HB2	2:B:1013:LEU:HD12	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:O:581:LEU:HD11	15:O:647:LEU:HD12	1.97	0.46
1:A:385:PRO:HD2	2:B:765:TYR:CD1	2.50	0.46
2:B:843:ILE:HB	2:B:871:VAL:HG12	1.97	0.46
13:M:85:LEU:HB2	13:M:173:ILE:HA	1.97	0.46
15:O:37:LEU:HA	15:O:40:ARG:HB2	1.98	0.46
1:A:49:LYS:HG2	1:A:54:LEU:HG	1.98	0.46
4:D:143:ALA:O	4:D:145:PHE:O	2.33	0.46
1:A:816:GLN:NE2	1:A:867:SER:OG	2.46	0.46
2:B:935:ASP:HB2	3:C:228:ARG:HB3	1.97	0.46
16:P:211:ASN:HD22	16:P:213:LYS:HE3	1.81	0.46
6:F:92:ARG:HH21	7:G:61:PRO:HG3	1.80	0.46
13:M:245:LEU:HD21	14:N:404:SER:HA	1.98	0.46
2:B:517:MET:HE2	2:B:611:PRO:HG2	1.97	0.46
2:B:616:SER:HG	2:B:621:ARG:HH21	1.63	0.46
1:A:794:MET:SD	2:B:947:HIS:ND1	2.89	0.46
1:A:1150:ASP:O	1:A:1154:ALA:CB	2.63	0.46
4:D:65:TYR:OH	7:G:86:THR:O	2.34	0.46
1:A:103:LEU:O	1:A:108:LYS:NZ	2.49	0.46
2:B:615:VAL:HG12	2:B:620:SER:HA	1.98	0.46
3:C:143:ASN:ND2	3:C:145:ASP:OD1	2.48	0.46
13:M:96:LEU:HB2	13:M:101:PRO:HB3	1.98	0.45
1:A:1084:GLU:HB3	6:F:86:THR:HG23	1.98	0.45
1:A:1166:LEU:HD22	1:A:1268:PRO:HA	1.99	0.45
2:B:846:SER:HA	2:B:868:GLU:HA	1.97	0.45
1:A:601:TYR:HB2	8:H:46:LEU:HD21	1.98	0.45
3:C:7:ILE:HG12	3:C:292:GLY:HA2	1.99	0.45
2:B:337:VAL:HB	2:B:345:LYS:HZ3	1.82	0.45
2:B:540:ASP:HB3	2:B:543:LEU:HD13	1.99	0.45
2:B:1094:VAL:HG23	2:B:1143:LEU:HD11	1.98	0.45
7:G:83:GLU:HG2	7:G:84:ILE:HG13	1.99	0.45
2:B:895:LEU:HD21	2:B:897:LYS:HE3	1.98	0.45
1:A:832:LEU:HD21	1:A:862:LEU:HD23	1.97	0.45
1:A:926:MET:HE3	1:A:932:PRO:HG3	1.99	0.45
1:A:1055:SER:HB2	8:H:131:ASN:HD22	1.82	0.45
2:B:774:ASN:HB3	2:B:777:SER:HB3	1.98	0.45
1:A:308:SER:O	1:A:312:MET:N	2.40	0.45
7:G:152:ARG:HE	7:G:197:LEU:HD12	1.81	0.45
15:O:232:LEU:HB2	15:O:236:LYS:HD2	1.98	0.45
1:A:374:ASP:OD1	2:B:1038:ARG:NH1	2.35	0.44
7:G:157:ASP:OD1	7:G:157:ASP:N	2.51	0.44
15:O:107:LEU:O	15:O:119:TYR:HB2	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:255:ILE:HG13	2:B:293:LEU:HD23	1.99	0.44
2:B:635:LEU:HD12	2:B:639:ASP:HB3	1.98	0.44
5:E:23:VAL:HG23	5:E:78:LEU:HD21	1.99	0.44
13:M:134:ASP:O	13:M:138:SER:CB	2.65	0.44
1:A:12:ARG:HB2	1:A:1419:GLN:HE22	1.82	0.44
1:A:678:PHE:HZ	1:A:697:MET:HG2	1.82	0.44
1:A:818:ILE:HG21	1:A:866:ILE:HG22	2.00	0.44
1:A:980:SER:HB3	5:E:160:GLU:HG2	1.98	0.44
1:A:1346:HIS:HB3	1:A:1348:MET:HE2	1.99	0.44
7:G:161:LYS:HE3	7:G:166:ARG:HA	1.99	0.44
15:O:80:VAL:HG21	15:O:88:VAL:HG22	1.99	0.44
3:C:120:LEU:HD23	3:C:124:GLU:HB3	1.99	0.44
8:H:63:LEU:HB3	8:H:88:SER:HB2	2.00	0.44
16:P:246:VAL:O	16:P:250:ASP:N	2.46	0.44
16:P:249:TYR:CG	16:P:255:LYS:HG3	2.53	0.44
1:A:201:TRP:HA	1:A:204:VAL:HG22	1.99	0.44
2:B:186:ILE:HG22	2:B:191:GLU:HG2	1.98	0.44
2:B:197:GLN:OE1	2:B:451:ARG:NH1	2.51	0.44
2:B:209:ALA:HB2	2:B:366:ILE:HG21	2.00	0.44
16:P:248:VAL:O	16:P:262:ARG:NH2	2.50	0.44
2:B:713:ILE:HD12	2:B:725:LEU:HD12	2.00	0.44
7:G:122:THR:OG1	7:G:126:SER:OG	2.30	0.44
12:L:40:LEU:HD13	12:L:44:ASP:HB2	1.99	0.44
1:A:504:VAL:HG12	1:A:551:ILE:HD11	2.00	0.44
1:A:939:TRP:HZ2	1:A:1062:ILE:HD12	1.82	0.44
1:A:1079:ARG:NE	6:F:84:TYR:OH	2.51	0.44
2:B:496:MET:HB3	2:B:608:ILE:HD12	1.99	0.44
2:B:776:SER:HB2	2:B:928:GLN:HB2	2.00	0.44
1:A:1396:LEU:HD13	2:B:1132:LEU:HD21	2.00	0.43
4:D:1:MET:HG2	7:G:9:ASP:HB3	2.00	0.43
16:P:203:LYS:O	16:P:206:VAL:HA	2.17	0.43
2:B:543:LEU:HG	13:M:176:VAL:HG11	2.00	0.43
6:F:144:GLU:HG2	6:F:146:TRP:CD1	2.52	0.43
14:N:372:SER:HB2	14:N:382:ILE:HG22	1.98	0.43
15:O:544:ASN:O	15:O:573:SER:OG	2.32	0.43
1:A:660:LEU:HD12	8:H:117:SER:HB3	2.00	0.43
2:B:137:ARG:HH11	2:B:139:ARG:HG3	1.83	0.43
2:B:882:ASP:HB3	2:B:901:ARG:HE	1.82	0.43
3:C:164:ALA:HB2	3:C:191:ILE:HB	2.00	0.43
13:M:247:TRP:HD1	14:N:406:ALA:HB1	1.82	0.43
15:O:44:PRO:HB2	15:O:579:GLN:HE21	1.82	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:804:ASP:OD1	2:B:804:ASP:N	2.49	0.43
2:B:914:SER:HB3	2:B:918:GLN:HB2	2.01	0.43
15:O:53:VAL:HG11	15:O:65:ILE:HG21	1.99	0.43
15:O:250:ALA:O	15:O:254:ASN:N	2.49	0.43
2:B:907:GLU:HA	2:B:925:ILE:HD11	2.01	0.43
3:C:136:LEU:HB3	3:C:204:LEU:HG	1.99	0.43
15:O:497:ALA:HB2	15:O:505:MET:HG3	2.01	0.43
2:B:885:MET:SD	2:B:887:SER:OG	2.76	0.43
1:A:1175:ASP:HA	1:A:1183:PHE:O	2.19	0.43
1:A:1206:ALA:HB2	1:A:1224:ILE:HD11	1.99	0.43
3:C:133:VAL:HG23	3:C:170:GLU:HB2	2.01	0.43
4:D:135:TYR:OH	4:D:142:ASP:CB	2.58	0.43
13:M:148:LEU:HD23	13:M:179:LEU:HB3	2.00	0.43
16:P:256:VAL:HG13	16:P:260:CYS:HB2	2.01	0.43
2:B:65:PHE:HE1	2:B:152:MET:HE1	1.83	0.43
2:B:199:GLN:HE22	2:B:378:GLU:HB2	1.84	0.43
2:B:796:LYS:HA	2:B:893:GLN:HE21	1.84	0.43
15:O:516:LEU:HD12	15:O:567:ARG:HB3	2.00	0.43
2:B:1048:ARG:NH1	2:B:1052:GLU:OE2	2.49	0.43
3:C:318:VAL:HG11	11:K:132:GLU:HB3	2.00	0.43
5:E:47:CYS:HA	5:E:53:PRO:HA	2.01	0.43
15:O:311:VAL:HA	15:O:314:ILE:HG22	2.01	0.43
1:A:224:PRO:HD2	1:A:316:TRP:HH2	1.84	0.42
15:O:460:LEU:HD23	15:O:468:LEU:HG	2.01	0.42
15:O:473:PRO:HG2	15:O:475:VAL:HG12	2.00	0.42
15:O:140:ILE:HD13	15:O:160:VAL:HG21	2.01	0.42
15:O:175:LEU:HD11	15:O:187:ILE:HG12	2.00	0.42
1:A:412:ASN:HB2	1:A:416:LEU:HD13	2.00	0.42
2:B:774:ASN:ND2	2:B:775:LYS:O	2.52	0.42
1:A:967:LEU:HD22	1:A:1009:ARG:HH21	1.85	0.42
4:D:58:ILE:HD12	7:G:36:ASN:HD21	1.85	0.42
3:C:21:PRO:HD2	11:K:82:LYS:HA	2.01	0.42
7:G:169:GLU:OE1	7:G:173:GLN:NE2	2.53	0.42
1:A:1026:ARG:HH22	8:H:110:ASP:H	1.67	0.42
1:A:1150:ASP:OD1	1:A:1150:ASP:N	2.52	0.42
3:C:61:THR:HG22	3:C:298:PHE:HZ	1.85	0.42
2:B:765:TYR:HD2	2:B:924:ILE:HB	1.84	0.42
1:A:533:ASN:HD21	6:F:94:LEU:HD23	1.85	0.42
1:A:1332:ARG:HA	1:A:1335:ILE:HG22	2.02	0.42
6:F:86:THR:HG22	6:F:88:TYR:H	1.83	0.42
15:O:530:GLU:OE2	15:O:534:ARG:NH1	2.43	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1187:ARG:NH1	1:A:1227:LYS:O	2.51	0.42
1:A:910:GLY:HA3	1:A:1379:MET:HE1	2.02	0.41
16:P:185:PHE:HA	16:P:188:GLU:HG2	2.02	0.41
2:B:193:VAL:HG21	2:B:458:LEU:HD23	2.02	0.41
7:G:10:LEU:HA	7:G:69:ASN:HA	2.02	0.41
14:N:304:PHE:CZ	14:N:409:LEU:HG	2.55	0.41
1:A:583:MET:HB3	1:A:700:LEU:HD13	2.01	0.41
10:J:17:LYS:HB3	10:J:39:LEU:HD21	2.02	0.41
1:A:1304:MET:HG2	5:E:142:VAL:HG11	2.02	0.41
15:O:364:ILE:HG23	15:O:453:ILE:HD11	2.03	0.41
2:B:253:ILE:HD11	2:B:283:PHE:HE1	1.86	0.41
6:F:115:THR:HG22	6:F:116:ASP:H	1.85	0.41
14:N:304:PHE:CE1	14:N:409:LEU:HD12	2.54	0.41
11:K:54:THR:HG22	11:K:61:ALA:HA	2.02	0.41
1:A:109:ASN:HD22	1:A:159:ALA:HB2	1.86	0.41
2:B:254:ALA:O	2:B:258:LYS:HB2	2.21	0.41
4:D:15:GLU:HA	4:D:18:LYS:HE3	2.03	0.41
4:D:121:LEU:HA	4:D:124:VAL:HG12	2.02	0.41
1:A:966:ILE:HG22	1:A:1075:LEU:HD11	2.02	0.41
1:A:1223:ASN:OD1	1:A:1231:ALA:N	2.46	0.41
1:A:409:THR:HG23	1:A:411:TYR:H	1.85	0.41
1:A:1257:PHE:HB2	9:I:14:ILE:HB	2.03	0.41
3:C:252:PRO:HA	3:C:253:PRO:HD3	1.94	0.41
5:E:127:ILE:HG22	5:E:130:ALA:H	1.86	0.41
7:G:152:ARG:O	7:G:197:LEU:N	2.54	0.41
16:P:251:ASP:OD1	16:P:251:ASP:N	2.52	0.41
2:B:913:SER:HB2	2:B:1027:LEU:HD11	2.03	0.40
3:C:31:TRP:CE2	11:K:123:ASP:HB3	2.56	0.40
1:A:91:PHE:HE1	1:A:99:THR:HG21	1.86	0.40
1:A:150:LYS:O	1:A:152:ARG:NH1	2.54	0.40
1:A:666:LYS:HB2	1:A:798:GLY:HA3	2.02	0.40
2:B:230:LYS:NZ	2:B:352:MET:SD	2.86	0.40
3:C:215:ASP:OD1	12:L:70:ARG:NH2	2.54	0.40
15:O:495:VAL:HG21	15:O:577:MET:HE1	2.03	0.40
1:A:401:VAL:HG23	1:A:402:LEU:HD12	2.04	0.40
1:A:580:LEU:HD11	1:A:612:LEU:HD22	2.03	0.40
1:A:1153:ALA:HA	1:A:1156:VAL:HG12	2.03	0.40
1:A:1188:ILE:HD13	1:A:1202:ILE:HD11	2.03	0.40
2:B:832:VAL:HB	12:L:60:ARG:HA	2.03	0.40
15:O:235:LEU:HD13	15:O:238:ARG:HB2	2.04	0.40
15:O:321:GLN:HG2	15:O:322:LYS:HG3	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:P:253:LEU:HD23	16:P:262:ARG:HH21	1.86	0.40
1:A:399:ALA:HB1	1:A:466:LEU:HB3	2.03	0.40
3:C:227:TYR:HB3	3:C:300:PHE:CD1	2.56	0.40
11:K:78:TYR:CZ	11:K:82:LYS:HD2	2.56	0.40
10:J:22:LEU:HD23	10:J:25:LEU:HD12	2.04	0.40
15:O:330:LEU:HD23	15:O:345:PHE:HE1	1.86	0.40

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%)	21	50
2	B	1112/1149 (97%)	980 (88%)	127 (11%)	5 (0%)	30	59
3	C	333/335 (99%)	299 (90%)	33 (10%)	1 (0%)	36	65
4	D	113/161 (70%)	97 (86%)	13 (12%)	3 (3%)	4	20
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%)	10	35
14	N	101/422 (24%)	80 (79%)	21 (21%)	0	100	100
15	O	531/654 (81%)	468 (88%)	62 (12%)	1 (0%)	43	71

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
16	P	119/317 (38%)	72 (60%)	42 (35%)	5 (4%)	2	14
17	Q	38/251 (15%)	32 (84%)	6 (16%)	0	100	100
All	All	4765/6151 (78%)	4122 (86%)	618 (13%)	25 (0%)	26	54

All (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
16	P	309	VAL
16	P	314	GLU
1	A	495	TRP
1	A	513	ASP
2	B	297	THR
2	B	298	GLN
4	D	141	CYS
16	P	206	VAL
16	P	307	LYS
1	A	1179	ASP
13	M	118	LEU
1	A	494	PRO
1	A	1352	PRO
15	O	236	LYS
3	C	4	ILE
1	A	599	LYS
2	B	584	VAL
1	A	636	PRO
13	M	94	PRO
1	A	600	PRO

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	1215/1257 (97%)	1211 (100%)	4 (0%)	86	84
2	B	975/1006 (97%)	973 (100%)	2 (0%)	87	85
3	C	296/296 (100%)	296 (100%)	0	100	100
4	D	110/145 (76%)	108 (98%)	2 (2%)	51	67
5	E	197/197 (100%)	197 (100%)	0	100	100
6	F	73/137 (53%)	73 (100%)	0	100	100
7	G	170/190 (90%)	170 (100%)	0	100	100
8	H	123/128 (96%)	123 (100%)	0	100	100
9	I	38/98 (39%)	37 (97%)	1 (3%)	40	61
10	J	63/65 (97%)	63 (100%)	0	100	100
11	K	91/130 (70%)	91 (100%)	0	100	100
12	L	40/57 (70%)	39 (98%)	1 (2%)	42	62
13	M	143/249 (57%)	143 (100%)	0	100	100
14	N	88/360 (24%)	87 (99%)	1 (1%)	65	74
15	O	492/593 (83%)	489 (99%)	3 (1%)	78	80
16	P	116/285 (41%)	113 (97%)	3 (3%)	40	61
17	Q	35/212 (16%)	35 (100%)	0	100	100
All	All	4265/5405 (79%)	4248 (100%)	17 (0%)	81	83

All (17) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	285	LEU
1	A	612	LEU
1	A	1032	LEU
1	A	1408	VAL
2	B	599	VAL
2	B	997	ASN
4	D	140	GLU
4	D	156	ILE
9	I	10	ASN
12	L	27	LEU
14	N	409	LEU
15	O	135	LEU
15	O	235	LEU
15	O	527	LEU
16	P	263	VAL

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Mol	Chain	Res	Type
16	P	312	PHE
16	P	314	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (75) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	29	GLN
1	A	71	HIS
1	A	109	ASN
1	A	475	ASN
1	A	523	GLN
1	A	533	ASN
1	A	566	HIS
1	A	643	ASN
1	A	647	GLN
1	A	816	GLN
1	A	899	GLN
1	A	948	ASN
1	A	990	ASN
1	A	1174	GLN
1	A	1218	GLN
1	A	1254	ASN
1	A	1261	GLN
1	A	1262	GLN
1	A	1317	ASN
1	A	1346	HIS
1	A	1354	HIS
1	A	1419	GLN
1	A	1453	ASN
2	B	39	ASN
2	B	197	GLN
2	B	275	ASN
2	B	286	ASN
2	B	362	ASN
2	B	396	ASN
2	B	626	HIS
2	B	774	ASN
2	B	865	GLN
2	B	916	HIS
2	B	997	ASN
2	B	1025	GLN
3	C	88	ASN

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Mol	Chain	Res	Type
3	C	137	ASN
3	C	143	ASN
3	C	161	HIS
3	C	200	GLN
3	C	207	HIS
3	C	301	ASN
4	D	71	ASN
4	D	125	ASN
5	E	5	ASN
5	E	32	GLN
5	E	113	GLN
5	E	136	ASN
5	E	174	GLN
6	F	78	GLN
7	G	32	ASN
7	G	36	ASN
8	H	128	ASN
9	I	10	ASN
13	M	132	ASN
13	M	155	ASN
13	M	158	GLN
13	M	190	ASN
13	M	254	GLN
14	N	284	ASN
14	N	287	HIS
14	N	298	ASN
14	N	392	GLN
14	N	421	GLN
15	O	152	HIS
15	O	202	GLN
15	O	244	ASN
15	O	254	ASN
15	O	362	ASN
15	O	579	GLN
15	O	584	ASN
15	O	631	ASN
16	P	176	ASN
16	P	211	ASN
17	Q	60	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 oligosaccharides 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.

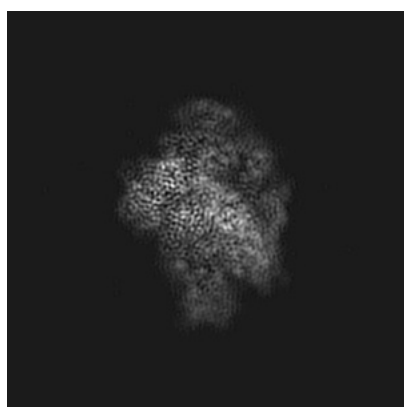
6 Map visualisation [i](#)

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.

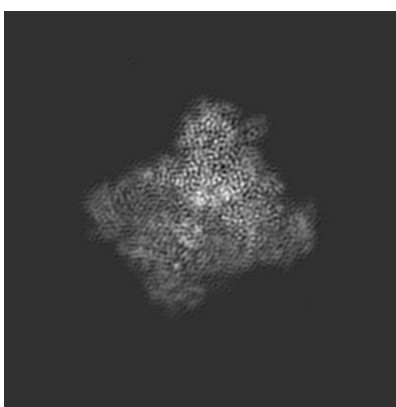
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

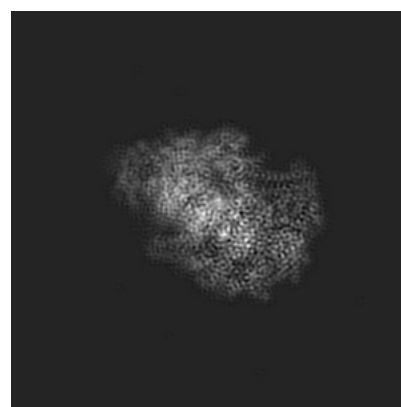
6.1.1 Primary map



X



Y

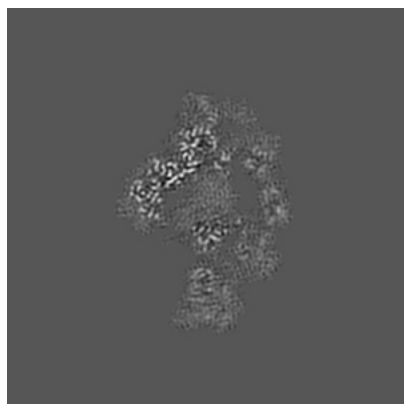


Z

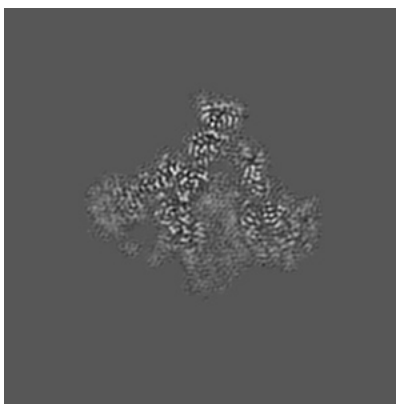
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

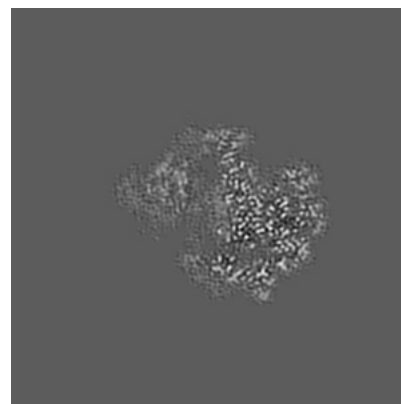
6.2.1 Primary map



X Index: 154



Y Index: 154

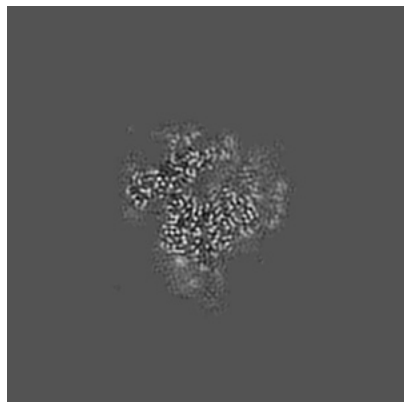


Z Index: 154

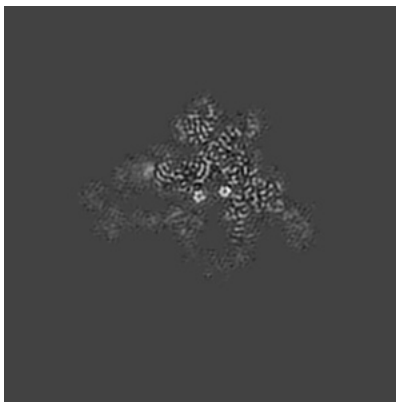
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

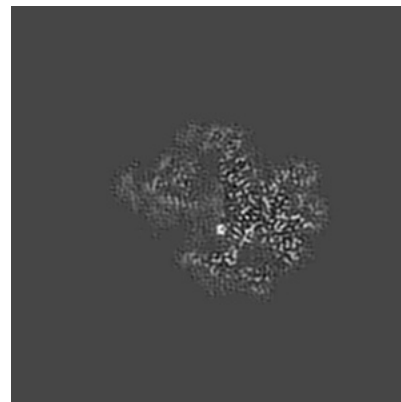
6.3.1 Primary map



X Index: 177



Y Index: 135

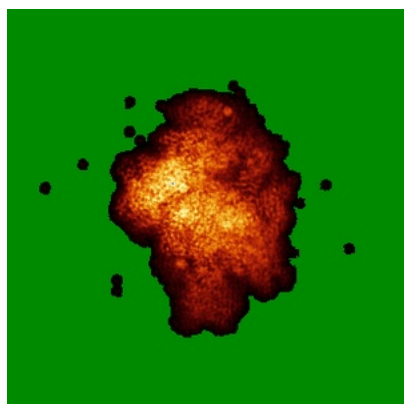


Z Index: 152

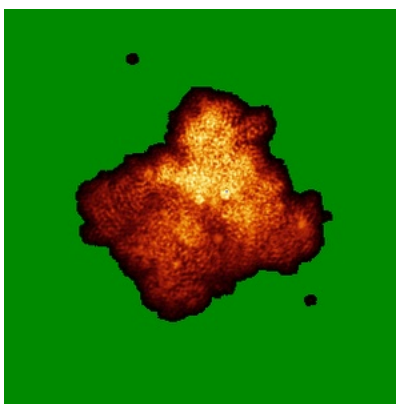
The images above show the largest variance slices of the map in three orthogonal directions.

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

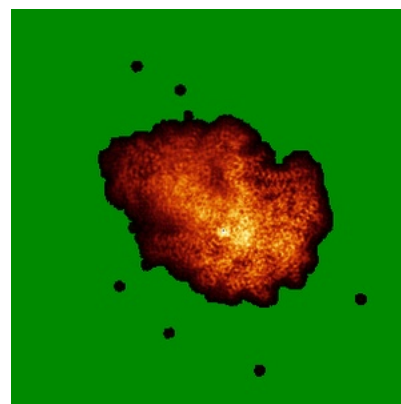
6.4.1 Primary map



X



Y

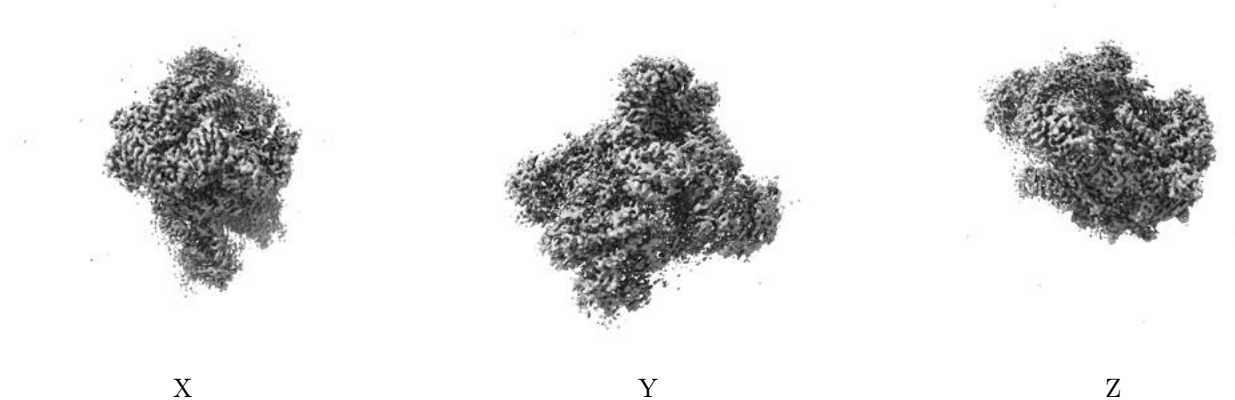


Z

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

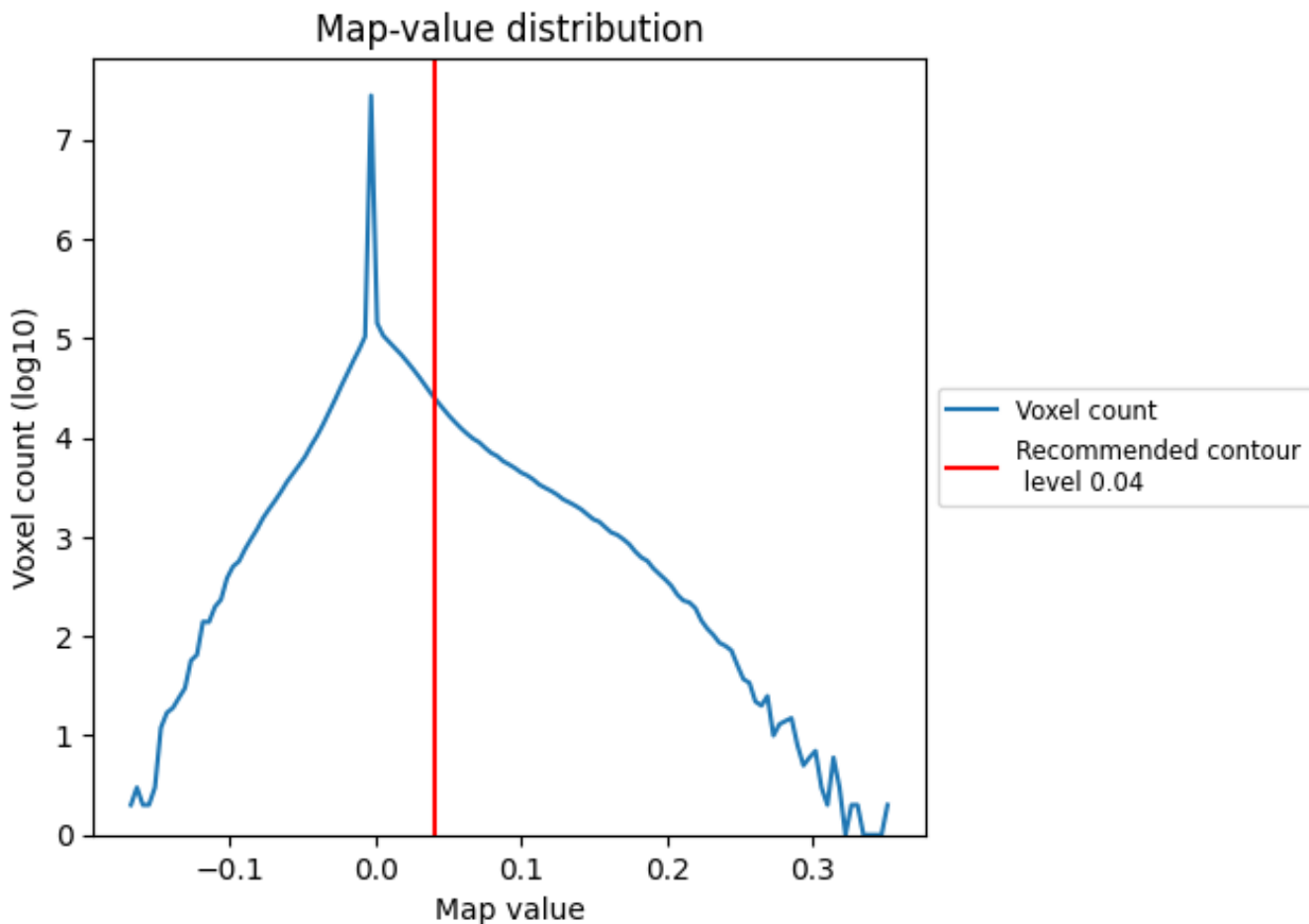
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

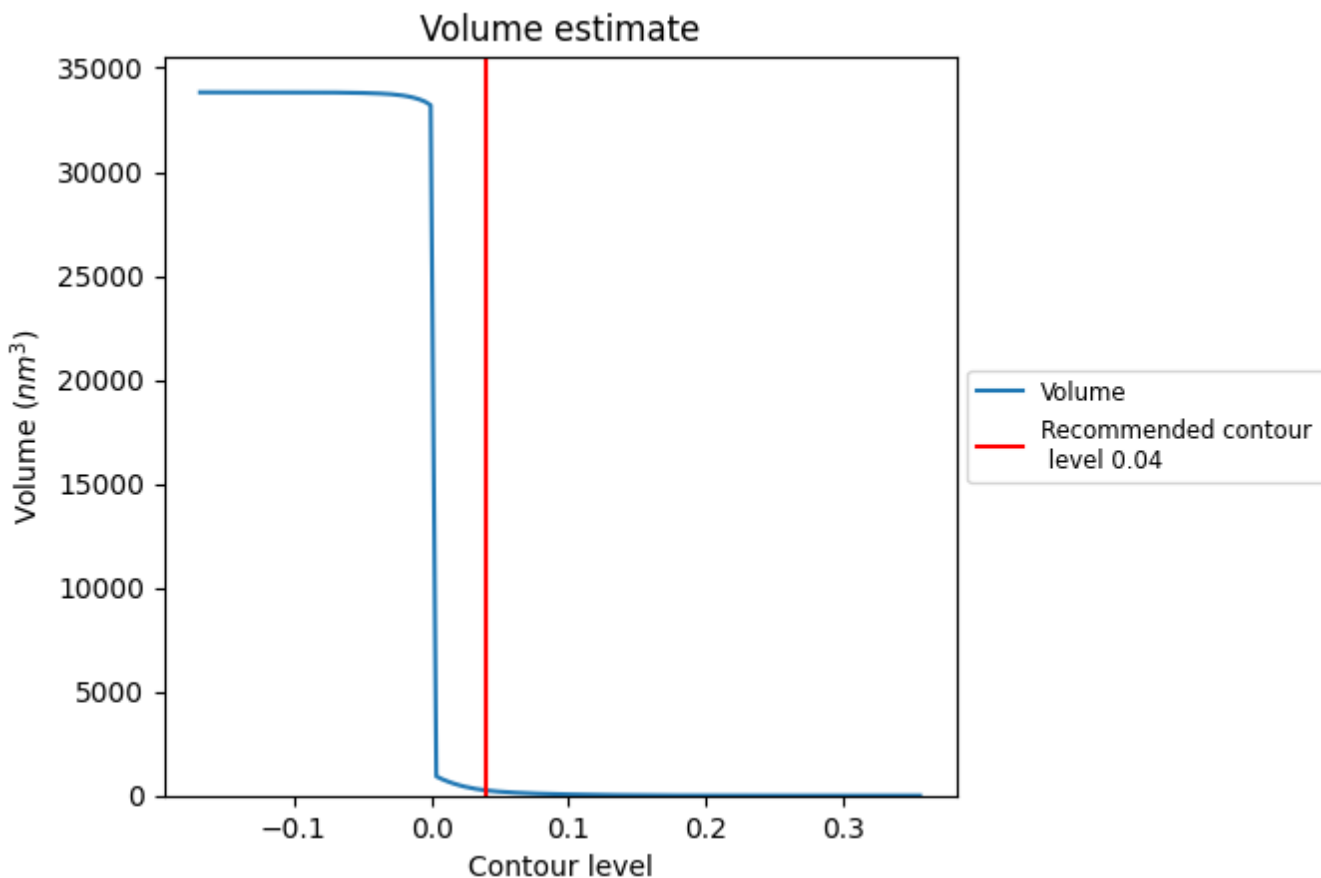
This section contains the results of statistical analysis of the map.

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.

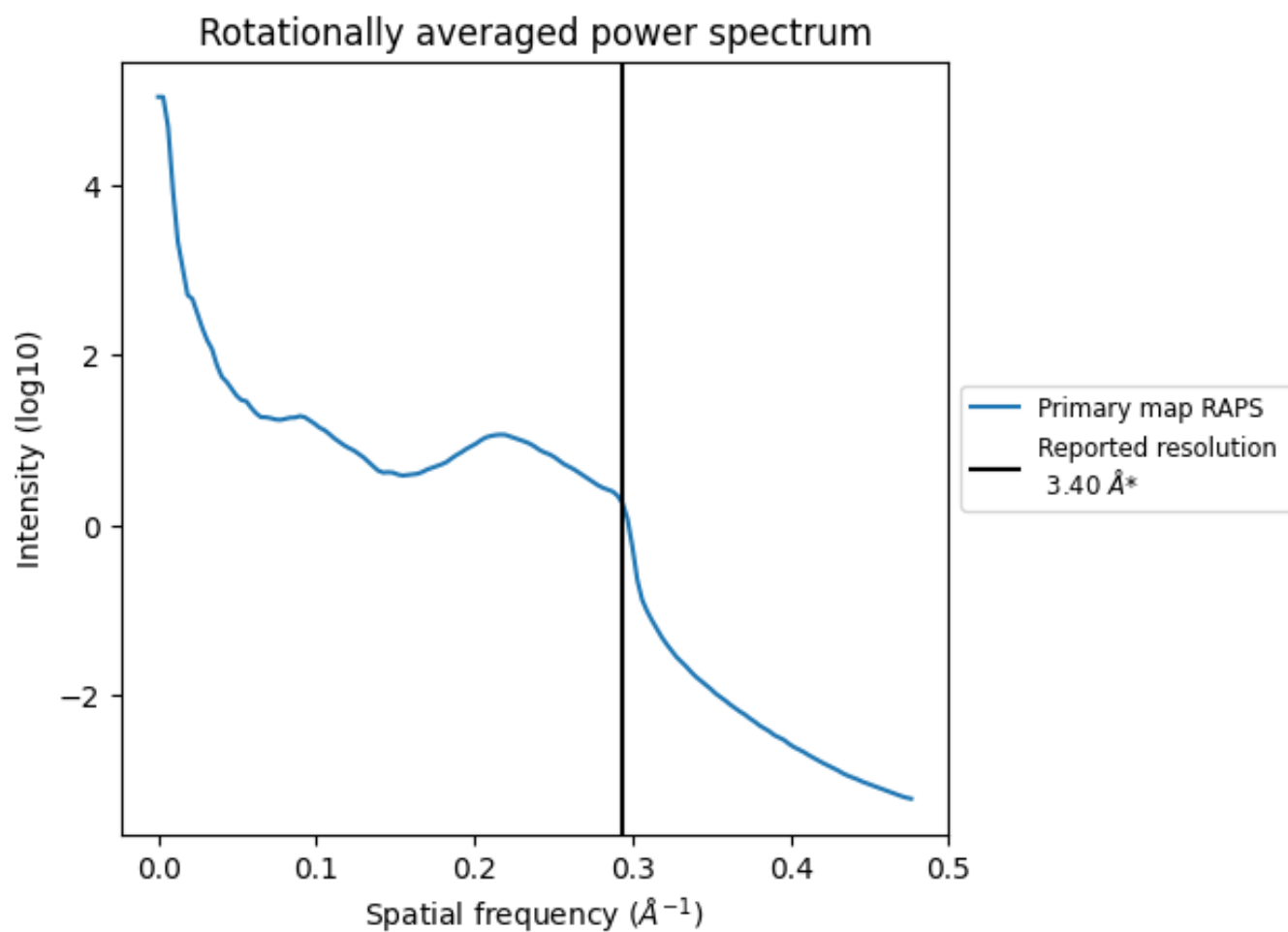
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 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](#)

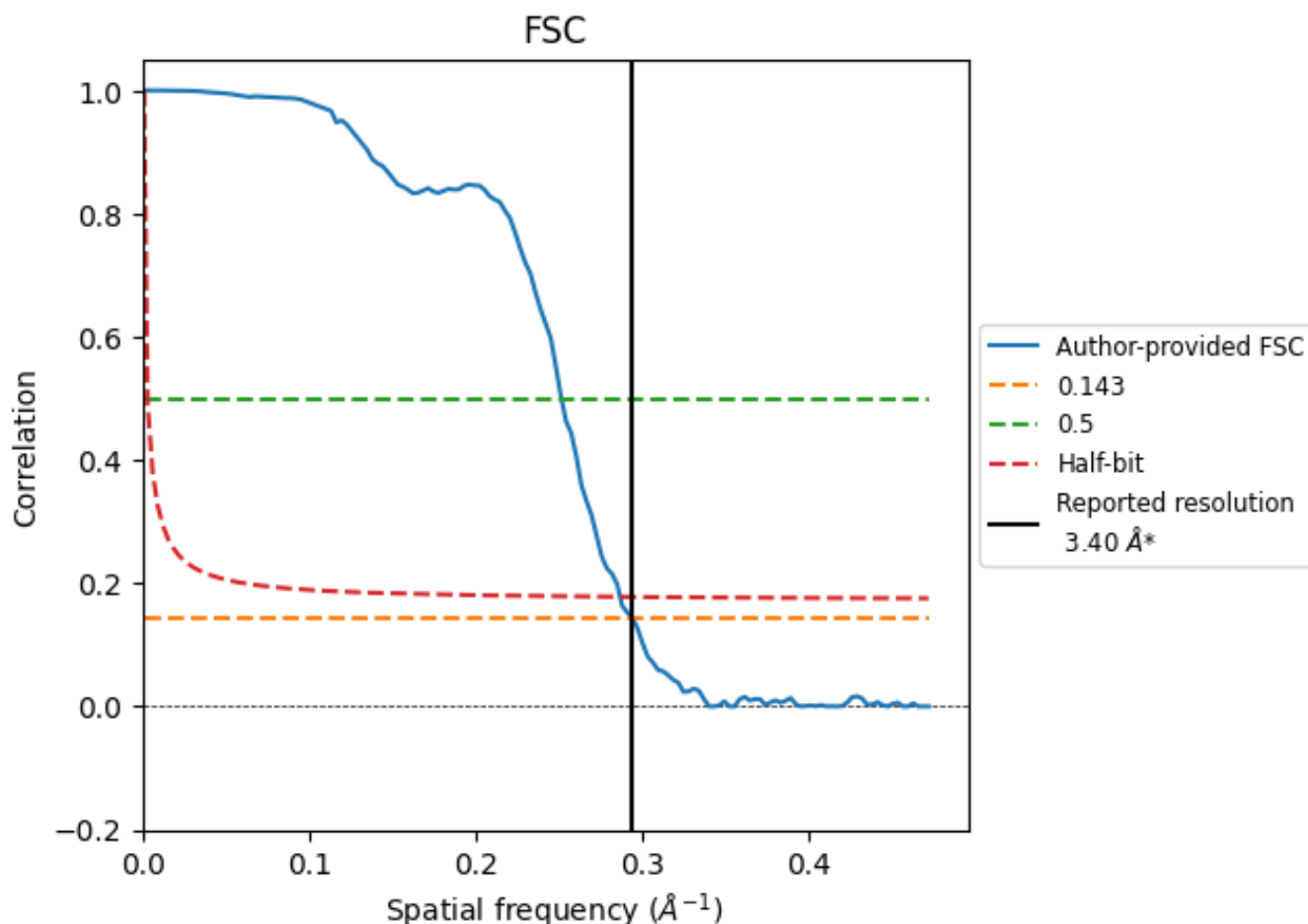


*Reported resolution corresponds to spatial frequency of 0.294\AA^{-1}

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 \AA^{-1}

8.2 Resolution estimates [i](#)

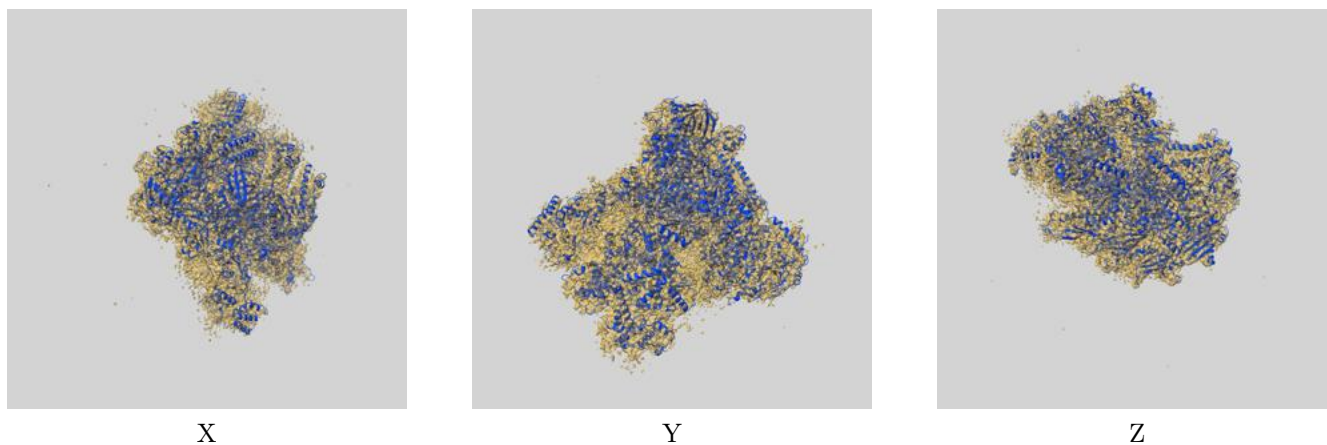
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.40	-	-
Author-provided FSC curve	3.40	3.98	3.49
Unmasked-calculated*	-	-	-

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

9 Map-model fit [i](#)

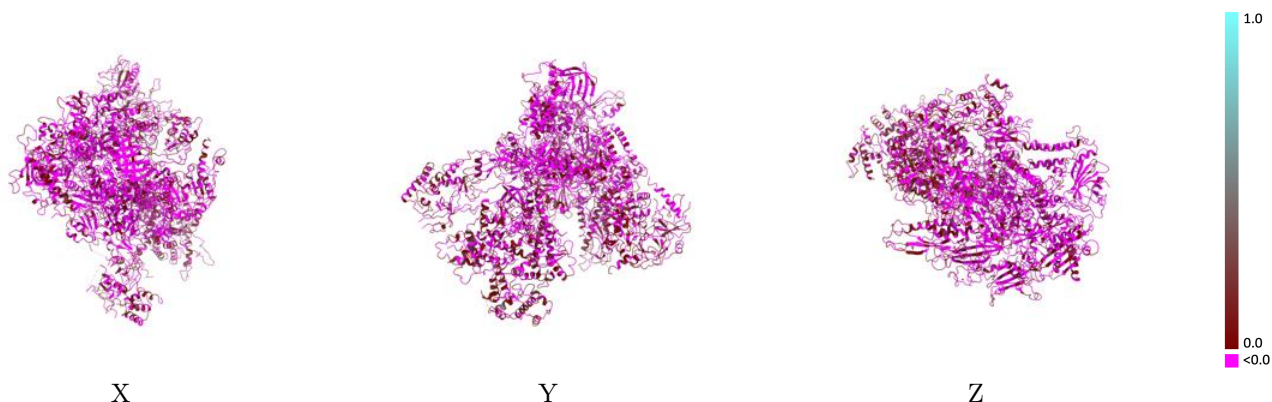
This section contains information regarding the fit between EMDB map EMD-3957 and PDB model 6EU2. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay [i](#)



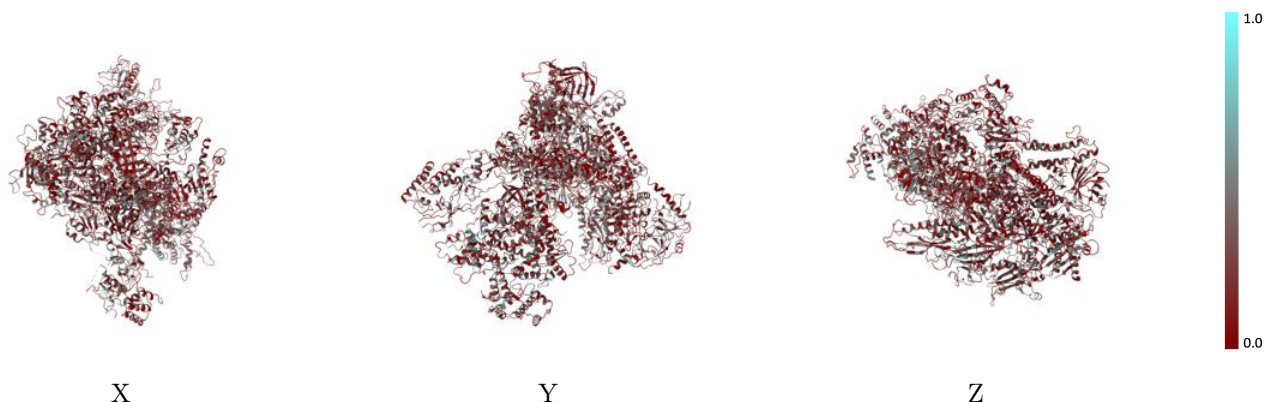
The images above show the 3D surface view of the map at the recommended contour level 0.04 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



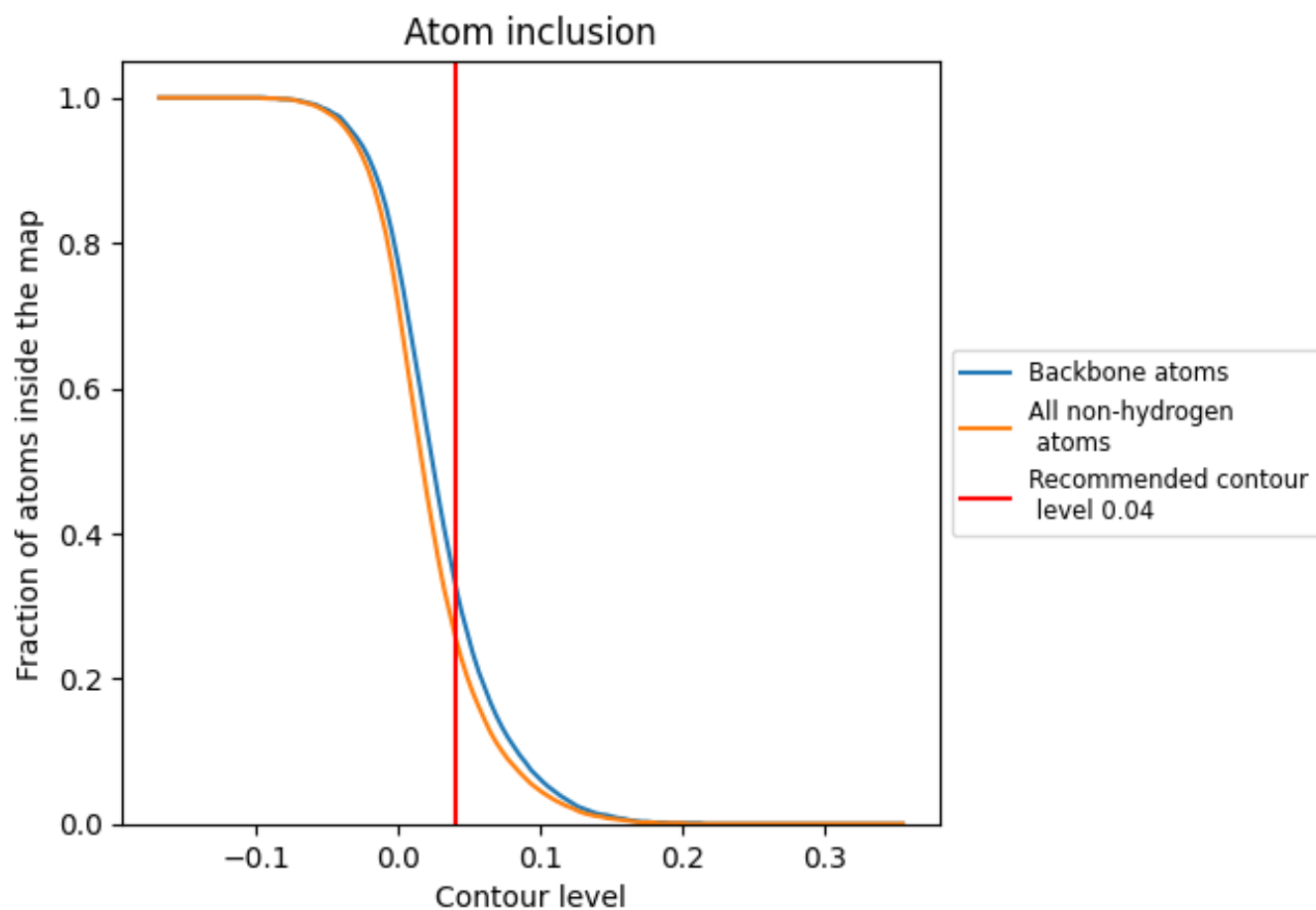
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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	 0.2500	 -0.0460
B	 0.2580	 -0.0620
C	 0.2730	 -0.0670
D	 0.2720	 0.0430
E	 0.2340	 -0.0410
F	 0.2670	 -0.0560
G	 0.2780	 -0.0060
H	 0.1960	 -0.0960
I	 0.1640	 -0.0440
J	 0.2930	 -0.0540
K	 0.2640	 -0.0740
L	 0.3060	 -0.0190
M	 0.2670	 0.0540
N	 0.2310	 -0.0310
O	 0.2920	 0.0130
P	 0.2990	 0.0370
Q	 0.3710	 0.1120

