WORLDWIDE wwPDB PROTEIN DATA BANK

wwPDB EM Validation Summary Report (i)

Apr 20, 2024 – 03:26 pm BST

PDB ID	:	7O19
EMDB ID	:	EMD-12693
Title	:	Cryo-EM structure of an Escherichia coli TnaC-ribosome complex stalled in response to L-tryptophan
Authors	:	van der Stel, A.X.; Gordon, E.R.; Sengupta, A.; Martinez, A.K.; Klepacki, D.; Perry, T.N.; Herrero del Valle, A.; Vazquez-Laslop, N.; Sachs, M.S.; Cruz-Vera, L.R.; Innis, C.A.
Deposited on	:	2021-03-29
Resolution	:	2.90 Å(reported)
Based on initial model	:	6TBV

1　Overall quality at a glance　ⓘ

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 2.90 Å.

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

Metric	Percentile Ranks	Value
Clashscore		6
Ramachandran outliers		0.1%
Sidechain outliers		0.4%
RNA backbone		0.54

Worse   *Better*

▌ Percentile relative to all structures

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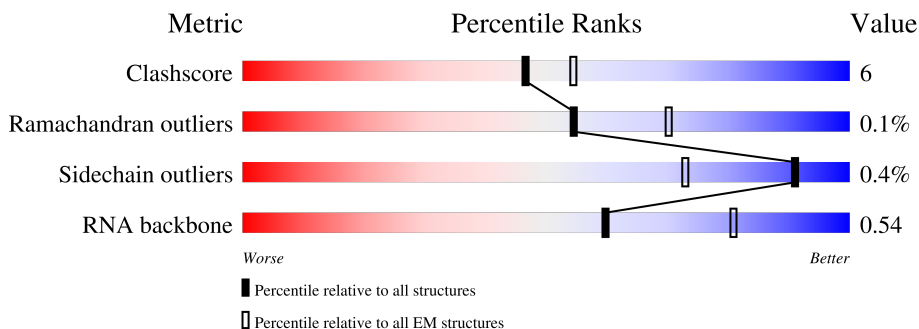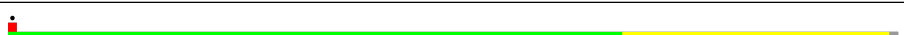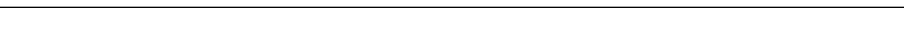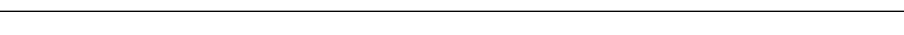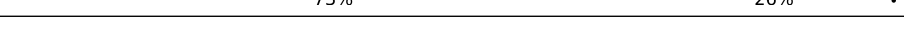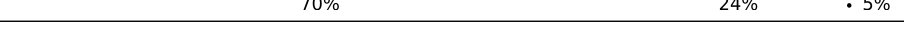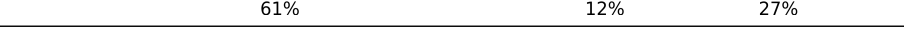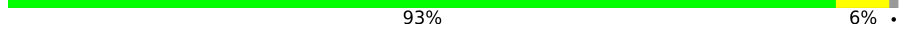
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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	AA	1534	47% 36% 15% •
2	AB	241	5% 66% 24% • 7%
3	AC	233	62% 25% • 12%
4	AD	206	71% 28%
5	AE	167	70% 22% • 7%
6	AF	135	50% 27% • 21%
7	AG	179	59% 24% • 16%

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Mol	Chain	Length	Quality of chain
8	AH	130	65% 34%
9	AI	130	62% 32%
10	AJ	103	5% 51% 43%
11	AK	129	71% 20% 9%
12	AL	124	80% 19%
13	AM	118	57% 40%
14	AN	102	69% 30%
15	AO	89	78% 21%
16	AP	82	73% 26%
17	AQ	84	70% 24% 5%
18	AR	75	61% 12% 27%
19	AS	92	49% 39% 11%
20	AT	87	93% 6%
21	AU	71	56% 21% 21%
22	BA	2897	54% 33% 11%
23	BB	120	66% 27% 6%
24	BC	273	83% 15%
25	BD	209	88% 11%
26	BE	201	86% 14%
27	BF	179	78% 20%
28	BG	177	79% 20%
29	BH	149	70% 30%
30	BI	70	10% 64% 30% 6%
31	BJ	142	86% 13%
32	BK	123	84% 15%

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Mol	Chain	Length	Quality of chain
33	BL	144	81% 18%
34	BM	136	85% 14%
35	BN	127	83% 10% 7%
36	BO	117	84% 15%
37	BP	115	86% 11%
38	BQ	118	89% 10%
39	BR	103	83% 17%
40	BS	110	83% 16%
41	BT	100	78% 15% 7%
42	BU	104	76% 22%
43	BV	94	72% 27%
44	BW	85	78% 12% 11%
45	BX	78	90% 9%
46	BY	63	86% 13%
47	BZ	59	83% 15%
48	B0	57	84% 11%
49	B1	55	64% 27% 7%
50	B2	46	85% 15%
51	B3	65	78% 15%
52	B4	38	87% 13%
53	B5	17	82% 12% 6%
54	B7	7	71% 29%
55	B8	77	55% 29% 14%

2 Entry composition ⓘ

There are 59 unique types of molecules in this entry. The entry contains 145019 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 Ribosomal RNA 16S.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	AA	1534	Total	C	N	O	P	0	0
			32930	14694	6041	10661	1534		

- Molecule 2 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	AB	224	Total	C	N	O	S	0	0
			1753	1109	315	321	8		

- Molecule 3 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	AC	206	Total	C	N	O	S	0	0
			1624	1028	305	288	3		

- Molecule 4 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	AD	205	Total	C	N	O	S	0	0
			1643	1026	315	298	4		

- Molecule 5 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	AE	155	Total	C	N	O	S	0	0
			1144	711	216	211	6		

- Molecule 6 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	AF	106	Total	C	N	O	S	0	0
			862	545	156	154	7		

- Molecule 7 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	AG	151	Total	C	N	O	S	0	0
			1181	735	227	215	4		

- Molecule 8 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	AH	129	Total	C	N	O	S	0	0
			979	616	173	184	6		

- Molecule 9 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	AI	127	Total	C	N	O	S	0	0
			1022	634	206	179	3		

- Molecule 10 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	AJ	99	Total	C	N	O	S	0	0
			795	498	152	144	1		

- Molecule 11 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	AK	117	Total	C	N	O	S	0	0
			877	540	174	160	3		

- Molecule 12 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	AL	123	Total	C	N	O	S	0	0
			957	591	196	165	5		

- Molecule 13 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	AM	114	Total	C	N	O	S	0	0
			883	546	178	156	3		

- Molecule 14 is a protein called 30S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	AN	101	Total	C	N	O	S	0	0
			799	498	165	133	3		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
AN	35	ALA	-	insertion	UNP P0AG59

- Molecule 15 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	AO	88	Total	C	N	O	S	0	0
			714	439	144	130	1		

- Molecule 16 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	AP	82	Total	C	N	O	S	0	0
			649	406	128	114	1		

- Molecule 17 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	AQ	80	Total	C	N	O	S	0	0
			648	411	121	113	3		

- Molecule 18 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms				AltConf	Trace
18	AR	55	Total	C	N	O	0	0
			455	288	86	81		

- Molecule 19 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	AS	82	Total	C	N	O	S	0	0
			656	419	125	110	2		

- Molecule 20 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	AT	86	Total 670	C 414	N 138	O 115	S 3	0	0

- Molecule 21 is a protein called 30S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	AU	56	Total 465	C 290	N 96	O 78	S 1	0	0

- Molecule 22 is a RNA chain called Ribosomal RNA 23S.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	BA	2897	Total 62209	C 27759	N 11446	O 20107	P 2897	0	0

- Molecule 23 is a RNA chain called Ribosomal RNA 5S.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	BB	120	Total 2569	C 1144	N 468	O 837	P 120	0	0

- Molecule 24 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	BC	271	Total 2082	C 1288	N 423	O 364	S 7	0	0

- Molecule 25 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	BD	209	Total 1566	C 980	N 288	O 294	S 4	0	0

- Molecule 26 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	BE	201	Total 1552	C 974	N 283	O 290	S 5	0	0

- Molecule 27 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	BF	177	Total	C	N	O	S	0	0
			1410	899	249	256	6		

- Molecule 28 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	BG	176	Total	C	N	O	S	0	0
			1323	832	243	246	2		

- Molecule 29 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	BH	149	Total	C	N	O	S	0	0
			1110	699	197	213	1		

- Molecule 30 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	BI	66	Total	C	N	O	S	0	0
			522	323	99	94	6		

- Molecule 31 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	BJ	142	Total	C	N	O	S	0	0
			1129	714	212	199	4		

- Molecule 32 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	BK	123	Total	C	N	O	S	0	0
			946	593	181	166	6		

- Molecule 33 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	BL	144	Total	C	N	O	S	0	0
			1053	654	207	190	2		

- Molecule 34 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	BM	136	Total	C	N	O	S	0	0
			1075	686	205	178	6		

- Molecule 35 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	BN	118	Total	C	N	O	S	0	0
			945	585	194	161	5		

- Molecule 36 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	BO	117	Total	C	N	O	S	0	0
			900	557	179	163	1		

- Molecule 37 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	BP	114	Total	C	N	O	S	0	0
			917	574	179	163	1		

- Molecule 38 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms				AltConf	Trace
38	BQ	117	Total	C	N	O	0	0
			947	604	192	151		

- Molecule 39 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	BR	103	Total	C	N	O	S	0	0
			816	516	153	145	2		

- Molecule 40 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	BS	110	Total	C	N	O	S	0	0
			857	532	166	156	3		

- Molecule 41 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	BT	93	Total 738	C 466	N 139	O 131	S 2	0	0

- Molecule 42 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms				AltConf	Trace
42	BU	102	Total 779	C 492	N 146	O 141	0	0

- Molecule 43 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	BV	94	Total 753	C 479	N 137	O 134	S 3	0	0

- Molecule 44 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	BW	76	Total 580	C 359	N 117	O 103	S 1	0	0

- Molecule 45 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	BX	77	Total 625	C 388	N 129	O 106	S 2	0	0

- Molecule 46 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	BY	62	Total 501	C 308	N 98	O 94	S 1	0	0

- Molecule 47 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	BZ	58	Total 449	C 281	N 87	O 79	S 2	0	0

- Molecule 48 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
48	B0	56	444	269	94	80	1	0	0

- Molecule 49 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
49	B1	51	414	266	76	72	0	0

- Molecule 50 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
50	B2	46	377	228	90	57	2	0	0

- Molecule 51 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
51	B3	64	504	323	105	74	2	0	0

- Molecule 52 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
52	B4	38	302	185	65	48	4	0	0

- Molecule 53 is a protein called Tryptophanase leader peptide.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
53	B5	17	146	94	27	25	0	0

- Molecule 54 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
54	B7	7	146	65	24	50	7	0	0

- Molecule 55 is a RNA chain called P-site tRNA-Pro.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
55	B8	77	1646	733	295	541	77	0	0

- Molecule 56 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
56	AA	35	Total 35	Mg 35	0
56	BA	132	Total 132	Mg 132	0
56	BC	1	Total 1	Mg 1	0
56	BD	1	Total 1	Mg 1	0
56	B8	1	Total 1	Mg 1	0

- Molecule 57 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
57	AB	1	Total 1	Zn 1	0
57	BI	1	Total 1	Zn 1	0
57	B4	1	Total 1	Zn 1	0

- Molecule 58 is TRYPTOPHAN (three-letter code: TRP) (formula: $C_{11}H_{12}N_2O_2$).

TRP
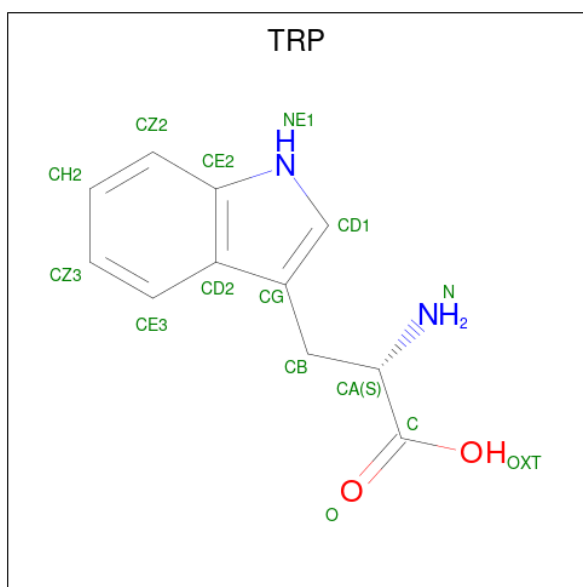
Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
58	BA	1	15	11	2	2	0

- Molecule 59 is water.

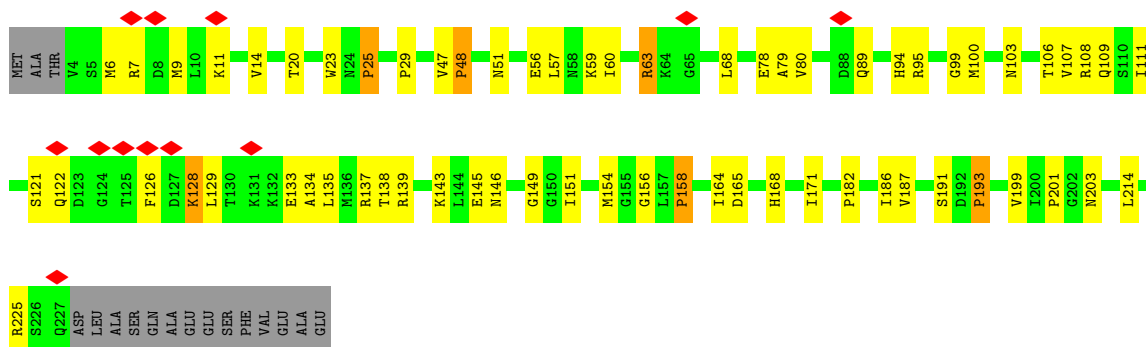| Mol	Chain	Residues	Atoms		AltConf
59	AA	168	Total 168	O 168	0
59	AK	1	Total 1	O 1	0
59	AM	1	Total 1	O 1	0
59	AN	2	Total 2	O 2	0
59	BA	608	Total 608	O 608	0
59	BC	7	Total 7	O 7	0
59	BD	1	Total 1	O 1	0
59	BE	1	Total 1	O 1	0
59	BL	2	Total 2	O 2	0
59	BN	1	Total 1	O 1	0
59	B8	1	Total 1	O 1	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Ribosomal RNA 16S
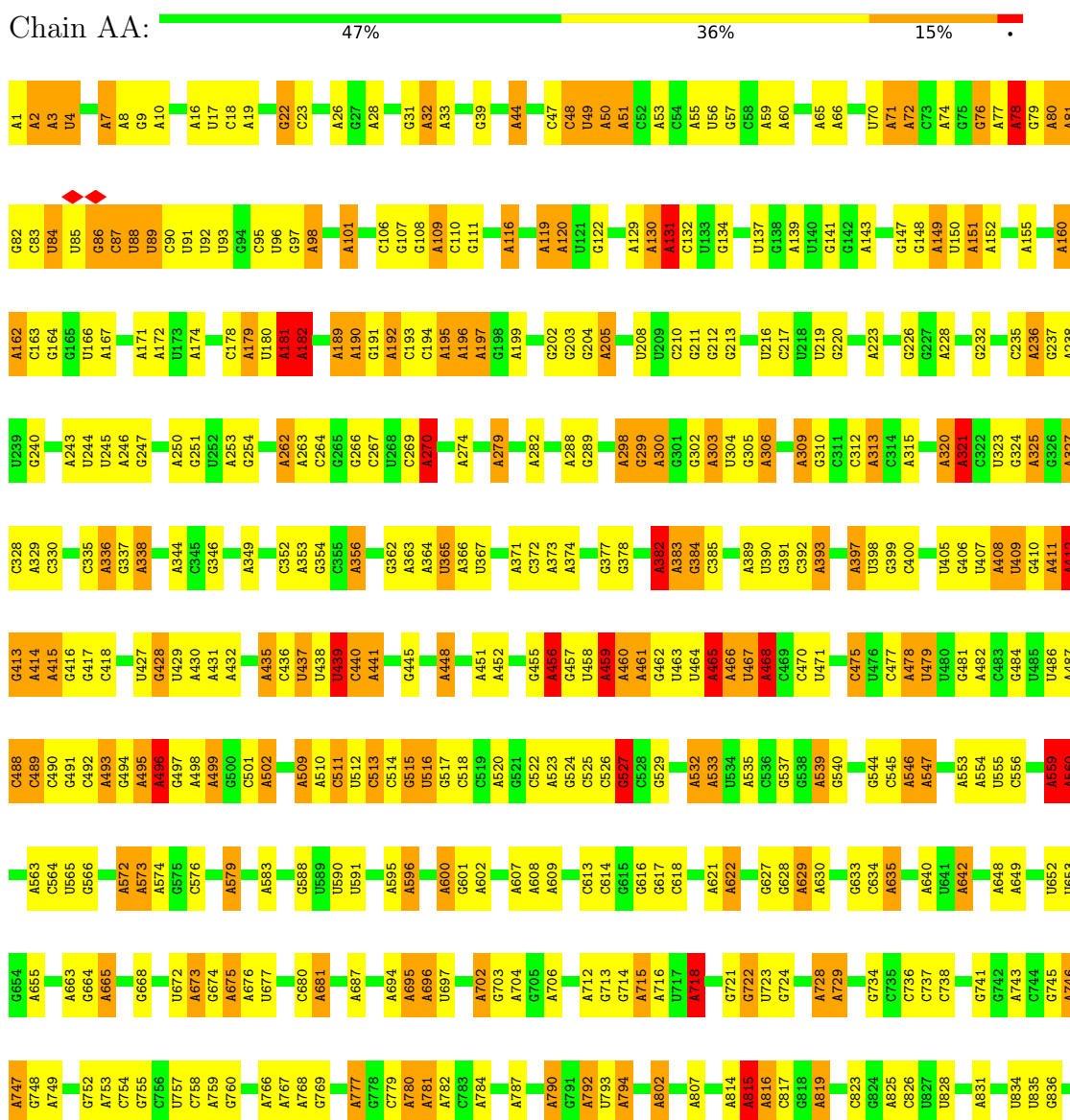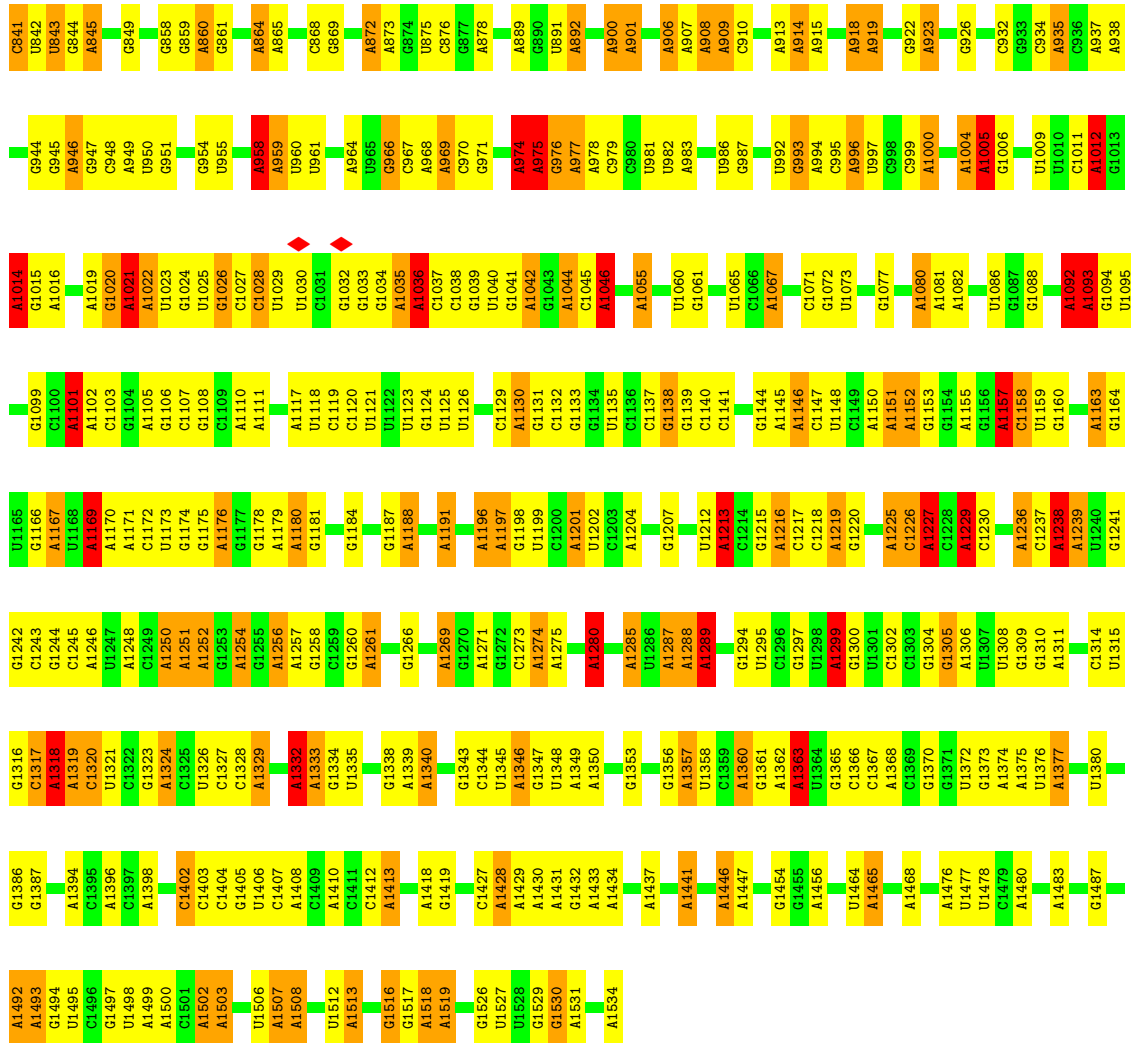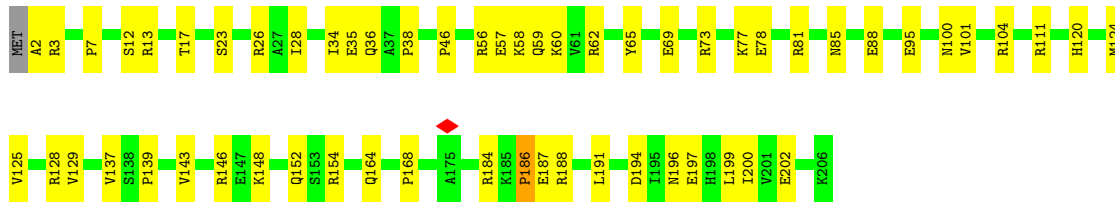
- Molecule 2: 30S ribosomal protein S2

Chain AB:
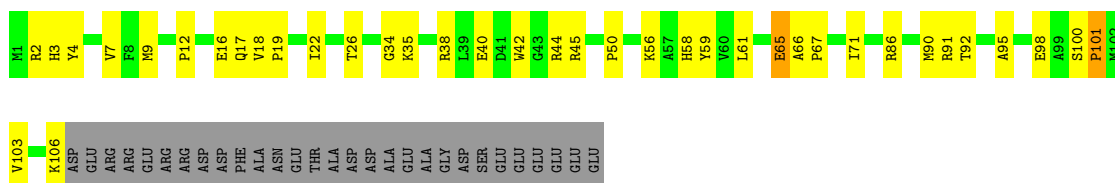
- Molecule 3: 30S ribosomal protein S3

Chain AC:

MET G2 P7 I10 K16 P17 W22 F23 A24 N25 T26 K27 E28 R40 Q41 Y42 L47 A50 S51 I55 V56 I57 E58 R59 P60 A61 K62 S63 I64 T67 I68 H69 T70 P73 V76 K79 K80 G81 E82 D83 V84 V90 D93 I94 P98

A99 Q100 I101 N102 I103 A104 E105 P109 D112 V116 A117 D118 S119 I120 T121 S122 Q123 L124 E125 V138 E152 R156 E161 I162 A163 Y168 P174 L175 D181 I182 T191 T192 Y193 K199 I207 LEU GLY GLY MET ALA ALA VAL GLU GLN PRO GLU LYS

PRO ALA ALA GLN PRO LYS LYS GLN GLN ARG LYS GLY ARG LYS

• Molecule 4: 30S ribosomal protein S4

Chain AD:	71%	28%

MET A2 R3 P7 S12 R13 T17 S23 R26 A27 I28 I34 E35 Q36 A37 P38 P46 R56 E57 K58 Q59 K60 V61 R62 Y65 E69 R73 K77 E78 R81 N85 E88 E95 N100 V101 R104 R111 H120 M124

V125 R128 V129 V137 S138 P139 V143 R146 E147 K148 Q152 S153 R154 Q164 P168 A175 R184 K185 P186 E187 R188 L191 D194 I195 N196 E197 H198 L199 I200 V201 E202 K206

• Molecule 5: 30S ribosomal protein S5

Chain AE:	70%	22%	7%

MET ALA HIS ILE GLU LYS GLN ALA GLY E10 E13 K14 L15 T34 T37 K52 P57 K62 A63 M64 E65 K66 N77 Q82 H83 P84 T90 P98 E101 G104 G108 R112 A113 V114 L115 E116 V117 N122 V123 N132 P133 I134 N135 V136

M147 P150 V153 A154 A155 K156 K159 S160 V161 E162 E163 I164 LEU GLY LYS

• Molecule 6: 30S ribosomal protein S6

Chain AF:	50%	27%	21%

M1 R2 H3 Y4 V7 F8 M9 P12 E16 Q17 V18 P19 I22 T26 G34 K35 R38 L39 E40 D41 W42 G43 R44 R45 P50 K56 A57 H58 Y59 V60 L61 E65 A66 P67 I71 R86 M90 R91 T92 A95 E98 A99 S100 P101 M102

V103 K106 ASP GLU ARG GLU ARG ARG ASP ASP PHE ALA ASN GLU THR ALA ALA ASP ALA ALA GLY SER GLU GLU GLU GLU GLU GLU

• Molecule 7: 30S ribosomal protein S7

Chain AG:	59%	24%	16%

MET P2 R3 R4 P14 D15 P16 K17 F18 K25 F26 I29 S37 E40 Y44 S45 A46 L47 K56 S57 E58 L59 E60 A61 F62 E63 V64 E67 N68 V69 R70 P71 P88 P93 R96 A100 M101 A108 R111 G112 D113 K114 S115 M116 A117 L118

R119 L120 A121 N122 E123 D126 K131 D140 R143 E146 K149 A152 HIS TYR ARG TRP LEU SER LEU ARG SER PHE SER HIS GLN ALA GLY ALA ALA SER SER LYS GLN PRO ALA LEU GLY TYR LEU ASN
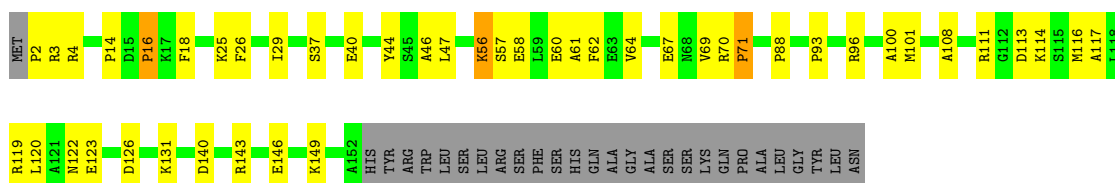
• Molecule 8: 30S ribosomal protein S8

Chain AH:
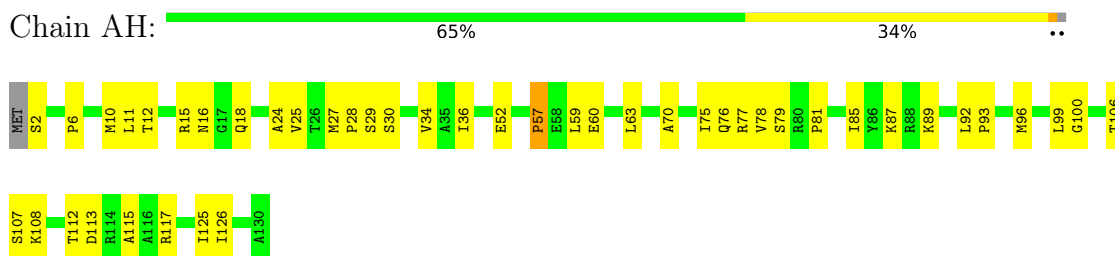
• Molecule 9: 30S ribosomal protein S9

Chain AI:
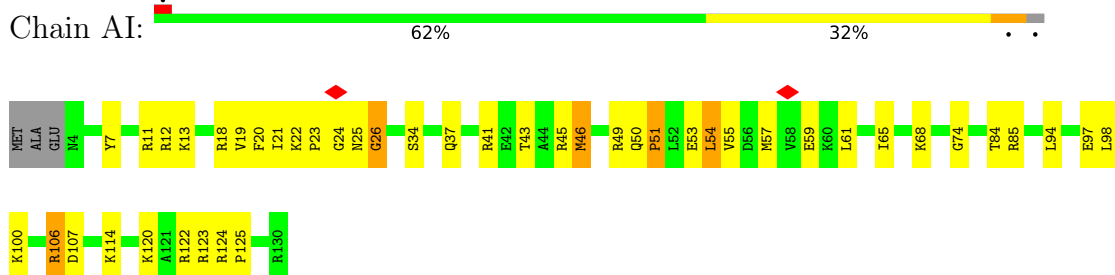
• Molecule 10: 30S ribosomal protein S10

Chain AJ:
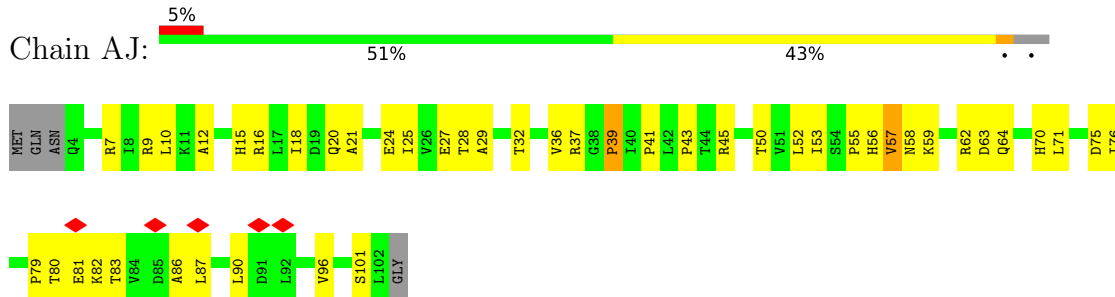
• Molecule 11: 30S ribosomal protein S11

Chain AK:
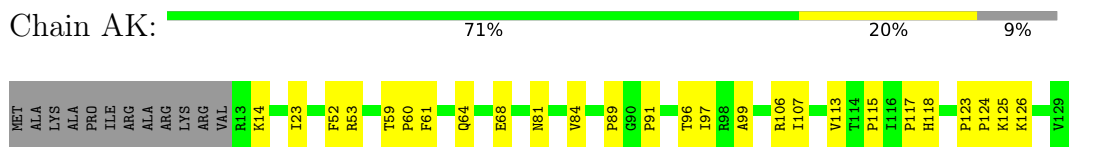
• Molecule 12: 30S ribosomal protein S12

Chain AL:
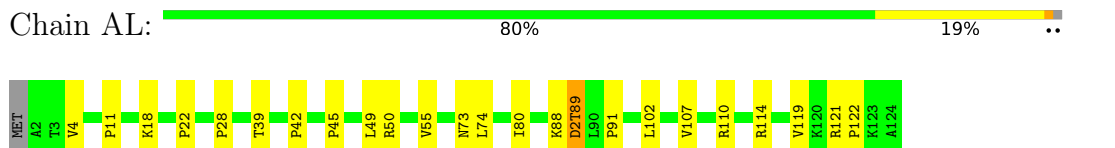
• Molecule 13: 30S ribosomal protein S13

Chain AM:

MET A2 R3 I4 A5 G6 I7 N8 I9 P10 V16 I17 A18 L19 T20 V25 T28 R29 I39 S49 Q52 I53 D54 T55 L56 R57 D58 E59 V60 F63 V64 V65 E66 G67 D68 L69 R70 R71 E72 I73 R79 L80 M81 D82 L83 Y86 R87 R92 P96

V97 R98 G99 Q100 R101 T102 T108 P112 R113 K114 P115 ILE LYS LYS
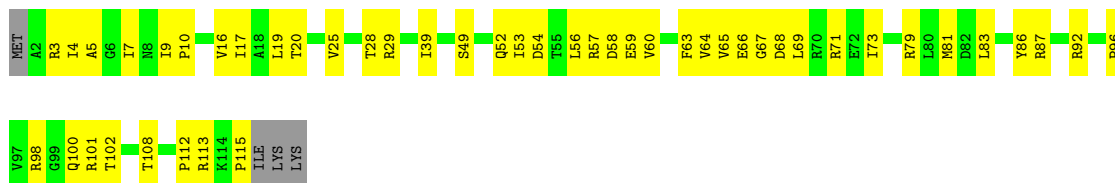
• Molecule 14: 30S ribosomal protein S14

Chain AN:

69%　　　30%

MET A1 F20 A21 K22 K27 A28 I29 I30 S31 D32 V33 N34 A35 E39 W42 N43 A44 V45 L46 K47 L48 Q49 T50 L51 P52 R53 D54 P57 S58 R59 Q60 R61 R69 P70 F73 L74 R75 G78 R90 G91 E92 I93 P94 K98 W101

• Molecule 15: 30S ribosomal protein S15

Chain AO:

78%　　　21%

MET S2 L3 S4 T8 D21 S24 V27 H46 K47 R53 R64 L67 D68 V75 A76 R77 Y78 T79 Q80 L81 I82 L87 R88 R89

• Molecule 16: 30S ribosomal protein S16

Chain AP:

73%　　　26%

M1 R8 R14 P15 A22 R25 R31 F32 I33 V36 P41 S44 E45 K46 E47 E48 G49 T50 R51 L52 D53 L54 D55 R56 I57 R70 L74 A82

• Molecule 17: 30S ribosomal protein S17

Chain AQ:

70%　　　24%　　5%

MET THR ASP K4 T7 L8 Q9 M17 E18 K19 S20 F28 V29 K30 H31 P32 I33 Y34 F37 H47 C53 E60 R65 P66 L67 T70 V76 V79 E80 K81 A82 V83 LEU

• Molecule 18: 30S ribosomal protein S18

Chain AR:

61%　　　12%　　27%

MET ALA ARG TYR PHE ARG ARG LYS PHE CYS ARG PHE THR ALA GLU GLY VAL GLN E20 D25 I26 K30 P41 R48 Y51 Y64 L68 P69 H74 GLN
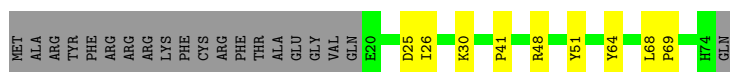
• Molecule 19: 30S ribosomal protein S19

Chain AS:

49%　　　39%　　11%

MET PRO R3 S4 L5 K6 K7 G8 P9 D12 L13 K17 K18 D27 K28 K29 P30 L31 S35 F41 P42 N43 M44 I45 G46 L47 T48 V51 H52 N53 G54 R55 Q56 H57 V58 P59 V60 F61 D64 E65 M66 V67 G68 L71 G72 E73 P76 T77 R78 A84

ALA ASP LYS LYS ALA LYS LYS LYS

• Molecule 20: 30S ribosomal protein S20

Chain AT:

93%　　　　　　　　　　　　　　　　　6%

MET A2 K8 R24 R25 P56 A87

• Molecule 21: 30S ribosomal protein S21

Chain AU:

56%　　　　　　　　21%　　　　21%

MET P2 V3 I4 K5 V6 R7 E8 N9 E10 P11 F12 L16 F19 E31 R34 F37 Y38 E39 K40 P41 E44 R45 K46 A57 LYS LEU ALA ARG GLU ASN ALA ARG ARG THR ARG LEU TYR
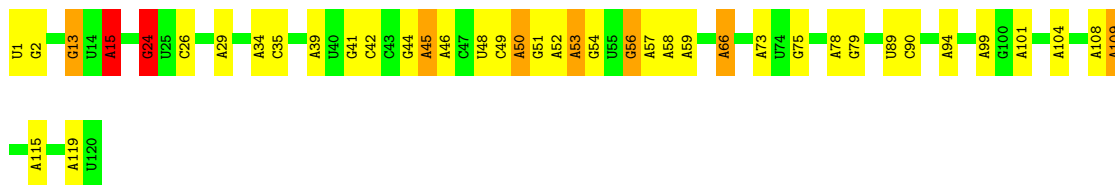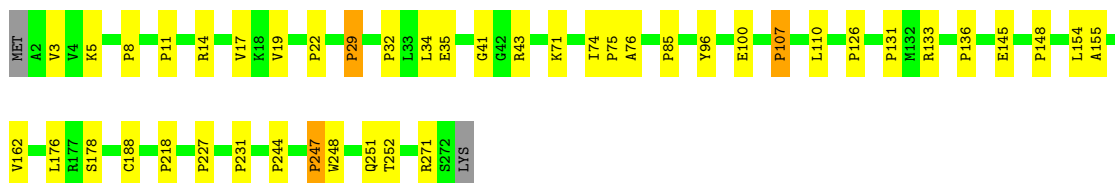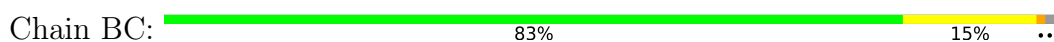
• Molecule 22: Ribosomal RNA 23S

Chain BA:

54%　　　　　　　　33%　　　　11%

G1 G2 U3 U4 A5 A6 A10 C11 U12 A13 A14 A19 C20 A21 G24 A28 U34 G35 A38 A42 G43 A44 A49 U50 G51 A52 A53 A56 C61 U62 A63 A64 U65 A71 U72 A73 A74 G75 U82 A83 A84 A89 U90 A91 A94 A95

A101 U102 A103 A104 A111 U114 A118 A119 U120 A125 A126 A127 A131 G141 A142 C143 A144 C145 A146 A149 A152 A155 A156 A160 A161 U162 C163 C164 A165 U166 A167 A172 A173 A176 G177 A181 A182 C183 A190 A191 A195 A196 A197 C198

A199 U200 C201 U202 A203 A204 A207 C208 A213 G214 G215 A216 A217 A218 A219 C220 A221 A222 A223 A226 A227 A231 G232 A233 C240 A241 A244 G248 C249 G250 A251 A255 A256 A262 G263 C264 A265 A270 G271 G272 G273 C274 C275 U276 C277 A278 A279 U280 A281 A282

G283 U284 G285 U286 G287 U288 A294 A299 A300 G301 C302 G303 A309 A310 A311 A320 U321 A322 C323 A324 A330 C331 A332 A340 C341 A342 C343 A344 A345 A346 A347 A348 C351 A352 C353 A354 U355 G356 C357 U358 G359 U360 A361 A362 A368 A371 A374 A382 C383

A384 C385 G386 A391 G396 A401 A402 U403 A404 U405 G406 G411 A412 A415 A422 A423 A428 A429 A430 U431 A432 A439 A443 A447 U448 A449 A453 A454 A457 A460 U464 G465 A466 G469 A470 A471 A472 C475 G476 A477 A478 A479 A480 G481

A482 A483 G489 C490 A491 A492 G493 G494 A497 A501 A502 A503 A504 A505 G506 A507 A508 C509 C510 U511 G512 A513 A514 A515 C516 A522 A526 C527 A528 A529 A532 G533 U534 G535 A538 A541 C544 A545 U546 A547 C548 A549 C550 A556 C557 U558 G559 A563

U568 U569 G570 U571 A572 U573 A574 A575 C581 A582 G585 A586 C587 U588 A589 A590 U591 A592 U593 U594 A599 A602 A603 G604 A608 A609 G612 A613 A614 U615 A616 A621 A626 A627 A631 A632 A633 C634 C635 G636 A637 G638 U639 C640 A643 A644 C645 U646 G647

U652 U653 A654 A655 G656 U657 U658 A661 A666 U667 A668 G669 A670 C673 G674 A675 A676 A677 A684 A685 U686 C687 U688 A689 A693 G696 A699 U703 G704 A705 A706 G711 G712 G713 U714 A715 A716 C717 A718 C719 U720 A721 A722 A727 A730 A734 A735

G738 A739 A742 A743 U744 G745 U746 U747 G748 A749 A750 A751 A752 A753 A756 G760 A761 A764 C765 G775 G776 A781 A782 A783 G784 G785 C786 C787 A788 A789 A792 A793 A794 A800 G801 A802 U803 A804 G805 C806 U807 U810 U811 C812 A819 A820 A821 A825 U826

• Molecule 23: Ribosomal RNA 5S

Chain BB: 66%   27%   6% •

• Molecule 24: 50S ribosomal protein L2

Chain BC: 83%   15%   ••

• Molecule 25: 50S ribosomal protein L3

Chain BD: 88%   11%   •

M1 T12 R13 P23 R33 Y45 R46 K55 K56 R59 V60 P63 R77 E88 E89 F118 N136 S139 P143 Q148 N149 Q150 T151 P152 P194 D200 P205 A209
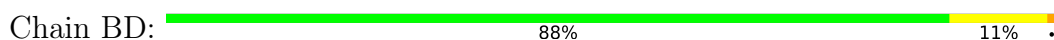
• Molecule 26: 50S ribosomal protein L4

Chain BE: 86%   14%

M1 E2 D7 T13 R21 P59 P76 A87 R88 P89 N97 M100 E111 R114 V121 E122 E127 A128 P129 E152 L153 D154 E155 N156 L157 F158 R162 N163 P177 A190 K194 E197 A201

• Molecule 27: 50S ribosomal protein L5

Chain BF: 78%   20%   ••

MET A2 Y8 V12 V13 K14 K15 L16 N23 S24 V25 M26 Q27 V28 P29 D56 L57 K64 P65 L66 R71 K72 S73 R80 Q81 P84 I85 R102 T105 V108 P109 R110 I111 R115 G116 L117 G126 G131 E134 Q135 I136 P139 D142

T158 P176 F177 R178 LYS
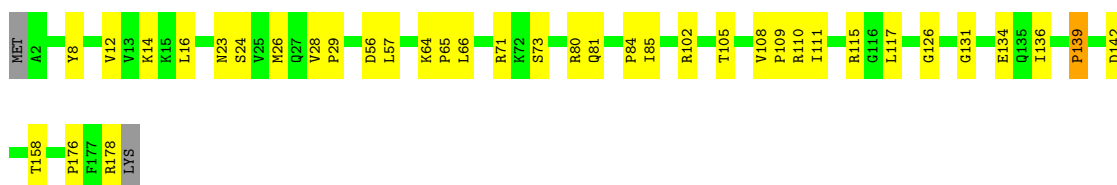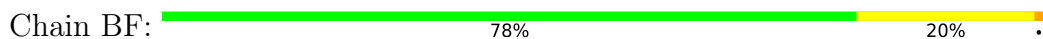
• Molecule 28: 50S ribosomal protein L6

Chain BG: 79%   20%   ••

MET S2 K6 A7 P8 P12 I24 T25 K29 E32 N38 E42 F52 G53 P54 R55 Q64 T67 L71 L72 V76 T80 K86 Y94 S106 P112 P118 P126 L133 I141 R149 R153 P154 E155 P156 K160

G161 V162 A165 R170 K177
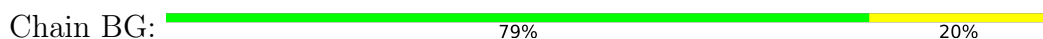
• Molecule 29: 50S ribosomal protein L9

Chain BH: 70%   30%

M1 D7 K8 L12 G16 V21 Y25 P32 P38 K42 N43 I44 E45 F46 F47 R50 K57 E60 A65 R68 A69 E70 K71 I72 N73 A74 L75 E76 S82 E87 G88 K89 L90 G95 D98 I99 V103 A106 G107 V108

A111 K112 S113 E114 V115 R116 L117 P118 N119 R123 T124 T125 E129 V130 S131 F132 Q133 V134 A140 K141 V142 I143 V146 E149
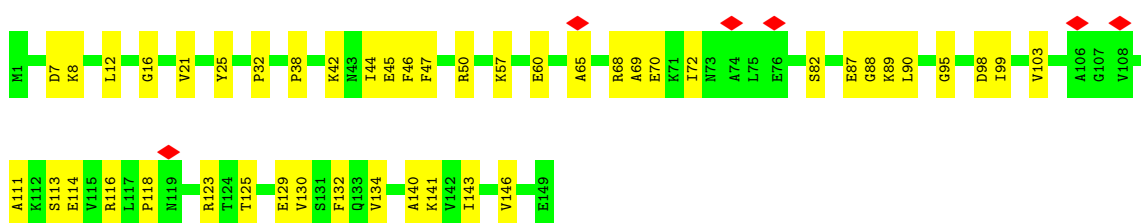
• Molecule 30: 50S ribosomal protein L31

Chain BI: 10%   64%   30%   6%

M1 I5 H6 P7 E11 C16 S17 C18 G19 N20 I24 R25 H30 D31 L34 D35 S38 P42 T45 G46 K47 Q48 R49 D50 V51 A52 T53 G54 G55 R56 V57 D58 K62 I66 PRO GLY SER LYS
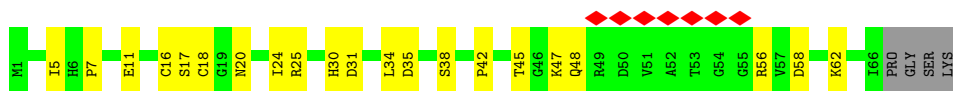
• Molecule 31: 50S ribosomal protein L13

Chain BJ:

86%   13%

M1 P8 D19 A20 T21 G22 K23 L36 R37 P46 D60 K61 R69 E90 P97 P110 K111 G112 P113 L114 G115 M118 K121 P137 I142

- Molecule 32: 50S ribosomal protein L14

Chain BK:

84%   15%

M1 I38 I39 K40 I43 P48 D56 V57 L58 V63 R64 R70 R71 P72 V76 P94 G101 P102 V103 T104 R105 F112 P120 E121 V122 L123

- Molecule 33: 50S ribosomal protein L15

Chain BL:

81%   18%

M1 P8 A9 S12 K13 L19 G20 R21 G22 L27 G28 K29 P56 R59 R60 L61 P62 K63 E76 I77 R78 L79 S80 D81 L82 V90 I100 K109 L112 A113 P119 R126 E144
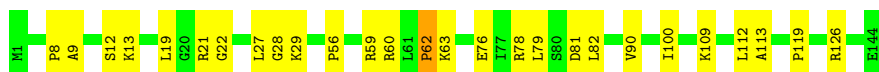
- Molecule 34: 50S ribosomal protein L16

Chain BM:

85%   14%

M1 P4 R10 L20 F31 V36 R44 M53 T54 R55 A56 V57 P69 P72 P77 V80 4D481 K86 P98 P109 E110 P125 T129 M136

- Molecule 35: 50S ribosomal protein L17

Chain BN:

83%   10%   7%

M1 M20 F21 M24 E32 K35 P39 P50 T53 P85 R86 D106 P109 Y112 R118 SER GLU LYS ALA GLU ALA ALA ALA GLU

- Molecule 36: 50S ribosomal protein L18

Chain BO:

84%   15%

M1 R16 E20 V27 P32 V39 I40 A41 P42 M43 G44 S45 L48 K56 K63 Y64 K76 E80 E84 K85 K88 D89 F117

- Molecule 37: 50S ribosomal protein L19

Chain BP:

86%   11%

MET S2 E9 P18 P22 W31 E34 K38 R39 N52 R53 E68 P79 A91 K111 E112 R113 L114 N115

- Molecule 38: 50S ribosomal protein L20

Chain BQ:

89% 10% •

MET A2 R3 V4 K5 R6 A35 V39 R48 D49 R50 R51 S87 D97 T107 E111 K112 A118
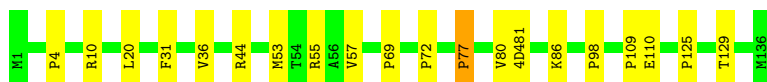
• Molecule 39: 50S ribosomal protein L21

Chain BR:

83% 17%

M1 Q6 K10 Q11 H12 R13 L22 E23 V38 I41 A42 N43 G44 E45 E46 I49 G50 V51 P52 F53 V54 K71 A103

• Molecule 40: 50S ribosomal protein L22

Chain BS:

83% 16% •

M1 E2 R11 K48 E52 E59 I66 T72 K73 E78 G79 P80 P87 R88 A93 D94 K98 V106 V107 S108 D109 R110
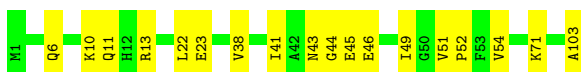
• Molecule 41: 50S ribosomal protein L23

Chain BT:

78% 15% 7%

M1 I2 R3 E4 E5 L11 P14 E18 T22 D37 E42 E54 V55 E56 V57 K88 E89 L93 ASP PHE VAL GLY GLY ALA GLU

• Molecule 42: 50S ribosomal protein L24

Chain BU:

76% 22% •

MET A2 R6 R7 D8 D18 K26 N27 V28 V34 E37 N40 H45 P48 V49 P50 A51 L52 N53 Q54 P55 V67 A71 A80 F85 F86 R94 F95 I103 LYS

• Molecule 43: 50S ribosomal protein L25

Chain BV:

72% 27% •

M1 F2 E7 K10 K14 R21 N24 K25 E26 P27 E35 A36 P37 H44 D45 K46 M50 F56 L61 T62 K68 E69 I70 K71 V72 V77 P81 P84 I89 D90 F91 A94

• Molecule 44: 50S ribosomal protein L27

Chain BW:

78% 12% 11%

MET ALA HIS LYS LYS ALA GLY GLY SER T10 A18 K19 F26 E29 R41 K66 V71 P74 K78 E85

• Molecule 45: 50S ribosomal protein L28

Chain BX:

90%   9%

MET | S2 | P12 | P31 | E43 | K44 | R45 | R72 | Y78

• Molecule 46: 50S ribosomal protein L29

Chain BY:
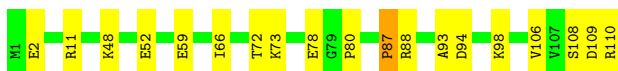
86%   13%

MET | K2 | A3 | K4 | E5 | L6 | R7 | R29 | D49 | R52 | L56 | E59 | A63

• Molecule 47: 50S ribosomal protein L30

Chain BZ:

83%   15%

MET | A2 | K3 | T4 | P18 | E37 | R38 | P42 | I48 | V57 | E58 | E59
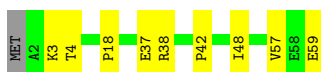
• Molecule 48: 50S ribosomal protein L32

Chain B0:

84%   11%

MET | A2 | P8 | D31 | K32 | H38 | L39 | R40 | T44 | A45 | D46 | K57

• Molecule 49: 50S ribosomal protein L33

Chain B1:

64%   27%   7%

MET | ALA | LYS | G4 | I5 | R6 | I9 | S13 | T22 | T23 | T24 | K25 | R28 | P31 | K37 | P41 | V42 | V43 | R44 | I48 | Y49 | K50 | E51 | I54 | LYS

• Molecule 50: 50S ribosomal protein L34

Chain B2:

85%   15%

M1 | T4 | P7 | H16 | T24 | G27 | K37 | V44 | S45 | K46

• Molecule 51: 50S ribosomal protein L35

Chain B3:

78%   15%

MET | P2 | K12 | K25 | H26 | A27 | N28 | H31 | I32 | L33 | T34 | K35 | K36 | P46 | K47 | A48 | P63 | Y64 | A65
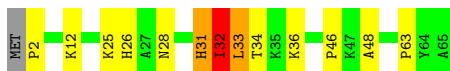
• Molecule 52: 50S ribosomal protein L36

Chain B4:

87%   13%

M1 I16 V25 A29 E30 P31 K32 G38
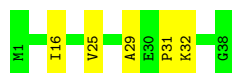
• Molecule 53: Tryptophanase leader peptide

Chain B5:

82%   12%   6%

V8 N14 R23 P24

• Molecule 54: mRNA

Chain B7:

71%   29%

C1 G2 C3 C4 C5 G6 U7

• Molecule 55: P-site tRNA-Pro

Chain B8:

55%   29%   14%   •

C1 G2 G3 U4 G5 A6 A14 C17 U17A G18 G19 U20 A21 G22 C23 C24 C25 A26 C30 A38 A41 A42 G46 U47 A51 C56 G57 A58 A59 A66 U67 C68 A69 C70 C71 G72 A73 C74 C75 A76

4   Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	93588	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TALOS ARCTICA	Depositor
Voltage (kV)	200	Depositor
Electron dose $(e^-/Å^2)$	40	Depositor
Minimum defocus (nm)	-1000	Depositor
Maximum defocus (nm)	-2000	Depositor
Magnification	55127	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.094	Depositor
Minimum map value	-0.019	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.005	Depositor
Recommended contour level	0.0075	Depositor
Map size (Å)	370.056, 370.056, 370.056	wwPDB
Map dimensions	408, 408, 408	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.907, 0.907, 0.907	Depositor

5   Model quality ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: MG, UR3, 4OC, ZN, 6MZ, 4D4, OMU, 3TD, 5MC, OMC, 2MG, MA6, D2T, 1MG, MEQ, OMG, 2MA, 5MU, PSU, 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	AA	1.49	1045/36593 (2.9%)	3.42	4438/57081 (7.8%)
2	AB	0.81	7/1784 (0.4%)	0.57	1/2403 (0.0%)
3	AC	0.83	7/1651 (0.4%)	0.51	0/2225
4	AD	0.78	6/1665 (0.4%)	0.47	0/2227
5	AE	0.87	5/1157 (0.4%)	0.57	0/1557
6	AF	1.05	7/881 (0.8%)	0.59	0/1189
7	AG	0.93	7/1195 (0.6%)	0.51	0/1602
8	AH	0.90	5/989 (0.5%)	0.55	0/1326
9	AI	0.73	3/1034 (0.3%)	0.66	3/1375 (0.2%)
10	AJ	1.03	6/805 (0.7%)	0.56	0/1089
11	AK	1.09	7/893 (0.8%)	0.57	0/1205
12	AL	1.12	8/960 (0.8%)	0.59	1/1286 (0.1%)
13	AM	0.93	5/892 (0.6%)	0.61	0/1193
14	AN	0.88	4/811 (0.5%)	0.53	0/1081
15	AO	0.36	0/722	0.47	0/964
16	AP	0.76	2/659 (0.3%)	0.54	0/884
17	AQ	0.76	2/657 (0.3%)	0.57	0/881
18	AR	0.87	2/462 (0.4%)	0.54	0/621
19	AS	1.08	5/672 (0.7%)	0.59	0/904
20	AT	0.54	1/676 (0.1%)	0.43	0/895
21	AU	1.08	4/472 (0.8%)	0.56	1/627 (0.2%)
22	BA	1.84	1753/69120 (2.5%)	3.52	8456/107824 (7.8%)
23	BB	1.53	58/2872 (2.0%)	3.02	271/4478 (6.1%)
24	BC	1.20	19/2121 (0.9%)	0.66	0/2852
25	BD	0.95	7/1576 (0.4%)	0.59	0/2119
26	BE	0.85	5/1571 (0.3%)	0.57	0/2113
27	BF	0.85	6/1434 (0.4%)	0.52	0/1926
28	BG	1.00	8/1343 (0.6%)	0.58	0/1816
29	BH	0.70	3/1121 (0.3%)	0.56	0/1515
30	BI	0.80	2/531 (0.4%)	0.60	0/709
31	BJ	1.03	6/1152 (0.5%)	0.56	0/1551

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
32	BK	1.00	5/955 (0.5%)	0.67	1/1279 (0.1%)
33	BL	0.90	4/1062 (0.4%)	0.64	1/1413 (0.1%)
34	BM	1.09	7/1081 (0.6%)	0.59	0/1443
35	BN	0.98	4/958 (0.4%)	0.59	0/1281
36	BO	0.74	2/910 (0.2%)	0.54	0/1219
37	BP	0.90	3/929 (0.3%)	0.64	2/1242 (0.2%)
38	BQ	0.72	0/960	0.49	0/1278
39	BR	0.81	2/829 (0.2%)	0.56	0/1107
40	BS	0.76	2/864 (0.2%)	0.53	0/1156
41	BT	0.67	1/744 (0.1%)	0.56	0/994
42	BU	0.89	3/787 (0.4%)	0.58	0/1051
43	BV	1.01	4/766 (0.5%)	0.58	0/1025
44	BW	0.80	1/587 (0.2%)	0.57	0/776
45	BX	0.87	2/635 (0.3%)	0.59	0/848
46	BY	0.43	0/502	0.46	0/667
47	BZ	0.91	2/453 (0.4%)	0.57	0/605
48	B0	0.82	1/450 (0.2%)	0.64	1/599 (0.2%)
49	B1	1.19	5/421 (1.2%)	0.76	2/561 (0.4%)
50	B2	0.85	1/380 (0.3%)	0.60	0/498
51	B3	1.12	4/513 (0.8%)	0.74	1/676 (0.1%)
52	B4	0.88	1/303 (0.3%)	0.54	0/397
53	B5	1.51	2/150 (1.3%)	0.71	0/203
54	B7	0.31	0/161	1.06	0/248
55	B8	1.94	66/1839 (3.6%)	2.95	152/2866 (5.3%)
All	All	1.54	3127/155710 (2.0%)	3.00	13331/232950 (5.7%)

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
10	AJ	0	1
27	BF	0	1
51	B3	0	1
All	All	0	3

The worst 5 of 3127 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
22	BA	892	A	C2'-C1'	-21.93	1.29	1.53
22	BA	2449	U	C5-C6	20.02	1.52	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
55	B8	14	A	C6-N6	17.45	1.48	1.33
55	B8	59	A	C6-N6	17.43	1.47	1.33
55	B8	76	A	C6-N6	17.33	1.47	1.33

The worst 5 of 13331 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
22	BA	2451	A	N1-C6-N6	-24.52	103.89	118.60
22	BA	2872	A	N1-C6-N6	-23.89	104.27	118.60
22	BA	1668	A	N1-C6-N6	-23.68	104.39	118.60
22	BA	1668	A	C2-N3-C4	23.56	122.38	110.60
22	BA	1668	A	N1-C2-N3	-23.30	117.65	129.30

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
10	AJ	81	GLU	Peptide
51	B3	31	HIS	Peptide
27	BF	142	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	AA	32930	0	16591	430	0
2	AB	1753	0	1780	43	0
3	AC	1624	0	1696	36	0
4	AD	1643	0	1707	41	0
5	AE	1144	0	1185	26	0
6	AF	862	0	864	28	0
7	AG	1181	0	1238	35	0
8	AH	979	0	1031	32	0
9	AI	1022	0	1070	45	0
10	AJ	795	0	836	35	0
11	AK	877	0	887	24	0
12	AL	957	0	1017	14	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
13	AM	883	0	941	50	0
14	AN	799	0	841	26	0
15	AO	714	0	734	13	0
16	AP	649	0	666	16	0
17	AQ	648	0	691	13	0
18	AR	455	0	478	7	0
19	AS	656	0	680	34	0
20	AT	670	0	719	3	0
21	AU	465	0	491	17	0
22	BA	62209	0	31308	391	0
23	BB	2569	0	1301	15	0
24	BC	2082	0	2154	19	0
25	BD	1566	0	1618	15	0
26	BE	1552	0	1619	15	0
27	BF	1410	0	1444	30	0
28	BG	1323	0	1371	18	0
29	BH	1110	0	1148	32	0
30	BI	522	0	520	20	0
31	BJ	1129	0	1162	11	0
32	BK	946	0	1023	12	0
33	BL	1053	0	1129	18	0
34	BM	1075	0	1155	9	0
35	BN	945	0	989	8	0
36	BO	900	0	935	11	0
37	BP	917	0	962	12	0
38	BQ	947	0	1019	12	0
39	BR	816	0	839	11	0
40	BS	857	0	922	11	0
41	BT	738	0	807	12	0
42	BU	779	0	831	15	0
43	BV	753	0	780	15	0
44	BW	580	0	594	6	0
45	BX	625	0	652	4	0
46	BY	501	0	531	5	0
47	BZ	449	0	488	4	0
48	B0	444	0	458	5	0
49	B1	414	0	442	11	0
50	B2	377	0	418	7	0
51	B3	504	0	572	11	0
52	B4	302	0	340	3	0
53	B5	146	0	143	2	0
54	B7	146	0	77	4	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
55	B8	1646	0	831	19	0
56	AA	35	0	0	0	0
56	B8	1	0	0	0	0
56	BA	132	0	0	1	0
56	BC	1	0	0	0	0
56	BD	1	0	0	0	0
57	AB	1	0	0	0	0
57	B4	1	0	0	0	0
57	BI	1	0	0	0	0
58	BA	15	0	9	0	0
59	AA	168	0	0	3	0
59	AK	1	0	0	0	0
59	AM	1	0	0	0	0
59	AN	2	0	0	0	0
59	B8	1	0	0	1	0
59	BA	608	0	0	4	0
59	BC	7	0	0	0	0
59	BD	1	0	0	0	0
59	BE	1	0	0	0	0
59	BL	2	0	0	0	0
59	BN	1	0	0	0	0
All	All	145019	0	96734	1531	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 1531 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)
22:BA:962:G:OP1	59:BA:3201:HOH:O	1.58	1.19
22:BA:2107:G:H1	22:BA:2182:U:H3	1.03	1.01
22:BA:2133:G:N2	22:BA:2158:A:N6	2.12	0.98
13:AM:53:ILE:HG22	13:AM:57:ARG:HH21	1.26	0.97
22:BA:2133:G:N2	22:BA:2158:A:C6	2.35	0.94

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	AB	222/241 (92%)	209 (94%)	13 (6%)	0	100	100
3	AC	204/233 (88%)	198 (97%)	6 (3%)	0	100	100
4	AD	203/206 (98%)	196 (97%)	7 (3%)	0	100	100
5	AE	153/167 (92%)	148 (97%)	5 (3%)	0	100	100
6	AF	104/135 (77%)	102 (98%)	2 (2%)	0	100	100
7	AG	149/179 (83%)	143 (96%)	6 (4%)	0	100	100
8	AH	127/130 (98%)	127 (100%)	0	0	100	100
9	AI	125/130 (96%)	115 (92%)	10 (8%)	0	100	100
10	AJ	97/103 (94%)	89 (92%)	6 (6%)	2 (2%)	7	26
11	AK	115/129 (89%)	111 (96%)	4 (4%)	0	100	100
12	AL	120/124 (97%)	113 (94%)	7 (6%)	0	100	100
13	AM	112/118 (95%)	104 (93%)	8 (7%)	0	100	100
14	AN	99/102 (97%)	88 (89%)	11 (11%)	0	100	100
15	AO	86/89 (97%)	82 (95%)	4 (5%)	0	100	100
16	AP	80/82 (98%)	73 (91%)	7 (9%)	0	100	100
17	AQ	78/84 (93%)	76 (97%)	2 (3%)	0	100	100
18	AR	53/75 (71%)	52 (98%)	1 (2%)	0	100	100
19	AS	80/92 (87%)	74 (92%)	6 (8%)	0	100	100
20	AT	84/87 (97%)	84 (100%)	0	0	100	100
21	AU	54/71 (76%)	52 (96%)	2 (4%)	0	100	100
24	BC	269/273 (98%)	260 (97%)	9 (3%)	0	100	100
25	BD	206/209 (99%)	198 (96%)	7 (3%)	1 (0%)	29	61
26	BE	199/201 (99%)	192 (96%)	7 (4%)	0	100	100
27	BF	175/179 (98%)	171 (98%)	4 (2%)	0	100	100
28	BG	174/177 (98%)	173 (99%)	1 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
29	BH	147/149 (99%)	133 (90%)	14 (10%)	0	100	100
30	BI	64/70 (91%)	58 (91%)	6 (9%)	0	100	100
31	BJ	140/142 (99%)	140 (100%)	0	0	100	100
32	BK	121/123 (98%)	119 (98%)	2 (2%)	0	100	100
33	BL	142/144 (99%)	134 (94%)	8 (6%)	0	100	100
34	BM	133/136 (98%)	130 (98%)	3 (2%)	0	100	100
35	BN	116/127 (91%)	109 (94%)	7 (6%)	0	100	100
36	BO	115/117 (98%)	113 (98%)	2 (2%)	0	100	100
37	BP	112/115 (97%)	109 (97%)	3 (3%)	0	100	100
38	BQ	115/118 (98%)	115 (100%)	0	0	100	100
39	BR	101/103 (98%)	98 (97%)	3 (3%)	0	100	100
40	BS	108/110 (98%)	105 (97%)	3 (3%)	0	100	100
41	BT	91/100 (91%)	90 (99%)	1 (1%)	0	100	100
42	BU	100/104 (96%)	96 (96%)	4 (4%)	0	100	100
43	BV	92/94 (98%)	91 (99%)	1 (1%)	0	100	100
44	BW	74/85 (87%)	73 (99%)	1 (1%)	0	100	100
45	BX	75/78 (96%)	72 (96%)	3 (4%)	0	100	100
46	BY	60/63 (95%)	59 (98%)	1 (2%)	0	100	100
47	BZ	56/59 (95%)	55 (98%)	1 (2%)	0	100	100
48	B0	54/57 (95%)	53 (98%)	1 (2%)	0	100	100
49	B1	49/55 (89%)	48 (98%)	1 (2%)	0	100	100
50	B2	44/46 (96%)	41 (93%)	3 (7%)	0	100	100
51	B3	62/65 (95%)	57 (92%)	3 (5%)	2 (3%)	4	16
52	B4	36/38 (95%)	36 (100%)	0	0	100	100
53	B5	15/17 (88%)	14 (93%)	1 (7%)	0	100	100
All	All	5590/5931 (94%)	5378 (96%)	207 (4%)	5 (0%)	54	82

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
25	BD	149	ASN
51	B3	32	ILE
51	B3	33	LEU

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Mol	Chain	Res	Type
10	AJ	57	VAL
10	AJ	58	ASN

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	AB	186/199 (94%)	183 (98%)	3 (2%)	62	86
3	AC	170/190 (90%)	168 (99%)	2 (1%)	71	91
4	AD	172/173 (99%)	172 (100%)	0	100	100
5	AE	118/126 (94%)	118 (100%)	0	100	100
6	AF	92/116 (79%)	92 (100%)	0	100	100
7	AG	124/147 (84%)	123 (99%)	1 (1%)	81	94
8	AH	104/105 (99%)	104 (100%)	0	100	100
9	AI	105/107 (98%)	104 (99%)	1 (1%)	76	92
10	AJ	87/90 (97%)	87 (100%)	0	100	100
11	AK	90/99 (91%)	90 (100%)	0	100	100
12	AL	102/103 (99%)	102 (100%)	0	100	100
13	AM	92/96 (96%)	92 (100%)	0	100	100
14	AN	79/84 (94%)	78 (99%)	1 (1%)	69	90
15	AO	76/77 (99%)	76 (100%)	0	100	100
16	AP	65/65 (100%)	65 (100%)	0	100	100
17	AQ	74/78 (95%)	74 (100%)	0	100	100
18	AR	48/65 (74%)	48 (100%)	0	100	100
19	AS	71/79 (90%)	70 (99%)	1 (1%)	67	89
20	AT	65/66 (98%)	65 (100%)	0	100	100
21	AU	48/61 (79%)	48 (100%)	0	100	100
24	BC	216/218 (99%)	216 (100%)	0	100	100
25	BD	163/163 (100%)	162 (99%)	1 (1%)	86	96

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
26	BE	165/165 (100%)	165 (100%)	0	100	100
27	BF	148/150 (99%)	147 (99%)	1 (1%)	84	95
28	BG	137/138 (99%)	136 (99%)	1 (1%)	84	95
29	BH	114/114 (100%)	114 (100%)	0	100	100
30	BI	59/62 (95%)	58 (98%)	1 (2%)	60	86
31	BJ	116/116 (100%)	116 (100%)	0	100	100
32	BK	104/104 (100%)	103 (99%)	1 (1%)	76	92
33	BL	103/103 (100%)	103 (100%)	0	100	100
34	BM	108/108 (100%)	108 (100%)	0	100	100
35	BN	98/103 (95%)	98 (100%)	0	100	100
36	BO	87/87 (100%)	86 (99%)	1 (1%)	73	92
37	BP	99/100 (99%)	99 (100%)	0	100	100
38	BQ	89/90 (99%)	89 (100%)	0	100	100
39	BR	84/84 (100%)	84 (100%)	0	100	100
40	BS	93/93 (100%)	93 (100%)	0	100	100
41	BT	80/84 (95%)	80 (100%)	0	100	100
42	BU	83/85 (98%)	83 (100%)	0	100	100
43	BV	78/78 (100%)	78 (100%)	0	100	100
44	BW	57/63 (90%)	57 (100%)	0	100	100
45	BX	67/68 (98%)	67 (100%)	0	100	100
46	BY	54/55 (98%)	54 (100%)	0	100	100
47	BZ	48/49 (98%)	48 (100%)	0	100	100
48	B0	47/48 (98%)	46 (98%)	1 (2%)	53	81
49	B1	45/49 (92%)	45 (100%)	0	100	100
50	B2	38/38 (100%)	38 (100%)	0	100	100
51	B3	51/52 (98%)	51 (100%)	0	100	100
52	B4	34/34 (100%)	34 (100%)	0	100	100
53	B5	17/17 (100%)	16 (94%)	1 (6%)	19	49
All	All	4650/4844 (96%)	4633 (100%)	17 (0%)	91	97

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

Mol	Chain	Res	Type
36	BO	63	LYS
53	B5	24	PRO
14	AN	27	LYS
19	AS	29	LYS
25	BD	33	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 8 such sidechains are listed below:

Mol	Chain	Res	Type
53	B5	17	ASN
53	B5	14	ASN
28	BG	38	ASN
8	AH	18	GLN
36	BO	43	ASN

5.3.3   RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	AA	1530/1534 (99%)	238 (15%)	7 (0%)
22	BA	2890/2897 (99%)	417 (14%)	23 (0%)
23	BB	119/120 (99%)	13 (10%)	1 (0%)
54	B7	6/7 (85%)	3 (50%)	1 (16%)
55	B8	76/77 (98%)	12 (15%)	2 (2%)
All	All	4621/4635 (99%)	683 (14%)	34 (0%)

5 of 683 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	AA	4	U
1	AA	7	A
1	AA	9	G
1	AA	22	G
1	AA	32	A

5 of 34 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
22	BA	2518	A
22	BA	2873	A
55	B8	2	G
22	BA	984	A

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Mol	Chain	Res	Type
22	BA	784	G

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

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
22	1MG	BA	745	22	18,26,27	2.36	5 (27%)	19,39,42	1.44	2 (10%)
22	G7M	BA	2069	22	20,26,27	2.14	6 (30%)	17,39,42	1.25	2 (11%)
22	PSU	BA	2580	22	18,21,22	3.77	7 (38%)	22,30,33	2.14	6 (27%)
1	5MC	AA	1407	1	18,22,23	3.26	7 (38%)	26,32,35	1.00	1 (3%)
22	OMG	BA	2251	22,55	18,26,27	2.30	8 (44%)	19,38,41	1.86	4 (21%)
1	MA6	AA	1518	1	18,26,27	1.34	2 (11%)	19,38,41	3.38	2 (10%)
22	PSU	BA	1911	22	18,21,22	4.12	6 (33%)	22,30,33	2.00	5 (22%)
22	2MG	BA	2445	22	18,26,27	2.28	6 (33%)	16,38,41	1.80	4 (25%)
22	PSU	BA	746	22,56	18,21,22	1.47	3 (16%)	22,30,33	2.42	5 (22%)
22	5MU	BA	1939	22	19,22,23	0.76	0	28,32,35	1.17	3 (10%)
25	MEQ	BD	150	25	8,9,10	1.37	2 (25%)	5,10,12	1.46	1 (20%)
1	UR3	AA	1498	1	19,22,23	3.03	8 (42%)	26,32,35	1.40	3 (11%)
1	2MG	AA	1207	1	18,26,27	2.45	7 (38%)	16,38,41	1.42	4 (25%)
1	4OC	AA	1402	1	20,23,24	2.90	8 (40%)	26,32,35	0.97	2 (7%)
22	5MU	BA	747	22	19,22,23	0.82	1 (5%)	28,32,35	1.26	3 (10%)
22	6MZ	BA	1618	22	18,25,26	2.93	5 (27%)	16,36,39	2.21	4 (25%)
22	6MZ	BA	2030	22	18,25,26	2.95	5 (27%)	16,36,39	2.58	4 (25%)
22	PSU	BA	955	22	18,21,22	3.80	6 (33%)	22,30,33	2.17	5 (22%)
22	2MA	BA	2503	22,56	17,25,26	2.30	5 (29%)	17,37,40	1.43	4 (23%)
1	5MC	AA	967	1	18,22,23	3.43	7 (38%)	26,32,35	1.06	2 (7%)
22	5MC	BA	1962	22	18,22,23	3.07	7 (38%)	26,32,35	1.26	5 (19%)
1	MA6	AA	1519	1	18,26,27	1.32	1 (5%)	19,38,41	3.57	2 (10%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
22	OMC	BA	2498	22,56	19,22,23	2.64	7 (36%)	26,31,34	1.05	1 (3%)
1	2MG	AA	1516	1	18,26,27	2.32	7 (38%)	16,38,41	1.48	4 (25%)
22	3TD	BA	1915	22	18,22,23	4.06	8 (44%)	22,32,35	1.97	4 (18%)
1	2MG	AA	966	1	18,26,27	2.46	7 (38%)	16,38,41	1.46	3 (18%)
34	4D4	BM	81	34	9,11,12	2.44	3 (33%)	8,13,15	1.06	0
22	2MG	BA	1835	22	18,26,27	2.19	7 (38%)	16,38,41	1.70	4 (25%)
22	PSU	BA	1917	22	18,21,22	4.07	7 (38%)	22,30,33	1.88	5 (22%)
22	PSU	BA	2605	22	18,21,22	3.73	7 (38%)	22,30,33	1.88	4 (18%)
12	D2T	AL	89	12	7,9,10	1.07	0	6,11,13	2.56	2 (33%)
22	OMU	BA	2552	22	19,22,23	2.64	7 (36%)	26,31,34	1.92	5 (19%)
1	G7M	AA	527	1	20,26,27	2.43	6 (30%)	17,39,42	1.09	1 (5%)
22	PSU	BA	2504	22	18,21,22	3.88	6 (33%)	22,30,33	1.72	4 (18%)
22	PSU	BA	2457	22	18,21,22	3.66	7 (38%)	22,30,33	2.28	5 (22%)
1	PSU	AA	516	56,1	18,21,22	4.19	6 (33%)	22,30,33	1.95	6 (27%)
22	PSU	BA	2604	22	18,21,22	3.82	6 (33%)	22,30,33	2.05	5 (22%)

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
22	1MG	BA	745	22	-	0/3/25/26	0/3/3/3
22	G7M	BA	2069	22	-	1/3/25/26	0/3/3/3
22	PSU	BA	2580	22	-	1/7/25/26	0/2/2/2
1	5MC	AA	1407	1	-	0/7/25/26	0/2/2/2
22	OMG	BA	2251	22,55	-	3/5/27/28	0/3/3/3
1	MA6	AA	1518	1	-	0/7/29/30	0/3/3/3
22	PSU	BA	1911	22	-	2/7/25/26	0/2/2/2
22	2MG	BA	2445	22	-	2/5/27/28	0/3/3/3
22	PSU	BA	746	22,56	-	2/7/25/26	0/2/2/2
22	5MU	BA	1939	22	-	2/7/25/26	0/2/2/2
25	MEQ	BD	150	25	-	2/8/9/11	-
1	UR3	AA	1498	1	-	0/7/25/26	0/2/2/2
1	2MG	AA	1207	1	-	0/5/27/28	0/3/3/3
1	4OC	AA	1402	1	-	1/9/29/30	0/2/2/2
22	5MU	BA	747	22	-	0/7/25/26	0/2/2/2
22	6MZ	BA	1618	22	-	0/5/27/28	0/3/3/3

Continued on next page...

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
22	6MZ	BA	2030	22	-	2/5/27/28	0/3/3/3
22	PSU	BA	955	22	-	0/7/25/26	0/2/2/2
22	2MA	BA	2503	22,56	-	1/3/25/26	0/3/3/3
1	5MC	AA	967	1	-	0/7/25/26	0/2/2/2
22	5MC	BA	1962	22	-	0/7/25/26	0/2/2/2
1	MA6	AA	1519	1	-	2/7/29/30	0/3/3/3
22	OMC	BA	2498	22,56	-	2/9/27/28	0/2/2/2
1	2MG	AA	1516	1	-	0/5/27/28	0/3/3/3
22	3TD	BA	1915	22	-	2/7/25/26	0/2/2/2
1	2MG	AA	966	1	-	2/5/27/28	0/3/3/3
34	4D4	BM	81	34	-	2/11/12/14	-
22	2MG	BA	1835	22	-	0/5/27/28	0/3/3/3
22	PSU	BA	1917	22	-	0/7/25/26	0/2/2/2
22	PSU	BA	2605	22	-	0/7/25/26	0/2/2/2
12	D2T	AL	89	12	-	1/7/12/14	-
22	OMU	BA	2552	22	-	0/9/27/28	0/2/2/2
1	G7M	AA	527	1	-	2/3/25/26	0/3/3/3
22	PSU	BA	2504	22	-	2/7/25/26	0/2/2/2
22	PSU	BA	2457	22	-	0/7/25/26	0/2/2/2
1	PSU	AA	516	56,1	-	0/7/25/26	0/2/2/2
22	PSU	BA	2604	22	-	0/7/25/26	0/2/2/2

The worst 5 of 203 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
22	BA	1915	3TD	C6-C5	11.67	1.48	1.35
1	AA	516	PSU	C6-C5	11.19	1.48	1.35
22	BA	1911	PSU	C6-C5	10.95	1.48	1.35
22	BA	1618	6MZ	C6-N6	10.93	1.52	1.35
22	BA	2030	6MZ	C6-N6	10.86	1.52	1.35

The worst 5 of 126 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	AA	1519	MA6	N1-C6-N6	-13.95	102.37	117.06
1	AA	1518	MA6	N1-C6-N6	-13.36	103.00	117.06
22	BA	746	PSU	N1-C2-N3	7.79	123.96	115.13
22	BA	1915	3TD	N1-C2-N3	6.40	121.19	116.14
1	AA	1519	MA6	N3-C2-N1	-6.28	118.86	128.68

There are no chirality outliers.

5 of 34 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	AA	527	G7M	C3'-C4'-C5'-O5'
1	AA	966	2MG	O4'-C4'-C5'-O5'
34	BM	81	4D4	NE-CD-CG-CB
22	BA	746	PSU	C2'-C1'-C5-C4
22	BA	1915	3TD	C3'-C4'-C5'-O5'

There are no ring outliers.

12 monomers are involved in 13 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
22	BA	2251	OMG	1	0
1	AA	1518	MA6	1	0
22	BA	746	PSU	1	0
25	BD	150	MEQ	1	0
1	AA	1402	4OC	1	0
22	BA	2030	6MZ	3	0
22	BA	955	PSU	1	0
1	AA	1519	MA6	1	0
22	BA	2498	OMC	1	0
1	AA	1516	2MG	1	0
12	AL	89	D2T	1	0
1	AA	527	G7M	1	0

5.5　Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6　Ligand geometry ⓘ

Of 174 ligands modelled in this entry, 173 are 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	$\#\|Z\| > 2$
58	TRP	BA	3001	-	14,16,16	0.86	1 (7%)	16,22,22	1.13	2 (12%)

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
58	TRP	BA	3001	-	-	0/7/8/8	0/2/2/2

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
58	BA	3001	TRP	OXT-C	-2.20	1.23	1.30

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
58	BA	3001	TRP	OXT-C-O	-2.59	118.21	124.09
58	BA	3001	TRP	OXT-C-CA	2.15	120.71	113.38

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 ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
22	BA	2

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	BA	885:C	O3'	892:A	P	13.83
1	BA	2099:U	O3'	2100:G	P	3.52

6　Map visualisation　ⓘ

This section contains visualisations of the EMDB entry EMD-12693. 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　ⓘ
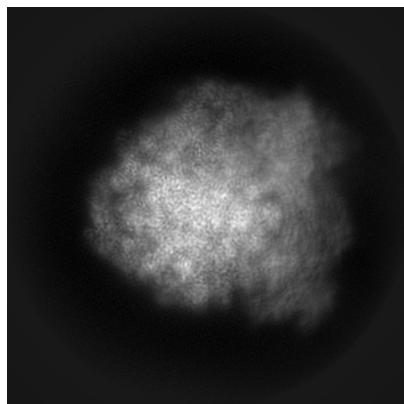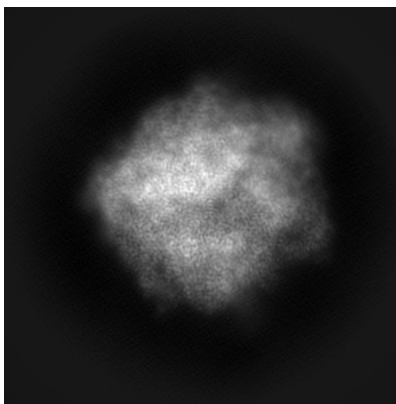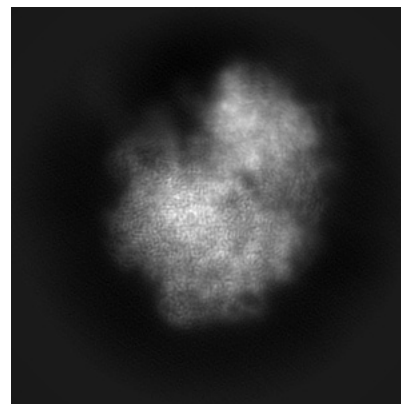
6.1.1　Primary map

X　　　　　　　　　Y　　　　　　　　　Z

6.1.2　Raw map

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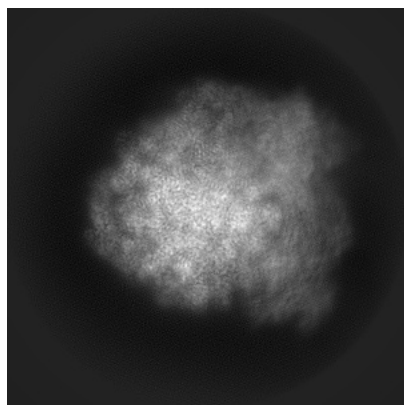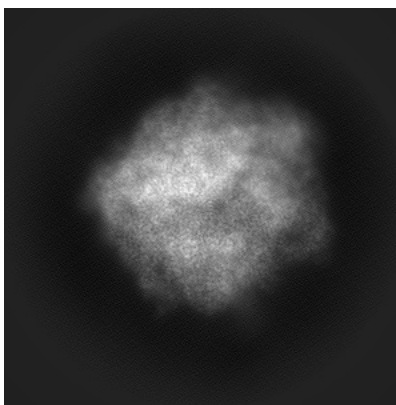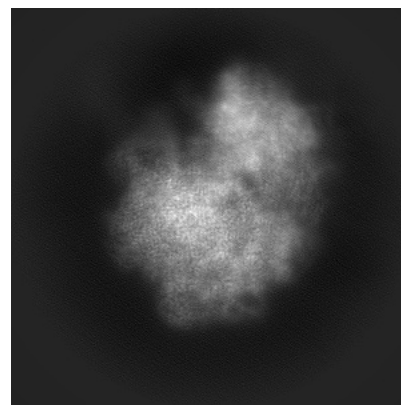
The images above show the map projected in three orthogonal directions.

6.2   Central slices ⓘ
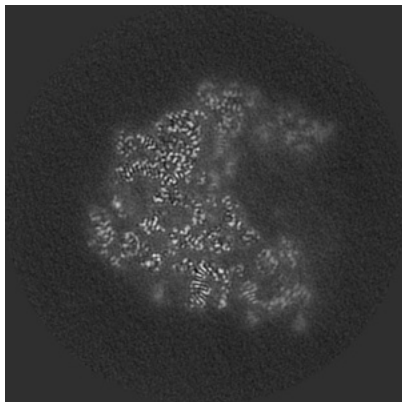
6.2.1   Primary map
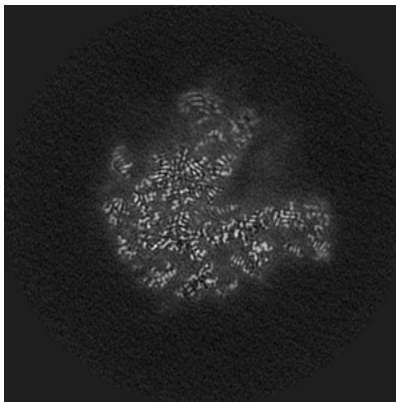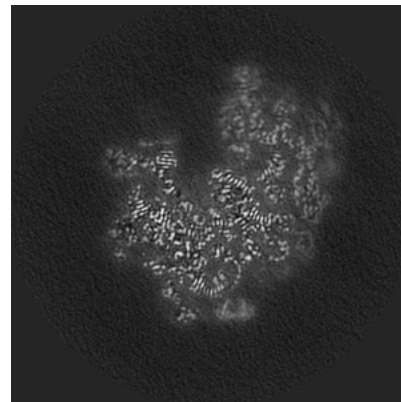
X Index: 204   Y Index: 204   Z Index: 204

6.2.2   Raw map
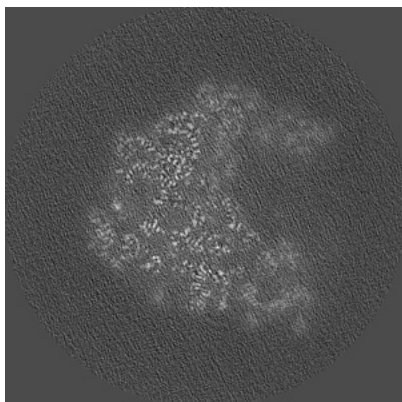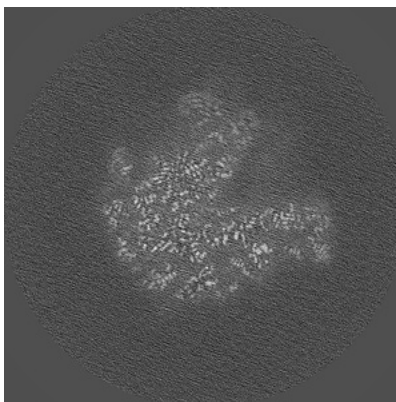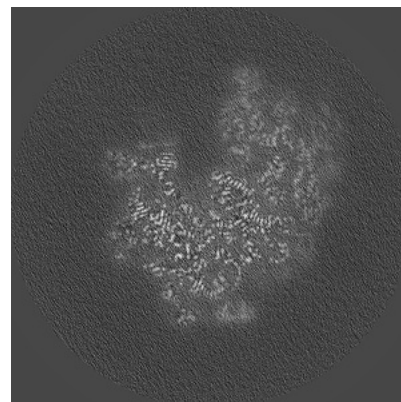
X Index: 204   Y Index: 204   Z Index: 204

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

6.3 Largest variance slices ⓘ

6.3.1 Primary map
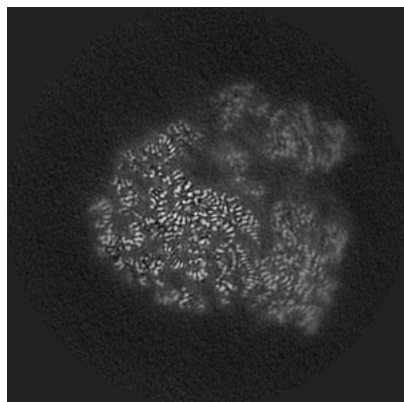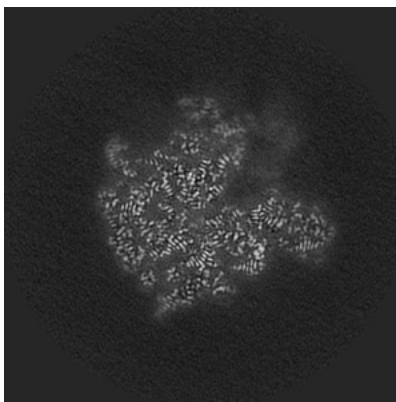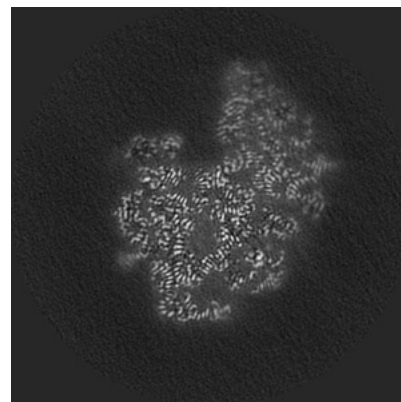
X Index: 219	Y Index: 196	Z Index: 188

6.3.2 Raw map
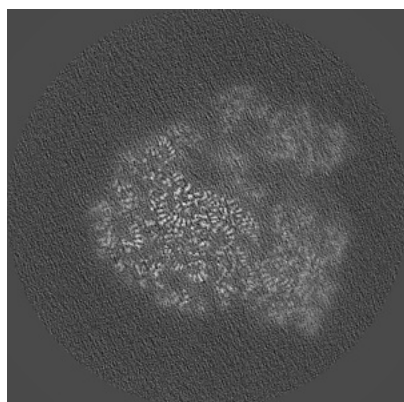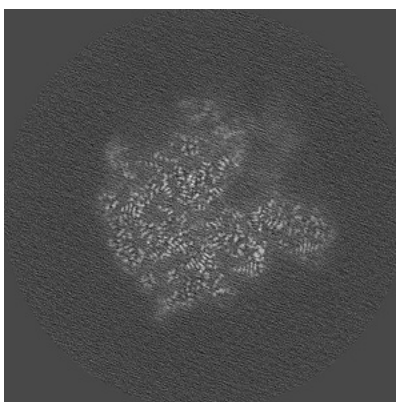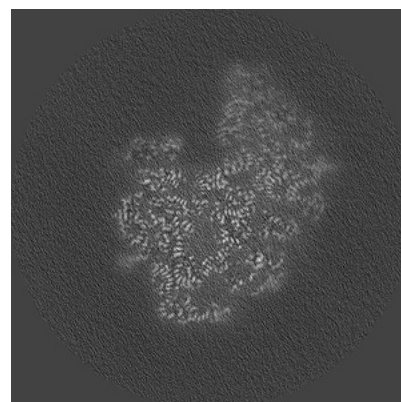
X Index: 219	Y Index: 196	Z Index: 188

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

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

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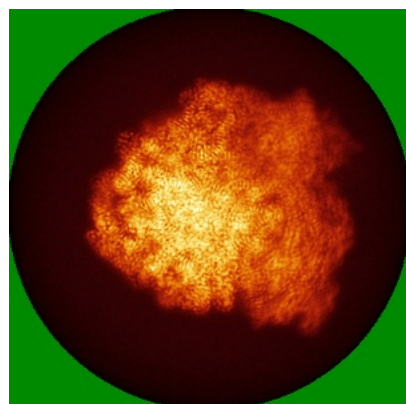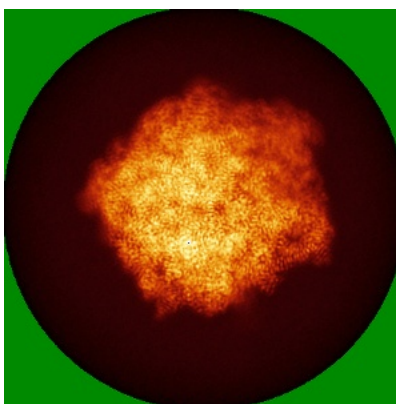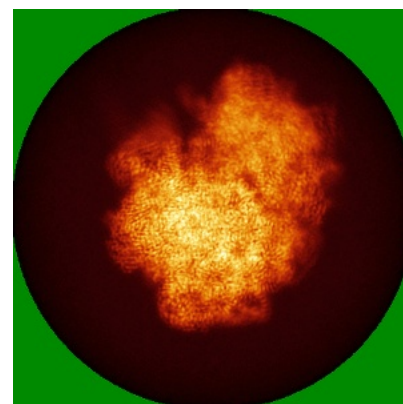
6.4.2 Raw map
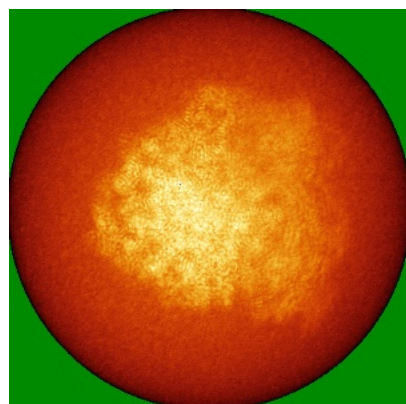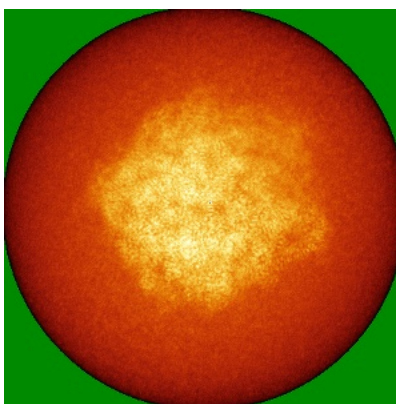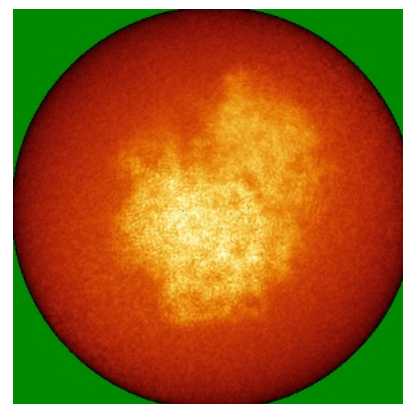
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

| X | Y | Z |
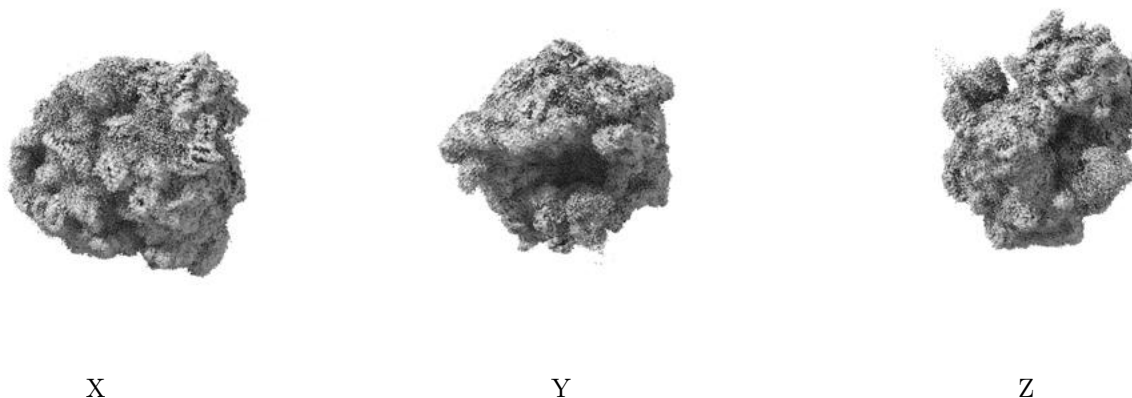
The images above show the 3D surface view of the map at the recommended contour level 0.0075. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

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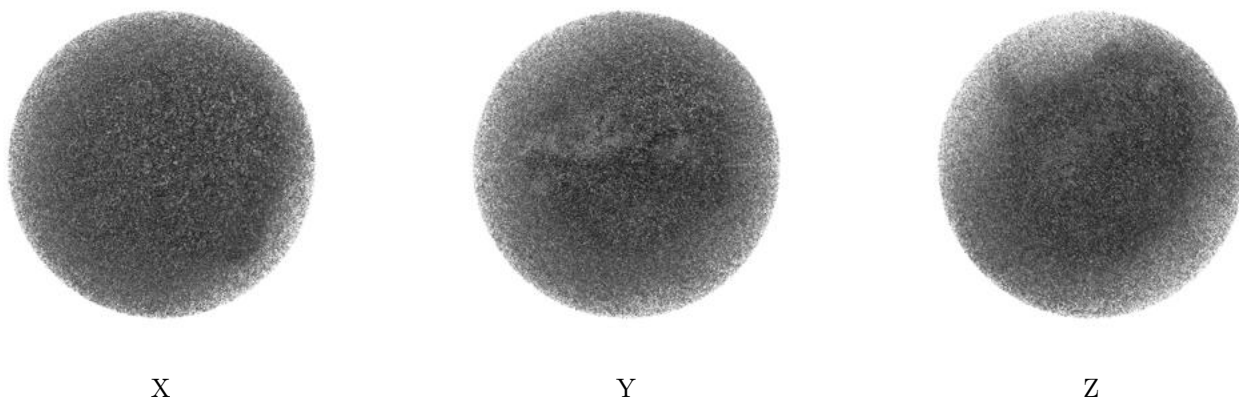
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6   Mask visualisation ⓘ

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

A mask typically either:

- Encompasses the whole structure

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

6.6.1   emd_12693_msk_1.map ⓘ

X   Y   Z
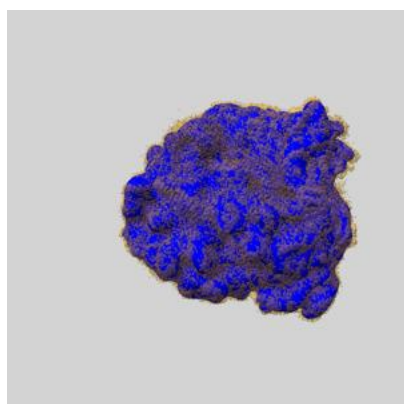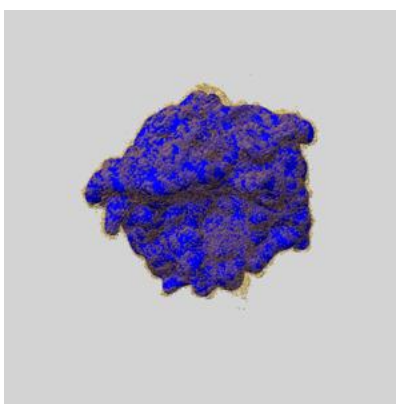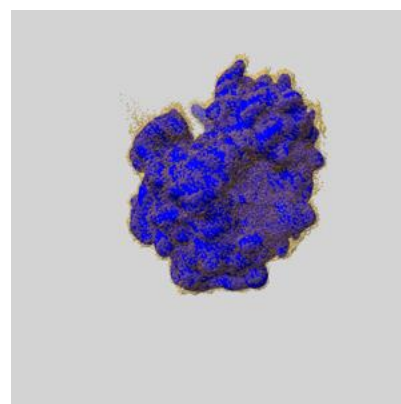
7 Map analysis ⓘ

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 ⓘ
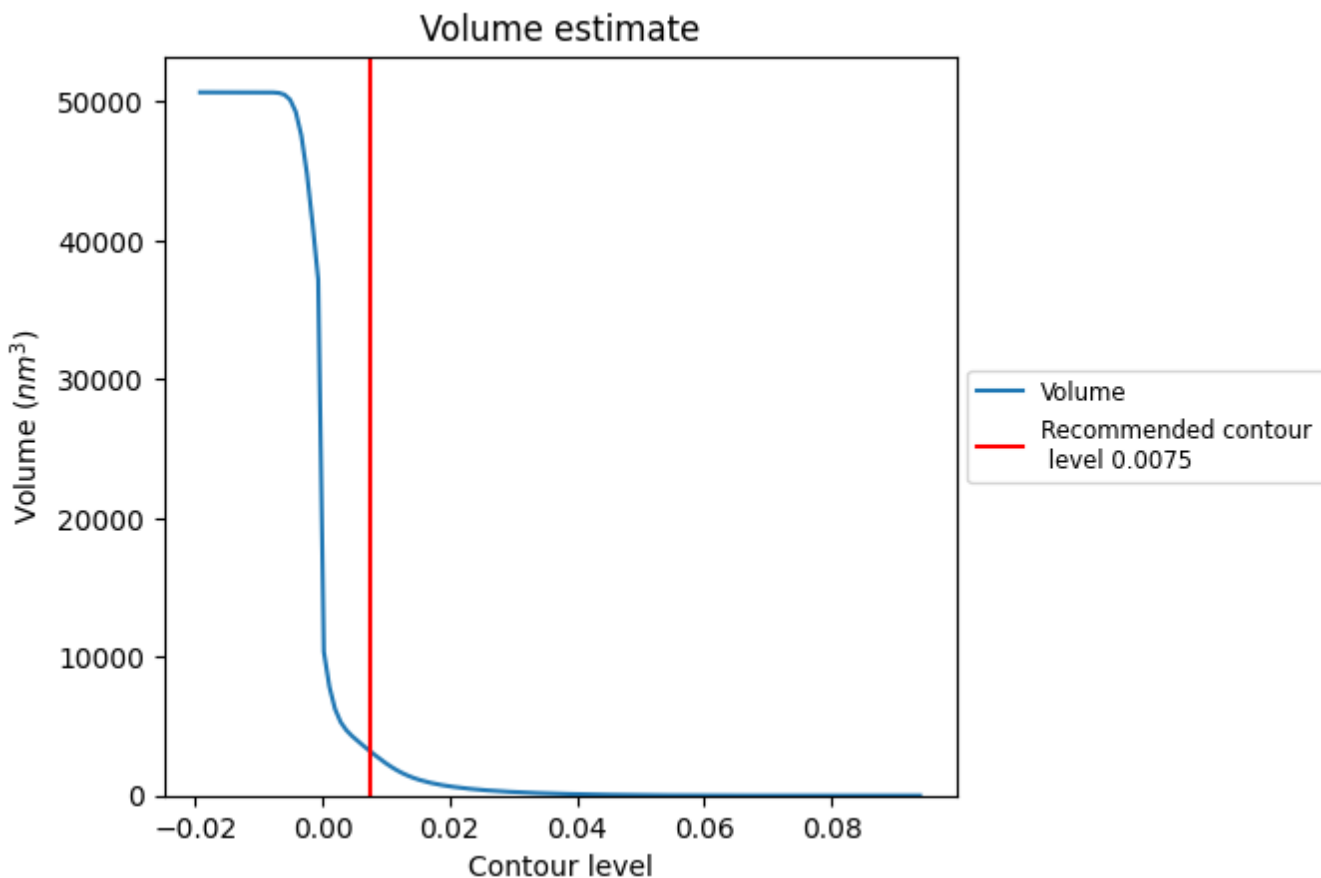
The volume at the recommended contour level is 3192 nm^3; this corresponds to an approximate mass of 2883 kDa.

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 ⓘ
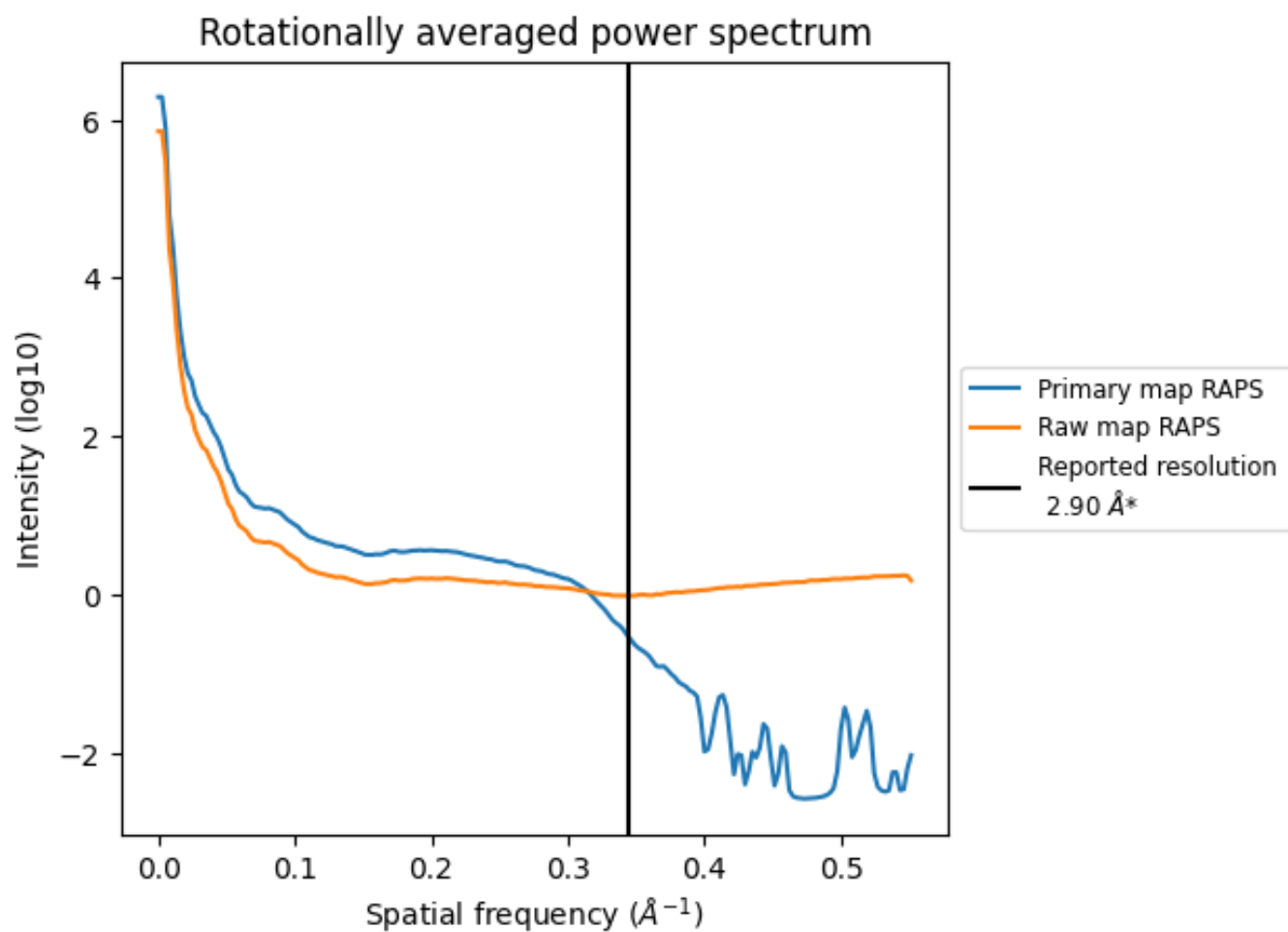
*Reported resolution corresponds to spatial frequency of 0.345 Å^{-1}

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 ⓘ
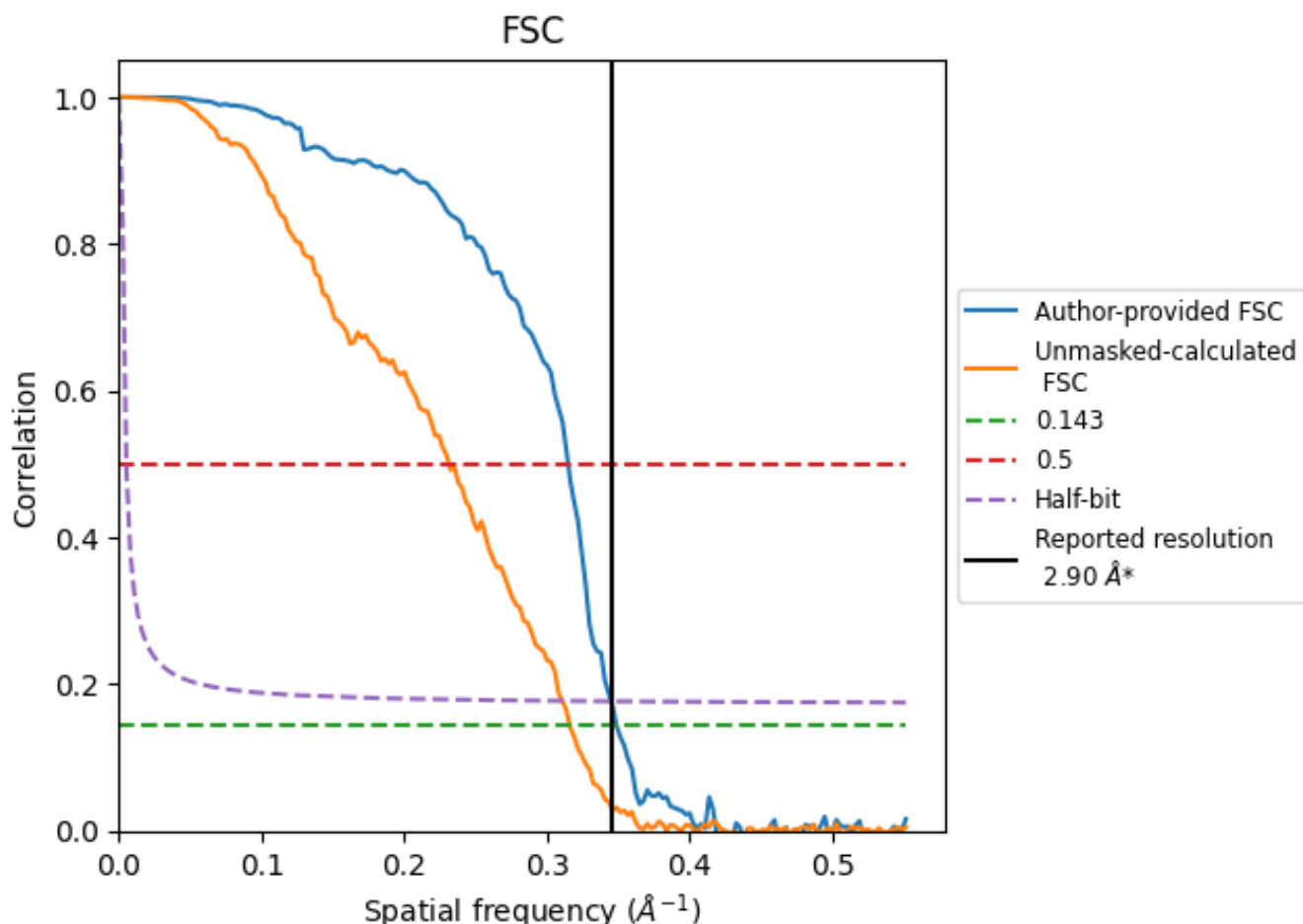
*Reported resolution corresponds to spatial frequency of 0.345 Å^{-1}

8.2 Resolution estimates ⓘ

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.90	-	-
Author-provided FSC curve	2.87	3.18	2.90
Unmasked-calculated*	3.17	4.33	3.22

*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-12693 and PDB model 7O19. Per-residue inclusion information can be found in section 3 on page 15.

9.1   Map-model overlay ⓘ
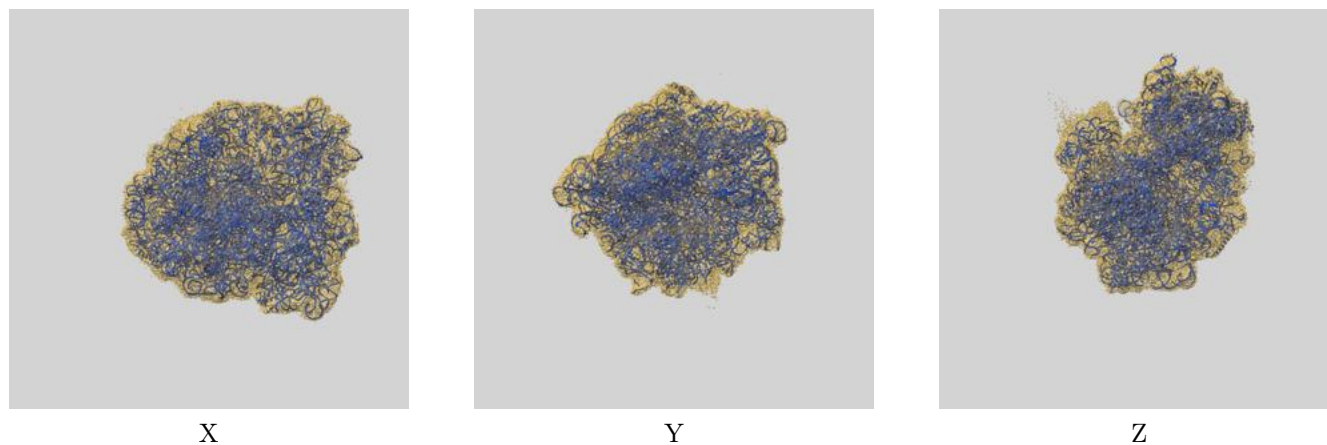
| X | Y | Z |

The images above show the 3D surface view of the map at the recommended contour level 0.0075 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
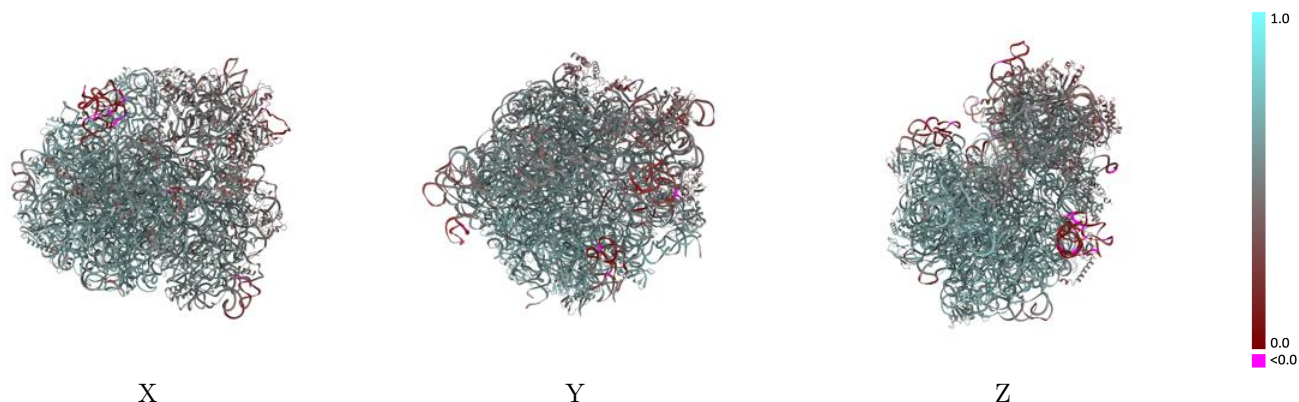
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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
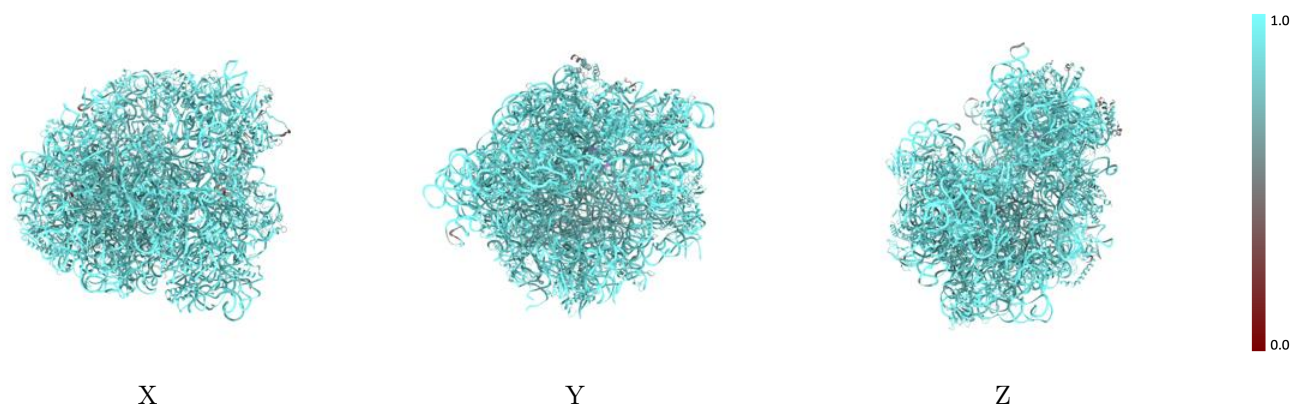
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0075).

9.4   Atom inclusion   ⓘ
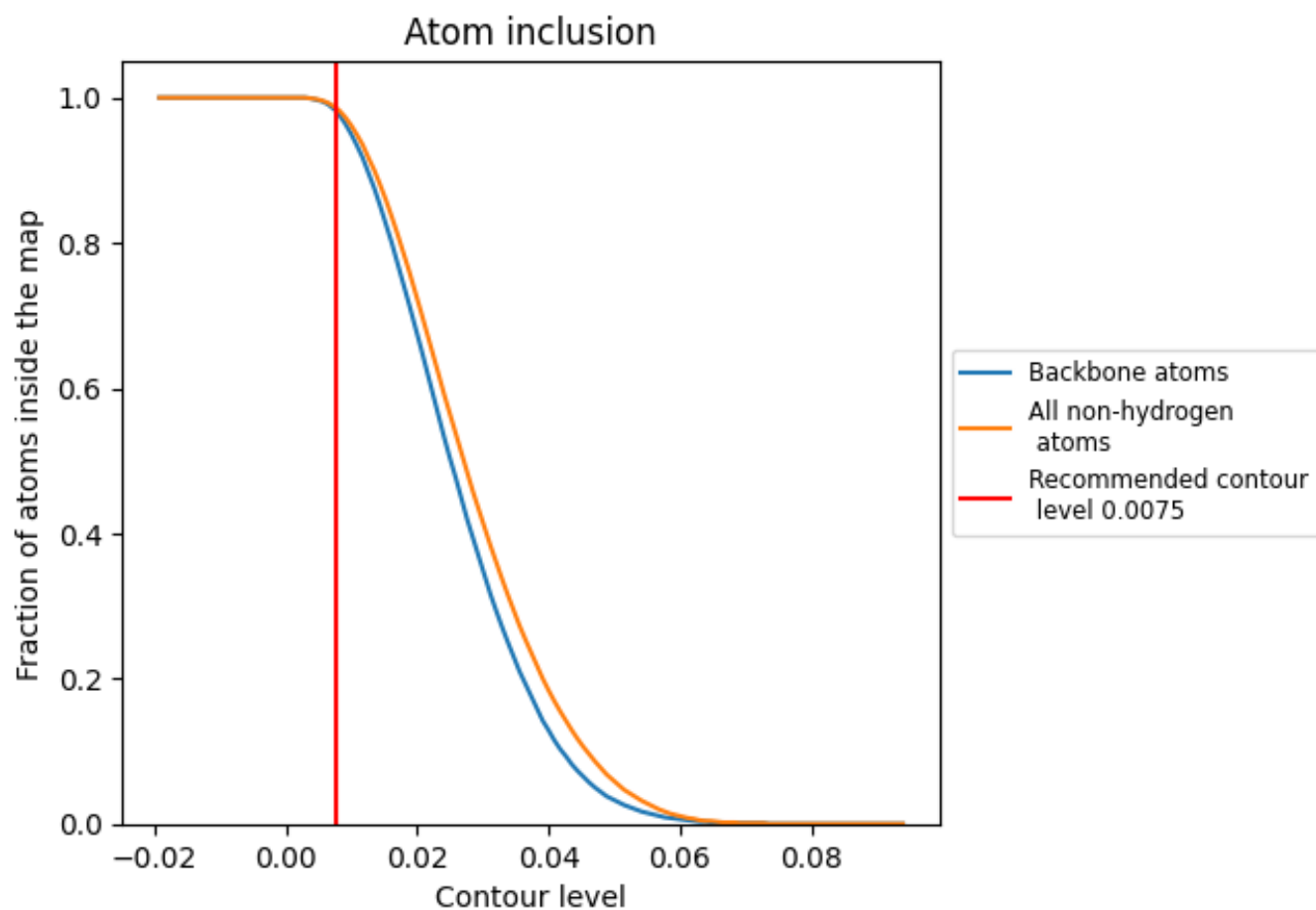
At the recommended contour level, 98% of all backbone atoms, 99% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.0075) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9870	0.5550
AA	0.9920	0.5160
AB	0.8310	0.4000
AC	0.9560	0.4400
AD	0.9540	0.4560
AE	0.9950	0.5140
AF	0.9680	0.4860
AG	0.9600	0.4210
AH	0.9840	0.5180
AI	0.9600	0.4200
AJ	0.8910	0.3800
AK	0.9930	0.5200
AL	0.9970	0.5400
AM	0.9690	0.4510
AN	0.9810	0.4340
AO	0.9870	0.5240
AP	0.9940	0.5160
AQ	0.9980	0.5170
AR	1.0000	0.5170
AS	0.9610	0.4170
AT	0.9800	0.5330
AU	0.9120	0.4360
B0	0.9930	0.6040
B1	1.0000	0.5900
B2	1.0000	0.6400
B3	1.0000	0.6290
B4	1.0000	0.6250
B5	1.0000	0.4990
B7	1.0000	0.4410
B8	0.9990	0.4470
BA	0.9950	0.5930
BB	0.9980	0.5930
BC	1.0000	0.6240
BD	0.9930	0.6170
BE	0.9780	0.5860

1.0

0.0
<0.0

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Chain	Atom inclusion	Q-score
BF	0.9910	0.5010
BG	0.9760	0.5380
BH	0.8620	0.4080
BI	0.8560	0.3820
BJ	0.9950	0.6200
BK	0.9990	0.6120
BL	0.9850	0.6040
BM	0.9930	0.6100
BN	1.0000	0.6330
BO	0.9840	0.5800
BP	0.9980	0.6020
BQ	0.9980	0.6300
BR	0.9600	0.5950
BS	0.9890	0.6120
BT	0.9900	0.5810
BU	0.9880	0.5730
BV	0.9730	0.5840
BW	0.9860	0.6090
BX	0.9980	0.6040
BY	0.9860	0.5660
BZ	0.9770	0.5990