



wwPDB EM Validation Summary Report ⓘ

Jun 24, 2026 – 01:30 PM EDT

PDB ID : 8FZG / pdb_00008fzg
EMDB ID : EMD-29627
Title : Cryo-EM structure of an E. coli non-rotated ribosome termination complex bound with RF3-GDPCP, RF1, P- and E-site tRNAPhe (Composite state II-A)
Authors : Rybak, M.Y.; Li, L.; Lin, J.; Gagnon, M.G.
Deposited on : 2023-01-28
Resolution : 3.10 Å (reported)
Based on initial model : 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:

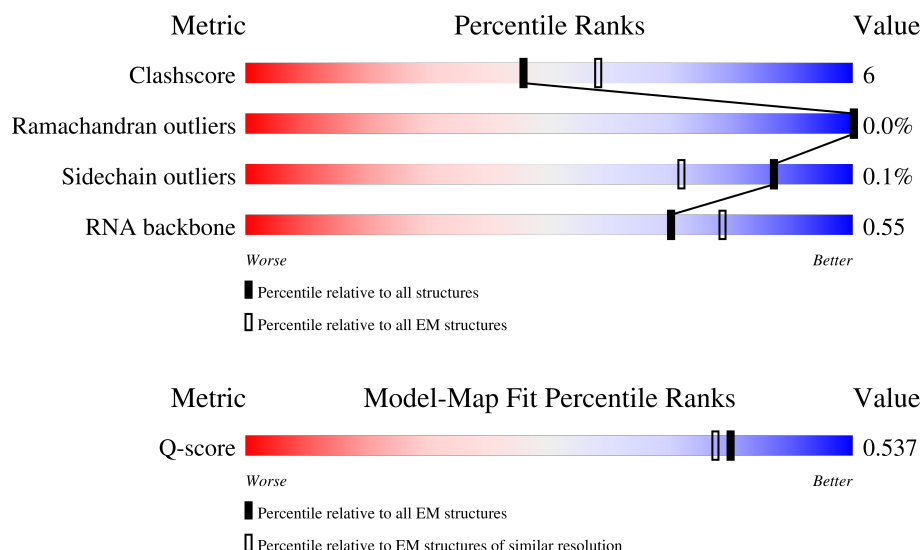
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data 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 3.10 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	14724 (2.60 - 3.60)

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	
2	b	241	

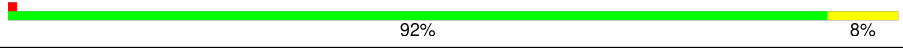
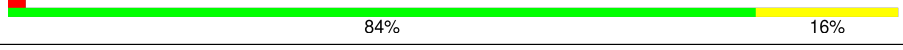
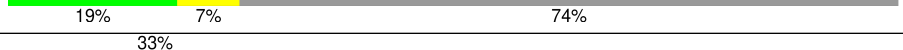
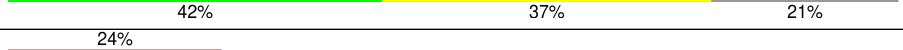
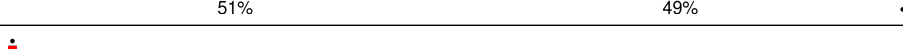
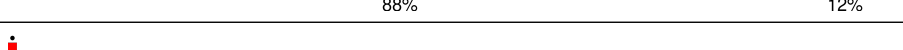
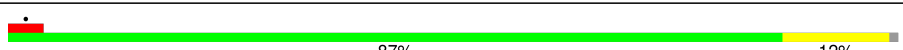
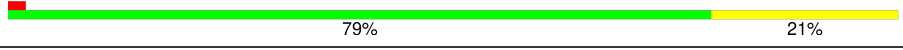
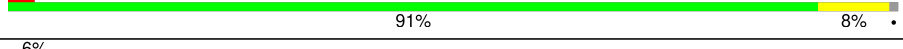
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Mol	Chain	Length	Quality of chain
3	c	233	
4	d	206	
5	e	167	
6	f	131	
7	g	156	
8	h	130	
9	i	130	
10	j	103	
11	k	129	
12	l	124	
13	m	118	
14	n	101	
15	o	89	
16	p	82	
17	q	84	
18	r	75	
19	s	92	
20	t	87	
21	u	71	
22	x	76	
22	y	76	
23	z	21	
24	w	360	
25	v	529	
26	A	2904	

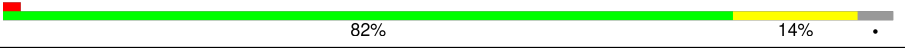
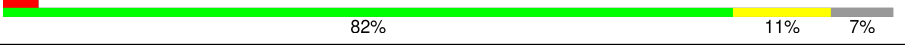
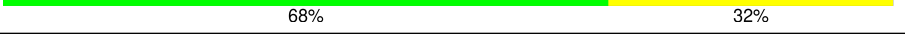
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Mol	Chain	Length	Quality of chain
27	B	120	
28	C	273	
29	D	209	
30	E	201	
31	F	179	
32	G	177	
33	H	149	
34	I	165	
35	J	142	
36	L	142	
37	M	123	
38	N	144	
39	O	136	
40	P	127	
41	Q	117	
42	R	115	
43	S	118	
44	T	103	
45	U	110	
46	V	100	
47	W	104	
48	X	94	
49	Y	85	
50	Z	78	
51	1	63	

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Mol	Chain	Length	Quality of chain
52	2	59	
53	3	70	
54	4	57	
55	5	55	
56	6	46	
57	7	65	
58	8	38	

2 Entry composition

There are 62 unique types of molecules in this entry. The entry contains 153589 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	1528	Total	C	N	O	P	0	0
			32803	14637	6019	10619	1528		

- 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	conflict	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	55	Total	C	N	O	S	0	0
			460	287	95	77	1		

- Molecule 22 is a RNA chain called P-site phenylalanyl-tRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
22	x	76	Total	C	N	O	P	S	0	0
			1632	731	290	533	76	2		
22	y	74	Total	C	N	O	P	S	0	0
			1584	707	285	517	74	1		

- Molecule 23 is a RNA chain called F-UAA mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	z	11	Total	C	N	O	P	0	0
			232	105	41	75	11		

- Molecule 24 is a protein called Peptide chain release factor 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	w	349	Total	C	N	O	S	0	0
			2750	1679	513	545	13		

- Molecule 25 is a protein called Peptide chain release factor RF3.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	v	487	Total	C	N	O	S	0	0
			3671	2328	639	687	17		

- 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	39	Total	C	N	O	S	0	0
			287	184	51	51	1		

- Molecule 34 is a protein called 50S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	I	131	Total	C	N	O	S	0	0
			988	625	175	183	5		

- Molecule 35 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	J	141	Total	C	N	O	S	0	0
			1032	651	179	196	6		

- Molecule 36 is a protein called 50S ribosomal protein L13.

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

- Molecule 37 is a protein called 50S ribosomal protein L14.

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

- Molecule 38 is a protein called 50S ribosomal protein L15.

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

- Molecule 39 is a protein called 50S ribosomal protein L16.

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

There is a discrepancy between the modelled and reference sequences:

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

- Molecule 40 is a protein called 50S ribosomal protein L17.

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

- Molecule 41 is a protein called 50S ribosomal protein L18.

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

- Molecule 42 is a protein called 50S ribosomal protein L19.

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

- Molecule 43 is a protein called 50S ribosomal protein L20.

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

- Molecule 44 is a protein called Ribosomal protein L21.

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

- Molecule 45 is a protein called 50S ribosomal protein L22.

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

- Molecule 46 is a protein called 50S ribosomal protein L23.

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

- Molecule 47 is a protein called 50S ribosomal protein L24.

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

- Molecule 48 is a protein called 50S ribosomal protein L25.

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

- Molecule 49 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms				AltConf	Trace
49	Y	76	Total	C	N	O	S	
			582	360	117	104	1	0

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

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

- Molecule 51 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms				AltConf	Trace
51	1	61	Total	C	N	O	S	
			495	305	97	92	1	0

- Molecule 52 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms				AltConf	Trace
52	2	58	Total	C	N	O	S	
			449	281	87	79	2	0

- Molecule 53 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms				AltConf	Trace
53	3	60	Total	C	N	O	S	
			474	293	90	85	6	0

- Molecule 54 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	4	55	Total	C	N	O	S	0	0
			434	263	92	78	1		

- Molecule 55 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	5	51	Total	C	N	O		0	0
			417	269	76	72			

- Molecule 56 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	6	46	Total	C	N	O	S	0	0
			377	228	90	57	2		

- Molecule 57 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	7	64	Total	C	N	O	S	0	0
			504	323	105	74	2		

- Molecule 58 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	8	38	Total	C	N	O	S	0	0
			302	185	65	48	4		

- Molecule 59 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

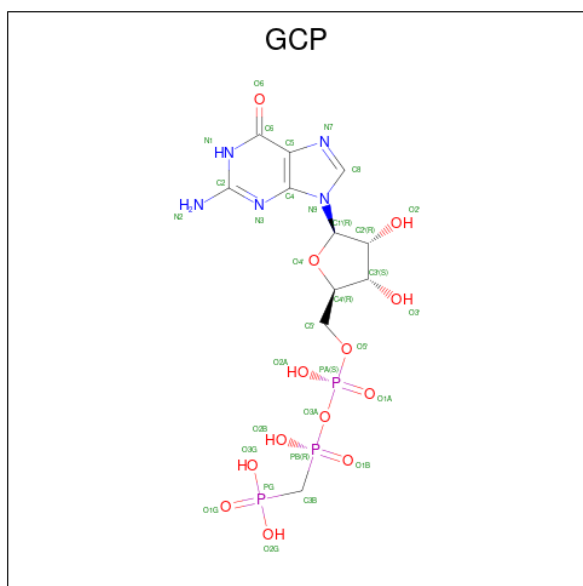
Mol	Chain	Residues	Atoms		AltConf
59	a	89	Total	Mg	0
			89	89	
59	n	1	Total	Mg	0
			1	1	
59	u	1	Total	Mg	0
			1	1	
59	x	1	Total	Mg	0
			1	1	
59	y	1	Total	Mg	0
			1	1	
59	A	320	Total	Mg	0
			320	320	

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Mol	Chain	Residues	Atoms		AltConf
59	B	8	Total	Mg	0
			8	8	
59	C	1	Total	Mg	0
			1	1	
59	D	1	Total	Mg	0
			1	1	
59	S	2	Total	Mg	0
			2	2	
59	4	1	Total	Mg	0
			1	1	
59	6	1	Total	Mg	0
			1	1	
59	7	1	Total	Mg	0
			1	1	

- Molecule 60 is PHOSPHOMETHYLPHOSPHONIC ACID GUANYLATE ESTER (CCD ID: GCP) (formula: $C_{11}H_{18}N_5O_{13}P_3$).



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

- Molecule 61 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
61	3	1	Total	Zn	0
			1	1	

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Mol	Chain	Residues	Atoms		AltConf
61	8	1	Total 1	Zn 1	0

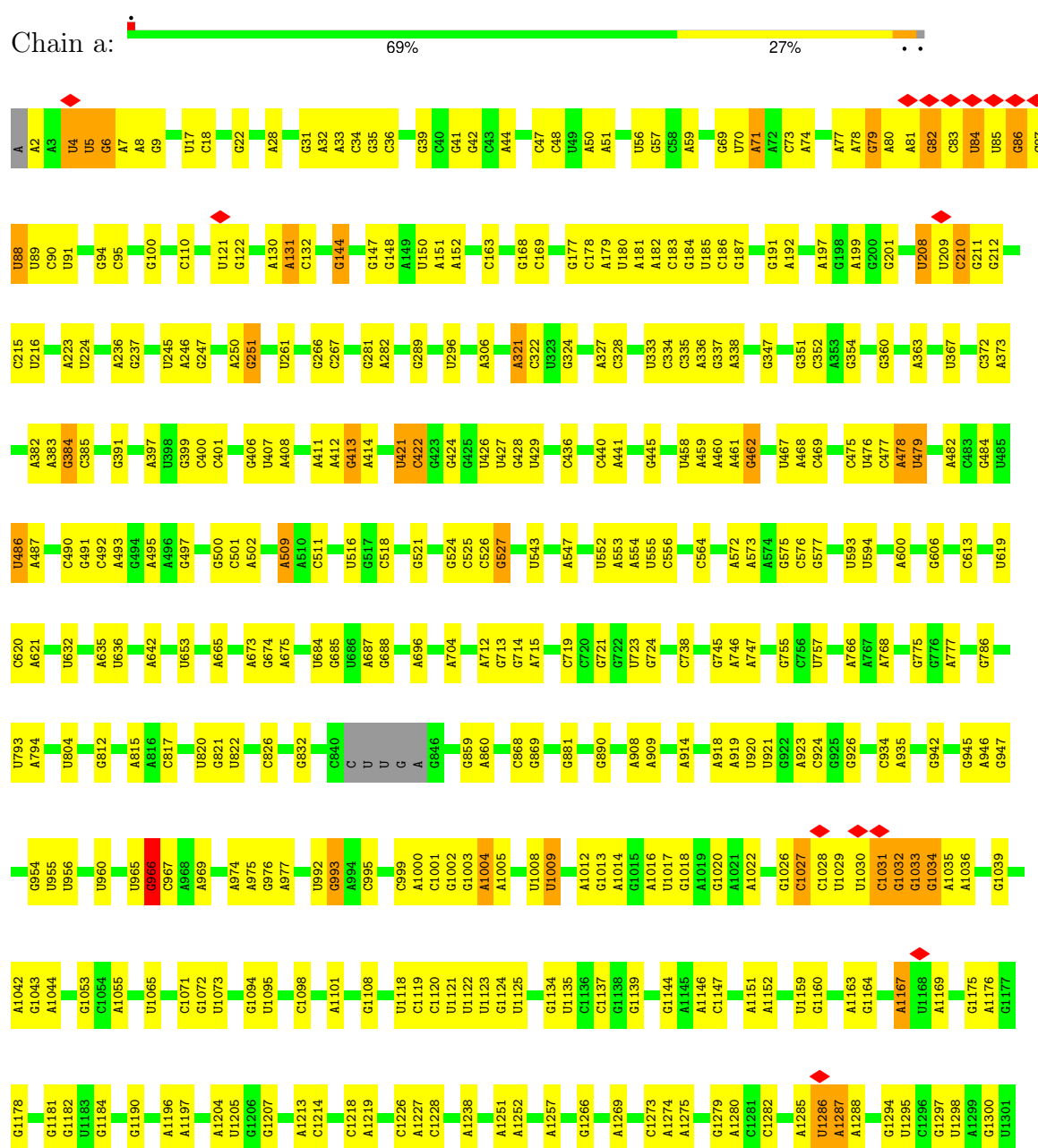
- Molecule 62 is water.

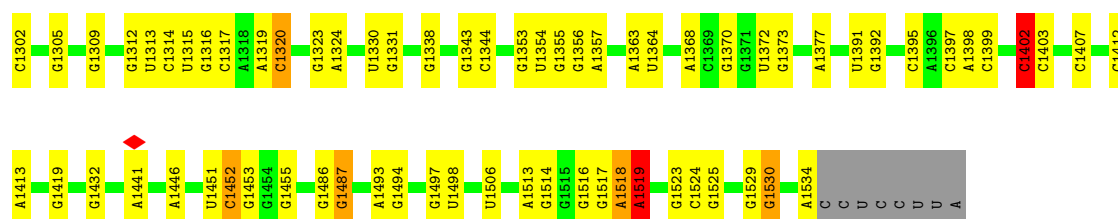
Mol	Chain	Residues	Atoms		AltConf
62	a	24	Total 24	O 24	0
62	A	117	Total 117	O 117	0
62	B	1	Total 1	O 1	0
62	N	1	Total 1	O 1	0
62	8	1	Total 1	O 1	0

3 Residue-property plots

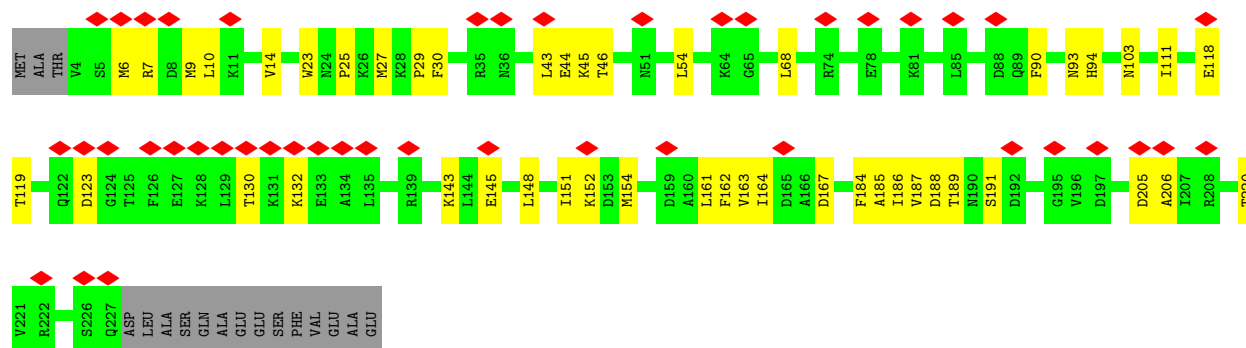
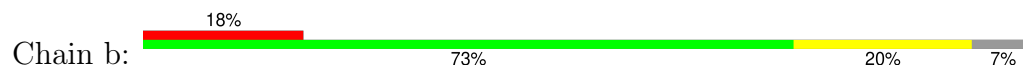
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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

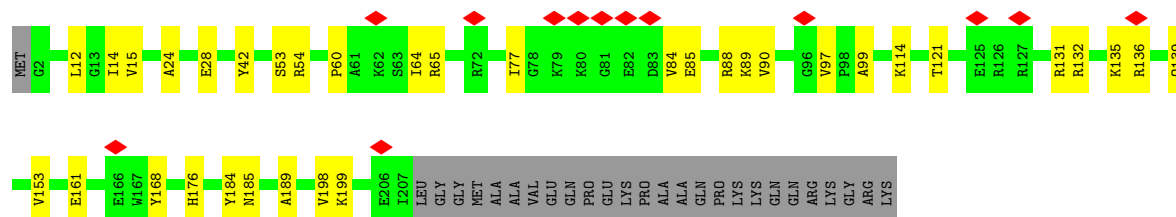




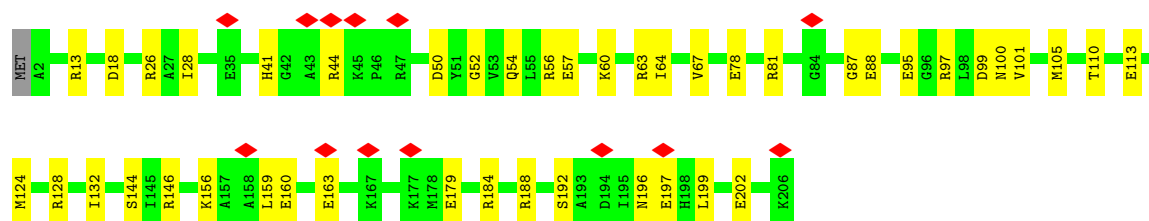
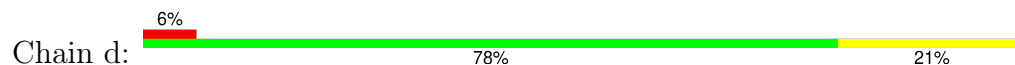
• Molecule 2: 30S ribosomal protein S2



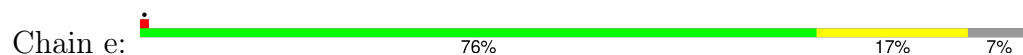
• Molecule 3: 30S ribosomal protein S3

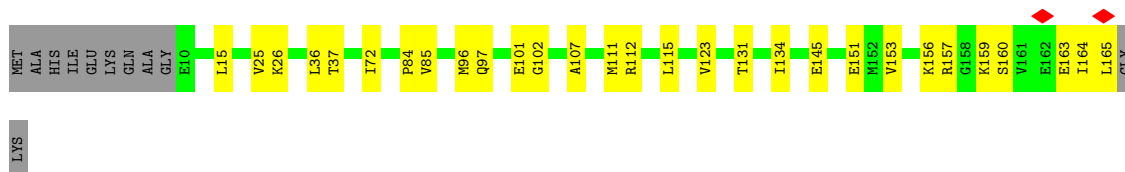


• Molecule 4: 30S ribosomal protein S4



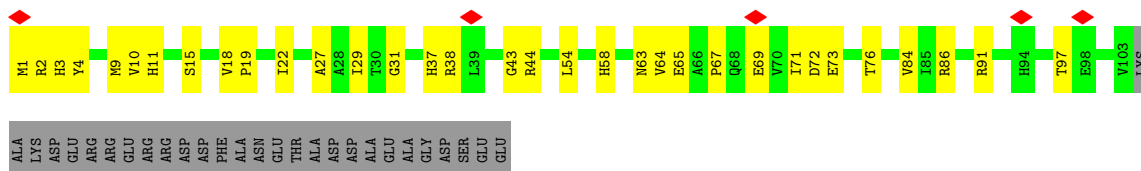
• Molecule 5: 30S ribosomal protein S5





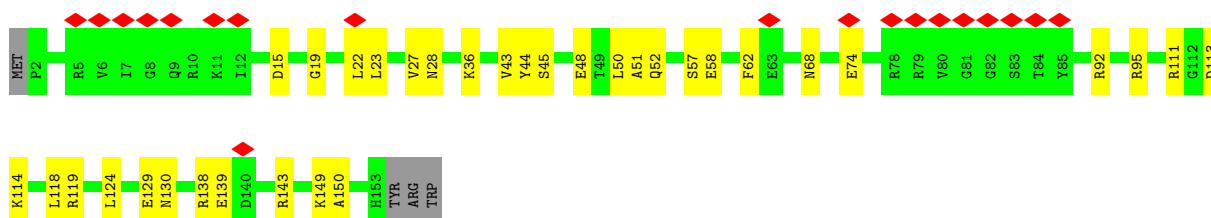
- Molecule 6: 30S ribosomal protein S6

Chain f: 53% 25% 21%



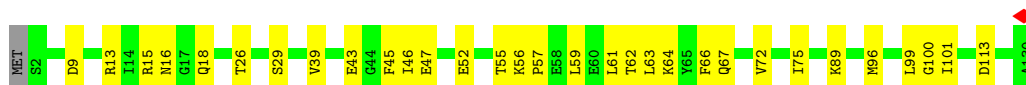
- Molecule 7: 30S ribosomal protein S7

Chain g: 12% 76% 22%



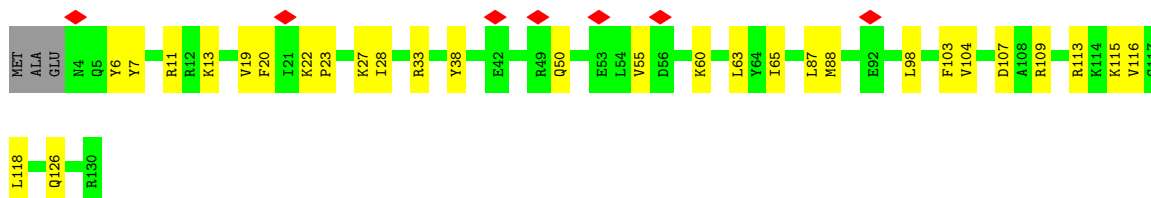
- Molecule 8: 30S ribosomal protein S8

Chain h: 75% 24%



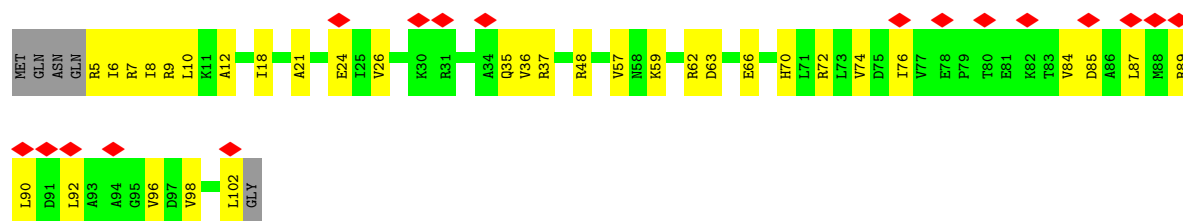
- Molecule 9: 30S ribosomal protein S9

Chain i: 5% 75% 22%



- Molecule 10: 30S ribosomal protein S10

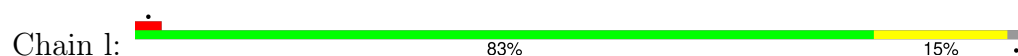
Chain j: 17% 63% 32% 5%



- Molecule 11: 30S ribosomal protein S11



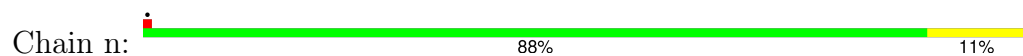
- Molecule 12: 30S ribosomal protein S12



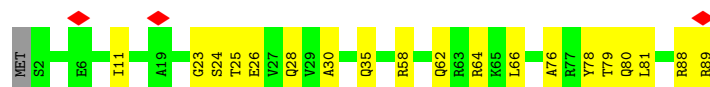
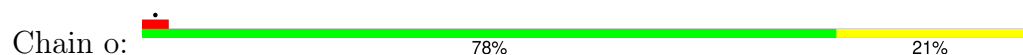
- Molecule 13: 30S ribosomal protein S13



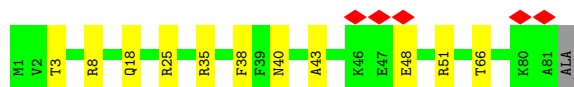
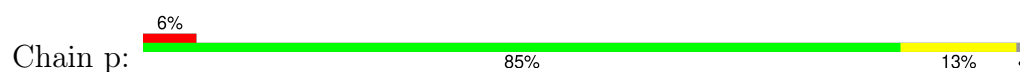
- Molecule 14: 30S ribosomal protein S14



- Molecule 15: 30S ribosomal protein S15



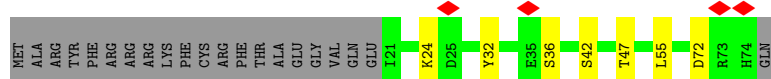
- Molecule 16: 30S ribosomal protein S16



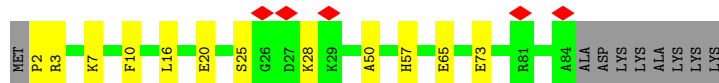
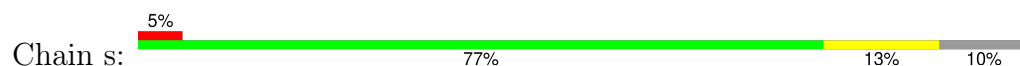
- Molecule 17: 30S ribosomal protein S17



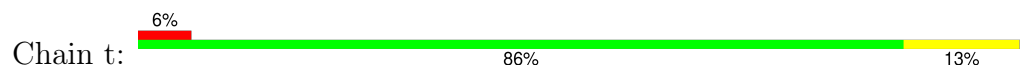
- Molecule 18: 30S ribosomal protein S18



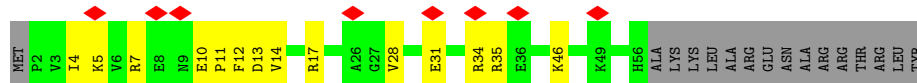
- Molecule 19: 30S ribosomal protein S19



- Molecule 20: 30S ribosomal protein S20

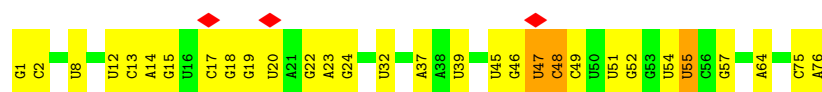


- Molecule 21: 30S ribosomal protein S21

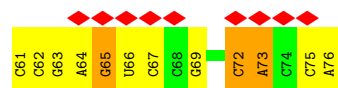
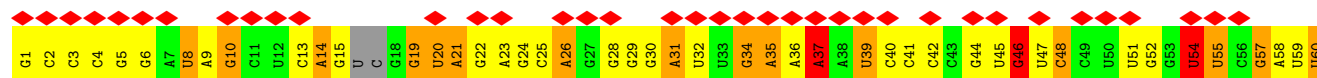
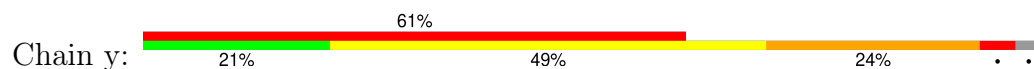


- Molecule 22: P-site phenylalanyl-tRNA

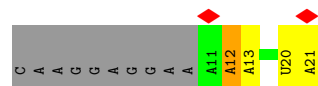
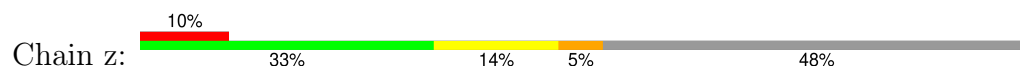




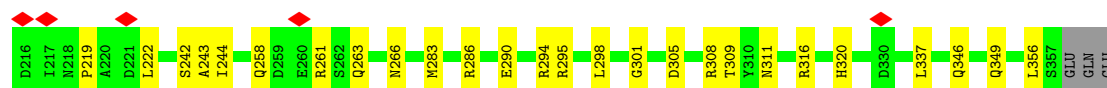
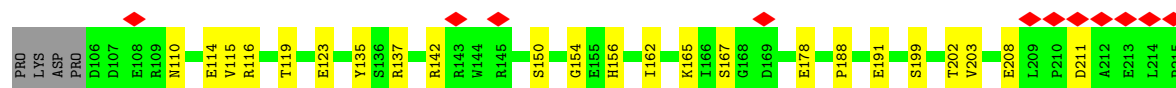
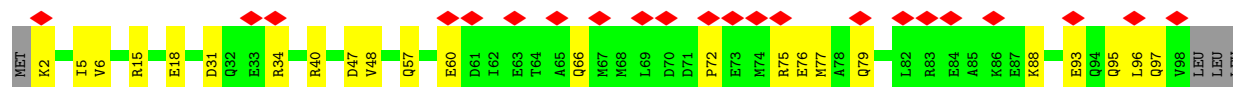
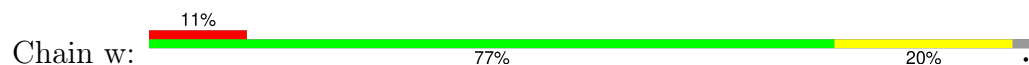
• Molecule 22: P-site phenylalanyl-tRNA



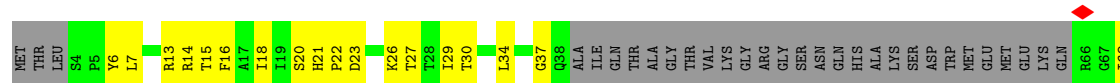
• Molecule 23: F-UAA mRNA

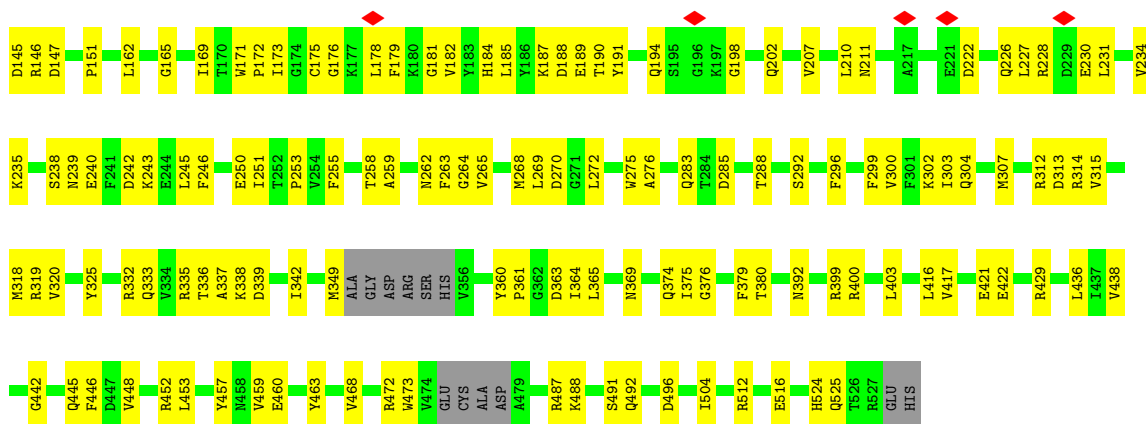


• Molecule 24: Peptide chain release factor 1

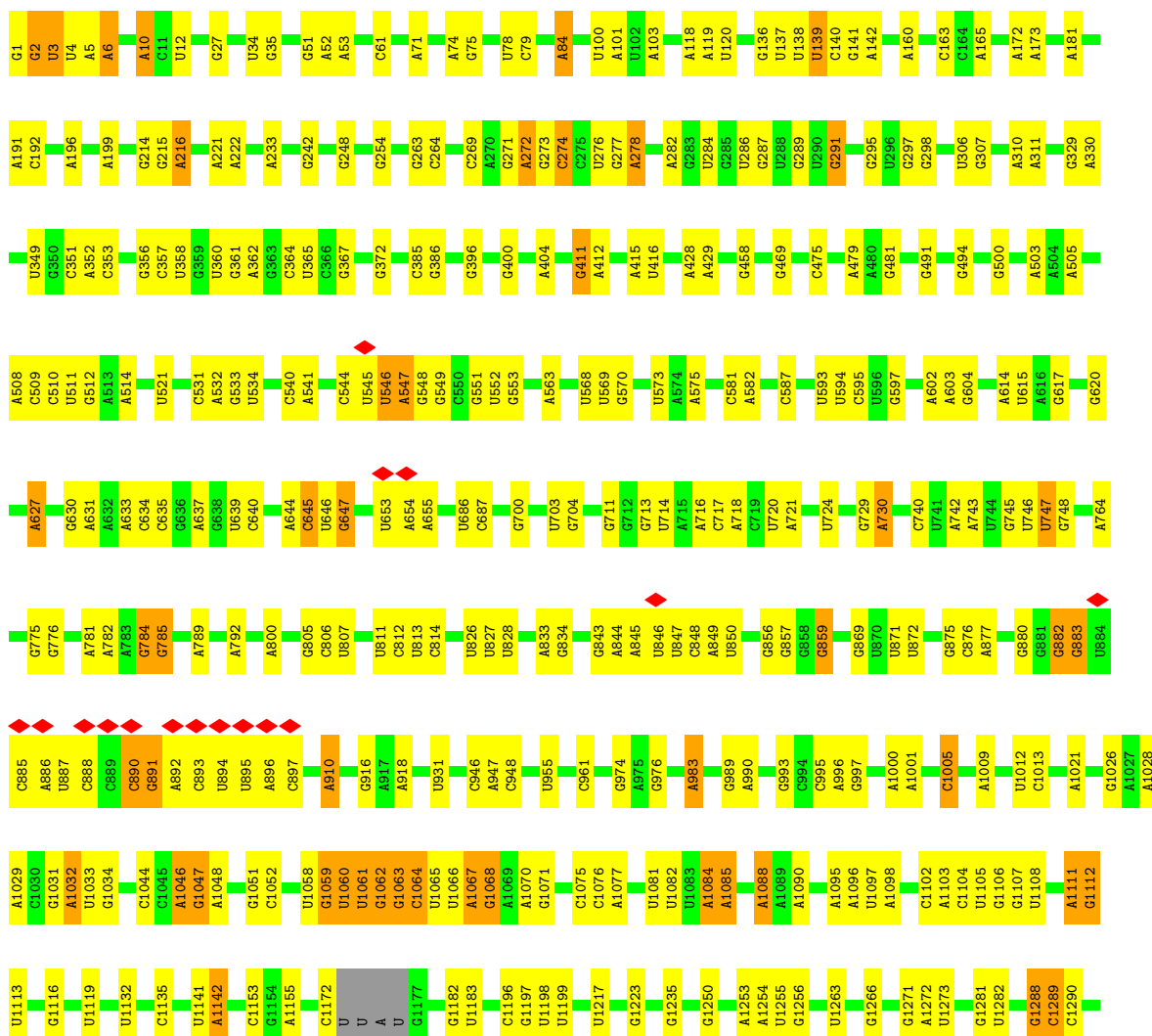


• Molecule 25: Peptide chain release factor RF3





• Molecule 26: 23S Ribosomal RNA



G2857	G2858	G2859	A2860	U2861	U2862	A2868	A2873	U2884	A2893	U2898	A2899	A2900	C2901	C2902	U	G2714	A2726	G2732	A2733	A2734	A2740	U2743	G2744	C2745	U2746	G2747	A2748	A2749	A2750	G2751	A2764	A2778	U2779	G2780	U2783	U2784	U2790	C2795	U2796	U2800	G2803	U2804	C2805	G2812	A2813	A2814	C2815	G2816	A2820	A2821	U2836	A2837	U2849	A2850	A2851	G2852	U2562	A2566	G2567	C2573	G2576	A2577	G2578	C2579	U2580	C2591	G2592	A2602	U2603	U2604	U2605	U2609	U2613	A2614	U2615	U2629	C2636	G2646	C2649	U2650	C2651	C2654	C2658	G2661	A2662	G2663	C2667	G2668	G2669	U2680	C2681	A2682	U2689	U2690	U2698	C2699	A2705	G2455	C2456	U2457	C2467	A2468	A2469	U2473	U2474	C2475	A2476	C2480	G2481	G2484	U2485	C2486	U2492	C2499	G2502	U2503	U2504	C2505	U2506	U2514	C2515	U2518	U2519	C2520	C2523	G2529	A2530	A2531	C2540	G2545	U2546	A2547	U2548	U2552	U2554	U2555	C2556	G2557	C2558	G2436	A2437	G2438	G2439	G2441	G2445	A2448	U2449	U2203	G2204	C2208	A2211	A2225	G2230	U2231	U2236	G2237	A2238	G2239	U2243	U2244	U2245	G2246	A2247	G2251	C2264	U2265	A2266	A2267	G2271	A2278	C2283	A2287	A2288	G2289	U2291	U2292	G2293	G2294	C2295	A2298	U2299	C2300	C2301	U2302	U2305	G2308	A2309	U2312	G2316	A2322	G2325	C2326	A2327	A2328	U2331	C2332	U2333	A2335	A2336	G2345	C2350	G2361	G2365	A2376	A2377	G2383	U2384	C2385	A2392	U2402	G2405	A2406	G2410	A2411	G2415	U2419	C2422	U2423	C2424	A2425	G2428	G2429	A2430	U2441	G2445	A2448	U2449	U2128	U2131	U2132	A2134	A2135	U2137	G2138	U2139	G2140	A2142	C2145	C2146	A2147	U2148	U2149	C2150	U2151	C2152	A2154	U2155	G2156	G2157	A2158	G2159	C2160	C2161	A2163	C2164	A2169	A2170	A2171	A2172	A2173	C2174	U2175	A2176	C2177	C2178	C2179	U2180	U2181	U2182	U2187	U2188	U2189	G2190	A2191	U2192	C2193	A2198	G2128	U2131	U2132	A2134	A2135	U2137	G2138	U2139	G2140	A2142	C2145	C2146	A2147	U2148	U2149	C2150	U2151	C2152	A2154	U2155	G2156	G2157	A2158	G2159	C2160	C2161	A2163	C2164	A2169	A2170	A2171	A2172	A2173	C2174	U2175	A2176	C2177	C2178	C2179	U2180	U2181	U2182	U2187	U2188	U2189	G2190	A2191	U2192	C2193	A2198	A2014	A2015	C2021	U2022	C2023	G2024	C2025	U2026	A2030	A2031	G2032	A2033	U2034	C2043	A2052	C2055	G2056	A2060	C2061	A2062	G2069	A2070	A2071	C2072	U2076	A2101	C2102	C2103	C2104	U2105	U2106	G2107	G2110	U2111	G2112	U2113	A2114	G2115	G2116	A2117	U2118	A2119	G2120	C2121	U2122	G2123	G2124	C2125	A2126	G2127	G1875	G1878	A1885	U1889	A1890	G1906	U1911	A1912	A1913	C1914	3TD1915	A1916	U1917	A1928	G1929	U1930	U1931	A1932	G1933	A1937	A1938	U1939	U1940	C1941	G1954	U1955	U1956	C1962	U1963	G1964	C1965	A1966	C1967	G1968	A1969	A1970	U1971	G1972	G1983	U1991	G1992	U1993	C1996	C2006	G2012	A2013	G1738	G1743	U1746	C2023	G1756	C1764	G1770	A1773	U1782	C1790	A1791	A1794	C1795	U1796	G1797	U1798	G1799	A1800	A1801	A1802	A1803	A1808	A1809	C1816	G1823	A1829	G1835	A1848	A1853	A1854	U1855	U1856	G1857	A1858	G1863	U1864	U1865	A1866	A1871	A1872	G1873	C1874	G1628	A1632	A1635	G1645	C1646	U1647	U1648	G1649	A1650	G1651	A1654	G1663	A1664	A1665	C1670	G1673	G1674	G1675	A1676	G1704	G1707	G1710	G1715	U1720	G1721	A1722	G1723	G1724	U1725	C1726	C1727	C1728	U1729	U1730	G1731	C1732	G1733	G1734	U1735	G1737	A1582	C1493	A1508	A1509	G1510	A1515	G1524	G1527	A1528	A1532	C1533	U1534	A1535	C1536	G1537	G1538	U1539	G1540	A1541	U1542	G1543	A1544	A1545	G1546	C1547	A1548	A1549	A1566	A1569	A1570	A1571	A1583	U1584	C1585	A1586	G1587	A1593	U1594	A1597	A1598	G1601	U1458	U1459	U1460	A1469	A1470	A1614	A1618	G1482	C1319	C1320	U1326	A1327	A1328	U1329	A1353	A1354	G1360	G1361	C1362	C1363	G1364	A1365	U1379	A1383	C1386	A1387	U1405	U1406	G1410	U1411	A1416	C1417	A1427	C1428	G1429	G1430	A1431	G1432	A1433	A1434	G1435	U1442	U1443	G1444	C1447	G1452	U1458	U1459	G1459	U1460	A1469	A1470	A1614	A1618	G1482	C1319	C1320	U1326	A1327	A1328	U1329	A1353	A1354	G1360	G1361	C1362	C1363	G1364	A1365	U1379	A1383	C1386	A1387	U1405	U1406	G1410	U1411	A1416	C1417	A1427	C1428	G1429	G1430	A1431	G1432	A1433	A1434	G1435	U1442	U1443	G1444	C1447	G1452	U1458	U1459	G1459	U1460	A1469	A1470	A1614	A1618	G1482	C1319	C1320	U1326	A1327	A1328	U1329	A1353	A1354	G1360	G1361	C1362	C1363	G1364	A1365	U1379	A1383	C1386	A1387	U1405	U1406	G1410	U1411	A1416	C1417	A1427	C1428	G1429	G1430	A1431	G1432	A1433	A1434	G1435	U1442	U1443	G1444	C1447	G1452	U1458	U1459	G1459	U1460	A1469	A1470	A1614	A1618	G1482	C1319	C1320	U1326	A1327	A1328	U1329	A1353	A1354	G1360	G1361	C1362	C1363	G1364	A1365	U1379	A1383	C1386	A1387	U1405	U1406	G1410	U1411	A1416	C1417	A1427	C1428	G1429	G1430	A1431	G1432	A1433	A1434	G1435	U1442	U1443	G1444	C1447	G1452	U1458	U1459	G1459	U1460	A1469	A1470	A1614	A1618	G1482	C1319	C1320	U1326	A1327	A1328	U1329	A1353	A1354	G1360	G1361	C1362	C1363	G1364	A1365	U1379	A1383	C1386	A1387	U1405	U1406	G1410	U1411	A1416	C1417	A1427	C1428	G1429	G1430	A1431	G1432	A1433	A1434	G1435	U1442	U1443	G1444	C1447	G1452	U1458	U1459	G1459	U1460	A1469	A1470	A1614	A1618	G1482	C1319	C1320	U1326	A1327	A1328	U1329	A1353	A1354	G1360	G1361	C1362	C1363	G1364	A1365	U1379	A1383	C1386	A1387	U1405	U1406	G1410	U1411	A1416	C1417	A1427	C1428	G1429	G1430	A1431	G1432	A1433	A1434	G1435	U1442	U1443	G1444	C1447	G1452	U1458	U1459	G1459	U1460	A1469	A147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Chain B:  72% 26%



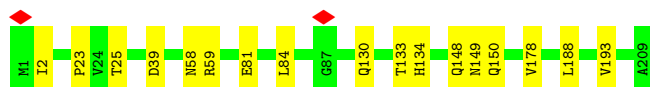
- Molecule 28: 50S ribosomal protein L2

Chain C:  90% 9%



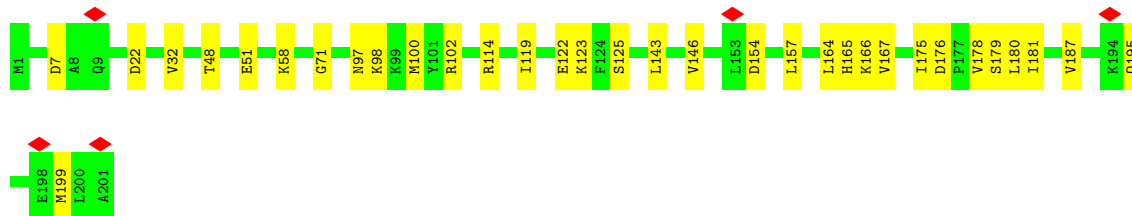
- Molecule 29: 50S ribosomal protein L3

Chain D:  92% 8%



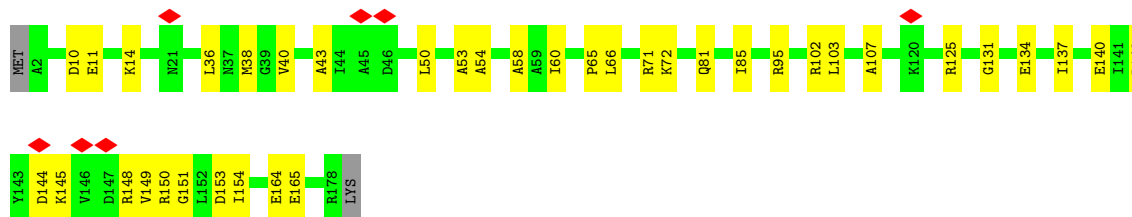
- Molecule 30: 50S ribosomal protein L4

Chain E:  84% 16%



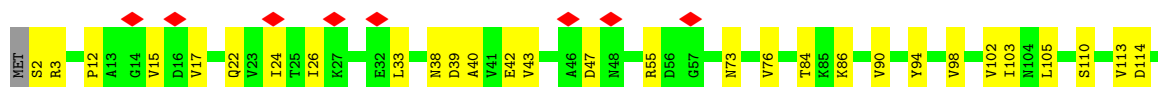
- Molecule 31: 50S ribosomal protein L5

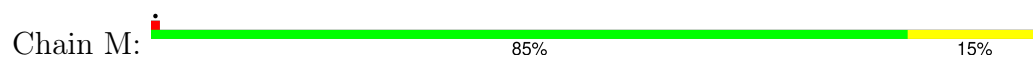
Chain F:  78% 21%



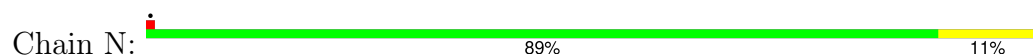
- Molecule 32: 50S ribosomal protein L6

Chain G:  6% 76% 24%

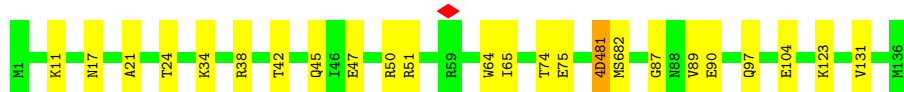
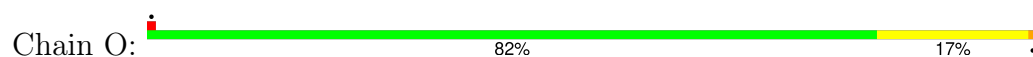




- Molecule 38: 50S ribosomal protein L15



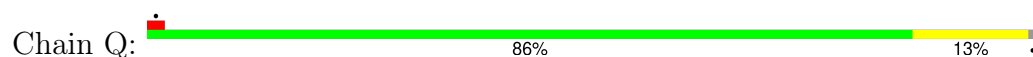
- Molecule 39: 50S ribosomal protein L16



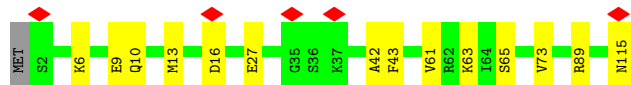
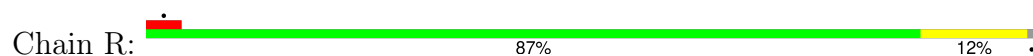
- Molecule 40: 50S ribosomal protein L17



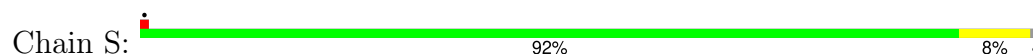
- Molecule 41: 50S ribosomal protein L18



- Molecule 42: 50S ribosomal protein L19

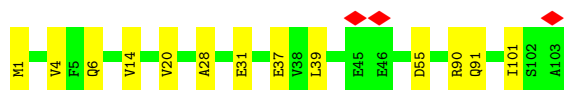


- Molecule 43: 50S ribosomal protein L20



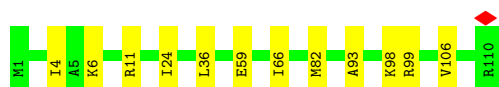
- Molecule 44: Ribosomal protein L21

Chain T:  87% 13%



- Molecule 45: 50S ribosomal protein L22

Chain U:  89% 11%



- Molecule 46: 50S ribosomal protein L23

Chain V:  89% 7%



- Molecule 47: 50S ribosomal protein L24

Chain W:  6% 79% 19%



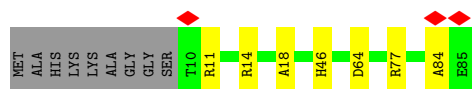
- Molecule 48: 50S ribosomal protein L25

Chain X:  79% 21%



- Molecule 49: 50S ribosomal protein L27

Chain Y:  81% 8% 11%

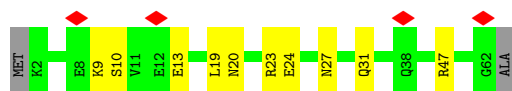
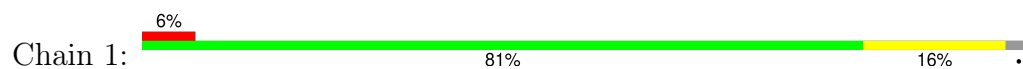


- Molecule 50: 50S ribosomal protein L28

Chain Z:  91% 8%



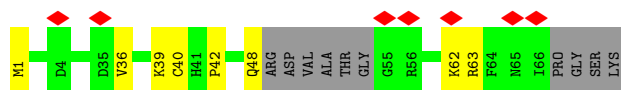
- Molecule 51: 50S ribosomal protein L29



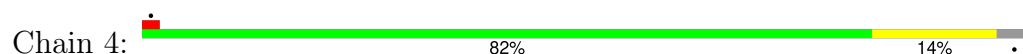
- Molecule 52: 50S ribosomal protein L30



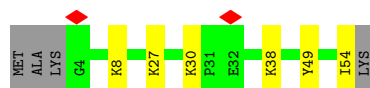
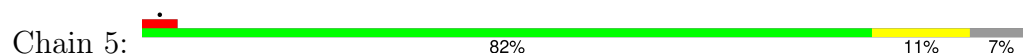
- Molecule 53: 50S ribosomal protein L31



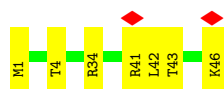
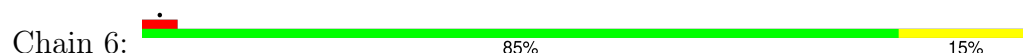
- Molecule 54: 50S ribosomal protein L32



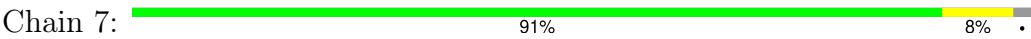
- Molecule 55: 50S ribosomal protein L33



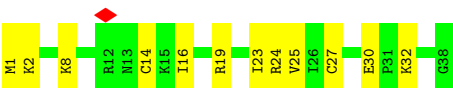
- Molecule 56: 50S ribosomal protein L34



- Molecule 57: 50S ribosomal protein L35



• Molecule 58: 50S ribosomal protein L36



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	31256	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 ($e^-/\text{\AA}^2$)	40.44	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	96000	Depositor
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	25.251	Depositor
Minimum map value	-14.192	Depositor
Average map value	0.001	Depositor
Map value standard deviation	1.011	Depositor
Recommended contour level	3.7	Depositor
Map size (Å)	435.2, 435.2, 435.2	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.85, 0.85, 0.85	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 4OC, 5MC, H2U, PSU, ZN, 4SU, 3TD, MEQ, 2MG, GCP, MG, OMG, OMC, OMU, 7MG, 2MA, D2T, MS6, IAS, 6MZ, UR3, 1MG, MIA, MA6, 4D4, 5MU, 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	a	0.19	0/36450	0.29	0/56856
2	b	0.17	0/1785	0.39	0/2404
3	c	0.16	0/1651	0.34	0/2225
4	d	0.17	0/1665	0.32	0/2227
5	e	0.17	0/1165	0.36	0/1568
6	f	0.17	0/858	0.40	0/1160
7	g	0.15	0/1206	0.32	0/1617
8	h	0.18	0/989	0.34	0/1326
9	i	0.15	0/1034	0.30	0/1375
10	j	0.17	0/796	0.41	0/1077
11	k	0.18	0/884	0.33	0/1191
12	l	0.20	0/945	0.32	0/1268
13	m	0.18	0/900	0.34	0/1204
14	n	0.16	0/817	0.27	0/1088
15	o	0.20	0/722	0.37	0/964
16	p	0.18	0/653	0.33	0/877
17	q	0.20	0/650	0.38	0/871
18	r	0.16	0/453	0.28	0/609
19	s	0.17	0/680	0.39	0/915
20	t	0.19	0/676	0.32	0/895
21	u	0.13	0/467	0.29	0/620
22	x	0.20	0/1651	0.27	0/2569
22	y	0.18	1/1605 (0.1%)	0.30	0/2497
23	z	0.18	0/259	0.28	0/400
24	w	0.18	0/2788	0.36	0/3753
25	v	0.25	0/3738	0.45	0/5071
26	A	0.22	0/69147	0.31	0/107869
27	B	0.19	0/2876	0.32	0/4483
28	C	0.20	0/2121	0.32	0/2852
29	D	0.21	0/1576	0.32	0/2119
30	E	0.19	0/1571	0.29	0/2113

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
31	F	0.15	0/1434	0.30	0/1926
32	G	0.16	0/1343	0.34	0/1816
33	H	0.14	0/290	0.39	0/392
34	I	0.19	0/1001	0.48	0/1350
35	J	0.15	0/1046	0.42	0/1410
36	L	0.20	0/1152	0.30	0/1551
37	M	0.20	0/955	0.34	0/1279
38	N	0.19	0/1061	0.30	0/1412
39	O	0.19	0/1073	0.31	0/1433
40	P	0.20	0/958	0.32	0/1281
41	Q	0.18	0/902	0.32	0/1209
42	R	0.19	0/929	0.28	0/1242
43	S	0.22	0/960	0.27	0/1278
44	T	0.20	0/829	0.34	0/1107
45	U	0.20	0/864	0.29	0/1156
46	V	0.17	0/744	0.31	0/994
47	W	0.19	0/787	0.40	0/1051
48	X	0.18	0/766	0.36	0/1025
49	Y	0.18	0/589	0.30	0/779
50	Z	0.20	0/635	0.28	0/848
51	1	0.16	0/496	0.22	0/660
52	2	0.20	0/453	0.27	0/605
53	3	0.16	0/481	0.32	0/640
54	4	0.19	0/440	0.30	0/588
55	5	0.21	0/424	0.35	0/565
56	6	0.20	0/380	0.24	0/498
57	7	0.20	0/513	0.30	0/676
58	8	0.18	0/303	0.28	0/397
All	All	0.20	1/164586 (0.0%)	0.31	0/245231

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
4	d	0	1
38	N	0	1
39	O	0	2
47	W	0	1
All	All	0	5

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
22	y	8	4SU	O3'-P	5.01	1.61	1.56

There are no bond angle outliers.

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
38	N	35	HIS	Peptide
39	O	81	4D4	Mainchain
39	O	82	MS6	Peptide
47	W	99	ASN	Peptide
4	d	184	ARG	Sidechain

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	32803	0	16528	241	0
2	b	1754	0	1782	32	0
3	c	1624	0	1696	25	0
4	d	1643	0	1707	30	0
5	e	1152	0	1196	18	0
6	f	839	0	833	21	0
7	g	1191	0	1245	23	0
8	h	979	0	1031	21	0
9	i	1022	0	1070	21	0
10	j	786	0	828	27	0
11	k	877	0	884	15	0
12	l	942	0	999	11	0
13	m	891	0	952	23	0
14	n	805	0	844	8	0
15	o	714	0	734	13	0
16	p	643	0	661	9	0
17	q	641	0	682	12	0
18	r	446	0	472	4	0
19	s	663	0	688	9	0
20	t	670	0	719	8	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
21	u	460	0	486	13	0
22	x	1632	0	839	8	0
22	y	1584	0	804	45	0
23	z	232	0	118	1	0
24	w	2750	0	2677	49	0
25	v	3671	0	3507	166	0
26	A	62252	0	31334	427	0
27	B	2572	0	1301	19	0
28	C	2082	0	2154	16	0
29	D	1566	0	1618	13	0
30	E	1552	0	1619	21	0
31	F	1410	0	1444	29	0
32	G	1323	0	1371	25	0
33	H	287	0	307	6	0
34	I	988	0	1025	52	0
35	J	1032	0	1085	58	0
36	L	1129	0	1162	12	0
37	M	946	0	1023	13	0
38	N	1052	0	1127	14	0
39	O	1075	0	1144	14	0
40	P	945	0	989	12	0
41	Q	892	0	923	12	0
42	R	917	0	962	9	0
43	S	947	0	1019	8	0
44	T	816	0	839	8	0
45	U	857	0	922	7	0
46	V	738	0	807	4	0
47	W	779	0	831	12	0
48	X	753	0	780	15	0
49	Y	582	0	599	4	0
50	Z	625	0	652	4	0
51	1	495	0	526	6	0
52	2	449	0	488	2	0
53	3	474	0	471	7	0
54	4	434	0	445	6	0
55	5	417	0	451	5	0
56	6	377	0	418	5	0
57	7	504	0	572	3	0
58	8	302	0	340	8	0
59	4	1	0	0	0	0
59	6	1	0	0	0	0
59	7	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
59	A	320	0	0	0	0
59	B	8	0	0	0	0
59	C	1	0	0	0	0
59	D	1	0	0	0	0
59	S	2	0	0	0	0
59	a	89	0	0	0	0
59	n	1	0	0	0	0
59	u	1	0	0	0	0
59	x	1	0	0	0	0
59	y	1	0	0	0	0
60	v	32	0	14	3	0
61	3	1	0	0	0	0
61	8	1	0	0	0	0
62	8	1	0	0	0	0
62	A	117	0	0	3	0
62	B	1	0	0	0	0
62	N	1	0	0	0	0
62	a	24	0	0	0	0
All	All	153589	0	104744	1559	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 1559 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:y:51:U:H3	22:y:63:G:H1	1.07	0.96
25:v:318:MET:HE1	25:v:379:PHE:HB2	1.51	0.92
22:y:15:G:H22	22:y:48:C:H42	1.18	0.92
7:g:113:ASP:HB2	7:g:119:ARG:HG2	1.55	0.88
1:a:81:A:N7	1:a:82:G:N2	2.25	0.85

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	b	222/241 (92%)	201 (90%)	21 (10%)	0	100	100
3	c	204/233 (88%)	190 (93%)	14 (7%)	0	100	100
4	d	203/206 (98%)	198 (98%)	5 (2%)	0	100	100
5	e	154/167 (92%)	149 (97%)	5 (3%)	0	100	100
6	f	101/131 (77%)	96 (95%)	5 (5%)	0	100	100
7	g	150/156 (96%)	138 (92%)	12 (8%)	0	100	100
8	h	127/130 (98%)	122 (96%)	5 (4%)	0	100	100
9	i	125/130 (96%)	121 (97%)	4 (3%)	0	100	100
10	j	96/103 (93%)	91 (95%)	4 (4%)	1 (1%)	12	41
11	k	113/129 (88%)	109 (96%)	4 (4%)	0	100	100
12	l	118/124 (95%)	110 (93%)	8 (7%)	0	100	100
13	m	113/118 (96%)	107 (95%)	6 (5%)	0	100	100
14	n	98/101 (97%)	96 (98%)	2 (2%)	0	100	100
15	o	86/89 (97%)	79 (92%)	7 (8%)	0	100	100
16	p	79/82 (96%)	76 (96%)	3 (4%)	0	100	100
17	q	77/84 (92%)	68 (88%)	9 (12%)	0	100	100
18	r	52/75 (69%)	52 (100%)	0	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	53/71 (75%)	52 (98%)	1 (2%)	0	100	100
24	w	345/360 (96%)	320 (93%)	25 (7%)	0	100	100
25	v	479/529 (90%)	421 (88%)	58 (12%)	0	100	100
28	C	269/273 (98%)	259 (96%)	10 (4%)	0	100	100
29	D	206/209 (99%)	197 (96%)	9 (4%)	0	100	100
30	E	199/201 (99%)	192 (96%)	7 (4%)	0	100	100
31	F	175/179 (98%)	169 (97%)	6 (3%)	0	100	100
32	G	174/177 (98%)	163 (94%)	11 (6%)	0	100	100
33	H	37/149 (25%)	33 (89%)	4 (11%)	0	100	100
34	I	129/165 (78%)	99 (77%)	30 (23%)	0	100	100
35	J	139/142 (98%)	119 (86%)	19 (14%)	1 (1%)	18	49

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
36	L	140/142 (99%)	138 (99%)	2 (1%)	0	100	100
37	M	121/123 (98%)	115 (95%)	6 (5%)	0	100	100
38	N	142/144 (99%)	134 (94%)	8 (6%)	0	100	100
39	O	132/136 (97%)	127 (96%)	5 (4%)	0	100	100
40	P	116/127 (91%)	112 (97%)	4 (3%)	0	100	100
41	Q	114/117 (97%)	106 (93%)	8 (7%)	0	100	100
42	R	112/115 (97%)	107 (96%)	5 (4%)	0	100	100
43	S	115/118 (98%)	114 (99%)	1 (1%)	0	100	100
44	T	101/103 (98%)	96 (95%)	5 (5%)	0	100	100
45	U	108/110 (98%)	107 (99%)	1 (1%)	0	100	100
46	V	91/100 (91%)	81 (89%)	10 (11%)	0	100	100
47	W	100/104 (96%)	91 (91%)	9 (9%)	0	100	100
48	X	92/94 (98%)	88 (96%)	4 (4%)	0	100	100
49	Y	74/85 (87%)	71 (96%)	3 (4%)	0	100	100
50	Z	75/78 (96%)	71 (95%)	4 (5%)	0	100	100
51	1	59/63 (94%)	55 (93%)	4 (7%)	0	100	100
52	2	56/59 (95%)	55 (98%)	1 (2%)	0	100	100
53	3	56/70 (80%)	51 (91%)	5 (9%)	0	100	100
54	4	53/57 (93%)	50 (94%)	3 (6%)	0	100	100
55	5	49/55 (89%)	48 (98%)	1 (2%)	0	100	100
56	6	44/46 (96%)	44 (100%)	0	0	100	100
57	7	62/65 (95%)	60 (97%)	1 (2%)	1 (2%)	7	30
58	8	36/38 (95%)	36 (100%)	0	0	100	100
All	All	6536/7082 (92%)	6142 (94%)	391 (6%)	3 (0%)	100	100

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
35	J	33	VAL
10	j	57	VAL
57	7	32	ILE

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	b	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	48/61 (79%)	48 (100%)	0	100	100
24	w	289/300 (96%)	289 (100%)	0	100	100
25	v	368/453 (81%)	364 (99%)	4 (1%)	65	78
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

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
32	G	137/138 (99%)	137 (100%)	0	100	100
33	H	30/114 (26%)	30 (100%)	0	100	100
34	I	100/123 (81%)	100 (100%)	0	100	100
35	J	109/110 (99%)	109 (100%)	0	100	100
36	L	116/116 (100%)	116 (100%)	0	100	100
37	M	104/104 (100%)	104 (100%)	0	100	100
38	N	103/103 (100%)	103 (100%)	0	100	100
39	O	107/107 (100%)	107 (100%)	0	100	100
40	P	98/103 (95%)	98 (100%)	0	100	100
41	Q	86/87 (99%)	86 (100%)	0	100	100
42	R	99/100 (99%)	99 (100%)	0	100	100
43	S	89/90 (99%)	89 (100%)	0	100	100
44	T	84/84 (100%)	84 (100%)	0	100	100
45	U	93/93 (100%)	93 (100%)	0	100	100
46	V	80/84 (95%)	80 (100%)	0	100	100
47	W	83/85 (98%)	83 (100%)	0	100	100
48	X	78/78 (100%)	78 (100%)	0	100	100
49	Y	58/63 (92%)	58 (100%)	0	100	100
50	Z	67/68 (98%)	67 (100%)	0	100	100
51	1	54/55 (98%)	54 (100%)	0	100	100
52	2	48/49 (98%)	48 (100%)	0	100	100
53	3	54/62 (87%)	54 (100%)	0	100	100
54	4	46/48 (96%)	46 (100%)	0	100	100
55	5	46/49 (94%)	46 (100%)	0	100	100
56	6	38/38 (100%)	38 (100%)	0	100	100
57	7	51/52 (98%)	51 (100%)	0	100	100
58	8	34/34 (100%)	34 (100%)	0	100	100
All	All	5410/5789 (94%)	5406 (100%)	4 (0%)	87	90

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
25	v	68	ILE

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Mol	Chain	Res	Type
25	v	69	SER
25	v	70	ILE
25	v	71	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 83 such sidechains are listed below:

Mol	Chain	Res	Type
30	E	97	ASN
44	T	91	GLN
31	F	52	ASN
36	L	47	HIS
48	X	49	ASN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	a	1526/1542 (98%)	187 (12%)	0
22	x	75/76 (98%)	13 (17%)	0
22	y	72/76 (94%)	26 (36%)	0
23	z	10/21 (47%)	3 (30%)	0
26	A	2897/2904 (99%)	378 (13%)	12 (0%)
27	B	119/120 (99%)	14 (11%)	2 (1%)
All	All	4699/4739 (99%)	621 (13%)	14 (0%)

5 of 621 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	a	4	U
1	a	5	U
1	a	6	G
1	a	9	G
1	a	22	G

5 of 14 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
26	A	1111	A
26	A	1328	A
27	B	66	A
26	A	2473	U

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Mol	Chain	Res	Type
27	B	3	C

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

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
1	2MG	a	1516	1	23,26,27	1.24	3 (13%)	33,38,41	2.28	10 (30%)
26	PSU	A	2605	26	18,21,22	1.40	3 (16%)	21,30,33	2.09	4 (19%)
1	MA6	a	1518	1	23,26,27	1.47	4 (17%)	33,38,41	2.45	13 (39%)
12	D2T	l	89	12	8,9,10	1.83	1 (12%)	6,11,13	2.50	3 (50%)
22	PSU	y	39	22	18,21,22	1.36	2 (11%)	21,30,33	2.10	4 (19%)
26	6MZ	A	1618	26	22,25,26	1.43	5 (22%)	29,36,39	2.26	9 (31%)
26	OMU	A	2552	26	19,22,23	1.27	3 (15%)	25,31,34	1.85	5 (20%)
1	PSU	a	516	1	18,21,22	1.40	3 (16%)	21,30,33	2.06	4 (19%)
26	PSU	A	2604	26	18,21,22	1.43	3 (16%)	21,30,33	2.08	4 (19%)
39	MS6	O	82	39	5,7,8	0.51	0	2,7,9	1.28	0
22	5MU	x	54	22	19,22,23	1.35	5 (26%)	27,32,35	2.22	6 (22%)
11	IAS	k	119	11	6,7,8	0.96	0	3,8,10	1.48	1 (33%)
26	PSU	A	746	26,59	18,21,22	1.42	3 (16%)	21,30,33	1.95	3 (14%)
26	PSU	A	1911	26	18,21,22	1.37	3 (16%)	21,30,33	2.05	4 (19%)
26	PSU	A	2580	26	18,21,22	1.42	5 (27%)	21,30,33	2.04	4 (19%)
22	MIA	x	37	22	28,31,32	2.37	6 (21%)	38,44,47	2.79	15 (39%)
1	UR3	a	1498	1	19,22,23	0.93	0	26,32,35	1.70	2 (7%)
26	OMG	A	2251	26,22	23,26,27	1.19	3 (13%)	32,38,41	2.02	6 (18%)
1	G7M	a	527	1	23,26,27	1.56	3 (13%)	34,39,42	1.75	5 (14%)
22	7MG	y	46	22	23,26,27	1.26	3 (13%)	27,39,42	2.78	8 (29%)
26	2MG	A	1835	26	23,26,27	1.27	3 (13%)	33,38,41	2.22	6 (18%)
26	6MZ	A	2030	26	22,25,26	1.44	5 (22%)	29,36,39	2.28	10 (34%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
1	5MC	a	1407	1	19,22,23	1.47	3 (15%)	26,32,35	1.12	3 (11%)
22	PSU	x	39	22	18,21,22	1.32	2 (11%)	21,30,33	2.23	3 (14%)
26	PSU	A	2457	26	18,21,22	1.41	5 (27%)	21,30,33	2.12	5 (23%)
26	2MA	A	2503	26,59	22,25,26	1.47	4 (18%)	32,37,40	2.33	7 (21%)
26	PSU	A	955	26	18,21,22	1.45	4 (22%)	21,30,33	2.08	3 (14%)
22	PSU	x	32	22	18,21,22	1.40	4 (22%)	21,30,33	2.06	3 (14%)
1	MA6	a	1519	1	23,26,27	1.47	4 (17%)	33,38,41	2.46	13 (39%)
1	2MG	a	1207	1	23,26,27	1.26	3 (13%)	33,38,41	2.22	8 (24%)
26	5MU	A	747	26	19,22,23	1.38	4 (21%)	27,32,35	2.10	6 (22%)
26	PSU	A	1917	26	18,21,22	1.45	4 (22%)	21,30,33	2.06	3 (14%)
22	5MU	y	54	22	19,22,23	1.39	5 (26%)	27,32,35	2.23	7 (25%)
26	5MU	A	1939	26	19,22,23	1.36	4 (21%)	27,32,35	2.19	6 (22%)
1	4OC	a	1402	1,59	20,23,24	0.75	0	25,32,35	0.96	1 (4%)
26	1MG	A	745	26	23,26,27	1.17	3 (13%)	33,39,42	1.73	5 (15%)
22	MIA	y	37	22	21,24,32	1.59	4 (19%)	30,35,47	2.01	7 (23%)
26	OMC	A	2498	26,59	19,22,23	0.82	0	25,31,34	0.98	1 (4%)
26	3TD	A	1915	26,59	19,22,23	4.22	7 (36%)	23,32,35	1.82	2 (8%)
26	2MG	A	2445	26	23,26,27	1.27	4 (17%)	33,38,41	2.25	7 (21%)
26	G7M	A	2069	26	23,26,27	1.53	3 (13%)	34,39,42	1.73	5 (14%)
29	MEQ	D	150	29	8,9,10	0.48	0	5,10,12	0.23	0
1	5MC	a	967	1	19,22,23	1.49	3 (15%)	26,32,35	1.09	2 (7%)
26	H2U	A	2449	26	18,21,22	1.20	3 (16%)	19,30,33	0.87	1 (5%)
26	5MC	A	1962	26	19,22,23	1.48	3 (15%)	26,32,35	1.13	3 (11%)
26	PSU	A	2504	26	18,21,22	1.40	3 (16%)	21,30,33	2.05	4 (19%)
22	PSU	y	55	22	18,21,22	1.37	2 (11%)	21,30,33	2.02	4 (19%)
1	2MG	a	966	1	23,26,27	1.26	4 (17%)	33,38,41	2.26	10 (30%)
39	4D4	O	81	39	9,11,12	2.53	2 (22%)	7,13,15	0.86	0
22	4SU	y	8	22	18,21,22	1.91	4 (22%)	25,30,33	2.42	5 (20%)
22	PSU	y	32	22	18,21,22	1.36	2 (11%)	21,30,33	2.03	4 (19%)
22	7MG	x	46	22	23,26,27	1.30	3 (13%)	27,39,42	2.65	7 (25%)
22	PSU	x	55	22	18,21,22	1.41	2 (11%)	21,30,33	2.08	3 (14%)
22	4SU	x	8	22	18,21,22	1.95	4 (22%)	25,30,33	1.97	4 (16%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns.

'-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	2MG	a	1516	1	-	0/9/27/28	0/3/3/3
26	PSU	A	2605	26	-	0/7/25/26	0/2/2/2
1	MA6	a	1518	1	-	2/11/29/30	0/3/3/3
12	D2T	l	89	12	-	1/7/12/14	-
22	PSU	y	39	22	-	1/7/25/26	0/2/2/2
26	6MZ	A	1618	26	-	0/9/27/28	0/3/3/3
26	OMU	A	2552	26	-	1/9/27/28	0/2/2/2
1	PSU	a	516	1	-	0/7/25/26	0/2/2/2
26	PSU	A	2604	26	-	0/7/25/26	0/2/2/2
39	MS6	O	82	39	-	3/4/6/8	-
22	5MU	x	54	22	-	0/7/25/26	0/2/2/2
11	IAS	k	119	11	-	1/7/7/8	-
26	PSU	A	746	26,59	-	4/7/25/26	0/2/2/2
26	PSU	A	1911	26	-	0/7/25/26	0/2/2/2
26	PSU	A	2580	26	-	0/7/25/26	0/2/2/2
22	MIA	x	37	22	-	5/15/33/34	0/3/3/3
1	UR3	a	1498	1	-	0/7/25/26	0/2/2/2
26	OMG	A	2251	26,22	-	0/9/27/28	0/3/3/3
1	G7M	a	527	1	-	2/7/25/26	0/3/3/3
22	7MG	y	46	22	-	5/7/37/38	0/3/3/3
26	2MG	A	1835	26	-	2/9/27/28	0/3/3/3
26	6MZ	A	2030	26	-	2/9/27/28	0/3/3/3
1	5MC	a	1407	1	-	0/7/25/26	0/2/2/2
22	PSU	x	39	22	-	0/7/25/26	0/2/2/2
26	PSU	A	2457	26	-	0/7/25/26	0/2/2/2
26	2MA	A	2503	26,59	-	1/7/25/26	0/3/3/3
26	PSU	A	955	26	-	0/7/25/26	0/2/2/2
22	PSU	x	32	22	-	0/7/25/26	0/2/2/2
1	MA6	a	1519	1	-	4/11/29/30	0/3/3/3
1	2MG	a	1207	1	-	2/9/27/28	0/3/3/3
26	5MU	A	747	26	-	0/7/25/26	0/2/2/2
26	PSU	A	1917	26	-	2/7/25/26	0/2/2/2
22	5MU	y	54	22	-	3/7/25/26	0/2/2/2
26	5MU	A	1939	26	-	0/7/25/26	0/2/2/2
1	4OC	a	1402	1,59	-	2/9/29/30	0/2/2/2
26	1MG	A	745	26	-	0/7/25/26	0/3/3/3
22	MIA	y	37	22	-	2/7/25/34	0/3/3/3
26	OMC	A	2498	26,59	-	1/9/27/28	0/2/2/2
26	3TD	A	1915	26,59	-	0/7/25/26	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
26	2MG	A	2445	26	-	0/9/27/28	0/3/3/3
26	G7M	A	2069	26	-	3/7/25/26	0/3/3/3
29	MEQ	D	150	29	-	2/8/9/11	-
1	5MC	a	967	1	-	0/7/25/26	0/2/2/2
26	H2U	A	2449	26	-	0/7/38/39	0/2/2/2
26	5MC	A	1962	26	-	0/7/25/26	0/2/2/2
26	PSU	A	2504	26	-	2/7/25/26	0/2/2/2
22	PSU	y	55	22	-	0/7/25/26	0/2/2/2
1	2MG	a	966	1	-	2/9/27/28	0/3/3/3
39	4D4	O	81	39	-	2/11/12/14	-
22	4SU	y	8	22	-	0/7/25/26	0/2/2/2
22	PSU	y	32	22	-	0/7/25/26	0/2/2/2
22	7MG	x	46	22	-	0/7/37/38	0/3/3/3
22	PSU	x	55	22	-	3/7/25/26	0/2/2/2
22	4SU	x	8	22	-	0/7/25/26	0/2/2/2

The worst 5 of 168 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
26	A	1915	3TD	C6-C5	12.68	1.49	1.35
26	A	1915	3TD	C2-N1	9.67	1.49	1.37
22	x	37	MIA	C2-S10	-7.56	1.69	1.75
22	x	37	MIA	C13-C14	6.89	1.53	1.32
39	O	81	4D4	CZ-NE	6.17	1.45	1.33

The worst 5 of 268 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
22	x	46	7MG	N9-C4-N3	9.02	138.68	125.46
22	y	46	7MG	N9-C4-N3	8.97	138.61	125.46
26	A	2503	2MA	C5-C4-N3	-8.37	118.36	127.18
22	x	37	MIA	C5-C4-N3	-8.08	118.67	127.18
22	x	37	MIA	C12-C13-C14	-8.07	112.53	127.01

There are no chirality outliers.

5 of 60 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	a	1207	2MG	N1-C2-N2-CM2
1	a	1207	2MG	N3-C2-N2-CM2

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Mol	Chain	Res	Type	Atoms
1	a	1402	4OC	O4'-C4'-C5'-O5'
1	a	1518	MA6	C5-C6-N6-C9
1	a	1519	MA6	O4'-C4'-C5'-O5'

There are no ring outliers.

12 monomers are involved in 19 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	a	1518	MA6	2	0
22	y	46	7MG	2	0
26	A	2030	6MZ	2	0
1	a	1519	MA6	2	0
22	y	54	5MU	1	0
1	a	1402	4OC	1	0
22	y	37	MIA	2	0
26	A	2498	OMC	2	0
29	D	150	MEQ	1	0
22	y	55	PSU	1	0
1	a	966	2MG	1	0
22	y	8	4SU	4	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 431 ligands modelled in this entry, 430 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
60	GCP	v	601	-	32,34,34	1.42	6 (18%)	49,54,54	1.85	7 (14%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
60	GCP	v	601	-	-	1/19/38/38	0/3/3/3

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

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
60	v	601	GCP	C5-C4	3.15	1.47	1.38
60	v	601	GCP	PG-O2G	2.73	1.61	1.55
60	v	601	GCP	PG-O3G	2.72	1.61	1.55
60	v	601	GCP	C6-N1	-2.53	1.34	1.38
60	v	601	GCP	PB-O3A	2.19	1.60	1.58

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

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
60	v	601	GCP	C5-C4-N3	-6.23	118.47	128.39
60	v	601	GCP	C2-N3-C4	5.12	121.11	112.30
60	v	601	GCP	N9-C4-N3	4.61	135.18	125.95
60	v	601	GCP	PB-O3A-PA	-4.02	119.25	132.37
60	v	601	GCP	C6-C5-N7	3.35	136.39	130.29

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
60	v	601	GCP	C5'-O5'-PA-O2A

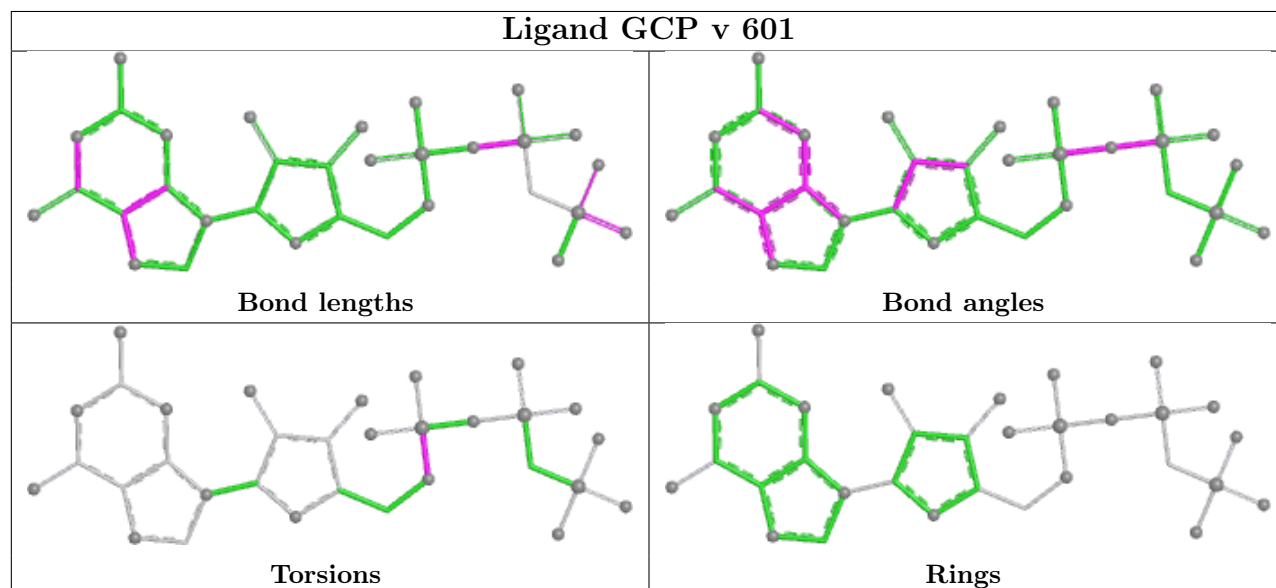
There are no ring outliers.

1 monomer is involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
60	v	601	GCP	3	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.

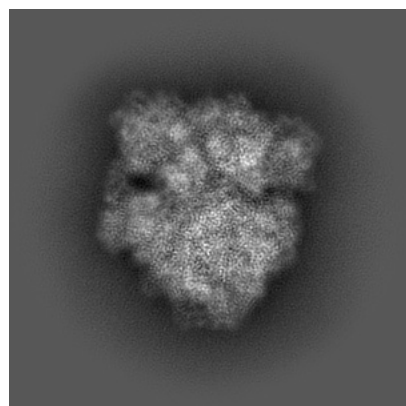
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-29627. These allow visual inspection of the internal detail of the map and identification of artifacts.

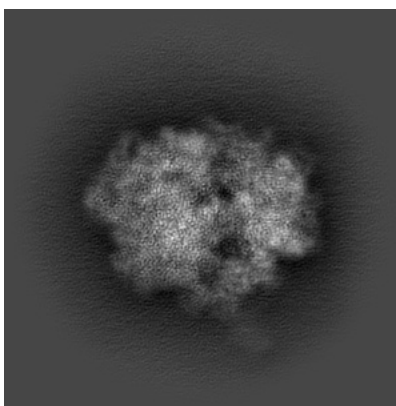
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

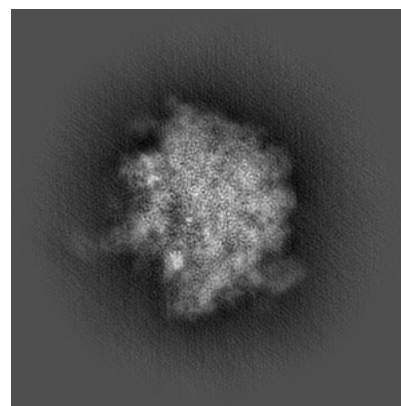
6.1.1 Primary map



X

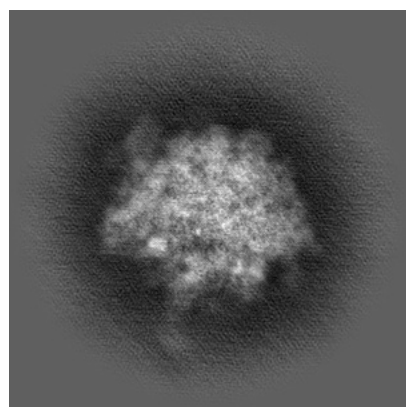


Y

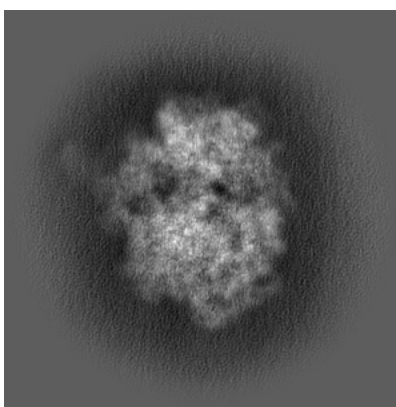


Z

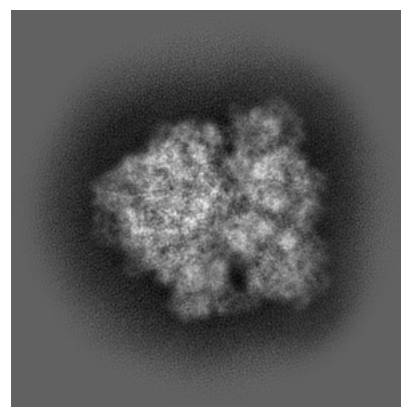
6.1.2 Raw map



X



Y

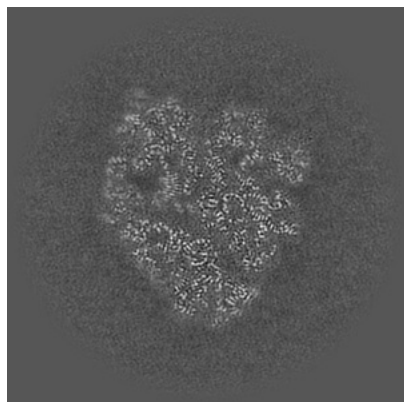


Z

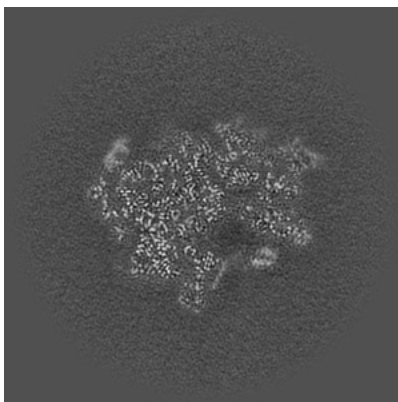
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

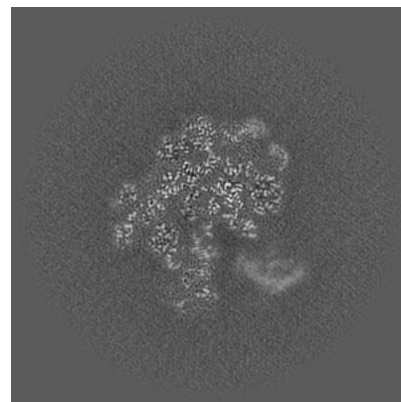
6.2.1 Primary map



X Index: 256

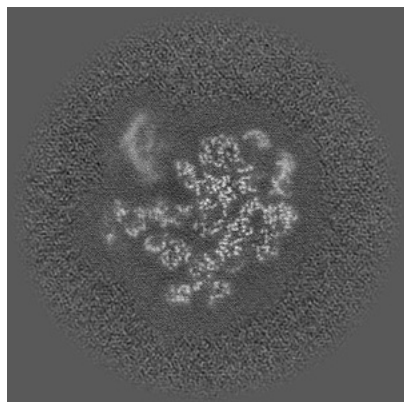


Y Index: 256

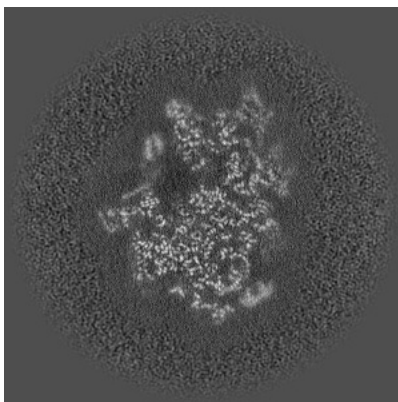


Z Index: 256

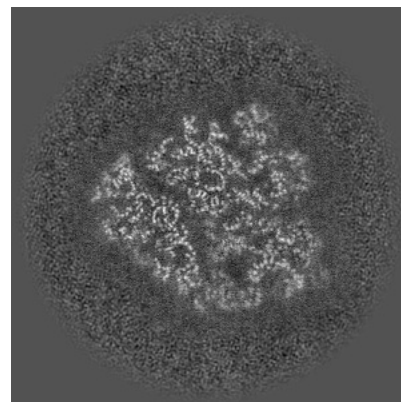
6.2.2 Raw map



X Index: 256



Y Index: 256

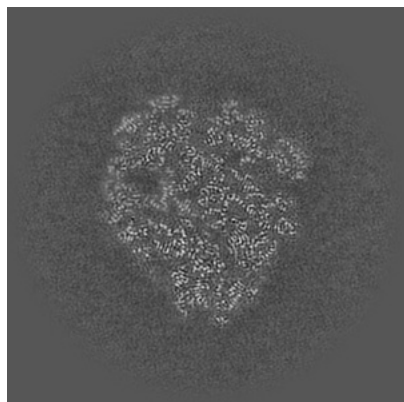


Z Index: 256

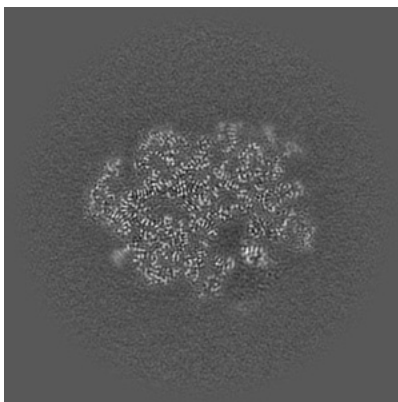
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

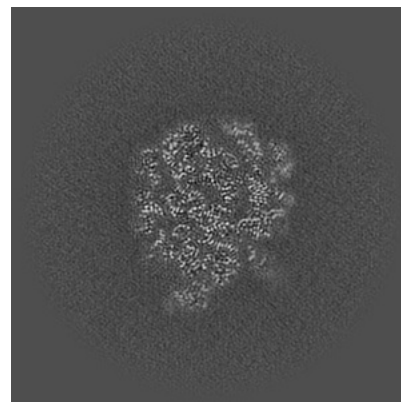
6.3.1 Primary map



X Index: 252

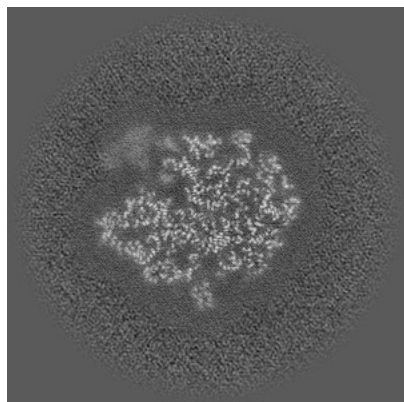


Y Index: 272

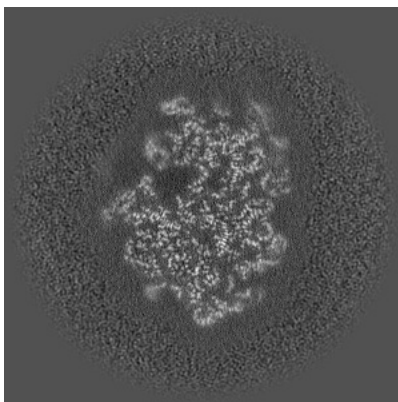


Z Index: 210

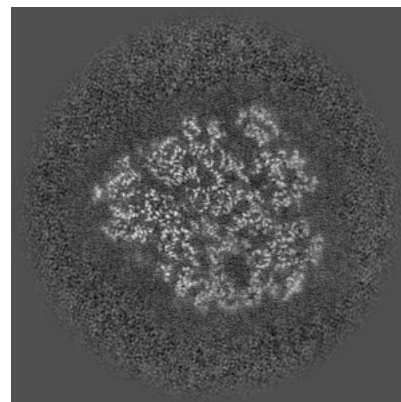
6.3.2 Raw map



X Index: 231



Y Index: 267

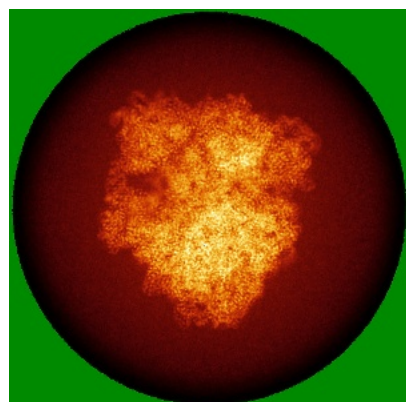


Z Index: 252

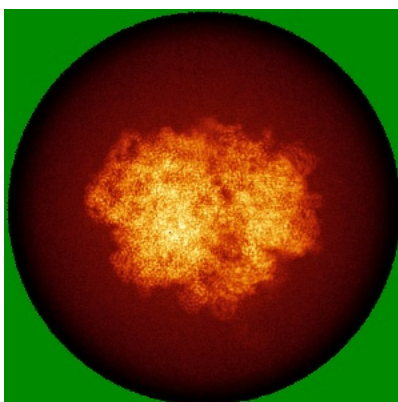
The images above show the largest variance slices of the map in three orthogonal directions.

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

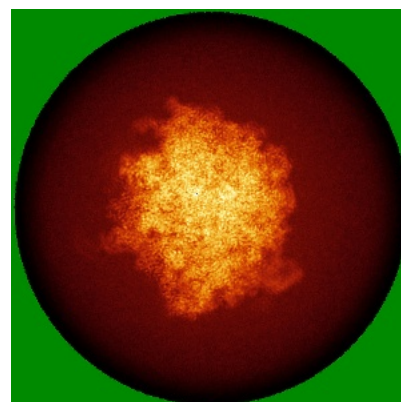
6.4.1 Primary map



X

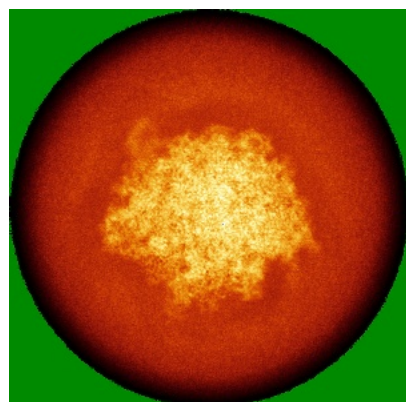


Y

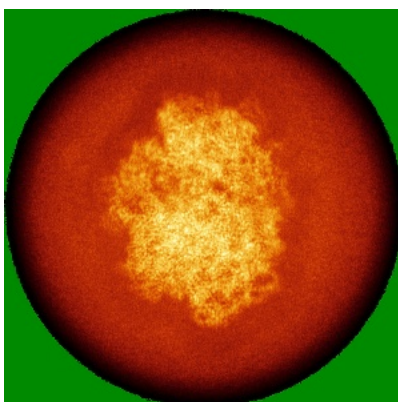


Z

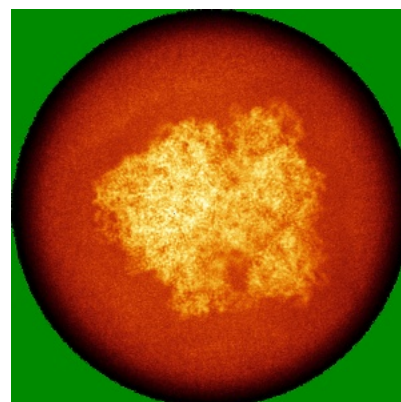
6.4.2 Raw map



X



Y

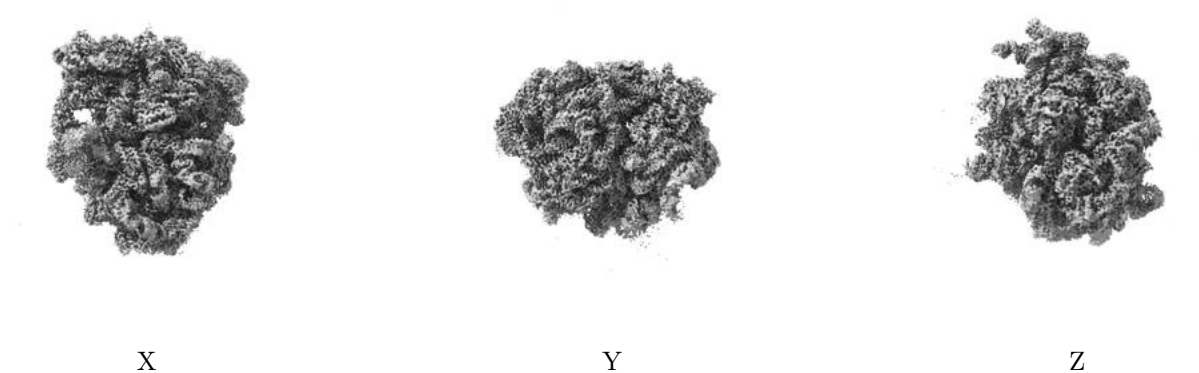


Z

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.

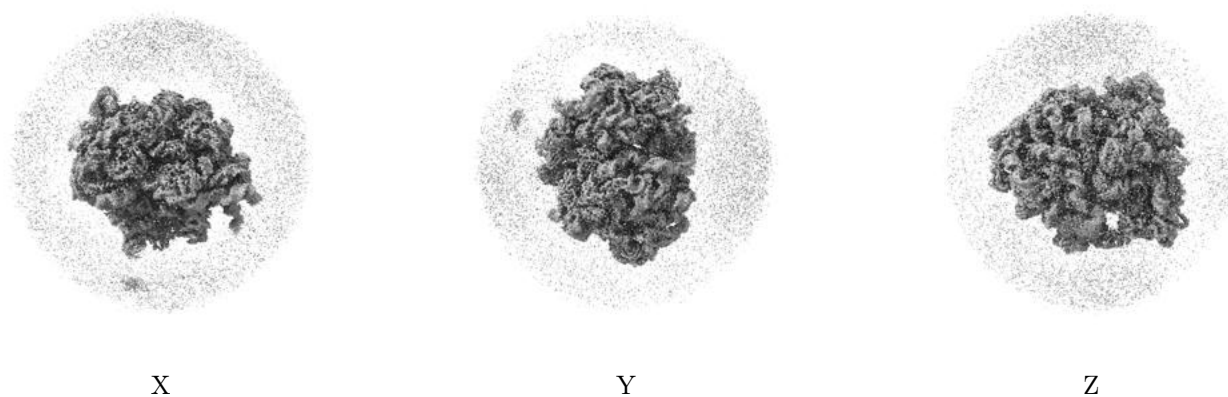
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 3.7. 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



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.

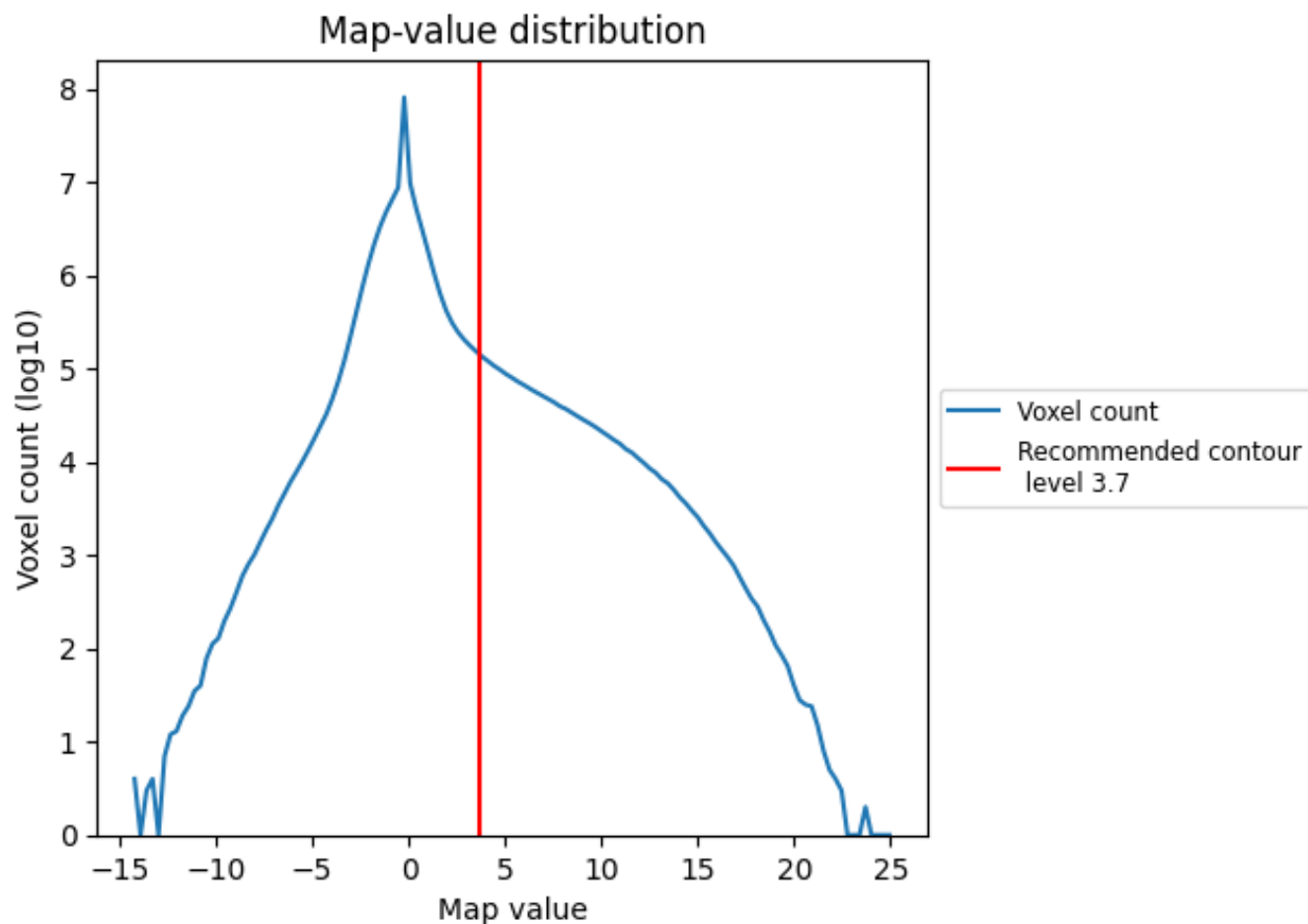
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

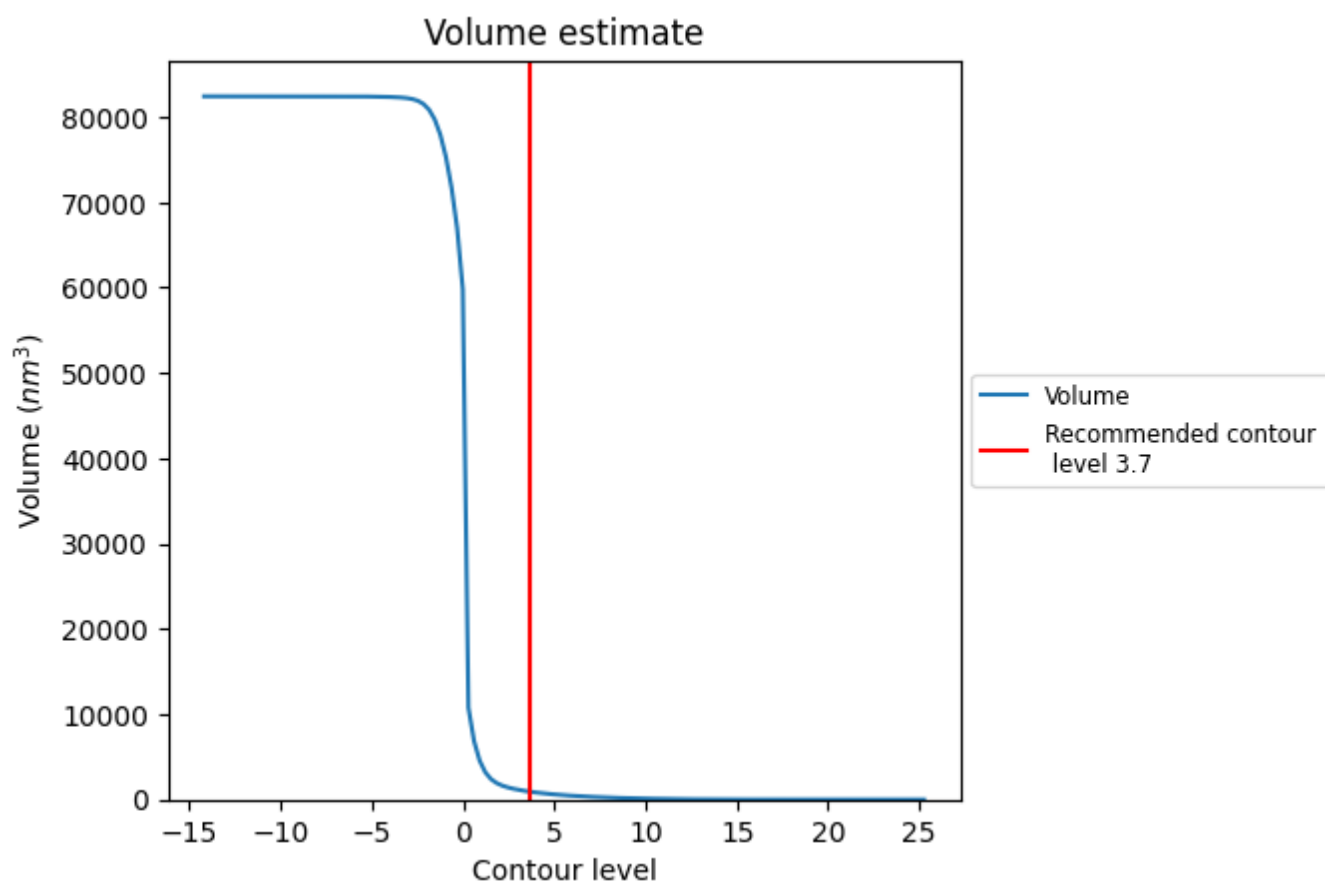
This section contains the results of statistical analysis of the map.

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.

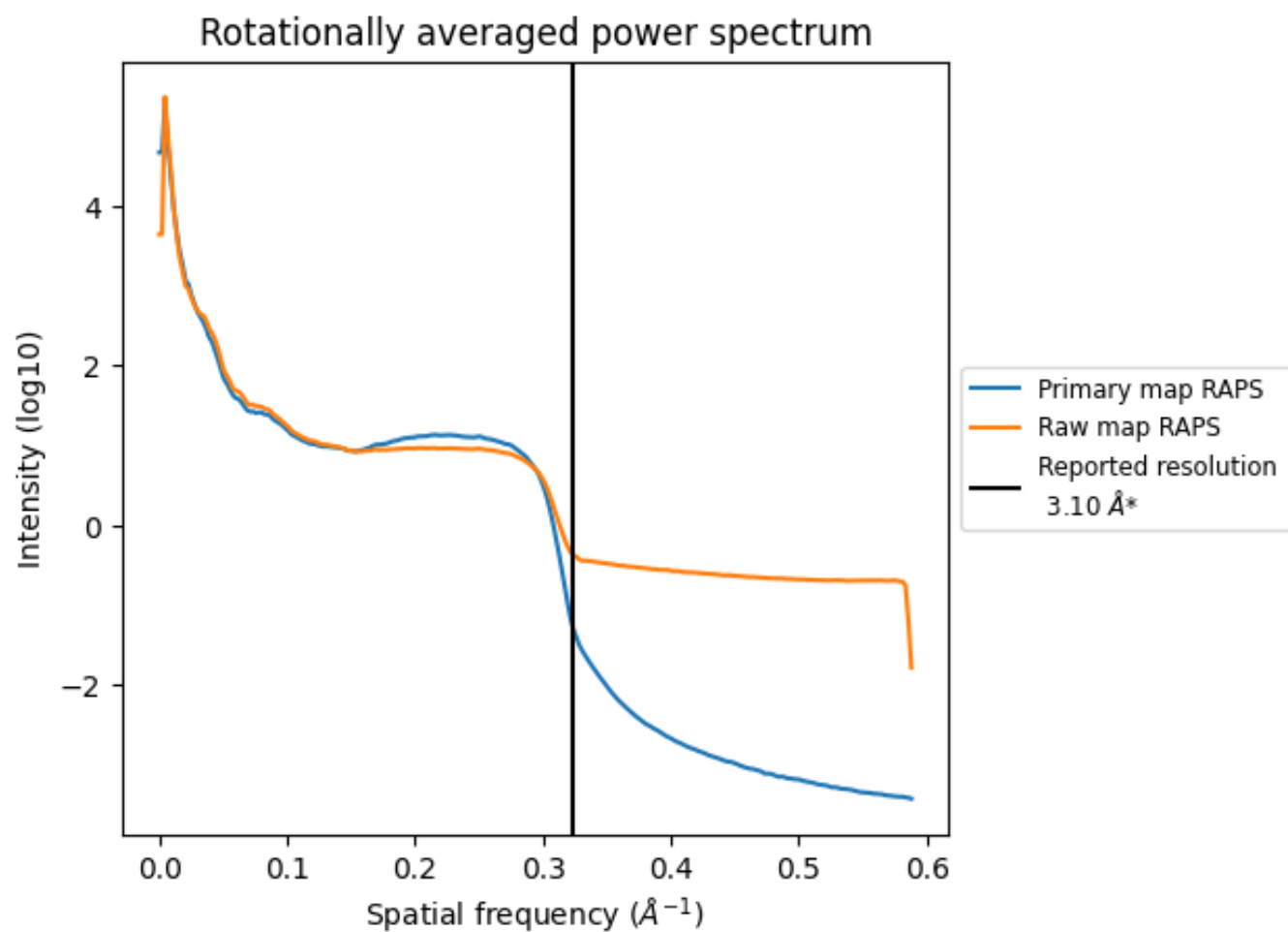
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 909 nm³; this corresponds to an approximate mass of 821 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 ⓘ

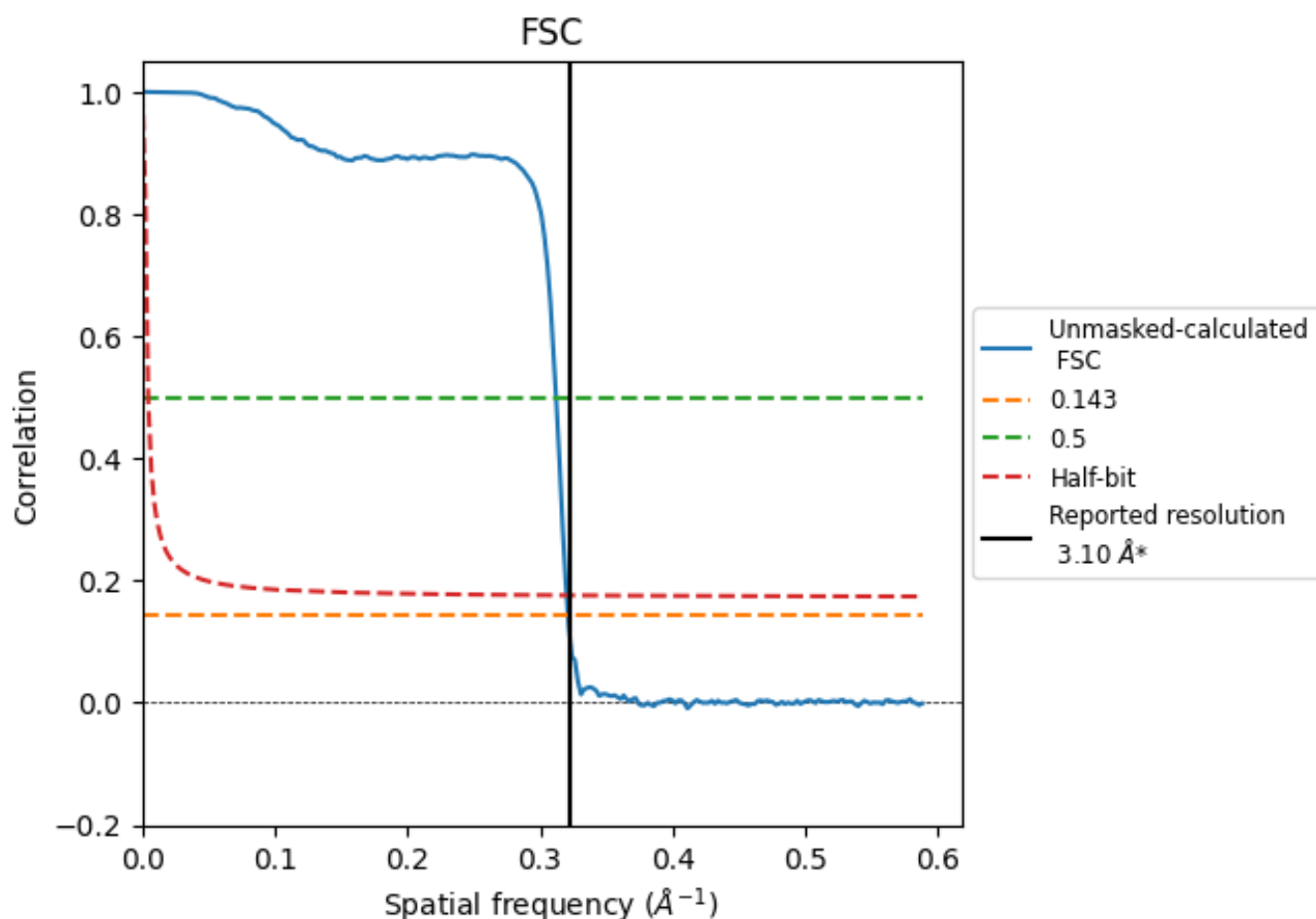


*Reported resolution corresponds to spatial frequency of 0.323 $\text{\AA}^{-1}$

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 0.323 Å⁻¹

8.2 Resolution estimates [i](#)

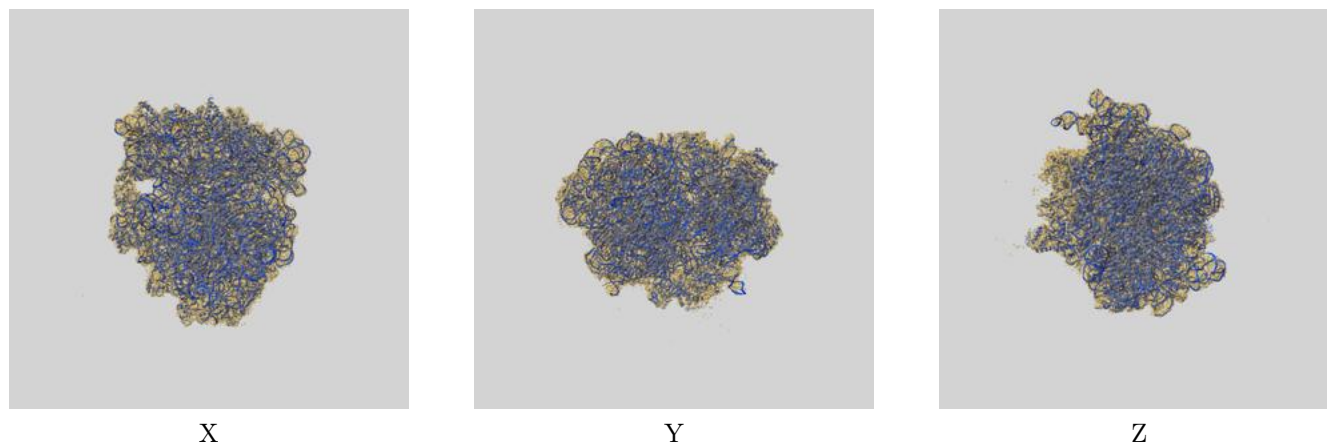
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.10	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.11	3.20	3.12

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

9 Map-model fit [i](#)

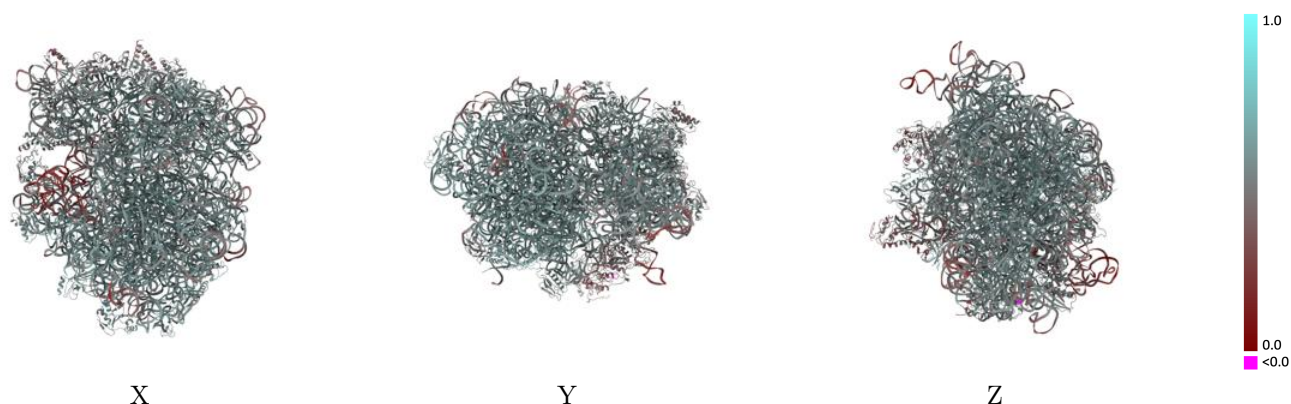
This section contains information regarding the fit between EMDB map EMD-29627 and PDB model 8FZG. Per-residue inclusion information can be found in [section 3](#) on [page 17](#).

9.1 Map-model overlay [i](#)



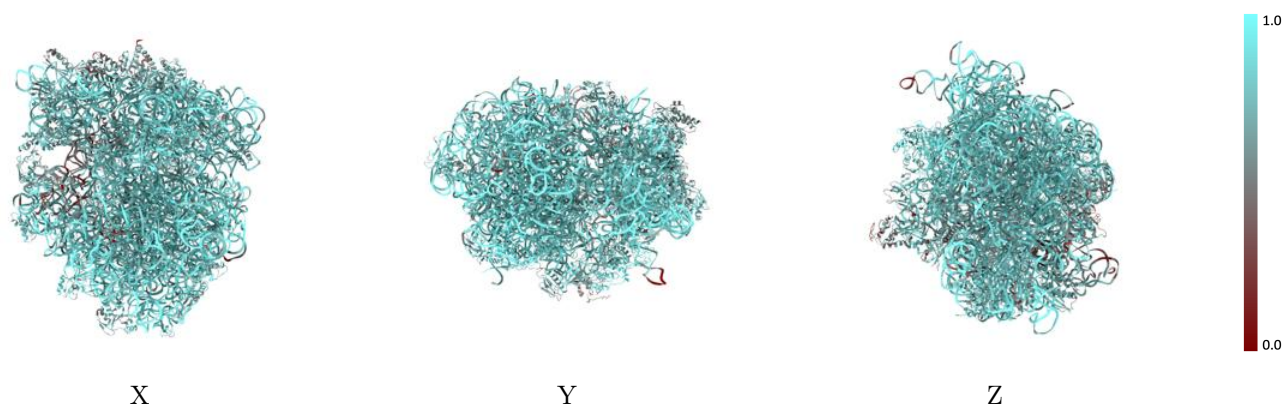
The images above show the 3D surface view of the map at the recommended contour level 3.7 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



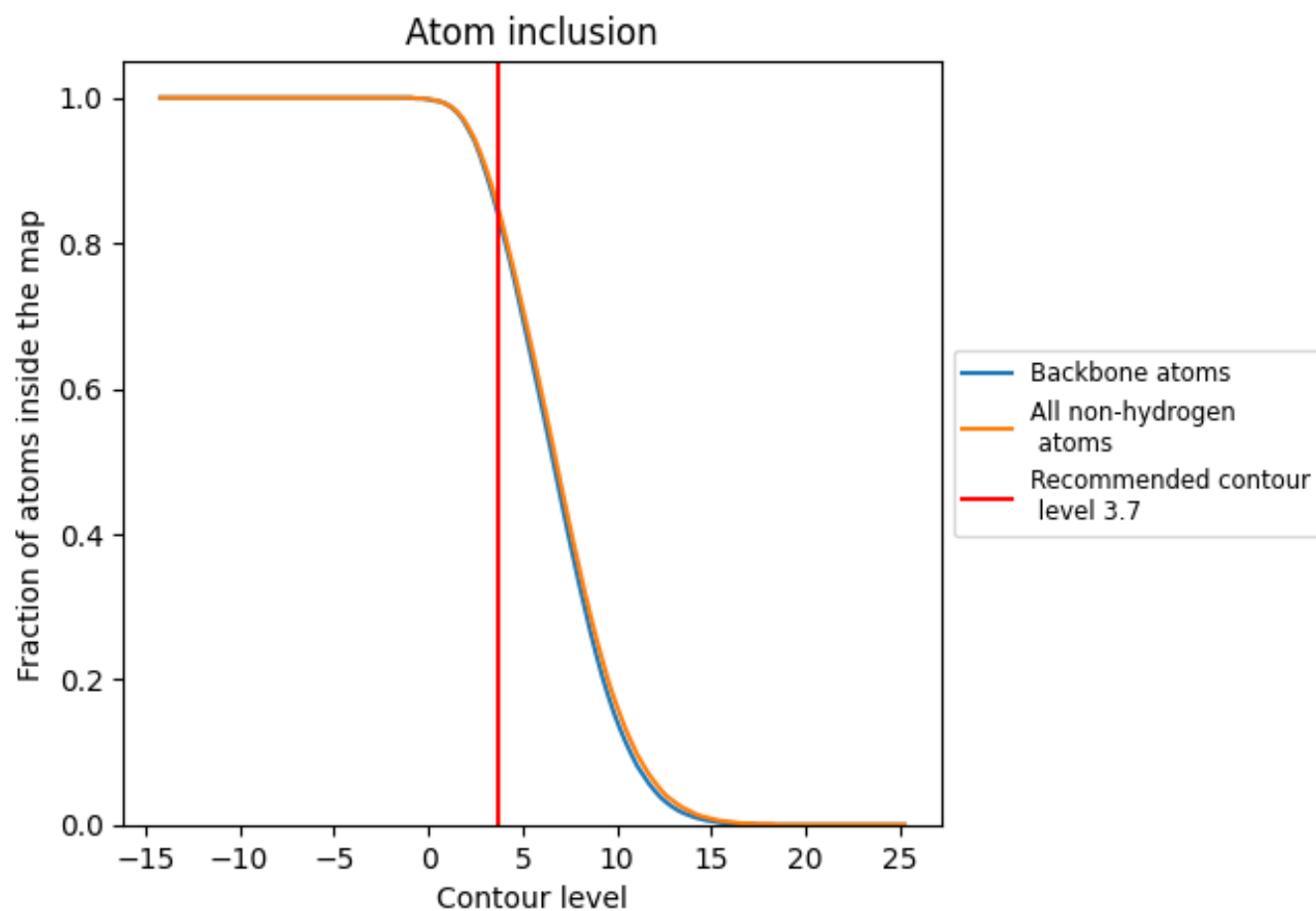
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (3.7).

9.4 Atom inclusion [i](#)



At the recommended contour level, 84% of all backbone atoms, 85% 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 (3.7) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8490	 0.5370
1	 0.7740	 0.5530
2	 0.8420	 0.5740
3	 0.6690	 0.4920
4	 0.8520	 0.5880
5	 0.7990	 0.5540
6	 0.8650	 0.5940
7	 0.8780	 0.6010
8	 0.8570	 0.5850
A	 0.9050	 0.5500
B	 0.8960	 0.5380
C	 0.8510	 0.5920
D	 0.8490	 0.5820
E	 0.8170	 0.5680
F	 0.7530	 0.5270
G	 0.7350	 0.5310
H	 0.1550	 0.4190
I	 0.4560	 0.3480
J	 0.6020	 0.3850
L	 0.8550	 0.5890
M	 0.8100	 0.5880
N	 0.8460	 0.5790
O	 0.8370	 0.5890
P	 0.8860	 0.5990
Q	 0.8020	 0.5540
R	 0.7860	 0.5780
S	 0.9000	 0.5920
T	 0.8420	 0.5720
U	 0.8410	 0.5790
V	 0.7880	 0.5680
W	 0.7730	 0.5440
X	 0.8020	 0.5650
Y	 0.8520	 0.5920
Z	 0.8140	 0.5750
a	 0.8930	 0.5320



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Chain	Atom inclusion	Q-score
b	 0.5710	 0.4660
c	 0.7270	 0.5300
d	 0.7370	 0.5100
e	 0.7950	 0.5490
f	 0.7350	 0.4930
g	 0.6330	 0.4820
h	 0.7950	 0.5600
i	 0.7350	 0.5090
j	 0.6730	 0.4750
k	 0.7430	 0.5230
l	 0.8010	 0.5720
m	 0.7310	 0.5290
n	 0.7780	 0.5310
o	 0.7750	 0.5360
p	 0.7910	 0.5410
q	 0.7580	 0.5500
r	 0.7470	 0.5350
s	 0.7530	 0.5270
t	 0.7660	 0.5490
u	 0.6050	 0.4970
v	 0.8900	 0.4390
w	 0.6780	 0.5090
x	 0.8360	 0.5380
y	 0.3720	 0.2810
z	 0.7500	 0.5340