WORLDWIDE PDB PROTEIN DATA BANK

Full wwPDB EM Validation Report ⓘ

Jul 3, 2024 – 07:45 am BST

PDB ID	:	7NVR
EMDB ID	:	EMD-12610
Title	:	Human Mediator with RNA Polymerase II Pre-initiation complex
Authors	:	Rengachari, S.; Schilbach, S.; Aibara, S.; Cramer, P.
Deposited on	:	2021-03-15
Resolution	:	4.50 Å(reported)

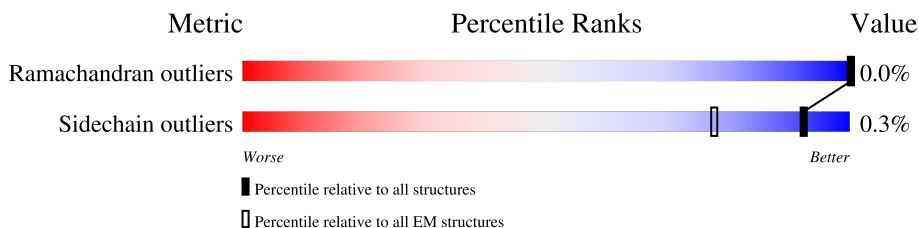The following versions of software and data (see references ⓘ) were used in the production of this report:

EMDB validation analysis	:	0.0.1.dev92
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

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 4.50 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		0.0%
Sidechain outliers		0.3%

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	0	760	· 94% 6%
2	1	548	16% 48% 52%
3	2	462	27% 84% 16%
4	3	309	· 69% 31%
5	4	308	11% 85% 15%
6	5	71	32% 93% 7%
7	6	395	6% 88% 12%
8	7	782	5% 77% 23%
9	8	346	6% 85% · 14%

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Mol	Chain	Length	Quality of chain
10	9	323	14% / 87% / 13%
11	A	1970	72% / 28%
12	B	1174	97%
13	C	275	93% / 7%
14	D	142	90% / 10%
15	E	210	100%
16	F	127	62% / 38%
17	G	172	99%
18	H	150	99%
19	I	125	91% / 9%
20	J	67	96%
21	K	117	97%
22	L	58	76% / 24%
23	M	316	80% / 20%
24	N	106	60% / 40%
25	O	339	53% / 47%
26	Q	517	26% / 73%
27	R	249	89% / 11%
28	T	106	60% / 40%
29	U	376	6% / 30% / 70%
30	V	109	17% / 89% / 9%
31	W	439	5% / 46% / 54%
32	X	291	58% / 41%
33	Y	19	42% / 100%
34	Z	8	88% / 100%

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Mol	Chain	Length	Quality of chain
35	a	246	58% 42%
36	b	268	50% 49%
37	c	117	93% 7%
38	d	651	67% 33%
39	e	208	80% 20%
40	f	212	87% 12%
41	g	200	65% 35%
42	h	270	28% 51% 49%
43	i	233	48% 52%
44	j	146	41% 49% 51%
45	k	135	55% 99%
46	l	1454	34% 66%
47	m	244	29% 34% 66%
48	n	144	16% 92% 8%
49	o	131	69% 31%
50	p	311	50% 50%
51	q	178	39% 61%
52	r	20	100%
53	s	178	24% 75%
54	v	22	5% 100%
55	w	16	100%
56	x	11	100%
57	y	18	100%
58	z	23	100%

2 Entity composition ⓘ

There are 61 unique types of molecules in this entry. The entry contains 96126 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 TFIIH basal transcription factor complex helicase XPD subunit.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	0	714	Total	C	N	O	S	0	0
			5751	3683	999	1040	29		

- Molecule 2 is a protein called General transcription factor IIH subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	1	265	Total	C	N	O	S	0	0
			2167	1382	378	395	12		

- Molecule 3 is a protein called General transcription factor IIH subunit 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	2	390	Total	C	N	O	S	0	0
			3158	2050	545	551	12		

- Molecule 4 is a protein called CDK-activating kinase assembly factor MAT1.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	3	214	Total	C	N	O	S	0	0
			1737	1092	299	334	12		

- Molecule 5 is a protein called General transcription factor IIH subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	4	263	Total	C	N	O	S	0	0
			2066	1323	344	380	19		

- Molecule 6 is a protein called General transcription factor IIH subunit 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	5	66	Total	C	N	O	S	0	0
			523	337	83	100	3		

- Molecule 7 is a protein called General transcription factor IIH subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	6	347	Total 2732	C 1726	N 471	O 508	S 27	0	0

- Molecule 8 is a protein called General transcription and DNA repair factor IIH helicase subunit XPB.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	7	605	Total 4890	C 3127	N 848	O 885	S 30	0	0

- Molecule 9 is a protein called Cyclin-dependent kinase 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	8	298	Total 2376	C 1537	N 404	O 423	S 12	0	0

- Molecule 10 is a protein called Cyclin-H.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	9	281	Total 2293	C 1465	N 394	O 416	S 18	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
11	A	1423	Total 11274	C 7092	N 2016	O 2094	S 72	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
12	B	1136	Total 9076	C 5739	N 1597	O 1676	S 64	0	0

- Molecule 13 is a protein called DNA-directed RNA polymerase II subunit RPB3.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	C	257	Total 2059	C 1294	N 351	O 408	S 6	0	0

- Molecule 14 is a protein called RPOL4c domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	D	128	Total	C	N	O	S	0	0
			1050	656	178	212	4		

- Molecule 15 is a protein called DNA-directed RNA polymerase II subunit E.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	E	209	Total	C	N	O	S	0	0
			1721	1089	300	324	8		

- Molecule 16 is a protein called DNA-directed RNA polymerase II subunit F.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	F	79	Total	C	N	O	S	0	0
			636	406	108	117	5		

- Molecule 17 is a protein called DNA-directed RNA polymerase II subunit RPB7.

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

- Molecule 18 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC3.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	H	148	Total	C	N	O	S	0	0
			1186	750	194	237	5		

- Molecule 19 is a protein called DNA-directed RNA polymerase II subunit RPB9.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	I	114	Total	C	N	O	S	0	0
			928	571	166	180	11		

- Molecule 20 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC5.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	J	64	Total	C	N	O	S	0	0
			507	328	86	87	6		

- Molecule 21 is a protein called RNA_pol_L_2 domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	K	115	Total 920	C 593	N 152	O 173	S 2	0	0

- Molecule 22 is a protein called RNA polymerase II subunit K.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	L	44	Total 373	C 231	N 72	O 64	S 6	0	0

- Molecule 23 is a protein called Transcription initiation factor IIB.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	M	252	Total 1953	C 1224	N 346	O 366	S 17	0	0

- Molecule 24 is a DNA chain called NT.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	N	64	Total 1318	C 624	N 243	O 388	P 63	0	0

- Molecule 25 is a protein called TATA-box-binding protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	O	179	Total 1422	C 923	N 251	O 241	S 7	0	0

- Molecule 26 is a protein called General transcription factor IIF subunit 1.

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

- Molecule 27 is a protein called General transcription factor IIF subunit 2.

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

- Molecule 28 is a DNA chain called TEMPLATE.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	T	64	Total 1303	C 616	N 245	O 378	P 64	0	0

- Molecule 29 is a protein called Transcription initiation factor IIA subunit 1.

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

- Molecule 30 is a protein called Transcription initiation factor IIA subunit 2.

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

- Molecule 31 is a protein called General transcription factor IIE subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	W	202	Total 1659	C 1042	N 299	O 307	S 11	0	0

- Molecule 32 is a protein called Transcription initiation factor IIE subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	X	171	Total 1403	C 895	N 243	O 261	S 4	0	0

- Molecule 33 is a protein called Unassigned peptide, likely TFIIE-beta.

Mol	Chain	Residues	Atoms				AltConf	Trace
33	Y	19	Total 95	C 57	N 19	O 19	0	0

- Molecule 34 is a protein called Unassigned peptide, likely XPB.

Mol	Chain	Residues	Atoms				AltConf	Trace
34	Z	8	Total 40	C 24	N 8	O 8	0	0

- Molecule 35 is a protein called Mediator of RNA polymerase II transcription subunit 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	a	143	Total	C	N	O	S	0	0
			1167	754	198	210	5		

• Molecule 36 is a protein called Mediator of RNA polymerase II transcription subunit 8.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	b	136	Total	C	N	O	S	0	0
			1046	657	179	207	3		

• Molecule 37 is a protein called Mediator of RNA polymerase II transcription subunit 11.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	c	109	Total	C	N	O	S	0	0
			858	524	159	171	4		

• Molecule 38 is a protein called Mediator of RNA polymerase II transcription subunit 17.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	d	439	Total	C	N	O	S	0	0
			3510	2232	627	637	14		

• Molecule 39 is a protein called Mediator of RNA polymerase II transcription subunit 18.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	e	167	Total	C	N	O	S	0	0
			1353	868	233	238	14		

• Molecule 40 is a protein called Mediator of RNA polymerase II transcription subunit 20.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	f	186	Total	C	N	O	S	0	0
			1448	924	238	270	16		

• Molecule 41 is a protein called Mediator of RNA polymerase II transcription subunit 22.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	g	130	Total	C	N	O	S	0	0
			1063	656	181	222	4		

• Molecule 42 is a protein called Mediator of RNA polymerase II transcription subunit 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	h	138	Total 1114	C 696	N 195	O 219	S 4	0	0

• Molecule 43 is a protein called Mediator of RNA polymerase II transcription subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	i	113	Total 960	C 614	N 170	O 170	S 6	0	0

• Molecule 44 is a protein called Mediator of RNA polymerase II transcription subunit 9.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	j	72	Total 596	C 375	N 108	O 109	S 4	0	0

• Molecule 45 is a protein called Mediator of RNA polymerase II transcription subunit 10.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	k	133	Total 1088	C 690	N 188	O 206	S 4	0	0

• Molecule 46 is a protein called Mediator of RNA polymerase II transcription subunit 14.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	l	501	Total 4031	C 2591	N 694	O 722	S 24	0	0

• Molecule 47 is a protein called Mediator of RNA polymerase II transcription subunit 19.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	m	84	Total 655	C 417	N 113	O 121	S 4	0	0

• Molecule 48 is a protein called Mediator of RNA polymerase II transcription subunit 21.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	n	132	Total 1005	C 621	N 170	O 210	S 4	0	0

• Molecule 49 is a protein called Mediator of RNA polymerase II transcription subunit 31.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	o	91	Total 804	C 535	N 132	O 133	S 4	0	0

- Molecule 50 is a protein called Mediator of RNA polymerase II transcription subunit 27.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	p	154	Total 1262	C 813	N 218	O 222	S 9	0	0

- Molecule 51 is a protein called Mediator of RNA polymerase II transcription subunit 28.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	q	69	Total 591	C 373	N 111	O 106	S 1	0	0

- Molecule 52 is a protein called unassigned peptide (MED29 or MED30).

Mol	Chain	Residues	Atoms				AltConf	Trace
52	r	20	Total 100	C 60	N 20	O 20	0	0

- Molecule 53 is a protein called Mediator of RNA polymerase II transcription subunit 30.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	s	44	Total 369	C 227	N 72	O 67	S 3	0	0

- Molecule 54 is a protein called unassigned peptide (MED14).

Mol	Chain	Residues	Atoms				AltConf	Trace
54	v	22	Total 110	C 66	N 22	O 22	0	0

- Molecule 55 is a protein called unassigned peptide (MED6).

Mol	Chain	Residues	Atoms				AltConf	Trace
55	w	16	Total 80	C 48	N 16	O 16	0	0

- Molecule 56 is a protein called unassigned peptide (MED17).

Mol	Chain	Residues	Atoms				AltConf	Trace
56	x	11	Total 55	C 33	N 11	O 11	0	0

- Molecule 57 is a protein called unassigned peptide (MED29 or MED30).

Mol	Chain	Residues	Atoms				AltConf	Trace
57	y	18	Total 90	C 54	N 18	O 18	0	0

- Molecule 58 is a protein called unassigned peptide (MED29 or MED30).

Mol	Chain	Residues	Atoms				AltConf	Trace
58	z	23	Total 115	C 69	N 23	O 23	0	0

- Molecule 59 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe_4S_4).
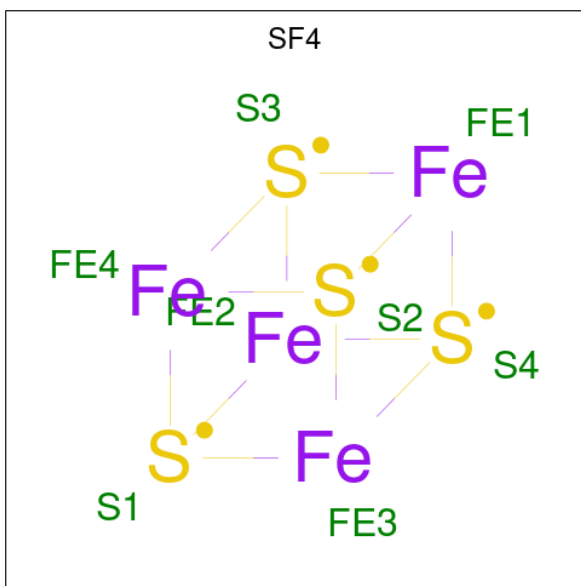
Mol	Chain	Residues	Atoms			AltConf
59	0	1	Total 8	Fe 4	S 4	0

- Molecule 60 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
60	3	2	Total 2	Zn 2	0

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Mol	Chain	Residues	Atoms		AltConf
60	4	2	Total 2	Zn 2	0
60	6	3	Total 3	Zn 3	0
60	A	2	Total 2	Zn 2	0
60	B	1	Total 1	Zn 1	0
60	C	1	Total 1	Zn 1	0
60	I	2	Total 2	Zn 2	0
60	J	1	Total 1	Zn 1	0
60	L	1	Total 1	Zn 1	0
60	M	1	Total 1	Zn 1	0
60	W	1	Total 1	Zn 1	0
60	p	1	Total 1	Zn 1	0

- Molecule 61 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
61	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: TFIIH basal transcription factor complex helicase XPD subunit

Chain 0:

• Molecule 2: General transcription factor IIH subunit 1

Chain 1:

• Molecule 3: General transcription factor IIH subunit 4

Chain 2:

27%

84%

16%

MET GLU SER THR PRO SER ARG GLY LEU LEU ASN ARG VAL HIS LEU LEU GLN CYS ARG N18 G25 G29 R33 E63 Q64 P65 Q68 A69 K77 E78 F79 S80 K81 E84 T98 Q99 L100 LEU PRO GLY GLY LEU GLN GLY L108 G125 GLY LYS ALA TRP SER ASP ASP

THR SER GLN LEU GLY PRO ASP LYS HIS ALA ARG ASP V145 P146 S147 L148 D149 K150 E153 E154 E157 H161 S166 P167 S168 A169 A170 V171 S172 Q173 D174 Q177 Q181 K186 S187 T188 E189 P190 G191 E192 P193 D207 T208 P209 A210 Q224 S225 R226 G227 M228 D229

F242 SER THR LEU GLY LYS ASP TYR SER VAL GLU GLY MET S255 D256 S257 R274 K275 R276 R285 N289 LEU SER SER GLY VAL SER GLY ALA GLY THR VAL HIS Q303 P304 G305 E320 S321 E322 L323 Q324 H366 R369 T370 P374 L377 K378 Q379 T380 P381

R402 F403 T404 E405 N410 Q411 F412 L413 S414 Q415 V416 D417 E418 E419 L420 L421 L422 A423 H424 A425 R426 E427 L428 G429 V430 L431 V432 F433 E434 N435 S436 A437 K438 R439 T444 P445 A446 G447 H448 S449 D450 V451 K452 R453 F454 W455 K456 R457 Q458 LYS HIS SER SER

• Molecule 4: CDK-activating kinase assembly factor MAT1

Chain 3:

69%

31%

M1 R41 R54 V60 L147 E148 E149 ALA LEU GLU VAL GLU ARG GLN GLU ASN GLU GLN ARG ARG LEU PHE ILE GLN LYS GLU GLN GLN LEU GLN GLN ILE LEU LYS ARG LYS ASN LYS GLN ALA PHE LEU ASP GLU LEU GLU SER SER ASP LEU PRO VAL ALA LEU LEU LEU

ALA GLN HIS LYS ASP ARG SER THR GLN LEU GLU MET GLN LEU GLU LYS PRO LYS PRO VAL LYS PRO VAL THR PHE SER THR GLY ILE LYS MET GLY ILE HIS ILE SER LEU ALA PRO ILE HIS LYS LEU GLU GLU A244 Q249 P250 L251 Q252 E262 L263 E264 M265 R268 N273

P308 SER

• Molecule 5: General transcription factor IIH subunit 3

Chain 4:

11%

85%

15%

MET VAL SER ASP GLU ASP GLU L8 K24 Q25 A26 L27 K28 E29 S30 Q31 P72 GLY LYS ASN GLY ARG LEU GLY ASP PHE PHE GLY ASP PRO GLY GLY ASN PRO PRO GLU PHE ASN PRO SER G95 S96 K97 K121 S122 D123 I124 K125 G126 Q127 H128 T129 K152 D153 N154 Q155 E156

E168 D197 S198 D199 D236 S239 H258 A288 F289 K290 I291 S292 LEU PRO PRO VAL LEU LYS ALA LYS LYS LYS LEU LYS VAL SER ALA

• Molecule 6: General transcription factor IIH subunit 5

Chain 5:

32%

93%

7%

MET VAL N3 V4 L5 K6 D24 E25 S26 N27 A28 L29 G30 K31 K32 I35 D39 D40 T41 I46 A47 E48 L49 V50 N51 V52 L68 THR GLN LYS

• Molecule 7: General transcription factor IIH subunit 2

Chain 6:

6%

88%

12%

MET ASP GLU GLU PRO GLU R7 I21 L22 K23 E24 ASP GLU SER GLY SER LEU LYS ALA THR ILE GLU ASP ILE LEU PHE LYS ALA LYS ARG LYS VAL PHE GLU HIS HIS GLY GLN V53 K132 K133 D136 S261 L262 S263 D264 Q265 D266 A274 HIS LEU ASP GLY ASN

THR E281 Q332 E333 I334 P335 L336 E337 E338 Y339 N340 G341 E342 R343 Q355 A361 H387 LYS ILE PRO ALA PRO SER GLY VAL

• Molecule 8: General transcription and DNA repair factor IIH helicase subunit XPB

Chain 7:

5%

77%

23%

MET GLY LYS ARG ASP ARG ALA ASP ARG ASP LYS LYS SER ARG LYS ARG HIS TYR GLU ASP GLU ASP ASP GLU GLU ASP ALA PRO GLY ASN ASP GLN GLU ALA VAL PRO SER ALA ALA GLY LYS GLN VAL ASP GLU SER GLY T51 E55 L63 L67 K68 D69 D70

D183 Q186 H187 L188 L189 Q190 D191 P192 V193 I194 R195 E196 C197 R198 L199 R200 ASN SER GLU GLY GLU ALA THR GLU LEU ILE THR GLU THR PHE THR SER LYS SER ALA ILE SER GLU LYS THR ALA GLU SER SER GLY GLY PRO SER THR SER ARG VAL THR ASP PRO GLN GLY LYS SER

ASP ILE PRO MET ASP LEU PHE ASP PHE TYR GLU GLN MET ASP LYS ASP GLU GLU GLU GLU THR Q266 K273 H286 P312 T313 K418 K648 G649 M650 V651 A652 E653 E654 K692 L693 A694 G695 M696 E697 E698 E699 D700 S704 T705 K706 E707 A718 A719 T720

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

ARG LYS

• Molecule 9: Cyclin-dependent kinase 7

Chain 8:

6%

85%

14%

MET ALA LEU ASP VAL LYS SER ARG ALA K10 Q22 T34 N35 Q36 L45 GLY HIS ARG SER GLU A51 D104 N105 S106 N148 P165 N166 D216 E235 D245 P253 G254 I255 P256 Q273 R298 R309 P310 N311 C312 PRO VAL GLU THR LEU LYS GLU

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

• Molecule 10: Cyclin-H

Chain 9:

14%

87%

13%

M1 V35 A36 N37 G38 LYS VAL LEU P42 N43 D44 P45 K72 P73 A74 P123 Q124 G127 R130 E131 S132 P133 L134 G135 Q136 E137 K138 P179 I180 L181 E182 N183 P184 E185 I186 R223 A224 G225 I226 T227 R266 S267 E268 A271 V272 Q275 K276 L277 E278 R279

S282 A283 E284 LEU ALA LEU ASN VAL ILE THR LYS LYS ARG LYS GLY TYR GLU ASP ASP ASP TYR VAL SER LYS LYS SER LYS HIS GLU GLU GLU GLU TRP THR ASP ASP LEU VAL GLU SER LEU

• Molecule 11: DNA-directed RNA polymerase subunit

Chain A:

72%   28%

MET HIS GLY GLY GLY PRO PRO SER GLY ASP S11 R61 S121 S133 K134 G135 Q136 P137 E155 GLY GLY GLU GLU MET ASP ASN LYS PHE GLY VAL GLU GLN PRO GLU GLY ASP GLU ASP GLU LEU THR LYS GLU LYS GLY HIS G182 W202 LYS HIS VAL ASN GLU ASP SER GLN

GLU K212 S269 N1105 THR PHE HIS TYR ALA GLY VAL SER ALA K1115 N1267 LYS MET GLN GLU GLU GLU GLU VAL VAL ASP K1278 L1439 P1487 THR ASN ILE PRO GLY LEU GLY ALA ALA GLY PRO THR GLY MET PHE PHE GLY SER ALA PRO SER PRO MET GLY GLY ILE SER

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

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

ASN TYR SER PRO THR SER PRO SER TYR SER PRO THR SER PRO SER TYR SER PRO THR SER PRO SER TYR SER PRO THR SER PRO SER TYR SER PRO THR SER PRO SER TYR SER PRO THR SER PRO SER TYR SER PRO

THR SER PRO SER TYR SER PRO THR SER PRO SER TYR SER PRO THR SER PRO SER TYR SER PRO THR SER PRO SER TYR SER PRO THR SER PRO SER TYR SER PRO THR SER PRO ASN TYR SER PRO THR SER PRO SER ASN

TYR THR PRO SER PRO SER TYR SER PRO THR SER PRO SER TYR SER PRO THR SER PRO ASN TYR THR PRO THR SER PRO ASN TYR SER PRO THR SER PRO SER TYR SER PRO THR SER PRO SER TYR SER PRO ARG TYR THR PRO GLN

SER PRO THR THR PRO SER PRO TYR SER PRO SER SER PRO TYR SER PRO THR SER PRO SER TYR SER PRO THR SER PRO LYS TYR THR PRO THR SER PRO SER TYR SER PRO THR SER PRO LYS TYR SER PRO THR SER PRO LYS TYR

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

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

• Molecule 12: DNA-directed RNA polymerase subunit beta

Chain B:

97%   .

MET TYR ASP ALA ASP GLU ASP MET GLN TYR ASP GLU ASP ASP D15 A69 GLU ALA GLN HIS ALA SER GLY GLU VAL GLU GLU P81 K199 A459 D681 P874 GLU ASN GLU ASP GLU LEU GLU LEU GLY THR ASN ARG ARG TYR T888 R1064 V1174

• Molecule 13: DNA-directed RNA polymerase II subunit RPB3

Chain C:

93%   7%

MET P2 S132 ARG ASN ARG ASP ASN ASP PRO SER ASP TYR VAL GLU GLN D146 V271 LEU THR ILE ASN

• Molecule 14: RPOL4c domain-containing protein

Chain D:
90%   10%

MET ALA ALA GLY GLY SER ASP PRO ARG ALA GLY ASP VAL E14 D53 Q141 TYR

• Molecule 15: DNA-directed RNA polymerase II subunit E

Chain E:
100%

MET D2 Q210

• Molecule 16: DNA-directed RNA polymerase II subunit F

Chain F:
62%   38%

MET SER ASP ASN GLU ASP ASN PHE ASP GLY ASP ASP PHE ASP ASP VAL GLU GLU ASP GLU GLY LEU ASP ASP SER LEU GLU ASN ALA GLU GLU GLU GLY GLN GLU ASN VAL GLU ILE LEU LEU PRO SER GLY GLU ARG PRO GLN ALA ASN Q49 D127

• Molecule 17: DNA-directed RNA polymerase II subunit RPB7

Chain G:
99%

M1 K81 D140 V171 SER

• Molecule 18: DNA-directed RNA polymerases I, II, and III subunit RPABC3

Chain H:
99%

MET A2 A149 PHE

• Molecule 19: DNA-directed RNA polymerase II subunit RPB9

Chain I:
91%   9%

MET GLU PRO ASP GLY THR TYR GLU PRO GLY PHE V12 R103 E125

• Molecule 20: DNA-directed RNA polymerases I, II, and III subunit RPABC5

Chain J:

96%

M1 P64 LEU GLU LYS

• Molecule 21: RNA_pol_L_2 domain-containing protein

Chain K:

97%

M1 K47 G115 ILE GLU

• Molecule 22: RNA polymerase II subunit K

Chain L:

76%   24%

MET ASP THR GLN LYS ASP VAL GLN PRO PRO LYS GLN GLN PRO M15 R58

• Molecule 23: Transcription initiation factor IIB

Chain M:

80%   20%

MET ALA SER THR SER ARG LEU ASP ALA LEU PRO ARG VAL T14 T54 PHE SER ASN ASP LYS ALA THR LYS ASP PRO SER ARG VAL GLY ASP SER GLN ASN PRO LEU LEU SER ASP GLY ASP LEU SER THR MET ILE GLY LYS THR GLY ALA ALA SER PHE ASP PHE GLY ASN

SER LYS TYR GLN ASN ARG ARG T106 L316

• Molecule 24: NT

Chain N:

60%   40%

DC DG DG DG DT DG DT DC DT DC DC DT G-9 C52 T53 G54 DC DG DA DG DG DG DC DC DA DG DC DT DG DT DG DG DG DG DT DG DA DG DT DA DC DT DC DC DT

• Molecule 25: TATA-box-binding protein

Chain O:

53%   47%

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

GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN ALA VAL ALA ALA ALA VAL GLN GLN SER THR SER GLN GLN ALA THR GLN GLY THR SER GLY GLN ALA PRO GLN

LEU PHE HIS SER GLN THR LEU THR THR ALA PRO LEU PRO GLY THR THR PRO LEU TYR PRO SER PRO MET THR MET THR PRO ILE THR PRO ALA THR PRO ALA SER GLU SER S159 K337 THR THR

• Molecule 26: General transcription factor IIF subunit 1

Chain Q:

26%   73%

• Molecule 27: General transcription factor IIF subunit 2

Chain R:

89%   11%

• Molecule 28: TEMPLATE

Chain T:

60%   40%

• Molecule 29: Transcription initiation factor IIA subunit 1

6%

Chain U:

30%   70%

ALA GLN THR GLN ALA PRO LEU VAL LEU LEU VAL ASP GLY THR ASP THR GLY ASP THR SER SER GLU GLU GLU ASP ASP ARG GLU GLU GLU ASP TYR ASP ASP ASP GLU GLU GLU ASP GLU LYS GLU LYS ASP GLY ALA GLU ASP **G307 Q308 V309 E310 N315 L328 F329 D330 T331 N361 W376**

- Molecule 30: Transcription initiation factor IIA subunit 2

Chain V:

17%
89%
9%

M1 A2 N8 D20 E21 Q24 S25 Q26 T29 P30 Q31 L32 A33 L34 R51 V52 R53 R82 E83 V84 T85 E86 L87 D99 GLY LYS ASN THR GLY SER ASN THR THR GLU

- Molecule 31: General transcription factor IIE subunit 1

Chain W:

5%
46%
54%

MET ALA ASP PRO ASP VAL LEU THR GLU **V10 F25 V78 E79 T80 A81 A82 D83 G84 K85 T86 T87 R88 Y105 A125 D172 D196** VAL ASN LEU ALA TYR GLU ILE LEU GLU GLU PRO GLU PRO THR GLU ILE PRO ALA LEU LYS GLN SER LYS ASP HIS ALA ALA THR THR

ALA GLY ALA ALA SER LEU ALA GLY GLY HIS HIS ARG GLU ALA TRP ALA THR LYS GLY PRO SER TYR GLU ASP LEU TYR THR GLN ASN VAL VAL ILE ASN MET ASP ALA GLN GLU ASP LEU HIS ARG ALA SER LEU GLU GLY LYS SER **A274 K275 E276 I279 R282 E283 Q287 G288**

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

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

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

- Molecule 32: Transcription initiation factor IIE subunit beta

Chain X:

58%
41%

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

SER PHE ASN LEU LYS ALA LEU SER GLY SER SER **G72 R91 K114 D134 G135 K206 S227 G241 I242** SER SER MET GLN GLN SER GLY PRO LYS LYS VAL ALA PRO ILE GLN ARG ARG LYS LYS PRO ALA SER GLN LYS LYS ARG ARG PHE LYS THR HIS ASN GLU HIS

LEU ALA GLY VAL LEU LYS ASP TYR SER ASP ILE THR SER SER LYS

- Molecule 33: Unassigned peptide, likely TFIIE-beta

Chain Y:

42%
100%

X1 X2 X3 X4 X7 X8 X9 X10 X11 X19

• Molecule 34: Unassigned peptide, likely XPB

Chain Z:

88%

100%

X1 X2 X3 X4 X5 X6 X7 X8

• Molecule 35: Mediator of RNA polymerase II transcription subunit 6

Chain a:

58%

42%

MET ALA ALA VAL ASP ILE ARG D8 R54 K150 ASP HIS GLU GLU GLN ASP LYS VAL ARG PRO LYS ALA LYS ARG LYS GLU GLU PRO SER ILE PHE GLN ARG GLN ARG VAL ASP ALA LEU LEU LEU ASP ARG GLN LYS PHE PRO LYS PHE VAL GLN LEU LEU LYS PRO GLY

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

• Molecule 36: Mediator of RNA polymerase II transcription subunit 8

Chain b:

50%

49%

MET GLN ARG GLU GLU K6 K64 HIS GLU LYS THR PRO LEU PHE ARG ASN GLN VAL ILE ILE PRO LEU VAL LEU SER PRO ASP ARG ASP GLU ASP LEU MET ARG GLN THR GLU GLY ARG VAL PRO VAL F100 S101 S155 LYS GLU GLU ARG GLU GLU SER GLU GLY GLY LEU ARG PRO

ASN K170 G190 LEU SER ASN TRP ARG PRO SER GLY SER SER GLY GLY PRO GLY GLN ILE ALA GLY GLN PRO GLY GLN ALA GLY THR ILE LEU LEU ALA GLY THR SER GLY LEU GLN GLN VAL GLN MET ALA GLY ALA PRO SER GLN GLN GLN PRO MET LEU SER GLY VAL GLN MET ALA GLN ALA GLY GLN

PRO GLY LYS MET PRO SER GLY ILE LYS THR ASN ILE LYS SER ALA SER MET HIS PRO TYR GLN ARG

• Molecule 37: Mediator of RNA polymerase II transcription subunit 11

Chain c:

93%

7%

MET ALA THR TYR SER LEU ALA N8 E116 ASN

• Molecule 38: Mediator of RNA polymerase II transcription subunit 17

Chain d:

67%

33%

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

ALA GLY THR GLU GLY ASP ALA GLN GLU TRP PRO GLY ALA GLY SER SER ALA ASP GLN ASP ASP GLU GLU GLY VAL VAL LYS PHE GLN PRO SER L92 K122 LYS PHE MET THR LEU ASP PRO VAL SER GLN ASP ALA LEU PRO PRO LYS ASN P141 E173 ASN GLN GLU ASN LYS

LEU Q180 N184 K226 ASN THR ASP LEU ASP LEU ASP LYS ASP LYS ILE LYS PRO GLU GLU TYR CYS P242 K263 GLN ALA PRO ASP ILE GLY ASP LEU GLY THR VAL ASN LEU PHE LYS ARG PRO LEU PRO LYS SER SER PRO GLY SER P289 K319 S348 SER ASN ASP LYS LYS SER

GLN LYS PHE ALA THR GLU LYS GLN CYS PRO GLU D366 N374 T513 L514 V555 GLY LEU GLY PRO ILE GLU SER ILE GLY N565 P574 SER GLY ASP Y578 F596 PRO ARG ASN GLN CYS LYS ASP LEU PRO LYS SER ASP VAL LEU GLN ASP ASN LYS TRP SER HIS LEU ARG

GLY P621 S647 PRO CYS LEU LEU

- Molecule 39: Mediator of RNA polymerase II transcription subunit 18

Chain e:

80%　　　20%

MET GLU ALA PRO PRO VAL THR MET MET PRO VAL THR GLY GLY THR I16 L60 LYS GLY GLN GLN ALA SER P67 M76 ASP ARG ALA G80 E92 MET GLY ASP LYS ASN R98 L152 VAL PRO GLY ASN THR ASP S159 A177 K201 I202 ASP PRO LYS ARG LEU MET

- Molecule 40: Mediator of RNA polymerase II transcription subunit 20

Chain f:

87%　　　12%

MET G2 P10 VAL ALA GLU GLY K15 S16 T48 ALA ALA SER THR LEU GLY SER GLN GLY GLN THR GLY LYS L62 V148 S167 N178 R179 H180 Q204 GLN VAL PRO VAL ALA GLY ILE ARG

- Molecule 41: Mediator of RNA polymerase II transcription subunit 22

Chain g:

65%　　　35%

MET ALA GLN ARG ALA LEU PRO GLN SER K11 S140 LEU CYS GLU ALA ASN ASP LEU PRO LEU CYS GLU ALA TYR GLY ARG LEU ASP ASP THR ASP SER ALA ASP GLY LEU SER ALA PRO LEU ALA SER PRO GLU PRO SER ALA GLY PRO LEU GLN VAL ALA ALA PRO ALA

HIS SER HIS ALA GLY PRO GLY THR GLU HIS ALA

- Molecule 42: Mediator of RNA polymerase II transcription subunit 4

Chain h:

28%
51%　　　49%

MET ALA ALA SER SER SER GLY GLU LYS GLU LYS GLU ARG LEU GLY GLY GLU LEU GLY VAL ALA GLY GLY ASN SER THR ARG GLU R29 L30 L31 S32 A33 L34 E35 D36 L37 E38 V39 L40 S41 R42 E43 L44 I45 E46 M47 L48 A49 I50 S51 R52 N53 Q54 K55 L56 L57 Q58 A59 G60

E61 E62 N63 Q64 V65 L66 E67 L68 L69 I70 H71 R72 D73 G74 E75 F76 Q77 E78 L79 M80 K81 L82 A83 L84 N85 Q86 G87 K88 I89 H90 H91 E92 M93 Q94 V95 L96 E97 K98 E99 V100 E101 K102 S105 K137 ALA ARG LYS GLY ALA ILE S144 A160 VAL CYS ALA PRO LEU

THR TRP VAL PRO GLY ASP PRO ARG ARG P176 R184 L187 LEU GLY GLN MET ASN ASN PRO SER THR ASN GLY VAL ASN GLY HIS LEU PRO ASP GLY ALA LEU ALA ALA GLY ARG LEU PRO ASP VAL LEU ALA PRO GLN TYR PRO TRP GLN SER ASN ASP MET SER MET ASN MET LEU

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

- Molecule 43: Mediator of RNA polymerase II transcription subunit 7

Chain i:

48%　　　　52%

MET GLY GLU PRO GLN GLN VAL SER ALA LEU PRO P12 P37 ILE LYS ASP SER TYR MET MET PHE GLY ASN GLN PHE GLN CYS ASP ASP LEU ILE ILE ARG PRO LEU GLU SER GLN ILE GLY ILE GLU ARG LEU HIS PRO MET GLN F72 I95 LEU ILE ARG SER PRO GLY SER ILE LYS

ARG E106 Q165 N166 C167 L168 ALA SER LEU PRO ASP ASP LEU PRO HIS SER GLU ALA GLY MET ARG VAL LYS THR GLU PRO MET ASP ASP ASP ASN ASN CYS THR GLY ASN GLU HIS GLN ARG ASN SER GLY HIS ARG ARG ASP GLN ILE ILE GLU GLU LYS ASP ALA ALA

LEU CYS VAL LEU ILE ASP MET ASN GLU ARG PRO

• Molecule 44: Mediator of RNA polymerase II transcription subunit 9

Chain j:

41%

49%　　　　51%

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

GLU ASN TYR SER F65 L66 P67 L68 V69 H70 N71 I72 I73 K74 C75 M76 D77 K78 D79 S80 P81 E82 V83 H84 Q85 D86 L87 N88 A89 L90 K91 S92 K93 F94 Q95 E96 M97 R98 K99 L100 I101 S102 T103 M104 P105 G106 I107 H108 L109 S110 P111 E112 Q113 Q114 Q115 Q116 Q117 L118 Q119 S120

L121 R122 E123 R126 K136 SER LEU CYS MET PHE GLU ILE PRO LYS GLU

• Molecule 45: Mediator of RNA polymerase II transcription subunit 10

Chain k:

55%

99%

MET A2 E3 K4 F5 D6 H7 L8 E9 E10 H11 L12 E13 K14 E17 N18 I19 R20 Q21 L22 G23 I24 I25 V26 S27 D28 F29 Q30 P31 S32 S33 Q34 A35 G36 L37 N38 Q39 K40 L41 N42 F43 I44 V45 T46 G47 L48 Q49 D50 I51 D52 K53 C54 R55 Q56 Q57 L58 H59 D60 I61

L65 E66 V67 F68 E69 Y70 I71 D72 Q73 G74 R75 P118 E119 D120 M121 A122 R125 S126 G129 H132 P133 P134 SER

• Molecule 46: Mediator of RNA polymerase II transcription subunit 14

Chain l:

34%　　　　66%

MET ALA PRO VAL GLN LEU GLU ASN HIS GLN LEU VAL PRO PRO GLY GLY GLY GLY GLY SER GLY GLY PRO PRO SER ALA PRO ALA PRO PRO PRO GLY ALA ALA VAL ALA ALA ALA ALA ALA A45 S46 P47 G48 Y49 R50 L51 S52 T53 L54 I55 E56 F57 H60 R61

S64 E65 L66 M67 V68 L69 K76 S77 D78 V79 E80 R81 K82 I83 E84 I85 V86 Q87 N107 G110 K111 V112 E113 K114 C115 A116 M117 S120 D123 Q124 D131 D134 R135 L136 A137 S138 R141 D142 A147 ARG LEU PRO SER F152 T206 ASP LEU P209

D240 PRO ASP VAL PRO TRP ARG LEU LEU LYS LEU E251 G260 ASP GLY ARG ALA LEU VAL HIS S268 L282 PHE ALA ASP GLU LYS P288 Q343 VAL LEU GLY ARG LYS THR GLY THR ALA SER V354 I361 ASP GLU ASN ASP VAL SER LYS P369 P376 PRO LEU PRO ALA SER

ASP SER LYS LEU VAL GLU ARG ALA MET **K391** L443 L470 **S523** ASN TYR SER THR HIS PRO ILE GLY ASN LEU SER **K535 N536** K537 **M571** SER VAL ASN ALA ALA ASP ARG GLU ASP **S581** **D597** LEU VAL PHE ARG THR LYS THR GLY LYS GLN THR ARG THR ASN ALA LYS

ARG LYS LEU SER ASP ASP CYS PRO CYS VAL GLU SER LYS LYS THR LYS ARG ALA GLY GLU MET CYS **A636** **S662** ASN LEU GLU ILE PRO HIS GLN GLY VAL GLN VAL GLU GLY ASP GLY PHE SER HIS ALA ILE ARG LEU LYS ILE PRO PRO CYS LYS GLN ILE GLY THR GLU GLU THR

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

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

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

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

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

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

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

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

THR HIS SER ALA LEU ASN ILE LEU LEU LEU GLY PRO SER PRO THR PRO GLY LEU VAL PRO GLY LEU ALA GLY SER TYR LEU CYS SER PRO LEU GLU ARG LEU GLY SER VAL ILE MET ARG ARG HIS LEU ARG ILE ILE GLN GLN THR GLU LEU GLN LEU ILE ASN SER ASN GLU PRO

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

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

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

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

• Molecule 47: Mediator of RNA polymerase II transcription subunit 19

Chain m: 29% 34% 66%

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

GLY CYS GLY PRO PHE TYR LEU MET ARG GLU GLU PRO GLY LEU THR GLY SER **T81** **N82** **L83** **I84** **T85** **H86** **Y87** **N88** **L89** **E90** **Q91** **A92** **Y93** **N94** **K95** **F96** **C97** **G98** **K99** **K100** **E103** **P110** **D111** **L112** **P113** **G114** **M115** **I116** **D117** **L118** **P119** **G120** **S121** **H122** **D123** **N124** **S125** **S126**

L127 R128 S129 L130 I131 E132 K133 P134 P135 I136 L137 S138 S139 S140 F141 N142 P143 I144 T145 G146 T147 M148 L149 A150 G151 F152 R153 L154 H155 T156 G157 P158 L159 P160 E161 Q162 C163 R164 LEU MET HIS ILE GLN PRO PRO LYS LYS ASN LYS HIS LYS HIS LYS GLN SER ARG THR GLN ASP

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

• Molecule 48: Mediator of RNA polymerase II transcription subunit 21

Chain n: 16% 92% 8%

MET ALA D3 S34 F35 N36 N37 I38 Q39 T40 A41 I42 N43 K44 D45 Q46 P47 A48 N49 P50 E53 Q129 L130 K131 T132 R133 S134 GLY THR HIS SER GLN SER LEU PRO ASP SER

• Molecule 49: Mediator of RNA polymerase II transcription subunit 31

Chain o: 69% 31%

MET ALA ALA VAL ALA MET GLU THR ASP ASP ALA GLY ASN R15 W105 GLN HIS TYR SER ARG LYS ARG MET ARG LEU GLN GLN ALA LEU ALA GLU GLN GLN GLN GLN ASN ASN THR SER GLY LYS

• Molecule 50: Mediator of RNA polymerase II transcription subunit 27

Chain p: 50% 50%

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

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

ALA GLY LEU ALA SER GLY LEU LEU ASN GLN GLN GLN SER LEU LYS ARG SER ALA ASN GLN MET GLY VAL LEU SER ALA LYS ARG ARG PRO LYS ALA GLN PRO THR THR LEU VAL L157 Q282 R310 GLN

• Molecule 51: Mediator of RNA polymerase II transcription subunit 28

Chain q: 39% 61%

MET ALA ALA PRO LEU GLY GLY MET PHE SER GLY GLN PRO PRO PRO GLN ALA PRO PRO GLN LEU PRO GLY GLN GLN ALA SER LEU LEU GLN ALA ALA PRO GLY ALA PRO ARG PRO SER SER THR LEU VAL ASP GLU GLU SER SER PHE GLU ALA CYS PHE ALA SER LEU VAL

SER GLN ASP TYR VAL ASN GLY THR ASP GLN GLU GLU ILE ARG THR GLY VAL ASP GLN CYS ILE Q82 H150 LYS LYS PRO ALA ASP ILE PRO GLN GLY SER LEU ALA TYR LEU GLU GLN ALA SER ALA ASN ILE PRO ALA LEU LYS PRO THR

• Molecule 52: unassigned peptide (MED29 or MED30)

Chain r: 100%

There are no outlier residues recorded for this chain.

• Molecule 53: Mediator of RNA polymerase II transcription subunit 30

Chain s:

24%　　•　　75%

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

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

ASP GLY SER LYS ASN ASP ASP ARG ALA GLY PRO PRO ARG PHE **A134** **M152** **N177**

• Molecule 54: unassigned peptide (MED14)

5%

Chain v:　　　100%

X801 **X822**

• Molecule 55: unassigned peptide (MED6)

Chain w:　　　100%

There are no outlier residues recorded for this chain.

• Molecule 56: unassigned peptide (MED17)

Chain x:　　　100%

There are no outlier residues recorded for this chain.

• Molecule 57: unassigned peptide (MED29 or MED30)

Chain y:　　　100%

There are no outlier residues recorded for this chain.

• Molecule 58: unassigned peptide (MED29 or MED30)

Chain z:　　　100%

There are no outlier residues recorded for this chain.

4   Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	25967	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 $(e^-/\text{Å}^2)$	58.56	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	40.088	Depositor
Minimum map value	-17.336	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	3.0	Depositor
Map size (Å)	440.99997, 440.99997, 440.99997	wwPDB
Map dimensions	420, 420, 420	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.05, 1.05, 1.05	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: SF4, 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	0	0.25	0/5875	0.41	0/7955
2	1	0.25	0/2210	0.40	0/2975
3	2	0.26	0/3230	0.42	0/4376
4	3	0.33	0/1769	0.44	0/2385
5	4	0.28	0/2103	0.46	0/2846
6	5	0.25	0/529	0.40	0/714
7	6	0.24	0/2793	0.41	0/3780
8	7	0.24	0/4994	0.40	0/6745
9	8	0.38	0/2434	0.55	0/3300
10	9	0.40	0/2342	0.48	0/3159
11	A	0.24	0/11479	0.41	0/15496
12	B	0.24	0/9257	0.42	0/12493
13	C	0.24	0/2102	0.42	0/2857
14	D	0.24	0/1064	0.38	0/1428
15	E	0.24	0/1752	0.41	0/2366
16	F	0.23	0/646	0.38	0/871
17	G	0.25	0/1382	0.43	0/1874
18	H	0.24	0/1207	0.43	0/1628
19	I	0.24	0/949	0.44	0/1284
20	J	0.25	0/516	0.40	0/696
21	K	0.25	0/939	0.39	0/1271
22	L	0.26	0/378	0.41	0/500
23	M	0.24	0/1983	0.40	0/2679
24	N	0.52	0/1478	0.90	0/2283
25	O	0.25	0/1448	0.42	0/1948
26	Q	0.24	0/1167	0.41	0/1576
27	R	0.24	0/1817	0.40	0/2445
28	T	0.54	0/1461	0.85	0/2249
29	U	0.24	0/945	0.41	0/1274
30	V	0.24	0/816	0.42	0/1105
31	W	0.37	1/1686 (0.1%)	0.48	0/2266
32	X	0.28	0/1427	0.46	0/1916

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
35	a	0.24	0/1200	0.40	0/1634
36	b	0.25	0/1058	0.42	0/1427
37	c	0.24	0/864	0.41	0/1161
38	d	0.26	0/3573	0.45	1/4812 (0.0%)
39	e	0.25	0/1377	0.45	0/1846
40	f	0.28	0/1478	0.53	1/1996 (0.1%)
41	g	0.23	0/1072	0.37	0/1440
42	h	0.24	0/1121	0.37	0/1496
43	i	0.25	0/979	0.41	0/1315
44	j	0.23	0/605	0.38	0/810
45	k	0.24	0/1107	0.36	0/1487
46	l	0.24	0/4102	0.40	1/5537 (0.0%)
47	m	0.25	0/671	0.42	0/908
48	n	0.23	0/1016	0.37	0/1381
49	o	0.25	0/829	0.34	0/1119
50	p	0.29	0/1294	0.47	0/1756
51	q	0.23	0/599	0.36	0/803
53	s	0.22	0/370	0.35	0/491
All	All	0.27	1/97493 (0.0%)	0.45	3/132159 (0.0%)

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
38	d	0	1
46	l	0	1
All	All	0	2

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
31	W	105	TYR	CD2-CE2	-6.79	1.29	1.39

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
38	d	92	LEU	CB-CG-CD2	7.84	124.33	111.00
40	f	148	VAL	CG1-CB-CG2	6.86	121.88	110.90
46	l	470	LEU	CA-CB-CG	5.01	126.82	115.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
38	d	513	THR	Peptide
46	l	443	LEU	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	0	710/760 (93%)	682 (96%)	28 (4%)	0	100	100
2	1	253/548 (46%)	245 (97%)	8 (3%)	0	100	100
3	2	380/462 (82%)	365 (96%)	15 (4%)	0	100	100
4	3	210/309 (68%)	195 (93%)	15 (7%)	0	100	100
5	4	259/308 (84%)	255 (98%)	4 (2%)	0	100	100
6	5	64/71 (90%)	63 (98%)	1 (2%)	0	100	100
7	6	341/395 (86%)	329 (96%)	12 (4%)	0	100	100
8	7	601/782 (77%)	576 (96%)	25 (4%)	0	100	100
9	8	294/346 (85%)	276 (94%)	16 (5%)	2 (1%)	22	62
10	9	277/323 (86%)	268 (97%)	9 (3%)	0	100	100
11	A	1413/1970 (72%)	1374 (97%)	39 (3%)	0	100	100
12	B	1130/1174 (96%)	1093 (97%)	37 (3%)	0	100	100
13	C	253/275 (92%)	241 (95%)	12 (5%)	0	100	100
14	D	126/142 (89%)	122 (97%)	4 (3%)	0	100	100
15	E	207/210 (99%)	203 (98%)	4 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
16	F	77/127 (61%)	76 (99%)	1 (1%)	0	100	100
17	G	169/172 (98%)	166 (98%)	3 (2%)	0	100	100
18	H	146/150 (97%)	143 (98%)	3 (2%)	0	100	100
19	I	112/125 (90%)	104 (93%)	8 (7%)	0	100	100
20	J	62/67 (92%)	61 (98%)	1 (2%)	0	100	100
21	K	113/117 (97%)	112 (99%)	1 (1%)	0	100	100
22	L	42/58 (72%)	40 (95%)	2 (5%)	0	100	100
23	M	248/316 (78%)	246 (99%)	2 (1%)	0	100	100
25	O	177/339 (52%)	175 (99%)	2 (1%)	0	100	100
26	Q	134/517 (26%)	129 (96%)	5 (4%)	0	100	100
27	R	218/249 (88%)	213 (98%)	5 (2%)	0	100	100
29	U	109/376 (29%)	102 (94%)	7 (6%)	0	100	100
30	V	97/109 (89%)	95 (98%)	2 (2%)	0	100	100
31	W	198/439 (45%)	197 (100%)	1 (0%)	0	100	100
32	X	169/291 (58%)	164 (97%)	5 (3%)	0	100	100
35	a	141/246 (57%)	132 (94%)	9 (6%)	0	100	100
36	b	130/268 (48%)	115 (88%)	15 (12%)	0	100	100
37	c	107/117 (92%)	95 (89%)	12 (11%)	0	100	100
38	d	421/651 (65%)	384 (91%)	36 (9%)	1 (0%)	47	81
39	e	157/208 (76%)	149 (95%)	8 (5%)	0	100	100
40	f	180/212 (85%)	168 (93%)	12 (7%)	0	100	100
41	g	128/200 (64%)	122 (95%)	6 (5%)	0	100	100
42	h	132/270 (49%)	128 (97%)	4 (3%)	0	100	100
43	i	107/233 (46%)	105 (98%)	2 (2%)	0	100	100
44	j	70/146 (48%)	64 (91%)	6 (9%)	0	100	100
45	k	131/135 (97%)	129 (98%)	2 (2%)	0	100	100
46	l	477/1454 (33%)	453 (95%)	24 (5%)	0	100	100
47	m	82/244 (34%)	75 (92%)	7 (8%)	0	100	100
48	n	130/144 (90%)	122 (94%)	8 (6%)	0	100	100
49	o	89/131 (68%)	88 (99%)	1 (1%)	0	100	100
50	p	152/311 (49%)	139 (91%)	13 (9%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
51	q	67/178 (38%)	65 (97%)	2 (3%)	0	100	100
53	s	42/178 (24%)	41 (98%)	1 (2%)	0	100	100
All	All	11332/16853 (67%)	10884 (96%)	445 (4%)	3 (0%)	100	100

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
38	d	514	LEU
9	8	166	ASN
9	8	165	PRO

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	0	624/664 (94%)	623 (100%)	1 (0%)	93	96
2	1	241/484 (50%)	241 (100%)	0	100	100
3	2	342/399 (86%)	341 (100%)	1 (0%)	92	95
4	3	195/283 (69%)	194 (100%)	1 (0%)	88	93
5	4	234/272 (86%)	234 (100%)	0	100	100
6	5	59/64 (92%)	59 (100%)	0	100	100
7	6	311/352 (88%)	310 (100%)	1 (0%)	92	95
8	7	536/688 (78%)	533 (99%)	3 (1%)	86	92
9	8	259/299 (87%)	258 (100%)	1 (0%)	91	94
10	9	256/296 (86%)	256 (100%)	0	100	100
11	A	1254/1749 (72%)	1253 (100%)	1 (0%)	93	96
12	B	994/1027 (97%)	992 (100%)	2 (0%)	93	96
13	C	234/252 (93%)	234 (100%)	0	100	100
14	D	118/126 (94%)	118 (100%)	0	100	100
15	E	191/192 (100%)	191 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
16	F	69/111 (62%)	69 (100%)	0	100	100
17	G	152/153 (99%)	151 (99%)	1 (1%)	84	90
18	H	129/131 (98%)	129 (100%)	0	100	100
19	I	103/112 (92%)	103 (100%)	0	100	100
20	J	53/56 (95%)	53 (100%)	0	100	100
21	K	104/106 (98%)	103 (99%)	1 (1%)	76	86
22	L	41/55 (74%)	41 (100%)	0	100	100
23	M	215/268 (80%)	215 (100%)	0	100	100
25	O	154/293 (53%)	154 (100%)	0	100	100
26	Q	121/448 (27%)	119 (98%)	2 (2%)	60	78
27	R	196/218 (90%)	195 (100%)	1 (0%)	88	93
29	U	105/324 (32%)	105 (100%)	0	100	100
30	V	90/98 (92%)	88 (98%)	2 (2%)	52	71
31	W	182/373 (49%)	182 (100%)	0	100	100
32	X	154/261 (59%)	153 (99%)	1 (1%)	86	92
35	a	128/223 (57%)	128 (100%)	0	100	100
36	b	117/225 (52%)	116 (99%)	1 (1%)	78	87
37	c	92/98 (94%)	92 (100%)	0	100	100
38	d	395/577 (68%)	392 (99%)	3 (1%)	81	89
39	e	150/183 (82%)	149 (99%)	1 (1%)	84	90
40	f	161/178 (90%)	160 (99%)	1 (1%)	86	92
41	g	122/173 (70%)	122 (100%)	0	100	100
42	h	123/230 (54%)	123 (100%)	0	100	100
43	i	109/216 (50%)	109 (100%)	0	100	100
44	j	70/133 (53%)	70 (100%)	0	100	100
45	k	122/124 (98%)	122 (100%)	0	100	100
46	l	454/1271 (36%)	453 (100%)	1 (0%)	93	96
47	m	76/208 (36%)	76 (100%)	0	100	100
48	n	109/119 (92%)	109 (100%)	0	100	100
49	o	84/115 (73%)	84 (100%)	0	100	100
50	p	143/280 (51%)	143 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
51	q	67/152 (44%)	67 (100%)	0	100	100
53	s	40/155 (26%)	39 (98%)	1 (2%)	47	68
All	All	10278/14814 (69%)	10251 (100%)	27 (0%)	92	95

All (27) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	0	114	ASN
3	2	33	ARG
4	3	41	ARG
7	6	343	ARG
8	7	198	ARG
8	7	266	GLN
8	7	692	LYS
9	8	10	LYS
11	A	61	ARG
12	B	199	LYS
12	B	1064	ARG
17	G	81	LYS
21	K	47	LYS
26	Q	44	GLN
26	Q	151	ARG
27	R	230	LYS
30	V	51	ARG
30	V	82	ARG
32	X	114	LYS
36	b	101	SER
38	d	184	ASN
38	d	319	LYS
38	d	374	ASN
39	e	201	LYS
40	f	15	LYS
46	l	537	LYS
53	s	152	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
10	9	7	GLN
32	X	89	HIS

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 20 ligands modelled in this entry, 19 are monoatomic - leaving 1 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	$\#|Z| > 2$
59	SF4	0	1000	1	0,12,12	-	-	-		

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
59	SF4	0	1000	1	-	-	0/6/5/5

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 (i)

This section contains visualisations of the EMDB entry EMD-12610. 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 (i)

6.1.1 Primary map
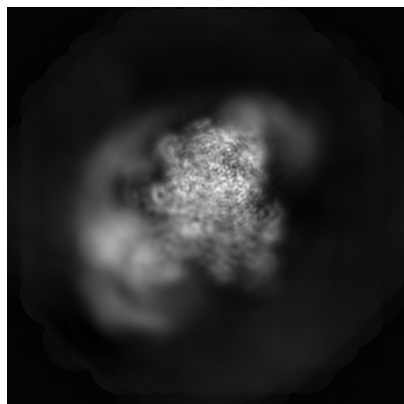
X
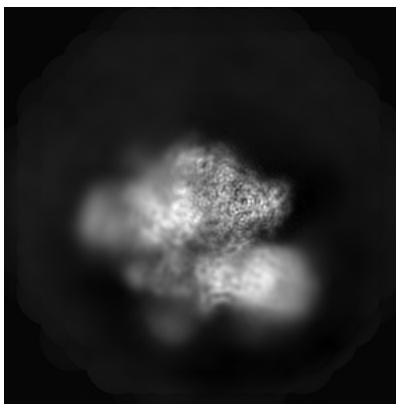
Y
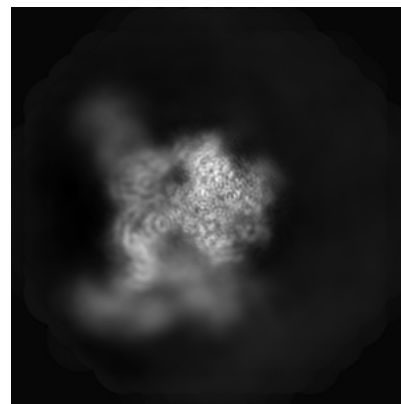
Z

6.1.2 Raw map

X

Y

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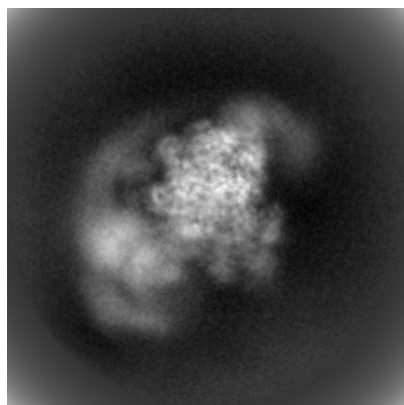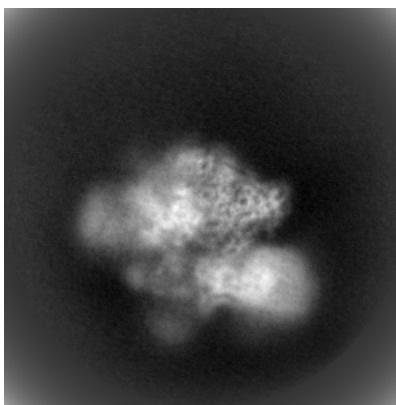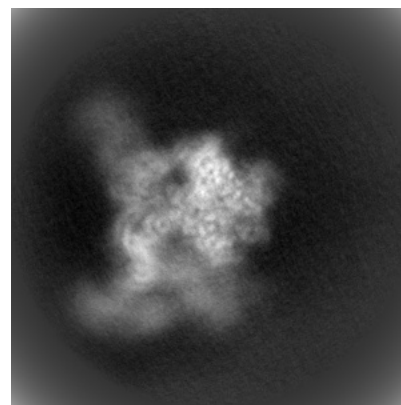
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
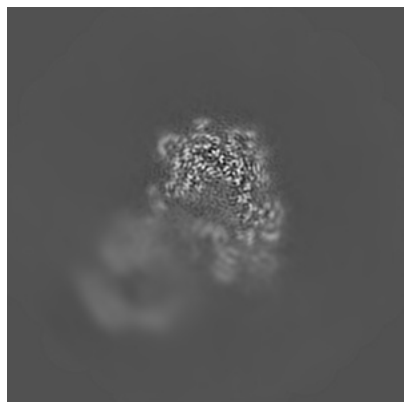
6.2.1 Primary map
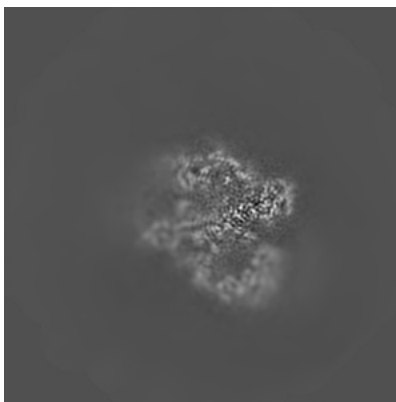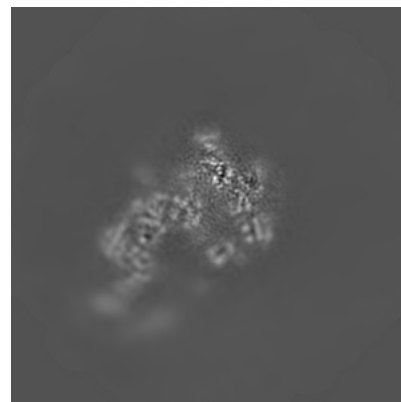
| X Index: 210 | Y Index: 210 | Z Index: 210 |

6.2.2 Raw map
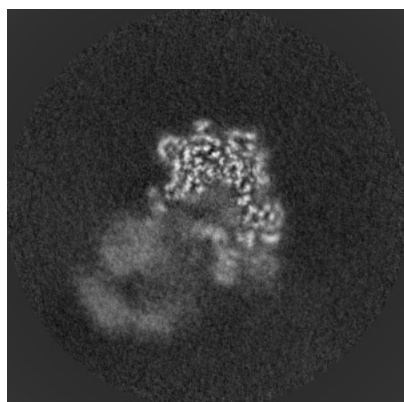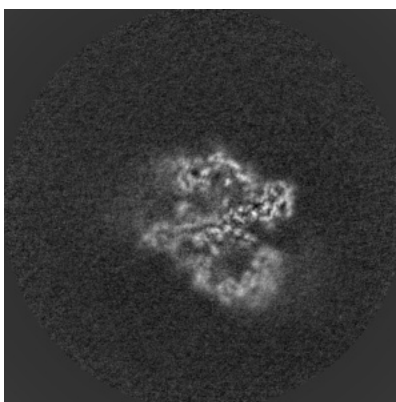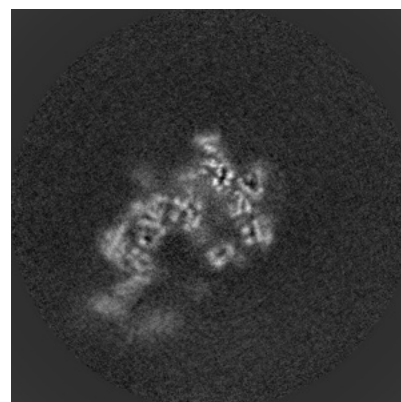
| X Index: 210 | Y Index: 210 | Z Index: 210 |

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

6.3 Largest variance slices ⓘ

6.3.1 Primary map
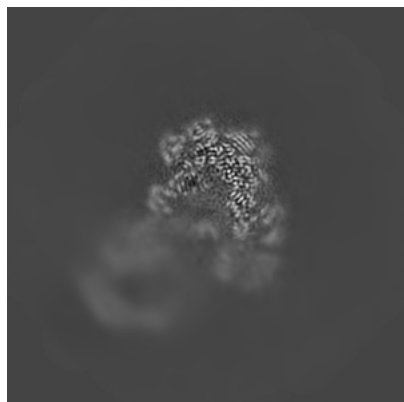
X Index: 215
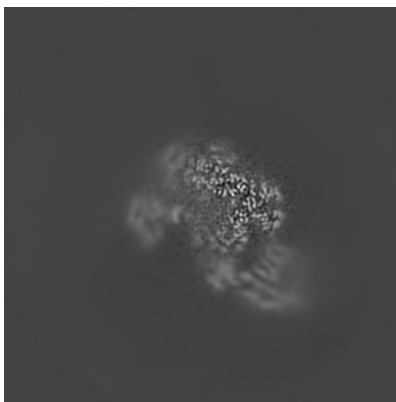
Y Index: 226
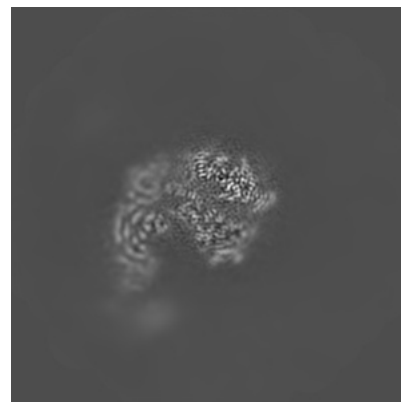
Z Index: 228

6.3.2 Raw map
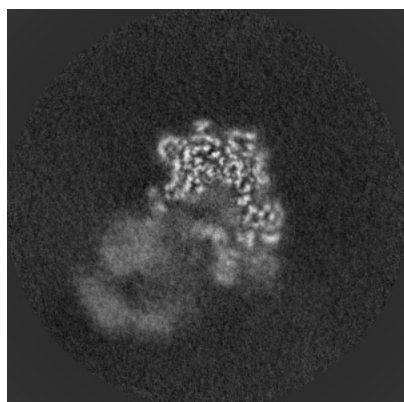
X Index: 210
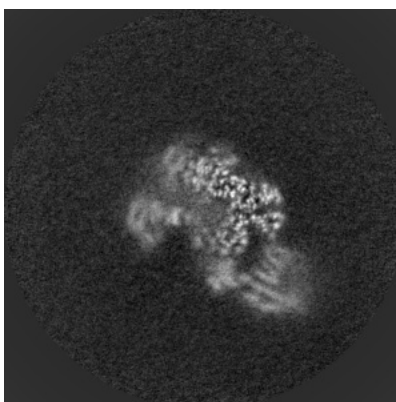
Y Index: 227
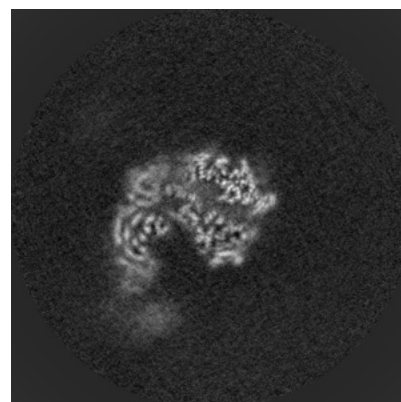
Z Index: 228

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
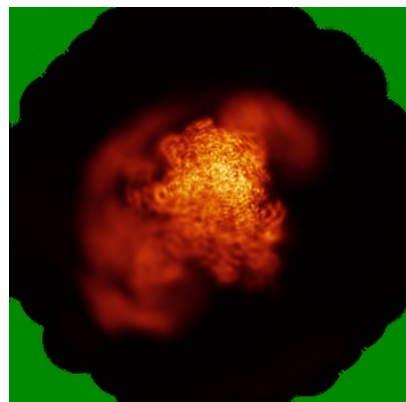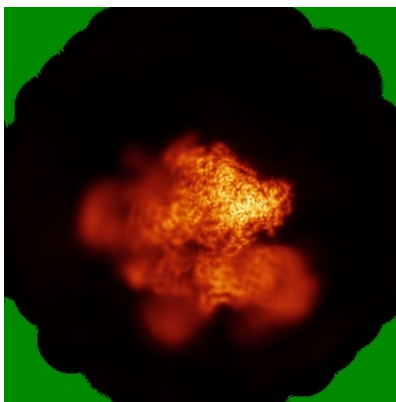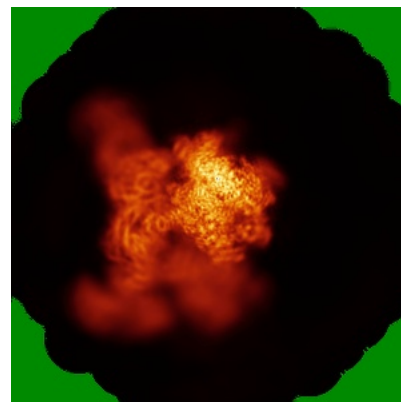
X   Y   Z

6.4.2 Raw map

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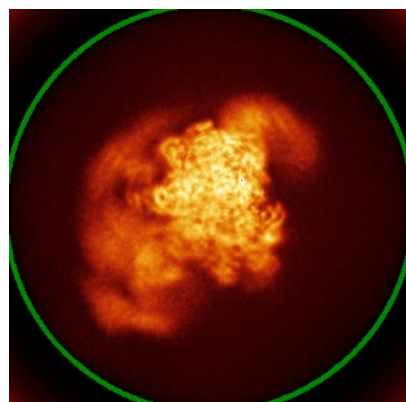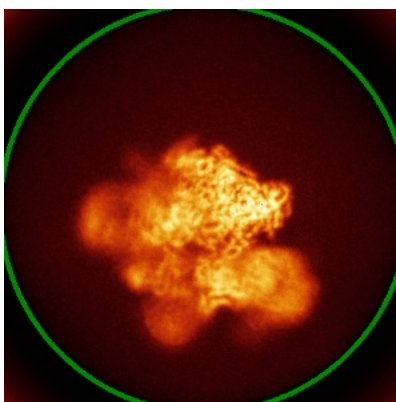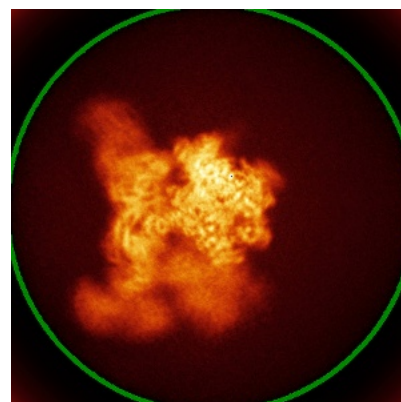
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

X	Y	Z
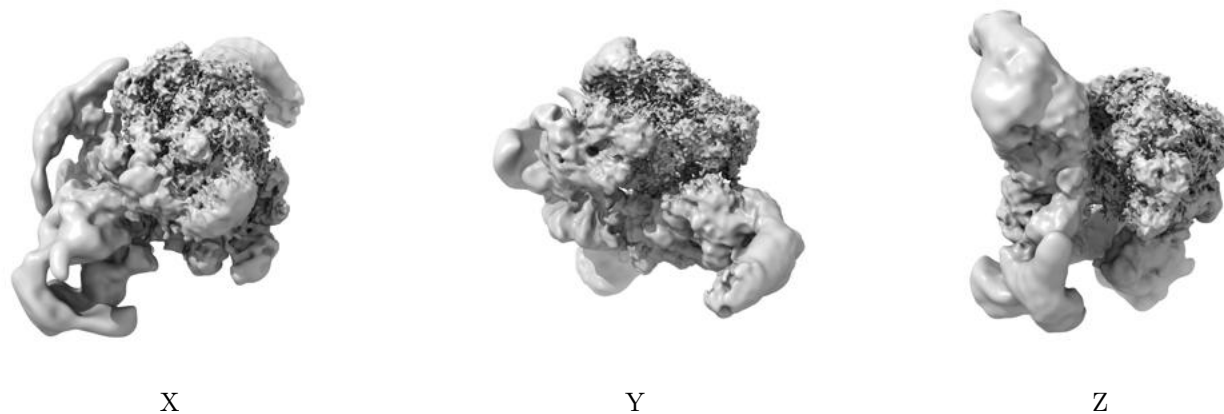
The images above show the 3D surface view of the map at the recommended contour level 3.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

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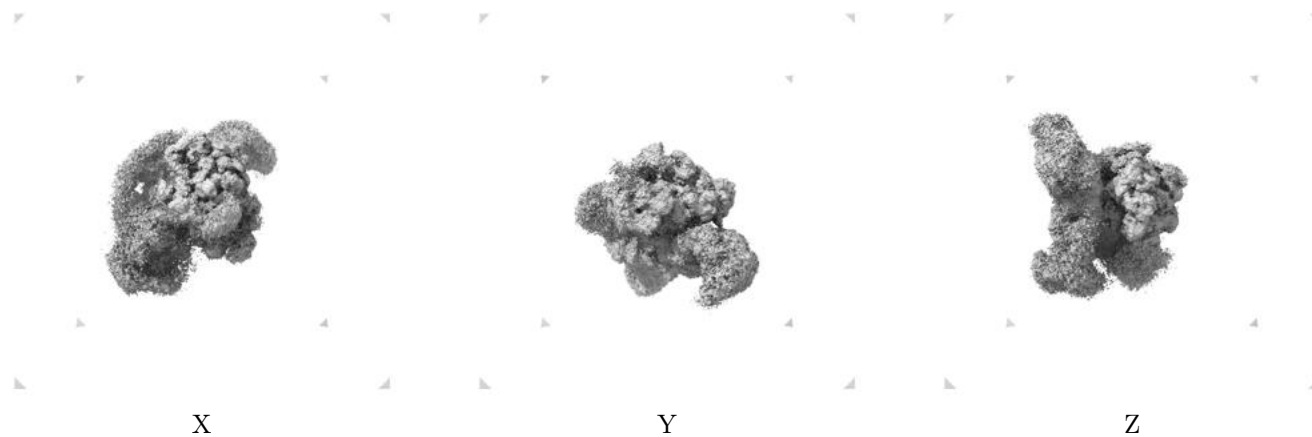
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6 Mask visualisation ⓘ

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

6.6.1 emd_12610_msk_1.map ⓘ

X   Y   Z
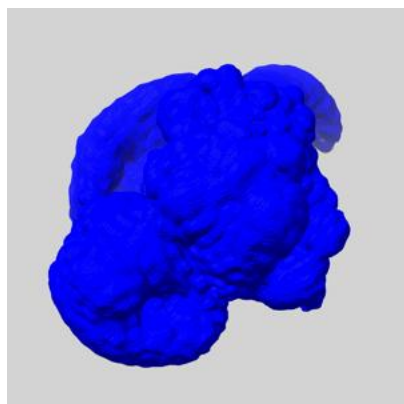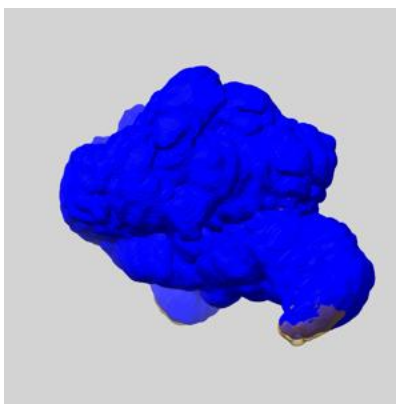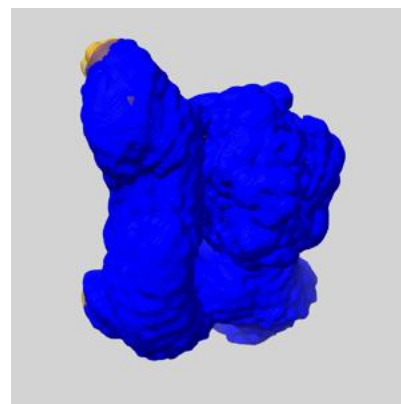
7 Map analysis ⓘ

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 ⓘ
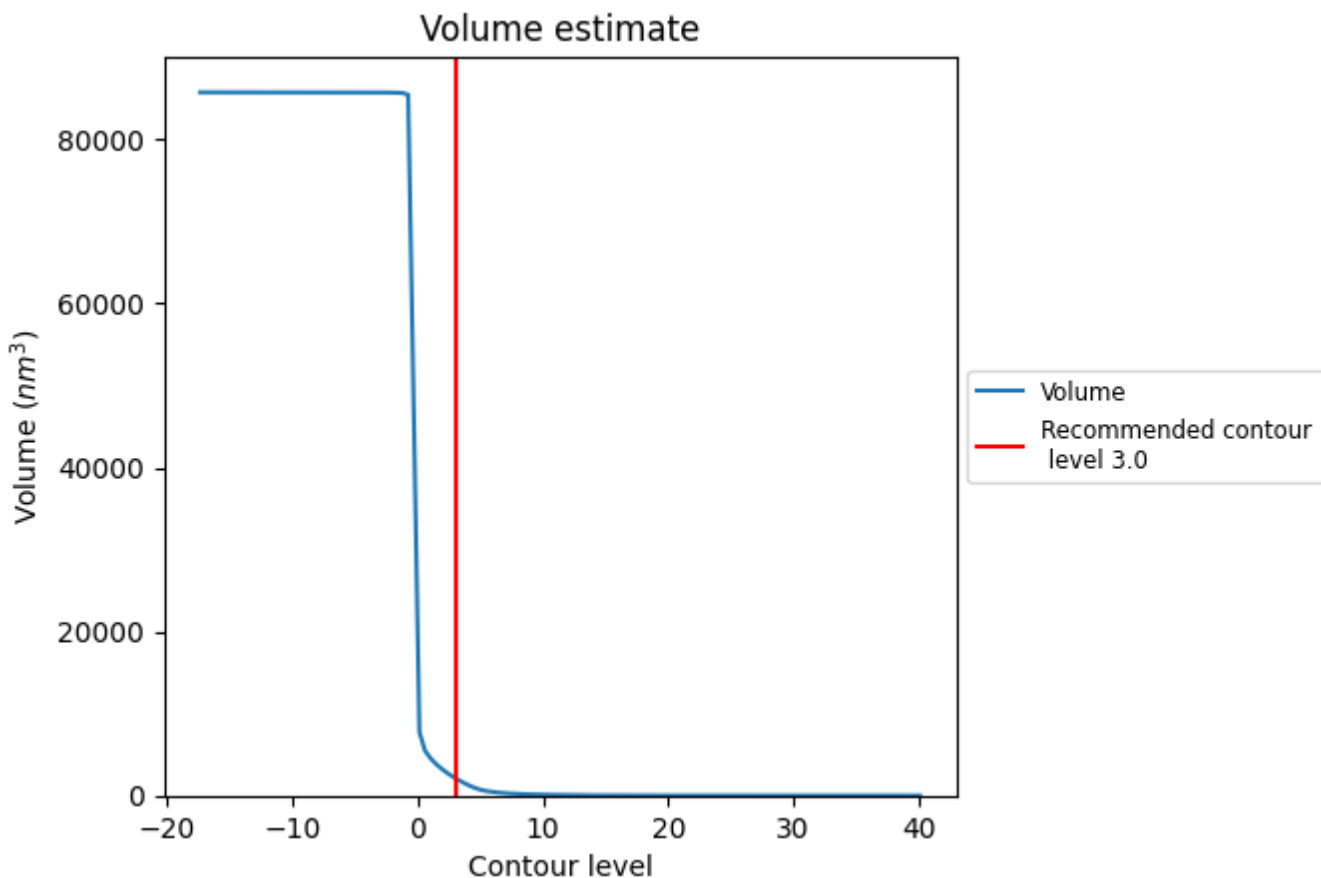
The volume at the recommended contour level is 2146 nm^3; this corresponds to an approximate mass of 1939 kDa.

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 ⓘ
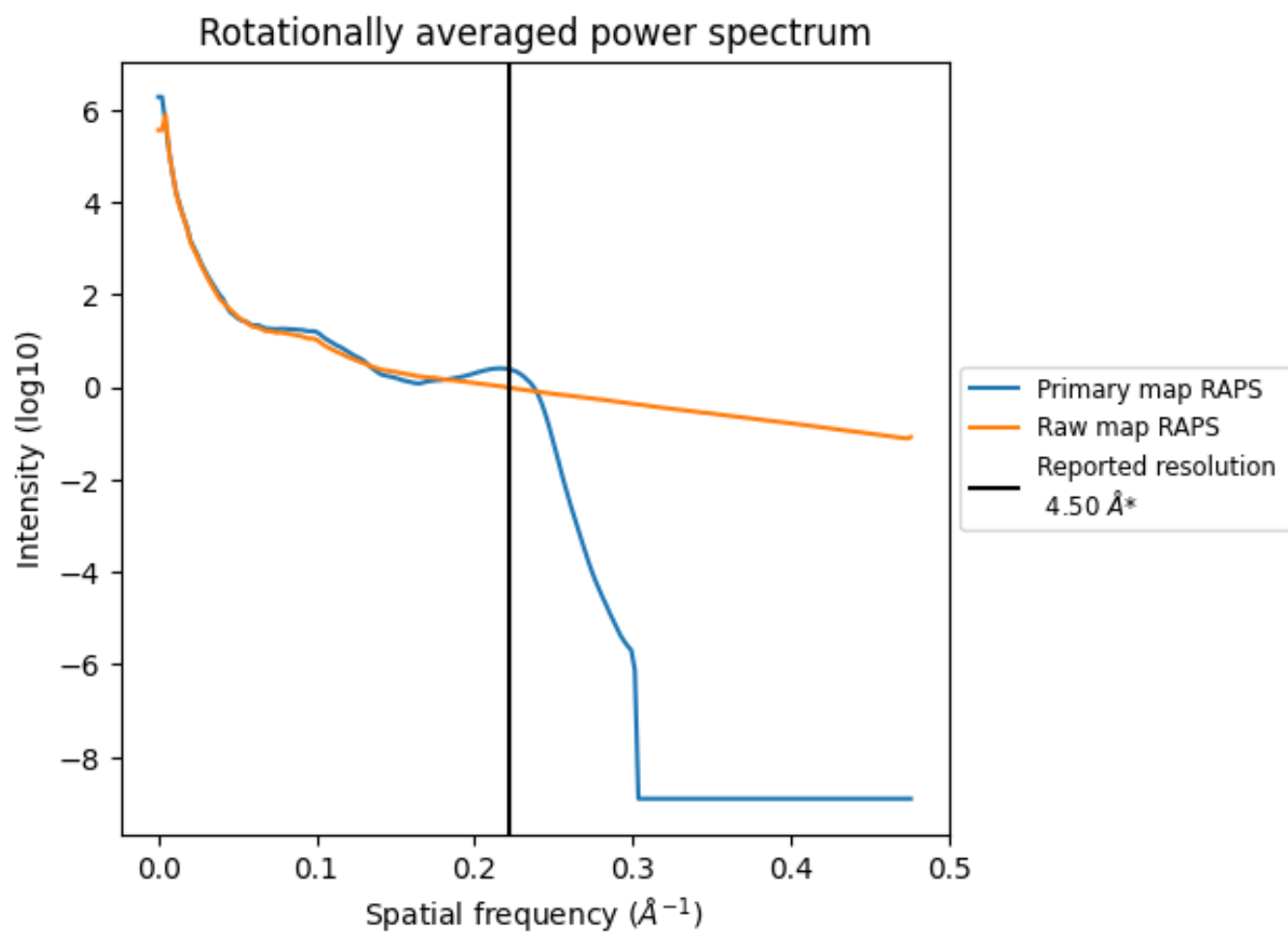
*Reported resolution corresponds to spatial frequency of 0.222 Å^{-1}

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 ⓘ
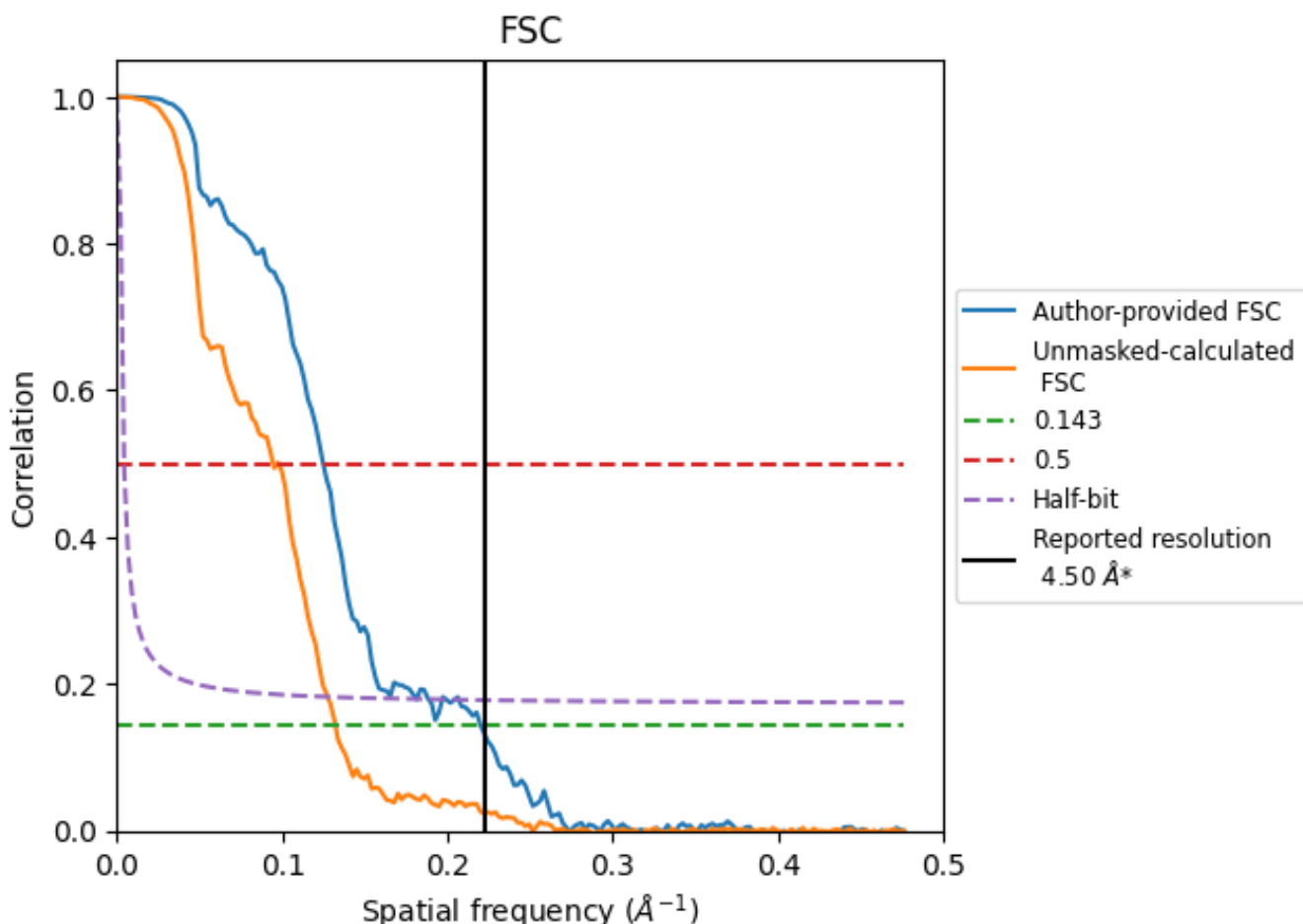
*Reported resolution corresponds to spatial frequency of 0.222 Å^{-1}

8.2   Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.50	-	-
Author-provided FSC curve	4.54	8.01	5.51
Unmasked-calculated*	7.56	10.57	7.84

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 7.56 differs from the reported value 4.5 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-12610 and PDB model 7NVR. Per-residue inclusion information can be found in section 3 on page 15.

9.1 Map-model overlay ⓘ

| X | Y | Z |
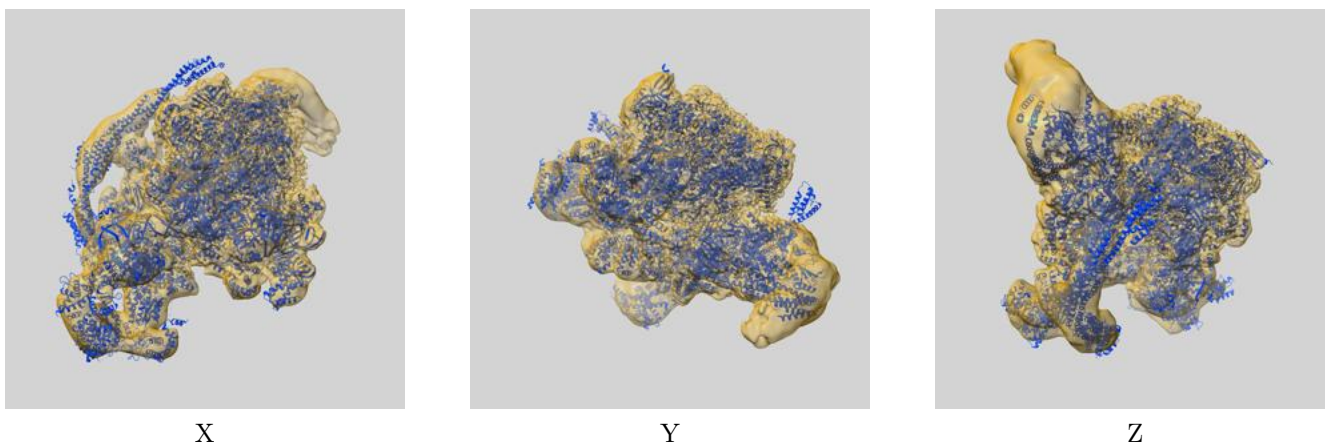
The images above show the 3D surface view of the map at the recommended contour level 3.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model ⓘ

X   Y   Z
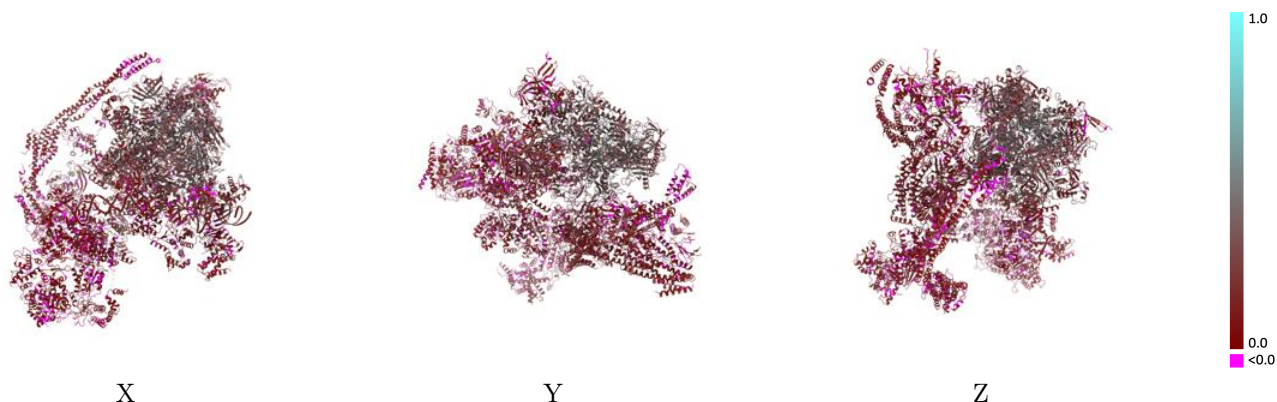
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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
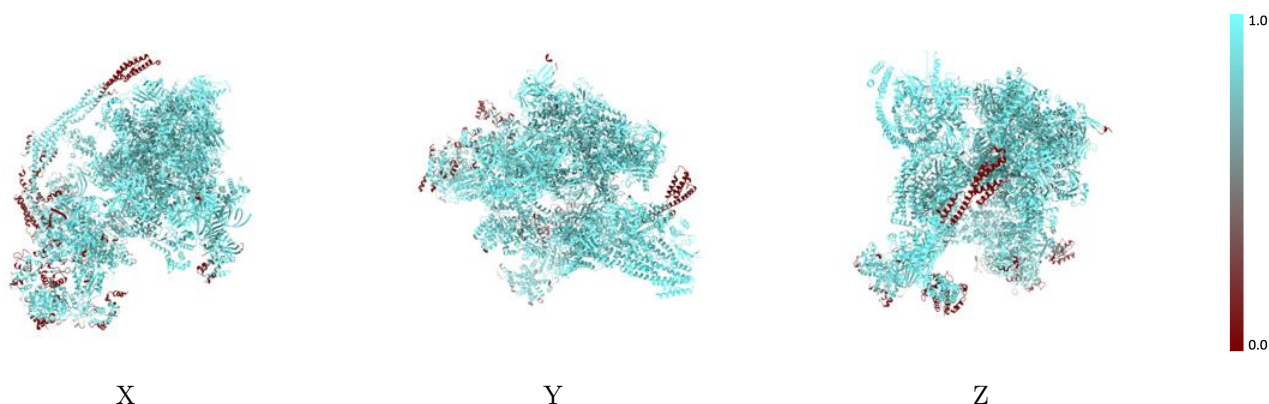
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (3.0).

9.4 Atom inclusion ⓘ
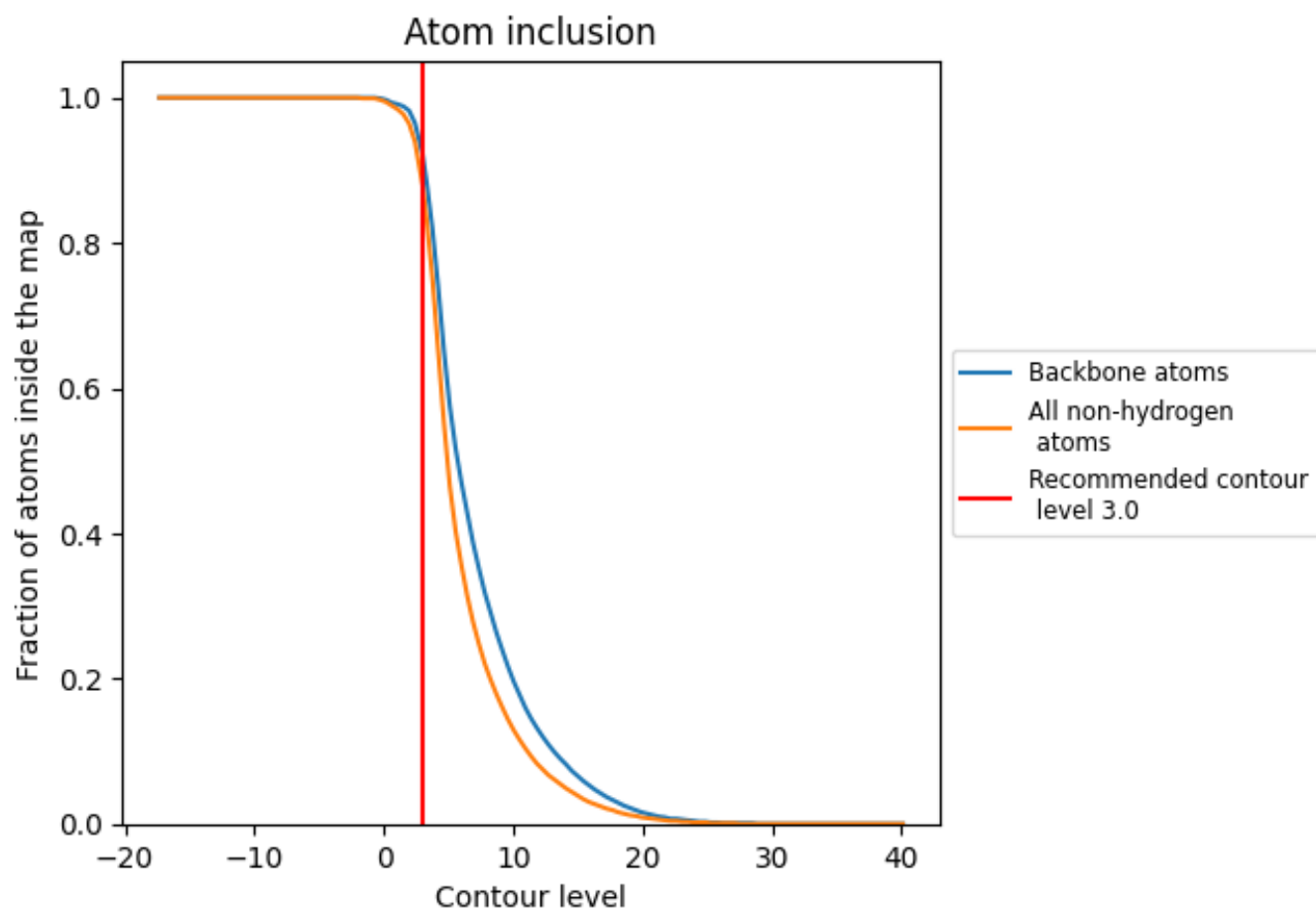
At the recommended contour level, 92% of all backbone atoms, 88% of all non-hydrogen atoms, are inside the map.

9.5　Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (3.0) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8780	0.1710
0	0.9490	0.1120
1	0.6440	0.0580
2	0.6590	0.0710
3	0.8920	0.1210
4	0.8590	0.0540
5	0.5870	0.0580
6	0.9050	0.0660
7	0.9080	0.0630
8	0.8840	0.0680
9	0.8380	0.0620
A	0.9180	0.2940
B	0.9260	0.3430
C	0.9410	0.3380
D	0.8730	0.1950
E	0.9180	0.2410
F	0.9030	0.3430
G	0.9140	0.2090
H	0.9460	0.3290
I	0.9630	0.2520
J	0.9500	0.3580
K	0.9330	0.3280
L	0.9380	0.3080
M	0.9250	0.2460
N	0.9380	0.1880
O	0.9710	0.1590
Q	0.9330	0.1300
R	0.9260	0.1480
T	0.9220	0.1700
U	0.7690	0.1300
V	0.7490	0.1110
W	0.8420	0.1100
X	0.9520	0.1410
Y	0.5370	0.0390
Z	0.2500	0.0870

1.0

0.0
<0.0

Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
a	0.9410	0.1280
b	0.9150	0.1860
c	0.9530	0.1710
d	0.9620	0.1240
e	0.9480	0.1430
f	0.9410	0.0990
g	0.9300	0.1460
h	0.4270	0.0450
i	0.9550	0.1140
j	0.1490	0.0100
k	0.4050	0.0660
l	0.8780	0.1070
m	0.1750	0.0350
n	0.8020	0.0910
o	0.9710	0.1060
p	0.9560	0.1190
q	1.0000	0.1450
r	1.0000	0.1280
s	0.9670	0.1420
v	0.9460	0.0390
w	1.0000	0.2650
x	0.9460	0.1010
y	1.0000	0.1370
z	1.0000	0.1300