



wwPDB EM Validation Summary Report ⓘ

Mar 25, 2026 – 08:06 AM UTC

PDB ID : 5IY9 / pdb_00005iy9
EMDB ID : EMD-8134
Title : Human holo-PIC in the initial transcribing state (no IIS)
Authors : He, Y.; Yan, C.; Fang, J.; Inouye, C.; Tjian, R.; Ivanov, I.; Nogales, E.
Deposited on : 2016-03-24
Resolution : 6.30 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

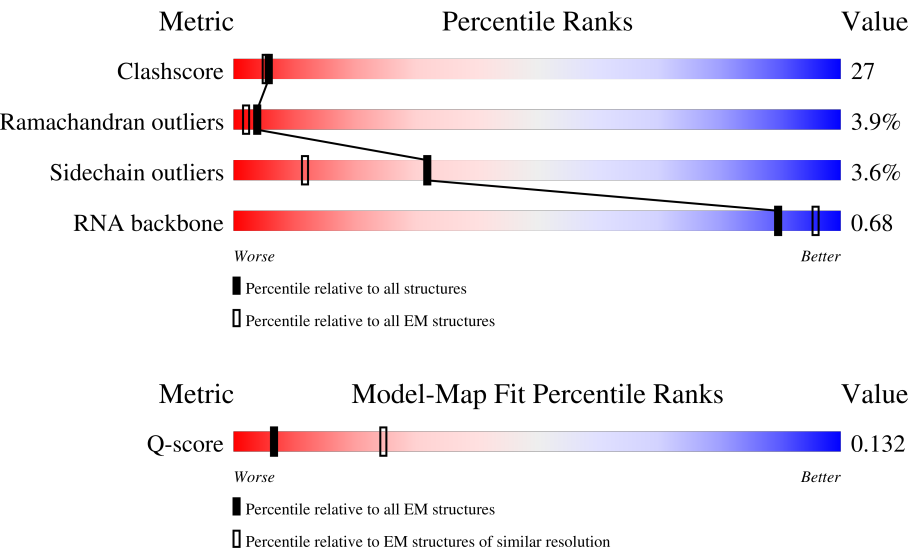
EMDB validation analysis : 0.0.1.dev132
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

1 Overall quality at a glance i

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

The reported resolution of this entry is 6.30 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



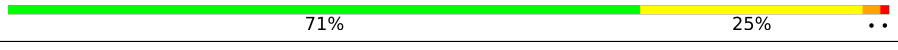
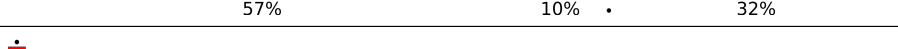
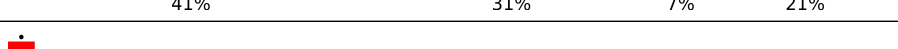
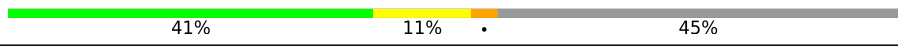
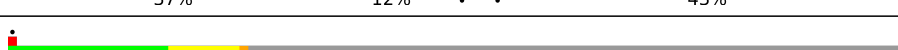
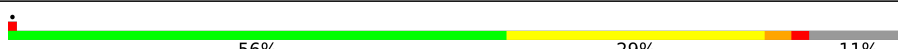
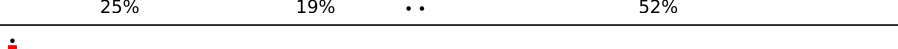
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	550 (5.80 - 6.80)

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 $\leq 5\%$. 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	47%22% . . 26%
2	B	1174	57%36%5% ..
3	C	275	64%31% . .

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Mol	Chain	Length	Quality of chain
4	D	142	
5	E	210	
6	F	127	
7	G	172	
8	H	150	
9	I	125	
10	J	67	
11	K	117	
12	L	58	
13	M	316	
14	N	376	
15	O	109	
16	P	339	
17	Q	439	
18	R	291	
19	S	517	
20	T	249	
21	V	782	
22	W	760	
23	0	395	
24	1	71	
25	2	462	
26	3	308	
27	X	83	
28	Y	83	

Continued on next page...

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Mol	Chain	Length	Quality of chain
29	Z	6	 100%

2 Entry composition

There are 31 unique types of molecules in this entry. The entry contains 61725 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called DNA-directed RNA polymerase II subunit RPB1.

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

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

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

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

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

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

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

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	86	Total	C	N	O	S	0	0
			689	437	120	127	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	N	O	S	0	0
			1351	875	219	249	8		

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

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

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

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

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

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

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

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

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
13	M	310	Total	C	N	O	S	0	0
			2391	1490	426	457	18		

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- Molecule 21 is a protein called TFIIF basal transcription factor complex helicase XPB subunit.

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

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

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

- Molecule 23 is a protein called General transcription factor IIH subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	0	188	Total	C	N	O	S	0	0
			1479	935	258	276	10		

- Molecule 24 is a protein called General transcription factor IIH subunit 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	1	62	Total	C	N	O	S	0	0
			491	317	77	93	4		

- Molecule 25 is a protein called General transcription factor IIH subunit 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	2	274	Total	C	N	O	S	0	0
			2196	1417	377	392	10		

- Molecule 26 is a protein called General transcription factor IIH subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	3	193	Total	C	N	O	S	0	0
			1526	978	252	284	12		

- Molecule 27 is a DNA chain called SCP-X.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	X	83	Total	C	N	O	P	0	0
			1710	815	307	506	82		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
28	Y	83	Total	C	N	O	P	0	0
			1681	798	300	501	82		

- Molecule 29 is a RNA chain called RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	Z	6	Total	C	N	O	P	0	0
			125	57	23	40	5		

- Molecule 30 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
30	A	2	Total	Mg	0
			2	2	

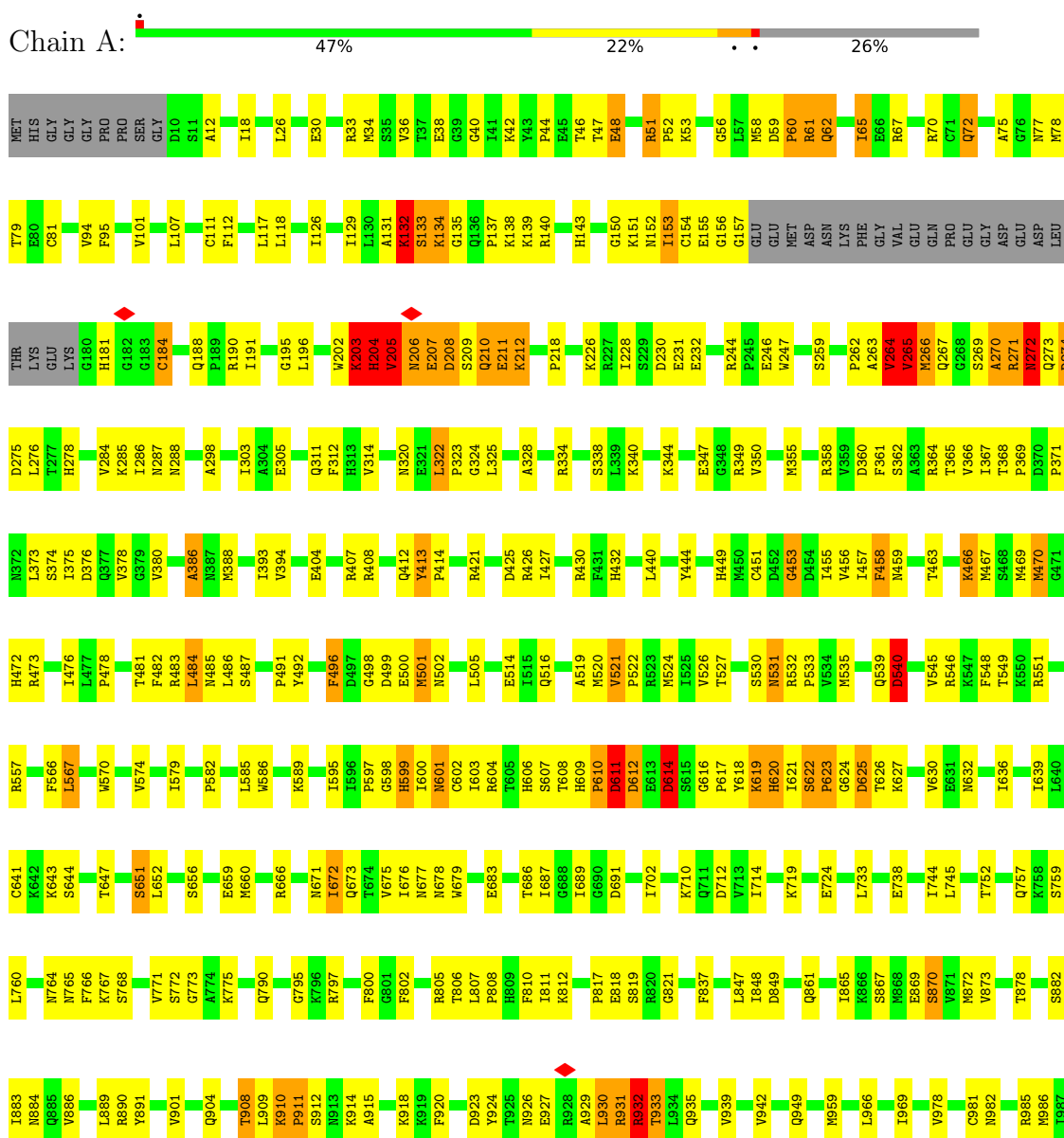
- Molecule 31 is ZINC ION (CCD ID: ZN) (formula: Zn).

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

3 Residue-property plots

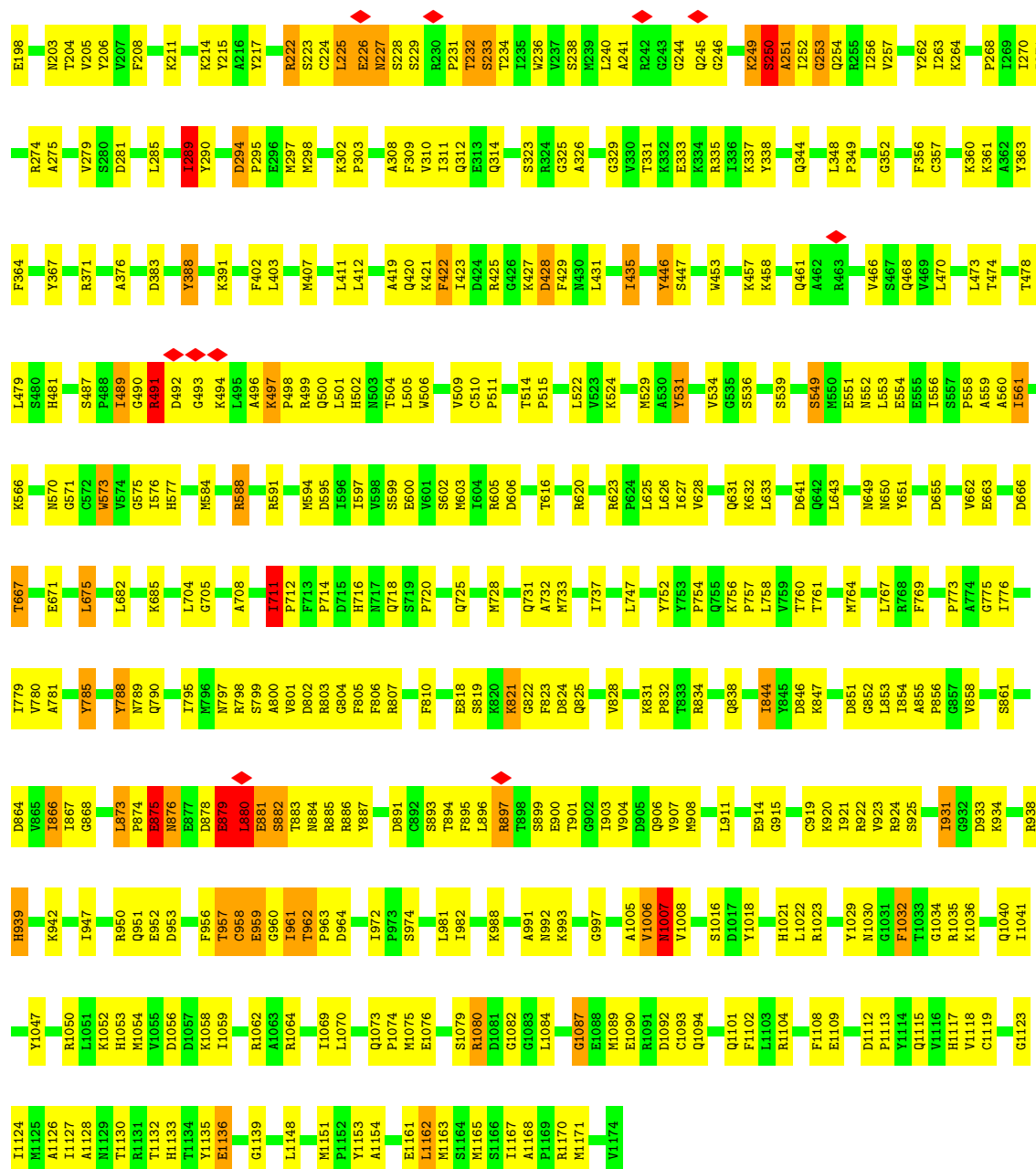
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

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



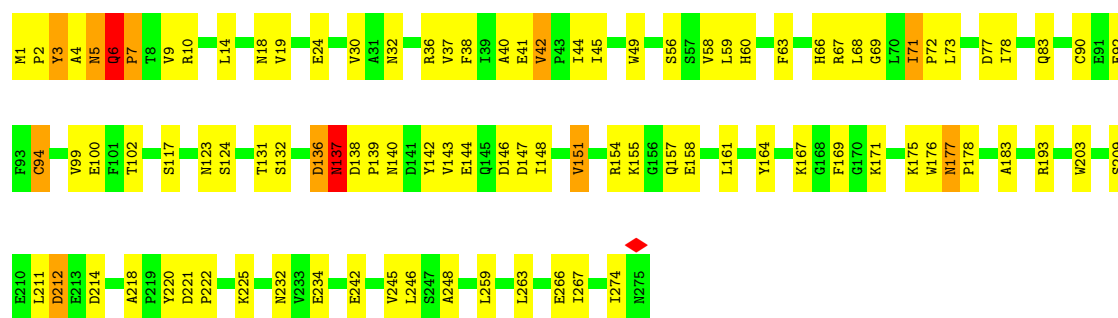


Q90	Q91	Y92	L93	S94	K95	H98	W99	D102	G103	A104	F105	M108	T119	A122	P123	L124	D127	I128	T131	V132	I133	E135	Q139	L140	Q141	Q145	K146	L156	Y160	C161	L162	L163	N164	G165	L166	T167	D168	R169	D170	D180	F181	P181	I187	K192	T193			
MET	TYR	ASP	ALA	ASP	GLU	ASP	MET	GLN	Y10	D11	E12	Q23	F24	A25	L28	S32	Y33	K37	G38	L39	V40	R41	D45	S46	F47	F50	Y51	Q52	Q56	R57	L58	V59	E60	D61	A62	P63	P64	L65	H73	A74	E77	V78	E79	E80	P81	P82	L86	T87



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

Chain C: 64% 31%



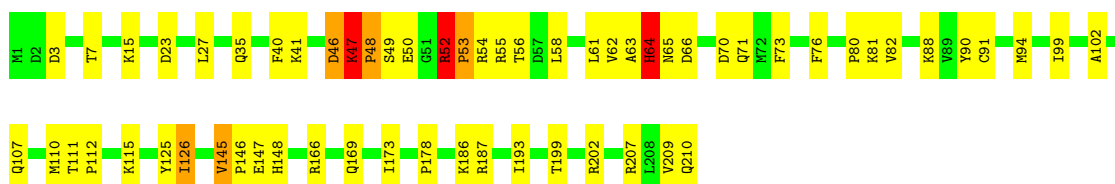
- Molecule 4: DNA-directed RNA polymerase II subunit RPB4

Chain D:  75% 15% 9%



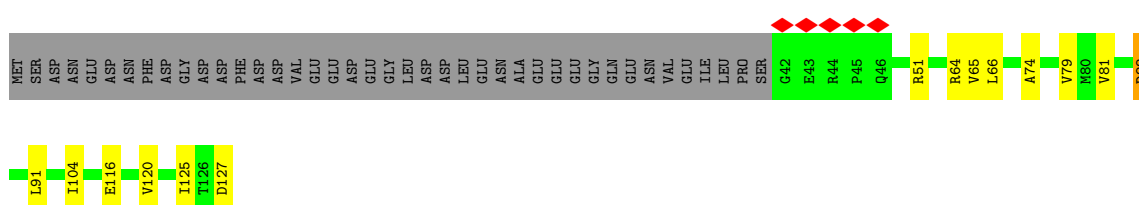
- Molecule 5: DNA-directed RNA polymerase II subunit RPB5

Chain E:  71% 25% ..



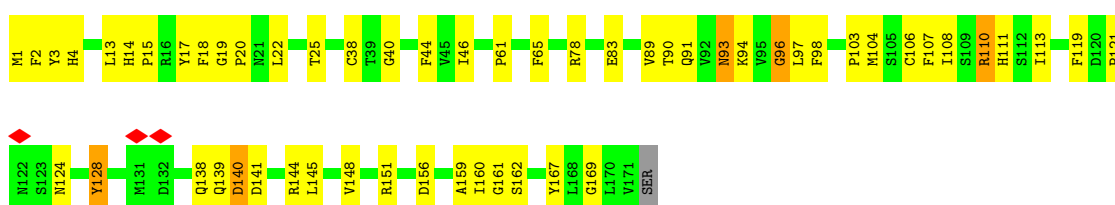
- Molecule 6: DNA-directed RNA polymerase II subunit RPB6

Chain F:  57% 10% 32%



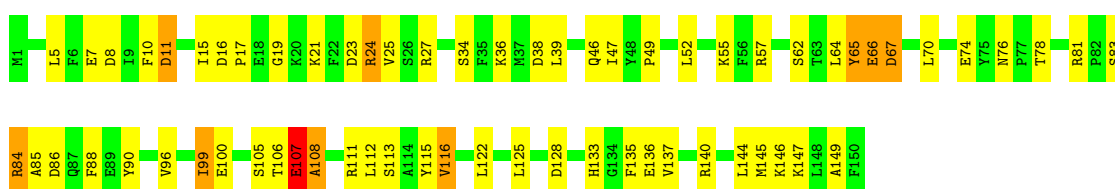
- Molecule 7: DNA-directed RNA polymerase II subunit RPB7

Chain G:  67% 30% ..

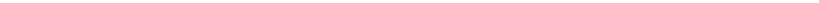


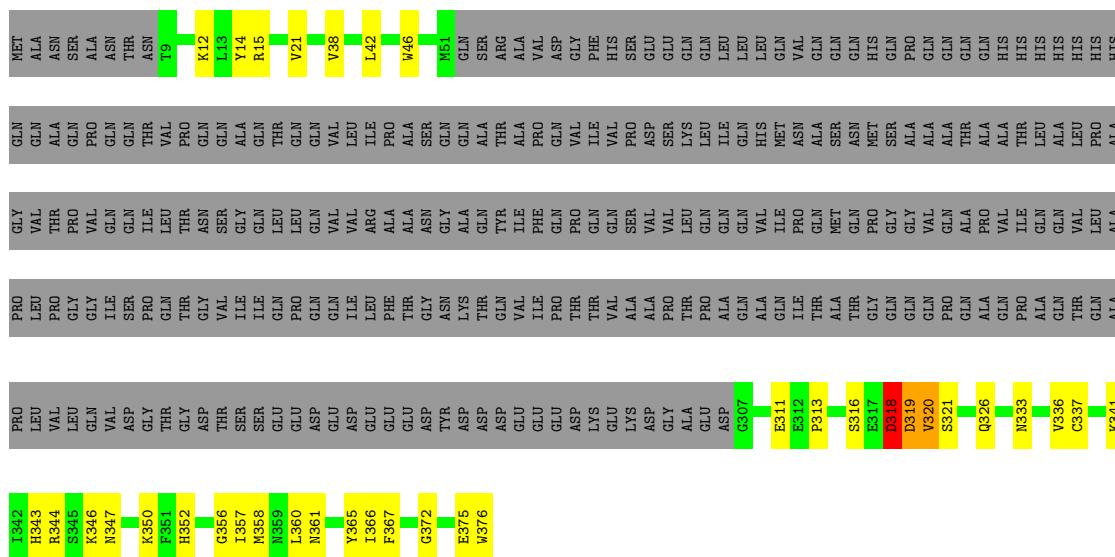
- Molecule 8: DNA-directed RNA polymerase II subunit RPB8

Chain H:  57% 37% 6%

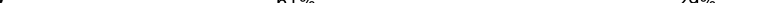


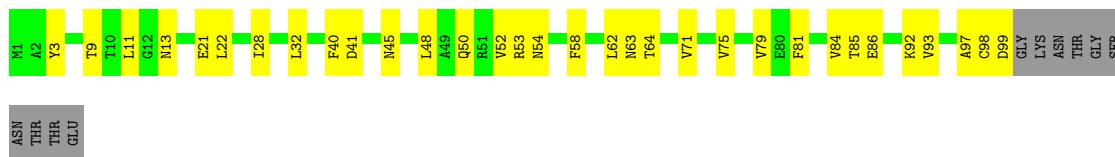
- Molecule 9: DNA-directed RNA polymerase II subunit RPB9

Chain N:  20% 9% . 70%

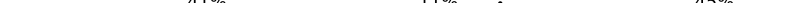


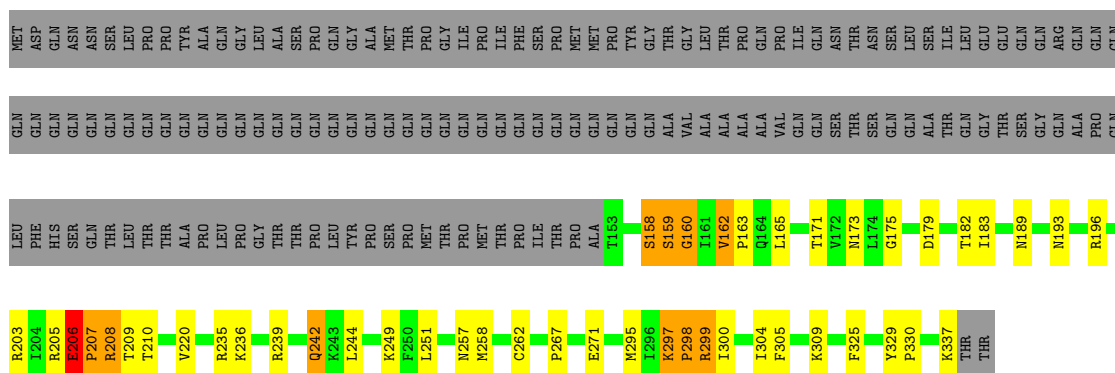
- Molecule 15: Transcription initiation factor IIA subunit 2

Chain O:  61% 29% 9%

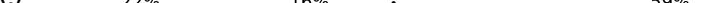


- Molecule 16: TATA-box-binding protein

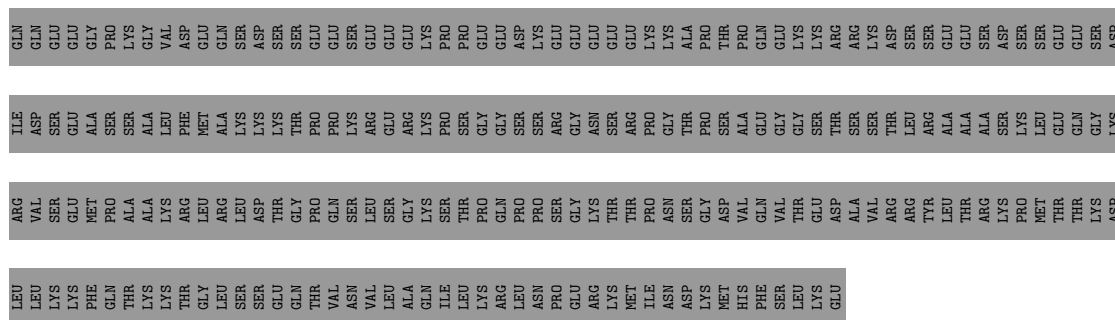
Chain P: 



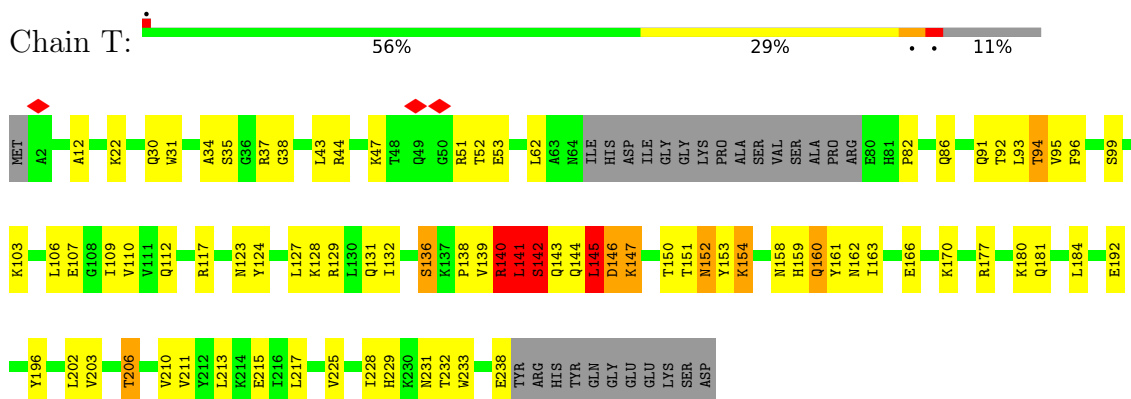
- Molecule 17: General transcription factor IIE subunit 1

Chain Q:  22% 16% . 59%

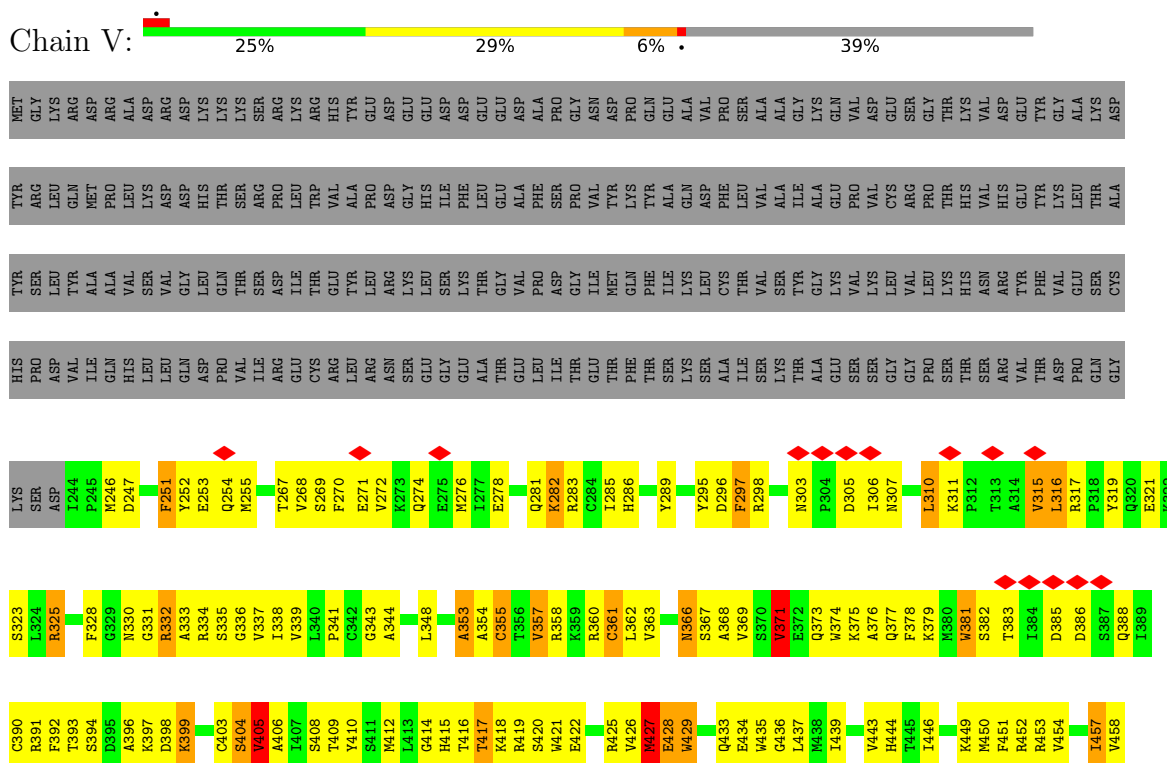


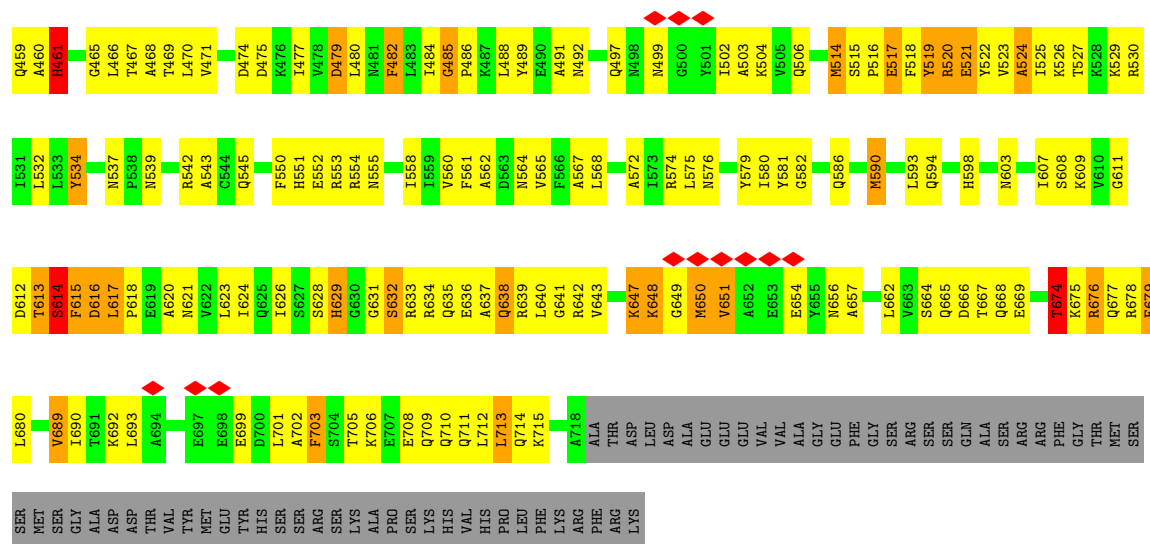


- Molecule 20: General transcription factor IIF subunit 2



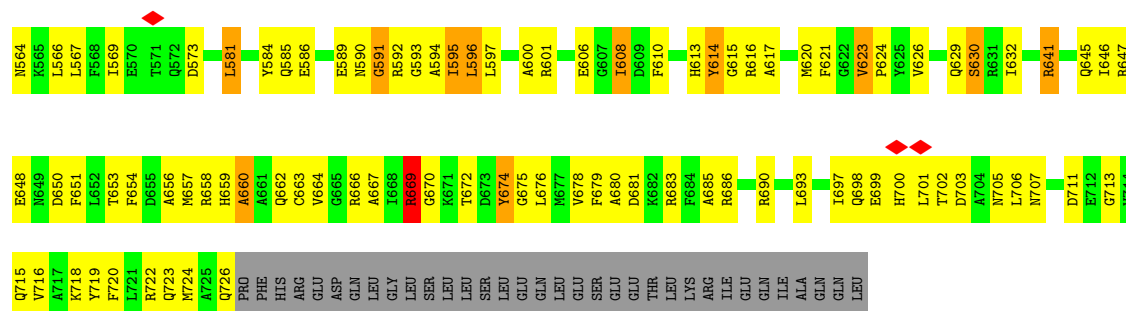
- Molecule 21: TFIIH basal transcription factor complex helicase XPB subunit



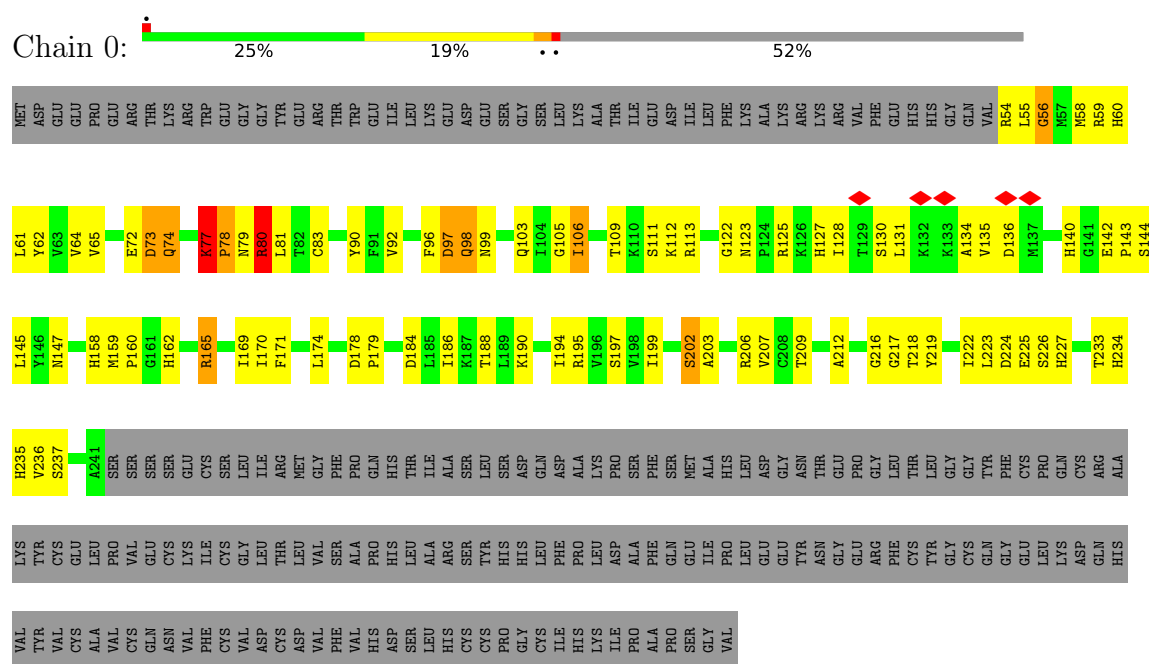


• Molecule 22: TFIIF basal transcription factor complex helicase XPD subunit

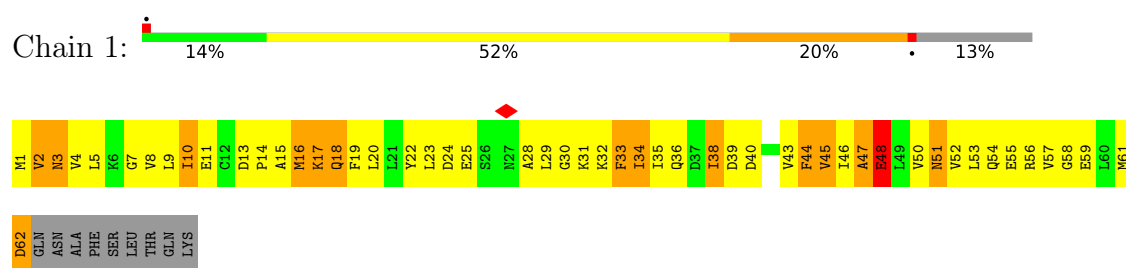




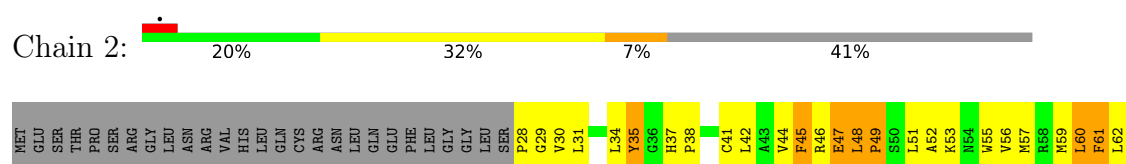
• Molecule 23: General transcription factor IIH subunit 2

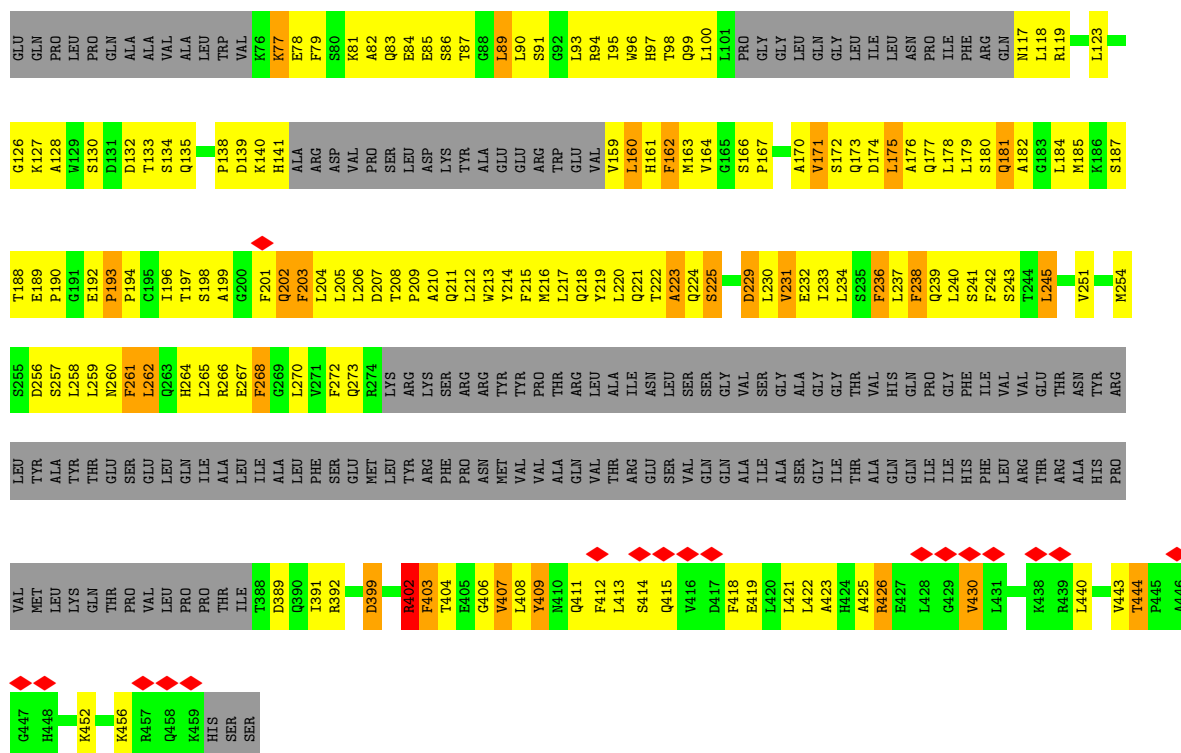


• Molecule 24: General transcription factor IIH subunit 5



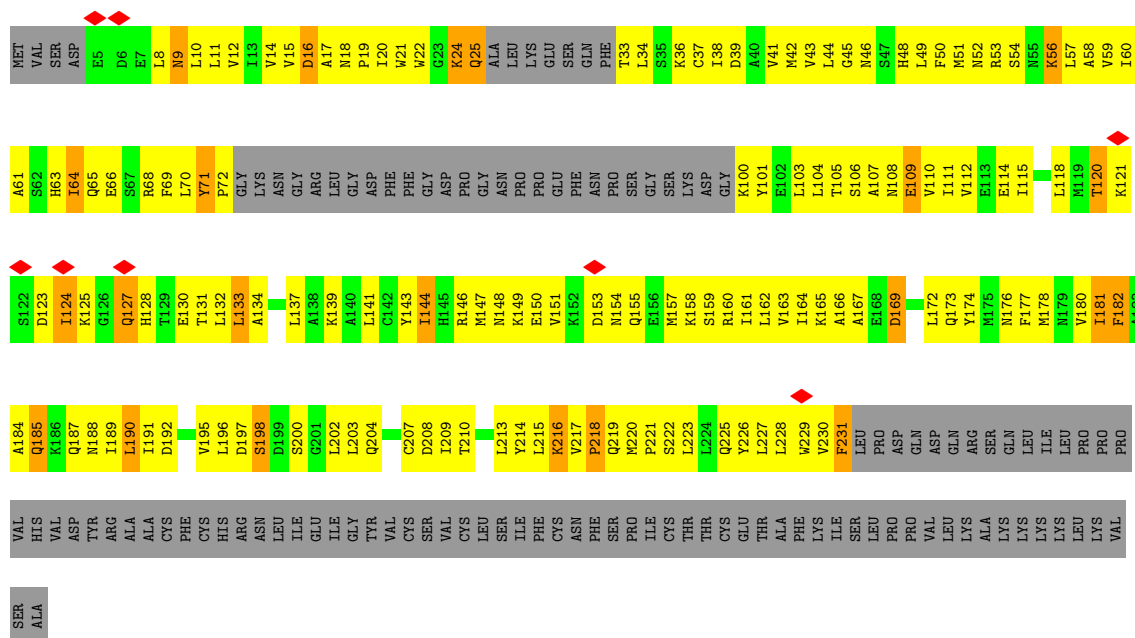
• Molecule 25: General transcription factor IIH subunit 4





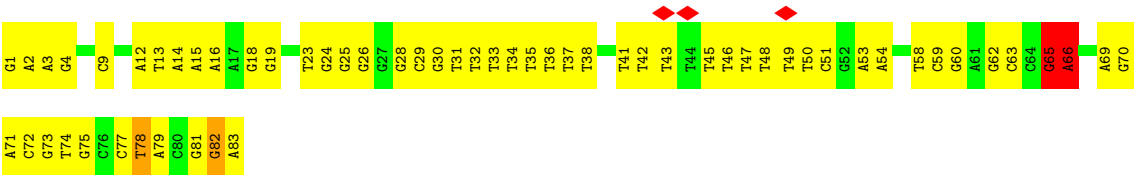
• Molecule 26: General transcription factor IIH subunit 3

Chain 3: 14% 42% 7% 37%

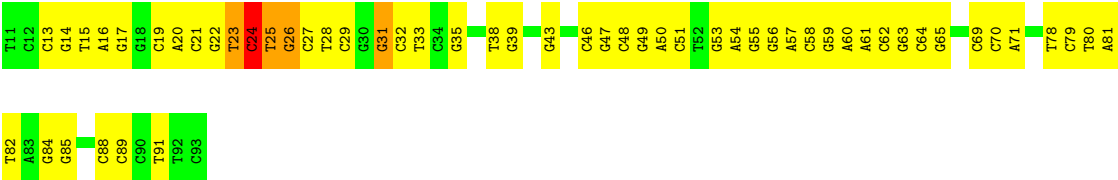


• Molecule 27: SCP-X

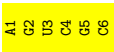
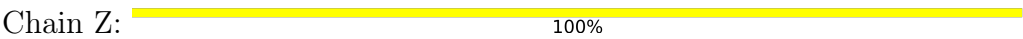
Chain X: 29% 66%



● Molecule 28: SCP-Y



● Molecule 29: RNA



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	91642	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 ($e^-/\text{\AA}^2$)	42	Depositor
Minimum defocus (nm)	2000	Depositor
Maximum defocus (nm)	4000	Depositor
Magnification	27500	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.276	Depositor
Minimum map value	-0.124	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.008	Depositor
Recommended contour level	0.03	Depositor
Map size (Å)	503.03998, 503.03998, 503.03998	wwPDB
Map dimensions	192, 192, 192	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	2.62, 2.62, 2.62	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.74	4/11727 (0.0%)	1.21	95/15833 (0.6%)
2	B	0.85	1/9503 (0.0%)	1.26	61/12831 (0.5%)
3	C	0.74	0/2259	1.16	14/3073 (0.5%)
4	D	0.34	0/1077	0.91	2/1446 (0.1%)
5	E	0.55	0/1753	1.14	6/2368 (0.3%)
6	F	0.59	0/700	1.04	2/946 (0.2%)
7	G	0.41	0/1382	0.99	9/1874 (0.5%)
8	H	0.52	0/1227	0.98	2/1654 (0.1%)
9	I	0.43	0/1038	1.20	8/1407 (0.6%)
10	J	0.78	0/542	1.26	5/730 (0.7%)
11	K	0.66	0/956	1.08	6/1294 (0.5%)
12	L	0.65	0/394	1.10	2/524 (0.4%)
13	M	0.56	0/2429	1.18	20/3281 (0.6%)
14	N	0.31	0/945	0.93	2/1274 (0.2%)
15	O	0.38	0/816	0.88	0/1105
16	P	0.41	0/1489	1.00	5/2005 (0.2%)
17	Q	0.41	0/1507	1.03	5/2023 (0.2%)
18	R	0.90	4/1380 (0.3%)	1.53	18/1854 (1.0%)
19	S	0.34	0/1167	0.84	3/1576 (0.2%)
20	T	0.38	0/1817	1.05	10/2445 (0.4%)
21	V	1.92	81/3931 (2.1%)	2.37	254/5298 (4.8%)
22	W	2.05	130/5460 (2.4%)	2.43	354/7390 (4.8%)
23	0	2.08	32/1506 (2.1%)	2.31	71/2038 (3.5%)
24	1	1.30	1/496 (0.2%)	1.80	13/669 (1.9%)
25	2	1.23	0/2243	1.70	38/3024 (1.3%)
26	3	1.28	0/1548	1.56	15/2090 (0.7%)
27	X	0.65	2/1917 (0.1%)	1.04	14/2962 (0.5%)
28	Y	0.66	2/1880 (0.1%)	1.05	23/2896 (0.8%)
29	Z	0.19	0/139	0.32	0/215
All	All	1.07	257/63228 (0.4%)	1.47	1057/86125 (1.2%)

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	2
8	H	0	1
15	O	0	1
16	P	0	1
17	Q	0	2
18	R	0	20
20	T	0	1
21	V	0	16
22	W	0	18
23	0	0	2
24	1	0	1
25	2	0	8
27	X	0	3
28	Y	0	3
All	All	0	79

The worst 5 of 257 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
18	R	206	LYS	CA-C	11.31	1.67	1.53
23	0	142	GLU	N-CA	-10.03	1.37	1.45
23	0	158	HIS	CA-C	9.99	1.65	1.52
23	0	99	ASN	CA-CB	9.65	1.63	1.53
22	W	465	ASP	CA-C	9.09	1.64	1.52

The worst 5 of 1057 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	I	84	HIS	C-N-CD	-16.35	57.95	125.00
13	M	94	ASP	N-CA-C	-15.28	90.41	114.09
18	R	206	LYS	N-CA-C	15.18	128.07	107.73
2	B	882	SER	N-CA-C	-14.44	91.01	111.81
1	A	413	TYR	CA-C-N	-13.85	106.70	120.83

There are no chirality outliers.

5 of 79 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1291	ASN	Sidechain
1	A	210	GLN	Mainchain
8	H	99	ILE	Peptide
15	O	86	GLU	Sidechain
16	P	242	GLN	Sidechain

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	11515	0	11608	544	0
2	B	9317	0	9307	427	0
3	C	2213	0	2153	99	0
4	D	1062	0	1042	15	0
5	E	1723	0	1745	66	0
6	F	689	0	715	11	0
7	G	1351	0	1358	42	0
8	H	1205	0	1167	50	0
9	I	1013	0	930	83	0
10	J	533	0	553	41	0
11	K	937	0	959	26	0
12	L	388	0	393	27	0
13	M	2391	0	2410	166	0
14	N	930	0	888	34	0
15	O	806	0	818	25	0
16	P	1462	0	1548	54	0
17	Q	1484	0	1498	216	0
18	R	1357	0	1381	228	0
19	S	1138	0	1103	42	0
20	T	1788	0	1819	97	0
21	V	3855	0	3871	137	0
22	W	5348	0	5373	124	0
23	0	1479	0	1524	45	0
24	1	491	0	507	237	0
25	2	2196	0	2206	586	0
26	3	1526	0	1561	476	0
27	X	1710	0	941	67	0
28	Y	1681	0	932	55	0
29	Z	125	0	67	10	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
30	A	2	0	0	0	0
31	A	2	0	0	0	0
31	B	1	0	0	0	0
31	C	1	0	0	0	0
31	I	2	0	0	0	0
31	J	1	0	0	0	0
31	L	1	0	0	0	0
31	M	1	0	0	0	0
31	Q	1	0	0	0	0
All	All	61725	0	60377	3267	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 27.

The worst 5 of 3267 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)
26:3:59:VAL:HG12	26:3:71:TYR:CD1	1.24	1.66
21:V:516:PRO:CG	24:1:15:ALA:HB3	1.21	1.65
1:A:1171:ALA:CB	9:I:59:THR:HG21	1.18	1.59
18:R:223:VAL:CG2	18:R:224:THR:HG21	1.29	1.59
21:V:315:VAL:HG13	22:W:500:ASP:CB	1.21	1.57

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	1450/1970 (74%)	1268 (87%)	120 (8%)	62 (4%)	2	17
2	B	1163/1174 (99%)	996 (86%)	116 (10%)	51 (4%)	2	17

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	C	273/275 (99%)	239 (88%)	25 (9%)	9 (3%)	3	21
4	D	127/142 (89%)	119 (94%)	8 (6%)	0	100	100
5	E	208/210 (99%)	191 (92%)	11 (5%)	6 (3%)	3	23
6	F	84/127 (66%)	82 (98%)	2 (2%)	0	100	100
7	G	169/172 (98%)	158 (94%)	10 (6%)	1 (1%)	21	59
8	H	148/150 (99%)	118 (80%)	20 (14%)	10 (7%)	1	11
9	I	123/125 (98%)	92 (75%)	16 (13%)	15 (12%)	0	4
10	J	65/67 (97%)	51 (78%)	9 (14%)	5 (8%)	1	9
11	K	115/117 (98%)	109 (95%)	4 (4%)	2 (2%)	7	36
12	L	44/58 (76%)	33 (75%)	9 (20%)	2 (4%)	2	16
13	M	308/316 (98%)	263 (85%)	32 (10%)	13 (4%)	2	17
14	N	109/376 (29%)	101 (93%)	6 (6%)	2 (2%)	6	34
15	O	97/109 (89%)	95 (98%)	2 (2%)	0	100	100
16	P	183/339 (54%)	170 (93%)	6 (3%)	7 (4%)	2	19
17	Q	176/439 (40%)	158 (90%)	10 (6%)	8 (4%)	2	16
18	R	163/291 (56%)	140 (86%)	14 (9%)	9 (6%)	1	14
19	S	134/517 (26%)	120 (90%)	10 (8%)	4 (3%)	3	22
20	T	218/249 (88%)	190 (87%)	20 (9%)	8 (4%)	2	19
21	V	473/782 (60%)	398 (84%)	47 (10%)	28 (6%)	1	13
22	W	661/760 (87%)	570 (86%)	69 (10%)	22 (3%)	3	21
23	0	186/395 (47%)	168 (90%)	13 (7%)	5 (3%)	4	25
24	1	60/71 (84%)	53 (88%)	5 (8%)	2 (3%)	3	21
25	2	264/462 (57%)	246 (93%)	14 (5%)	4 (2%)	8	39
26	3	187/308 (61%)	176 (94%)	9 (5%)	2 (1%)	11	46
All	All	7188/10001 (72%)	6304 (88%)	607 (8%)	277 (4%)	4	18

5 of 277 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	132	LYS
1	A	153	ILE
1	A	204	HIS
1	A	205	VAL
1	A	207	GLU

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	1279/1748 (73%)	1234 (96%)	45 (4%)	32	53
2	B	1020/1028 (99%)	979 (96%)	41 (4%)	28	49
3	C	252/252 (100%)	244 (97%)	8 (3%)	34	55
4	D	119/126 (94%)	118 (99%)	1 (1%)	73	80
5	E	192/192 (100%)	186 (97%)	6 (3%)	35	56
6	F	74/111 (67%)	74 (100%)	0	100	100
7	G	152/153 (99%)	151 (99%)	1 (1%)	76	81
8	H	131/131 (100%)	126 (96%)	5 (4%)	29	50
9	I	112/112 (100%)	106 (95%)	6 (5%)	20	41
10	J	56/56 (100%)	54 (96%)	2 (4%)	31	52
11	K	106/106 (100%)	105 (99%)	1 (1%)	70	79
12	L	43/55 (78%)	41 (95%)	2 (5%)	23	44
13	M	263/268 (98%)	256 (97%)	7 (3%)	39	60
14	N	105/324 (32%)	104 (99%)	1 (1%)	68	78
15	O	90/98 (92%)	89 (99%)	1 (1%)	65	76
16	P	159/293 (54%)	157 (99%)	2 (1%)	61	74
17	Q	164/373 (44%)	160 (98%)	4 (2%)	43	63
18	R	150/261 (58%)	138 (92%)	12 (8%)	11	31
19	S	121/448 (27%)	118 (98%)	3 (2%)	42	62
20	T	196/218 (90%)	190 (97%)	6 (3%)	35	56
21	V	422/688 (61%)	406 (96%)	16 (4%)	29	50
22	W	577/664 (87%)	545 (94%)	32 (6%)	19	41
23	0	171/352 (49%)	163 (95%)	8 (5%)	23	44
24	1	56/64 (88%)	52 (93%)	4 (7%)	13	35
25	2	238/399 (60%)	229 (96%)	9 (4%)	29	50
26	3	171/272 (63%)	161 (94%)	10 (6%)	18	39

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	6419/8792 (73%)	6186 (96%)	233 (4%)	32 52

5 of 233 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
11	K	48	SER
25	2	430	VAL
18	R	225	VAL
25	2	421	LEU
22	W	664	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 97 such sidechains are listed below:

Mol	Chain	Res	Type
18	R	117	GLN
22	W	203	ASN
20	T	86	GLN
21	V	539	ASN
23	0	60	HIS

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
29	Z	5/6 (83%)	0	0

There are no RNA backbone outliers to report.

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 12 ligands modelled in this entry, 12 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.

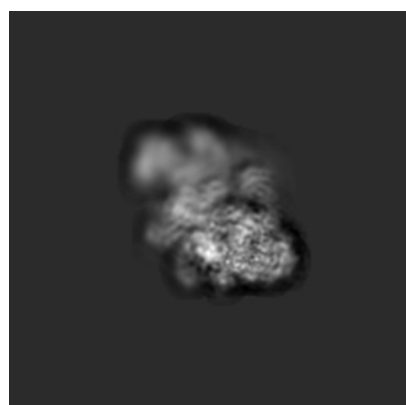
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-8134. These allow visual inspection of the internal detail of the map and identification of artifacts.

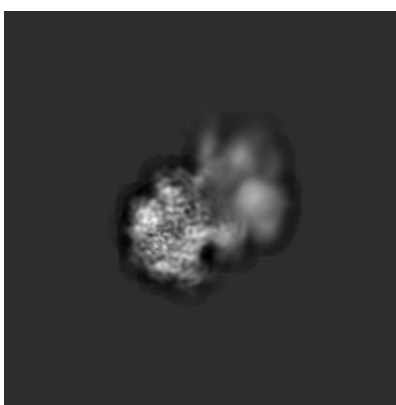
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

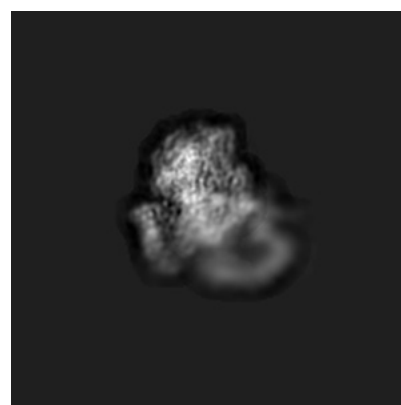
6.1.1 Primary map



X



Y

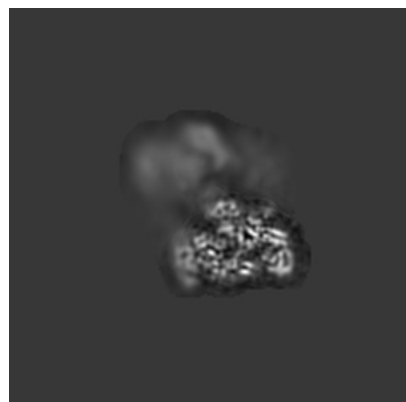


Z

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

6.2 Central slices [i](#)

6.2.1 Primary map



X Index: 96



Y Index: 96

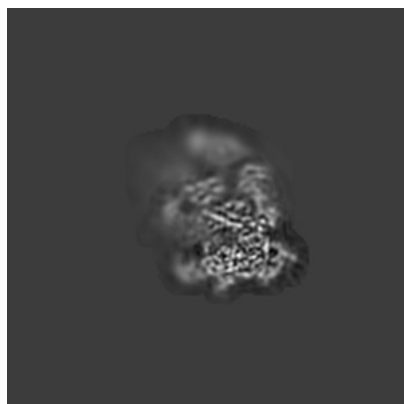


Z Index: 96

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

6.3 Largest variance slices [i](#)

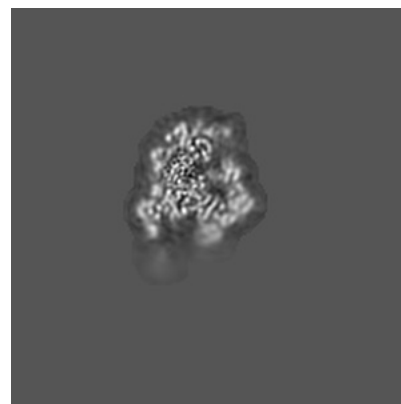
6.3.1 Primary map



X Index: 87



Y Index: 97



Z Index: 75

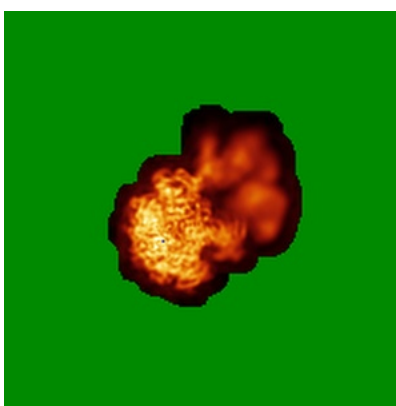
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

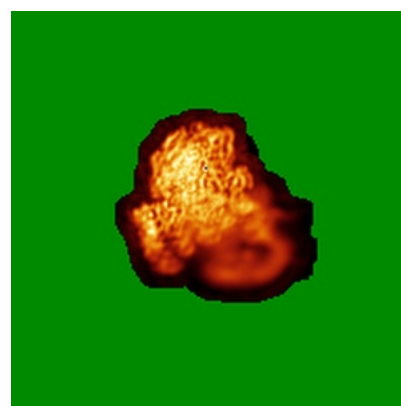
6.4.1 Primary map



X



Y

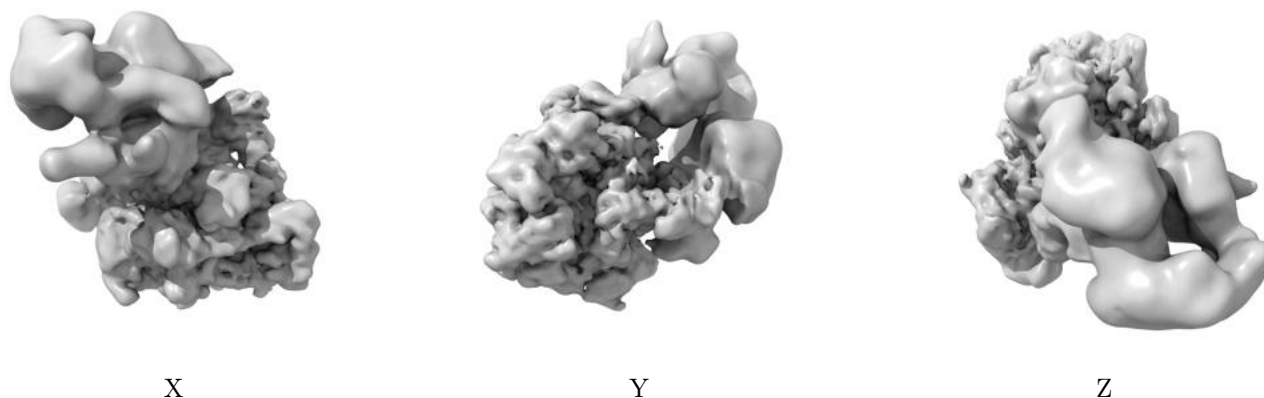


Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.03. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

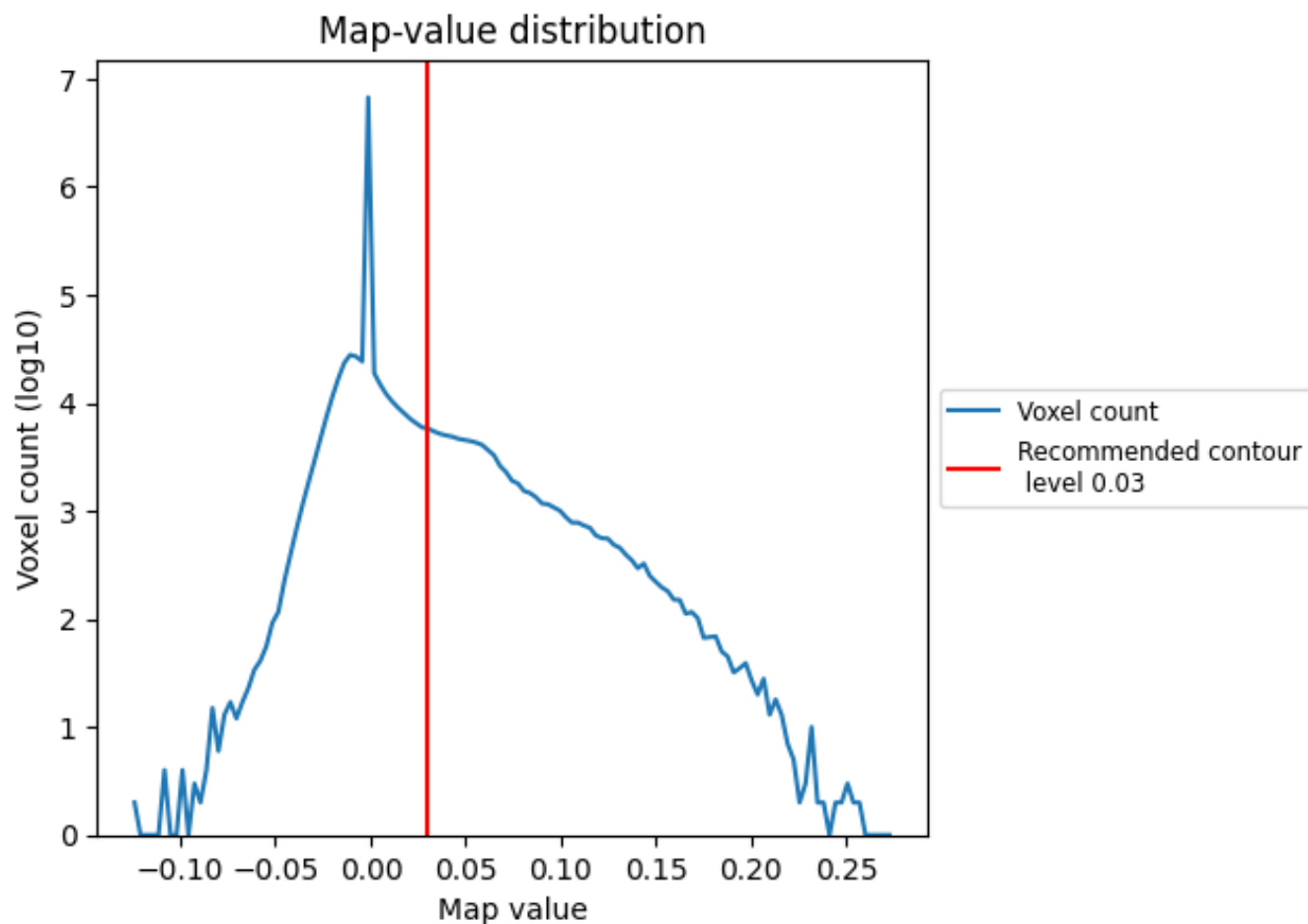
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

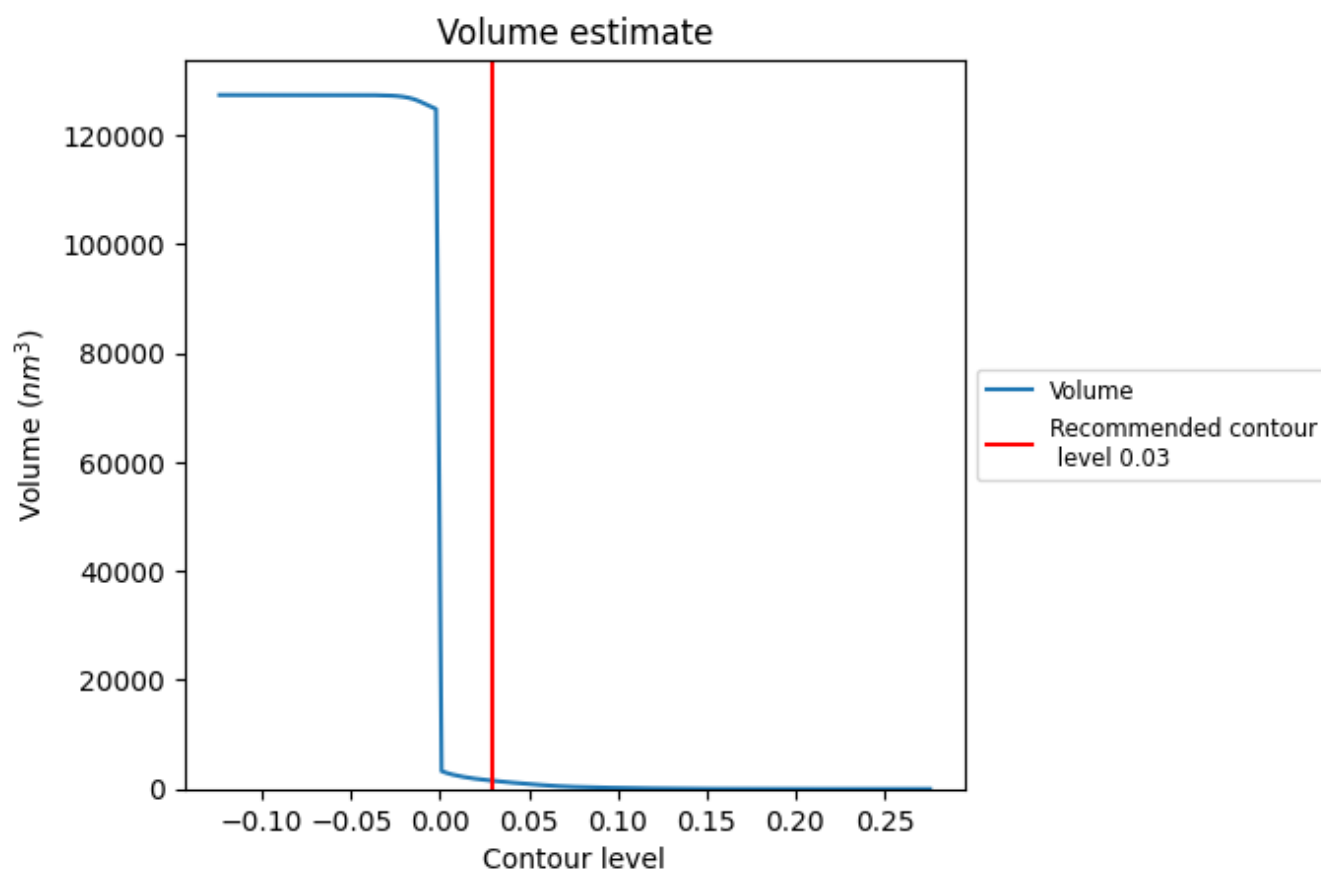
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

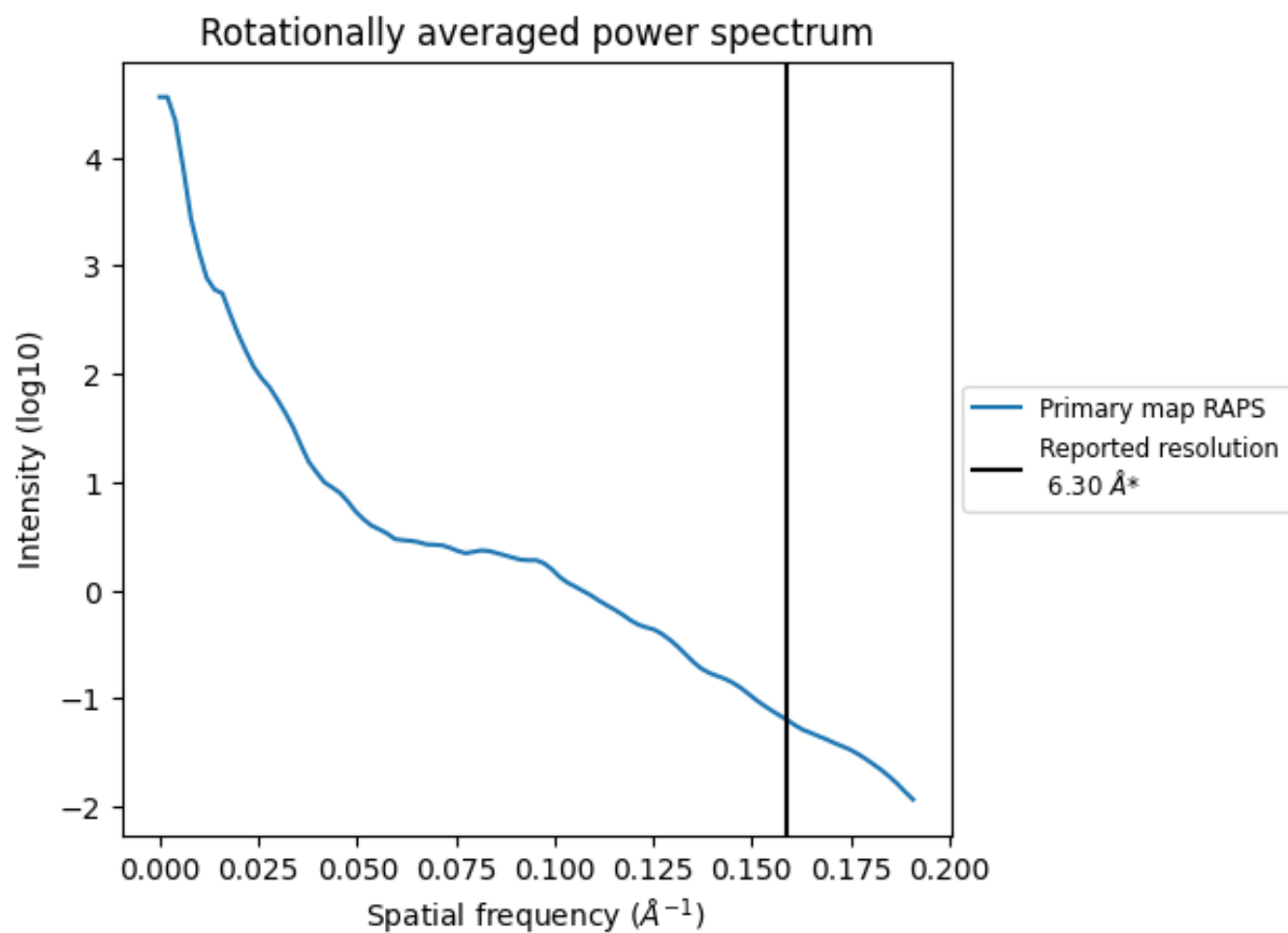
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1495 nm³; this corresponds to an approximate mass of 1350 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 ⓘ

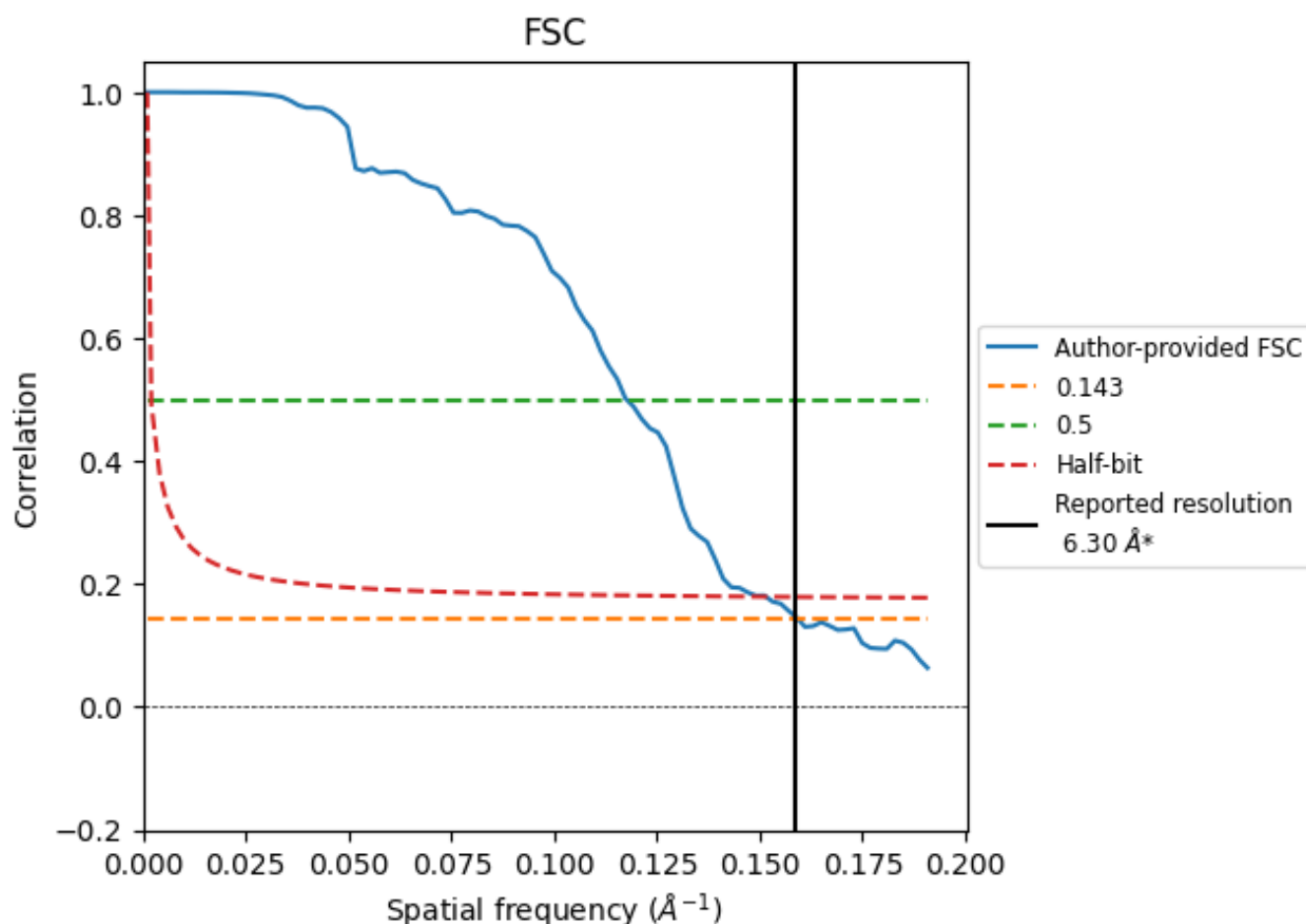


*Reported resolution corresponds to spatial frequency of 0.159 $\text{\AA}^{-1}$

8 Fourier-Shell correlation [i](#)

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 [i](#)



*Reported resolution corresponds to spatial frequency of 0.159 Å⁻¹

8.2 Resolution estimates [i](#)

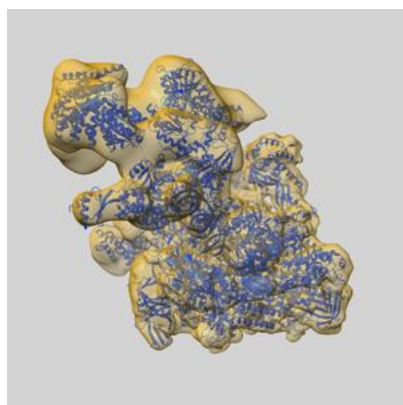
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	6.30	-	-
Author-provided FSC curve	6.28	8.50	6.60
Unmasked-calculated*	-	-	-

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

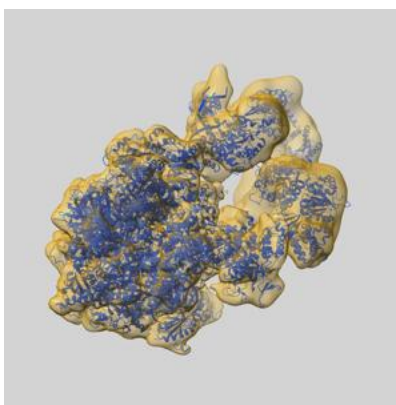
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-8134 and PDB model 5IY9. Per-residue inclusion information can be found in section 3 on page 10.

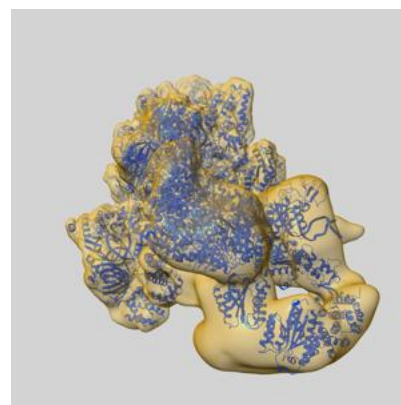
9.1 Map-model overlay [i](#)



X



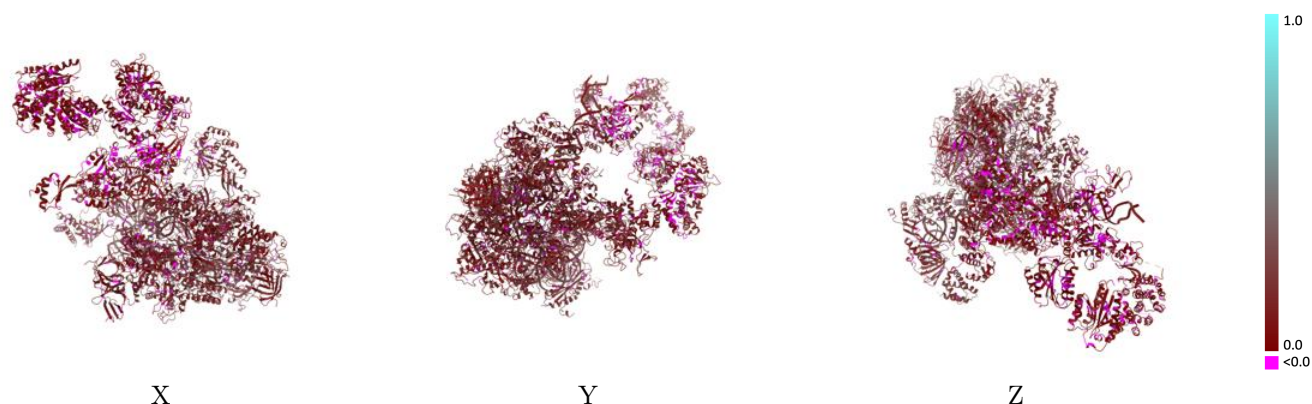
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.03 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)

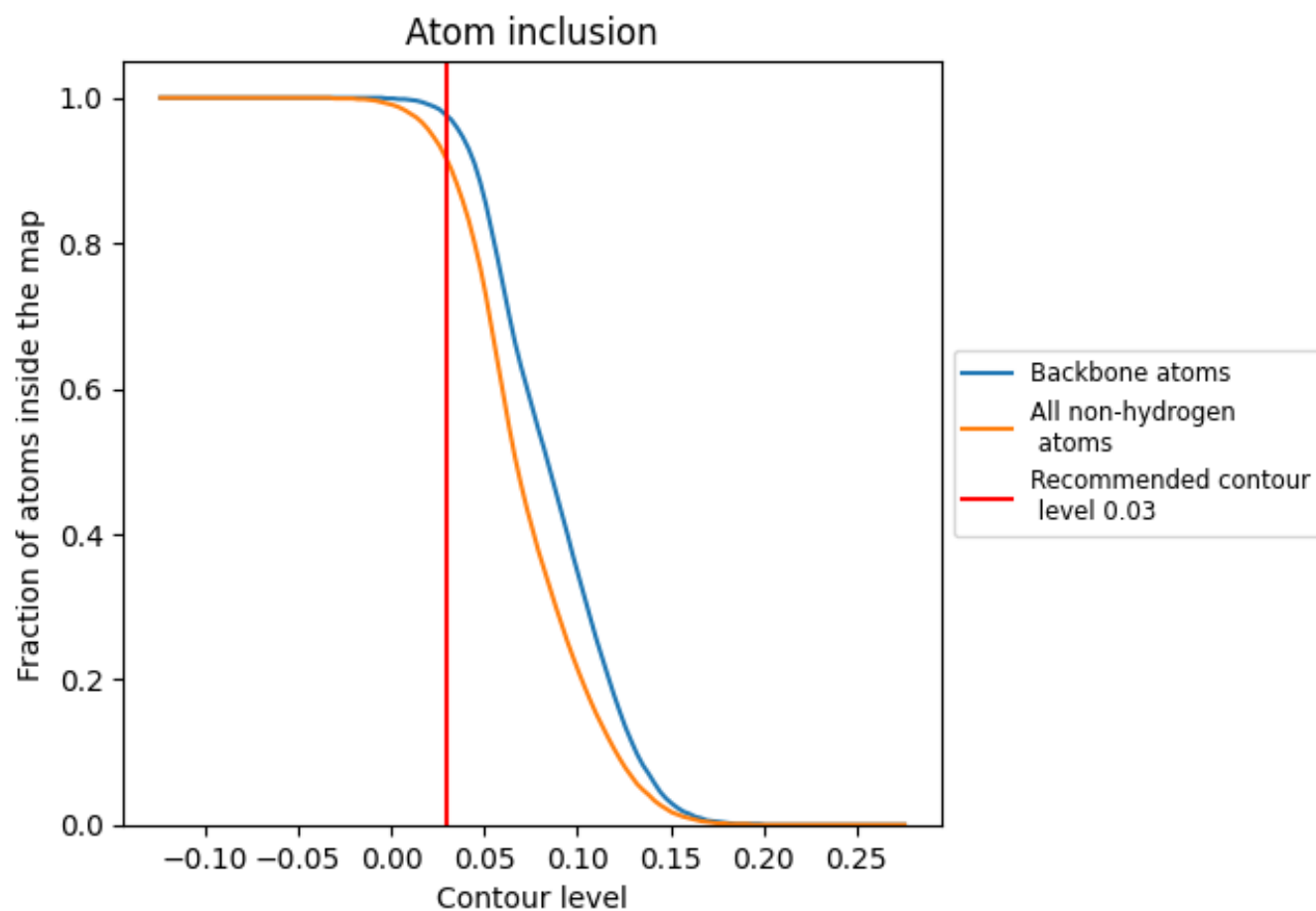


The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model [i](#)

This section was not generated.

9.4 Atom inclusion ⓘ



At the recommended contour level, 98% of all backbone atoms, 91% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.03) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9140	 0.1320
0	 0.9530	 0.0630
1	 0.9530	 0.0690
2	 0.9090	 0.0740
3	 0.9440	 0.0530
A	 0.8890	 0.1560
B	 0.8800	 0.1570
C	 0.9470	 0.1600
D	 0.9500	 0.1400
E	 0.9290	 0.1510
F	 0.8650	 0.1620
G	 0.9560	 0.1330
H	 0.9510	 0.1530
I	 0.9160	 0.1470
J	 0.9330	 0.1560
K	 0.9320	 0.1680
L	 0.9620	 0.1770
M	 0.8790	 0.1520
N	 0.9660	 0.1470
O	 0.9750	 0.1370
P	 0.9660	 0.1480
Q	 0.9300	 0.1300
R	 0.8940	 0.1250
S	 0.9080	 0.1190
T	 0.9250	 0.1440
V	 0.9290	 0.0650
W	 0.9180	 0.0590
X	 0.9010	 0.1710
Y	 0.9650	 0.1910
Z	 0.9360	 0.2190

