wwPDB EM Validation Summary Report (i)

Dec 26, 2024 – 04:10 AM EST

PDB ID	:	5IY6
EMDB ID	:	EMD-3307
Title	:	Human holo-PIC in the closed state
Authors	:	He, Y.; Yan, C.; Fang, J.; Inouye, C.; Tjian, R.; Ivanov, I.; Nogales, E.
Deposited on	:	2016-03-24
Resolution	:	7.20 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 (i) 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 (i)) were used in the production of this report:

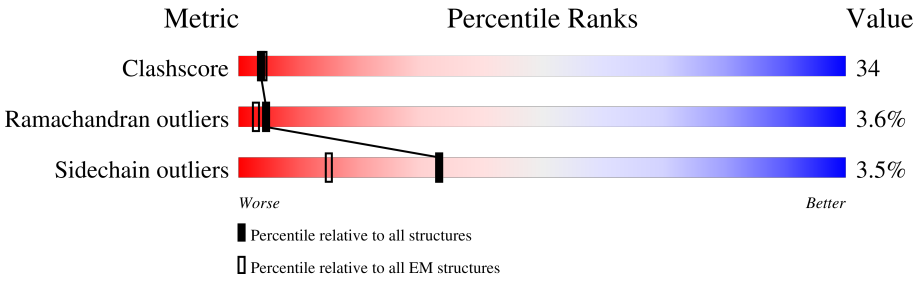
EMDB validation analysis	:	0.0.1.dev113
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.40

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 7.20 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	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	1970	24% 41% 31% • 26%
2	B	1174	22% 50% 46% • •
3	C	275	10% 46% 50% •
4	D	142	21% 65% 26% 9%
5	E	210	22% 50% 46% • •
6	F	127	15% 35% 32% • 32%
7	G	172	18% 65% 32% • •
8	H	150	18% 47% 46% 6% •

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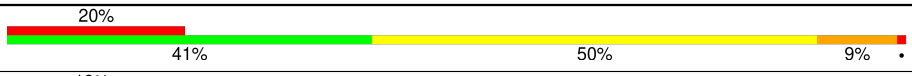
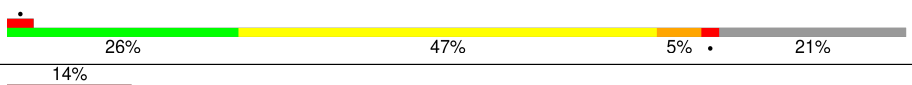
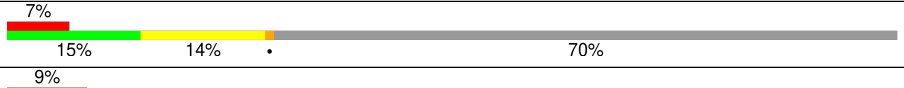
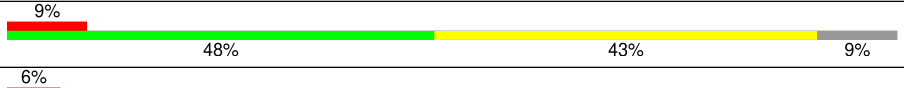
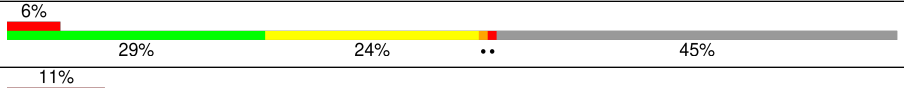
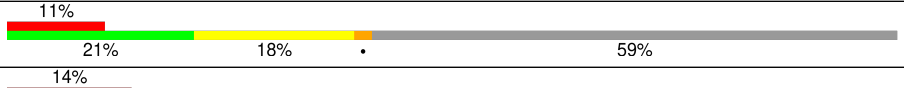
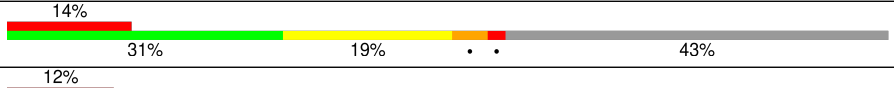
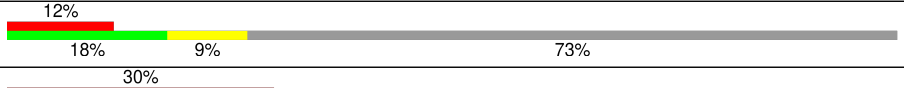
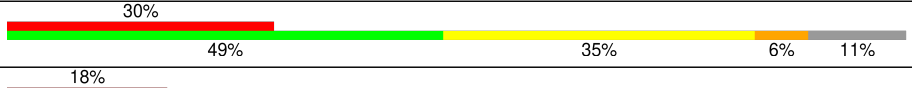
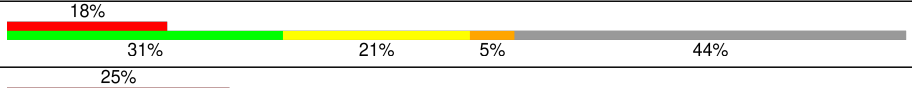
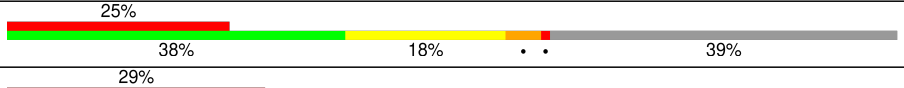
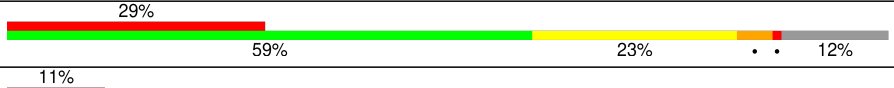
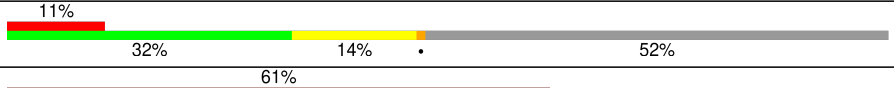
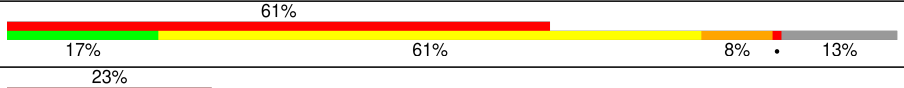
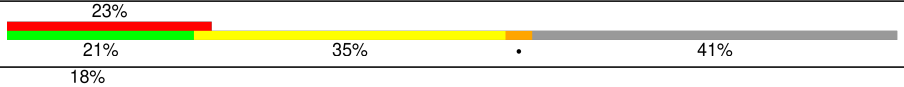
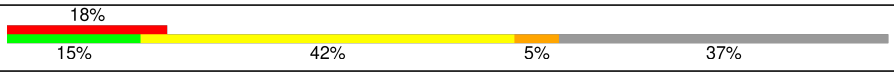
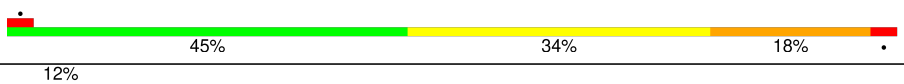
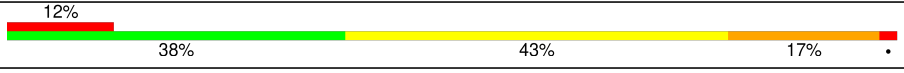
Mol	Chain	Length	Quality of chain
9	I	125	
10	J	67	
11	K	117	
12	L	58	
13	M	316	
14	N	376	
15	O	109	
16	P	339	
17	Q	439	
18	R	291	
19	S	517	
20	T	249	
21	U	301	
22	V	782	
23	W	760	
24	0	395	
25	1	71	
26	2	462	
27	3	308	
28	X	65	
29	Y	65	

2 Entry composition (i)

There are 31 unique types of molecules in this entry. The entry contains 61839 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 II subunit RPB1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1454	11515	7234	2058	2150	73	0	0

- Molecule 2 is a protein called DNA-directed RNA polymerase II subunit RPB2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	1165	9317	5878	1637	1738	64	0	0

- Molecule 3 is a protein called DNA-directed RNA polymerase II subunit RPB3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	275	2213	1386	380	440	7	0	0

- Molecule 4 is a protein called DNA-directed RNA polymerase II subunit RPB4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	129	1062	665	179	214	4	0	0

- Molecule 5 is a protein called DNA-directed RNA polymerase II subunit RPB5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	E	210	1723	1088	301	325	9	0	0

- Molecule 6 is a protein called DNA-directed RNA polymerase II subunit RPB6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	F	86	689	437	120	127	5	0	0

- Molecule 7 is a protein called DNA-directed RNA polymerase II subunit RPB7.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	171	Total	C	N	O	S	0	0
			1351	875	219	249	8		

- Molecule 8 is a protein called DNA-directed RNA polymerase II subunit RPB8.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	150	Total	C	N	O	S	0	0
			1205	764	196	239	6		

- Molecule 9 is a protein called DNA-directed RNA polymerase II subunit RPB9.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	125	Total	C	N	O	S	0	0
			1013	626	177	198	12		

- Molecule 10 is a protein called DNA-directed RNA polymerase II subunit RPB10.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	J	67	Total	C	N	O	S	0	0
			533	345	90	92	6		

- Molecule 11 is a protein called DNA-directed RNA polymerase II subunit RPB11-a.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	117	Total	C	N	O	S	0	0
			937	604	154	177	2		

- Molecule 12 is a protein called DNA-directed RNA polymerase II subunit RPB12.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	L	46	Total	C	N	O	S	0	0
			388	241	75	66	6		

- Molecule 13 is a protein called Transcription initiation factor IIB.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	M	260	Total	C	N	O	S	0	0
			2018	1265	360	376	17		

- Molecule 14 is a protein called Transcription initiation factor IIA subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	113	Total	C	N	O	S	0	0
			930	585	152	189	4		

- Molecule 15 is a protein called Transcription initiation factor IIA subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	O	99	Total	C	N	O	S	0	0
			806	510	142	151	3		

- Molecule 16 is a protein called TATA-box-binding protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	P	185	Total	C	N	O	S	0	0
			1462	946	257	252	7		

- Molecule 17 is a protein called General transcription factor IIE subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	Q	180	Total	C	N	O	S	0	0
			1484	938	262	273	11		

- Molecule 18 is a protein called Transcription initiation factor IIE subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	R	165	Total	C	N	O	S	0	0
			1357	865	235	253	4		

- Molecule 19 is a protein called General transcription factor IIF subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	S	138	Total	C	N	O	S	0	0
			1138	719	208	208	3		

- Molecule 20 is a protein called General transcription factor IIF subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	T	222	Total	C	N	O	S	0	0
			1788	1127	320	338	3		

- Molecule 21 is a protein called Transcription elongation factor A protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	U	170	Total	C	N	O	S	0	0
			1343	818	247	263	15		

- Molecule 22 is a protein called TFIIH basal transcription factor complex helicase XPB subunit.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	V	475	Total	C	N	O	S	0	0
			3855	2454	663	712	26		

- Molecule 23 is a protein called TFIIH basal transcription factor complex helicase XPD subunit.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	W	665	Total	C	N	O	S	0	0
			5348	3415	932	975	26		

- Molecule 24 is a protein called General transcription factor IIH subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	0	188	Total	C	N	O	S	0	0
			1479	935	258	276	10		

- Molecule 25 is a protein called General transcription factor IIH subunit 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	1	62	Total	C	N	O	S	0	0
			491	317	77	93	4		

- Molecule 26 is a protein called General transcription factor IIH subunit 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	2	274	Total	C	N	O	S	0	0
			2196	1417	377	392	10		

- Molecule 27 is a protein called General transcription factor IIH subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	3	193	Total	C	N	O	S	0	0
			1526	978	252	284	12		

- Molecule 28 is a DNA chain called SCP-X.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	X	65	Total	C	N	O	P	0	0
			1343	633	261	385	64		

- Molecule 29 is a DNA chain called SCP-Y.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	Y	65	Total	C	N	O	P	0	0
			1316	625	236	391	64		

- Molecule 30 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
30	A	1	Total	Mg	0
			1	1	
30	B	1	Total	Mg	0
			1	1	

- Molecule 31 is ZINC ION (three-letter code: ZN) (formula: Zn).

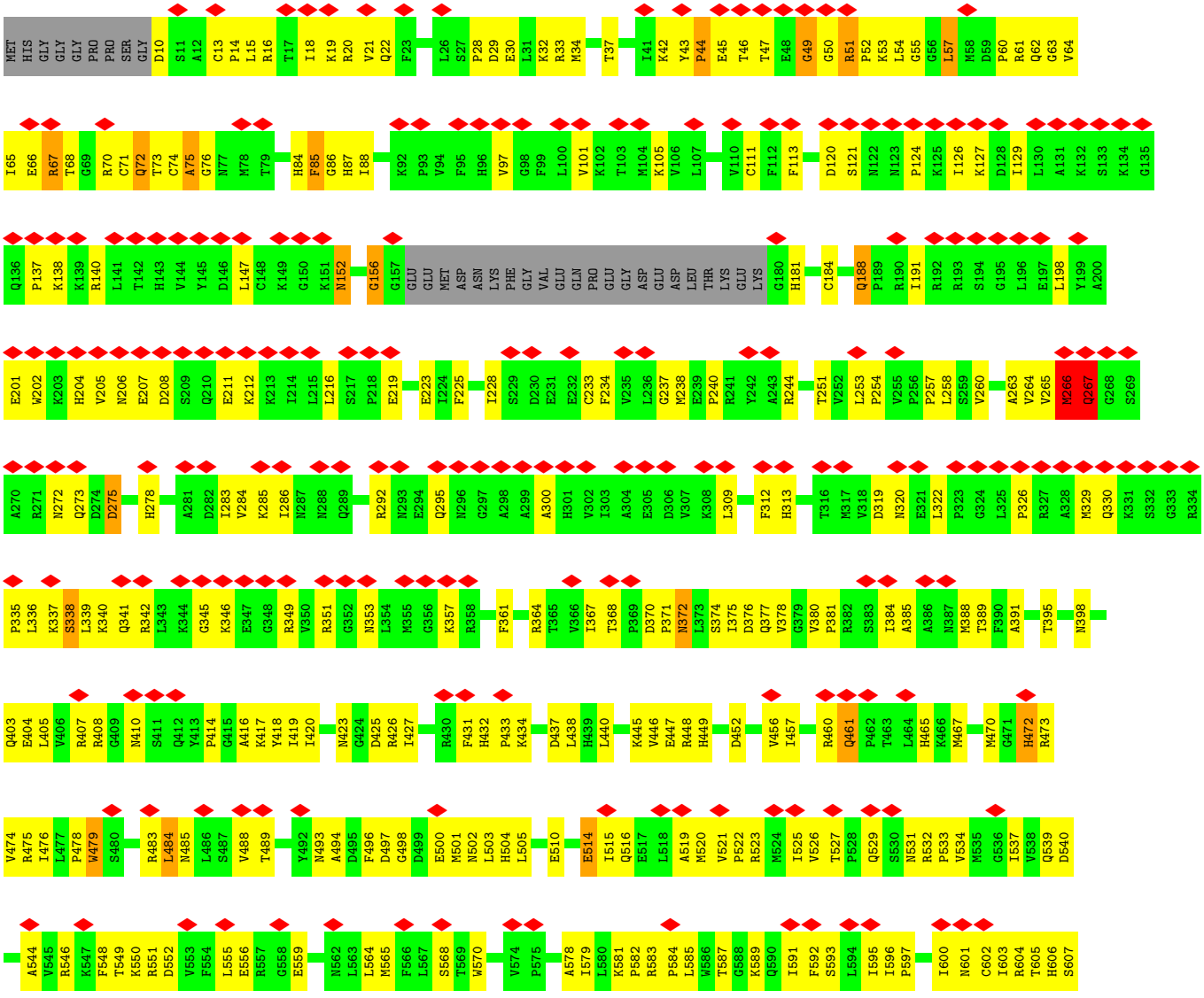
Mol	Chain	Residues	Atoms		AltConf
31	A	2	Total	Zn	0
			2	2	
31	B	1	Total	Zn	0
			1	1	
31	C	1	Total	Zn	0
			1	1	
31	I	2	Total	Zn	0
			2	2	
31	J	1	Total	Zn	0
			1	1	
31	L	1	Total	Zn	0
			1	1	
31	M	1	Total	Zn	0
			1	1	
31	Q	1	Total	Zn	0
			1	1	
31	U	1	Total	Zn	0
			1	1	

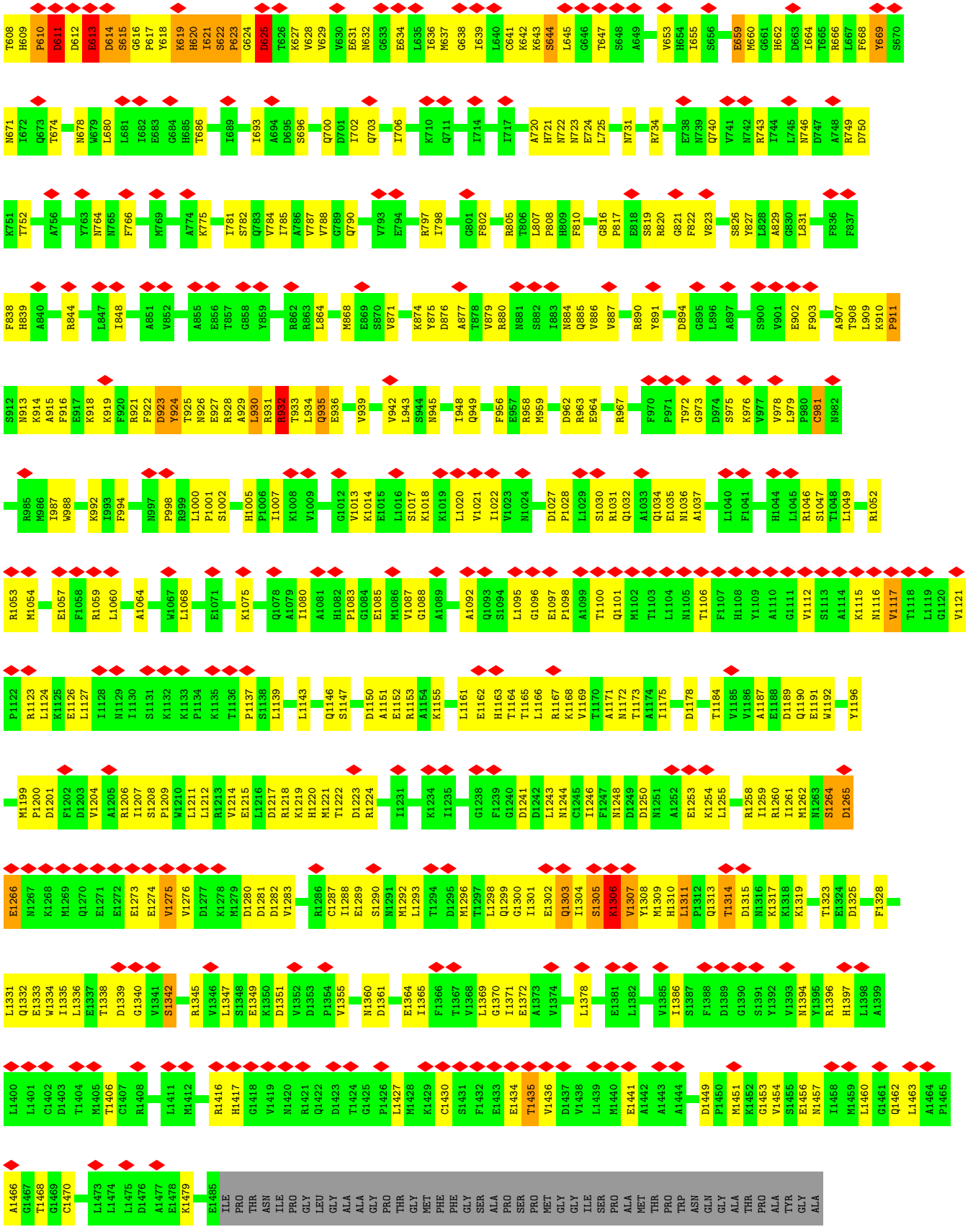
3 Residue-property plots (i)

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 II subunit RPB1

Chain A:

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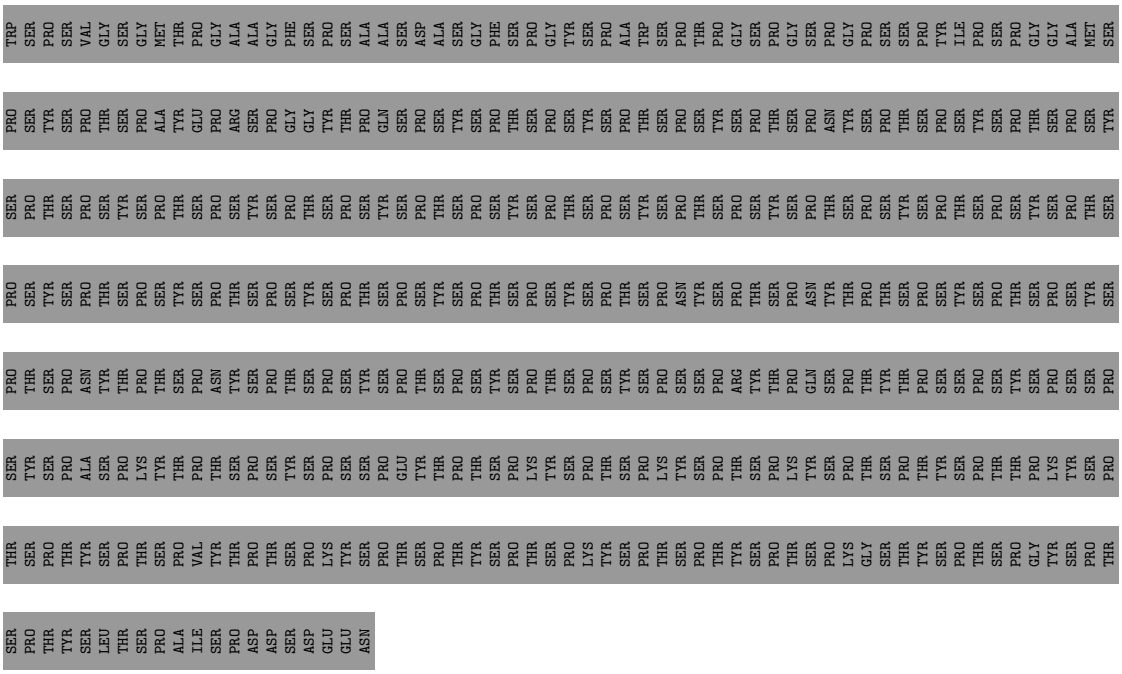
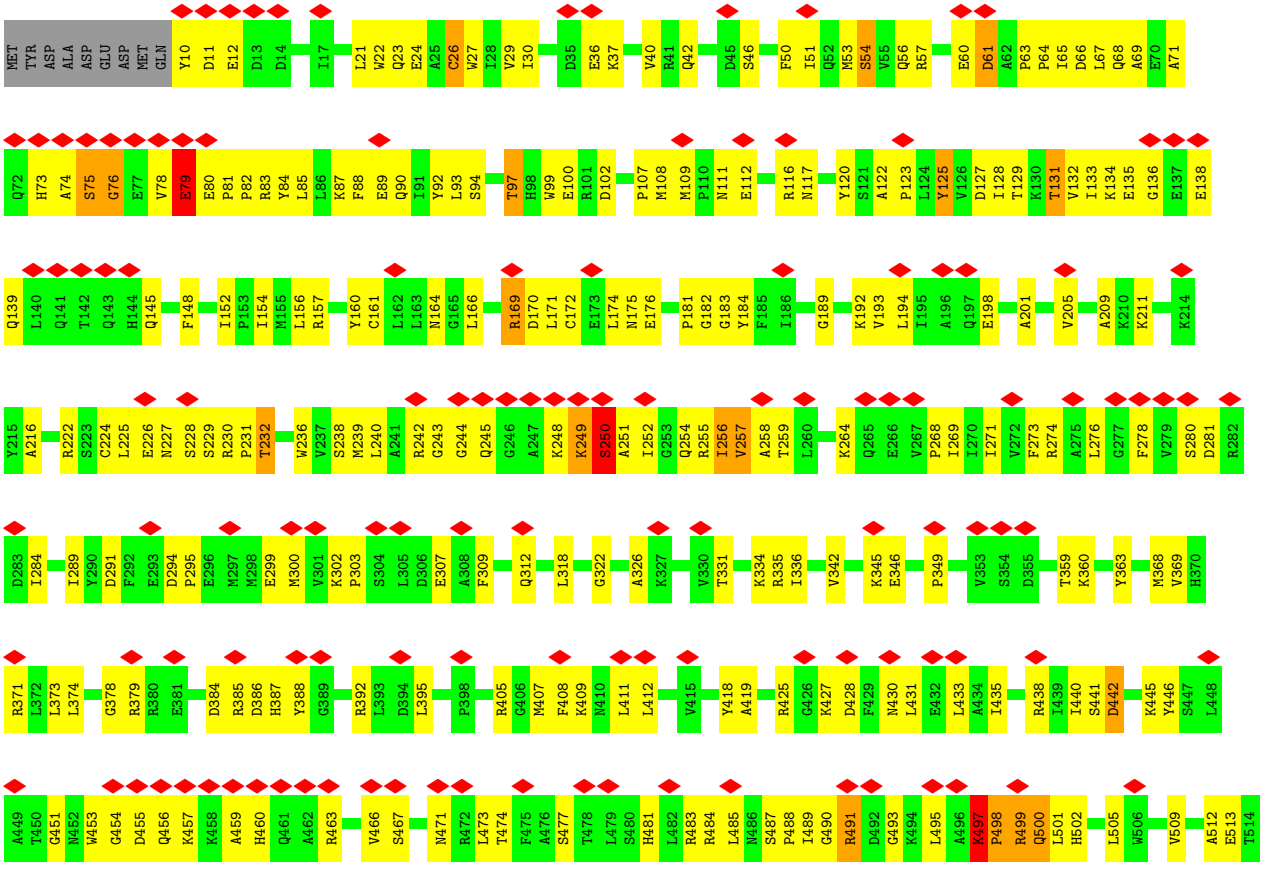
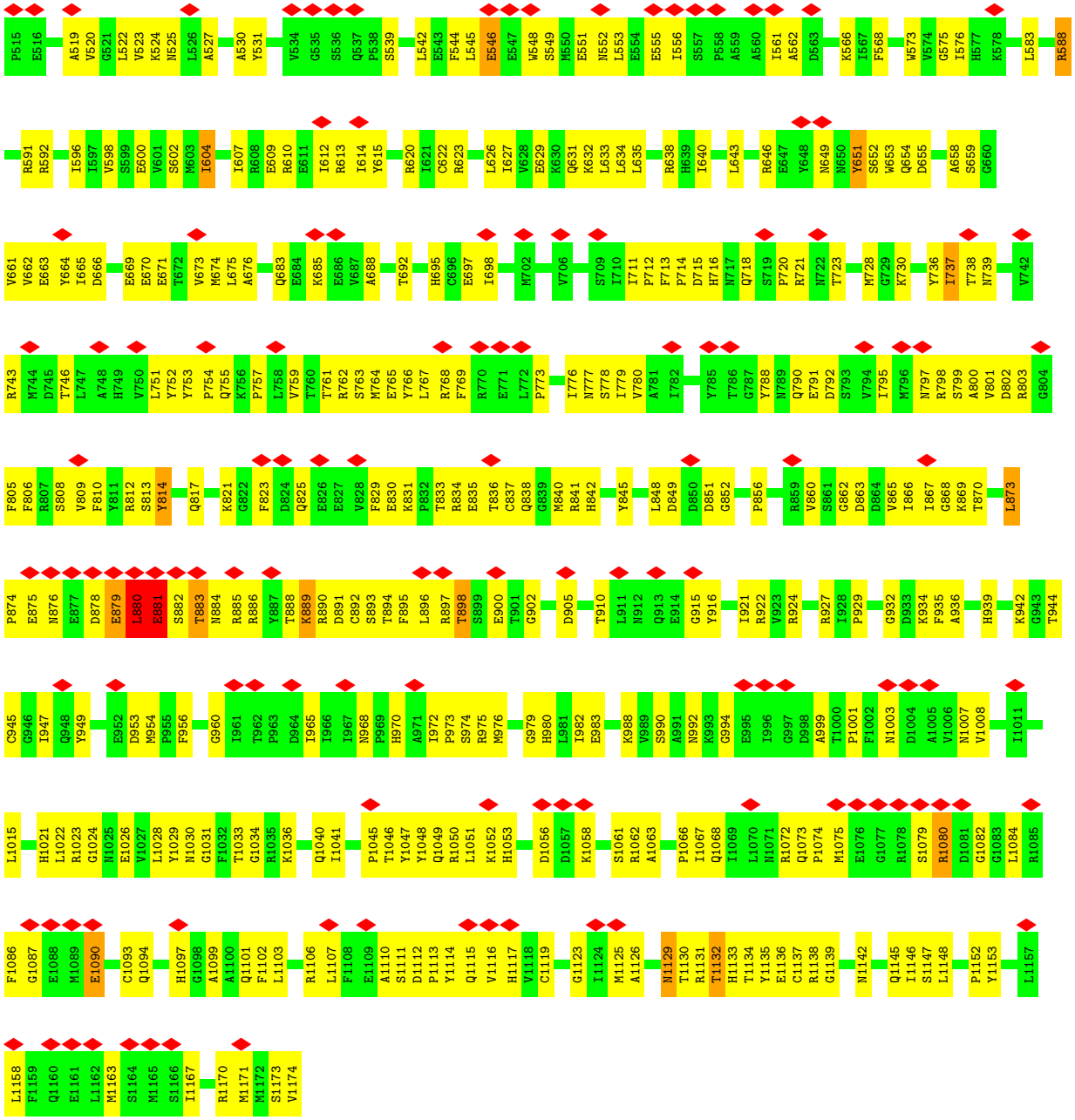
N671 I672 Q673 T674 N678 W679 L680 L681 I682 E683 G684 H685 T686 I689 I693 A694 D695 S696 Q700 D701 I702 Q703 I706 K710 Q711 I714 I717 A720 H721 N722 N723 E724 L725 N731 R734 E738 N739 Q740 V741 N742 R743 I744 L745 N746 D747 A748 R749 D750
K751 T752 A756 Y763 N764 N765 F766 M769 A774 K775 I781 S782 Q783 V784 I785 A786 V787 V788 G789 Q790 V793 E794 R797 I798 G801 F802 R805 T806 L807 P808 H809 F810 G816 P817 E818 S819 R820 G821 F822 V823 S826 Y827 L828 A829 G830 L831 F836 F837
F838 H839 A840 R844 L847 I848 A851 V852 A855 E856 T857 G858 Y859 R862 R863 L864 M868 E869 S870 V871 K874 Y875 D876 A877 T878 V879 R880 N881 S882 I883 N884 Q885 V886 V887 R890 Y891 D894 G895 L896 A897 S900 V901 E902 F903 A907 T908 L909 K910 P911
S912 N913 K914 A915 F916 E917 K918 K919 F920 R921 F922 D923 Y924 T925 N926 E927 R928 A929 L930 R931 R932 T933 L934 Q935 E936 V939 V942 L943 S944 N945 I948 Q949 F956 E957 R958 M959 D962 R963 E964 R967 F970 P971 T972 G973 D974 S975 K976 V977 V978 L979 P980 C981 N982
R985 M986 I987 W988 K992 I993 F994 N997 P998 R999 L1000 P1001 S1002 H1005 P1006 I1007 K1008 V1009 G1012 V1013 K1014 E1015 L1016 S1017 K1018 K1019 L1020 V1021 I1022 V1023 N1024 D1027 P1028 L1029 S1030 R1031 Q1032 A1033 Q1034 E1035 N1036 A1037 L1040 F1041 H1044 L1045 R1046 S1047 T1048 L1049 R1052
R1053 M1054 E1057 F1058 R1059 L1060 A1064 W1067 L1068 E1071 K1075 Q1078 A1079 I1080 A1081 H1082 P1083 G1084 E1085 M1086 V1087 G1088 A1089 A1092 Q1093 S1094 L1095 G1096 E1097 P1098 A1099 T1100 Q1101 M1102 T1103 L1104 N1105 T1106 F1107 H1108 Y1109 A1110 G1111 V1112 S1113 A1114 K1115 N1116 V1117 T1118 L1119 G1120 V1121
P1122 R1123 L1124 K1125 E1126 L1127 I1128 N1129 I1130 S1131 K1132 K1133 P1134 K1135 T1136 P1137 S1138 L1139 L1143 Q1146 S1147 D1150 A1151 E1152 R1153 A1154 K1155 L1161 E1162 H1163 T1164 T1165 L1166 R1167 K1168 V1169 T1170 A1171 N1172 T1173 A1174 I1175 D1178 T1184 V1185 V1186 A1187 E1188 D1189 Q1190 E1191 W1192 Y1196
M1199 P1200 D1201 F1202 D1203 V1204 A1205 R1206 I1207 S1208 P1209 W1210 L1211 L1212 R1213 V1214 E1215 L1216 D1217 R1218 K1219 H1220 M1221 T1222 D1223 R1224 T1231 K1234 I1235 G1238 F1239 G1240 D1241 D1242 L1243 N1244 C1245 I1246 F1247 N1248 D1249 D1250 N1251 A1252 E1253 K1254 L1255 R1258 I1259 R1260 I1261 M1262 N1263 S1264 D1265
E1266 N1267 K1268 M1269 Q1270 E1271 E1272 E1273 E1274 V1275 V1276 D1277 K1278 M1279 D1280 D1281 D1282 V1283 R1286 C1287 I1288 E1289 S1290 N1291 M1292 L1293 T1294 D1295 M1296 T1297 L1298 Q1299 G1300 I1301 E1302 Q1303 I1304 S1305 K1306 V1307 Y1308 M1309 H1310 L1311 P1312 Q1313 T1314 D1315 N1316 K1317 K1318 K1319 T1323 E1324 D1325 F1328
L1331 Q1332 E1333 W1334 I1335 L1336 E1337 T1338 D1339 G1340 V1341 S1342 R1345 V1346 L1347 S1348 E1349 K1350 D1351 V1352 D1353 P1354 V1355 N1360 D1361 E1364 I1365 F1366 T1367 V1368 L1369 G1370 I1371 E1372 A1373 V1374 L1378 E1381 L1382 V1385 I1386 S1387 F1388 D1389 G1390 S1391 Y1392 V1393 N1394 Y1395 R1396 H1397 L1398 A1399
L1400 L1401 C1402 D1403 T1404 M1405 T1406 C1407 R1408 L1411 M1412 R1416 H1417 G1418 V1419 N1420 R1421 Q1422 D1423 T1424 G1425 P1426 L1427 M1428 K1429 C1430 S1431 F1432 E1433 E1434 T1435 V1436 D1437 V1438 L1439 M1440 E1441 A1442 A1443 A1444 D1449 P1450 M1451 K1452 G1453 V1454 S1455 E1456 N1457 I1458 M1459 L1460 G1461 Q1462 L1463 A1464 P1465
A1466 G1467 T1468 G1469 C1470 L1473 L1474 L1475 D1476 A1477 E1478 K1479 E1485 ILE PRO THR ASN ILE PRO GLY LEU GLY ALA ALA GLY PRO THR GLY MET PHE PHE GLY SER ALA PRO SER PRO MET GLY GLY ILE SER PRO ALA MET THR PRO TRP ASN GLN GLY ALA THR PRO ALA TYR GLY ALA



• Molecule 2: DNA-directed RNA polymerase II subunit RPB2

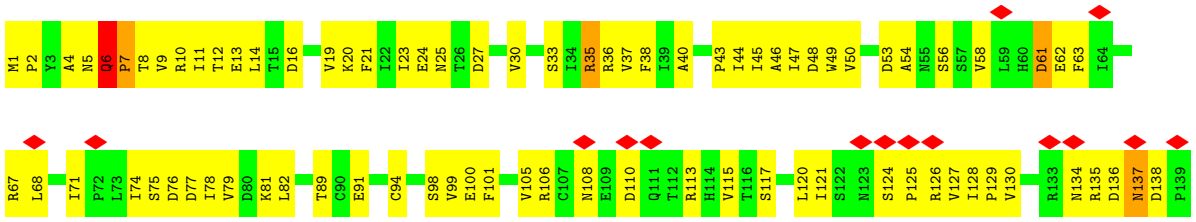
Chain B:

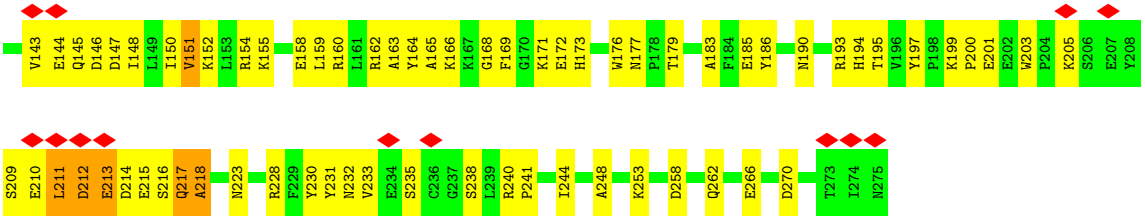




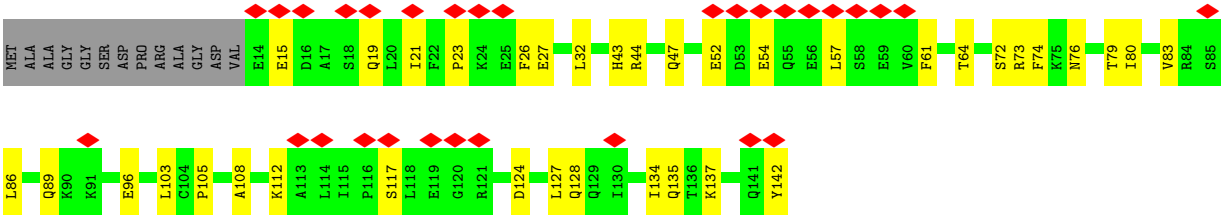
• Molecule 3: DNA-directed RNA polymerase II subunit RPB3

Chain C:

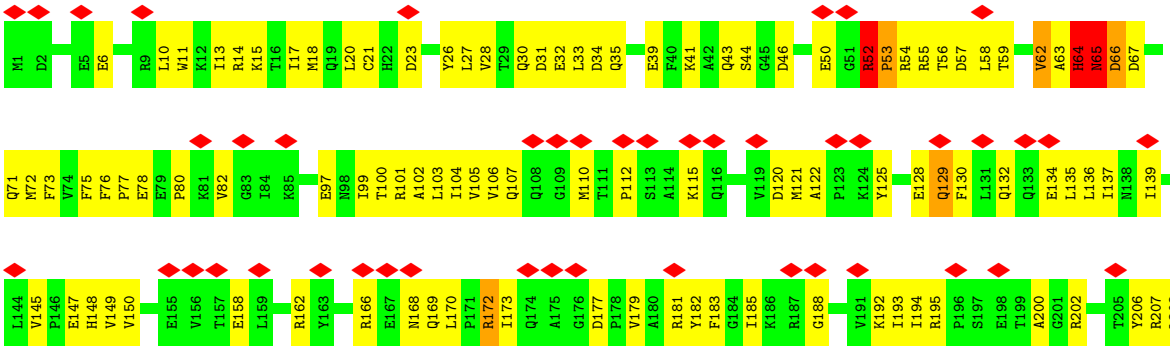




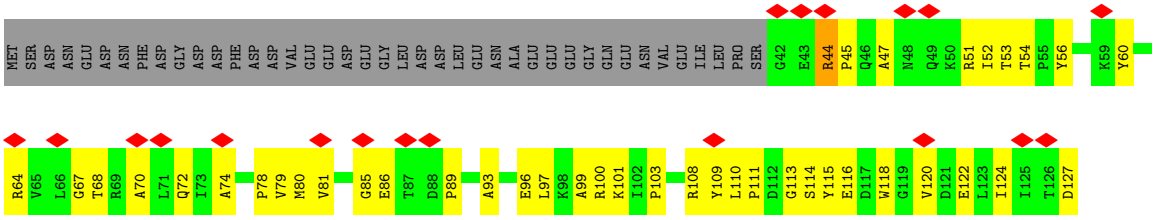
• Molecule 4: DNA-directed RNA polymerase II subunit RPB4



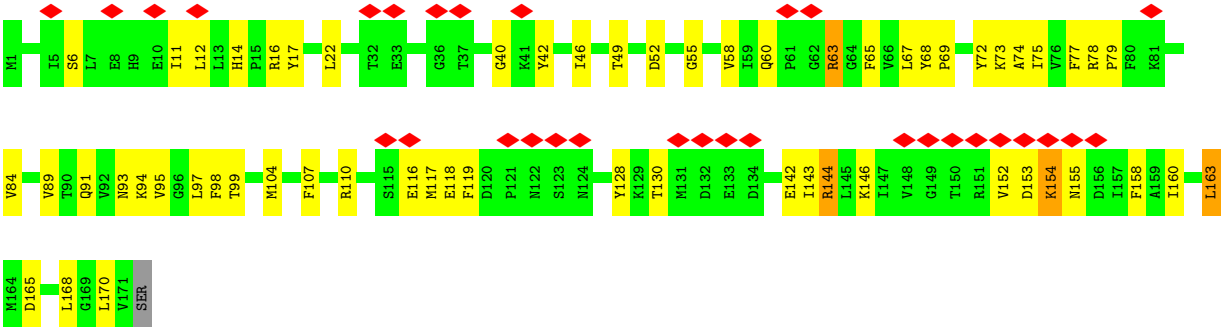
• Molecule 5: DNA-directed RNA polymerase II subunit RPB5



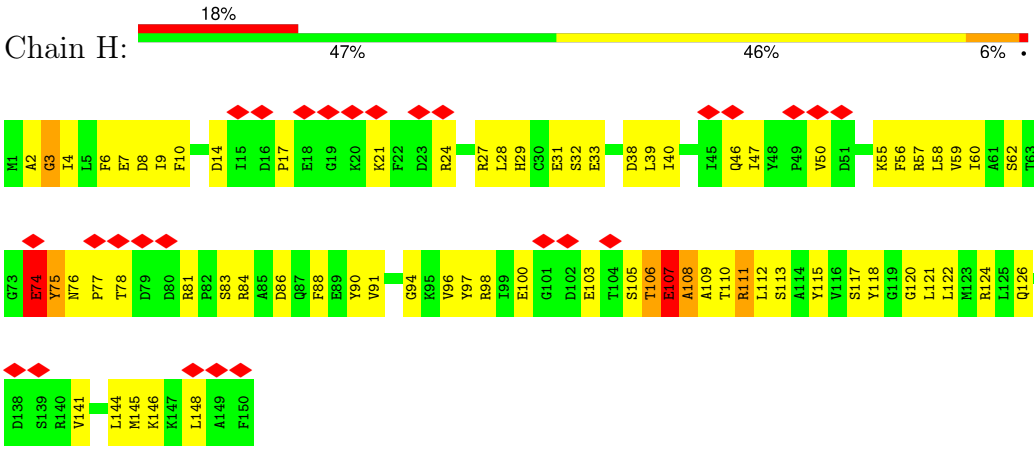
• Molecule 6: DNA-directed RNA polymerase II subunit RPB6



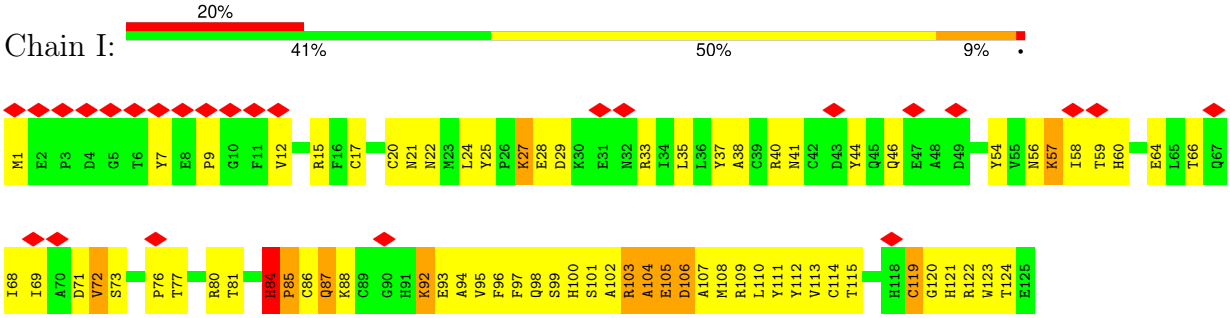
• Molecule 7: DNA-directed RNA polymerase II subunit RPB7



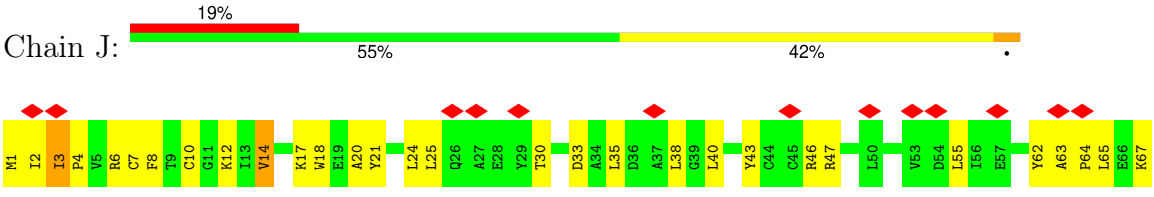
• Molecule 8: DNA-directed RNA polymerase II subunit RPB8



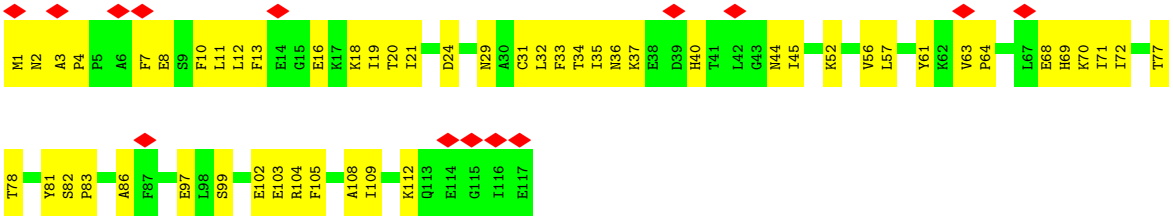
• Molecule 9: DNA-directed RNA polymerase II subunit RPB9



• Molecule 10: DNA-directed RNA polymerase II subunit RPB10

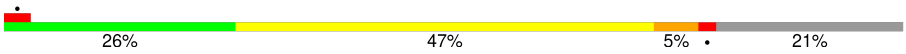


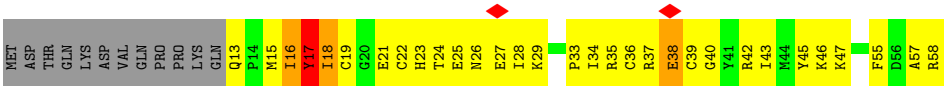
• Molecule 11: DNA-directed RNA polymerase II subunit RPB11-a



• Molecule 12: DNA-directed RNA polymerase II subunit RPB12

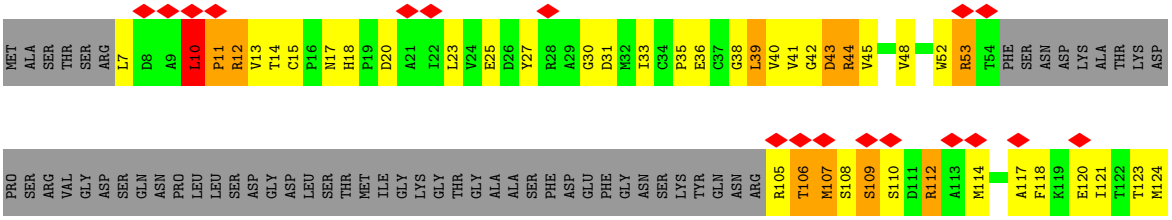
Chain L:

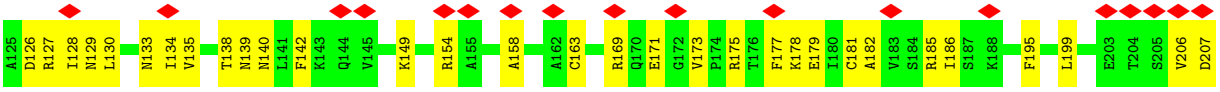


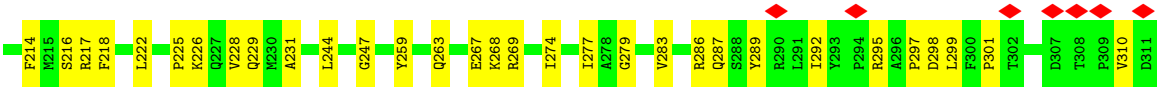


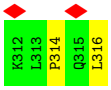
• Molecule 13: Transcription initiation factor IIB

Chain M:



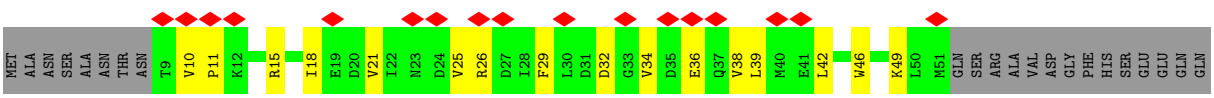


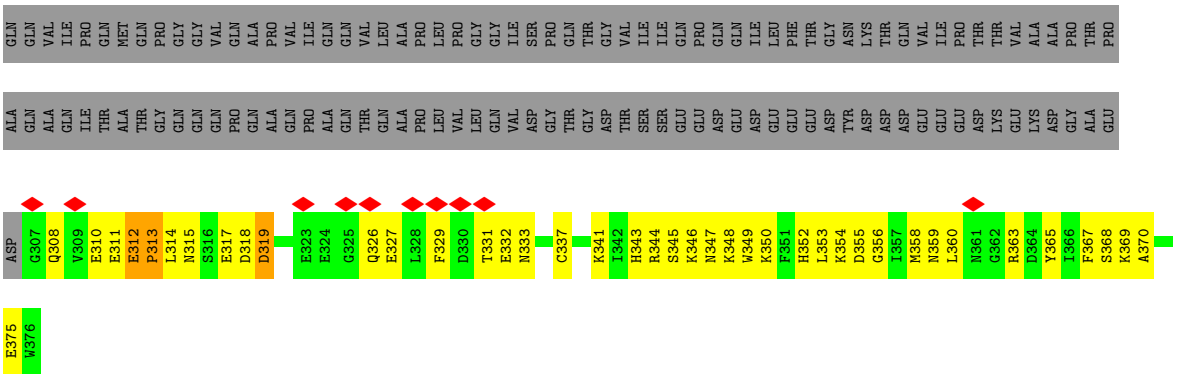




• Molecule 14: Transcription initiation factor IIA subunit 1

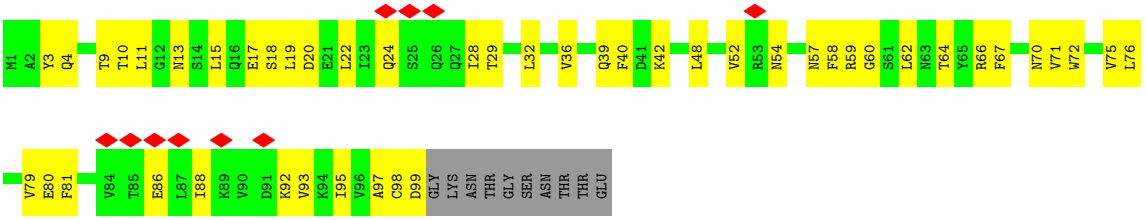
Chain N:





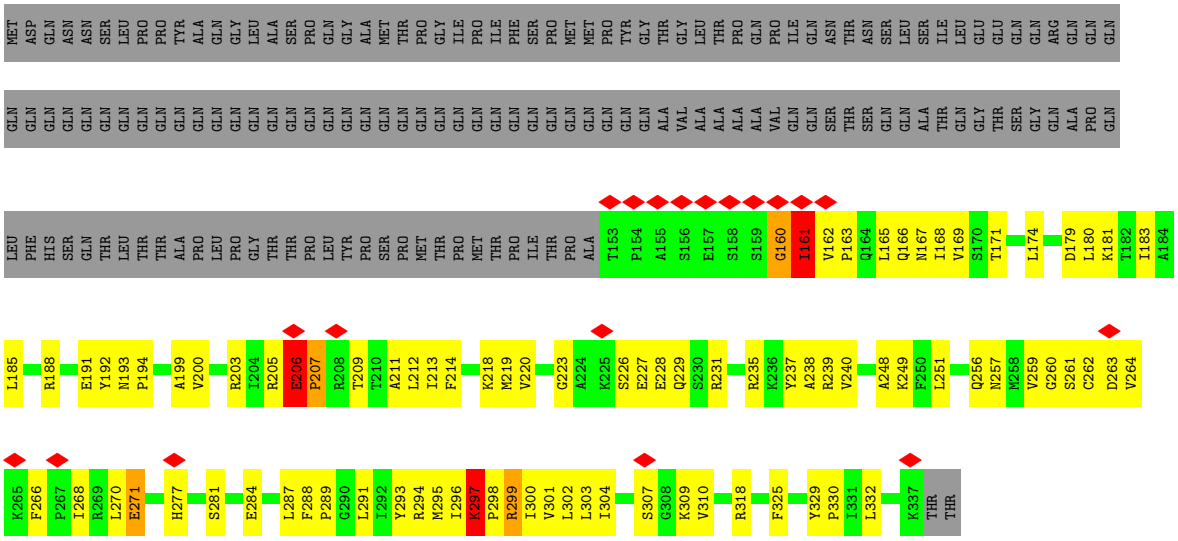
• Molecule 15: Transcription initiation factor IIA subunit 2

Chain O:



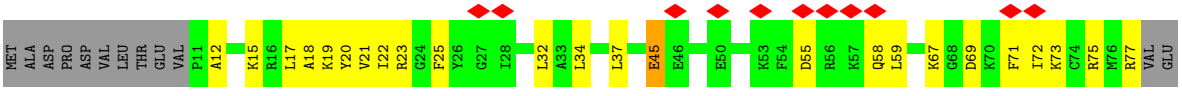
• Molecule 16: TATA-box-binding protein

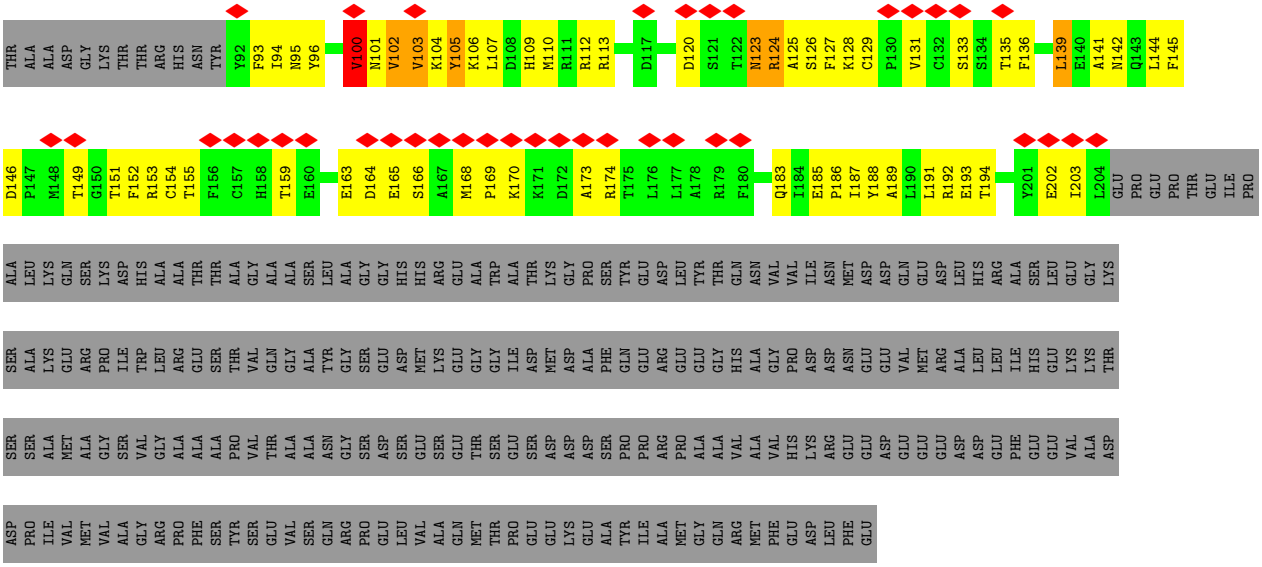
Chain P:



• Molecule 17: General transcription factor IIE subunit 1

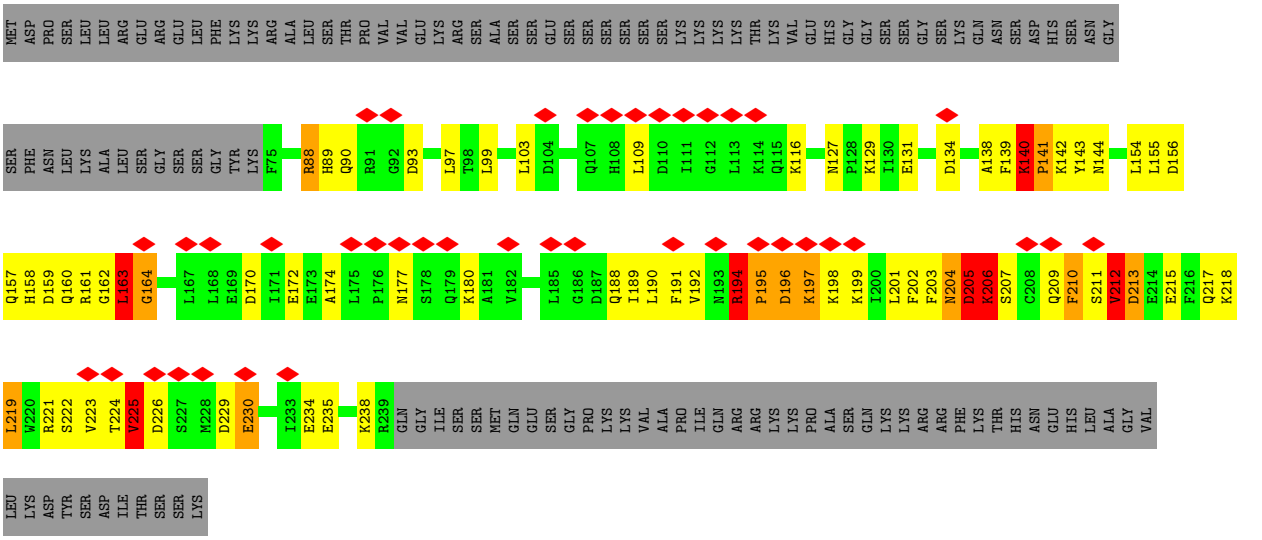
Chain Q:





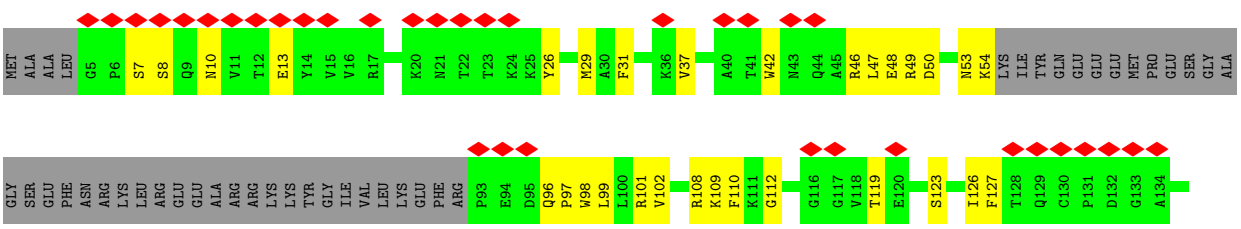
• Molecule 18: Transcription initiation factor IIE subunit beta

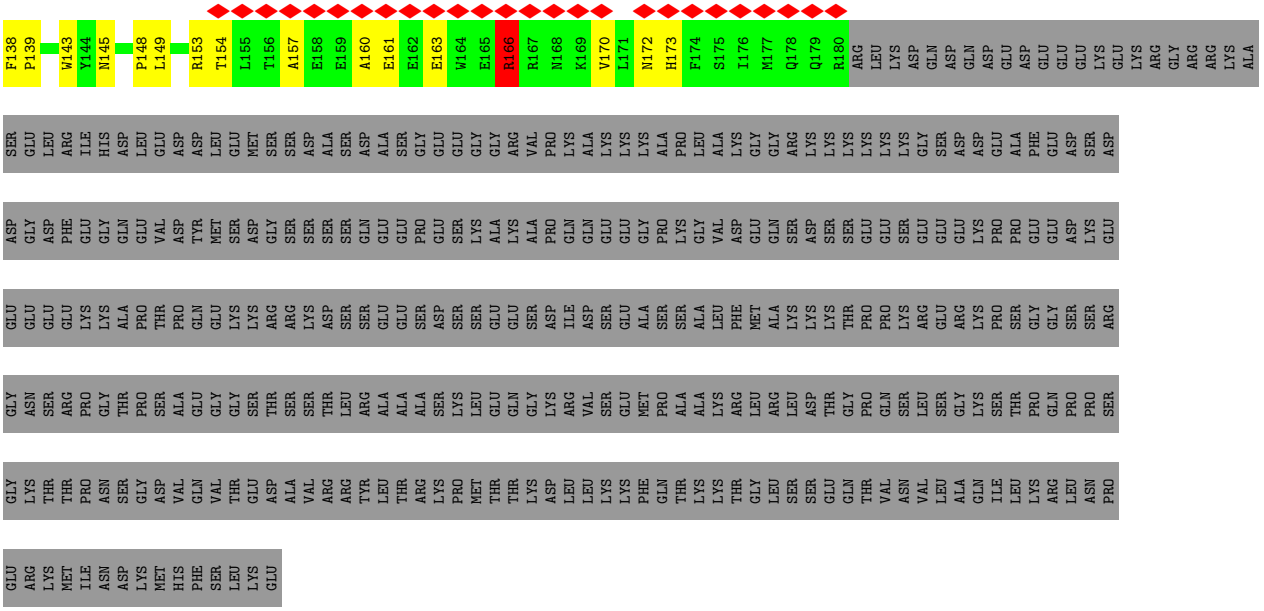
Chain R:



• Molecule 19: General transcription factor IIF subunit 1

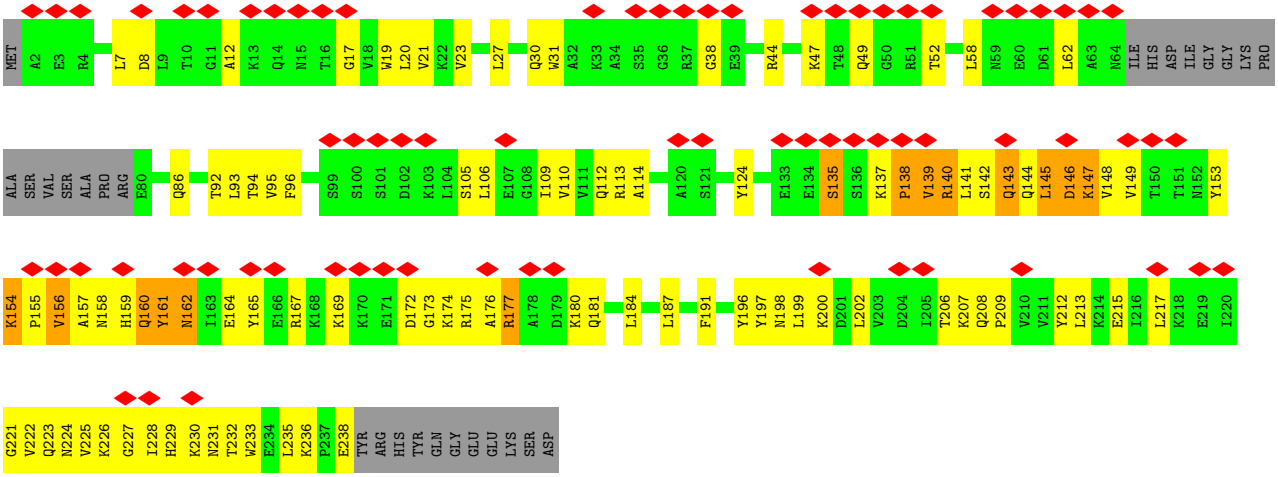
Chain S:





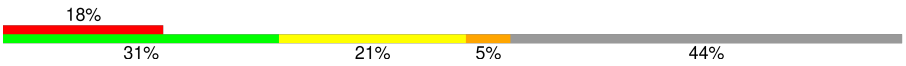
• Molecule 20: General transcription factor IIF subunit 2

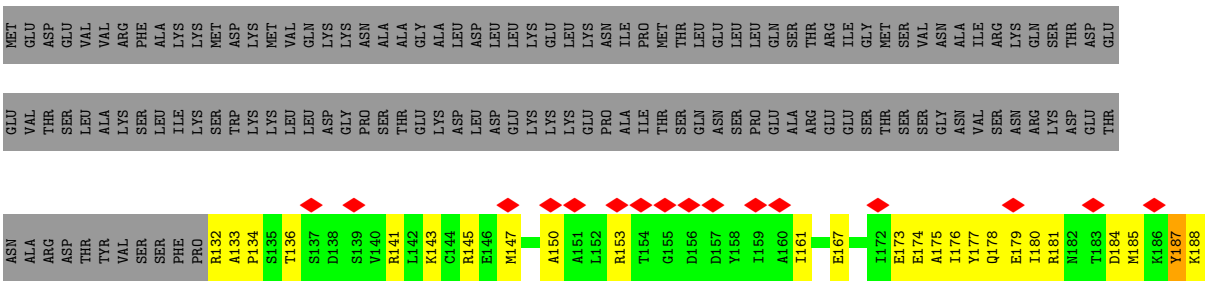
Chain T:



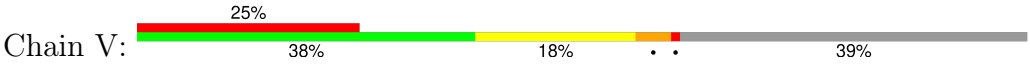
• Molecule 21: Transcription elongation factor A protein 1

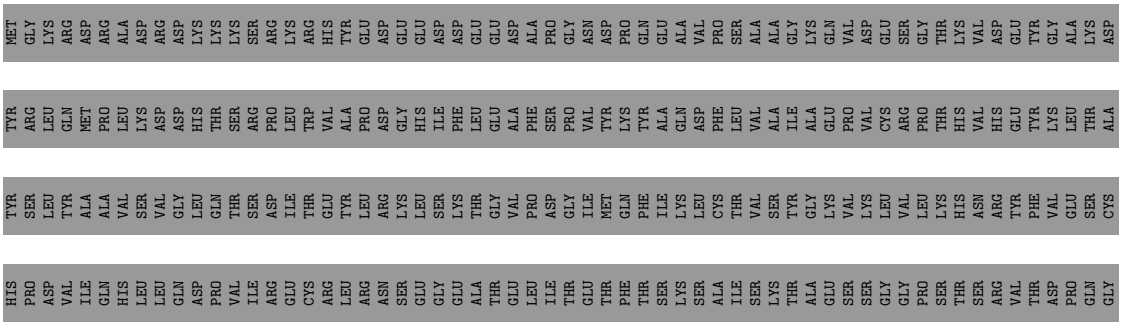
Chain U:

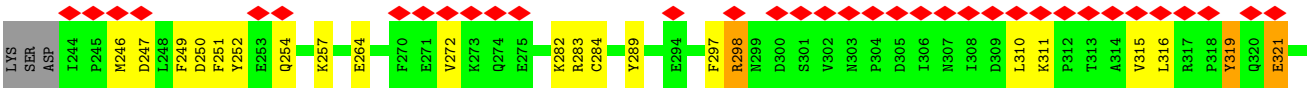


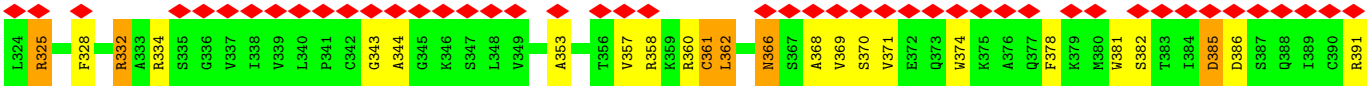


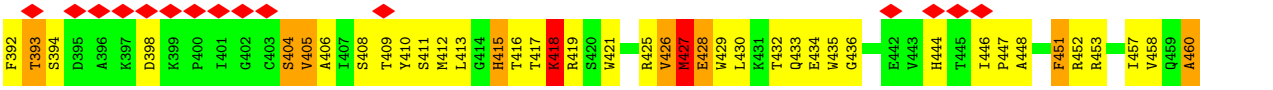
• Molecule 22: TFIIH basal transcription factor complex helicase XPB subunit

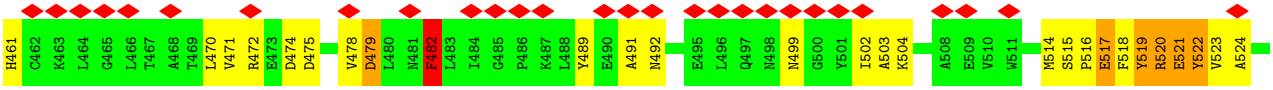


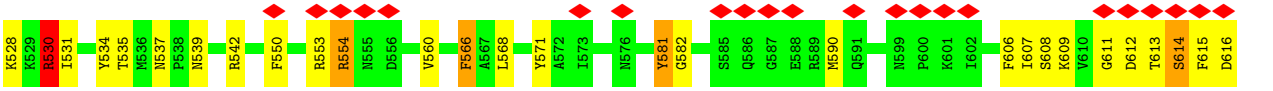


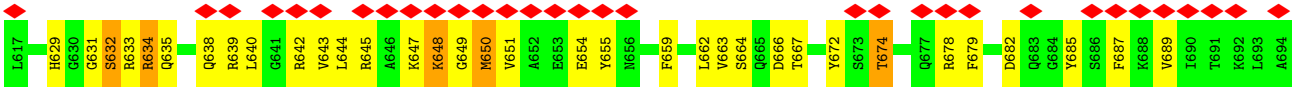


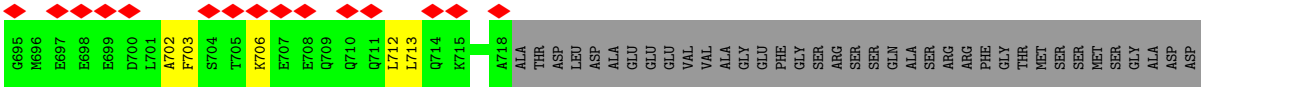


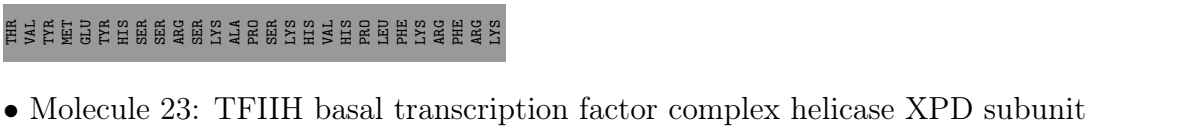






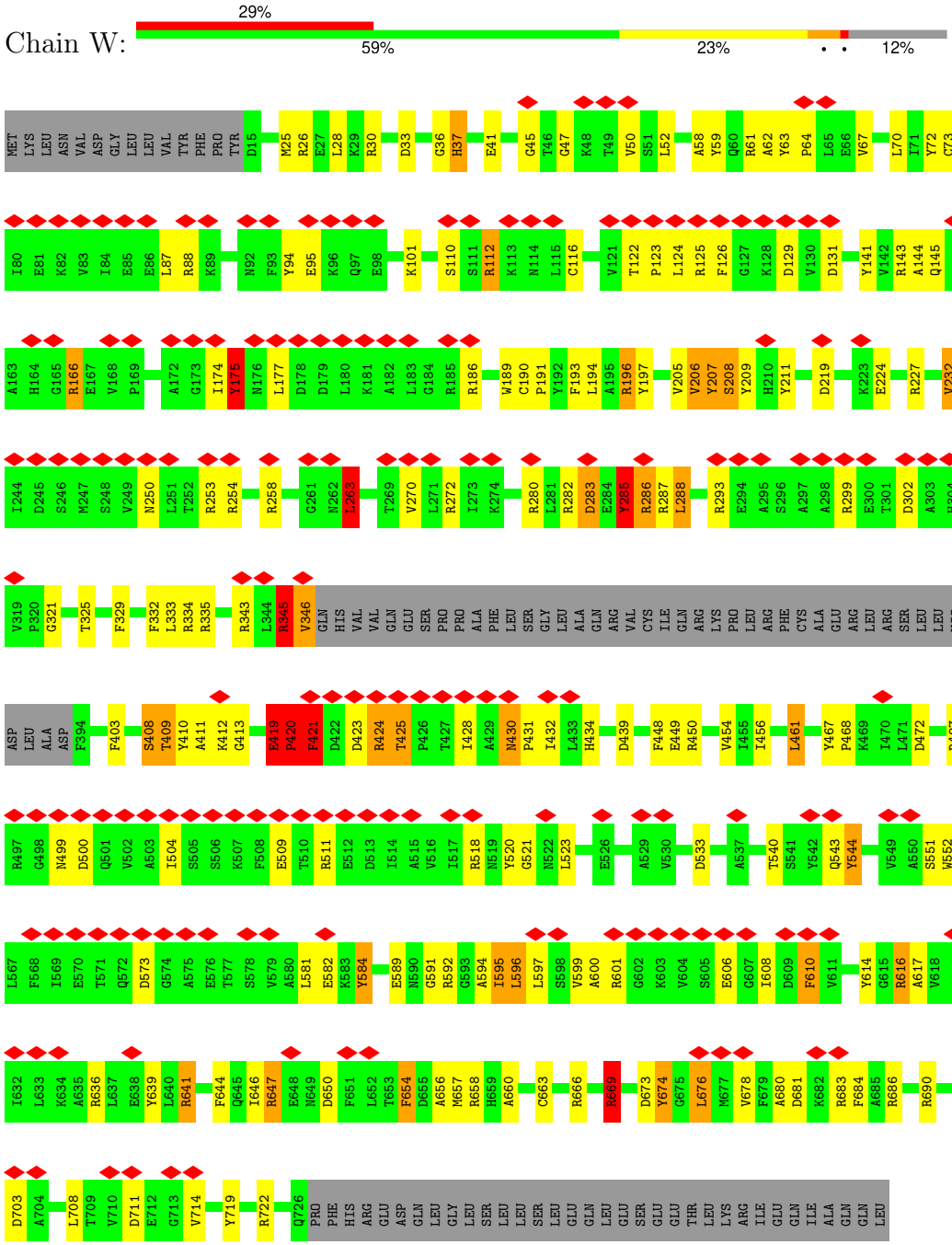






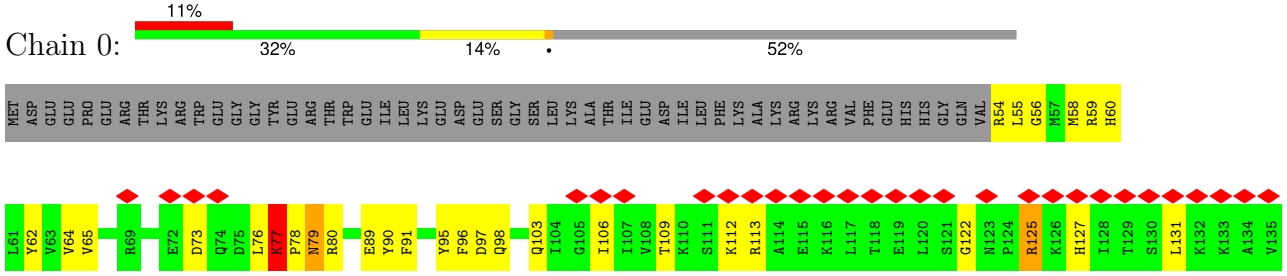
• Molecule 23: TFIIH basal transcription factor complex helicase XPD subunit

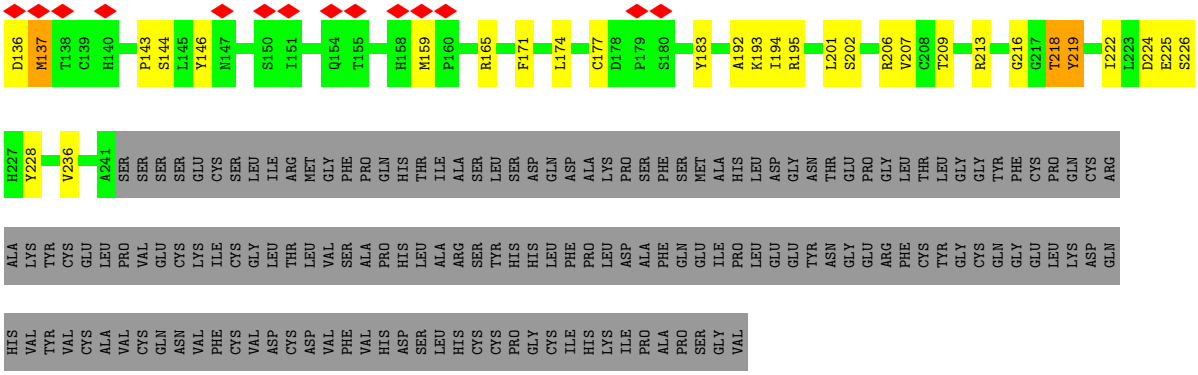
Chain W:



• Molecule 24: General transcription factor IIH subunit 2

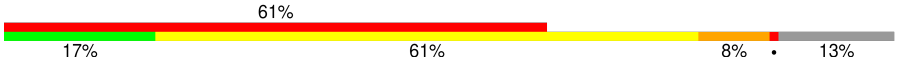
Chain 0:

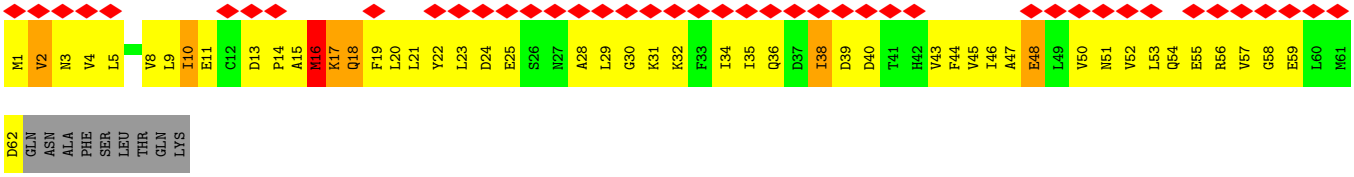




• Molecule 25: General transcription factor IIH subunit 5

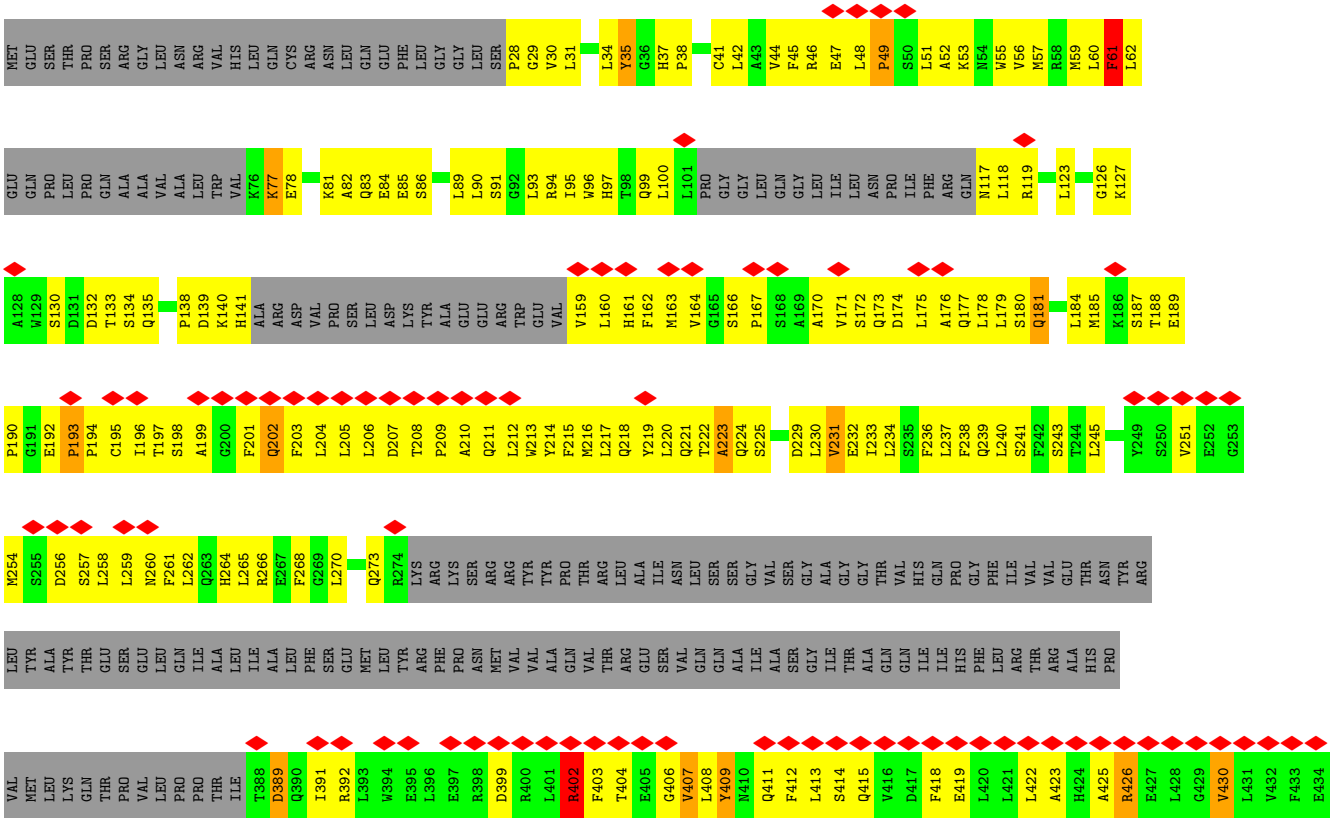
Chain 1:

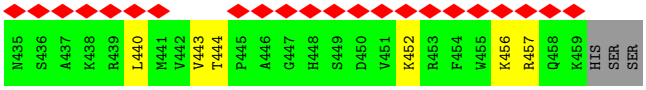




• Molecule 26: General transcription factor IIH subunit 4

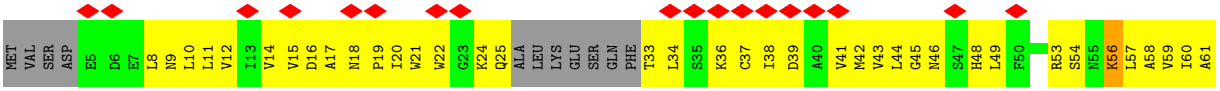
Chain 2:

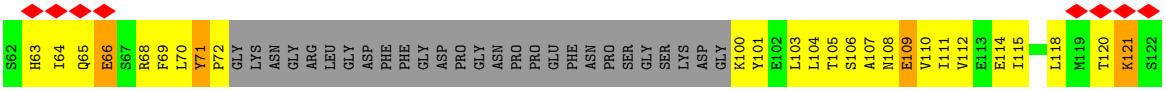


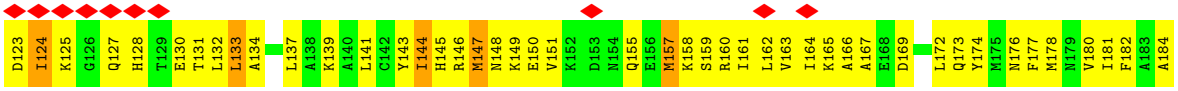


• Molecule 27: General transcription factor IIH subunit 3

Chain 3:

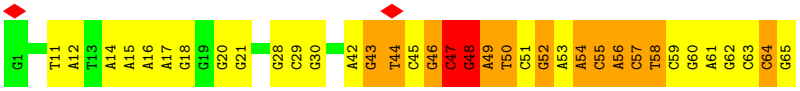






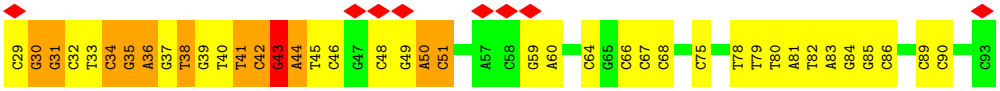
• Molecule 28: SCP-X

Chain X:



• Molecule 29: SCP-Y

Chain Y:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	34728	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 ($e^-/Å^2$)	42	Depositor
Minimum defocus (nm)	2000	Depositor
Maximum defocus (nm)	4000	Depositor
Magnification	27500	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.218	Depositor
Minimum map value	-0.111	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.007	Depositor
Recommended contour level	0.045	Depositor
Map size (Å)	506.88, 506.88, 506.88	wwPDB
Map dimensions	192, 192, 192	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	2.64, 2.64, 2.64	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	0.33	5/11727 (0.0%)	0.66	23/15833 (0.1%)
2	B	0.29	1/9503 (0.0%)	0.63	4/12831 (0.0%)
3	C	0.27	0/2259	0.67	2/3073 (0.1%)
4	D	0.28	0/1077	0.51	0/1446
5	E	0.27	0/1753	0.66	2/2368 (0.1%)
6	F	0.25	0/700	0.51	0/946
7	G	0.27	0/1382	0.55	0/1874
8	H	0.26	0/1227	0.64	1/1654 (0.1%)
9	I	0.25	0/1038	0.90	1/1407 (0.1%)
10	J	0.27	0/542	0.56	0/730
11	K	0.26	0/956	0.52	0/1294
12	L	0.28	0/394	0.65	1/524 (0.2%)
13	M	0.26	0/2049	0.69	2/2769 (0.1%)
14	N	0.31	0/945	0.58	1/1274 (0.1%)
15	O	0.26	0/816	0.54	0/1105
16	P	0.26	0/1489	0.60	2/2005 (0.1%)
17	Q	0.28	0/1507	0.59	2/2023 (0.1%)
18	R	0.44	0/1380	0.87	2/1854 (0.1%)
19	S	0.29	0/1167	0.53	1/1576 (0.1%)
20	T	0.27	0/1817	0.57	0/2445
21	U	0.33	0/1358	0.66	2/1820 (0.1%)
22	V	1.40	13/3931 (0.3%)	1.87	96/5298 (1.8%)
23	W	1.50	22/5460 (0.4%)	2.00	154/7390 (2.1%)
24	0	1.49	5/1506 (0.3%)	1.95	43/2038 (2.1%)
25	1	0.83	0/496	1.15	1/669 (0.1%)
26	2	0.88	0/2243	1.18	8/3024 (0.3%)
27	3	0.85	0/1548	1.22	6/2090 (0.3%)
28	X	1.32	18/1510 (1.2%)	1.75	58/2332 (2.5%)
29	Y	1.26	15/1472 (1.0%)	1.71	52/2267 (2.3%)
All	All	0.75	79/63252 (0.1%)	1.09	464/85959 (0.5%)

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	1
17	Q	0	1
18	R	0	8
20	T	0	1
22	V	0	8
23	W	0	11
24	0	0	1
25	1	0	1
26	2	0	8
28	X	0	8
29	Y	0	6
All	All	0	54

The worst 5 of 79 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
29	Y	51	DC	O3'-P	-14.92	1.43	1.61
28	X	53	DA	P-O5'	-9.87	1.49	1.59
28	X	61	DA	C5'-C4'	8.65	1.60	1.51
29	Y	38	DT	P-O5'	8.07	1.67	1.59
23	W	158	TYR	CE1-CZ	8.04	1.49	1.38

The worst 5 of 464 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	I	84	HIS	C-N-CD	-24.67	66.32	120.60
24	0	77	LYS	C-N-CD	-21.82	72.60	120.60
3	C	6	GLN	C-N-CD	-21.15	74.06	120.60
13	M	10	LEU	C-N-CD	-20.90	74.63	120.60
27	3	71	TYR	C-N-CD	-20.67	75.13	120.60

There are no chirality outliers.

5 of 54 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	85	PHE	Peptide
17	Q	100	VAL	Mainchain
18	R	204	ASN	Mainchain

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Mol	Chain	Res	Type	Group
18	R	205	ASP	Mainchain,Peptide
18	R	206	LYS	Mainchain

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	11515	0	11609	697	0
2	B	9317	0	9305	579	0
3	C	2213	0	2153	156	0
4	D	1062	0	1042	24	0
5	E	1723	0	1744	117	0
6	F	689	0	715	46	0
7	G	1351	0	1358	53	0
8	H	1205	0	1167	91	0
9	I	1013	0	932	93	0
10	J	533	0	553	51	0
11	K	937	0	959	47	0
12	L	388	0	393	70	0
13	M	2018	0	2059	132	0
14	N	930	0	888	68	0
15	O	806	0	818	50	0
16	P	1462	0	1549	112	0
17	Q	1484	0	1496	230	0
18	R	1357	0	1377	299	0
19	S	1138	0	1103	39	0
20	T	1788	0	1819	171	0
21	U	1343	0	1338	100	0
22	V	3855	0	3872	221	0
23	W	5348	0	5372	179	0
24	0	1479	0	1524	39	0
25	1	491	0	507	239	0
26	2	2196	0	2206	595	0
27	3	1526	0	1561	471	0
28	X	1343	0	725	35	0
29	Y	1316	0	730	36	0
30	A	1	0	0	0	0
30	B	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
31	A	2	0	0	0	0
31	B	1	0	0	0	0
31	C	1	0	0	0	0
31	I	2	0	0	0	0
31	J	1	0	0	0	0
31	L	1	0	0	0	0
31	M	1	0	0	0	0
31	Q	1	0	0	0	0
31	U	1	0	0	0	0
All	All	61839	0	60874	4132	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 34.

The worst 5 of 4132 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)
23:W:421:PHE:CD1	23:W:431:PRO:HG3	1.15	1.65
5:E:27:LEU:HD12	5:E:64:HIS:CD2	1.29	1.64
27:3:59:VAL:HG12	27:3:71:TYR:CD1	1.24	1.64
5:E:27:LEU:HB2	5:E:64:HIS:CD2	1.33	1.63
22:V:315:VAL:HG13	23:W:500:ASP:CB	1.21	1.63

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	1450/1970 (74%)	1305 (90%)	97 (7%)	48 (3%)	3 21
2	B	1163/1174 (99%)	1049 (90%)	76 (6%)	38 (3%)	3 21

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
3	C	273/275 (99%)	241 (88%)	18 (7%)	14 (5%)	1 15
4	D	127/142 (89%)	118 (93%)	8 (6%)	1 (1%)	16 55
5	E	208/210 (99%)	195 (94%)	7 (3%)	6 (3%)	3 23
6	F	84/127 (66%)	78 (93%)	4 (5%)	2 (2%)	5 27
7	G	169/172 (98%)	158 (94%)	10 (6%)	1 (1%)	22 60
8	H	148/150 (99%)	123 (83%)	13 (9%)	12 (8%)	1 9
9	I	123/125 (98%)	100 (81%)	14 (11%)	9 (7%)	1 10
10	J	65/67 (97%)	53 (82%)	9 (14%)	3 (5%)	2 17
11	K	115/117 (98%)	112 (97%)	3 (3%)	0	100 100
12	L	44/58 (76%)	37 (84%)	3 (7%)	4 (9%)	0 8
13	M	256/316 (81%)	236 (92%)	12 (5%)	8 (3%)	3 22
14	N	109/376 (29%)	100 (92%)	5 (5%)	4 (4%)	2 20
15	O	97/109 (89%)	90 (93%)	7 (7%)	0	100 100
16	P	183/339 (54%)	170 (93%)	8 (4%)	5 (3%)	4 25
17	Q	176/439 (40%)	159 (90%)	11 (6%)	6 (3%)	3 21
18	R	163/291 (56%)	128 (78%)	22 (14%)	13 (8%)	1 9
19	S	134/517 (26%)	123 (92%)	7 (5%)	4 (3%)	3 23
20	T	218/249 (88%)	191 (88%)	17 (8%)	10 (5%)	2 17
21	U	168/301 (56%)	136 (81%)	21 (12%)	11 (6%)	1 12
22	V	473/782 (60%)	400 (85%)	46 (10%)	27 (6%)	1 14
23	W	661/760 (87%)	567 (86%)	69 (10%)	25 (4%)	2 19
24	0	186/395 (47%)	168 (90%)	13 (7%)	5 (3%)	4 25
25	1	60/71 (84%)	53 (88%)	5 (8%)	2 (3%)	3 21
26	2	264/462 (57%)	246 (93%)	14 (5%)	4 (2%)	8 40
27	3	187/308 (61%)	175 (94%)	9 (5%)	3 (2%)	8 38
All	All	7304/10302 (71%)	6511 (89%)	528 (7%)	265 (4%)	4 20

5 of 265 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	67	ARG
1	A	205	VAL
1	A	266	MET

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Mol	Chain	Res	Type
1	A	267	GLN
1	A	531	ASN

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	1279/1748 (73%)	1247 (98%)	32 (2%)	42	61
2	B	1020/1028 (99%)	997 (98%)	23 (2%)	45	64
3	C	252/252 (100%)	246 (98%)	6 (2%)	44	62
4	D	119/126 (94%)	118 (99%)	1 (1%)	79	85
5	E	192/192 (100%)	186 (97%)	6 (3%)	35	54
6	F	74/111 (67%)	74 (100%)	0	100	100
7	G	152/153 (99%)	149 (98%)	3 (2%)	50	68
8	H	131/131 (100%)	127 (97%)	4 (3%)	35	54
9	I	112/112 (100%)	106 (95%)	6 (5%)	18	40
10	J	56/56 (100%)	56 (100%)	0	100	100
11	K	106/106 (100%)	105 (99%)	1 (1%)	75	83
12	L	43/55 (78%)	43 (100%)	0	100	100
13	M	222/268 (83%)	212 (96%)	10 (4%)	23	45
14	N	105/324 (32%)	104 (99%)	1 (1%)	73	82
15	O	90/98 (92%)	89 (99%)	1 (1%)	70	80
16	P	159/293 (54%)	154 (97%)	5 (3%)	35	54
17	Q	164/373 (44%)	157 (96%)	7 (4%)	25	46
18	R	150/261 (58%)	138 (92%)	12 (8%)	10	29
19	S	121/448 (27%)	118 (98%)	3 (2%)	42	61
20	T	196/218 (90%)	187 (95%)	9 (5%)	23	44
21	U	148/266 (56%)	139 (94%)	9 (6%)	15	37
22	V	422/688 (61%)	403 (96%)	19 (4%)	23	45

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
23	W	577/664 (87%)	541 (94%)	36 (6%)	15 36
24	0	171/352 (49%)	163 (95%)	8 (5%)	22 44
25	1	56/64 (88%)	52 (93%)	4 (7%)	12 32
26	2	238/399 (60%)	229 (96%)	9 (4%)	28 49
27	3	171/272 (63%)	159 (93%)	12 (7%)	12 32
All	All	6526/9058 (72%)	6299 (96%)	227 (4%)	33 51

5 of 227 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
18	R	212	VAL
27	3	144	ILE
22	V	418	LYS
27	3	124	ILE
24	0	202	SER

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

Mol	Chain	Res	Type
9	I	121	HIS
27	3	63	HIS
22	V	366	ASN
27	3	52	ASN
27	3	187	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 oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 13 ligands modelled in this entry, 13 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.

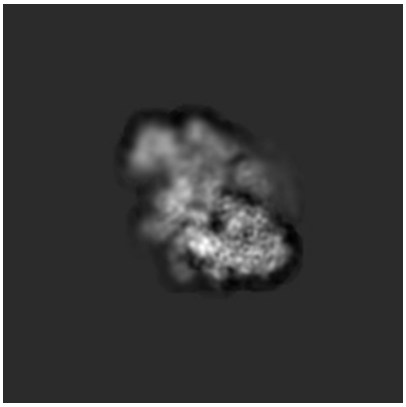
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-3307. These allow visual inspection of the internal detail of the map and identification of artifacts.

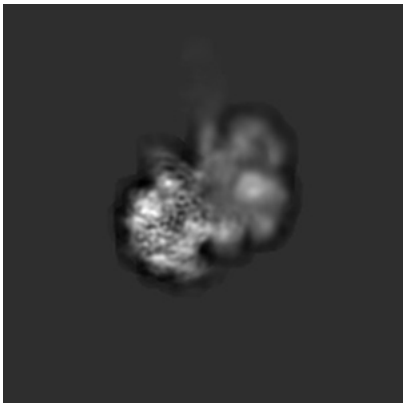
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

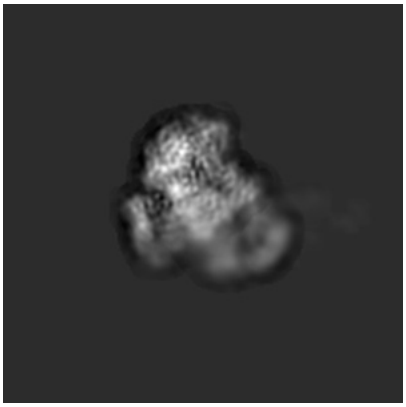
6.1.1 Primary map



X



Y

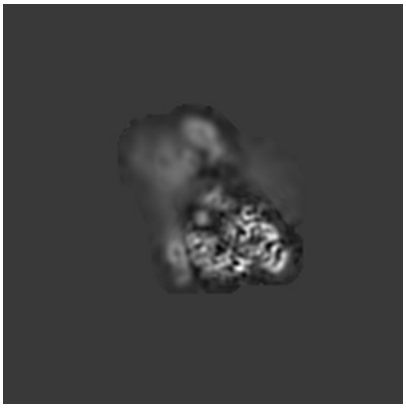


Z

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

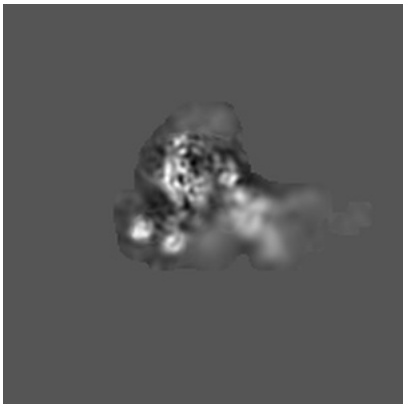
6.2 Central slices

6.2.1 Primary map



X Index: 96

Y Index: 96

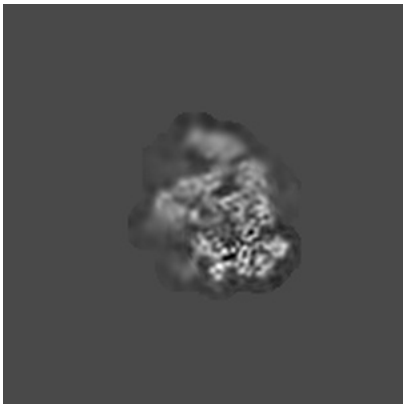


Z Index: 96

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

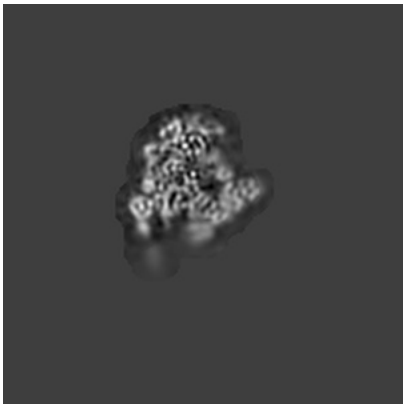
6.3 Largest variance slices (i)

6.3.1 Primary map



X Index: 83

Y Index: 96

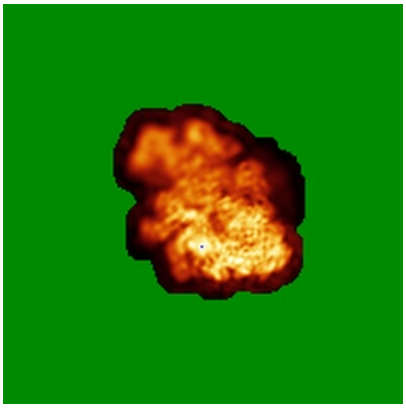


Z Index: 75

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

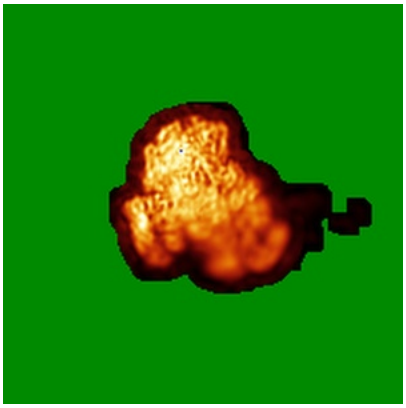
6.4 Orthogonal standard-deviation projections (False-color) (i)

6.4.1 Primary map



X

Y

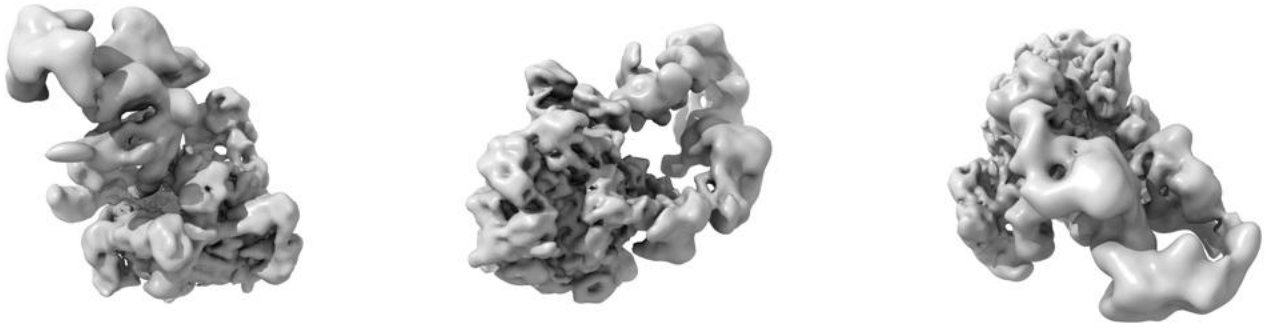


Z

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



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.045. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

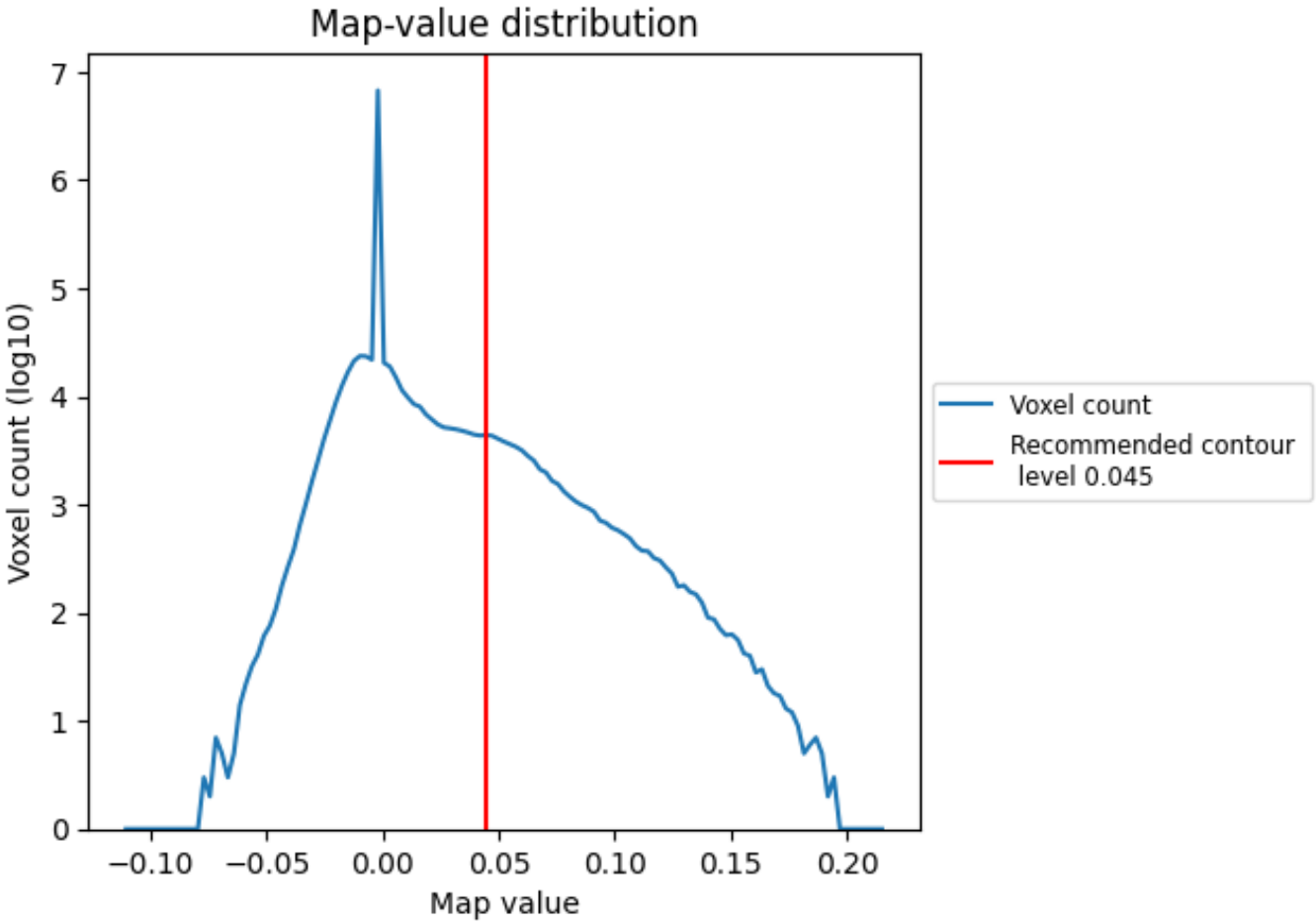
6.6 Mask visualisation (i)

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

7 Map analysis

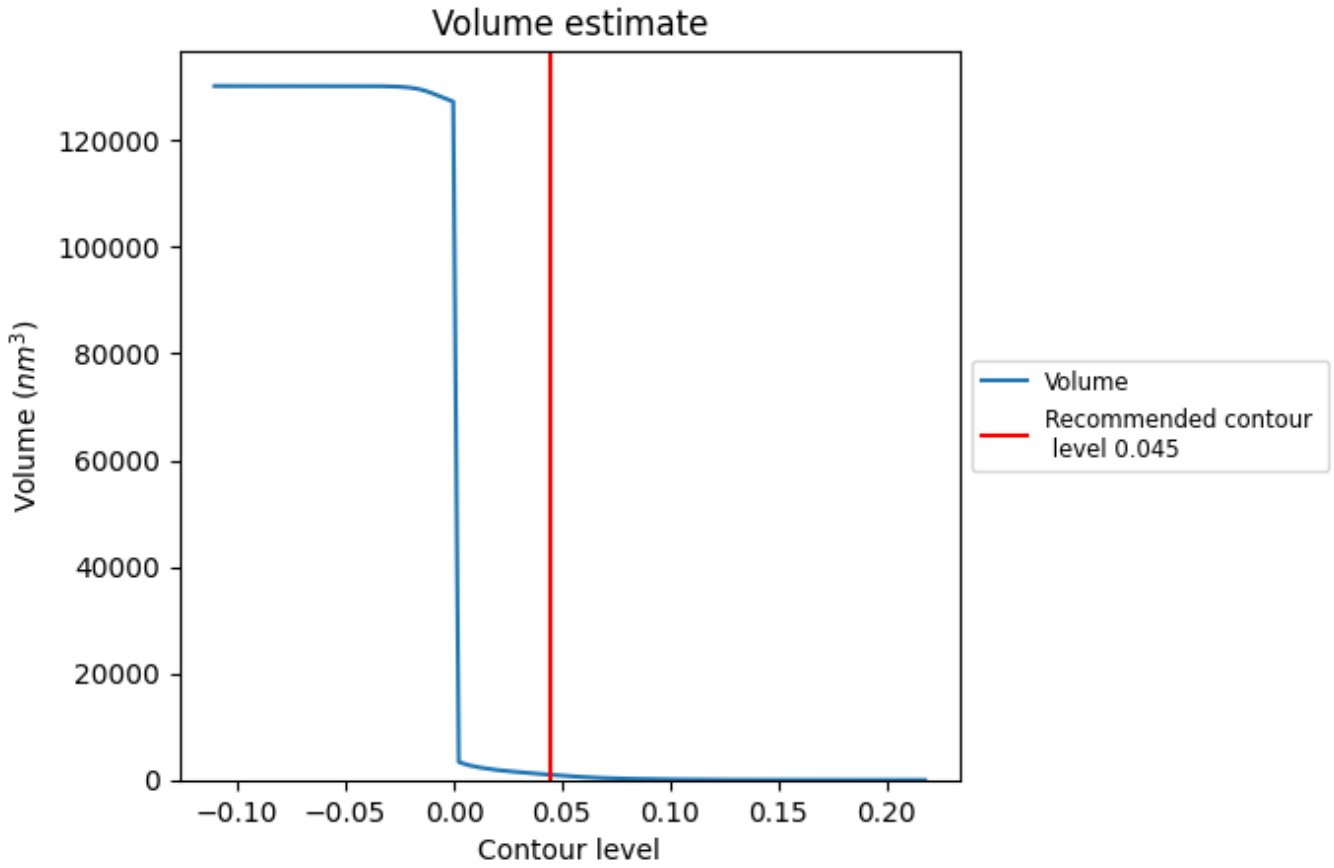
This section contains the results of statistical analysis of the map.

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.

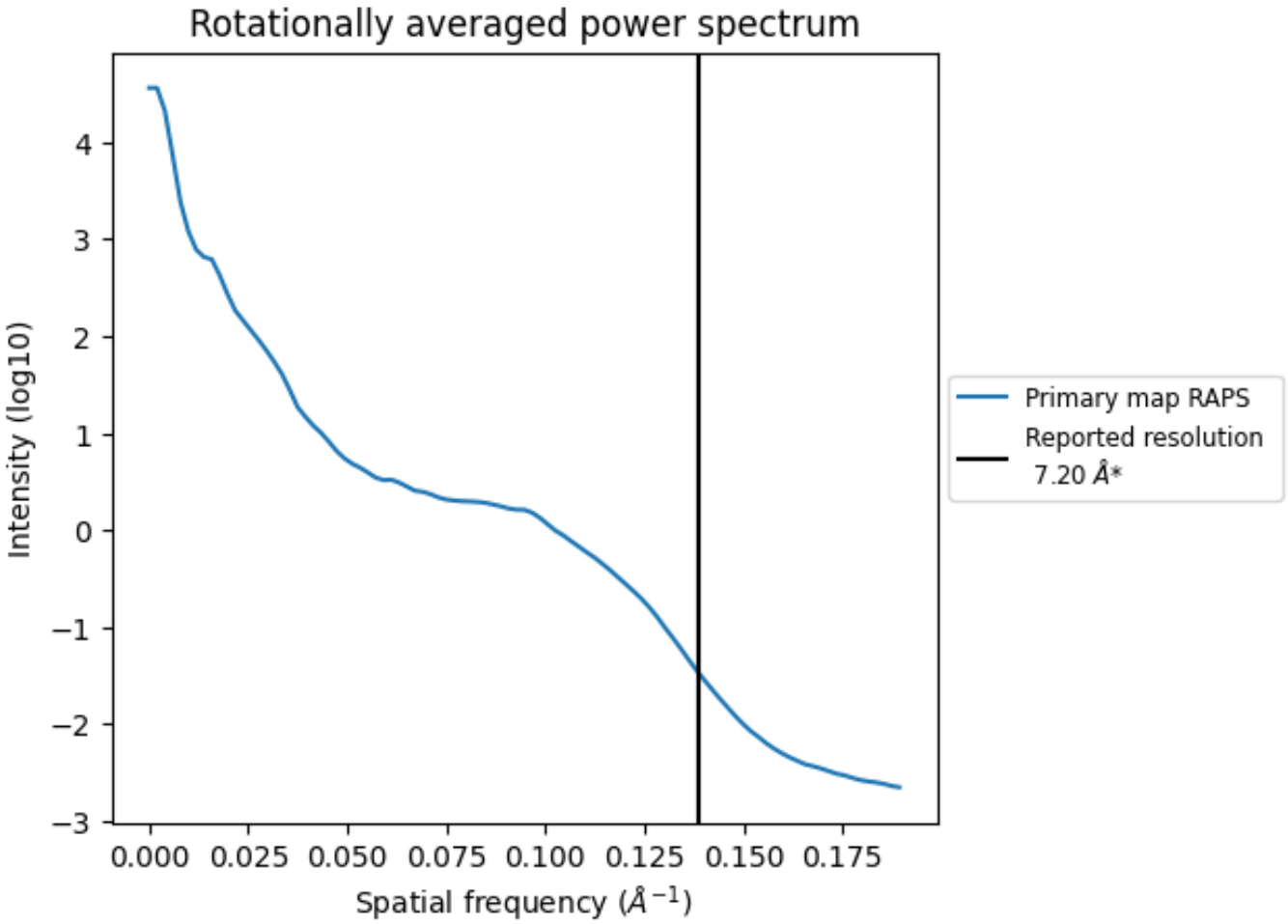
7.2 Volume estimate (i)



The volume at the recommended contour level is 965 nm^3; this corresponds to an approximate mass of 872 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)

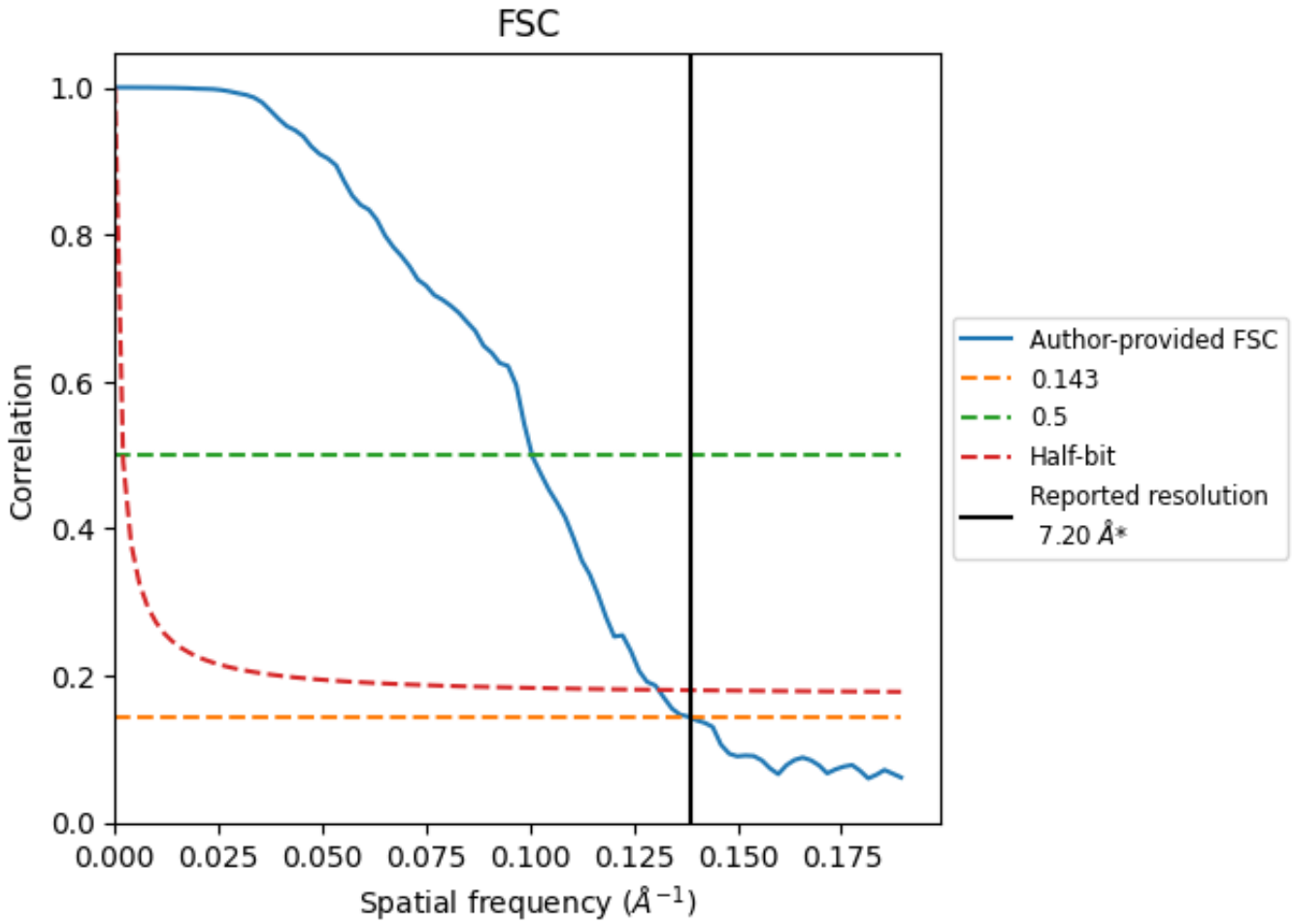


*Reported resolution corresponds to spatial frequency of 0.139 Å^{-1}

8 Fourier-Shell correlation

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



*Reported resolution corresponds to spatial frequency of 0.139 Å^{-1}

8.2 Resolution estimates (i)

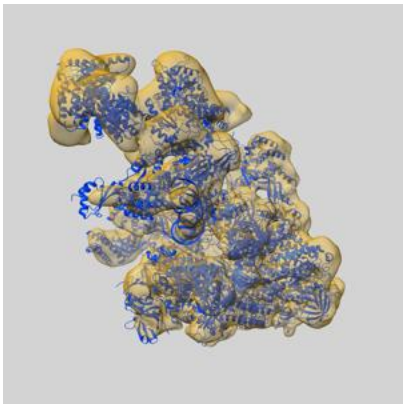
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	7.20	-	-
Author-provided FSC curve	7.23	9.95	7.64
Unmasked-calculated*	-	-	-

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

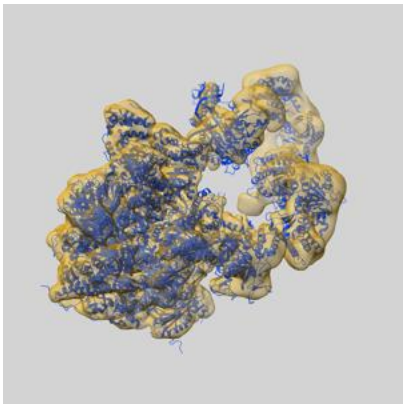
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-3307 and PDB model 5IY6. Per-residue inclusion information can be found in section 3 on page 9.

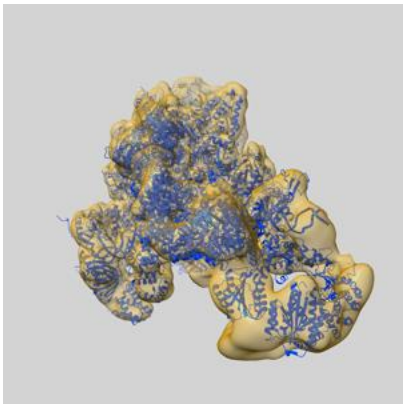
9.1 Map-model overlay



X



Y



Z

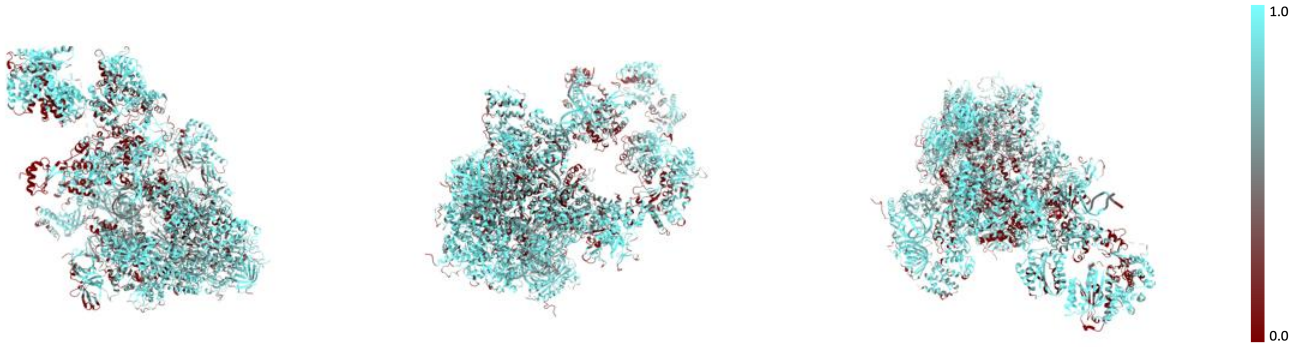
The images above show the 3D surface view of the map at the recommended contour level 0.045 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model

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.

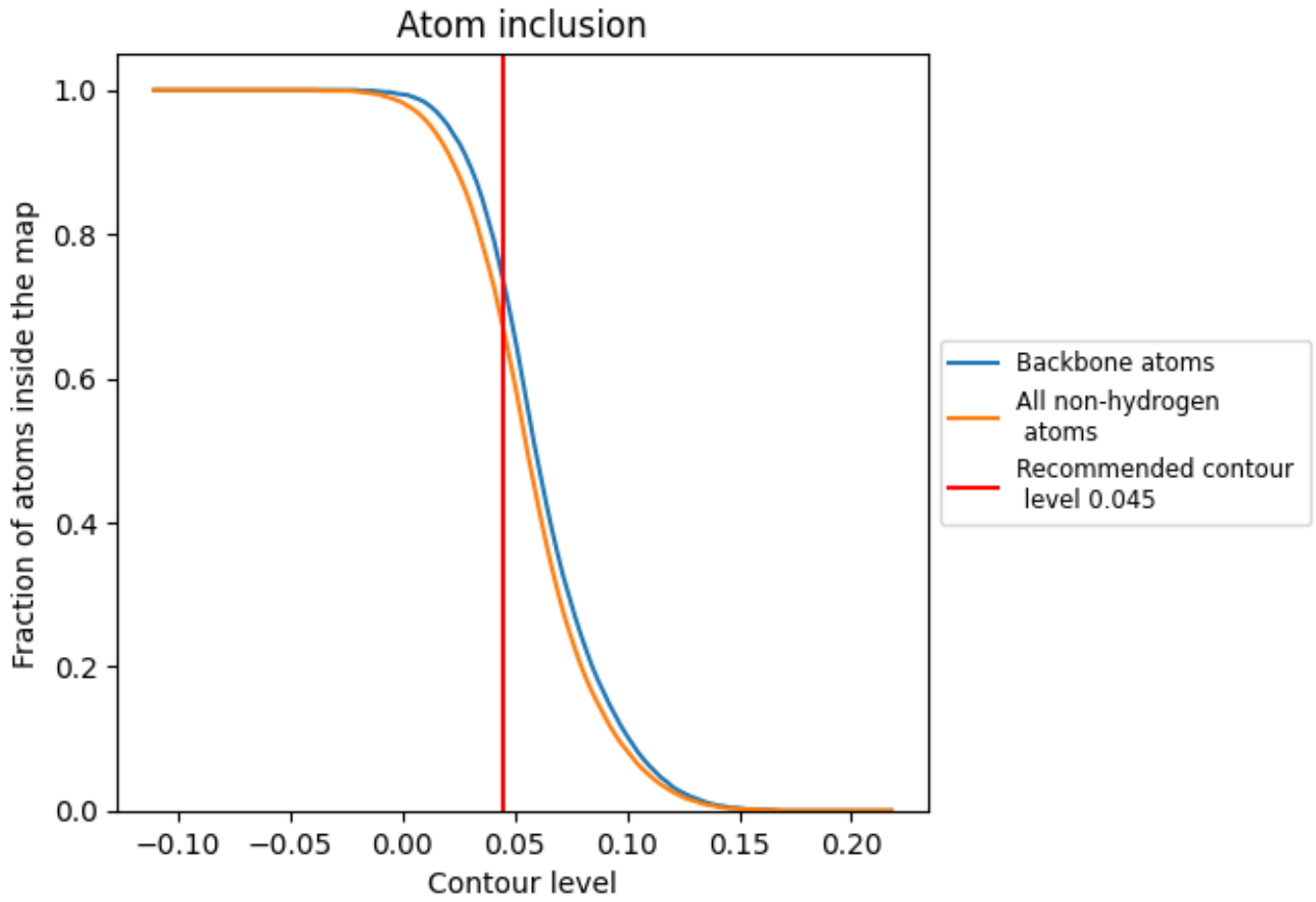
9.3 Atom inclusion mapped to coordinate model



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 (0.045).

9.4 Atom inclusion (i)



At the recommended contour level, 73% of all backbone atoms, 67% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.045) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6680	0.0820
0	0.7470	0.0510
1	0.3220	0.0670
2	0.5650	0.0700
3	0.6770	0.0530
A	0.6120	0.0730
B	0.6800	0.0860
C	0.8020	0.1000
D	0.7200	0.0820
E	0.6920	0.0870
F	0.6720	0.0400
G	0.7400	0.0860
H	0.7670	0.0850
I	0.7150	0.1000
J	0.7350	0.0790
K	0.7930	0.1260
L	0.8520	0.1250
M	0.7330	0.1110
N	0.7180	0.1030
O	0.8380	0.0950
P	0.8440	0.0960
Q	0.6610	0.0940
R	0.6830	0.0970
S	0.5540	0.0750
T	0.6240	0.0950
U	0.6100	0.0840
V	0.5560	0.0630
W	0.6280	0.0530
X	0.7800	0.1280
Y	0.7360	0.1290