



wwPDB EM Validation Summary Report ⓘ

Nov 1, 2022 – 06:30 PM EDT

PDB ID : 5IY9
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:

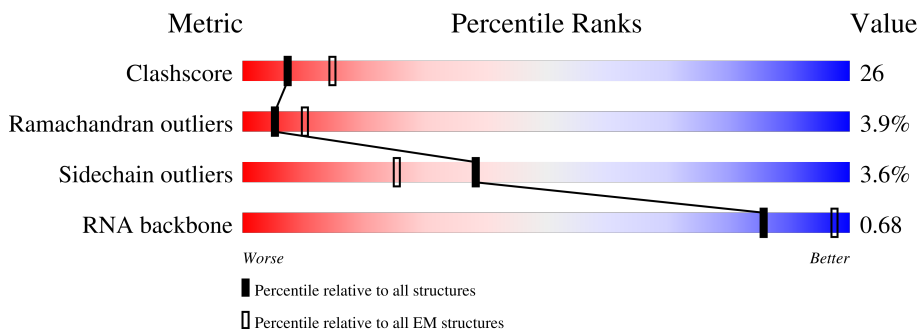
EMDB validation analysis : 0.0.1.dev43
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.2

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 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.







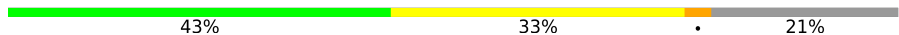



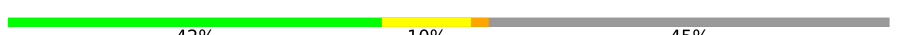




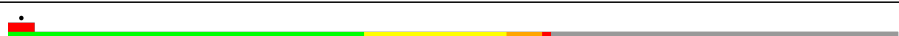


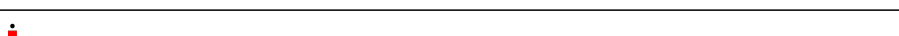
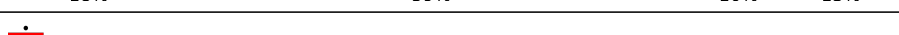
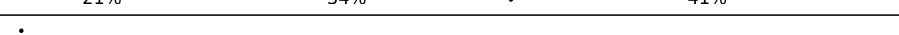

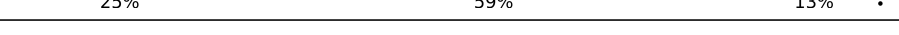
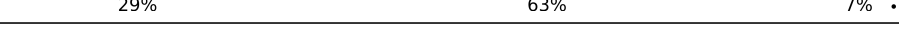
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	
2	B	1174	
3	C	275	
4	D	142	
5	E	210	
6	F	127	
7	G	172	

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Mol	Chain	Length	Quality of chain
8	H	150	 56% 39% 5%
9	I	125	 5% 54% 34% 10%
10	J	67	 60% 31% 9%
11	K	117	 70% 29%
12	L	58	 43% 33% 21%
13	M	316	 70% 23%
14	N	376	 21% 9% 70%
15	O	109	 61% 29% 9%
16	P	339	 42% 10% 45%
17	Q	439	 22% 17% 59%
18	R	291	 37% 12% 43%
19	S	517	 18% 9% 73%
20	T	249	 57% 28% 11%
21	V	782	 40% 16% 39%
22	W	760	 6% 59% 23% 5% 12%
23	0	395	 32% 13% 52%
24	1	71	 18% 59% 10% 13%
25	2	462	 21% 34% 41%
26	3	308	 16% 42% 5% 37%
27	X	83	 25% 59% 13%
28	Y	83	 29% 63% 7%
29	Z	6	 100%

2 Entry composition [i](#)

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
			Total	C	N	O	S		
1	A	1454	11515	7234	2058	2150	73	0	0

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

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

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

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

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

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

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	F	86	689	437	120	127	5	0	0

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- Molecule 29 is a RNA chain called RNA.

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

- Molecule 30 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

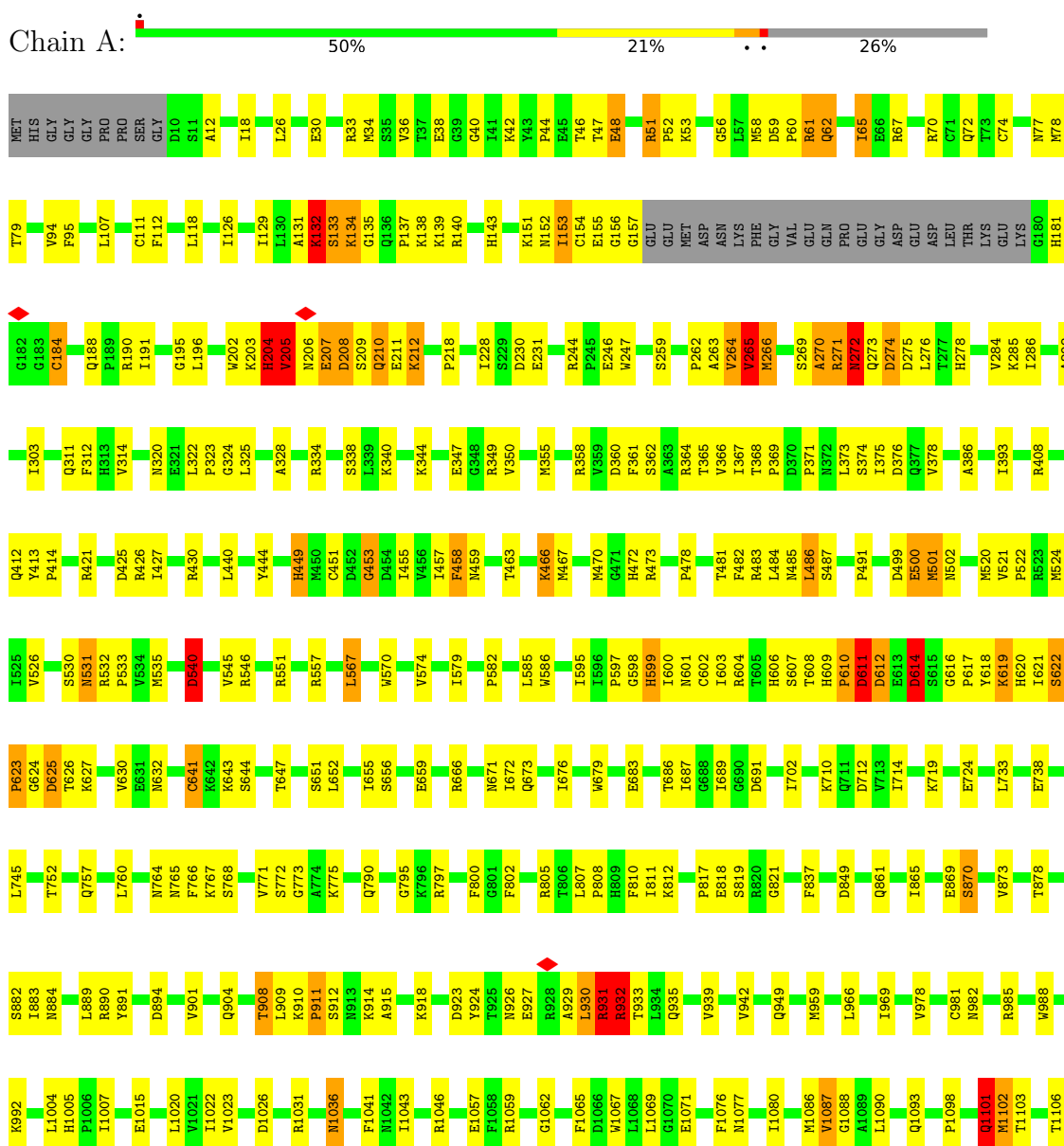
- Molecule 31 is ZINC ION (three-letter code: ZN) (formula: Zn).

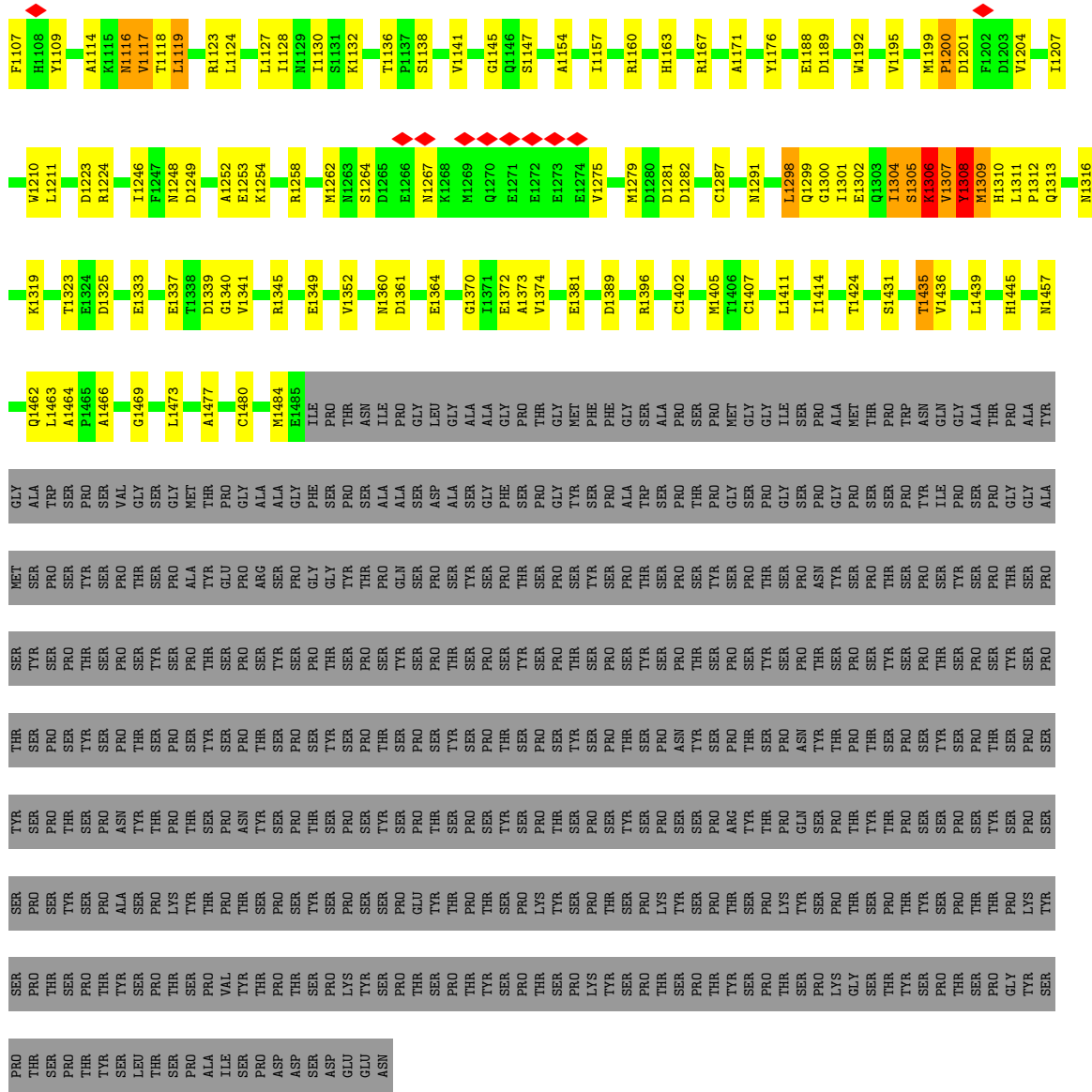
Mol	Chain	Residues	Atoms		AltConf
			Total	Zn	
31	A	2	2	2	0
31	B	1	1	1	0
31	C	1	1	1	0
31	I	2	2	2	0
31	J	1	1	1	0
31	L	1	1	1	0
31	M	1	1	1	0
31	Q	1	1	1	0

3 Residue-property plots [i](#)

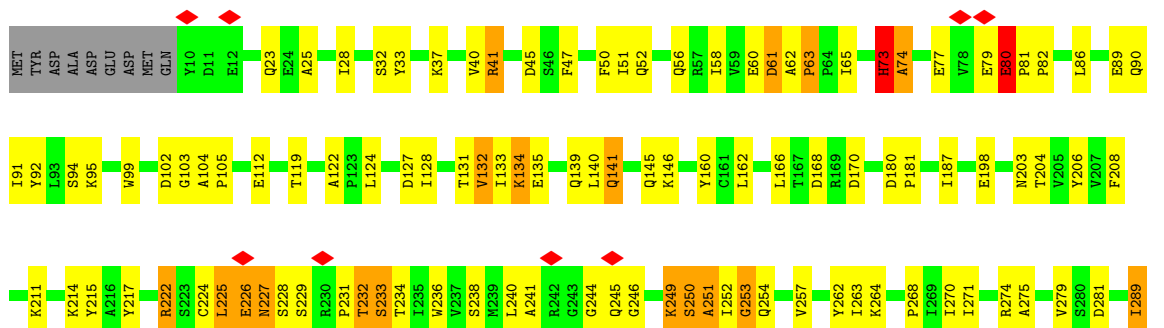
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

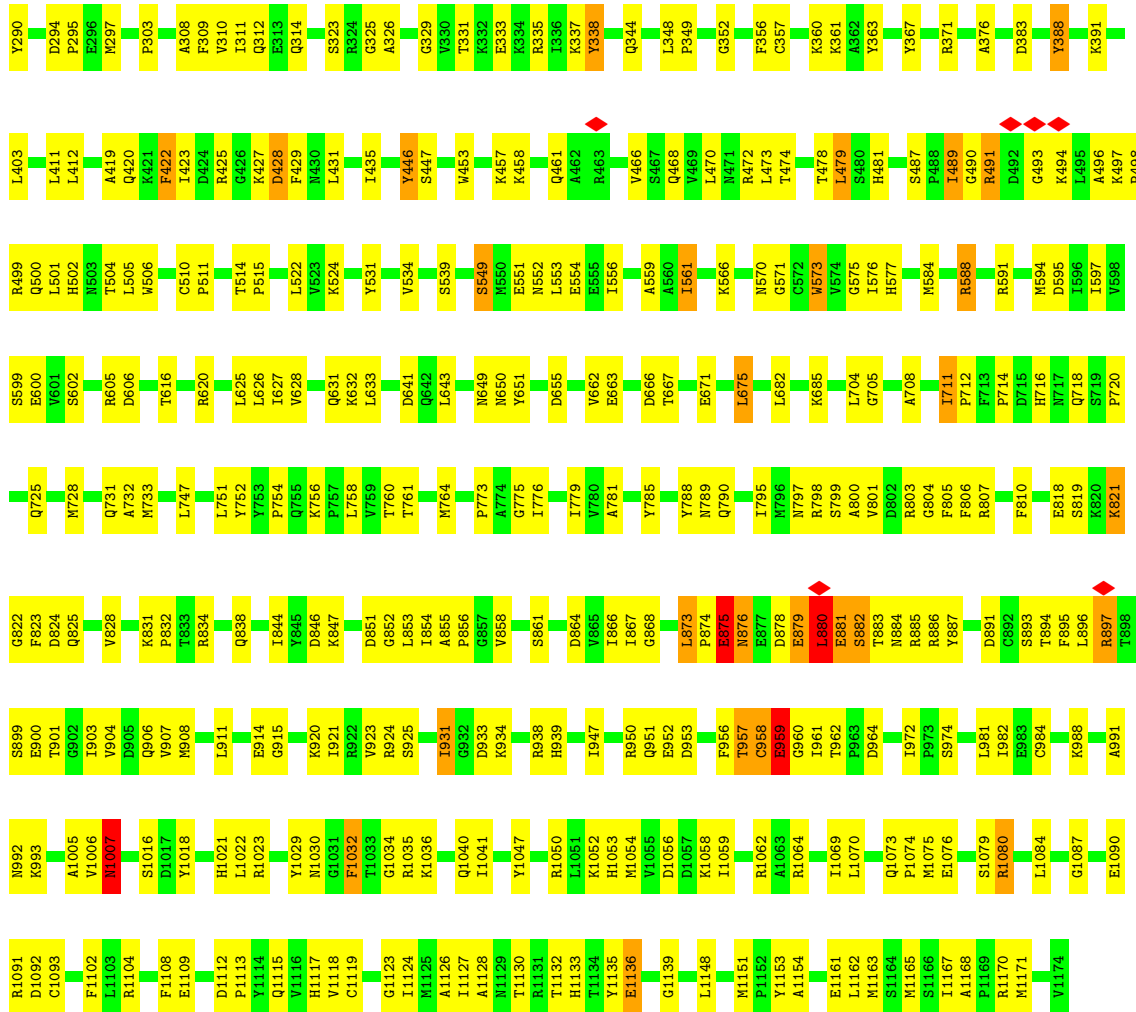
- Molecule 1: DNA-directed RNA polymerase II subunit RPB1



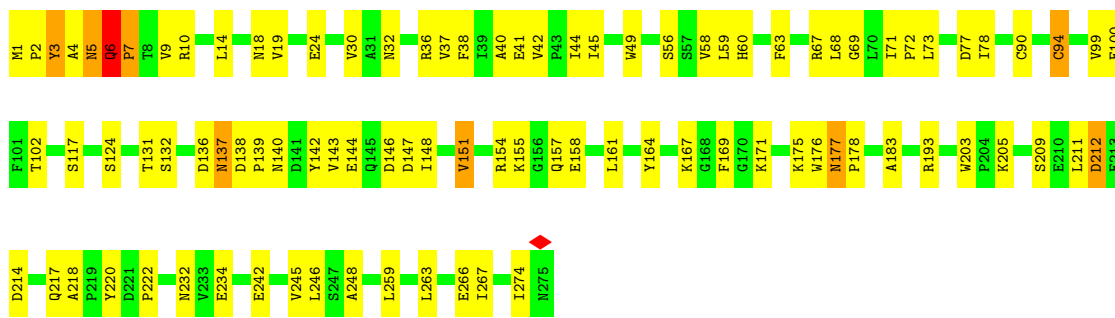


● Molecule 2: DNA-directed RNA polymerase II subunit RPB2

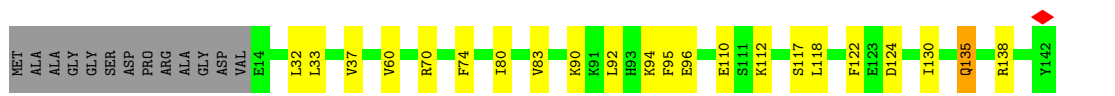
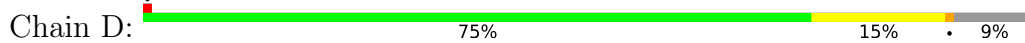




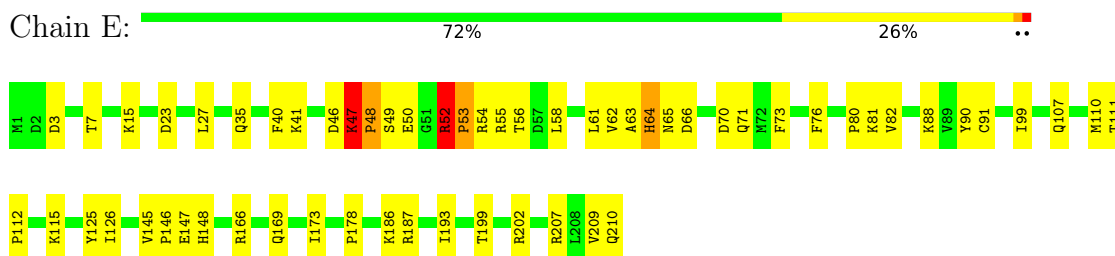
• Molecule 3: DNA-directed RNA polymerase II subunit RPB3



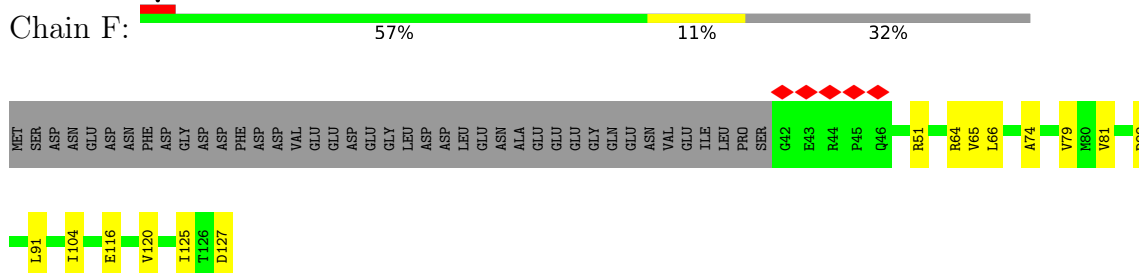
• Molecule 4: DNA-directed RNA polymerase II subunit RPB4



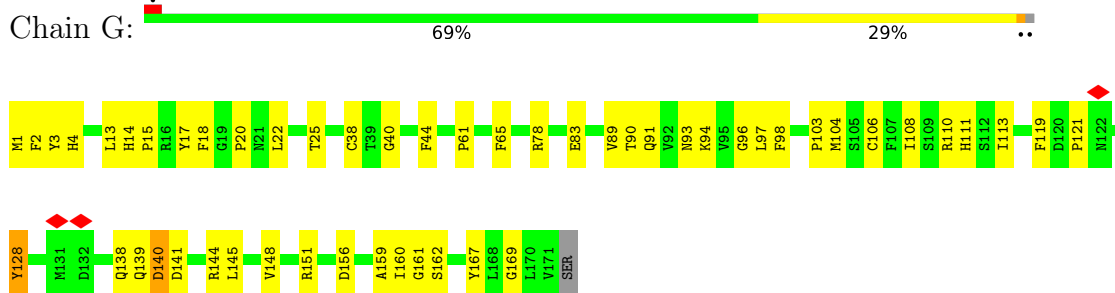
- Molecule 5: DNA-directed RNA polymerase II subunit RPB5



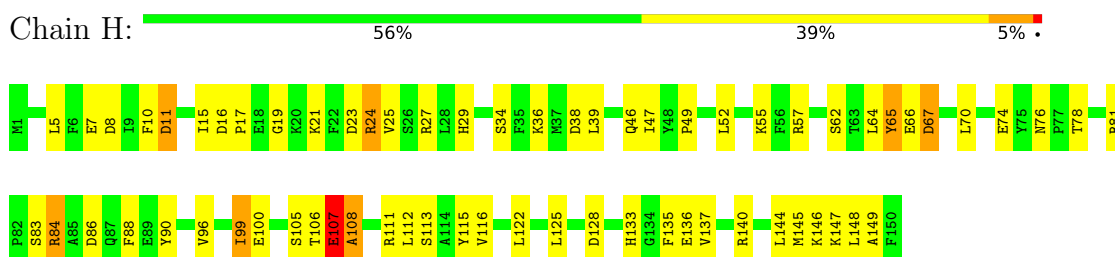
- Molecule 6: DNA-directed RNA polymerase II subunit RPB6



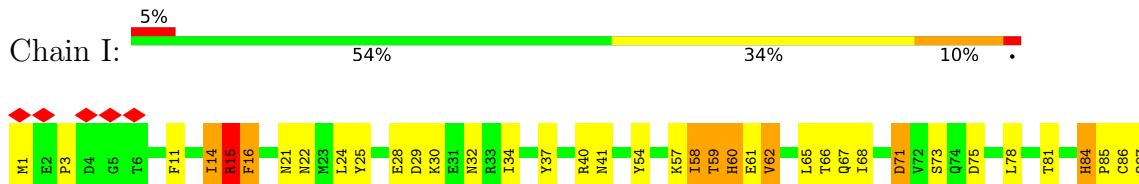
- Molecule 7: DNA-directed RNA polymerase II subunit RPB7

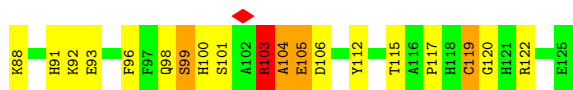


- Molecule 8: DNA-directed RNA polymerase II subunit RPB8

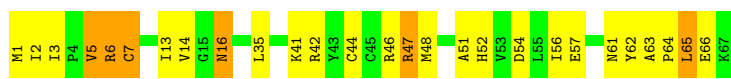


- Molecule 9: DNA-directed RNA polymerase II subunit RPB9

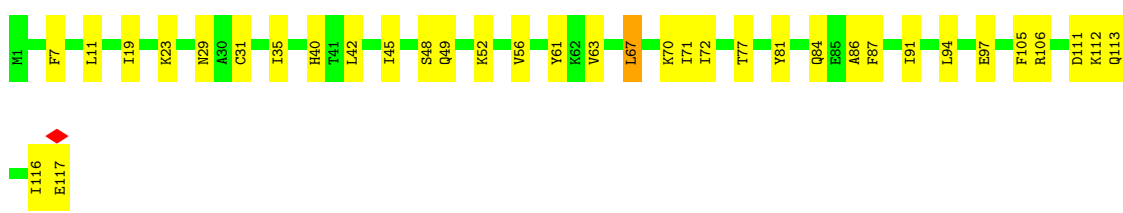




- Molecule 10: DNA-directed RNA polymerase II subunit RPB10



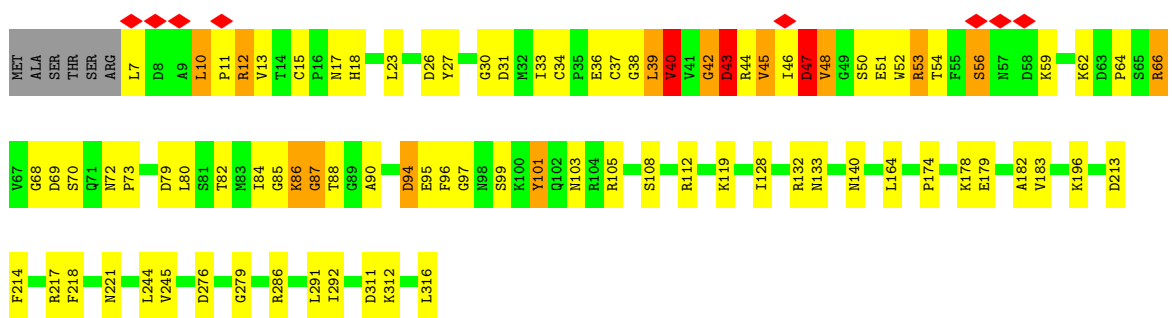
- Molecule 11: DNA-directed RNA polymerase II subunit RPB11-a



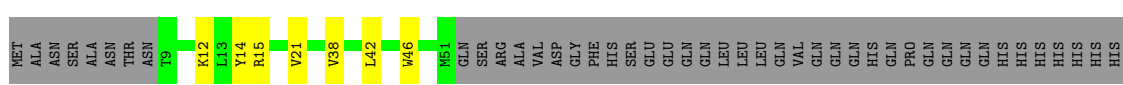
- Molecule 12: DNA-directed RNA polymerase II subunit RPB12

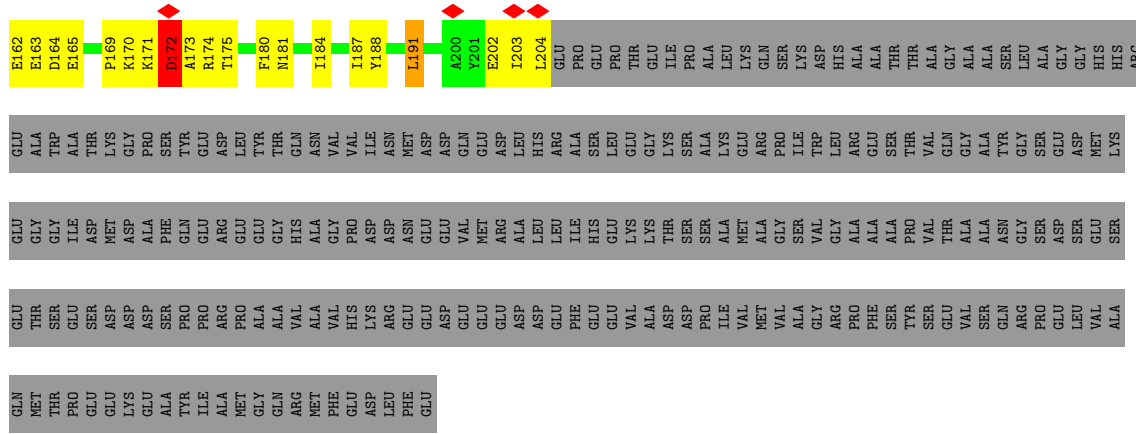


- Molecule 13: Transcription initiation factor IIB

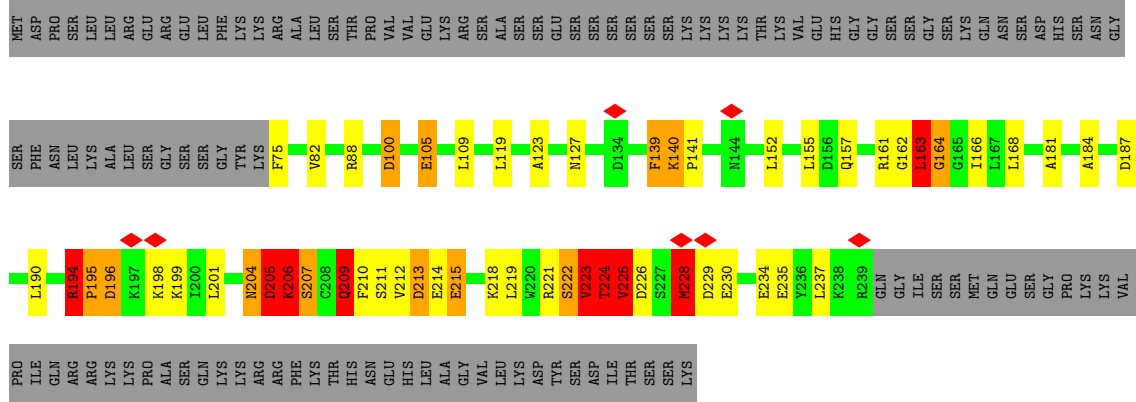
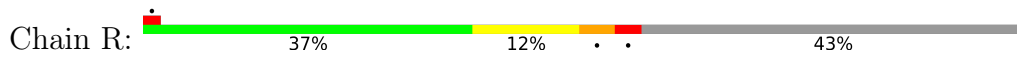


- Molecule 14: Transcription initiation factor IIA subunit 1

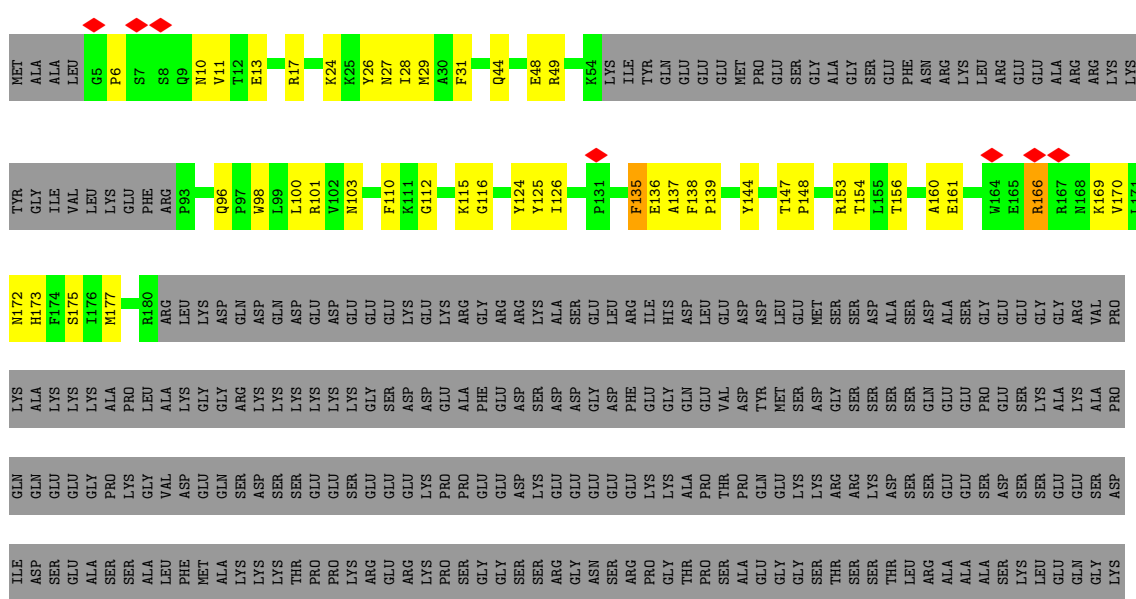




• Molecule 18: Transcription initiation factor IIE subunit beta

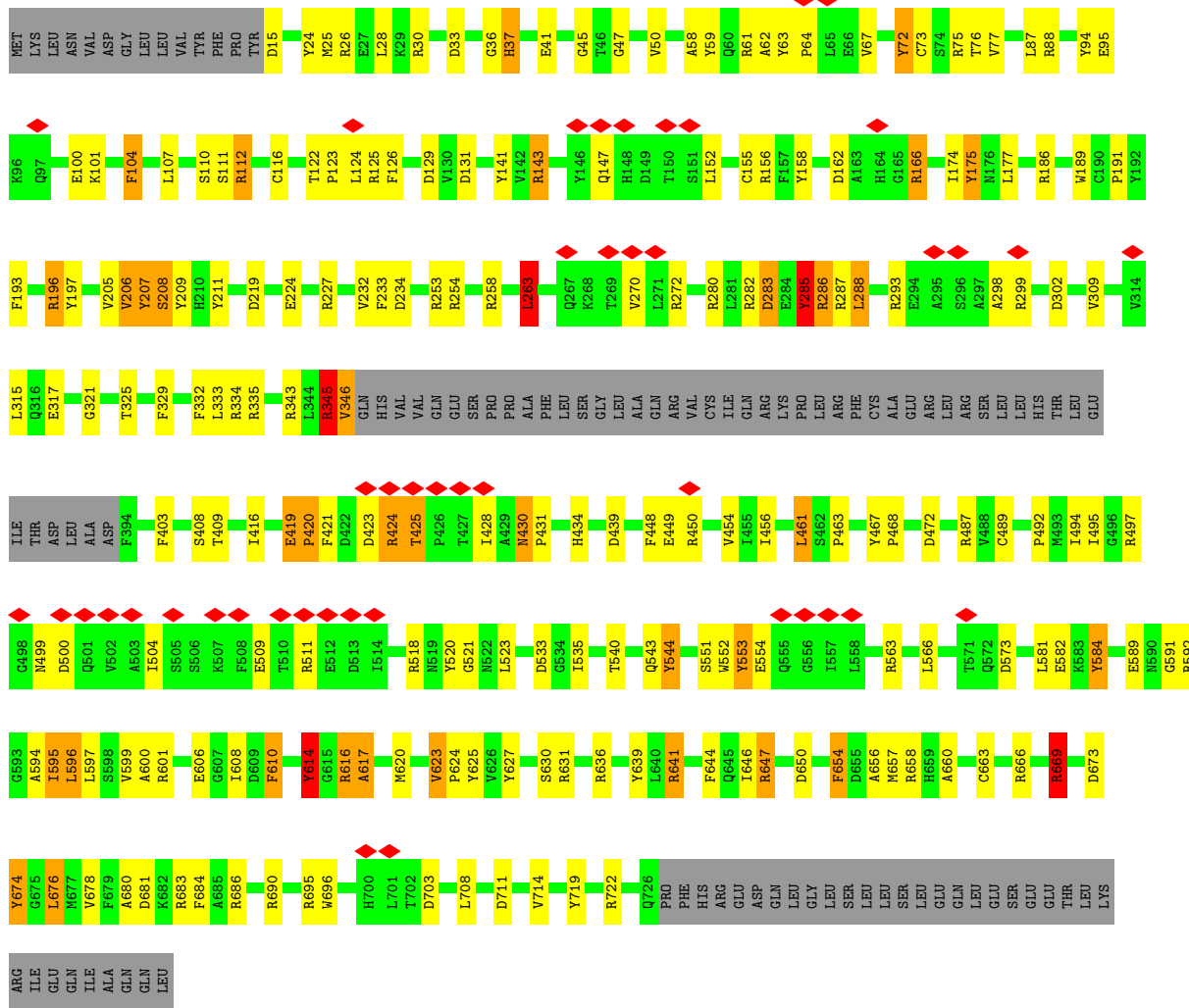


• Molecule 19: General transcription factor IIF subunit 1

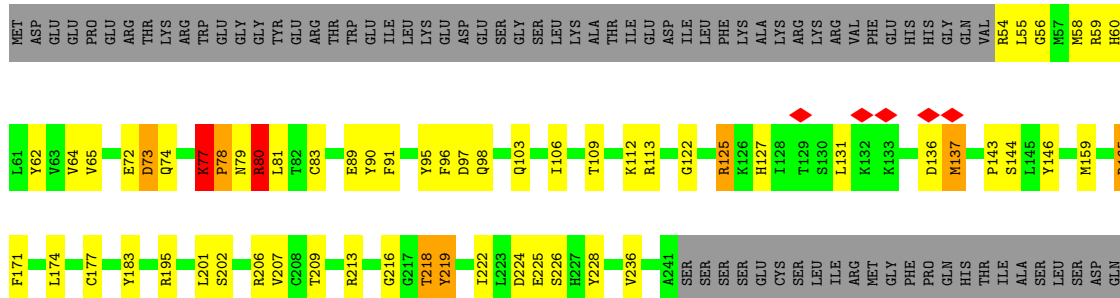
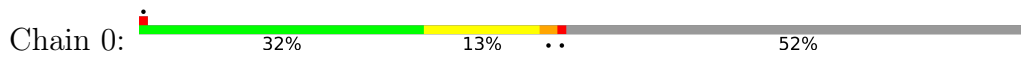


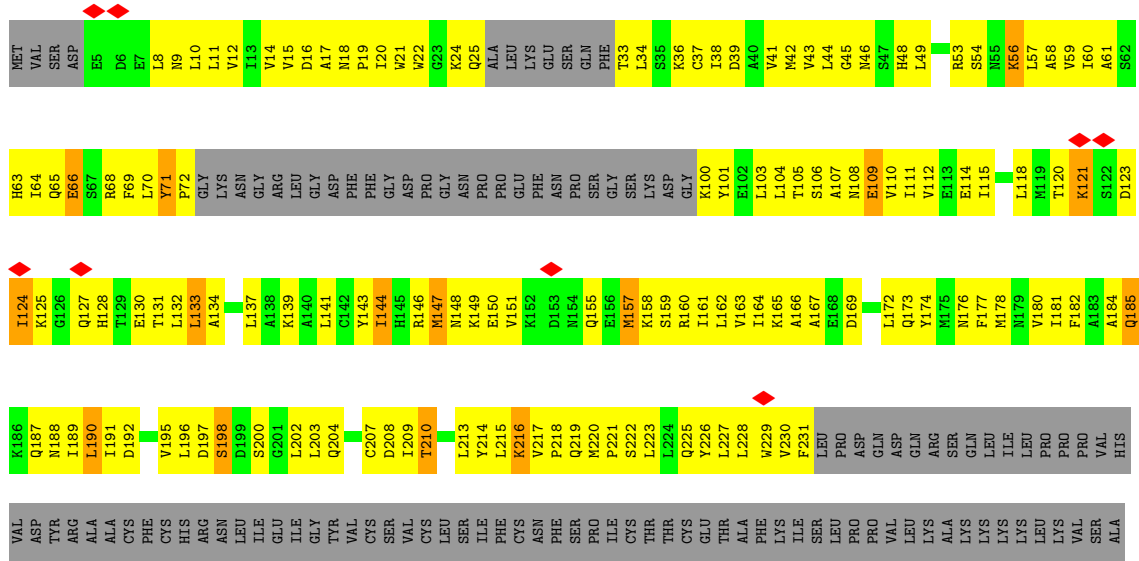
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• Molecule 22: TFIIF basal transcription factor complex helicase XPD subunit

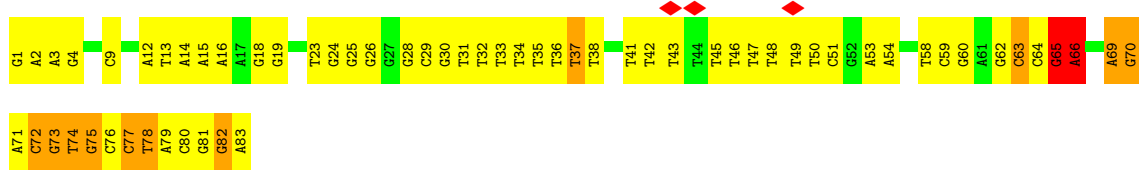
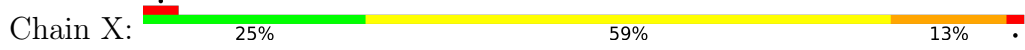


• Molecule 23: General transcription factor IIH subunit 2

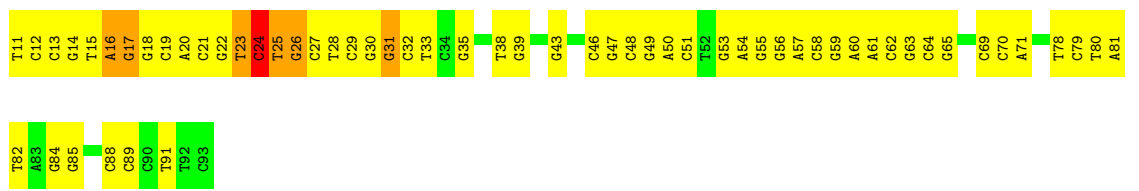
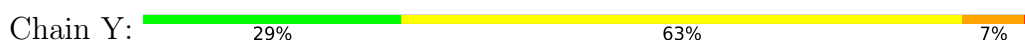




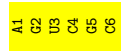
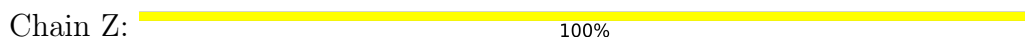
● Molecule 27: SCP-X



● 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 (\AA)	503.03998, 503.03998, 503.03998	wwPDB
Map dimensions	192, 192, 192	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	2.62, 2.62, 2.62	Depositor

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: 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	0.56	1/11727 (0.0%)	0.81	15/15833 (0.1%)
2	B	0.67	3/9503 (0.0%)	0.87	8/12831 (0.1%)
3	C	0.54	0/2259	0.76	1/3073 (0.0%)
4	D	0.27	0/1077	0.52	0/1446
5	E	0.43	0/1753	0.85	1/2368 (0.0%)
6	F	0.44	0/700	0.71	0/946
7	G	0.32	0/1382	0.58	0/1874
8	H	0.45	0/1227	0.71	1/1654 (0.1%)
9	I	0.38	0/1038	1.06	4/1407 (0.3%)
10	J	0.66	1/542 (0.2%)	0.89	0/730
11	K	0.50	0/956	0.72	1/1294 (0.1%)
12	L	0.56	0/394	0.73	0/524
13	M	0.42	0/2429	0.73	3/3281 (0.1%)
14	N	0.24	0/945	0.52	0/1274
15	O	0.34	0/816	0.53	0/1105
16	P	0.29	0/1489	0.54	0/2005
17	Q	0.29	0/1507	0.63	1/2023 (0.0%)
18	R	0.67	4/1380 (0.3%)	1.13	6/1854 (0.3%)
19	S	0.27	0/1167	0.54	0/1576
20	T	0.28	0/1817	0.66	2/2445 (0.1%)
21	V	1.46	15/3931 (0.4%)	1.96	111/5298 (2.1%)
22	W	1.55	24/5460 (0.4%)	2.05	161/7390 (2.2%)
23	0	1.49	5/1506 (0.3%)	1.98	45/2038 (2.2%)
24	1	0.84	0/496	1.16	0/669
25	2	0.88	0/2243	1.18	8/3024 (0.3%)
26	3	0.85	0/1548	1.14	2/2090 (0.1%)
27	X	1.17	20/1917 (1.0%)	1.52	41/2962 (1.4%)
28	Y	1.16	13/1880 (0.7%)	1.48	43/2896 (1.5%)
29	Z	0.37	0/139	0.84	0/215
All	All	0.85	86/63228 (0.1%)	1.17	454/86125 (0.5%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	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 86 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
28	Y	25	DT	O3'-P	10.60	1.73	1.61
27	X	71	DA	P-O5'	-9.87	1.49	1.59
28	Y	31	DG	O3'-P	-9.02	1.50	1.61
27	X	79	DA	C5'-C4'	8.68	1.60	1.51
27	X	69	DA	C4'-C3'	8.62	1.61	1.53

The worst 5 of 454 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	I	84	HIS	C-N-CD	-28.48	57.95	120.60
5	E	52	ARG	C-N-CD	-22.65	70.76	120.60
23	0	77	LYS	C-N-CD	-22.15	71.87	120.60
26	3	71	TYR	C-N-CD	-20.77	74.91	120.60
1	A	622	SER	C-N-CD	-20.67	75.13	120.60

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 [i](#)

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	512	0
2	B	9317	0	9307	414	0
3	C	2213	0	2153	98	0
4	D	1062	0	1042	15	0
5	E	1723	0	1745	65	0
6	F	689	0	715	11	0
7	G	1351	0	1358	42	0
8	H	1205	0	1167	48	0
9	I	1013	0	930	78	0
10	J	533	0	553	39	0
11	K	937	0	959	25	0
12	L	388	0	393	24	0
13	M	2391	0	2410	164	0
14	N	930	0	888	34	0
15	O	806	0	818	25	0
16	P	1462	0	1548	53	0
17	Q	1484	0	1498	212	0
18	R	1357	0	1381	224	0
19	S	1138	0	1103	42	0
20	T	1788	0	1819	92	0
21	V	3855	0	3871	131	0
22	W	5348	0	5373	122	0
23	0	1479	0	1524	43	0
24	1	491	0	507	228	0
25	2	2196	0	2206	571	0
26	3	1526	0	1561	461	0
27	X	1710	0	941	67	0
28	Y	1681	0	932	56	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	3159	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 26.

The worst 5 of 3159 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 22
2	B	1163/1174 (99%)	996 (86%)	116 (10%)	51 (4%)	2 22

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	C	273/275 (99%)	239 (88%)	25 (9%)	9 (3%)	4	26
4	D	127/142 (89%)	119 (94%)	8 (6%)	0	100	100
5	E	208/210 (99%)	191 (92%)	11 (5%)	6 (3%)	4	29
6	F	84/127 (66%)	82 (98%)	2 (2%)	0	100	100
7	G	169/172 (98%)	158 (94%)	10 (6%)	1 (1%)	25	66
8	H	148/150 (99%)	118 (80%)	20 (14%)	10 (7%)	1	15
9	I	123/125 (98%)	92 (75%)	16 (13%)	15 (12%)	0	5
10	J	65/67 (97%)	51 (78%)	9 (14%)	5 (8%)	1	13
11	K	115/117 (98%)	109 (95%)	4 (4%)	2 (2%)	9	42
12	L	44/58 (76%)	33 (75%)	9 (20%)	2 (4%)	2	21
13	M	308/316 (98%)	263 (85%)	32 (10%)	13 (4%)	3	22
14	N	109/376 (29%)	101 (93%)	6 (6%)	2 (2%)	8	40
15	O	97/109 (89%)	95 (98%)	2 (2%)	0	100	100
16	P	183/339 (54%)	170 (93%)	6 (3%)	7 (4%)	3	24
17	Q	176/439 (40%)	158 (90%)	10 (6%)	8 (4%)	2	21
18	R	163/291 (56%)	140 (86%)	14 (9%)	9 (6%)	2	19
19	S	134/517 (26%)	120 (90%)	10 (8%)	4 (3%)	4	28
20	T	218/249 (88%)	190 (87%)	20 (9%)	8 (4%)	3	24
21	V	473/782 (60%)	398 (84%)	47 (10%)	28 (6%)	1	17
22	W	661/760 (87%)	570 (86%)	69 (10%)	22 (3%)	4	26
23	0	186/395 (47%)	168 (90%)	13 (7%)	5 (3%)	5	31
24	1	60/71 (84%)	53 (88%)	5 (8%)	2 (3%)	4	26
25	2	264/462 (57%)	246 (93%)	14 (5%)	4 (2%)	10	45
26	3	187/308 (61%)	176 (94%)	9 (5%)	2 (1%)	14	52
All	All	7188/10001 (72%)	6304 (88%)	607 (8%)	277 (4%)	5	23

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 [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	1279/1748 (73%)	1235 (97%)	44 (3%)	37	60
2	B	1020/1028 (99%)	985 (97%)	35 (3%)	37	60
3	C	252/252 (100%)	244 (97%)	8 (3%)	39	61
4	D	119/126 (94%)	118 (99%)	1 (1%)	81	89
5	E	192/192 (100%)	186 (97%)	6 (3%)	40	62
6	F	74/111 (67%)	74 (100%)	0	100	100
7	G	152/153 (99%)	151 (99%)	1 (1%)	84	90
8	H	131/131 (100%)	126 (96%)	5 (4%)	33	57
9	I	112/112 (100%)	108 (96%)	4 (4%)	35	59
10	J	56/56 (100%)	53 (95%)	3 (5%)	22	47
11	K	106/106 (100%)	105 (99%)	1 (1%)	78	87
12	L	43/55 (78%)	42 (98%)	1 (2%)	50	70
13	M	263/268 (98%)	256 (97%)	7 (3%)	44	65
14	N	105/324 (32%)	104 (99%)	1 (1%)	76	86
15	O	90/98 (92%)	89 (99%)	1 (1%)	73	84
16	P	159/293 (54%)	157 (99%)	2 (1%)	69	82
17	Q	164/373 (44%)	158 (96%)	6 (4%)	34	58
18	R	150/261 (58%)	139 (93%)	11 (7%)	14	39
19	S	121/448 (27%)	118 (98%)	3 (2%)	47	68
20	T	196/218 (90%)	190 (97%)	6 (3%)	40	62
21	V	422/688 (61%)	403 (96%)	19 (4%)	27	52
22	W	577/664 (87%)	543 (94%)	34 (6%)	19	45
23	0	171/352 (49%)	163 (95%)	8 (5%)	26	51
24	1	56/64 (88%)	52 (93%)	4 (7%)	14	39
25	2	238/399 (60%)	229 (96%)	9 (4%)	33	57
26	3	171/272 (63%)	159 (93%)	12 (7%)	15	40

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	6419/8792 (73%)	6187 (96%)	232 (4%)	38 59

5 of 232 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
13	M	133	ASN
26	3	66	GLU
20	T	154	LYS
25	2	452	LYS
23	0	77	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 46 such sidechains are listed below:

Mol	Chain	Res	Type
23	0	103	GLN
25	2	239	GLN
24	1	51	ASN
25	2	181	GLN
25	2	273	GLN

5.3.3 RNA [i](#)

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 [i](#)

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 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 [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

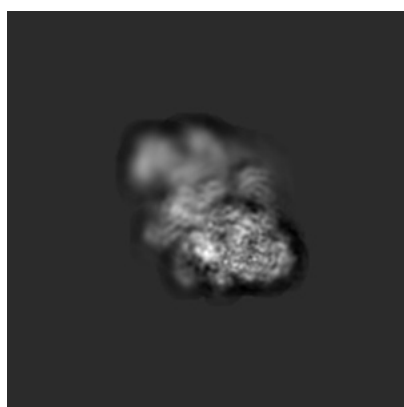
6 Map visualisation [i](#)

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.

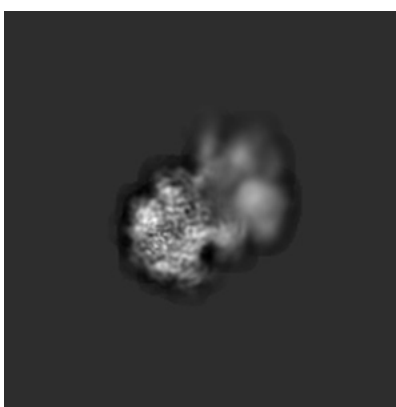
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

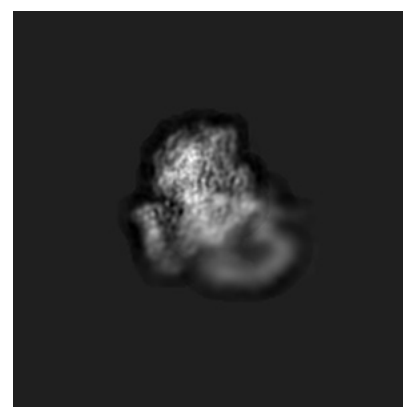
6.1.1 Primary map



X



Y

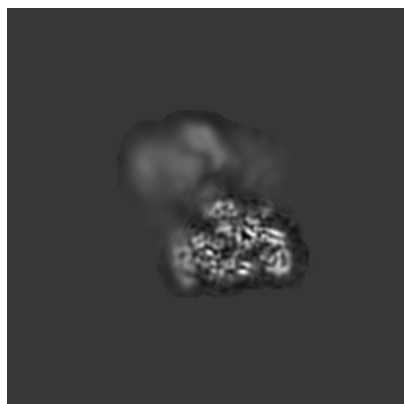


Z

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

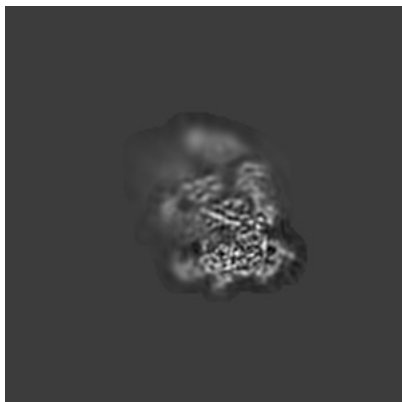


Z Index: 96

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

6.3 Largest variance slices [i](#)

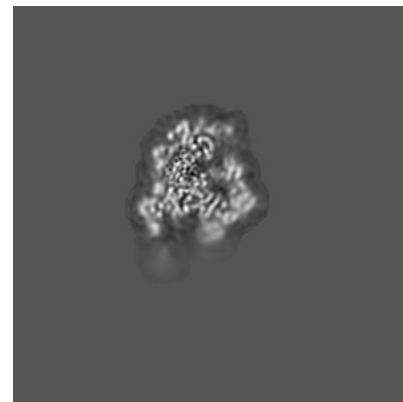
6.3.1 Primary map



X Index: 87



Y Index: 97

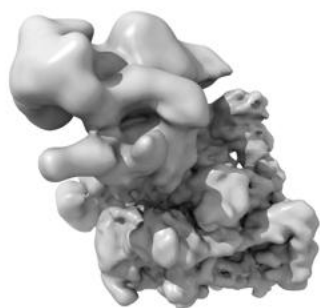


Z Index: 75

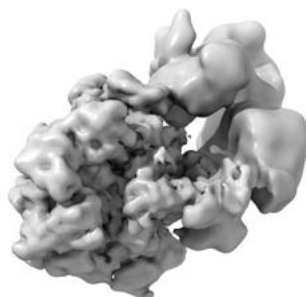
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



X



Y



Z

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

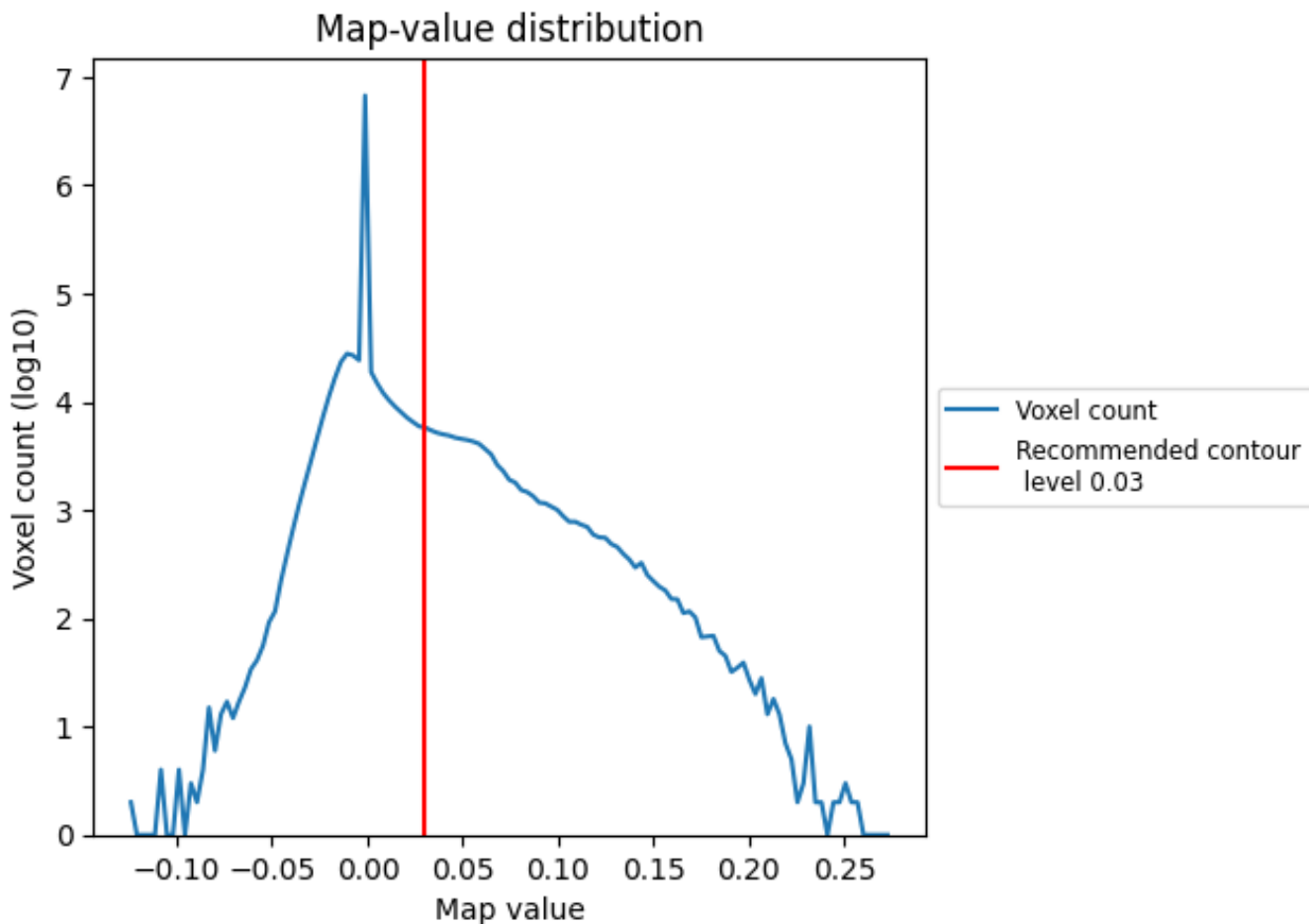
6.5 Mask visualisation

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

7 Map analysis [i](#)

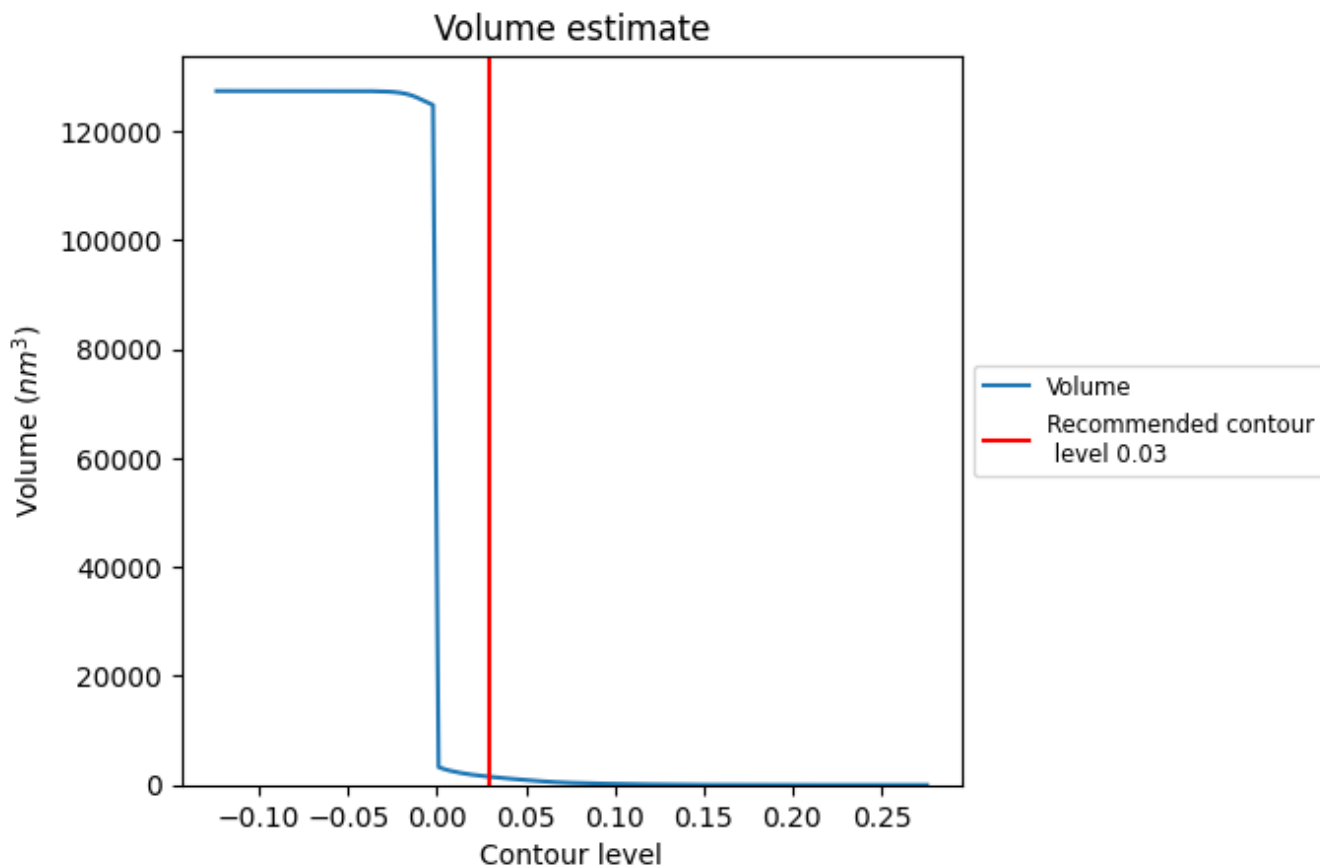
This section contains the results of statistical analysis of the map.

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.

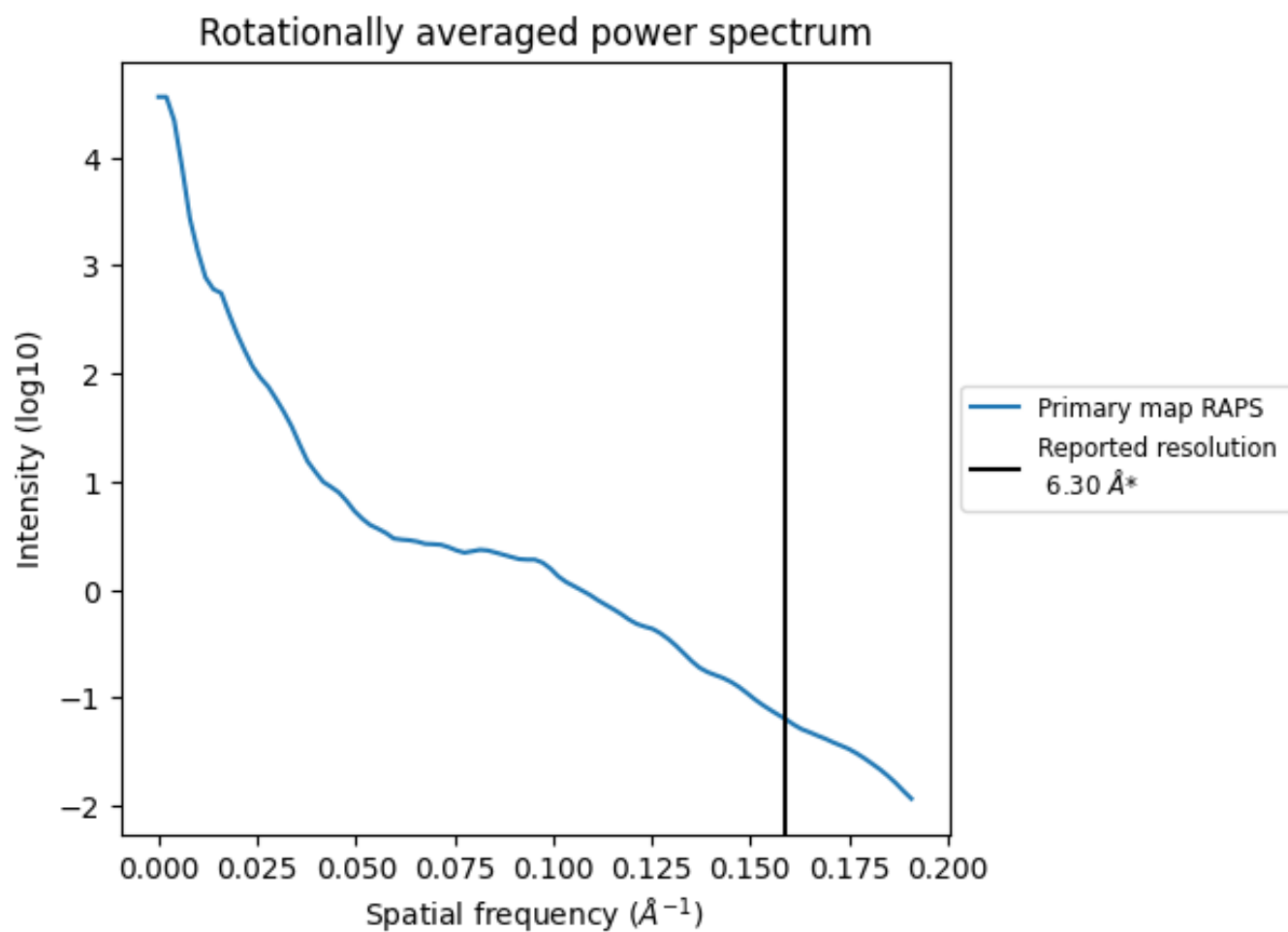
7.2 Volume estimate [\(i\)](#)



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 [i](#)

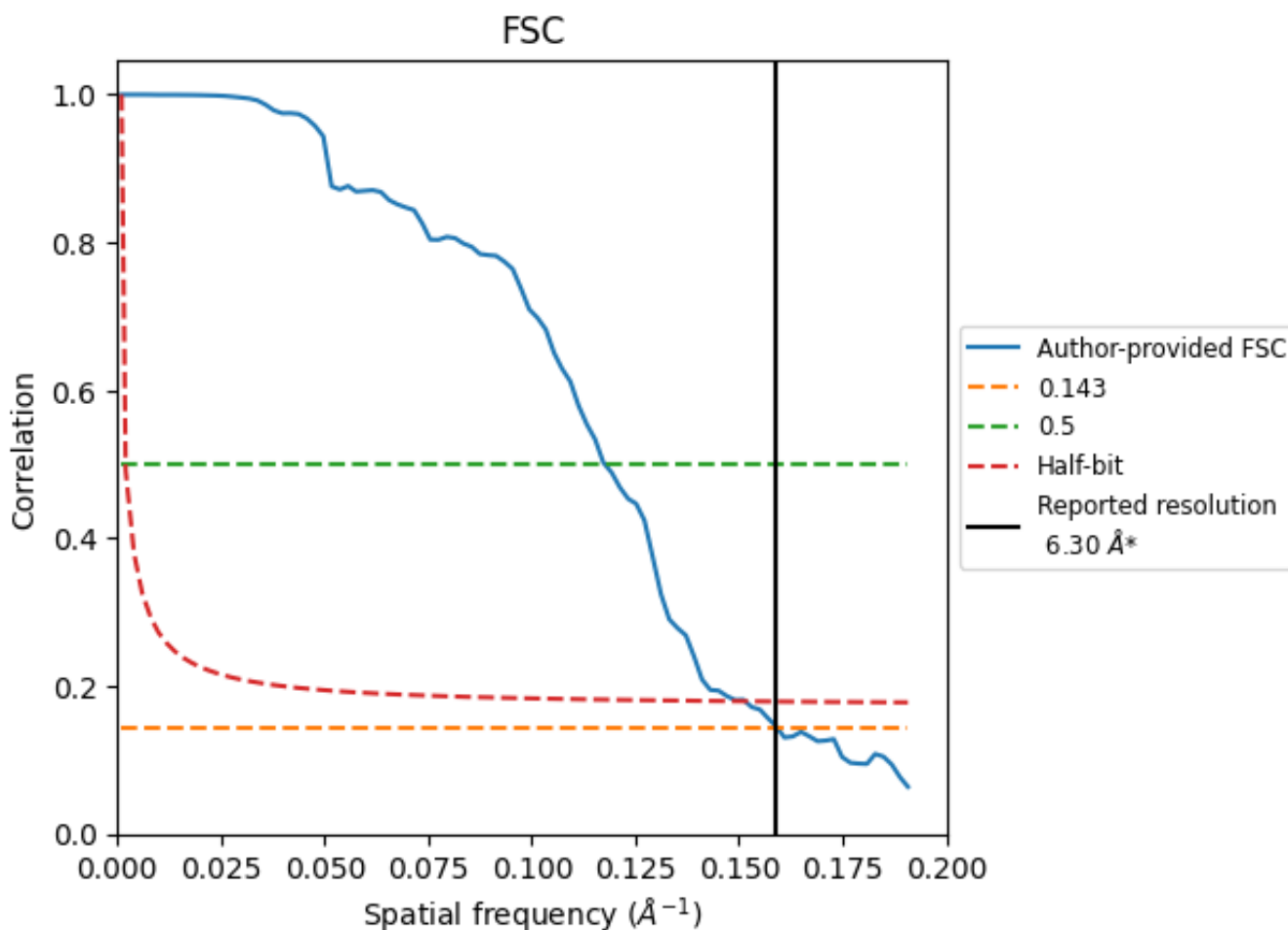


*Reported resolution corresponds to spatial frequency of 0.159 Å⁻¹

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](#)

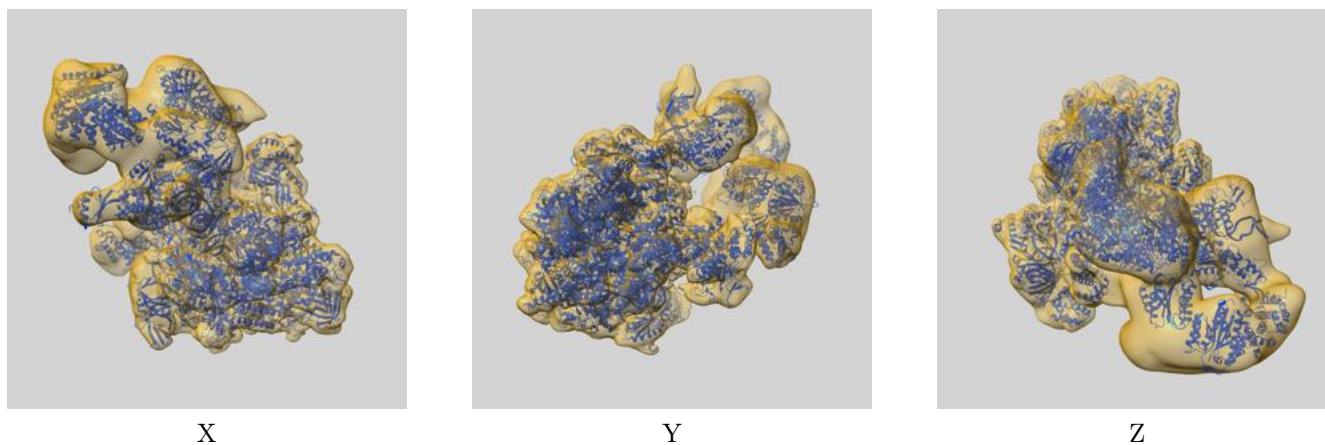
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	6.30	-	-
Author-provided FSC curve	6.28	8.50	6.60
Unmasked-calculated*	-	-	-

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

9 Map-model fit [i](#)

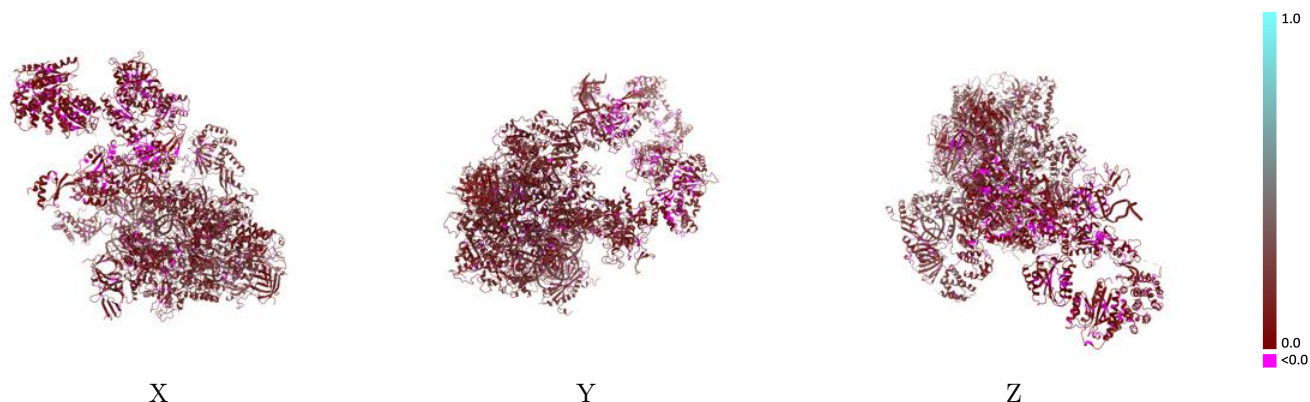
This section contains information regarding the fit between EMDB map EMD-8134 and PDB model 5IY9. Per-residue inclusion information can be found in section 3 on page 9.

9.1 Map-model overlay [i](#)



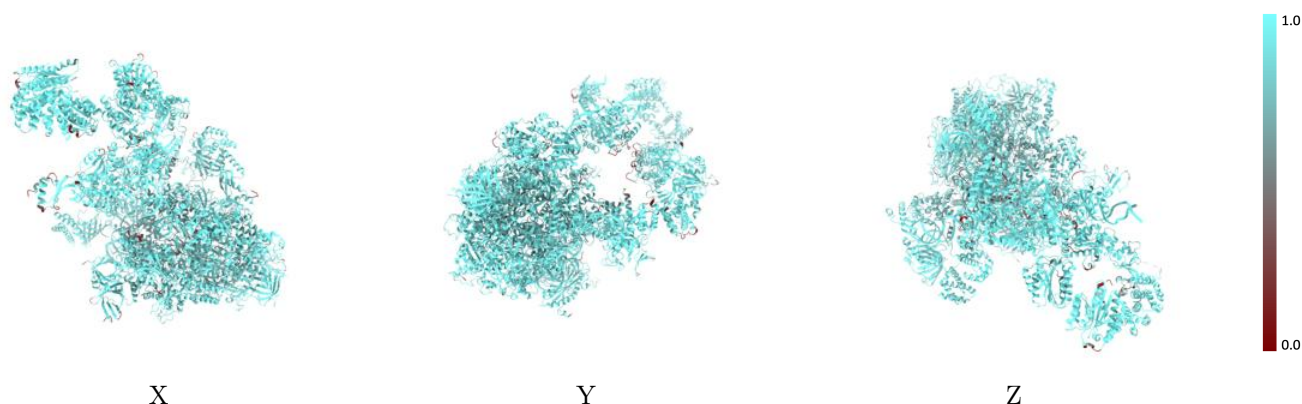
The images above show the 3D surface view of the map at the recommended contour level 0.03 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



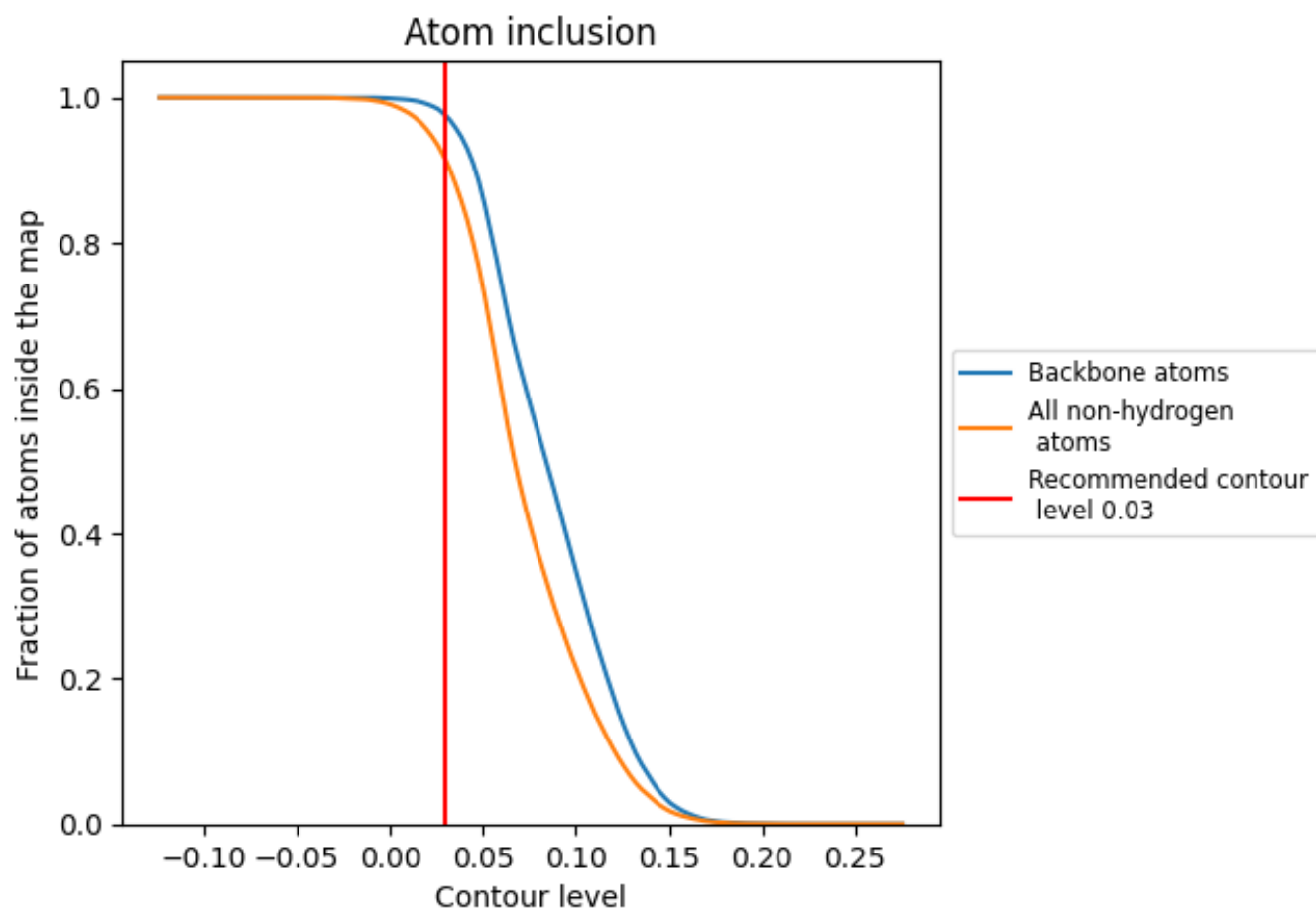
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.03).





























































9.4 Atom inclusion [i](#)



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	 0.9141	 0.1320
0	 0.9525	 0.0630
1	 0.9529	 0.0690
2	 0.9090	 0.0740
3	 0.9437	 0.0530
A	 0.8889	 0.1560
B	 0.8798	 0.1570
C	 0.9469	 0.1600
D	 0.9503	 0.1400
E	 0.9293	 0.1510
F	 0.8653	 0.1620
G	 0.9557	 0.1330
H	 0.9508	 0.1530
I	 0.9164	 0.1470
J	 0.9328	 0.1560
K	 0.9322	 0.1680
L	 0.9624	 0.1770
M	 0.8794	 0.1520
N	 0.9662	 0.1470
O	 0.9746	 0.1370
P	 0.9664	 0.1480
Q	 0.9301	 0.1300
R	 0.8936	 0.1250
S	 0.9080	 0.1190
T	 0.9247	 0.1440
V	 0.9293	 0.0650
W	 0.9182	 0.0590
X	 0.9006	 0.1710
Y	 0.9649	 0.1910
Z	 0.9360	 0.2190

