WORLDWIDE wwPDB PROTEIN DATA BANK

wwPDB EM Validation Summary Report ⓘ

Nov 26, 2022 – 02:55 PM EST

PDB ID	:	5SVA
EMDB ID	:	EMD-8305
Title	:	Mediator-RNA Polymerase II Pre-Initiation Complex
Authors	:	Robinson, P.J.; Bushnell, D.A.; Kornberg, R.D.
Deposited on	:	2016-08-05
Resolution	:	15.30 Å(reported)

This is a wwPDB EM Validation Summary Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references ⓘ) were used in the production of this report:
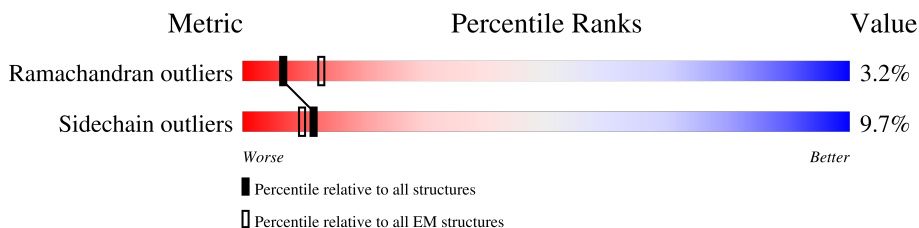
EMDB validation analysis	:	0.0.1.dev43
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

1   Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 15.30 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.
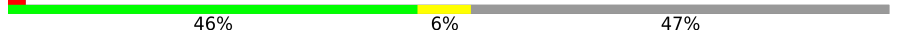
Metric	Percentile Ranks	Value
Ramachandran outliers		3.2%
Sidechain outliers		9.7%

Worse   *Better*

▪ Percentile relative to all structures

▯ Percentile relative to all EM structures

Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1733	70% 12% • 18%
2	B	1224	83% 11% • 6%
3	C	318	74% 10% 16%
4	D	221	63% 16% • 19%
5	E	215	88% 11%
6	F	155	50% 5% 46%
7	G	171	90% 9% •
8	H	146	76% 14% • 9%
9	I	122	89% 8% •

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Mol	Chain	Length	Quality of chain
10	J	70	74% 16% 7%
11	K	120	86% 10%
12	L	70	46% 20% 34%
13	M	295	46% 6% 47%
14	N	223	68% 8% 25%
15	O	115	87% 10%
16	P	687	66% 5% 29%
17	Q	307	74% 8% 18%
18	R	210	90% 10%
19	S	121	84% 6% 10%
20	T	284	29% 68%
21	U	222	67% 30%
22	V	149	49% 7% 43%
23	W	140	80% 5% 15%
24	X	127	70% 28%
25	Y	778	68% 28%
26	Z	843	50% 6% 44%
27	a	513	12% 88%
28	b	72	33% 86% 12%
29	c	345	49% 6% 45%
30	d	286	17% 40% 59%
31	e	122	19% 76% 7% 17%
32	f	735	19% 80%
33	g	400	40% 57%
34	h	482	21% 76%

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Mol	Chain	Length	Quality of chain
35	i	328	28%　　8%　　63%
36	j	240	10%　　70%　　25%
37	k	25	68%　　32%
38	l	108	10%　　57%　　43%
39	m	108	6%　　57%　　43%
40	n	244	11%　　82%　　18%

2 Entity composition ⓘ

There are 42 unique types of molecules in this entry. The entry contains 66759 atoms, of which 626 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
1	A	1422	Total 11174	C 7036	N 1954	O 2122	S 62	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	1156	Total 9140	C 5781	N 1606	O 1697	S 56	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	266	Total 2095	C 1317	N 348	O 417	S 13	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	178	Total 1434	C 887	N 257	O 288	S 2	0	0

- Molecule 5 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC1.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	E	214	Total 1752	C 1111	N 309	O 321	S 11	0	0

- Molecule 6 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC2.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	84	Total 679	C 434	N 115	O 127	S 3	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 1340	C 861	N 222	O 249	S 8	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	133	Total 1068	C 673	N 180	O 211	S 4	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	119	Total 971	C 596	N 179	O 186	S 10	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
10	J	65	Total 532	C 339	N 93	O 94	S 6	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	115	Total 920	C 590	N 157	O 171	S 2	0	1

- Molecule 12 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC4.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	L	46	Total 363	C 224	N 72	O 63	S 4	0	0

- Molecule 13 is a protein called Mediator of RNA polymerase II transcription subunit 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	M	156	Total 777	C 464	N 156	O 156	S 1	0	0

- Molecule 14 is a protein called Mediator of RNA polymerase II transcription subunit 8.

Mol	Chain	Residues	Atoms				AltConf	Trace
14	N	168	Total 891	C 542	N 172	O 177	0	0

- Molecule 15 is a protein called Mediator of RNA polymerase II transcription subunit 11.

Mol	Chain	Residues	Atoms				AltConf	Trace
15	O	103	Total 511	C 305	N 103	O 103	0	0

- Molecule 16 is a protein called Mediator of RNA polymerase II transcription subunit 17.

Mol	Chain	Residues	Atoms				AltConf	Trace
16	P	487	Total 2421	C 1447	N 487	O 487	0	0

- Molecule 17 is a protein called Mediator of RNA polymerase II transcription subunit 18.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	Q	253	Total 1979	C 1255	N 330	O 384	S 10	0	0

- Molecule 18 is a protein called Mediator of RNA polymerase II transcription subunit 20.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	R	209	Total 1600	C 1011	N 269	O 315	S 5	0	0

- Molecule 19 is a protein called Mediator of RNA polymerase II transcription subunit 22.

Mol	Chain	Residues	Atoms				AltConf	Trace
19	S	109	Total 544	C 326	N 109	O 109	0	0

- Molecule 20 is a protein called Mediator of RNA polymerase II transcription subunit 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	T	91	Total 756	C 475	N 125	O 154	S 2	0	0

- Molecule 21 is a protein called Mediator of RNA polymerase II transcription subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	U	156	Total 1310	C 847	N 220	O 238	S 5	0	0

- Molecule 22 is a protein called Mediator of RNA polymerase II transcription subunit 9.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	V	85	Total 720	C 451	N 133	O 135	S 1	0	0

- Molecule 23 is a protein called Mediator of RNA polymerase II transcription subunit 21.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	W	119	Total 965	C 608	N 160	O 193	S 4	0	0

- Molecule 24 is a protein called Mediator of RNA polymerase II transcription subunit 31.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	X	92	Total 767	C 506	N 116	O 141	S 4	0	0

- Molecule 25 is a protein called DNA repair helicase RAD3.

Mol	Chain	Residues	Atoms						AltConf	Trace
25	Y	562	Total 5175	C 2901	H 626	N 777	O 838	S 33	0	0

- Molecule 26 is a protein called DNA repair helicase RAD25.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	Z	469	Total 3769	C 2370	N 660	O 716	S 23	0	0

- Molecule 27 is a protein called RNA polymerase II transcription factor B subunit 2.

Mol	Chain	Residues	Atoms				AltConf	Trace
27	a	62	Total 518	C 334	N 83	O 101	0	0

- Molecule 28 is a protein called RNA polymerase II transcription factor B subunit 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	b	63	499	316	88	93	2	0	0

- Molecule 29 is a protein called Transcription initiation factor IIB.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	c	189	1357	838	240	267	12	0	0

- Molecule 30 is a protein called Transcription initiation factor IIA large subunit.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	d	116	956	599	159	195	3	0	0

- Molecule 31 is a protein called Transcription initiation factor IIA subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	e	101	792	500	132	156	4	0	0

- Molecule 32 is a protein called Transcription initiation factor IIF subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	f	149	1243	788	222	229	4	0	0

- Molecule 33 is a protein called Transcription initiation factor IIF subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	g	172	1443	922	248	267	6	0	0

- Molecule 34 is a protein called Transcription initiation factor IIE subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	h	118	960	625	158	172	5	0	0

- Molecule 35 is a protein called Transcription initiation factor IIE subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	i	120	Total	C	N	O	S	0	0
			987	636	161	187	3		

- Molecule 36 is a protein called TATA-box-binding protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	j	180	Total	C	N	O	S	0	0
			1416	921	242	247	6		

- Molecule 37 is a protein called DNA-directed RNA polymerase II subunit RPB1.

Mol	Chain	Residues	Atoms				AltConf	Trace
37	k	25	Total	C	N	O	0	0
			184	116	25	43		

- Molecule 38 is a DNA chain called 108bp HIS4 Promoter Non-template Strand (-92/+16).

Mol	Chain	Residues	Atoms					AltConf	Trace
38	l	62	Total	C	N	O	P	0	0
			1271	609	222	378	62		

- Molecule 39 is a DNA chain called 108bp HIS4 Promoter Template Strand (+16/-92).

Mol	Chain	Residues	Atoms					AltConf	Trace
39	m	62	Total	C	N	O	P	0	0
			1271	607	236	366	62		

- Molecule 40 is a protein called Transcription initiation factor TFIID subunit 14.

Mol	Chain	Residues	Atoms		AltConf	Trace
40	n	200	Total	C	0	200
			200	200		

- Molecule 41 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
41	A	2	Total	Zn	0
			2	2	
41	B	1	Total	Zn	0
			1	1	
41	C	1	Total	Zn	0
			1	1	

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Mol	Chain	Residues	Atoms		AltConf
41	I	2	Total 2	Zn 2	0
41	J	1	Total 1	Zn 1	0
41	L	1	Total 1	Zn 1	0

- Molecule 42 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

3   Residue-property plots ⓘ

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

• Molecule 1: DNA-directed RNA polymerase II subunit RPB1

TYR SER PRO THR SER PRO SER TYR SER PRO THR SER PRO GLY TYR SER PRO GLY SER PRO ALA TYR SER PRO LYS GLN ASP GLU GLN LYS HIS ASN GLU GLU ASN SER ARG
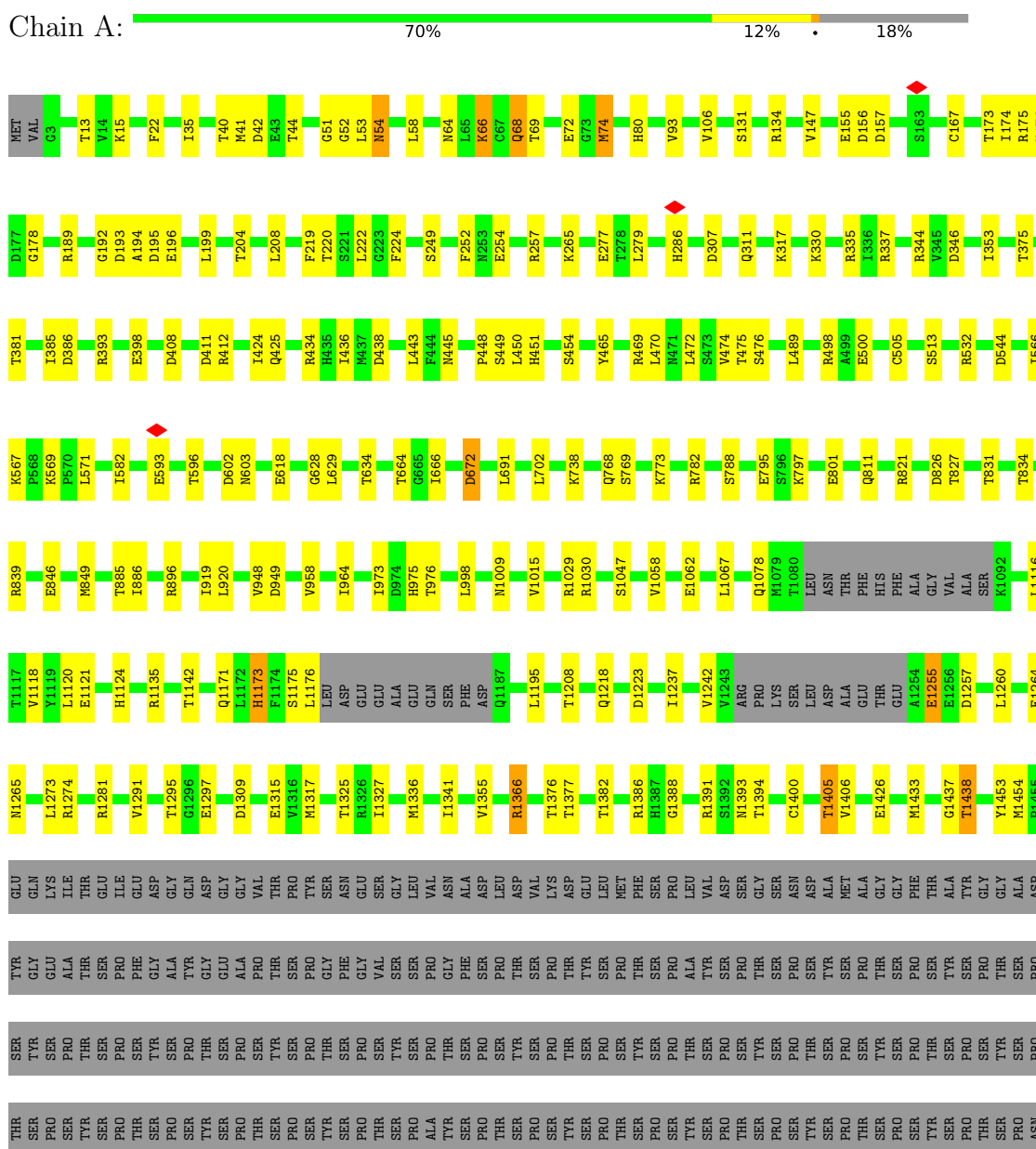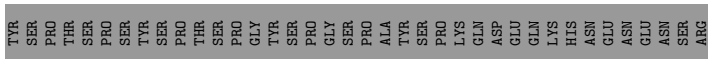
● Molecule 2: DNA-directed RNA polymerase II subunit RPB2

Chain B: 83%   11%   · 6%

MET SER ASP LEU ALA ASN SER GLU LYS TYR TYR ASP GLU ASP PRO TYR GLY PHE GLU D20 I25 L43 Q46 I63 L69 E72 Q73 S81 N103 E104 H110 D141 VAL PRO GLY ARG E146 L151 ILE ALA GLU GLU SER GLU ASP ASP SER GLU SER

G163 R169 R175 N178 E183 V211 A229 I240 I251 R261 E262 T272 Q278 D279 I282 R287 D294 D307 M313 R337 G338 T339 A340 L341 G342 I343 K344 R348 Q357 I364 T365 K393 L408 T419 H440 D441

F442 A462 W466 Q469 K470 M473 R476 V482 R485 Y486 T487 I502 GLY ARG ASP GLY LYS LEU A509 E529 G530 Q531 V547 M552 M563 V570 S574 R595 L596 R601 T602 L603 I609 E612 M615 I616 R620 T628

L646 G647 H648 L651 K652 V653 I658 D668 ILE GLU GLY GLY PHE GLU ASP VAL GLU E678 Y679 T680 E696 P707 E708 E711 A715 ASN GLU GLU ASN ASP LEU D722 V723 V731 H734 T737 R766 S771 A772 Q776 N786 D790 T791 M792

K801 M839 I840 M841 S844 M860 R879 S919 PRO ASP GLU GLU GLU LEU GLY GLN ARG THR ALA TYR HIS S933 K934 T939 R942 S943 T944 T956 D959 R967 Q975 Q986 E997 D998 M999 V1007 E1028 S1045 P1046 R1060 Q1065

M1072 Q1084 R1094 R1106 A1107 R1108 G1121 R1122 S1123 R1129 M1138 S1145 F1146 L1147 L1151 S1155 D1156 A1157 F1158 R1159 V1160 G1167 L1175 N1176 Q1179 E1180 E1181 C1182 K1183 K1188 Q1193 K1201 L1202 M1210 P1214 R1220 D1223 F1224

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

Chain C: 74%   10%   16%

MET SER E3 E12 V25 D26 A39 E52 T53 N54 T55 T56 E81 R84 C88 E89 T100 L101 V119 I120 V121 L124 M125 G126 R127 N128 I129 I133 L147 R148 N214 E215 G216 Q224 I238 P239 V240 L259 M265 D268 LYS VAL

ASN PHE ALA SER GLY ASP ASN ASN THR ALA SER ASN MET LEU GLY SER GLU VAL ASP ALA VAL MET MET THR GLY ALA GLU GLN ASP PRO TYR SER ASN ASN ALA SER GLN MET GLY ASN THR GLY SER GLY TYR ASP ASN ALA TRP
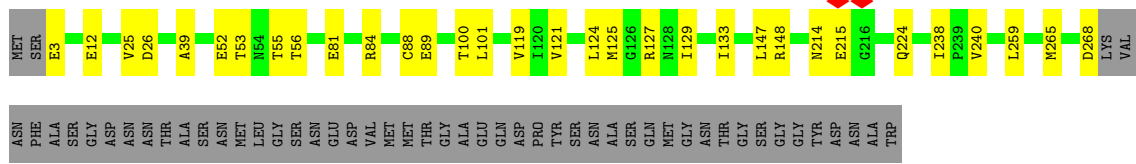
● Molecule 4: DNA-directed RNA polymerase II subunit RPB4

Chain D: 63%   16%   ·   19%

MET ASN V3 S4 T5 S6 T7 F8 Q9 T10 R11 R12 R13 K16 K17 V18 E21 E22 A25 T26 L27 E32 F33 Q34 L35 H40 L47 L52 S53 E65 K76 HIS LYS LYS LYS HIS LEU LYS HIS GLU ASN ALA ASN ASP GLU THR THR ALA VAL GLU ASP

GLU ASP ASP LEU ASP GLU GLU ASP ASP VAL ASN ALA ASP ASP ASP PHE MET HIS SER GLU T118 I126 T134 N137 N138 K139 R153 D156 S169 V177 T187 S197 L198 N199 N200 K201 S215 T219 L220 Y221
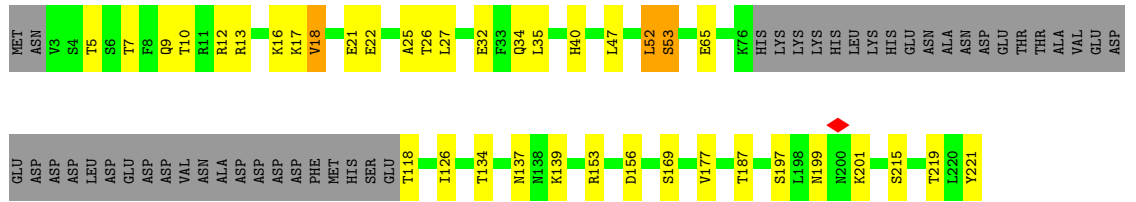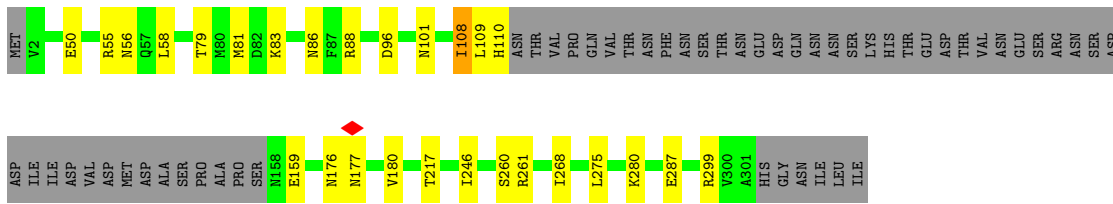
● Molecule 5: DNA-directed RNA polymerases I, II, and III subunit RPABC1

Chain E: 88%   11%

MET D2 Q3 T31 E36 L37 K45 D48 M57 E67 D84 V90 K91 T92 N104 P129 A130 T131 L140 H146 K166 S173 R177 I178 K191 R192 V196 S202 E203 T204 M215

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

Chain F: 50%   5%   46%

MET SER ASP TYR GLU GLU ALA PHE ASN ASP GLY ASN GLU ASN PHE GLU ASP PHE ASP VAL GLU HIS PHE SER ASP GLU GLU THR TYR GLU GLU LYS PRO GLN PHE LYS ASP GLY GLU THR THR ASP ALA ASN GLY LYS THR ILE VAL THR GLY GLY ASN GLY PRO GLU ASP PHE GLN GLN

HIS GLU GLN ILE ARG ARG LYS THR LEU LYS GLU K72 R79 T82 T86 R90 D110 V133 L155

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

Chain G: 90%   9%

M1 F2 L13 Q24 Y25 L26 P63 T64 Q96 M106 K112 S133 E134 T138 I143 R144 V145 V154 S155 S162 I171

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

Chain H: 76%   14%   9%

MET S2 S13 E14 P17 G18 I26 T31 D34 I59 A60 L63 ASN LEU GLU ASP THR PRO ALA ASN ASP SER SER ALA T76 R77 P81 P82 Q83 L89 A90 D91 D92 K103 E106 V107 S108 K109 N128 Y129 R130 L135 E138 R146

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

Chain I: 89%   8%

MET I2 R8 D9 T31 V35 E74 R91 D94 T95 C106 T111 N116 K117 R118 T119 Q120 PHE SER

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

Chain J: 74%   16%   7%

M1 I2 V3 P4 V5 R6 C7 K12 V13 L22 E29 K42 R48 T52 P65 LEU GLU LYS ARG ASP

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

Chain K: 86%   10%

M1 D5 K18 L19 K20 T25 N29 A30 V31 K37 L42 R47 L51 R70 L101 T107 A115 ALA ASP ASP ALA PHE

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

Chain L:

46%   20%   34%

• Molecule 13: Mediator of RNA polymerase II transcription subunit 6

Chain M:

46%   6%   47%

• Molecule 14: Mediator of RNA polymerase II transcription subunit 8
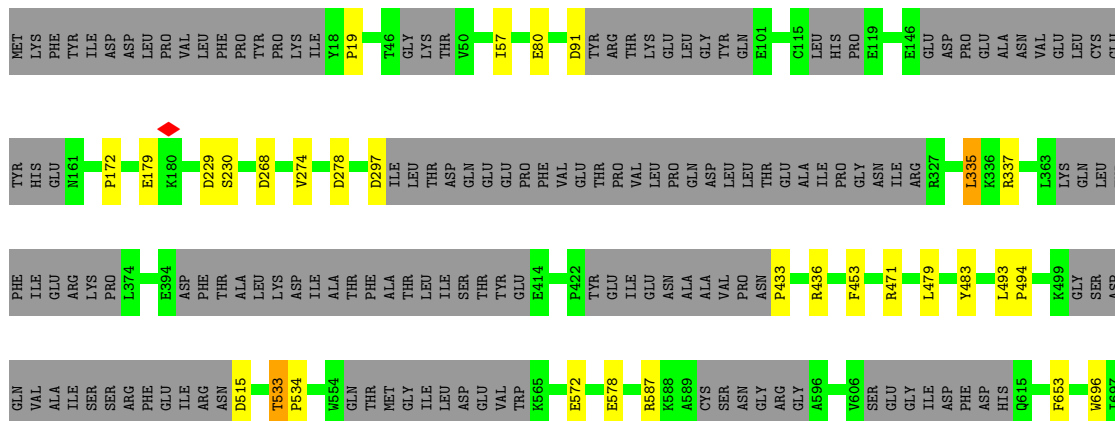
Chain N:

68%   8%   25%

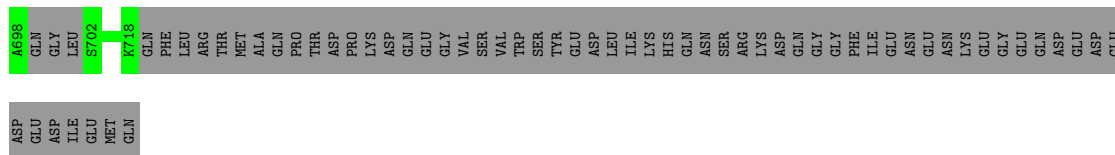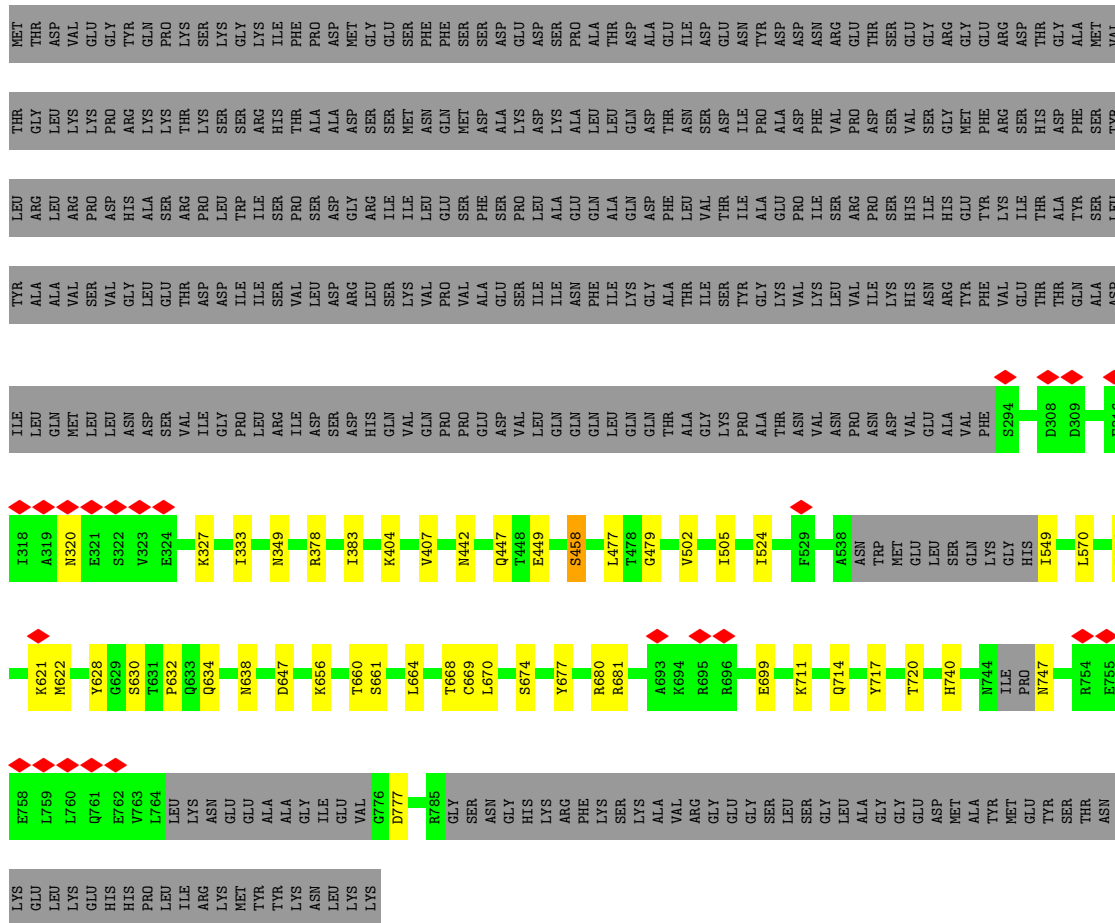• Molecule 15: Mediator of RNA polymerase II transcription subunit 11

Chain O:

87%   10%

• Molecule 16: Mediator of RNA polymerase II transcription subunit 17

Chain P:

66%   5%   29%

- Molecule 17: Mediator of RNA polymerase II transcription subunit 18

Chain Q:

- Molecule 18: Mediator of RNA polymerase II transcription subunit 20
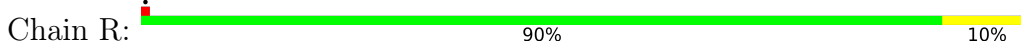
Chain R:

- Molecule 19: Mediator of RNA polymerase II transcription subunit 22
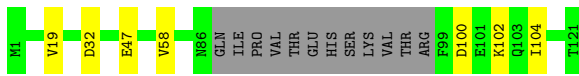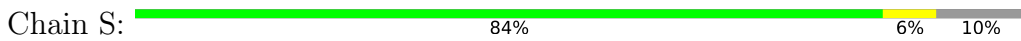
Chain S:

- Molecule 20: Mediator of RNA polymerase II transcription subunit 4
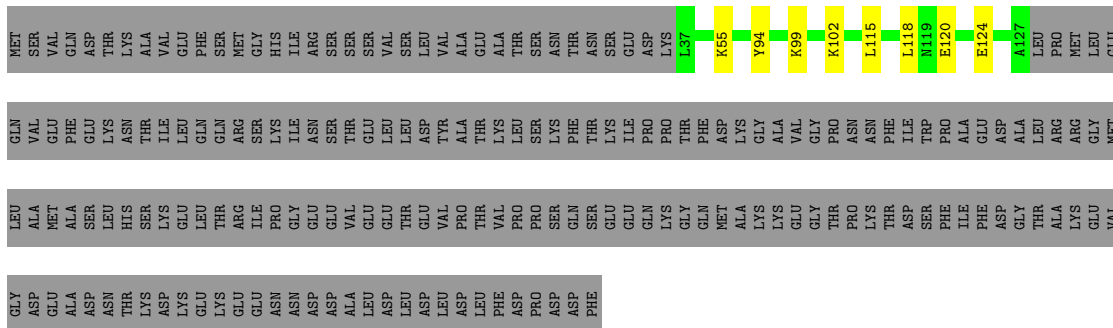
Chain T:

- Molecule 21: Mediator of RNA polymerase II transcription subunit 7

Chain U:
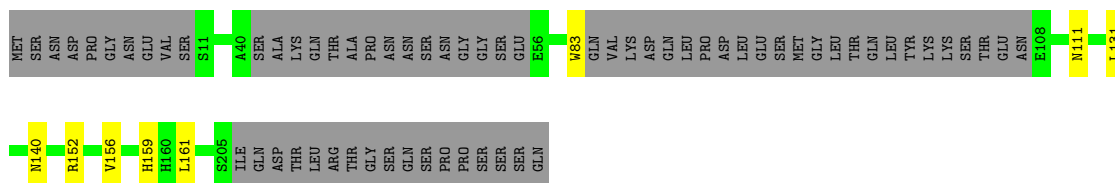
• Molecule 22: Mediator of RNA polymerase II transcription subunit 9

Chain V:

• Molecule 23: Mediator of RNA polymerase II transcription subunit 21

Chain W:

• Molecule 24: Mediator of RNA polymerase II transcription subunit 31

Chain X:

• Molecule 25: DNA repair helicase RAD3

Chain Y:

A698 GLN GLY LEU S702 K718 GLN PHE LEU ARG THR MET ALA GLN THR ASP PRO LYS ASP GLN GLU GLY VAL SER VAL TRP SER TYR GLU ASP LEU ILE LYS HIS GLN ASN SER ARG LYS ASP GLN GLY GLY PHE ILE GLU ASN GLU LYS GLU GLY GLU GLN ASN ASP GLU ASP GLU

ASP GLU ASP ILE GLU MET GLN

• Molecule 26: DNA repair helicase RAD25

Chain Z:

50% 6% 44%

MET THR ASP VAL GLU GLY TYR GLN PRO LYS SER GLY LYS ILE PHE PRO ASP MET GLY GLU SER PHE PHE SER ASP SER GLU ASP SER PRO ALA THR ASP ALA GLU GLU ILE ASP GLN ASN TYR ASP ASP ASN ARG GLU THR SER GLY GLY ARG GLY GLU ASP THR GLY ALA MET VAL

THR GLY LEU LYS PRO LYS LYS ARG LYS THR LYS SER SER ARG HIS THR ALA ALA ASP SER SER ASN GLN MET ASP ALA LYS ASP LYS ALA LEU LEU GLN ASP THR ASN SER ASP ILE PRO ALA ASP PHE VAL PRO ASP SER VAL SER GLY MET PHE ARG SER HIS ASP PHE SER TYR

LEU ARG LEU ARG PRO ASP HIS ALA SER PRO LEU TRP ILE SER SER ASP SER GLY ARG ILE LEU GLU GLN SER PHE SER PRO LEU ALA GLU GLN ALA GLN ASP PHE LEU VAL THR ILE ALA GLU PRO ILE LEU SER ARG PRO HIS ILE HIS GLU TYR ILE LYS THR ALA TYR SER LEU

TYR ALA ALA VAL SER VAL GLY LEU GLU THR ASP ASP ILE ILE SER LEU ASP LEU SER VAL PRO VAL ALA GLU ILE ILE ASN PHE ILE LYS GLY ALA THR ILE LYS SER TYR GLY LYS VAL VAL ILE HIS ASN ARG TYR PHE VAL GLU THR GLN ALA ASP

ILE LEU GLN MET LEU LEU ASN ASP SER VAL ILE GLY PRO LEU ARG ILE ASP SER HIS GLN VAL GLN PRO PRO GLU GLU ASP VAL LEU GLN GLN LEU GLN GLN THR ALA GLY LYS PRO ALA THR ASN VAL ASN PRO ASN ASP VAL GLU ALA VAL **PHE** **S294** **D308** **D309** **F316** **E317**

I318 **A319** **N320** **E321** **S322** **V323** **E324** **K327** **I333** **N349** **R378** **I383** **K404** **V407** **N442** **Q447** **T448** **E449** **S458** **L477** **T478** **G479** **V502** **I505** **I524** **F529** **A538** ASN TRP MET GLU LEU SER GLN LYS GLY HIS **I549** **L570** **T573** **I582**

K621 **M622** **Y628** **G629** **S630** **T631** **P632** **Q634** **N638** **D647** **K656** **T660** **S661** **L664** **T668** **C669** **L670** **S674** **Y677** **R680** **R681** **A693** **K694** **R695** **R696** **E699** **K711** **Q714** **Y717** **T720** **H740** **N744** ILE PRO **N747** **R754** **E755** **R756** **R757**

E758 **L759** **L760** **Q761** **E762** **V763** **L764** LEU LYS ASN GLU GLU ALA ALA GLY ILE GLU VAL **G776** **D777** **R785** GLY SER ASN GLY HIS LYS ARG PHE LYS SER LYS ALA VAL ARG GLY GLU GLY SER LEU SER GLY LEU ALA GLY GLY GLU ASP MET ALA TYR MET GLU TYR SER THR ASN LYS ASN

LYS GLU LEU LYS GLU HIS HIS PRO LEU ILE ARG LYS MET TYR LYS ASN LEU LYS LYS

• Molecule 27: RNA polymerase II transcription factor B subunit 2

Chain a:

12% 88%

MET SER ASP TYR SER LEU LYS HIS SER VAL THR GLN TYR LEU GLU GLN ILE PRO GLN GLN VAL GLN ASN ARG LEU TYR THR SER PRO ALA THR CYS LEU ILE LEU TYR ARG ILE LEU PRO PRO LEU ALA LYS PHE PHE ILE MET ALA MET VAL PHE ASN GLN ASN GLU VAL PRO LEU LEU

ASP LEU ASP LYS TRP VAL ASN GLU ASN GLY LYS LEU GLN PHE GLN ASN ALA ILE LYS SER MET LYS SER LEU HIS LEU ILE PRO ASN SER SER GLY THR LEU MET ILE ASN LEU PRO ASN LEU THR PHE ILE SER LEU ARG ASN ALA LEU THR GLY GLY GLU VAL GLN ASN SER

PHE GLY VAL VAL VAL GLU ASN VAL SER LEU VAL SER LEU ASP LEU LEU GLN GLU ASN SER GLN LEU ASP TYR SER ALA ASN LYS TRP GLU THR ILE HIS PHE MET VAL GLY THR PRO LEU ALA LYS VAL LEU PRO SER GLU VAL LYS VAL LEU ASN LEU LEU LEU HIS SER LEU GLU MET GLU GLU VAL ASN SER THR GLY

GLU PHE LYS ILE THR ASN GLY PHE GLN PHE LEU GLN GLU ASN SER LEU LEU TRP THR LEU LEU GLN TYR LEU LYS MET ILE GLU THR SER LYS MET ASP VAL ASP VAL ALA LEU HIS PHE ILE PHE MET GLY ALA GLU GLU VAL LYS ALA TYR LYS ILE ASP

ALA LEU SER GLU THR GLN ARG ILE MET LEU GLN ASP MET ARG ASP TYR GLY LEU VAL PHE GLN LYS HIS SER ASN ASP SER ILE PHE TYR PRO THR LYS LEU ALA LEU MET LEU THR SER ASP THR LYS THR ILE ARG SER ALA SER ASN ALA MET ASP SER VAL LEU ARG GLN ASN ARG

GLU GLU PRO SER VAL ASN GLU ASP GLY ALA ASN GLY LYS SER THR ASP ILE THR SER ASP SER LEU ASN LYS ALA GLY LEU LYS ASN GLN ASP ILE PRO ASP GLY SER ILE VAL GLU THR ASN PHE LYS ILE TYR SER TYR SER ASN SER PRO LEU GLN ILE ALA VAL LEU

SER LEU PHE HIS LEU ALA ARG VAL ASN VAL LEU GLN ILE THR ARG GLU ILE ARG ALA LEU THR ASN GLY THR ALA ASP GLN ILE ILE ALA TYR LEU GLU HIS ALA HIS PRO GLN MET ARG GLU ALA GLU LYS LEU GLU LYS LYS LEU

GLU LEU ASP PRO ASN CYS LYS LYS GLU PRO LEU GLN VAL LEU PRO PRO THR VAL VAL ASP VAL GLN ILE ARG LEU TRP GLN LEU LEU **E447 L448** **Y459 S460 D461 F462** **Y468 N469 L470 L471 S472** **A475** **V480 L481** **K484 D485 D486 K487 K488 K489 K490 F491 F492 I493** **K508** LEU LYS LYS

LYS GLN

• Molecule 28: RNA polymerase II transcription factor B subunit 5

Chain b:

• Molecule 29: Transcription initiation factor IIB

Chain c:

• Molecule 30: Transcription initiation factor IIA large subunit

Chain d:

ALA LYS LYS GLU LYS ARG SER ALA LEU LEU ASP THR ASP GLU VAL GLY SER GLU GLU LEU ASP SER ASP ASP D228 S232 GLU GLY GLU E236 D237 G238 P239 D240 L247 T254 K255 A256 R257 L262 I269 N270 R271 N272 Q277 K278 E282 A283 E284 W285 V286

• Molecule 31: Transcription initiation factor IIA subunit 2

Chain e:

19%
76%
7%
17%

MET ALA VAL P4 L19 L23 L26 D29 G30 R31 I32 E33 R39 V40 L41 A49 K53 D54 N55 T56 Q57 S58 K59 L60 T61 V62 K63 L66 Q84 V85 T86 V87 E88 ASP SER HIS ARG ASP SER GLN GLY SER GLY ASP SER GLN SER V105 I106

S107 L111 N117 K120 SER GLU

• Molecule 32: Transcription initiation factor IIF subunit alpha

Chain f:

19%
80%

MET SER ARG ARG ASN PRO PRO GLY SER ARG ASN GLY GLY GLY PRO THR ASN ALA SER PRO PHE ILE LYS ARG ARG ASP ARG MET ARG ARG ASN PHE LEU ARG MET ARG MET GLY GLN ASN GLY SER ASN SER SER PRO GLY VAL PRO ASN GLY ASP ASN SER ARG GLY SER GLU LEU VAL LYS

LYS ASP ASP PRO GLU TYR ALA GLU GLU GLY LYS ARG GLY LYS ALA GLU GLN GLU ARG SER THR PRO ASN ALA SER PRO PHE ILE GLY LEU GLU GLN ILE GLY VAL GLU ALA ALA GLY ARG SER ASN VAL LYS VAL ASP GLU PRO ASN GLU GLU ALA SER GLN THR PRO THR VAL ASP SER VAL THR LYS ASP ASN THR ALA ASN GLY VAL ASN SER SER ILE N99 E100 F101 P102 D110 M114 P129 D132 L135 P136 A154 GLU ILE VAL GLN ARG

QLN LYS GLU ILE SER GLU GLY TYR LYS LYS ALA GLU GLU GLN ARG SER THR PRO ASN ALA SER GLY MET ASN LYS SER GLY THR VAL SER LEU ASN ASN THR VAL LYS ASP GLY ASP SER GLN THR PRO THR VAL ASP SER VAL THR LYS ASP ASN THR ALA ASN GLY VAL ASN SER SER ILE

PRO THR VAL GLY SER SER VAL PRO PRO ALA SER PRO THR VAL SER ALA VAL GLU SER ASN GLY MET ASN LYS SER GLY THR VAL SER LEU ASN ASN GLY LEU ASN ASP GLY ASN SER THR ALA ASN GLY VAL ASN SER SER ILE ALA ALA ASN GLY LEU ASP ASN GLY GLY ALA ALA

GLU ASP PRO THR LYS VAL GLY MET VAL LYS TYR ASP GLY LYS GLU VAL THR ASN GLU PRO GLU GLU GLU GLY THR MET ASP PRO LEU ALA ASP VAL ALA PRO GLY GLY LEU ARG ALA LYS ARG G323 N324 L325 R326 R327 K328 T329 R330 Q331 L332 D336 K340 P349

D354 PHE ASP G357 W361 S417 GLY GLU VAL PRO ARG TRP LEU MET LYS HIS LEU ASP ASN GLY LEU THR THR THR ARG TYR ASP ARG ALA THR ARG LYS LEU ALA VAL ALA ASP GLN GLN ALA MET ASP GLU ASP ARG ASP ASP ASN SER GLU VAL GLU LEU VAL GLU LEU ASP TYR

ASP GLU GLU PHE ALA ASP ASP GLU GLU ALA PRO ILE ILE ASP GLY ASN GLU GLN GLU ASP LYS SER GLU GLN ARG ILE LYS SER GLU GLU MET LEU GLN ALA ASN MET GLY ILE ARG ALA ARG LYS LEU ALA VAL ALA PRO GLY GLY LEU PHE GLY GLU GLY LYS LYS ILE ASP

GLU ASP GLY GLU ARG ILE LYS LYS ALA LEU GLN LYS GLU LEU ALA ALA LEU THR SER SER GLU ASN GLU ILE ASN PRO TYR LEU GLU SER GLU ASP ILE LEU ASN LYS GLU GLU ASP PRO VAL LYS GLU GLU GLU ASP SER SER THR LEU LYS SER ARG SER SER

PRO LYS LYS GLN GLN LYS ALA THR ASN ALA HIS HIS LYS PRO LEU ARG VAL LYS SER ILE LYS ASN CYS VAL ILE LEU GLU LYS GLY SER PHE PRO GLU GLY TRP ASN PRO GLN THR LEU LYS ALA VAL ASP SER ASN ASN ALA

SER ASN THR VAL PRO SER PRO ILE LYS GLN GLU GLU GLY LEU ASN SER THR VAL ALA GLU ARG GLU GLU THR PRO ALA PRO THR ILE THR GLU LYS ASP ILE ILE GLU ALA ILE GLY ASP GLY LYS VAL VAL ASN ILE LYS GLU PHE GLY LYS PHE ILE ARG ARG LYS TYR PRO GLY ALA GLU

ASN LYS LYS LEU MET PHE ALA ILE VAL LYS LEU LEU CYS ARG LYS VAL GLY ASN ASP HIS MET GLU LEU LYS LYS GLU

• Molecule 33: Transcription initiation factor IIF subunit beta

Chain g: 40% • 57%

• Molecule 34: Transcription initiation factor IIE subunit alpha

Chain h: 21% • 76%

• Molecule 35: Transcription initiation factor IIE subunit beta

Chain i: 28% 8% • 63%

- Molecule 36: TATA-box-binding protein

Chain j:

10%
70%   ·   25%

- Molecule 37: DNA-directed RNA polymerase II subunit RPB1

Chain k:

68%   32%

- Molecule 38: 108bp HIS4 Promoter Non-template Strand (-92/+16)

Chain l:

10%
57%   43%

- Molecule 39: 108bp HIS4 Promoter Template Strand (+16/-92)

Chain m:

6%
57%   43%

- Molecule 40: Transcription initiation factor TFIID subunit 14

Chain n:

11%
82%   18%

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	170600	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TECNAI 20	Depositor
Voltage (kV)	200	Depositor
Electron dose $(e^-/\text{Å}^2)$	15	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN ULTRASCAN 4000 (4k x 4k)	Depositor
Maximum map value	0.153	Depositor
Minimum map value	-0.044	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.010	Depositor
Recommended contour level	0.025	Depositor
Map size (Å)	503.8, 503.8, 503.8	wwPDB
Map dimensions	220, 220, 220	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	2.29, 2.29, 2.29	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$|Z|$ >5	RMSZ	#$|Z|$ >5
1	A	0.51	1/11374 (0.0%)	0.79	5/15384 (0.0%)
2	B	0.48	0/9317	0.74	4/12567 (0.0%)
3	C	0.49	0/2133	0.78	2/2891 (0.1%)
4	D	0.51	0/1444	0.83	2/1935 (0.1%)
5	E	0.48	0/1788	0.72	0/2406
6	F	0.58	0/691	0.79	0/933
7	G	0.51	0/1368	0.81	0/1844
8	H	0.51	0/1086	0.80	0/1470
9	I	0.47	0/989	0.78	0/1331
10	J	0.54	0/541	0.88	1/727 (0.1%)
11	K	0.48	0/938	0.71	0/1267
12	L	0.54	0/365	0.79	0/485
13	M	0.61	0/775	0.83	0/1077
14	N	0.53	0/893	0.76	0/1237
15	O	0.52	0/509	0.67	0/707
16	P	0.58	0/2417	0.79	2/3369 (0.1%)
17	Q	0.56	0/2014	0.75	0/2728
18	R	0.50	2/1626 (0.1%)	0.66	0/2205
19	S	0.57	0/542	0.73	0/755
20	T	0.69	0/763	1.10	2/1025 (0.2%)
21	U	0.43	0/1339	0.60	0/1808
22	V	0.73	0/732	1.01	4/984 (0.4%)
23	W	0.47	0/973	0.64	0/1308
24	X	0.39	0/789	0.53	0/1077
25	Y	0.55	2/4616 (0.0%)	0.79	13/6196 (0.2%)
26	Z	0.78	0/3837	0.98	8/5177 (0.2%)
27	a	0.67	0/527	0.68	0/704
28	b	0.60	0/504	0.69	1/679 (0.1%)
29	c	0.29	0/1373	0.47	0/1863
30	d	0.40	0/970	0.57	0/1310
31	e	0.42	0/800	0.63	0/1080
32	f	0.33	0/1267	0.82	9/1700 (0.5%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	g	0.66	0/1469	0.73	3/1972 (0.2%)
34	h	0.96	0/978	1.11	1/1321 (0.1%)
35	i	0.37	0/1003	0.61	0/1345
36	j	0.41	0/1443	0.62	0/1942
37	k	0.77	0/194	0.69	0/270
38	l	0.43	0/1423	0.89	0/2195
39	m	0.47	0/1427	0.89	0/2199
All	All	0.54	5/67237 (0.0%)	0.78	57/91473 (0.1%)

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
2	B	0	1
13	M	0	2
16	P	0	3
17	Q	0	1
25	Y	0	1
26	Z	0	1
All	All	0	9

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1394	THR	C-N	-6.29	1.21	1.33
25	Y	172	PRO	N-CD	5.61	1.55	1.47
25	Y	19	PRO	N-CD	5.51	1.55	1.47
18	R	35	TRP	CD2-CE2	5.06	1.47	1.41
18	R	116	TRP	CD2-CE2	5.04	1.47	1.41

The worst 5 of 57 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
25	Y	493	LEU	C-N-CD	-13.71	90.45	120.60
25	Y	533	THR	C-N-CD	-13.65	90.57	120.60
32	f	135	LEU	C-N-CD	-11.09	96.21	120.60
26	Z	505	ILE	CB-CA-C	-9.99	91.62	111.60
25	Y	433	PRO	CA-N-CD	-9.03	98.86	111.50

There are no chirality outliers.

5 of 9 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	B	43	LEU	Mainchain
13	M	10	GLN	Peptide
13	M	138	GLY	Peptide
16	P	471	ASN	Peptide
16	P	532	ASN	Peptide

5.2 Too-close contacts ⓘ

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

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	1414/1733 (82%)	1254 (89%)	112 (8%)	48 (3%)	3	26
2	B	1142/1224 (93%)	1022 (90%)	84 (7%)	36 (3%)	4	26
3	C	264/318 (83%)	242 (92%)	20 (8%)	2 (1%)	19	60
4	D	174/221 (79%)	149 (86%)	17 (10%)	8 (5%)	2	21
5	E	212/215 (99%)	195 (92%)	13 (6%)	4 (2%)	8	38
6	F	82/155 (53%)	75 (92%)	7 (8%)	0	100	100
7	G	169/171 (99%)	157 (93%)	9 (5%)	3 (2%)	8	40
8	H	129/146 (88%)	106 (82%)	14 (11%)	9 (7%)	1	14
9	I	117/122 (96%)	98 (84%)	16 (14%)	3 (3%)	5	31
10	J	63/70 (90%)	51 (81%)	9 (14%)	3 (5%)	2	21
11	K	113/120 (94%)	109 (96%)	4 (4%)	0	100	100
12	L	44/70 (63%)	19 (43%)	14 (32%)	11 (25%)	0	1
13	M	152/295 (52%)	115 (76%)	20 (13%)	17 (11%)	0	7
14	N	164/223 (74%)	133 (81%)	16 (10%)	15 (9%)	1	11

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
15	O	99/115 (86%)	92 (93%)	4 (4%)	3 (3%)	4	28
16	P	479/687 (70%)	385 (80%)	61 (13%)	33 (7%)	1	15
17	Q	249/307 (81%)	217 (87%)	25 (10%)	7 (3%)	5	30
18	R	207/210 (99%)	190 (92%)	12 (6%)	5 (2%)	6	33
19	S	105/121 (87%)	91 (87%)	7 (7%)	7 (7%)	1	15
20	T	89/284 (31%)	69 (78%)	20 (22%)	0	100	100
21	U	150/222 (68%)	127 (85%)	22 (15%)	1 (1%)	22	63
22	V	83/149 (56%)	73 (88%)	5 (6%)	5 (6%)	1	17
23	W	115/140 (82%)	95 (83%)	18 (16%)	2 (2%)	9	42
24	X	90/127 (71%)	86 (96%)	4 (4%)	0	100	100
25	Y	534/778 (69%)	503 (94%)	23 (4%)	8 (2%)	10	46
26	Z	461/843 (55%)	430 (93%)	26 (6%)	5 (1%)	14	52
27	a	60/513 (12%)	60 (100%)	0	0	100	100
28	b	61/72 (85%)	58 (95%)	3 (5%)	0	100	100
29	c	185/345 (54%)	164 (89%)	19 (10%)	2 (1%)	14	52
30	d	110/286 (38%)	103 (94%)	7 (6%)	0	100	100
31	e	97/122 (80%)	93 (96%)	4 (4%)	0	100	100
32	f	143/735 (20%)	130 (91%)	9 (6%)	4 (3%)	5	30
33	g	164/400 (41%)	148 (90%)	12 (7%)	4 (2%)	6	33
34	h	112/482 (23%)	100 (89%)	10 (9%)	2 (2%)	8	40
35	i	114/328 (35%)	102 (90%)	9 (8%)	3 (3%)	5	31
36	j	178/240 (74%)	170 (96%)	5 (3%)	3 (2%)	9	42
37	k	23/25 (92%)	9 (39%)	6 (26%)	8 (35%)	0	0
All	All	8147/12614 (65%)	7220 (89%)	666 (8%)	261 (3%)	7	26

5 of 261 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	74	MET
1	A	189	ARG
1	A	195	ASP
1	A	286	HIS
1	A	317	LYS

5.3.2 Protein sidechains ⓘ

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	1240/1520 (82%)	1071 (86%)	169 (14%)	3	17
2	B	985/1061 (93%)	868 (88%)	117 (12%)	5	20
3	C	234/274 (85%)	206 (88%)	28 (12%)	5	20
4	D	160/200 (80%)	129 (81%)	31 (19%)	1	8
5	E	196/197 (100%)	175 (89%)	21 (11%)	6	23
6	F	74/137 (54%)	67 (90%)	7 (10%)	8	27
7	G	152/152 (100%)	137 (90%)	15 (10%)	8	26
8	H	117/128 (91%)	103 (88%)	14 (12%)	5	20
9	I	113/116 (97%)	106 (94%)	7 (6%)	18	43
10	J	60/65 (92%)	49 (82%)	11 (18%)	1	10
11	K	99/102 (97%)	87 (88%)	12 (12%)	5	20
12	L	40/57 (70%)	37 (92%)	3 (8%)	13	38
13	M	1/259 (0%)	1 (100%)	0	100	100
14	N	16/207 (8%)	14 (88%)	2 (12%)	4	19
17	Q	226/280 (81%)	206 (91%)	20 (9%)	10	31
18	R	177/178 (99%)	162 (92%)	15 (8%)	10	33
20	T	87/258 (34%)	81 (93%)	6 (7%)	15	40
21	U	149/208 (72%)	142 (95%)	7 (5%)	26	51
22	V	84/144 (58%)	80 (95%)	4 (5%)	25	51
23	W	113/132 (86%)	108 (96%)	5 (4%)	28	53
24	X	87/117 (74%)	84 (97%)	3 (3%)	37	60
25	Y	512/707 (72%)	504 (98%)	8 (2%)	62	79
26	Z	412/737 (56%)	375 (91%)	37 (9%)	9	30
27	a	57/468 (12%)	57 (100%)	0	100	100
28	b	57/66 (86%)	57 (100%)	0	100	100
29	c	136/299 (46%)	118 (87%)	18 (13%)	4	18

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
30	d	107/260 (41%)	104 (97%)	3 (3%)	43	65
31	e	91/108 (84%)	83 (91%)	8 (9%)	10	31
32	f	136/641 (21%)	135 (99%)	1 (1%)	84	90
33	g	162/363 (45%)	157 (97%)	5 (3%)	40	62
34	h	108/429 (25%)	91 (84%)	17 (16%)	2	14
35	i	113/295 (38%)	86 (76%)	27 (24%)	0	4
36	j	152/205 (74%)	143 (94%)	9 (6%)	19	45
37	k	25/25 (100%)	25 (100%)	0	100	100
All	All	6478/10395 (62%)	5848 (90%)	630 (10%)	12	27

5 of 630 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
18	R	153	ILE
33	g	127	LYS
20	T	120	GLU
18	R	121	LEU
26	Z	628	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 114 such sidechains are listed below:

Mol	Chain	Res	Type
25	Y	138	ASN
36	j	88	HIS
26	Z	447	GLN
36	j	68	GLN
33	g	98	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 9 ligands modelled in this entry, 9 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 ⓘ

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-8305. These allow visual inspection of the internal detail of the map and identification of artifacts.

Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1   Orthogonal projections ⓘ

6.1.1   Primary map

| X | Y | Z |

6.1.2   Raw map

| X | Y | Z |
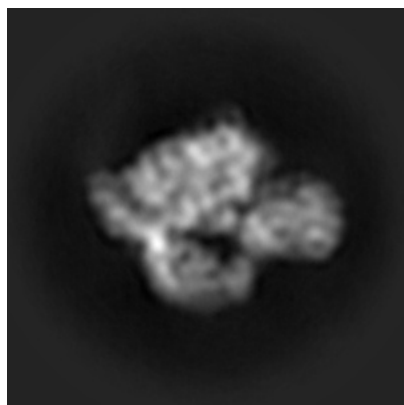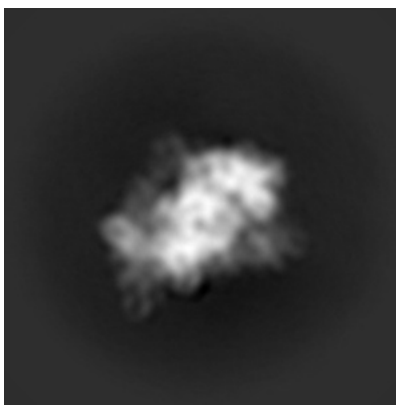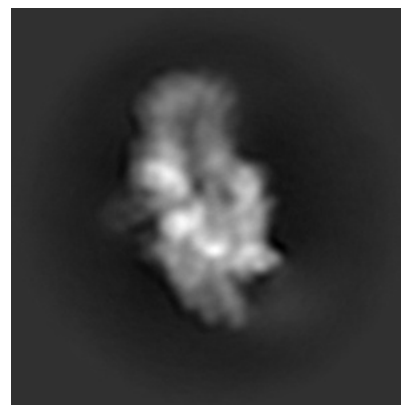
The images above show the map projected in three orthogonal directions.

6.2   Central slices ⓘ

6.2.1   Primary map

| X Index: 110 | Y Index: 110 | Z Index: 110 |

6.2.2   Raw map
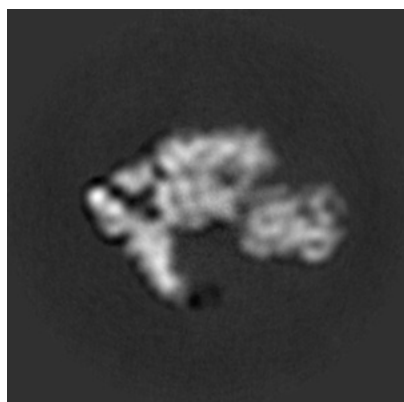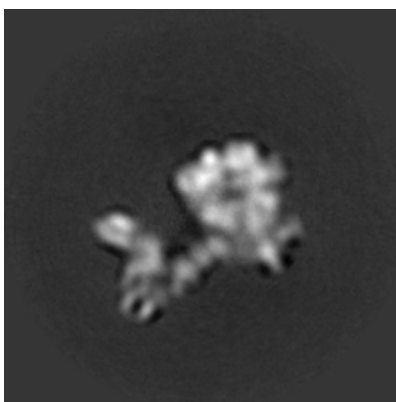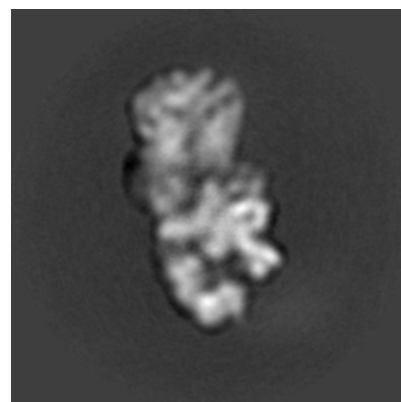
| X Index: 110 | Y Index: 110 | Z Index: 110 |

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

6.3 Largest variance slices ⓘ

6.3.1 Primary map

X Index: 90	Y Index: 86	Z Index: 103

6.3.2 Raw map
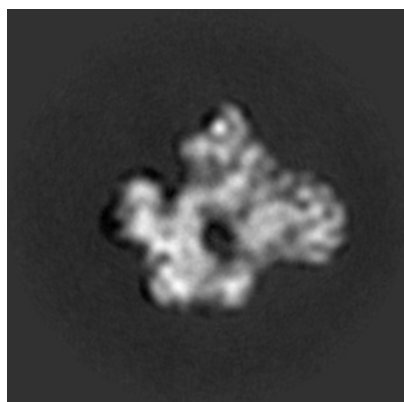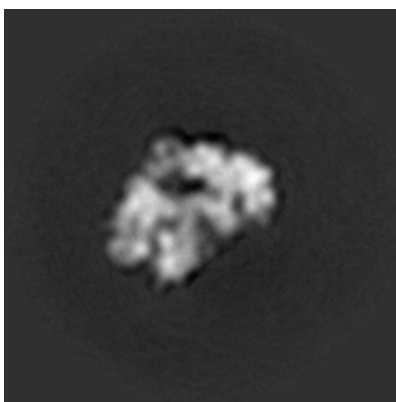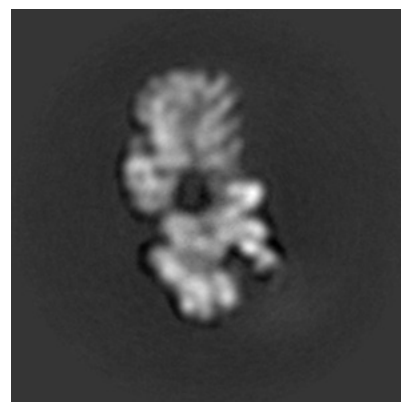
X Index: 90	Y Index: 86	Z Index: 103

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

6.4 Orthogonal surface views ⓘ

6.4.1 Primary map

| X | Y | Z |
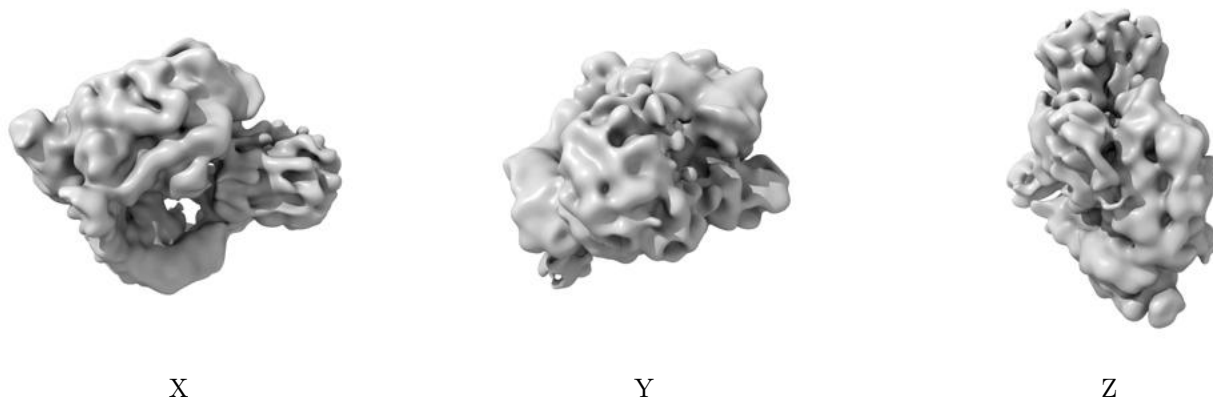
The images above show the 3D surface view of the map at the recommended contour level 0.025. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.4.2 Raw map

| X | Y | Z |
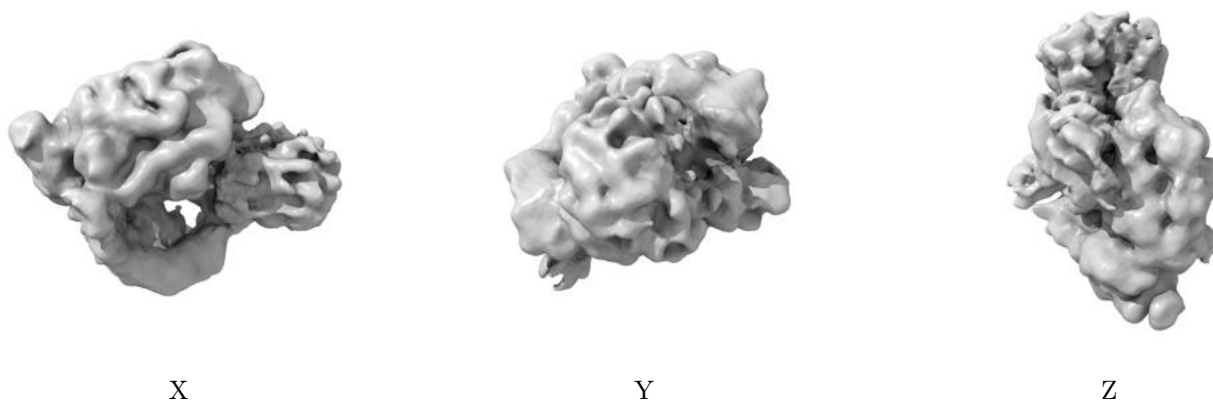
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.5 Mask visualisation (i)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

A mask typically either:

- Encompasses the whole structure

- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

6.5.1 emd_8305_msk_1.map (i)

X Y Z
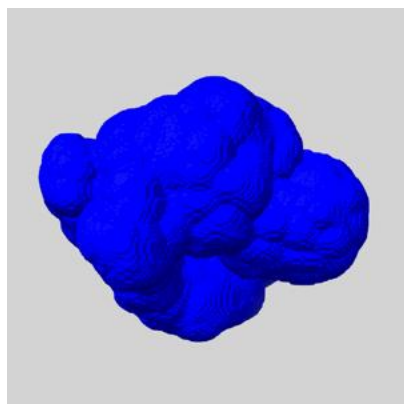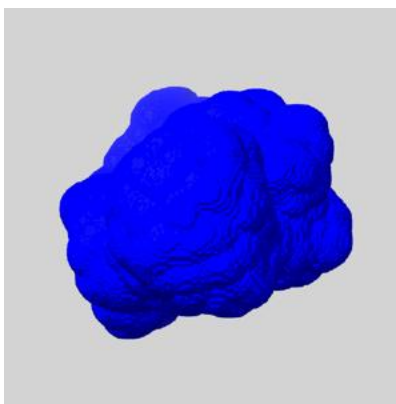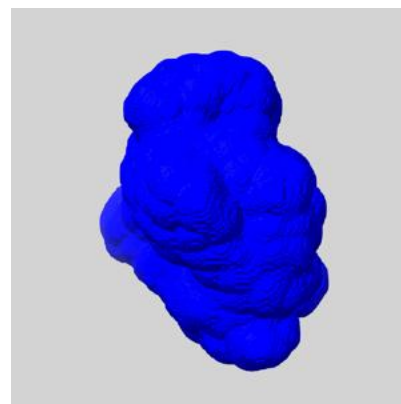
7 Map analysis ⓘ

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

7.1 Map-value distribution ⓘ
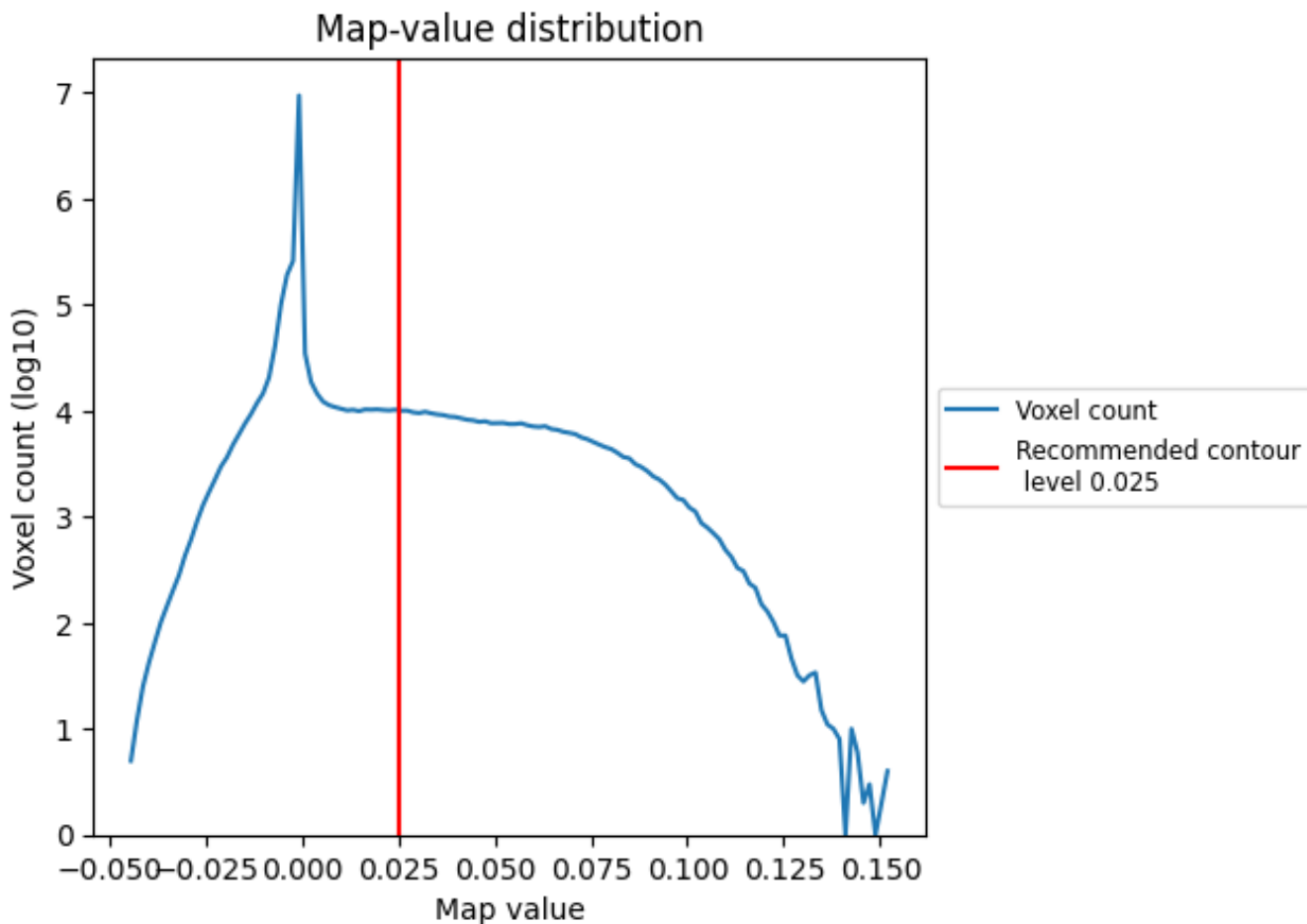
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2　Volume estimate ⓘ
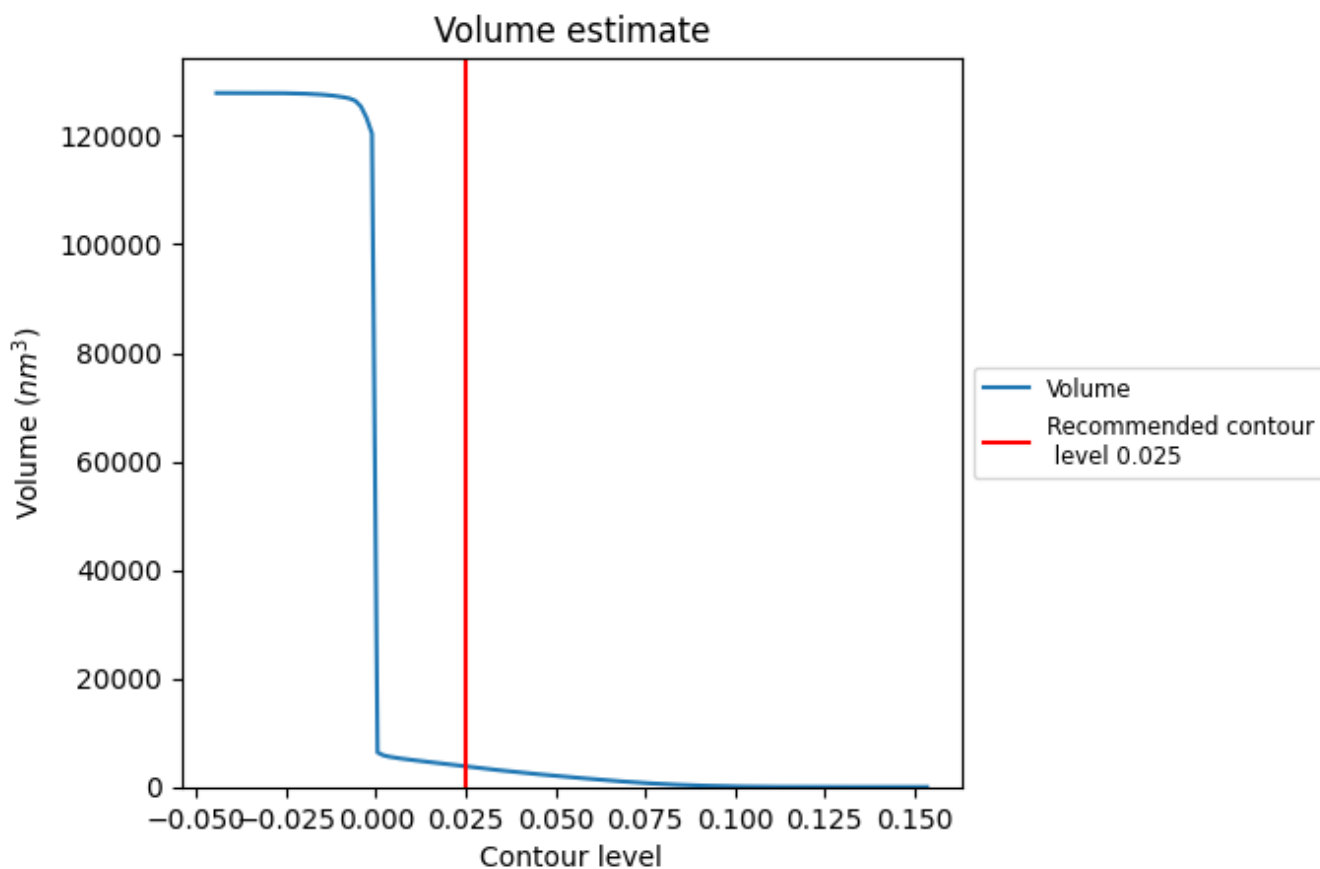
The volume at the recommended contour level is 3796 nm^3; this corresponds to an approximate mass of 3429 kDa.

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　ⓘ
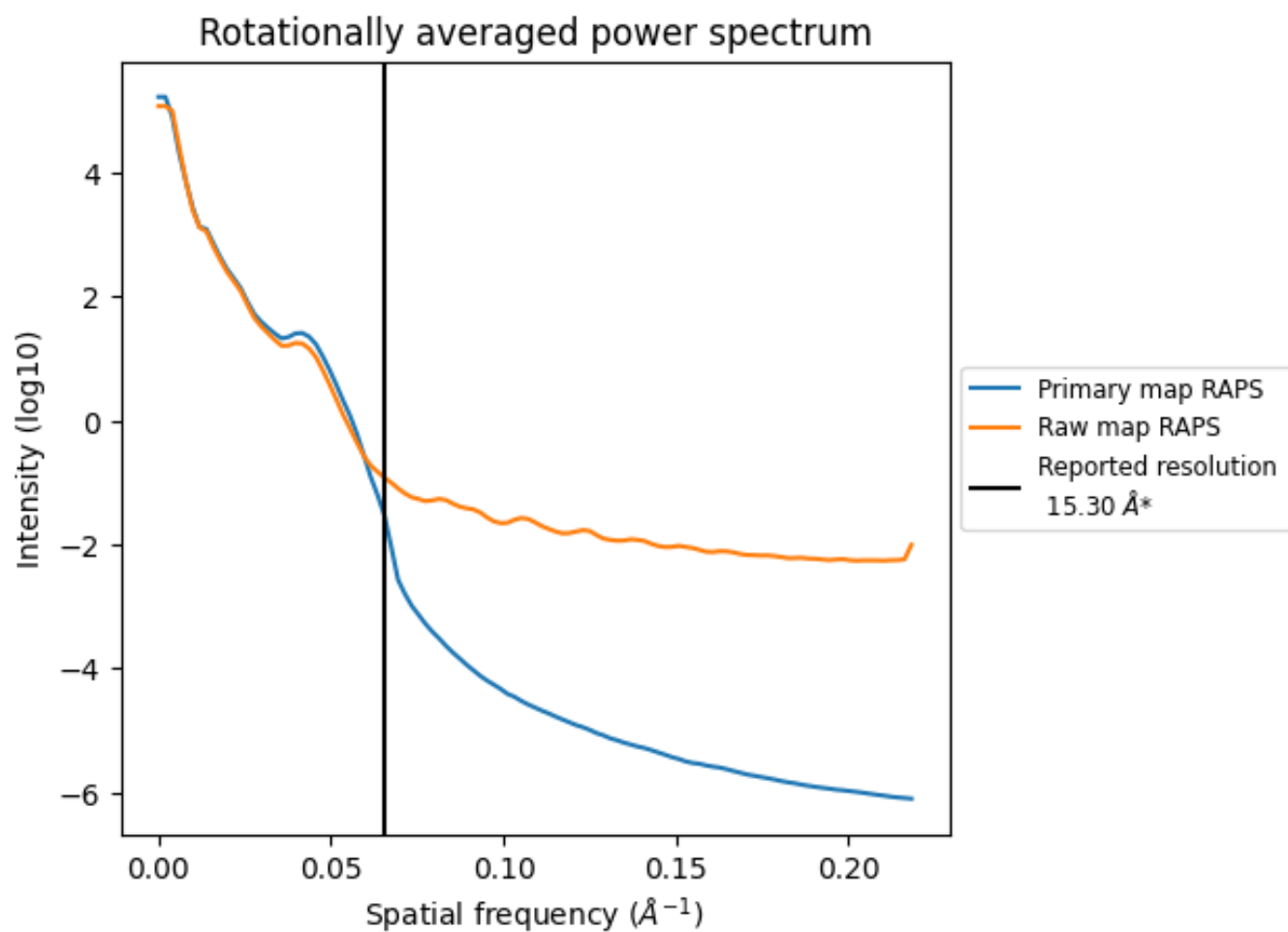
*Reported resolution corresponds to spatial frequency of 0.065 Å^{-1}

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 ⓘ
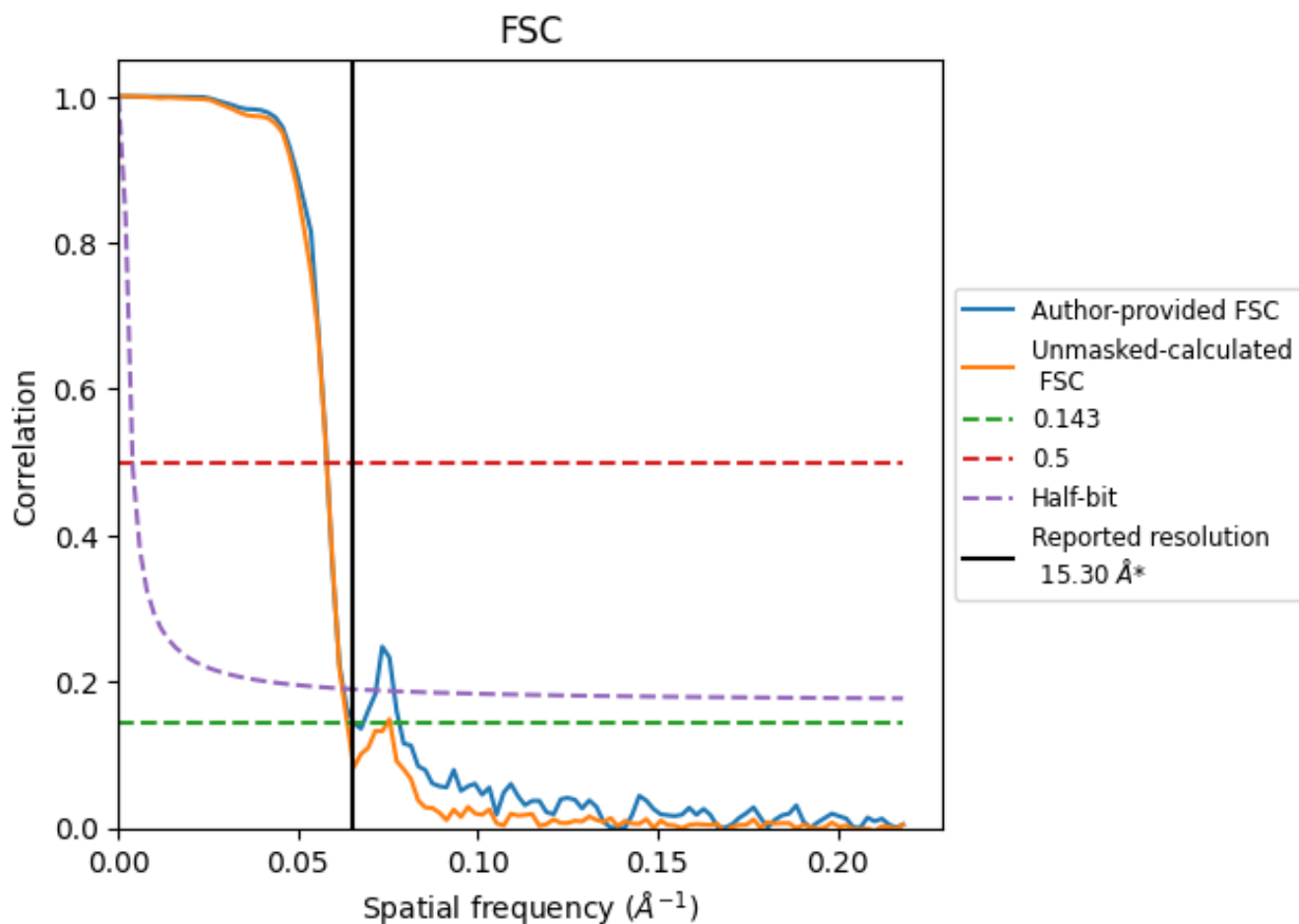
*Reported resolution corresponds to spatial frequency of 0.065 Å^{-1}

8.2   Resolution estimates ⓘ

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	15.30	-	-
Author-provided FSC curve	15.27	17.24	15.97
Unmasked-calculated*	15.70	17.27	16.05

*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-8305 and PDB model 5SVA. Per-residue inclusion information can be found in section 3 on page 12.

9.1   Map-model overlay ⓘ

| X | Y | Z |
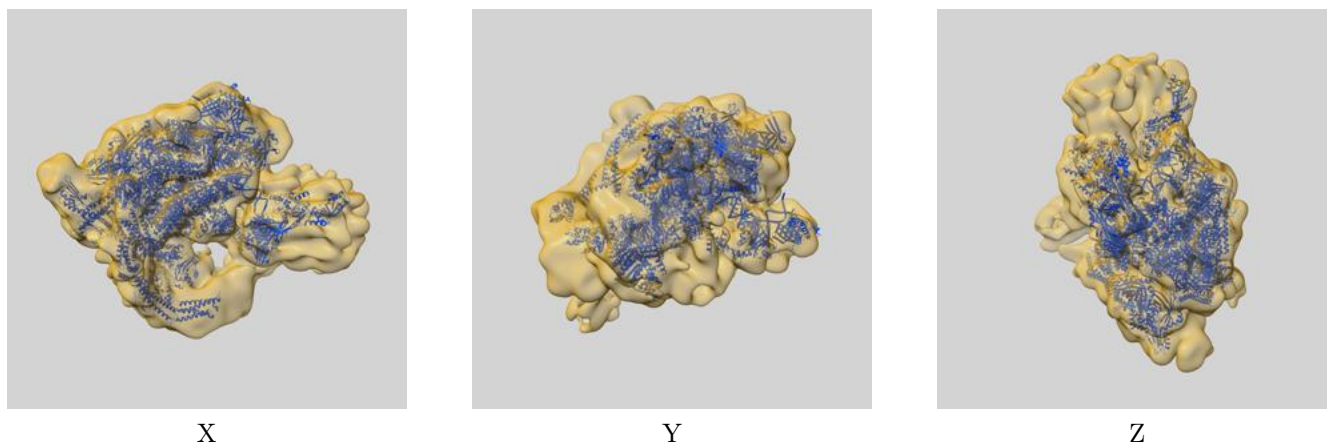
The images above show the 3D surface view of the map at the recommended contour level 0.025 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2　Q-score mapped to coordinate model ⓘ

X　　　　　　　　　　　　　Y　　　　　　　　　　　　　Z
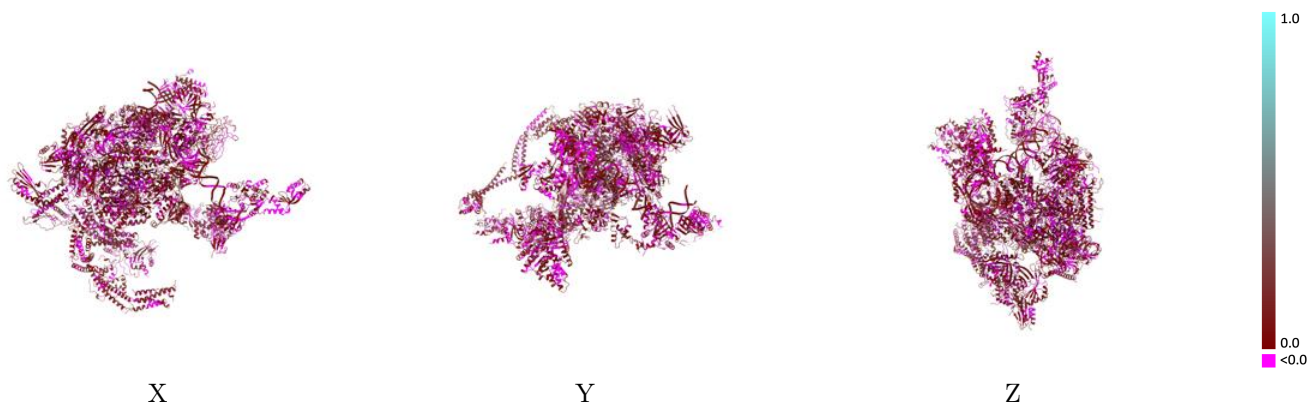
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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
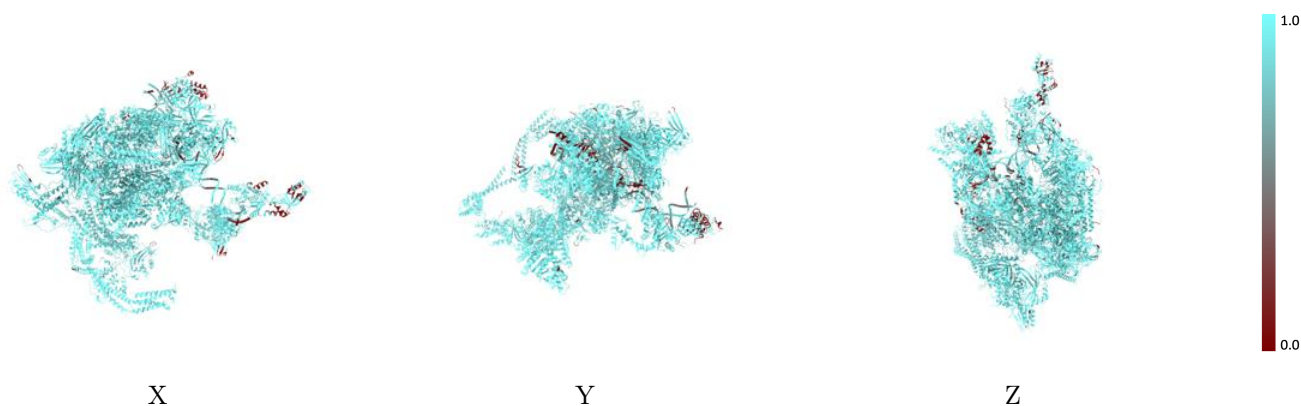
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.025).

9.4   Atom inclusion ⓘ
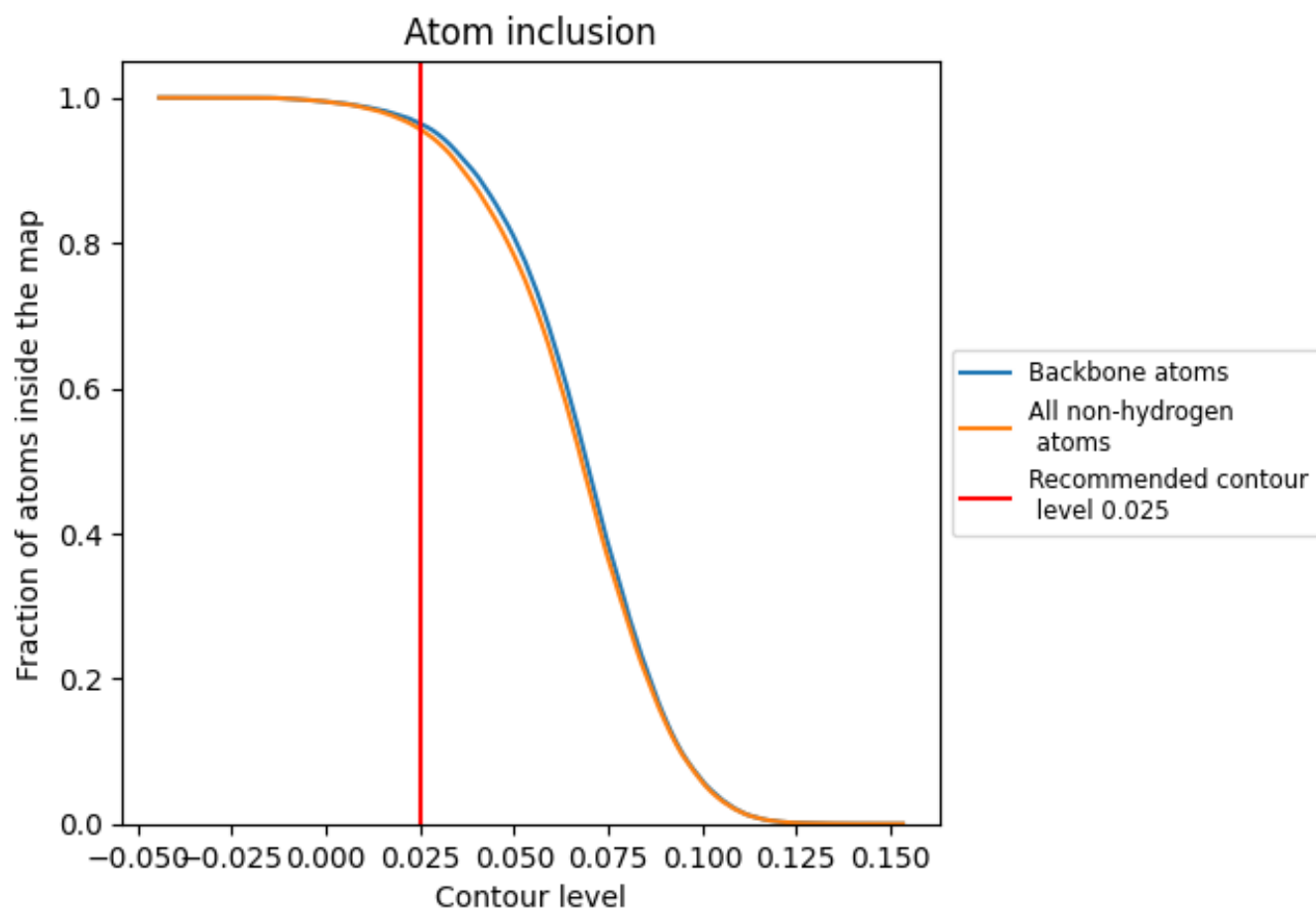
At the recommended contour level, 96% of all backbone atoms, 96% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.025) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9567	0.0490
A	0.9933	0.0610
B	0.9962	0.0400
C	0.9898	0.0500
D	0.9780	0.0630
E	0.9930	0.0720
F	0.9970	0.0640
G	0.9758	0.0570
H	0.9510	0.0380
I	0.9440	0.0490
J	1.0000	0.0810
K	0.9746	0.0720
L	1.0000	0.0570
M	0.9665	0.0290
N	0.9989	0.0450
O	1.0000	0.0700
P	0.9851	0.0610
Q	0.9923	0.0460
R	0.9810	0.0630
S	1.0000	0.0330
T	0.9798	0.0460
U	0.9961	0.0700
V	0.9772	0.1040
W	0.9958	0.0940
X	0.9854	0.0070
Y	0.9923	0.0450
Z	0.9340	0.0360
a	0.6090	-0.0120
b	0.6037	0.0000
c	0.9679	0.0260
d	0.5480	0.0070
e	0.7375	0.0220
f	0.9133	0.0170
g	0.9823	0.0240
h	0.9606	0.0620

1.0

0.0
<0.0

Continued on next page...

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Chain	Atom inclusion	Q-score
i	1.0000	0.0750
j	0.8256	0.0390
k	1.0000	-0.0140
l	0.7679	0.0630
m	0.8253	0.0540
n	0.8600	0.0390