W O R L D W I D E
wwPDB
P R O T E I N   D A T A   B A N K

wwPDB EM Validation Summary Report (i)

Nov 26, 2022 – 05:50 PM EST

PDB ID	:	7SYS
EMDB ID	:	EMD-25539
Title	:	Structure of the delta dII IRES eIF2-containing 48S initiation complex, closed conformation. Structure 12(delta dII).
Authors	:	Brown, Z.P.; Abaeva, I.S.; De, S.; Hellen, C.U.T.; Pestova, T.V.; Frank, J.
Deposited on	:	2021-11-25
Resolution	:	3.50 Å(reported)
Based on initial models	:	5FLX, 5K0Y, 4KZZ, 6O85, 6D9J

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 3.50 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.

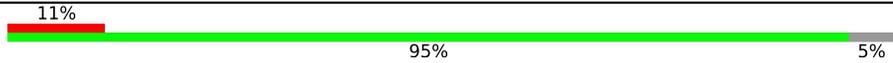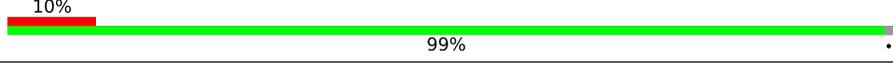| Metric	Percentile Ranks	Value
Ramachandran outliers		0
Sidechain outliers		0.4%
RNA backbone		0.55

Worse   Better

■ Percentile relative to all structures

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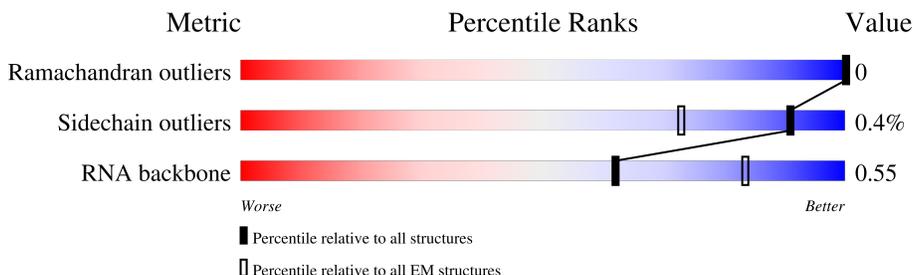
Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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 <=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	2	1870	· 72% 18% · 9%
2	A	144	61% 69% 31%
3	B	295	· 73% · 26%
4	C	264	5% 81% 19%
5	D	221	· 100%
6	E	281	10% 80% · 19%
7	F	263	· 99%
8	G	204	5% 93% 6%

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Mol	Chain	Length	Quality of chain
9	H	249	11% / 95% / 5%
10	I	432	11% / 43% / 57%
11	J	208	10% / 99%
12	K	194	95% / 5%
13	L	149	8% / 64% / 36%
14	M	158	10% / 94%
15	N	132	81% / 88% / 11%
16	O	151	99%
17	P	168	7% / 81% / 19%
18	Q	145	10% / 83% / 17%
19	R	172	83% / 17%
20	S	135	12% / 97%
21	T	152	14% / 93% / 5%
22	U	145	97%
23	V	119	20% / 84% / 16%
24	W	83	99%
25	X	130	99%
26	Y	143	98%
27	Z	131	93% / 5%
28	a	124	10% / 62% / 38%
29	b	101	100%
30	c	84	8% / 99%
31	d	69	14% / 97%
32	e	56	96%
33	f	133	12% / 43% / 57%
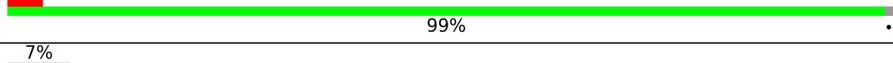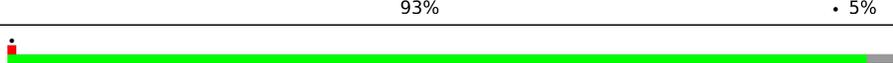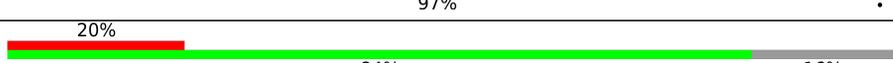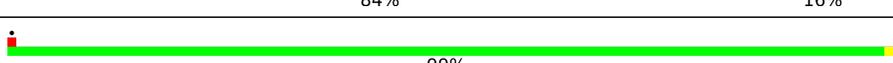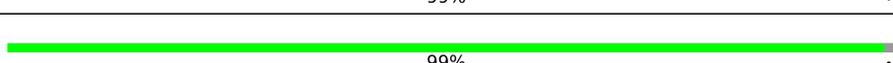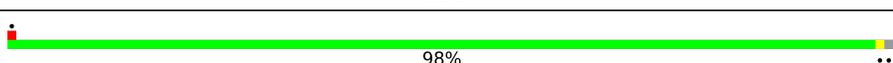
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Mol	Chain	Length	Quality of chain
34	g	188	28% / 36% · 64%
35	h	317	8% / 98% ··
36	j	315	6% / 56% · 42%
37	n	25	20% / 100%
38	z	400	9% / 34% 14% 53%
39	i	75	24% / 80% 19% ·

2 Entry composition (i)

There are 40 unique types of molecules in this entry. The entry contains 82981 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 RNA chain called 18S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	2	1697	Total 36227	C 16170	N 6504	O 11857	P 1696	0	0

- Molecule 2 is a protein called Eukaryotic translation initiation factor 1A, X-chromosomal.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	A	99	Total 798	C 503	N 143	O 148	S 4	0	0

- Molecule 3 is a protein called uS2 (SA).

Mol	Chain	Residues	Atoms					AltConf	Trace
3	B	217	Total 1710	C 1086	N 300	O 316	S 8	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	114	THR	ALA	conflict	UNP G1TLT8

- Molecule 4 is a protein called eS1.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	C	213	Total 1729	C 1098	N 309	O 308	S 14	0	0

- Molecule 5 is a protein called uS5.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	D	221	Total 1716	C 1111	N 295	O 301	S 9	0	0

- Molecule 6 is a protein called uS3.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	E	228	Total 1768	C 1126	N 318	O 316	S 8	0	0

- Molecule 7 is a protein called eS4 (S4 X isoform).

Mol	Chain	Residues	Atoms					AltConf	Trace
7	F	262	Total 2076	C 1324	N 386	O 358	S 8	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	25	GLY	SER	conflict	UNP G1TK17
F	51	ARG	LYS	conflict	UNP G1TK17
F	78	THR	ALA	conflict	UNP G1TK17
F	156	VAL	MET	conflict	UNP G1TK17

- Molecule 8 is a protein called uS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	G	191	Total 1509	C 943	N 286	O 273	S 7	0	0

- Molecule 9 is a protein called eS6.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	H	237	Total 1923	C 1200	N 387	O 329	S 7	0	0

- Molecule 10 is a protein called eS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	I	185	Total 1488	C 952	N 271	O 264	S 1	0	0

- Molecule 11 is a protein called eS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	J	206	Total 1691	C 1061	N 333	O 292	S 5	1	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
J	47	ARG	GLY	conflict	UNP G1TJW1

- Molecule 12 is a protein called uS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	K	185	Total	C	N	O	S	0	0
			1525	969	306	248	2		

- Molecule 13 is a protein called eS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	L	96	Total	C	N	O	S	0	0
			810	530	143	131	6		

- Molecule 14 is a protein called uS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	M	151	Total	C	N	O	S	0	0
			1233	785	231	211	6		

- Molecule 15 is a protein called eS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	N	117	Total	C	N	O	S	0	0
			908	570	161	169	8		

- Molecule 16 is a protein called uS15.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	O	149	Total	C	N	O	S	0	0
			1202	770	228	203	1		

- Molecule 17 is a protein called uS11.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	P	136	Total	C	N	O	S	0	0
			1016	621	199	190	6		

- Molecule 18 is a protein called uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	Q	120	Total	C	N	O	S	0	0
			997	635	187	168	7		

- Molecule 19 is a protein called uS9.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	R	142	Total	C	N	O	S	0	0
			1128	717	213	195	3		

- Molecule 20 is a protein called eS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	S	132	Total	C	N	O	S	0	0
			1068	670	199	195	4		

- Molecule 21 is a protein called uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	T	144	Total	C	N	O	S	0	0
			1190	746	241	202	1		

- Molecule 22 is a protein called eS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	U	141	Total	C	N	O	S	0	0
			1097	688	211	195	3		

- Molecule 23 is a protein called uS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	V	100	Total	C	N	O	S	0	0
			795	498	152	141	4		

- Molecule 24 is a protein called eS21.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	W	83	Total	C	N	O	S	0	0
			636	393	117	121	5		

There are 7 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
W	3	ASN	SER	conflict	UNP G1TM82
W	4	ASP	ASN	conflict	UNP G1TM82
W	33	GLN	PRO	conflict	UNP G1TM82
W	50	PHE	SER	conflict	UNP G1TM82
W	75	ALA	SER	conflict	UNP G1TM82
W	76	ASP	HIS	conflict	UNP G1TM82
W	81	LYS	GLN	conflict	UNP G1TM82

- Molecule 25 is a protein called uS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	X	129	Total	C	N	O	S	0	0
			1034	659	193	176	6		

- Molecule 26 is a protein called uS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	Y	141	Total	C	N	O	S	0	0
			1098	693	219	183	3		

- Molecule 27 is a protein called eS24.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	Z	124	Total	C	N	O	S	0	0
			1011	640	198	168	5		

- Molecule 28 is a protein called eS25.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	a	77	Total	C	N	O	S	0	0
			614	393	114	106	1		

- Molecule 29 is a protein called eS26.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	b	101	Total	C	N	O	S	0	0
			814	507	170	132	5		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
b	28	ARG	CYS	conflict	UNP G1TFE8

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Chain	Residue	Modelled	Actual	Comment	Reference
b	56	ALA	VAL	conflict	UNP G1TFE8

- Molecule 30 is a protein called eS27.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	c	83	Total	C	N	O	S	0	0
			651	408	121	115	7		

- Molecule 31 is a protein called eS28.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	d	67	Total	C	N	O	S	0	0
			530	321	108	99	2		

- Molecule 32 is a protein called uS14.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	e	55	Total	C	N	O	S	0	0
			459	286	94	74	5		

- Molecule 33 is a protein called eS30.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	f	57	Total	C	N	O	S	0	0
			457	282	101	73	1		

- Molecule 34 is a protein called eS31.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	g	68	Total	C	N	O	S	0	0
			555	351	103	94	7		

- Molecule 35 is a protein called Receptor for Activated C Kinase 1 (RACK1).

Mol	Chain	Residues	Atoms					AltConf	Trace
35	h	313	Total	C	N	O	S	0	0
			2436	1535	424	465	12		

- Molecule 36 is a protein called Eukaryotic translation initiation factor 2 subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	j	182	Total 1221	C 781	N 225	O 212	S 3	0	0

- Molecule 37 is a protein called eL41.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	n	25	Total 239	C 145	N 64	O 27	S 3	0	0

- Molecule 38 is a RNA chain called HCV IRES.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	z	188	Total 4017	C 1789	N 721	O 1319	P 188	0	0

- Molecule 39 is a RNA chain called Met-tRNA-i-Met.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	i	75	Total 1604	C 717	N 298	O 515	P 74	0	0

- Molecule 40 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
40	b	1	Total 1	Zn 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: 18S rRNA

• Molecule 2: Eukaryotic translation initiation factor 1A, X-chromosomal

Chain A:

• Molecule 3: uS2 (SA)

Chain B:

• Molecule 4: eS1

Chain C:

ARG ALA ASP GLY TYR GLU PRO VAL GLN GLU SER VAL

- Molecule 5: uS5

Chain D:

100%

K58 A100 D104 L255 K275 T276 H277 T278

- Molecule 6: uS3

10%

Chain E:

80% 19%

MET SER ALA ARG ARG ARG ARG ARG ALA ALA PHE ARG ARG ARG ALA GLU PRO PHE ILE PRO ILE SER VAL ARG GLU PRO LEU PRO PHE LEU SER ALA ALA ARG GLY GLY LYS M1 A2 V3 A30 E31 D32 G33 E38 V41 T42 P43 T44 E47 V58 K62

R76 E81 A114 R143 D154 E212 P213 K214 D215 E216 I217 L218 P219 T220 T221 K227 G228 GLY LYS PRO GLU PRO PRO ALA MET PRO GLN PRO VAL PRO THR ALA

- Molecule 7: eS4 (S4 X isoform)

Chain F:

99%

MET A2 L23 D88 R200 K259 Q260 S261 S262 G263

- Molecule 8: uS7

5%

Chain G:

93% 6%

MET THR GLU TRP GLU THR ALA ALA PRO ALA VAL ALA GLU T14 P15 D16 D32 A53 R60 R127 I128 G129 R130 A131 G132 T133 R204

- Molecule 9: eS6

11%

Chain H:

95% 5%

M1 E35 V36 A37 A38 D39 E43 H70 R98 D120 D126 T127 T128 R131 K149 E165 L213 K218 E219 A220 K221 E222 K223 R224 I228 A229 K230 R231 R232 R233 L234 S235 S236 L237 ARG ALA SER THR SER LYS SER GLU SER SER GLN LYS

- Molecule 10: eS7

11%

Chain I:

43% 57%

GLU PRO ILE THR ASN ARG VAL PHE GLN ALA LEU THR SER SER ASP PHE LYS GLN GLN ASP GLY GLY SER PHE SER LEU SER ARG THR HIS LEU SER GLY PHE ARG SER ARG PRO ARG ARG THR THR ILE ALA SER ALA ALA THR ARG PRO PRO ILE PRO SER ARG GLY GLY SER ALA

PRO THR GLY THR PRO GLU GLY ALA GLY ALA SER ARG SER ARG ARG THR VAL PRO ARG LEU PRO PRO GLN PRO SER GLY PRO PRO ARG ALA PRO ARG HIS PRO GLY PHE GLN ARG ALA LEU PRO SER LEU ILE ARG PRO GLU PRO GLY VAL ARG ALA PRO LEU LEU ALA SER ALA GLY THR

ARG PHE LYS ARG PRO ALA SER GLN ALA VAL LYS ALA LEU SER ALA ARG GLY LEU LEU GLN PRO GLN VAL GLN VAL ALA GLY PRO ARG ALA ASN ARG VAL PRO GLN ARG ARG GLU PRO ARG GLN HIS LEU SER GLY HIS ALA PRO GLY ALA SER GLU GLY GLY SER ALA SER PRO THR TYR TRP

SER LEU GLY ILE THR SER TRP ASP ALA LEU GLY PHE PRO LEU LEU ARG GLY GLY SER SER GLY PHE ARG SER SER VAL ALA LEU PHE ARG PRO LEU SER PHE ARG ARG ARG ASP LEU ARG ARG GLU ILE TRP ALA SER SER ALA GLY ALA PRO GLY GLU ALA MET PHE

SER SER SER A6 K7 I8 P11 N12 G13 E14 K15 P16 D17 E18 F19 E20 I23 S24 Q25 A26 L27 L28 E29 L30 E31 M32 N33 S34 D35 L36 K37 A38 R41 E42 L43 N44 E50 I51 E52 V53 G54 G55 G56 R57 R78 R81 E84 K85 S88 G89 S108

ARG THR LYS ASN K113 K160 K191 F192 Q193 L194

• Molecule 11: eS8

Chain J: 10% 99%

MET G2 R92 R123 K124 K125 G126 A127 K128 L129 T130 P131 E132 E133 I136 L137 K140 R141 E151 E194 R205 K206 G207 LYS

• Molecule 12: uS4

Chain K: 95% 5%

MET P2 R79 K180 G181 Q182 G183 G184 A185 G186 ALA GLY ASP ASP GLU GLU GLU ASP

• Molecule 13: eS10

Chain L: 8% 64% 36%

M1 E13 A36 D37 L79 R80 D81 L85 P86 P87 E88 I89 V90 R95 R96 SER ARG PRO GLU THR GLY ARG PRO ARG PRO LYS SER GLY LEU GLU GLY GLU ARG PRO ALA ARG LEU THR ARG GLY GLU ALA ASP ARG ASP THR TYR ARG SER ALA VAL PRO PRO GLY ALA

ASP LYS LYS ALA GLU ALA GLY ALA GLY SER ALA THR GLU

• Molecule 14: uS17

Chain M: 10% 94%

MET ALA D3 K21 R22 V23 L24 L25 G26 E27 T28 G29 K30 E31 K32 R69 K104 D119 A149 G150 T151 K152 K153 GLN PHE GLN LYS PHE

• Molecule 15: eS12

Chain N: 81% 88% 11%

MET ALA GLU GLY ILE ALA ALA GLY VAL MET ASP V14 N15 T16 A17 L18 Q19 E20 V21 L22 K23 T24 A25 L26 I27 H28 D29 G30 L31 A32 R33 G34 I35 R36 E37 A38 A39 K40 A41 L42 D43 K44 R45 Q46 A47 H48 L49 C50 V51 L52 A53 S54 N55 C56 D57 E58 P59 M60

Y61 V62 K63 L64 V65 E66 A67 L68 C69 A70 E71 H72 Q73 I74 N75 L76 I77 K78 V79 D80 D81 N82 K83 K84 L85 G86 E87 W88 V89 G90 L91 C92 K93 I94 D95 R96 E97 G98 K99 P100 R101 K102 S107 C108 V109 V110 V111 K112 D113 Y114 G115 K116 E117 S118 Q119 A120 K121 D122 V123

I124 E125 E126 Y127 F128 K129 C130 LYS LYS

• Molecule 16: uS15

Chain O:

99%

MET G2 S144 T145 A146 S147 A148 L149 V150 ALA

• Molecule 17: uS11

Chain P:

7%

81%

19%

MET LYS ALA ARG ALA LEU SER GLY SER GLY VAL ARG ARG ARG ALA ALA MET ALA PRO ARG LYS GLY LYS LYS GLU LYS LYS GLU GLU GLN VAL ILE S16 L17 G18 P19 Q20 V21 A22 E23 G24 E25 E130 L151

• Molecule 18: uS19

Chain Q:

10%

83%

17%

MET ALA GLU VAL GLU GLN LYS LYS LYS ARG THR F12 R13 K14 F15 L25 L26 D27 G48 L49 R50 R51 K52 Q53 H54 M70 E71 K72 P73 E74 P131 GLY ILE GLY ALA THR HIS SER SER ARG PHE ILE PRO LEU LYS

• Molecule 19: uS9

Chain R:

83%

17%

SER ALA ARG VAL ALA PRO ARG PHE PRO PHE PRO VAL VAL ALA PRO ARG GLY GLU ASP ARG HIS SER SER ALA ALA ALA MET PRO SER LYS G5 P6 N29 D110 R146

• Molecule 20: eS17

Chain S:

12%

97%

MET G2 R63 S70 L73 R78 Y84 V88 D92 Q93 E94 L108 L109 D110 F111 G112 N116 Q121 P122 T123 R132 G133 ALA VAL

• Molecule 21: uS13

Chain T:

MET S2 L3 V4 I5 P6 E7 K8 F9 Q10 H11 R14 N17 T18 N19 I20 D21 D49 I50 D51 L59 T60 E61 D62 N73 K94 E109 E112 R142 G143 R144 T145 VAL GLY VAL SER LYS LYS

- Molecule 22: eS19

Chain U:

MET PRO G3 D118 K143 LYS HIS

- Molecule 23: uS10

Chain V:

MET ALA PHE LYS ASP THR GLY LYS THR PRO VAL GLU PRO GLU VAL ALA ILE H18 R19 D38 R41 K44 E45 K46 N47 L48 K49 P94 S95 E96 I97 V98 K99 Q100 I101 T102 S103 I104 S105 I106 E107 P108 I116 A117 ASP ALA

- Molecule 24: eS21

Chain W:

M1 D4 D76 F83

- Molecule 25: uS8

Chain X:

MET V2 F130

- Molecule 26: uS12

Chain Y:

MET G2 Q61 D88 R142 SER

- Molecule 27: eS24

Chain Z:

MET ASN ASP T4 D53 K99 K100 K101 G126 A127 GLY LYS LYS LYS

- Molecule 28: eS25

Chain a:

10%

62%

38%

PRO PRO LYS ASP ASP LYS LYS LYS LYS ASP ALA GLY LYS SER ALA LYS LYS ASP LYS ASP PRO VAL ASN LYS SER GLY GLY LYS LYS ALA LYS LYS LYS LYS TRP SER LYS GLY **K39 V40 R41 D42 K43** **F50 D51 K52** **D56 K57** **T113 K114 G115** GLY ASP ALA PRO ALA GLY

GLU ASP ALA

• Molecule 29: eS26

Chain b:

100%

T2 **R100 F101 R102**

• Molecule 30: eS27

Chain c:

8%

99%

MET **P2** **G39 C40** **G58 C59 S60 T61** **Q83 H84**

• Molecule 31: eS28

Chain d:

14%

97%

MET ASP **T3 S4 R5 V6 Q7** **E64 A65 R66 R67 L68 R69**

• Molecule 32: uS14

Chain e:

96%

MET **G2** R19 **D56**

• Molecule 33: eS30

Chain f:

12%

43%

57%

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

ALA LEU SER THR LEU GLU GLU VAL ALA GLY ARG MET LEU GLY GLY LYS VAL **H76 G77 S78 L79 A80 R81** **E96** **V118 V119 P120 T121 F122 G123 K124 K125** **S132**

• Molecule 34: eS31

Chain g:

28%
36%
64%

MET ALA ARG HIS PRO LEU TYR GLN GLY SER GLY ILE TRP CYS GLY ARG ARG GLY LEU ARG GLY GLY ALA PHE GLY GLY GLY ALA GLY LYS PRO ARG GLY GLY PRO ALA ALA LEU PHE LEU PHE ASP PRO PRO SER ALA ARG ARG TRP ALA ARG HIS GLN ASP ALA ASP LEU ARG GLU ASN PRO TYR GLY

GLU ASP HIS HIS ALA ARG GLY ILE PRO PRO ASP GLN GLN GLN ARG LEU ILE ILE PHE ALA GLY LYS GLN LEU GLU ASP GLY ARG THR LEU SER ASP TYR ASN ILE GLN LYS GLU SER THR LEU HIS LEU VAL LEU ARG ARG GLY GLY ALA LYS LYS ARG LYS LYS **K83** **S84** **Y85** **T86** **T87** **P88**

K89 **K90** **N91** **K92** **H93** **K94** **R95** **K96** **K97** **V98** **K99** **L100** **A101** **V102** **L103** **K104** **Y105** **V106** **K107** **V108** **D109** **E110** **N111** **G112** **K113** **I114** **S115** **R116** **L117** **R118** **R119** **E120** **C121** **P122** **S123** **D124** **E125** **C126** **G127** **A128** **G129** **V130** **F131** **H135** **F136** **D137** **R138** **C144** **C145** **L146** **C149** **F150** ASN LYS PRO GLU ASP

LYS

• Molecule 35: Receptor for Activated C Kinase 1 (RACK1)

Chain h:

8%
98%

MET **T2** **E3** **E49** **T50** **Q143** **D144** **E145** **S161** **N162** **L179** **A180** **N181** **I189** **L221** **N222** **L261** **D268** **E269** **E273** **V274** **I275** **S276** **T277** **S278** **S279** **K280** **A281** **D304** **I314** GLY THR ARG

• Molecule 36: Eukaryotic translation initiation factor 2 subunit 1

Chain j:

6%
56%
42%

MET PRO GLY **L4** **S5** **E43** **E99** **E117** **E120** **D124** **W136** **V137** **F138** **Y142** **K143** **R144** **Y147** **Y150** **A156** **V157** **S158** **D159** **P160** **E170** **D171** **V175** **L176** **T185** PRO GLN ALA VAL LYS ILE ARG ALA ASP GLU VAL ALA CYS TYR GLY TYR GLU GLY GLY

ILE ASP ALA VAL LYS GLU ALA LEU ARG ALA GLY LEU ASN CYS SER THR GLU ASN MET PRO ILE LYS ILE ASN LEU ILE ALA PRO PRO ARG TYR VAL MET THR THR THR LEU THR LEU GLU ARG THR GLU GLY ASN ALA GLU GLU VAL ASP GLY ASP ASP ASP ALA GLU GLU MET GLU ALA LYS ALA GLU ASP

LYS ARG GLY VAL PHE ASN VAL GLN MET GLU PRO LYS VAL VAL THR ASP THR ASP GLU THR GLU LEU ALA ARG GLN MET GLU ARG LEU GLU ARG GLU ASN ALA GLU VAL ASP GLY ASP ASP ASP ALA GLU GLU MET GLU ALA LYS ALA GLU ASP

• Molecule 37: eL41

Chain n:

20%
100%

M1 **M20** **R21** **Q22** **R23** **S24** **K25**

• Molecule 38: HCV IRES

Chain z:

9%
34%
14%
53%

G C C A G C C C C C U G A U G G G G G C G A C A C U C C A C C A U G A A U C A C U C C C C U G U G A G G A A C U A C U G

U C U U C A C G C A G A A A G C G U C U A G C C A U G G C G U U A G U A U G A G U G U C G U G C A G C C U C C A G G A **C120**

• Molecule 39: Met-tRNA-i-Met

Chain i:

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	103813	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TECNAI F30	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	70.9	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	56000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.093	Depositor
Minimum map value	-0.039	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.014	Depositor
Map size (Å)	380.0, 380.0, 380.0	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.95, 0.95, 0.95	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

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	2	0.27	0/40506	1.01	185/63123 (0.3%)
2	A	0.26	0/809	0.59	0/1083
3	B	0.28	0/1747	0.65	1/2374 (0.0%)
4	C	0.26	0/1756	0.57	0/2350
5	D	0.27	0/1753	0.55	1/2369 (0.0%)
6	E	0.28	0/1796	0.62	0/2417
7	F	0.26	0/2118	0.57	1/2849 (0.0%)
8	G	0.25	0/1531	0.59	0/2059
9	H	0.25	0/1946	0.60	0/2590
10	I	0.27	0/1510	0.59	0/2022
11	J	0.27	0/1723	0.61	0/2298
12	K	0.27	0/1550	0.63	0/2069
13	L	0.31	0/834	0.63	1/1125 (0.1%)
14	M	0.28	0/1254	0.62	0/1677
15	N	0.28	0/918	0.63	0/1233
16	O	0.25	0/1226	0.56	0/1649
17	P	0.26	0/1029	0.59	0/1380
18	Q	0.28	0/1017	0.63	0/1358
19	R	0.30	0/1146	0.64	0/1534
20	S	0.28	0/1082	0.68	0/1452
21	T	0.27	0/1208	0.66	1/1618 (0.1%)
22	U	0.26	0/1115	0.55	0/1493
23	V	0.24	0/805	0.60	0/1081
24	W	0.27	0/643	0.60	1/860 (0.1%)
25	X	0.27	0/1051	0.58	0/1406
26	Y	0.27	0/1116	0.64	1/1490 (0.1%)
27	Z	0.27	0/1028	0.63	1/1366 (0.1%)
28	a	0.26	0/620	0.66	0/831
29	b	0.27	0/828	0.61	0/1109
30	c	0.26	0/665	0.55	0/891
31	d	0.25	0/532	0.67	0/712
32	e	0.26	0/470	0.59	0/623

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	f	0.26	0/462	0.59	0/607
34	g	0.30	0/567	0.59	0/753
35	h	0.26	0/2493	0.61	2/3394 (0.1%)
36	j	0.39	1/1239 (0.1%)	0.66	3/1680 (0.2%)
37	n	0.29	0/240	0.71	0/305
38	z	0.26	0/4488	0.97	5/6995 (0.1%)
39	i	0.24	0/1795	0.89	1/2798 (0.0%)
All	All	0.27	1/88616 (0.0%)	0.85	204/129023 (0.2%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
36	j	136	TRP	CD2-CE2	5.92	1.48	1.41

The worst 5 of 204 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	2	1852	C	N1-C2-O2	16.60	128.86	118.90
1	2	1852	C	N3-C2-O2	-15.27	111.21	121.90
1	2	1852	C	C2-N1-C1'	12.74	132.82	118.80
1	2	1852	C	C6-N1-C2	-11.53	115.69	120.30
1	2	630	U	C2-N1-C1'	10.94	130.83	117.70

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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	
2	A	97/144 (67%)	92 (95%)	5 (5%)	0	100	100
3	B	215/295 (73%)	202 (94%)	13 (6%)	0	100	100
4	C	211/264 (80%)	198 (94%)	13 (6%)	0	100	100
5	D	219/221 (99%)	216 (99%)	3 (1%)	0	100	100
6	E	226/281 (80%)	219 (97%)	7 (3%)	0	100	100
7	F	260/263 (99%)	250 (96%)	10 (4%)	0	100	100
8	G	189/204 (93%)	181 (96%)	8 (4%)	0	100	100
9	H	235/249 (94%)	231 (98%)	4 (2%)	0	100	100
10	I	181/432 (42%)	173 (96%)	8 (4%)	0	100	100
11	J	205/208 (99%)	191 (93%)	14 (7%)	0	100	100
12	K	183/194 (94%)	181 (99%)	2 (1%)	0	100	100
13	L	94/149 (63%)	86 (92%)	8 (8%)	0	100	100
14	M	149/158 (94%)	136 (91%)	13 (9%)	0	100	100
15	N	115/132 (87%)	106 (92%)	9 (8%)	0	100	100
16	O	147/151 (97%)	145 (99%)	2 (1%)	0	100	100
17	P	134/168 (80%)	122 (91%)	12 (9%)	0	100	100
18	Q	118/145 (81%)	111 (94%)	7 (6%)	0	100	100
19	R	140/172 (81%)	134 (96%)	6 (4%)	0	100	100
20	S	130/135 (96%)	117 (90%)	13 (10%)	0	100	100
21	T	142/152 (93%)	137 (96%)	5 (4%)	0	100	100
22	U	139/145 (96%)	134 (96%)	5 (4%)	0	100	100
23	V	98/119 (82%)	94 (96%)	4 (4%)	0	100	100
24	W	81/83 (98%)	78 (96%)	3 (4%)	0	100	100
25	X	127/130 (98%)	124 (98%)	3 (2%)	0	100	100
26	Y	139/143 (97%)	137 (99%)	2 (1%)	0	100	100
27	Z	122/131 (93%)	119 (98%)	3 (2%)	0	100	100
28	a	75/124 (60%)	73 (97%)	2 (3%)	0	100	100
29	b	99/101 (98%)	96 (97%)	3 (3%)	0	100	100
30	c	81/84 (96%)	77 (95%)	4 (5%)	0	100	100
31	d	65/69 (94%)	60 (92%)	5 (8%)	0	100	100
32	e	53/56 (95%)	51 (96%)	2 (4%)	0	100	100
33	f	55/133 (41%)	54 (98%)	1 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
34	g	66/188 (35%)	60 (91%)	6 (9%)	0	100	100
35	h	311/317 (98%)	298 (96%)	13 (4%)	0	100	100
36	j	180/315 (57%)	173 (96%)	7 (4%)	0	100	100
37	n	23/25 (92%)	23 (100%)	0	0	100	100
All	All	5104/6280 (81%)	4879 (96%)	225 (4%)	0	100	100

There are no Ramachandran outliers to report.

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	A	84/123 (68%)	84 (100%)	0	100	100
3	B	180/245 (74%)	179 (99%)	1 (1%)	86	94
4	C	194/231 (84%)	194 (100%)	0	100	100
5	D	187/187 (100%)	187 (100%)	0	100	100
6	E	190/232 (82%)	188 (99%)	2 (1%)	73	88
7	F	224/225 (100%)	224 (100%)	0	100	100
8	G	161/170 (95%)	160 (99%)	1 (1%)	86	94
9	H	207/218 (95%)	206 (100%)	1 (0%)	88	94
10	I	165/360 (46%)	165 (100%)	0	100	100
11	J	179/180 (99%)	179 (100%)	0	100	100
12	K	161/168 (96%)	161 (100%)	0	100	100
13	L	87/125 (70%)	87 (100%)	0	100	100
14	M	136/142 (96%)	133 (98%)	3 (2%)	52	78
15	N	99/108 (92%)	98 (99%)	1 (1%)	76	88
16	O	130/131 (99%)	130 (100%)	0	100	100
17	P	106/130 (82%)	106 (100%)	0	100	100
18	Q	109/130 (84%)	109 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
19	R	117/140 (84%)	117 (100%)	0	100	100
20	S	119/121 (98%)	118 (99%)	1 (1%)	81	91
21	T	125/132 (95%)	124 (99%)	1 (1%)	81	91
22	U	111/116 (96%)	111 (100%)	0	100	100
23	V	92/107 (86%)	92 (100%)	0	100	100
24	W	67/67 (100%)	67 (100%)	0	100	100
25	X	112/113 (99%)	112 (100%)	0	100	100
26	Y	113/115 (98%)	113 (100%)	0	100	100
27	Z	107/113 (95%)	106 (99%)	1 (1%)	78	90
28	a	68/102 (67%)	68 (100%)	0	100	100
29	b	88/88 (100%)	88 (100%)	0	100	100
30	c	75/76 (99%)	75 (100%)	0	100	100
31	d	60/62 (97%)	60 (100%)	0	100	100
32	e	48/49 (98%)	47 (98%)	1 (2%)	53	79
33	f	47/106 (44%)	47 (100%)	0	100	100
34	g	61/154 (40%)	60 (98%)	1 (2%)	62	83
35	h	272/275 (99%)	272 (100%)	0	100	100
36	j	84/280 (30%)	81 (96%)	3 (4%)	35	66
37	n	24/24 (100%)	24 (100%)	0	100	100
All	All	4389/5345 (82%)	4372 (100%)	17 (0%)	91	96

5 of 17 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
36	j	142	TYR
36	j	150	TYR
14	M	104	LYS
15	N	96	ARG
20	S	116	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
13	L	44	HIS

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Mol	Chain	Res	Type
14	M	141	ASN
21	T	72	GLN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	2	1685/1870 (90%)	307 (18%)	10 (0%)
38	z	186/400 (46%)	52 (27%)	0
39	i	74/75 (98%)	15 (20%)	0
All	All	1945/2345 (82%)	374 (19%)	10 (0%)

5 of 374 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	2	4	C
1	2	5	U
1	2	26	U
1	2	33	G
1	2	41	G

5 of 10 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	2	1137	U
1	2	1395	C
1	2	1637	A
1	2	561	A
1	2	688	U

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

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-25539. 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 ⓘ
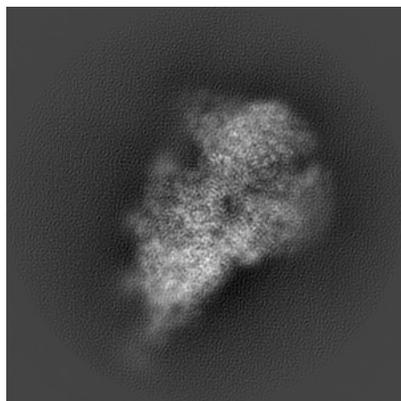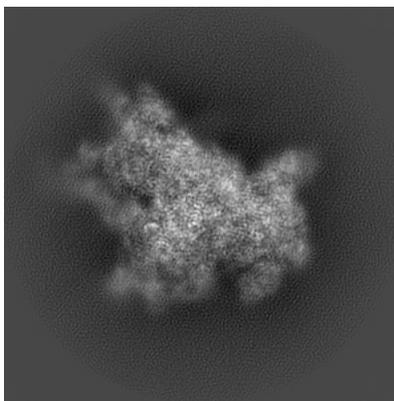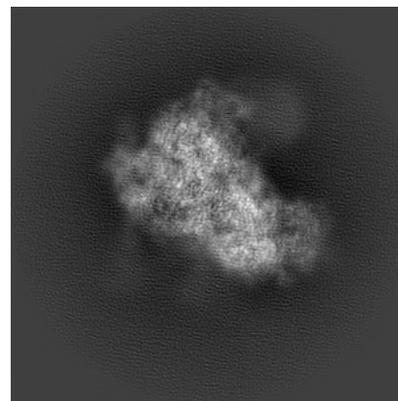
6.1.1 Primary map

| X | Y | Z |

6.1.2 Raw map

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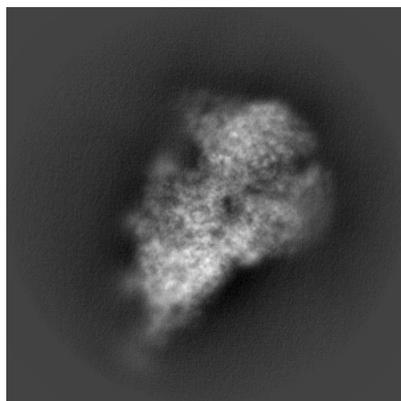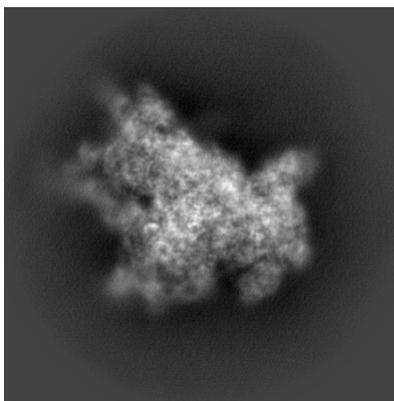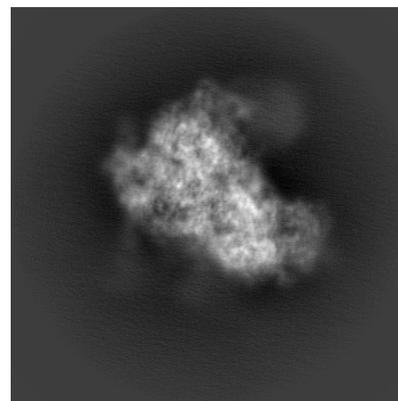
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
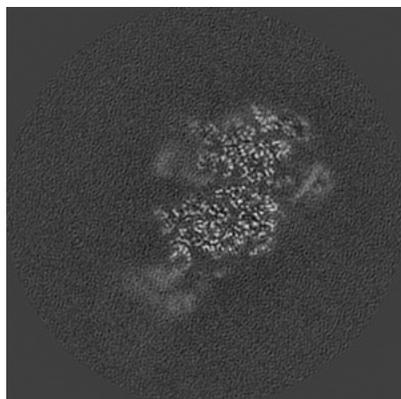
6.2.1 Primary map
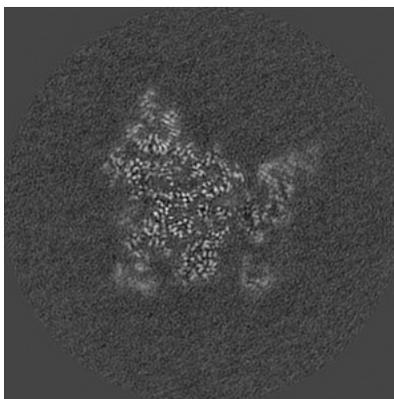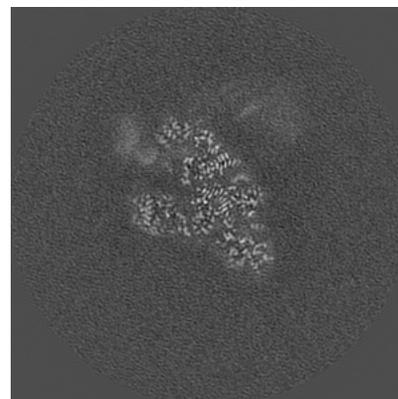
X Index: 200   Y Index: 200   Z Index: 200

6.2.2 Raw map
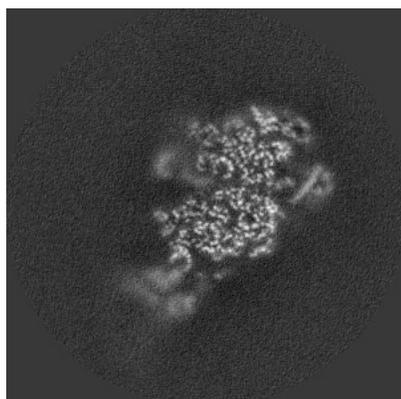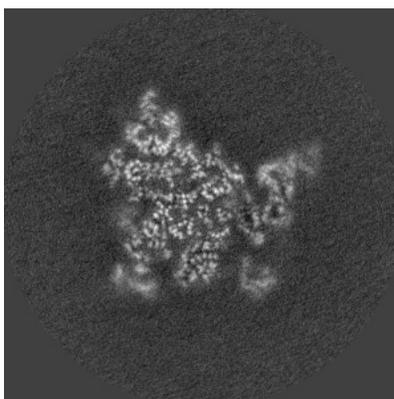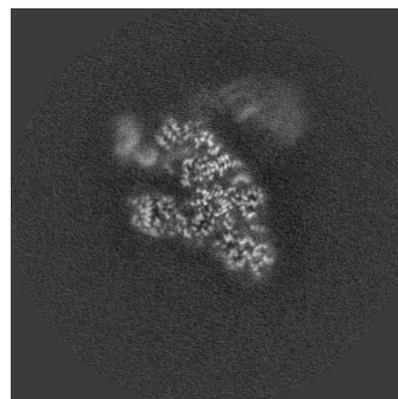
X Index: 200   Y Index: 200   Z Index: 200

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

6.3 Largest variance slices ⓘ
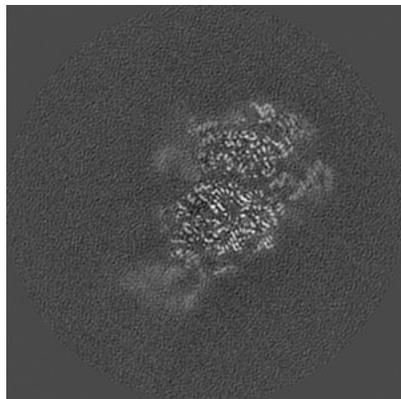
6.3.1 Primary map
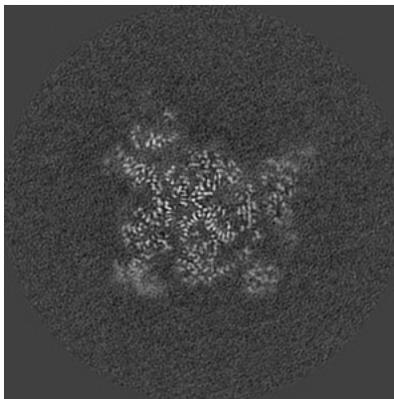
| X Index: 197 | Y Index: 206 | Z Index: 165 |
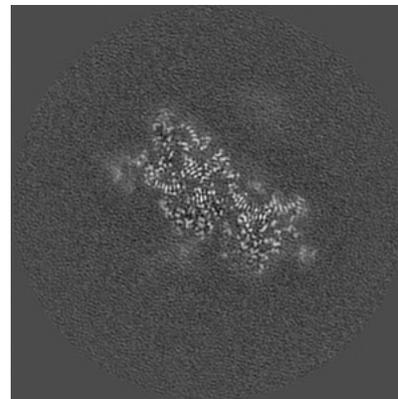
6.3.2 Raw map
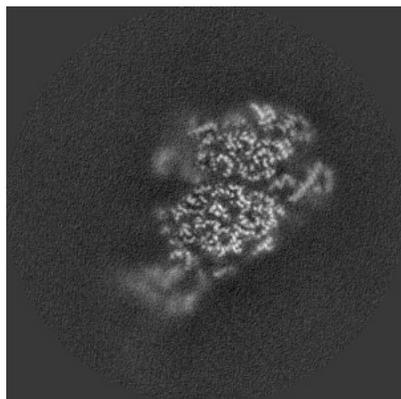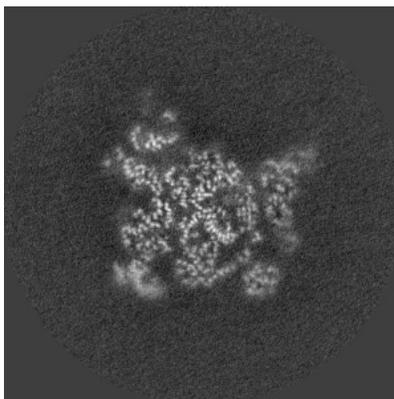
| X Index: 198 | Y Index: 206 | Z Index: 153 |
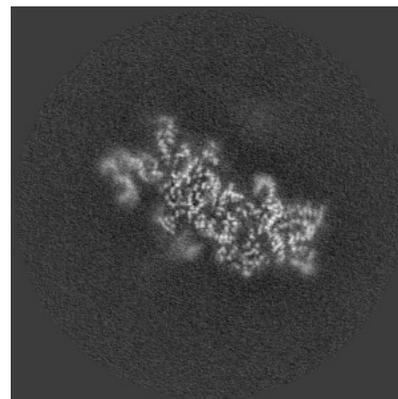
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views (i)

6.4.1 Primary map

| X | Y | Z |
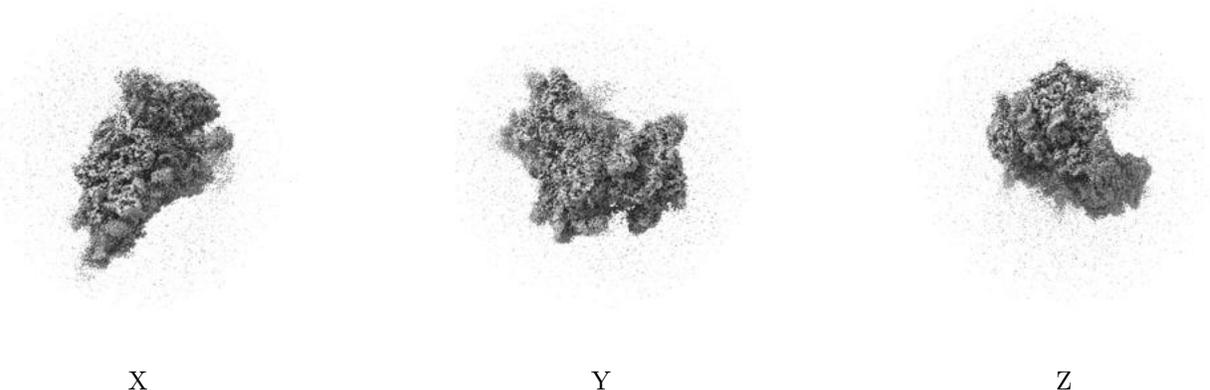
The images above show the 3D surface view of the map at the recommended contour level 0.014. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.4.2 Raw map

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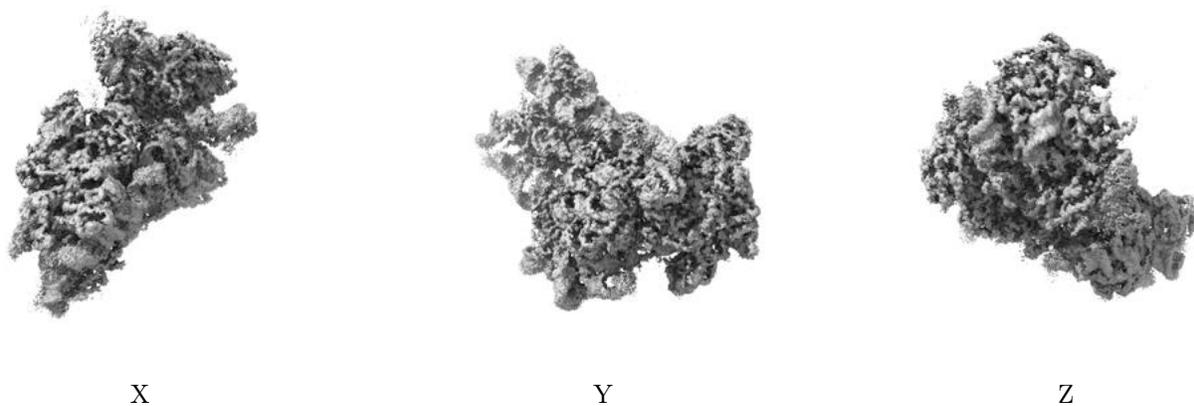
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.5   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

6.5.1   emd_25539_msk_1.map   ⓘ

X   Y   Z
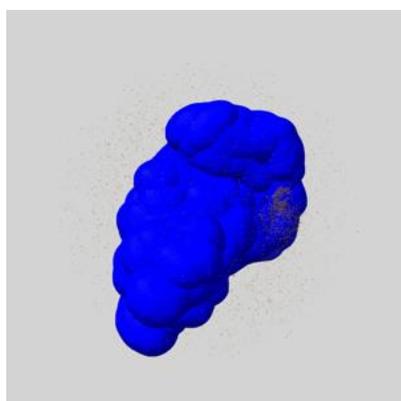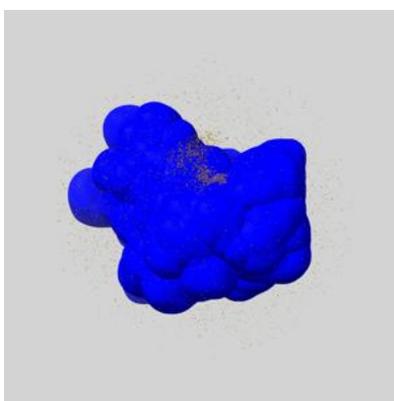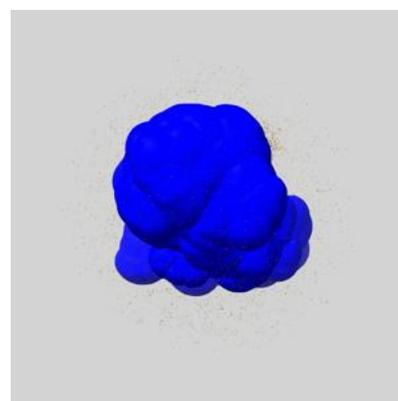
7　Map analysis ⓘ

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 ⓘ
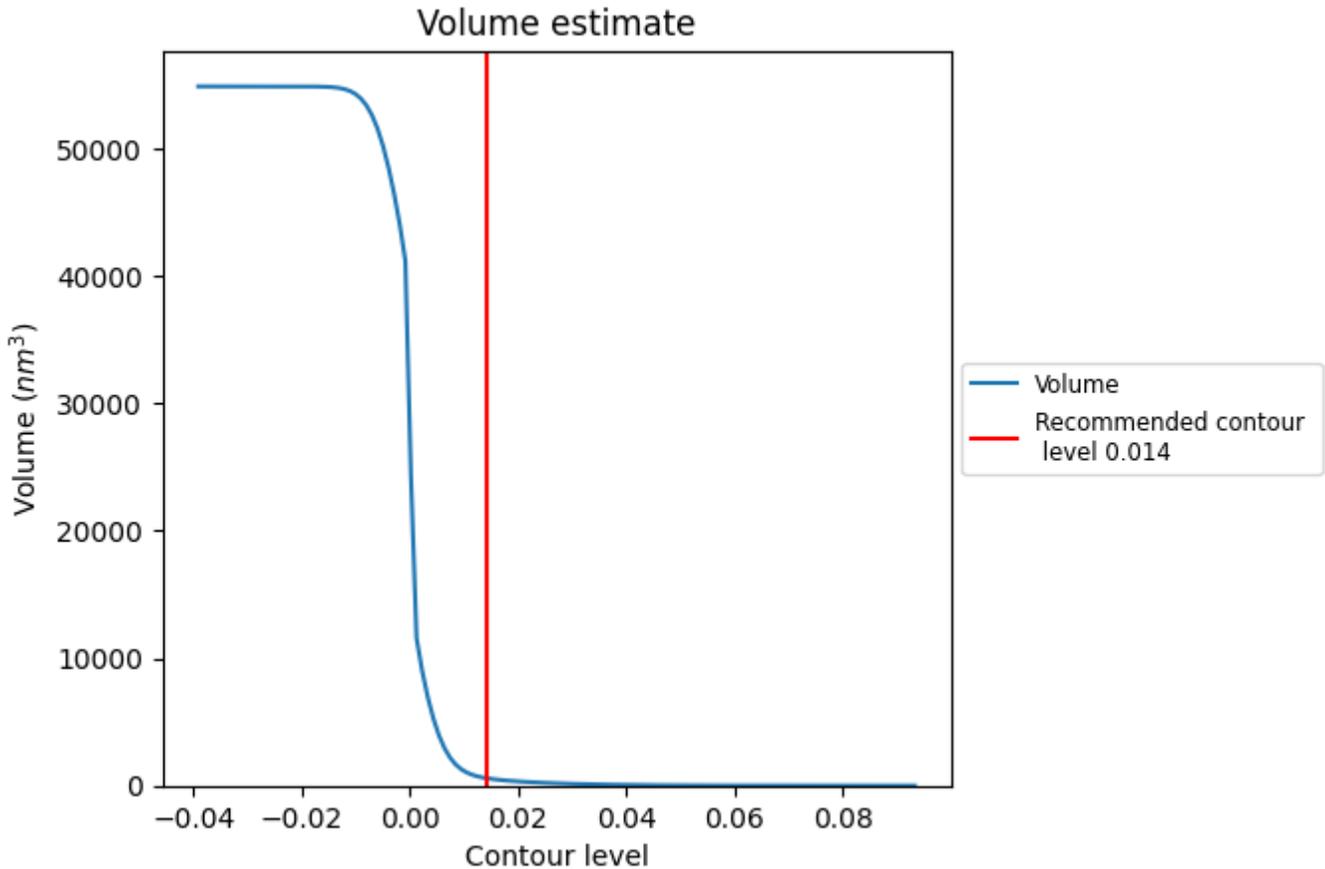
The volume at the recommended contour level is 594 nm^3; this corresponds to an approximate mass of 536 kDa.

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 ⓘ
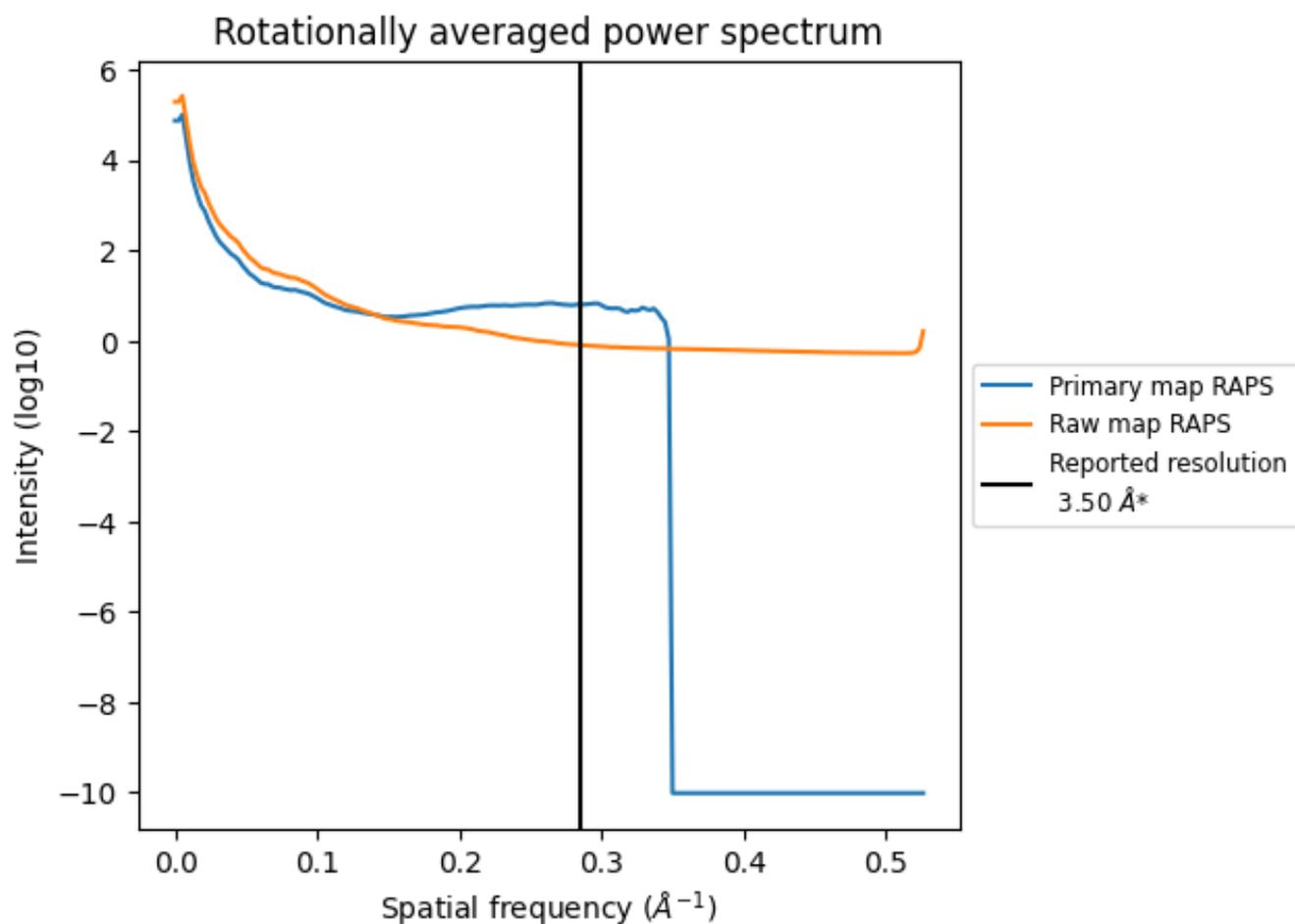
*Reported resolution corresponds to spatial frequency of 0.286 Å^{-1}

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 ⓘ
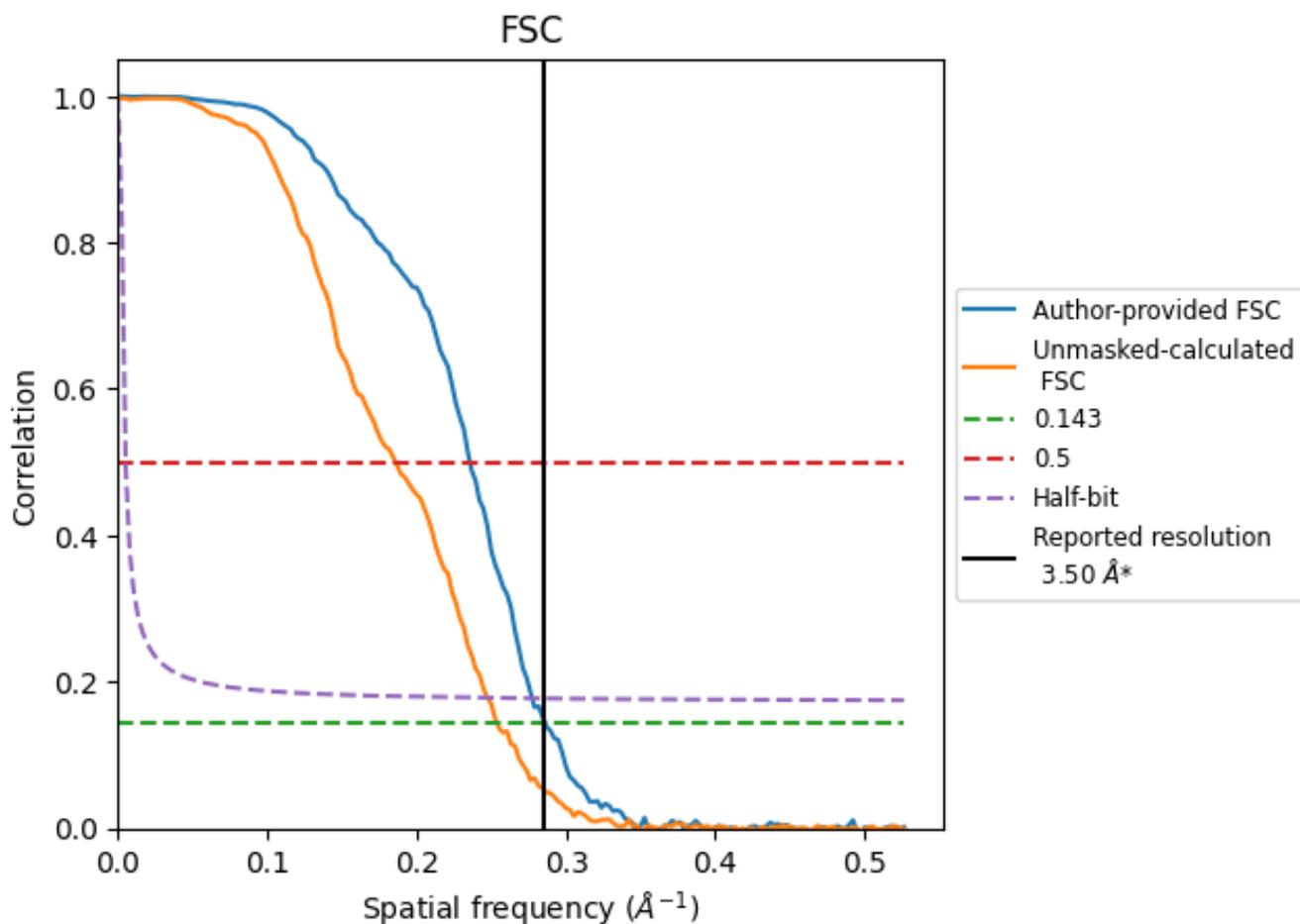
*Reported resolution corresponds to spatial frequency of 0.286 Å^{-1}

8.2 Resolution estimates ⓘ

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.50	-	-
Author-provided FSC curve	3.50	4.24	3.61
Unmasked-calculated*	3.94	5.38	4.04

*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 3.94 differs from the reported value 3.5 by more than 10 %

9   Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-25539 and PDB model 7SYS. Per-residue inclusion information can be found in section 3 on page 12.

9.1   Map-model overlay ⓘ


X   Y   Z
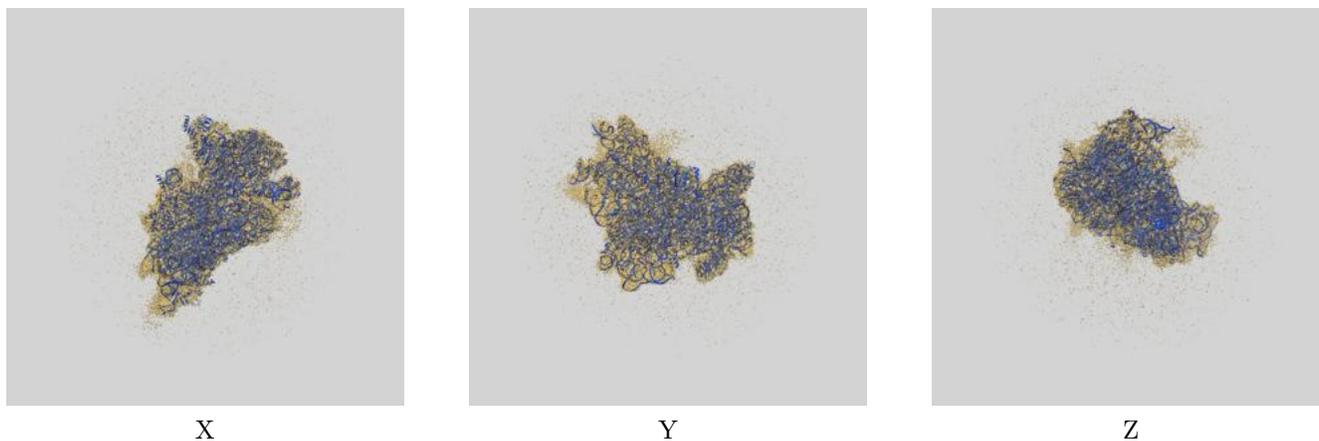
The images above show the 3D surface view of the map at the recommended contour level 0.014 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2　Q-score mapped to coordinate model　ⓘ


X	Y	Z
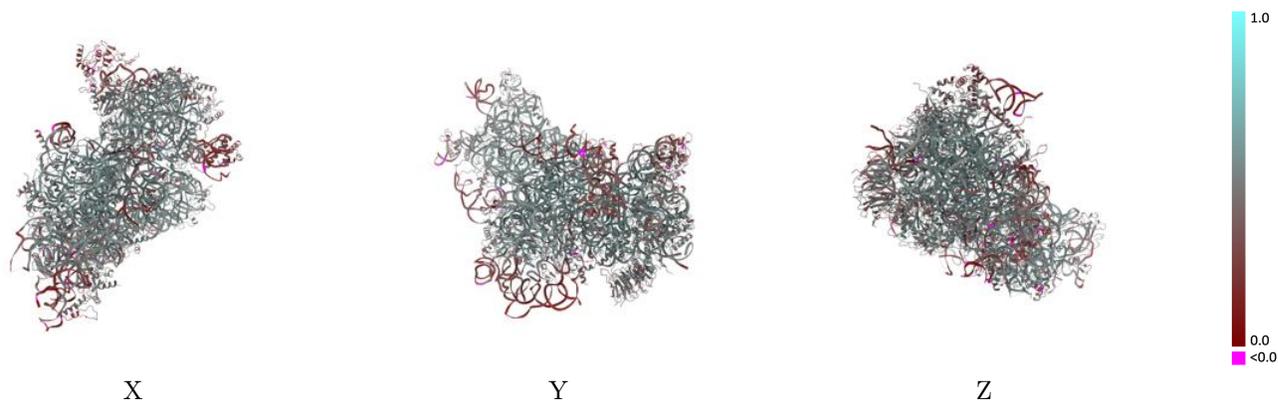
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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
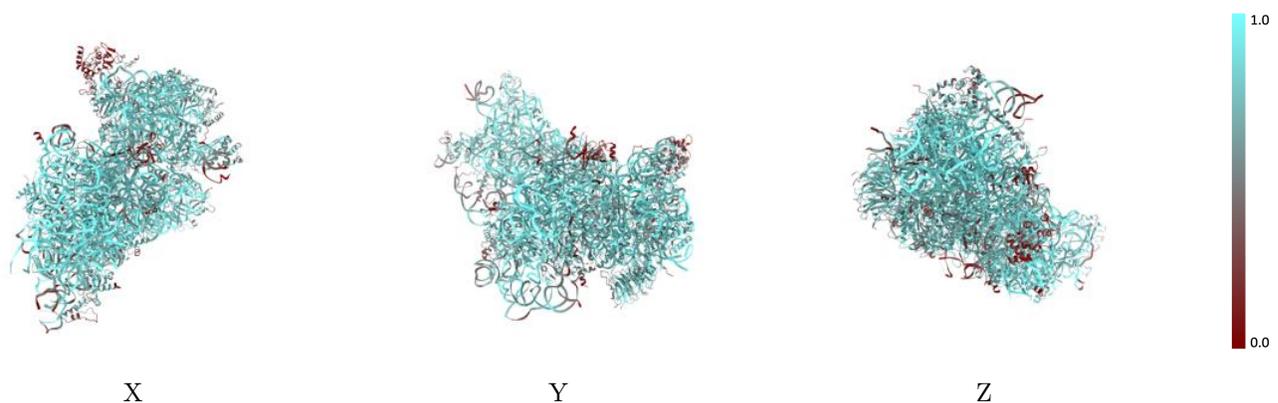
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.014).
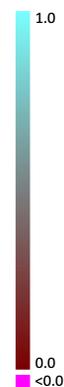
9.4　Atom inclusion ⓘ
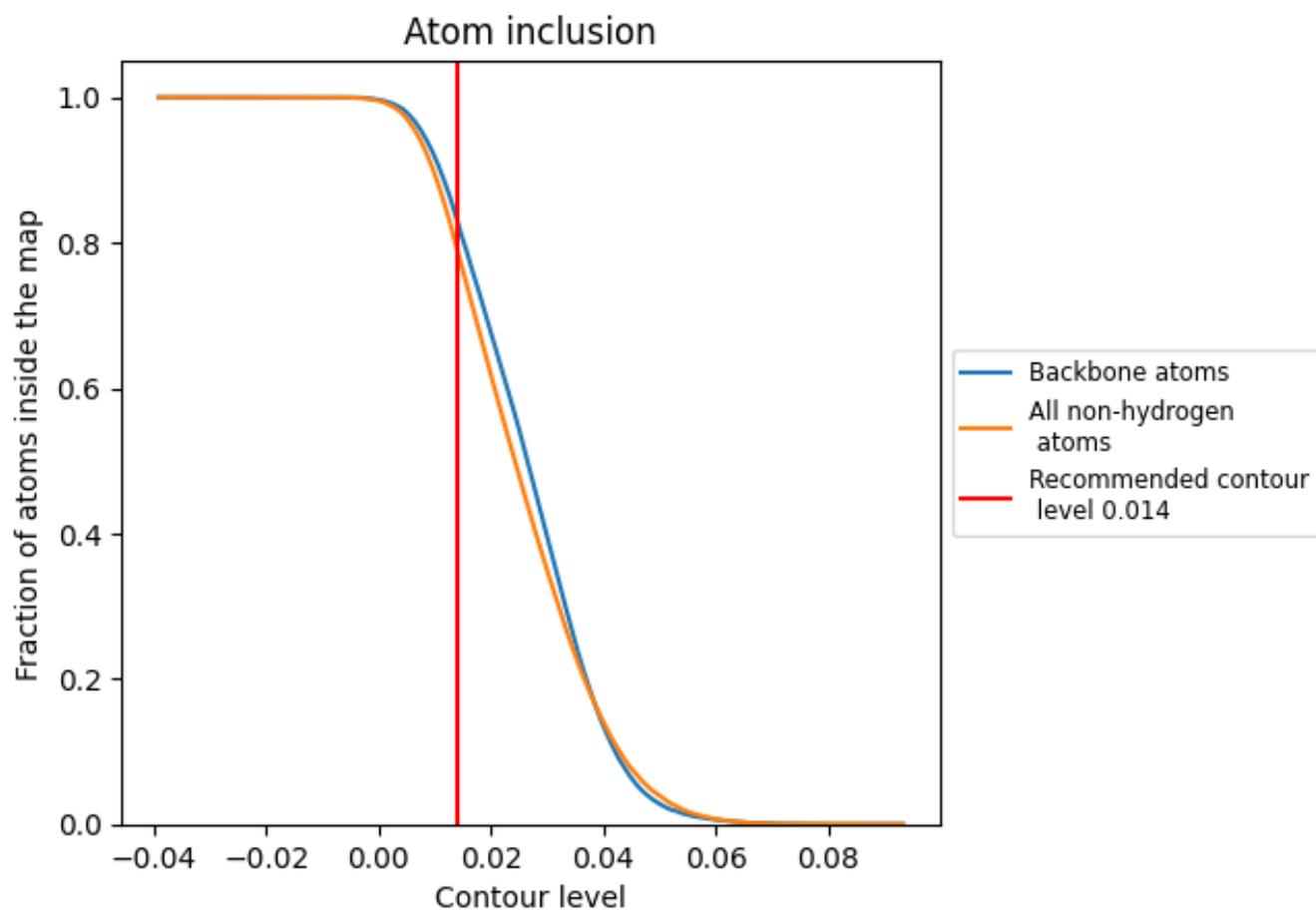
At the recommended contour level, 83% of all backbone atoms, 79% of all non-hydrogen atoms, are inside the map.

9.5　Map-model fit summary　ⓘ

The table lists the average atom inclusion at the recommended contour level (0.014) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7898	0.4690
2	0.8881	0.4940
A	0.1553	0.3060
B	0.7993	0.5130
C	0.7899	0.5090
D	0.8029	0.5200
E	0.6759	0.4730
F	0.8222	0.5230
G	0.7793	0.5090
H	0.7326	0.4290
I	0.5777	0.4350
J	0.7437	0.4750
K	0.8068	0.5070
L	0.6911	0.4320
M	0.7696	0.5110
N	0.1644	0.2440
O	0.8259	0.5220
P	0.7852	0.5040
Q	0.6891	0.4110
R	0.8288	0.5150
S	0.7283	0.4680
T	0.6865	0.4480
U	0.8435	0.5110
V	0.6447	0.4690
W	0.8199	0.5280
X	0.8554	0.5460
Y	0.7955	0.5230
Z	0.8247	0.4950
a	0.5893	0.4370
b	0.8223	0.5300
c	0.7637	0.4910
d	0.6850	0.4770
e	0.8594	0.5370
f	0.6500	0.4670
g	0.2500	0.2910

1.0

0.0
<0.0

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Chain	Atom inclusion	Q-score
h	0.7202	0.4450
i	0.6552	0.3160
j	0.6896	0.3880
n	0.7018	0.4730
z	0.6176	0.2600