WORLDWIDE PDB
PROTEIN DATA BANK

wwPDB EM Validation Summary Report ⓘ

Apr 20, 2024 – 08:42 pm BST

PDB ID	:	7PNW
EMDB ID	:	EMD-13554
Title	:	Mouse mitochondrial ribosome small subunit lacking m5U modification
Authors	:	Itoh, Y.; Khawaja, A.; Laptev, I.; Sergiev, P.; Rorbach, J.; Amunts, A.
Deposited on	:	2021-09-08
Resolution	:	3.09 Å(reported)
Based on initial model	:	6RW4

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

EMDB validation analysis	:	0.0.1.dev92
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

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 3.09 Å.

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

Metric	Percentile Ranks	Value
Clashscore		1
Ramachandran outliers		0.0%
Sidechain outliers		0.1%
RNA backbone		0.61

Worse   *Better*

▮ Percentile relative to all structures

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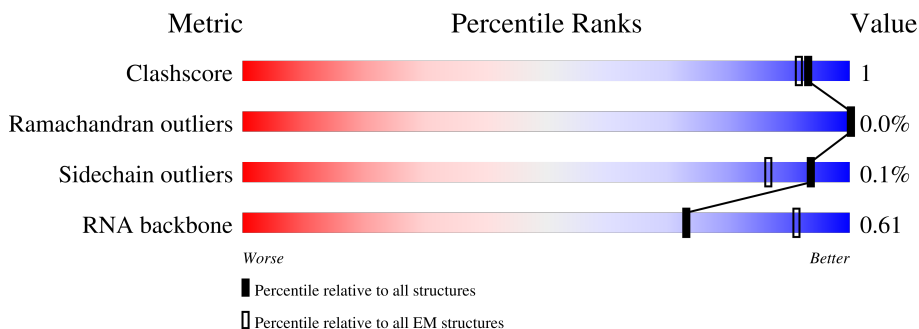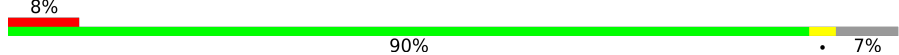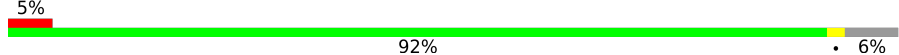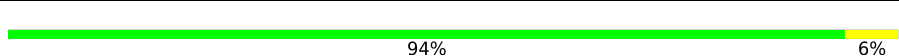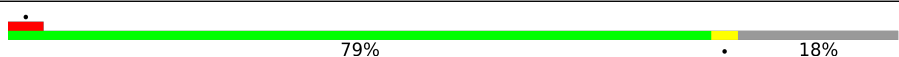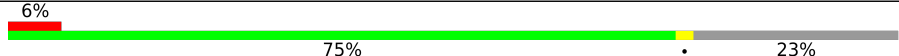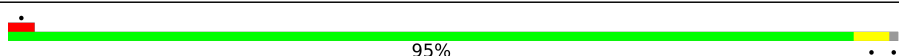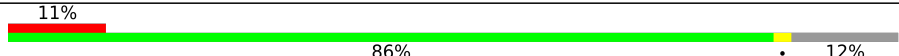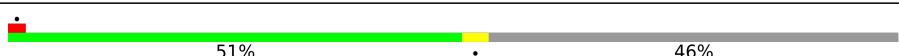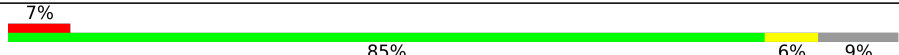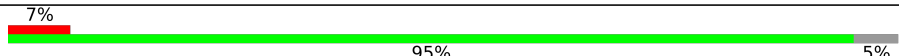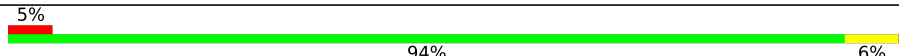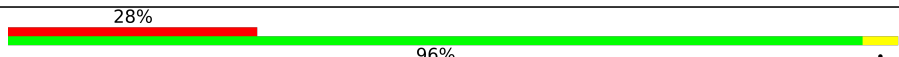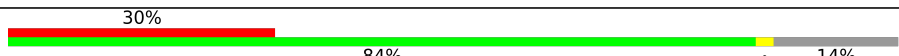
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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 <=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	956	• 81% 16% •
2	B	291	• 74% • 23%
3	C	167	77% • 21%
4	D	432	6% 75% • 22%
5	E	125	• 94% • •
6	F	242	5% 84% • 14%
7	G	390	8% 80% • 17%

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Mol	Chain	Length	Quality of chain
8	H	160	81% 6% 12%
9	I	191	69% 28%
10	J	139	74% 22%
11	K	128	77% 21%
12	L	258	7% 67% 32%
13	M	135	8% 90% 7%
14	N	120	5% 92% 6%
15	O	254	76% 22%
16	P	143	65% 32%
17	Q	86	94% 6%
18	R	359	79% 18%
19	S	177	6% 75% 23%
20	T	171	95%
21	U	200	85% 13%
22	V	415	11% 86% 12%
23	W	186	51% 46%
24	X	391	7% 85% 6% 9%
25	Y	384	9% 38% 61%
26	Z	106	7% 95% 5%
27	0	218	5% 94% 6%
28	1	320	86% 13%
29	2	117	28% 96%
30	3	200	35% 64%
31	4	685	30% 84% 14%

2 Entry composition ⓘ

There are 37 unique types of molecules in this entry. The entry contains 125573 atoms, of which 57662 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 RNA chain called 12S mitochondrial rRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	A	954	Total	C	H	N	O	P	0	0
			30524	9106	10255	3639	6570	954		

- Molecule 2 is a protein called 28S ribosomal protein S2, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
2	B	223	Total	C	H	N	O	S	0	0
			3590	1142	1799	326	315	8		

- Molecule 3 is a protein called 28S ribosomal protein S24, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
3	C	132	Total	C	H	N	O	S	0	0
			2163	690	1091	197	180	5		

- Molecule 4 is a protein called 28S ribosomal protein S5, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
4	D	339	Total	C	H	N	O	S	0	0
			5460	1698	2758	519	475	10		

- Molecule 5 is a protein called 28S ribosomal protein S6, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
5	E	122	Total	C	H	N	O	S	0	0
			1986	617	1007	181	178	3		

- Molecule 6 is a protein called 28S ribosomal protein S7, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
6	F	208	Total	C	H	N	O	S	0	0
			3472	1096	1750	316	299	11		

- Molecule 7 is a protein called 28S ribosomal protein S9, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
7	G	325	Total 5304	C 1689	H 2630	N 480	O 491	S 14	0	0

- Molecule 8 is a protein called 28S ribosomal protein S10, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
8	H	140	Total 2346	C 742	H 1193	N 200	O 207	S 4	0	0

- Molecule 9 is a protein called 28S ribosomal protein S11, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
9	I	137	Total 2047	C 629	H 1038	N 191	O 184	S 5	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
I	181	5F0	ASN	conflict	UNP Q9DCA2

- Molecule 10 is a protein called 28S ribosomal protein S12, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
10	J	108	Total 1749	C 528	H 903	N 172	O 141	S 5	0	0

- Molecule 11 is a protein called 28S ribosomal protein S14, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
11	K	101	Total 1743	C 534	H 888	N 175	O 140	S 6	0	0

- Molecule 12 is a protein called 28S ribosomal protein S15, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
12	L	176	Total 3041	C 930	H 1576	N 274	O 255	S 6	0	0

- Molecule 13 is a protein called 28S ribosomal protein S16, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
13	M	126	Total	C	H	N	O	S	0	0
			2004	623	1009	194	172	6		

- Molecule 14 is a protein called 28S ribosomal protein S17, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
14	N	113	Total	C	H	N	O	S	0	0
			1839	575	951	160	150	3		

- Molecule 15 is a protein called 28S ribosomal protein S18b, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
15	O	197	Total	C	H	N	O	S	0	0
			3146	1014	1548	289	286	9		

- Molecule 16 is a protein called 28S ribosomal protein S18c, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
16	P	97	Total	C	H	N	O	S	0	0
			1610	505	818	140	139	8		

- Molecule 17 is a protein called 28S ribosomal protein S21, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
17	Q	86	Total	C	H	N	O	S	0	0
			1482	453	750	146	126	7		

- Molecule 18 is a protein called 28S ribosomal protein S22, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
18	R	294	Total	C	H	N	O	S	0	0
			4816	1526	2416	418	449	7		

- Molecule 19 is a protein called 28S ribosomal protein S23, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
19	S	136	Total	C	H	N	O	S	0	0
			2257	722	1133	199	201	2		

- Molecule 20 is a protein called 28S ribosomal protein S25, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
20	T	170	Total	C	H	N	O	S	0	0
			2801	892	1413	238	246	12		

- Molecule 21 is a protein called 28S ribosomal protein S26, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
21	U	174	Total	C	H	N	O	S	0	0
			2908	894	1459	283	270	2		

- Molecule 22 is a protein called 28S ribosomal protein S27, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
22	V	365	Total	C	H	N	O	S	0	0
			5970	1911	2972	506	570	11		

- Molecule 23 is a protein called 28S ribosomal protein S28, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
23	W	100	Total	C	H	N	O	S	0	0
			1606	503	813	141	146	3		

- Molecule 24 is a protein called 28S ribosomal protein S29, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
24	X	357	Total	C	H	N	O	S	0	0
			5762	1834	2881	515	522	10		

- Molecule 25 is a protein called 28S ribosomal protein S31, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
25	Y	149	Total	C	H	N	O	S	0	0
			2439	809	1193	201	233	3		

- Molecule 26 is a protein called 28S ribosomal protein S33, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
26	Z	101	Total	C	H	N	O	S	0	0
			1682	526	848	157	148	3		

- Molecule 27 is a protein called 28S ribosomal protein S34, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
27	0	216	Total	C	H	N	O	S	0	0
			3649	1139	1838	355	313	4		

- Molecule 28 is a protein called 28S ribosomal protein S35, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
28	1	277	Total	C	H	N	O	S	0	0
			4440	1397	2228	380	423	12		

- Molecule 29 is a protein called Coiled-coil-helix-coiled-coil-helix domain-containing protein 1.

Mol	Chain	Residues	Atoms						AltConf	Trace
29	2	117	Total	C	H	N	O	S	0	0
			1906	580	964	183	169	10		

- Molecule 30 is a protein called Aurora kinase A-interacting protein.

Mol	Chain	Residues	Atoms						AltConf	Trace
30	3	72	Total	C	H	N	O	S	0	0
			1371	414	728	135	93	1		

- Molecule 31 is a protein called Pentatricopeptide repeat domain-containing protein 3, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
31	4	589	Total	C	H	N	O	S	0	0
			9558	3064	4800	800	872	22		

- Molecule 32 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
32	A	54	Total	Mg	0
			54	54	
32	B	1	Total	Mg	0
			1	1	
32	X	1	Total	Mg	0
			1	1	
32	3	1	Total	Mg	0
			1	1	

- Molecule 33 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms		AltConf
33	A	10	Total 10	K 10	0

- Molecule 34 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
34	O	1	Total 1	Zn 1	0

- Molecule 35 is FE2/S2 (INORGANIC) CLUSTER (three-letter code: FES) (formula: Fe_2S_2) (labeled as "Ligand of Interest" by depositor).
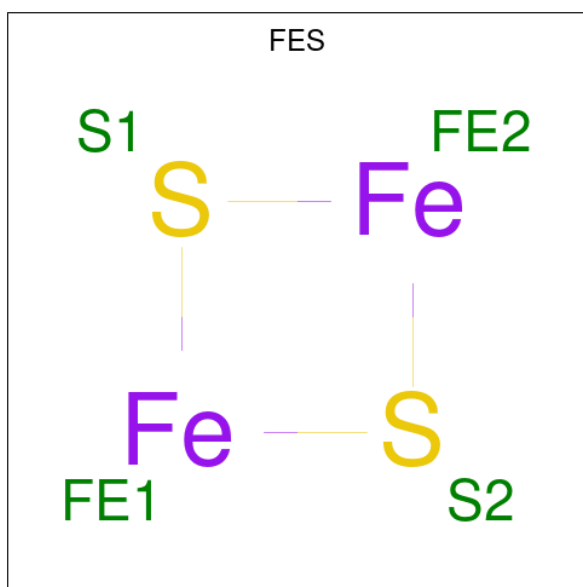
Mol	Chain	Residues	Atoms			AltConf
35	P	1	Total 4	Fe 2	S 2	0
35	T	1	Total 4	Fe 2	S 2	0

- Molecule 36 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).

ATP
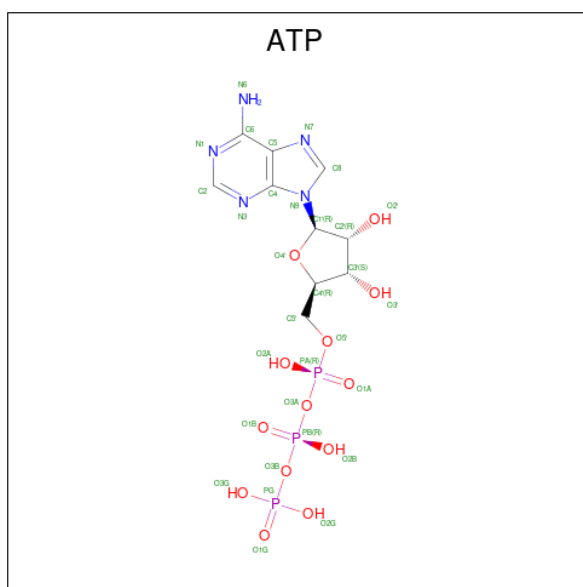
Mol	Chain	Residues	Atoms						AltConf
			Total	C	H	N	O	P	
36	X	1	43	10	12	5	13	3	0

- Molecule 37 is water.

Mol	Chain	Residues	Atoms		AltConf
37	A	521	Total	O	0
			521	521	
37	B	18	Total	O	0
			18	18	
37	C	23	Total	O	0
			23	23	
37	D	40	Total	O	0
			40	40	
37	E	1	Total	O	0
			1	1	
37	F	4	Total	O	0
			4	4	
37	G	13	Total	O	0
			13	13	
37	H	20	Total	O	0
			20	20	
37	I	7	Total	O	0
			7	7	
37	J	5	Total	O	0
			5	5	
37	K	20	Total	O	0
			20	20	

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Mol	Chain	Residues	Atoms		AltConf
37	L	3	Total 3	O 3	0
37	M	12	Total 12	O 12	0
37	N	1	Total 1	O 1	0
37	O	20	Total 20	O 20	0
37	P	2	Total 2	O 2	0
37	Q	5	Total 5	O 5	0
37	R	5	Total 5	O 5	0
37	S	4	Total 4	O 4	0
37	T	6	Total 6	O 6	0
37	U	3	Total 3	O 3	0
37	W	3	Total 3	O 3	0
37	X	5	Total 5	O 5	0
37	Y	5	Total 5	O 5	0
37	Z	11	Total 11	O 11	0
37	0	4	Total 4	O 4	0
37	1	12	Total 12	O 12	0
37	2	4	Total 4	O 4	0
37	3	5	Total 5	O 5	0
37	4	1	Total 1	O 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.
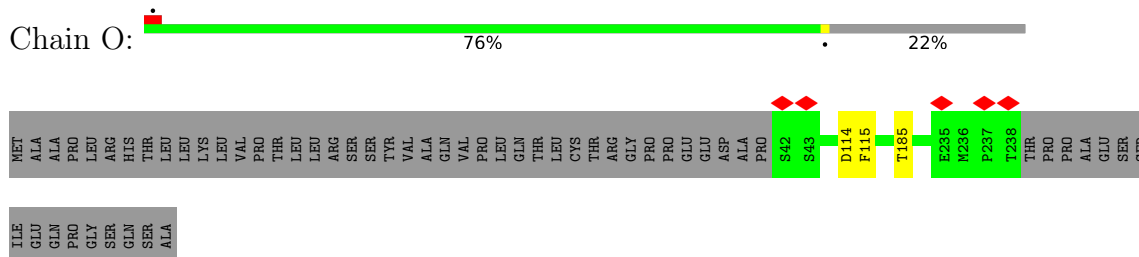
- Molecule 1: 12S mitochondrial rRNA
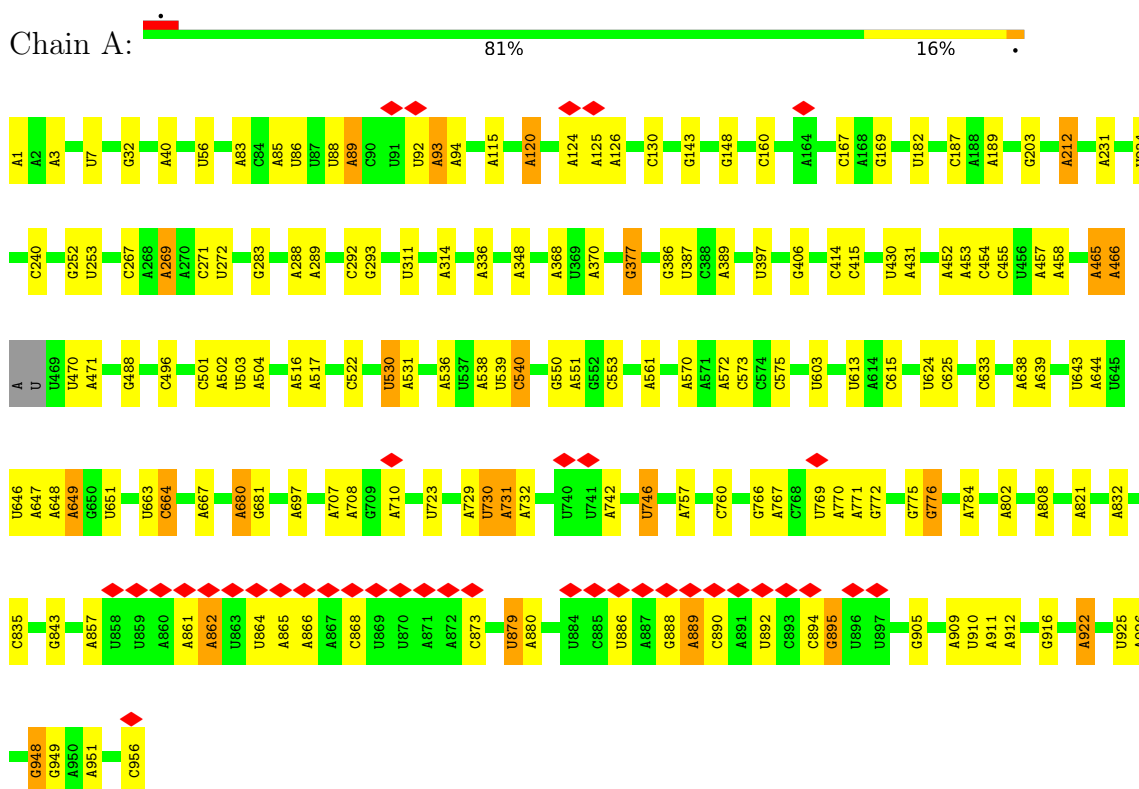
- Molecule 2: 28S ribosomal protein S2, mitochondrial

- Molecule 3: 28S ribosomal protein S24, mitochondrial

Chain C:

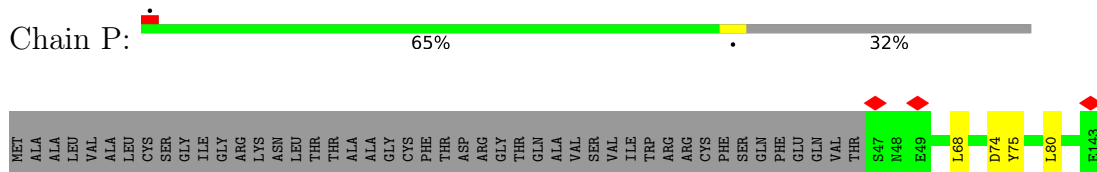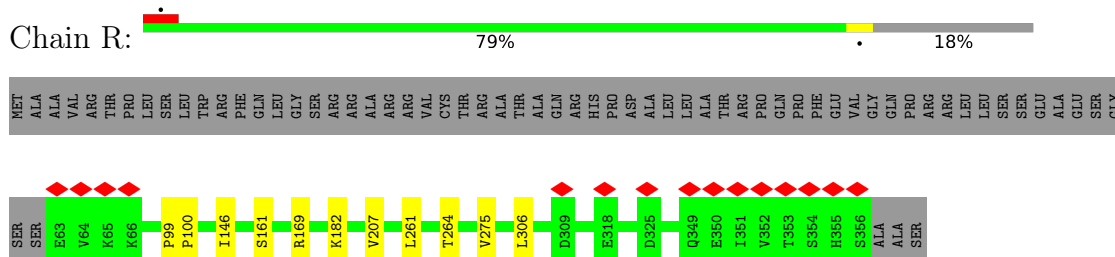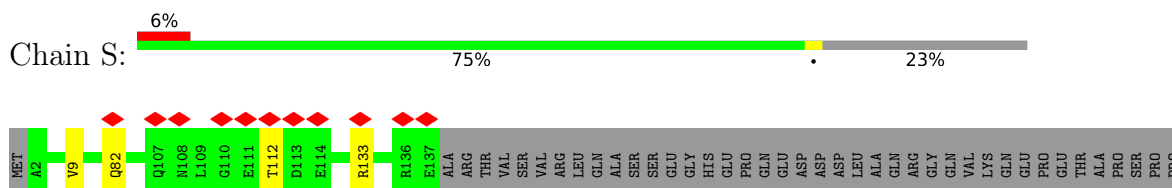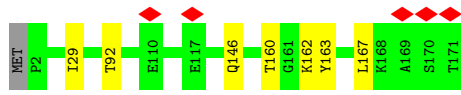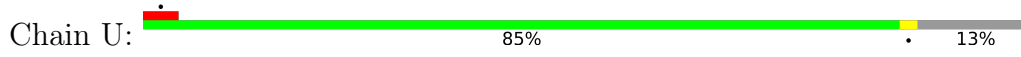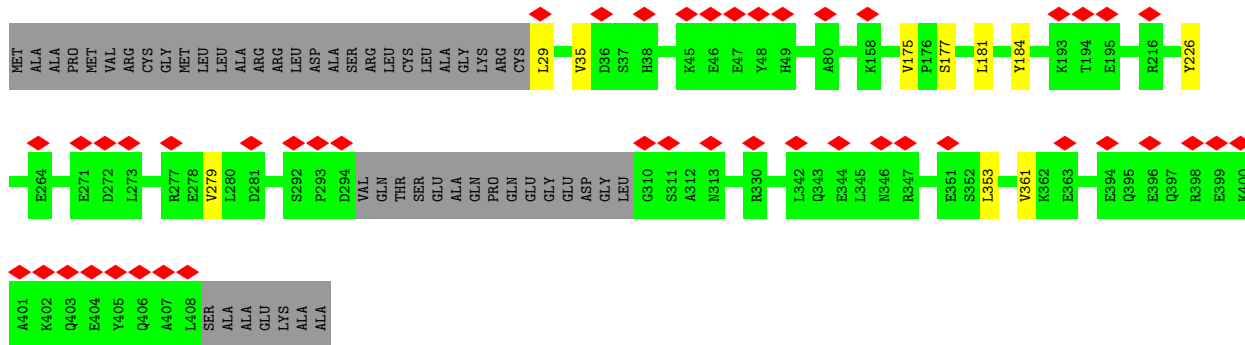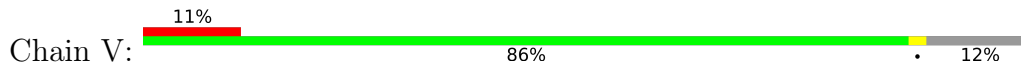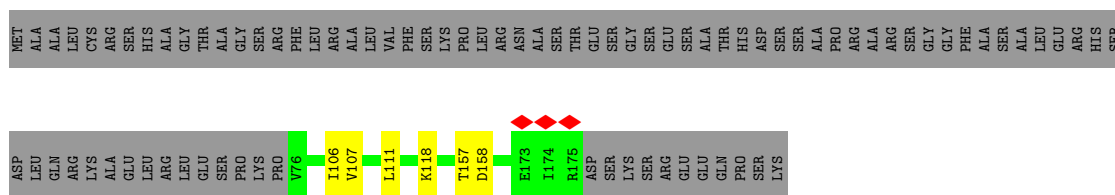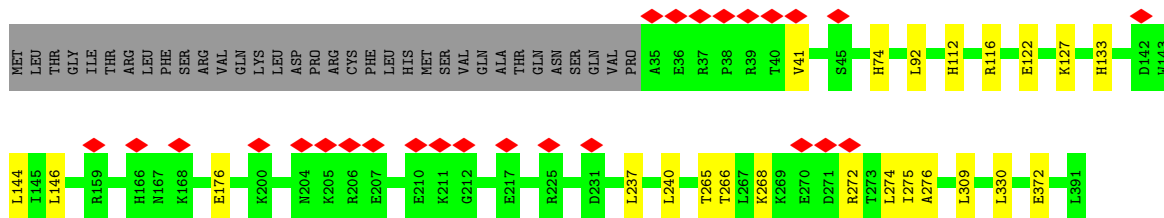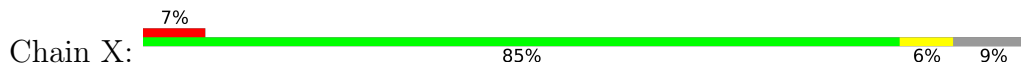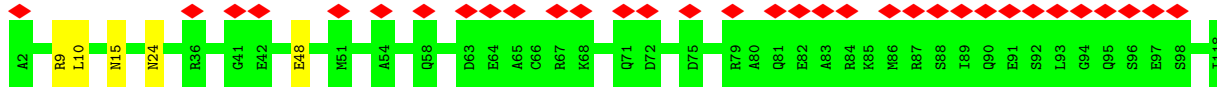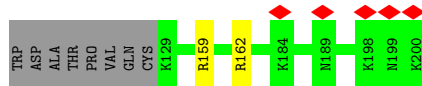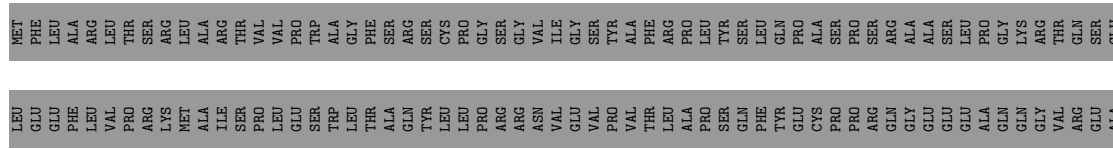77%   21%

MET ALA TRP SER ALA SER VAL ARG GLY LEU GLY GLN ARG VAL LEU ALA CYS SER ARG GLU LEU PRO GLY ALA TRP ARG THR LEU HIS THR SER ALA VAL CYS ALA K36 L87 I119 V136 L153 I167

• Molecule 4: 28S ribosomal protein S5, mitochondrial

6%

Chain D:

75%   22%

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

CYS LEU THR SER LEU SER HIS VAL LEU LEU GLN THR GLN CYS CYS VAL SER SER PRO GLY ASN TRP THR GLY GLN GLN CYS ARG PRO TYR S90 G111 A112 R113 K114 G115 R116 GLY LYS ARG THR K121 K122 K123 K124 R125 R130 S153 G154 R178 E179 E180 W181 D182 R183 K184 R185

K186 I187 K188 V189 K190 I205 I224 K236 V247 I260 A273 K274 N275 R276 A277 I278 Y287 R302 L345 E374 I384 K414 L419 T432

• Molecule 5: 28S ribosomal protein S6, mitochondrial

Chain E:

94%

MET P2 R14 I26 V36 L79 I93 R123 LYS LYS
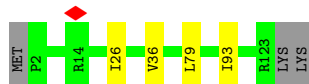
• Molecule 6: 28S ribosomal protein S7, mitochondrial

5%

Chain F:

84%   14%

MET ALA ALA PRO ALA LEU ARG ALA ALA PRO LEU ARG TRP SER GLY LEU LEU ALA LEU GLY VAL LEU VAL ARG CYS ALA VAL TRP ASN LEU PRO GLY LEU THR GLN VAL ALA ARG GLY S35 P54 V55 A56 E57 L58 T59 E60 S84 A131 E132 A135 K163 H166 K195 E231 R240

W241 W242
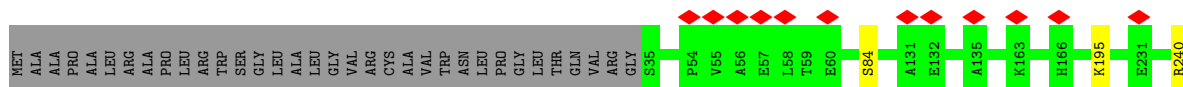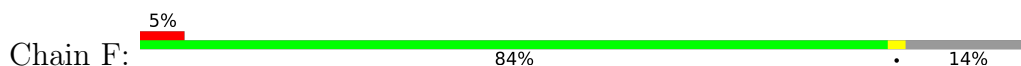
• Molecule 7: 28S ribosomal protein S9, mitochondrial

8%

Chain G:

80%   17%

MET ALA ALA PRO CYS VAL SER CYS GLY ARG VAL LEU LEU SER LEU TRP PHE THR PRO ALA VAL ARG ALA SER LEU CYS GLN ARG PRO GLY TYR TRP THR ALA SER ALA VAL GLY TRP GLN THR GLY THR ARG PHE GLN GLN LEU SER LYS LEU ILE HIS THR THR VAL VAL THR THR LYS LYS N60

V61 Q62 A63 S64 R65 Q66 E67 E71 E97 Q135 R136 H175 R176 GLY PRO LEU SER ALA SER A183 E184 S185 R186 D187 L188 I189 G190 S191 R192 V204 S241 I242 T243 I244 Q245 S246 K247 K248 D257 E258 Q259 V292 D293 L314 V350 D353 R371

K375 R383 K384 R390

• Molecule 8: 28S ribosomal protein S10, mitochondrial

Chain H:

81%   6%   12%

MET LYS TRP VAL PRO LEU SER ASN L9 T24 S25 D26 V39 D43 R44 A45 K81 S82 I85 R100 L104 N122 E145 P146 M147 W148 GLU THR VAL PRO GLU GLU LYS LYS GLU LYS SER LYS SER
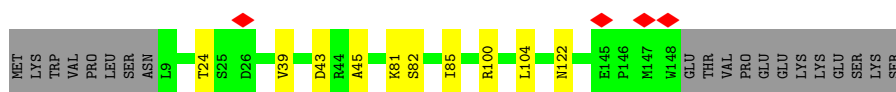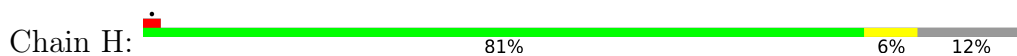
• Molecule 9: 28S ribosomal protein S11, mitochondrial

Chain I:

69%   28%

MET GLN VAL LEU ARG ASN SER GLY SER TRP LEU LEU LEU LEU SER TRP ALA GLY HIS GLY MET THR ARG PHE VAL GLY ILE ALA PRO ALA LYS ASN ILE HIS THR GLY ALA PRO ARG LEU GLU ASP SER ALA ALA ARG GLN ASN THR GLU ARG GLU ALA ALA PRO S55 E67 N91

V148 T173 D174 N175 T176 5F0181 L191
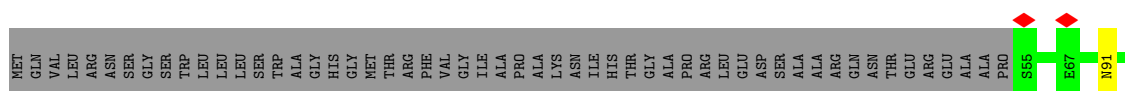
• Molecule 10: 28S ribosomal protein S12, mitochondrial

Chain J:

74%   22%

MET SER TRP PRO GLY LEU LEU TYR GLY LEU THR THR SER LEU SER ARG GLY LEU ALA LEU ALA PRO GLN LEU TRP ALA ALA ARG SER MET A31 K72 P73 R78 D117 L118 K138 LYS
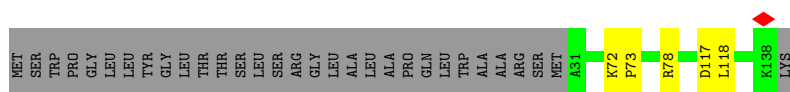
• Molecule 11: 28S ribosomal protein S14, mitochondrial

Chain K:

77%   21%

MET ALA ALA SER VAL LEU GLY SER LEU LEU ARG THR PHE ARG GLN ALA VAL PRO PRO SER ALA SER GLY GLN VAL ARG GLY Y28 R108 R112 W128

• Molecule 12: 28S ribosomal protein S15, mitochondrial

Chain L:

7%

67%   32%

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

PRO K62 Q63 D64 D65 E84 K85 P193 P194 K225 R226 A227 L228 K229 A230 A231 A232 A233 A234 A235 K236 K237 GLU LYS ASN GLU GLY VAL PRO GLU ASN PRO SER ASN ALA VAL PRO GLU LYS THR GLN VAL ASN

• Molecule 13: 28S ribosomal protein S16, mitochondrial

Chain M:

8%

90%   7%

MET VAL GLN LEU THR THR ILE PHE CYS K10 L17 D55 A81 I104 K124 A125 E126 S127 E128 A129 K130 E131 T132 E133 A134 S135

• Molecule 14: 28S ribosomal protein S17, mitochondrial

Chain N:

5%

92%

6%

MET SER I3 V4 V14 V88 E112 P113 R114 E115 GLU LEU LYS VAL SER

• Molecule 15: 28S ribosomal protein S18b, mitochondrial

Chain O:

76%

22%

MET ALA ALA PRO LEU ARG HIS THR LEU LEU LYS LEU VAL PRO THR LEU LEU ARG SER TYR VAL ALA GLN VAL PRO LEU GLN THR LEU CYS THR ARG GLY PRO PRO GLU GLU ASP ALA PRO S42 S43 D114 F115 T185 E235 M236 P237 T238 THR PRO PRO ALA GLU SER SER

ILE GLU GLN PRO GLY SER GLN SER ALA

• Molecule 16: 28S ribosomal protein S18c, mitochondrial

Chain P:

65%

32%

MET ALA ALA LEU VAL ALA LEU CYS SER GLY ILE GLY ARG LYS ASN LEU THR THR ALA ALA GLY CYS PHE THR ASP ARG GLY THR GLN ALA VAL SER VAL ILE TRP ARG ARG CYS PHE SER GLN PHE GLU GLN VAL THR S47 N48 E49 L68 D74 Y75 L80 E143

• Molecule 17: 28S ribosomal protein S21, mitochondrial

Chain Q:

94%

6%

A2 I39 R42 E67 R70 P83 C87

• Molecule 18: 28S ribosomal protein S22, mitochondrial

Chain R:

79%

18%

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

SER SER E63 V64 K65 K66 P99 P100 I146 S161 R169 K182 V207 L261 T264 V275 L306 D309 E318 D325 Q349 E350 I351 V352 T353 S354 H355 S356 ALA ALA SER

• Molecule 19: 28S ribosomal protein S23, mitochondrial

Chain S:

6%

75%

23%

MET A2 V9 Q82 Q107 N108 L109 G110 E111 T112 D113 E114 R133 R36 E137 ALA ARG THR VAL SER VAL ARG LEU GLN ALA SER SER GLU GLY HIS GLU GLU PRO GLN GLU GLU ASP ASP LEU ALA GLN ARG GLY GLN VAL LYS GLN GLU PRO GLU THR ALA PRO PRO SER PRO PRO

• Molecule 20: 28S ribosomal protein S25, mitochondrial

Chain T:

95%

MET P2 I29 T92 E110 E117 Q146 T160 G161 K162 Y163 L167 K168 A169 S170 T171

• Molecule 21: 28S ribosomal protein S26, mitochondrial

Chain U:

85%   13%

MET LEU ARG ALA LEU ASN ARG LEU ALA ALA ARG PRO GLU THR ARG PRO PRO THR PRO LEU LEU LEU PRO VAL ARG GLY R27 R93 E132 K135 A136 E137 Q141 R142 E146 V150 E171 A190 V198 R199 N200

• Molecule 22: 28S ribosomal protein S27, mitochondrial

11%

Chain V:

86%   12%

MET ALA ALA PRO MET VAL ARG CYS GLY MET LEU LEU ALA ARG LEU ASP ALA SER ARG LEU CYS LEU ALA GLY LYS ARG CYS L29 V35 D36 S37 H38 K45 E46 E47 Y48 H49 A80 K158 V175 P176 S177 L181 Y184 K193 T194 E195 R216 Y226

E264 E271 D272 L273 R277 E278 V279 L280 D281 S292 P293 D294 VAL GLN THR SER GLU ALA GLN PRO GLN GLU GLU ASP GLY LEU G310 S311 A312 N313 R330 L342 Q343 A344 L345 N346 R347 E351 S352 L353 V361 K362 E363 E394 Q395 E396 Q397 R398 E399 K400

A401 K402 Q403 E404 Y405 Q406 A407 L408 SER ALA ALA GLU LYS ALA ALA

• Molecule 23: 28S ribosomal protein S28, mitochondrial

Chain W:

51%   46%

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

ASP LEU GLN ARG LYS ALA GLU LEU ARG LEU GLU SER PRO LYS PRO V76 I106 V107 L111 K118 T157 D158 E173 I174 R175 ASP SER LYS SER ARG GLU GLU GLU GLN PRO SER LYS

• Molecule 24: 28S ribosomal protein S29, mitochondrial

7%

Chain X:

85%   6%   9%

MET LEU THR GLY ILE THR ARG LEU PHE SER ARG VAL GLN LYS LEU ASP PRO ARG CYS PHE LEU HIS MET SER VAL GLN ALA THR GLN ASN SER GLN VAL PRO A35 E36 R37 P38 R39 T40 V41 S45 H74 L92 H112 R116 E122 K127 H133 D142 W143

L144 I145 L146 R159 H166 N167 K168 E176 K200 N204 K205 R206 E207 E210 K211 G212 E217 R225 D231 L237 L240 T265 T266 L267 K268 K269 E270 D271 R272 T273 L274 I275 A276 L309 L330 E372 L391

• Molecule 25: 28S ribosomal protein S31, mitochondrial

Chain Y:

• Molecule 26: 28S ribosomal protein S33, mitochondrial

Chain Z:

• Molecule 27: 28S ribosomal protein S34, mitochondrial

Chain 0:

• Molecule 28: 28S ribosomal protein S35, mitochondrial

Chain 1:

• Molecule 29: Coiled-coil-helix-coiled-coil-helix domain-containing protein 1

Chain 2:

• Molecule 30: Aurora kinase A-interacting protein

Chain 3:

• Molecule 31: Pentatricopeptide repeat domain-containing protein 3, mitochondrial

Chain 4:
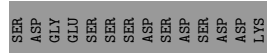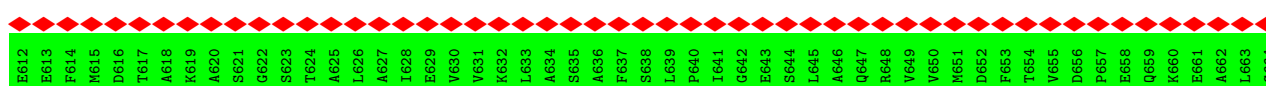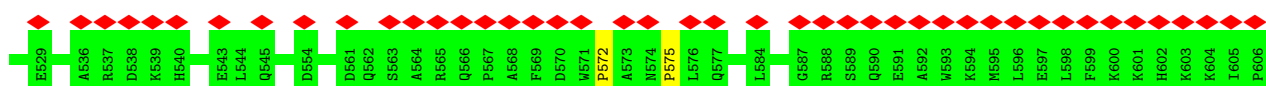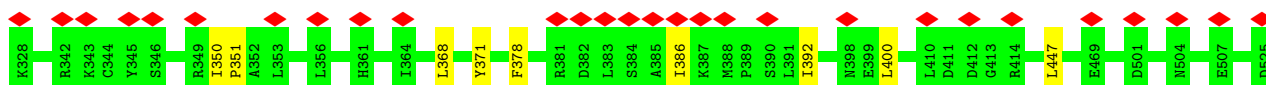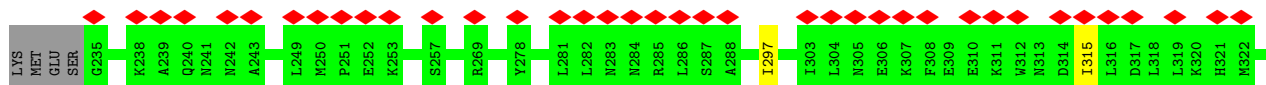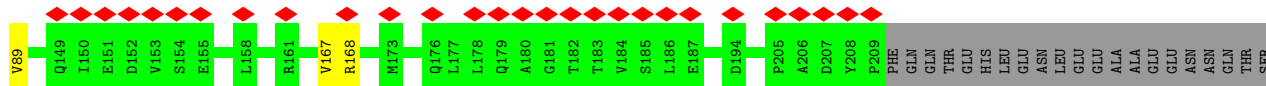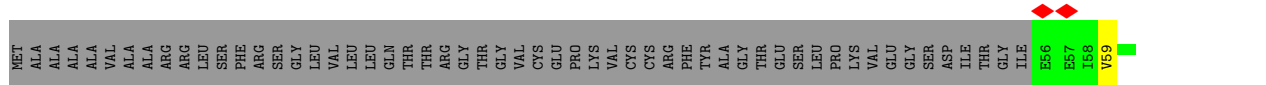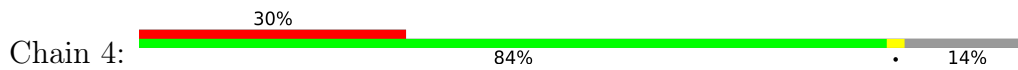
4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	44121	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	31	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	3600	Depositor
Magnification	165000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	1.762	Depositor
Minimum map value	-0.939	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.032	Depositor
Recommended contour level	0.14	Depositor
Map size (Å)	398.40192, 398.40192, 398.40192	wwPDB
Map dimensions	576, 576, 576	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.69167, 0.69167, 0.69167	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: AYA, FES, MG, MA6, ATP, 5MC, 5F0, K, ZN, B8T

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	0.26	1/22587 (0.0%)	0.66	0/35152
2	B	0.26	0/1832	0.41	0/2479
3	C	0.25	0/1100	0.42	0/1485
4	D	0.25	0/2757	0.42	0/3696
5	E	0.25	0/997	0.41	0/1347
6	F	0.24	0/1763	0.36	0/2368
7	G	0.25	0/2734	0.39	0/3669
8	H	0.25	0/1179	0.41	0/1597
9	I	0.24	0/1018	0.45	0/1374
10	J	0.26	0/862	0.46	0/1155
11	K	0.24	0/871	0.42	0/1167
12	L	0.23	0/1485	0.36	0/1980
13	M	0.25	0/1017	0.42	0/1366
14	N	0.26	0/907	0.45	0/1228
15	O	0.25	0/1653	0.39	0/2254
16	P	0.26	0/809	0.39	0/1085
17	Q	0.24	0/735	0.40	0/980
18	R	0.25	0/2449	0.38	0/3311
19	S	0.26	0/1148	0.40	0/1541
20	T	0.26	0/1420	0.39	0/1903
21	U	0.24	0/1470	0.37	0/1976
22	V	0.23	0/3059	0.35	0/4135
23	W	0.25	0/805	0.43	0/1084
24	X	0.24	0/2952	0.38	0/3995
25	Y	0.25	0/1283	0.36	0/1730
26	Z	0.25	0/851	0.37	0/1133
27	0	0.24	0/1856	0.41	0/2511
28	1	0.24	0/2260	0.38	0/3063
29	2	0.23	0/949	0.38	0/1264
30	3	0.24	0/654	0.38	0/860
31	4	0.24	0/4868	0.36	0/6597
All	All	0.25	1/70330 (0.0%)	0.50	0/99485

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1	A	OP3-P	-10.78	1.48	1.61

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2   Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	20269	10255	10242	49	0
2	B	1791	1799	1797	7	0
3	C	1072	1091	1087	3	0
4	D	2702	2758	2753	9	0
5	E	979	1007	1007	2	0
6	F	1722	1750	1748	3	0
7	G	2674	2630	2626	8	0
8	H	1153	1193	1190	7	0
9	I	1009	1038	1029	4	0
10	J	846	903	901	3	0
11	K	855	888	887	2	0
12	L	1465	1576	1574	2	0
13	M	995	1009	1006	3	0
14	N	888	951	947	3	0
15	O	1598	1548	1547	2	0
16	P	792	818	817	2	0
17	Q	732	750	750	4	0
18	R	2400	2416	2415	8	0
19	S	1124	1133	1132	3	0
20	T	1388	1413	1413	5	0
21	U	1449	1459	1456	2	0
22	V	2998	2972	2967	8	0
23	W	793	813	811	4	0
24	X	2881	2881	2879	14	0
25	Y	1246	1193	1191	2	0
26	Z	834	848	847	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
27	0	1811	1838	1834	8	0
28	1	2212	2228	2226	2	0
29	2	942	964	963	4	0
30	3	643	728	726	2	0
31	4	4758	4800	4793	10	0
32	3	1	0	0	0	0
32	A	54	0	0	0	0
32	B	1	0	0	0	0
32	X	1	0	0	0	0
33	A	10	0	0	0	0
34	O	1	0	0	0	0
35	P	4	0	0	0	0
35	T	4	0	0	0	0
36	X	31	12	12	0	0
37	0	4	0	0	0	0
37	1	12	0	0	0	0
37	2	4	0	0	0	0
37	3	5	0	0	0	0
37	4	1	0	0	0	0
37	A	521	0	0	7	0
37	B	18	0	0	0	0
37	C	23	0	0	0	0
37	D	40	0	0	2	0
37	E	1	0	0	0	0
37	F	4	0	0	0	0
37	G	13	0	0	0	0
37	H	20	0	0	0	0
37	I	7	0	0	0	0
37	J	5	0	0	0	0
37	K	20	0	0	0	0
37	L	3	0	0	0	0
37	M	12	0	0	0	0
37	N	1	0	0	0	0
37	O	20	0	0	0	0
37	P	2	0	0	0	0
37	Q	5	0	0	0	0
37	R	5	0	0	0	0
37	S	4	0	0	0	0
37	T	6	0	0	0	0
37	U	3	0	0	0	0
37	W	3	0	0	0	0
37	X	5	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
37	Y	5	0	0	0	0
37	Z	11	0	0	0	0
All	All	67911	57662	57573	160	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 1.

The worst 5 of 160 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)
1:A:370:A:OP2	29:2:9:ARG:NH2	2.09	0.85
29:2:10:LEU:O	29:2:15:ASN:ND2	2.14	0.80
1:A:862:A:N6	1:A:895:G:O6	2.23	0.71
6:F:84:SER:OG	24:X:372:GLU:OE2	2.07	0.71
1:A:647:A:OP1	2:B:198:ASN:ND2	2.24	0.70

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	
2	B	221/291 (76%)	219 (99%)	2 (1%)	0	100	100
3	C	130/167 (78%)	125 (96%)	5 (4%)	0	100	100
4	D	335/432 (78%)	331 (99%)	4 (1%)	0	100	100
5	E	120/125 (96%)	117 (98%)	3 (2%)	0	100	100
6	F	206/242 (85%)	203 (98%)	3 (2%)	0	100	100
7	G	321/390 (82%)	316 (98%)	5 (2%)	0	100	100
8	H	138/160 (86%)	134 (97%)	3 (2%)	1 (1%)	22	57
9	I	134/191 (70%)	129 (96%)	5 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
10	J	106/139 (76%)	105 (99%)	1 (1%)	0	100	100
11	K	99/128 (77%)	99 (100%)	0	0	100	100
12	L	174/258 (67%)	173 (99%)	1 (1%)	0	100	100
13	M	124/135 (92%)	124 (100%)	0	0	100	100
14	N	111/120 (92%)	108 (97%)	3 (3%)	0	100	100
15	O	195/254 (77%)	192 (98%)	3 (2%)	0	100	100
16	P	95/143 (66%)	94 (99%)	1 (1%)	0	100	100
17	Q	84/86 (98%)	83 (99%)	1 (1%)	0	100	100
18	R	292/359 (81%)	284 (97%)	8 (3%)	0	100	100
19	S	134/177 (76%)	132 (98%)	2 (2%)	0	100	100
20	T	168/171 (98%)	167 (99%)	1 (1%)	0	100	100
21	U	172/200 (86%)	170 (99%)	2 (1%)	0	100	100
22	V	361/415 (87%)	355 (98%)	6 (2%)	0	100	100
23	W	98/186 (53%)	95 (97%)	3 (3%)	0	100	100
24	X	355/391 (91%)	349 (98%)	6 (2%)	0	100	100
25	Y	147/384 (38%)	145 (99%)	2 (1%)	0	100	100
26	Z	99/106 (93%)	98 (99%)	1 (1%)	0	100	100
27	0	214/218 (98%)	210 (98%)	4 (2%)	0	100	100
28	1	275/320 (86%)	273 (99%)	2 (1%)	0	100	100
29	2	115/117 (98%)	114 (99%)	1 (1%)	0	100	100
30	3	70/200 (35%)	70 (100%)	0	0	100	100
31	4	585/685 (85%)	580 (99%)	5 (1%)	0	100	100
All	All	5678/7190 (79%)	5594 (98%)	83 (2%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
8	H	85	ILE

5.3.2   Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	B	195/247 (79%)	195 (100%)	0	100	100
3	C	113/139 (81%)	113 (100%)	0	100	100
4	D	279/354 (79%)	279 (100%)	0	100	100
5	E	107/110 (97%)	107 (100%)	0	100	100
6	F	180/204 (88%)	180 (100%)	0	100	100
7	G	282/335 (84%)	281 (100%)	1 (0%)	91	96
8	H	130/150 (87%)	130 (100%)	0	100	100
9	I	102/143 (71%)	102 (100%)	0	100	100
10	J	93/117 (80%)	93 (100%)	0	100	100
11	K	90/110 (82%)	90 (100%)	0	100	100
12	L	161/224 (72%)	161 (100%)	0	100	100
13	M	103/112 (92%)	103 (100%)	0	100	100
14	N	97/104 (93%)	97 (100%)	0	100	100
15	O	176/225 (78%)	176 (100%)	0	100	100
16	P	89/125 (71%)	89 (100%)	0	100	100
17	Q	77/77 (100%)	77 (100%)	0	100	100
18	R	261/313 (83%)	261 (100%)	0	100	100
19	S	117/152 (77%)	117 (100%)	0	100	100
20	T	153/154 (99%)	153 (100%)	0	100	100
21	U	149/171 (87%)	149 (100%)	0	100	100
22	V	326/362 (90%)	325 (100%)	1 (0%)	92	96
23	W	87/156 (56%)	87 (100%)	0	100	100
24	X	314/346 (91%)	312 (99%)	2 (1%)	86	94
25	Y	133/341 (39%)	133 (100%)	0	100	100
26	Z	88/93 (95%)	88 (100%)	0	100	100
27	0	190/191 (100%)	189 (100%)	1 (0%)	88	94
28	1	247/279 (88%)	247 (100%)	0	100	100
29	2	103/103 (100%)	103 (100%)	0	100	100
30	3	68/176 (39%)	68 (100%)	0	100	100
31	4	519/599 (87%)	519 (100%)	0	100	100

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	5029/6212 (81%)	5024 (100%)	5 (0%)	93　98

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
7	G	375	LYS
22	V	226	TYR
24	X	74	HIS
24	X	112	HIS
27	0	48	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 11 such sidechains are listed below:

Mol	Chain	Res	Type
12	L	198	GLN
28	1	182	HIS
31	4	376	HIS
31	4	372	HIS
5	E	81	HIS

5.3.3　RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	949/956 (99%)	124 (13%)	0

5 of 124 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	3	A
1	A	7	U
1	A	32	G
1	A	40	A
1	A	56	U

There are no RNA pucker outliers to report.

5.4　Non-standard residues in protein, DNA, RNA chains ⓘ

7 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
1	B8T	A	840	1	19,22,23	0.31	0	26,31,34	0.33	0
29	AYA	2	2	29	6,7,8	0.80	0	5,8,10	0.54	0
1	5MC	A	842	1	18,22,23	0.32	0	26,32,35	0.44	0
17	AYA	Q	2	17	6,7,8	0.76	0	5,8,10	0.52	0
1	MA6	A	937	1	18,26,27	0.76	0	19,38,41	0.57	0
1	MA6	A	938	1	18,26,27	0.77	0	19,38,41	0.58	0
9	5F0	I	181	9	8,8,9	0.57	0	7,9,11	1.07	1 (14%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	B8T	A	840	1	-	1/7/27/28	0/2/2/2
29	AYA	2	2	29	-	0/4/6/8	-
1	5MC	A	842	1	-	0/7/25/26	0/2/2/2
17	AYA	Q	2	17	-	0/4/6/8	-
1	MA6	A	937	1	-	0/7/29/30	0/3/3/3
1	MA6	A	938	1	-	1/7/29/30	0/3/3/3
9	5F0	I	181	9	-	0/9/9/10	-

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	I	181	5F0	O-C-CB	-2.46	118.25	125.43

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	938	MA6	C4'-C5'-O5'-P

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
1	A	840	B8T	O4'-C4'-C5'-O5'

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	937	MA6	2	0
1	A	938	MA6	1	0

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 71 ligands modelled in this entry, 68 are monoatomic - leaving 3 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
35	FES	P	201	5,16	0,4,4	-	-	-		
35	FES	T	201	20,13	0,4,4	-	-	-		
36	ATP	X	401	32	26,33,33	0.75	0	31,52,52	0.66	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
35	FES	P	201	5,16	-	-	0/1/1/1
35	FES	T	201	20,13	-	-	0/1/1/1
36	ATP	X	401	32	-	0/18/38/38	0/3/3/3

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.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand FES P 201

Bond lengths

Bond angles

Torsions

Rings

Ligand FES T 201

Bond lengths

Bond angles

Torsions

Rings
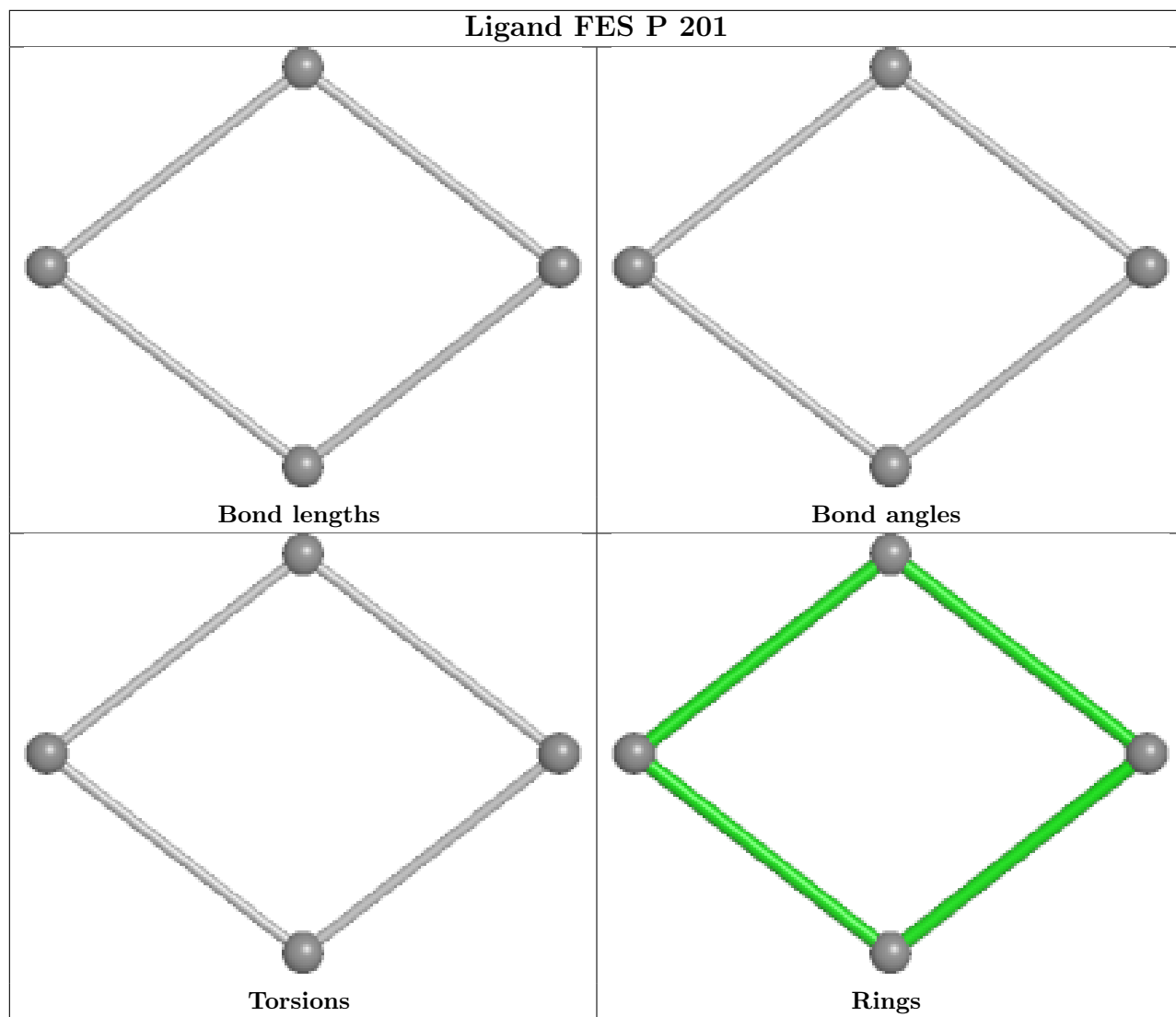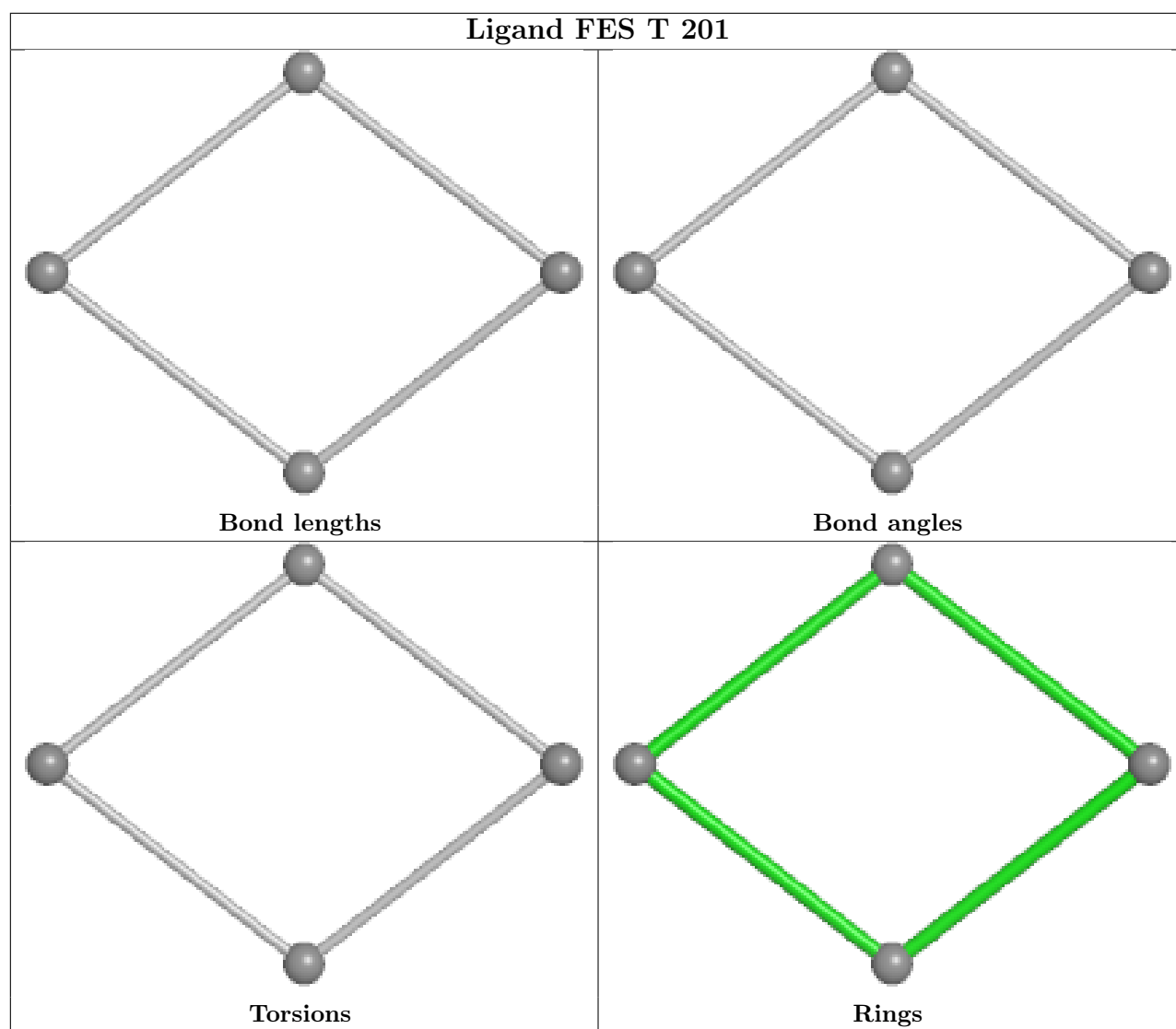
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-13554. 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 ⓘ
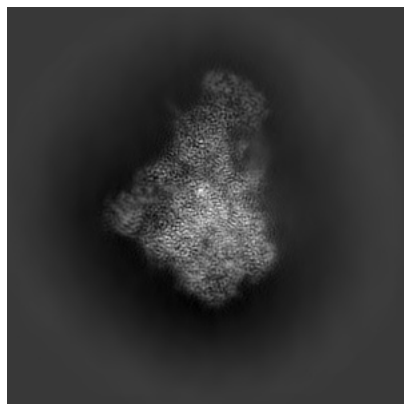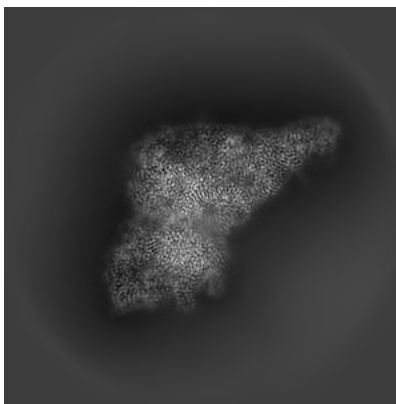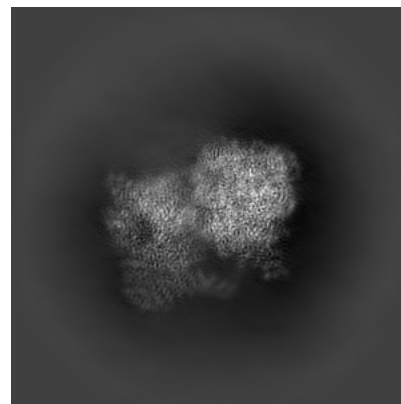
6.1.1 Primary map

X   Y   Z

6.1.2 Raw map

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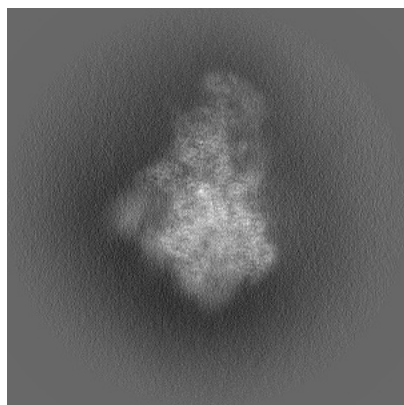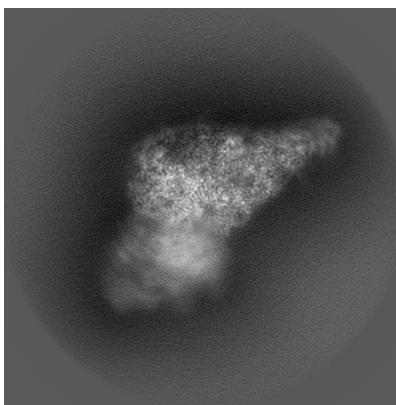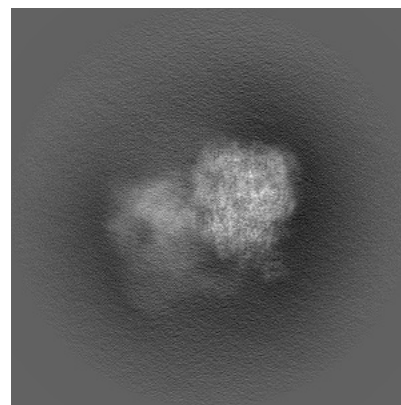
The images above show the map projected in three orthogonal directions.

6.2　Central slices　ⓘ
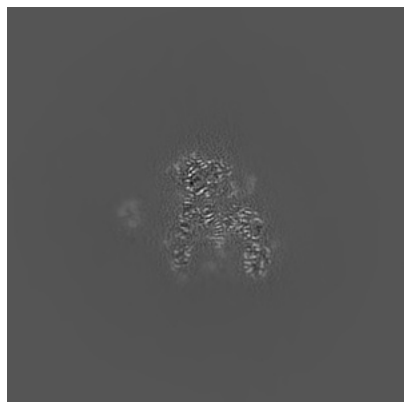
6.2.1　Primary map
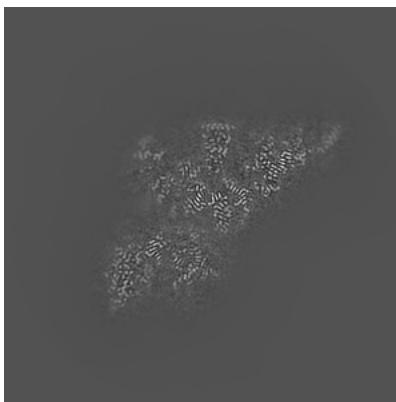
| X Index: 288 | Y Index: 288 | Z Index: 288 |
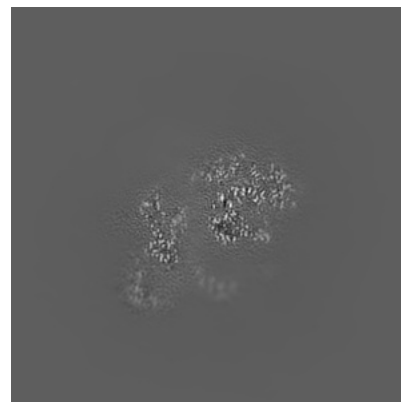
6.2.2　Raw map
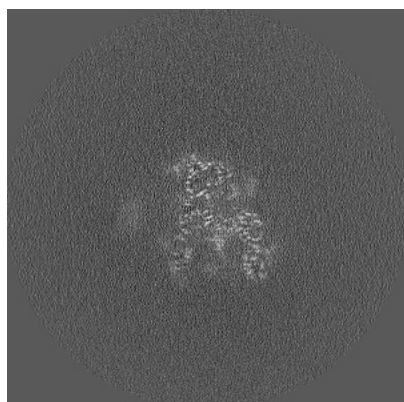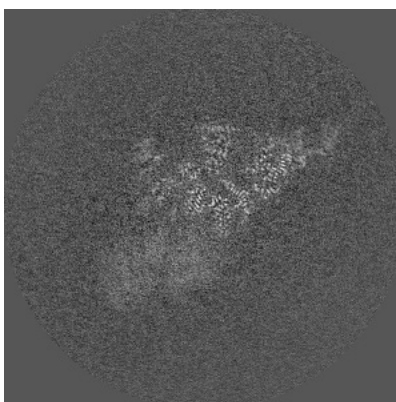
| X Index: 240 | Y Index: 240 | Z Index: 240 |
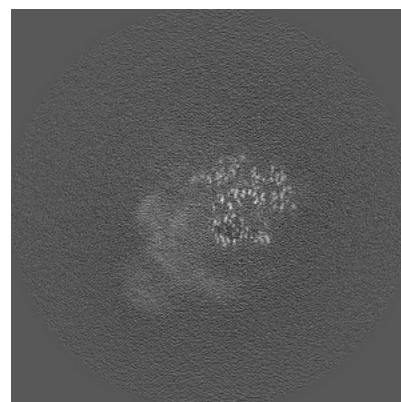
The images above show central slices of the map in three orthogonal directions.

6.3　Largest variance slices (i)

6.3.1　Primary map
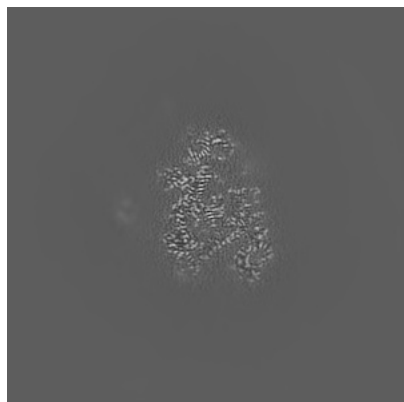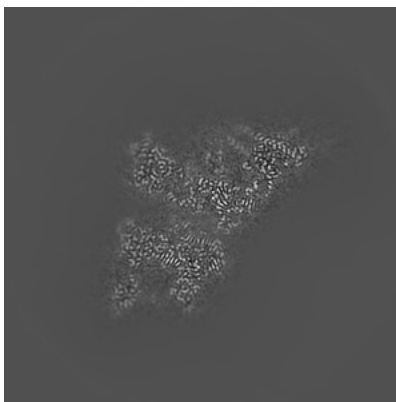
| X Index: 314 | Y Index: 276 | Z Index: 278 |
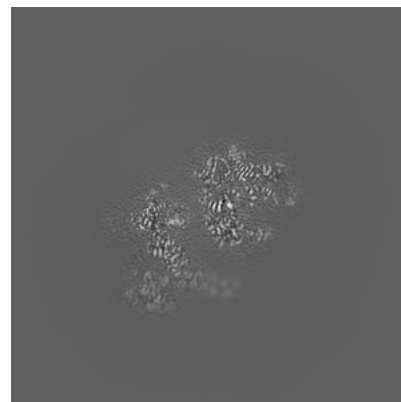
6.3.2　Raw map
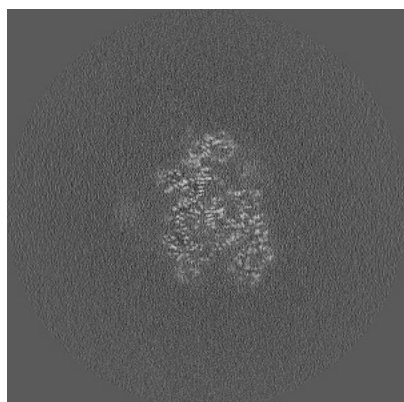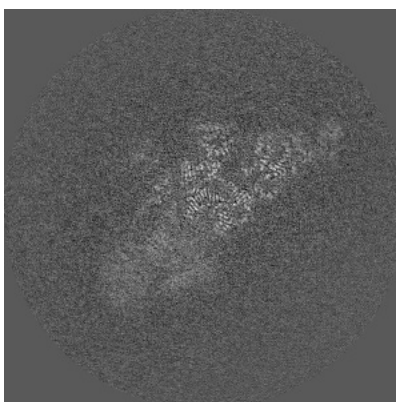
| X Index: 261 | Y Index: 243 | Z Index: 232 |
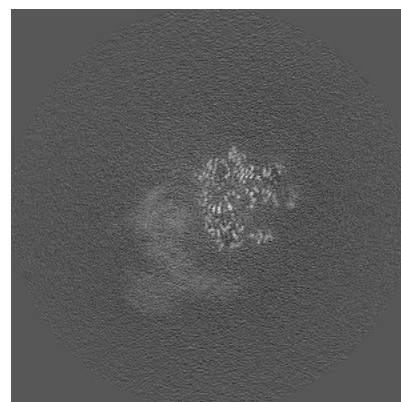
The images above show the largest variance slices of the map in three orthogonal directions.

6.4   Orthogonal standard-deviation projections (False-color) ⓘ

6.4.1   Primary map
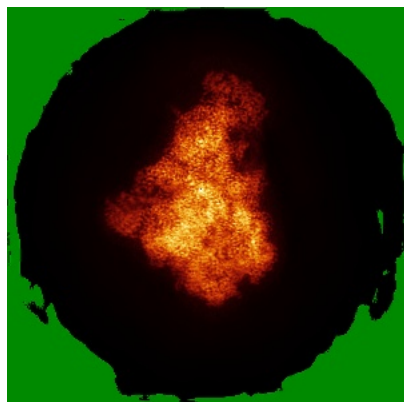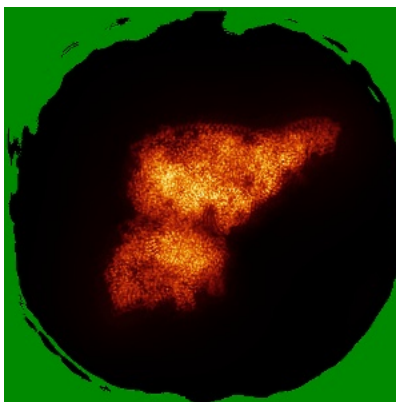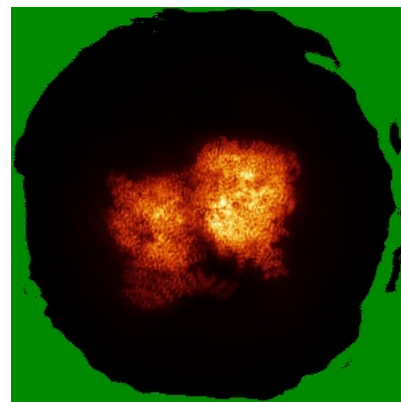
| X | Y | Z |

6.4.2   Raw map

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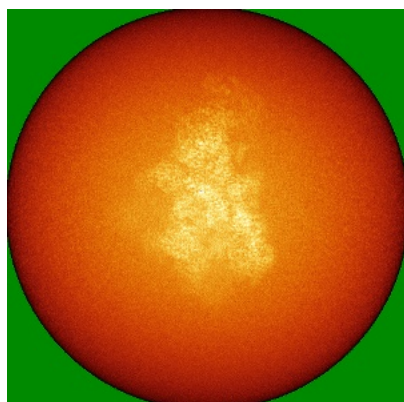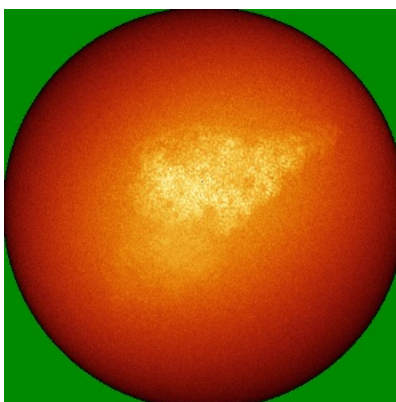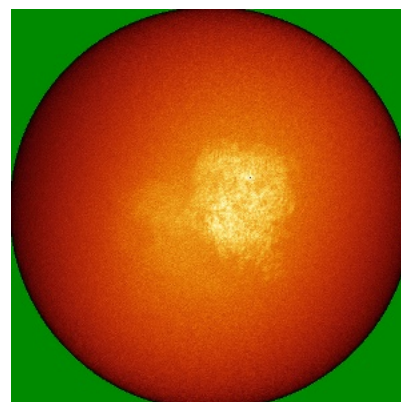
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5   Orthogonal surface views ⓘ

6.5.1   Primary map

X   Y   Z
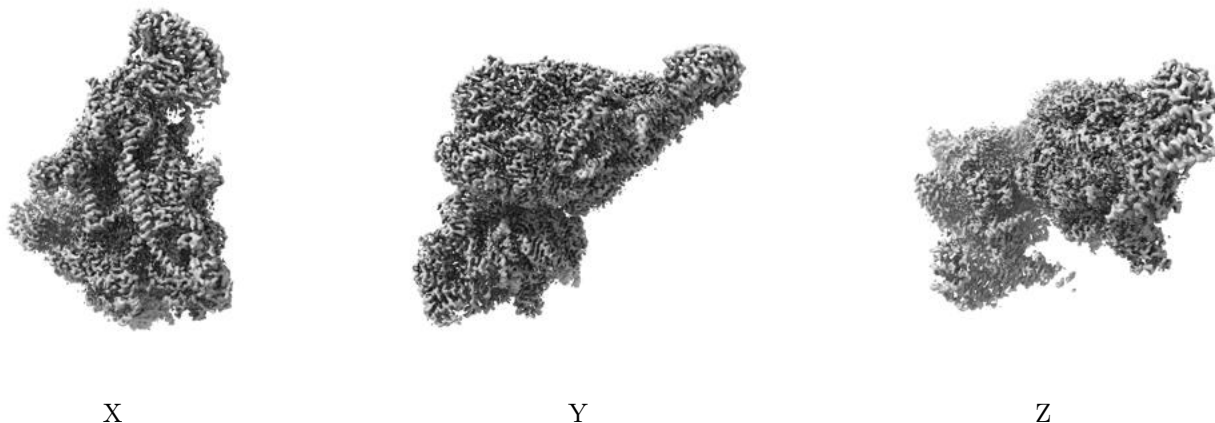
The images above show the 3D surface view of the map at the recommended contour level 0.14. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2   Raw map

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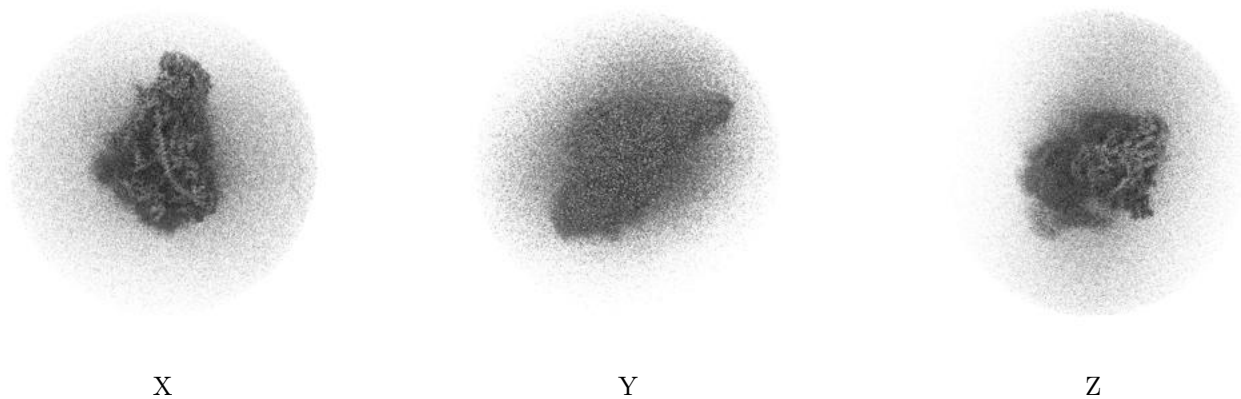
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6   Mask visualisation ⓘ

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

A mask typically either:

- Encompasses the whole structure

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

6.6.1   emd_13554_msk_1.map ⓘ

X   Y   Z
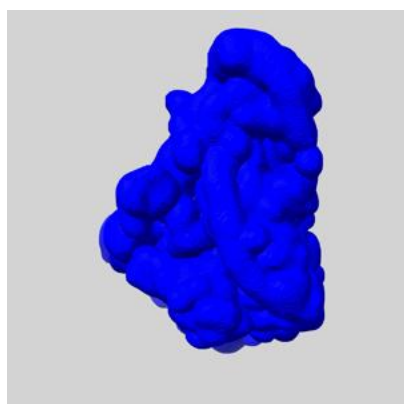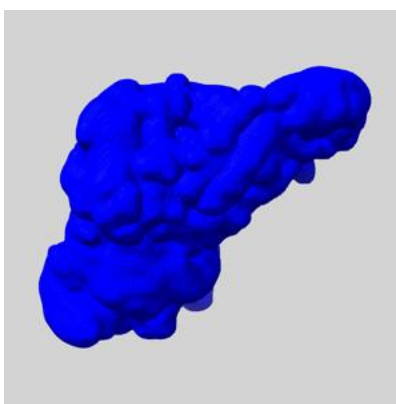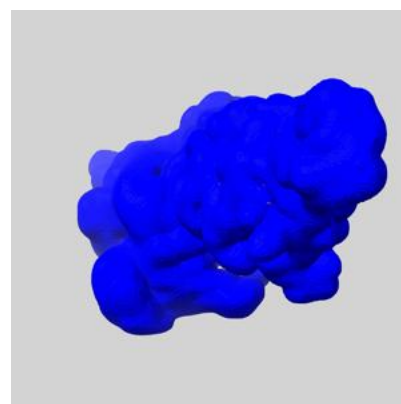
7   Map analysis ⓘ

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

7.1   Map-value distribution ⓘ

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

7.2　Volume estimate ⓘ
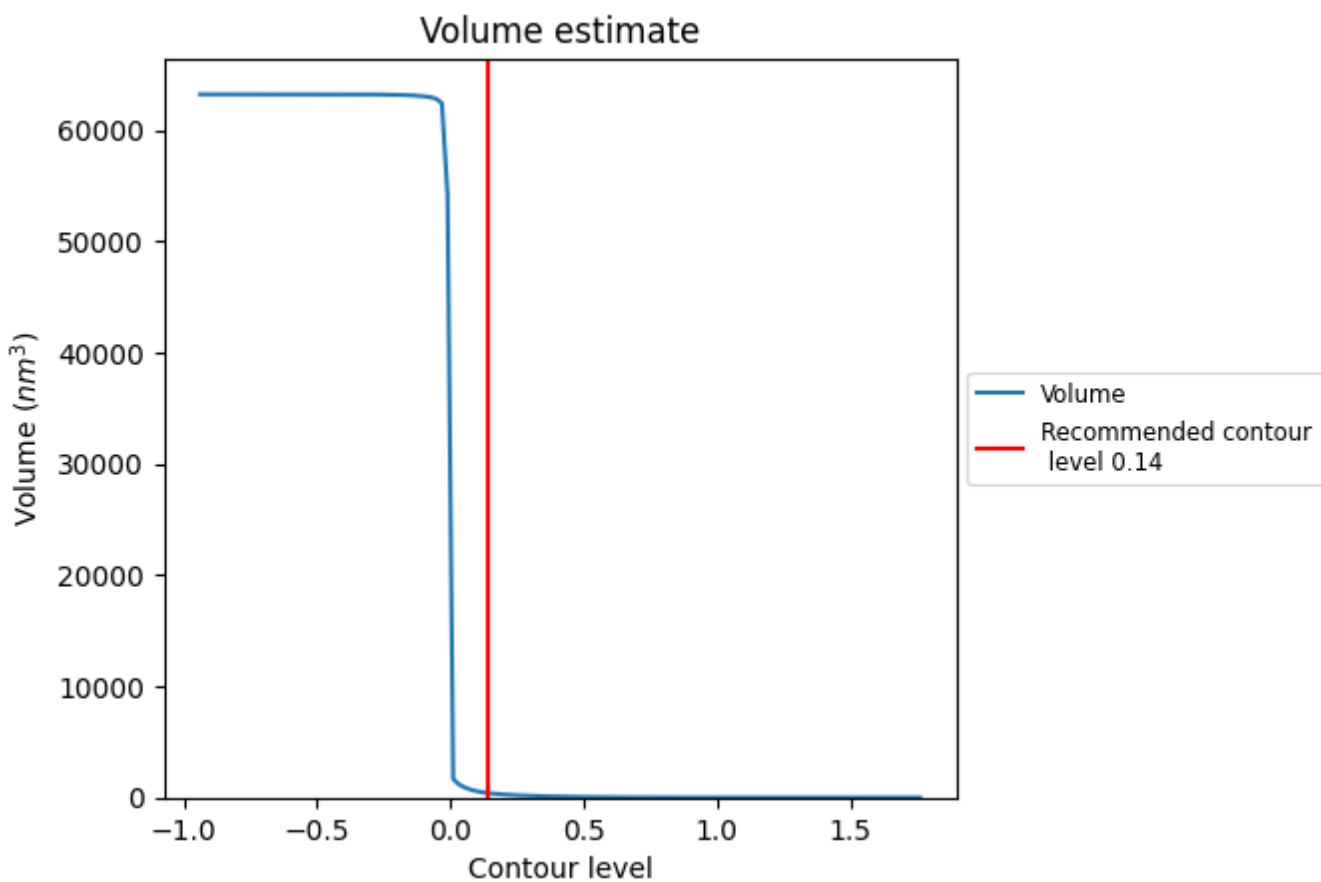
The volume at the recommended contour level is 413 nm^3; this corresponds to an approximate mass of 373 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ
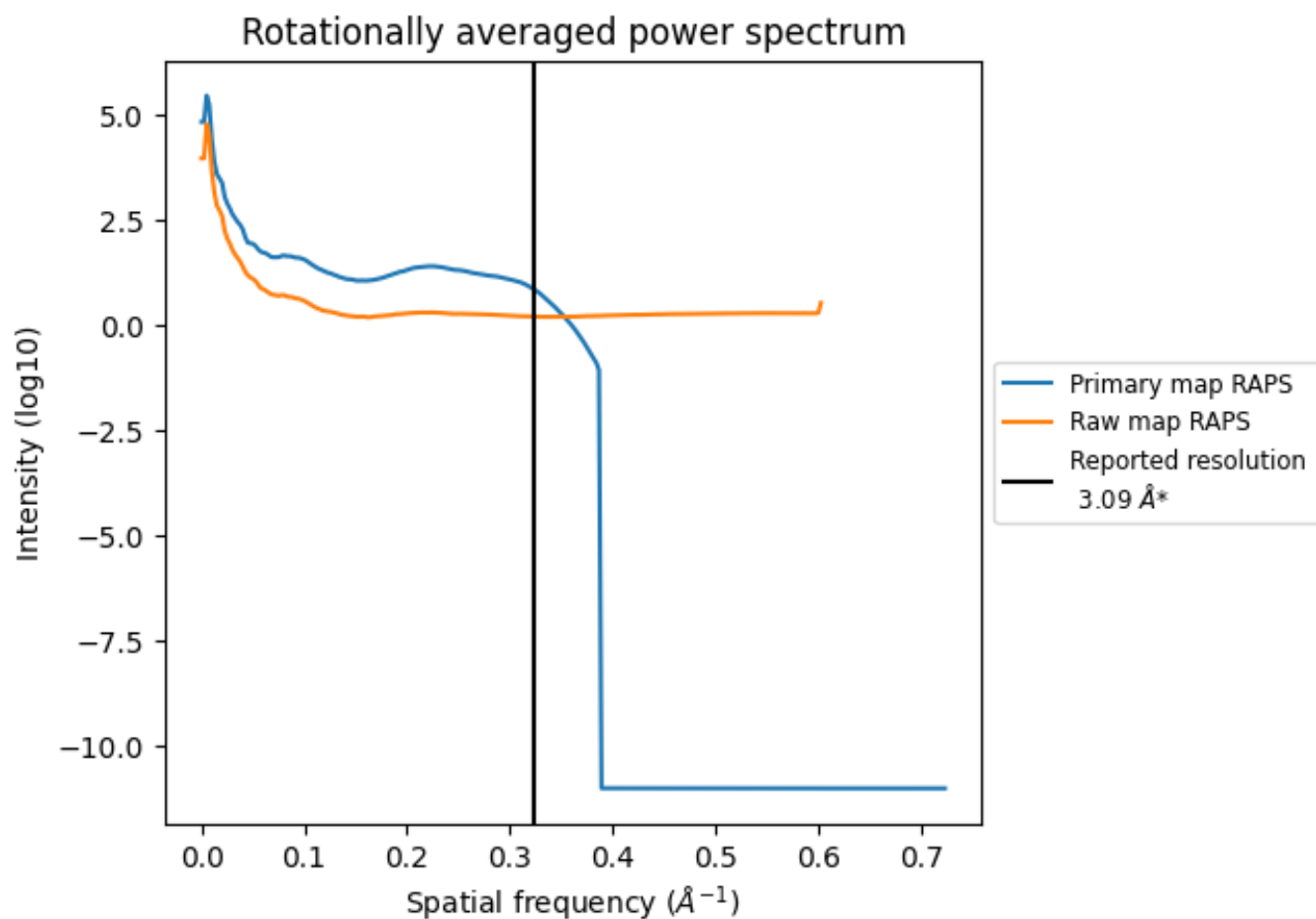
*Reported resolution corresponds to spatial frequency of 0.324 Å^{-1}

8 Fourier-Shell correlation ⓘ

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC ⓘ
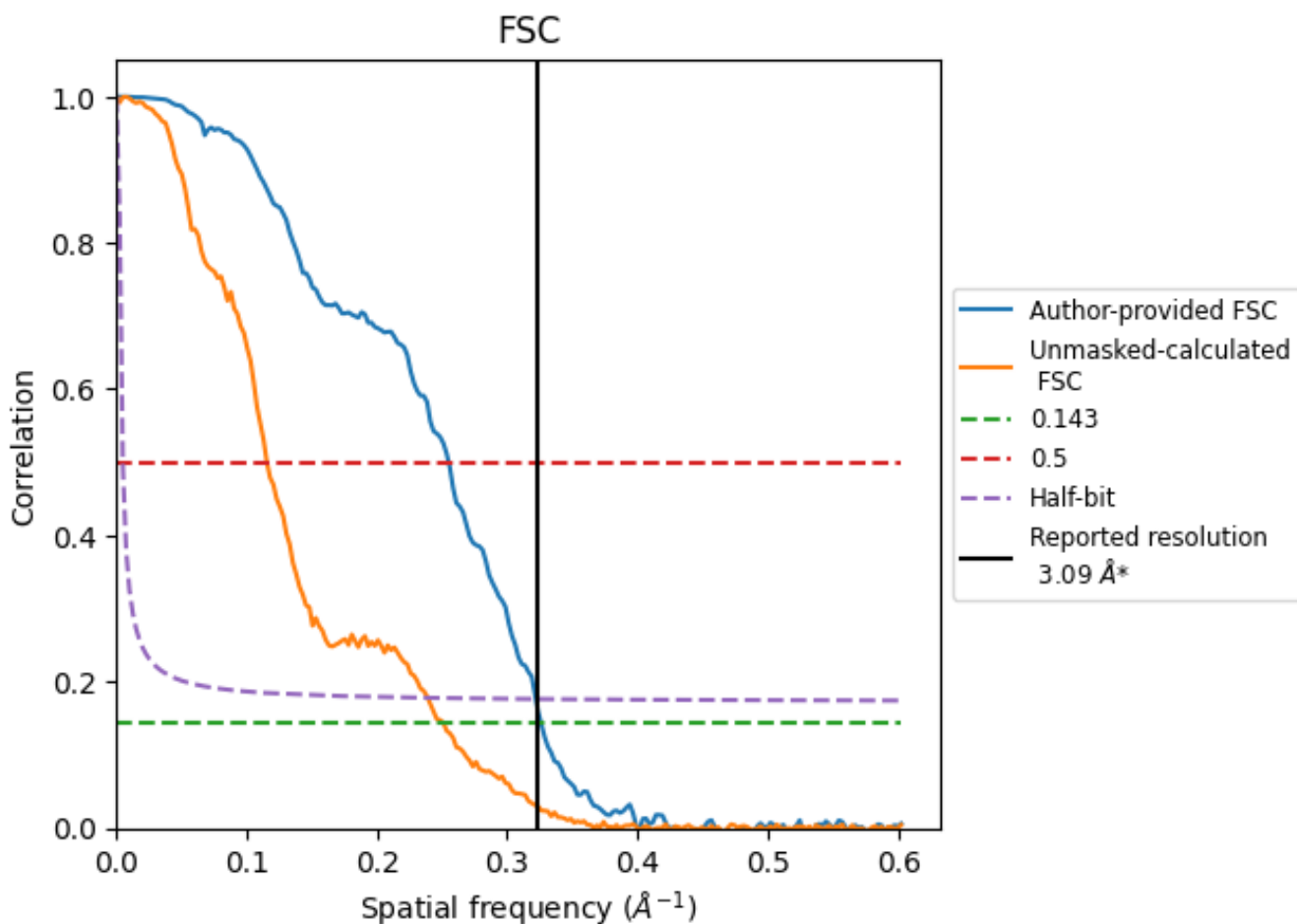
*Reported resolution corresponds to spatial frequency of 0.324 Å^{-1}

8.2   Resolution estimates   ⓘ

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.09	-	-
Author-provided FSC curve	3.07	3.92	3.11
Unmasked-calculated*	3.98	8.66	4.19

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.98 differs from the reported value 3.09 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-13554 and PDB model 7PNW. Per-residue inclusion information can be found in section 3 on page 12.

9.1 Map-model overlay ⓘ

| X | Y | Z |
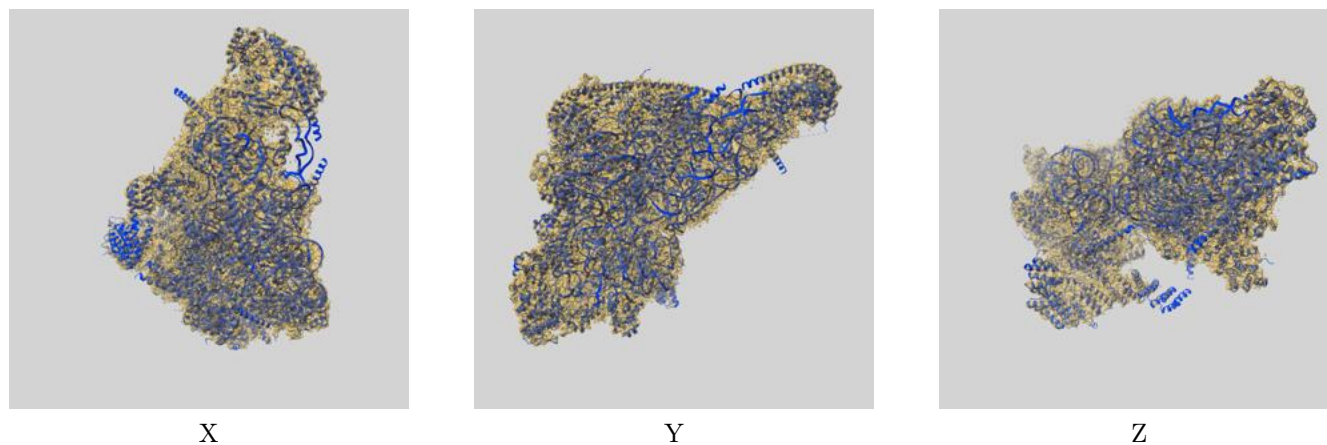
The images above show the 3D surface view of the map at the recommended contour level 0.14 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2   Q-score mapped to coordinate model ⓘ

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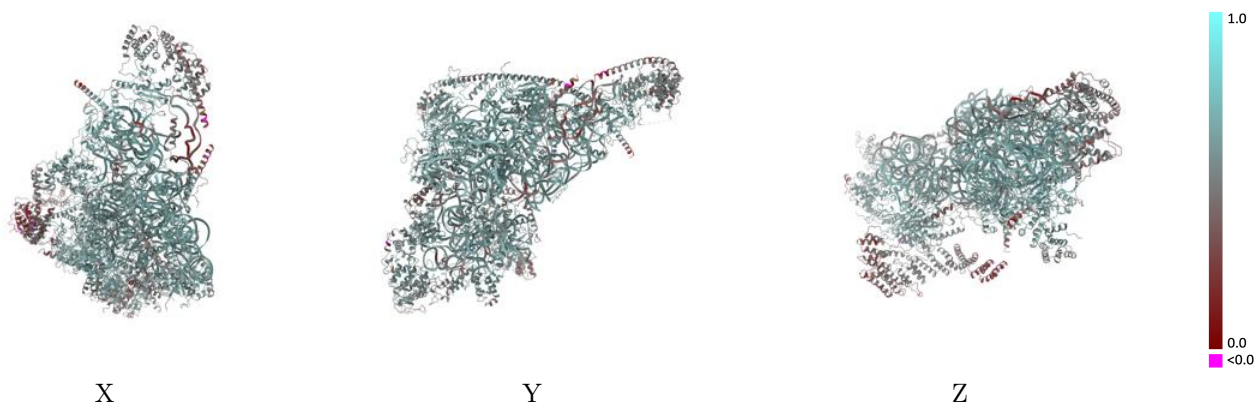
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

9.3   Atom inclusion mapped to coordinate model ⓘ

X   Y   Z
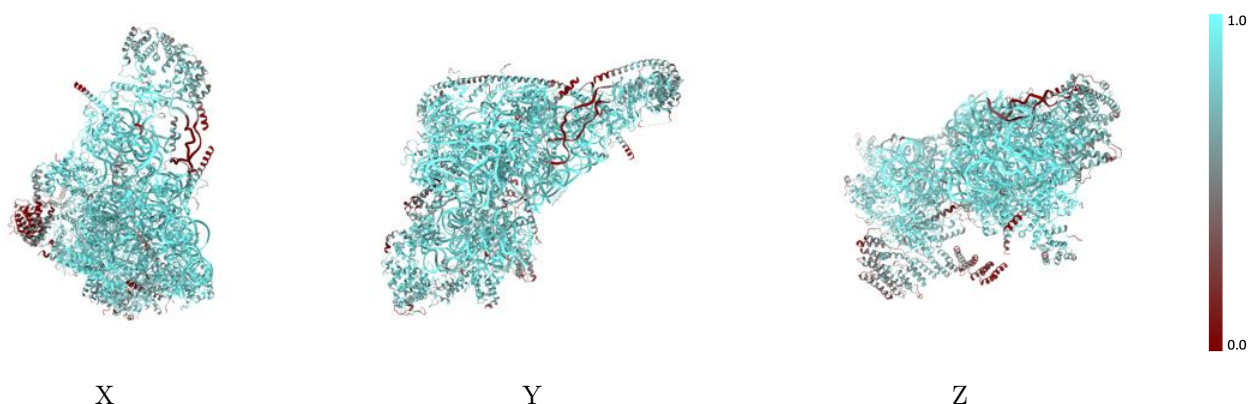
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.14).

9.4   Atom inclusion ⓘ
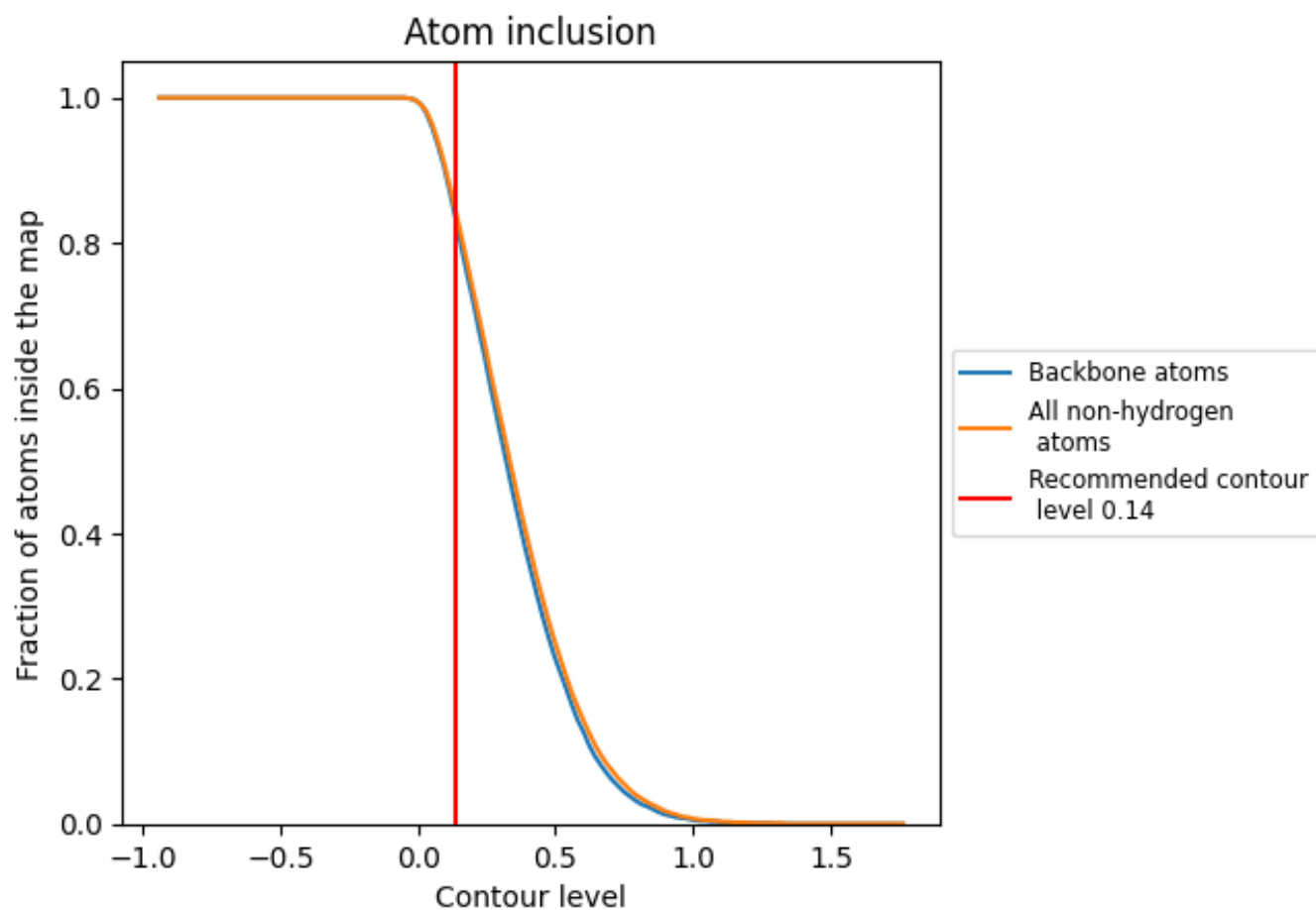
At the recommended contour level, 83% of all backbone atoms, 84% of all non-hydrogen atoms, are inside the map.

9.5   Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.14) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8400	0.5650
0	0.8550	0.5750
1	0.7910	0.5520
2	0.6240	0.4990
3	0.8170	0.5800
4	0.5170	0.4190
A	0.9240	0.5970
B	0.9240	0.6120
C	0.9550	0.6260
D	0.8510	0.5800
E	0.8750	0.5820
F	0.8020	0.5460
G	0.7830	0.5480
H	0.8620	0.5890
I	0.9030	0.5910
J	0.9150	0.5970
K	0.9560	0.6410
L	0.7980	0.5680
M	0.8870	0.6080
N	0.8980	0.6160
O	0.9010	0.6010
P	0.9160	0.6040
Q	0.9400	0.6140
R	0.8350	0.5740
S	0.7880	0.5440
T	0.8830	0.5850
U	0.7680	0.5540
V	0.6640	0.4720
W	0.8870	0.5860
X	0.7920	0.5480
Y	0.6460	0.4820
Z	0.8390	0.5740

1.0

0.0
<0.0