WORLDWIDE PDB PROTEIN DATA BANK

wwPDB EM Validation Summary Report (i)

Jun 25, 2025 – 05:44 pm BST

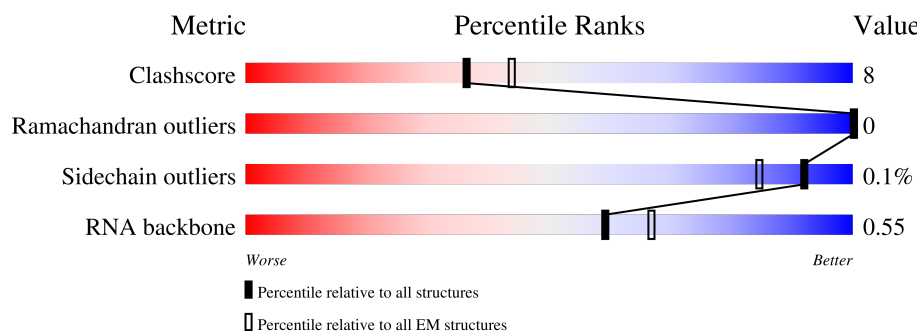|		
PDB ID	:	8B3F / pdb_00008b3f
EMDB ID	:	EMD-15826
Title	:	Pol II-CSB-CSA-DDB1-ELOF1
Authors	:	Kokic, G.; Cramer, P.
Deposited on	:	2022-09-16
Resolution	:	3.10 Å(reported)

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 3.10 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
Clashscore		8
Ramachandran outliers		0
Sidechain outliers		0.1%
RNA backbone		0.55

Worse ... *Better*

▮ Percentile relative to all structures
▯ Percentile relative to all EM structures
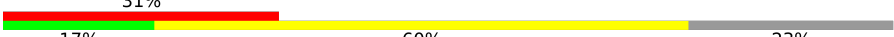
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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

Mol	Chain	Length	Quality of chain
1	A	1970	59% 11% · 28%
2	B	1167	82% 13% ··
3	C	275	79% / 81% 11% · 5%
4	D	142	70% 18% · 10%
5	E	210	84% 15%
6	F	127	55% 8% · 35%
7	G	172	62% / 78% 19% ···

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Mol	Chain	Length	Quality of chain
8	H	150	87% 10%
9	I	125	70% 22% 6%
10	J	67	93% 7%
11	K	117	82% 15%
12	L	58	57% 19% 21%
13	M	83	19% 66% 11% 23%
14	N	52	31% 17% 60% 23%
15	P	10	90% 10%
16	T	52	19% 21% 79%
17	a	396	8% 77% 15% 8%
18	b	1496	8% 30% 6% 64%
19	d	1140	6% 61% 7% 31%

2 Entry composition ⓘ

There are 21 unique types of molecules in this entry. The entry contains 92036 atoms, of which 45119 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 subunit.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	A	1409	Total 22460	C 7022	H 11299	N 1998	O 2070	S 71	0	0

There are 14 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	TYR	deletion	UNP A0A7M4DUC2
A	?	-	SER	deletion	UNP A0A7M4DUC2
A	?	-	PRO	deletion	UNP A0A7M4DUC2
A	?	-	THR	deletion	UNP A0A7M4DUC2
A	?	-	SER	deletion	UNP A0A7M4DUC2
A	?	-	PRO	deletion	UNP A0A7M4DUC2
A	?	-	SER	deletion	UNP A0A7M4DUC2
A	?	-	TYR	deletion	UNP A0A7M4DUC2
A	?	-	SER	deletion	UNP A0A7M4DUC2
A	?	-	PRO	deletion	UNP A0A7M4DUC2
A	?	-	THR	deletion	UNP A0A7M4DUC2
A	?	-	SER	deletion	UNP A0A7M4DUC2
A	?	-	PRO	deletion	UNP A0A7M4DUC2
A	?	-	SER	deletion	UNP A0A7M4DUC2

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

Mol	Chain	Residues	Atoms						AltConf	Trace
2	B	1130	Total 18131	C 5725	H 9083	N 1591	O 1668	S 64	0	0

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

Mol	Chain	Residues	Atoms						AltConf	Trace
3	C	260	Total 4120	C 1309	H 2031	N 359	O 415	S 6	0	0

- Molecule 4 is a protein called RNA polymerase II subunit D.

Mol	Chain	Residues	Atoms						AltConf	Trace
4	D	128	Total	C	H	N	O	S	0	0
			1985	636	972	172	201	4		

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

Mol	Chain	Residues	Atoms						AltConf	Trace
5	E	209	Total	C	H	N	O	S	0	0
			3457	1089	1737	300	323	8		

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

Mol	Chain	Residues	Atoms						AltConf	Trace
6	F	82	Total	C	H	N	O	S	0	0
			1341	418	684	113	121	5		

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

Mol	Chain	Residues	Atoms						AltConf	Trace
7	G	171	Total	C	H	N	O	S	0	0
			2665	867	1331	216	243	8		

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

Mol	Chain	Residues	Atoms						AltConf	Trace
8	H	148	Total	C	H	N	O	S	0	0
			2333	750	1147	194	237	5		

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

Mol	Chain	Residues	Atoms						AltConf	Trace
9	I	117	Total	C	H	N	O	S	0	0
			1827	587	878	169	182	11		

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

Mol	Chain	Residues	Atoms						AltConf	Trace
10	J	67	Total	C	H	N	O	S	0	0
			1086	345	553	90	92	6		

- Molecule 11 is a protein called RNA_pol_L_2 domain-containing protein.

Mol	Chain	Residues	Atoms						AltConf	Trace
11	K	115	Total 1862	C 593	H 942	N 152	O 173	S 2	0	0

- Molecule 12 is a protein called RNA polymerase II subunit K.

Mol	Chain	Residues	Atoms						AltConf	Trace
12	L	46	Total 781	C 241	H 393	N 75	O 66	S 6	0	0

- Molecule 13 is a protein called Transcription elongation factor 1 homolog.

Mol	Chain	Residues	Atoms						AltConf	Trace
13	M	64	Total 968	C 312	H 463	N 81	O 105	S 7	0	0

- Molecule 14 is a DNA chain called NTS.

Mol	Chain	Residues	Atoms						AltConf	Trace
14	N	40	Total 913	C 393	H 84	N 162	O 234	P 40	0	0

- Molecule 15 is a RNA chain called RNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
15	P	10	Total 330	C 98	H 110	N 45	O 67	P 10	0	0

- Molecule 16 is a DNA chain called TS.

Mol	Chain	Residues	Atoms						AltConf	Trace
16	T	52	Total 1078	C 476	H 87	N 160	O 303	P 52	0	0

- Molecule 17 is a protein called DNA excision repair protein ERCC-8.

Mol	Chain	Residues	Atoms						AltConf	Trace
17	a	365	Total 5624	C 1775	H 2775	N 507	O 548	S 19	0	0

- Molecule 18 is a protein called DNA excision repair protein ERCC-6.

Mol	Chain	Residues	Atoms						AltConf	Trace
18	b	534	Total 8744	C 2803	H 4390	N 761	O 769	S 21	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
b	-2	SER	-	expression tag	UNP Q03468
b	-1	ASN	-	expression tag	UNP Q03468
b	0	ALA	-	expression tag	UNP Q03468

- Molecule 19 is a protein called DNA damage-binding protein 1.

Mol	Chain	Residues	Atoms						AltConf	Trace
19	d	781	Total 12321	C 3916	H 6160	N 1038	O 1173	S 34	0	0

- Molecule 20 is ZINC ION (CCD ID: ZN) (formula: Zn).

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

- Molecule 21 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
21	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 subunit

L1401 T1404 M1405 F1432 E1433 M1440 M1459 L1460 F1471 L1475 E1478 K1479 C1480 K1481 TYR GLY MET GLU ILE PRO THR ASN ILE PRO GLY LEU GLY ALA ALA GLY PRO THR GLY MET PHE PHE GLY SER ALA SER PRO MET GLY GLY ILE SER PRO ALA MET THR PRO

TRP ASN GLN GLY ALA THR PRO ALA TYR GLY ALA TRP PRO SER PRO SER VAL GLY SER GLY MET THR PRO GLY ALA ALA GLY PHE SER PRO SER ALA ALA ASP ALA SER GLY PHE SER PRO GLY TYR SER PRO ALA TRP SER THR PRO GLY SER PRO MET GLY GLY ILE SER PRO GLY PRO ALA MET THR PRO SER

PRO TYR ILE SER PRO GLY GLY ALA MET SER PRO SER TYR SER THR SER PRO ALA TYR GLU PRO ARG SER PRO GLY GLY TYR THR PRO GLN SER PRO SER TYR SER PRO THR SER PRO SER TYR SER PRO TYR SER PRO THR SER PRO SER TYR SER PRO THR SER PRO THR SER PRO ASN TYR SER PRO THR

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THR TYR SER PRO THR THR PRO LYS TYR SER PRO SER PRO THR TYR SER PRO THR SER PRO VAL TYR THR PRO THR SER PRO LYS TYR SER PRO THR SER PRO THR TYR SER PRO THR THR PRO LYS TYR SER PRO THR SER PRO SER PRO LYS GLY SER THR

TYR SER PRO THR SER PRO GLY TYR SER PRO THR SER PRO THR TYR SER LEU THR SER PRO ALA ILE SER PRO ASP ASP SER ASP GLU GLU ASN

• Molecule 2: DNA-directed RNA polymerase subunit beta

Chain B: 82%   13%

MET GLN TYR ASP GLU ASP ASP D15 E24 D35 Q52 M53 R57 L67 Q68 A69 GLU ALA GLN HIS ALA SER GLY GLU VAL GLU GLU P81 K87 F88 E89 K95 R101 M108 M109 G136 E137 T159 L162 R169 E173 V207 F208 A209 K210

K211 D212 S213 K214 Y217 C224 N227 S228 S229 T232 M239 L240 A241 R242 GLY GLY GLN GLY ALA LYS LYS SER A251 I252 G253 Q254 R255 E266 I270 I271 R274 V279 S280 D281 I284 L285 E296 M297 M298 V301 K302 P303 E307 V310 I311

R324 G325 A326 K327 T331 K332 E333 E341 K345 E358 T359 K360 R371 A375 A376 L377 G378 R379 R380 E381 L382 Y388 L393 G406 N410 R416 K421 F422 I423 D424 R425 E432 K457 H460 Q461 L473 L485 R491 D492 G493 K494

L501 L505 E516 V520 F544 E547 W548 S549 E554 E555 T565 H577 K578 D579 P580 R591 I596 S602 R610 R613 I614 Y615 R620 L625 V628 E629 K632 R646 Q654 L675 A676 M677 I710 Q731 A732 M733 G734 V735

T761 M764 F769 R770 N777 V780 S784 Q790 V794 R812 E816 K820 K821 G822 F823 D824 Q825 R834 E835 Q838 G839 M840 R841 H842 A843 K847 D850 D863 D864 T872 L873 P874 GLU ASN GLU ASP GLU LEU GLU GLY THR ASN ARG

R886 Y887 T888 T894 E900 D905 M908 K917 R922 V923 R924 R927 K934 R938 T957 C958 E959 G960 I961 I967 K993 G994 E995 N1007 K1010 L1028 R1035 K1036 L1051 M1054 D1057 Q1068 P1074 R1078 E1088 M1089 E1090

R1091 D1092 R1104 E1105 E1109 N1120 L1121 I1124 I1127 T1134 Y1135 R1138 Q1145 I1146 S1147 R1150 C1155 M1163 V1174

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

Chain C:	81%	11%	5%

MET P2 P7 I11 S33 L59 H60 D61 E62 F63 L70 S85 R86 R106 C107 N108 E109 D110 Q111 N134 ARG ASP ASN ASP PRO SER ASP TYR VAL E144 K155 E158 K166 A180 D189 N190 A191 L192 R193 K199 P222 K225 P226 E227

R228 S235 L239 R240 S250 K253 K254 Q268 S269 D270 VAL LEU THR ILE ASN

• Molecule 4: RNA polymerase II subunit D

Chain D:	79%	70%	18%	10%

MET ALA ALA GLY SER ASP PRO ARG ALA GLY ASP VAL E14 E15 D16 A17 S18 Q19 L20 I21 F22 P23 K24 E25 F26 E27 T28 A29 E30 T31 L32 L33 N34 S35 E36 V37 H38 M39 L40 L41 E42 H43 R44 K45 Q46 Q47 N48 E49 S50 A51 E52 D53 E54 Q55 E56 L57 S58 E59 V60

F61 M62 K63 T64 L65 N66 Y67 T68 A69 R70 F71 S72 R73 F74 K75 N76 R77 E78 T79 S82 V83 R84 S85 L86 L87 L88 Q89 K90 K91 L92 H93 K94 F95 E96 L97 A98 C99 L100 A101 N102 L103 C104 P105 E106 T107 A108 E109 E110 S111 K112 A113 L114 I115 P116 S117 L118 E119 G120 R121

F122 E123 D124 E125 E126 L127 Q128 Q129 I130 L131 D132 D133 I134 Q135 T136 K137 R138 S139 F140 Q141 TYR

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

Chain E:	84%	15%

MET D2 D3 E4 E5 L10 W11 K12 Y26 E39 K47 R55 T56 M72 E78 K85 K88 C91 E96 R101 A102 L103 M110 T111 P112 S113 A114 D120 M121 L127 L131 Q132 Q133 E134 H142 K153 E158 R162 R166

R181 R187 Q210

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

Chain F:	55%	8%	35%

MET SER ASP ASN GLU ASP ASN PHE ASP GLY ASP ASP PHE ASP ASP VAL GLU GLU ASP GLY LEU ASP ASP LEU GLU ASN ALA GLU GLU GLU GLY GLN GLU VAL GLU ILE LEU PRO SER GLY GLU ARG PRO Q46 A47 N48 Q49 K50 R51 M57 R64 E84 L90

K95 R100 D117 V120 D121 D127

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

Chain G:

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

Chain H:

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

Chain I:

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

Chain J:

• Molecule 11: RNA_pol_L_2 domain-containing protein

Chain K:
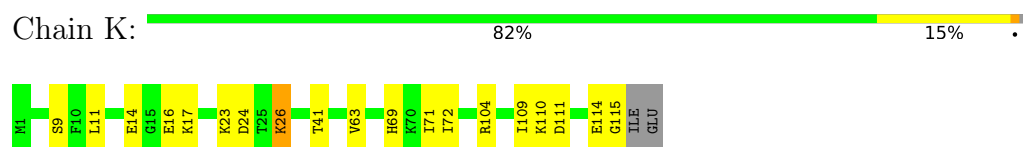
• Molecule 12: RNA polymerase II subunit K

Chain L:

MET ASP THR GLN LYS ASP VAL GLN PRO PRO LYS GLN Q13 C22 H23 T24 E25 N26 E27 I28 K29 S30 R31 R35 C36 R37 E38 R42 I43 R48 R51 R58

• Molecule 13: Transcription elongation factor 1 homolog

Chain M:
19%
66% 11% 23%

MET GLY ARG ARG LYS SER LYS ARG LYS PRO PRO PRO LYS LYS LYS MET THR GLY THR L20 E21 T25 C26 P27 F28 C29 N30 H31 R43 V52 C53 L54 E55 E56 Y71 D76 E79 A80 A81 N82 Q83

• Molecule 14: NTS

Chain N:
31%
17% 60% 23%

C1 T2 A3 G4 T5 T6 G7 A8 T9 C10 T11 C12 A13 T14 A15 T16 DT DT DC DA DT DT DC DC DT DA DC DT C29 A30 G31 G32 A33 G34 A35 G38 A39 G40 C41 A42 G43 A44 G45 C46 G47 A48 A49 T50 A51 C52

• Molecule 15: RNA

Chain P:
90% 10%

A1 A10

• Molecule 16: TS

Chain T:
19%
21% 79%

G1 T2 A3 T4 T5 C6 G7 C8 T9 C10 T11 G12 C13 T14 C15 C16 T17 T18 C19 T20 C21 C22 C23 A24 T25 C26 C27 T28 C29 T30 T34 G35 G36 C37 T38 A39 T40 G41 A42 G43 C46 A47 A48 C49 T50 A51 G52

• Molecule 17: DNA excision repair protein ERCC-8

Chain a:
8%
77% 15% 8%

M1 L2 L12 E13 R17 L30 E31 L32 N33 K34 D35 R36 D37 R40 P53 V54 E55 S64 L70 Y81 Y82 T83 V87 R92 D96 R99 Y100 S101 Y108 D111 M114 F115 T116 F120 D121 K122 T123 L124 K125 V126 D136 E141

E142 T143 V144 M149 S153 T154 K155 H156 C157 L158 V159 T163 R164 V168 L173 K174 S175 G176 H180 R186 I189 V192 Y200 T204 L213 R217 R218 A219 S220 G221 C222 L223 G231 K232 K233 S234 Q235 A236 V237 E238 S239 A240 L251 S255

T262 N290 S291 K292 T320 I327 L330 D338 R354 N357 A360 W361 L365 TYR GLU PRO VAL PRO ASP ASP GLU THR THR THR LYS SER GLN LEU ASN PRO ALA PHE GLU ASP ALA TRP SER SER ASP GLU GLU GLY

• Molecule 18: DNA excision repair protein ERCC-6

Chain b:

8%

30%   6%   64%

• Molecule 19: DNA damage-binding protein 1

Chain d:

6%

61% 7% 31%

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	220655	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	42	Depositor
Minimum defocus (nm)	140	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.181	Depositor
Minimum map value	-0.112	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.00762	Depositor
Map size (Å)	398.99997, 398.99997, 398.99997	wwPDB
Map dimensions	380, 380, 380	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.05, 1.05, 1.05	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$|Z|$ >5	RMSZ	#$|Z|$ >5
1	A	0.50	9/11364 (0.1%)	1.08	130/15342 (0.8%)
2	B	0.49	5/9229 (0.1%)	0.87	65/12458 (0.5%)
3	C	0.53	1/2132 (0.0%)	1.02	22/2896 (0.8%)
4	D	0.55	2/1027 (0.2%)	1.15	17/1384 (1.2%)
5	E	0.61	1/1751 (0.1%)	1.19	29/2366 (1.2%)
6	F	0.42	0/667	0.96	5/901 (0.6%)
7	G	0.54	1/1365 (0.1%)	1.27	19/1853 (1.0%)
8	H	0.40	0/1207	0.69	5/1628 (0.3%)
9	I	0.50	0/972	1.12	13/1316 (1.0%)
10	J	0.38	0/542	1.00	3/730 (0.4%)
11	K	0.57	2/939 (0.2%)	1.13	15/1271 (1.2%)
12	L	0.79	2/394 (0.5%)	1.58	13/524 (2.5%)
13	M	0.17	0/515	0.33	0/700
14	N	0.20	0/932	0.32	0/1435
15	P	0.37	0/247	0.35	0/384
16	T	0.28	0/1102	0.42	0/1682
17	a	0.21	0/2908	0.45	0/3939
18	b	0.21	0/4458	0.46	0/6021
19	d	0.19	0/6268	0.43	1/8466 (0.0%)
All	All	0.43	23/48019 (0.0%)	0.87	337/65296 (0.5%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	9
2	B	0	6
3	C	0	5
5	E	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
6	F	0	1
7	G	0	2
9	I	0	2
12	L	0	1
17	a	0	1
18	b	0	2
All	All	0	30

The worst 5 of 23 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	G	1	MET	CB-CG	-8.20	1.27	1.52
11	K	26	LYS	CG-CD	-5.97	1.34	1.52
11	K	26	LYS	CD-CE	-5.91	1.34	1.52
12	L	35	ARG	CZ-NH1	-5.80	1.24	1.32
3	C	111	GLN	CG-CD	-5.78	1.37	1.52

The worst 5 of 337 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	1286	ARG	CG-CD-NE	22.18	160.79	112.00
1	A	958	ARG	CG-CD-NE	21.43	159.13	112.00
7	G	28	GLN	CA-CB-CG	18.43	150.96	114.10
1	A	711	GLN	CA-CB-CG	18.20	150.50	114.10
1	A	105	LYS	CA-CB-CG	17.36	148.82	114.10

There are no chirality outliers.

5 of 30 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	112	PHE	Sidechain
1	A	397	PHE	Sidechain
1	A	407	ARG	Sidechain
1	A	430	ARG	Sidechain
1	A	538	VAL	Peptide

5.2   Too-close contacts ⓘ

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

the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	11161	11299	11297	147	0
2	B	9048	9083	9083	101	0
3	C	2089	2031	2031	23	0
4	D	1013	972	972	21	0
5	E	1720	1737	1737	13	0
6	F	657	684	684	7	0
7	G	1334	1331	1333	23	0
8	H	1186	1147	1147	9	0
9	I	949	878	879	22	0
10	J	533	553	553	4	0
11	K	920	942	942	9	0
12	L	388	393	393	5	0
13	M	505	463	463	30	0
14	N	829	84	450	102	0
15	P	220	110	109	0	0
16	T	991	87	553	80	0
17	a	2849	2775	2777	93	0
18	b	4354	4390	4387	134	0
19	d	6161	6160	6159	49	0
20	A	2	0	0	0	0
20	B	1	0	0	0	0
20	C	1	0	0	0	0
20	I	2	0	0	0	0
20	J	1	0	0	0	0
20	L	1	0	0	0	0
20	M	1	0	0	0	0
21	A	1	0	0	0	0
All	All	46917	45119	45949	690	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 8.

The worst 5 of 690 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:N:16:DT:P	18:b:1004:LEU:HD13	1.19	1.74
14:N:15:DA:O3'	18:b:1004:LEU:CD1	1.69	1.38
14:N:16:DT:C3'	18:b:1002:TYR:O	1.71	1.38
14:N:16:DT:OP2	18:b:975:ARG:NH1	1.60	1.33
14:N:16:DT:P	18:b:1004:LEU:CD1	2.14	1.32

There are no symmetry-related clashes.

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	1399/1970 (71%)	1348 (96%)	51 (4%)	0	100	100
2	B	1122/1167 (96%)	1072 (96%)	50 (4%)	0	100	100
3	C	256/275 (93%)	248 (97%)	8 (3%)	0	100	100
4	D	126/142 (89%)	117 (93%)	9 (7%)	0	100	100
5	E	207/210 (99%)	196 (95%)	11 (5%)	0	100	100
6	F	80/127 (63%)	75 (94%)	5 (6%)	0	100	100
7	G	169/172 (98%)	159 (94%)	10 (6%)	0	100	100
8	H	146/150 (97%)	141 (97%)	5 (3%)	0	100	100
9	I	115/125 (92%)	106 (92%)	9 (8%)	0	100	100
10	J	65/67 (97%)	64 (98%)	1 (2%)	0	100	100
11	K	113/117 (97%)	109 (96%)	4 (4%)	0	100	100
12	L	44/58 (76%)	40 (91%)	4 (9%)	0	100	100
13	M	62/83 (75%)	61 (98%)	1 (2%)	0	100	100
17	a	363/396 (92%)	343 (94%)	20 (6%)	0	100	100
18	b	526/1496 (35%)	507 (96%)	19 (4%)	0	100	100
19	d	765/1140 (67%)	730 (95%)	35 (5%)	0	100	100
All	All	5558/7695 (72%)	5316 (96%)	242 (4%)	0	100	100

There are no Ramachandran outliers to report.

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	1241/1749 (71%)	1241 (100%)	0	100	100
2	B	992/1021 (97%)	989 (100%)	3 (0%)	91	95
3	C	237/252 (94%)	237 (100%)	0	100	100
4	D	108/126 (86%)	108 (100%)	0	100	100
5	E	191/192 (100%)	191 (100%)	0	100	100
6	F	71/111 (64%)	71 (100%)	0	100	100
7	G	147/153 (96%)	147 (100%)	0	100	100
8	H	129/131 (98%)	129 (100%)	0	100	100
9	I	105/112 (94%)	105 (100%)	0	100	100
10	J	56/56 (100%)	56 (100%)	0	100	100
11	K	104/106 (98%)	104 (100%)	0	100	100
12	L	43/55 (78%)	43 (100%)	0	100	100
13	M	59/76 (78%)	59 (100%)	0	100	100
17	a	320/348 (92%)	319 (100%)	1 (0%)	91	95
18	b	476/1299 (37%)	476 (100%)	0	100	100
19	d	685/999 (69%)	685 (100%)	0	100	100
All	All	4964/6786 (73%)	4960 (100%)	4 (0%)	92	97

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	B	301	VAL
2	B	331	THR
2	B	393	LEU
17	a	32	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 27 such sidechains are listed below:

Mol	Chain	Res	Type
4	D	43	HIS
13	M	31	HIS
19	d	789	HIS
12	L	23	HIS
17	a	133	GLN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
15	P	9/10 (90%)	1 (11%)	0

All (1) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
15	P	10	A

There are no RNA pucker outliers to report.

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 oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 10 ligands modelled in this entry, 10 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-15826. 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 ⓘ
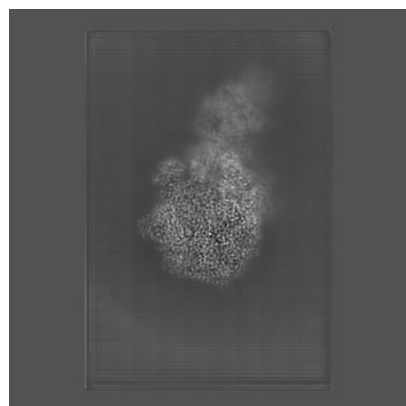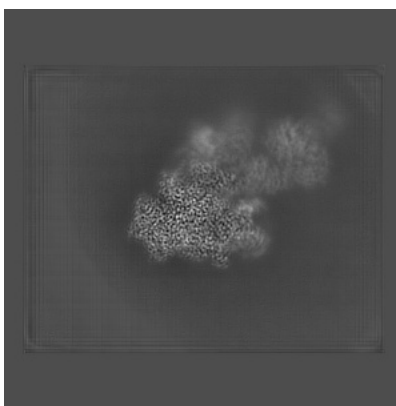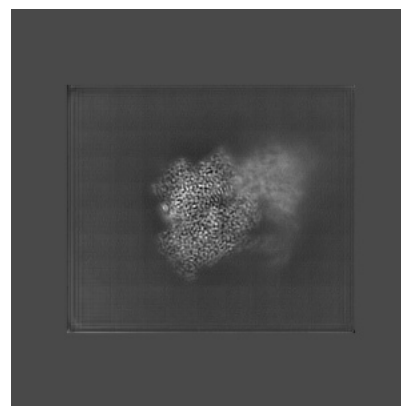
6.1.1 Primary map

| X | Y | Z |

6.1.2 Raw map

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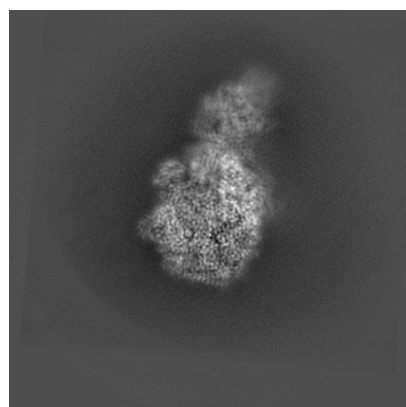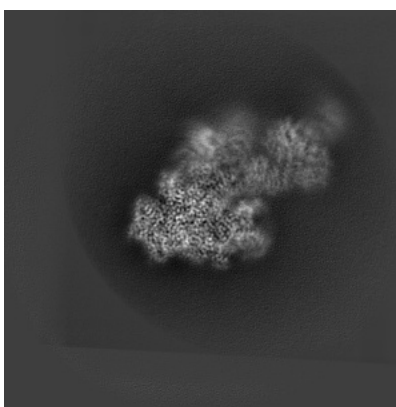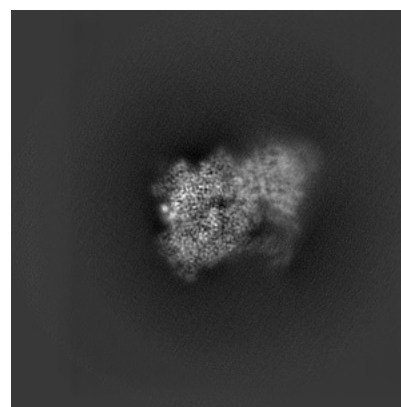
The images above show the map projected in three orthogonal directions.

6.2   Central slices (i)

6.2.1   Primary map
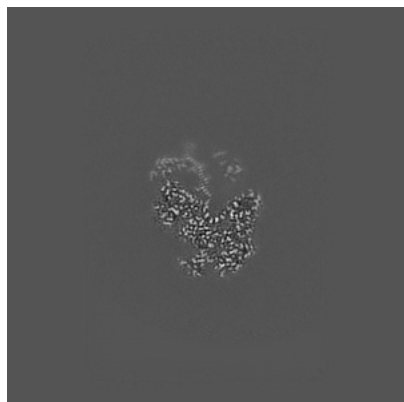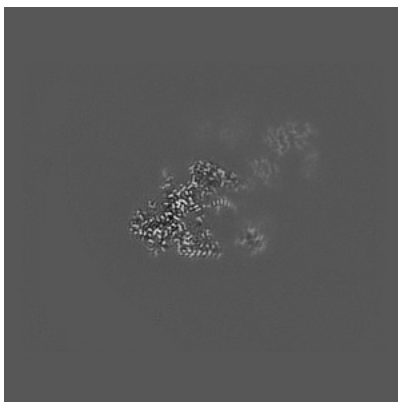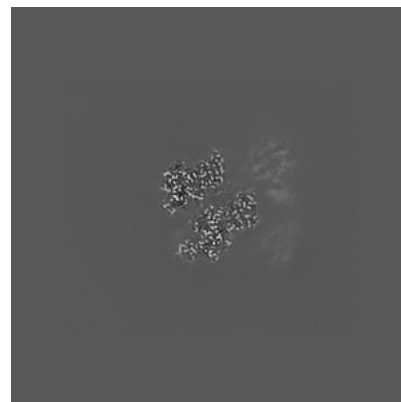
X Index: 190   Y Index: 190   Z Index: 190

6.2.2   Raw map
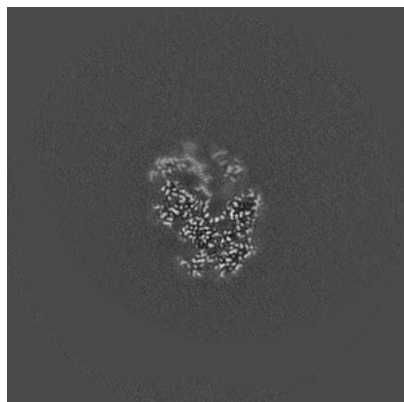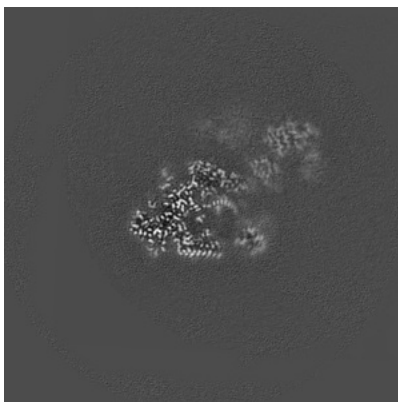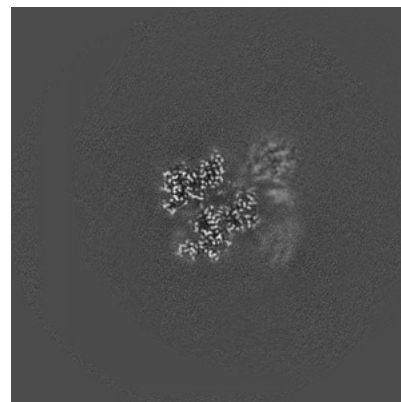
X Index: 190   Y Index: 190   Z Index: 190

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

6.3 Largest variance slices (i)

6.3.1 Primary map
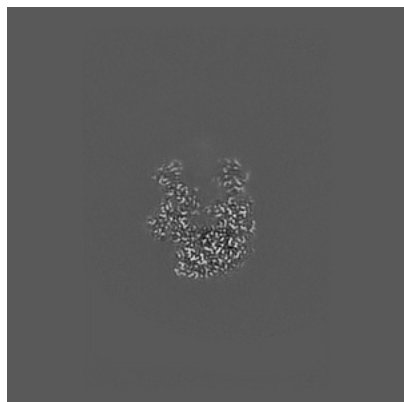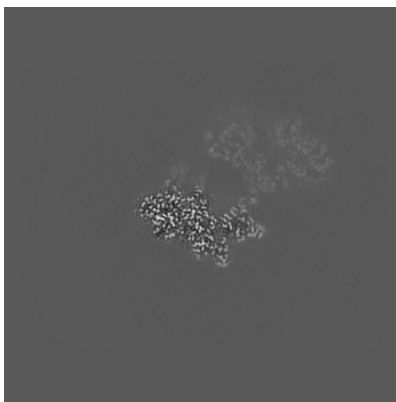
X Index: 180   Y Index: 212   Z Index: 183
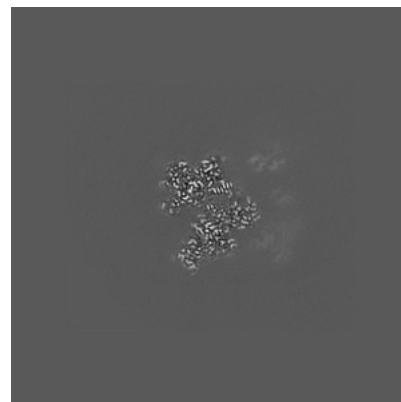
6.3.2 Raw map
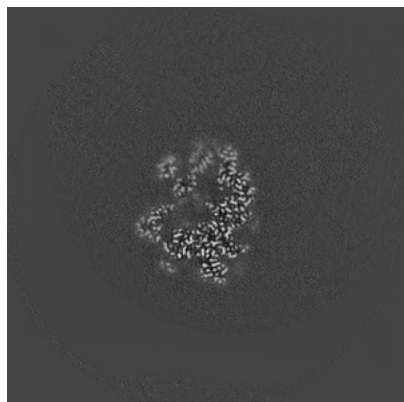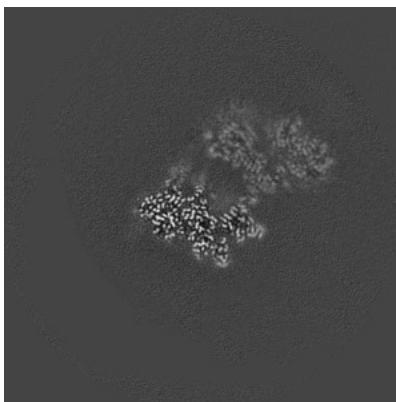
X Index: 166   Y Index: 212   Z Index: 183
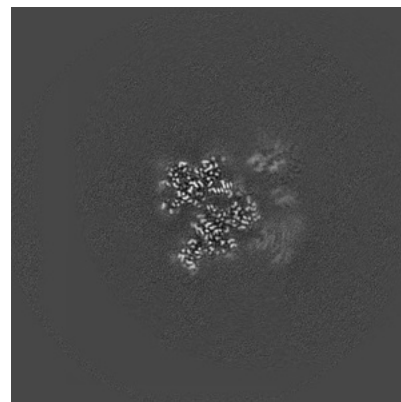
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map
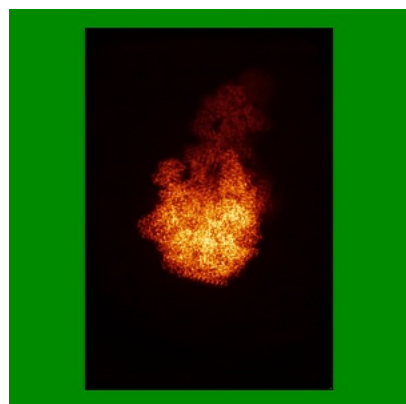
X
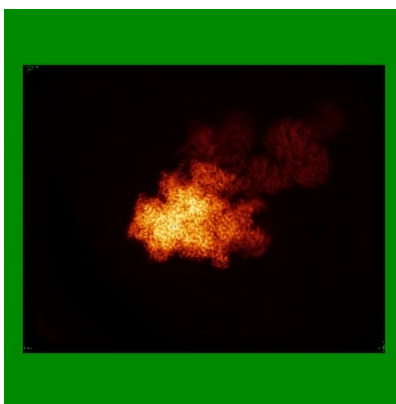
Y
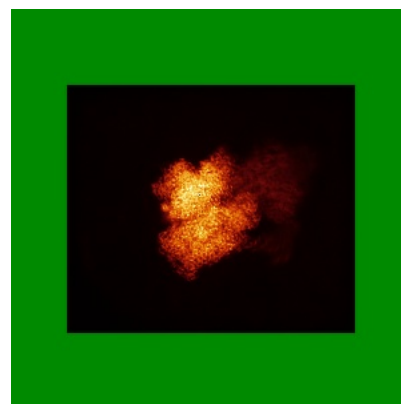
Z

6.4.2 Raw map

X

Y

Z
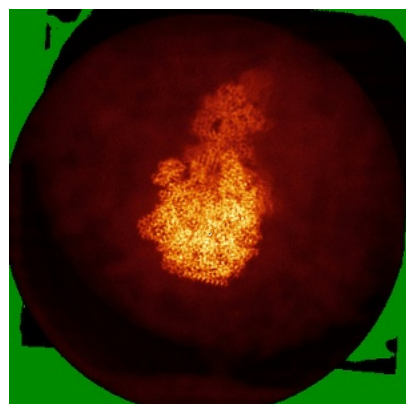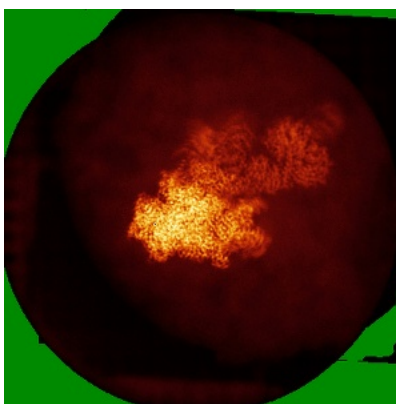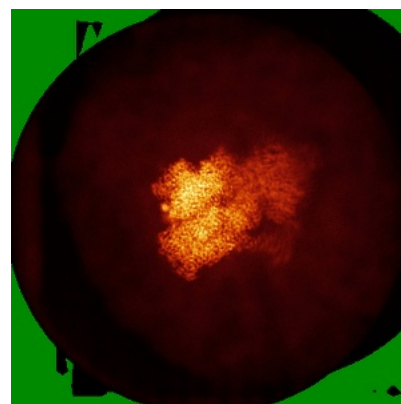
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X   Y   Z
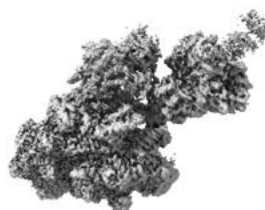
The images above show the 3D surface view of the map at the recommended contour level 0.00762. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 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.

6.6 Mask visualisation (i)

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

7　Map analysis ⓘ

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

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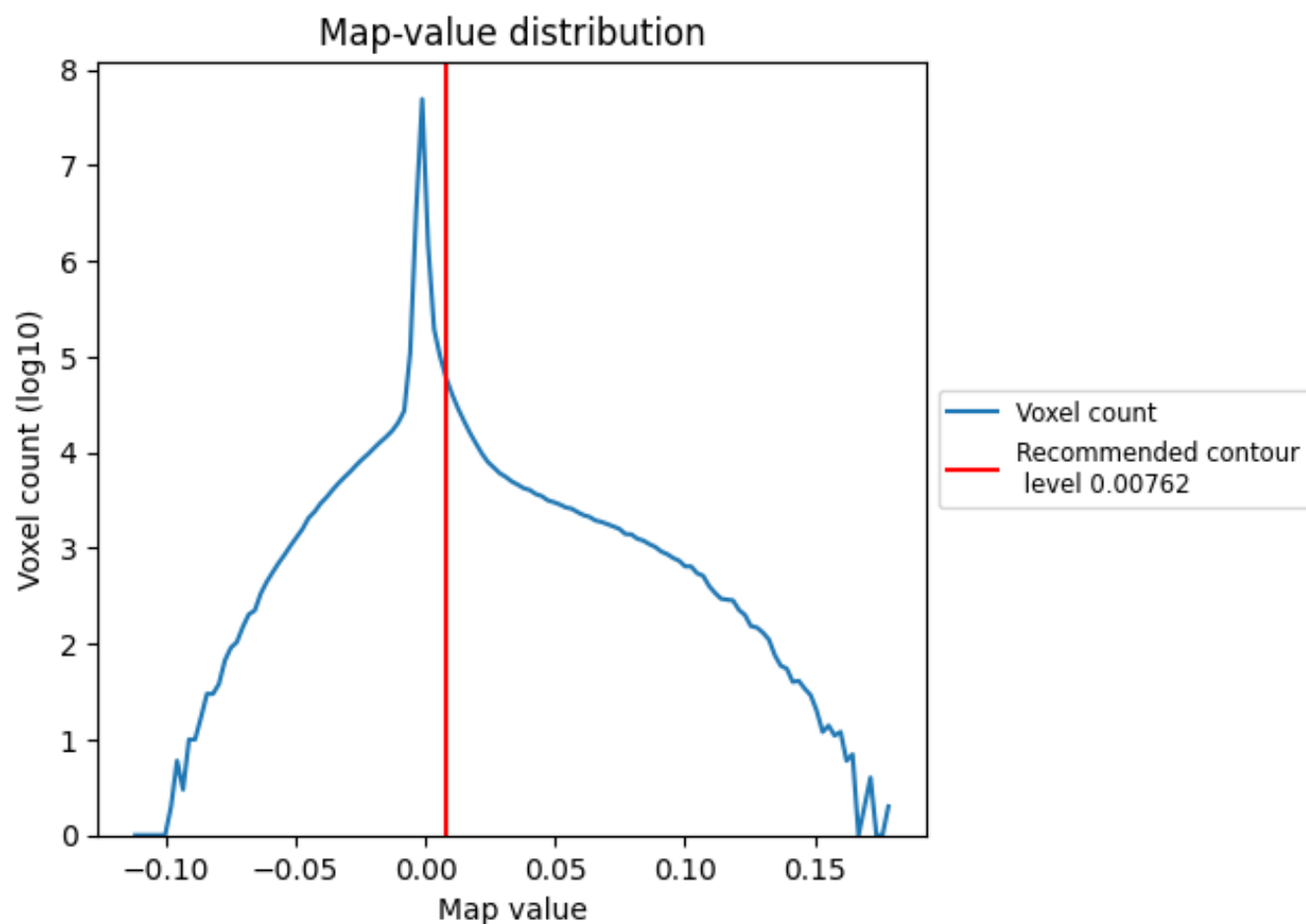
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate ⓘ
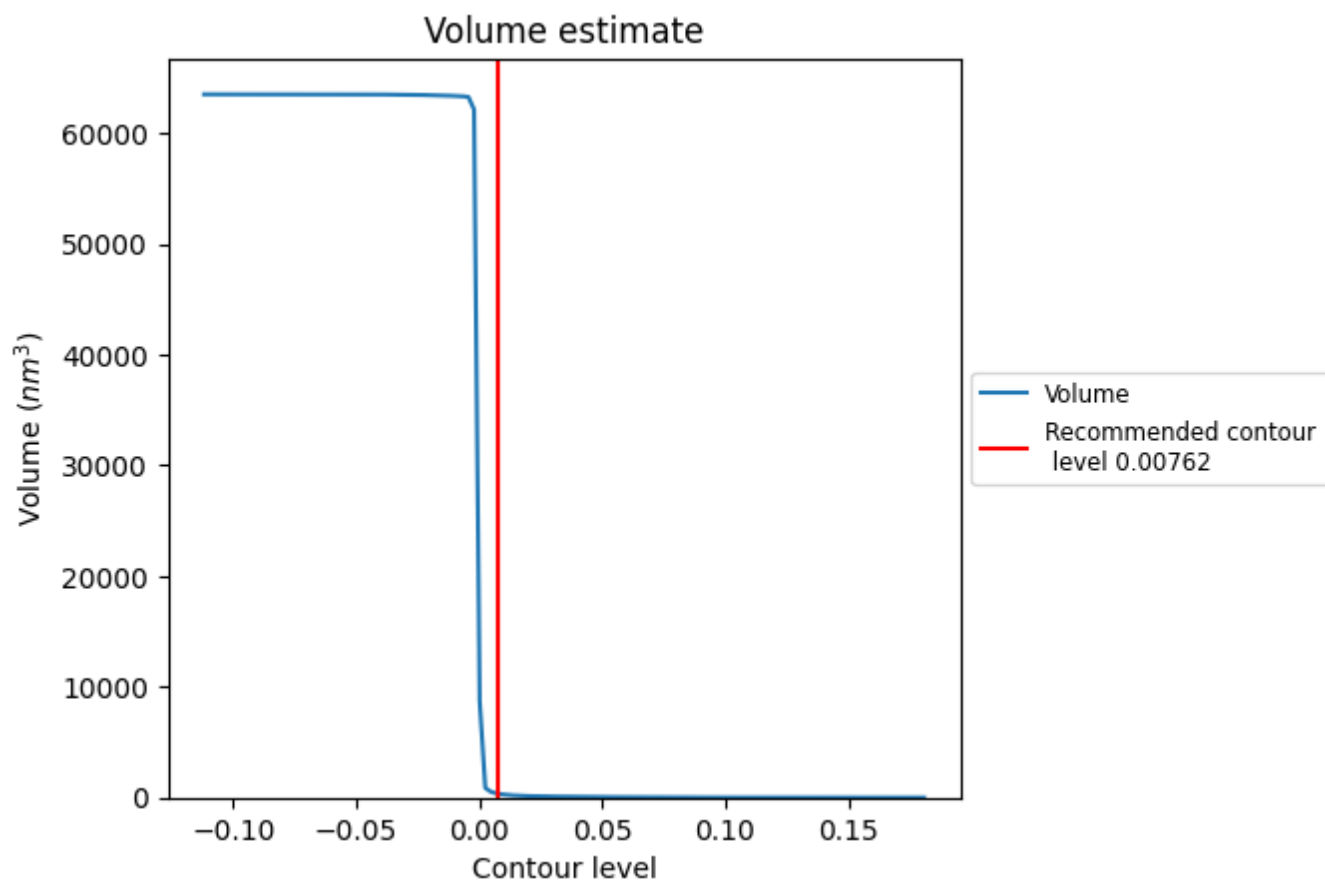
The volume at the recommended contour level is 348 nm^3; this corresponds to an approximate mass of 314 kDa.

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 ⓘ
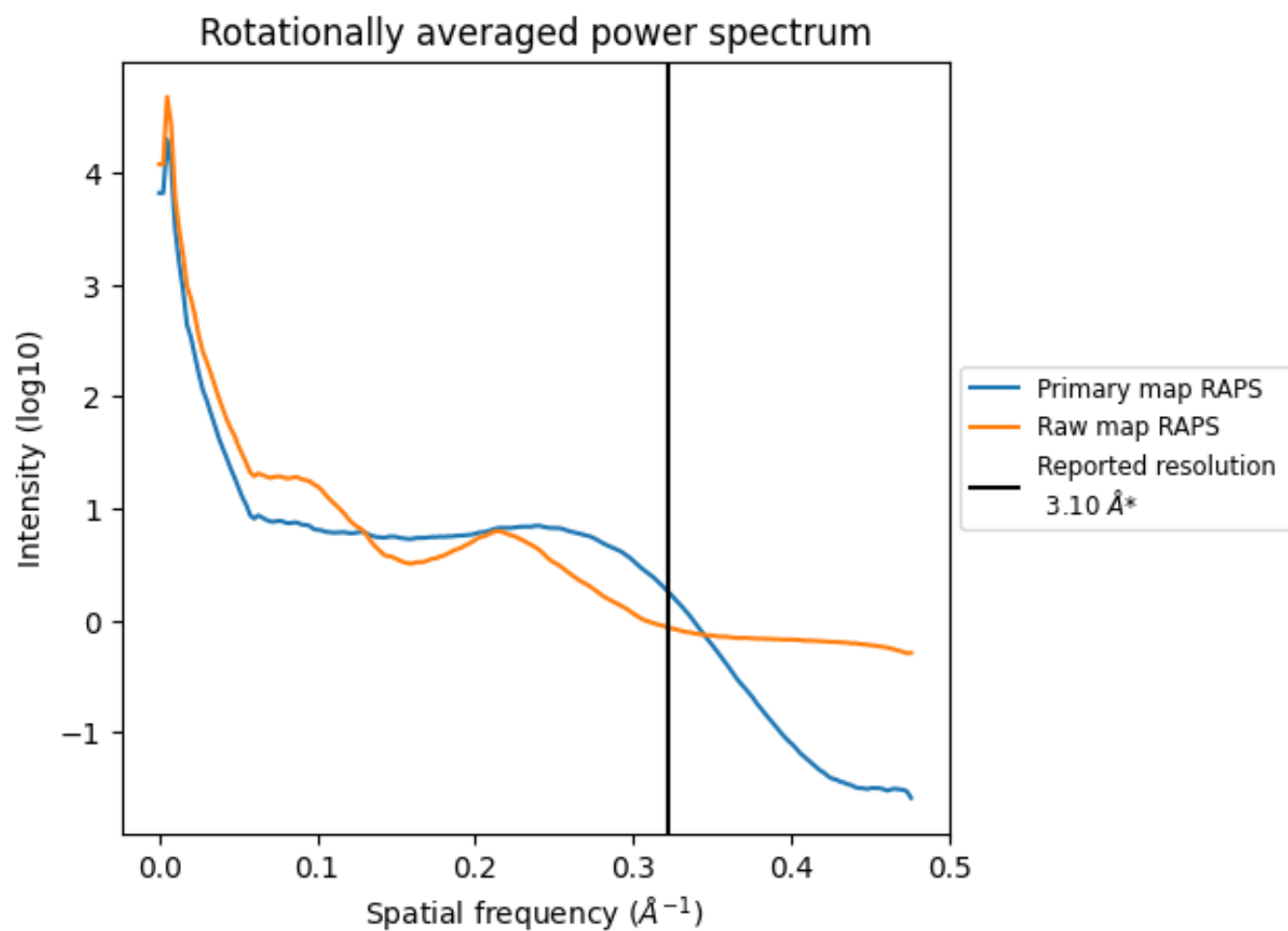
*Reported resolution corresponds to spatial frequency of 0.323 Å^{-1}

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 ⓘ
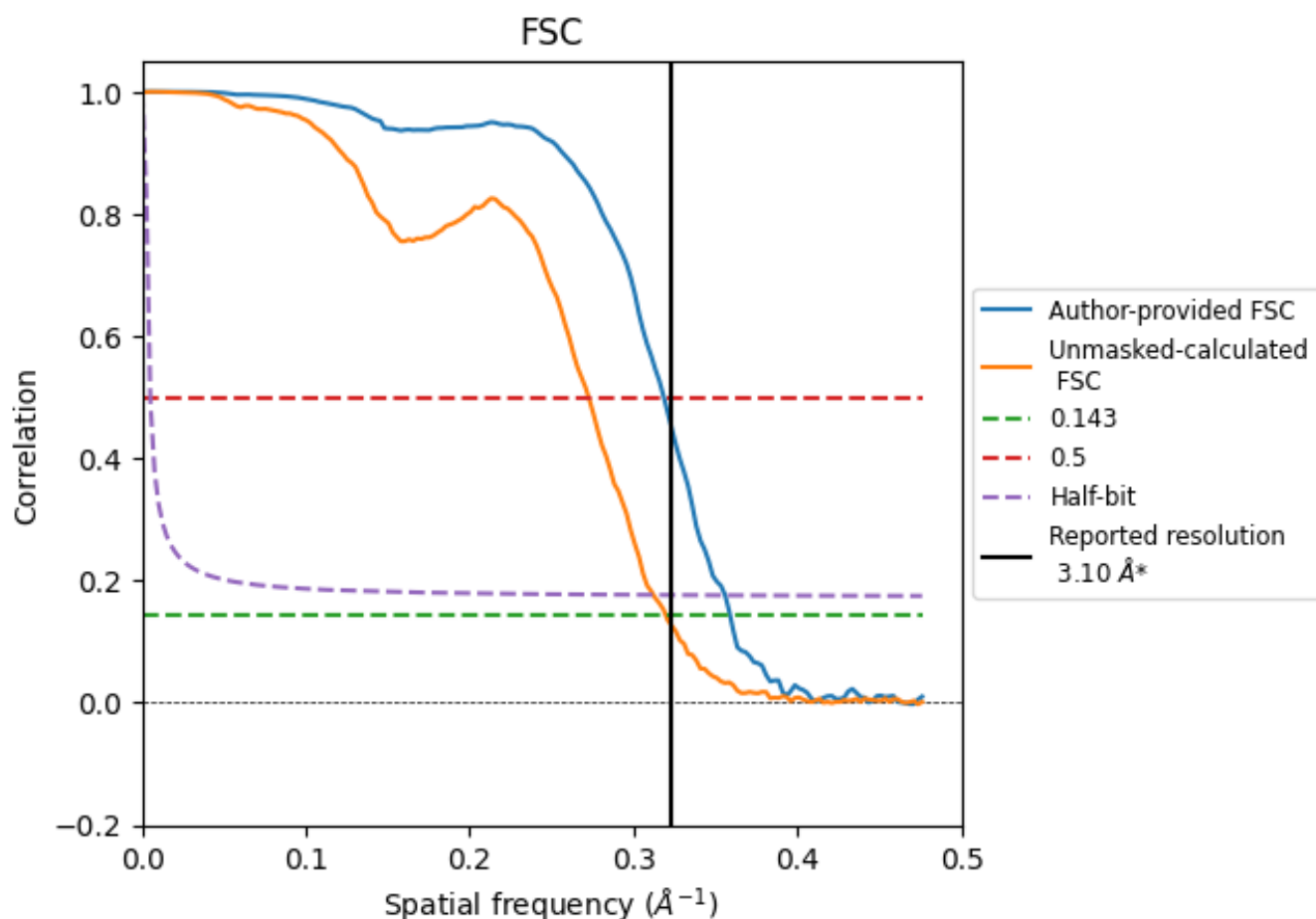
*Reported resolution corresponds to spatial frequency of 0.323 Å^{-1}

8.2   Resolution estimates ⓘ

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.10	-	-
Author-provided FSC curve	2.79	3.14	2.81
Unmasked-calculated*	3.13	3.67	3.20

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from author-provided FSC intersecting FSC 0.143 CUT-OFF 2.79 differs from the reported value 3.1 by more than 10 %

9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-15826 and PDB model 8B3F. Per-residue inclusion information can be found in section 3 on page 8.

9.1 Map-model overlay (i)
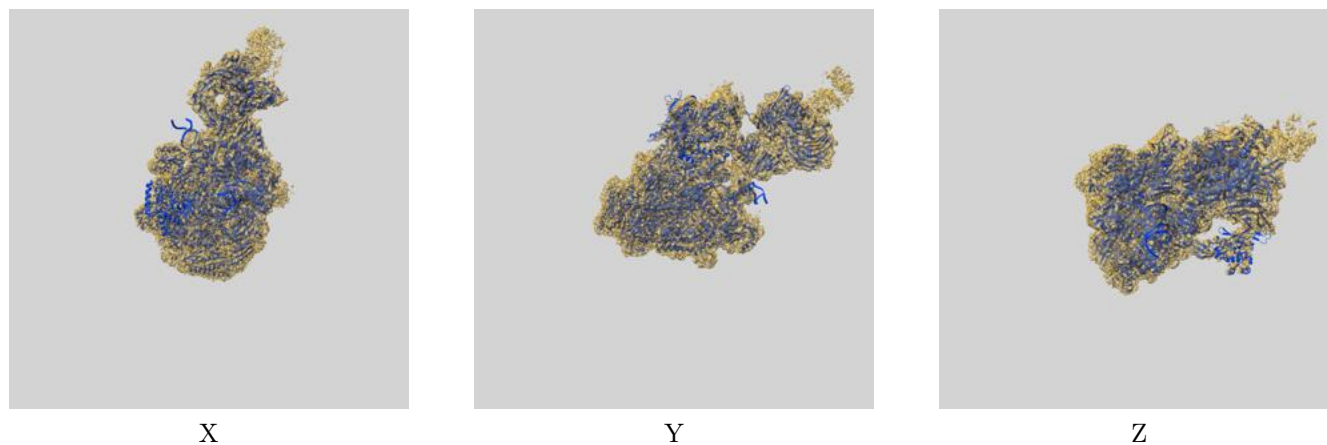
| X | Y | Z |

The images above show the 3D surface view of the map at the recommended contour level 0.00762 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
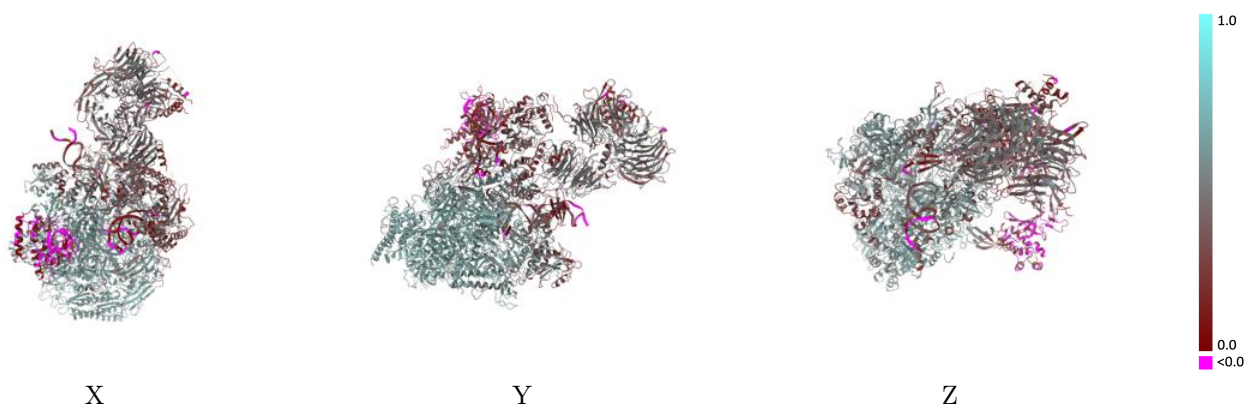
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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
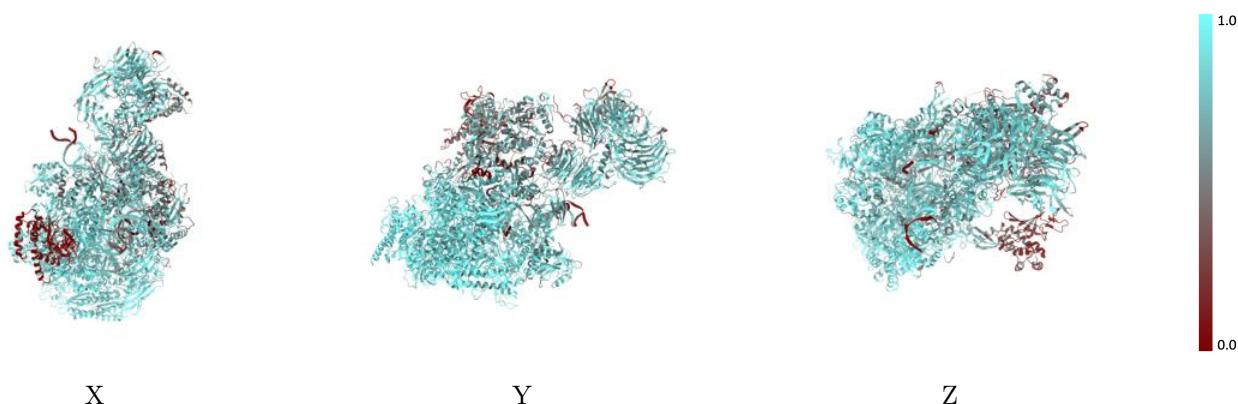
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.00762).

9.4 Atom inclusion (i)
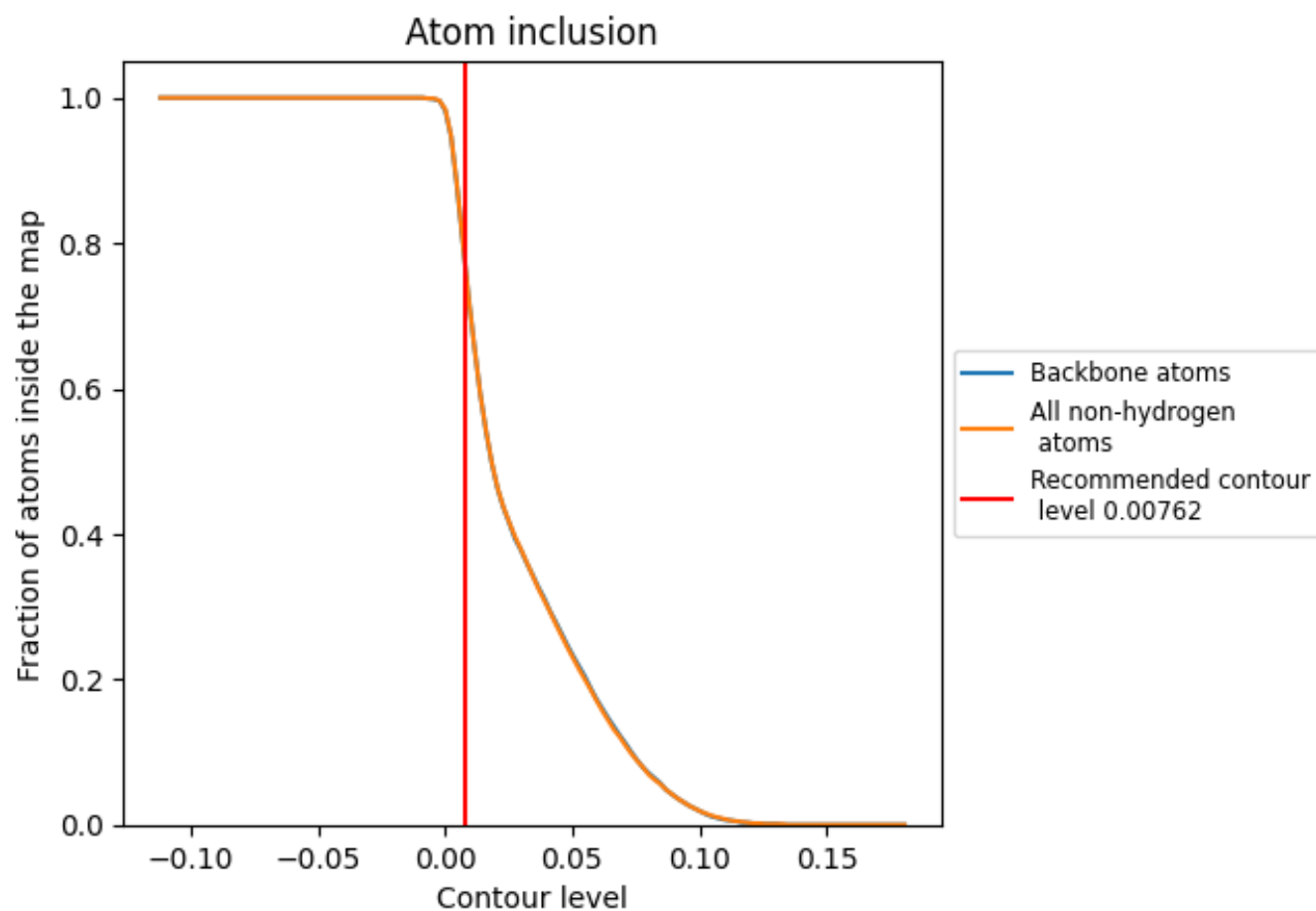
At the recommended contour level, 78% of all backbone atoms, 78% of all non-hydrogen atoms, are inside the map.

9.5   Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.00762) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7800	0.4560
A	0.8880	0.5410
B	0.8900	0.5450
C	0.9330	0.5850
D	0.1420	0.0370
E	0.9150	0.5250
F	0.8930	0.5620
G	0.3160	0.1480
H	0.9430	0.5770
I	0.8510	0.4610
J	0.9540	0.6050
K	0.9350	0.5880
L	0.8550	0.4770
M	0.5730	0.2010
N	0.5370	0.1810
P	0.9320	0.5860
T	0.7230	0.2880
a	0.7340	0.4200
b	0.5830	0.3010
d	0.7170	0.3830

1.0

0.0
<0.0