wwPDB EM Validation Summary Report ⓘ

Mar 12, 2025 – 02:19 AM EDT

PDB ID	:	7SA4
EMDB ID	:	EMD-24944
Title	:	Damaged 70S ribosome with PrfH bound
Authors	:	Tian, Y.; Zeng, F.; Raybarman, A.; Carruthers, A.; Li, Q.; Fatma, S.; Huang, R.H.
Deposited on	:	2021-09-22
Resolution	:	2.55 Å(reported)

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

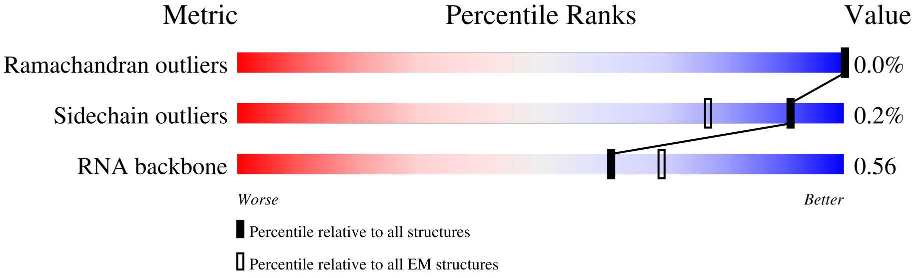
EMDB validation analysis	:	0.0.1.dev117
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	FAILED
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.41.4

1 Overall quality at a glance ⓘ

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

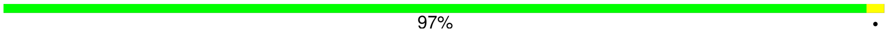
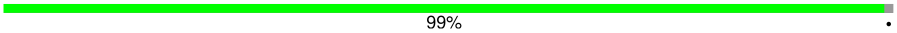
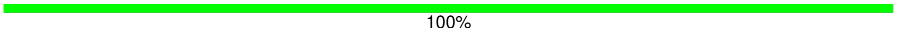
The reported resolution of this entry is 2.55 Å.

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)
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5%

Mol	Chain	Length	Quality of chain
1	1	2903	 82% 17%
2	2	1534	 82% 17% •
3	4	120	 88% 12%
4	5	77	 83% 16% •
4	6	77	 79% 21%
5	7	25	 24% 28% 48%
6	8	204	 97% •
7	B	273	 99% •
8	C	209	 100%

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Mol	Chain	Length	Quality of chain
9	D	201	100%
10	E	179	99% •
11	F	177	98% ••
12	G	149	99% •
13	H	165	78% • 21%
14	I	142	95% 5%
15	J	142	100%
16	K	123	100%
17	L	144	100%
18	M	136	100%
19	N	127	94% 6%
20	O	117	99% •
21	P	115	99% •
22	Q	118	98% ••
23	R	103	100%
24	S	110	99% •
25	T	100	94% 6%
26	U	104	98% ••
27	V	94	100%
28	W	85	89% 11%
29	X	78	99% •
30	Y	63	98% •
31	Z	59	98% •
32	a	70	94% 6%
33	b	57	98% •

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Mol	Chain	Length	Quality of chain
34	c	55	95% 5%
35	d	46	98% •
36	e	65	95% • •
37	f	38	100%
38	g	241	93% 7%
39	h	233	89% 11%
40	i	206	100%
41	j	167	93% • 7%
42	k	135	76% • 23%
43	l	179	84% 16%
44	m	130	99% •
45	n	130	97% • •
46	o	103	96% •
47	p	129	91% 9%
48	q	124	98% • •
49	r	118	98% •
50	s	101	99% •
51	t	89	99% •
52	u	82	100%
53	v	84	95% 5%
54	w	75	88% 12%
55	x	92	90% 10%
56	y	87	99% •
57	z	71	97% • •

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
1	G7M	1	2069	X	-	-	-

2 Entry composition (i)

There are 60 unique types of molecules in this entry. The entry contains 150065 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 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	1	2903	62336	27816	11470	20147	2903	0	0

- Molecule 2 is a RNA chain called 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	2	1534	32930	14693	6041	10662	1534	0	0

- Molecule 3 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	4	120	2569	1144	468	837	120	0	0

- Molecule 4 is a RNA chain called P-tRNA, E-tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	5	77	1643	732	297	537	77	0	0
			Total	C	N	O	P		
4	6	77	1640	732	297	535	76	0	0

- Molecule 5 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
5	7	13	275	124	49	89	13	0	0

- Molecule 6 is a protein called Peptide chain release factor H.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	8	203	1606	991	308	301	6	0	0

- Molecule 7 is a protein called 50S ribosomal protein L2.

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

- Molecule 8 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	C	209	1565	979	288	294	4	0	0

- Molecule 9 is a protein called 50S ribosomal protein L4.

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

- Molecule 10 is a protein called 50S ribosomal protein L5.

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

- Molecule 11 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	F	175	1313	826	241	244	2	0	0

- Molecule 12 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	G	149	1111	699	197	214	1	0	0

- Molecule 13 is a protein called 50S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	H	130	980	620	174	182	4	0	0

- Molecule 14 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	I	135	984	622	171	185	6	0	0

- Molecule 15 is a protein called 50S ribosomal protein L13.

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

- Molecule 16 is a protein called 50S ribosomal protein L14.

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

- Molecule 17 is a protein called 50S ribosomal protein L15.

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

- Molecule 18 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	M	136	1074	686	205	177	6	0	0

- Molecule 19 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	N	119	951	588	195	163	5	0	0

- Molecule 20 is a protein called 50S ribosomal protein L18.

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

- Molecule 21 is a protein called 50S ribosomal protein L19.

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

- Molecule 22 is a protein called 50S ribosomal protein L20.

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

- Molecule 23 is a protein called 50S ribosomal protein L21.

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

- Molecule 24 is a protein called 50S ribosomal protein L22.

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

- Molecule 25 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	T	94	746	470	140	134	2	0	0

- Molecule 26 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
26	U	103	788	498	148	142	0	0

- Molecule 27 is a protein called 50S ribosomal protein L25.

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

- Molecule 28 is a protein called 50S ribosomal protein L27.

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

- Molecule 29 is a protein called 50S ribosomal protein L28.

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

- Molecule 30 is a protein called 50S ribosomal protein L29.

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

- Molecule 31 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	Z	58	Total	C	N	O	S	0	0
			448	281	87	78	2		

- Molecule 32 is a protein called 50S ribosomal protein L31.

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

- Molecule 33 is a protein called 50S ribosomal protein L32.

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

- Molecule 34 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
34	c	52	Total	C	N	O	0	0
			426	275	78	73		

- Molecule 35 is a protein called 50S ribosomal protein L34.

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

- Molecule 36 is a protein called 50S ribosomal protein L35.

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

- Molecule 37 is a protein called 50S ribosomal protein L36.

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

- Molecule 38 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	g	225	Total	C	N	O	S	0	0
			1760	1113	316	323	8		

- Molecule 39 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	h	208	Total	C	N	O	S	0	0
			1636	1036	307	290	3		

- Molecule 40 is a protein called 30S ribosomal protein S4.

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

- Molecule 41 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	j	156	1152	717	217	212	6	0	0

- Molecule 42 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	k	104	848	536	153	152	7	0	0

- Molecule 43 is a protein called 30S ribosomal protein S7.

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

- Molecule 44 is a protein called 30S ribosomal protein S8.

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

- Molecule 45 is a protein called 30S ribosomal protein S9.

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

- Molecule 46 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
46	o	99	790	495	151	143	1	0	0

- Molecule 47 is a protein called 30S ribosomal protein S11.

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

- Molecule 48 is a protein called 30S ribosomal protein S12.

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

- Molecule 49 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
49	r	116	900	558	181	158	3	0	0

- Molecule 50 is a protein called 30S ribosomal protein S14.

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

- Molecule 51 is a protein called 30S ribosomal protein S15.

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

- Molecule 52 is a protein called 30S ribosomal protein S16.

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

- Molecule 53 is a protein called 30S ribosomal protein S17.

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

- Molecule 54 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
54	w	66	544	344	102	97	1	0	0

- Molecule 55 is a protein called 30S ribosomal protein S19.

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

- Molecule 56 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
56	y	86	669	414	138	114	3	0	0

- Molecule 57 is a protein called 30S ribosomal protein S21.

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

- Molecule 58 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
58	1	292	292	292	0
58	2	127	127	127	0
58	4	8	8	8	0
58	5	6	6	6	0
58	B	1	1	1	0
58	C	1	1	1	0
58	Q	1	1	1	0
58	b	1	1	1	0
58	i	1	1	1	0
58	r	1	1	1	0

- Molecule 59 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms	AltConf
59	a	1	Total Zn 1 1	0
59	f	1	Total Zn 1 1	0

- Molecule 60 is water.

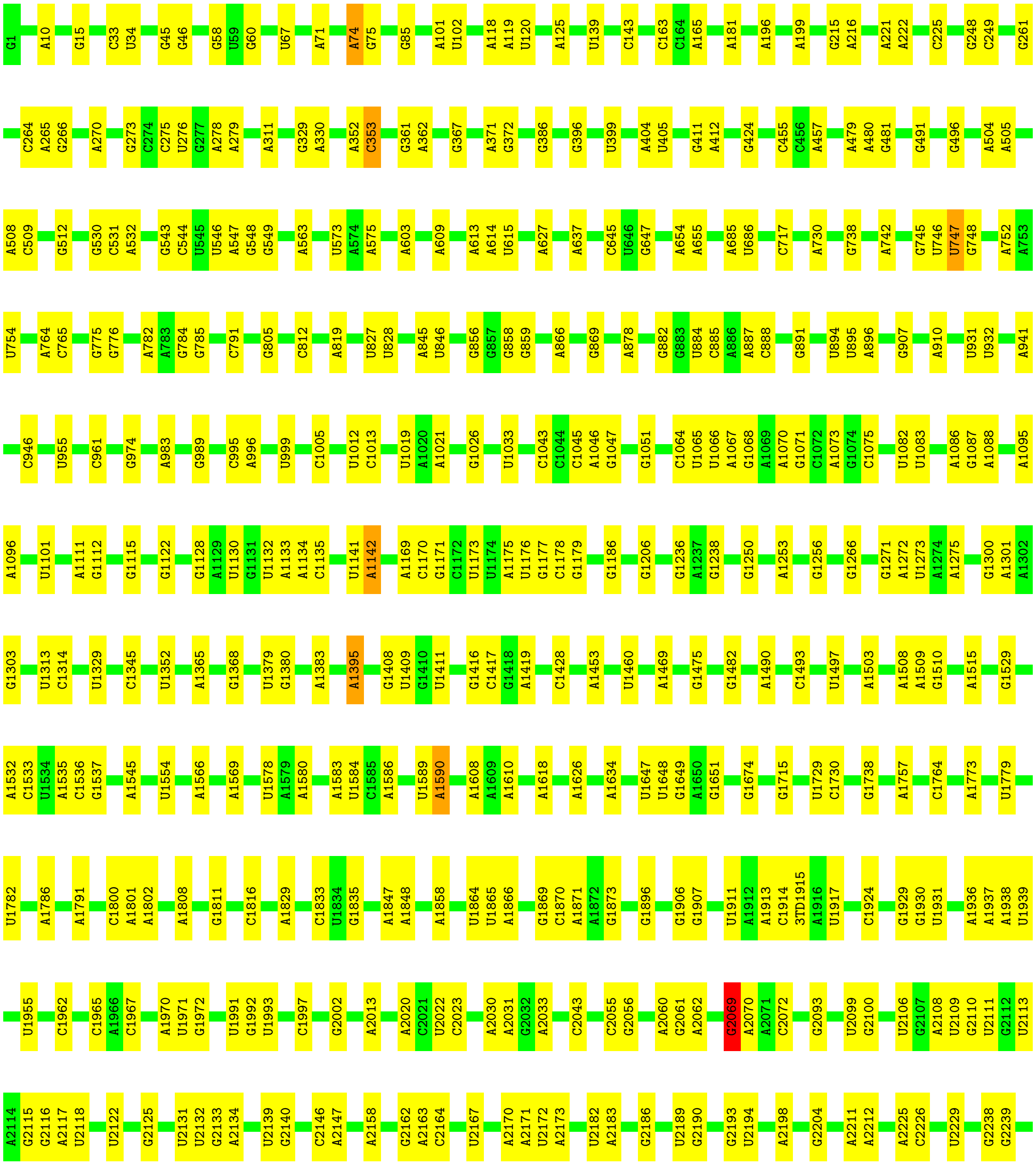
Mol	Chain	Residues	Atoms	AltConf
60	B	2	Total O 2 2	0

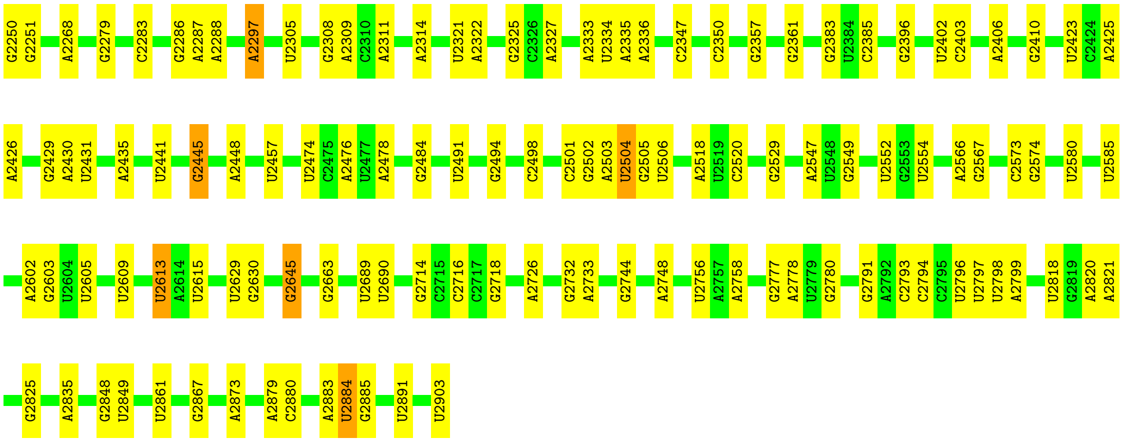
3 Residue-property plots (i)

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. 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. 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: 23S ribosomal RNA

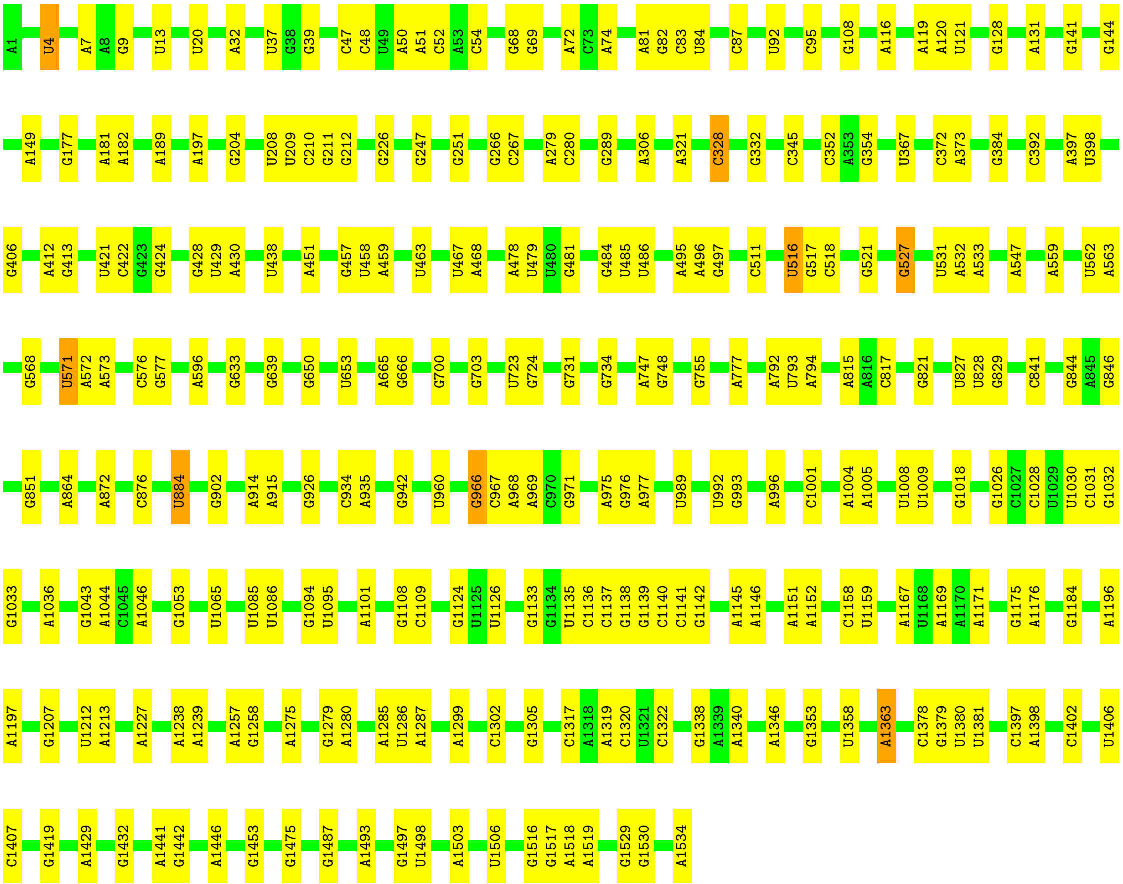
Chain 1:





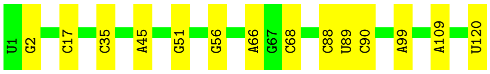
- Molecule 2: 16S ribosomal RNA

Chain 2:



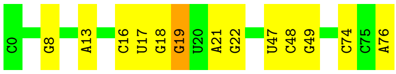
- Molecule 3: 5S ribosomal RNA

Chain 4:



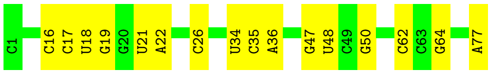
- Molecule 4: P-tRNA, E-tRNA

Chain 5:



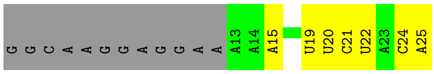
- Molecule 4: P-tRNA, E-tRNA

Chain 6:



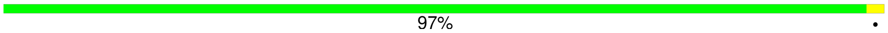
- Molecule 5: mRNA

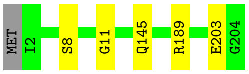
Chain 7:



- Molecule 6: Peptide chain release factor H

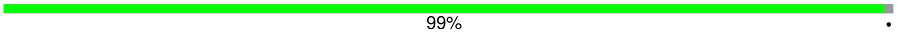
Chain 8:

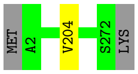




- Molecule 7: 50S ribosomal protein L2

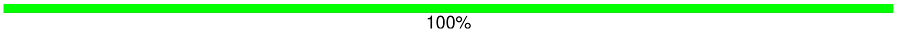
Chain B:





- Molecule 8: 50S ribosomal protein L3

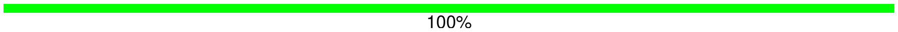
Chain C:

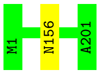


There are no outlier residues recorded for this chain.

- Molecule 9: 50S ribosomal protein L4

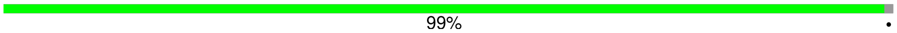
Chain D:

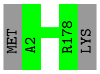




- Molecule 10: 50S ribosomal protein L5

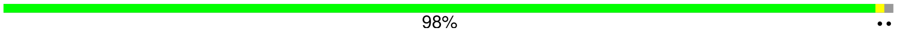
Chain E:

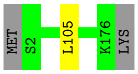




- Molecule 11: 50S ribosomal protein L6

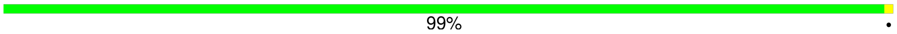
Chain F:

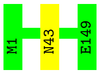




- Molecule 12: 50S ribosomal protein L9

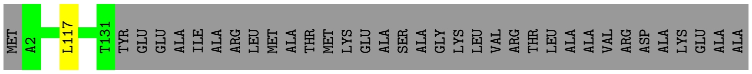
Chain G:





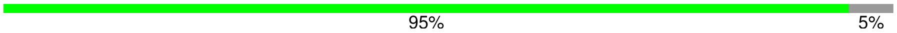
- Molecule 13: 50S ribosomal protein L10

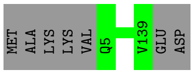
Chain H:



- Molecule 14: 50S ribosomal protein L11

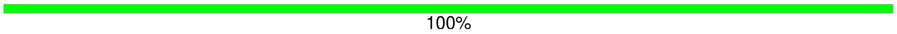
Chain I:





- Molecule 15: 50S ribosomal protein L13

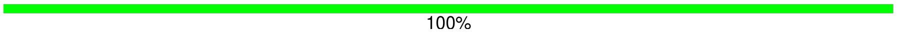
Chain J:



There are no outlier residues recorded for this chain.

- Molecule 16: 50S ribosomal protein L14

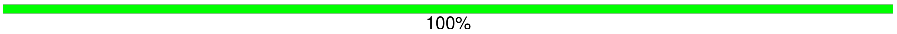
Chain K:



There are no outlier residues recorded for this chain.

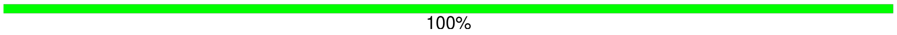
- Molecule 17: 50S ribosomal protein L15

Chain L:



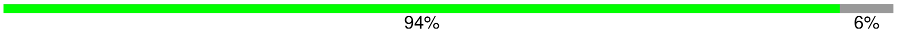
There are no outlier residues recorded for this chain.

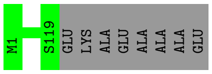
- Molecule 18: 50S ribosomal protein L16

Chain M:


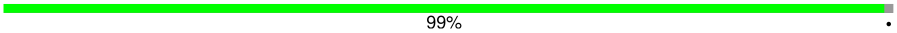
There are no outlier residues recorded for this chain.

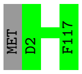
- Molecule 19: 50S ribosomal protein L17

Chain N:


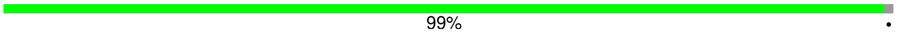


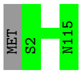
- Molecule 20: 50S ribosomal protein L18

Chain O:


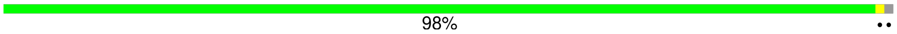


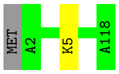
- Molecule 21: 50S ribosomal protein L19

Chain P:


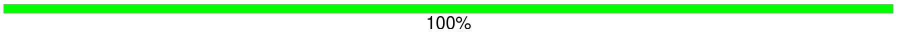


- Molecule 22: 50S ribosomal protein L20

Chain Q:


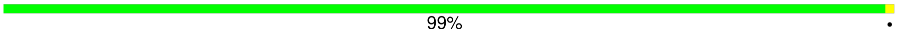


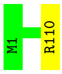
- Molecule 23: 50S ribosomal protein L21

Chain R:


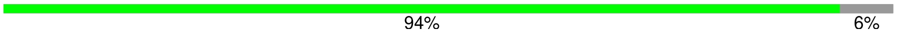
There are no outlier residues recorded for this chain.

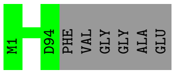
- Molecule 24: 50S ribosomal protein L22

Chain S:




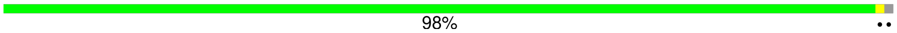
- Molecule 25: 50S ribosomal protein L23

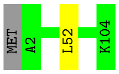
Chain T:




- Molecule 26: 50S ribosomal protein L24

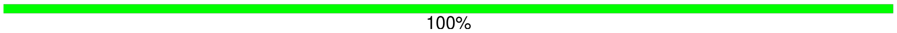
Chain U:





- Molecule 27: 50S ribosomal protein L25

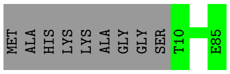
Chain V:



There are no outlier residues recorded for this chain.

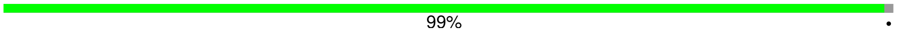
- Molecule 28: 50S ribosomal protein L27

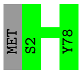
Chain W:



- Molecule 29: 50S ribosomal protein L28

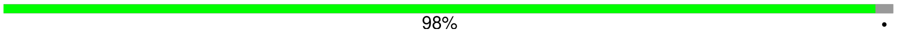
Chain X:

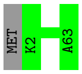




- Molecule 30: 50S ribosomal protein L29

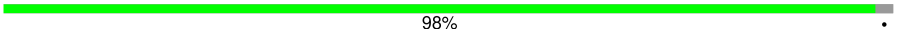
Chain Y:

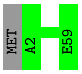




- Molecule 31: 50S ribosomal protein L30

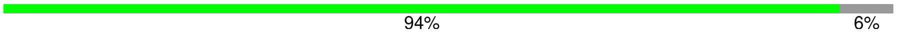
Chain Z:

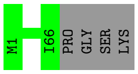




- Molecule 32: 50S ribosomal protein L31

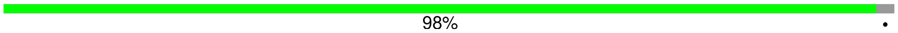
Chain a:

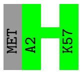




- Molecule 33: 50S ribosomal protein L32

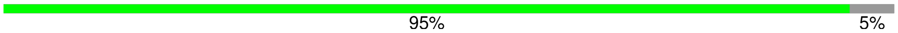
Chain b:

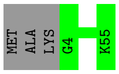




- Molecule 34: 50S ribosomal protein L33

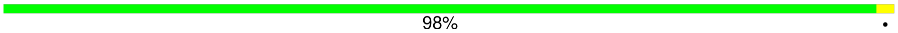
Chain c:

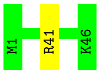




- Molecule 35: 50S ribosomal protein L34

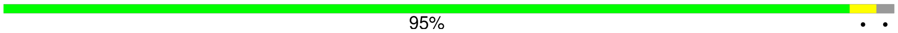
Chain d:

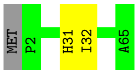




- Molecule 36: 50S ribosomal protein L35

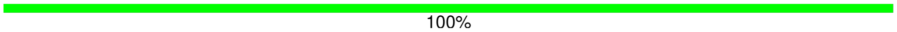
Chain e:





- Molecule 37: 50S ribosomal protein L36

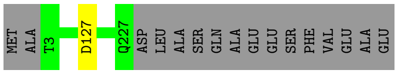
Chain f:



There are no outlier residues recorded for this chain.

- Molecule 38: 30S ribosomal protein S2

Chain g:

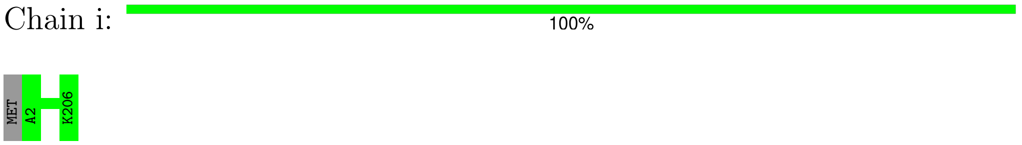


- Molecule 39: 30S ribosomal protein S3

Chain h:

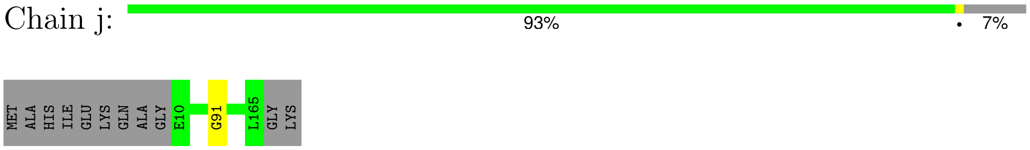
- Molecule 40: 30S ribosomal protein S4

Chain i:



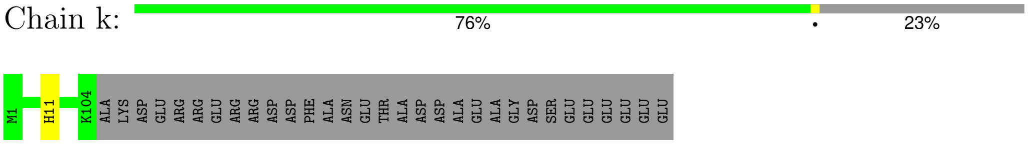
- Molecule 41: 30S ribosomal protein S5

Chain j:



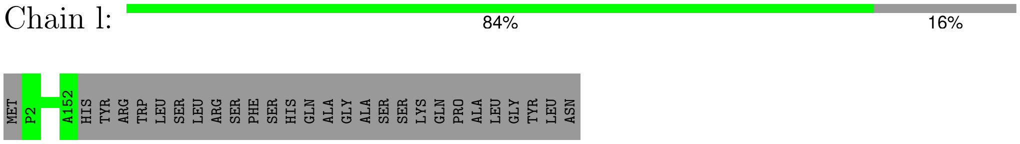
- Molecule 42: 30S ribosomal protein S6

Chain k:



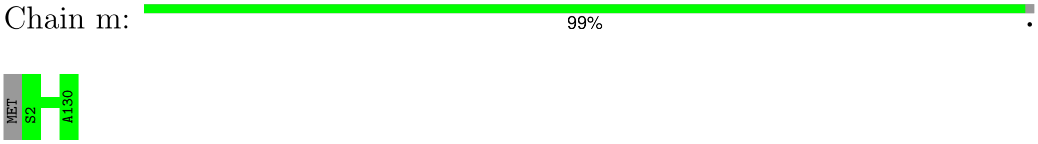
- Molecule 43: 30S ribosomal protein S7

Chain l:



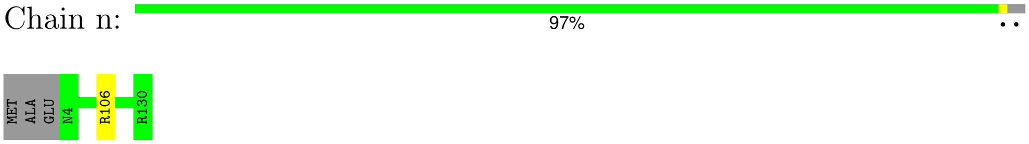
- Molecule 44: 30S ribosomal protein S8

Chain m:



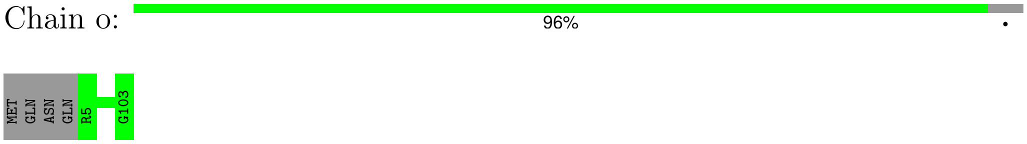
- Molecule 45: 30S ribosomal protein S9

Chain n:



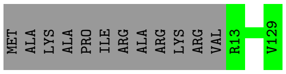
- Molecule 46: 30S ribosomal protein S10

Chain o:



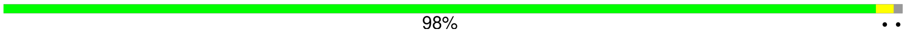
- Molecule 47: 30S ribosomal protein S11

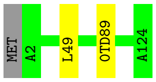
Chain p:



- Molecule 48: 30S ribosomal protein S12

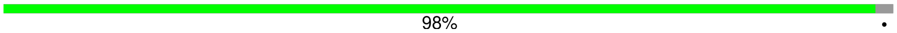
Chain q:

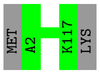




- Molecule 49: 30S ribosomal protein S13

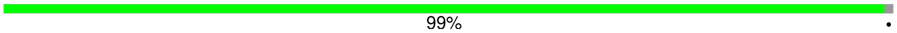
Chain r:

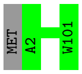




- Molecule 50: 30S ribosomal protein S14

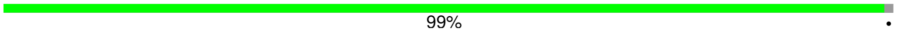
Chain s:

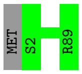




- Molecule 51: 30S ribosomal protein S15

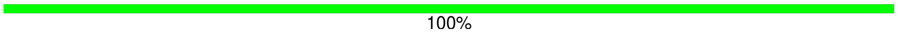
Chain t:





- Molecule 52: 30S ribosomal protein S16

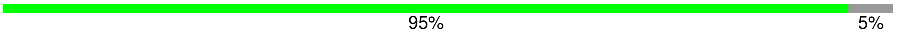
Chain u:

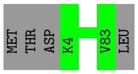


There are no outlier residues recorded for this chain.

- Molecule 53: 30S ribosomal protein S17

Chain v:





- Molecule 54: 30S ribosomal protein S18

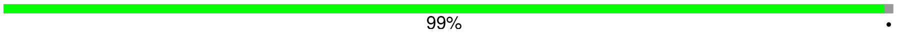
Chain w:

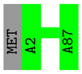
- Molecule 55: 30S ribosomal protein S19

Chain x:

- Molecule 56: 30S ribosomal protein S20

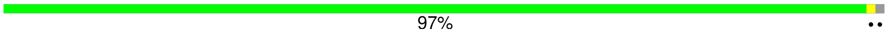
Chain y:

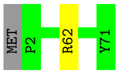




- Molecule 57: 30S ribosomal protein S21

Chain z:





4 Experimental information

Property	**Value**	**Source**
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	207600	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	30.0	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: A3P, UR3, 4OC, MA6, 2MG, OMU, 1MG, OMC, 6MZ, 3TD, G7M, 0TD, 5MU, OMG, 2MA, PSU, MG, 5MC, ZN

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	1	0.98	13/69285 (0.0%)	0.89	68/108083 (0.1%)
2	2	0.88	14/36558 (0.0%)	0.91	55/57015 (0.1%)
3	4	0.81	0/2872	0.81	0/4478
4	5	0.67	0/1835	0.85	1/2859 (0.0%)
4	6	0.31	0/1832	0.84	0/2855
5	7	0.61	0/307	0.88	0/475
6	8	0.45	1/1636 (0.1%)	0.60	0/2208
7	B	0.51	1/2121 (0.0%)	0.59	0/2852
8	C	0.48	0/1586	0.57	0/2134
9	D	0.43	0/1571	0.55	0/2113
10	E	0.38	0/1434	0.56	0/1926
11	F	0.36	0/1333	0.56	1/1805 (0.1%)
12	G	0.31	0/1122	0.54	0/1515
13	H	0.29	0/993	0.62	1/1340 (0.1%)
14	I	0.27	0/998	0.52	0/1348
15	J	0.48	0/1152	0.52	0/1551
16	K	0.46	0/955	0.55	0/1279
17	L	0.42	0/1062	0.58	0/1413
18	M	0.46	0/1093	0.56	0/1460
19	N	0.46	0/964	0.52	0/1289
20	O	0.40	0/902	0.53	0/1209
21	P	0.47	0/929	0.53	0/1242
22	Q	0.52	0/960	0.55	0/1278
23	R	0.48	0/829	0.58	0/1107
24	S	0.46	0/864	0.53	0/1156
25	T	0.39	0/752	0.49	0/1005
26	U	0.40	0/796	0.55	1/1062 (0.1%)
27	V	0.42	0/766	0.51	0/1025
28	W	0.48	0/589	0.59	0/779
29	X	0.45	0/635	0.54	0/848
30	Y	0.31	0/502	0.50	0/667

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
31	Z	0.41	0/452	0.59	0/605
32	a	0.35	0/531	0.51	0/709
33	b	0.46	0/450	0.57	0/599
34	c	0.43	0/433	0.53	0/576
35	d	0.44	0/380	0.51	0/498
36	e	0.47	0/513	0.60	0/676
37	f	0.46	0/303	0.54	0/397
38	g	0.34	0/1791	0.54	0/2413
39	h	0.41	0/1663	0.53	0/2241
40	i	0.41	0/1665	0.49	0/2227
41	j	0.48	0/1165	0.59	0/1568
42	k	0.37	0/867	0.52	0/1171
43	l	0.33	0/1195	0.51	0/1602
44	m	0.42	0/989	0.54	0/1326
45	n	0.39	0/1034	0.55	0/1375
46	o	0.39	0/800	0.60	0/1082
47	p	0.38	0/893	0.51	0/1205
48	q	0.45	0/960	0.62	1/1286 (0.1%)
49	r	0.38	0/909	0.55	0/1215
50	s	0.39	0/817	0.47	0/1088
51	t	0.38	0/722	0.47	0/964
52	u	0.41	0/659	0.53	0/884
53	v	0.40	0/657	0.56	0/881
54	w	0.43	0/553	0.53	0/743
55	x	0.37	0/680	0.50	0/915
56	y	0.37	0/675	0.51	0/895
57	z	0.33	0/597	0.49	0/792
All	All	0.81	29/161586 (0.0%)	0.81	128/241309 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	1	3	0
22	Q	0	1
36	e	0	1
38	g	0	1
39	h	0	1
All	All	3	4

The worst 5 of 29 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	8	11	GLY	C-N	8.55	1.50	1.34
1	1	74	A	C6-N1	-7.07	1.30	1.35
2	2	1363	A	C6-N1	-6.52	1.30	1.35
1	1	2013	A	C6-N1	-6.45	1.31	1.35
1	1	1142	A	C6-N1	-6.44	1.31	1.35

The worst 5 of 128 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	2	1358	U	C5-C4-O4	25.37	141.12	125.90
2	2	37	U	C5-C4-O4	25.30	141.08	125.90
1	1	2613	U	C5-C4-O4	24.51	140.61	125.90
1	1	1141	U	C5-C4-O4	24.49	140.59	125.90
2	2	37	U	N3-C4-O4	-24.23	102.44	119.40

All (3) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
1	1	2069	G7M	C2',C4',C3'

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
22	Q	5	LYS	Peptide
36	e	31	HIS	Peptide
38	g	127	ASP	Peptide
39	h	2	GLY	Peptide

5.2 Too-close contacts (i)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

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	
6	8	201/204 (98%)	184 (92%)	16 (8%)	1 (0%)	25	34
7	B	269/273 (98%)	263 (98%)	6 (2%)	0	100	100
8	C	207/209 (99%)	203 (98%)	4 (2%)	0	100	100
9	D	199/201 (99%)	194 (98%)	5 (2%)	0	100	100
10	E	175/179 (98%)	165 (94%)	10 (6%)	0	100	100
11	F	173/177 (98%)	164 (95%)	9 (5%)	0	100	100
12	G	147/149 (99%)	135 (92%)	12 (8%)	0	100	100
13	H	128/165 (78%)	114 (89%)	14 (11%)	0	100	100
14	I	133/142 (94%)	125 (94%)	8 (6%)	0	100	100
15	J	140/142 (99%)	139 (99%)	1 (1%)	0	100	100
16	K	121/123 (98%)	118 (98%)	3 (2%)	0	100	100
17	L	142/144 (99%)	140 (99%)	2 (1%)	0	100	100
18	M	134/136 (98%)	129 (96%)	5 (4%)	0	100	100
19	N	117/127 (92%)	112 (96%)	5 (4%)	0	100	100
20	O	114/117 (97%)	112 (98%)	2 (2%)	0	100	100
21	P	112/115 (97%)	109 (97%)	3 (3%)	0	100	100
22	Q	115/118 (98%)	114 (99%)	1 (1%)	0	100	100
23	R	101/103 (98%)	95 (94%)	6 (6%)	0	100	100
24	S	108/110 (98%)	106 (98%)	2 (2%)	0	100	100
25	T	92/100 (92%)	91 (99%)	1 (1%)	0	100	100
26	U	101/104 (97%)	97 (96%)	4 (4%)	0	100	100
27	V	92/94 (98%)	91 (99%)	1 (1%)	0	100	100
28	W	74/85 (87%)	74 (100%)	0	0	100	100
29	X	75/78 (96%)	74 (99%)	1 (1%)	0	100	100
30	Y	60/63 (95%)	58 (97%)	2 (3%)	0	100	100
31	Z	56/59 (95%)	54 (96%)	2 (4%)	0	100	100
32	a	64/70 (91%)	59 (92%)	5 (8%)	0	100	100
33	b	54/57 (95%)	51 (94%)	3 (6%)	0	100	100
34	c	50/55 (91%)	50 (100%)	0	0	100	100
35	d	44/46 (96%)	44 (100%)	0	0	100	100
36	e	62/65 (95%)	58 (94%)	3 (5%)	1 (2%)	8	10
37	f	36/38 (95%)	36 (100%)	0	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
38	g	223/241 (92%)	211 (95%)	12 (5%)	0	100	100
39	h	206/233 (88%)	197 (96%)	9 (4%)	0	100	100
40	i	203/206 (98%)	202 (100%)	1 (0%)	0	100	100
41	j	154/167 (92%)	144 (94%)	9 (6%)	1 (1%)	22	29
42	k	102/135 (76%)	100 (98%)	2 (2%)	0	100	100
43	l	149/179 (83%)	146 (98%)	3 (2%)	0	100	100
44	m	127/130 (98%)	123 (97%)	4 (3%)	0	100	100
45	n	125/130 (96%)	115 (92%)	10 (8%)	0	100	100
46	o	97/103 (94%)	89 (92%)	8 (8%)	0	100	100
47	p	115/129 (89%)	112 (97%)	3 (3%)	0	100	100
48	q	120/124 (97%)	115 (96%)	5 (4%)	0	100	100
49	r	114/118 (97%)	108 (95%)	6 (5%)	0	100	100
50	s	98/101 (97%)	97 (99%)	1 (1%)	0	100	100
51	t	86/89 (97%)	83 (96%)	3 (4%)	0	100	100
52	u	80/82 (98%)	79 (99%)	1 (1%)	0	100	100
53	v	78/84 (93%)	74 (95%)	4 (5%)	0	100	100
54	w	64/75 (85%)	64 (100%)	0	0	100	100
55	x	81/92 (88%)	80 (99%)	1 (1%)	0	100	100
56	y	84/87 (97%)	83 (99%)	1 (1%)	0	100	100
57	z	68/71 (96%)	68 (100%)	0	0	100	100
All	All	6070/6424 (94%)	5848 (96%)	219 (4%)	3 (0%)	100	100

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
6	8	203	GLU
36	e	32	ILE
41	j	91	GLY

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	
6	8	170/171 (99%)	167 (98%)	3 (2%)	54	72
7	B	216/218 (99%)	216 (100%)	0	100	100
8	C	164/164 (100%)	164 (100%)	0	100	100
9	D	165/165 (100%)	164 (99%)	1 (1%)	84	92
10	E	148/150 (99%)	148 (100%)	0	100	100
11	F	136/138 (99%)	136 (100%)	0	100	100
12	G	114/114 (100%)	113 (99%)	1 (1%)	75	87
13	H	99/123 (80%)	99 (100%)	0	100	100
14	I	104/110 (94%)	104 (100%)	0	100	100
15	J	116/116 (100%)	116 (100%)	0	100	100
16	K	104/104 (100%)	104 (100%)	0	100	100
17	L	103/103 (100%)	103 (100%)	0	100	100
18	M	109/109 (100%)	109 (100%)	0	100	100
19	N	99/103 (96%)	99 (100%)	0	100	100
20	O	86/87 (99%)	86 (100%)	0	100	100
21	P	99/100 (99%)	99 (100%)	0	100	100
22	Q	89/90 (99%)	89 (100%)	0	100	100
23	R	84/84 (100%)	84 (100%)	0	100	100
24	S	93/93 (100%)	92 (99%)	1 (1%)	70	82
25	T	81/84 (96%)	81 (100%)	0	100	100
26	U	84/85 (99%)	84 (100%)	0	100	100
27	V	78/78 (100%)	78 (100%)	0	100	100
28	W	58/63 (92%)	58 (100%)	0	100	100
29	X	67/68 (98%)	67 (100%)	0	100	100
30	Y	54/55 (98%)	54 (100%)	0	100	100
31	Z	48/49 (98%)	48 (100%)	0	100	100
32	a	59/62 (95%)	59 (100%)	0	100	100
33	b	47/48 (98%)	47 (100%)	0	100	100
34	c	47/49 (96%)	47 (100%)	0	100	100
35	d	38/38 (100%)	37 (97%)	1 (3%)	41	59

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
36	e	51/52 (98%)	51 (100%)	0	100	100
37	f	34/34 (100%)	34 (100%)	0	100	100
38	g	187/199 (94%)	187 (100%)	0	100	100
39	h	171/190 (90%)	171 (100%)	0	100	100
40	i	172/173 (99%)	172 (100%)	0	100	100
41	j	119/126 (94%)	119 (100%)	0	100	100
42	k	91/116 (78%)	90 (99%)	1 (1%)	70	82
43	l	124/147 (84%)	124 (100%)	0	100	100
44	m	104/105 (99%)	104 (100%)	0	100	100
45	n	105/107 (98%)	104 (99%)	1 (1%)	73	84
46	o	86/90 (96%)	86 (100%)	0	100	100
47	p	90/99 (91%)	90 (100%)	0	100	100
48	q	102/103 (99%)	102 (100%)	0	100	100
49	r	94/96 (98%)	94 (100%)	0	100	100
50	s	83/84 (99%)	83 (100%)	0	100	100
51	t	76/77 (99%)	76 (100%)	0	100	100
52	u	65/65 (100%)	65 (100%)	0	100	100
53	v	74/78 (95%)	74 (100%)	0	100	100
54	w	57/65 (88%)	57 (100%)	0	100	100
55	x	72/79 (91%)	72 (100%)	0	100	100
56	y	65/66 (98%)	65 (100%)	0	100	100
57	z	60/61 (98%)	59 (98%)	1 (2%)	56	73
All	All	5041/5233 (96%)	5031 (100%)	10 (0%)	91	97

5 of 10 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
42	k	11	HIS
45	n	106	ARG
57	z	62	ARG
9	D	156	ASN
12	G	43	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 22 such sidechains are listed below:

Mol	Chain	Res	Type
38	g	93	ASN
48	q	5	ASN
42	k	58	HIS
50	s	60	GLN
14	I	104	GLN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	1	2897/2903 (99%)	473 (16%)	12 (0%)
2	2	1524/1534 (99%)	250 (16%)	8 (0%)
3	4	119/120 (99%)	14 (11%)	0
4	5	76/77 (98%)	13 (17%)	2 (2%)
4	6	76/77 (98%)	16 (21%)	1 (1%)
5	7	12/25 (48%)	7 (58%)	0
All	All	4704/4736 (99%)	773 (16%)	23 (0%)

5 of 773 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	1	10	A
1	1	15	G
1	1	33	C
1	1	34	U
1	1	45	G

5 of 23 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
2	2	484	G
2	2	1004	A
2	2	516	PSU
2	2	1109	C
1	1	2146	C

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

35 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	6MZ	1	1618	1	17,25,26	0.81	0	15,36,39	2.38	4 (26%)
2	4OC	2	1402	2	20,23,24	0.77	0	25,32,35	1.04	2 (8%)
1	6MZ	1	2030	1	17,25,26	0.84	0	15,36,39	2.81	4 (26%)
2	5MC	2	1407	2	19,22,23	1.40	3 (15%)	26,32,35	1.19	3 (11%)
1	PSU	1	2457	1	18,21,22	1.55	5 (27%)	21,30,33	2.27	5 (23%)
1	PSU	1	2605	1	18,21,22	1.49	4 (22%)	21,30,33	2.06	4 (19%)
1	1MG	1	745	1	19,26,27	0.77	1 (5%)	18,39,42	1.26	3 (16%)
2	MA6	2	1519	2	19,26,27	0.91	1 (5%)	18,38,41	2.31	7 (38%)
48	0TD	q	89	48	8,9,10	1.80	2 (25%)	6,11,13	1.00	0
1	G7M	1	2069	1	20,26,27	1.19	2 (10%)	16,39,42	1.47	2 (12%)
2	MA6	2	1518	2	19,26,27	0.84	0	18,38,41	2.25	6 (33%)
1	5MC	1	1962	1	19,22,23	1.50	3 (15%)	26,32,35	1.17	3 (11%)
1	PSU	1	2504	1	18,21,22	1.58	4 (22%)	21,30,33	2.13	4 (19%)
1	PSU	1	746	58,1	18,21,22	1.48	5 (27%)	21,30,33	2.01	4 (19%)
2	5MC	2	967	2	19,22,23	1.41	3 (15%)	26,32,35	1.14	2 (7%)
1	3TD	1	1915	1	19,22,23	0.70	0	23,32,35	1.35	3 (13%)
1	PSU	1	1917	1	18,21,22	1.44	4 (22%)	21,30,33	2.14	4 (19%)
1	2MG	1	1835	1	18,26,27	0.95	1 (5%)	16,38,41	1.60	6 (37%)
2	2MG	2	1207	2	18,26,27	1.01	1 (5%)	16,38,41	1.32	3 (18%)
1	2MG	1	2445	1	18,26,27	1.12	1 (5%)	16,38,41	1.38	4 (25%)
1	PSU	1	955	1	18,21,22	1.54	4 (22%)	21,30,33	2.21	4 (19%)
1	OMG	1	2251	1,4	19,26,27	0.99	1 (5%)	21,38,41	1.11	3 (14%)
1	2MA	1	2503	58,1	18,25,26	0.68	0	20,37,40	2.12	3 (15%)
2	G7M	2	527	2	20,26,27	2.52	4 (20%)	16,39,42	0.90	1 (6%)
2	A3P	2	1493	2	21,28,29	0.87	0	24,42,45	1.35	4 (16%)
1	OMU	1	2552	1	19,22,23	1.35	4 (21%)	25,31,34	1.99	5 (20%)
2	2MG	2	966	2	18,26,27	1.02	1 (5%)	16,38,41	1.28	3 (18%)
1	PSU	1	1911	1	18,21,22	1.44	4 (22%)	21,30,33	2.14	4 (19%)
1	PSU	1	2580	1	18,21,22	1.51	5 (27%)	21,30,33	2.24	5 (23%)
2	PSU	2	516	58,2	18,21,22	1.47	4 (22%)	21,30,33	2.24	5 (23%)
1	OMC	1	2498	58,1	19,22,23	0.88	1 (5%)	25,31,34	0.96	1 (4%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
2	UR3	2	1498	2	19,22,23	0.90	1 (5%)	26,32,35	1.78	3 (11%)
2	2MG	2	1516	2	18,26,27	1.07	1 (5%)	16,38,41	1.35	3 (18%)
1	5MU	1	1939	1	19,22,23	1.49	4 (21%)	27,32,35	2.30	6 (22%)
1	5MU	1	747	1	19,22,23	1.42	4 (21%)	27,32,35	2.08	5 (18%)

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	6MZ	1	1618	1	-	2/5/27/28	0/3/3/3
2	4OC	2	1402	2	-	1/9/29/30	0/2/2/2
1	6MZ	1	2030	1	-	2/5/27/28	0/3/3/3
2	5MC	2	1407	2	-	0/7/25/26	0/2/2/2
1	PSU	1	2457	1	-	0/7/25/26	0/2/2/2
1	PSU	1	2605	1	-	0/7/25/26	0/2/2/2
1	1MG	1	745	1	-	0/3/25/26	0/3/3/3
2	MA6	2	1519	2	-	2/7/29/30	0/3/3/3
48	0TD	q	89	48	-	5/7/12/14	-
1	G7M	1	2069	1	3/3/5/5	2/3/25/26	0/3/3/3
2	MA6	2	1518	2	-	0/7/29/30	0/3/3/3
1	5MC	1	1962	1	-	2/7/25/26	0/2/2/2
1	PSU	1	2504	1	-	2/7/25/26	0/2/2/2
1	PSU	1	746	58,1	-	3/7/25/26	0/2/2/2
2	5MC	2	967	2	-	0/7/25/26	0/2/2/2
1	3TD	1	1915	1	-	4/7/25/26	0/2/2/2
1	PSU	1	1917	1	-	0/7/25/26	0/2/2/2
1	2MG	1	1835	1	-	0/5/27/28	0/3/3/3
2	2MG	2	1207	2	-	0/5/27/28	0/3/3/3
1	2MG	1	2445	1	-	2/5/27/28	0/3/3/3
1	PSU	1	955	1	-	0/7/25/26	0/2/2/2
1	OMG	1	2251	1,4	-	0/5/27/28	0/3/3/3
1	2MA	1	2503	58,1	-	2/3/25/26	0/3/3/3
2	G7M	2	527	2	-	2/3/25/26	0/3/3/3
2	A3P	2	1493	2	-	2/8/30/31	0/3/3/3
1	OMU	1	2552	1	-	0/9/27/28	0/2/2/2
2	2MG	2	966	2	-	2/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	PSU	1	1911	1	-	0/7/25/26	0/2/2/2
1	PSU	1	2580	1	-	0/7/25/26	0/2/2/2
2	PSU	2	516	58,2	-	2/7/25/26	0/2/2/2
1	OMC	1	2498	58,1	-	0/9/27/28	0/2/2/2
2	UR3	2	1498	2	-	0/7/25/26	0/2/2/2
2	2MG	2	1516	2	-	0/5/27/28	0/3/3/3
1	5MU	1	1939	1	-	0/7/25/26	0/2/2/2
1	5MU	1	747	1	-	0/7/25/26	0/2/2/2

The worst 5 of 78 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	2	527	G7M	C8-N9	7.13	1.46	1.33
2	2	527	G7M	C8-N7	6.78	1.45	1.33
1	1	1962	5MC	C5-C4	5.18	1.48	1.44
2	2	967	5MC	C5-C4	4.78	1.47	1.44
2	2	1407	5MC	C5-C4	4.54	1.47	1.44

The worst 5 of 128 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	1	2503	2MA	C2-N3-C4	7.93	121.86	115.46
2	2	1498	UR3	C4-N3-C2	-7.14	118.84	124.58
1	1	2457	PSU	N1-C2-N3	6.95	122.50	115.17
1	1	2504	PSU	N1-C2-N3	6.91	122.46	115.17
1	1	2030	6MZ	C2-N1-C6	6.89	121.95	116.60

All (3) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
1	1	2069	G7M	C2’
1	1	2069	G7M	C4’
1	1	2069	G7M	C3’

5 of 37 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	2	516	PSU	O4’-C1’-C5-C4
2	2	516	PSU	O4’-C1’-C5-C6
48	q	89	0TD	O-C-CA-CB
1	1	746	PSU	C2’-C1’-C5-C4
1	1	746	PSU	C2’-C1’-C5-C6

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 441 ligands modelled in this entry, 441 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
2	2	3
1	1	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	1	2314:A	O3’	2315:G	P	3.01
1	2	1276:G	O3’	1277:C	P	2.96
1	2	1383:C	O3’	1384:C	P	2.91
1	2	147:G	O3’	148:G	P	2.90

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-24944. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

6.1 Orthogonal projections ⓘ

This section was not generated.

6.2 Central slices ⓘ

This section was not generated.

6.3 Largest variance slices ⓘ

This section was not generated.

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

This section was not generated.

6.5 Orthogonal surface views ⓘ

This section was not generated.

6.6 Mask visualisation ⓘ

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

7 Map analysis ⓘ

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

7.1 Map-value distribution ⓘ

This section was not generated.

7.2 Volume estimate versus contour level ⓘ

This section was not generated.

7.3 Rotationally averaged power spectrum ⓘ

This section was not generated. The rotationally averaged power spectrum had issues being displayed.

8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit (i)

This section was not generated.