



wwPDB EM Validation Summary Report ⓘ

Oct 18, 2021 – 11:07 am BST

PDB ID : 7OOP
EMDB ID : EMD-13010
Title : Pol II-CSB-CSA-DDB1-UVSSA-PAF-SPT6 (Structure 3)
Authors : Kokic, G.; Cramer, P.
Deposited on : 2021-05-28
Resolution : 2.90 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

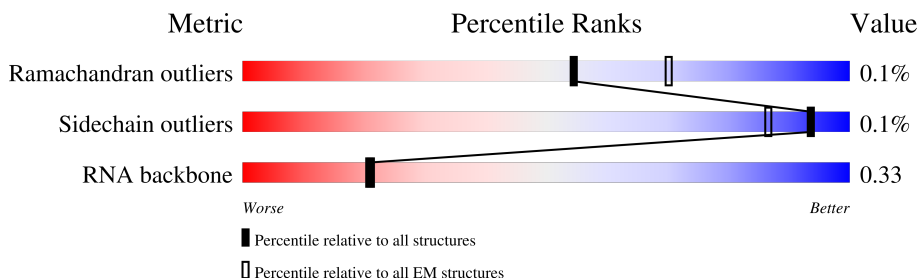
EMDB validation analysis : 0.0.0.dev97
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.23.2

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 2.90 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	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	
8	H	150	

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Mol	Chain	Length	Quality of chain
9	I	125	
10	J	67	
11	K	117	
12	L	58	
13	M	1726	
14	N	47	
15	P	45	
16	R	40	
17	S	1173	
18	T	47	
19	U	666	
20	V	531	
21	Y	305	
22	Z	531	
23	a	396	
24	b	1493	
25	c	709	
26	d	1140	

2 Entry composition [i](#)

There are 28 unique types of molecules in this entry. The entry contains 62441 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	1412	11179	7033	2002	2074	70	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	1131	9052	5727	1592	1669	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	260	2089	1309	359	415	6	0	0

- Molecule 4 is a protein called RPOL4c domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	128	1013	636	172	201	4	0	0

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	F	82	657	418	113	121	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	1334	867	216	243	8	0	0

- Molecule 8 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		
8	H	148	1186	750	194	237	5	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	117	949	587	169	182	11	0	0

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

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 RNA_pol_L_2 domain-containing protein.

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

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

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 elongation factor SPT6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	M	810	6648	4226	1155	1234	33	0	0

- Molecule 14 is a DNA chain called NTS.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	35	Total	C	N	O	P	0	0
			727	344	142	206	35		

- Molecule 15 is a RNA chain called RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	P	21	Total	C	N	O	P	0	0
			454	204	89	140	21		

- Molecule 16 is a protein called LEO1 helix.

Mol	Chain	Residues	Atoms				AltConf	Trace
16	R	40	Total	C	N	O	0	0
			160	80	40	40		

- Molecule 17 is a protein called RNA polymerase-associated protein CTR9 homolog.

Mol	Chain	Residues	Atoms				AltConf	Trace
17	S	890	Total	C	N	O	0	0
			3560	1780	890	890		

- Molecule 18 is a DNA chain called TS.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	T	47	Total	C	N	O	P	0	0
			947	453	159	288	47		

- Molecule 19 is a protein called RNA polymerase-associated protein LEO1.

Mol	Chain	Residues	Atoms				AltConf	Trace
19	U	104	Total	C	N	O	0	0
			416	208	104	104		

- Molecule 20 is a protein called RNA polymerase II-associated factor 1 homolog.

Mol	Chain	Residues	Atoms				AltConf	Trace
20	V	217	Total	C	N	O	0	0
			868	434	217	217		

- Molecule 21 is a protein called WD repeat-containing protein 61.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
21	Y	300	1200	600	300	300	0	0

- Molecule 22 is a protein called Parafibromin.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
22	Z	43	172	86	43	43	0	0

- Molecule 23 is a protein called DNA excision repair protein ERCC-8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	a	365	2849	1775	507	548	19	0	0

- Molecule 24 is a protein called DNA excision repair protein ERCC-6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	b	534	4356	2803	763	769	21	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
b	538	ARG	LYS	conflict	UNP Q03468

- Molecule 25 is a protein called UV-stimulated scaffold protein A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
25	c	141	564	282	141	141	0	0

- Molecule 26 is a protein called DNA damage-binding protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	d	1096	8491	5397	1423	1625	46	0	0

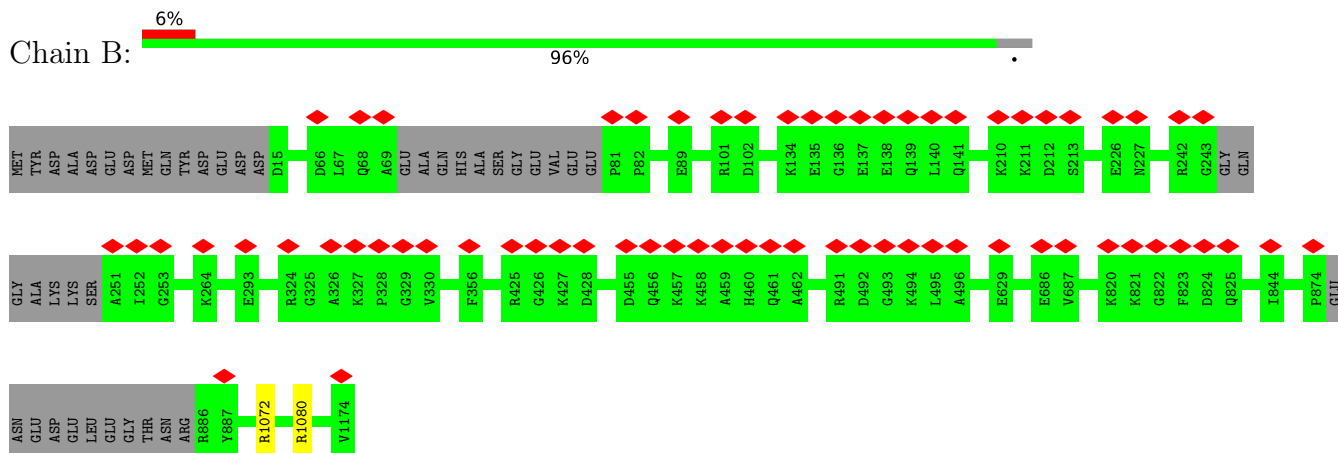
- Molecule 27 is ZINC ION (three-letter code: ZN) (formula: Zn).

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

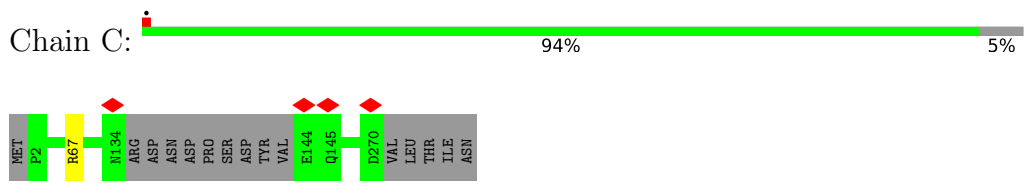
- Molecule 28 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
28	A	1	Total 1	Mg 1	0

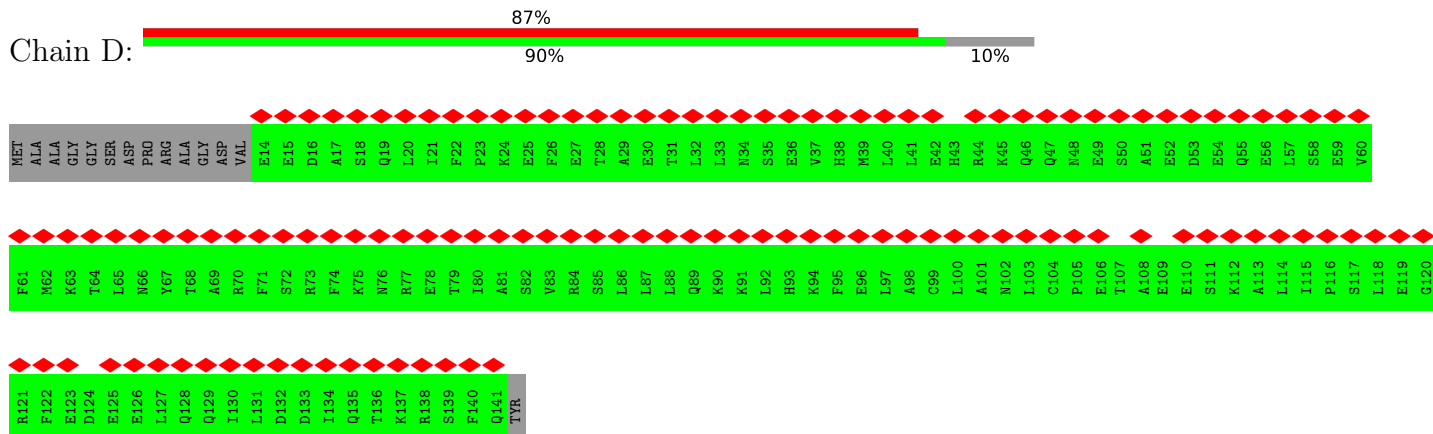
• Molecule 2: DNA-directed RNA polymerase subunit beta



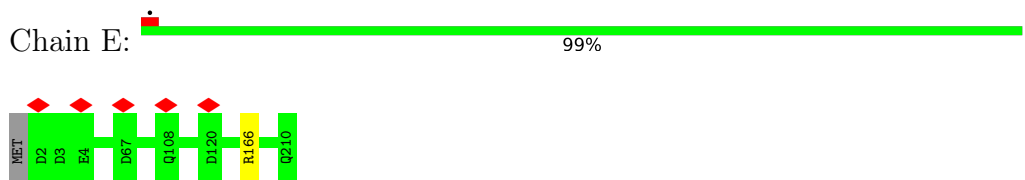
• Molecule 3: DNA-directed RNA polymerase II subunit RPB3



• Molecule 4: RPOL4c domain-containing protein



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



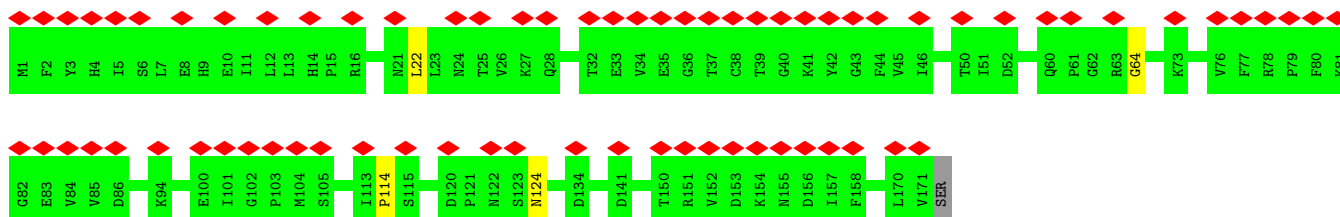
• Molecule 6: DNA-directed RNA polymerase II subunit F





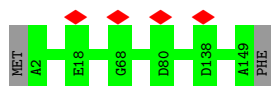
- Molecule 7: DNA-directed RNA polymerase II subunit RPB7

Chain G: 42% 97%



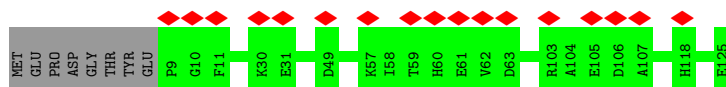
- Molecule 8: DNA-directed RNA polymerases I, II, and III subunit RPABC3

Chain H: 99%



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

Chain I: 14% 94% 6%



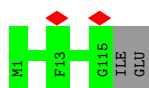
- Molecule 10: DNA-directed RNA polymerases I, II, and III subunit RPABC5

Chain J: 100%



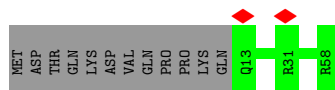
- Molecule 11: RNA_pol_L_2 domain-containing protein

Chain K: 98%

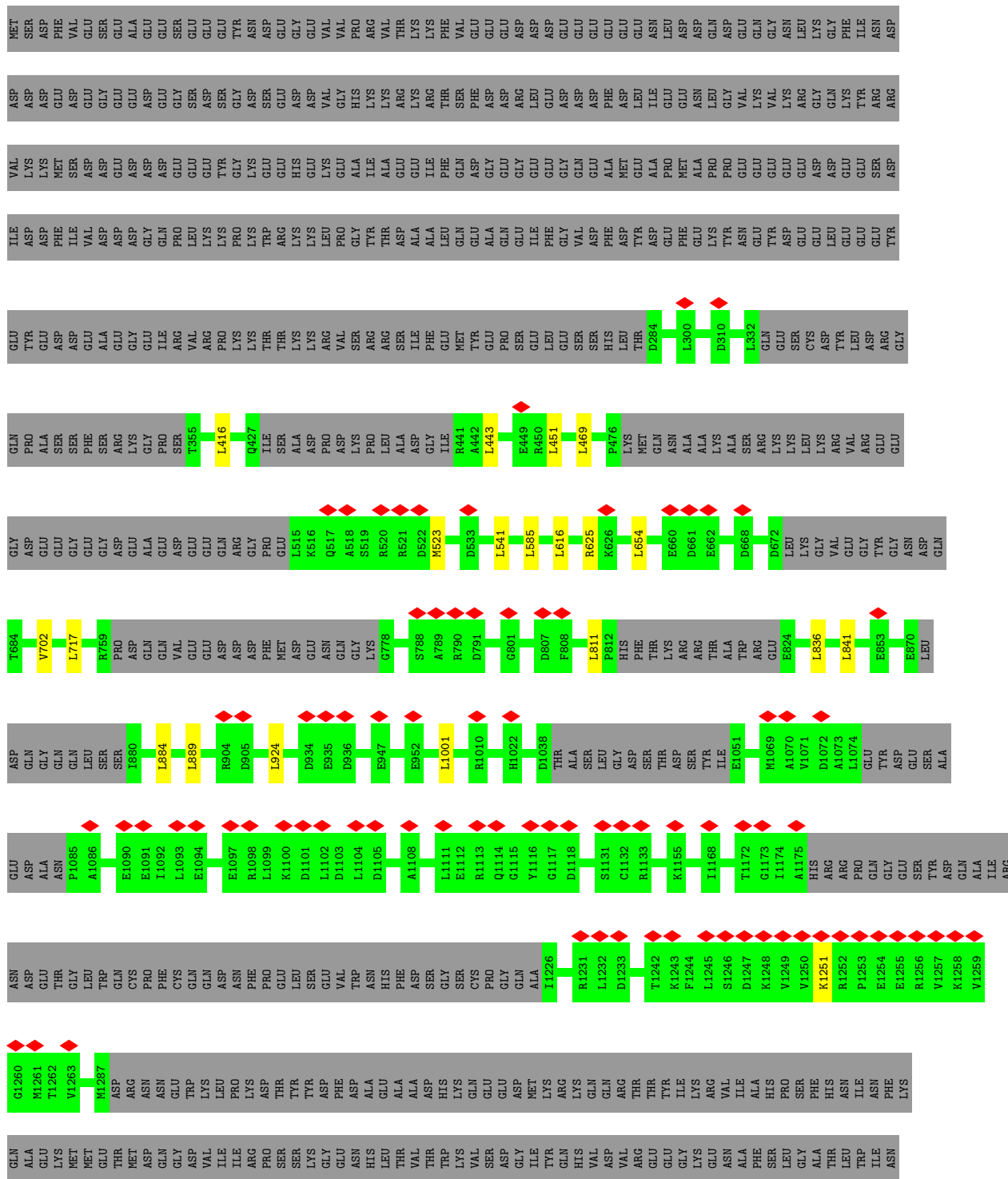


- Molecule 12: RNA polymerase II subunit K

Chain L: 79% 21%



• Molecule 13: Transcription elongation factor SPT6

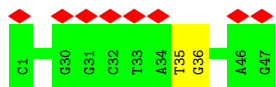


D121	G181	L241	V301	V367	T438	P565	A666	L727	F805	K868
K122	A182	E242	E302	L368	L441	D566	R667	F728	D806	E869
I123	L183	L243	A303	K369	L442	A567	D668	K729	L807	E870
I124	A184	N244	M304	A370	Q442	A577	V669	C730	A808	Q871
M125	Y185	N245	Q305	P371	E443	E580	F670	G731	L809	K872
Y126	Y186	K246	A306	Y372	K444	E581	Q672	K732	A810	L873
D127	K187	E247	E307	N373	V445	Q582	V673	L733	A811	L874
Q128	K188	A248	S308	N374	Q446	Q583	H674	Q734	T812	L875
N129	A189	Q249	C309	N375	A447	P583	E675	E735	R815	L876
H130	L190	S250	Y310	Y375	D448	Q584	A676	C736	Q816	Q877
L131	R191	I251	Q311	K378	E452	D585	A677	K737	Q817	R878
L132	T192	K252	L312	K379	L453	Q586	T677	L741	Q818	A879
G133	N193	N253	A313	I380	L454	K587	A678	K742	D818	Q880
R134	P194	G254	R314	L381	M455	E688	D679	A743	D819	L820
A135	G195	V255	S315	G382	M456	R590	L680	D750	Q823	E883
C136	C196	Q256	F316	S383	A459	L591	S681	T751	A824	R884
F137	P197	L257	H317	L384	A460	L592	D682	W752	H827	T885
C138	A198	L258	V318	Y385	R463	K693	V683	F755	V828	K886
L139	E199	S259	Q319	Y386	L464	Q594	M684	W756	A829	L889
L140	V200	R260	E320	A386	L465	P695	L685	A757	R830	M890
E141	R201	A261	D321	A387	Q465	S596	H686	L758	A831	F891
G142	L202	Y262	Y322	S388	G468	T597	L687	L759	R832	F892
D143	G203	T263	D323	E389	F474	Q598	A688	W760	K633	T892
K144	M204	I264	Q324	E392	L475	D600	L690	R763	Q834	Q893
M145	G205	D265	Q327	D395	L476	A606	Y691	L764	D835	D894
M146	H206	P266	Y328	I396	A477	M609	V692	L765	E836	E895
Q147	C207	S267	E331	A397	R480	V610	H693	T766	Q837	E896
A148	F208	N268	A332	K398	A481	W611	Q694	S767	R839	L897
D149	V209	P269	A333	G399	A482	H616	Q695	W768	E840	L898
A150	K210	M270	Q334	K402	A483	Q617	Q696	L769	L841	R842
Q151	L211	V271	F335	E484	E484	P618	V697	L769	L842	K843
F152	N212	L272	F336	K403	A485	P618	H698	L769	L843	A844
H153	K213	N273	F337	V404	E486	W618	L699	L770	Q845	E845
F154	H154	H274	A336	T405	H487	T619	S699	S774	Q846	Q847
V155	L214	H274	S337	A406	D488	H620	A700	W775	A847	R848
L156	E215	L275	S338	Q407	D489	D621	V701	K773	Q848	E849
M157	K216	A276	S339	Y408	E489	D622	W703	W775	Q849	A850
Q158	A217	T277	F340	Y409	M493	H623	M704	L776	Q851	E851
S159	R218	H278	F341	P409	A494	E642	E705	K777	L852	L852
L219	L219	F279	L342	D410	C511	D643	W706	E778	L853	R853
P160	A220	F281	P343	V412	R525	A644	C707	L778	L854	Q854
N161	F221	F281	F344	E413	E526	N646	L708	L780	Q855	K855
N162	S222	K282	F344	A414	H527	N646	W709	W781	L856	L856
I163	R223	K283	L347	V415	E527	N647	L708	A782	L857	L857
P164	A224	D284	G348	A414	H528	L647	K710	W783	L858	L858
A165	L225	Y285	Q349	A414	E529	L650	F711	K784	L859	L859
L166	E226	S286	M350	T425	N529	N651	F712	E785	L860	L860
L167	L227	K287	K351	D426	Y530	K654	W712	L786	L861	L861
G168	N228	V288	I352	I427	Y534	A658	K713	L786	L862	L862
K169	S229	Q289	Y353	Q428	Y534	A658	W714	L786	L863	L863
A170	K230	H290	R354	G429	E549	A658	Q715	L786	L864	L864
C171	C231	L291	G355	A430	E549	A658	W716	L786	L865	L865
I172	V232	A292	E358	L431	E556	A658	W716	L786	L866	L866
S173	G233	L293	Q362	S432	E556	A658	L717	L786	L867	L867
F174	A234	H294	C363	A433	Q559	A658	E718	L786	L868	L868
N175	L235	A295	F364	Y434	Q559	A658	W719	L786	L869	L869
K176	V236	F296	F364	G435	H564	A658	Y722	L786	L870	L870
K177	G237	H297	E365	T436	H564	A658	L723	L786	L871	L871
D178	L238	N298	K366	A437	H564	A658	A724	L786	L872	L872
Y179	A239	T299	E366	A437	H564	A658	W725	L786	L873	L873
R180	V240	E300	E366	A437	H564	A658	A726	L786	L874	L874

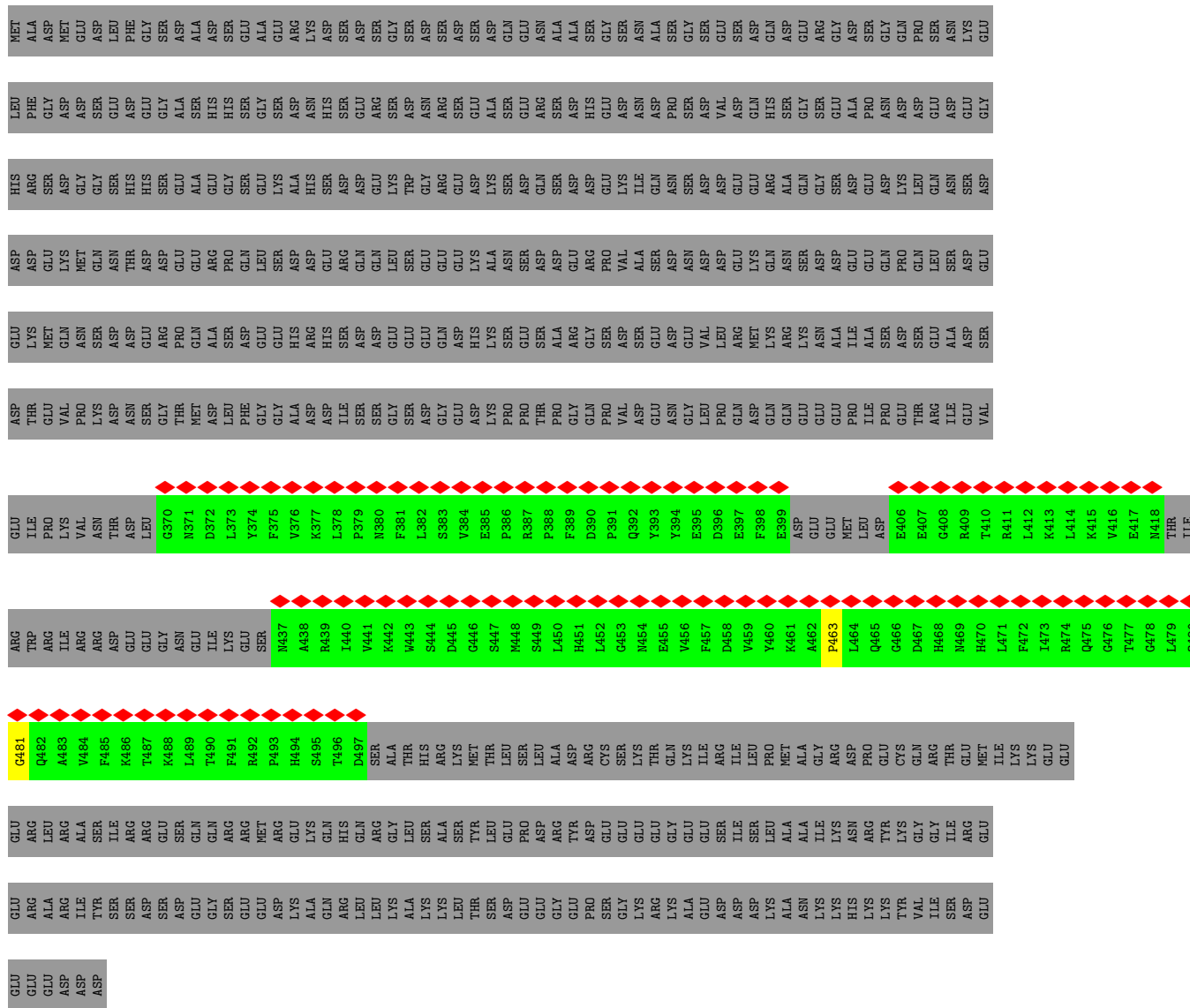
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VAL	LYS	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ALA	LYS	CYS	LYS	LYS	LYS	LYS	LYS	LYS	LYS	LYS
PRO	ALA	SER	LYS	LYS	LYS	LYS	LYS	LYS	LYS	LYS
GLY	PRO	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ARG	PRO	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG
ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP
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GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP
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GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP
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GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
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GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
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GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP
GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN
GLY	GLY	GLY	GLY	GLY	GL					

GLY
SER
ASP
ASP
SER
ASP

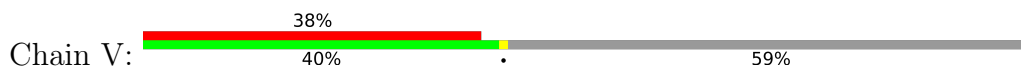
• Molecule 18: TS

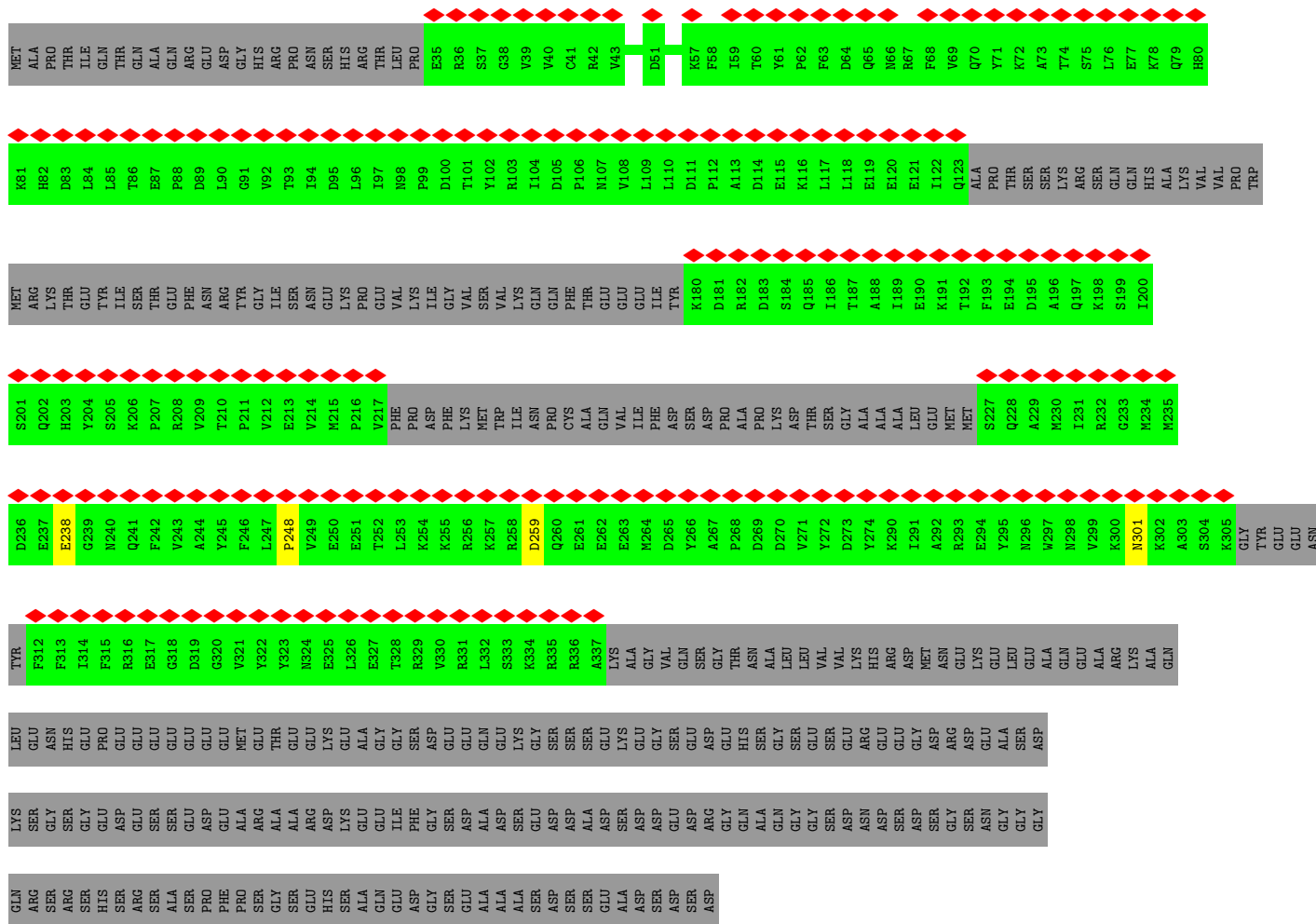


• Molecule 19: RNA polymerase-associated protein LEO1

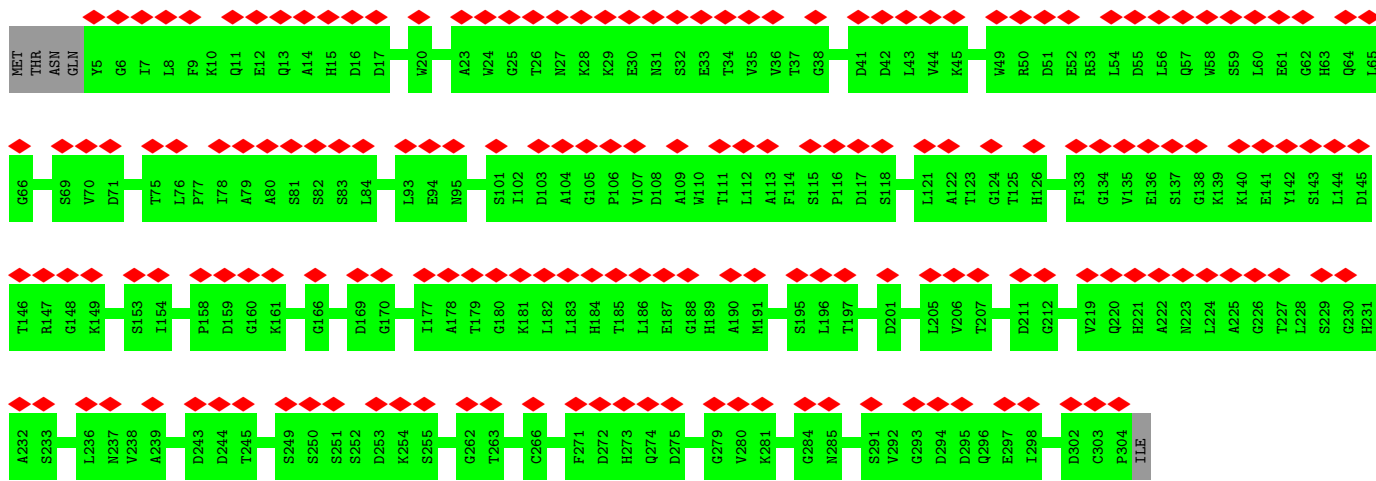


• Molecule 20: RNA polymerase II-associated factor 1 homolog

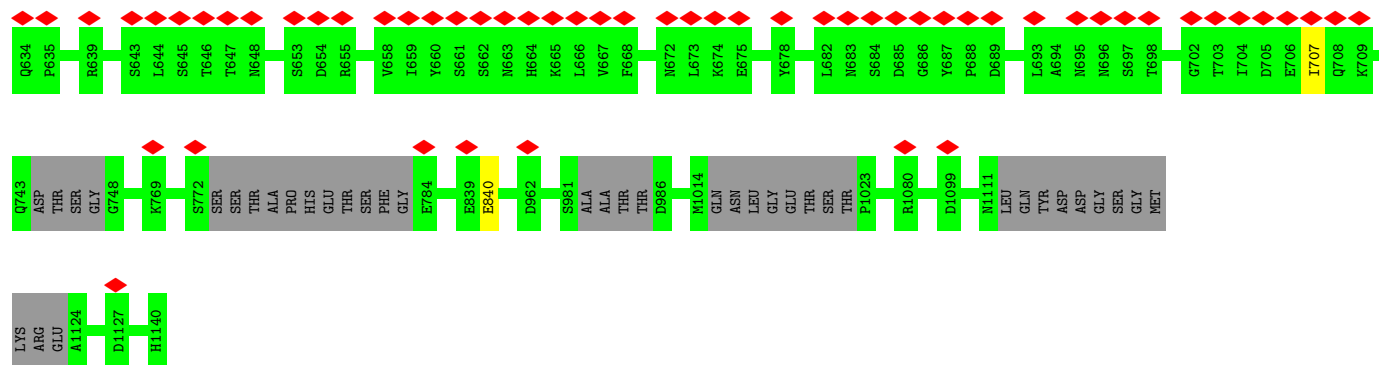




• Molecule 21: WD repeat-containing protein 61



• Molecule 22: Parafibromin



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	100000	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 ($e^-/\text{\AA}^2$)	40.4	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	81000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.130	Depositor
Minimum map value	-0.062	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.01	Depositor
Map size (Å)	419.99997, 419.99997, 419.99997	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.05, 1.05, 1.05	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 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	0.30	0/11382	0.54	1/15368 (0.0%)
2	B	0.31	0/9233	0.53	0/12463
3	C	0.34	0/2132	0.56	1/2896 (0.0%)
4	D	0.37	0/1027	0.64	0/1384
5	E	0.29	0/1751	0.53	0/2366
6	F	0.31	0/667	0.50	0/901
7	G	0.50	0/1365	0.71	2/1853 (0.1%)
8	H	0.33	0/1207	0.53	0/1628
9	I	0.30	0/972	0.54	0/1316
10	J	0.32	0/542	0.50	0/730
11	K	0.30	0/939	0.49	0/1271
12	L	0.32	0/394	0.59	0/524
13	M	0.43	0/6770	0.71	23/9119 (0.3%)
14	N	0.89	0/817	0.95	0/1258
15	P	1.23	5/510 (1.0%)	2.12	8/793 (1.0%)
17	S	0.28	0/3559	0.52	0/4447
18	T	1.14	2/1056 (0.2%)	1.05	0/1624
19	U	0.28	0/413	0.47	0/511
20	V	0.28	0/864	0.54	0/1073
21	Y	0.32	0/1199	0.62	0/1497
22	Z	0.29	0/171	0.52	0/212
23	a	0.61	0/2908	0.61	0/3939
24	b	0.44	0/4460	0.63	2/6024 (0.0%)
25	c	0.22	0/563	0.42	0/702
26	d	0.47	1/8646 (0.0%)	0.62	0/11725
All	All	0.43	8/63547 (0.0%)	0.64	37/85624 (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
1	A	0	1
7	G	0	1
23	a	0	2
24	b	0	2
All	All	0	6

The worst 5 of 8 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
15	P	29	A	C1'-N9	-5.60	1.39	1.46
15	P	32	C	C1'-N1	5.49	1.56	1.48
18	T	36	DG	C3'-O3'	-5.25	1.37	1.44
15	P	26	U	C1'-N1	5.23	1.56	1.48
15	P	25	A	C1'-N9	-5.12	1.39	1.46

The worst 5 of 37 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
15	P	36	A	O5'-P-OP2	-33.38	70.65	110.70
15	P	36	A	OP1-P-OP2	-25.02	82.08	119.60
15	P	36	A	O5'-P-OP1	20.52	135.32	110.70
13	M	717	LEU	CB-CG-CD1	14.25	135.22	111.00
15	P	34	A	O5'-P-OP1	-13.04	93.97	105.70

There are no chirality outliers.

5 of 6 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	538	VAL	Peptide
7	G	124	ASN	Peptide
23	a	174	LYS	Peptide
23	a	175	SER	Peptide
24	b	912	LEU	Peptide

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

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	1402/1970 (71%)	1368 (98%)	34 (2%)	0	100	100
2	B	1123/1174 (96%)	1075 (96%)	48 (4%)	0	100	100
3	C	256/275 (93%)	249 (97%)	7 (3%)	0	100	100
4	D	126/142 (89%)	121 (96%)	5 (4%)	0	100	100
5	E	207/210 (99%)	204 (99%)	3 (1%)	0	100	100
6	F	80/127 (63%)	75 (94%)	5 (6%)	0	100	100
7	G	169/172 (98%)	163 (96%)	5 (3%)	1 (1%)	25	58
8	H	146/150 (97%)	142 (97%)	4 (3%)	0	100	100
9	I	115/125 (92%)	111 (96%)	4 (4%)	0	100	100
10	J	65/67 (97%)	65 (100%)	0	0	100	100
11	K	113/117 (97%)	111 (98%)	2 (2%)	0	100	100
12	L	44/58 (76%)	40 (91%)	4 (9%)	0	100	100
13	M	788/1726 (46%)	743 (94%)	45 (6%)	0	100	100
17	S	888/1173 (76%)	842 (95%)	46 (5%)	0	100	100
19	U	98/666 (15%)	82 (84%)	14 (14%)	2 (2%)	7	27
20	V	209/531 (39%)	174 (83%)	31 (15%)	4 (2%)	8	28
21	Y	298/305 (98%)	278 (93%)	20 (7%)	0	100	100
22	Z	41/531 (8%)	40 (98%)	1 (2%)	0	100	100
23	a	363/396 (92%)	344 (95%)	19 (5%)	0	100	100
24	b	526/1493 (35%)	504 (96%)	22 (4%)	0	100	100
25	c	139/709 (20%)	136 (98%)	3 (2%)	0	100	100
26	d	1082/1140 (95%)	1012 (94%)	69 (6%)	1 (0%)	51	82
All	All	8278/13257 (62%)	7879 (95%)	391 (5%)	8 (0%)	54	82

5 of 8 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
20	V	248	PRO
26	d	707	ILE
7	G	64	GLY
19	U	481	GLY
20	V	301	ASN

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	1242/1749 (71%)	1240 (100%)	2 (0%)	93	98
2	B	992/1027 (97%)	990 (100%)	2 (0%)	93	98
3	C	237/252 (94%)	237 (100%)	0	100	100
4	D	108/126 (86%)	108 (100%)	0	100	100
5	E	191/192 (100%)	190 (100%)	1 (0%)	88	96
6	F	71/111 (64%)	71 (100%)	0	100	100
7	G	147/153 (96%)	147 (100%)	0	100	100
8	H	129/131 (98%)	129 (100%)	0	100	100
9	I	105/112 (94%)	105 (100%)	0	100	100
10	J	56/56 (100%)	56 (100%)	0	100	100
11	K	104/106 (98%)	104 (100%)	0	100	100
12	L	43/55 (78%)	43 (100%)	0	100	100
13	M	722/1522 (47%)	720 (100%)	2 (0%)	92	98
23	a	320/348 (92%)	320 (100%)	0	100	100
24	b	476/1297 (37%)	475 (100%)	1 (0%)	93	98
26	d	938/999 (94%)	938 (100%)	0	100	100
All	All	5881/8236 (71%)	5873 (100%)	8 (0%)	93	98

5 of 8 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
24	b	745	ARG

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
13	M	1251	LYS
5	E	166	ARG
2	B	1080	ARG
13	M	625	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 6 such sidechains are listed below:

Mol	Chain	Res	Type
13	M	983	GLN
24	b	773	HIS
26	d	467	GLN
4	D	43	HIS
2	B	98	HIS

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
15	P	20/45 (44%)	10 (50%)	1 (5%)

5 of 10 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
15	P	27	A
15	P	28	U
15	P	29	A
15	P	30	U
15	P	33	A

All (1) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
15	P	27	A

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 9 ligands modelled in this entry, 9 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.

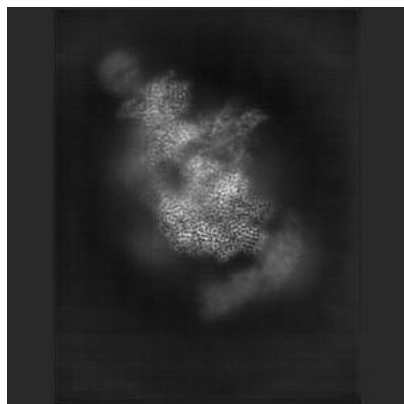
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-13010. These allow visual inspection of the internal detail of the map and identification of artifacts.

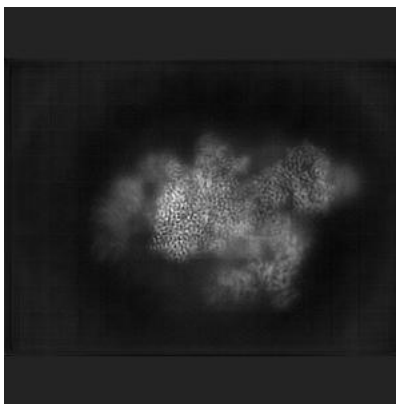
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

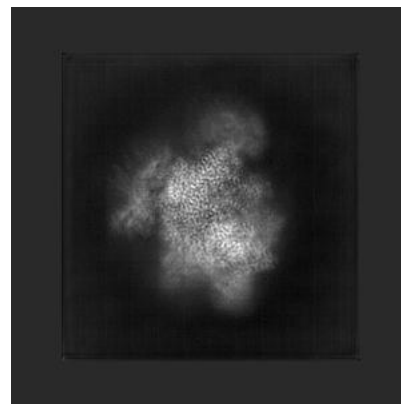
6.1.1 Primary map



X

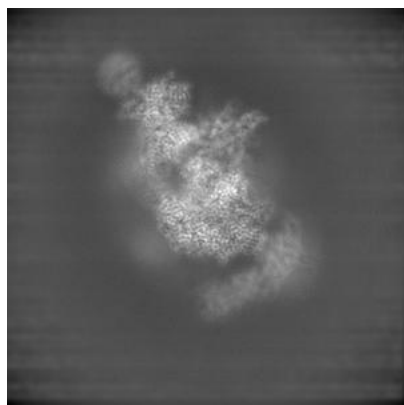


Y

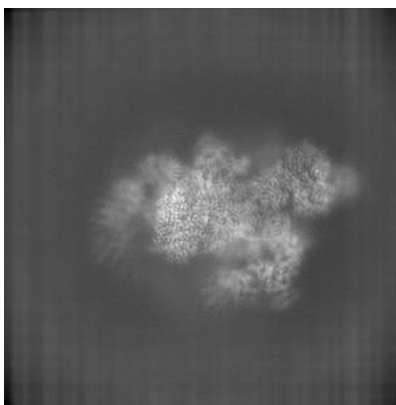


Z

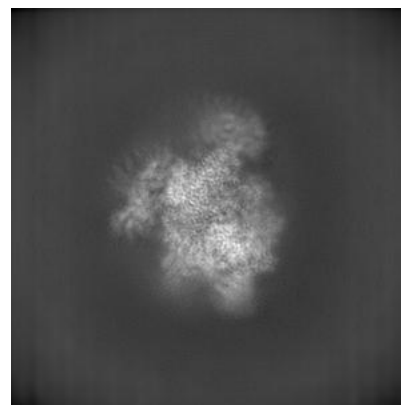
6.1.2 Raw map



X



Y

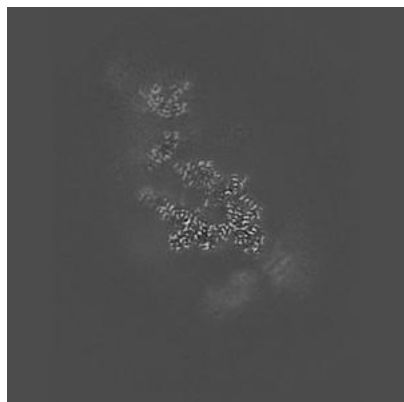


Z

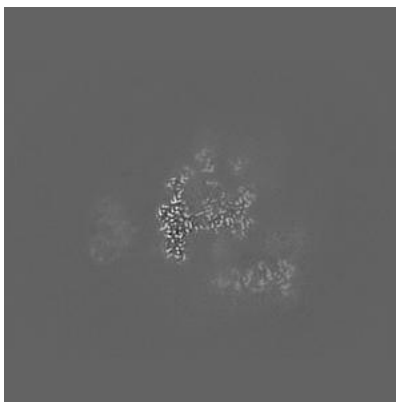
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

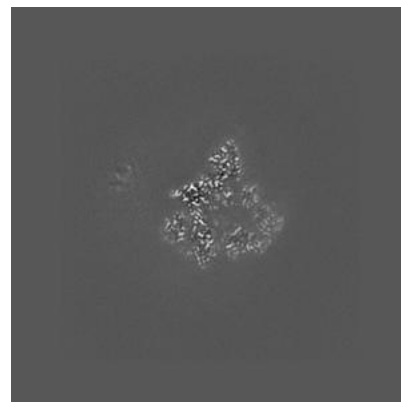
6.2.1 Primary map



X Index: 200

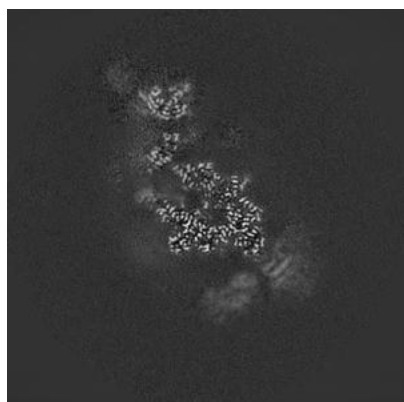


Y Index: 200

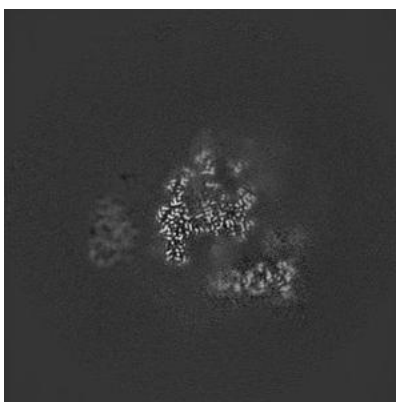


Z Index: 200

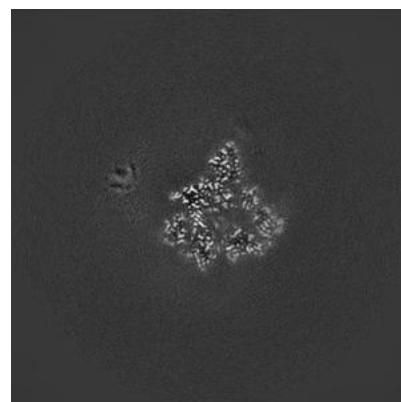
6.2.2 Raw map



X Index: 200



Y Index: 200



Z Index: 200

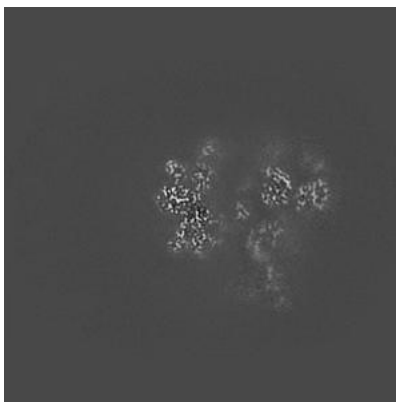
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

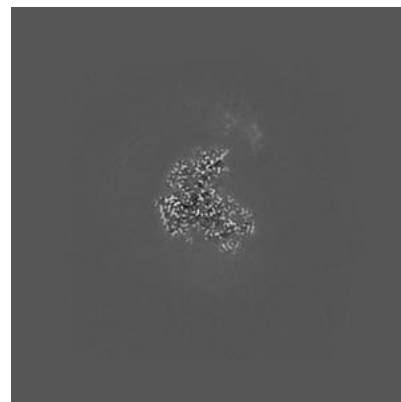
6.3.1 Primary map



X Index: 195

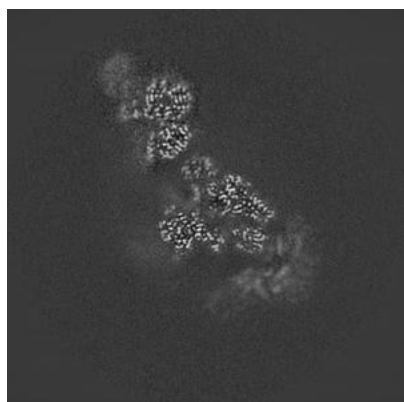


Y Index: 173

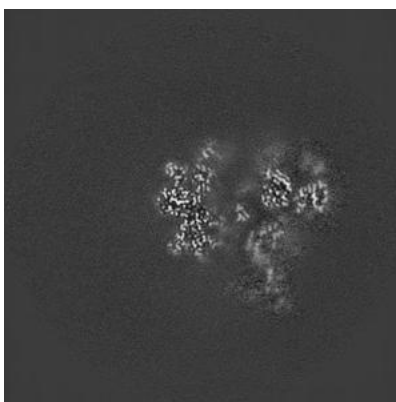


Z Index: 173

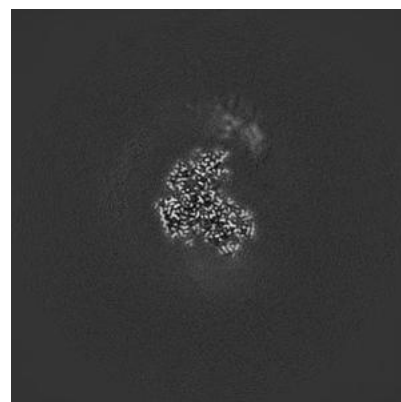
6.3.2 Raw map



X Index: 211



Y Index: 173

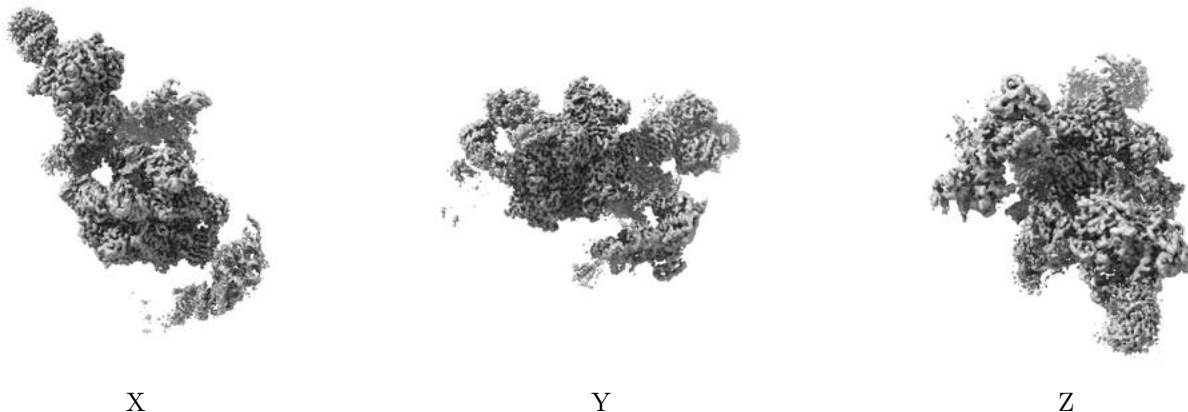


Z Index: 173

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

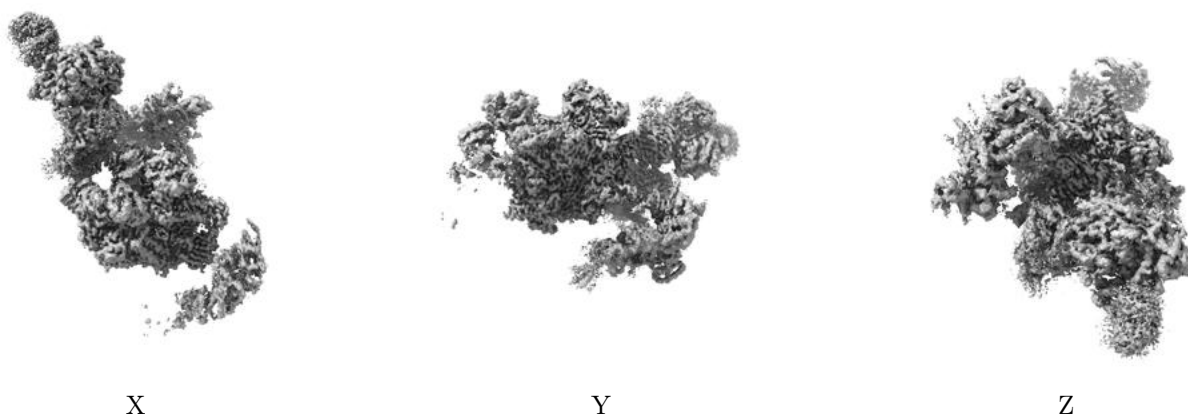
6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.01. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.4.2 Raw map



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

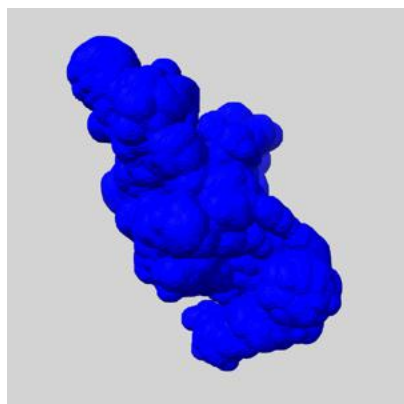
6.5 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

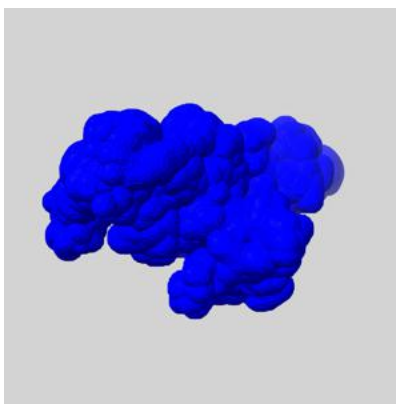
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

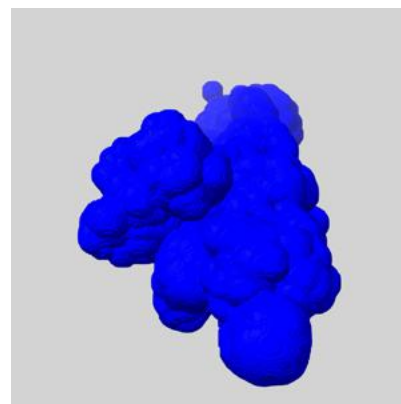
6.5.1 emd_13010_msk_1.map [i](#)



X

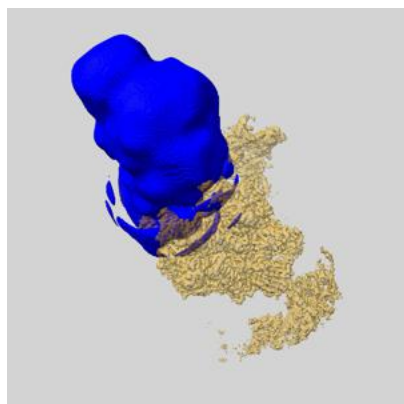


Y

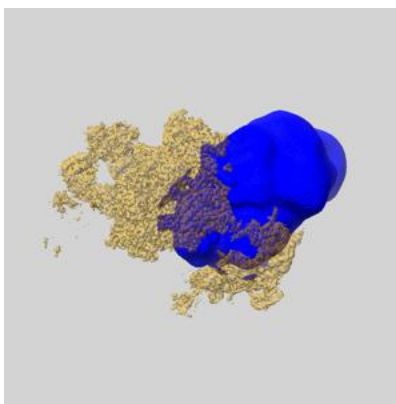


Z

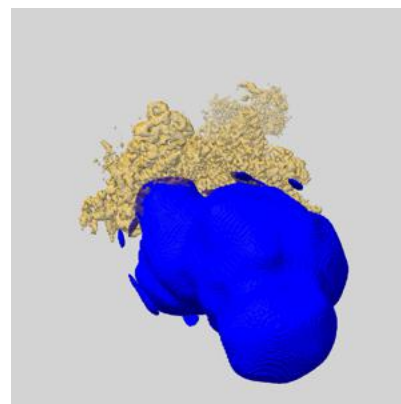
6.5.2 emd_13010_msk_2.map [i](#)



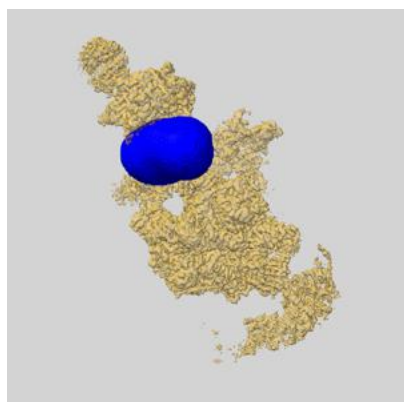
X



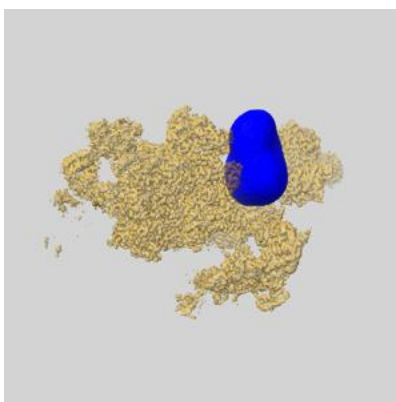
Y



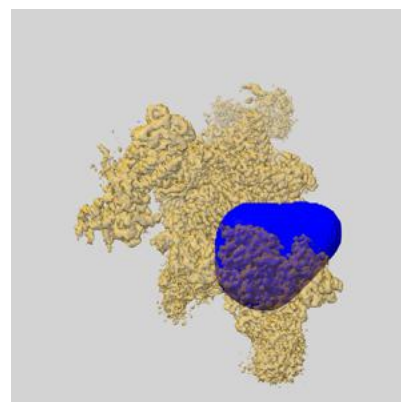
Z

6.5.3 emd_13010_msk_3.map [i](#)

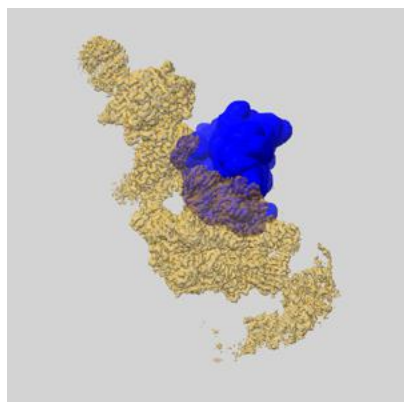
X



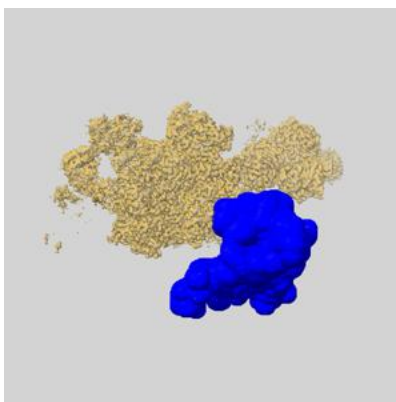
Y



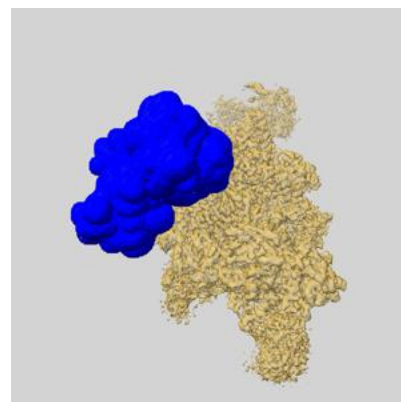
Z

6.5.4 emd_13010_msk_4.map [i](#)

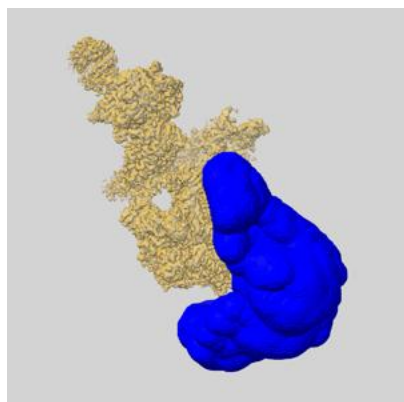
X



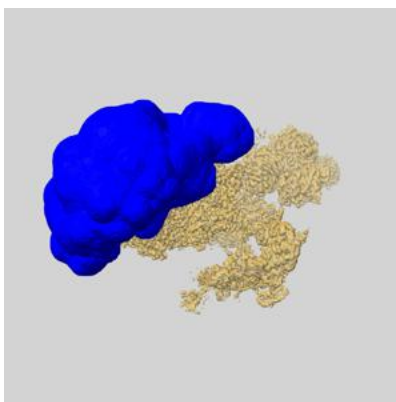
Y



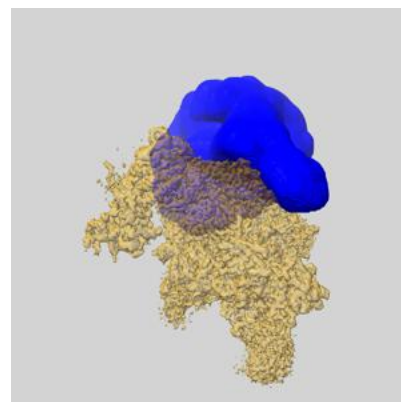
Z

6.5.5 emd_13010_msk_5.map [i](#)

X



Y

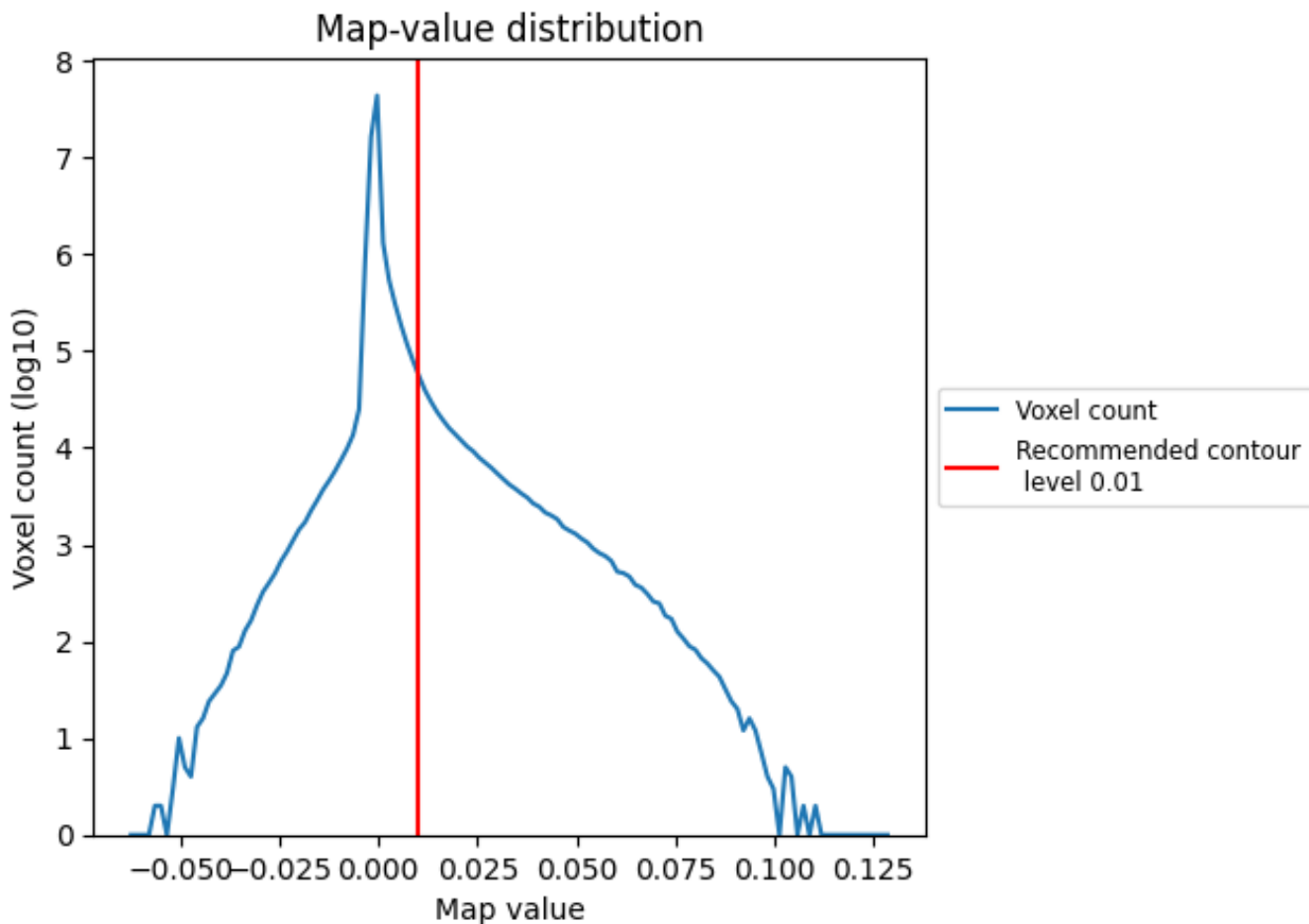


Z

7 Map analysis [i](#)

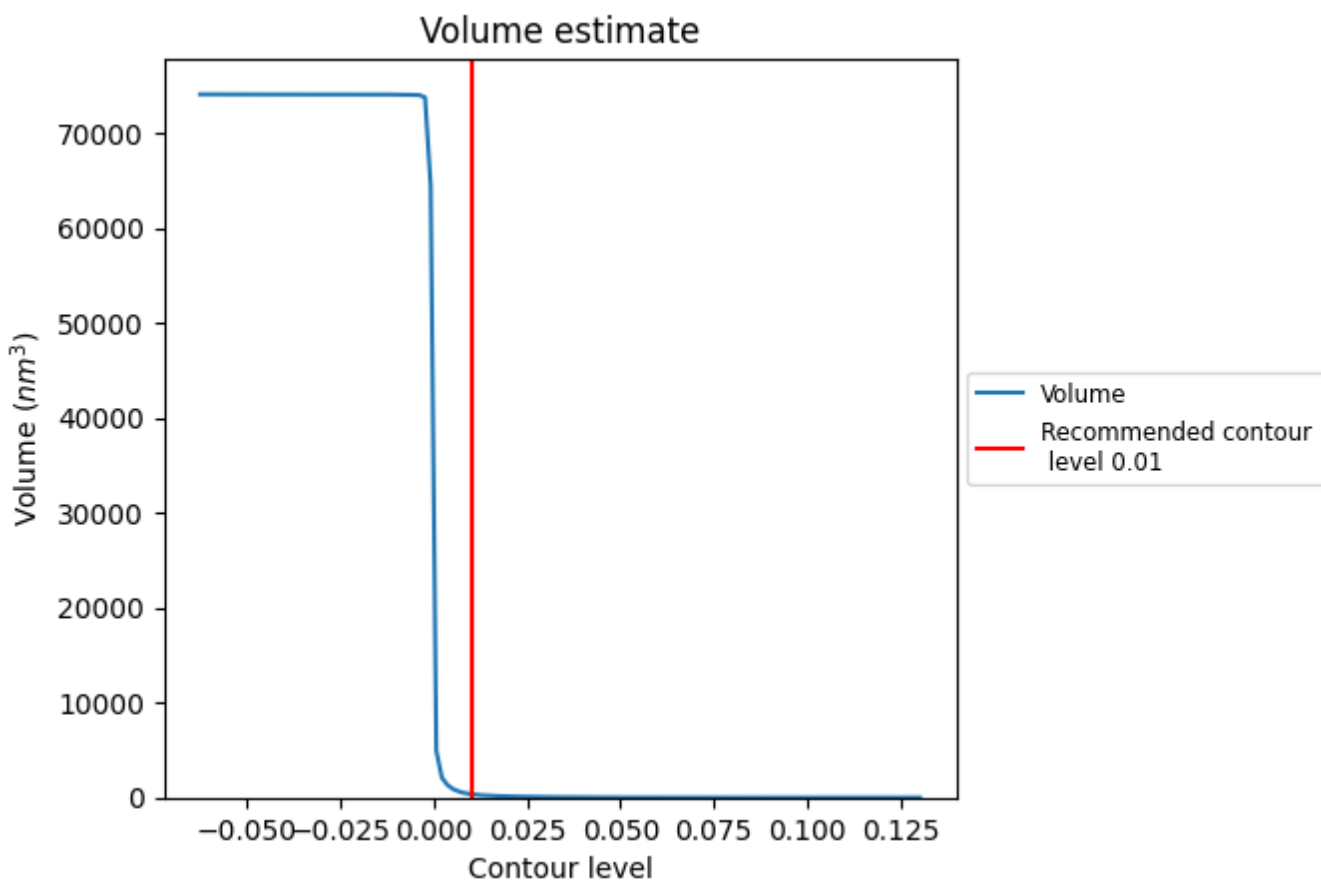
This section contains the results of statistical analysis of the map.

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.

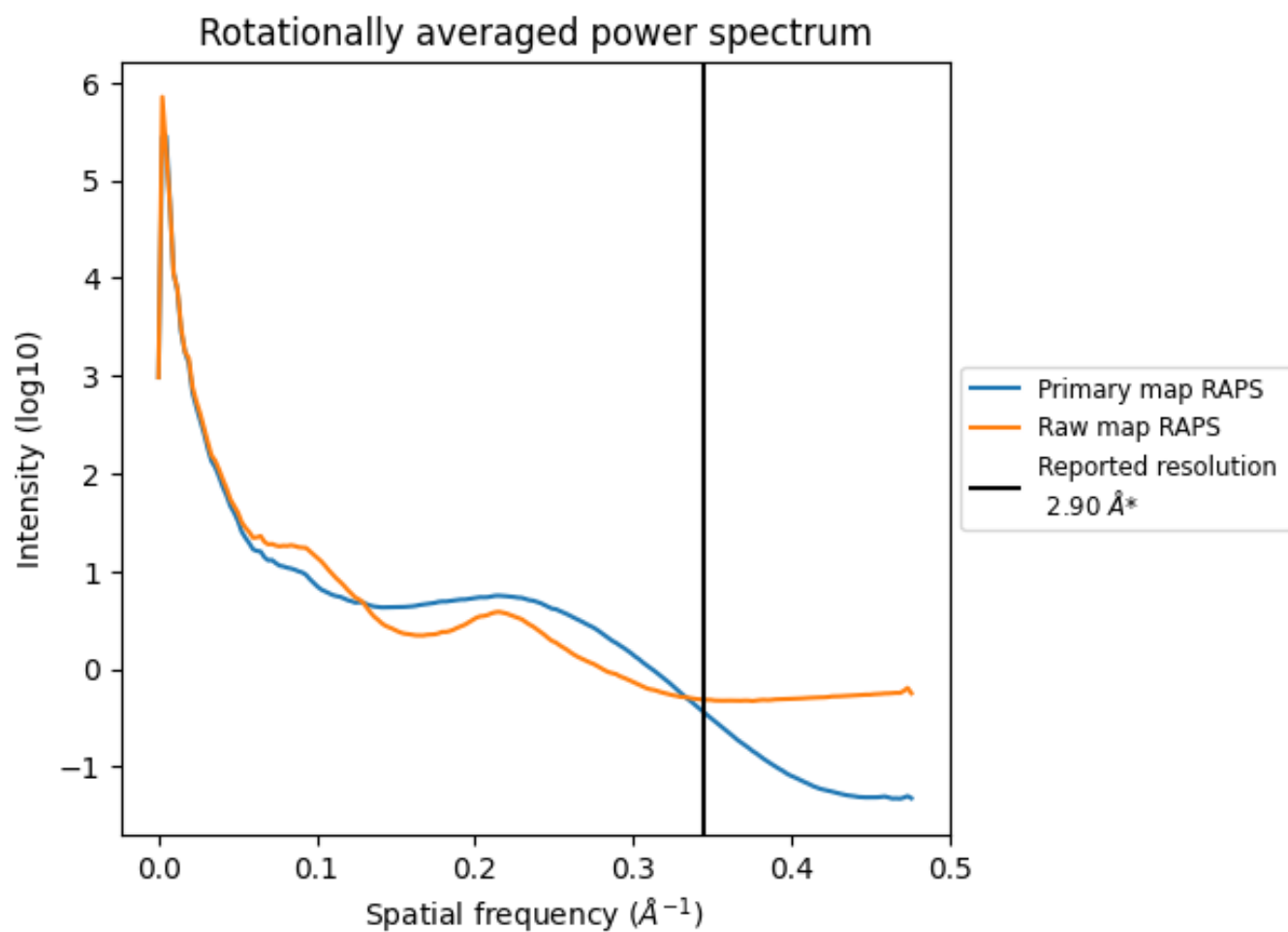
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 363 nm^3 ; this corresponds to an approximate mass of 328 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

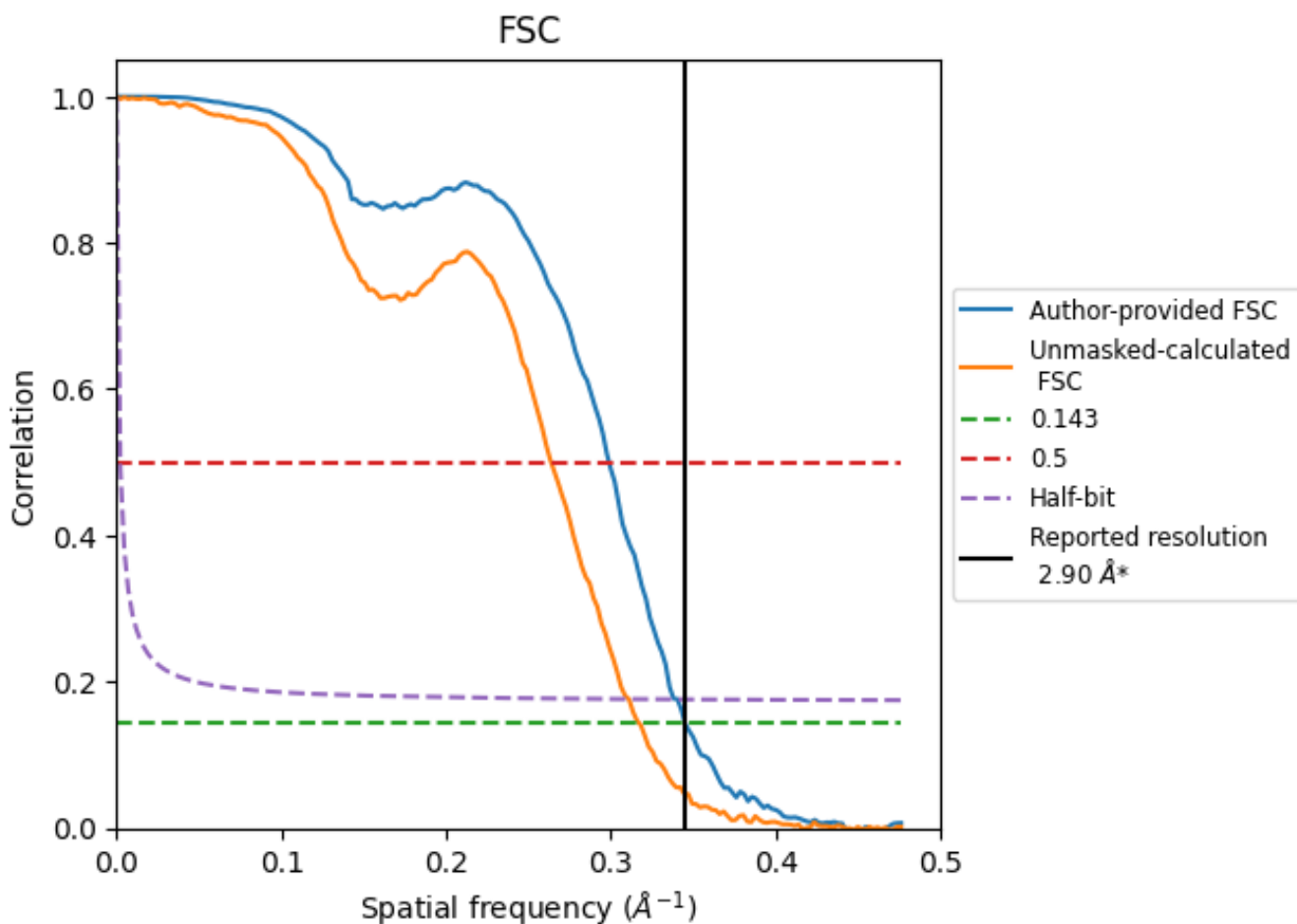


*Reported resolution corresponds to spatial frequency of 0.345 Å⁻¹

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 0.345 \AA^{-1}

8.2 Resolution estimates [i](#)

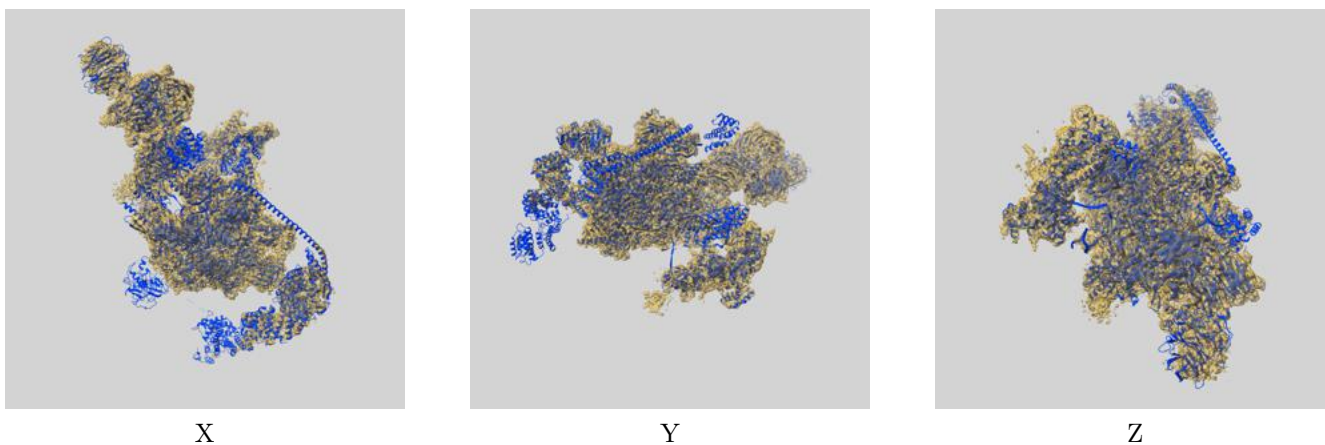
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.90	-	-
Author-provided FSC curve	2.90	3.34	2.94
Unmasked-calculated*	3.15	3.79	3.22

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

9 Map-model fit [i](#)

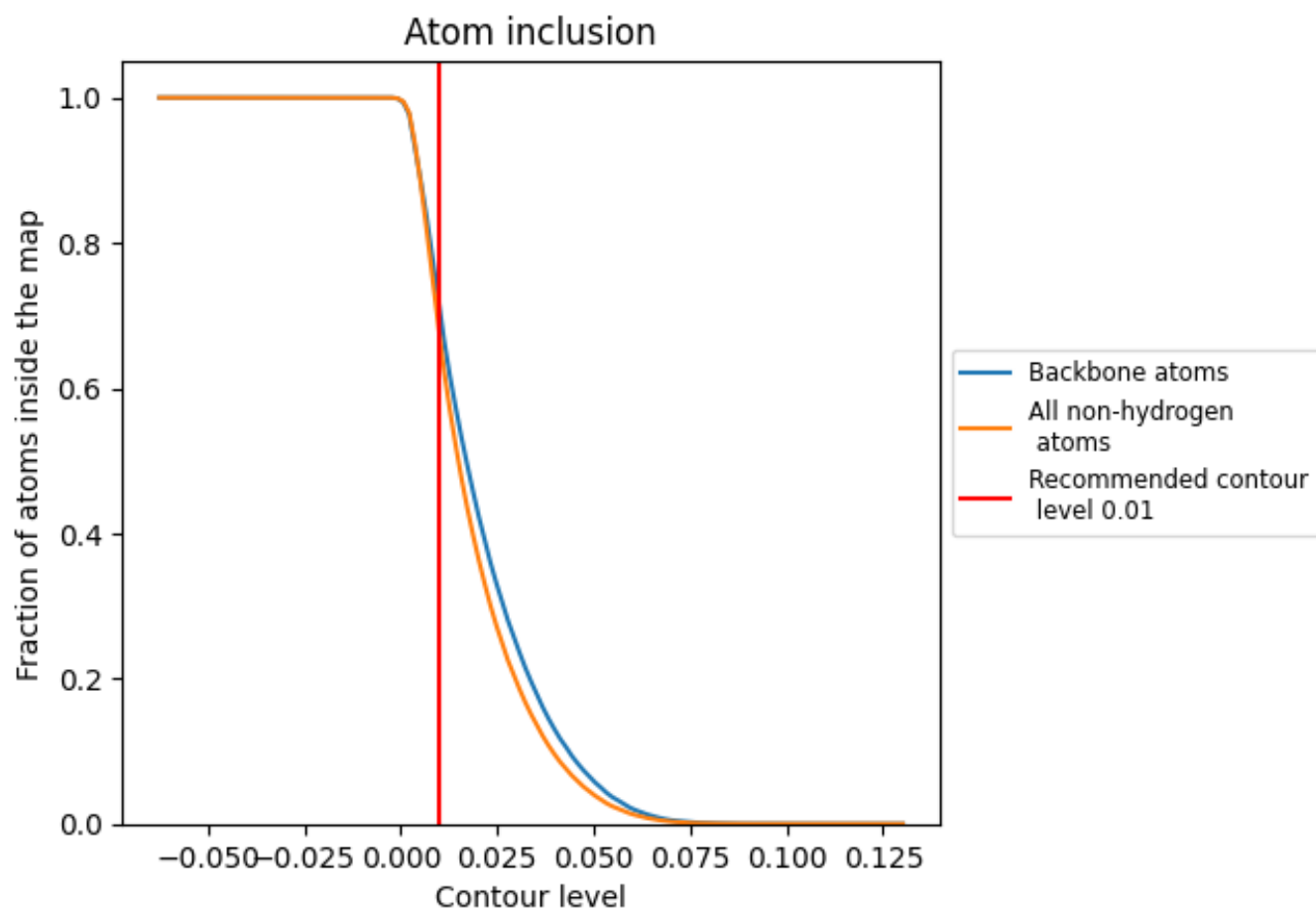
This section contains information regarding the fit between EMDB map EMD-13010 and PDB model 7OOP. Per-residue inclusion information can be found in section [3](#) on page [9](#).

9.1 Map-model overlay [i](#)



The images above show the 3D surface view of the map at the recommended contour level 0.01 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 Atom inclusion [i](#)



At the recommended contour level, 71% of all backbone atoms, 68% of all non-hydrogen atoms, are inside the map.