



wwPDB EM Validation Summary Report ⓘ

Nov 11, 2024 – 04:23 PM JST

PDB ID : 7EGA
EMDB ID : EMD-31110
Title : TFIID-based intermediate PIC on PUMA promoter
Authors : Chen, X.; Wu, Z.; Hou, H.; Qi, Y.; Wang, X.; Li, J.; Xu, Y.
Deposited on : 2021-03-24
Resolution : 4.10 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:

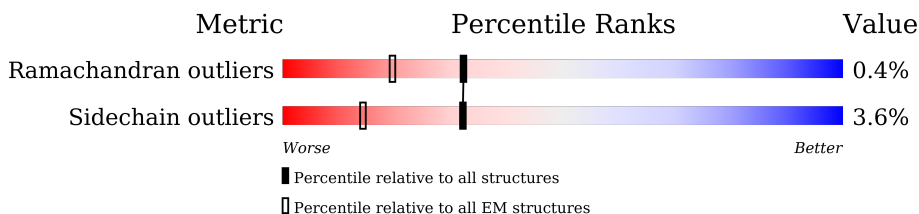
EMDB validation analysis : 0.0.1.dev113
MolProbity : 4.02b-467
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

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 4.10 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	1872	
2	B	1199	
3	D	1085	
3	d	1085	
4	E	800	
4	e	800	
5	F	677	
5	f	677	
6	G	349	

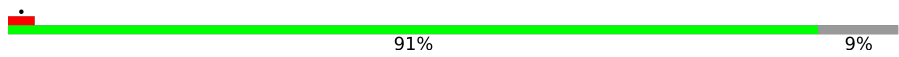
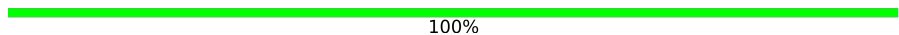
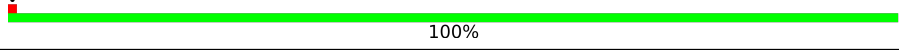

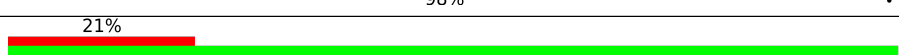
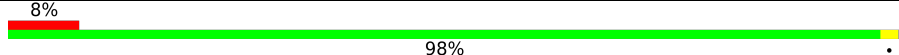

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
7	H	310	16% 63% 5% 33%
8	I	264	6% 44% 55%
8	i	264	44% 45% 54%
9	J	218	40% 59%
9	j	218	44% 56%
10	L	161	15% 45% 53%
10	l	161	66% 64% 34%
11	O	109	82% 6% 11%
12	P	339	46% 6% 48%
13	Q	376	31% 68%
14	R	316	75% 21%
15	S	517	20% 79%
16	T	249	8% 80% 9% 11%
17	U	439	7% 33% 7% 59%
18	V	291	9% 45% 14% 41%
19	c	929	14% 13% 86%
20	k	211	46% 46% 54%
21	m	124	70% 69% 30%
22	o	1487	95% ..
23	p	1174	96% ..
24	q	273	94% 6%
25	r	142	13% 89% 10%
26	s	210	99%
27	t	127	62% 38%
28	v	150	99% .

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
29	w	125	 91% 9%
30	x	64	 100%
31	y	117	 100%
32	z	58	 76% 24%
33	X	85	 19% 98%
34	Y	85	 21% 100%
35	u	172	 8% 98%

2 Entry composition [i](#)

There are 37 unique types of molecules in this entry. The entry contains 85697 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 Transcription initiation factor TFIID subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	602	Total	C	N	O	S	0	0
			4927	3142	858	899	28		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	963	Total	C	N	O	S	0	0
			7796	5011	1315	1412	58		

- Molecule 3 is a protein called Transcription initiation factor TFIID subunit 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	D	164	Total	C	N	O	S	0	0
			1366	851	256	255	4		
3	d	158	Total	C	N	O	S	0	0
			1307	814	238	252	3		

- Molecule 4 is a protein called Transcription initiation factor TFIID subunit 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	E	546	Total	C	N	O	S	0	0
			4364	2766	757	820	21		
4	e	539	Total	C	N	O	S	0	0
			4327	2746	748	814	19		

- Molecule 5 is a protein called Transcription initiation factor TFIID subunit 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	F	404	Total	C	N	O	S	0	0
			3081	1954	537	572	18		
5	f	403	Total	C	N	O	S	0	0
			3081	1954	533	576	18		

- Molecule 6 is a protein called Transcription initiation factor TFIID subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	G	145	Total	C	N	O	S	0	0
			1180	748	217	211	4		

- Molecule 7 is a protein called Transcription initiation factor TFIID subunit 8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	H	209	Total	C	N	O	S	0	0
			1633	1034	283	311	5		

- Molecule 8 is a protein called Transcription initiation factor TFIID subunit 9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	I	120	Total	C	N	O	S	0	0
			959	610	166	177	6		
8	i	121	Total	C	N	O	S	0	0
			967	615	167	178	7		

- Molecule 9 is a protein called Transcription initiation factor TFIID subunit 10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	J	89	Total	C	N	O	S	0	0
			709	457	114	134	4		
9	j	95	Total	C	N	O	S	0	0
			759	488	124	143	4		

- Molecule 10 is a protein called Transcription initiation factor TFIID subunit 12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	L	76	Total	C	N	O	S	0	0
			622	388	109	122	3		
10	l	107	Total	C	N	O	S	0	0
			876	547	158	166	5		

- Molecule 11 is a protein called Transcription initiation factor IIA subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	O	97	Total	C	N	O	S	0	0
			771	491	133	145	2		

- Molecule 12 is a protein called TATA-box-binding protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	P	177	1412	918	249	238	7	0	0

- Molecule 13 is a protein called Transcription initiation factor IIA subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	Q	122	996	623	162	207	4	0	0

- Molecule 14 is a protein called Transcription initiation factor IIB.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	R	251	1939	1214	344	364	17	0	0

- Molecule 15 is a protein called General transcription factor IIF subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	S	108	872	558	153	159	2	0	0

- Molecule 16 is a protein called General transcription factor IIF subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	T	222	1788	1127	320	338	3	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	U	179	1476	932	261	272	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	V	172	1404	893	243	264	4	0	0

- Molecule 19 is a protein called Transcription initiation factor TFIID subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	c	127	1011	638	174	193	6	0	0

- Molecule 20 is a protein called Transcription initiation factor TFIID subunit 11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	k	98	785	499	142	139	5	0	0

- Molecule 21 is a protein called Transcription initiation factor TFIID subunit 13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	m	87	724	456	131	131	6	0	0

- Molecule 22 is a protein called DNA-directed RNA polymerase subunit.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	o	1427	11308	7114	2023	2099	72	0	0

- Molecule 23 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	p	1134	9062	5732	1595	1671	64	0	0

- Molecule 24 is a protein called DNA-directed RNA polymerase II subunit RPB3.

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

- Molecule 25 is a protein called DNA-directed RNA polymerase II subunit RPB4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	r	128	1005	632	172	197	4	0	0

- Molecule 26 is a protein called DNA-directed RNA polymerase II subunit E.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	s	209	1720	1089	300	323	8	0	0

- Molecule 27 is a protein called DNA-directed RNA polymerase II subunit F.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	t	79	635	406	108	116	5	0	0

- Molecule 28 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC3.

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

- Molecule 29 is a protein called DNA-directed RNA polymerase II subunit RPB9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	w	114	927	571	166	179	11	0	0

- Molecule 30 is a protein called RPB10.

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

- Molecule 31 is a protein called RNA_pol_L_2 domain-containing protein.

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

- Molecule 32 is a protein called RPB12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	z	44	372	231	72	63	6	0	0

- Molecule 33 is a DNA chain called DNA (85-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
33	X	85	1751	829	329	508	85	0	0

- Molecule 34 is a DNA chain called DNA (85-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
34	Y	85	1734	824	313	512	85	0	0

- Molecule 35 is a protein called DNA-directed RNA polymerase II subunit RPB7.

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

- Molecule 36 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
			Total	Zn	
36	R	1	1	1	0
36	U	1	1	1	0
36	o	2	2	2	0
36	p	1	1	1	0
36	q	1	1	1	0
36	w	2	2	2	0
36	x	1	1	1	0
36	z	1	1	1	0

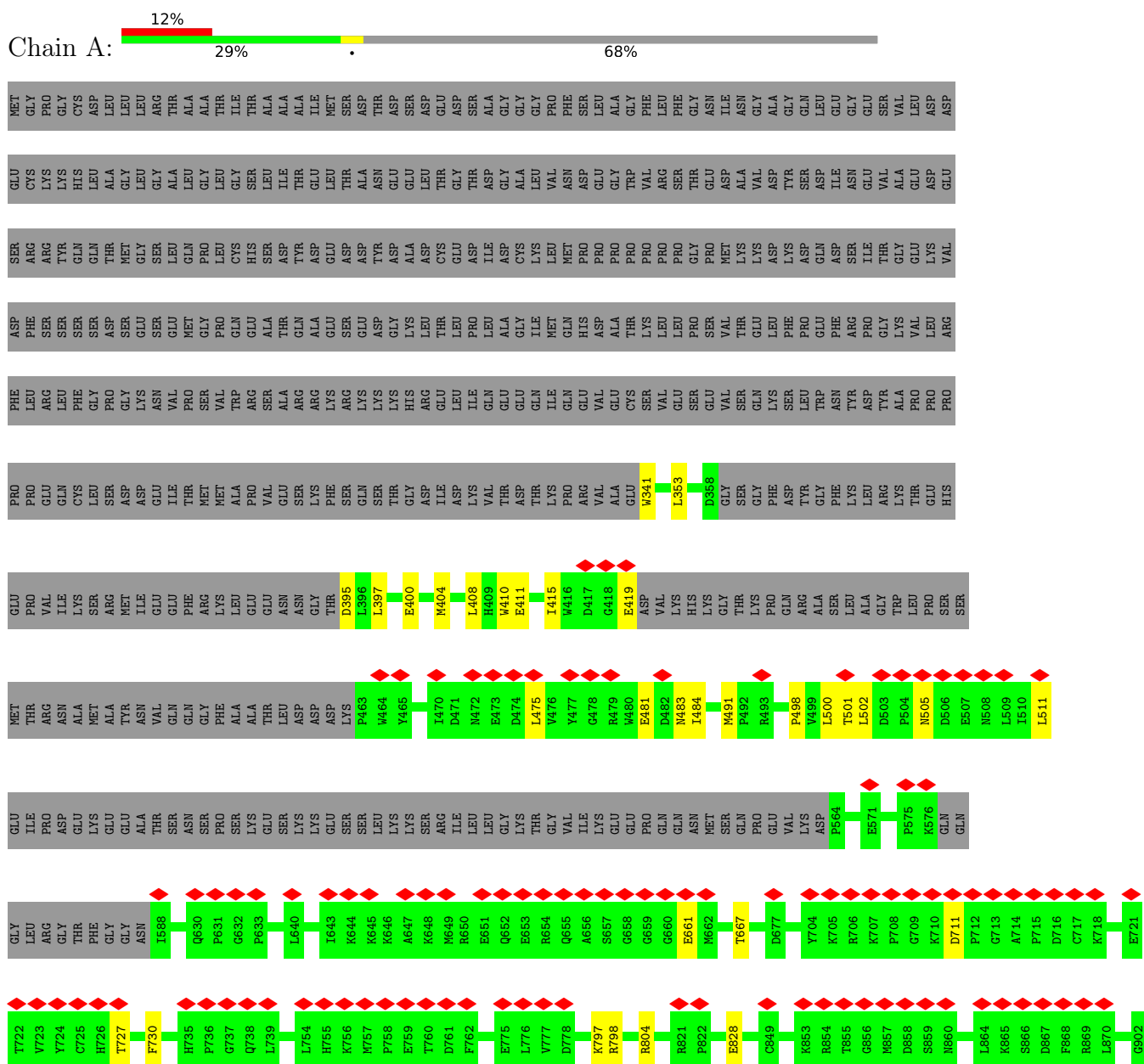
- Molecule 37 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

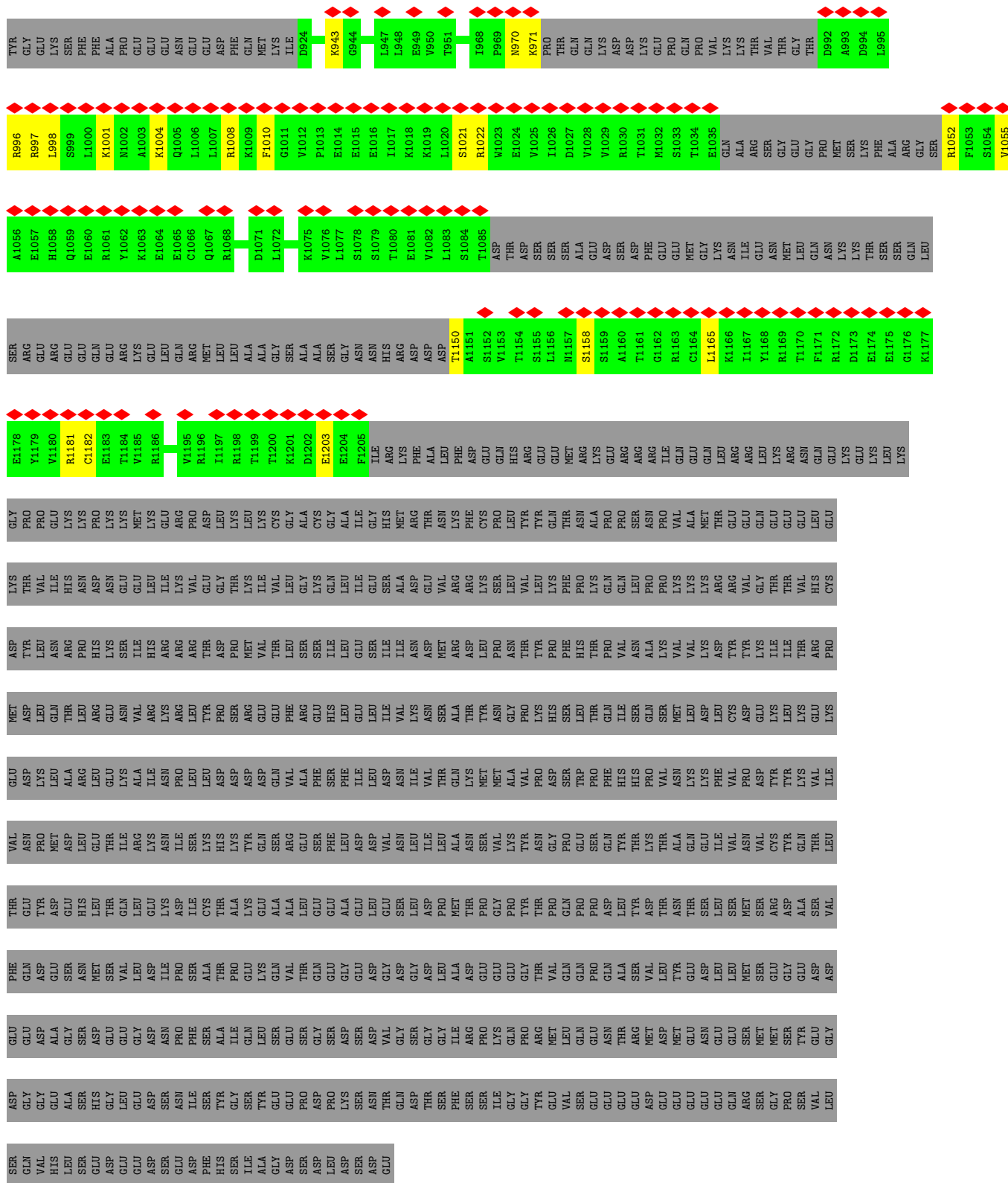
Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
37	o	1	1	1	0

3 Residue-property plots

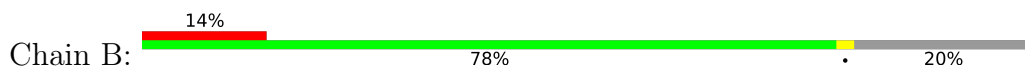
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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.

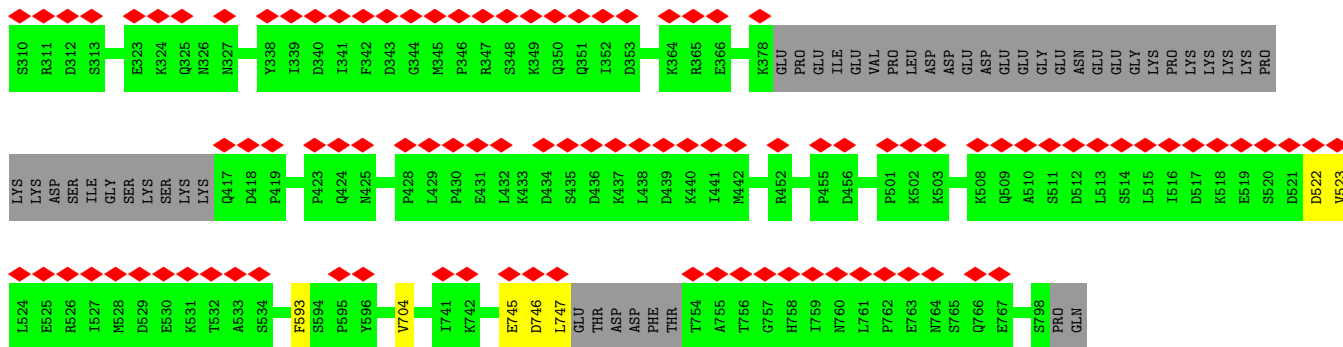
- Molecule 1: Transcription initiation factor TFIID subunit 1



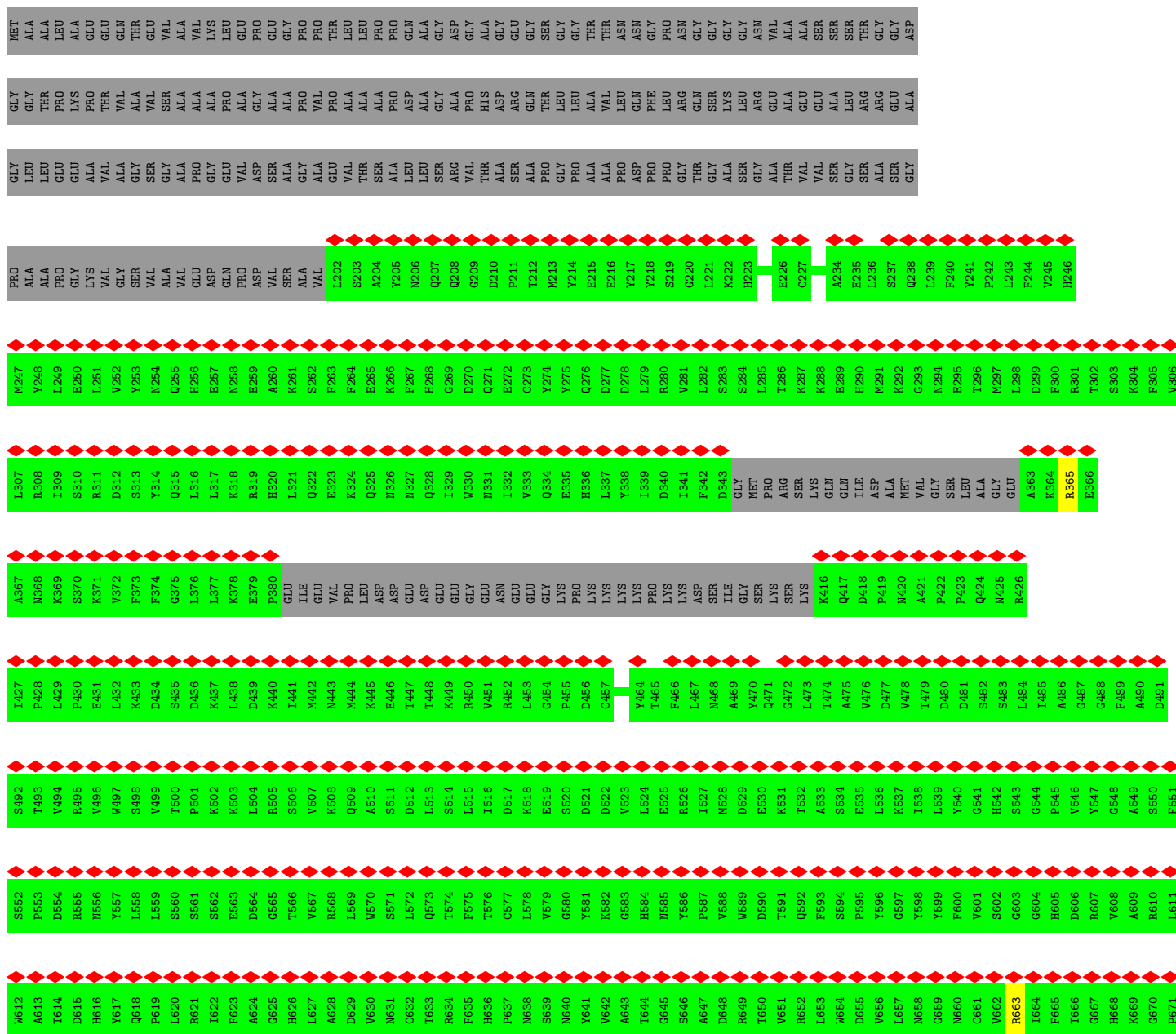


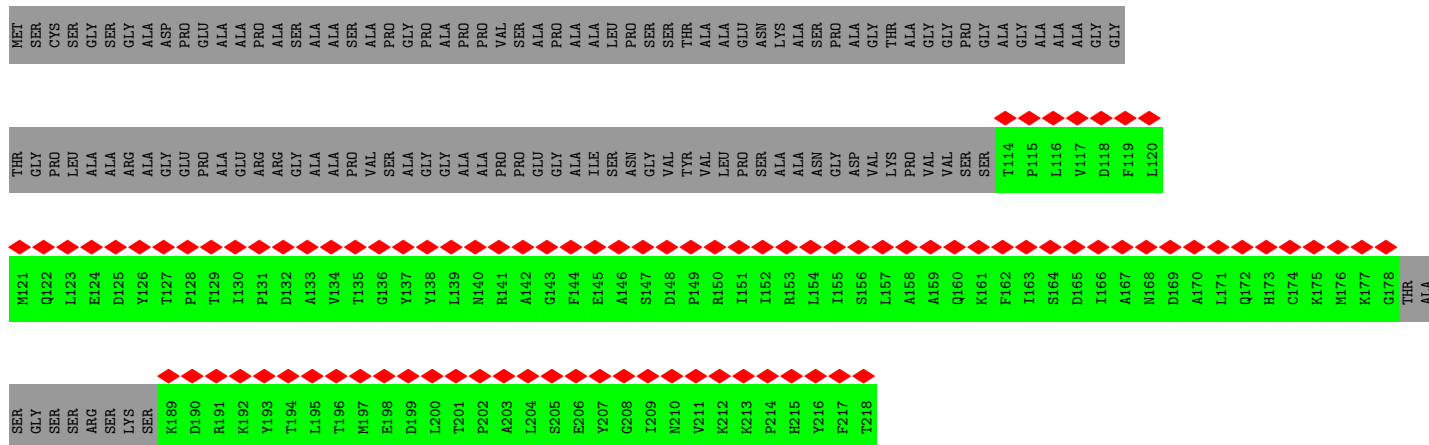
• Molecule 2: Transcription initiation factor TFIIID subunit 2



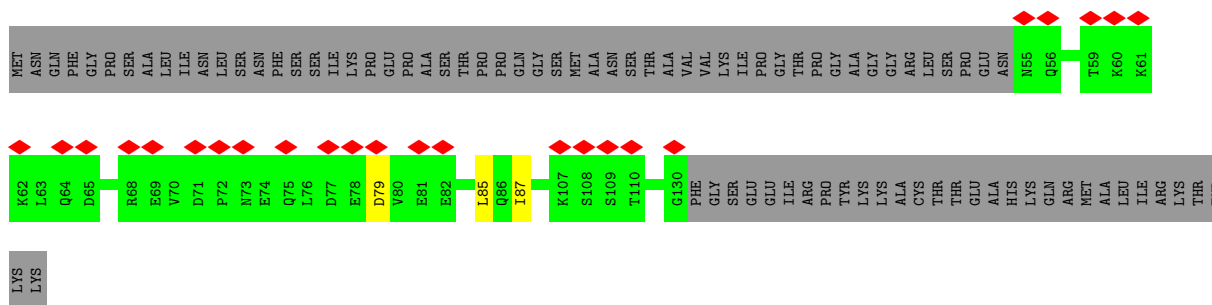
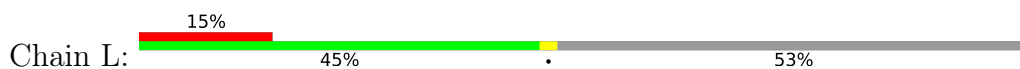


• Molecule 4: Transcription initiation factor TFIID subunit 5

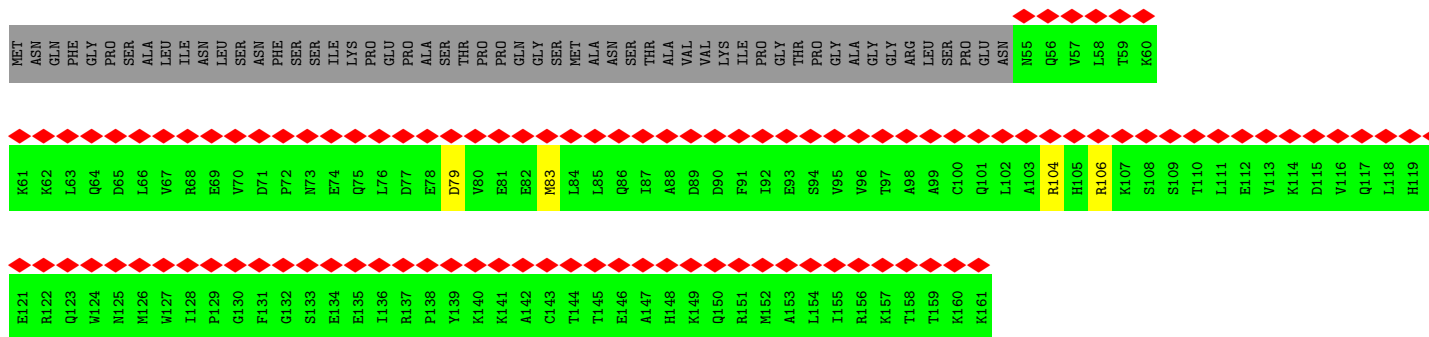




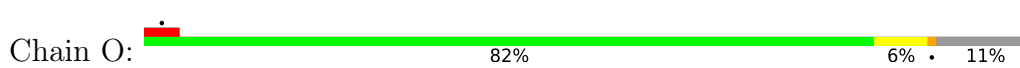
• Molecule 10: Transcription initiation factor TFIID subunit 12



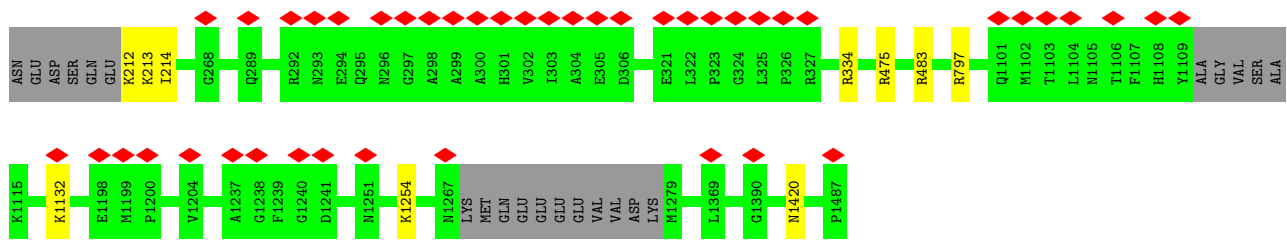
• Molecule 10: Transcription initiation factor TFIID subunit 12



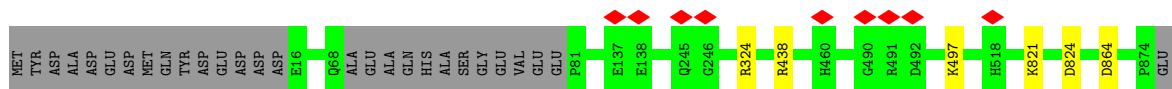
• Molecule 11: Transcription initiation factor IIA subunit 2



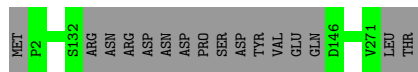
• Molecule 12: TATA-box-binding protein



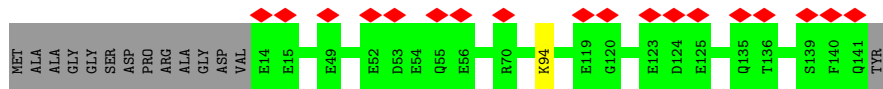
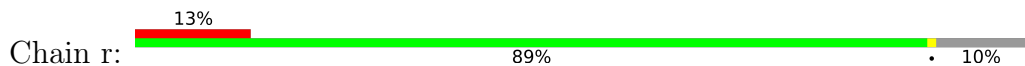
- Molecule 23: DNA-directed RNA polymerase subunit beta



- Molecule 24: DNA-directed RNA polymerase II subunit RPB3



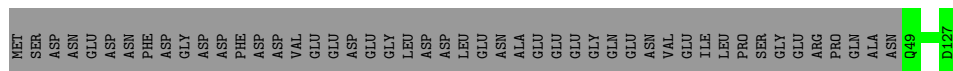
- Molecule 25: DNA-directed RNA polymerase II subunit RPB4



- Molecule 26: DNA-directed RNA polymerase II subunit E



- Molecule 27: DNA-directed RNA polymerase II subunit F



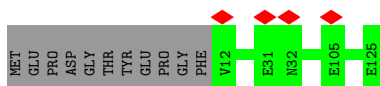
- Molecule 28: DNA-directed RNA polymerases I, II, and III subunit RPABC3

Chain v:  99%



- Molecule 29: DNA-directed RNA polymerase II subunit RPB9

Chain w:  91% 9%



- Molecule 30: RPB10

Chain x:  100%

There are no outlier residues recorded for this chain.

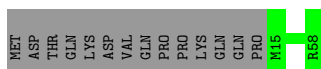
- Molecule 31: RNA_pol_L_2 domain-containing protein

Chain y:  100%



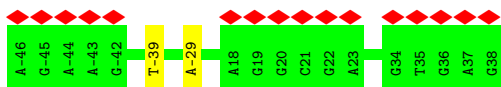
- Molecule 32: RPB12

Chain z:  76% 24%



- Molecule 33: DNA (85-MER)

Chain X:  19% 98%

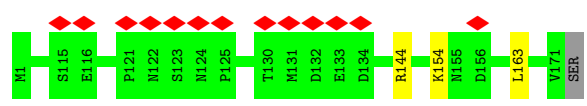


- Molecule 34: DNA (85-MER)

Chain Y:  21% 100%



- Molecule 35: DNA-directed RNA polymerase II subunit RPB7



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	21692	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50.0	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.114	Depositor
Minimum map value	-0.069	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.0085	Depositor
Map size (\AA)	508.8, 508.8, 508.8	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.06, 1.06, 1.06	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	0.52	0/5046	0.64	0/6810
2	B	0.47	0/7993	0.61	0/10836
3	D	0.47	0/1379	0.61	1/1843 (0.1%)
3	d	0.28	0/1321	0.49	0/1772
4	E	0.35	0/4469	0.55	0/6050
4	e	0.33	0/4433	0.55	0/6004
5	F	0.51	0/3139	0.71	2/4264 (0.0%)
5	f	0.40	0/3140	0.63	0/4268
6	G	0.51	0/1199	0.63	0/1612
7	H	0.41	0/1673	0.59	0/2285
8	I	0.32	0/981	0.50	0/1332
8	i	0.31	0/989	0.46	0/1343
9	J	0.31	0/724	0.53	1/982 (0.1%)
9	j	0.30	0/775	0.52	0/1049
10	L	0.32	0/630	0.57	1/852 (0.1%)
10	l	0.37	0/888	0.56	1/1194 (0.1%)
11	O	0.52	0/781	0.76	0/1061
12	P	0.62	0/1438	0.72	0/1935
13	Q	0.46	0/1013	0.61	0/1366
14	R	0.34	0/1967	0.55	0/2656
15	S	0.36	0/896	0.55	0/1213
16	T	0.54	0/1817	0.66	0/2445
17	U	0.50	1/1499 (0.1%)	0.77	4/2012 (0.2%)
18	V	0.49	0/1428	0.68	0/1917
19	c	0.40	0/1035	0.54	0/1406
20	k	0.30	0/799	0.48	0/1070
21	m	0.31	0/733	0.51	0/977
22	o	0.34	0/11516	0.50	0/15548
23	p	0.38	0/9243	0.47	0/12475
24	q	0.39	0/2102	0.46	0/2857
25	r	0.27	0/1019	0.47	0/1374
26	s	0.30	0/1751	0.45	0/2366

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
27	t	0.37	0/645	0.47	0/871
28	v	0.37	0/1207	0.49	0/1628
29	w	0.30	0/948	0.46	0/1284
30	x	0.43	0/516	0.45	0/696
31	y	0.35	0/956	0.44	0/1294
32	z	0.38	0/377	0.45	0/500
33	X	0.78	2/1966 (0.1%)	1.00	1/3034 (0.0%)
34	Y	0.64	0/1942	0.90	0/2993
35	u	0.33	0/1382	0.53	0/1874
All	All	0.42	3/87755 (0.0%)	0.59	11/119348 (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
15	S	0	1

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
17	U	123	ASN	C-N	5.62	1.47	1.34
33	X	-29	DA	O3'-P	5.45	1.67	1.61
33	X	-39	DT	C1'-N1	5.02	1.55	1.49

The worst 5 of 11 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
17	U	127	PHE	CB-CA-C	8.11	126.62	110.40
3	D	881	ARG	CB-CA-C	-6.21	97.99	110.40
17	U	123	ASN	O-C-N	5.99	132.29	122.70
17	U	140	GLU	CB-CA-C	-5.37	99.66	110.40
10	L	79	ASP	CB-CG-OD2	5.29	123.06	118.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
15	S	6	PRO	Mainchain

5.2 Too-close contacts [i](#)

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

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	584/1872 (31%)	552 (94%)	30 (5%)	2 (0%)	37	71
2	B	959/1199 (80%)	914 (95%)	45 (5%)	0	100	100
3	D	158/1085 (15%)	142 (90%)	15 (10%)	1 (1%)	22	59
3	d	154/1085 (14%)	150 (97%)	4 (3%)	0	100	100
4	E	540/800 (68%)	507 (94%)	30 (6%)	3 (1%)	22	59
4	e	531/800 (66%)	484 (91%)	47 (9%)	0	100	100
5	F	400/677 (59%)	375 (94%)	21 (5%)	4 (1%)	13	48
5	f	399/677 (59%)	380 (95%)	19 (5%)	0	100	100
6	G	139/349 (40%)	137 (99%)	2 (1%)	0	100	100
7	H	207/310 (67%)	186 (90%)	18 (9%)	3 (1%)	9	40
8	I	118/264 (45%)	115 (98%)	3 (2%)	0	100	100
8	i	119/264 (45%)	115 (97%)	4 (3%)	0	100	100
9	J	85/218 (39%)	82 (96%)	3 (4%)	0	100	100
9	j	91/218 (42%)	89 (98%)	2 (2%)	0	100	100
10	L	74/161 (46%)	67 (90%)	7 (10%)	0	100	100
10	l	105/161 (65%)	100 (95%)	5 (5%)	0	100	100
11	O	95/109 (87%)	83 (87%)	9 (10%)	3 (3%)	3	25
12	P	175/339 (52%)	166 (95%)	7 (4%)	2 (1%)	12	46
13	Q	118/376 (31%)	107 (91%)	10 (8%)	1 (1%)	16	53
14	R	247/316 (78%)	237 (96%)	9 (4%)	1 (0%)	30	67
15	S	104/517 (20%)	99 (95%)	3 (3%)	2 (2%)	6	35

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
16	T	218/249 (88%)	197 (90%)	15 (7%)	6 (3%)	4	27
17	U	175/439 (40%)	154 (88%)	18 (10%)	3 (2%)	7	37
18	V	170/291 (58%)	131 (77%)	29 (17%)	10 (6%)	1	16
19	c	125/929 (14%)	116 (93%)	9 (7%)	0	100	100
20	k	96/211 (46%)	91 (95%)	5 (5%)	0	100	100
21	m	85/124 (68%)	79 (93%)	6 (7%)	0	100	100
22	o	1417/1487 (95%)	1304 (92%)	113 (8%)	0	100	100
23	p	1128/1174 (96%)	1050 (93%)	77 (7%)	1 (0%)	48	82
24	q	253/273 (93%)	226 (89%)	27 (11%)	0	100	100
25	r	126/142 (89%)	119 (94%)	7 (6%)	0	100	100
26	s	207/210 (99%)	196 (95%)	11 (5%)	0	100	100
27	t	77/127 (61%)	74 (96%)	3 (4%)	0	100	100
28	v	146/150 (97%)	133 (91%)	13 (9%)	0	100	100
29	w	112/125 (90%)	103 (92%)	9 (8%)	0	100	100
30	x	62/64 (97%)	60 (97%)	2 (3%)	0	100	100
31	y	115/117 (98%)	109 (95%)	6 (5%)	0	100	100
32	z	42/58 (72%)	38 (90%)	4 (10%)	0	100	100
35	u	169/172 (98%)	156 (92%)	12 (7%)	1 (1%)	22	59
All	All	10125/18139 (56%)	9423 (93%)	659 (6%)	43 (0%)	32	67

5 of 43 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1158	SER
5	F	323	VAL
7	H	141	PRO
11	O	52	VAL
15	S	9	GLN

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	536/1665 (32%)	487 (91%)	49 (9%)	7	26
2	B	876/1083 (81%)	854 (98%)	22 (2%)	42	62
3	D	147/815 (18%)	116 (79%)	31 (21%)	1	5
3	d	146/815 (18%)	146 (100%)	0	100	100
4	E	478/657 (73%)	474 (99%)	4 (1%)	79	84
4	e	475/657 (72%)	473 (100%)	2 (0%)	89	91
5	F	320/574 (56%)	299 (93%)	21 (7%)	14	36
5	f	322/574 (56%)	313 (97%)	9 (3%)	38	59
6	G	133/322 (41%)	126 (95%)	7 (5%)	19	43
7	H	181/270 (67%)	168 (93%)	13 (7%)	12	34
8	I	106/235 (45%)	101 (95%)	5 (5%)	22	46
8	i	107/235 (46%)	106 (99%)	1 (1%)	75	83
9	J	78/154 (51%)	78 (100%)	0	100	100
9	j	83/154 (54%)	83 (100%)	0	100	100
10	L	71/141 (50%)	69 (97%)	2 (3%)	38	59
10	l	98/141 (70%)	95 (97%)	3 (3%)	35	56
11	O	84/98 (86%)	78 (93%)	6 (7%)	12	34
12	P	153/293 (52%)	134 (88%)	19 (12%)	4	18
13	Q	111/324 (34%)	105 (95%)	6 (5%)	18	42
14	R	214/268 (80%)	201 (94%)	13 (6%)	15	39
15	S	93/448 (21%)	91 (98%)	2 (2%)	47	65
16	T	196/218 (90%)	178 (91%)	18 (9%)	7	25
17	U	163/373 (44%)	137 (84%)	26 (16%)	2	13
18	V	155/261 (59%)	121 (78%)	34 (22%)	1	5
19	c	113/833 (14%)	111 (98%)	2 (2%)	54	71
20	k	87/182 (48%)	87 (100%)	0	100	100
21	m	80/106 (76%)	79 (99%)	1 (1%)	65	77
22	o	1257/1306 (96%)	1243 (99%)	14 (1%)	70	80
23	p	993/1027 (97%)	984 (99%)	9 (1%)	75	83
24	q	234/250 (94%)	234 (100%)	0	100	100
25	r	106/126 (84%)	105 (99%)	1 (1%)	75	83

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
26	s	191/192 (100%)	190 (100%)	1 (0%)	86	90
27	t	69/111 (62%)	69 (100%)	0	100	100
28	v	129/131 (98%)	129 (100%)	0	100	100
29	w	103/112 (92%)	103 (100%)	0	100	100
30	x	53/53 (100%)	53 (100%)	0	100	100
31	y	106/106 (100%)	106 (100%)	0	100	100
32	z	41/55 (74%)	41 (100%)	0	100	100
35	u	152/153 (99%)	150 (99%)	2 (1%)	65	77
All	All	9040/15518 (58%)	8717 (96%)	323 (4%)	32	53

5 of 323 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
17	U	119	ARG
5	f	323	VAL
17	U	171	LYS
18	V	160	GLN
22	o	212	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 122 such sidechains are listed below:

Mol	Chain	Res	Type
13	Q	352	HIS
23	p	570	ASN
3	d	1069	ASN
23	p	525	ASN
28	v	131	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 11 ligands modelled in this entry, 11 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.

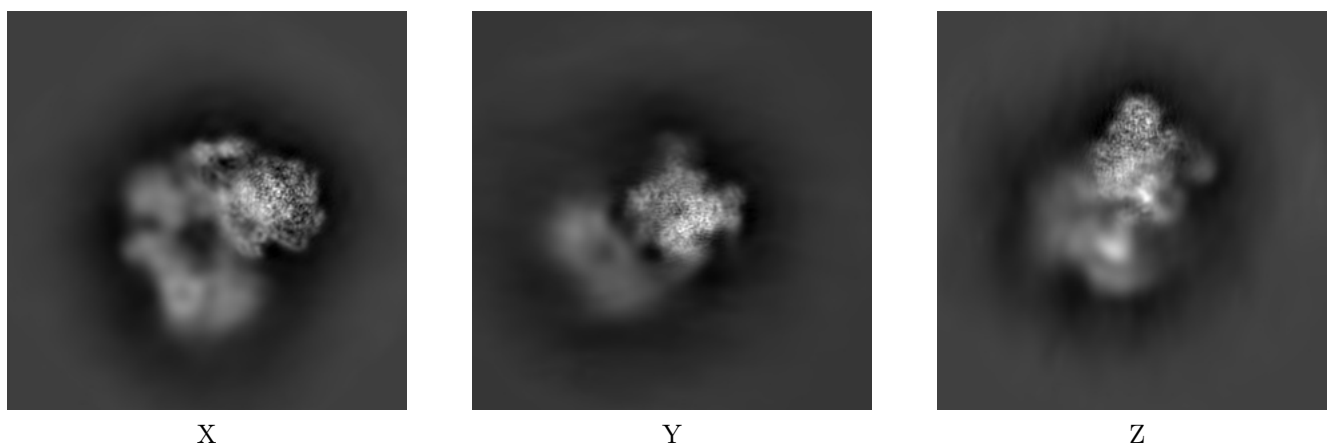
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-31110. 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](#)

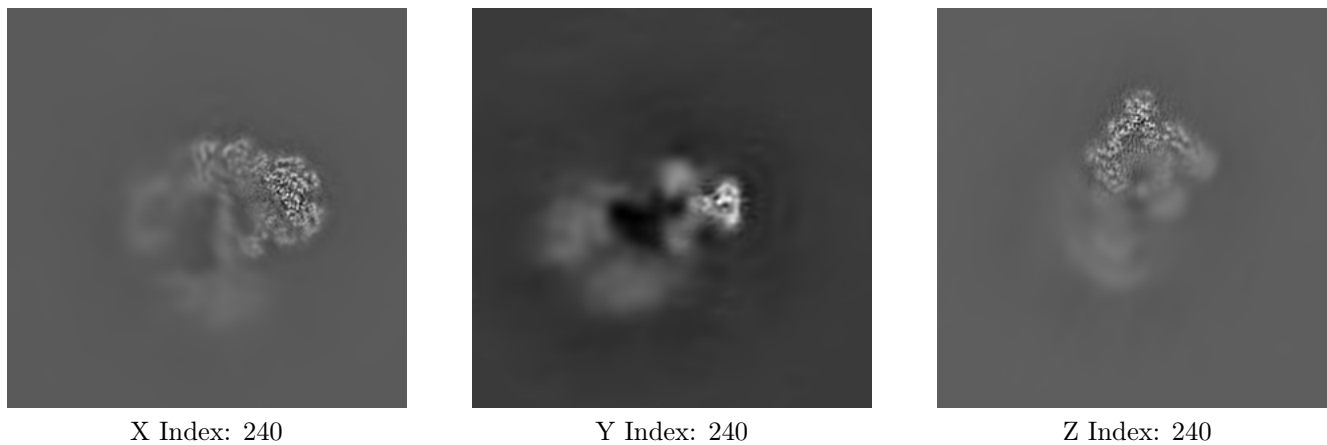
6.1.1 Primary map



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

6.2 Central slices [i](#)

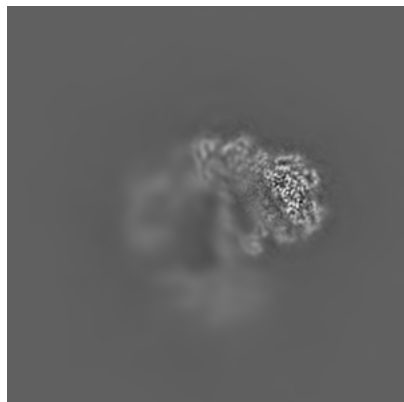
6.2.1 Primary map



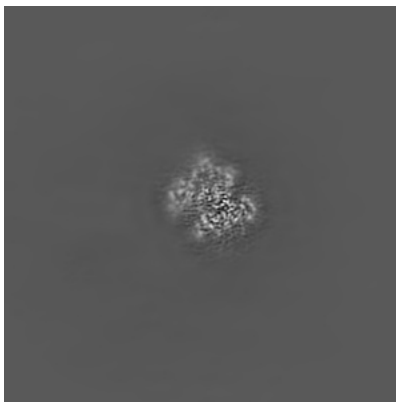
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

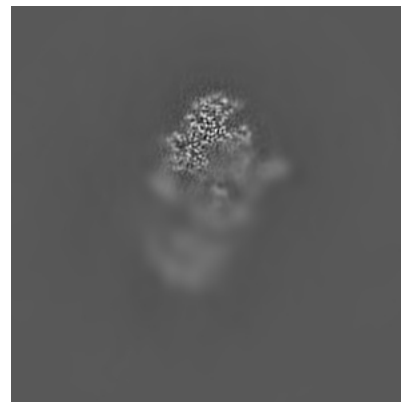
6.3.1 Primary map



X Index: 239



Y Index: 330

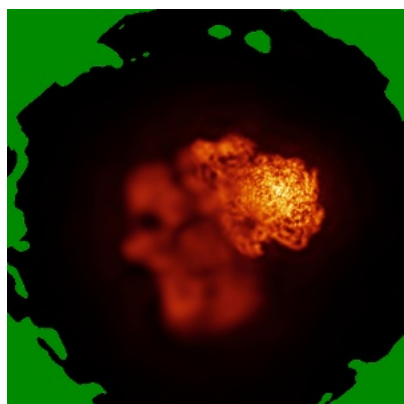


Z Index: 264

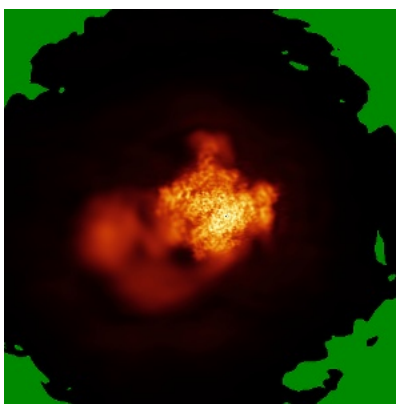
The images above show the largest variance slices of the map in three orthogonal directions.

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

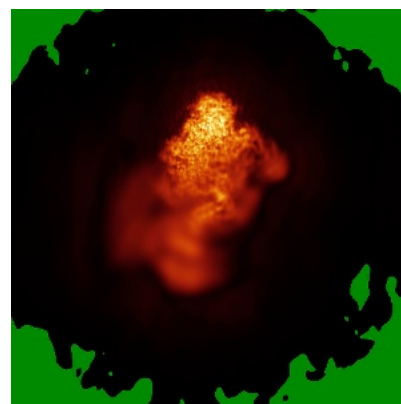
6.4.1 Primary map



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 0.0085. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

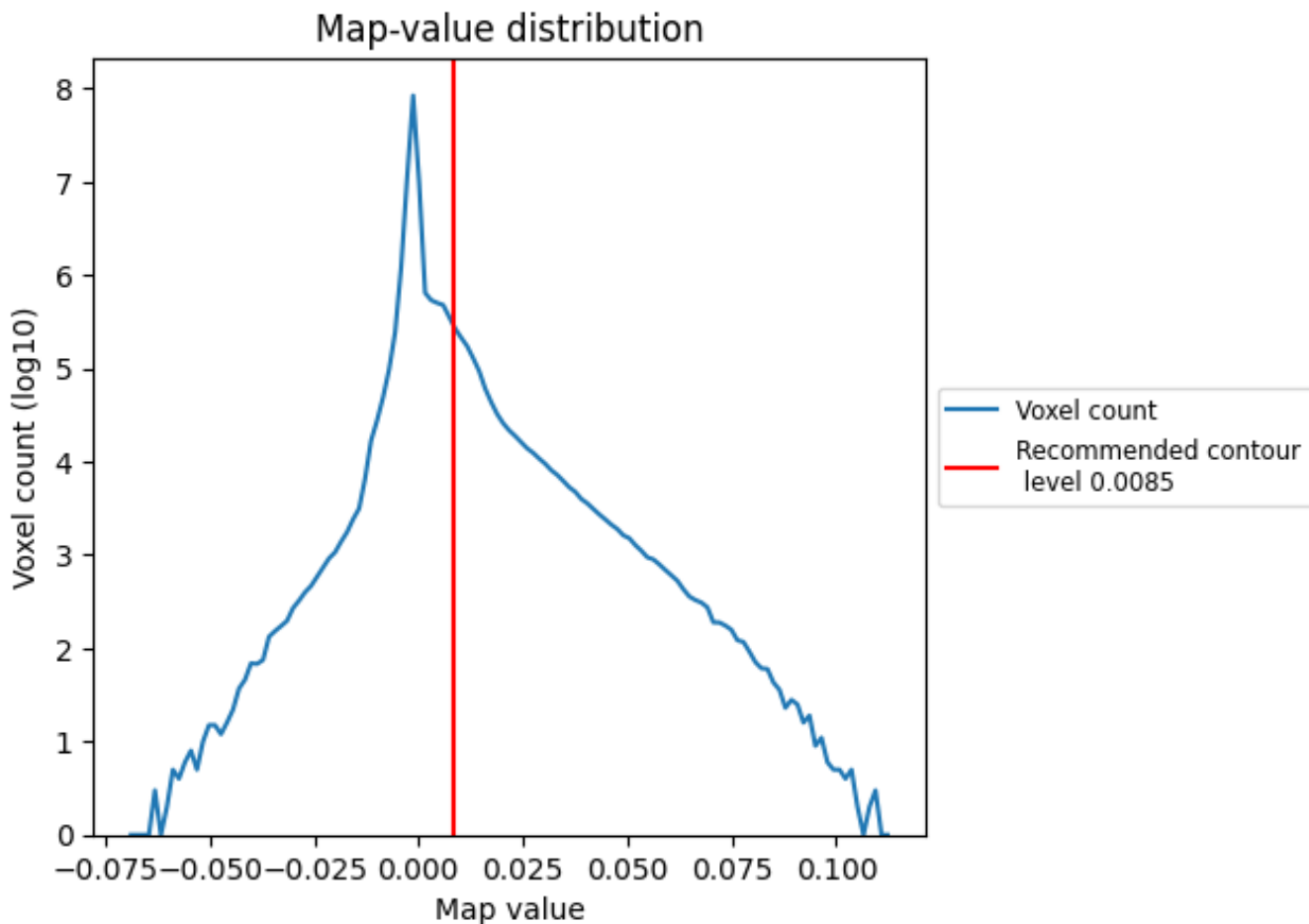
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

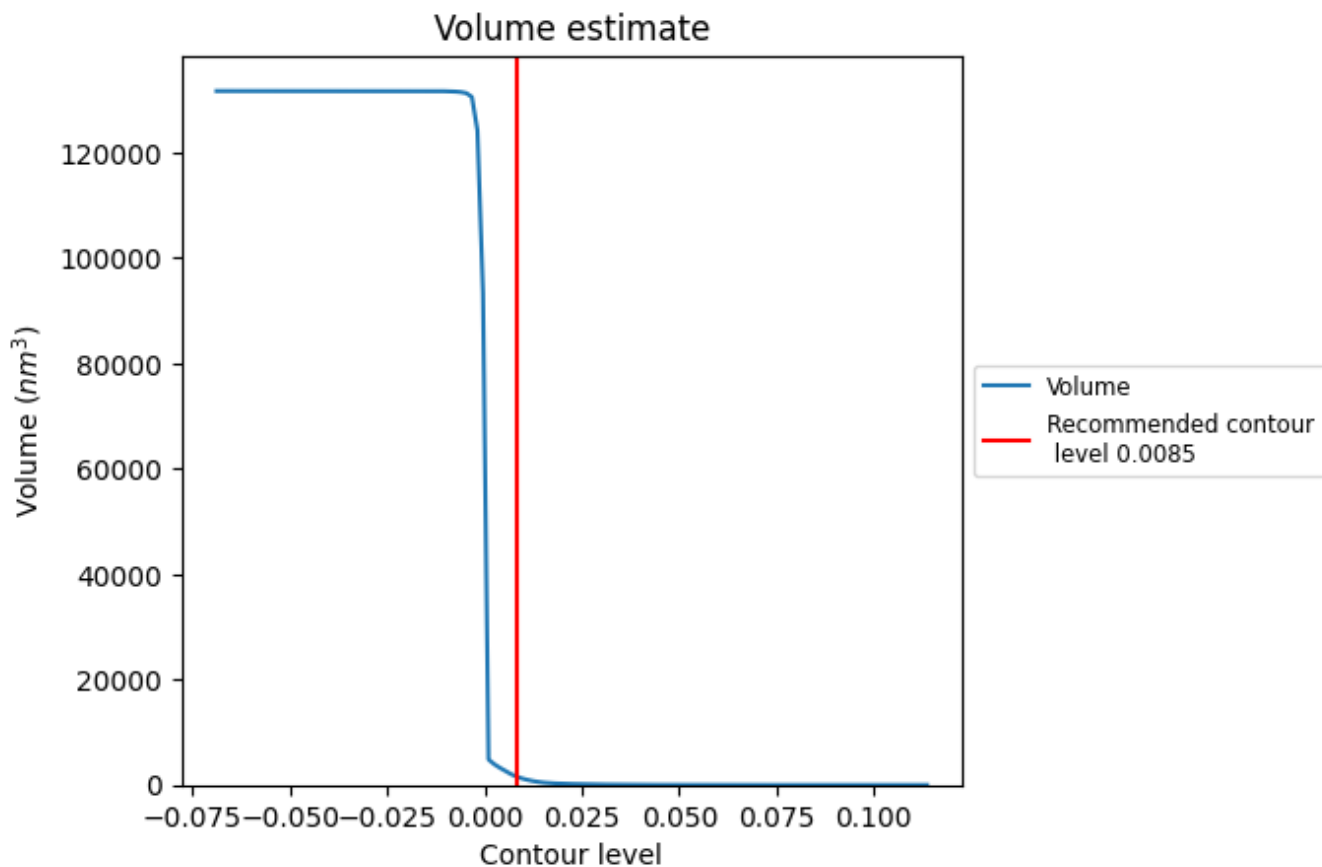
This section contains the results of statistical analysis of the map.

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.

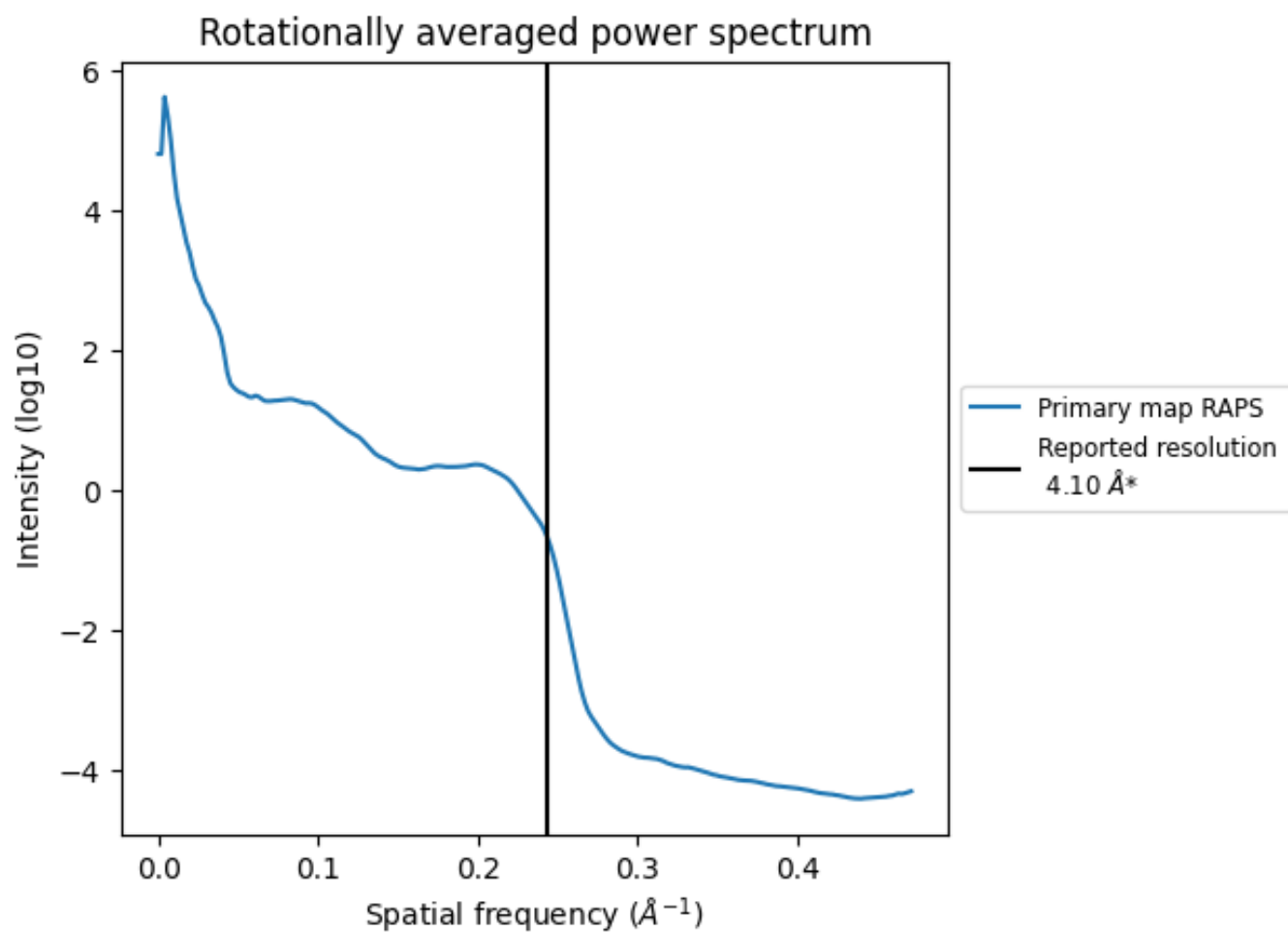
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1522 nm³; this corresponds to an approximate mass of 1374 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 0.244\AA^{-1}

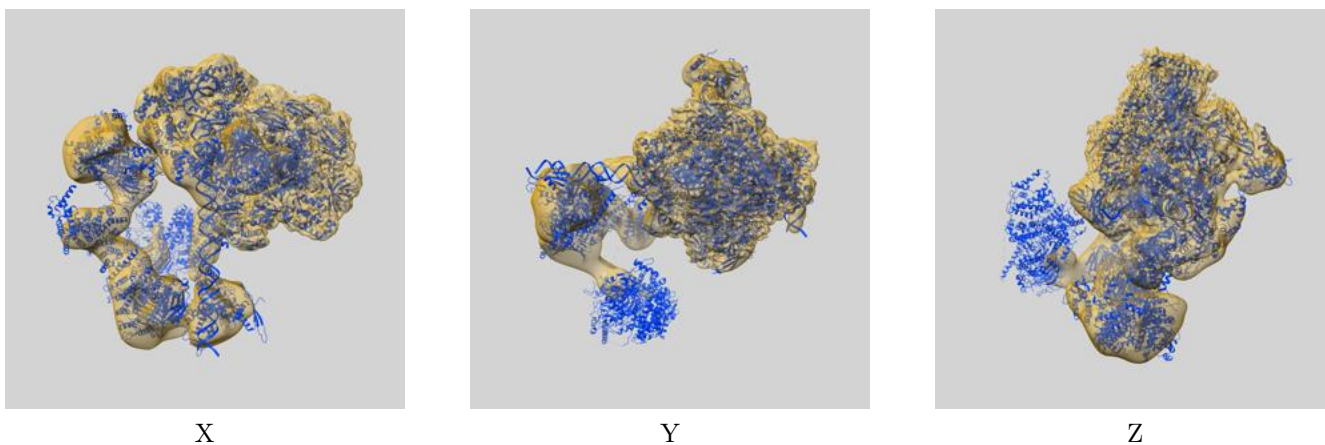
8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit [i](#)

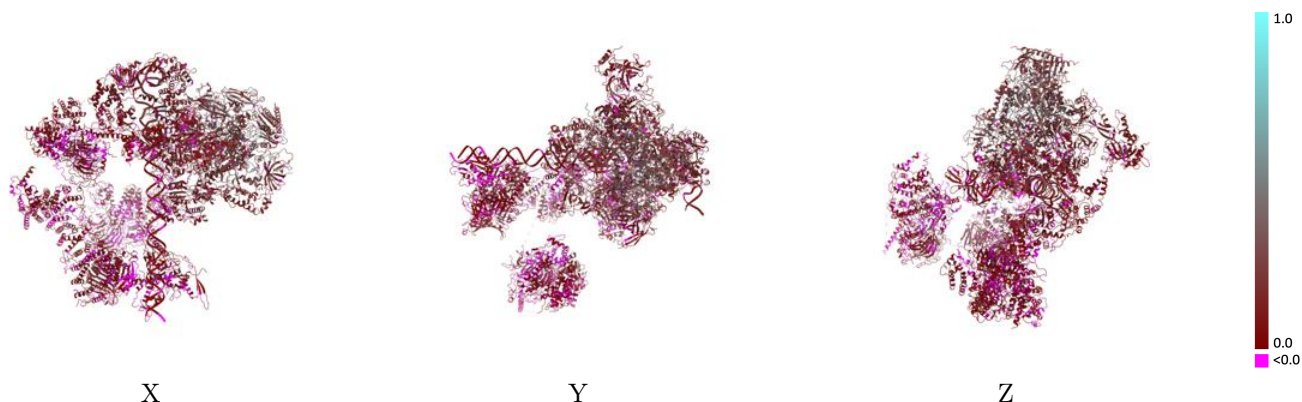
This section contains information regarding the fit between EMDB map EMD-31110 and PDB model 7EGA. Per-residue inclusion information can be found in section 3 on page 11.

9.1 Map-model overlay [i](#)



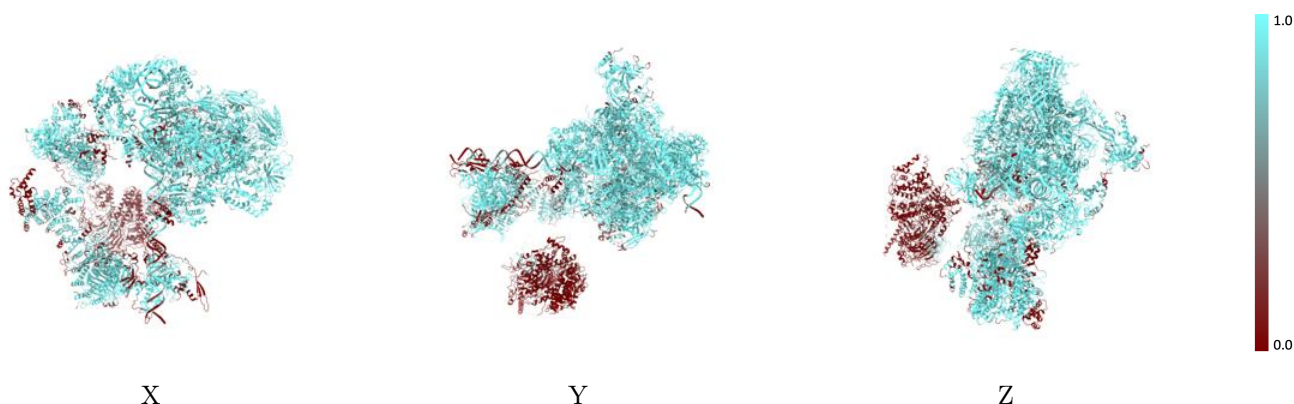
The images above show the 3D surface view of the map at the recommended contour level 0.0085 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



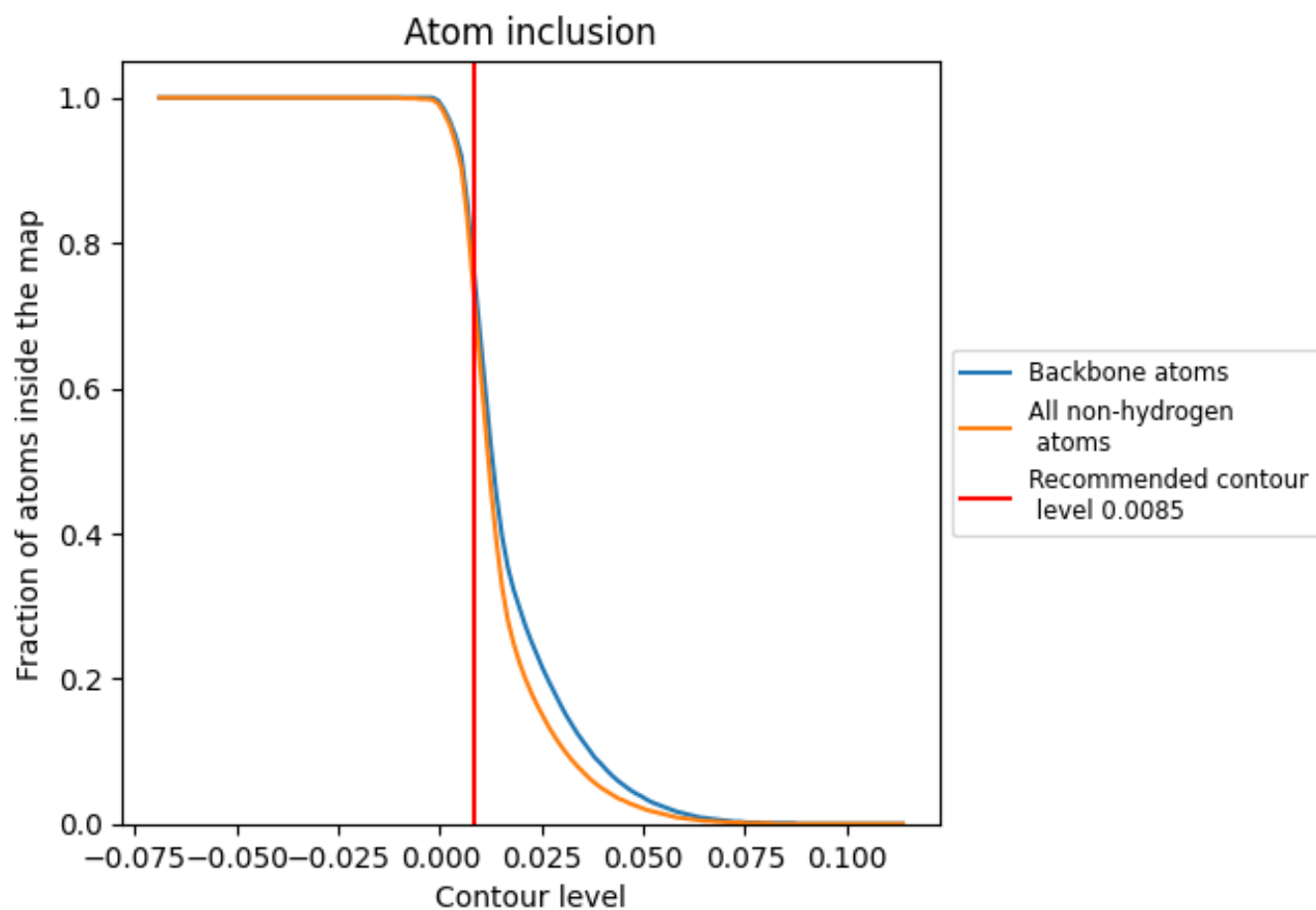
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.0085).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 75% of all backbone atoms, 72% 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 (0.0085) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7220	 0.1220
A	 0.6010	 0.0360
B	 0.8160	 0.0470
D	 0.7180	 0.0730
E	 0.7490	 0.0490
F	 0.6920	 0.0420
G	 0.6330	 0.0590
H	 0.7350	 0.0450
I	 0.8450	 0.0430
J	 0.9280	 0.0530
L	 0.6420	 0.0560
O	 0.9380	 0.1050
P	 0.9640	 0.1320
Q	 0.9080	 0.1150
R	 0.9270	 0.1760
S	 0.8710	 0.0910
T	 0.8620	 0.1020
U	 0.7800	 0.0840
V	 0.8180	 0.0700
X	 0.7270	 0.1100
Y	 0.7150	 0.1110
c	 0.0000	 0.0100
d	 0.0000	 0.0160
e	 0.1300	 0.0380
f	 0.5800	 0.0480
i	 0.0340	 0.0210
j	 0.0000	 0.0050
k	 0.0000	 0.0400
l	 0.0000	 0.0300
m	 0.0000	 0.0290
o	 0.8980	 0.2140
p	 0.9000	 0.2790
q	 0.9380	 0.2910
r	 0.8490	 0.1080
s	 0.9330	 0.1680



Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
t	 0.9290	 0.2370
u	 0.8870	 0.1280
v	 0.9420	 0.2110
w	 0.8780	 0.1930
x	 0.9210	 0.3030
y	 0.9200	 0.2620
z	 0.9130	 0.2670