wwPDB EM Validation Summary Report ⓘ

Nov 19, 2022 – 08:24 am GMT

PDB ID	:	5LMX
EMDB ID	:	EMD-4088
Title	:	Monomeric RNA polymerase I at 4.9 A resolution
Authors	:	Torreira, E.; Louro, J.A.; Gil-Carton, D.; Gallego, O.; Calvo, O.; Fernandez-Tornero, C.
Deposited on	:	2016-08-02
Resolution	:	4.90 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:

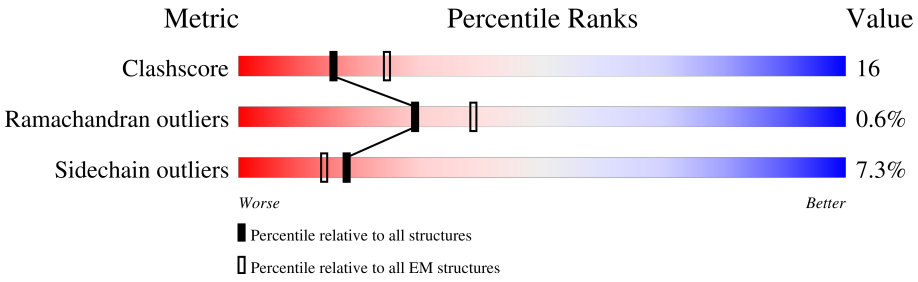
EMDB validation analysis	:	0.0.1.dev43
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.2

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 4.90 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 <=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	1664	29% 66% 18% • 15%
2	B	1203	30% 69% 22% • 7%
3	C	380	9% 58% 19% • 20%
4	D	137	11% 7% 5% • 87%
5	E	215	11% 90% 10%
6	F	155	22% 55% 8% • 35%
7	G	326	17% 20% 6% • 73%
8	H	146	6% 79% 13% 8%

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Mol	Chain	Length	Quality of chain
9	I	125	19% 37% 13% 49%
10	J	70	7% 73% 19% 7%
11	K	142	13% 42% 27% 29%
12	L	70	14% 40% 23% 36%
13	M	415	12% 21% 75%
14	N	233	36% 48% 9% 40%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
15	ZN	L	101	-	-	X	-

2 Entry composition (i)

There are 15 unique types of molecules in this entry. The entry contains 31118 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 I subunit RPA190.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1420	11207	7087	1942	2118	60	0	0

- Molecule 2 is a protein called DNA-directed RNA polymerase I subunit RPA135.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	1115	8868	5618	1546	1656	48	0	0

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

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

- Molecule 4 is a protein called DNA-directed RNA polymerase I subunit RPA14.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
4	D	18	133	84	23	26	0	0

- 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	1759	1116	310	321	12	0	0

- 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	100	823	522	144	154	3	0	0

- Molecule 7 is a protein called DNA-directed RNA polymerase I subunit RPA43.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	89	Total	C	N	O	S	0	0
			706	465	113	123	5		

- Molecule 8 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC3.

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

- Molecule 9 is a protein called DNA-directed RNA polymerase I subunit RPA12.

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

- Molecule 10 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC5.

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

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

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

- Molecule 13 is a protein called DNA-directed RNA polymerase I subunit RPA49.

Mol	Chain	Residues	Atoms				AltConf	Trace
13	M	105	Total	C	N	O	0	0
			831	528	137	166		

- Molecule 14 is a protein called DNA-directed RNA polymerase I subunit RPA34.

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

- Molecule 15 is ZINC ION (three-letter code: ZN) (formula: Zn).

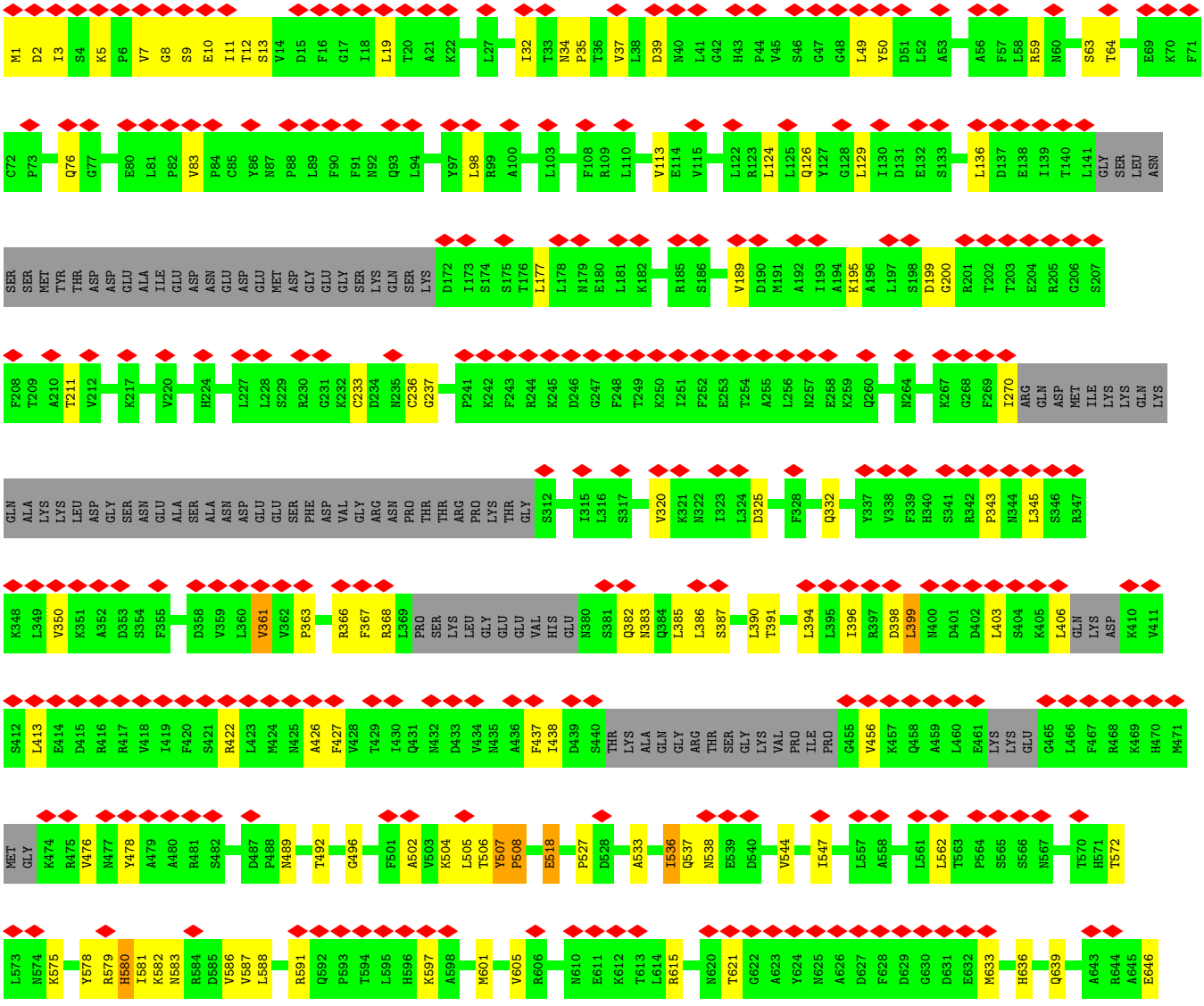
Mol	Chain	Residues	Atoms		AltConf
15	A	2	Total	Zn	0
			2	2	
15	B	1	Total	Zn	0
			1	1	
15	I	1	Total	Zn	0
			1	1	
15	J	1	Total	Zn	0
			1	1	
15	L	1	Total	Zn	0
			1	1	

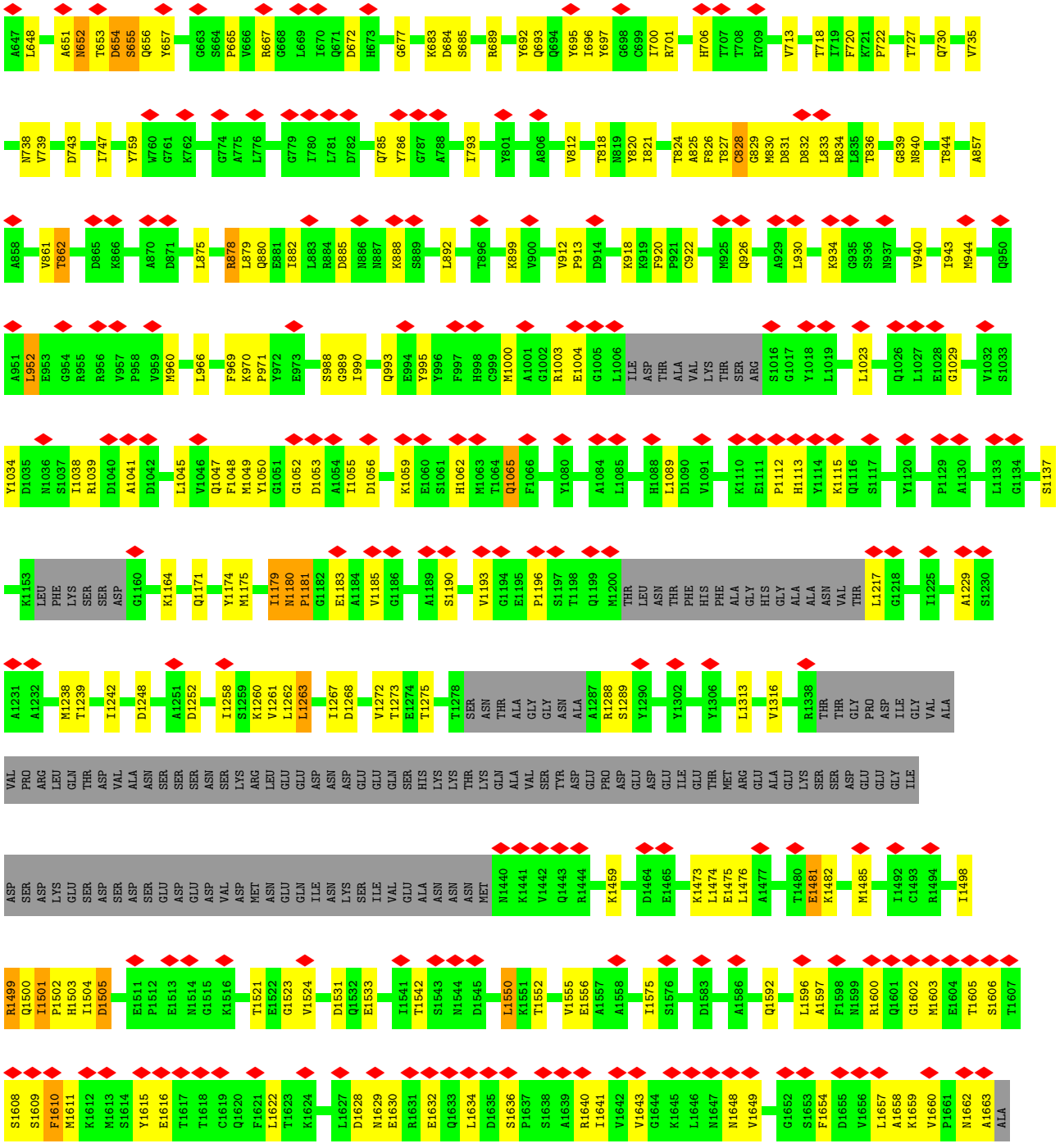
3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: DNA-directed RNA polymerase I subunit RPA190

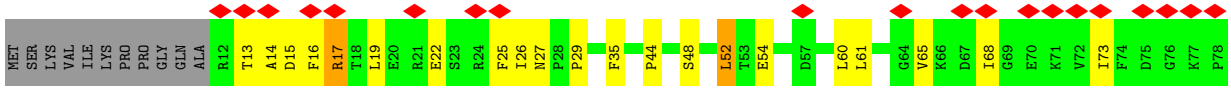
Chain A:

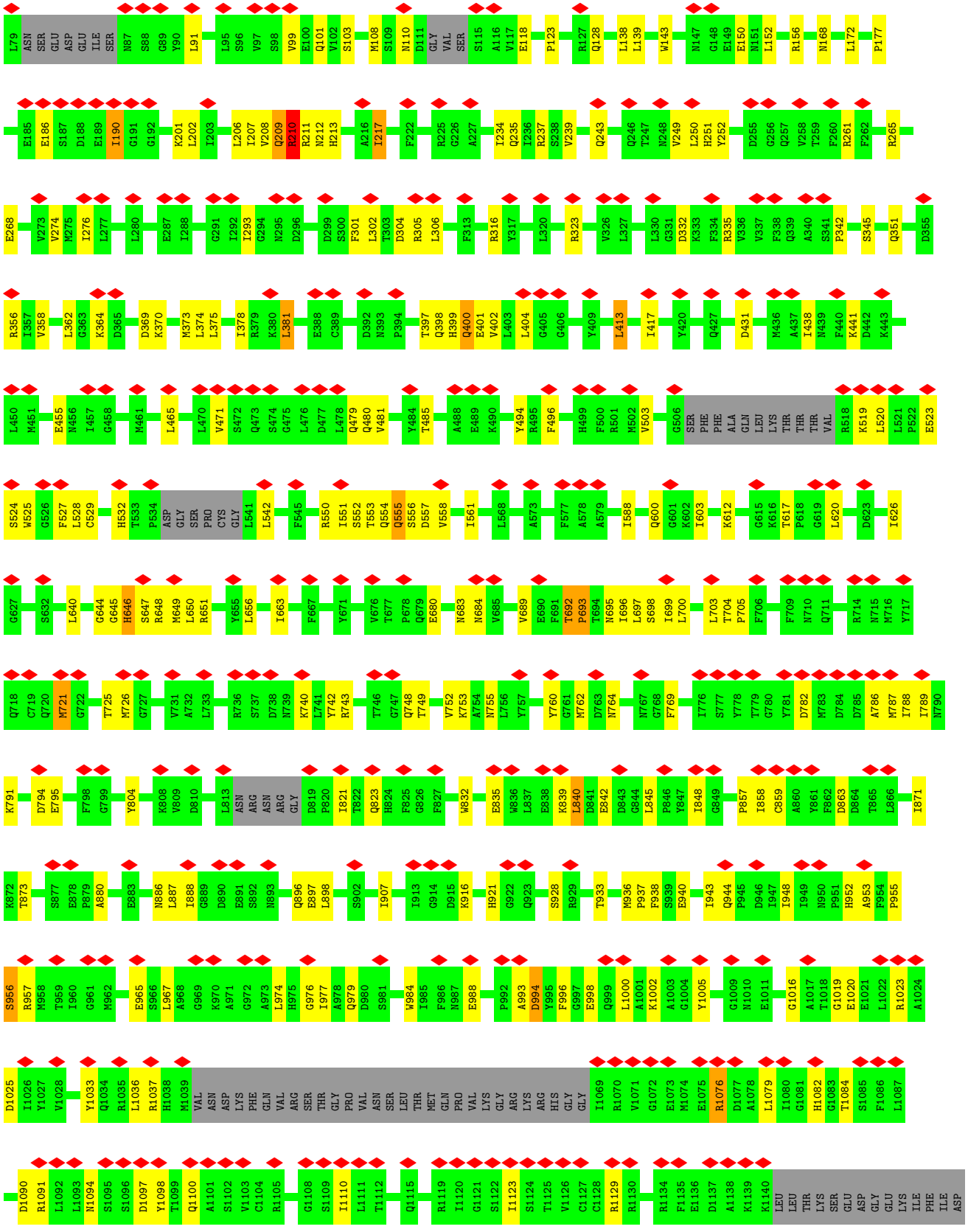


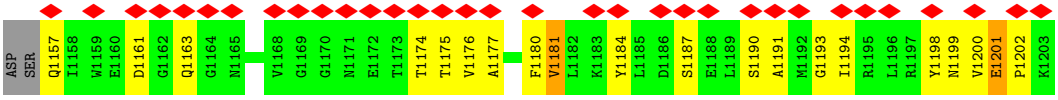


• Molecule 2: DNA-directed RNA polymerase I subunit RPA135

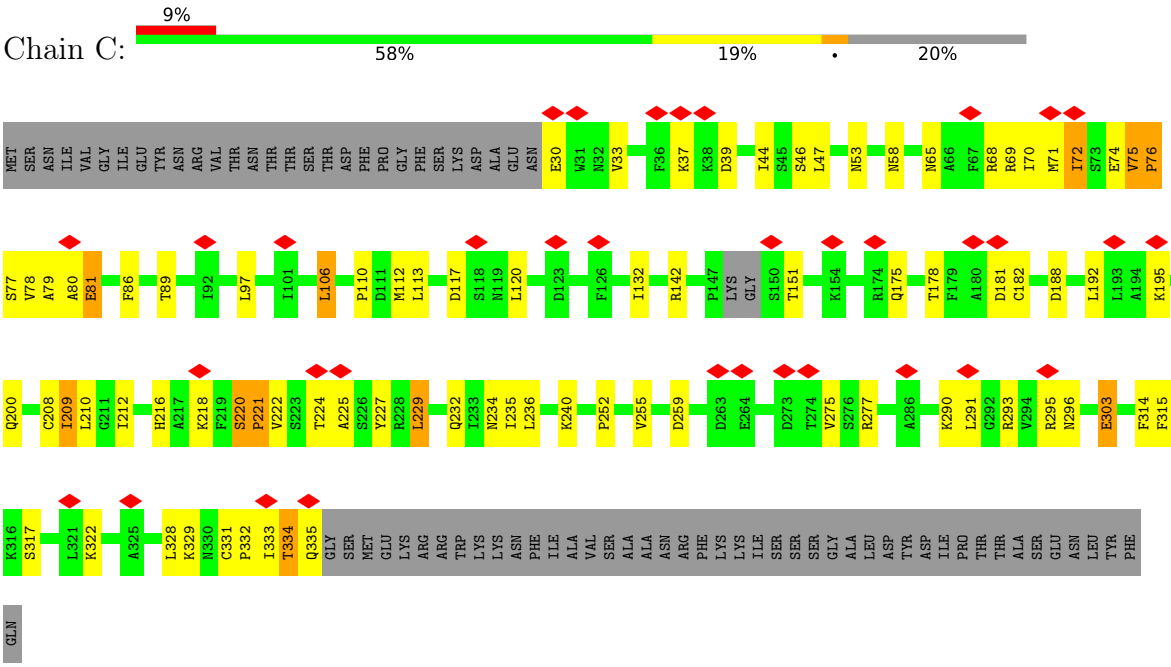
Chain B:



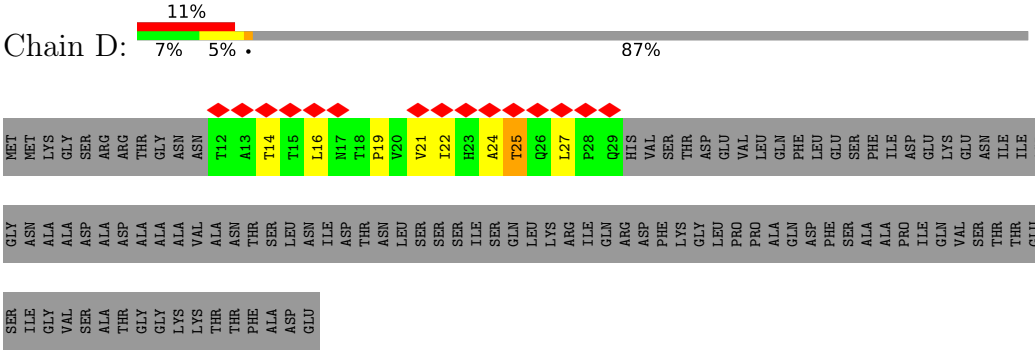

L79 ASN SER GLU ASP GLU ILE SER N87 S88 G89 Y90 L91 L95 S96 V97 S98 V99 E100 Q101 V102 S103 M108 S109 N110 D111 GLY VAL SER S115 A116 V117 E118 P123 R127 Q128 L138 L139 W143 N147 G148 E149 E150 N151 L152 R156 N168 L172 P177
E185 E186 S187 D188 E189 I190 G191 G192 K201 L202 I203 L206 I207 V208 Q209 R210 R211 N212 H213 A216 I217 F222 R225 G226 A227 I234 Q235 I236 R237 S238 V239 Q243 Q246 T247 N248 V249 L250 H251 Y252 D255 G256 Q257 V258 T259 F260 R261 F262 R265
E268 V273 V274 M275 I276 L277 L280 E287 I288 G291 I292 I293 G294 N295 D296 D299 S300 F301 L302 T303 D304 R305 L306 F313 R316 Y317 L320 R323 V326 L327 L330 G331 D332 K333 F334 R335 V336 V337 F338 Q339 A340 S341 P342 S345 Q351 D355
R356 I357 V358 L362 G363 K364 D365 D369 K370 M373 L374 L375 I378 R379 K380 L381 E388 C389 D392 N393 P394 T397 Q398 H399 Q400 E401 V402 L403 L404 G405 G406 Y409 L413 I417 Y420 Q427 D431 M436 A437 I438 N439 F440 K441 D442 K443
L450 M451 E455 N456 I457 G458 M461 L465 L470 V471 S472 Q473 S474 G475 L476 D477 L478 Q479 Q480 V481 Y484 T485 A488 E489 K490 Y494 R495 F496 H499 F500 R501 M502 V503 G506 SER PHE PHE ALA GLN LEU LYS THR THR THR VAL R518 K519 L520 L521 P522 E523
S524 W525 G526 F527 L528 C529 H532 T533 P534 ASP GLY SER PRO CYS GLY L541 L542 F545 R550 I551 S552 T553 Q554 Q555 S556 D557 V558 I561 L568 A573 F577 A578 A579 I588 Q600 G601 K602 I603 K612 G615 K616 T617 P618 G619 L620 D623 I626
G627 S632 L640 G644 G645 H646 S647 R648 M649 L650 R651 Y655 L656 I663 F667 Y671 V676 T677 P678 Q679 E680 N683 N684 V685 V689 E690 F691 T692 P693 T694 N695 I696 L697 S698 I699 L700 L703 T704 P705 F706 F709 N710 Q711 R714 N715 M716 Y717
Q718 C719 Q720 M721 G722 T725 M726 G727 V731 A732 L733 R736 S737 D738 N739 K740 L741 Y742 R743 T746 G747 Q748 T749 V752 K753 A754 N755 L756 Y757 Y760 G761 M762 D763 N764 N767 G768 F769 I776 S777 Y778 T779 G780 Y781 D782 M783 D784 D785 A786 M787 I788 I789 N790
K791 D794 E795 F798 G799 Y804 K808 V809 D810 L813 D819 P820 I821 T822 Q823 H824 F825 G826 F827 W832 E835 W836 L837 E838 K839 L840 D841 E842 D843 G844 L845 P846 Y847 I848 G849 P857 I858 C859 A860 Y861 F862 D863 D864 T865 L866 I871
K872 T873 S877 E878 P879 A880 E883 N886 L887 I888 G889 D890 E891 S892 N893 Q896 E897 L898 S902 I907 I913 G914 D915 K916 H921 G922 Q923 S928 R929 T933 M936 P937 F938 S939 E940 I943 Q944 P945 D946 I947 I948 I949 N950 P951 H952 A953 F954 P955
S966 R957 M958 T959 I960 G961 M962 E965 S966 L967 A968 G969 K970 A971 G972 A973 L974 H975 G976 I977 A978 Q979 D980 S981 W984 I985 F986 N987 E988 P992 A993 D994 Y995 F996 G997 E998 Q999 L1000 A1001 K1002 A1003 G1004 Y1005 G1009 N1010 E1011 G1016 A1017 T1018 G1019 E1020 E1021 L1022 R1023 A1024
D1025 I1026 Y1027 V1028 Y1033 Q1034 R1035 L1036 R1037 H1038 M1039 VAL ASN ASP LYS PHE GLN VAL ARG SER THR GLY PRO VAL ASN SER LEU THR MET GLN PRO VAL LYS GLY ARG LYS ARG HIS GLY GLY I1069 R1070 V1071 G1072 E1073 M1074 E1075 R1076 D1077 A1078 L1079 I1080 G1081 H1082 G1083 T1084 S1085 F1086 L1087
D1090 R1091 L1092 L1093 N1094 S1095 S1096 D1097 Y1098 T1099 Q1100 A1101 S1102 V1103 C1104 R1105 G1108 S1109 I1110 L1111 T1112 Q1115 R1119 I1120 G1121 S1122 I1123 S1124 T1125 V1126 C1127 C1128 R1129 R1130 R1134 F1135 E1136 D1137 A1138 K1139 K1140 LEU LEU THR LYS SER GLU ASP GLY GLU LYS ILE PHE ILE ASP



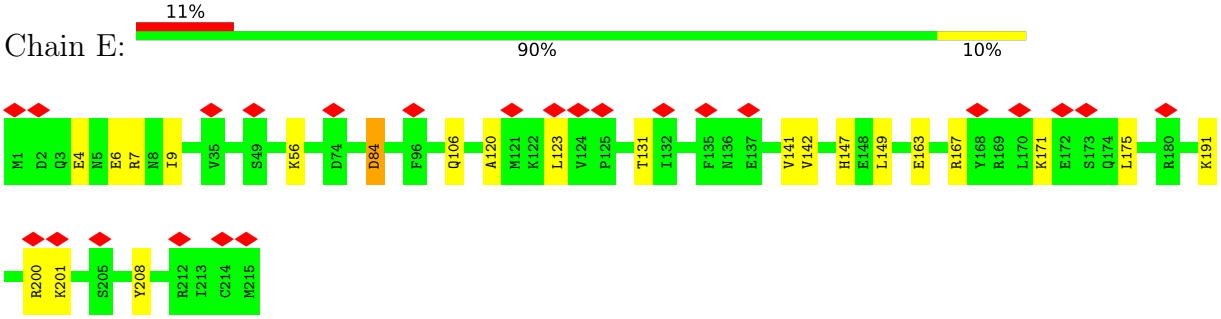
• Molecule 3: DNA-directed RNA polymerases I and III subunit RPAC1,DNA-directed RNA polymerases I and III subunit RPAC1



• Molecule 4: DNA-directed RNA polymerase I subunit RPA14

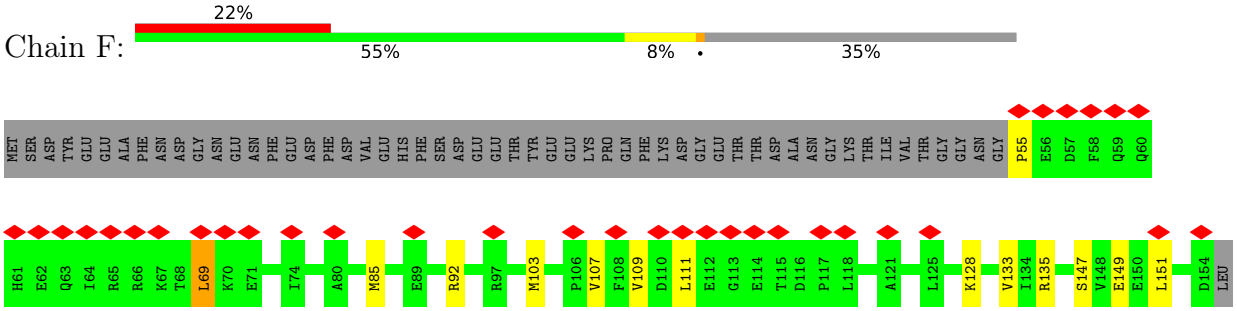


• Molecule 5: DNA-directed RNA polymerases I, II, and III subunit RPABC1



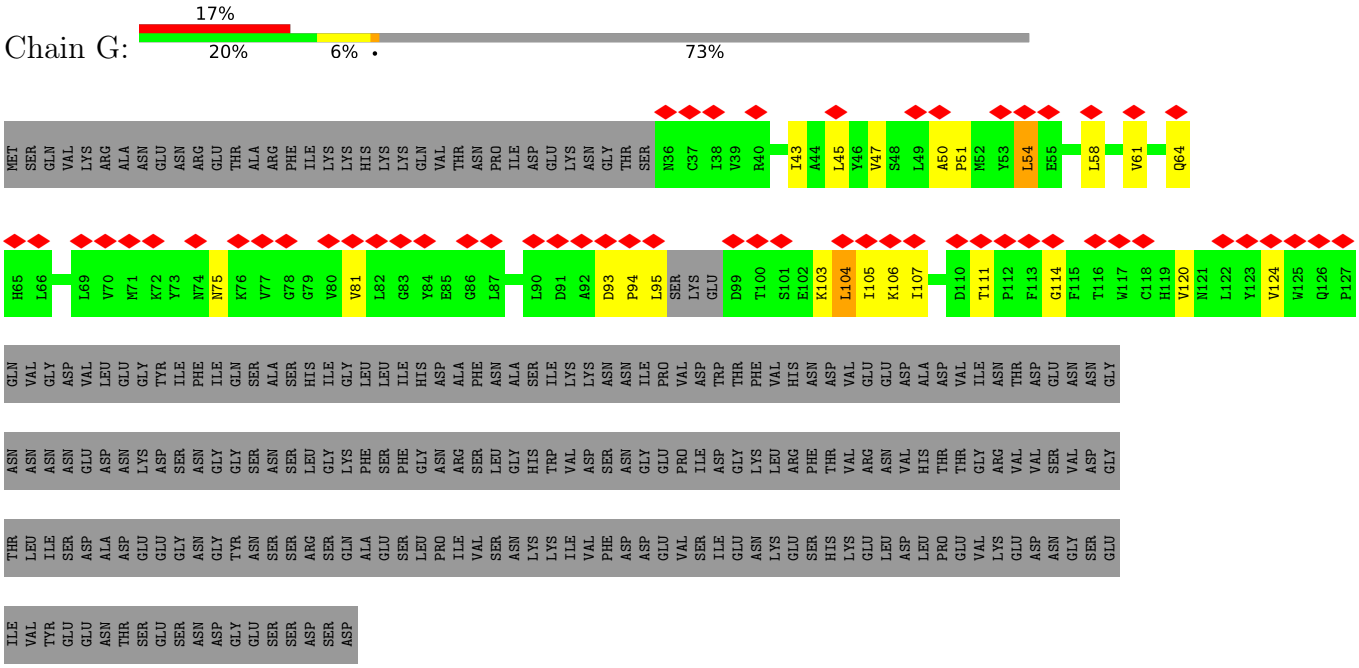
• Molecule 6: DNA-directed RNA polymerases I, II, and III subunit RPABC2

Chain F:



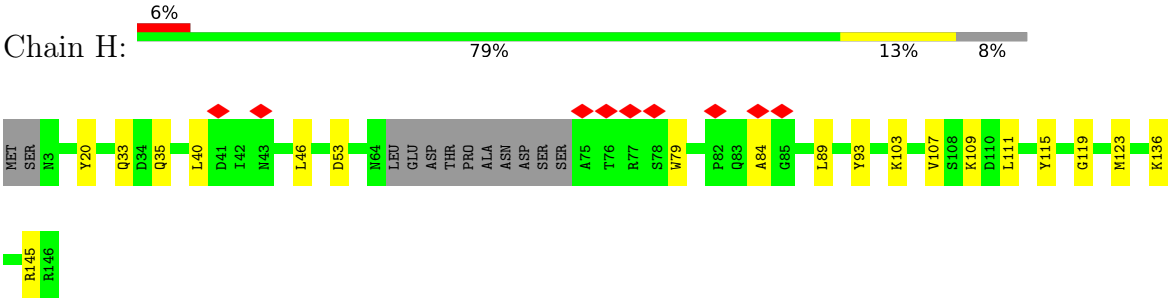
• Molecule 7: DNA-directed RNA polymerase I subunit RPA43

Chain G:



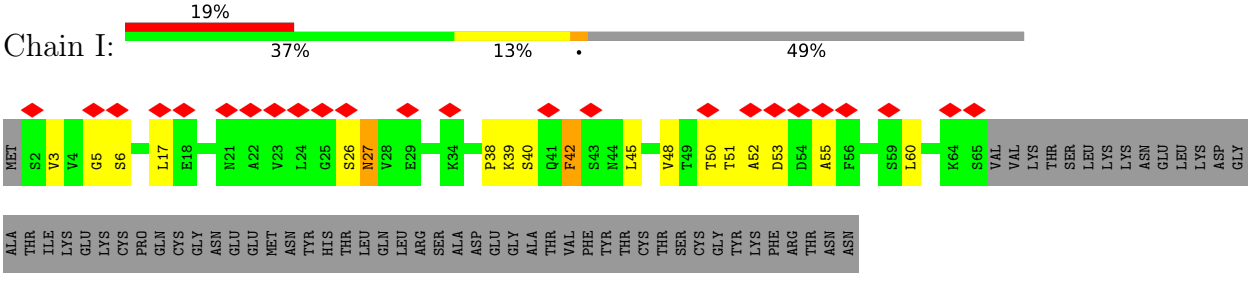
• Molecule 8: DNA-directed RNA polymerases I, II, and III subunit RPABC3

Chain H:



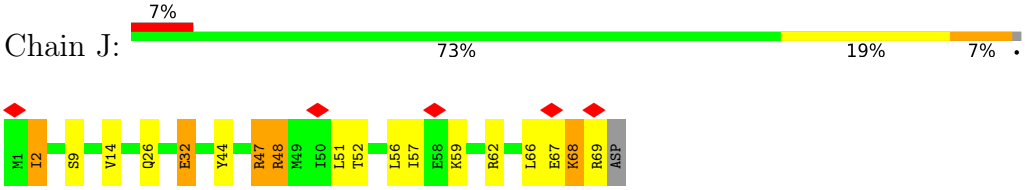
• Molecule 9: DNA-directed RNA polymerase I subunit RPA12

Chain I:



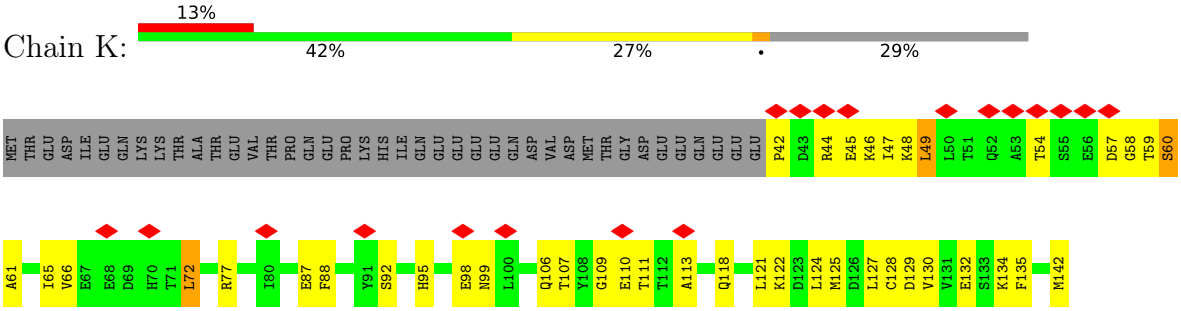
• Molecule 10: DNA-directed RNA polymerases I, II, and III subunit RPABC5

Chain J:



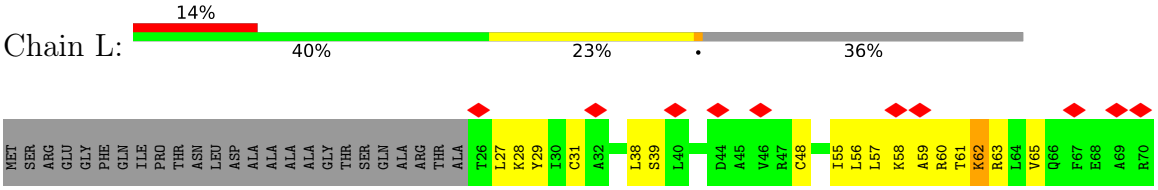
• Molecule 11: DNA-directed RNA polymerases I and III subunit RPAC2

Chain K:



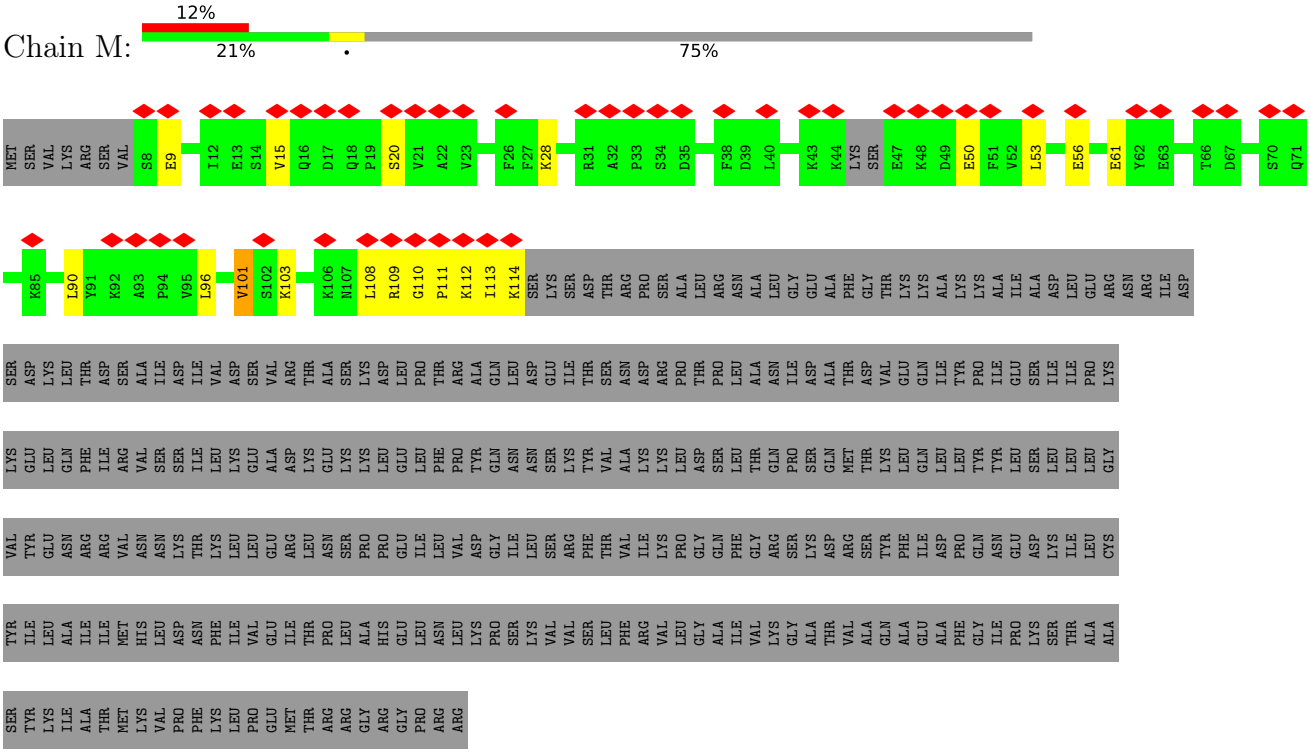
• Molecule 12: DNA-directed RNA polymerases I, II, and III subunit RPABC4

Chain L:



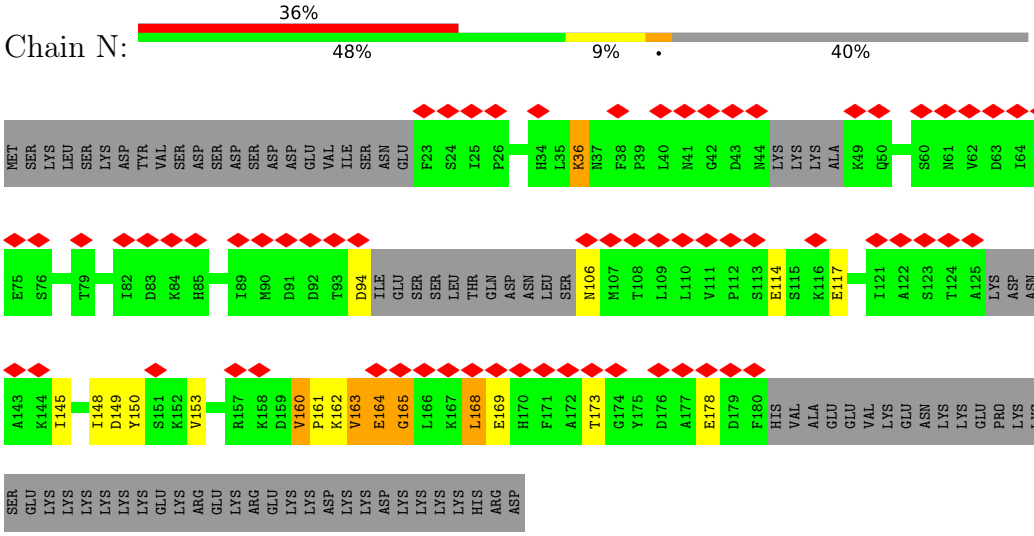
• Molecule 13: DNA-directed RNA polymerase I subunit RPA49

Chain M:



• Molecule 14: DNA-directed RNA polymerase I subunit RPA34

Chain N:


36%
48%
9%
40%
MET SER LYS LEU SER LYS ASP TYR VAL SER ASP SER ASP SER ASP ASP GLU VAL ILE SER ASN GLU F23 S24 I25 P26 H34 L35 K36 N37 F38 P39 L40 N41 G42 D43 N44 LYS LYS LYS ALA K49 Q50 S60 N61 V62 D63 I64 S65 K66 L67 K68 S69 L70 P71 V72 D73 F74
E75 S76 T79 I82 D83 K84 H85 I89 M90 D91 D92 T93 D94 ILE GLU SER SER LEU THR GLN ASP ASN LEU SER N106 M107 T108 L109 L110 V111 P112 S113 E114 S115 K116 E117 I121 A122 S123 T124 A125 LYS ASP ASN ALA P130 L131 Q132 F133 D134 S138 V139 S140 E141 T142
A143 K144 I145 I148 D149 Y150 S151 K152 V153 R157 K158 D159 V160 P161 K162 V163 E164 G165 L166 K167 L168 E169 H170 F171 A172 T173 G174 Y175 D176 A177 E178 D179 F180 HIS VAL ALA GLU GLU VAL LYS GLU ASN LYS LYS GLU PRO LYS LYS ARG SER HIS HIS ASP ASP GLU GLU GLU SER
SER GLU LYS LYS LYS LYS LYS LYS GLU LYS ARG GLU LYS ARG GLU LYS LYS ASP LYS LYS ASP LYS LYS LYS LYS HIS ARG ASP

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	122348	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	68.0	Depositor
Minimum defocus (nm)	1900.0	Depositor
Maximum defocus (nm)	4200.0	Depositor
Magnification	79096	Depositor
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.408	Depositor
Minimum map value	-0.180	Depositor
Average map value	0.005	Depositor
Map value standard deviation	0.024	Depositor
Recommended contour level	0.14	Depositor
Map size (Å)	286.74, 286.74, 286.74	wwPDB
Map dimensions	162, 162, 162	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.77, 1.77, 1.77	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
1	A	0.40	1/11408 (0.0%)	0.57	3/15405 (0.0%)
2	B	0.39	1/9062 (0.0%)	0.59	2/12249 (0.0%)
3	C	0.42	0/2469	0.62	2/3347 (0.1%)
4	D	0.37	0/135	0.62	0/188
5	E	0.40	0/1795	0.55	0/2416
6	F	0.39	0/838	0.54	0/1129
7	G	0.40	0/725	0.60	0/990
8	H	0.39	0/1090	0.57	0/1476
9	I	0.37	0/478	0.53	0/647
10	J	0.40	0/578	0.62	0/775
11	K	0.38	0/803	0.57	0/1083
12	L	0.35	0/361	0.56	0/478
13	M	0.38	0/846	0.53	0/1136
14	N	0.44	0/1124	0.56	2/1512 (0.1%)
All	All	0.40	2/31712 (0.0%)	0.58	9/42831 (0.0%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1181	PRO	N-CD	5.30	1.55	1.47
2	B	693	PRO	N-CD	5.26	1.55	1.47

The worst 5 of 9 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C	220	SER	C-N-CD	6.06	141.13	128.40
1	A	1501	ILE	C-N-CD	6.05	141.12	128.40
3	C	75	VAL	C-N-CD	6.04	141.09	128.40
14	N	160	VAL	C-N-CD	6.04	141.07	128.40
1	A	507	TYR	C-N-CD	6.03	141.07	128.40

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	11207	0	11249	527	0
2	B	8868	0	8734	466	0
3	C	2418	0	2401	145	0
4	D	133	0	138	5	0
5	E	1759	0	1788	14	0
6	F	823	0	841	28	0
7	G	706	0	721	59	0
8	H	1072	0	1042	15	0
9	I	472	0	473	9	0
10	J	569	0	585	58	0
11	K	792	0	790	93	0
12	L	359	0	384	17	0
13	M	831	0	820	19	0
14	N	1103	0	1106	27	0
15	A	2	0	0	0	0
15	B	1	0	0	0	0
15	I	1	0	0	0	0
15	J	1	0	0	0	0
15	L	1	0	0	2	0
All	All	31118	0	31072	1011	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 16.

The worst 5 of 1011 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)
2:B:697:LEU:HD11	2:B:984:TRP:CH2	1.23	1.65
2:B:697:LEU:HD11	2:B:984:TRP:CZ3	1.31	1.59
1:A:5:LYS:CB	2:B:1100:GLN:NE2	1.67	1.57
1:A:1660:VAL:CG2	7:G:105:ILE:HG23	1.10	1.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:37:LYS:HG3	11:K:134:LYS:CE	1.33	1.55

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	1394/1664 (84%)	1309 (94%)	76 (6%)	9 (1%)	25 65
2	B	1099/1203 (91%)	1020 (93%)	73 (7%)	6 (0%)	29 68
3	C	300/380 (79%)	273 (91%)	24 (8%)	3 (1%)	15 54
4	D	16/137 (12%)	14 (88%)	2 (12%)	0	100 100
5	E	213/215 (99%)	202 (95%)	11 (5%)	0	100 100
6	F	98/155 (63%)	96 (98%)	2 (2%)	0	100 100
7	G	85/326 (26%)	80 (94%)	5 (6%)	0	100 100
8	H	130/146 (89%)	119 (92%)	10 (8%)	1 (1%)	19 60
9	I	62/125 (50%)	53 (86%)	8 (13%)	1 (2%)	9 44
10	J	67/70 (96%)	62 (92%)	5 (8%)	0	100 100
11	K	99/142 (70%)	91 (92%)	6 (6%)	2 (2%)	7 39
12	L	43/70 (61%)	38 (88%)	5 (12%)	0	100 100
13	M	101/415 (24%)	93 (92%)	8 (8%)	0	100 100
14	N	131/233 (56%)	114 (87%)	15 (12%)	2 (2%)	10 46
All	All	3838/5281 (73%)	3564 (93%)	250 (6%)	24 (1%)	29 65

5 of 24 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	652	ASN

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Mol	Chain	Res	Type
1	A	655	SER
1	A	505	LEU
1	A	654	ASP
1	A	1499	ARG

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	1250/1465 (85%)	1184 (95%)	66 (5%)	22 49
2	B	973/1053 (92%)	876 (90%)	97 (10%)	7 28
3	C	269/334 (80%)	243 (90%)	26 (10%)	8 29
4	D	16/116 (14%)	11 (69%)	5 (31%)	0 2
5	E	197/197 (100%)	192 (98%)	5 (2%)	47 68
6	F	90/137 (66%)	86 (96%)	4 (4%)	28 53
7	G	80/291 (28%)	75 (94%)	5 (6%)	18 44
8	H	116/128 (91%)	111 (96%)	5 (4%)	29 54
9	I	56/110 (51%)	48 (86%)	8 (14%)	3 17
10	J	64/65 (98%)	57 (89%)	7 (11%)	6 25
11	K	91/130 (70%)	83 (91%)	8 (9%)	10 33
12	L	40/57 (70%)	37 (92%)	3 (8%)	13 39
13	M	94/371 (25%)	89 (95%)	5 (5%)	22 49
14	N	128/220 (58%)	118 (92%)	10 (8%)	12 38
All	All	3464/4674 (74%)	3210 (93%)	254 (7%)	18 40

5 of 254 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	B	542	LEU
10	J	2	ILE
2	B	897	GLU

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Mol	Chain	Res	Type
9	I	53	ASP
12	L	27	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 54 such sidechains are listed below:

Mol	Chain	Res	Type
2	B	646	HIS
2	B	975	HIS
11	K	95	HIS
2	B	683	ASN
2	B	724	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

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

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

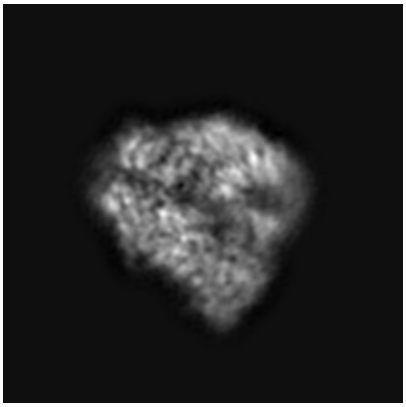
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-4088. These allow visual inspection of the internal detail of the map and identification of artifacts.

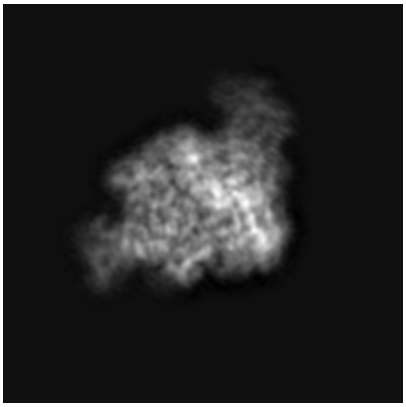
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

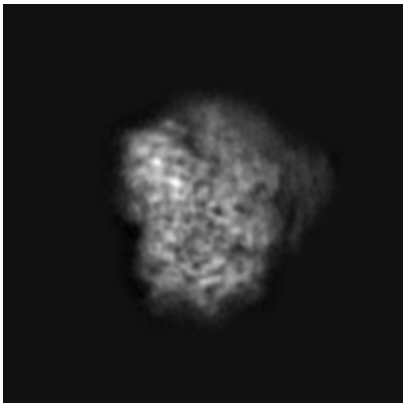
6.1.1 Primary map



X



Y

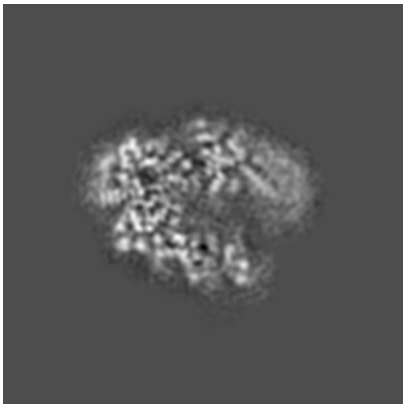


Z

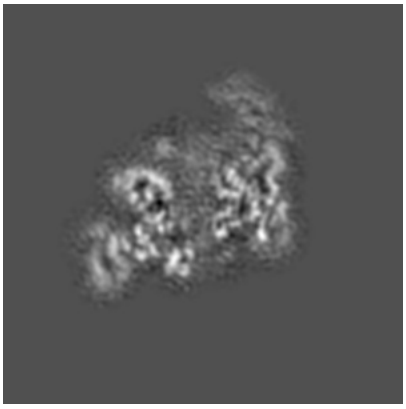
The images above show the map projected in three orthogonal directions.

6.2 Central slices

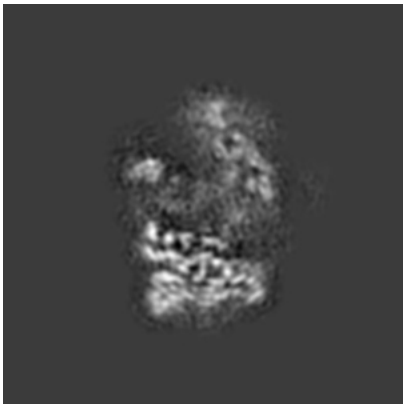
6.2.1 Primary map



X Index: 81



Y Index: 81

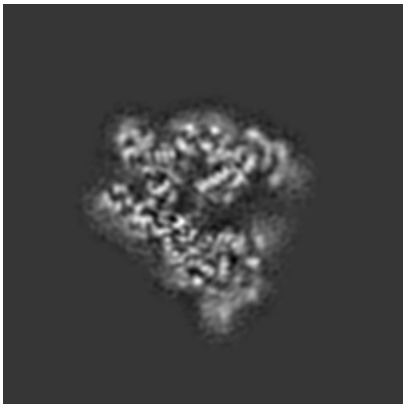


Z Index: 81

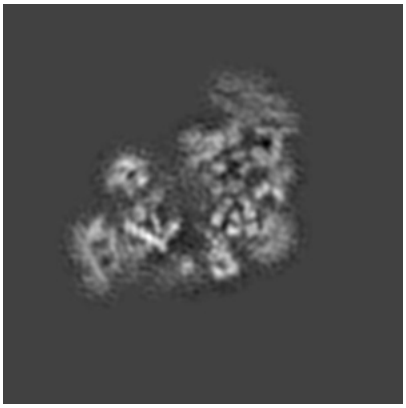
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

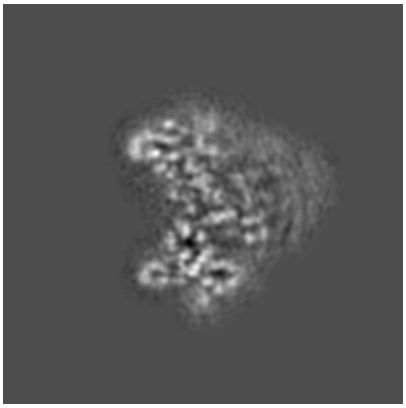
6.3.1 Primary map



X Index: 69



Y Index: 89

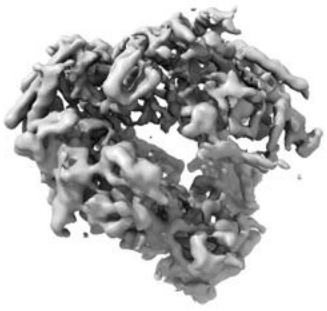


Z Index: 98

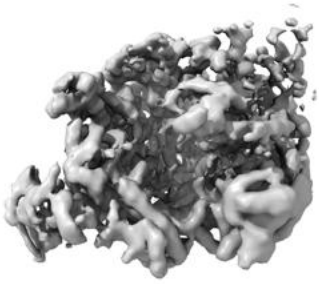
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views (i)

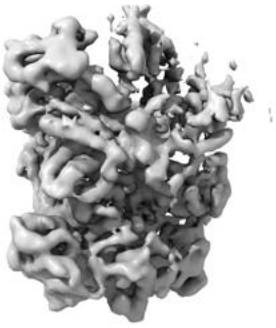
6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.14. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

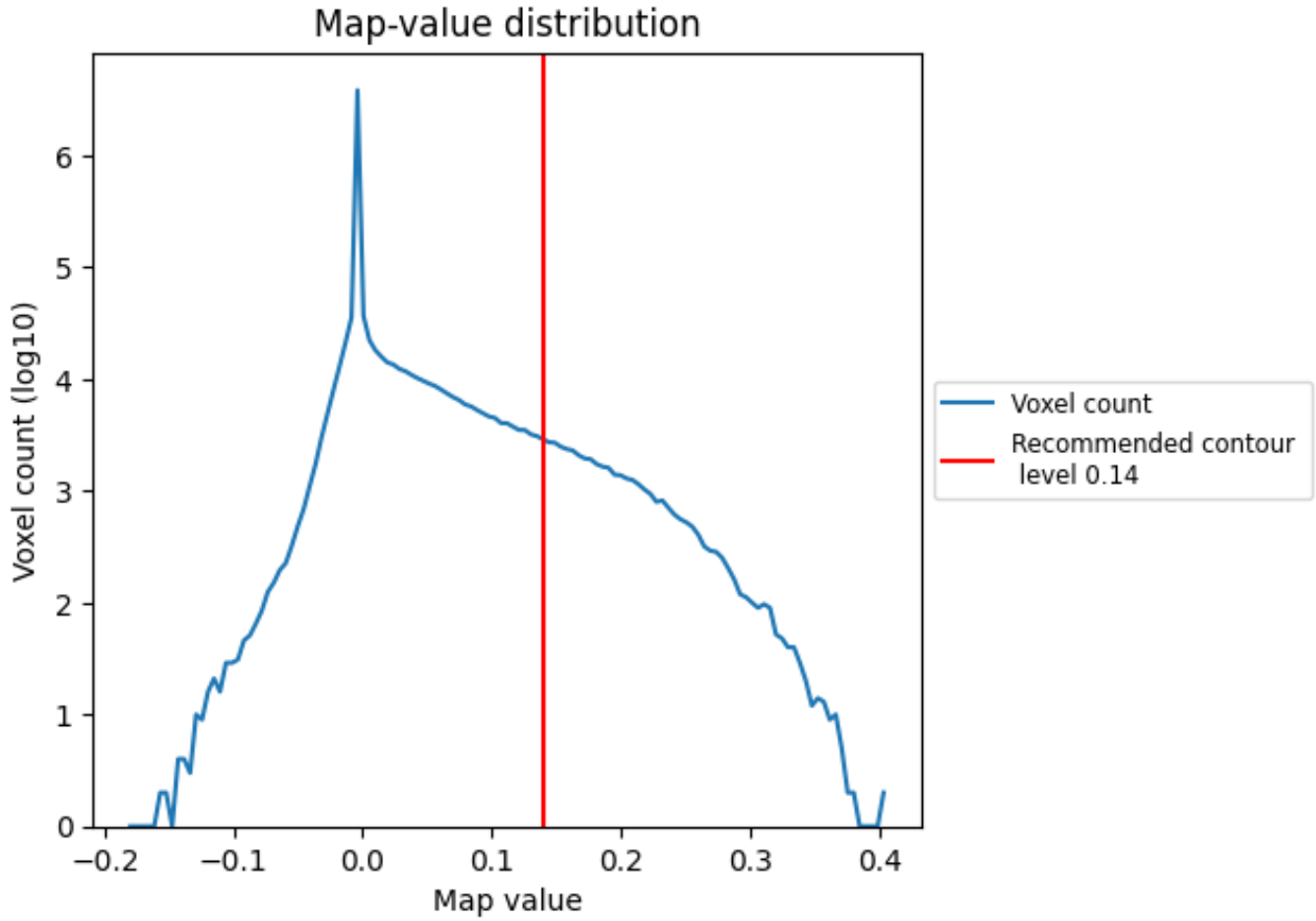
6.5 Mask visualisation (i)

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

7 Map analysis

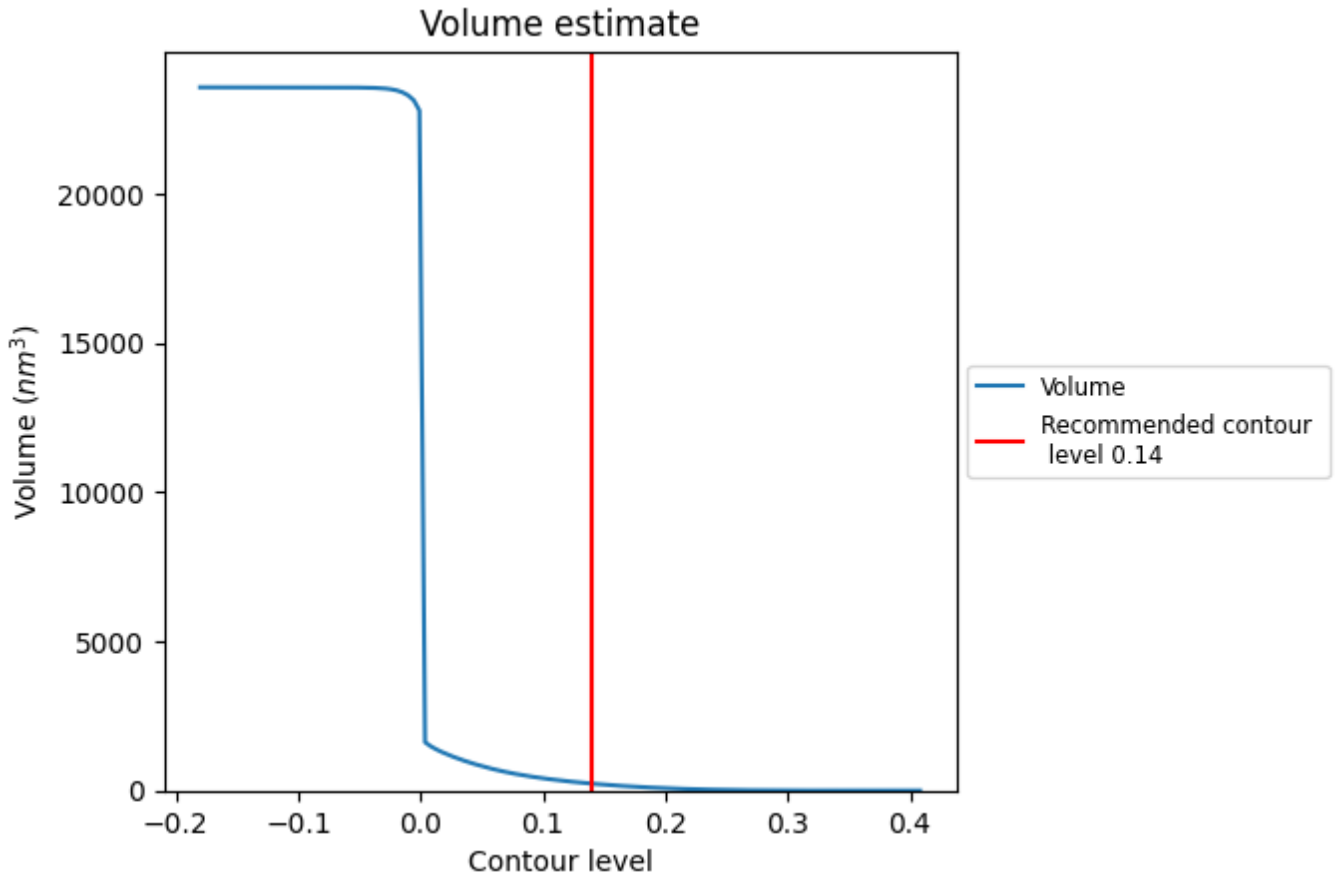
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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.

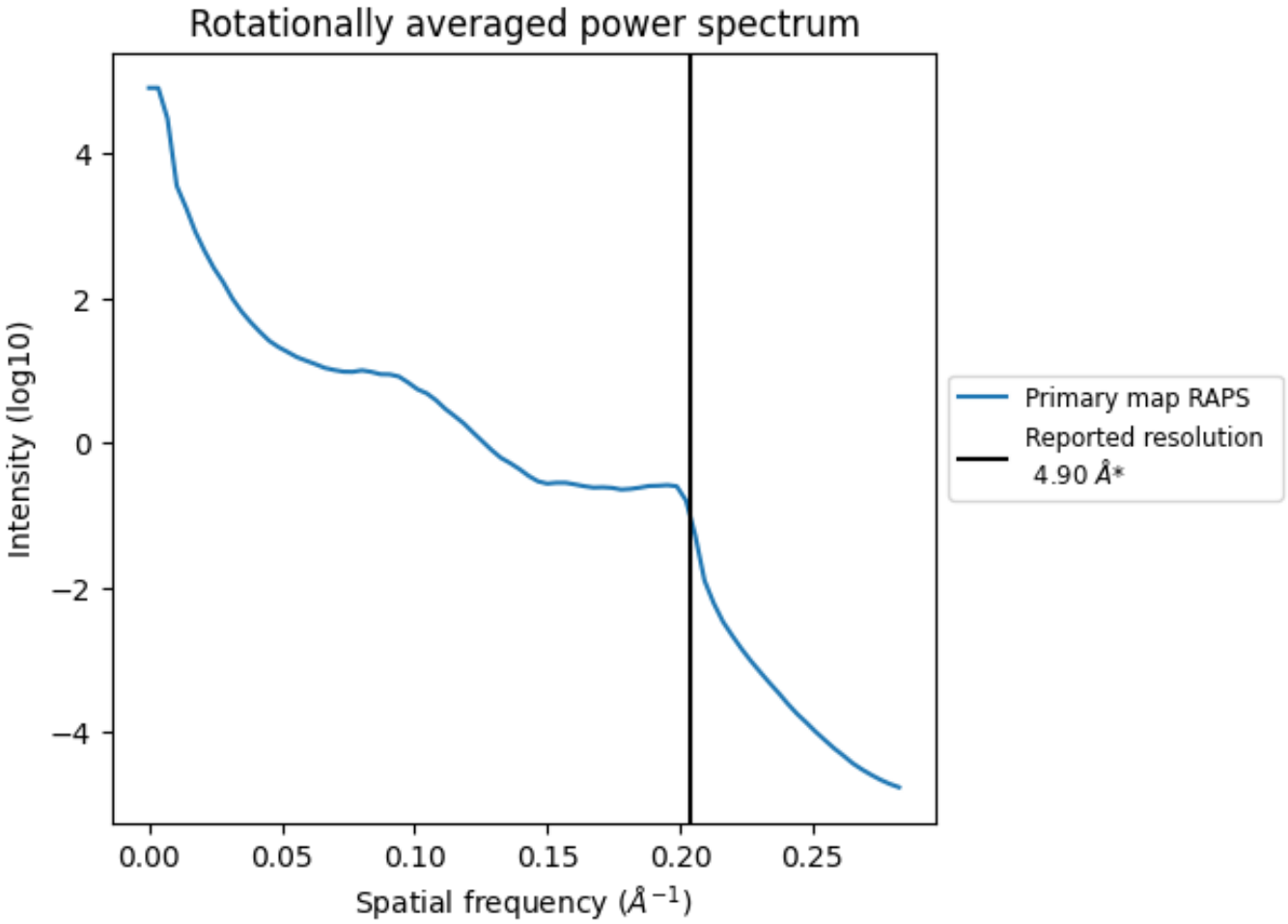
7.2 Volume estimate (i)



The volume at the recommended contour level is 233 nm^3; this corresponds to an approximate mass of 210 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 0.204 Å^{-1}

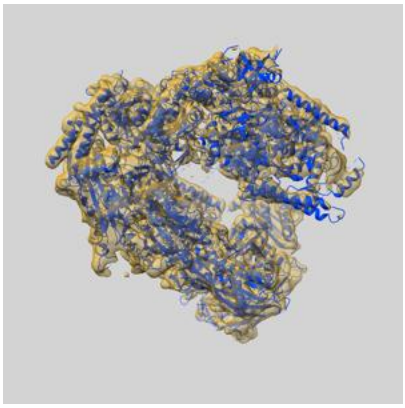
8 Fourier-Shell correlation (i)

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

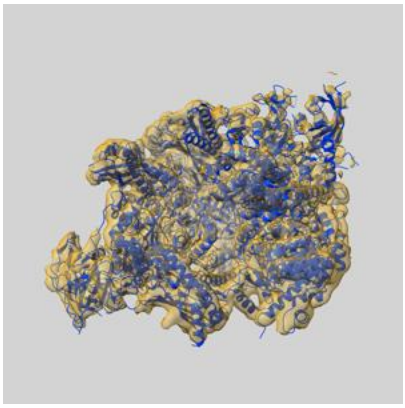
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-4088 and PDB model 5LMX. Per-residue inclusion information can be found in section 3 on page 7.

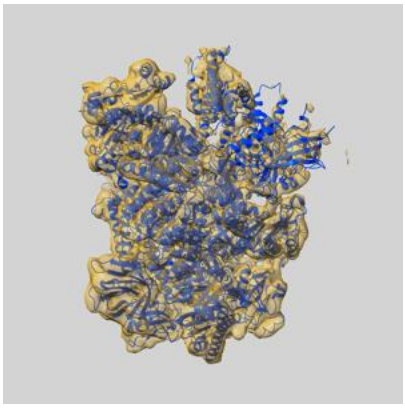
9.1 Map-model overlay



X



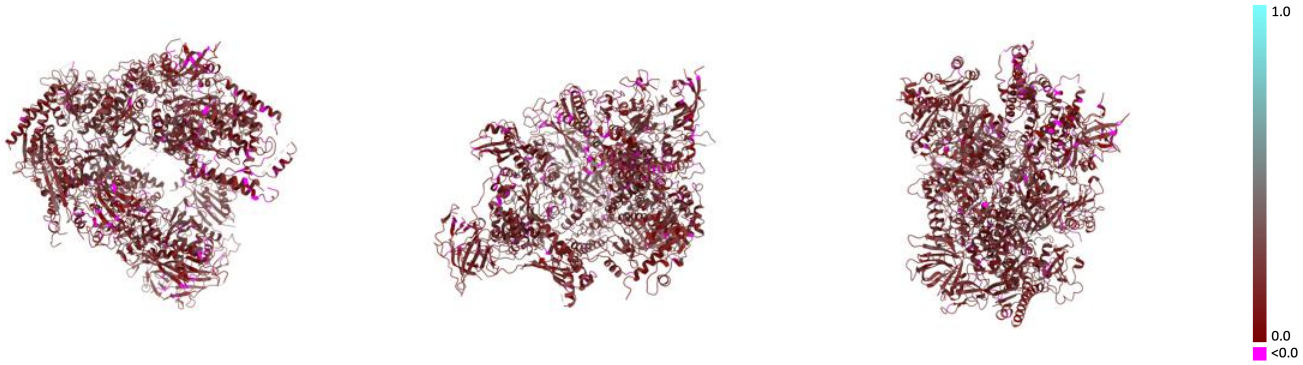
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.14 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.

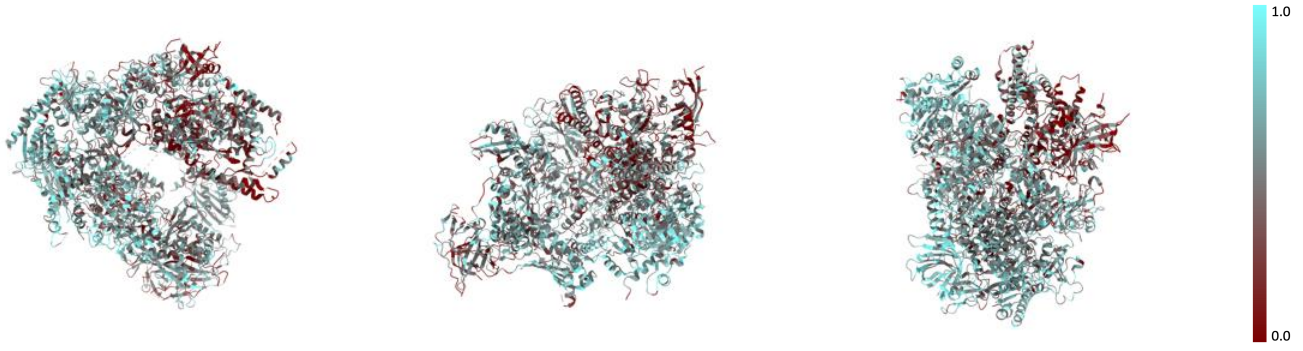
9.2 Q-score mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according 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.

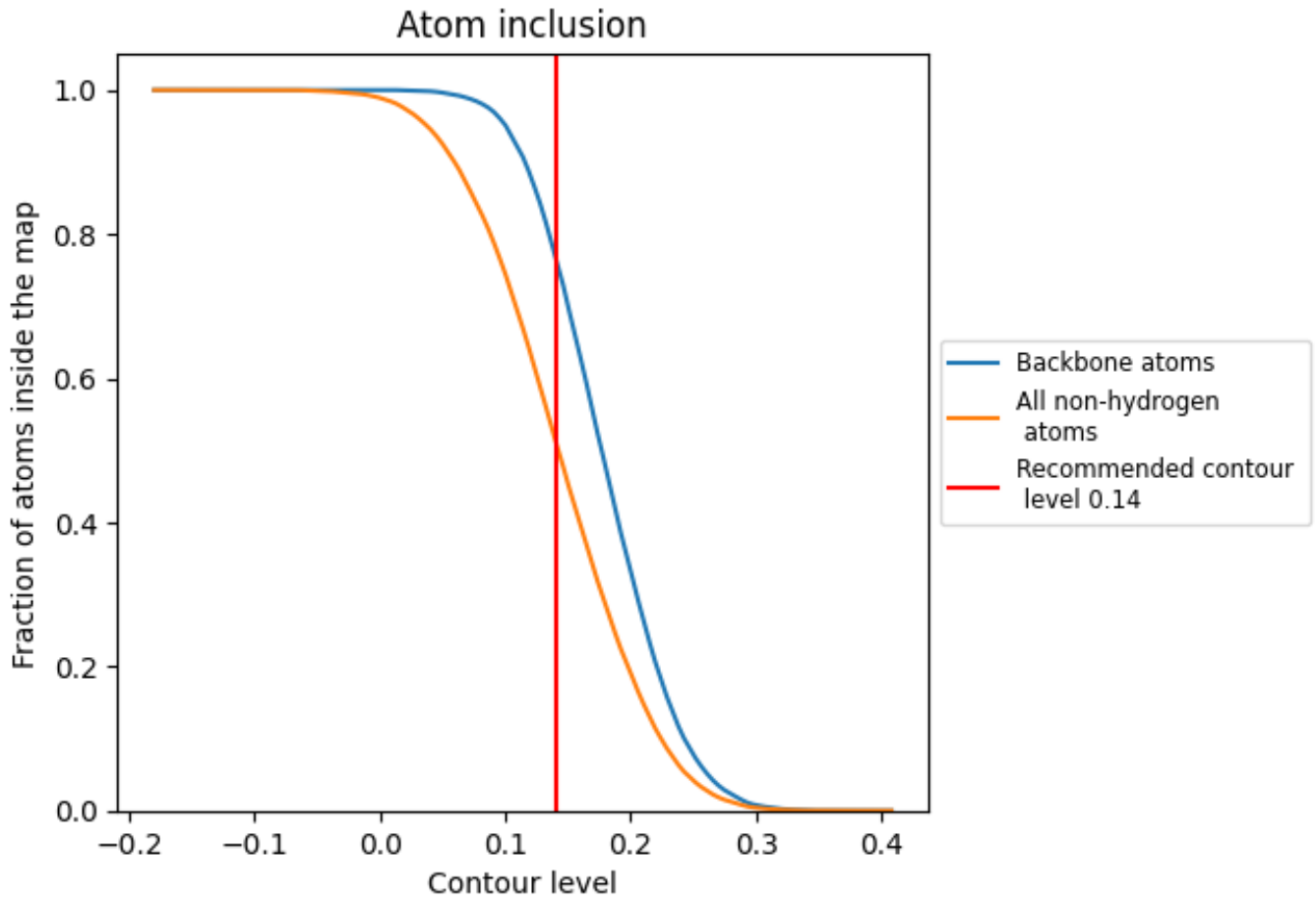
9.3 Atom inclusion mapped to coordinate model



X Y Z

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 (0.14).

9.4 Atom inclusion (i)



At the recommended contour level, 77% of all backbone atoms, 51% 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 (0.14) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.5134	0.1830
A	0.4848	0.1820
B	0.5162	0.1770
C	0.6411	0.2020
D	0.1203	0.2100
E	0.6556	0.1840
F	0.4831	0.1910
G	0.2712	0.1830
H	0.6791	0.2120
I	0.4894	0.1950
J	0.6159	0.1980
K	0.5900	0.1840
L	0.5620	0.1250
M	0.4037	0.1460
N	0.3160	0.1800