WORLDWIDE wwPDB PROTEIN DATA BANK

wwPDB EM Validation Summary Report (i)

Dec 11, 2022 – 12:52 AM JST

PDB ID	:	7WTV
EMDB ID	:	EMD-32802
Title	:	Cryo-EM structure of a human pre-40S ribosomal subunit - State RRP12-A2
Authors	:	Cheng, J.; Lau, B.; Thoms, M.; Ameismeier, M.; Berninghausen, O.; Hurt, E.; Beckmann, R.
Deposited on	:	2022-02-05
Resolution	:	3.50 Å(reported)

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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.

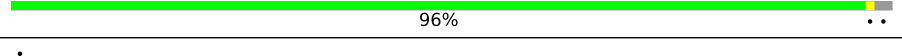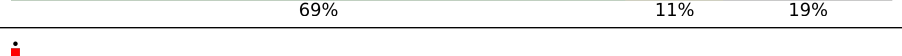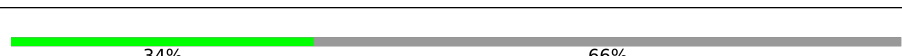Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.

Metric	Percentile Ranks	Value
Clashscore		6
Ramachandran outliers		0.0%
Sidechain outliers		0.2%
RNA backbone		0.52

Worse   *Better*

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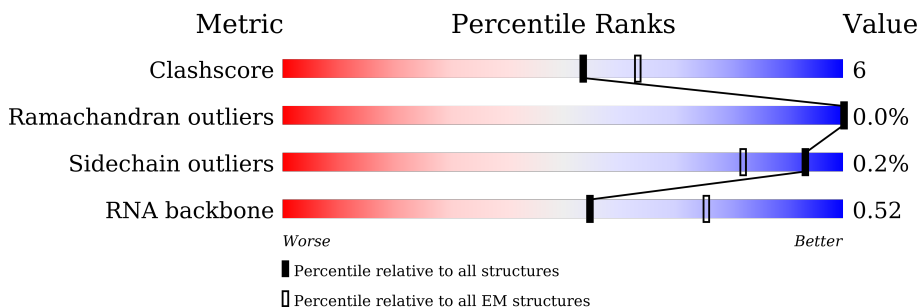
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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	2	1873	48% 29% 6% · 16%
2	R	135	23% 51% 9% 40%
3	b	84	96% ··
4	B	264	69% 11% 19%
5	c	69	88% 12%
6	E	263	90% 9%
7	e	59	34% 66%
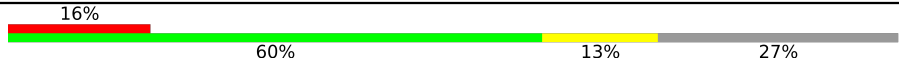
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Mol	Chain	Length	Quality of chain
8	F	204	85% 7% 7%
9	H	194	78% 18%
10	G	249	78% 14% 8%
11	Z	125	9% 48% 10% 42%
12	Y	133	81% 12% 7%
13	x	252	69% 31%
14	X	143	87% 12%
15	w	437	30% 75% 24%
16	W	130	93% 6%
17	u	804	80% 20%
18	T	145	6% 83% 16%
19	S	152	5% 71% 12% 17%
20	Q	146	73% 13% 14%
21	P	145	73% 10% 17%
22	O	151	71% 19% 11%
23	N	151	89% 10%
24	L	158	78% 16%
25	J	194	85% 8% 7%
26	I	208	83% 15%
27	r	125	27% 94% 6%
28	q	281	83% 16%
29	K	1297	50% 66% 10% 23%
30	M	132	77% 67% 14% 18%
31	f	156	24% 37% 63%
32	z	230	23% 23% 77%

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Mol	Chain	Length	Quality of chain
33	A	295	16% / 60% / 13% / 27%
34	C	293	6% / 63% / 10% / 26%
35	V	83	5% / 84% / 16%

2 Entry composition ⓘ

There are 37 unique types of molecules in this entry. The entry contains 84177 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	1574	Total 33614	C 15002	N 6033	O 11005	P 1574	0	0

- Molecule 2 is a protein called 40S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	R	81	Total 673	C 420	N 137	O 114	S 2	0	0

- Molecule 3 is a protein called 40S ribosomal protein S27.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	b	82	Total 640	C 402	N 118	O 113	S 7	0	0

- Molecule 4 is a protein called 40S ribosomal protein S3a.

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

- Molecule 5 is a protein called 40S ribosomal protein S28.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	c	61	Total 471	C 288	N 95	O 86	S 2	0	0

- Molecule 6 is a protein called 40S ribosomal protein S4, X isoform.

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

- Molecule 7 is a protein called 40S ribosomal protein S30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	e	20	179	110	43	25	1	0	0

- Molecule 8 is a protein called 40S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	F	189	1494	934	284	269	7	0	0

- Molecule 9 is a protein called 40S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	H	186	1501	957	276	267	1	0	0

- Molecule 10 is a protein called 40S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	G	230	1862	1164	371	320	7	0	0

- Molecule 11 is a protein called 40S ribosomal protein S25.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	Z	72	574	368	104	101	1	0	0

- Molecule 12 is a protein called 40S ribosomal protein S24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	Y	124	1014	641	198	170	5	0	0

- Molecule 13 is a protein called RNA-binding protein PNO1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	x	175	1372	881	249	238	4	0	0

- Molecule 14 is a protein called 40S ribosomal protein S23.

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

- Molecule 15 is a protein called Bystin.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	w	331	Total 2610	C 1671	N 477	O 453	S 9	0	0

- Molecule 16 is a protein called 40S ribosomal protein S15a.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	W	129	Total 1033	C 659	N 193	O 175	S 6	0	0

- Molecule 17 is a protein called Pre-rRNA-processing protein TSR1 homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	u	642	Total 5168	C 3315	N 928	O 901	S 24	0	0

- Molecule 18 is a protein called 40S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	T	144	Total 1122	C 703	N 217	O 199	S 3	0	0

- Molecule 19 is a protein called 40S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	S	126	Total 1046	C 663	N 204	O 178	S 1	0	0

- Molecule 20 is a protein called 40S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	Q	125	Total 998	C 637	N 185	O 173	S 3	0	0

- Molecule 21 is a protein called 40S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	P	121	Total 1006	C 643	N 186	O 170	S 7	0	0

- Molecule 22 is a protein called 40S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	O	135	Total 1009	C 618	N 198	O 187	S 6	0	0

- Molecule 23 is a protein called 40S ribosomal protein S13.

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

- Molecule 24 is a protein called 40S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	L	151	Total 1229	C 782	N 230	O 211	S 6	0	0

- Molecule 25 is a protein called 40S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	J	180	Total 1499	C 955	N 300	O 242	S 2	0	0

- Molecule 26 is a protein called 40S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	I	205	Total 1682	C 1056	N 331	O 290	S 5	0	0

- Molecule 27 is a protein called Multifunctional methyltransferase subunit TRM112-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	r	118	Total 940	C 601	N 166	O 166	S 7	0	0

- Molecule 28 is a protein called Probable 18S rRNA (guanine-N(7))-methyltransferase.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	q	235	Total 1869	C 1182	N 333	O 343	S 11	0	0

- Molecule 29 is a protein called RRP12-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	K	993	Total 7707	C 4938	N 1337	O 1387	S 45	0	0

- Molecule 30 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	M	108	Total 837	C 530	N 147	O 153	S 7	0	0

- Molecule 31 is a protein called Ubiquitin-40S ribosomal protein S27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	f	57	Total 465	C 295	N 89	O 74	S 7	0	0

- Molecule 32 is a protein called Ribosome biogenesis protein SLX9 homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	z	52	Total 416	C 255	N 80	O 79	S 2	0	0

- Molecule 33 is a protein called 40S ribosomal protein SA.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	A	216	Total 1705	C 1083	N 299	O 315	S 8	0	0

- Molecule 34 is a protein called 40S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	C	216	Total 1674	C 1085	N 287	O 292	S 10	0	0

- Molecule 35 is a protein called 40S ribosomal protein S21.

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

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

Mol	Chain	Residues	Atoms		AltConf
36	2	1	Total	Zn	0
			1	1	

- Molecule 37 is S-ADENOSYL-L-HOMOCYSTEINE (three-letter code: SAH) (formula: $C_{14}H_{20}N_6O_5S$).
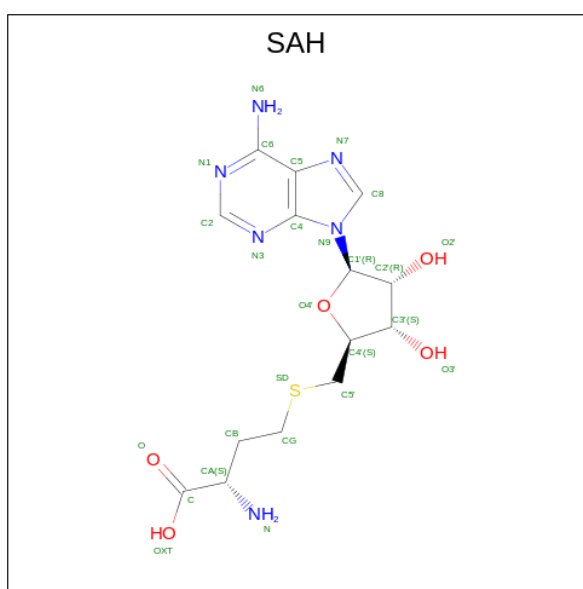
Mol	Chain	Residues	Atoms					AltConf
37	q	1	Total	C	N	O	S	0
			26	14	6	5	1	

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

Chain 2:

48%   29%   6%   16%
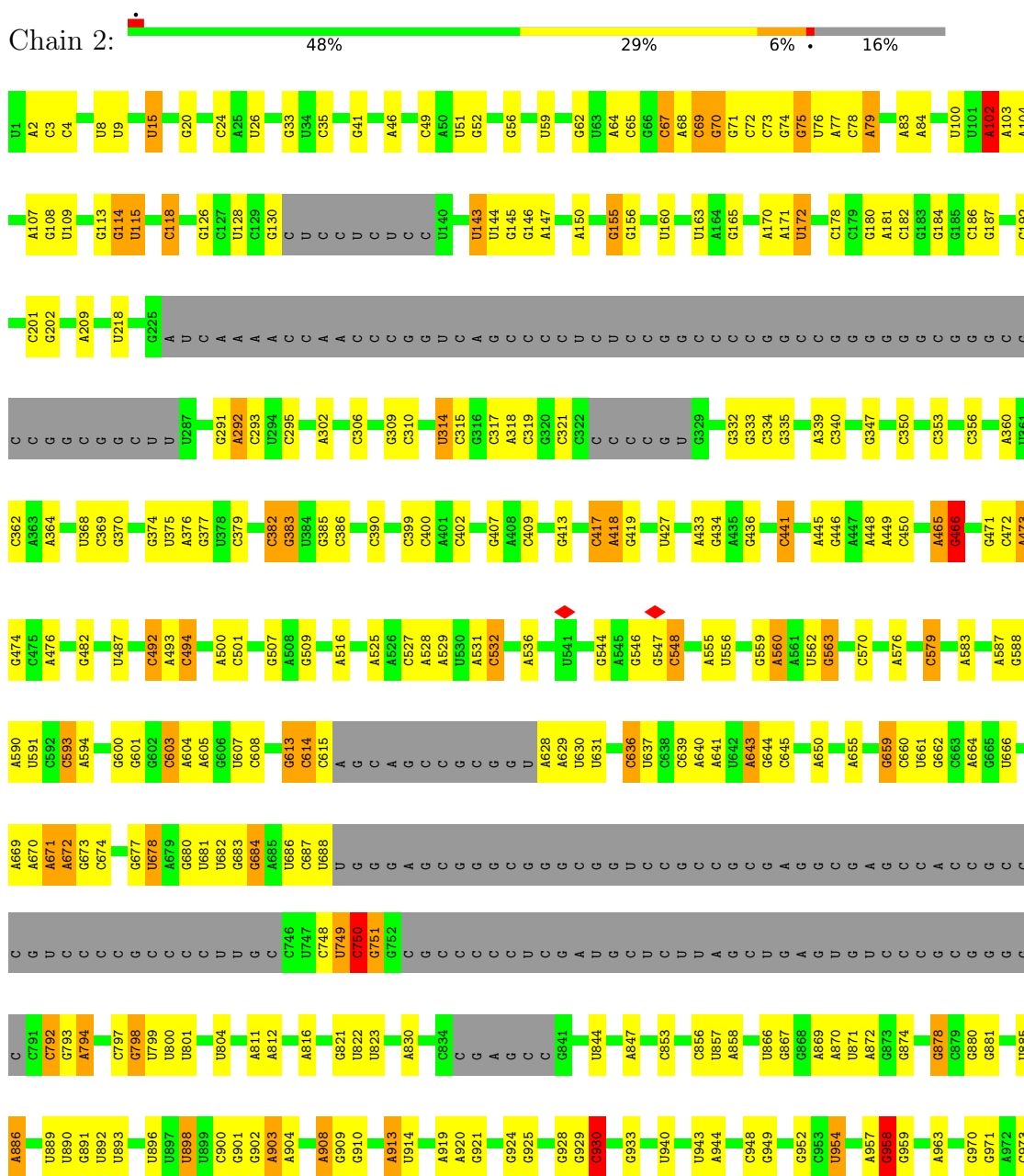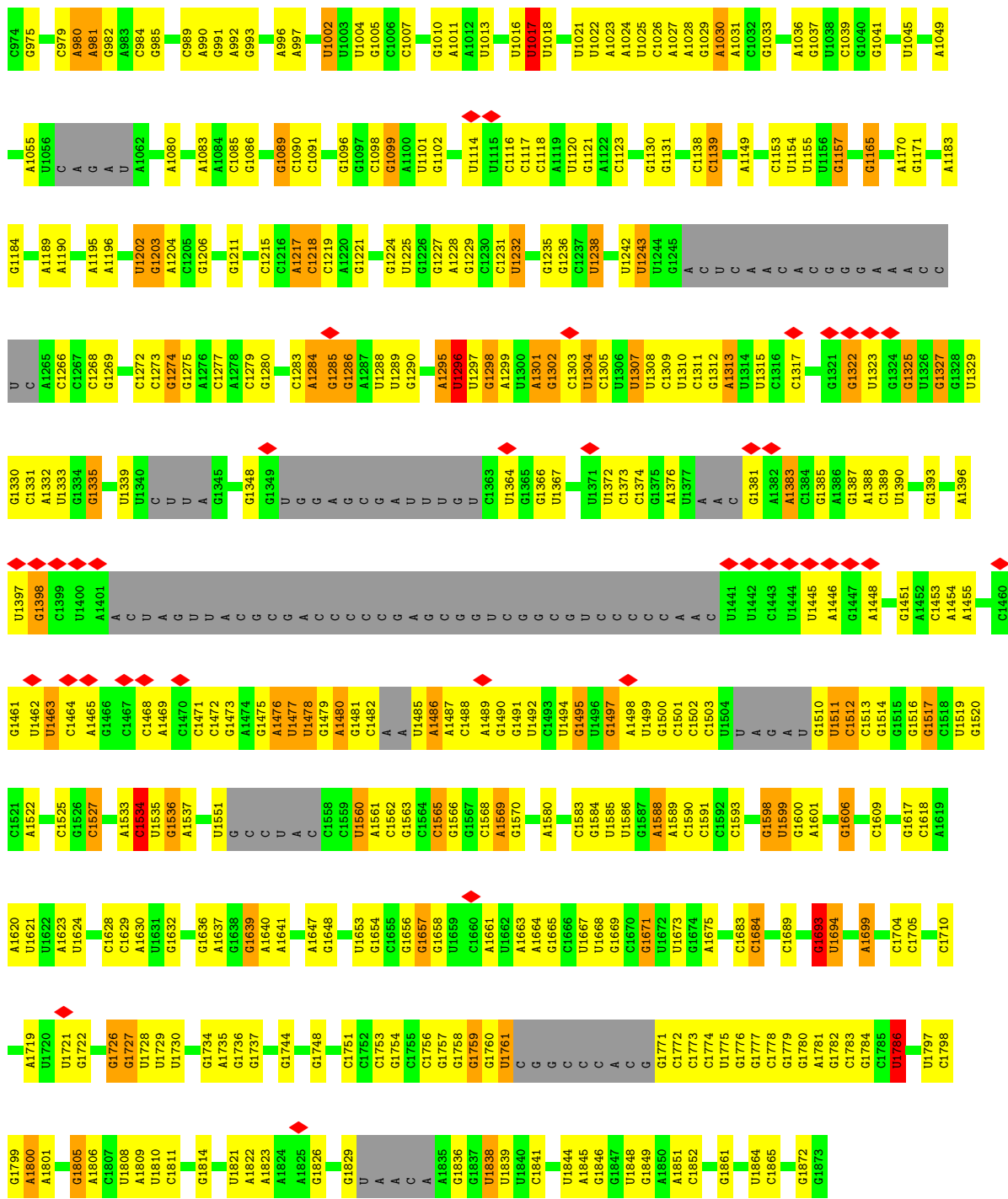
• Molecule 2: 40S ribosomal protein S17

D82 N83 TYR VAL PRO GLU VAL SER ALA LEU ASP GLN GLU ILE ILE GLU VAL ASP PRO ASP THR LYS GLU MET LEU LYS LEU LEU ASP PHE GLY LEU SER LEU GLN VAL THR GLN PRO THR VAL GLY MET ASN PHE LYS THR PRO ARG GLY PRO VAL
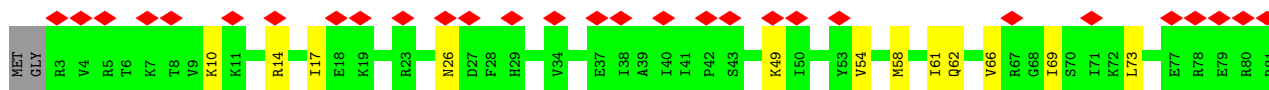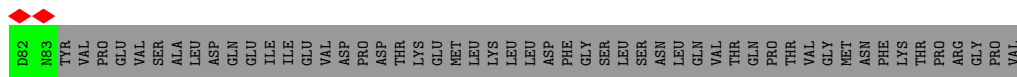
• Molecule 3: 40S ribosomal protein S27

Chain b: 96%

MET P2 L3 Q83 HIS

• Molecule 4: 40S ribosomal protein S3a

Chain B: 69%   11%   19%

MET ALA VAL GLY LYS ASN LYS ARG LEU THR LYS GLY GLY LYS LYS GLY ALA LYS LYS LYS V21 V22 D23 K27 K28 V33 T50 R51 T55 L62 R65 V66 F67 L71 F84 D90 V91 Q92 N95 C96 M120 D126 T129 R136 F142

T143 K144 R162 K167 N179 P190 K195 Y205 H208 L228 H232 G233 GLU GLY SER SER SER GLY LYS ALA THR GLY ASP GLU THR GLY ALA LYS VAL GLU ARG ALA ASP GLY TYR GLU PRO PRO VAL GLN GLU SER VAL
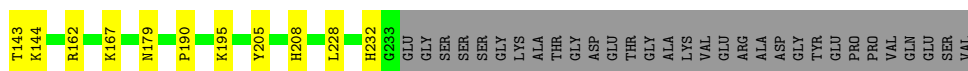
• Molecule 5: 40S ribosomal protein S28

Chain c: 88%   12%

MET ASP THR SER ARG VAL GLN P8 S39 L68 ARG
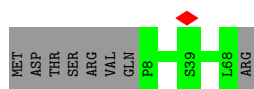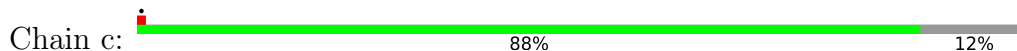
• Molecule 6: 40S ribosomal protein S4, X isoform

Chain E: 90%   9%

MET A2 L9 K10 R11 K16 M19 A28 P29 R30 L44 I70 K71 I72 D88 K94 R100 L101 I102 T105 R108 Y121 K122 I129 L139 K174 N197 R198 P239 R245 S262 G263
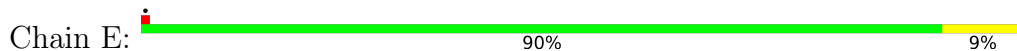
• Molecule 7: 40S ribosomal protein S30

Chain e: 34%   66%

LYS VAL HIS GLY SER LEU ALA ARG ALA GLY LYS VAL ARG GLY GLN THR PRO LYS VAL ALA LYS GLN GLU LYS K25 N44 VAL VAL PRO THR PHE GLY LYS LYS LYS GLY PRO ASN ALA ASN SER
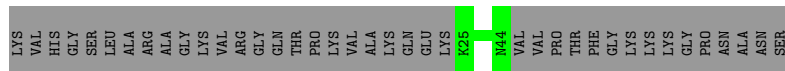
• Molecule 8: 40S ribosomal protein S5

Chain F: 85%   7%   7%

MET THR GLU TRP GLU THR ALA ALA PRO ALA VAL ALA GLU THR PRO D16 L19 W23 V28 K42 E43 K47 E70 N74 N82 K85 L102 F163 I166 K167 A170 D175 R204
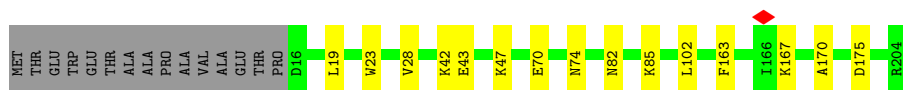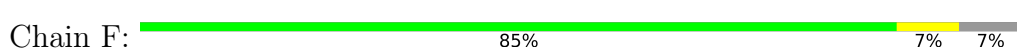
• Molecule 9: 40S ribosomal protein S7

Chain H:
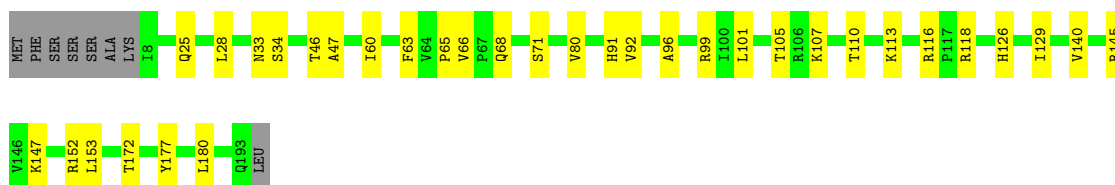
• Molecule 10: 40S ribosomal protein S6

Chain G:
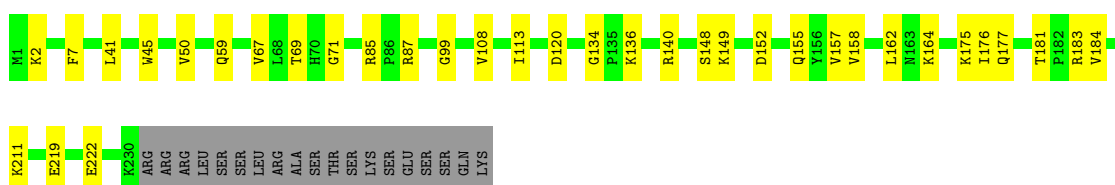
• Molecule 11: 40S ribosomal protein S25

Chain Z:

• Molecule 12: 40S ribosomal protein S24

Chain Y:

• Molecule 13: RNA-binding protein PNO1

Chain x:

• Molecule 14: 40S ribosomal protein S23

Chain X:

87%　　　　12%

MET G2 T9 A10 R11 Y27 H31 P40 H46 S64 A65 I66 R67 N77 F84 V85 D88 L91 N92 F93 L101 A111 V112 G113 D114 R140 P141 R142 SER

• Molecule 15: Bystin

30%

Chain w:

75%　　　　24%

MET PRO LYS PHE LYS ALA ALA ARG GLY VAL GLY GLY GLU GLU LYS HIS ALA P18 G39 ARG THR GLY GLU ALA GLU E47 R53 E67 E70 A71 E72 HIS THR GLY THR ASP LYS PRO ALA ALA PRO R83 E84 R85 T86 T87 R88 L89 G90 P91 ARG MET PRO GLN ASP

GLY SER ASP GLU ASP GLU TRP THR PRO THR LEU LYS ALA ALA THR MET THR ALA ALA GLY HIS HIS GLU VAL VAL ASP PRO GLU ASP ARG ALA ILE GLU MET PHE MET ASN LYS ASN PRO P142 A143 R144 R145 T146 L147 A148 D149 I150 I151 M152 E153 K154 L155 T156

E157 K158 Q159 T160 E161 V162 E163 T164 V165 M166 S167 GLU VAL SER GLY PHE PRO MET PRO GLN LEU ASP PRO R180 V181 L182 E183 V184 Y185 R186 K199 L200 P201 A209 L210 S211 V219 T220 E221 P222 E223 A224 F237 A238 R244 F249 L276 K277 K278 A279 L280 E296

S297 G298 T299 C300 A305 I312 L320 M326 L327 K328 I329 A330 E331 M332 E333 Y334 S335 G336 A337 A351 Y354 R355 D358 F362 H363 G366 F367 R368 T369 E370 K371 R372 E373 L377 V386 Q387 R388 Y389 K390 A391 D392 L393 A394 T395 D396 E399 A400 L401

L405 R406 L407 Q408 P409 H410 P411 Q412 L413 S414 P415 E416 I417 R418 R419 E420 L421 Q422 S423 A424 V425 P426 R427 ASP VAL GLU ASP VAL PRO ILE THR VAL GLU

• Molecule 16: 40S ribosomal protein S15a

Chain W:

93%　　　　6%

MET V2 R3 M4 E51 S76 Q82 L94 E115 K119 F130

• Molecule 17: Pre-rRNA-processing protein TSR1 homolog

Chain u:

80%　　　　20%

MET ALA ALA H4 G18 GLY ARG HIS ARG GLY ARG SER ALA GLN ARG ASP GLY LYS GLY ARG LEU ALA LEU LYS THR LEU SER LYS LYS VAL ARG LYS GLU L48 Q104 ASP ARG ASP THR G109 N118 N266 P313 ARG GLY ILE LYS PRO GLN LYS ASP PRO ASP MET

ALA MET GLU ILE CYS ALA THR ASP ALA VAL ASP ASP GLU MET GLY GLU GLY LEU K342 M345 D348 R351 P361 D362 P363 MET GLU GLY GLU GLN THR TRP PRO THR GLU GLU LEU GLU LEU SER GLU ALA LYS ASP PHE LEU LYS GLU SER SER LYS VAL VAL LYS K392 I405 LEU

ASP GLY GLY SER GLN SER GLY GLY GLU GLY ASP GLY TYR GLU ASP TYR ASP MET HIS GLU ASP PHE MET GLU GLU GLU SER GLN ASP GLU SER SER GLU GLU GLU GLU GLU TYR GLU THR MET THR ILE GLU GLU SER VAL HIS ASP ASP LEU TYR ASP LYS LYS VAL D464 E465 E466

A467 E468 A469 K470 M471 L472 E473 K474 Y475 K476 Q477 E478 R479 L480 E481 E482 M483 F484 P485 S792 GLU ILE SER SER THR VAL PRO GLN GLY GLY MET GLU

• Molecule 18: 40S ribosomal protein S19

Chain T:

6%

83%

16%

MET P2 G3 V9 N10 Q11 Q12 E13 R16 A19 L22 K23 K24 S25 G26 K27 L28 K38 L39 A40 K43 P47 S90 H91 R101 Q105 D118 R121 T124 P125 Q126 A140 A141 N142 K143 K144 H145

• Molecule 19: 40S ribosomal protein S18

Chain S:

5%

71%

12%

17%

MET SER L3 V4 I5 P6 E7 K8 F9 N17 D21 G22 R23 R24 A29 I30 K34 G35 V36 Y40 D49 I50 D51 R66 T69 R75 D81 Q97 N101 G102 L103 D104 N105 R124 G128 LEU ARG VAL ARG GLY GLN HIS THR LYS THR THR

GLY ARG ARG GLY THR VAL GLY VAL SER LYS LYS LYS

• Molecule 20: 40S ribosomal protein S16

Chain Q:

73%

13%

14%

MET PRO SER LYS GLY PRO LEU Q8 S9 V10 Q11 K16 K17 T20 A21 K26 V34 I42 L58 R62 F63 K73 V78 S89 V93 Q97 D101 K105 L112 Y115 D116 R117 T118 K130 K131 F132 GLY GLY PRO GLY ALA ARG ALA

ARG TYR GLN LYS SER TYR ARG

• Molecule 21: 40S ribosomal protein S15

Chain P:

73%

10%

17%

MET ALA GLU VAL GLU GLN LYS LYS LYS ARG THR PHE ARG LYS F15 M28 S29 Y30 E31 Q32 P69 M70 T78 H79 L80 R81 V96 K100 T101 E110 G117 S120 Y123 V126 K127 H128 GLY ARG PRO GLY ILE GLY ALA THR HIS SER S139 L144 K145

• Molecule 22: 40S ribosomal protein S14

Chain O:

71%

19%

11%

MET ALA PRO ARG LYS GLY LYS GLU LYS LYS GLU GLU GLN VAL ILE SER L17 G18 P19 A22 E23 G24 E25 N26 V27 V30 F34 A35 S36 F37 F41 S48 E51 T52 R55 V56 T57 M60 K61 D80 T91 H94 I95 R98 A99 R117

R121 I129 T133 D138 R142 K143 G144 R149 R150 L151

• Molecule 23: 40S ribosomal protein S13

Chain N:

• Molecule 24: 40S ribosomal protein S11

Chain L:

• Molecule 25: 40S ribosomal protein S9

Chain J:

• Molecule 26: 40S ribosomal protein S8

Chain I:

• Molecule 27: Multifunctional methyltransferase subunit TRM112-like protein

Chain r:

• Molecule 28: Probable 18S rRNA (guanine-N(7))-methyltransferase

Chain q:
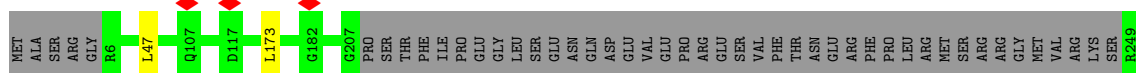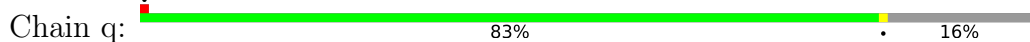
F281

• Molecule 29: RRP12-like protein

Chain K:

• Molecule 30: 40S ribosomal protein S12

• Molecule 31: Ubiquitin-40S ribosomal protein S27a

ILE GLN LYS GLU SER THR LEU HIS LEU VAL LEU ARG ARG GLY ALA LYS LYS ARG LYS LYS SER TYR THR THR P88 K89 K90 N91 K92 H93 K94 R95 K96 K97 V98 K99 L100 A101 V102 L103 K104 Y105 Y106 K107 V108 ASP GLU ASN GLY LYS I114 S115 R116 L117 R118 R119 E120

C121 P122 S123 D124 E125 C126 G127 A128 F136 D137 Y148 C149 PHE ASN LYS PRO GLU ASP LYS

- Molecule 32: Ribosome biogenesis protein SLX9 homolog

Chain z:

23%

23%　　　　77%

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

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

ALA ILE LYS LEU ALA GLU GLN LYS HIS ARG GLU GLU ARG ARG ALA THR VAL VAL GLY ASP LEU HIS PRO LEU ASP ALA LEU PRO GLU LEU LEU GLY GLU GLU ALA GLY GLY SER ARG ARG GLN ALA ARG SER ARG GLU ASP SER ASN LYS PRO R174 P175 S176 E177 L178 S179 R180

M181 S182 A183 A184 Q185 R186 Q187 Q188 L189 L190 E191 E192 E193 R194 T195 R196 F197 Q198 E199 L200 L201 A202 S203 P204 A205 Y206 R207 A208 S209 P210 L211 V212 A213 I214 G215 Q216 T217 L218 A219 R220 Q221 M222 Q223 L224 E225 ASP GLY GLY GLN LEU

- Molecule 33: 40S ribosomal protein SA

Chain A:

16%

60%　　　　13%　　　　27%

MET S2 G3 A4 L5 D6 V7 L8 E12 L16 K17 A20 A21 H24 E35 Y39 K42 S43 I46 Y47 I48 I49 N50 L51 K52 R53 T54 W55 E56 K57 L60 A67 D73 I77 S78 S79 R80 N81 Q84 R85 K89 A92 G95

I99 A100 G101 R102 F103 T104 T107 I112 A115 F116 R117 E118 V123 D126 P127 R128 P133 L134 T144 I145 A146 L147 D151 D158 I161 K166 L173 M174 W175 W176 E181 T188 R191 E192 E196 Y202 F203 Y204 R205 D206 P207 E208 E209

I210 E211 K212 E213 E214 Q215 A216 A217 ALA GLU LYS ALA VAL THR LYS GLU GLU PHE GLN GLY GLU TRP THR ALA PRO THR PRO GLU GLU PHE THR ALA GLY GLN PRO GLU VAL ALA ASP TRP SER GLU GLY VAL GLN VAL PRO SER VAL PRO ILE GLN GLN PHE PRO THR GLU ASP TRP SER ALA

GLN PRO ALA THR GLU ASP TRP SER ALA ALA PRO THR ALA GLN ALA THR GLU TRP VAL GLY ALA THR THR ASP TRP SER

- Molecule 34: 40S ribosomal protein S2

Chain C:

6%

63%　　　　10%　　　　26%

MET ALA ASP ASP ALA GLY ALA ALA GLY GLY PRO GLY GLY PRO GLY GLY PRO GLY MET GLY ASN ARG GLY GLY PHE ARG GLY GLY PHE GLY SER GLY ILE ARG GLY ARG GLY ARG GLY ARG GLY ARG GLY ARG GLY ARG GLY ARG GLY ALA ARG GLY GLY LYS ALA GLU ASP LYS GLU W60

T64 K65 L66 G67 M73 E90 S91 E92 G99 A100 S101 L102 K103 V106 L107 K108 Q113 K114 Q115 T116 R117 A118 G119 G120 R121 T122 R123 F124 V128 A129 I130 K142 C143 S144 V147 L157 I174 T179 K183 I196 P197 A198 R199 R200 G201

D221 C222 Y223 T232 L233 G234 N235 L251 L273 V274 K275 THR HIS THR ARG VAL SER VAL GLN ARG THR GLN ALA PRO ALA VAL ALA THR THR

• Molecule 35: 40S ribosomal protein S21

Chain V:

5%

84% 16%

M1 C17 I23 A37 E38 V39 D40 K41 V42 T43 N47 K51 C56 E64 S68 D76 N82 F83

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	25441	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION; Relion	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	44	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.473	Depositor
Minimum map value	-0.222	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.008	Depositor
Recommended contour level	0.02	Depositor
Map size (Å)	381.24, 381.24, 381.24	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.059, 1.059, 1.059	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, SAH, G7M

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	0.56	0/37551	1.04	165/58500 (0.3%)
2	R	0.32	0/680	0.66	0/905
3	b	0.31	0/653	0.59	1/876 (0.1%)
4	B	0.28	0/1756	0.56	0/2350
5	c	0.37	0/473	0.72	0/633
6	E	0.37	0/2118	0.59	0/2849
7	e	0.31	0/180	0.61	0/232
8	F	0.38	0/1515	0.61	0/2037
9	H	0.29	0/1524	0.60	0/2042
10	G	0.30	0/1885	0.60	1/2510 (0.0%)
11	Z	0.37	0/580	0.68	0/780
12	Y	0.36	0/1031	0.60	0/1370
13	x	0.28	0/1394	0.61	1/1880 (0.1%)
14	X	0.34	0/1116	0.58	0/1490
15	w	0.27	0/2656	0.58	0/3586
16	W	0.37	0/1050	0.59	0/1406
17	u	0.29	0/5296	0.57	0/7154
18	T	0.33	0/1142	0.57	0/1530
19	S	0.37	0/1063	0.68	2/1426 (0.1%)
20	Q	0.39	0/1012	0.67	0/1356
21	P	0.34	0/1025	0.61	0/1369
22	O	0.30	0/1022	0.67	0/1372
23	N	0.31	0/1226	0.56	0/1649
24	L	0.40	0/1250	0.63	0/1673
25	J	0.36	0/1524	0.63	1/2035 (0.0%)
26	I	0.35	0/1711	0.64	0/2282
27	r	0.30	0/961	0.66	0/1301
28	q	0.34	0/1910	0.60	2/2572 (0.1%)
29	K	0.32	0/7851	0.61	2/10624 (0.0%)
30	M	0.24	0/845	0.52	0/1134
31	f	0.26	0/474	0.56	0/626
32	z	0.27	0/420	0.68	0/564

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	A	0.28	0/1742	0.59	0/2367
34	C	0.30	0/1710	0.58	1/2310 (0.0%)
35	V	0.29	0/643	0.57	0/860
All	All	0.44	0/88989	0.83	176/127650 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
17	u	0	1
29	K	0	1
All	All	0	2

There are no bond length outliers.

The worst 5 of 176 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	2	501	C	N1-C2-O2	12.14	126.19	118.90
1	2	501	C	C2-N1-C1'	12.11	132.12	118.80
1	2	293	C	N1-C2-O2	11.68	125.91	118.90
1	2	1773	C	N3-C2-O2	-11.65	113.74	121.90
1	2	1838	U	N3-C2-O2	-10.77	114.66	122.20

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
29	K	378	VAL	Peptide
17	u	348	ASP	Peptide

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	2	33614	0	16977	325	0
2	R	673	0	722	8	0
3	b	640	0	665	0	0
4	B	1729	0	1803	20	0
5	c	471	0	499	0	0
6	E	2076	0	2177	14	0
7	e	179	0	200	0	0
8	F	1494	0	1549	9	0
9	H	1501	0	1593	21	0
10	G	1862	0	2018	23	0
11	Z	574	0	627	10	0
12	Y	1014	0	1082	11	0
13	x	1372	0	1453	0	0
14	X	1098	0	1167	12	0
15	w	2610	0	2644	0	0
16	W	1033	0	1080	7	0
17	u	5168	0	5230	0	0
18	T	1122	0	1153	15	0
19	S	1046	0	1094	9	0
20	Q	998	0	1065	12	0
21	P	1006	0	1056	12	0
22	O	1009	0	1034	18	0
23	N	1202	0	1289	11	0
24	L	1229	0	1302	18	0
25	J	1499	0	1618	11	0
26	I	1682	0	1769	20	0
27	r	940	0	958	0	0
28	q	1869	0	1854	0	0
29	K	7707	0	7986	87	0
30	M	837	0	870	12	0
31	f	465	0	485	0	0
32	z	416	0	424	0	0
33	A	1705	0	1706	22	0
34	C	1674	0	1764	20	0
35	V	636	0	637	8	0
36	2	1	0	0	0	0
37	q	26	0	19	0	0
All	All	84177	0	69569	647	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 6.

The worst 5 of 647 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)
1:2:536:A:N6	1:2:548:C:H42	1.45	1.14
1:2:748:C:H42	1:2:794:A:N6	1.48	1.12
1:2:536:A:H61	1:2:548:C:N4	1.46	1.11
1:2:748:C:N4	1:2:794:A:H61	1.46	1.11
1:2:1710:C:H42	1:2:1823:A:N6	1.51	1.07

There are no symmetry-related clashes.

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	R	79/135 (58%)	78 (99%)	1 (1%)	0	100	100
3	b	80/84 (95%)	73 (91%)	7 (9%)	0	100	100
4	B	211/264 (80%)	202 (96%)	9 (4%)	0	100	100
5	c	59/69 (86%)	57 (97%)	2 (3%)	0	100	100
6	E	260/263 (99%)	249 (96%)	11 (4%)	0	100	100
7	e	18/59 (30%)	18 (100%)	0	0	100	100
8	F	187/204 (92%)	176 (94%)	10 (5%)	1 (0%)	29	68
9	H	184/194 (95%)	176 (96%)	8 (4%)	0	100	100
10	G	228/249 (92%)	217 (95%)	11 (5%)	0	100	100
11	Z	70/125 (56%)	63 (90%)	7 (10%)	0	100	100
12	Y	122/133 (92%)	119 (98%)	3 (2%)	0	100	100
13	x	173/252 (69%)	167 (96%)	6 (4%)	0	100	100
14	X	139/143 (97%)	138 (99%)	1 (1%)	0	100	100
15	w	321/437 (74%)	314 (98%)	7 (2%)	0	100	100
16	W	127/130 (98%)	123 (97%)	4 (3%)	0	100	100
17	u	630/804 (78%)	601 (95%)	29 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
18	T	142/145 (98%)	139 (98%)	3 (2%)	0	100	100
19	S	124/152 (82%)	117 (94%)	7 (6%)	0	100	100
20	Q	123/146 (84%)	116 (94%)	7 (6%)	0	100	100
21	P	117/145 (81%)	116 (99%)	1 (1%)	0	100	100
22	O	133/151 (88%)	125 (94%)	8 (6%)	0	100	100
23	N	147/151 (97%)	141 (96%)	6 (4%)	0	100	100
24	L	149/158 (94%)	138 (93%)	11 (7%)	0	100	100
25	J	178/194 (92%)	169 (95%)	9 (5%)	0	100	100
26	I	203/208 (98%)	194 (96%)	9 (4%)	0	100	100
27	r	116/125 (93%)	108 (93%)	8 (7%)	0	100	100
28	q	231/281 (82%)	223 (96%)	8 (4%)	0	100	100
29	K	973/1297 (75%)	934 (96%)	39 (4%)	0	100	100
30	M	102/132 (77%)	100 (98%)	2 (2%)	0	100	100
31	f	53/156 (34%)	51 (96%)	2 (4%)	0	100	100
32	z	50/230 (22%)	49 (98%)	1 (2%)	0	100	100
33	A	214/295 (72%)	209 (98%)	5 (2%)	0	100	100
34	C	214/293 (73%)	206 (96%)	8 (4%)	0	100	100
35	V	81/83 (98%)	78 (96%)	3 (4%)	0	100	100
All	All	6238/7887 (79%)	5984 (96%)	253 (4%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
8	F	163	PHE

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	R	72/122 (59%)	72 (100%)	0	100	100
3	b	74/76 (97%)	74 (100%)	0	100	100
4	B	194/231 (84%)	194 (100%)	0	100	100
5	c	52/62 (84%)	52 (100%)	0	100	100
6	E	224/225 (100%)	224 (100%)	0	100	100
7	e	18/48 (38%)	18 (100%)	0	100	100
8	F	159/170 (94%)	159 (100%)	0	100	100
9	H	167/174 (96%)	166 (99%)	1 (1%)	86	94
10	G	200/218 (92%)	200 (100%)	0	100	100
11	Z	64/103 (62%)	64 (100%)	0	100	100
12	Y	108/115 (94%)	107 (99%)	1 (1%)	78	90
13	x	148/208 (71%)	148 (100%)	0	100	100
14	X	113/115 (98%)	113 (100%)	0	100	100
15	w	262/370 (71%)	260 (99%)	2 (1%)	81	91
16	W	112/113 (99%)	112 (100%)	0	100	100
17	u	561/705 (80%)	560 (100%)	1 (0%)	93	98
18	T	114/115 (99%)	114 (100%)	0	100	100
19	S	110/132 (83%)	110 (100%)	0	100	100
20	Q	106/121 (88%)	106 (100%)	0	100	100
21	P	111/130 (85%)	111 (100%)	0	100	100
22	O	105/119 (88%)	105 (100%)	0	100	100
23	N	130/131 (99%)	130 (100%)	0	100	100
24	L	135/142 (95%)	133 (98%)	2 (2%)	65	84
25	J	160/168 (95%)	159 (99%)	1 (1%)	86	94
26	I	178/180 (99%)	177 (99%)	1 (1%)	86	94
27	r	105/112 (94%)	105 (100%)	0	100	100
28	q	198/240 (82%)	198 (100%)	0	100	100
29	K	846/1094 (77%)	844 (100%)	2 (0%)	93	98
30	M	91/108 (84%)	90 (99%)	1 (1%)	73	88
31	f	51/140 (36%)	51 (100%)	0	100	100
32	z	44/185 (24%)	44 (100%)	0	100	100
33	A	180/243 (74%)	179 (99%)	1 (1%)	86	94

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
34	C	182/225 (81%)	182 (100%)	0	100	100
35	V	67/67 (100%)	67 (100%)	0	100	100
All	All	5441/6707 (81%)	5428 (100%)	13 (0%)	93	98

5 of 13 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
25	J	177	ASN
26	I	141	ARG
33	A	42	LYS
29	K	1245	LYS
30	M	33	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
9	H	168	HIS
17	u	298	GLN
17	u	532	ASN
25	J	143	ASN

5.3.3   RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	2	1555/1873 (83%)	353 (22%)	22 (1%)

5 of 353 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	2	2	A
1	2	3	C
1	2	9	U
1	2	26	U
1	2	33	G

5 of 22 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	2	1295	A

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Mol	Chain	Res	Type
1	2	1511	U
1	2	1497	G
1	2	1534	C
1	2	332	G

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

1 non-standard protein/DNA/RNA residue is 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	G7M	2	1639	1	20,26,27	2.66	7 (35%)	17,39,42	1.25	2 (11%)

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	G7M	2	1639	1	-	1/3/25/26	0/3/3/3

The worst 5 of 7 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	2	1639	G7M	C2-N2	6.43	1.49	1.34
1	2	1639	G7M	C2-N3	5.39	1.46	1.33
1	2	1639	G7M	C4-N3	4.81	1.49	1.37
1	2	1639	G7M	C6-N1	3.95	1.43	1.37
1	2	1639	G7M	C5-C6	3.24	1.53	1.45

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	2	1639	G7M	C2-N1-C6	-3.02	119.54	125.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	2	1639	G7M	N1-C2-N3	-2.06	119.47	123.32

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	2	1639	G7M	C3'-C4'-C5'-O5'

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 2 ligands modelled in this entry, 1 is monoatomic - leaving 1 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	#$|Z| > 2$
37	SAH	q	301	-	24,28,28	1.25	3 (12%)	25,40,40	1.85	4 (16%)

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
37	SAH	q	301	-	-	3/11/31/31	0/3/3/3

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
37	q	301	SAH	C2-N3	3.55	1.37	1.32
37	q	301	SAH	OXT-C	-2.22	1.23	1.30
37	q	301	SAH	C2-N1	2.21	1.38	1.33

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
37	q	301	SAH	N3-C2-N1	-5.75	119.69	128.68
37	q	301	SAH	C5'-SD-CG	-4.34	89.26	102.27
37	q	301	SAH	OXT-C-O	-2.79	117.75	124.09
37	q	301	SAH	OXT-C-CA	2.25	121.03	113.38

There are no chirality outliers.

All (3) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
37	q	301	SAH	C-CA-CB-CG
37	q	301	SAH	CA-CB-CG-SD
37	q	301	SAH	N-CA-CB-CG

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 SAH q 301

Bond lengths

Bond angles

Torsions

Rings
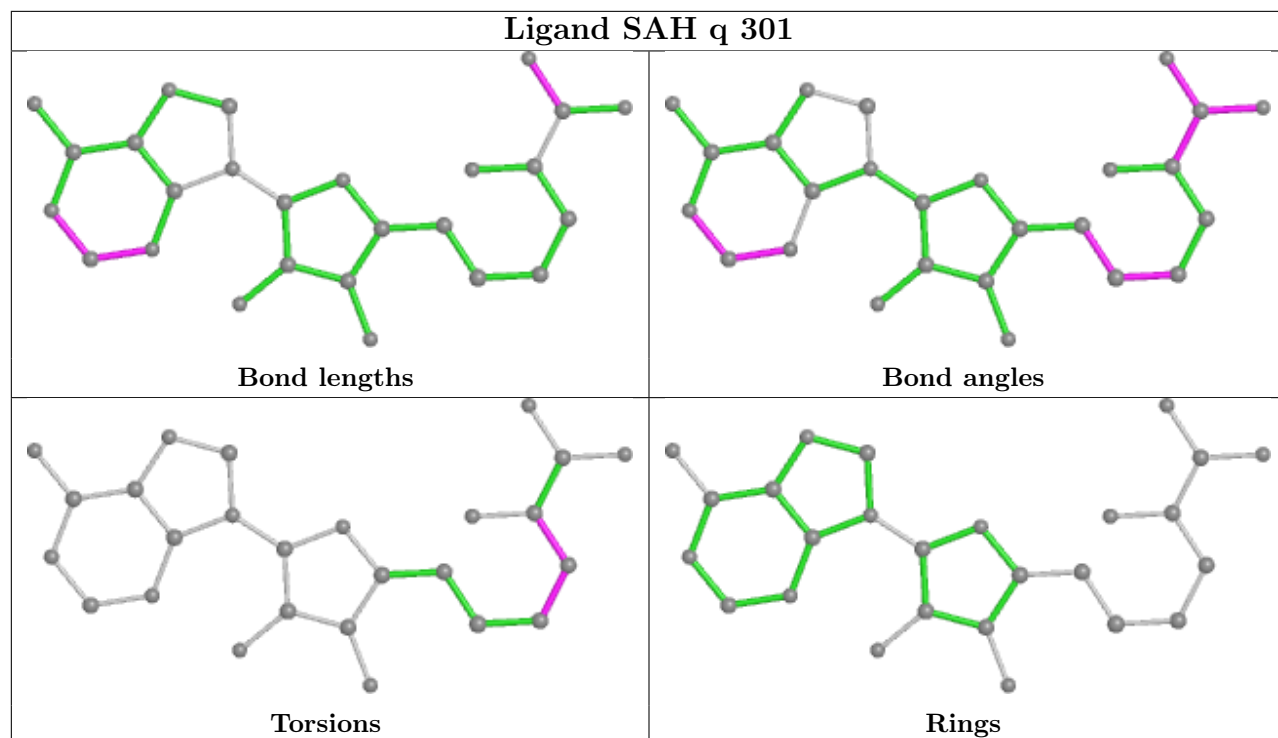
5.7 Other polymers ⓘ

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-32802. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

6.1 Orthogonal projections ⓘ

6.1.1 Primary map

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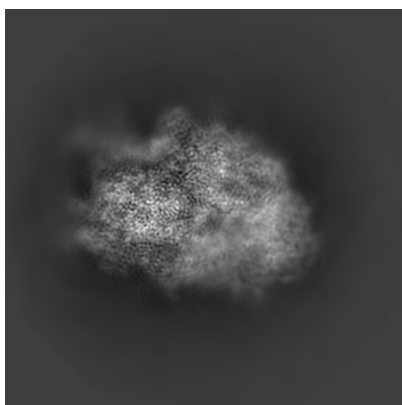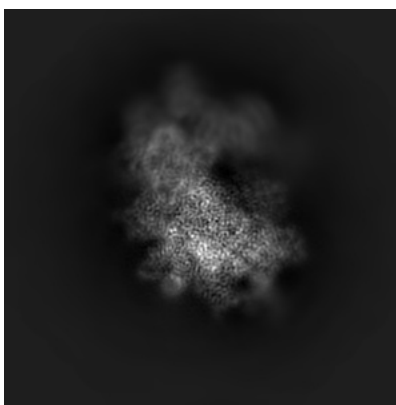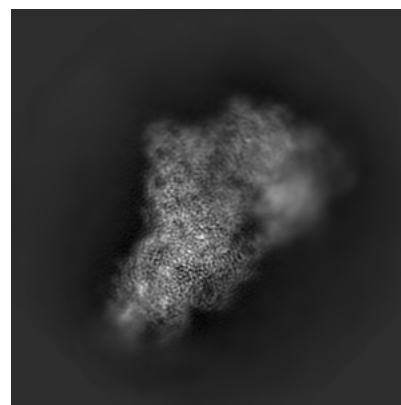
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
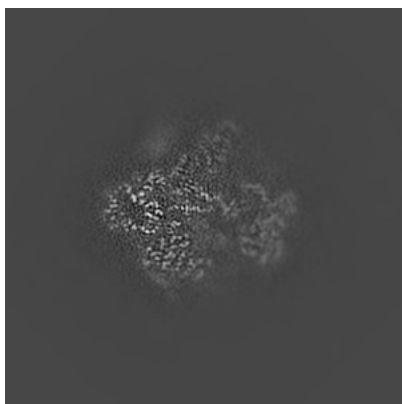
6.2.1 Primary map
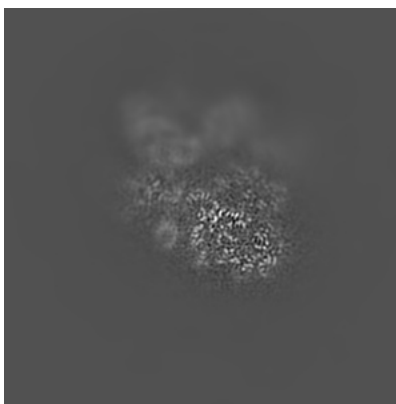
| X Index: 180 | Y Index: 180 | Z Index: 180 |
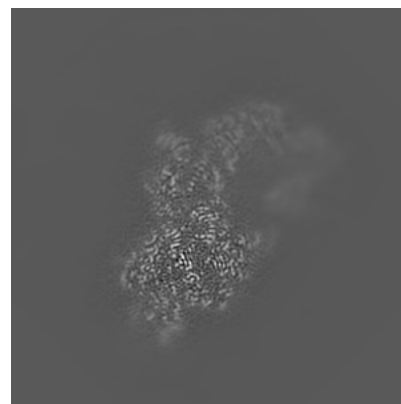
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

6.3.1 Primary map
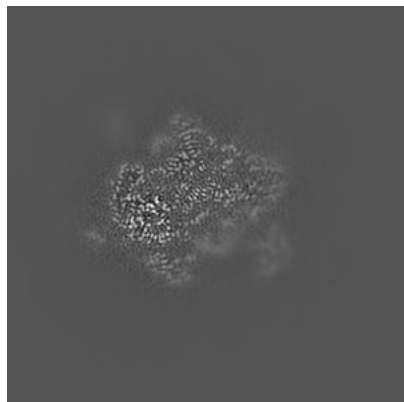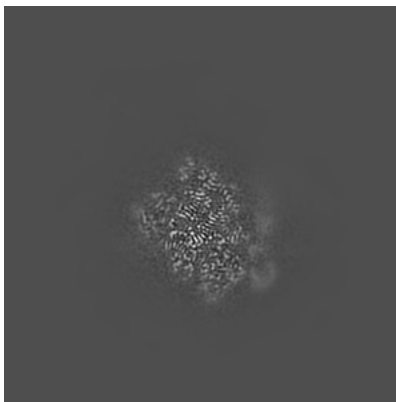
| X Index: 161 | Y Index: 132 | Z Index: 181 |
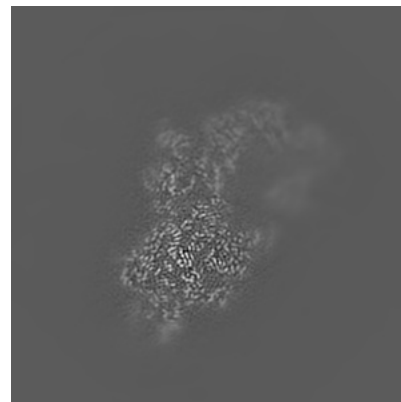
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views (i)

6.4.1 Primary map
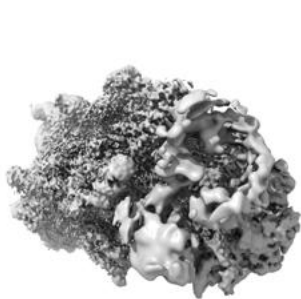
| X | Y | Z |
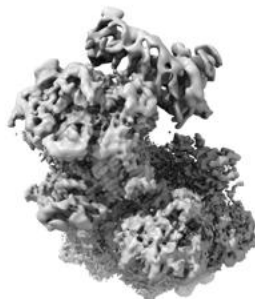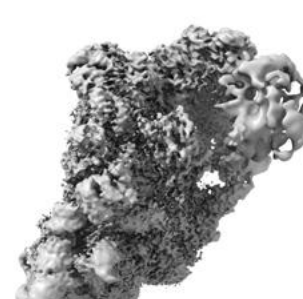
The images above show the 3D surface view of the map at the recommended contour level 0.02. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5   Mask visualisation ⓘ

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

7   Map analysis ⓘ

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

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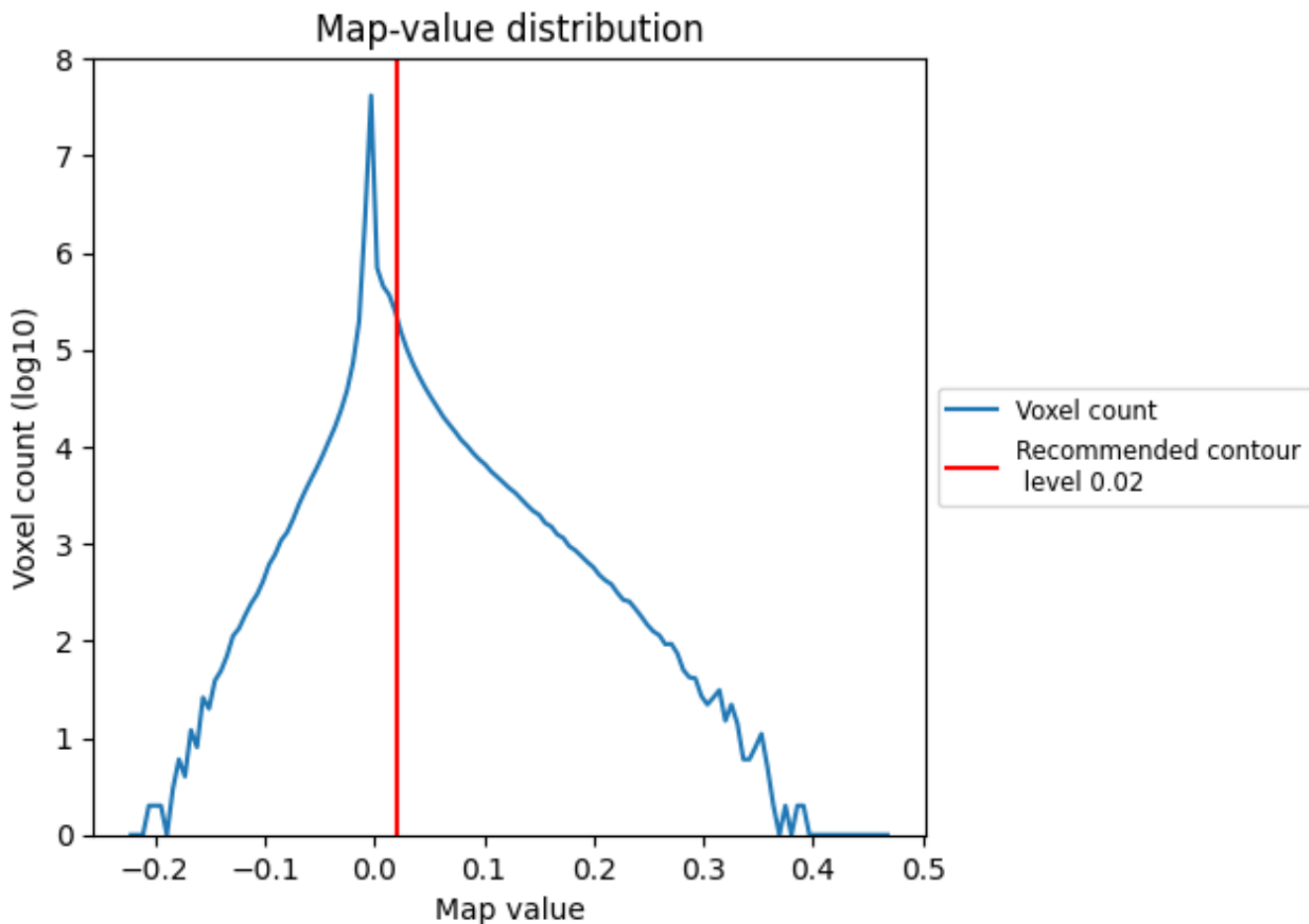
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2   Volume estimate ⓘ
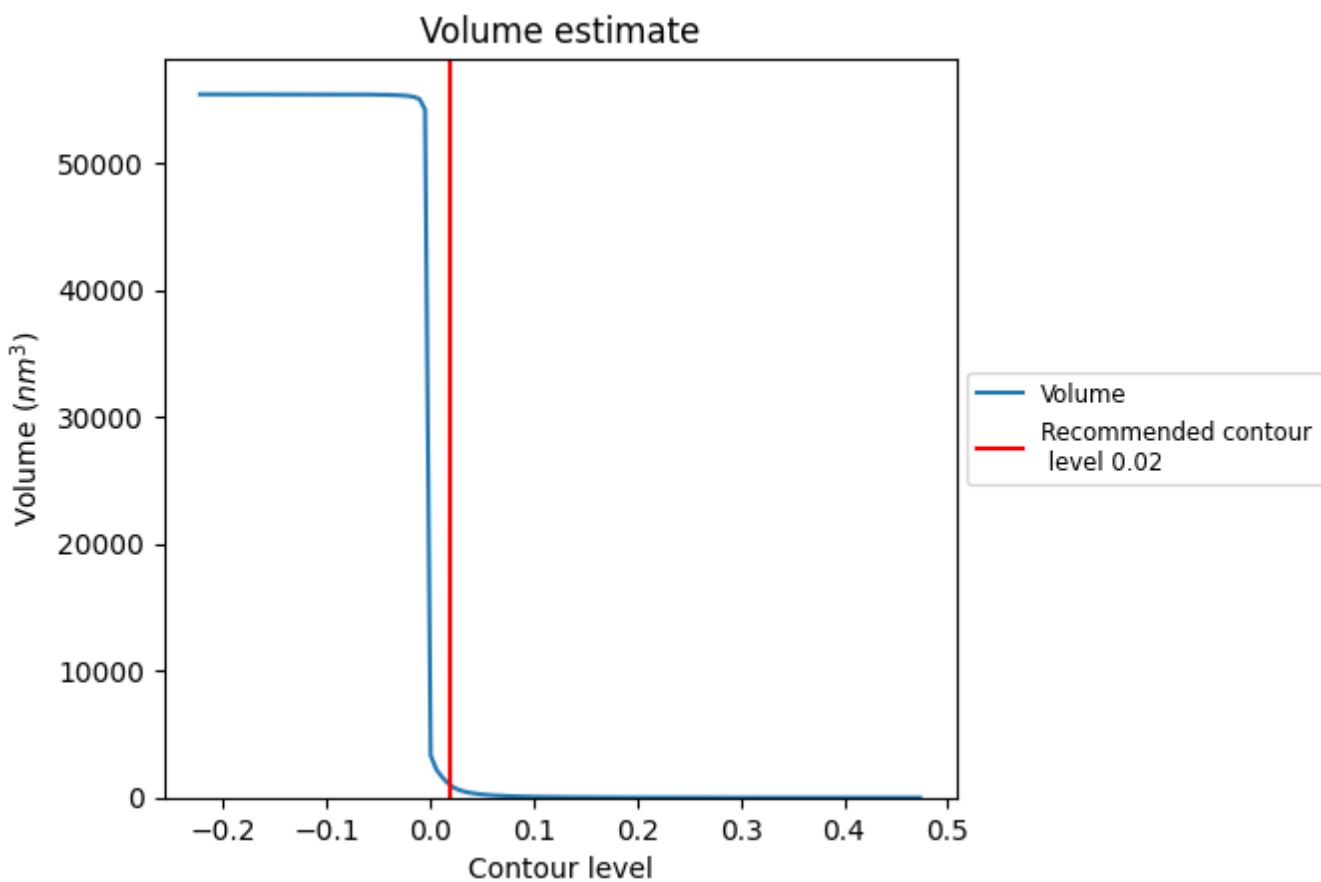
The volume at the recommended contour level is 979 nm^3; this corresponds to an approximate mass of 884 kDa.

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

7.3 Rotationally averaged power spectrum (i)
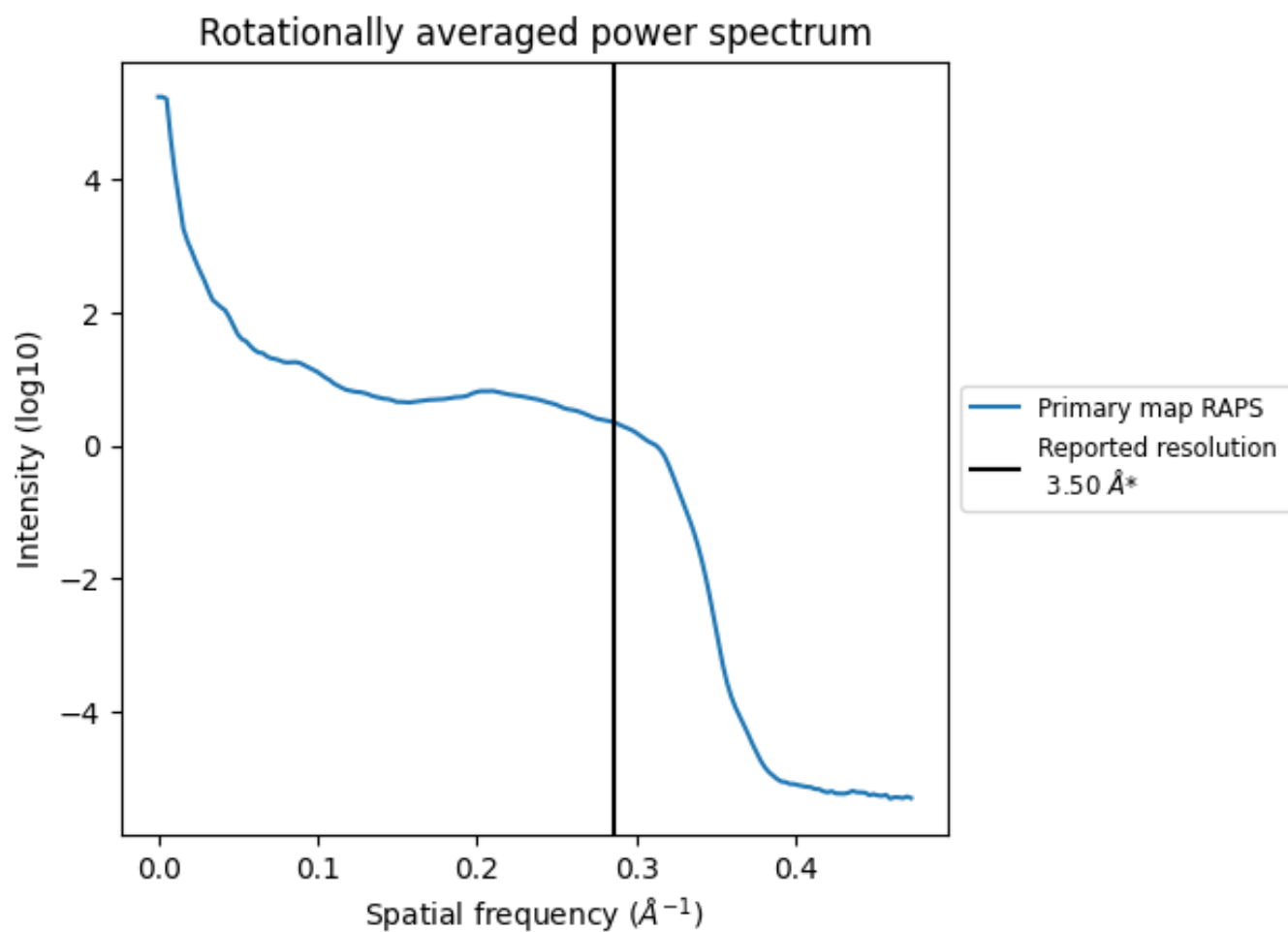
*Reported resolution corresponds to spatial frequency of 0.286 $\mathring{A}^{-1}$

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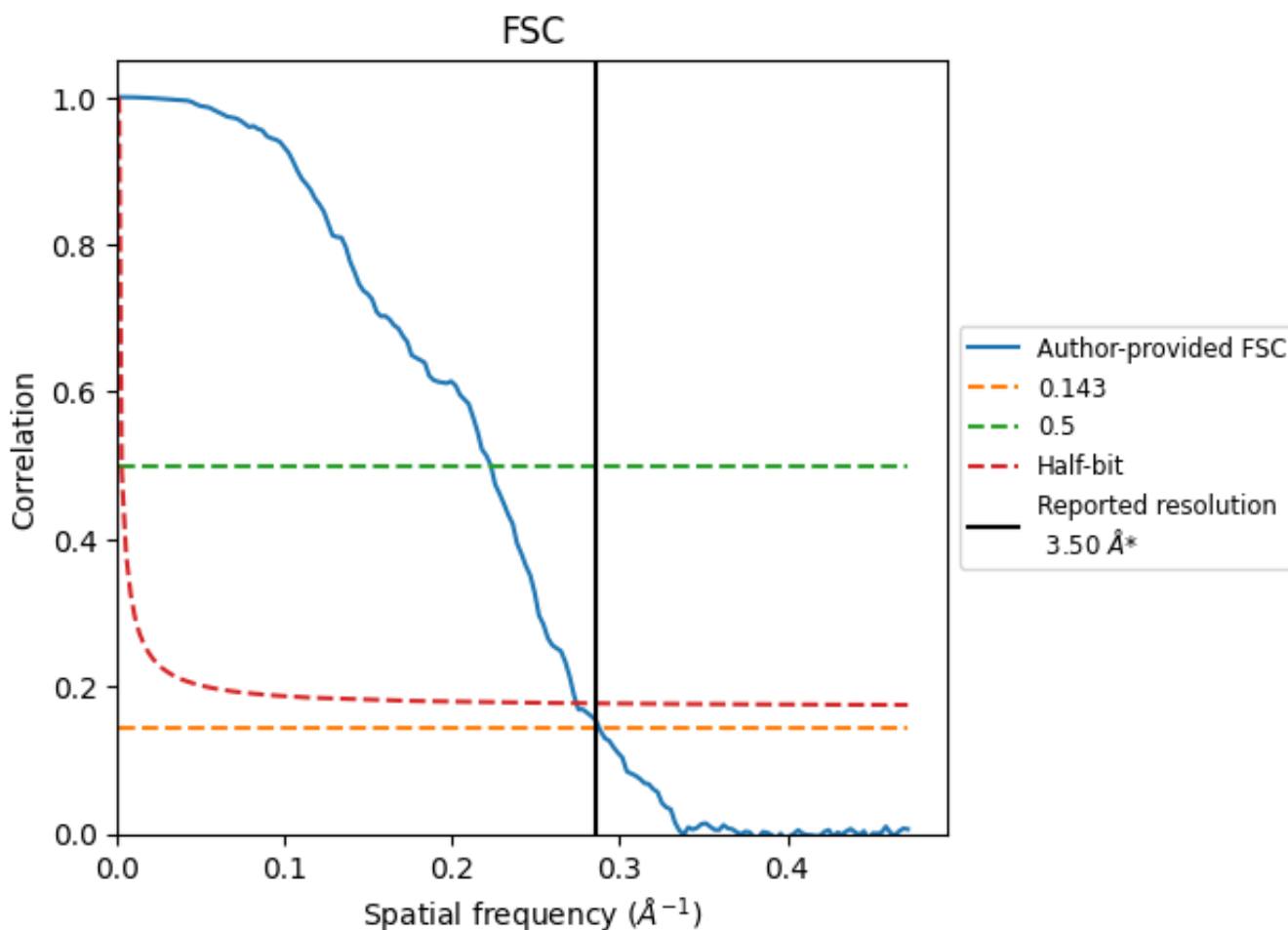
*Reported resolution corresponds to spatial frequency of 0.286 Å^{-1}

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	3.47	4.48	3.65
Unmasked-calculated*	-	-	-

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

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-32802 and PDB model 7WTV. Per-residue inclusion information can be found in section 3 on page 11.

9.1 Map-model overlay ⓘ

X	Y	Z
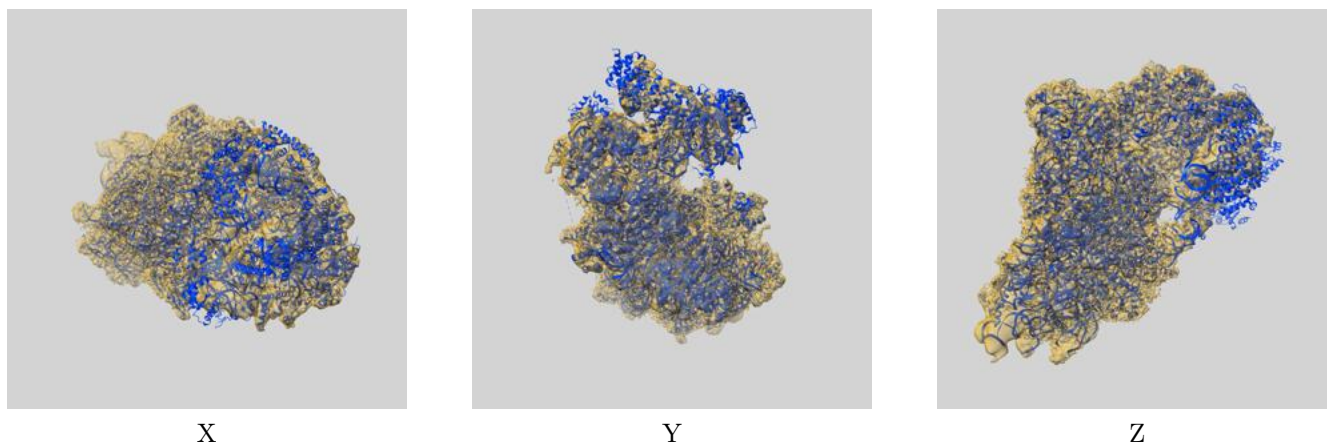
The images above show the 3D surface view of the map at the recommended contour level 0.02 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2   Q-score mapped to coordinate model ⓘ

X   Y   Z
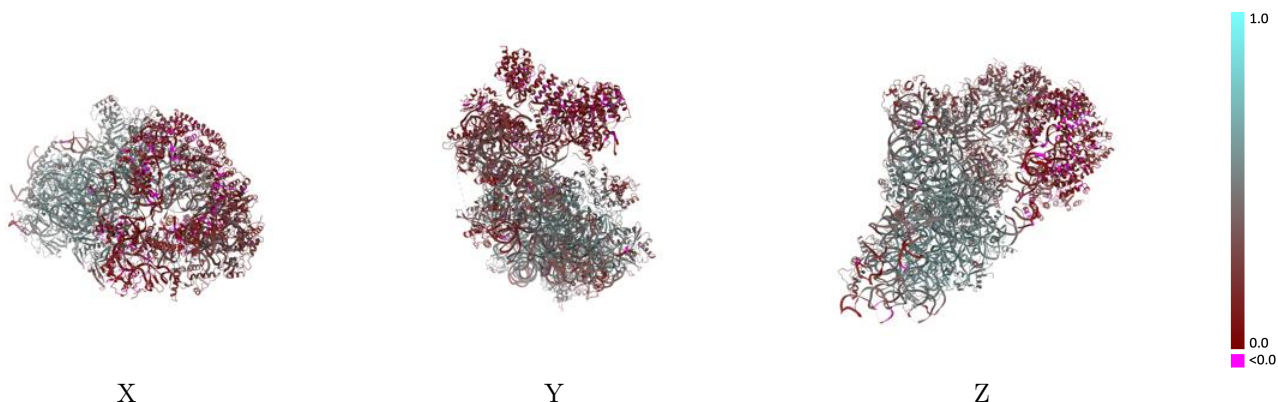
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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
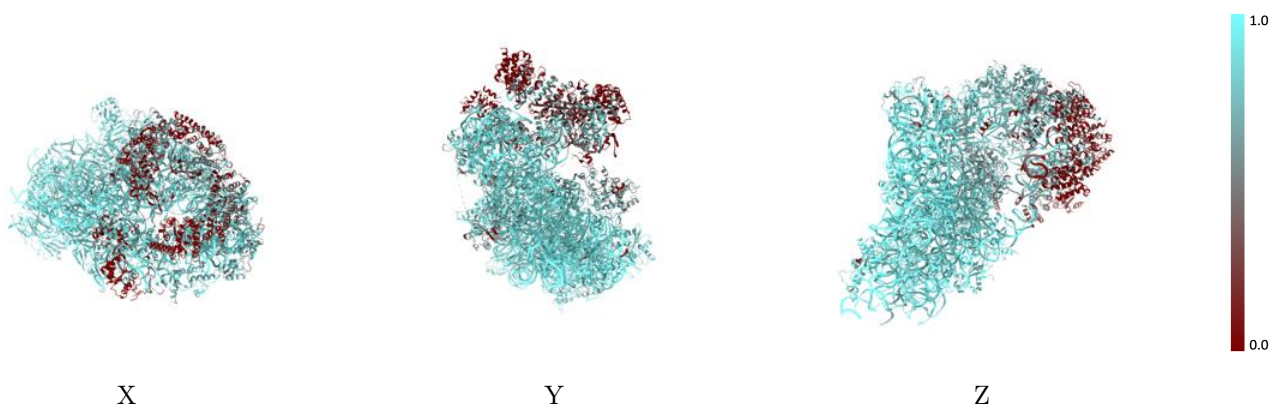
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.02).

9.4   Atom inclusion ⓘ
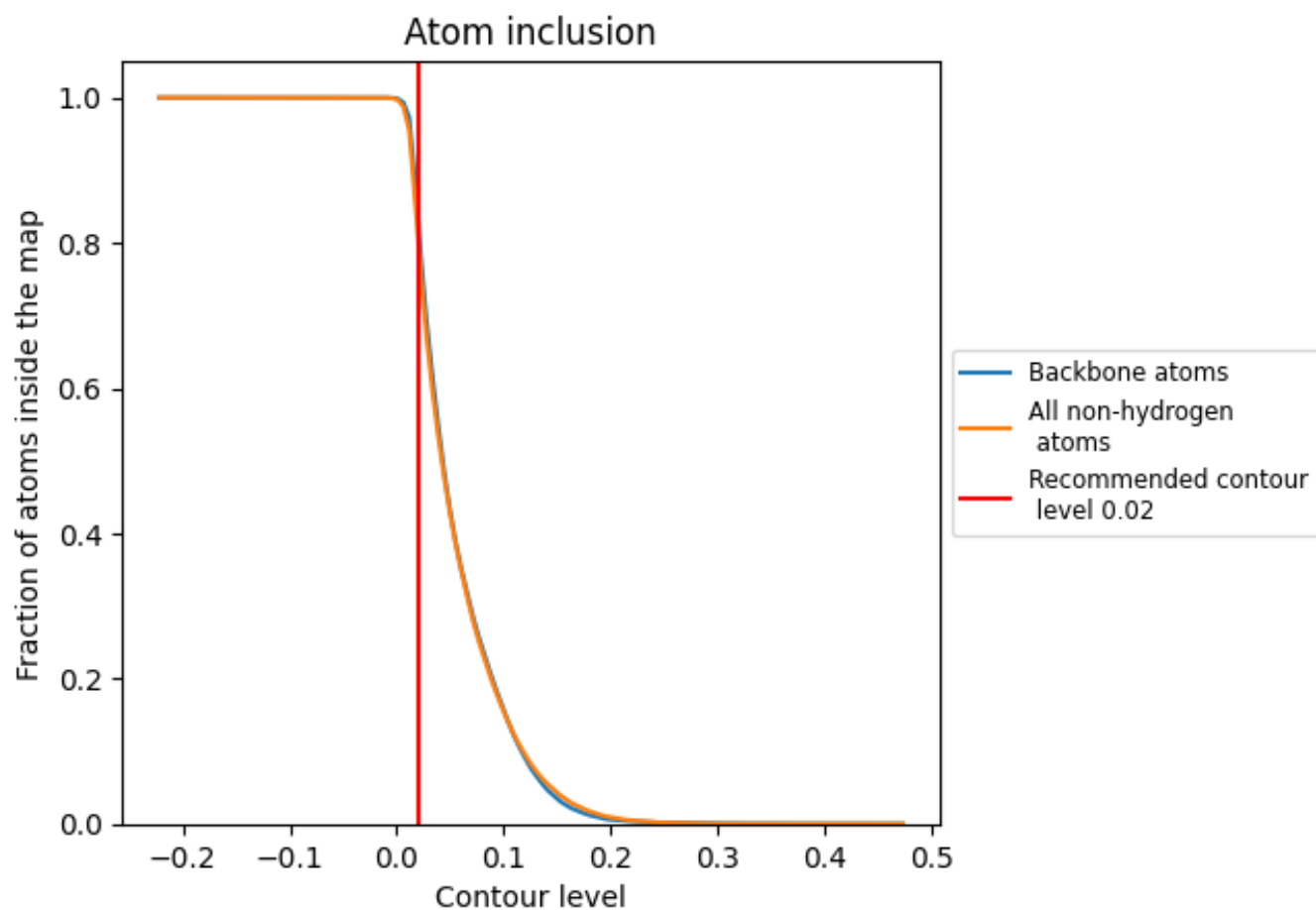
At the recommended contour level, 84% of all backbone atoms, 81% of all non-hydrogen atoms, are inside the map.

9.5   Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.02) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8082	0.3780
2	0.9354	0.4200
A	0.5763	0.3680
B	0.8511	0.3800
C	0.7485	0.4480
E	0.9728	0.5700
F	0.8121	0.3130
G	0.9389	0.4770
H	0.9124	0.4390
I	0.9304	0.4780
J	0.9653	0.5480
K	0.3070	0.1340
L	0.9397	0.5330
M	0.0545	0.0900
N	0.9468	0.4990
O	0.8663	0.3740
P	0.8094	0.2890
Q	0.7381	0.2690
R	0.4876	0.1420
S	0.7527	0.2760
T	0.7619	0.2810
V	0.7170	0.4530
W	0.9802	0.5620
X	0.9206	0.5240
Y	0.9634	0.5380
Z	0.6542	0.2010
b	0.9713	0.5110
c	0.8455	0.3470
e	0.9821	0.5500
f	0.2860	0.0440
q	0.8115	0.3510
r	0.5261	0.1940
u	0.8810	0.4490
w	0.5150	0.1430
x	0.9159	0.4260
z	0.0000	0.0370

1.0

0.0
<0.0