Full wwPDB EM Validation Report ⓘ

Dec 18, 2022 – 09:25 am GMT

PDB ID	:	7ADB
EMDB ID	:	EMD-11722
Title	:	Transcription termination intermediate complex 1 delta NusG
Authors	:	Said, N.; Hilal, T.; Loll, B.; Wahl, C.M.
Deposited on	:	2020-09-14
Resolution	:	4.40 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:

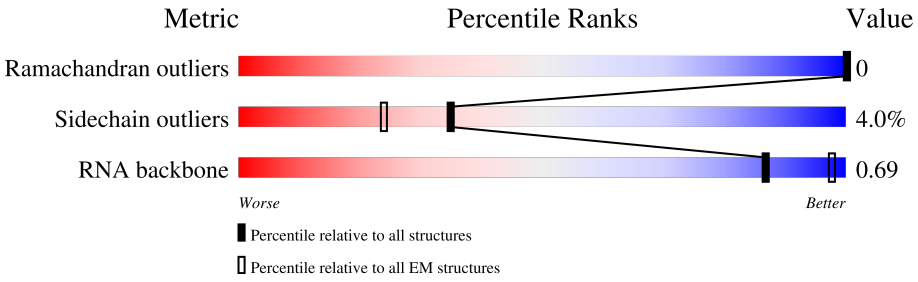
EMDB validation analysis	:	0.0.1.dev43
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

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 4.40 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)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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	419	74% 91% 9%
1	b	419	49% 91% 9%
1	c	419	45% 91% 9%
1	d	419	51% 91% 9%
1	e	419	73% 91% 9%
1	f	419	92% 91% 9%
2	A	497	99% 99%
3	U	329	46% 98%

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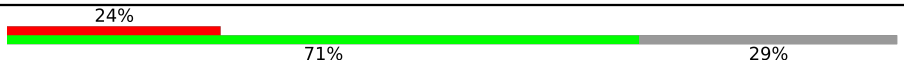
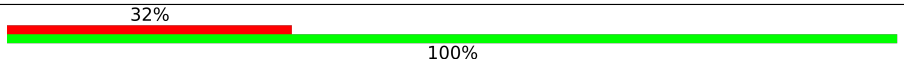
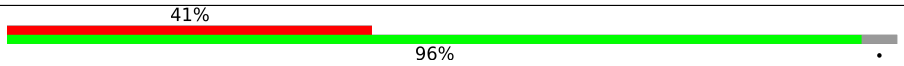
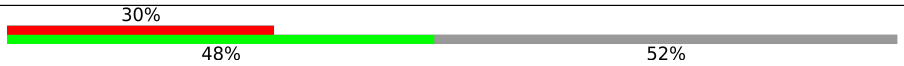
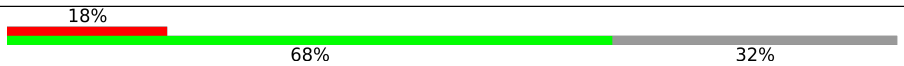
Mol	Chain	Length	Quality of chain
3	V	329	
4	W	91	
5	X	1342	
6	Y	1416	
7	K	50	
8	L	50	
9	R	99	

2 Entry composition

There are 14 unique types of molecules in this entry. The entry contains 51330 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 Transcription termination factor Rho.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	a	417	Total 3280	C 2065	N 581	O 617	S 17	0	0
1	b	417	Total 3280	C 2065	N 581	O 617	S 17	0	0
1	c	417	Total 3280	C 2065	N 581	O 617	S 17	0	0
1	d	417	Total 3280	C 2065	N 581	O 617	S 17	0	0
1	e	417	Total 3280	C 2065	N 581	O 617	S 17	0	0
1	f	417	Total 3280	C 2065	N 581	O 617	S 17	0	0

- Molecule 2 is a protein called Transcription termination/antitermination protein NusA.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	A	495	Total 3852	C 2396	N 669	O 774	S 13	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	GLY	-	expression tag	UNP C3SSN7
A	0	ALA	-	expression tag	UNP C3SSN7

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

Mol	Chain	Residues	Atoms					AltConf	Trace
3	U	322	Total 2510	C 1569	N 442	O 491	S 8	0	0
3	V	235	Total 1828	C 1137	N 326	O 359	S 6	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
4	W	79	Total	C	N	O	S	0	0
			627	382	118	126	1		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
5	X	1340	Total	C	N	O	S	0	0
			10567	6631	1841	2052	43		

- Molecule 6 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	Y	1358	Total	C	N	O	S	0	0
			10545	6620	1883	1992	50		

There are 9 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Y	1408	LEU	-	expression tag	UNP C3SIA2
Y	1409	GLU	-	expression tag	UNP C3SIA2
Y	1410	VAL	-	expression tag	UNP C3SIA2
Y	1411	HIS	-	expression tag	UNP C3SIA2
Y	1412	HIS	-	expression tag	UNP C3SIA2
Y	1413	HIS	-	expression tag	UNP C3SIA2
Y	1414	HIS	-	expression tag	UNP C3SIA2
Y	1415	HIS	-	expression tag	UNP C3SIA2
Y	1416	HIS	-	expression tag	UNP C3SIA2

- Molecule 7 is a DNA chain called ntDNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	K	24	Total	C	N	O	P	0	0
			497	235	95	143	24		

- Molecule 8 is a DNA chain called tDNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	L	34	Total	C	N	O	P	0	0
			682	325	122	202	33		

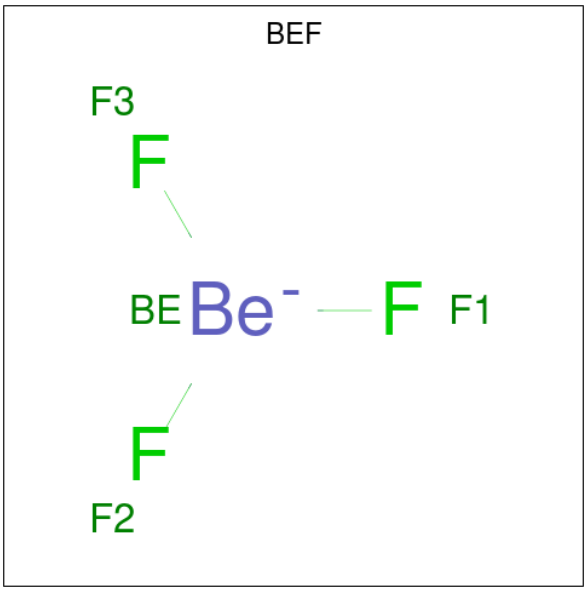
- Molecule 9 is a RNA chain called rut RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	R	17	Total	C	N	O	P	0	0
			364	162	65	120	17		

There are 27 discrepancies between the modelled and reference sequences:

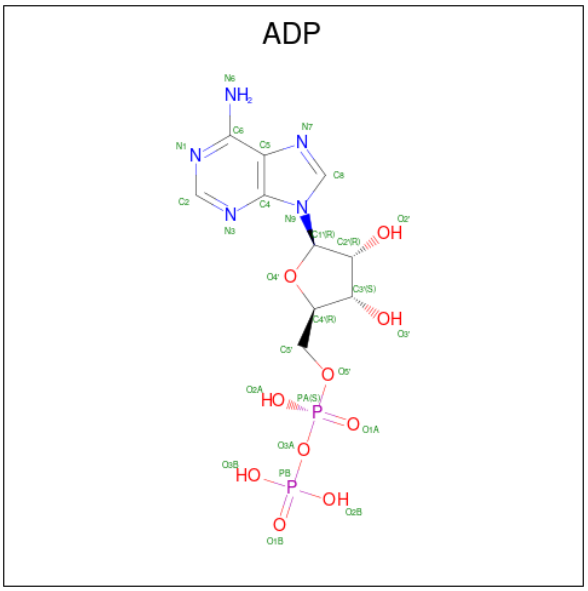
Chain	Residue	Modelled	Actual	Comment	Reference
R	1	G	-	expression tag	GB 1227111474
R	2	G	-	expression tag	GB 1227111474
R	3	G	-	expression tag	GB 1227111474
R	72	U	-	insertion	GB 1227111474
R	77	U	-	expression tag	GB 1227111474
R	78	U	-	expression tag	GB 1227111474
R	79	A	-	expression tag	GB 1227111474
R	80	A	-	expression tag	GB 1227111474
R	81	A	-	expression tag	GB 1227111474
R	82	C	-	expression tag	GB 1227111474
R	83	C	-	expression tag	GB 1227111474
R	84	A	-	expression tag	GB 1227111474
R	85	C	-	expression tag	GB 1227111474
R	86	A	-	expression tag	GB 1227111474
R	87	C	-	expression tag	GB 1227111474
R	88	C	-	expression tag	GB 1227111474
R	89	U	-	expression tag	GB 1227111474
R	90	G	-	expression tag	GB 1227111474
R	91	G	-	expression tag	GB 1227111474
R	92	C	-	expression tag	GB 1227111474
R	93	G	-	expression tag	GB 1227111474
R	94	U	-	expression tag	GB 1227111474
R	95	G	-	expression tag	GB 1227111474
R	96	U	-	expression tag	GB 1227111474
R	97	G	-	expression tag	GB 1227111474
R	98	G	-	expression tag	GB 1227111474
R	99	C	-	expression tag	GB 1227111474

- Molecule 10 is BERYLLIUM TRIFLUORIDE ION (three-letter code: BEF) (formula: BeF_3).



Mol	Chain	Residues	Atoms	AltConf
10	b	1	Total Be F 4 1 3	0
10	c	1	Total Be F 4 1 3	0
10	d	1	Total Be F 4 1 3	0
10	e	1	Total Be F 4 1 3	0
10	f	1	Total Be F 4 1 3	0

- Molecule 11 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).



Mol	Chain	Residues	Atoms					AltConf
11	b	1	Total	C	N	O	P	0
			27	10	5	10	2	
11	c	1	Total	C	N	O	P	0
			27	10	5	10	2	
11	d	1	Total	C	N	O	P	0
			27	10	5	10	2	
11	e	1	Total	C	N	O	P	0
			27	10	5	10	2	
11	f	1	Total	C	N	O	P	0
			27	10	5	10	2	

- Molecule 12 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
12	b	1	Total	Mg	0
			1	1	
12	c	1	Total	Mg	0
			1	1	
12	d	1	Total	Mg	0
			1	1	
12	e	1	Total	Mg	0
			1	1	
12	f	1	Total	Mg	0
			1	1	
12	Y	1	Total	Mg	0
			1	1	

- Molecule 13 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	AltConf
13	Y	2	Total Zn 2 2	0

- Molecule 14 is water.

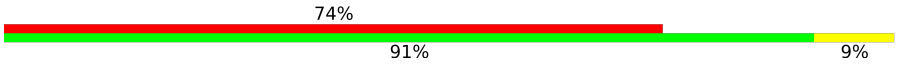
Mol	Chain	Residues	Atoms	AltConf
14	b	3	Total O 3 3	0
14	c	3	Total O 3 3	0
14	d	3	Total O 3 3	0
14	e	3	Total O 3 3	0
14	f	3	Total O 3 3	0

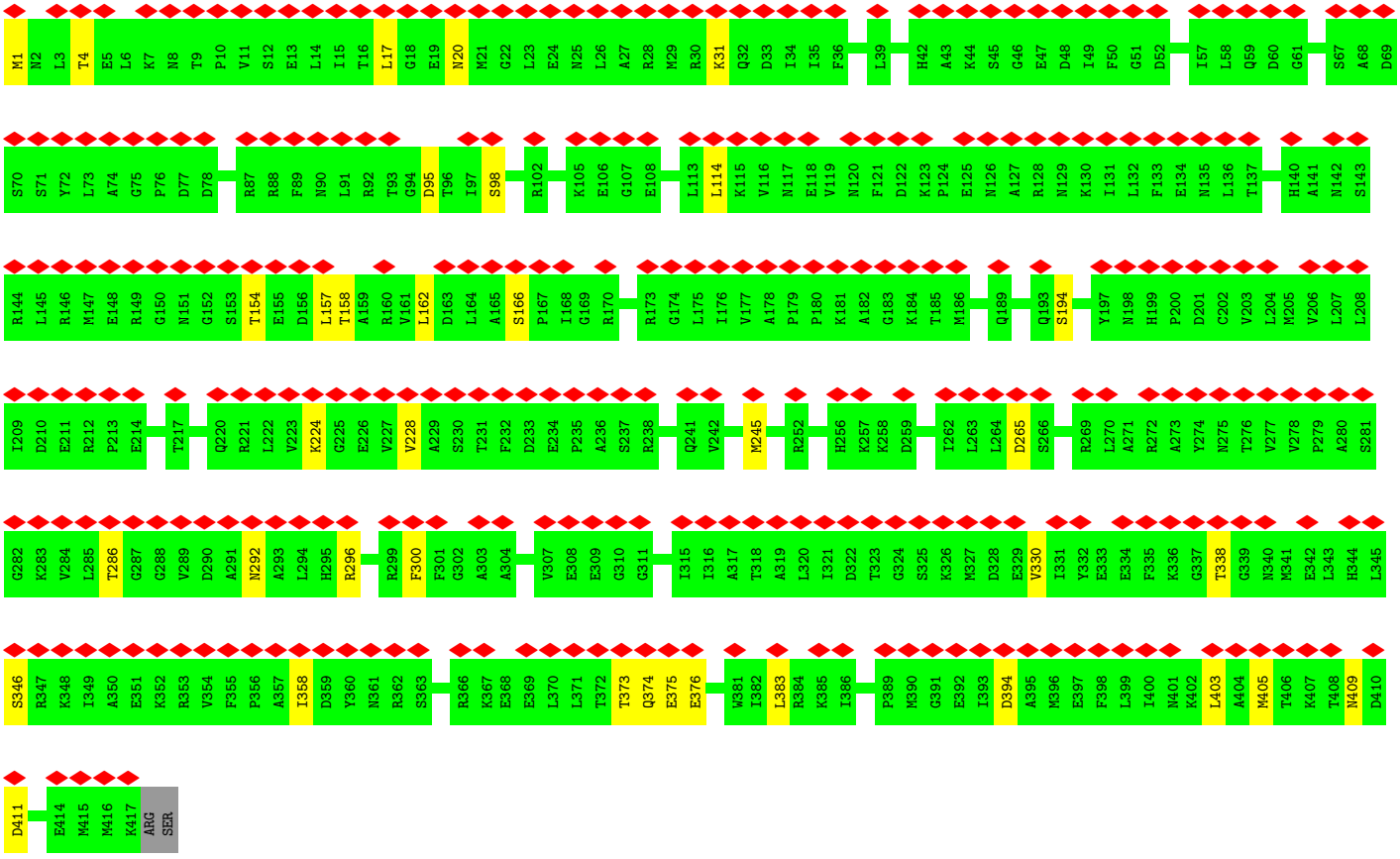
3 Residue-property plots (i)

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: Transcription termination factor Rho

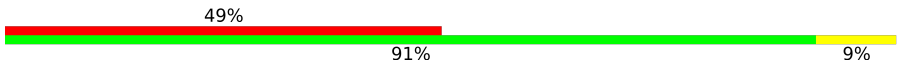
Chain a:

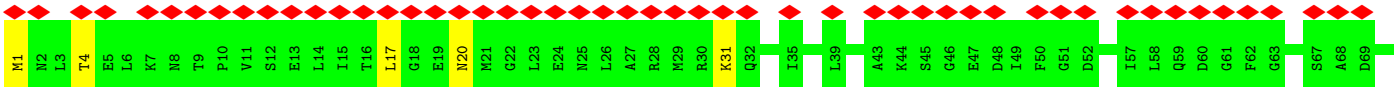


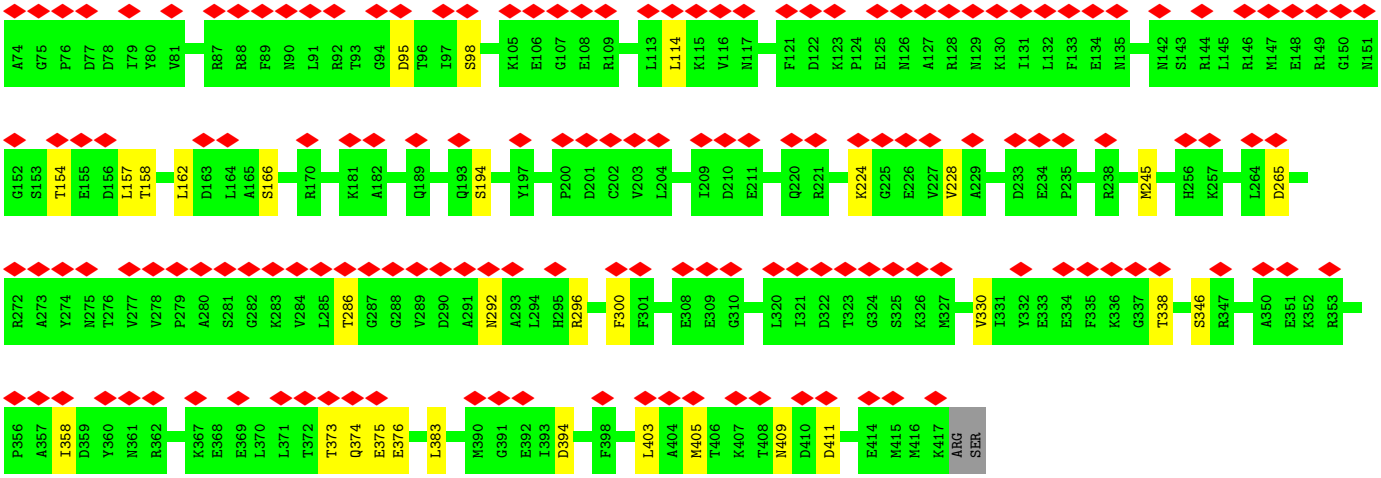


• Molecule 1: Transcription termination factor Rho

Chain b:

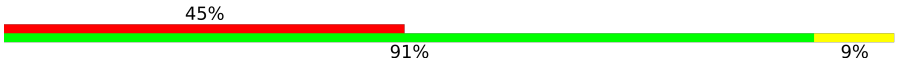


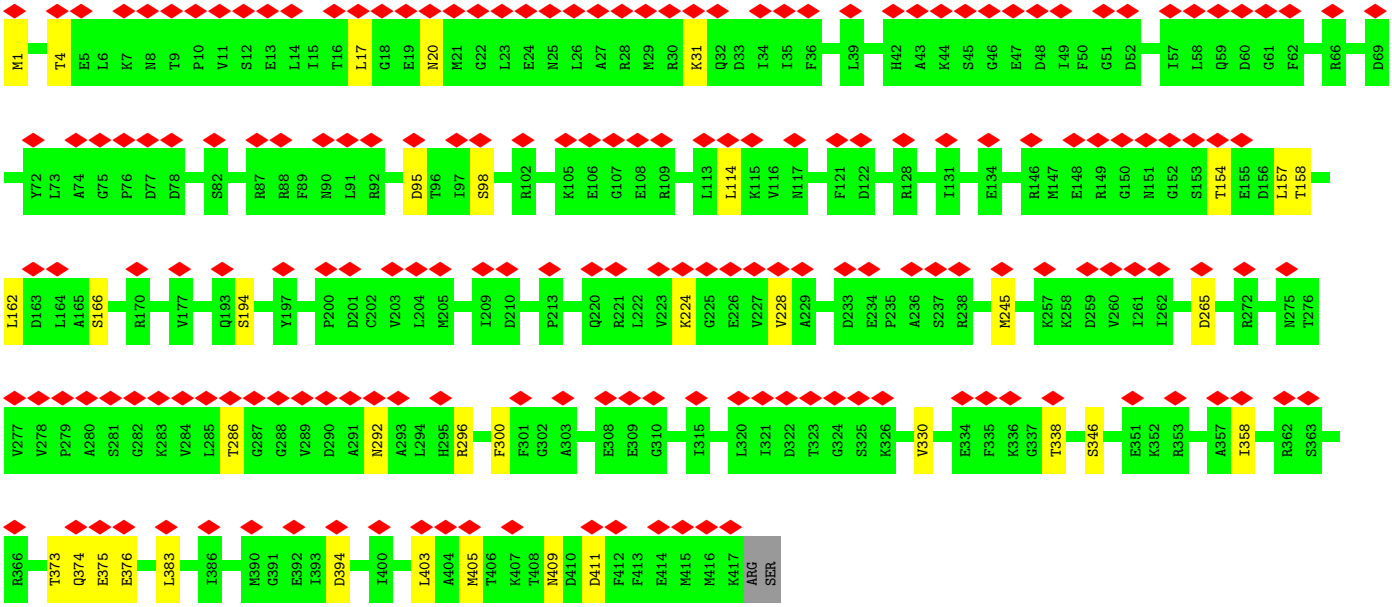




• Molecule 1: Transcription termination factor Rho

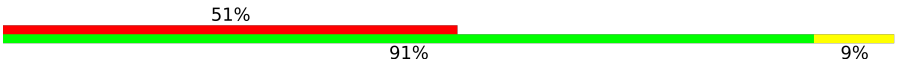
Chain c:

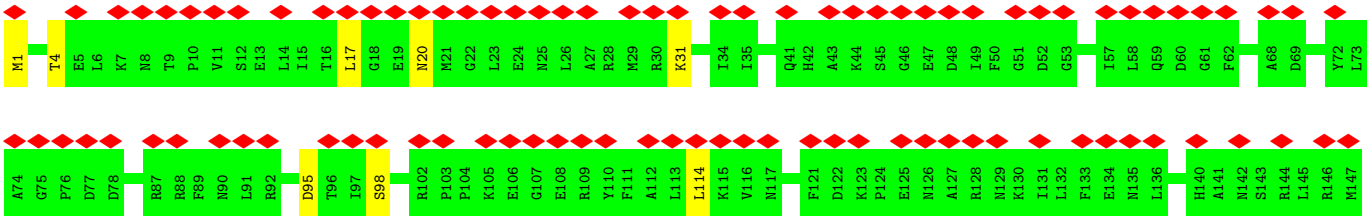


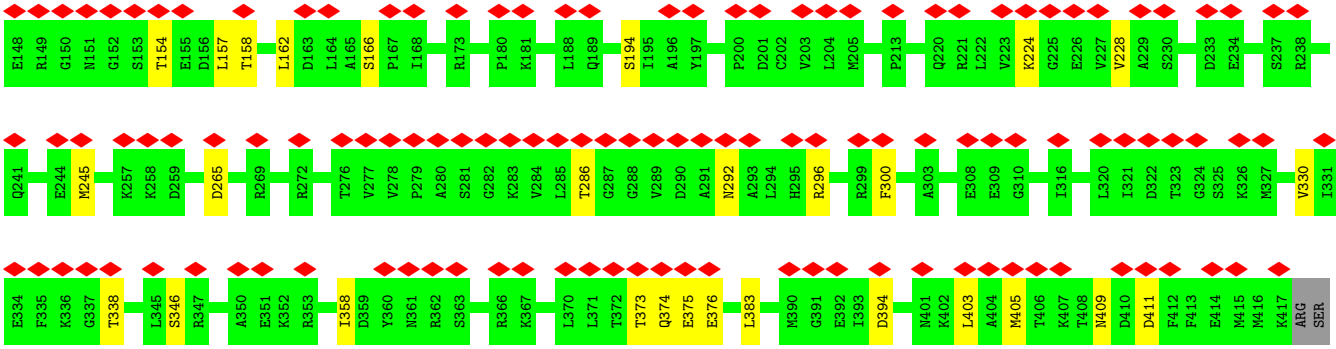


• Molecule 1: Transcription termination factor Rho

Chain d:

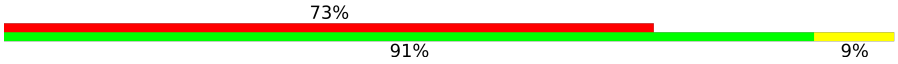


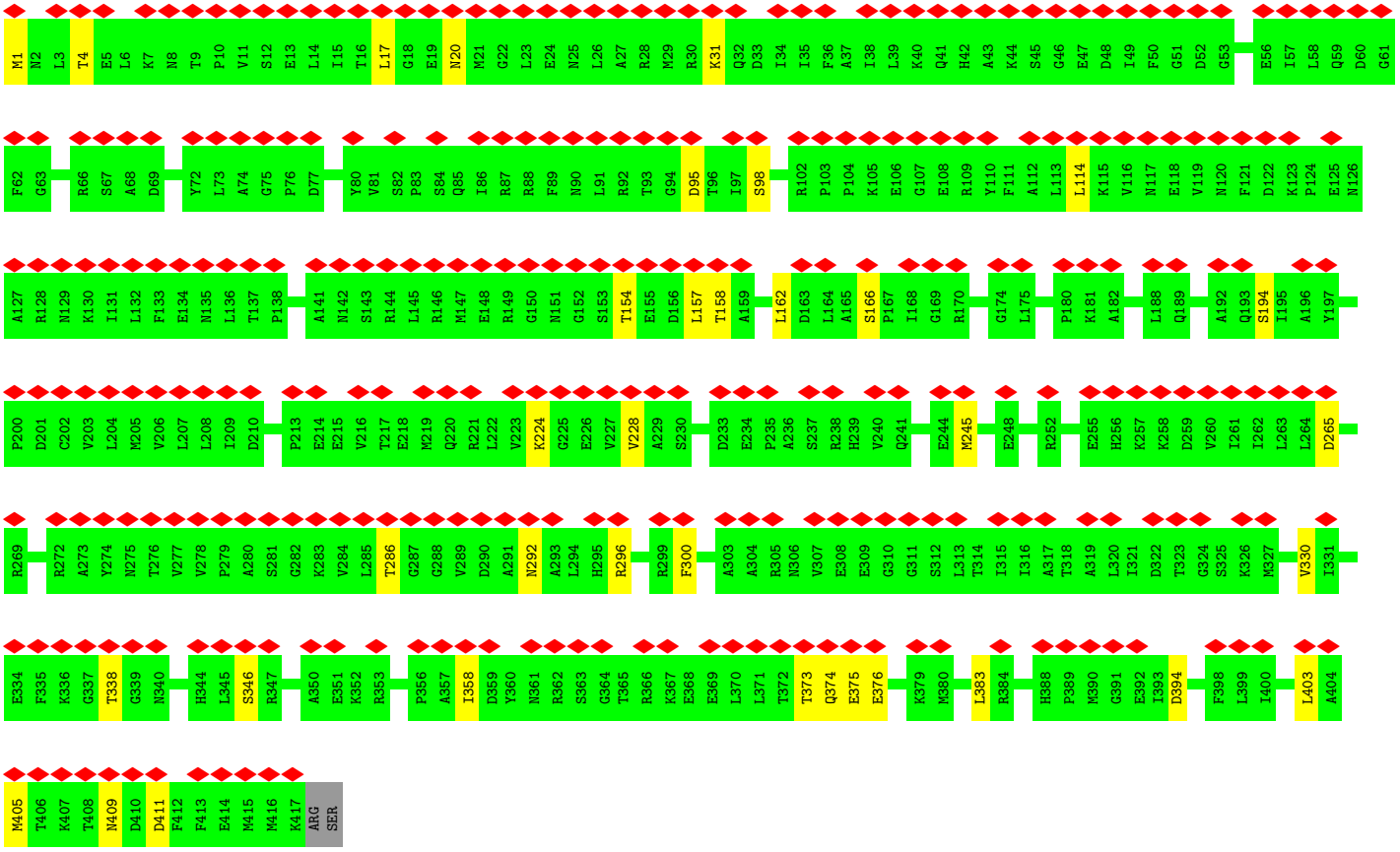




• Molecule 1: Transcription termination factor Rho

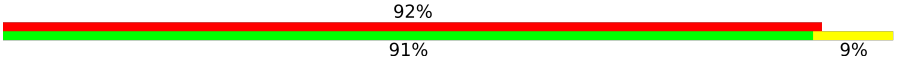
Chain e:

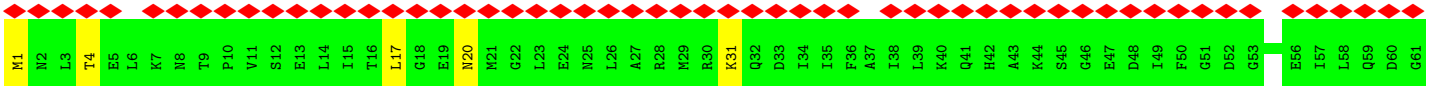


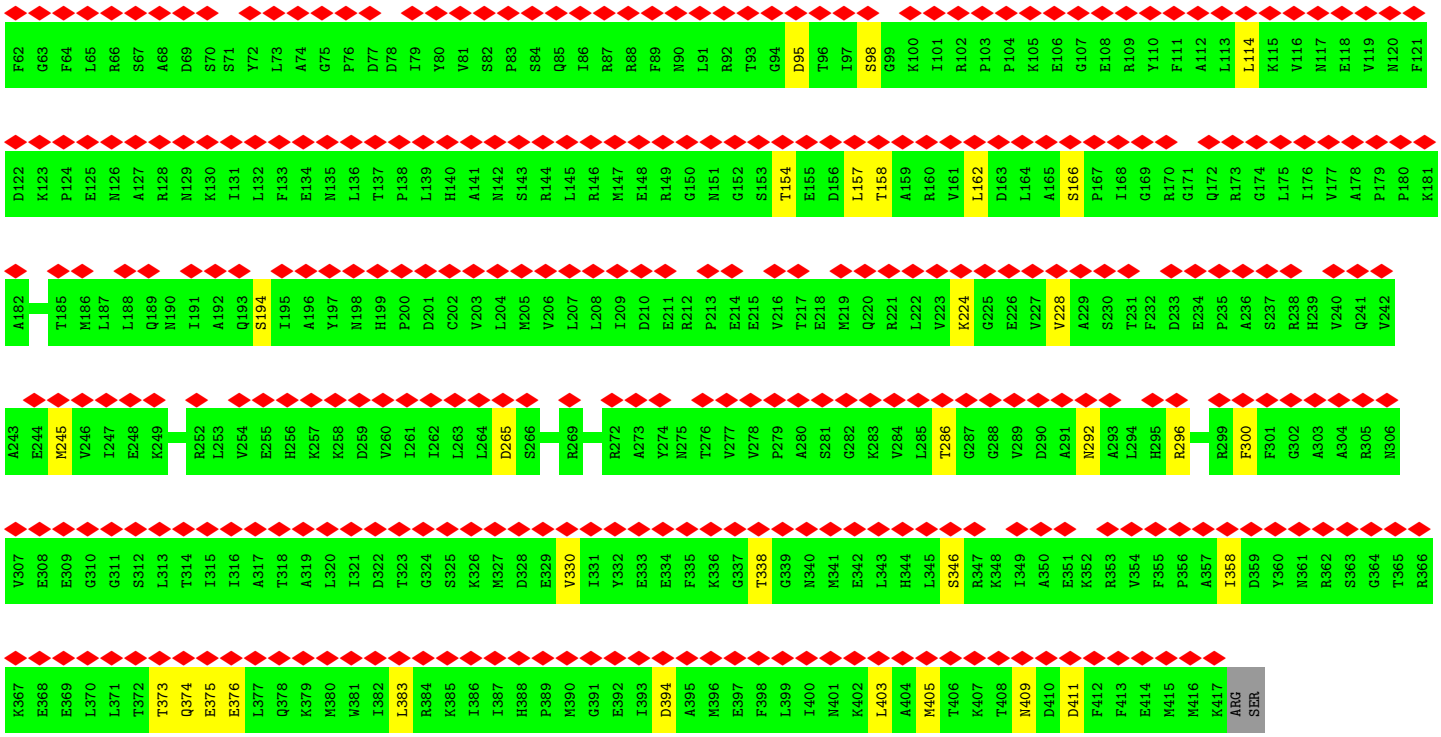


• Molecule 1: Transcription termination factor Rho

Chain f:

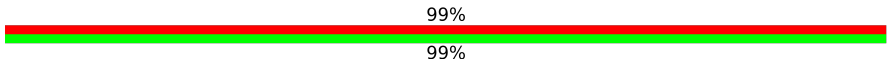


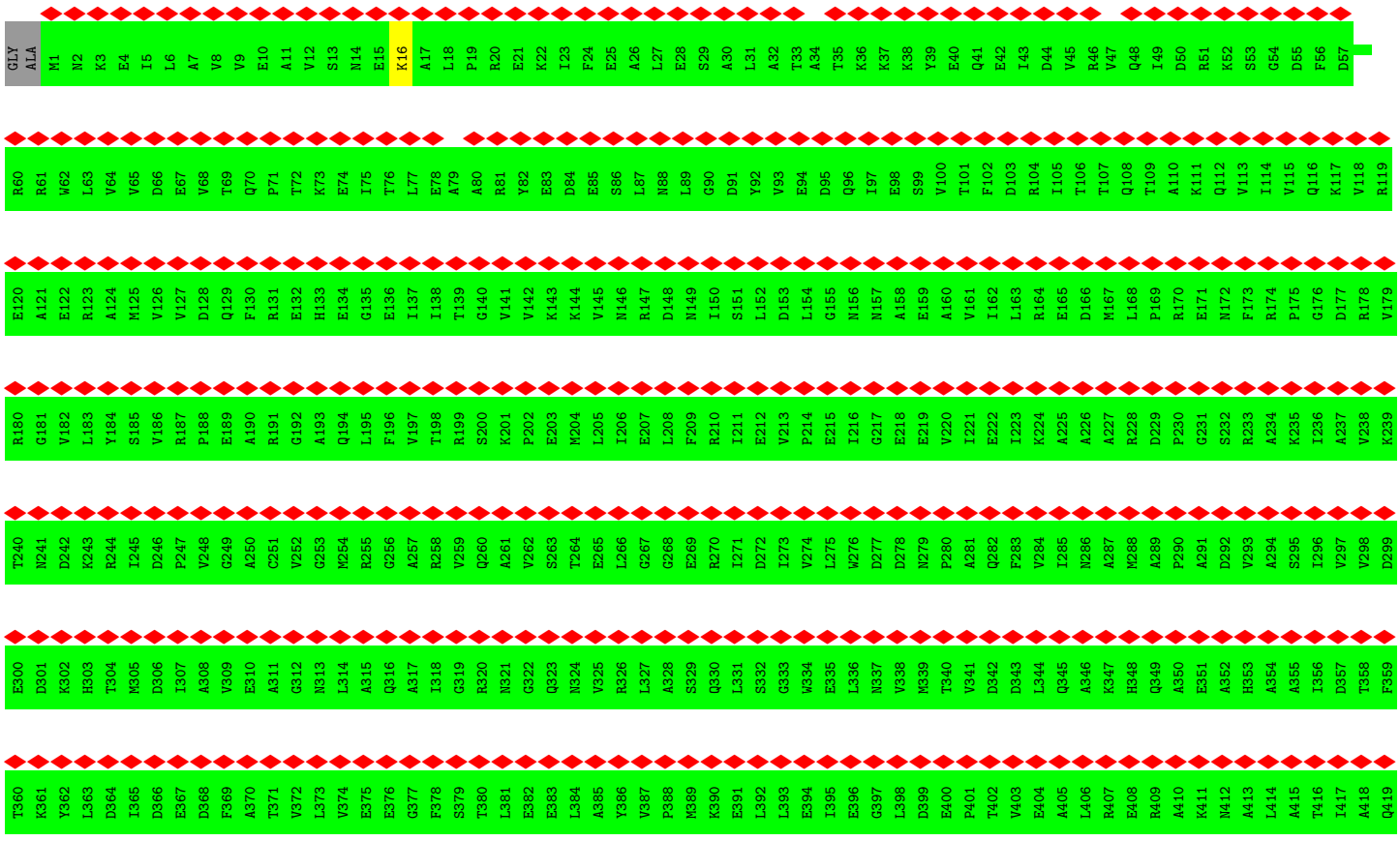




• Molecule 2: Transcription termination/antitermination protein NusA

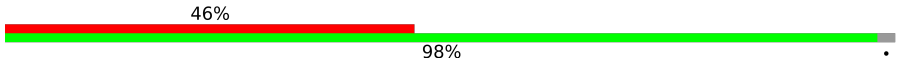
Chain A:

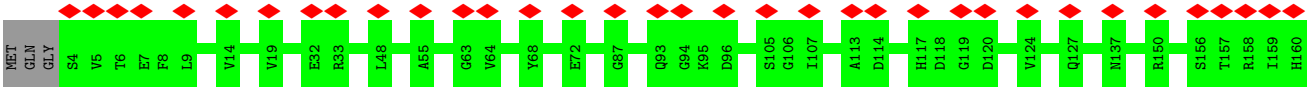


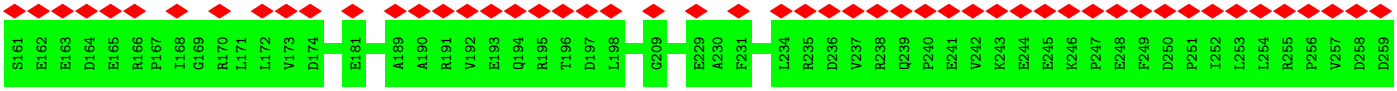


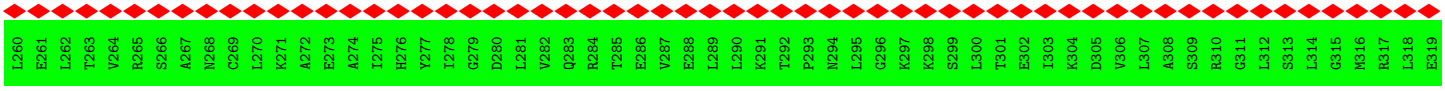
• Molecule 3: DNA-directed RNA polymerase subunit alpha

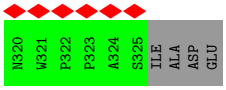
Chain U:





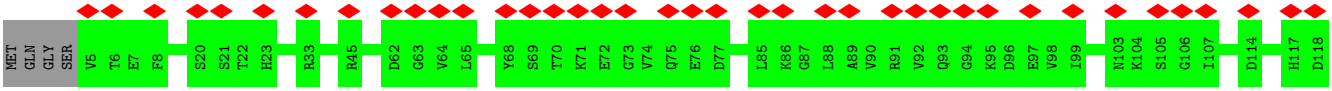


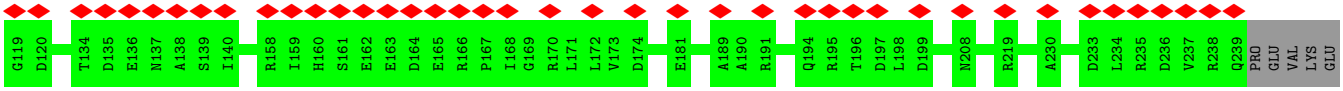




• Molecule 3: DNA-directed RNA polymerase subunit alpha

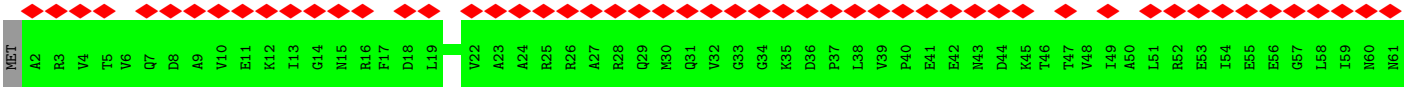
Chain V:

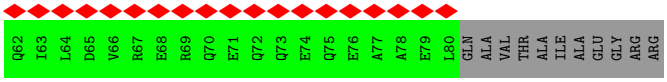




• Molecule 4: DNA-directed RNA polymerase subunit omega

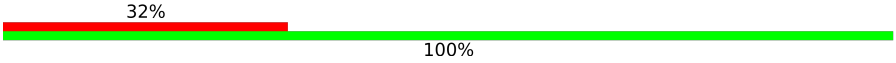
Chain W:

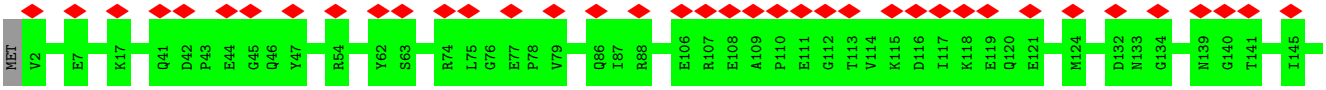


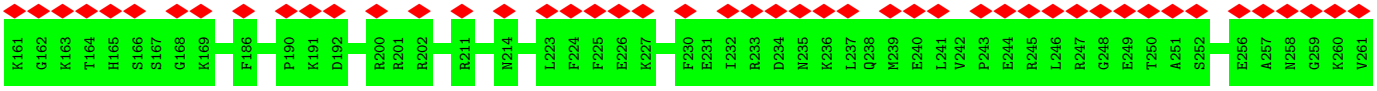


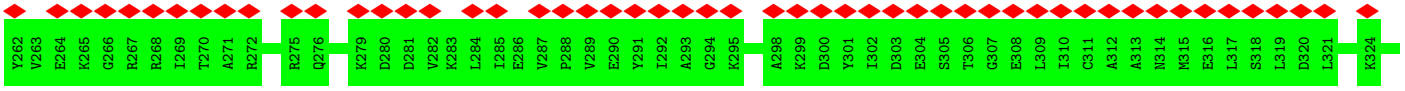
• Molecule 5: DNA-directed RNA polymerase subunit beta

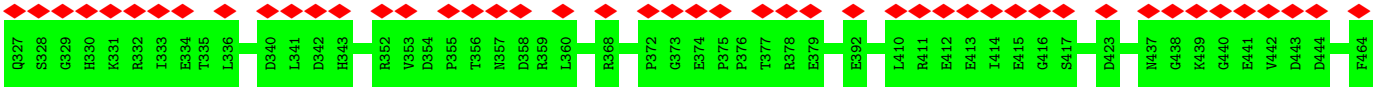
Chain X:

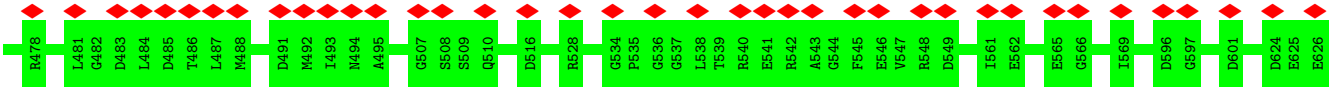


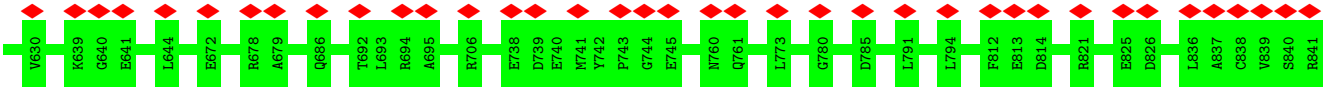


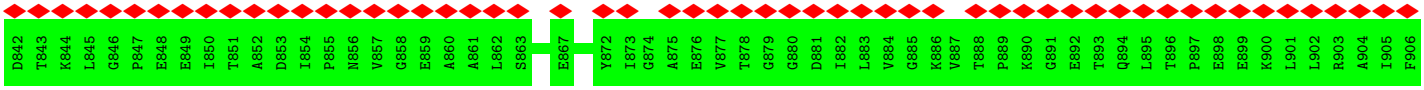


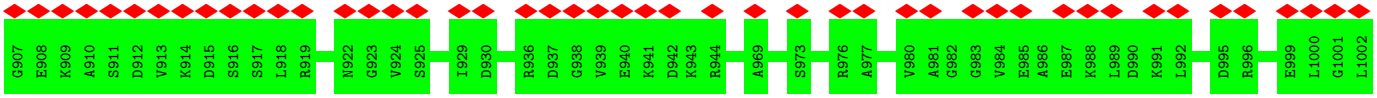


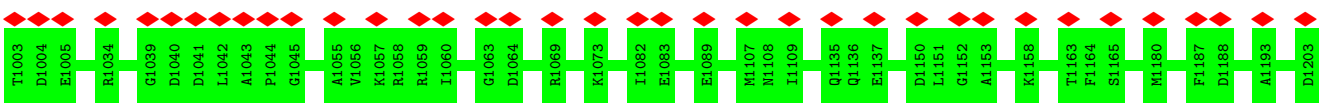


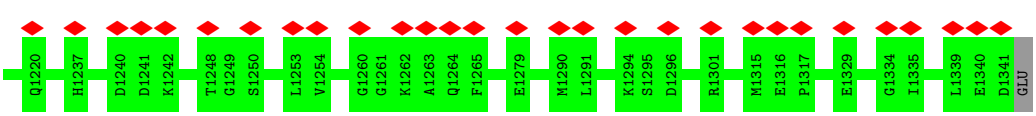






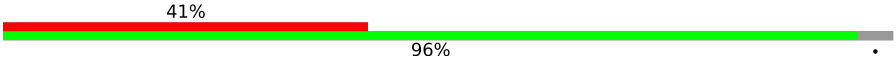


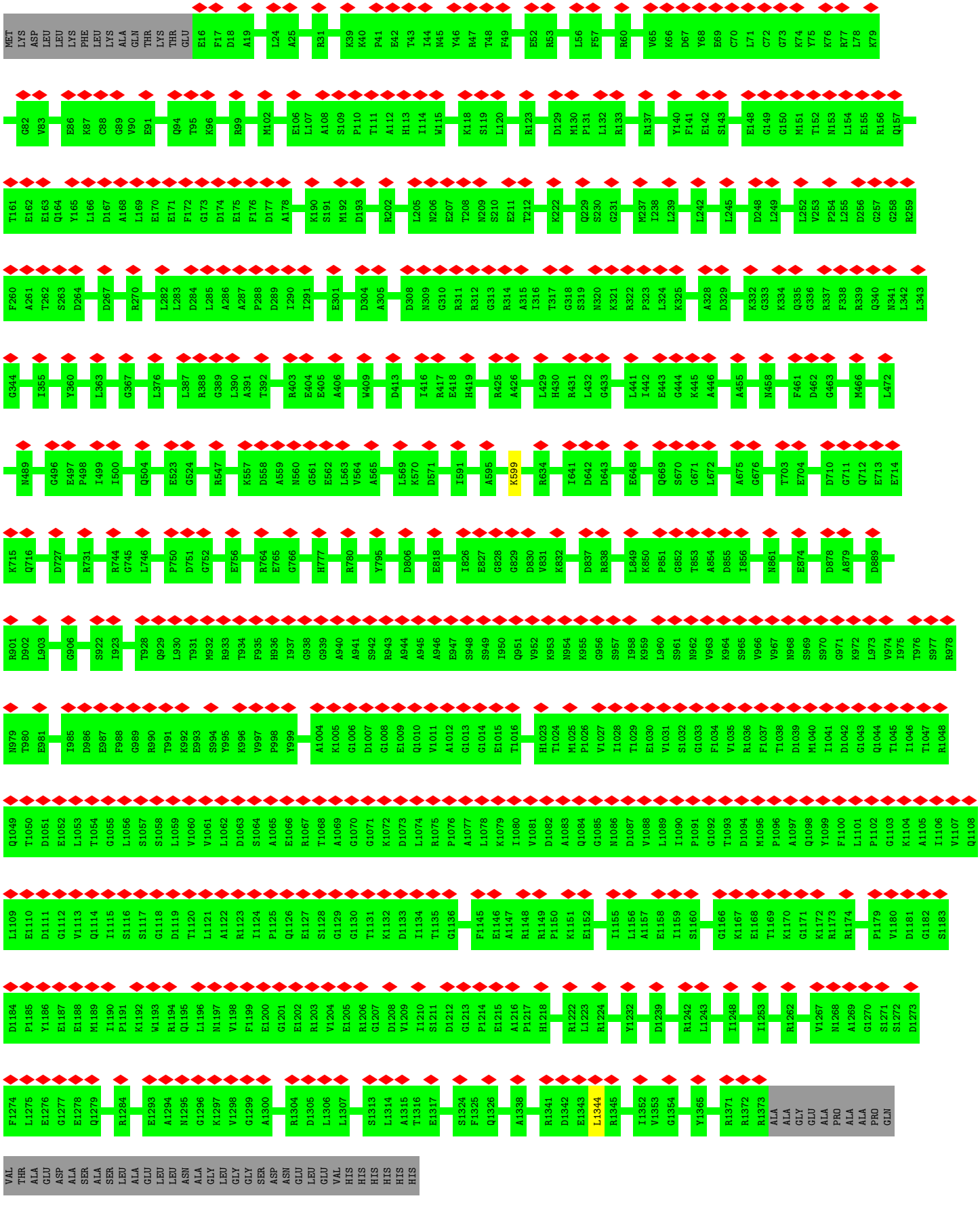




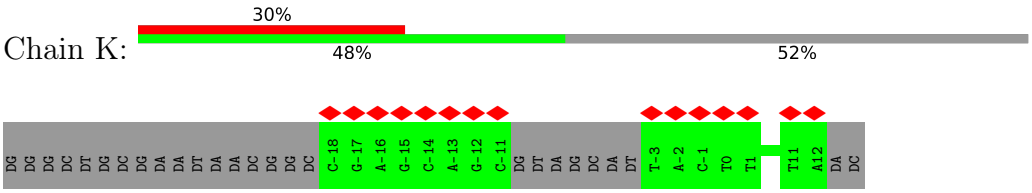
• Molecule 6: DNA-directed RNA polymerase subunit beta'

Chain Y:

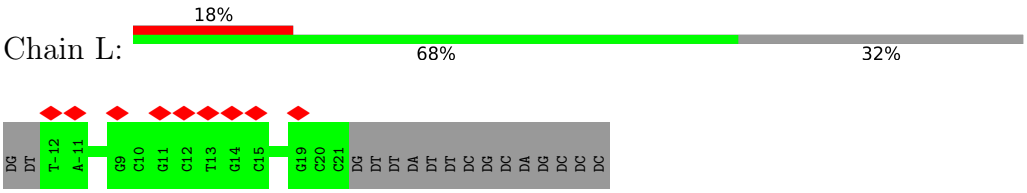



MET LYS ASP LEU LEU LYS PHE LEU LYS ALA GLN THR LYS THR GLU
E16 F17 D18 A19 L24 A25 R31 K39 K40 P41 E42 T43 I44 N45 Y46 R47 T48 F49 E52 R53 L56 F57 R60 V65 K66 D67 Y68 E69 C70 L71 C72 G73 K74 Y75 K76 R77 L78 K79
G82 V83 E86 K87 C88 G89 V90 E91 Q94 T95 K96 R99 M102 E106 L107 A108 S109 P110 T111 A112 H113 I114 W115 K118 S119 L120 R123 D129 M130 P131 L132 R133 R137 Y140 F141 E142 S143 E148 G149 G150 M151 T152 N153 L154 E155 R156 Q157
T161 E162 E163 Q164 Y165 L166 D167 A168 L169 E170 E171 F172 G173 D174 E175 F176 D177 A178 K190 S191 M192 D193 R202 L205 N206 E207 T208 N209 S210 E211 T212 K222 Q229 S230 G231 M237 I238 L239 L242 L245 D248 L249 L252 V253 P254 L255 D256 G257 G258 R259
F260 A261 T262 S263 D264 D267 R270 L282 L283 D284 L285 A286 A287 P288 D289 I290 I291 E301 D304 A305 D308 N309 G310 R311 R312 G313 R314 A315 I316 T317 G318 S319 N320 K321 R322 P323 L324 K325 A328 D329 K332 G333 K334 Q335 G336 R337 F338 R339 Q340 N341 L342 L343
G344 I355 Y360 L363 G367 L376 L387 R388 G389 L390 A391 T392 R403 E404 E405 A406 W409 D413 I416 R417 E418 H419 R425 A426 L429 H430 R431 L432 G433 L441 I442 E443 G444 K445 A446 A455 N458 F461 D462 G463 M466 L472
N489 G496 E497 P498 I499 I500 Q504 E523 G524 R547 K557 D558 A559 N560 G561 E562 L563 V564 A565 L569 K570 D571 I591 A595 K599 R634 I641 D642 D643 E648 Q669 S670 G671 L672 A675 G676 T703 E704 D710 G711 Q712 E713 E714
K715 Q716 D727 R731 R744 G745 L746 P750 D751 G752 E756 R764 E765 G766 H777 R780 Y795 D806 E818 I826 E827 G828 G829 D830 V831 K832 D837 R838 L849 K850 P851 G852 T853 A854 D855 I856 N861 E874 D878 A879 D889
R901 D902 L903 G906 S922 I923 T928 Q929 L930 T931 M932 R933 T934 F935 H936 I937 G938 G939 A940 A941 S942 R943 A944 A945 A946 E947 S948 S949 I950 Q951 V952 K953 N954 K955 G956 S957 I958 K959 L960 S961 N962 V963 K964 S965 V966 V967 N968 S969 S970 G971 K972 L973 V974 I975 T976 S977 R978
N979 T980 E981 I985 D986 E987 F988 G989 R990 T991 K992 E993 S994 Y995 K996 V997 P998 Y999 A1004 K1005 G1006 D1007 G1008 E1009 Q1010 V1011 A1012 G1013 G1014 E1015 T1016 H1023 T1024 M1025 P1026 V1027 I1028 T1029 E1030 V1031 S1032 G1033 F1034 V1035 R1036 F1037 T1038 D1039 M1040 I1041 D1042 G1043 Q1044 T1045 I1046 T1047 R1048
Q1049 T1050 D1051 E1052 L1053 T1054 G1055 L1056 S1057 S1058 L1059 V1060 V1061 L1062 D1063 S1064 A1065 E1066 R1067 T1068 A1069 G1070 G1071 K1072 D1073 L1074 R1075 P1076 A1077 L1078 K1079 I1080 V1081 D1082 A1083 Q1084 G1085 N1086 D1087 V1088 L1089 I1090 P1091 G1092 T1093 D1094 M1095 P1096 A1097 Q1098 Y1099 F1100 L1101 P1102 G1103 K1104 A1105 I1106 V1107 Q1108
L1109 E1110 D1111 G1112 V1113 Q1114 I1115 S1116 S1117 G1118 D1119 T1120 L1121 A1122 R1123 I1124 P1125 Q1126 E1127 S1128 G1129 G1130 T1131 K1132 D1133 I1134 T1135 G1136 F1145 E1146 A1147 R1148 R1149 P1150 K1151 E1152 I1155 L1156 A1157 E1158 I1159 S1160 G1166 K1167 E1168 T1169 K1170 G1171 K1172 R1173 R1174 P1179 V1180 D1181 G1182 S1183
D1184 P1185 Y1186 E1187 E1188 M1189 I1190 P1191 K1192 W1193 R1194 Q1195 L1196 N1197 V1198 F1199 E1200 G1201 E1202 R1203 V1204 E1205 R1206 G1207 D1208 V1209 I1210 S1211 D1212 G1213 P1214 E1215 A1216 P1217 H1218 R1222 L1223 R1224 Y1232 D1239 R1242 L1243 I1248 I1253 R1262 V1267 N1268 A1269 G1270 S1271 S1272 D1273
F1274 L1275 E1276 G1277 E1278 Q1279 R1284 E1293 A1294 N1295 G1296 K1297 V1298 G1299 A1300 R1304 D1305 L1306 L1307 S1313 L1314 A1315 T1316 E1317 S1324 F1325 Q1326 A1338 R1341 D1342 E1343 L1344 R1345 I1352 V1353 G1354 Y1365 R1371 R1372 R1373 ALA ALA GLY GLU ALA PRO ALA ALA PRO GLN
VAL THR ALA GLU ASP ALA SER ALA SER LEU ALA GLU LEU LEU ASN ALA GLY LEU GLY GLY SER ASP ASN GLU LEU GLU VAL HIS HIS HIS HIS HIS HIS

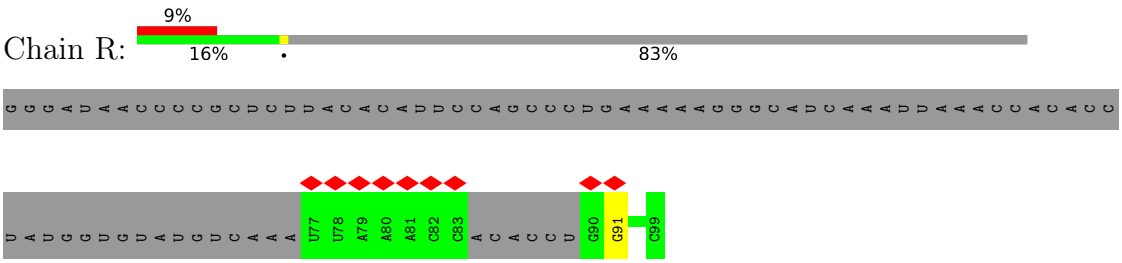
• Molecule 7: ntDNA



• Molecule 8: tDNA



• Molecule 9: rut RNA



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	27226	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI POLARA 300	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	50	Depositor
Minimum defocus (nm)	8000	Depositor
Maximum defocus (nm)	25000	Depositor
Magnification	31000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.247	Depositor
Minimum map value	0.000	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.013	Depositor
Recommended contour level	0.11	Depositor
Map size (Å)	372.0, 372.0, 372.0	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.24, 1.24, 1.24	Depositor

5 Model quality

5.1 Standard geometry

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	a	0.28	0/3329	0.48	0/4483
1	b	0.28	0/3329	0.48	0/4483
1	c	0.28	0/3329	0.48	0/4483
1	d	0.28	0/3329	0.48	0/4483
1	e	0.28	0/3329	0.48	0/4483
1	f	0.28	0/3329	0.48	0/4483
2	A	0.25	0/3897	0.44	0/5273
3	U	0.23	0/2544	0.44	0/3449
3	V	0.24	0/1850	0.45	0/2507
4	W	0.23	0/629	0.43	0/847
5	X	0.25	0/10736	0.42	0/14487
6	Y	0.24	0/10706	0.42	1/14456 (0.0%)
7	K	0.55	0/557	0.94	0/856
8	L	0.53	0/762	0.88	0/1171
9	R	0.20	0/405	0.83	0/627
All	All	0.27	0/52060	0.47	1/70571 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	Y	1344	LEU	CA-CB-CG	5.13	127.10	115.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

Due to software issues we are unable to calculate clashes - this section is therefore empty.

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	415/419 (99%)	397 (96%)	18 (4%)	0	100	100
1	b	415/419 (99%)	397 (96%)	18 (4%)	0	100	100
1	c	415/419 (99%)	397 (96%)	18 (4%)	0	100	100
1	d	415/419 (99%)	397 (96%)	18 (4%)	0	100	100
1	e	415/419 (99%)	397 (96%)	18 (4%)	0	100	100
1	f	415/419 (99%)	397 (96%)	18 (4%)	0	100	100
2	A	493/497 (99%)	453 (92%)	40 (8%)	0	100	100
3	U	320/329 (97%)	292 (91%)	28 (9%)	0	100	100
3	V	233/329 (71%)	218 (94%)	15 (6%)	0	100	100
4	W	77/91 (85%)	72 (94%)	5 (6%)	0	100	100
5	X	1338/1342 (100%)	1251 (94%)	87 (6%)	0	100	100
6	Y	1356/1416 (96%)	1302 (96%)	54 (4%)	0	100	100
All	All	6307/6518 (97%)	5970 (95%)	337 (5%)	0	100	100

There are no Ramachandran outliers to report.

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	357/359 (99%)	321 (90%)	36 (10%)	7	28
1	b	357/359 (99%)	321 (90%)	36 (10%)	7	28

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	c	357/359 (99%)	321 (90%)	36 (10%)	7 28
1	d	357/359 (99%)	321 (90%)	36 (10%)	7 28
1	e	357/359 (99%)	321 (90%)	36 (10%)	7 28
1	f	357/359 (99%)	321 (90%)	36 (10%)	7 28
2	A	409/409 (100%)	408 (100%)	1 (0%)	93 96
3	U	281/286 (98%)	281 (100%)	0	100 100
3	V	203/286 (71%)	203 (100%)	0	100 100
4	W	67/75 (89%)	67 (100%)	0	100 100
5	X	1155/1157 (100%)	1155 (100%)	0	100 100
6	Y	1134/1177 (96%)	1133 (100%)	1 (0%)	93 97
All	All	5391/5544 (97%)	5173 (96%)	218 (4%)	35 56

All (218) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	a	1	MET
1	a	4	THR
1	a	17	LEU
1	a	20	ASN
1	a	31	LYS
1	a	95	ASP
1	a	98	SER
1	a	114	LEU
1	a	154	THR
1	a	157	LEU
1	a	158	THR
1	a	162	LEU
1	a	166	SER
1	a	194	SER
1	a	224	LYS
1	a	228	VAL
1	a	245	MET
1	a	265	ASP
1	a	286	THR
1	a	292	ASN
1	a	296	ARG
1	a	300	PHE
1	a	330	VAL

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Mol	Chain	Res	Type
1	a	338	THR
1	a	346	SER
1	a	358	ILE
1	a	373	THR
1	a	374	GLN
1	a	375	GLU
1	a	376	GLU
1	a	383	LEU
1	a	394	ASP
1	a	403	LEU
1	a	405	MET
1	a	409	ASN
1	a	411	ASP
1	b	1	MET
1	b	4	THR
1	b	17	LEU
1	b	20	ASN
1	b	31	LYS
1	b	95	ASP
1	b	98	SER
1	b	114	LEU
1	b	154	THR
1	b	157	LEU
1	b	158	THR
1	b	162	LEU
1	b	166	SER
1	b	194	SER
1	b	224	LYS
1	b	228	VAL
1	b	245	MET
1	b	265	ASP
1	b	286	THR
1	b	292	ASN
1	b	296	ARG
1	b	300	PHE
1	b	330	VAL
1	b	338	THR
1	b	346	SER
1	b	358	ILE
1	b	373	THR
1	b	374	GLN
1	b	375	GLU

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Mol	Chain	Res	Type
1	b	376	GLU
1	b	383	LEU
1	b	394	ASP
1	b	403	LEU
1	b	405	MET
1	b	409	ASN
1	b	411	ASP
1	c	1	MET
1	c	4	THR
1	c	17	LEU
1	c	20	ASN
1	c	31	LYS
1	c	95	ASP
1	c	98	SER
1	c	114	LEU
1	c	154	THR
1	c	157	LEU
1	c	158	THR
1	c	162	LEU
1	c	166	SER
1	c	194	SER
1	c	224	LYS
1	c	228	VAL
1	c	245	MET
1	c	265	ASP
1	c	286	THR
1	c	292	ASN
1	c	296	ARG
1	c	300	PHE
1	c	330	VAL
1	c	338	THR
1	c	346	SER
1	c	358	ILE
1	c	373	THR
1	c	374	GLN
1	c	375	GLU
1	c	376	GLU
1	c	383	LEU
1	c	394	ASP
1	c	403	LEU
1	c	405	MET
1	c	409	ASN

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Mol	Chain	Res	Type
1	c	411	ASP
1	d	1	MET
1	d	4	THR
1	d	17	LEU
1	d	20	ASN
1	d	31	LYS
1	d	95	ASP
1	d	98	SER
1	d	114	LEU
1	d	154	THR
1	d	157	LEU
1	d	158	THR
1	d	162	LEU
1	d	166	SER
1	d	194	SER
1	d	224	LYS
1	d	228	VAL
1	d	245	MET
1	d	265	ASP
1	d	286	THR
1	d	292	ASN
1	d	296	ARG
1	d	300	PHE
1	d	330	VAL
1	d	338	THR
1	d	346	SER
1	d	358	ILE
1	d	373	THR
1	d	374	GLN
1	d	375	GLU
1	d	376	GLU
1	d	383	LEU
1	d	394	ASP
1	d	403	LEU
1	d	405	MET
1	d	409	ASN
1	d	411	ASP
1	e	1	MET
1	e	4	THR
1	e	17	LEU
1	e	20	ASN
1	e	31	LYS

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Mol	Chain	Res	Type
1	e	95	ASP
1	e	98	SER
1	e	114	LEU
1	e	154	THR
1	e	157	LEU
1	e	158	THR
1	e	162	LEU
1	e	166	SER
1	e	194	SER
1	e	224	LYS
1	e	228	VAL
1	e	245	MET
1	e	265	ASP
1	e	286	THR
1	e	292	ASN
1	e	296	ARG
1	e	300	PHE
1	e	330	VAL
1	e	338	THR
1	e	346	SER
1	e	358	ILE
1	e	373	THR
1	e	374	GLN
1	e	375	GLU
1	e	376	GLU
1	e	383	LEU
1	e	394	ASP
1	e	403	LEU
1	e	405	MET
1	e	409	ASN
1	e	411	ASP
1	f	1	MET
1	f	4	THR
1	f	17	LEU
1	f	20	ASN
1	f	31	LYS
1	f	95	ASP
1	f	98	SER
1	f	114	LEU
1	f	154	THR
1	f	157	LEU
1	f	158	THR

Continued on next page...

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Mol	Chain	Res	Type
1	f	162	LEU
1	f	166	SER
1	f	194	SER
1	f	224	LYS
1	f	228	VAL
1	f	245	MET
1	f	265	ASP
1	f	286	THR
1	f	292	ASN
1	f	296	ARG
1	f	300	PHE
1	f	330	VAL
1	f	338	THR
1	f	346	SER
1	f	358	ILE
1	f	373	THR
1	f	374	GLN
1	f	375	GLU
1	f	376	GLU
1	f	383	LEU
1	f	394	ASP
1	f	403	LEU
1	f	405	MET
1	f	409	ASN
1	f	411	ASP
2	A	16	LYS
6	Y	599	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (42) such sidechains are listed below:

Mol	Chain	Res	Type
1	a	32	GLN
1	a	295	HIS
1	a	388	HIS
1	b	32	GLN
1	b	295	HIS
1	b	388	HIS
1	c	32	GLN
1	c	198	ASN
1	c	295	HIS
1	d	32	GLN
1	d	90	ASN

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Mol	Chain	Res	Type
1	e	32	GLN
1	e	140	HIS
1	e	295	HIS
1	e	388	HIS
1	f	32	GLN
1	f	295	HIS
2	A	48	GLN
2	A	96	GLN
2	A	129	GLN
2	A	157	ASN
2	A	260	GLN
2	A	303	HIS
2	A	321	ASN
2	A	324	ASN
2	A	412	ASN
3	U	227	GLN
4	W	29	GLN
5	X	139	ASN
5	X	193	ASN
5	X	513	GLN
5	X	684	ASN
5	X	688	GLN
5	X	798	GLN
5	X	799	ASN
5	X	932	GLN
5	X	1116	HIS
6	Y	365	GLN
6	Y	488	ASN
6	Y	739	GLN
6	Y	1049	GLN
6	Y	1295	ASN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
9	R	15/99 (15%)	1 (6%)	0

All (1) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
9	R	91	G

There are no RNA pucker outliers to report.

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 18 ligands modelled in this entry, 8 are monoatomic - leaving 10 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
10	BEF	e	1002	-	0,3,3	-	-	-		
10	BEF	c	1002	-	0,3,3	-	-	-		
10	BEF	b	501	-	0,3,3	-	-	-		
11	ADP	b	502	1,12	24,29,29	0.97	1 (4%)	29,45,45	1.45	4 (13%)
10	BEF	d	1002	-	0,3,3	-	-	-		
11	ADP	d	1000	1,12	24,29,29	0.96	1 (4%)	29,45,45	1.49	4 (13%)
11	ADP	e	1000	12	24,29,29	0.95	1 (4%)	29,45,45	1.47	4 (13%)
10	BEF	f	1002	-	0,3,3	-	-	-		
11	ADP	c	1000	1,12	24,29,29	0.95	1 (4%)	29,45,45	1.50	4 (13%)
11	ADP	f	1000	1	24,29,29	0.97	1 (4%)	29,45,45	1.42	4 (13%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
11	ADP	b	502	1,12	-	6/12/32/32	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
11	ADP	e	1000	12	-	1/12/32/32	0/3/3/3
11	ADP	d	1000	1,12	-	1/12/32/32	0/3/3/3
11	ADP	c	1000	1,12	-	1/12/32/32	0/3/3/3
11	ADP	f	1000	1	-	2/12/32/32	0/3/3/3

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
11	b	502	ADP	C5-C4	2.56	1.47	1.40
11	f	1000	ADP	C5-C4	2.53	1.47	1.40
11	d	1000	ADP	C5-C4	2.51	1.47	1.40
11	e	1000	ADP	C5-C4	2.50	1.47	1.40
11	c	1000	ADP	C5-C4	2.48	1.47	1.40

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
11	e	1000	ADP	C3'-C2'-C1'	3.66	106.50	100.98
11	c	1000	ADP	C3'-C2'-C1'	3.60	106.40	100.98
11	d	1000	ADP	C3'-C2'-C1'	3.55	106.32	100.98
11	b	502	ADP	C3'-C2'-C1'	3.51	106.27	100.98
11	f	1000	ADP	C3'-C2'-C1'	3.46	106.19	100.98
11	d	1000	ADP	PA-O3A-PB	-3.36	121.29	132.83
11	c	1000	ADP	PA-O3A-PB	-3.26	121.63	132.83
11	c	1000	ADP	N3-C2-N1	-3.18	123.71	128.68
11	d	1000	ADP	N3-C2-N1	-3.17	123.73	128.68
11	e	1000	ADP	PA-O3A-PB	-3.17	121.96	132.83
11	f	1000	ADP	N3-C2-N1	-3.15	123.75	128.68
11	e	1000	ADP	N3-C2-N1	-3.13	123.78	128.68
11	b	502	ADP	N3-C2-N1	-3.08	123.86	128.68
11	b	502	ADP	PA-O3A-PB	-3.04	122.39	132.83
11	f	1000	ADP	PA-O3A-PB	-3.03	122.42	132.83
11	d	1000	ADP	C4-C5-N7	-2.65	106.64	109.40
11	c	1000	ADP	C4-C5-N7	-2.64	106.65	109.40
11	f	1000	ADP	C4-C5-N7	-2.63	106.66	109.40
11	e	1000	ADP	C4-C5-N7	-2.62	106.67	109.40
11	b	502	ADP	C4-C5-N7	-2.55	106.74	109.40

There are no chirality outliers.

All (11) torsion outliers are listed below:

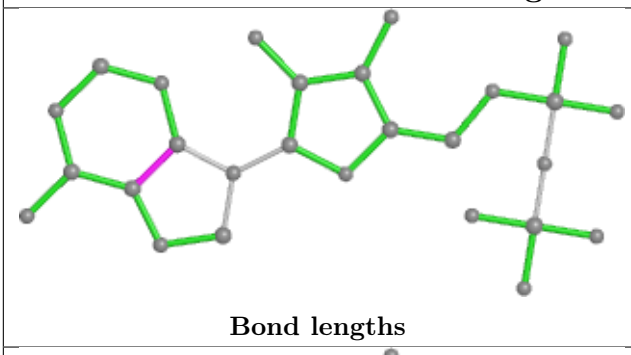
Mol	Chain	Res	Type	Atoms
11	b	502	ADP	C5'-O5'-PA-O2A
11	b	502	ADP	C5'-O5'-PA-O3A
11	f	1000	ADP	O4'-C4'-C5'-O5'
11	b	502	ADP	PB-O3A-PA-O1A
11	b	502	ADP	O4'-C4'-C5'-O5'
11	f	1000	ADP	PB-O3A-PA-O2A
11	b	502	ADP	C5'-O5'-PA-O1A
11	b	502	ADP	PB-O3A-PA-O2A
11	d	1000	ADP	O4'-C4'-C5'-O5'
11	e	1000	ADP	O4'-C4'-C5'-O5'
11	c	1000	ADP	O4'-C4'-C5'-O5'

There are no ring outliers.

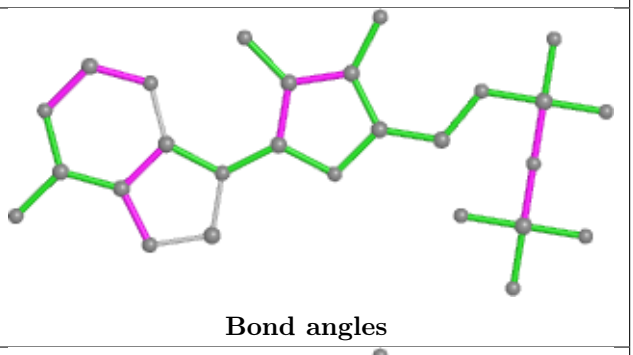
No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

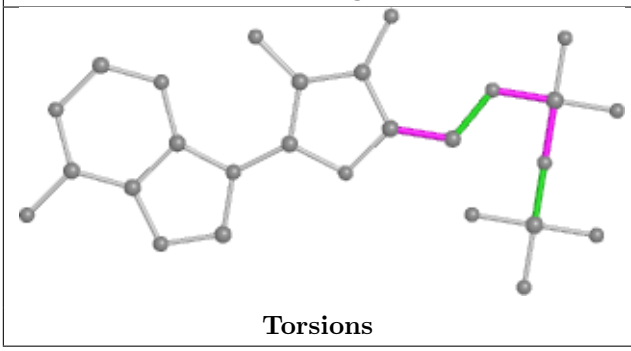
Ligand ADP b 502



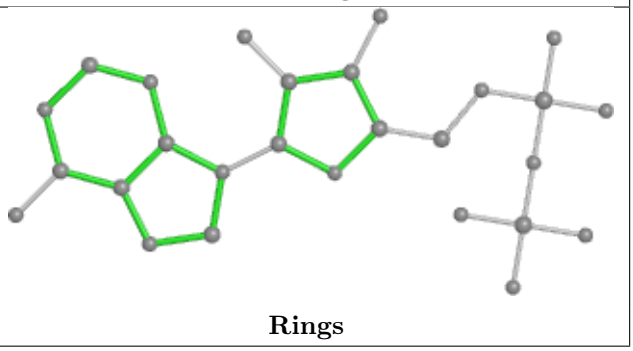
Bond lengths



Bond angles

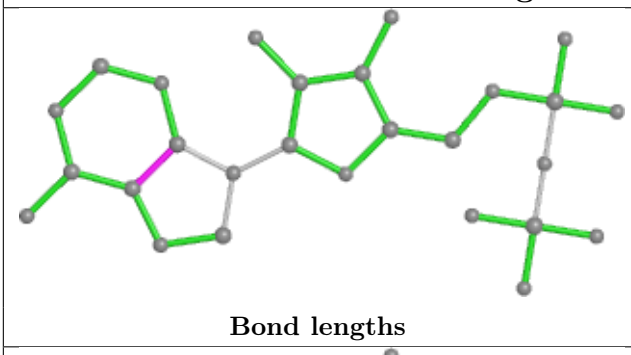


Torsions

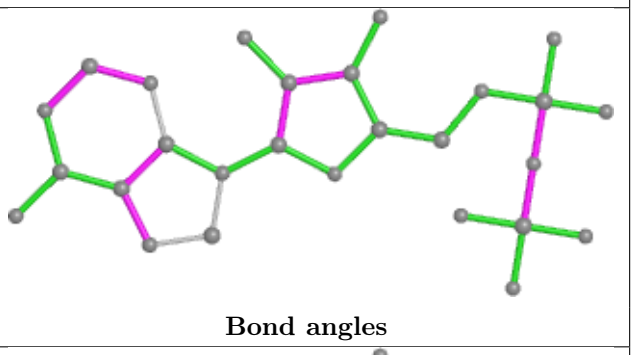


Rings

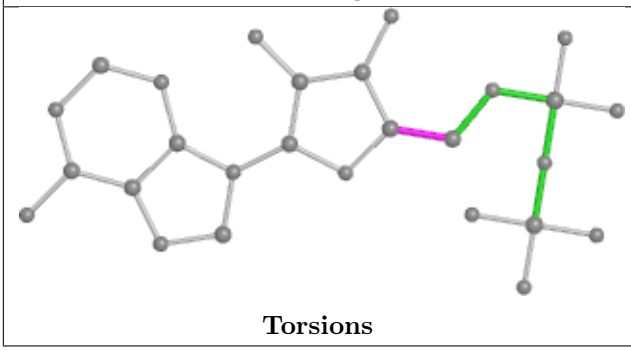
Ligand ADP d 1000



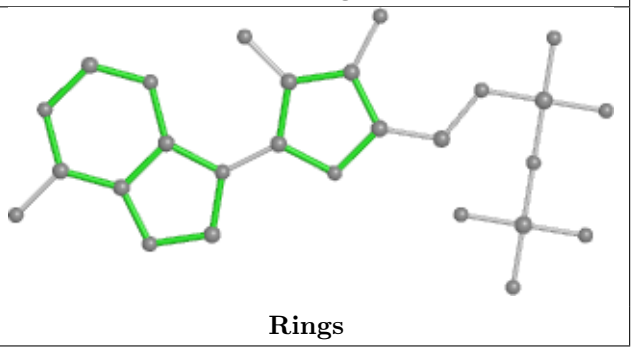
Bond lengths



Bond angles

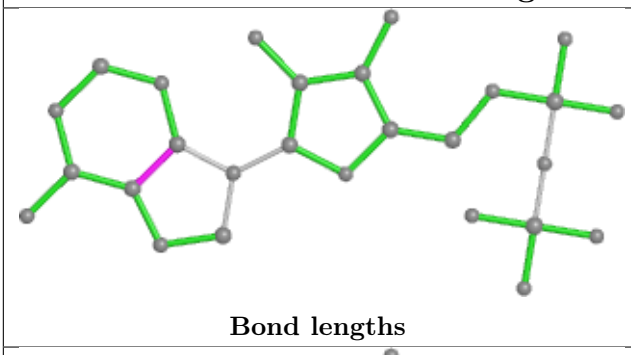


Torsions

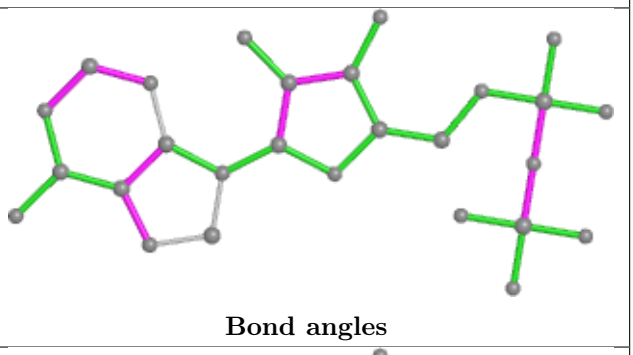


Rings

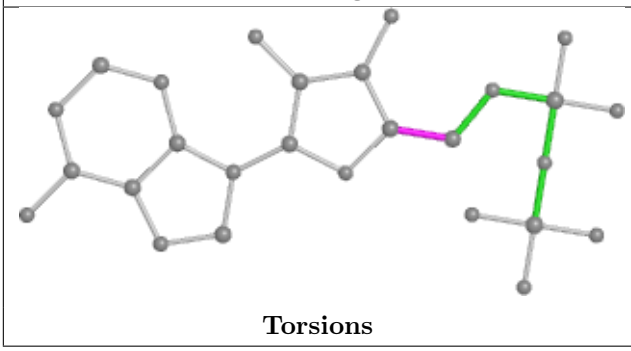
Ligand ADP e 1000



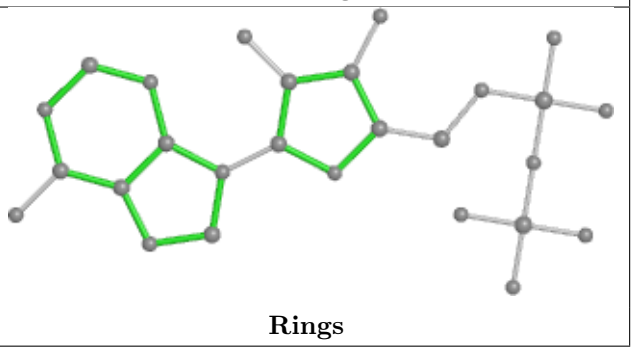
Bond lengths



Bond angles

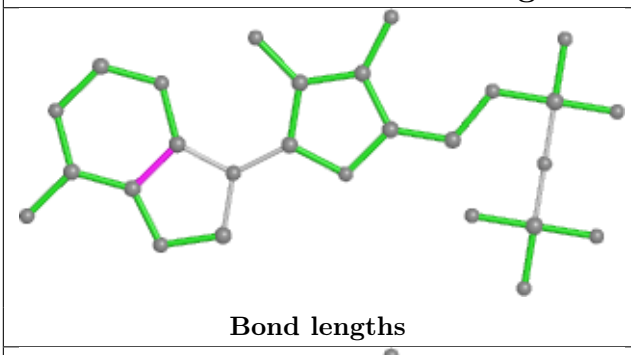


Torsions

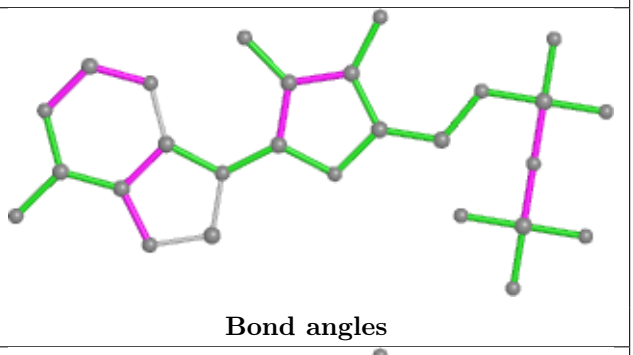


Rings

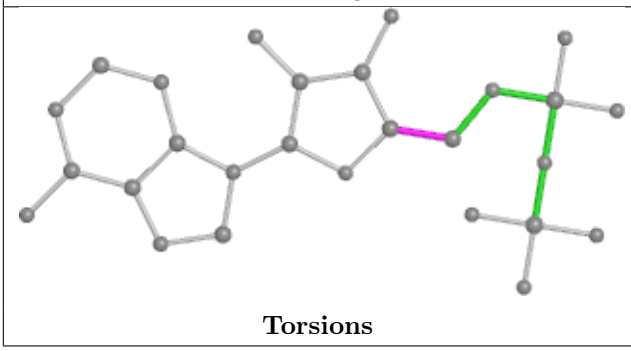
Ligand ADP c 1000



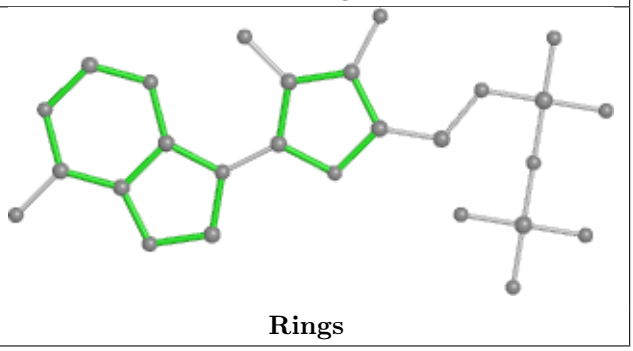
Bond lengths



Bond angles

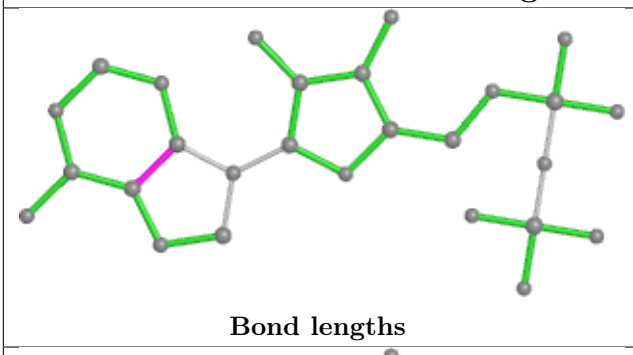


Torsions

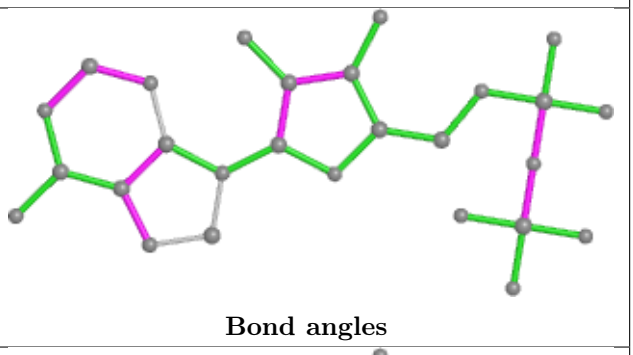


Rings

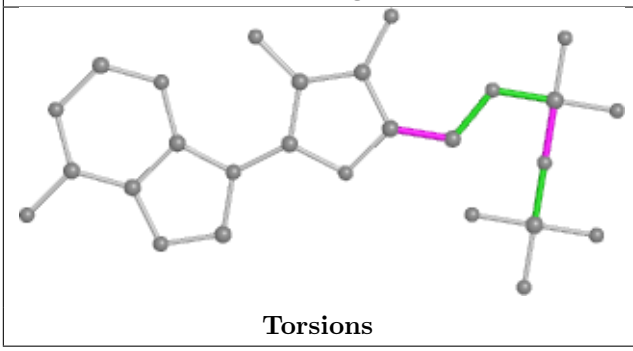
Ligand ADP f 1000



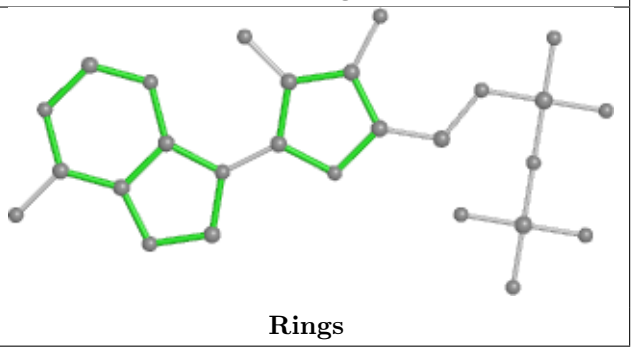
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

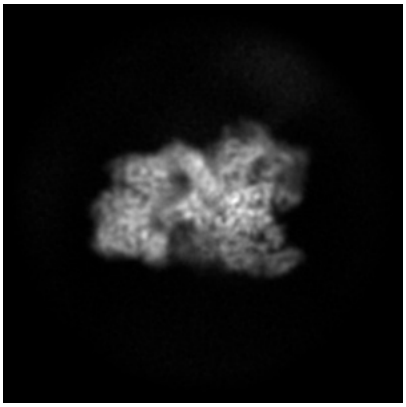
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-11722. These allow visual inspection of the internal detail of the map and identification of artifacts.

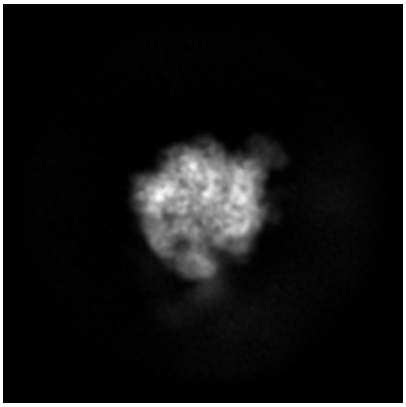
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

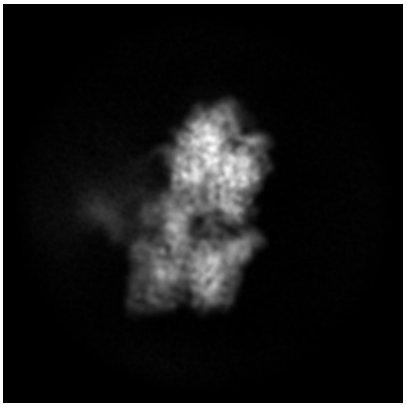
6.1.1 Primary map



X



Y

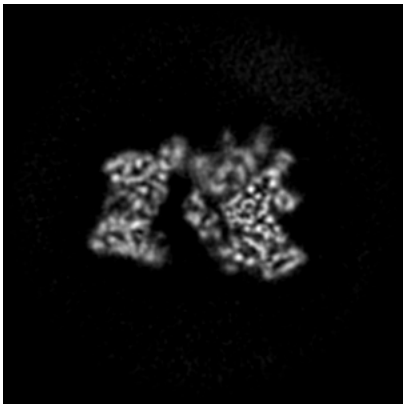


Z

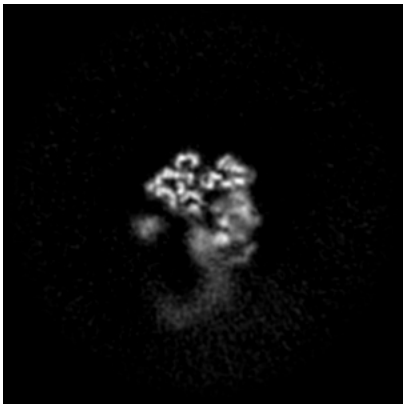
The images above show the map projected in three orthogonal directions.

6.2 Central slices

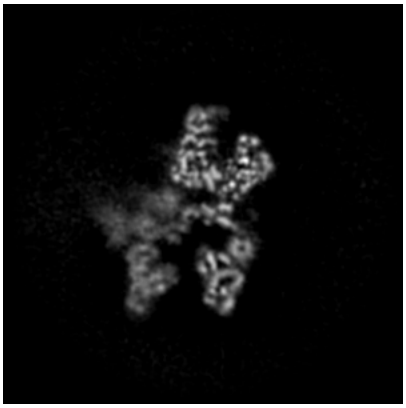
6.2.1 Primary map



X Index: 150



Y Index: 150

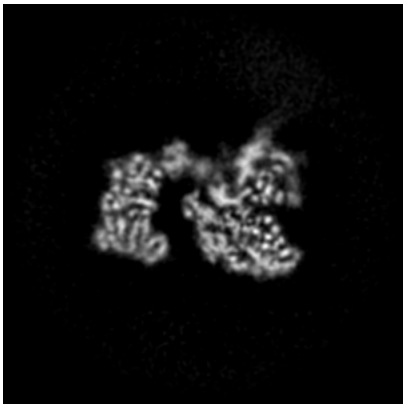


Z Index: 150

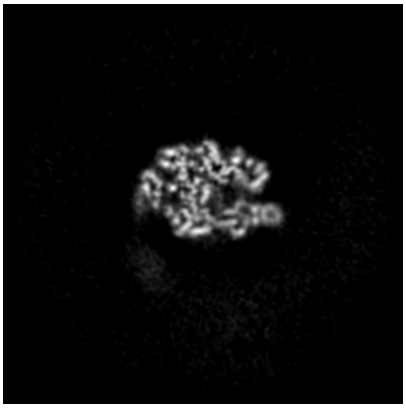
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

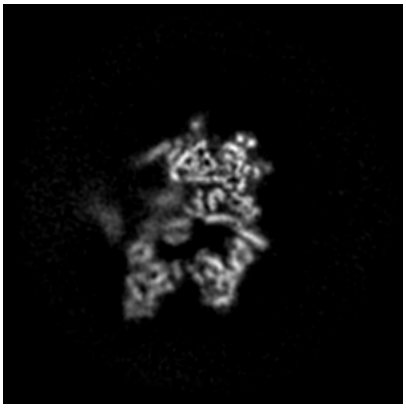
6.3.1 Primary map



X Index: 156



Y Index: 169

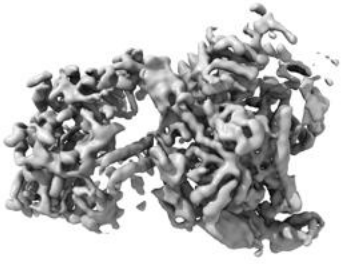


Z Index: 143

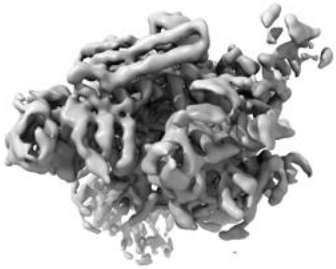
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views (i)

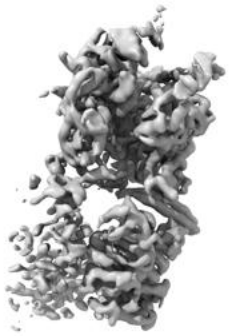
6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.11. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

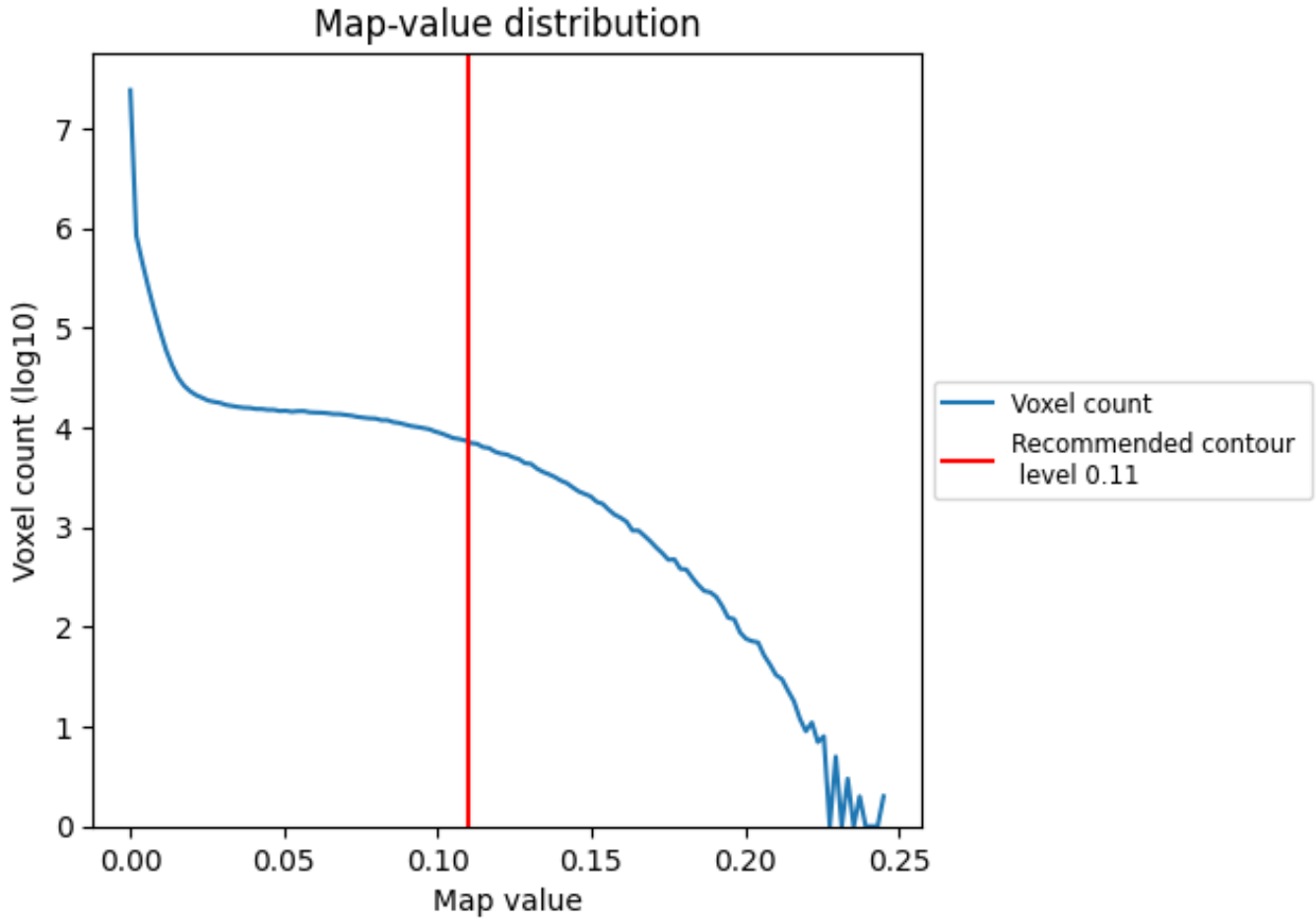
6.5 Mask visualisation (i)

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

7 Map analysis

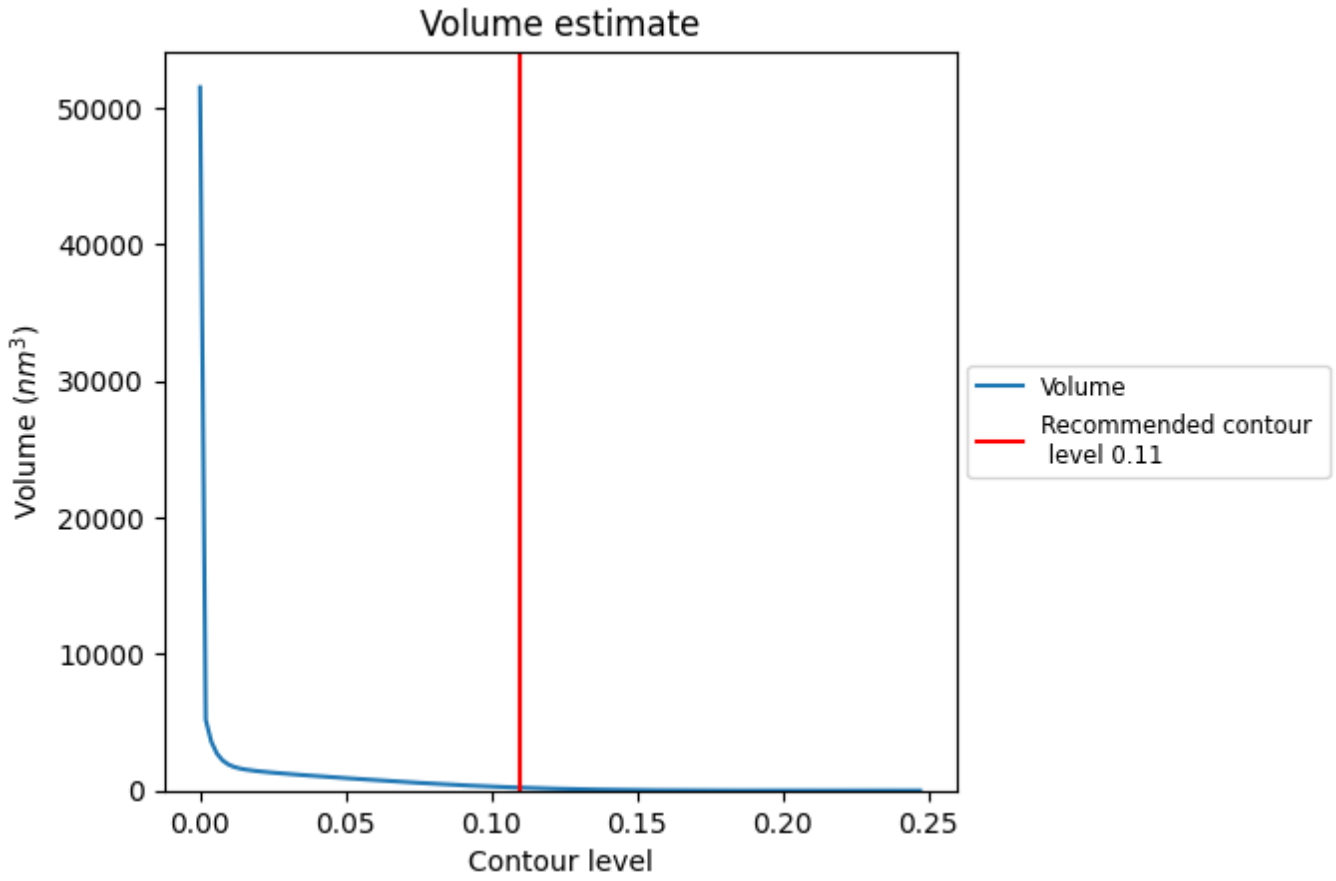
This section contains the results of statistical analysis of the map.

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.

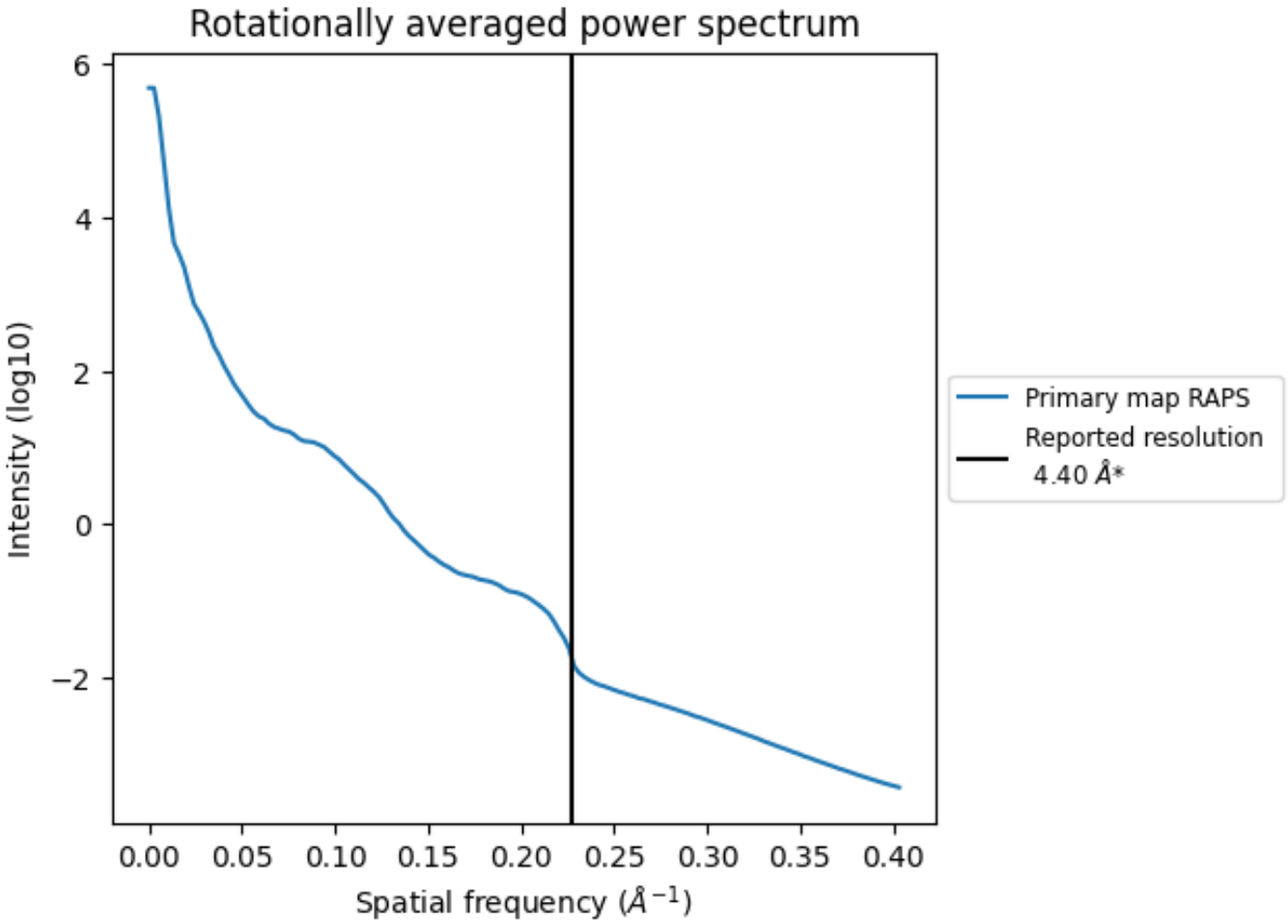
7.2 Volume estimate



The volume at the recommended contour level is 212 nm^3; this corresponds to an approximate mass of 191 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)

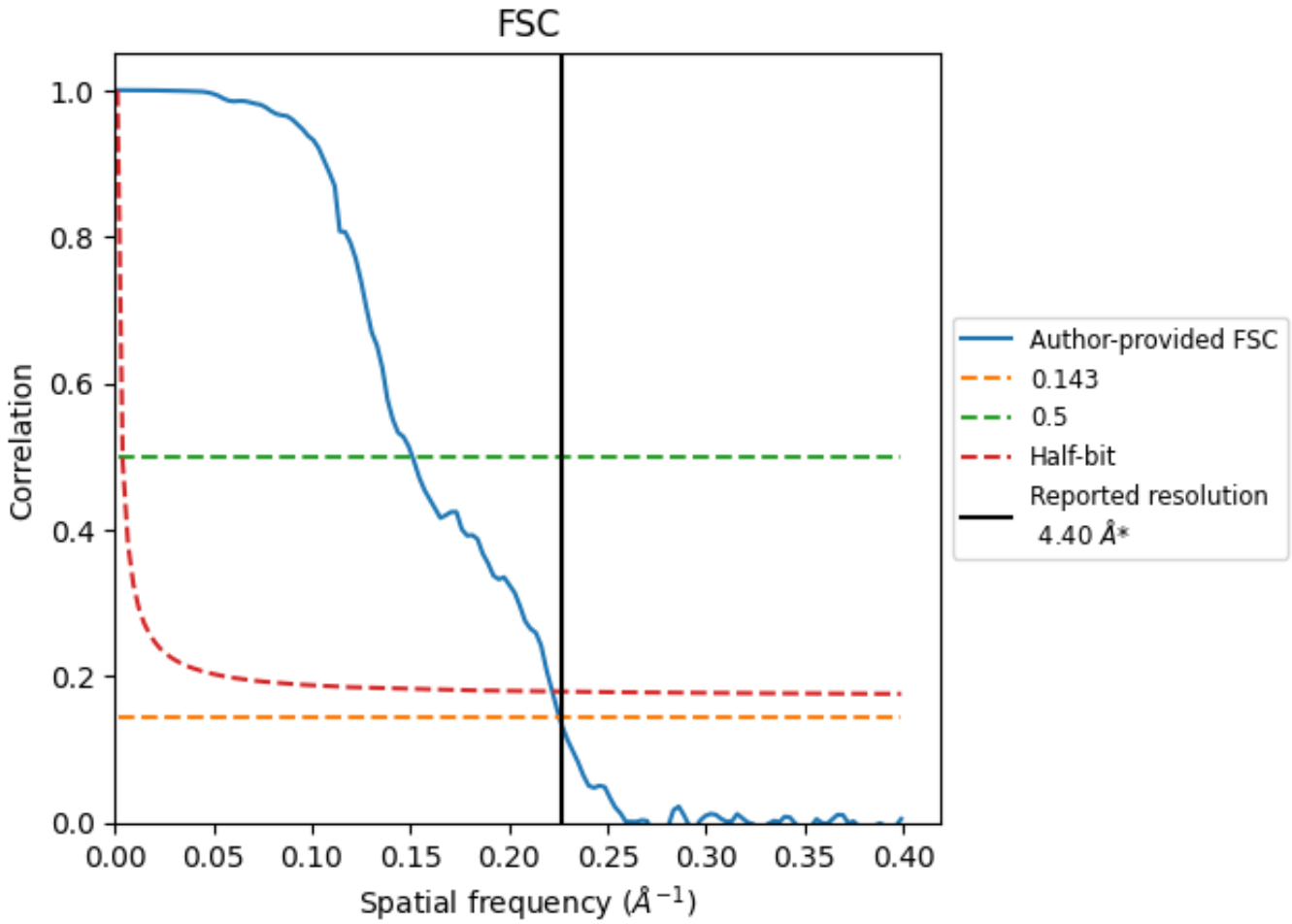


*Reported resolution corresponds to spatial frequency of 0.227 Å^{-1}

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 0.227 Å^{-1}

8.2 Resolution estimates (i)

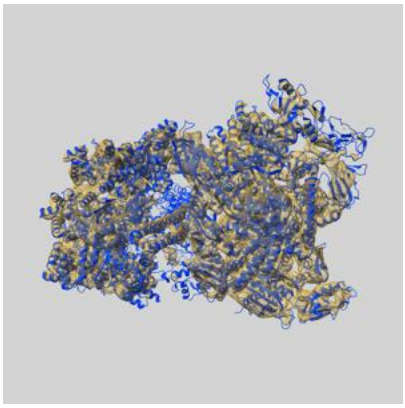
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.40	-	-
Author-provided FSC curve	4.43	6.63	4.50
Unmasked-calculated*	-	-	-

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

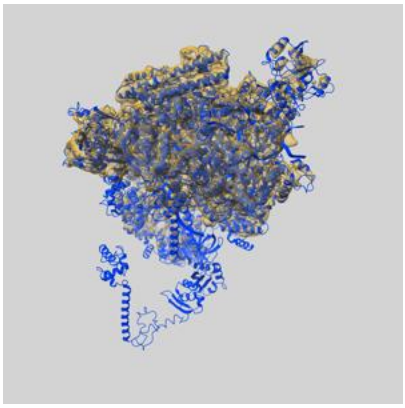
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-11722 and PDB model 7ADB. Per-residue inclusion information can be found in section 3 on page 10.

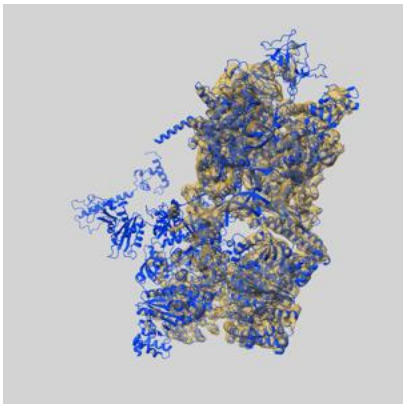
9.1 Map-model overlay



X



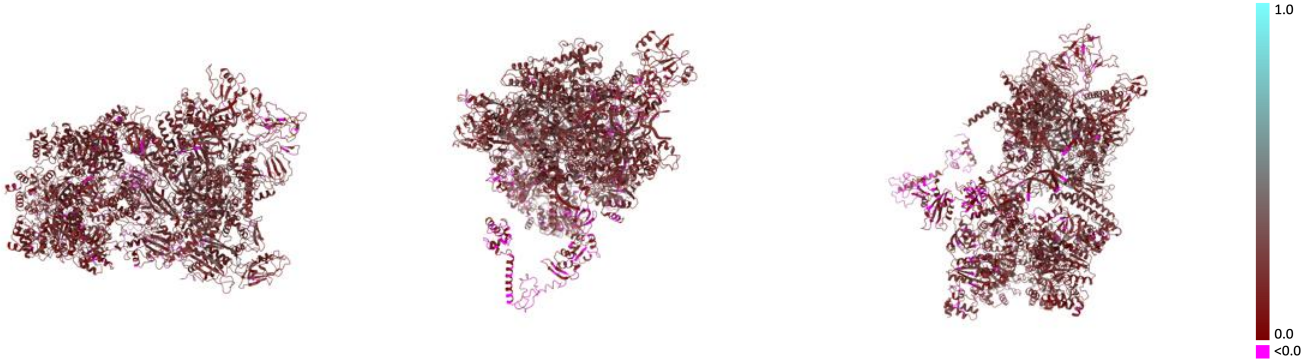
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.11 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.

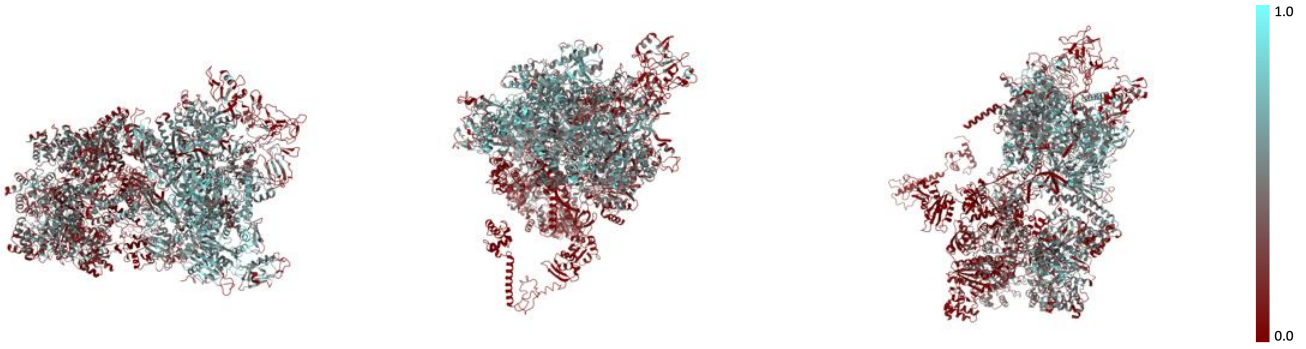
9.2 Q-score mapped to coordinate model (i)



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.

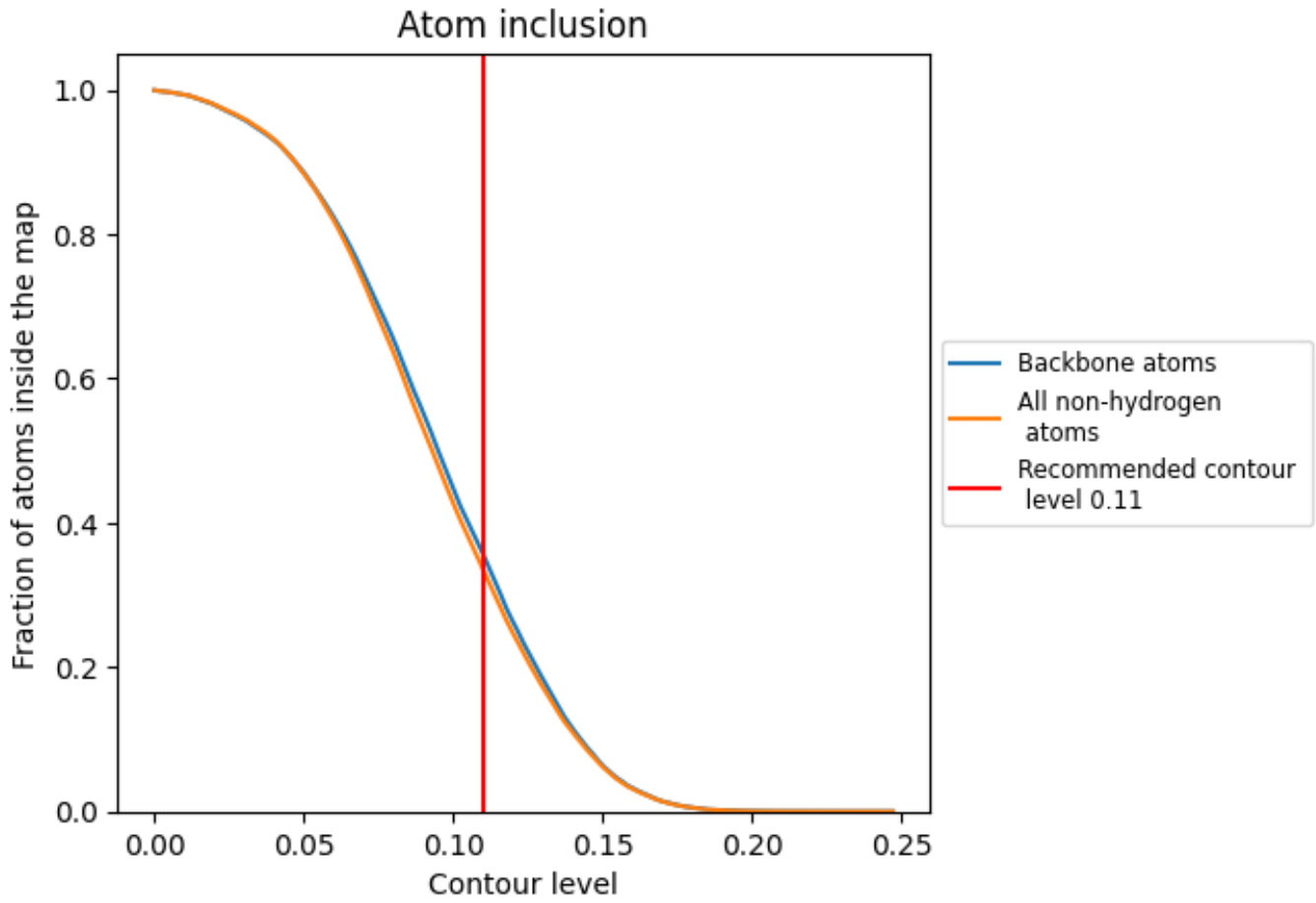
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.11).

9.4 Atom inclusion (i)



At the recommended contour level, 36% of all backbone atoms, 34% 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 (0.11) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.3355	0.1860
A	0.0130	0.0780
K	0.2636	0.1400
L	0.5249	0.2030
R	0.4011	0.1810
U	0.3596	0.1990
V	0.4603	0.2070
W	0.1260	0.2140
X	0.4733	0.2240
Y	0.4169	0.2040
a	0.2256	0.1670
b	0.3777	0.1860
c	0.4017	0.1840
d	0.3660	0.1820
e	0.2428	0.1620
f	0.0860	0.1520