



wwPDB EM Validation Summary Report ⓘ

Mar 24, 2026 – 08:12 PM UTC

PDB ID : 8G7P / pdb_00008g7p
EMDB ID : EMD-29819
Title : Structure of the Escherichia coli 70S ribosome in complex with EF-Tu and Ile-tRNA^{Ile}(LAU) bound to the cognate AUA codon (Structure I)
Authors : Rybak, M.Y.; Gagnon, M.G.
Deposited on : 2023-02-16
Resolution : 2.90 Å (reported)
Based on initial models : 5UYM, 7K00

This is a wwPDB EM Validation Summary Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

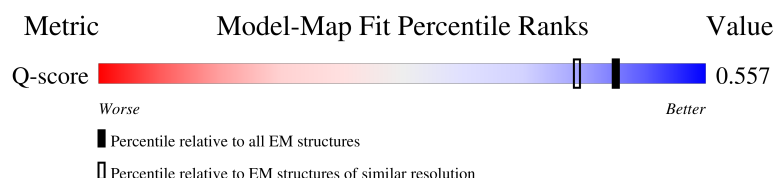
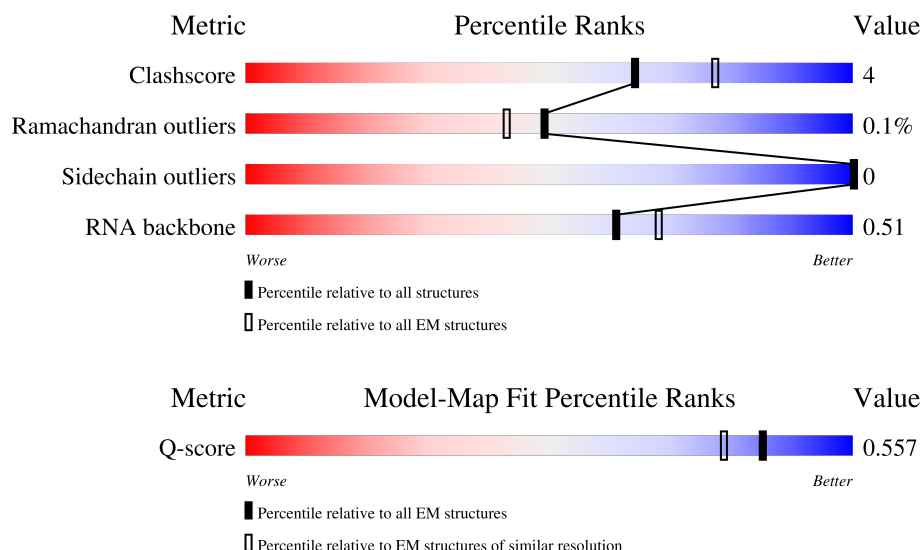
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDb archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

1 Overall quality at a glance

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

The reported resolution of this entry is 2.90 Å.

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



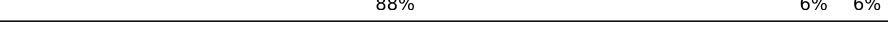
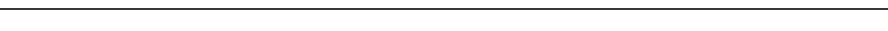
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	13054 (2.40 - 3.40)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	a	1542	 73% 23% . .
2	b	241	 74% 19% 7%
3	c	233	 78% 10% 12%

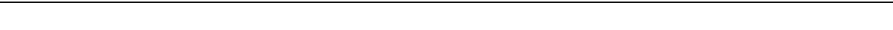
Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
4	d	206	
5	e	167	
6	f	131	
7	g	156	
8	h	130	
9	i	130	
10	j	103	
11	k	129	
12	l	124	
13	m	118	
14	n	101	
15	o	89	
16	p	82	
17	q	84	
18	r	75	
19	s	92	
20	t	87	
21	u	71	
22	w	76	
22	y	76	
23	x	77	
24	v	27	
25	z	392	
26	A	2904	
27	B	120	

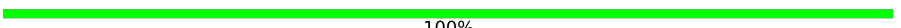
Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
28	C	273	 92% 7%
29	D	209	 91% 9%
30	E	201	 89% 11%
31	F	179	 87% 12%
32	G	177	 82% 17%
33	H	149	 24% 47% 72%
34	J	142	 94% 5%
35	L	142	 93% 7%
36	M	123	 94% 6%
37	N	144	 96%
38	O	136	 93% 7%
39	P	127	 89% 7%
40	Q	117	 86% 13%
41	R	115	 94% 5%
42	S	118	 94% 5%
43	T	103	 92% 8%
44	U	110	 85% 15%
45	V	100	 81% 12% 7%
46	W	104	 88% 11%
47	X	94	 89% 11%
48	Y	85	 78% 12% 11%
49	Z	78	 94% 5%
50	1	63	 83% 14%
51	2	59	 88% 10%
52	3	70	 77% 9% 14%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
53	4	57	 86%11%.
54	5	55	 82%11%7%
55	6	46	 100%
56	7	65	 89%9%.
57	8	38	 82%18%

2 Entry composition

There are 63 unique types of molecules in this entry. The entry contains 151823 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 16S Ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	a	1529	Total	C	N	O	P	0	0
			32825	14647	6024	10625	1529		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
2	b	224	Total	C	N	O	S	0	0
			1754	1110	315	321	8		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
3	c	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	d	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	e	156	Total	C	N	O	S	0	0
			1152	717	217	212	6		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
6	f	103	Total	C	N	O	S	0	0
			839	530	151	151	7		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
7	g	152	Total	C	N	O	S	0	0
			1191	741	230	216	4		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
8	h	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	i	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	j	98	Total	C	N	O	S	0	0
			786	493	150	142	1		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
11	k	117	Total	C	N	O	S	0	0
			877	540	173	161	3		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
k	119	IAS	ASN	modified residue	UNP A0A0H3PWX2

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

Mol	Chain	Residues	Atoms					AltConf	Trace
12	l	121	Total	C	N	O	S	0	0
			942	582	193	162	5		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
13	m	115	Total	C	N	O	S	0	0
			891	552	179	157	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
14	n	100	Total	C	N	O	S	0	0
			805	499	164	139	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
15	o	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	p	81	Total	C	N	O	S	0	0
			643	403	127	112	1		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
17	q	79	Total	C	N	O	S	0	0
			641	406	120	112	3		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
18	r	54	Total	C	N	O	0	0
			446	283	85	78		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
19	s	83	Total	C	N	O	S	0	0
			663	424	126	111	2		

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
21	u	70	Total	C	N	O	S	0	0
			589	366	125	97	1		

- Molecule 22 is a RNA chain called Isoleucine tRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
22	w	76	Total 1647	C 740	N 292	O 538	P 76	S 1	0	0
22	y	76	Total 1644	C 740	N 292	O 536	P 75	S 1	0	0

- Molecule 23 is a RNA chain called P-site initiator tRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
23	x	76	Total	C	N	O	P	S	0	0
			1625	725	294	529	76	1		

- Molecule 24 is a RNA chain called M-I mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	v	13	Total	C	N	O	P	0	0
			284	128	59	84	13		

- Molecule 25 is a protein called Elongation factor Tu.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	z	392	Total	C	N	O	S	0	0
			3029	1915	521	580	13		

- Molecule 26 is a RNA chain called 23S Ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	A	2899	Total	C	N	O	P	0	0
			62252	27778	11456	20119	2899		

- Molecule 27 is a RNA chain called 5S Ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	B	120	Total	C	N	O	P	0	0
			2572	1145	470	837	120		

- Molecule 28 is a protein called 50S ribosomal protein L2.

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

- Molecule 29 is a protein called 50S ribosomal protein L3.

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

- Molecule 30 is a protein called 50S ribosomal protein L4.

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

- Molecule 31 is a protein called 50S ribosomal protein L5.

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

- Molecule 32 is a protein called 50S ribosomal protein L6.

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

- Molecule 33 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	H	41	Total	C	N	O	S	0	0
			303	194	54	54	1		

- Molecule 34 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms				AltConf	Trace
34	J	141	Total	C	N	O	0	0
			693	411	141	141		

- Molecule 35 is a protein called 50S ribosomal protein L13.

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

- Molecule 36 is a protein called 50S ribosomal protein L14.

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

- Molecule 37 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms				AltConf	Trace
37	N	144	Total	C	N	O	S	0
			1052	653	207	190	2	0

- Molecule 38 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms				AltConf	Trace
38	O	136	Total	C	N	O	S	0
			1075	686	205	177	7	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
O	82	MS6	MET	modified residue	UNP E6BI61

- Molecule 39 is a protein called 50S ribosomal protein L17.

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

- Molecule 40 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms				AltConf	Trace
40	Q	116	Total	C	N	O	0	0
			892	552	178	162		

- Molecule 41 is a protein called 50S ribosomal protein L19.

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

- Molecule 42 is a protein called 50S ribosomal protein L20.

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

- Molecule 43 is a protein called Ribosomal protein L21.

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

- Molecule 44 is a protein called 50S ribosomal protein L22.

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

- Molecule 45 is a protein called 50S ribosomal protein L23.

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

- Molecule 46 is a protein called 50S ribosomal protein L24.

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

- Molecule 47 is a protein called 50S ribosomal protein L25.

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

- Molecule 48 is a protein called 50S ribosomal protein L27.

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

- Molecule 49 is a protein called 50S ribosomal protein L28.

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
50	1	61	Total	C	N	O	S	0	0
			495	305	97	92	1		

- Molecule 51 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	2	58	Total	C	N	O	S	0	0
			449	281	87	79	2		

- Molecule 52 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	3	60	Total	C	N	O	S	0	0
			476	296	89	85	6		

- Molecule 53 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	4	55	Total	C	N	O	S	0	0
			434	263	92	78	1		

- Molecule 54 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
54	5	51	Total	C	N	O	0	0
			417	269	76	72		

- Molecule 55 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	6	46	Total	C	N	O	S	0	0
			373	225	89	57	2		

- Molecule 56 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	7	64	Total	C	N	O	S	0	0
			504	323	105	74	2		

- Molecule 57 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	8	38	Total	C	N	O	S	0	0
			302	185	65	48	4		

- Molecule 58 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
58	a	182	Total	Mg	0
			182	182	
58	j	2	Total	Mg	0
			2	2	
58	n	2	Total	Mg	0
			2	2	
58	p	1	Total	Mg	0
			1	1	
58	w	1	Total	Mg	0
			1	1	
58	x	2	Total	Mg	0
			2	2	
58	v	3	Total	Mg	0
			3	3	
58	z	2	Total	Mg	0
			2	2	
58	A	640	Total	Mg	0
			640	640	

Continued on next page...

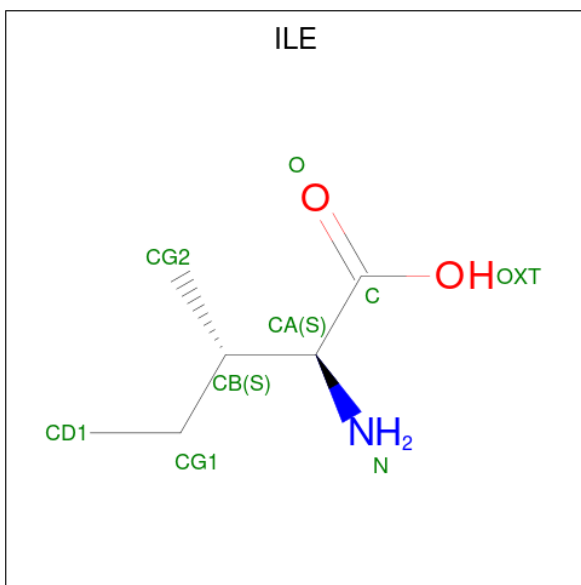
Continued from previous page...

Mol	Chain	Residues	Atoms		AltConf
58	B	9	Total 9	Mg 9	0
58	D	1	Total 1	Mg 1	0
58	E	2	Total 2	Mg 2	0
58	G	1	Total 1	Mg 1	0
58	L	3	Total 3	Mg 3	0
58	N	5	Total 5	Mg 5	0
58	R	2	Total 2	Mg 2	0
58	U	1	Total 1	Mg 1	0
58	V	2	Total 2	Mg 2	0
58	W	1	Total 1	Mg 1	0
58	Z	1	Total 1	Mg 1	0
58	2	2	Total 2	Mg 2	0
58	4	3	Total 3	Mg 3	0
58	6	6	Total 6	Mg 6	0
58	8	2	Total 2	Mg 2	0

- Molecule 59 is POTASSIUM ION (CCD ID: K) (formula: K).

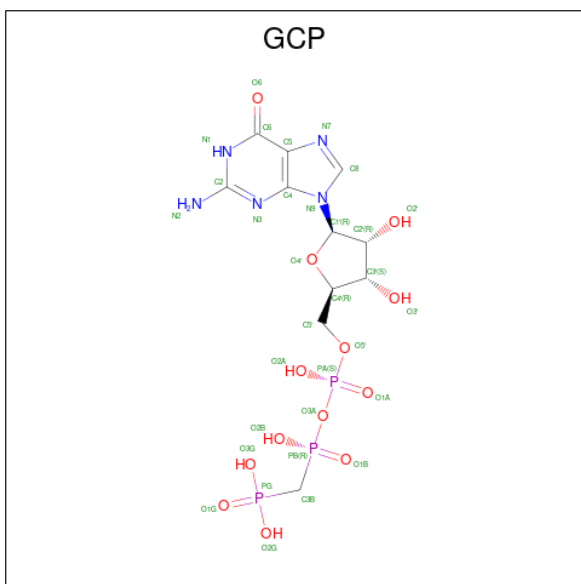
Mol	Chain	Residues	Atoms		AltConf
59	a	1	Total 1	K 1	0
59	1	1	Total 1	K 1	0

- Molecule 60 is ISOLEUCINE (CCD ID: ILE) (formula: C₆H₁₃NO₂) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				AltConf
60	w	1	Total	C	N	O	0
			8	6	1	1	
60	y	1	Total	C	N	O	0
			8	6	1	1	

- Molecule 61 is PHOSPHOMETHYLPHOSPHONIC ACID GUANYLATE ESTER (CCD ID: GCP) (formula: C₁₁H₁₈N₅O₁₃P₃).



Mol	Chain	Residues	Atoms					AltConf
61	z	1	Total	C	N	O	P	0
			32	11	5	13	3	

- Molecule 62 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
62	3	1	Total 1	Zn 1	0
62	8	1	Total 1	Zn 1	0

- Molecule 63 is water.

Mol	Chain	Residues	Atoms		AltConf
63	a	131	Total 131	O 131	0
63	i	2	Total 2	O 2	0
63	l	1	Total 1	O 1	0
63	m	1	Total 1	O 1	0
63	n	3	Total 3	O 3	0
63	p	4	Total 4	O 4	0
63	t	1	Total 1	O 1	0
63	v	1	Total 1	O 1	0
63	A	517	Total 517	O 517	0
63	B	8	Total 8	O 8	0
63	C	3	Total 3	O 3	0
63	D	2	Total 2	O 2	0
63	E	1	Total 1	O 1	0
63	L	2	Total 2	O 2	0
63	N	4	Total 4	O 4	0
63	P	5	Total 5	O 5	0
63	S	5	Total 5	O 5	0

Continued on next page...

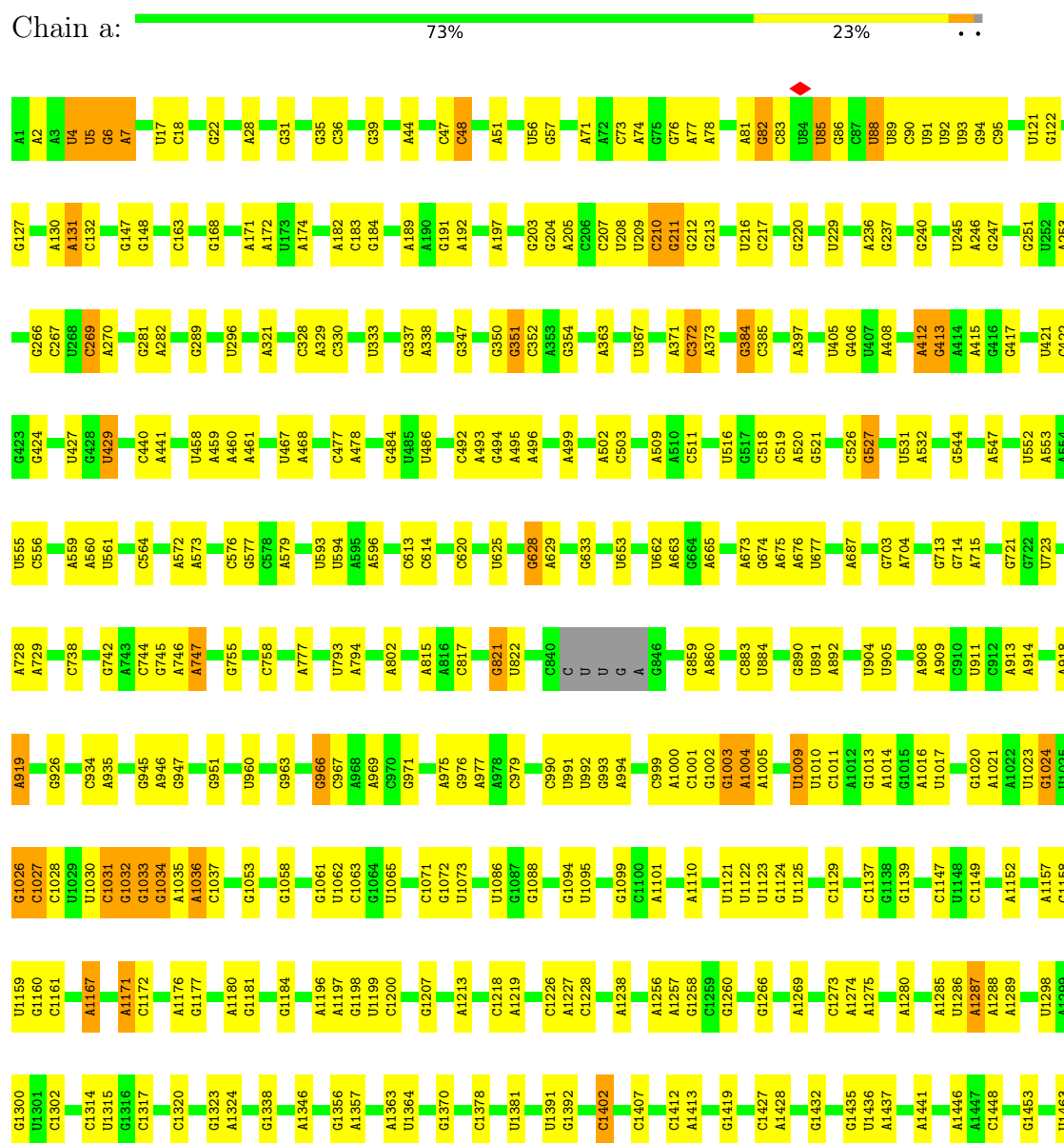
Continued from previous page...

Mol	Chain	Residues	Atoms		AltConf
63	T	3	Total 3	O 3	0
63	U	2	Total 2	O 2	0
63	V	2	Total 2	O 2	0
63	W	4	Total 4	O 4	0
63	Y	3	Total 3	O 3	0
63	2	1	Total 1	O 1	0
63	4	5	Total 5	O 5	0
63	6	3	Total 3	O 3	0
63	7	1	Total 1	O 1	0
63	8	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.

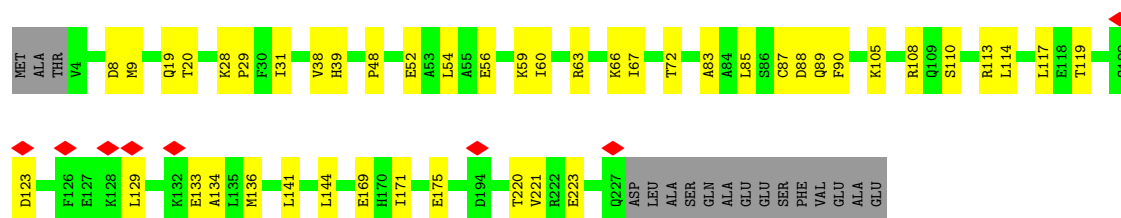
• Molecule 1: 16S Ribosomal RNA





• Molecule 2: 30S ribosomal protein S2

Chain b: 74% 19% 7%



• Molecule 3: 30S ribosomal protein S3

Chain c: 78% 10% 12%



• Molecule 4: 30S ribosomal protein S4

Chain d: 89% 10%



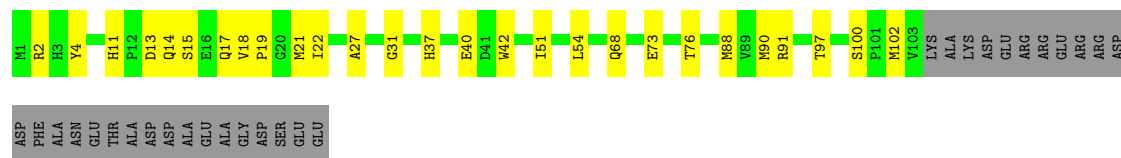
• Molecule 5: 30S ribosomal protein S5

Chain e: 81% 12% 7%



• Molecule 6: 30S ribosomal protein S6

Chain f: 58% 21% 21%



• Molecule 7: 30S ribosomal protein S7

Chain g:  84% 13%



- Molecule 8: 30S ribosomal protein S8

Chain h:  88% 11%



- Molecule 9: 30S ribosomal protein S9

Chain i:  78% 19%



- Molecule 10: 30S ribosomal protein S10

Chain j:  67% 28% 5%



- Molecule 11: 30S ribosomal protein S11

Chain k:  78% 12% 9%



- Molecule 12: 30S ribosomal protein S12

Chain l:  90% 7%



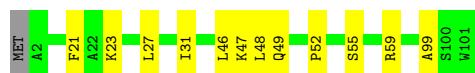
- Molecule 13: 30S ribosomal protein S13

Chain m:  82% 15%



- Molecule 14: 30S ribosomal protein S14

Chain n:  87% 12%



- Molecule 15: 30S ribosomal protein S15

Chain o:  84% 15%



- Molecule 16: 30S ribosomal protein S16

Chain p:  90% 9%



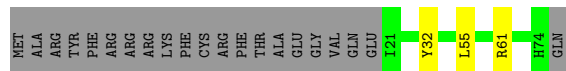
- Molecule 17: 30S ribosomal protein S17

Chain q:  88% 6% 6%



- Molecule 18: 30S ribosomal protein S18

Chain r:  68% 28%



- Molecule 19: 30S ribosomal protein S19

Chain s:  77% 13% 10%

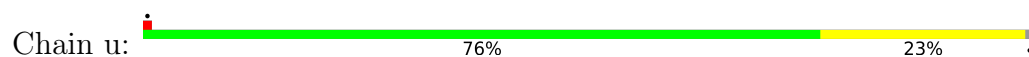


- Molecule 20: 30S ribosomal protein S20

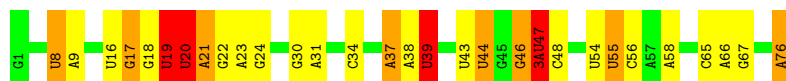
Chain t:  85% 14%



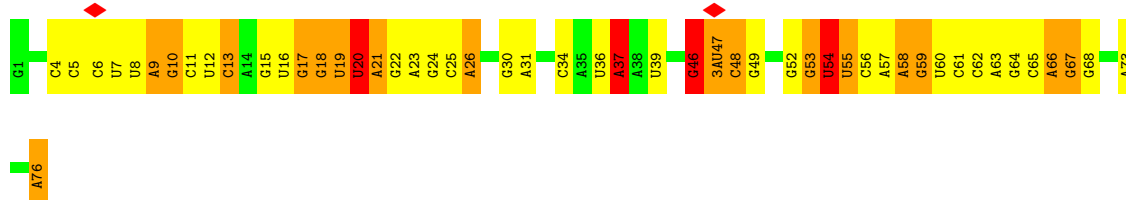
- Molecule 21: 30S ribosomal protein S21



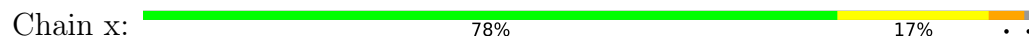
- Molecule 22: Isoleucine tRNA



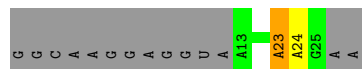
- Molecule 22: Isoleucine tRNA



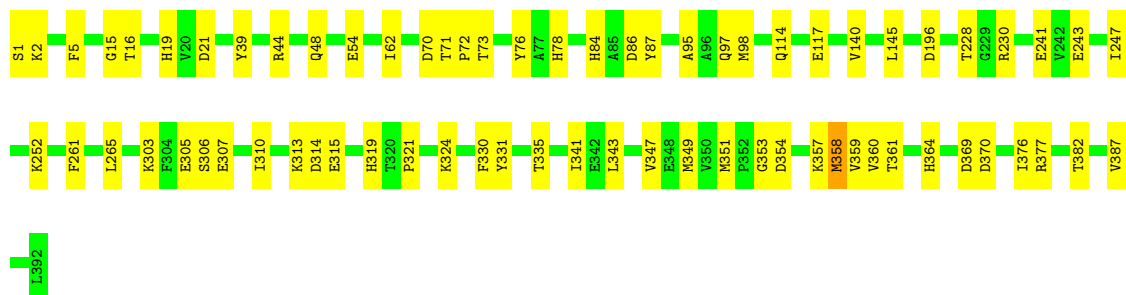
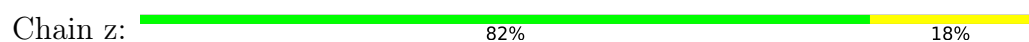
- Molecule 23: P-site initiator tRNA



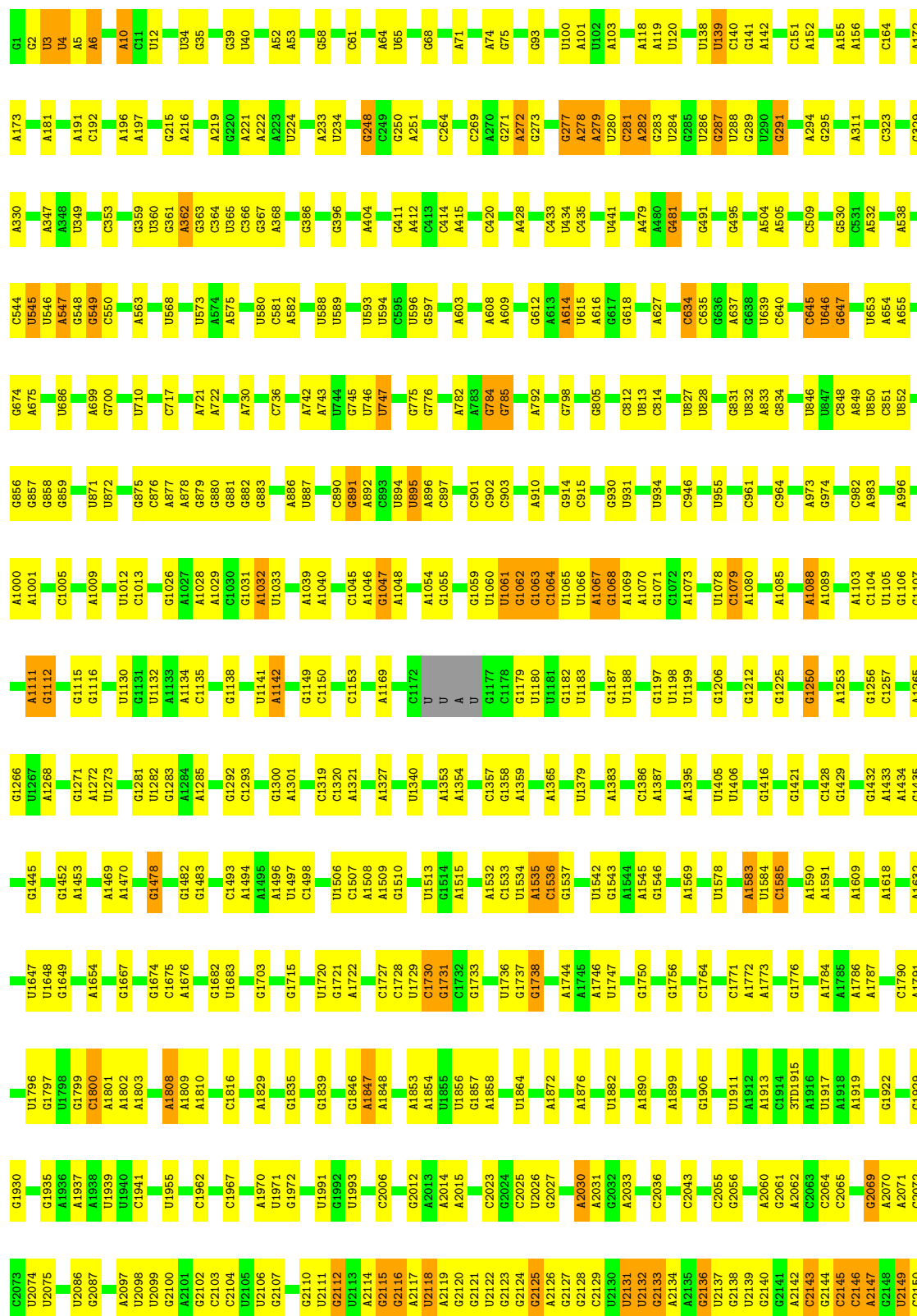
- Molecule 24: M-I mRNA

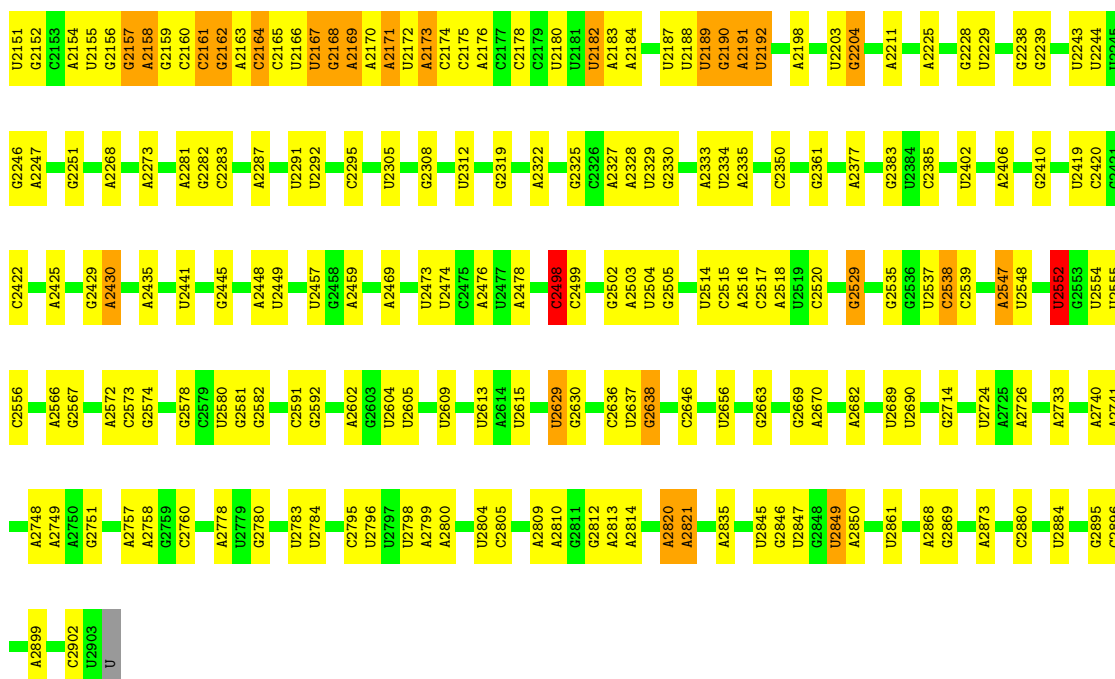


- Molecule 25: Elongation factor Tu



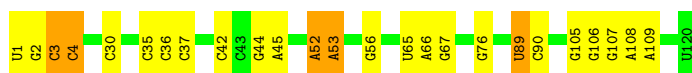
● Molecule 26: 23S Ribosomal RNA

Chain A:  74% 23%



• Molecule 27: 5S Ribosomal RNA

Chain B: 79% 17%



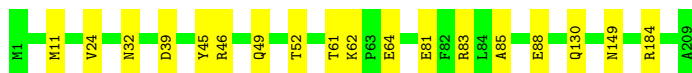
• Molecule 28: 50S ribosomal protein L2

Chain C: 92% 7%



• Molecule 29: 50S ribosomal protein L3

Chain D: 91% 9%



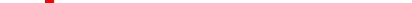
• Molecule 30: 50S ribosomal protein L4

Chain E: 89% 11%

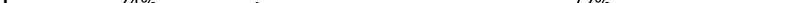


• Molecule 31: 50S ribosomal protein L5

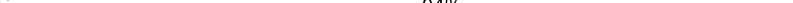
MET	A2		D6	Y7	Y8	V12	P29	M38	A53	G62	S73	Q81	G82	Y83	P84	L85	R95	T105	A119	F138	P139	E140	A160	K161	E165	G166	R167	A178	LYS
-----	----	--	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------	------	------	------	------	------	------	------	------	------	------	-----

- Chain G:  82% 17%

MET	S2	A5	V9	V17	V23	I26	G31	T36	E42	V43	K44	D47	L50	T51	F52	R55	Q64	A65	G66		L72	V79	T80	E81	V102	Q116	C125	I131	V132	L133	I141	Y164	E167	K175	K176	X177
-----	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	--	-----	-----	-----	-----	------	------	------	------	------	------	------	------	------	------	------	------

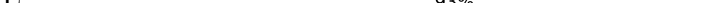
- Chain H:  24% 72%

Sequence logo for the 10th position. The y-axis represents information content in bits (0.00 to 0.35). The x-axis lists amino acids. The 10th position (index 9) is highlighted with a red diamond, indicating a strong preference for ASP (0.35 bits) and GLY (0.30 bits).

- Chain J:  47% 94% 5%

The image displays a complete set of human chromosomes, arranged in two rows. The top row includes chromosomes 1 through 10, 13 through 18, 21, and the X chromosome. The bottom row includes chromosomes 11 through 12, 19 through 20, 22, and the Y chromosome. Each chromosome is represented by a colored bar with its name and number. The chromosomes are labeled as follows:

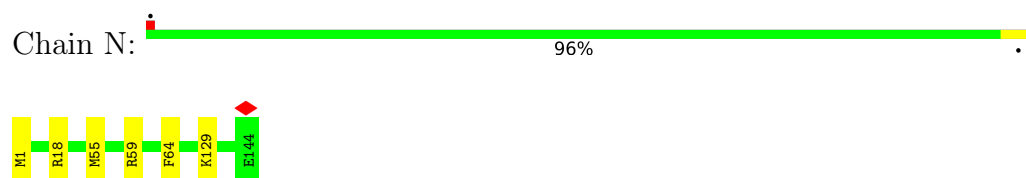
- Row 1: 1 (blue), 2 (orange), 3 (green), 4 (red), 5 (purple), 6 (brown), 7 (pink), 8 (gray), 9 (olive), 10 (yellow), 13 (dark blue), 14 (light blue), 15 (teal), 16 (dark green), 17 (medium green), 18 (light green), 21 (yellow-green), X (pink).
- Row 2: 11 (light blue), 12 (medium blue), 19 (teal), 20 (dark teal), 22 (dark blue), Y (brown), 1 (blue), 2 (orange), 3 (green), 4 (red), 5 (purple), 6 (brown), 7 (pink), 8 (gray), 9 (olive), 10 (yellow), 13 (dark blue), 14 (light blue), 15 (teal), 16 (dark green), 17 (medium green), 18 (light green), 21 (yellow-green), X (pink).

- Chain L:  93% 7%

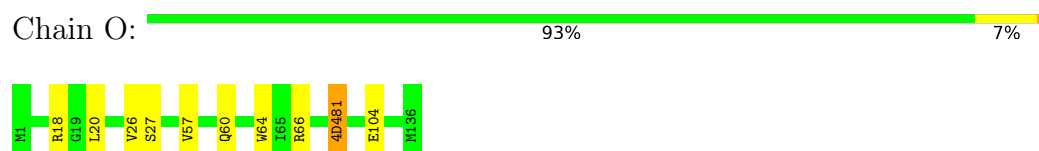
M1 K2 T3 K12 R13 T30 D49 R96 P97 E98 R99 E102 M108 I142

- Chain M: 94% 6%

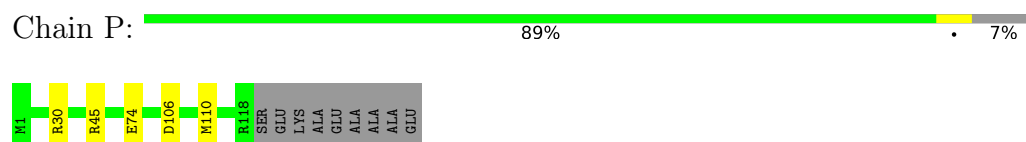
- Molecule 37: 50S ribosomal protein L15



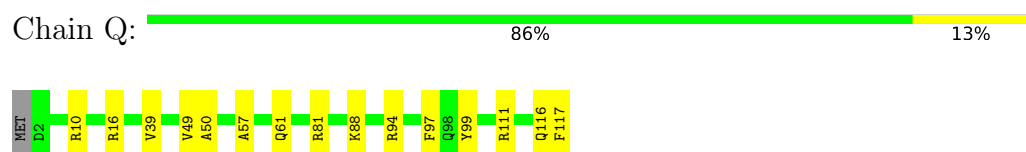
- Molecule 38: 50S ribosomal protein L16



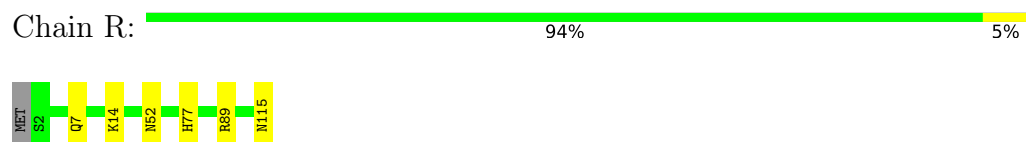
- Molecule 39: 50S ribosomal protein L17



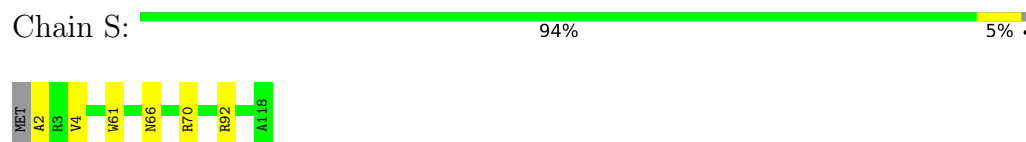
- Molecule 40: 50S ribosomal protein L18



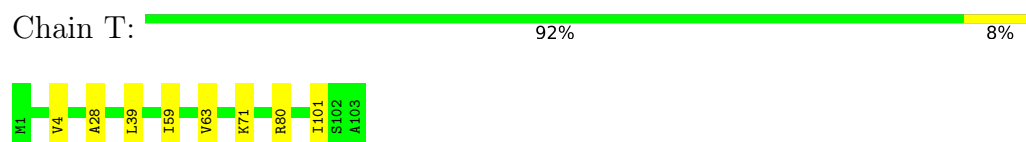
- Molecule 41: 50S ribosomal protein L19



- Molecule 42: 50S ribosomal protein L20



- Molecule 43: Ribosomal protein L21



- Molecule 44: 50S ribosomal protein L22

Chain U:  85% 15%



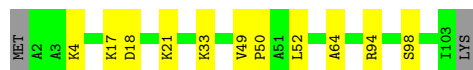
- Molecule 45: 50S ribosomal protein L23

Chain V:  81% 12% 7%



- Molecule 46: 50S ribosomal protein L24

Chain W:  88% 11% .



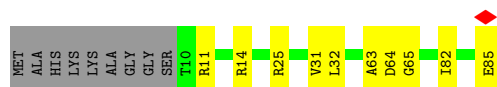
- Molecule 47: 50S ribosomal protein L25

Chain X:  89% 11%



- Molecule 48: 50S ribosomal protein L27

Chain Y:  78% 12% 11%



- Molecule 49: 50S ribosomal protein L28

Chain Z:  94% 5% .



- Molecule 50: 50S ribosomal protein L29

Chain 1:  83% 14% .



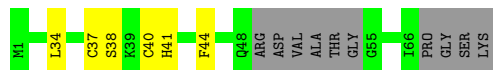
- Molecule 51: 50S ribosomal protein L30

Chain 2:  88% 10% .



- Molecule 52: 50S ribosomal protein L31

Chain 3:  77% 9% 14%



- Molecule 53: 50S ribosomal protein L32

Chain 4:  86% 11% .

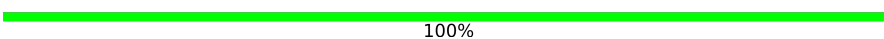


- Molecule 54: 50S ribosomal protein L33

Chain 5:  82% 11% 7%



- Molecule 55: 50S ribosomal protein L34

Chain 6:  100%

There are no outlier residues recorded for this chain.

- Molecule 56: 50S ribosomal protein L35

Chain 7:  89% 9% .



- Molecule 57: 50S ribosomal protein L36

Chain 8:  82% 18%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	135882	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	40	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2300	Depositor
Magnification	96000	Depositor
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	1.944	Depositor
Minimum map value	-0.636	Depositor
Average map value	-0.003	Depositor
Map value standard deviation	0.097	Depositor
Recommended contour level	0.19	Depositor
Map size (Å)	440.32, 440.32, 440.32	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.86, 0.86, 0.86	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 4SU, 3AU, MS6, GCP, 2MA, MA6, MG, 5MC, OMU, OMC, 1MG, PSU, 5MU, G7M, ZN, 6MZ, 4D4, OMG, D2T, 4OC, 2MG, K, 3TD, MEQ, M3X, UR3, T6A, IAS, H2U

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# $ Z > 5$	RMSZ	# $ Z > 5$
1	a	0.17	0/36475	0.31	0/56895
2	b	0.15	0/1785	0.43	0/2404
3	c	0.14	0/1651	0.31	0/2225
4	d	0.16	0/1665	0.36	0/2227
5	e	0.15	0/1165	0.38	0/1568
6	f	0.16	0/858	0.41	0/1160
7	g	0.13	0/1206	0.32	0/1617
8	h	0.16	0/989	0.40	0/1326
9	i	0.15	0/1034	0.34	0/1375
10	j	0.21	0/796	0.51	0/1077
11	k	0.15	0/884	0.36	0/1191
12	l	0.15	0/945	0.38	0/1268
13	m	0.14	0/900	0.34	0/1204
14	n	0.16	0/817	0.31	0/1088
15	o	0.19	0/722	0.40	0/964
16	p	0.14	0/653	0.35	0/877
17	q	0.16	0/650	0.41	0/871
18	r	0.14	0/453	0.31	0/609
19	s	0.12	0/680	0.29	0/915
20	t	0.17	0/676	0.30	0/895
21	u	0.13	0/597	0.28	0/792
22	w	0.31	1/1552 (0.1%)	0.35	0/2412
22	y	0.31	1/1549 (0.1%)	0.36	0/2408
23	x	0.18	0/1725	0.29	0/2689
24	v	0.15	0/320	0.30	0/497
25	z	0.18	0/3085	0.43	1/4173 (0.0%)
26	A	0.19	1/69147 (0.0%)	0.34	0/107869
27	B	0.17	0/2876	0.35	0/4483
28	C	0.17	0/2121	0.38	0/2852
29	D	0.18	0/1576	0.36	0/2119
30	E	0.14	0/1571	0.33	0/2113

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
31	F	0.13	0/1434	0.33	0/1926
32	G	0.14	0/1343	0.33	0/1816
33	H	0.14	0/306	0.39	0/413
34	J	0.10	0/692	0.28	0/960
35	L	0.16	0/1152	0.33	0/1551
36	M	0.16	0/955	0.36	0/1279
37	N	0.15	0/1061	0.30	0/1412
38	O	0.16	0/1073	0.34	0/1433
39	P	0.16	0/958	0.32	0/1281
40	Q	0.14	0/902	0.31	0/1209
41	R	0.15	0/929	0.27	0/1242
42	S	0.16	0/960	0.30	0/1278
43	T	0.16	0/829	0.37	0/1107
44	U	0.14	0/864	0.28	0/1156
45	V	0.15	0/744	0.35	0/994
46	W	0.16	0/787	0.42	0/1051
47	X	0.14	0/766	0.31	0/1025
48	Y	0.16	0/587	0.38	0/776
49	Z	0.15	0/635	0.32	0/848
50	1	0.11	0/496	0.25	0/660
51	2	0.15	0/453	0.31	0/605
52	3	0.13	0/484	0.36	0/645
53	4	0.17	0/440	0.37	0/588
54	5	0.13	0/424	0.35	0/565
55	6	0.16	0/376	0.38	0/494
56	7	0.17	0/513	0.34	0/676
57	8	0.16	0/303	0.35	0/397
All	All	0.18	3/161589 (0.0%)	0.34	1/241550 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
38	O	0	1
56	7	0	1
All	All	0	2

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
22	w	76	A	C6-N6	7.22	1.48	1.33
22	y	76	A	C6-N6	7.06	1.48	1.33
26	A	2552	OMU	O3'-P	5.06	1.61	1.56

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
25	z	358	MET	N-CA-CB	5.43	120.36	111.08

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
56	7	30	ARG	Peptide
38	O	81	4D4	Mainchain

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	a	32825	0	16539	179	0
2	b	1754	0	1782	30	0
3	c	1624	0	1696	14	0
4	d	1643	0	1707	16	0
5	e	1152	0	1196	13	0
6	f	839	0	833	18	0
7	g	1191	0	1245	13	0
8	h	979	0	1031	7	0
9	i	1022	0	1070	21	0
10	j	786	0	828	20	0
11	k	877	0	884	11	0
12	l	942	0	999	6	0
13	m	891	0	952	13	0
14	n	805	0	844	11	0
15	o	714	0	734	8	0
16	p	643	0	661	4	0
17	q	641	0	682	4	0
18	r	446	0	472	2	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
19	s	663	0	688	10	0
20	t	670	0	719	8	0
21	u	589	0	629	11	0
22	w	1647	0	832	12	0
22	y	1644	0	831	61	0
23	x	1625	0	829	5	0
24	v	284	0	142	1	0
25	z	3029	0	3041	46	0
26	A	62252	0	31333	345	0
27	B	2572	0	1301	9	0
28	C	2082	0	2154	12	0
29	D	1566	0	1618	12	0
30	E	1552	0	1619	14	0
31	F	1410	0	1444	13	0
32	G	1323	0	1371	18	0
33	H	303	0	327	4	0
34	J	693	0	344	6	0
35	L	1129	0	1162	9	0
36	M	946	0	1023	6	0
37	N	1052	0	1127	5	0
38	O	1075	0	1146	7	0
39	P	945	0	989	4	0
40	Q	892	0	923	9	0
41	R	917	0	962	4	0
42	S	947	0	1019	5	0
43	T	816	0	839	5	0
44	U	857	0	922	9	0
45	V	738	0	807	6	0
46	W	779	0	831	7	0
47	X	753	0	780	6	0
48	Y	580	0	594	6	0
49	Z	625	0	652	2	0
50	1	495	0	526	6	0
51	2	449	0	488	4	0
52	3	476	0	467	5	0
53	4	434	0	445	3	0
54	5	417	0	451	3	0
55	6	373	0	407	0	0
56	7	504	0	572	4	0
57	8	302	0	340	4	0
58	2	2	0	0	0	0
58	4	3	0	0	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
58	6	6	0	0	0	0
58	8	2	0	0	0	0
58	A	640	0	0	0	0
58	B	9	0	0	0	0
58	D	1	0	0	0	0
58	E	2	0	0	0	0
58	G	1	0	0	0	0
58	L	3	0	0	0	0
58	N	5	0	0	0	0
58	R	2	0	0	0	0
58	U	1	0	0	0	0
58	V	2	0	0	0	0
58	W	1	0	0	0	0
58	Z	1	0	0	0	0
58	a	182	0	0	0	0
58	j	2	0	0	0	0
58	n	2	0	0	0	0
58	p	1	0	0	0	0
58	v	3	0	0	0	0
58	w	1	0	0	0	0
58	x	2	0	0	0	0
58	z	2	0	0	0	0
59	a	1	0	0	0	0
59	l	1	0	0	0	0
60	w	8	0	10	2	0
60	y	8	0	10	0	0
61	z	32	0	14	1	0
62	3	1	0	0	0	0
62	8	1	0	0	0	0
63	2	1	0	0	0	0
63	4	5	0	0	0	0
63	6	3	0	0	0	0
63	7	1	0	0	0	0
63	8	1	0	0	0	0
63	A	517	0	0	5	0
63	B	8	0	0	0	0
63	C	3	0	0	0	0
63	D	2	0	0	0	0
63	E	1	0	0	0	0
63	L	2	0	0	0	0
63	N	4	0	0	0	0
63	P	5	0	0	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
63	S	5	0	0	1	0
63	T	3	0	0	0	0
63	U	2	0	0	0	0
63	V	2	0	0	0	0
63	W	4	0	0	0	0
63	Y	3	0	0	0	0
63	a	131	0	0	1	0
63	i	2	0	0	0	0
63	l	1	0	0	0	0
63	m	1	0	0	0	0
63	n	3	0	0	0	0
63	p	4	0	0	0	0
63	t	1	0	0	0	0
63	v	1	0	0	0	0
All	All	151823	0	100883	1017	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 4.

The worst 5 of 1017 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:a:1009:U:H3	1:a:1020:G:H1	1.05	0.96
14:n:49:GLN:HE22	19:s:13:LEU:H	1.08	0.95
1:a:76:G:H1	1:a:93:U:H3	0.97	0.94
22:y:15:G:N2	22:y:48:C:H42	1.64	0.94
22:y:15:G:H22	22:y:48:C:N4	1.64	0.93

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	b	222/241 (92%)	206 (93%)	16 (7%)	0	100	100
3	c	204/233 (88%)	194 (95%)	10 (5%)	0	100	100
4	d	203/206 (98%)	199 (98%)	4 (2%)	0	100	100
5	e	154/167 (92%)	148 (96%)	6 (4%)	0	100	100
6	f	101/131 (77%)	96 (95%)	5 (5%)	0	100	100
7	g	150/156 (96%)	140 (93%)	10 (7%)	0	100	100
8	h	127/130 (98%)	121 (95%)	6 (5%)	0	100	100
9	i	125/130 (96%)	119 (95%)	6 (5%)	0	100	100
10	j	96/103 (93%)	91 (95%)	4 (4%)	1 (1%)	12	39
11	k	113/129 (88%)	104 (92%)	9 (8%)	0	100	100
12	l	118/124 (95%)	114 (97%)	4 (3%)	0	100	100
13	m	113/118 (96%)	106 (94%)	7 (6%)	0	100	100
14	n	98/101 (97%)	96 (98%)	2 (2%)	0	100	100
15	o	86/89 (97%)	84 (98%)	2 (2%)	0	100	100
16	p	79/82 (96%)	75 (95%)	4 (5%)	0	100	100
17	q	77/84 (92%)	75 (97%)	2 (3%)	0	100	100
18	r	52/75 (69%)	51 (98%)	1 (2%)	0	100	100
19	s	81/92 (88%)	77 (95%)	4 (5%)	0	100	100
20	t	84/87 (97%)	81 (96%)	3 (4%)	0	100	100
21	u	68/71 (96%)	65 (96%)	3 (4%)	0	100	100
25	z	390/392 (100%)	361 (93%)	27 (7%)	2 (0%)	24	54
28	C	269/273 (98%)	258 (96%)	11 (4%)	0	100	100
29	D	206/209 (99%)	196 (95%)	9 (4%)	1 (0%)	24	54
30	E	199/201 (99%)	189 (95%)	10 (5%)	0	100	100
31	F	175/179 (98%)	170 (97%)	5 (3%)	0	100	100
32	G	174/177 (98%)	169 (97%)	5 (3%)	0	100	100
33	H	39/149 (26%)	33 (85%)	6 (15%)	0	100	100
34	J	139/142 (98%)	125 (90%)	13 (9%)	1 (1%)	18	48
35	L	140/142 (99%)	137 (98%)	3 (2%)	0	100	100
36	M	121/123 (98%)	115 (95%)	6 (5%)	0	100	100
37	N	142/144 (99%)	140 (99%)	2 (1%)	0	100	100
38	O	132/136 (97%)	129 (98%)	3 (2%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
39	P	116/127 (91%)	114 (98%)	2 (2%)	0	100	100
40	Q	114/117 (97%)	112 (98%)	2 (2%)	0	100	100
41	R	112/115 (97%)	110 (98%)	2 (2%)	0	100	100
42	S	115/118 (98%)	114 (99%)	1 (1%)	0	100	100
43	T	101/103 (98%)	97 (96%)	4 (4%)	0	100	100
44	U	108/110 (98%)	104 (96%)	4 (4%)	0	100	100
45	V	91/100 (91%)	83 (91%)	7 (8%)	1 (1%)	11	36
46	W	100/104 (96%)	94 (94%)	6 (6%)	0	100	100
47	X	92/94 (98%)	90 (98%)	2 (2%)	0	100	100
48	Y	74/85 (87%)	71 (96%)	3 (4%)	0	100	100
49	Z	75/78 (96%)	74 (99%)	1 (1%)	0	100	100
50	1	59/63 (94%)	55 (93%)	4 (7%)	0	100	100
51	2	56/59 (95%)	55 (98%)	1 (2%)	0	100	100
52	3	56/70 (80%)	52 (93%)	4 (7%)	0	100	100
53	4	53/57 (93%)	52 (98%)	1 (2%)	0	100	100
54	5	49/55 (89%)	44 (90%)	5 (10%)	0	100	100
55	6	44/46 (96%)	43 (98%)	1 (2%)	0	100	100
56	7	62/65 (95%)	57 (92%)	5 (8%)	0	100	100
57	8	36/38 (95%)	36 (100%)	0	0	100	100
All	All	5990/6420 (93%)	5721 (96%)	263 (4%)	6 (0%)	49	77

5 of 6 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
25	z	314	ASP
10	j	57	VAL
29	D	149	ASN
45	V	89	GLU
34	J	33	VAL

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	b	186/199 (94%)	186 (100%)	0	100	100
3	c	170/190 (90%)	170 (100%)	0	100	100
4	d	172/173 (99%)	172 (100%)	0	100	100
5	e	119/126 (94%)	119 (100%)	0	100	100
6	f	90/112 (80%)	90 (100%)	0	100	100
7	g	125/129 (97%)	125 (100%)	0	100	100
8	h	104/105 (99%)	104 (100%)	0	100	100
9	i	105/107 (98%)	105 (100%)	0	100	100
10	j	86/90 (96%)	86 (100%)	0	100	100
11	k	89/98 (91%)	89 (100%)	0	100	100
12	l	101/103 (98%)	101 (100%)	0	100	100
13	m	93/96 (97%)	93 (100%)	0	100	100
14	n	83/84 (99%)	83 (100%)	0	100	100
15	o	76/77 (99%)	76 (100%)	0	100	100
16	p	65/65 (100%)	65 (100%)	0	100	100
17	q	73/78 (94%)	73 (100%)	0	100	100
18	r	47/65 (72%)	47 (100%)	0	100	100
19	s	72/79 (91%)	72 (100%)	0	100	100
20	t	65/66 (98%)	65 (100%)	0	100	100
21	u	60/61 (98%)	60 (100%)	0	100	100
25	z	324/325 (100%)	324 (100%)	0	100	100
28	C	216/218 (99%)	216 (100%)	0	100	100
29	D	163/163 (100%)	163 (100%)	0	100	100
30	E	165/165 (100%)	165 (100%)	0	100	100
31	F	148/150 (99%)	148 (100%)	0	100	100
32	G	137/138 (99%)	137 (100%)	0	100	100
33	H	32/114 (28%)	32 (100%)	0	100	100
35	L	116/116 (100%)	116 (100%)	0	100	100
36	M	104/104 (100%)	104 (100%)	0	100	100
37	N	103/103 (100%)	103 (100%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
38	O	107/107 (100%)	107 (100%)	0	100	100
39	P	98/103 (95%)	98 (100%)	0	100	100
40	Q	86/87 (99%)	86 (100%)	0	100	100
41	R	99/100 (99%)	99 (100%)	0	100	100
42	S	89/90 (99%)	89 (100%)	0	100	100
43	T	84/84 (100%)	84 (100%)	0	100	100
44	U	93/93 (100%)	93 (100%)	0	100	100
45	V	80/84 (95%)	80 (100%)	0	100	100
46	W	83/85 (98%)	83 (100%)	0	100	100
47	X	78/78 (100%)	78 (100%)	0	100	100
48	Y	57/63 (90%)	57 (100%)	0	100	100
49	Z	67/68 (98%)	67 (100%)	0	100	100
50	1	54/55 (98%)	54 (100%)	0	100	100
51	2	48/49 (98%)	48 (100%)	0	100	100
52	3	54/62 (87%)	54 (100%)	0	100	100
53	4	46/48 (96%)	46 (100%)	0	100	100
54	5	46/49 (94%)	46 (100%)	0	100	100
55	6	37/38 (97%)	37 (100%)	0	100	100
56	7	51/52 (98%)	51 (100%)	0	100	100
57	8	34/34 (100%)	34 (100%)	0	100	100
All	All	4880/5128 (95%)	4880 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 66 such sidechains are listed below:

Mol	Chain	Res	Type
44	U	61	ASN
45	V	48	GLN
50	1	58	ASN
25	z	22	HIS
20	t	61	GLN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	a	1527/1542 (99%)	200 (13%)	0
22	w	75/76 (98%)	18 (24%)	0
22	y	75/76 (98%)	23 (30%)	0
23	x	75/77 (97%)	7 (9%)	0
24	v	12/27 (44%)	1 (8%)	0
26	A	2897/2904 (99%)	397 (13%)	14 (0%)
27	B	119/120 (99%)	17 (14%)	3 (2%)
All	All	4780/4822 (99%)	663 (13%)	17 (0%)

5 of 663 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	a	4	U
1	a	5	U
1	a	6	G
1	a	7	A
1	a	22	G

5 of 17 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
27	B	3	C
27	B	66	A
26	A	1730	C
26	A	2097	A
26	A	2189	U

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

65 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	5MU	y	54	22	19,22,23	1.37	5 (26%)	27,32,35	2.05	6 (22%)
26	6MZ	A	1618	26	22,25,26	1.45	3 (13%)	29,36,39	2.23	9 (31%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
26	5MU	A	1939	26,58	19,22,23	1.43	5 (26%)	27,32,35	2.19	6 (22%)
1	MA6	a	1518	1	23,26,27	1.47	4 (17%)	33,38,41	2.43	13 (39%)
23	PSU	x	55	23	18,21,22	1.37	2 (11%)	21,30,33	2.06	3 (14%)
22	OMG	w	17	22	23,26,27	1.19	3 (13%)	32,38,41	2.02	6 (18%)
29	MEQ	D	150	29	8,9,10	0.51	0	5,10,12	0.17	0
26	3TD	A	1915	26	19,22,23	4.19	7 (36%)	23,32,35	1.72	2 (8%)
26	6MZ	A	2030	26	22,25,26	1.47	5 (22%)	29,36,39	2.27	9 (31%)
26	PSU	A	2605	26	18,21,22	1.39	3 (16%)	21,30,33	2.13	4 (19%)
26	PSU	A	2580	26	18,21,22	1.39	4 (22%)	21,30,33	2.07	5 (23%)
1	5MC	a	967	1	19,22,23	1.57	3 (15%)	26,32,35	1.13	3 (11%)
23	5MU	x	54	23	19,22,23	1.40	6 (31%)	27,32,35	2.14	6 (22%)
1	UR3	a	1498	1	19,22,23	0.94	0	26,32,35	1.76	2 (7%)
26	H2U	A	2449	26	18,21,22	1.12	3 (16%)	19,30,33	0.86	0
26	PSU	A	2504	26	18,21,22	1.39	2 (11%)	21,30,33	2.07	4 (19%)
26	G7M	A	2069	26	23,26,27	1.55	3 (13%)	34,39,42	1.73	5 (14%)
1	PSU	a	516	1,58	18,21,22	1.37	3 (16%)	21,30,33	2.05	5 (23%)
23	4SU	x	8	23	18,21,22	1.83	4 (22%)	25,30,33	2.25	4 (16%)
1	2MG	a	1516	1	23,26,27	1.23	3 (13%)	33,38,41	2.27	9 (27%)
26	PSU	A	2604	26	18,21,22	1.40	3 (16%)	21,30,33	2.10	4 (19%)
26	2MG	A	1835	26	23,26,27	1.26	4 (17%)	33,38,41	2.25	7 (21%)
26	5MU	A	747	26	19,22,23	1.41	6 (31%)	27,32,35	2.04	6 (22%)
26	PSU	A	955	26	18,21,22	1.42	3 (16%)	21,30,33	2.05	4 (19%)
22	T6A	y	37	22	31,34,35	1.41	3 (9%)	43,49,52	1.88	11 (25%)
22	4SU	w	8	22	18,21,22	1.94	5 (27%)	25,30,33	2.20	5 (20%)
22	G7M	w	46	22	23,26,27	1.55	3 (13%)	34,39,42	1.76	5 (14%)
1	5MC	a	1407	1	19,22,23	1.53	3 (15%)	26,32,35	1.20	3 (11%)
22	G7M	y	46	22	23,26,27	1.52	3 (13%)	34,39,42	1.74	5 (14%)
22	PSU	w	55	22	18,21,22	1.37	2 (11%)	21,30,33	2.09	4 (19%)
22	4SU	y	8	22	18,21,22	1.90	5 (27%)	25,30,33	2.30	5 (20%)
22	PSU	y	39	22	18,21,22	1.41	3 (16%)	21,30,33	1.98	3 (14%)
1	G7M	a	527	1	23,26,27	1.54	3 (13%)	34,39,42	1.74	5 (14%)
22	H2U	w	20	22	18,21,22	0.99	2 (11%)	19,30,33	0.85	1 (5%)
38	4D4	O	81	38	9,11,12	2.67	3 (33%)	7,13,15	0.86	0
26	1MG	A	745	26	23,26,27	1.15	3 (13%)	33,39,42	1.78	5 (15%)
22	5MU	w	54	22	19,22,23	1.38	6 (31%)	27,32,35	2.21	6 (22%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
26	PSU	A	1917	26	18,21,22	1.42	4 (22%)	21,30,33	2.04	3 (14%)
26	OMG	A	2251	26,23	23,26,27	1.21	3 (13%)	32,38,41	2.03	7 (21%)
26	5MC	A	1962	26	19,22,23	1.59	3 (15%)	26,32,35	1.14	3 (11%)
22	H2U	y	20	22	18,21,22	1.05	2 (11%)	19,30,33	0.75	1 (5%)
1	MA6	a	1519	1	23,26,27	1.47	5 (21%)	33,38,41	2.43	15 (45%)
22	OMG	y	17	22	23,26,27	1.17	3 (13%)	32,38,41	2.02	6 (18%)
22	M3X	w	34	22,24	24,30,31	2.19	4 (16%)	24,41,44	1.02	1 (4%)
22	PSU	y	55	22	18,21,22	1.36	2 (11%)	21,30,33	2.00	3 (14%)
26	PSU	A	2457	26	18,21,22	1.40	3 (16%)	21,30,33	2.07	4 (19%)
26	2MA	A	2503	26,58	22,25,26	1.45	4 (18%)	32,37,40	2.25	9 (28%)
11	IAS	k	119	11	6,7,8	0.98	0	3,8,10	1.46	1 (33%)
26	PSU	A	746	26,58	18,21,22	1.43	2 (11%)	21,30,33	2.10	3 (14%)
1	2MG	a	1207	1	23,26,27	1.25	4 (17%)	33,38,41	2.23	7 (21%)
22	PSU	w	39	22	18,21,22	1.40	2 (11%)	21,30,33	2.04	3 (14%)
22	3AU	y	47	22	24,28,29	2.72	9 (37%)	30,40,43	1.34	3 (10%)
1	2MG	a	966	1	23,26,27	1.28	4 (17%)	33,38,41	2.24	7 (21%)
26	OMU	A	2552	26	19,22,23	1.27	3 (15%)	25,31,34	1.85	5 (20%)
26	PSU	A	1911	26	18,21,22	1.40	3 (16%)	21,30,33	2.10	5 (23%)
23	5MC	x	32	23	19,22,23	1.46	3 (15%)	26,32,35	1.34	3 (11%)
1	4OC	a	1402	1,58	20,23,24	0.75	0	25,32,35	1.03	2 (8%)
22	H2U	y	19	22	18,21,22	1.01	2 (11%)	19,30,33	0.80	0
26	OMC	A	2498	26,58	19,22,23	0.81	0	25,31,34	1.02	1 (4%)
22	M3X	y	34	22	24,30,31	2.26	4 (16%)	24,41,44	1.10	2 (8%)
22	3AU	w	47	22	24,28,29	2.70	9 (37%)	30,40,43	1.38	3 (10%)
22	T6A	w	37	22	31,34,35	1.39	4 (12%)	43,49,52	1.95	9 (20%)
22	H2U	w	19	22	18,21,22	1.00	2 (11%)	19,30,33	0.81	1 (5%)
26	2MG	A	2445	26,58	23,26,27	1.27	3 (13%)	33,38,41	2.25	7 (21%)
12	D2T	l	89	12	8,9,10	1.42	1 (12%)	6,11,13	2.59	3 (50%)

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	5MU	y	54	22	-	4/7/25/26	0/2/2/2

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
26	6MZ	A	1618	26	-	0/9/27/28	0/3/3/3
26	5MU	A	1939	26,58	-	0/7/25/26	0/2/2/2
1	MA6	a	1518	1	-	2/11/29/30	0/3/3/3
23	PSU	x	55	23	-	0/7/25/26	0/2/2/2
22	OMG	w	17	22	-	3/9/27/28	0/3/3/3
29	MEQ	D	150	29	-	2/8/9/11	-
26	3TD	A	1915	26	-	0/7/25/26	0/2/2/2
26	6MZ	A	2030	26	-	2/9/27/28	0/3/3/3
26	PSU	A	2605	26	-	0/7/25/26	0/2/2/2
26	PSU	A	2580	26	-	0/7/25/26	0/2/2/2
1	5MC	a	967	1	-	0/7/25/26	0/2/2/2
23	5MU	x	54	23	-	0/7/25/26	0/2/2/2
1	UR3	a	1498	1	-	0/7/25/26	0/2/2/2
26	H2U	A	2449	26	-	0/7/38/39	0/2/2/2
26	PSU	A	2504	26	-	2/7/25/26	0/2/2/2
26	G7M	A	2069	26	-	0/7/25/26	0/3/3/3
1	PSU	a	516	1,58	-	0/7/25/26	0/2/2/2
23	4SU	x	8	23	-	0/7/25/26	0/2/2/2
1	2MG	a	1516	1	-	0/9/27/28	0/3/3/3
26	PSU	A	2604	26	-	0/7/25/26	0/2/2/2
26	2MG	A	1835	26	-	0/9/27/28	0/3/3/3
26	5MU	A	747	26	-	0/7/25/26	0/2/2/2
26	PSU	A	955	26	-	0/7/25/26	0/2/2/2
22	T6A	y	37	22	-	12/23/41/42	0/3/3/3
22	4SU	w	8	22	-	0/7/25/26	0/2/2/2
22	G7M	w	46	22	-	3/7/25/26	0/3/3/3
1	5MC	a	1407	1	-	0/7/25/26	0/2/2/2
22	G7M	y	46	22	-	2/7/25/26	0/3/3/3
22	PSU	w	55	22	-	2/7/25/26	0/2/2/2
22	4SU	y	8	22	-	1/7/25/26	0/2/2/2
22	PSU	y	39	22	-	1/7/25/26	0/2/2/2
1	G7M	a	527	1	-	2/7/25/26	0/3/3/3
22	H2U	w	20	22	-	5/7/38/39	0/2/2/2
38	4D4	O	81	38	-	3/11/12/14	-
26	1MG	A	745	26	-	0/7/25/26	0/3/3/3
22	5MU	w	54	22	-	0/7/25/26	0/2/2/2
26	PSU	A	1917	26	-	2/7/25/26	0/2/2/2
26	OMG	A	2251	26,23	-	0/9/27/28	0/3/3/3
26	5MC	A	1962	26	-	0/7/25/26	0/2/2/2

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
22	H2U	y	20	22	-	5/7/38/39	0/2/2/2
1	MA6	a	1519	1	-	3/11/29/30	0/3/3/3
22	OMG	y	17	22	-	0/9/27/28	0/3/3/3
22	M3X	w	34	22,24	-	8/17/37/38	0/2/2/2
22	PSU	y	55	22	-	3/7/25/26	0/2/2/2
26	PSU	A	2457	26	-	0/7/25/26	0/2/2/2
26	2MA	A	2503	26,58	-	2/7/25/26	0/3/3/3
11	IAS	k	119	11	-	0/7/7/8	-
26	PSU	A	746	26,58	-	2/7/25/26	0/2/2/2
1	2MG	a	1207	1	-	1/9/27/28	0/3/3/3
22	PSU	w	39	22	-	0/7/25/26	0/2/2/2
22	3AU	y	47	22	-	6/16/34/35	0/2/2/2
1	2MG	a	966	1	-	1/9/27/28	0/3/3/3
26	OMU	A	2552	26	-	2/9/27/28	0/2/2/2
26	PSU	A	1911	26	-	0/7/25/26	0/2/2/2
23	5MC	x	32	23	-	0/7/25/26	0/2/2/2
1	4OC	a	1402	1,58	-	2/9/29/30	0/2/2/2
22	H2U	y	19	22	-	4/7/38/39	0/2/2/2
26	OMC	A	2498	26,58	-	4/9/27/28	0/2/2/2
22	M3X	y	34	22	-	4/17/37/38	0/2/2/2
22	3AU	w	47	22	-	7/16/34/35	0/2/2/2
22	T6A	w	37	22	-	0/23/41/42	0/3/3/3
22	H2U	w	19	22	-	6/7/38/39	0/2/2/2
26	2MG	A	2445	26,58	-	0/9/27/28	0/3/3/3
12	D2T	l	89	12	-	5/7/12/14	-

The worst 5 of 216 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
26	A	1915	3TD	C6-C5	12.45	1.49	1.35
26	A	1915	3TD	C2-N1	9.68	1.49	1.37
22	y	34	M3X	C2-N2	8.96	1.48	1.34
22	w	34	M3X	C2-N2	8.63	1.47	1.34
22	w	47	3AU	C2-N1	6.33	1.47	1.38

The worst 5 of 297 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
26	A	2503	2MA	C5-C4-N3	-7.83	118.93	127.18

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
26	A	1835	2MG	C2-N3-C4	7.47	121.35	112.00
26	A	2445	2MG	C2-N3-C4	7.47	121.34	112.00
1	a	1516	2MG	C2-N3-C4	7.43	121.29	112.00
1	a	1207	2MG	C2-N3-C4	7.38	121.23	112.00

There are no chirality outliers.

5 of 113 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	a	527	G7M	O4'-C4'-C5'-O5'
1	a	527	G7M	C3'-C4'-C5'-O5'
1	a	1207	2MG	N3-C2-N2-CM2
1	a	1402	4OC	O4'-C4'-C5'-O5'
1	a	1519	MA6	C5-C6-N6-C9

There are no ring outliers.

20 monomers are involved in 27 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
22	y	54	5MU	3	0
1	a	1518	MA6	3	0
23	x	55	PSU	1	0
26	A	2030	6MZ	1	0
23	x	54	5MU	1	0
1	a	1516	2MG	1	0
22	y	37	T6A	2	0
22	y	46	G7M	3	0
22	w	20	H2U	2	0
22	y	20	H2U	1	0
1	a	1519	MA6	3	0
22	y	17	OMG	3	0
22	y	55	PSU	3	0
11	k	119	IAS	1	0
22	w	39	PSU	1	0
26	A	2552	OMU	1	0
26	A	2498	OMC	1	0
22	w	47	3AU	1	0
22	w	37	T6A	1	0
22	w	19	H2U	1	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 883 ligands modelled in this entry, 880 are monoatomic - leaving 3 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
61	GCP	z	401	58	32,34,34	1.41	6 (18%)	49,54,54	1.79	8 (16%)
60	ILE	w	102	22	6,7,8	0.61	0	4,8,10	1.07	0
60	ILE	y	101	22	6,7,8	0.52	0	4,8,10	1.08	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
61	GCP	z	401	58	-	2/19/38/38	0/3/3/3
60	ILE	w	102	22	-	4/7/8/10	-
60	ILE	y	101	22	-	2/7/8/10	-

The worst 5 of 6 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
61	z	401	GCP	C5-C4	3.03	1.47	1.38
61	z	401	GCP	PG-O3G	2.82	1.61	1.55
61	z	401	GCP	PG-O2G	2.66	1.60	1.55
61	z	401	GCP	C6-N1	-2.63	1.33	1.38
61	z	401	GCP	C5-N7	-2.11	1.34	1.39

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

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
61	z	401	GCP	C5-C4-N3	-6.15	118.60	128.39
61	z	401	GCP	C2-N3-C4	5.05	120.99	112.30
61	z	401	GCP	N9-C4-N3	4.46	134.88	125.95
61	z	401	GCP	C6-C5-N7	3.31	136.32	130.29
61	z	401	GCP	PB-O3A-PA	-2.80	123.25	132.37

There are no chirality outliers.

5 of 8 torsion outliers are listed below:

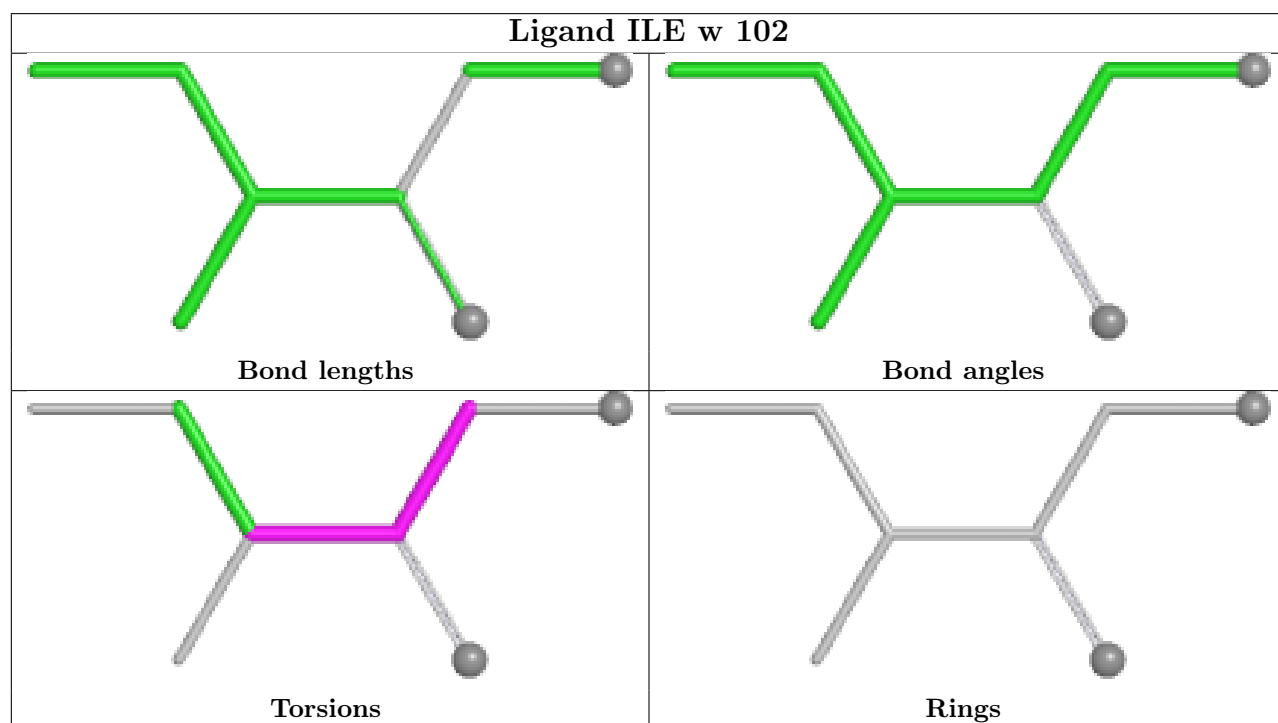
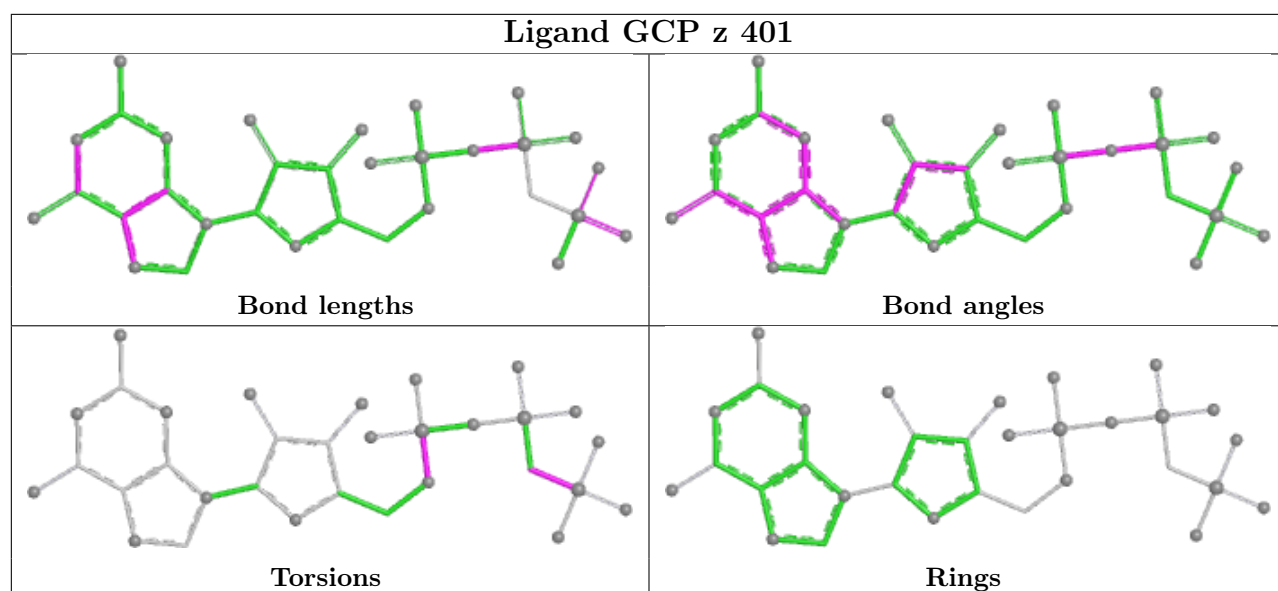
Mol	Chain	Res	Type	Atoms
60	w	102	ILE	O-C-CA-CB
60	w	102	ILE	C-CA-CB-CG1
60	w	102	ILE	C-CA-CB-CG2
60	y	101	ILE	C-CA-CB-CG2
61	z	401	GCP	C5'-O5'-PA-O2A

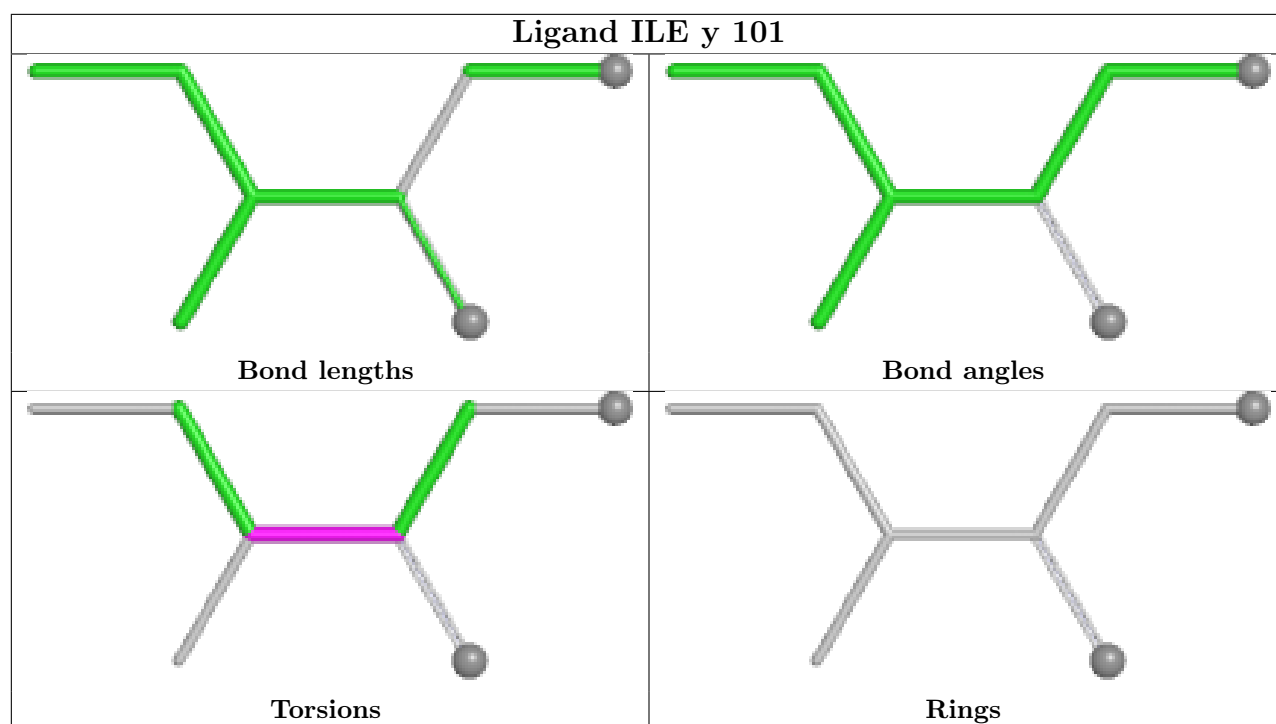
There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
61	z	401	GCP	1	0
60	w	102	ILE	2	0

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 than 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.





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

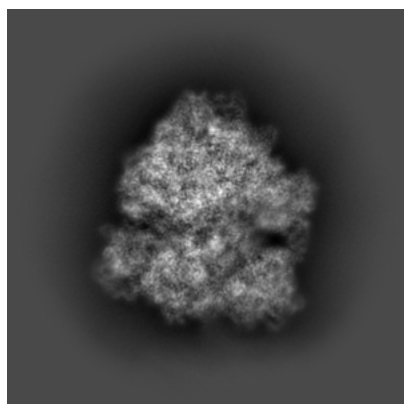
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-29819. These allow visual inspection of the internal detail of the map and identification of artifacts.

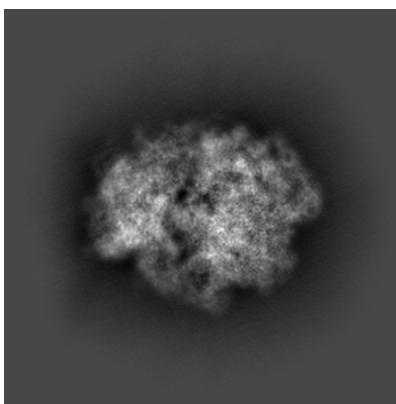
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

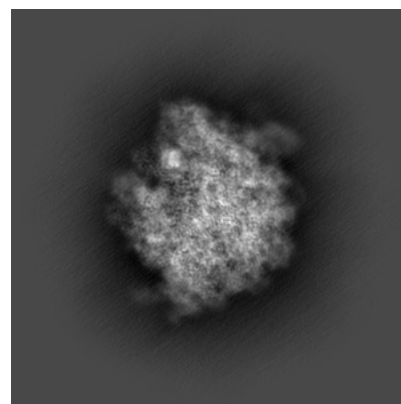
6.1.1 Primary map



X

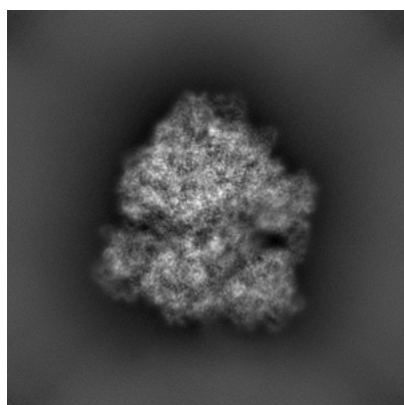


Y

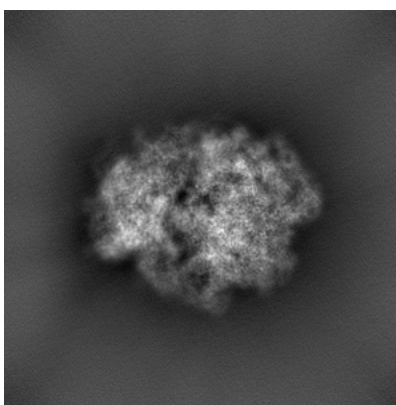


Z

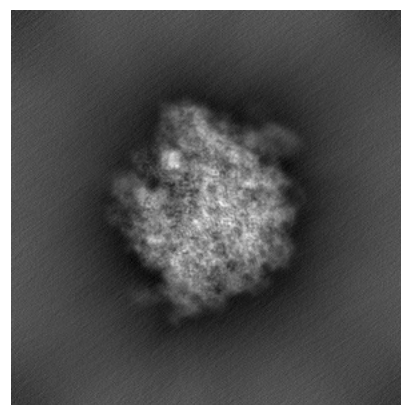
6.1.2 Raw map



X



Y

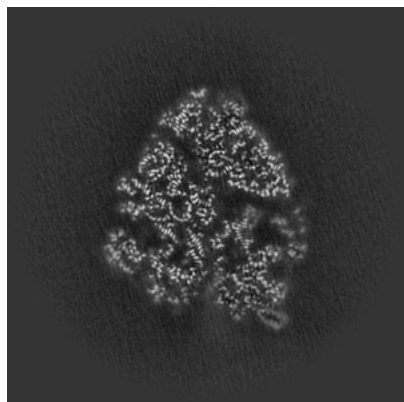


Z

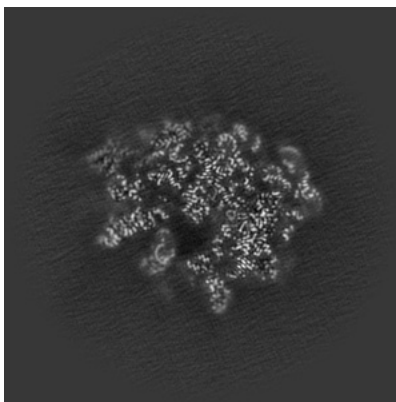
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

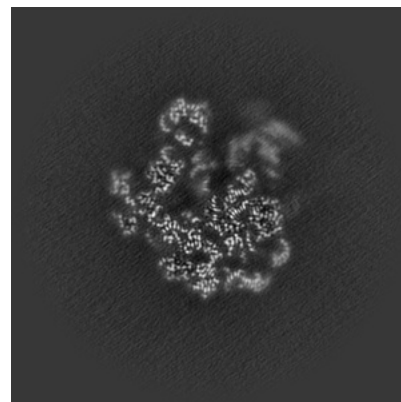
6.2.1 Primary map



X Index: 256

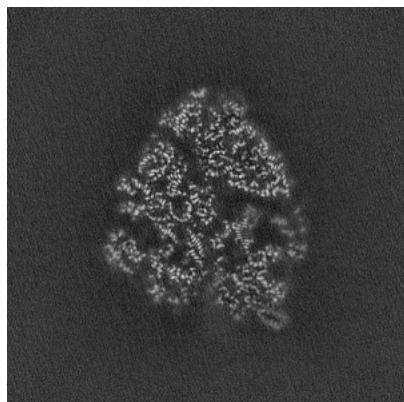


Y Index: 256

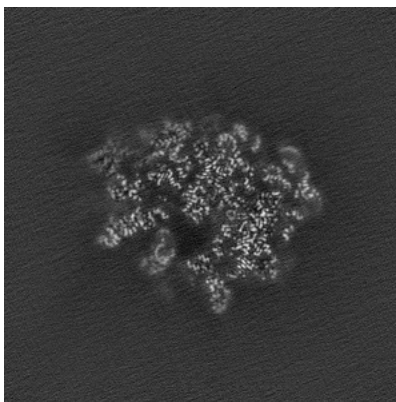


Z Index: 256

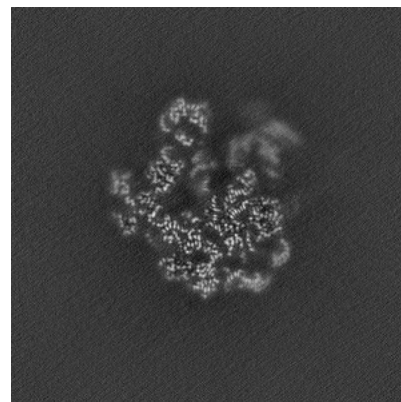
6.2.2 Raw map



X Index: 256



Y Index: 256

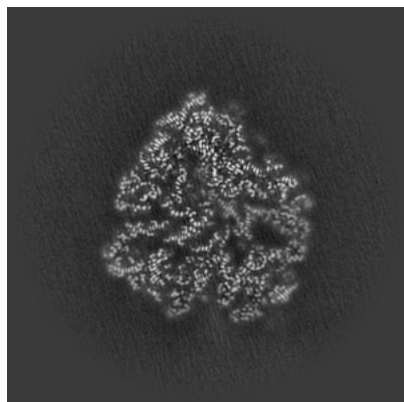


Z Index: 256

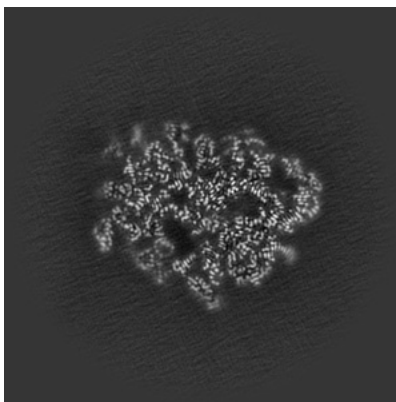
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

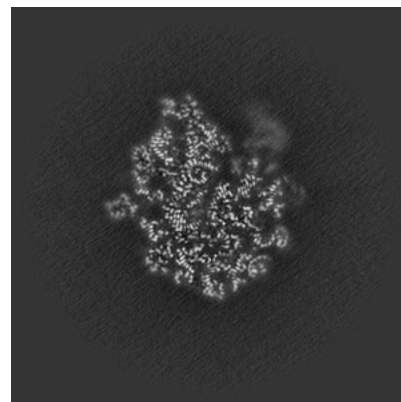
6.3.1 Primary map



X Index: 247

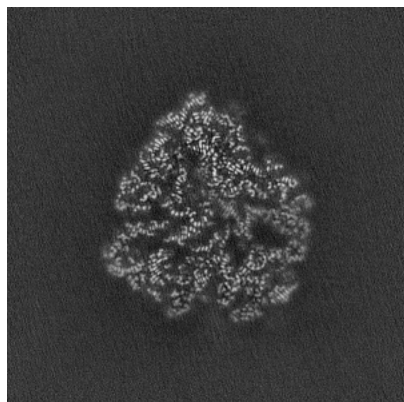


Y Index: 239

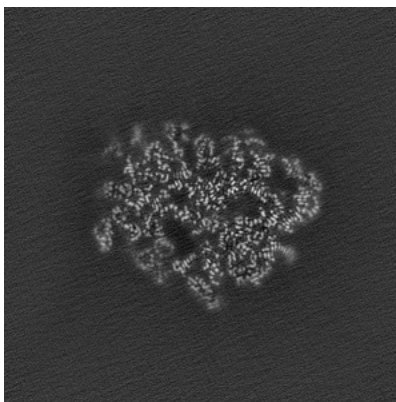


Z Index: 279

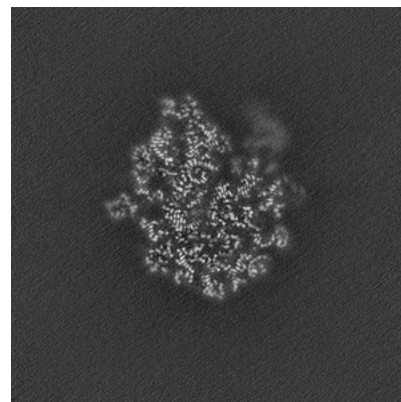
6.3.2 Raw map



X Index: 247



Y Index: 239

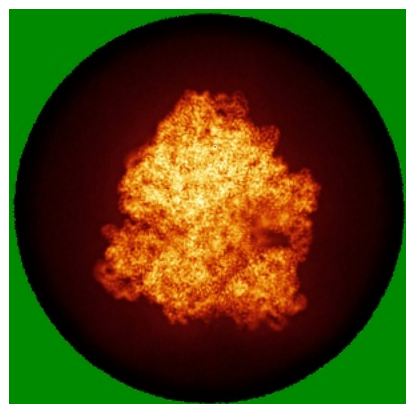


Z Index: 279

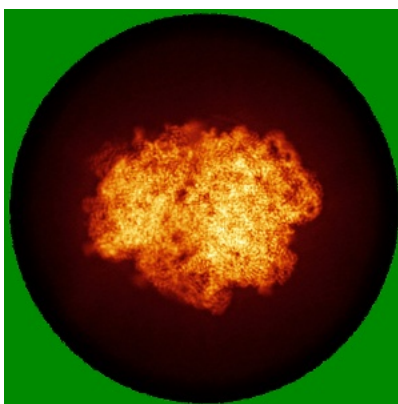
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

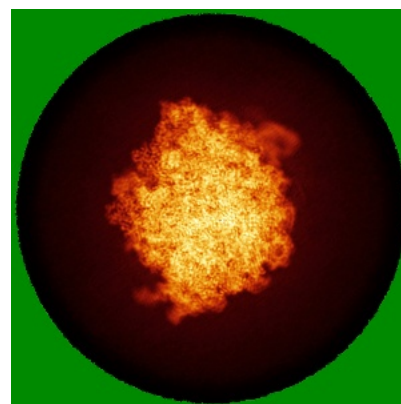
6.4.1 Primary map



X

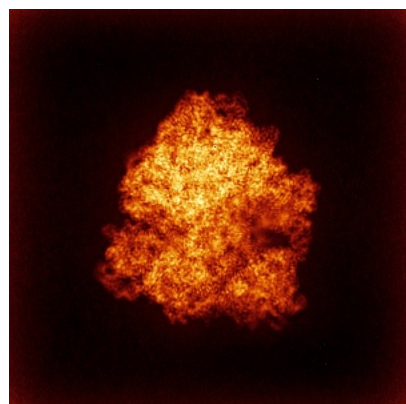


Y

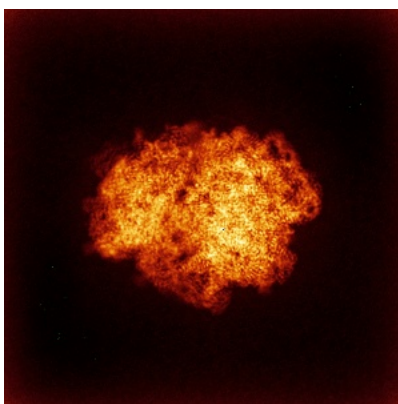


Z

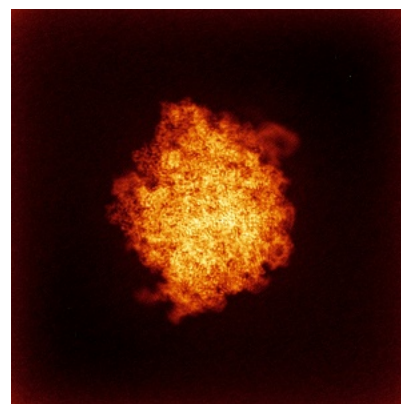
6.4.2 Raw map



X



Y

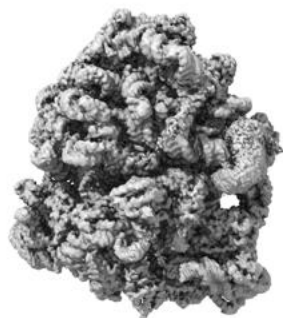


Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



X



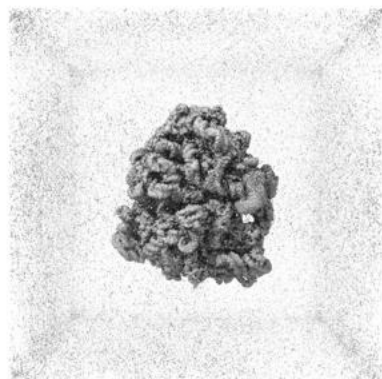
Y



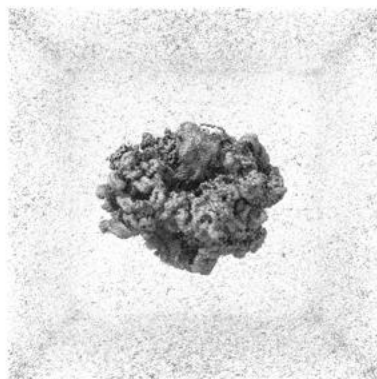
Z

The images above show the 3D surface view of the map at the recommended contour level 0.19. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

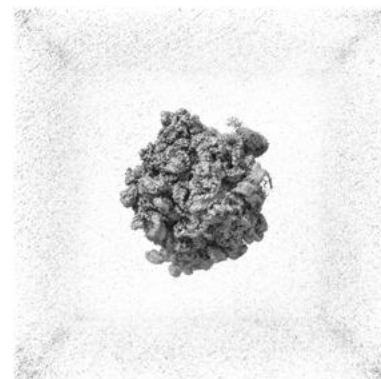
6.5.2 Raw map



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.

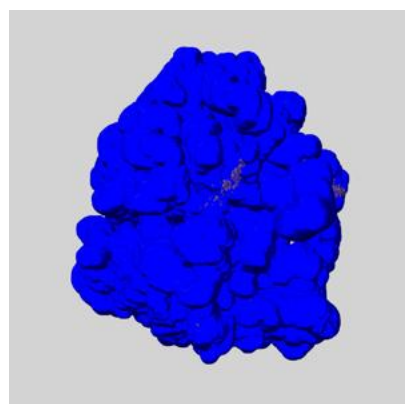
6.6 Mask visualisation [i](#)

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

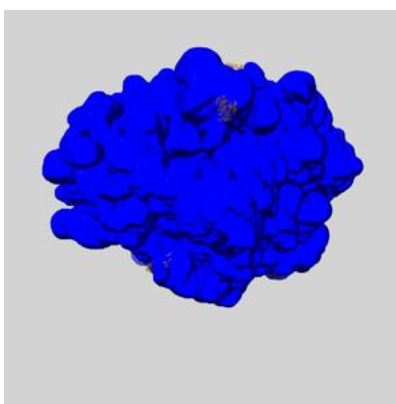
A mask typically either:

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

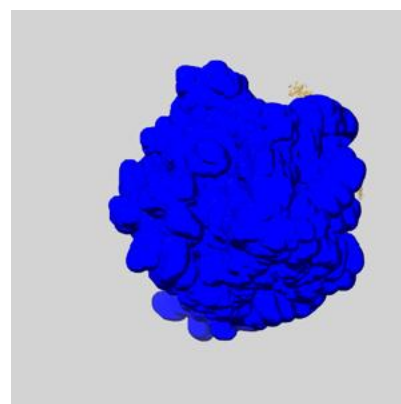
6.6.1 emd_29819_msk_1.map [i](#)



X



Y

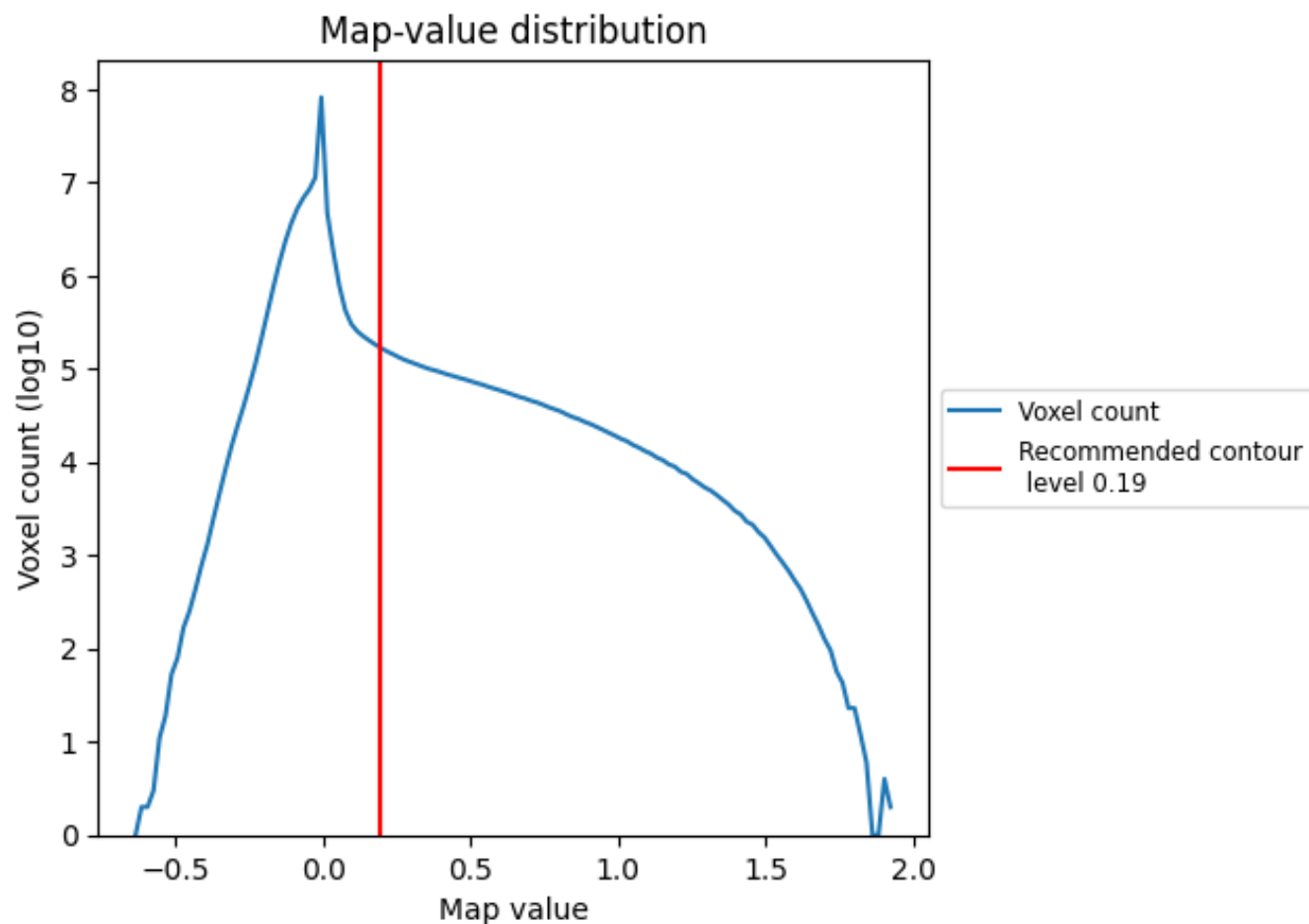


Z

7 Map analysis [i](#)

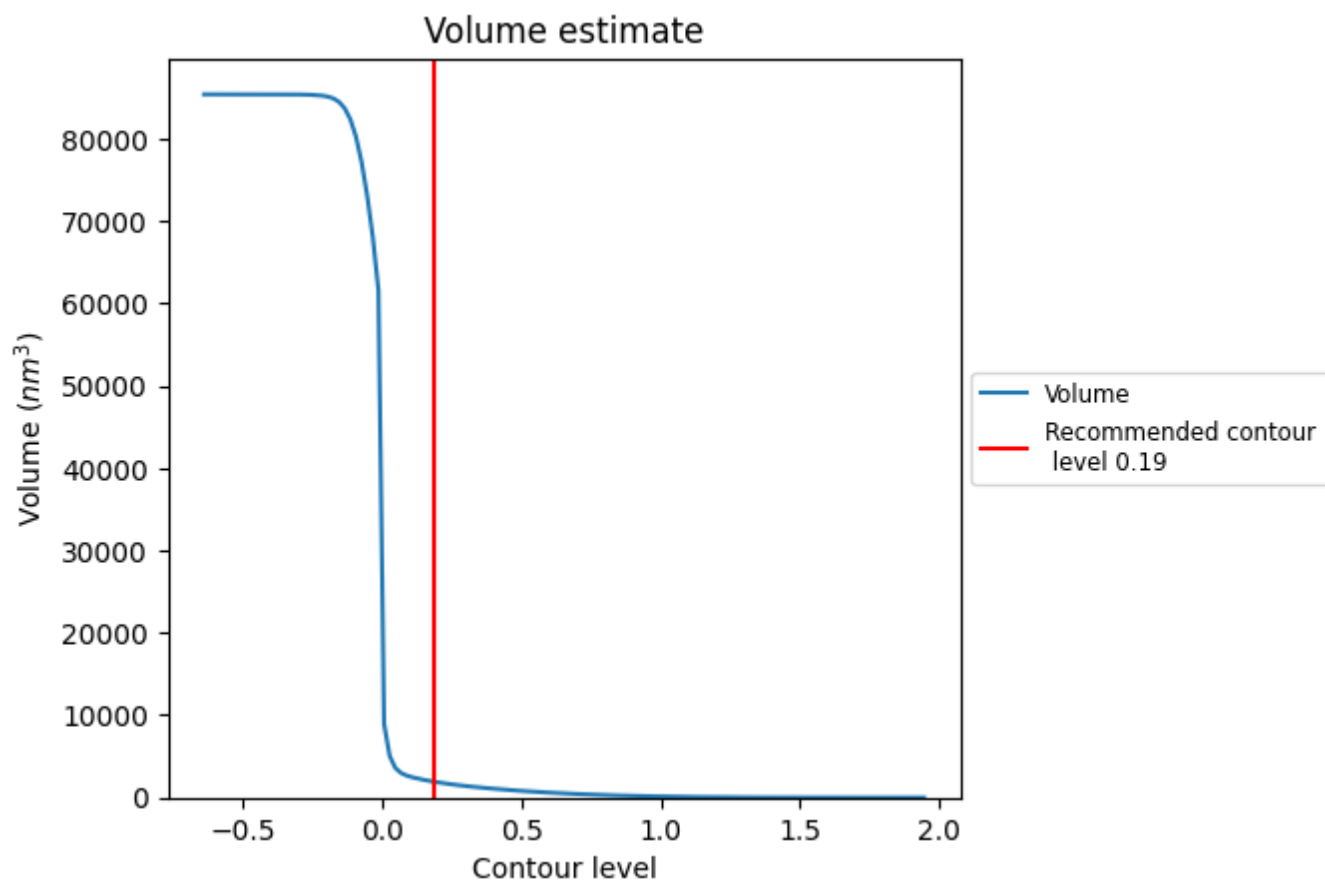
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

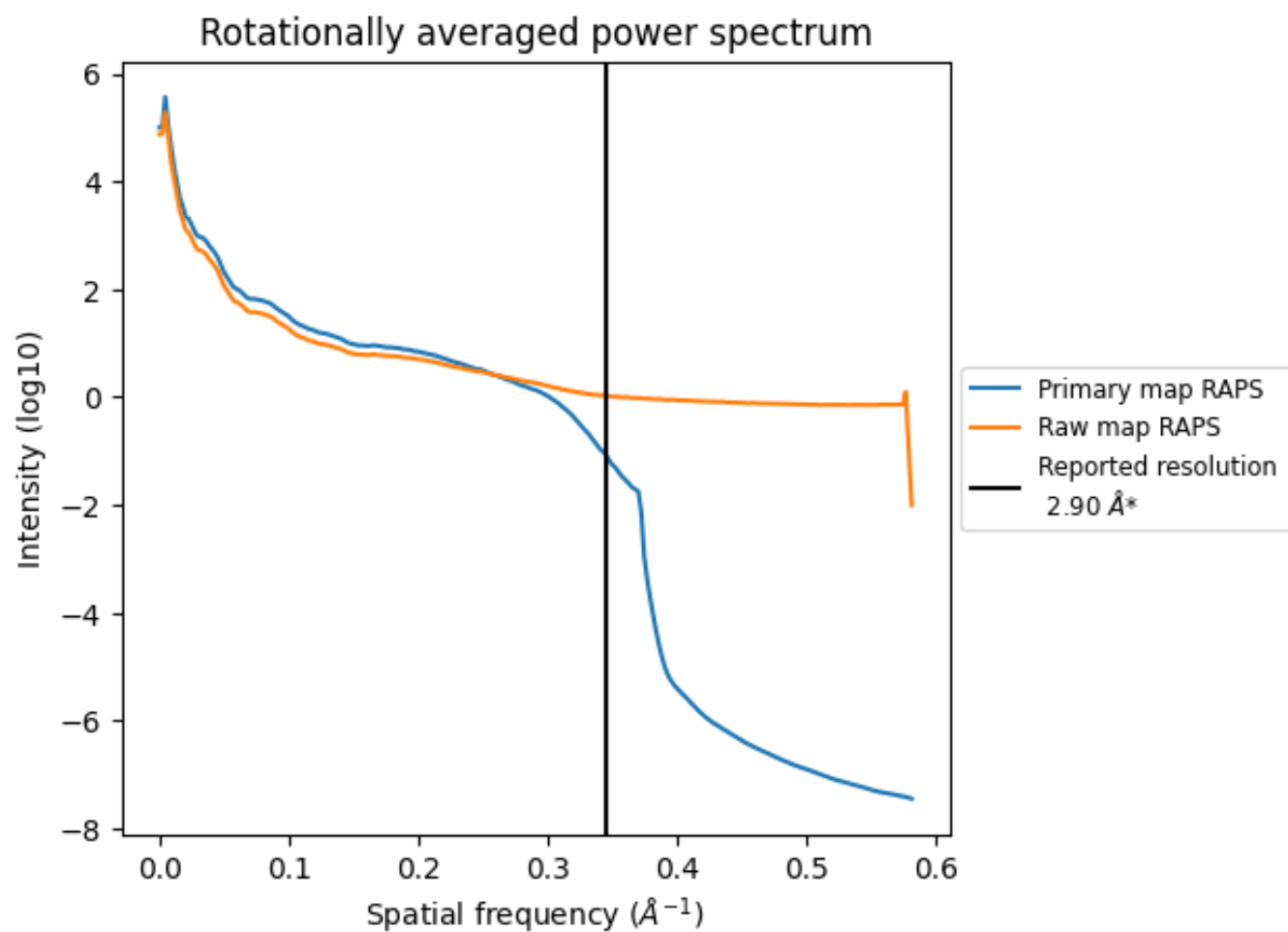
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1908 nm³; this corresponds to an approximate mass of 1723 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 ⓘ

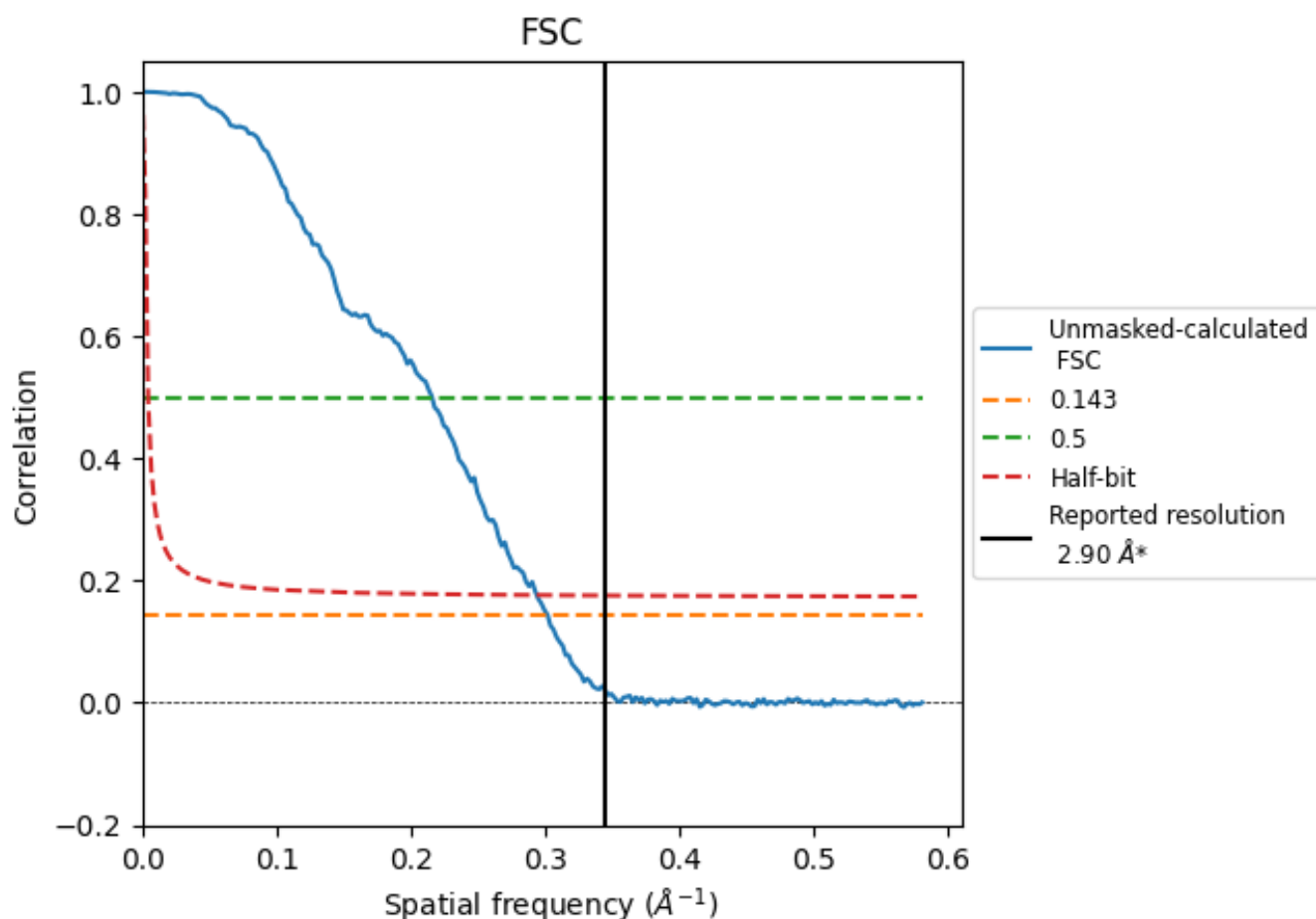


*Reported resolution corresponds to spatial frequency of 0.345 $\text{\AA}^{-1}$

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.345 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

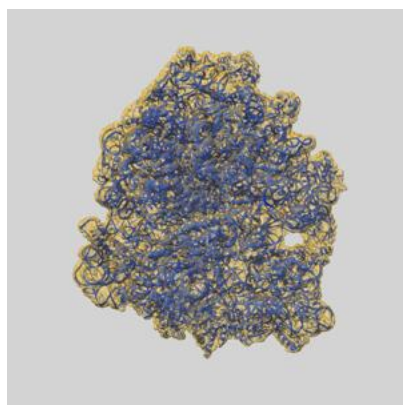
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.90	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.31	4.63	3.40

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.31 differs from the reported value 2.9 by more than 10 %

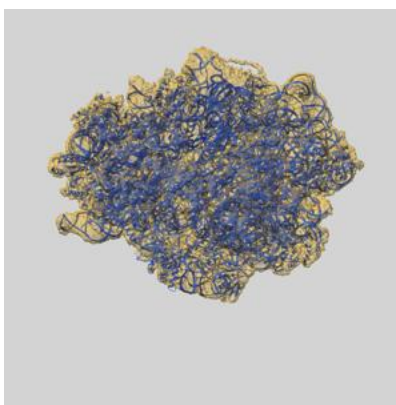
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-29819 and PDB model 8G7P. Per-residue inclusion information can be found in section [3](#) on page [19](#).

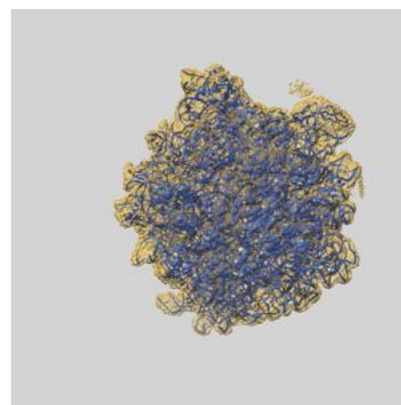
9.1 Map-model overlay [i](#)



X



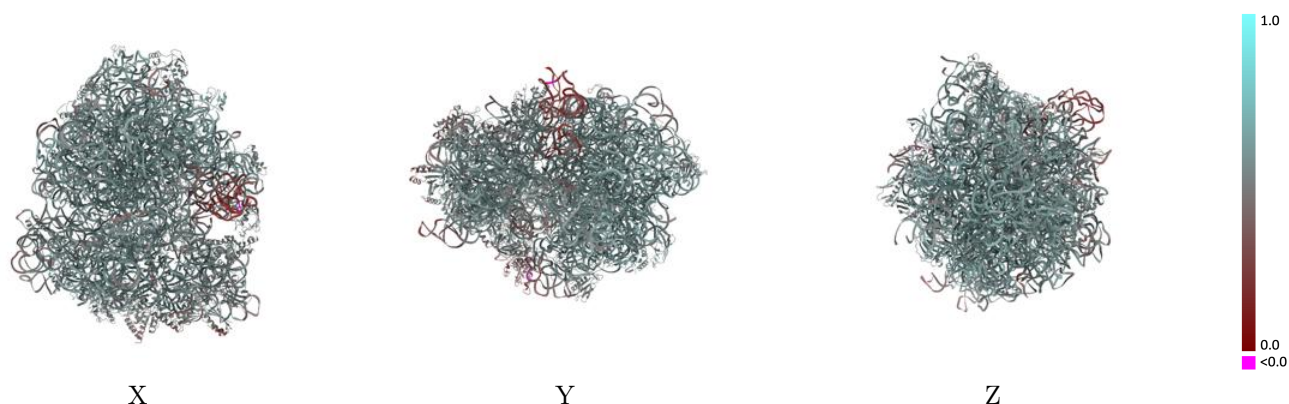
Y



Z

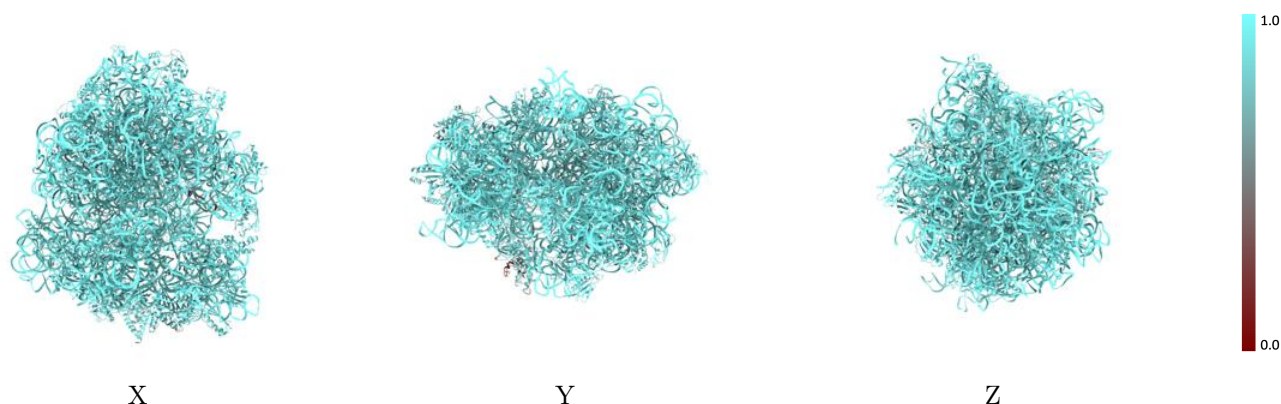
The images above show the 3D surface view of the map at the recommended contour level 0.19 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



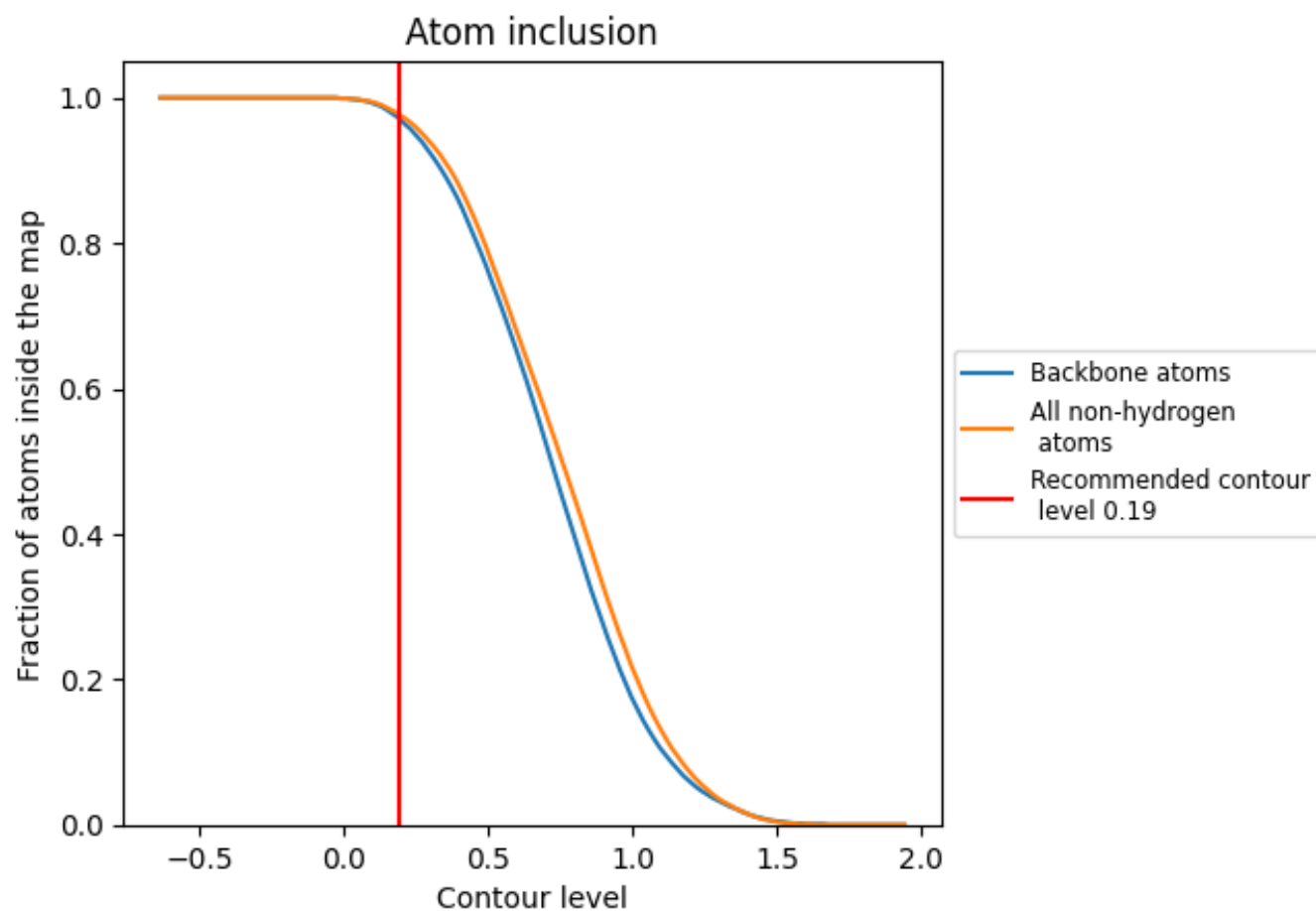
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 [i](#)



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 (0.19).

9.4 Atom inclusion [i](#)



At the recommended contour level, 97% of all backbone atoms, 98% 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 (0.19) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9780	 0.5570
1	 0.9730	 0.5220
2	 0.9660	 0.5790
3	 0.9700	 0.4940
4	 0.9810	 0.5910
5	 0.9340	 0.5690
6	 0.9610	 0.6060
7	 0.9760	 0.6100
8	 0.9700	 0.5850
A	 0.9940	 0.5710
B	 0.9970	 0.5520
C	 0.9680	 0.5970
D	 0.9770	 0.5890
E	 0.9570	 0.5580
F	 0.9650	 0.5200
G	 0.9570	 0.5260
H	 0.6570	 0.4750
J	 0.4910	 0.2940
L	 0.9750	 0.5890
M	 0.9560	 0.5850
N	 0.9710	 0.5840
O	 0.9700	 0.5840
P	 0.9920	 0.5990
Q	 0.9830	 0.5450
R	 0.9580	 0.5820
S	 0.9910	 0.5990
T	 0.9720	 0.5750
U	 0.9630	 0.5890
V	 0.9570	 0.5580
W	 0.9750	 0.5460
X	 0.9620	 0.5560
Y	 0.9680	 0.5920
Z	 0.9680	 0.5850
a	 0.9960	 0.5560
b	 0.8150	 0.4700



Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
c	 0.9430	 0.5380
d	 0.9550	 0.5390
e	 0.9600	 0.5570
f	 0.9220	 0.5030
g	 0.9320	 0.5050
h	 0.9640	 0.5570
i	 0.9680	 0.5230
j	 0.9070	 0.4900
k	 0.9560	 0.5420
l	 0.9640	 0.5930
m	 0.9620	 0.5300
n	 0.9650	 0.5430
o	 0.9550	 0.5270
p	 0.9710	 0.5590
q	 0.9680	 0.5580
r	 0.9390	 0.5490
s	 0.9550	 0.5310
t	 0.9620	 0.5250
u	 0.8610	 0.4830
v	 0.9860	 0.5760
w	 0.9740	 0.5290
x	 0.9870	 0.5430
y	 0.8870	 0.3640
z	 0.9550	 0.5340