



## wwPDB EM Validation Summary Report ⓘ

Nov 8, 2022 – 10:45 AM JST

PDB ID : 5ZLU  
EMDB ID : EMD-6934  
Title : Ribosome Structure bound to ABC-F protein.  
Authors : Su, W.X.; Kumar, V.; Ero, R.; Andrew, S.W.W.; Jian, S.; Yong-Gui, G.  
Deposited on : 2018-03-29  
Resolution : 3.60 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto: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>.

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

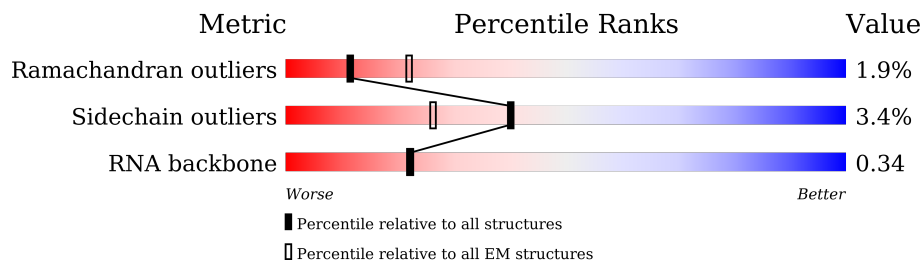
EMDB validation analysis : 0.0.1.dev43  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.9  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.31.2

# 1 Overall quality at a glance i

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

The reported resolution of this entry is 3.60 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	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 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	W	25	24% 72%
2	A	104	12% 90% 7%
3	B	73	5% 96% 7%
4	C	106	10% 89% 7%
5	D	93	7% 89% 11%
6	E	105	64% 32%
7	F	27	64% 32%
8	G	1514	64% 32%

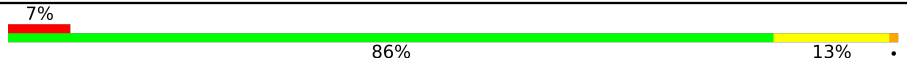


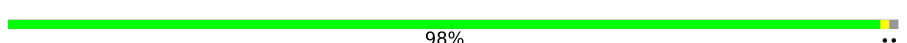



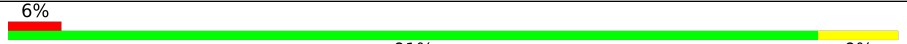
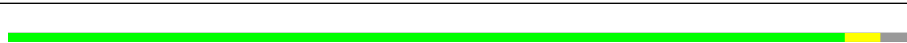

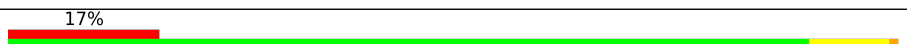

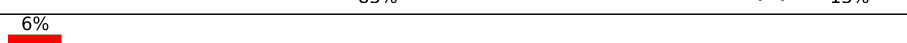
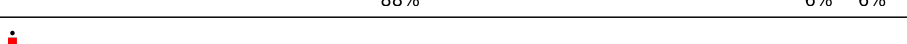
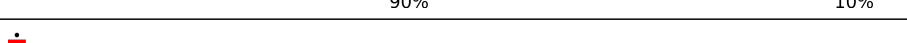
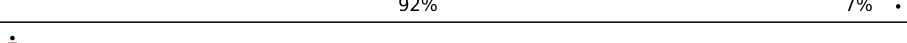
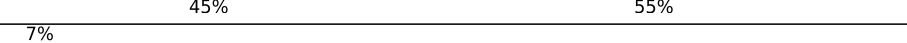



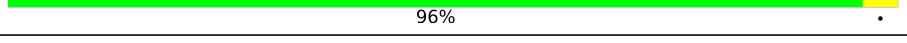

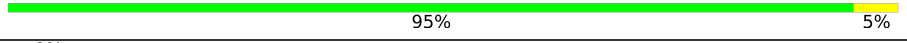

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Mol	Chain	Length	Quality of chain
9	H	256	82% 5% 13%
10	I	239	85% 14%
11	J	209	95% 5%
12	K	162	91% 7%
13	L	101	13% 94% 6%
14	M	156	96% ...
15	N	138	96% .
16	O	128	95% . .
17	P	129	5% 90% . 8%
18	Q	132	5% 92% . 6%
19	R	126	6% 87% . 10%
20	S	61	5% 84% 15% .
21	T	89	97% . .
22	U	88	93% . 6%
23	V	2875	54% 38% 7%
24	X	123	62% 32% 7%
25	Y	229	75% 90% 9%
26	Z	276	93% 5% .
27	a	206	97% .
28	b	210	5% 94% 5% .
29	c	182	8% 84% 12% . . .
30	d	180	84% 12% . . .
31	e	173	63% 65% 6% . . 27%
32	f	147	67% 74% 15% . 9%
33	g	140	76% 7% . 16%

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Mol	Chain	Length	Quality of chain
34	h	122	 7% 86% 13%
35	i	150	 83% 11%
36	j	141	 6% 89% 7%
37	k	118	 98%
38	l	112	 84% 13%
39	m	146	 5% 71% 8% 20%
40	n	118	 97%
41	o	101	 6% 91% 9%
42	p	113	 94%
43	q	96	 93%
44	r	110	 17% 90% 9%
45	s	206	 39% 83% 13%
46	t	85	 6% 88% 6% 6%
47	u	67	 90% 10%
48	v	60	 92% 7%
49	CC	71	 45% 55%
49	w	71	 7% 90% 10%
50	x	60	 83% 12% 5%
51	y	54	 80% 9% 9%
52	z	49	 8% 96%
53	AA	65	 91% 6%
54	BB	37	 95% 5%
55	DD	77	 9% 52% 39% 9%
56	EE	497	 11% 91% 7%

## 2 Entry composition [i](#)

There are 58 unique types of molecules in this entry. The entry contains 150313 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 RNA (25-mer).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	W	7	149	67	26	49	7	0	0

- Molecule 2 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	A	97	808	519	149	138	2	0	0

- Molecule 3 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
3	B	73	597	380	118	99	0	0

- Molecule 4 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	C	99	763	470	162	129	2	0	0

- Molecule 5 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	D	82	656	419	121	113	3	0	1

- Molecule 6 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	E	98	794	499	156	138	1	0	0

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

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
7	F	24	208	128	50	30	0	0

- Molecule 8 is a RNA chain called 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
8	G	1514	32534	14481	6019	10520	1514	0	0

- Molecule 9 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	H	222	1810	1154	328	323	5	0	0

- Molecule 10 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	I	206	1612	1016	314	281	1	0	0

- Molecule 11 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	J	208	1703	1066	339	291	7	0	0

- Molecule 12 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	K	150	1146	724	217	201	4	0	0

- Molecule 13 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	L	101	843	531	155	154	3	0	0

- Molecule 14 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	M	155	1257	781	252	218	6	0	0

- Molecule 15 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	N	138	1116	705	215	193	3	0	0

- Molecule 16 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
16	O	127	1010	639	197	174	0	0

- Molecule 17 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	P	119	885	549	168	165	3	0	0

- Molecule 18 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	Q	124	970	611	195	163	1	0	0

- Molecule 19 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	R	114	914	565	189	158	2	0	0

- Molecule 20 is a protein called 30S ribosomal protein S14 type Z.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	S	60	492	312	104	72	4	0	0

- Molecule 21 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	T	88	Total	C	N	O	S	0	0
			734	459	147	126	2		

- Molecule 22 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	U	83	Total	C	N	O	S	0	0
			700	443	139	117	1		

- Molecule 23 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	V	2875	Total	C	N	O	P	0	0
			61917	27558	11575	19909	2875		

- Molecule 24 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	X	123	Total	C	N	O	P	0	0
			2641	1175	488	855	123		

- Molecule 25 is a protein called 50S ribosomal protein L1.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	Y	228	Total	C	N	O	S	0	0
			1742	1102	318	319	3		

- Molecule 26 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	Z	273	Total	C	N	O	S	0	0
			2126	1341	424	358	3		

- Molecule 27 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	a	206	Total	C	N	O	S	0	0
			1578	997	302	273	6		

- Molecule 28 is a protein called 50S ribosomal protein L4.



Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	b	208	1625	1034	303	286	2	0	0

- Molecule 29 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	c	179	1455	929	266	256	4	0	0

- Molecule 30 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	d	176	1335	847	250	237	1	0	0

- Molecule 31 is a protein called 50S ribosomal protein L10.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
31	e	126	621	369	126	126	0	0

- Molecule 32 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	f	134	993	632	175	181	5	0	0

- Molecule 33 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	g	117	931	603	171	154	3	0	0

- Molecule 34 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	h	122	932	587	171	170	4	0	0

- Molecule 35 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	i	145	Total	C	N	O	S	0	0
			1108	689	226	191	2		

- Molecule 36 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	j	136	Total	C	N	O	S	0	0
			1080	688	204	183	5		

- Molecule 37 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms				AltConf	Trace
37	k	117	Total	C	N	O	0	0
			960	599	202	159		

- Molecule 38 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms				AltConf	Trace
38	l	110	Total	C	N	O	0	0
			877	553	175	149		

- Molecule 39 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	m	117	Total	C	N	O	S	0	0
			976	614	197	164	1		

- Molecule 40 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	n	117	Total	C	N	O	S	0	0
			964	610	202	151	1		

- Molecule 41 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	o	101	Total	C	N	O	S	0	0
			779	501	142	135	1		

- Molecule 42 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	p	110	876	552	171	151	2	0	0

- Molecule 43 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	q	94	742	483	133	126		0	0

- Molecule 44 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
44	r	110	844	539	158	141	6	0	0

- Molecule 45 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
45	s	180	1435	916	256	260	3	0	0

- Molecule 46 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
46	t	80	629	389	132	107	1	0	0

- Molecule 47 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
47	u	67	567	350	116	99	2	0	0

- Molecule 48 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
48	v	59	469	298	90	81		0

- Molecule 49 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	w	71	Total	C	N	O	S	0	0
			581	364	108	104	5		
49	CC	32	Total	C	N	O		0	0
			157	93	32	32			

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

Mol	Chain	Residues	Atoms					AltConf	Trace
50	x	57	Total	C	N	O	S	0	0
			445	279	87	74	5		

- Molecule 51 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	y	49	Total	C	N	O	S	0	0
			422	262	87	69	4		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
y	7	LEU	ILE	see sequence details	UNP P35871

- Molecule 52 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	z	49	Total	C	N	O	S	0	0
			430	263	108	57	2		

- Molecule 53 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	AA	64	Total	C	N	O	S	0	0
			515	331	102	79	3		

- Molecule 54 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	BB	37	Total	C	N	O	S	0	0
			307	188	68	47	4		

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

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	N	O	P			S
55	DD	77	1648	736	301	533	77	1	0	0

- Molecule 56 is a protein called Macrolide efflux protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
56	EE	490	3841	2415	668	742	16	0	0

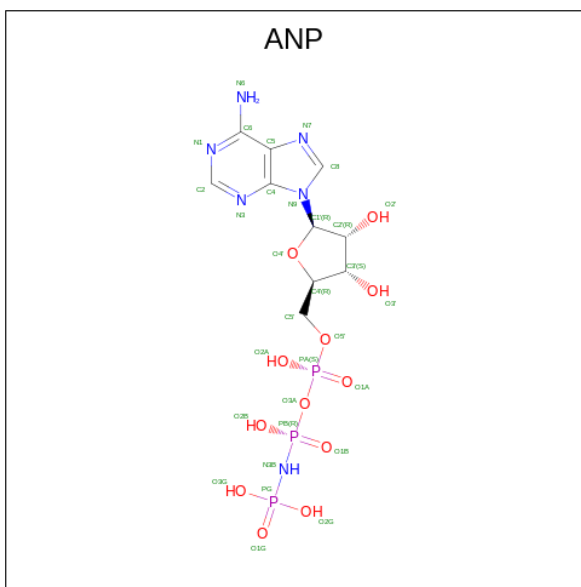
There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
EE	492	HIS	-	expression tag	UNP A0A1I9WCL8
EE	493	HIS	-	expression tag	UNP A0A1I9WCL8
EE	494	HIS	-	expression tag	UNP A0A1I9WCL8
EE	495	HIS	-	expression tag	UNP A0A1I9WCL8
EE	496	HIS	-	expression tag	UNP A0A1I9WCL8
EE	497	HIS	-	expression tag	UNP A0A1I9WCL8

- Molecule 57 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
57	Z	1	1	1	0
57	i	1	1	1	0

- Molecule 58 is PHOSPHOAMINOPHOSPHONIC ACID-ADENYLATE ESTER (three-letter code: ANP) (formula: C<sub>10</sub>H<sub>17</sub>N<sub>6</sub>O<sub>12</sub>P<sub>3</sub>).

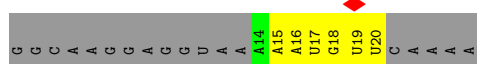


Mol	Chain	Residues	Atoms				AltConf	
			Total	C	N	O		P
58	EE	1	Total	C	N	O	P	0
			62	20	12	24	6	
58	EE	1	Total	C	N	O	P	0
			62	20	12	24	6	

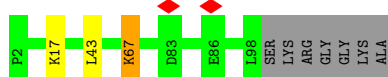
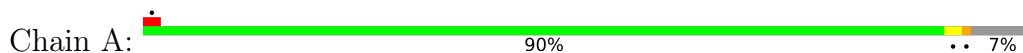
### 3 Residue-property plots [i](#)

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 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.

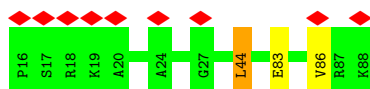
- Molecule 1: RNA (25-mer)



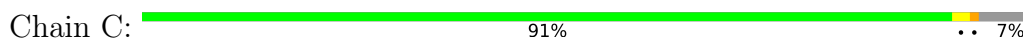
- Molecule 2: 30S ribosomal protein S17



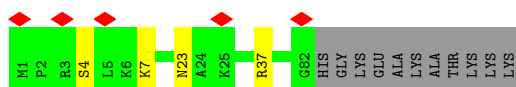
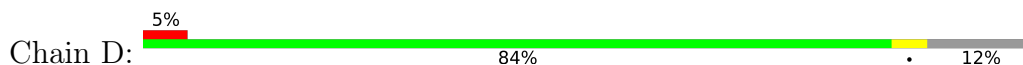
- Molecule 3: 30S ribosomal protein S18



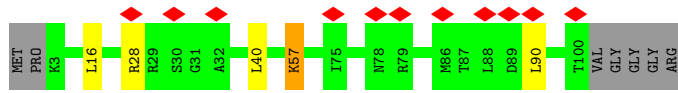
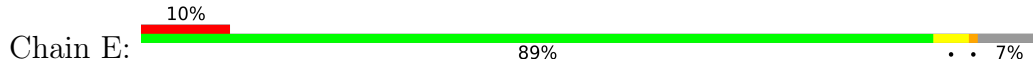
- Molecule 4: 30S ribosomal protein S20



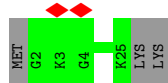
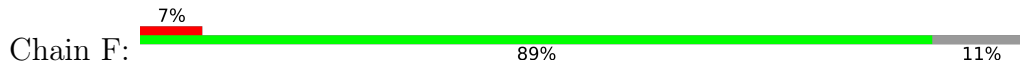
- Molecule 5: 30S ribosomal protein S19



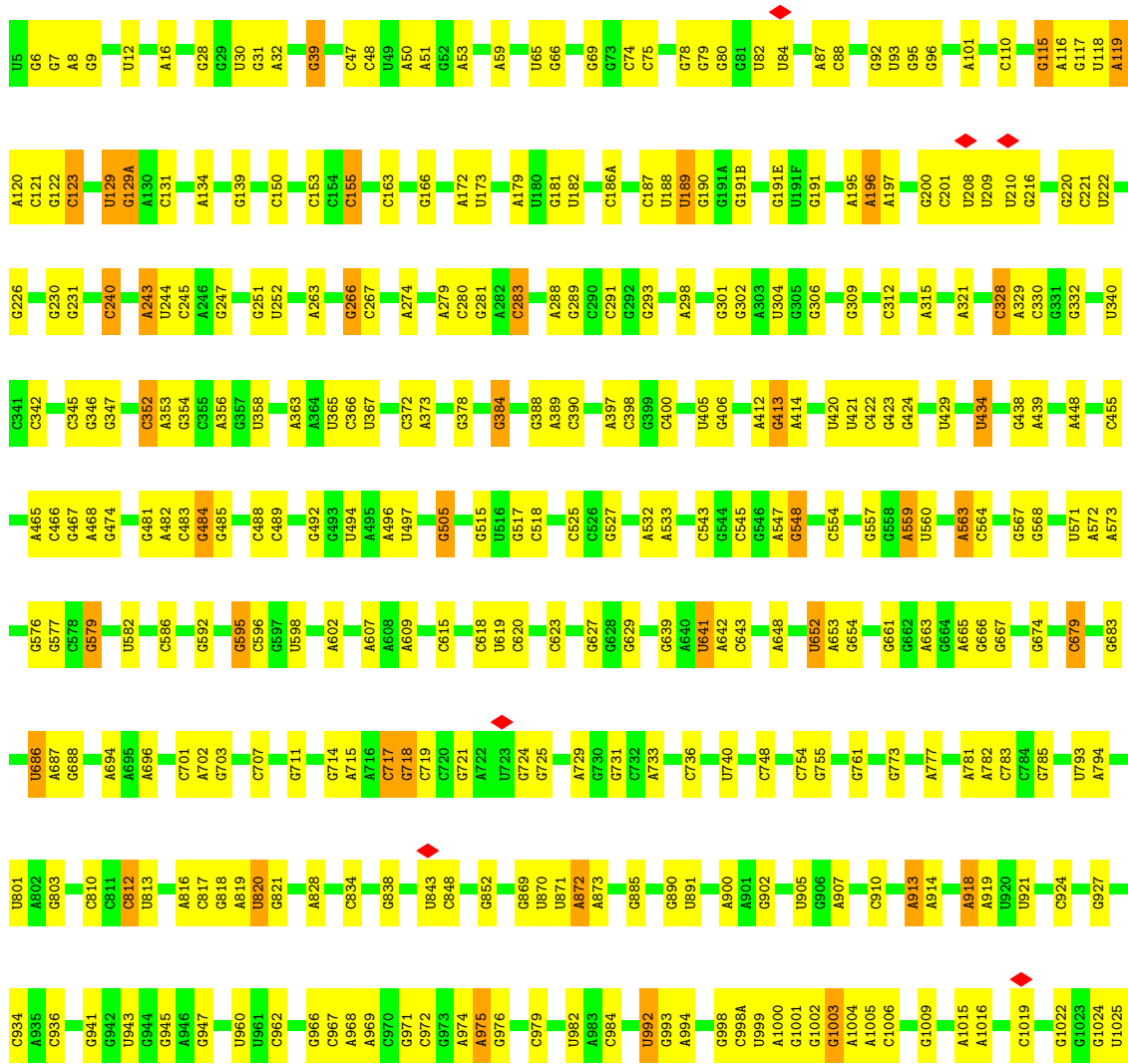
• Molecule 6: 30S ribosomal protein S10



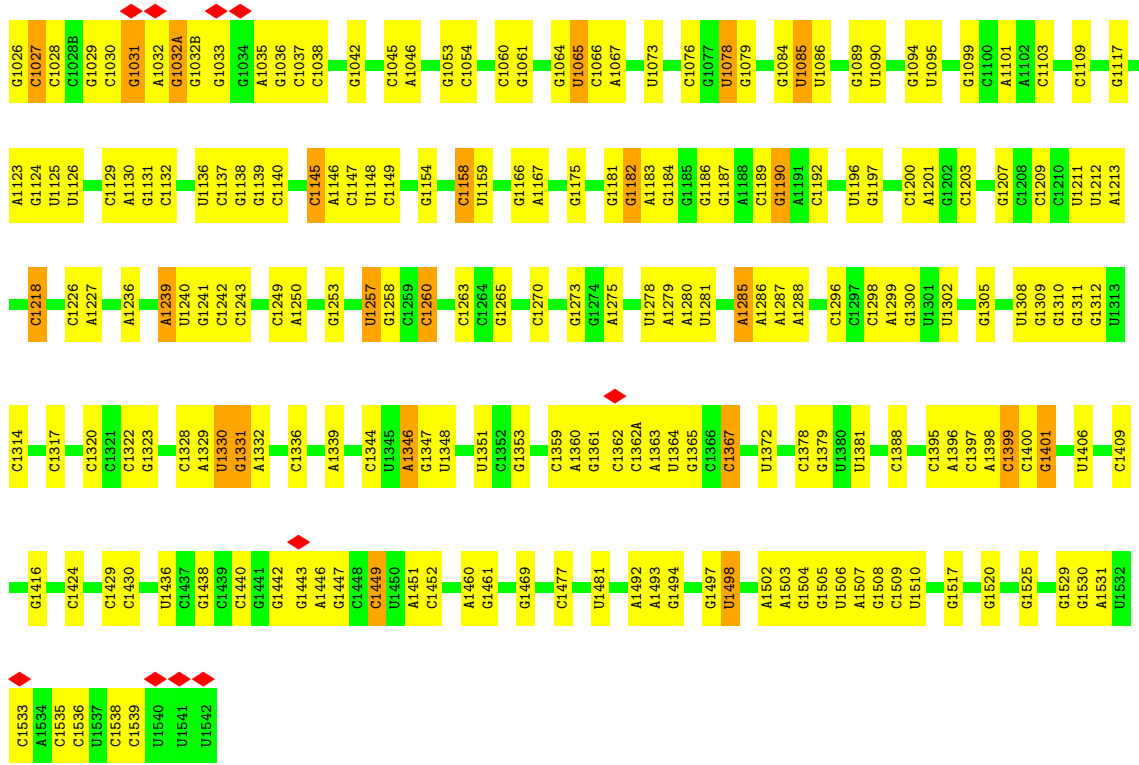
• Molecule 7: 30S ribosomal protein Thx



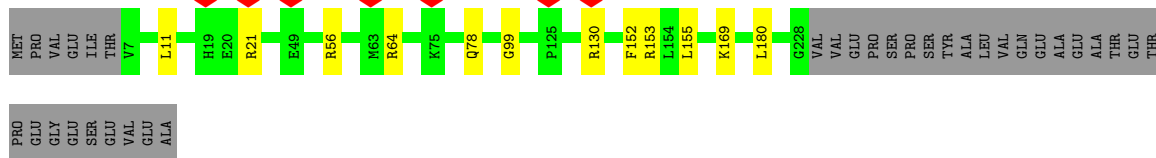
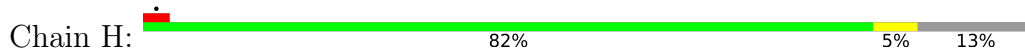
• Molecule 8: 16S ribosomal RNA



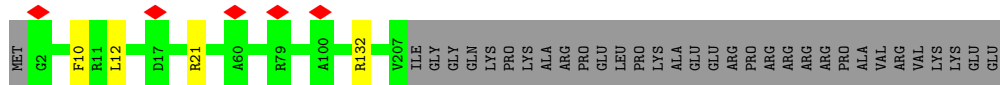
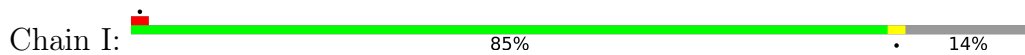




• Molecule 9: 30S ribosomal protein S2




• Molecule 10: 30S ribosomal protein S3



• Molecule 11: 30S ribosomal protein S4

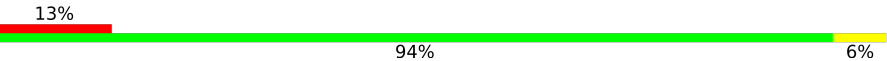


• Molecule 12: 30S ribosomal protein S5

Chain K:  91% 7%



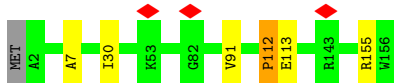
- Molecule 13: 30S ribosomal protein S6

Chain L:  13% 94% 6%



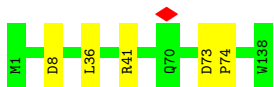
- Molecule 14: 30S ribosomal protein S7

Chain M:  96%



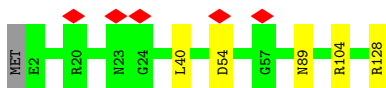
- Molecule 15: 30S ribosomal protein S8

Chain N:  96%




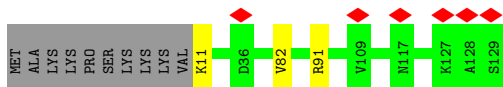
- Molecule 16: 30S ribosomal protein S9

Chain O:  95%

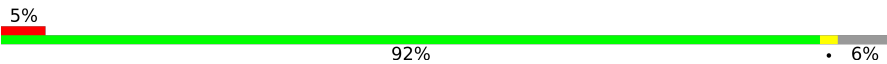


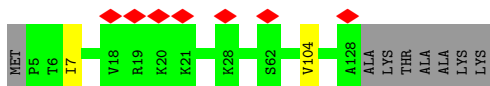
- Molecule 17: 30S ribosomal protein S11

Chain P:  5% 90% 8%

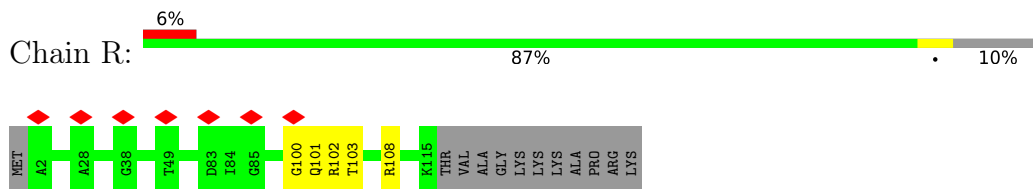


- Molecule 18: 30S ribosomal protein S12

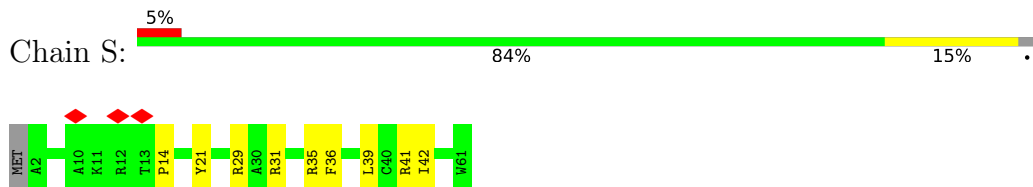
Chain Q:  5% 92% 6%



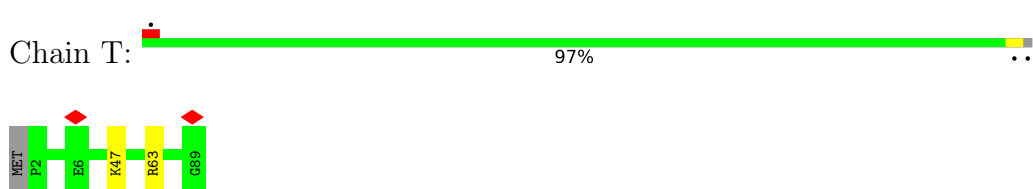
• Molecule 19: 30S ribosomal protein S13



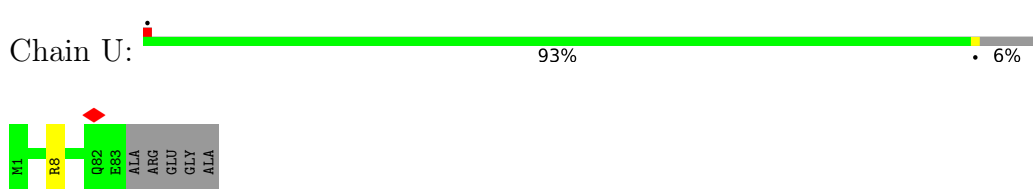
• Molecule 20: 30S ribosomal protein S14 type Z



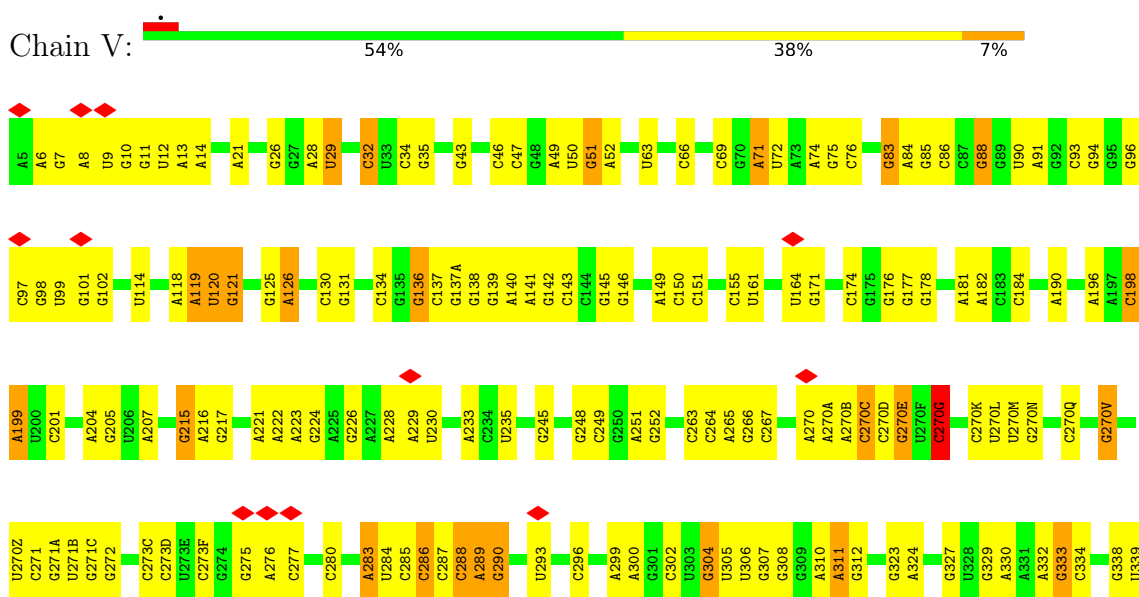
• Molecule 21: 30S ribosomal protein S15

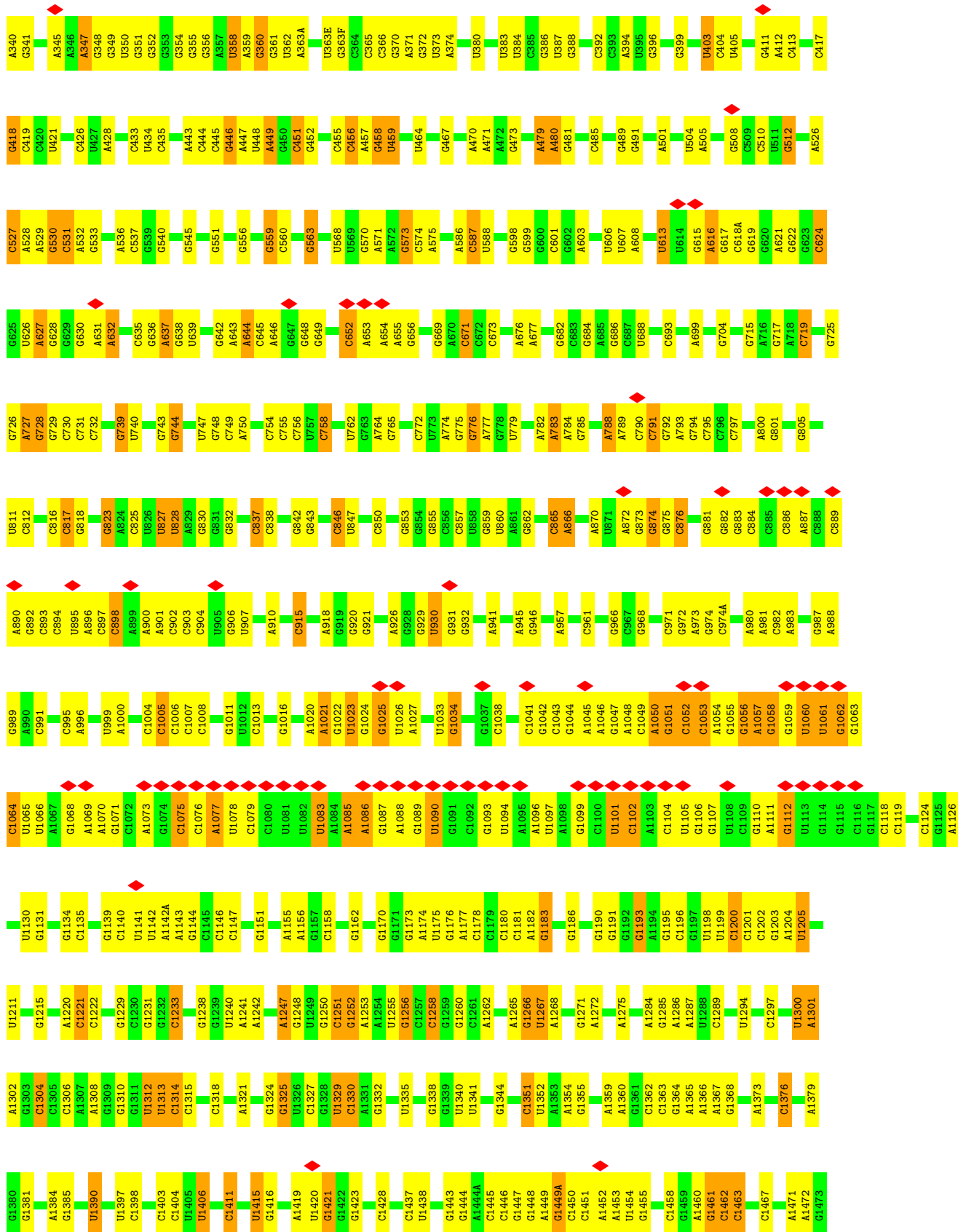


• Molecule 22: 30S ribosomal protein S16

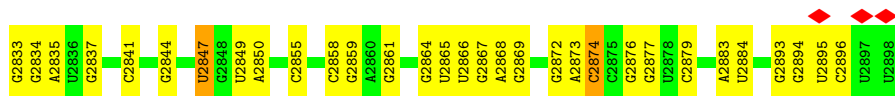


• Molecule 23: 23S ribosomal RNA





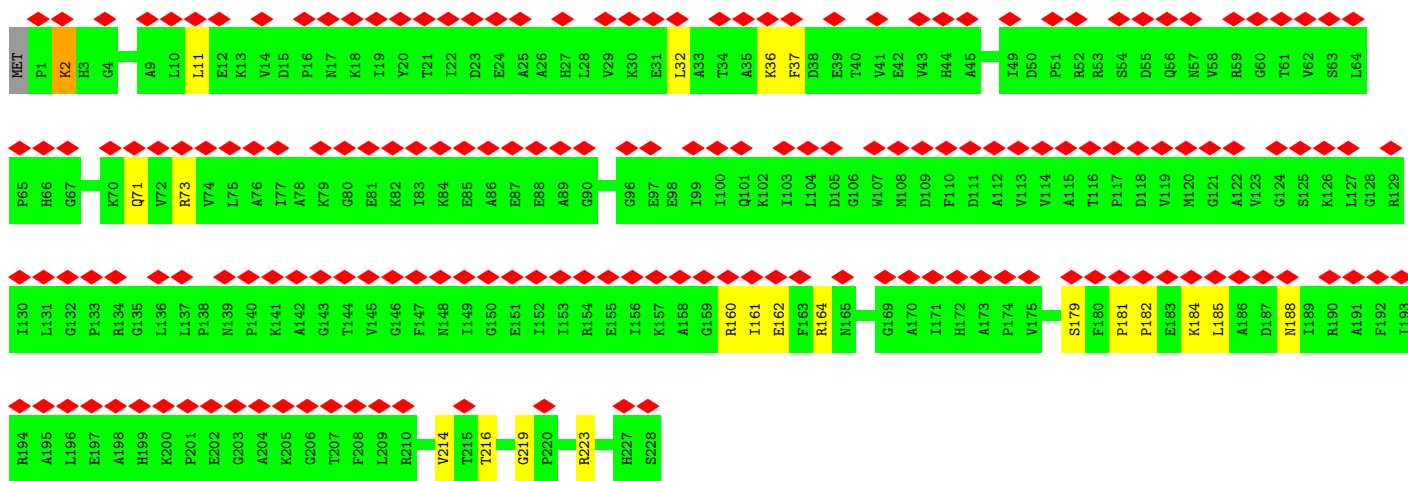
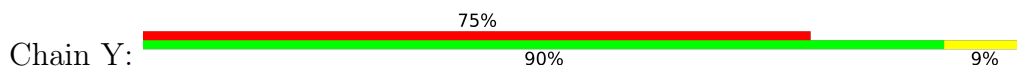




• Molecule 24: 5S ribosomal RNA



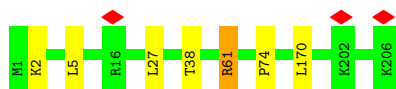
• Molecule 25: 50S ribosomal protein L1



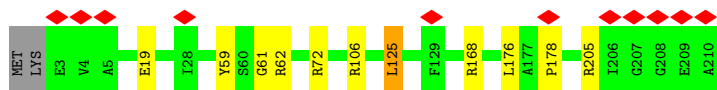
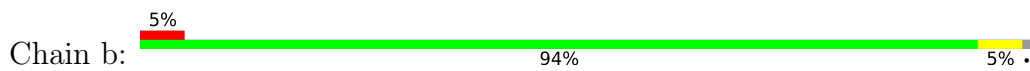
• Molecule 26: 50S ribosomal protein L2



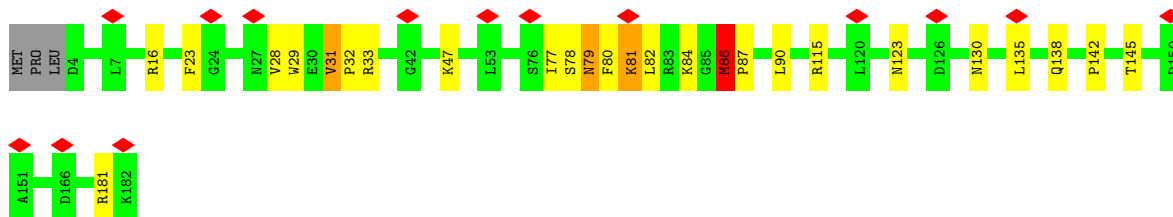
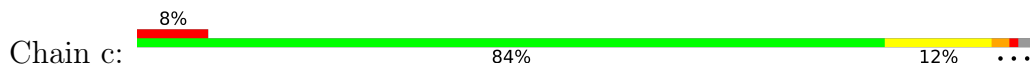
• Molecule 27: 50S ribosomal protein L3



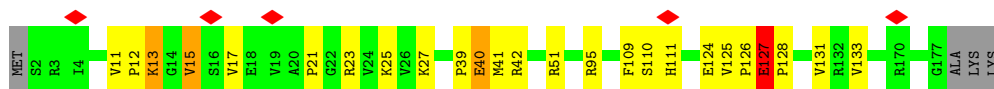
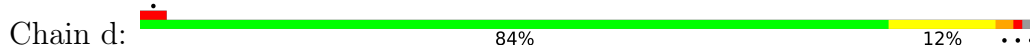
• Molecule 28: 50S ribosomal protein L4



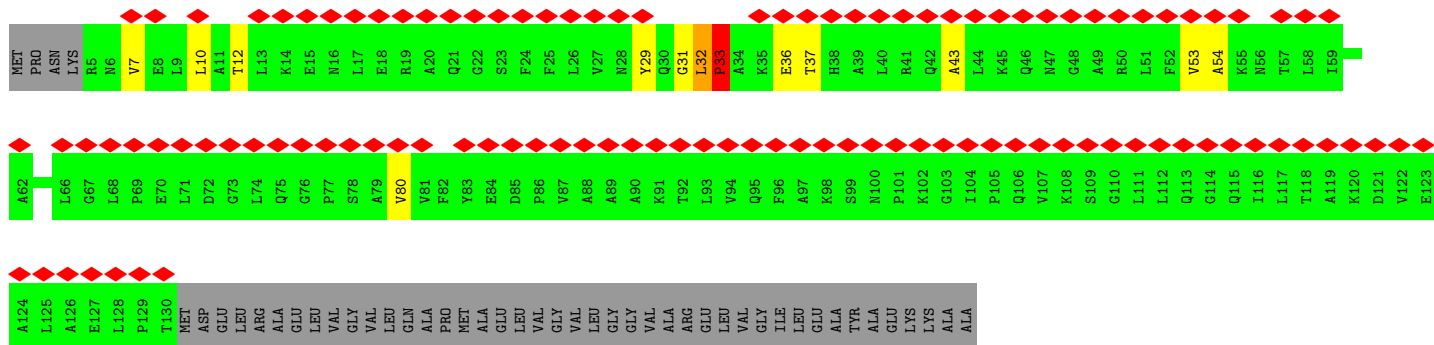
• Molecule 29: 50S ribosomal protein L5



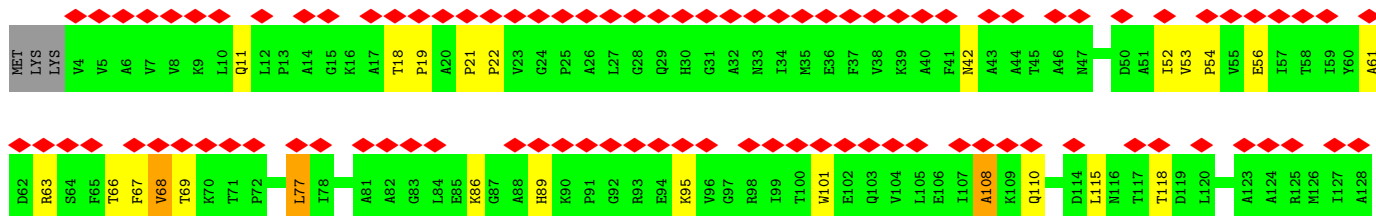
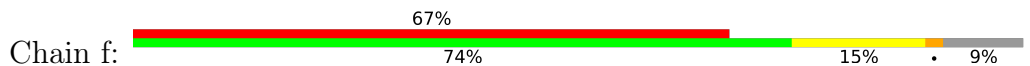
• Molecule 30: 50S ribosomal protein L6

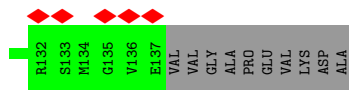


• Molecule 31: 50S ribosomal protein L10

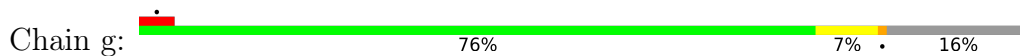


• Molecule 32: 50S ribosomal protein L11

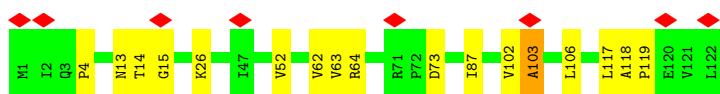
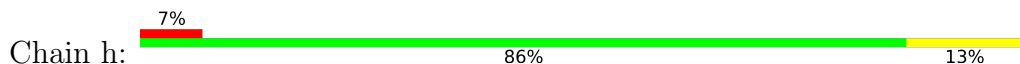




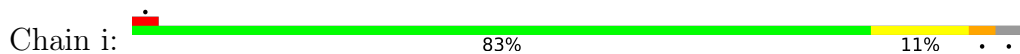
• Molecule 33: 50S ribosomal protein L13



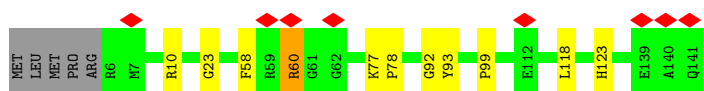
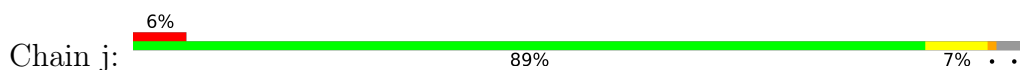
• Molecule 34: 50S ribosomal protein L14



• Molecule 35: 50S ribosomal protein L15



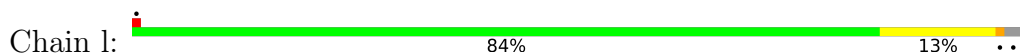
• Molecule 36: 50S ribosomal protein L16



• Molecule 37: 50S ribosomal protein L17

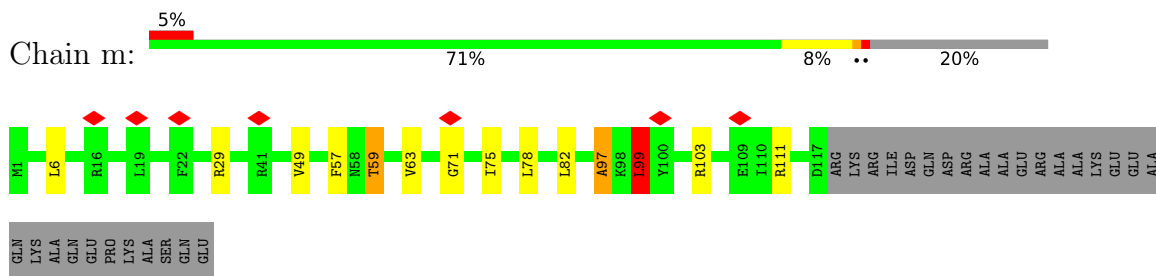


• Molecule 38: 50S ribosomal protein L18

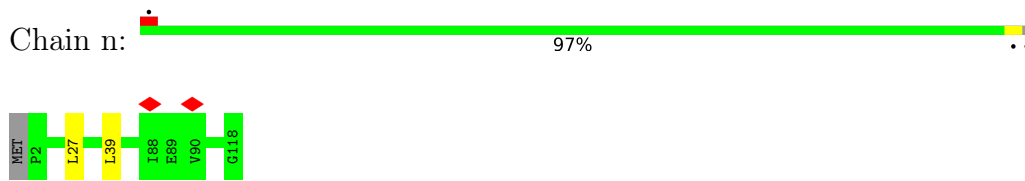


• Molecule 39: 50S ribosomal protein L19

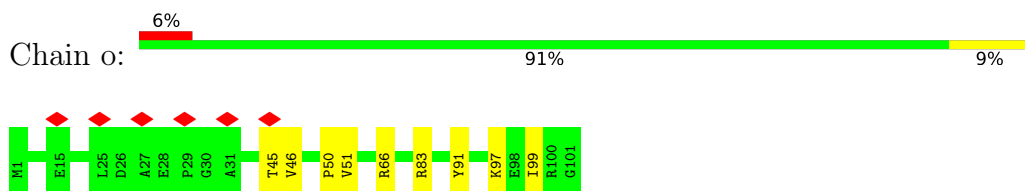




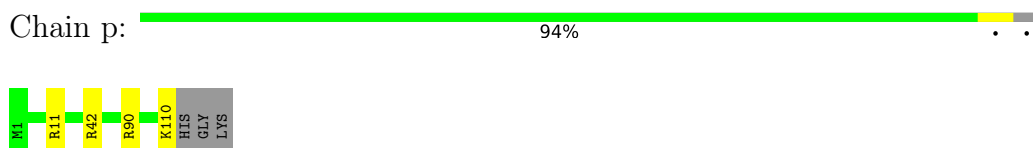
• Molecule 40: 50S ribosomal protein L20



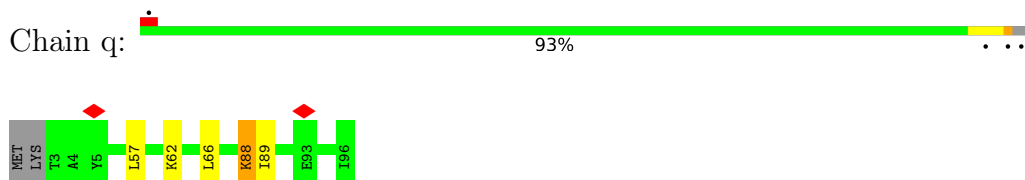
• Molecule 41: 50S ribosomal protein L21



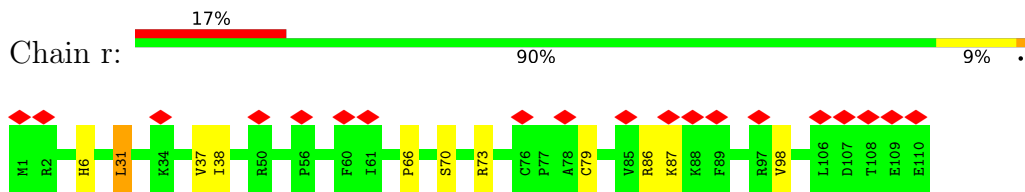
• Molecule 42: 50S ribosomal protein L22



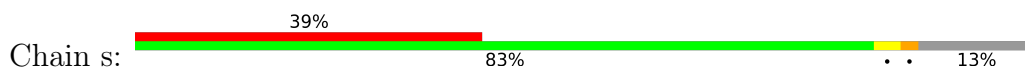
• Molecule 43: 50S ribosomal protein L23

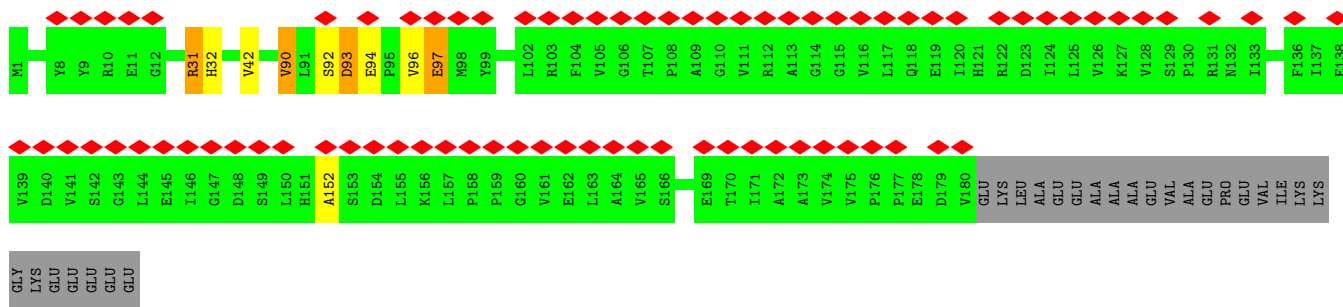


• Molecule 44: 50S ribosomal protein L24

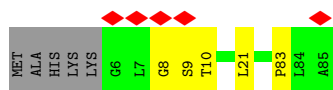
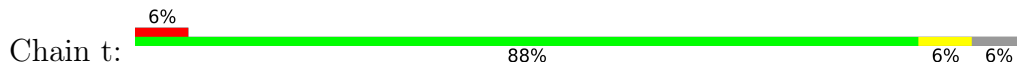


• Molecule 45: 50S ribosomal protein L25

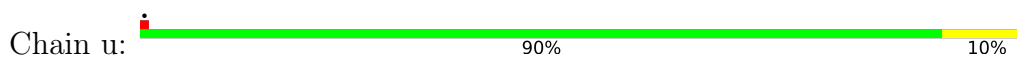




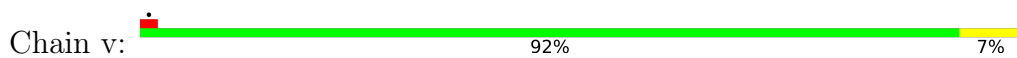
● Molecule 46: 50S ribosomal protein L27



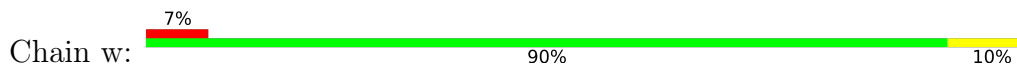
● Molecule 47: 50S ribosomal protein L29



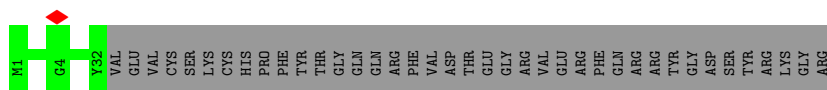
● Molecule 48: 50S ribosomal protein L30




● Molecule 49: 50S ribosomal protein L31

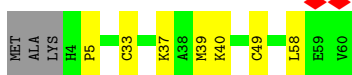


● Molecule 49: 50S ribosomal protein L31




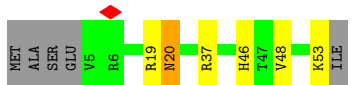
● Molecule 50: 50S ribosomal protein L32

Chain x:  83% 12% 5%



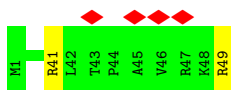
- Molecule 51: 50S ribosomal protein L33

Chain y:  80% 9% 9%

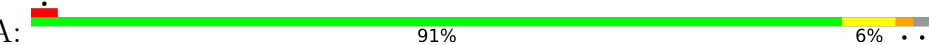


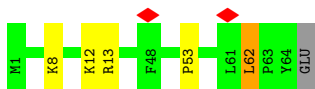
- Molecule 52: 50S ribosomal protein L34

Chain z:  8% 96%



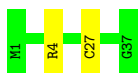
- Molecule 53: 50S ribosomal protein L35

Chain AA:  91% 6% ..



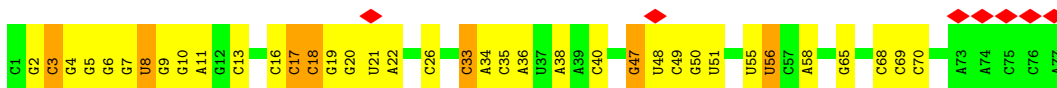
- Molecule 54: 50S ribosomal protein L36

Chain BB:  95% 5%



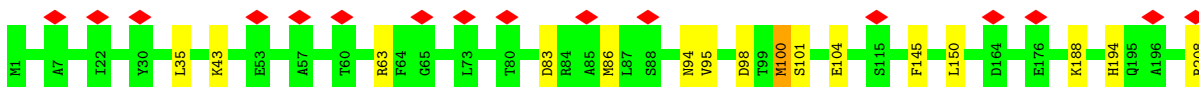
- Molecule 55: P-site tRNA

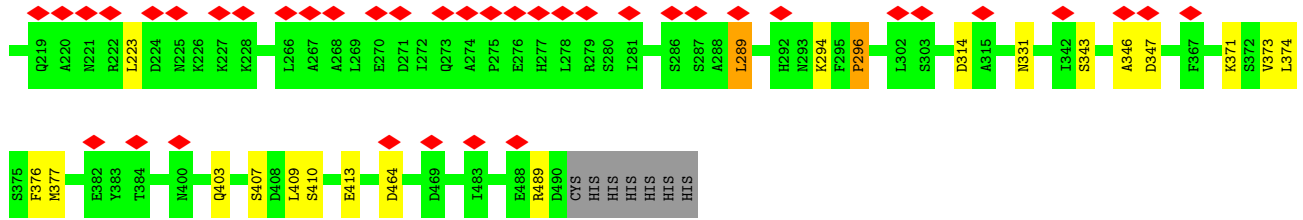
Chain DD:  9% 52% 39% 9%



- Molecule 56: Macrolide efflux protein

Chain EE:  11% 91% 7% ..





## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	127778	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 ( $e^-/\text{\AA}^2$ )	50	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.568	Depositor
Minimum map value	-0.339	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.021	Depositor
Recommended contour level	0.052	Depositor
Map size (Å)	396.0, 396.0, 396.0	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.1, 1.1, 1.1	Depositor

## 5 Model quality i

### 5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: 7MG, PSU, MG, 4SU, 5MU, OMC, ANP

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	W	0.25	0/166	0.74	0/256
2	A	0.38	0/821	0.69	2/1098 (0.2%)
3	B	0.32	0/603	0.77	1/799 (0.1%)
4	C	0.31	0/765	0.63	0/1007
5	D	0.36	0/670	0.69	0/903
6	E	0.32	0/807	0.72	1/1085 (0.1%)
7	F	0.32	0/212	0.57	0/277
8	G	0.67	2/36416 (0.0%)	1.15	241/56835 (0.4%)
9	H	0.33	0/1842	0.72	3/2479 (0.1%)
10	I	0.34	0/1636	0.64	1/2205 (0.0%)
11	J	0.41	1/1733 (0.1%)	0.75	3/2318 (0.1%)
12	K	0.38	0/1162	0.69	0/1564
13	L	0.34	0/856	0.76	3/1154 (0.3%)
14	M	0.36	0/1276	0.67	1/1709 (0.1%)
15	N	0.36	0/1136	0.70	2/1527 (0.1%)
16	O	0.34	0/1029	0.71	1/1379 (0.1%)
17	P	0.32	0/900	0.67	0/1213
18	Q	0.40	0/986	0.76	0/1320
19	R	0.34	0/924	0.71	0/1238
20	S	0.29	0/501	0.50	0/664
21	T	0.33	0/745	0.63	0/992
22	U	0.35	0/716	0.63	0/963
23	V	0.86	11/69349 (0.0%)	1.27	775/108263 (0.7%)
24	X	0.64	1/2954 (0.0%)	1.23	24/4606 (0.5%)
25	Y	0.43	1/1775 (0.1%)	0.79	3/2393 (0.1%)
26	Z	0.47	0/2176	0.78	3/2933 (0.1%)
27	a	0.48	0/1611	0.82	3/2171 (0.1%)
28	b	0.46	0/1660	0.80	1/2247 (0.0%)
29	c	0.33	0/1479	0.83	3/1989 (0.2%)
30	d	0.35	0/1360	0.98	4/1838 (0.2%)
31	e	0.41	0/620	0.81	2/861 (0.2%)
32	f	0.34	0/1012	0.85	5/1373 (0.4%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
33	g	0.40	0/952	0.80	3/1283 (0.2%)
34	h	0.47	0/942	0.91	2/1268 (0.2%)
35	i	0.41	0/1125	0.88	4/1497 (0.3%)
36	j	0.47	0/1100	0.87	1/1470 (0.1%)
37	k	0.41	0/974	0.74	0/1302
38	l	0.32	0/887	0.69	2/1180 (0.2%)
39	m	0.43	0/990	0.89	3/1325 (0.2%)
40	n	0.46	0/982	0.72	1/1306 (0.1%)
41	o	0.41	0/790	0.90	1/1057 (0.1%)
42	p	0.43	0/886	0.67	0/1189
43	q	0.41	0/756	0.81	2/1015 (0.2%)
44	r	0.37	0/857	0.91	2/1142 (0.2%)
45	s	0.37	0/1467	0.72	1/1992 (0.1%)
46	t	0.39	0/637	0.69	1/848 (0.1%)
47	u	0.34	0/569	0.72	2/751 (0.3%)
48	v	0.47	0/474	0.79	1/635 (0.2%)
49	CC	0.26	0/156	0.53	0/215
49	w	0.49	0/594	0.96	0/795
50	x	0.44	0/459	0.79	0/621
51	y	0.48	0/429	0.85	0/572
52	z	0.55	0/438	0.84	0/575
53	AA	0.50	0/523	0.88	0/690
54	BB	0.43	0/310	0.88	1/407 (0.2%)
55	DD	0.46	0/1724	1.16	24/2687 (0.9%)
56	EE	0.34	0/3892	0.70	4/5224 (0.1%)
All	All	0.69	16/162811 (0.0%)	1.11	1137/242705 (0.5%)

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
3	B	0	3
4	C	0	1
5	D	0	1
6	E	0	4
9	H	0	2
11	J	0	2
12	K	0	1
13	L	0	2
14	M	0	2

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Mol	Chain	#Chirality outliers	#Planarity outliers
15	N	0	1
16	O	0	2
18	Q	0	1
19	R	0	1
23	V	0	6
25	Y	0	4
26	Z	0	8
27	a	0	2
28	b	0	5
29	c	0	4
30	d	0	2
31	e	0	8
32	f	0	2
33	g	0	2
34	h	0	10
35	i	0	8
36	j	0	6
38	l	0	1
39	m	0	8
41	o	0	4
43	q	0	2
44	r	0	7
46	t	0	1
47	u	0	2
48	v	0	1
49	w	0	2
50	x	0	1
51	y	0	1
52	z	0	1
53	AA	0	2
56	EE	0	6
All	All	0	129

The worst 5 of 16 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
23	V	1449(A)	G	O3'-P	-15.61	1.42	1.61
23	V	1146	C	O3'-P	11.89	1.75	1.61
24	X	-1	A	OP3-P	-10.17	1.49	1.61
8	G	93	U	O3'-P	-8.97	1.50	1.61
8	G	1167	A	O3'-P	-7.78	1.51	1.61



The worst 5 of 1137 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
30	d	11	VAL	C-N-CD	-21.67	72.92	120.60
23	V	1449(A)	G	O3'-P-O5'	-19.38	67.19	104.00
23	V	1061	U	OP1-P-OP2	18.30	147.06	119.60
23	V	155	C	O3'-P-O5'	-18.02	69.77	104.00
23	V	2349	G	C8-N9-C4	-17.62	99.35	106.40

There are no chirality outliers.

5 of 129 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	B	44	LEU	Peptide
3	B	83	GLU	Peptide
3	B	86	VAL	Peptide
4	C	75	ASN	Peptide
5	D	4	SER	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	
2	A	95/104 (91%)	82 (86%)	12 (13%)	1 (1%)	14	53
3	B	71/73 (97%)	59 (83%)	12 (17%)	0	100	100
4	C	97/106 (92%)	85 (88%)	10 (10%)	2 (2%)	7	40
5	D	80/93 (86%)	64 (80%)	16 (20%)	0	100	100
6	E	96/105 (91%)	81 (84%)	14 (15%)	1 (1%)	15	55
7	F	22/27 (82%)	20 (91%)	2 (9%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
9	H	220/256 (86%)	195 (89%)	23 (10%)	2 (1%)	17	57
10	I	204/239 (85%)	174 (85%)	30 (15%)	0	100	100
11	J	206/209 (99%)	178 (86%)	27 (13%)	1 (0%)	29	68
12	K	148/162 (91%)	129 (87%)	18 (12%)	1 (1%)	22	61
13	L	99/101 (98%)	84 (85%)	14 (14%)	1 (1%)	15	55
14	M	153/156 (98%)	135 (88%)	16 (10%)	2 (1%)	12	50
15	N	136/138 (99%)	118 (87%)	17 (12%)	1 (1%)	22	61
16	O	125/128 (98%)	97 (78%)	28 (22%)	0	100	100
17	P	117/129 (91%)	103 (88%)	14 (12%)	0	100	100
18	Q	122/132 (92%)	96 (79%)	25 (20%)	1 (1%)	19	59
19	R	112/126 (89%)	86 (77%)	23 (20%)	3 (3%)	5	35
20	S	58/61 (95%)	39 (67%)	18 (31%)	1 (2%)	9	45
21	T	86/89 (97%)	83 (96%)	3 (4%)	0	100	100
22	U	81/88 (92%)	70 (86%)	11 (14%)	0	100	100
25	Y	226/229 (99%)	179 (79%)	39 (17%)	8 (4%)	3	30
26	Z	271/276 (98%)	232 (86%)	38 (14%)	1 (0%)	34	71
27	a	204/206 (99%)	162 (79%)	42 (21%)	0	100	100
28	b	206/210 (98%)	156 (76%)	48 (23%)	2 (1%)	15	55
29	c	177/182 (97%)	121 (68%)	45 (25%)	11 (6%)	1	17
30	d	174/180 (97%)	135 (78%)	27 (16%)	12 (7%)	1	14
31	e	124/173 (72%)	79 (64%)	39 (32%)	6 (5%)	2	22
32	f	132/147 (90%)	86 (65%)	34 (26%)	12 (9%)	1	9
33	g	115/140 (82%)	92 (80%)	21 (18%)	2 (2%)	9	45
34	h	120/122 (98%)	76 (63%)	39 (32%)	5 (4%)	3	25
35	i	143/150 (95%)	95 (66%)	41 (29%)	7 (5%)	2	21
36	j	134/141 (95%)	94 (70%)	37 (28%)	3 (2%)	6	39
37	k	115/118 (98%)	97 (84%)	18 (16%)	0	100	100
38	l	108/112 (96%)	82 (76%)	23 (21%)	3 (3%)	5	34
39	m	115/146 (79%)	78 (68%)	34 (30%)	3 (3%)	5	35
40	n	115/118 (98%)	103 (90%)	12 (10%)	0	100	100
41	o	99/101 (98%)	79 (80%)	19 (19%)	1 (1%)	15	55

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
42	p	108/113 (96%)	92 (85%)	15 (14%)	1 (1%)	17	57
43	q	92/96 (96%)	76 (83%)	14 (15%)	2 (2%)	6	39
44	r	108/110 (98%)	66 (61%)	40 (37%)	2 (2%)	8	42
45	s	178/206 (86%)	128 (72%)	41 (23%)	9 (5%)	2	20
46	t	78/85 (92%)	64 (82%)	13 (17%)	1 (1%)	12	50
47	u	65/67 (97%)	55 (85%)	9 (14%)	1 (2%)	10	47
48	v	57/60 (95%)	46 (81%)	10 (18%)	1 (2%)	8	43
49	CC	30/71 (42%)	18 (60%)	12 (40%)	0	100	100
49	w	69/71 (97%)	43 (62%)	23 (33%)	3 (4%)	2	24
50	x	55/60 (92%)	35 (64%)	18 (33%)	2 (4%)	3	29
51	y	47/54 (87%)	29 (62%)	17 (36%)	1 (2%)	7	40
52	z	47/49 (96%)	40 (85%)	7 (15%)	0	100	100
53	AA	62/65 (95%)	50 (81%)	9 (14%)	3 (5%)	2	22
54	BB	35/37 (95%)	32 (91%)	3 (9%)	0	100	100
56	EE	488/497 (98%)	386 (79%)	98 (20%)	4 (1%)	19	59
All	All	6425/6914 (93%)	5084 (79%)	1218 (19%)	123 (2%)	11	42

5 of 123 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	C	75	ASN
9	H	78	GLN
25	Y	161	ILE
25	Y	179	SER
29	c	31	VAL

### 5.3.2 Protein sidechains [i](#)

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	A	92/96 (96%)	91 (99%)	1 (1%)	73	88

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	B	64/64 (100%)	64 (100%)	0	100	100
4	C	76/82 (93%)	75 (99%)	1 (1%)	69	86
5	D	72/80 (90%)	69 (96%)	3 (4%)	30	63
6	E	88/92 (96%)	88 (100%)	0	100	100
7	F	19/22 (86%)	19 (100%)	0	100	100
9	H	191/220 (87%)	186 (97%)	5 (3%)	46	74
10	I	160/188 (85%)	157 (98%)	3 (2%)	57	80
11	J	180/181 (99%)	176 (98%)	4 (2%)	52	77
12	K	115/123 (94%)	114 (99%)	1 (1%)	78	90
13	L	90/90 (100%)	90 (100%)	0	100	100
14	M	126/127 (99%)	124 (98%)	2 (2%)	62	83
15	N	119/119 (100%)	118 (99%)	1 (1%)	81	91
16	O	98/99 (99%)	96 (98%)	2 (2%)	55	79
17	P	90/99 (91%)	87 (97%)	3 (3%)	38	69
18	Q	104/109 (95%)	104 (100%)	0	100	100
19	R	92/101 (91%)	91 (99%)	1 (1%)	73	88
20	S	49/50 (98%)	41 (84%)	8 (16%)	2	15
21	T	79/80 (99%)	77 (98%)	2 (2%)	47	75
22	U	72/74 (97%)	71 (99%)	1 (1%)	67	85
25	Y	180/181 (99%)	174 (97%)	6 (3%)	38	69
26	Z	215/218 (99%)	209 (97%)	6 (3%)	43	72
27	a	166/166 (100%)	163 (98%)	3 (2%)	59	81
28	b	164/166 (99%)	160 (98%)	4 (2%)	49	75
29	c	152/156 (97%)	139 (91%)	13 (9%)	10	41
30	d	142/148 (96%)	130 (92%)	12 (8%)	10	41
32	f	101/111 (91%)	92 (91%)	9 (9%)	9	40
33	g	99/119 (83%)	94 (95%)	5 (5%)	24	58
34	h	100/100 (100%)	99 (99%)	1 (1%)	76	88
35	i	112/116 (97%)	107 (96%)	5 (4%)	27	62
36	j	106/111 (96%)	104 (98%)	2 (2%)	57	80
37	k	100/101 (99%)	99 (99%)	1 (1%)	76	88

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
38	l	87/88 (99%)	76 (87%)	11 (13%)	4	24
39	m	105/127 (83%)	101 (96%)	4 (4%)	33	66
40	n	93/94 (99%)	92 (99%)	1 (1%)	73	88
41	o	82/82 (100%)	79 (96%)	3 (4%)	34	66
42	p	90/92 (98%)	87 (97%)	3 (3%)	38	69
43	q	76/78 (97%)	76 (100%)	0	100	100
44	r	91/91 (100%)	90 (99%)	1 (1%)	73	88
45	s	159/179 (89%)	155 (98%)	4 (2%)	47	75
46	t	63/67 (94%)	61 (97%)	2 (3%)	39	70
47	u	62/62 (100%)	60 (97%)	2 (3%)	39	70
48	v	51/52 (98%)	50 (98%)	1 (2%)	55	79
49	w	63/63 (100%)	61 (97%)	2 (3%)	39	70
50	x	50/52 (96%)	46 (92%)	4 (8%)	12	43
51	y	47/52 (90%)	42 (89%)	5 (11%)	6	32
52	z	42/42 (100%)	41 (98%)	1 (2%)	49	75
53	AA	54/55 (98%)	53 (98%)	1 (2%)	57	80
54	BB	34/34 (100%)	33 (97%)	1 (3%)	42	72
56	EE	412/419 (98%)	386 (94%)	26 (6%)	18	53
All	All	5274/5518 (96%)	5097 (97%)	177 (3%)	40	69

5 of 177 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
38	l	98	VAL
51	y	20	ASN
39	m	111	ARG
45	s	93	ASP
54	BB	4	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 38 such sidechains are listed below:

Mol	Chain	Res	Type
43	q	31	HIS
51	y	32	ASN
43	q	41	ASN

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Mol	Chain	Res	Type
47	u	66	ASN
56	EE	285	GLN

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	W	6/25 (24%)	6 (100%)	1 (16%)
23	V	2874/2875 (99%)	1140 (39%)	83 (2%)
24	X	122/123 (99%)	41 (33%)	1 (0%)
55	DD	76/77 (98%)	31 (40%)	4 (5%)
8	G	1513/1514 (99%)	479 (31%)	37 (2%)
All	All	4591/4614 (99%)	1697 (36%)	126 (2%)

5 of 1697 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	W	15	A
1	W	16	A
1	W	17	U
1	W	18	G
1	W	19	U

5 of 126 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
23	V	451	C
23	V	2319	G
23	V	827	U
23	V	2238	G
23	V	2712	U

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

5 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
55	OMC	DD	33	55	19,22,23	0.82	0	26,31,34	1.04	1 (3%)
55	7MG	DD	47	55	22,26,27	1.32	3 (13%)	29,39,42	2.65	8 (27%)
55	PSU	DD	56	55	18,21,22	1.00	1 (5%)	22,30,33	1.67	5 (22%)
55	4SU	DD	8	55	18,21,22	1.72	4 (22%)	26,30,33	2.31	6 (23%)
55	5MU	DD	55	55	19,22,23	4.61	5 (26%)	28,32,35	3.70	10 (35%)

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
55	OMC	DD	33	55	-	2/9/27/28	0/2/2/2
55	7MG	DD	47	55	-	1/7/37/38	0/3/3/3
55	PSU	DD	56	55	-	2/7/25/26	0/2/2/2
55	4SU	DD	8	55	-	1/7/25/26	0/2/2/2
55	5MU	DD	55	55	-	1/7/25/26	0/2/2/2

The worst 5 of 13 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
55	DD	55	5MU	C2-N1	11.06	1.56	1.38
55	DD	55	5MU	C4-N3	-9.89	1.20	1.38
55	DD	55	5MU	C4-C5	9.87	1.61	1.44
55	DD	55	5MU	C6-N1	7.96	1.51	1.38
55	DD	8	4SU	C4-S4	-4.46	1.59	1.68

The worst 5 of 30 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
55	DD	55	5MU	C5-C4-N3	12.26	125.78	115.31
55	DD	55	5MU	C5-C6-N1	-9.85	113.21	123.34
55	DD	47	7MG	N9-C4-N3	9.15	139.16	125.47
55	DD	8	4SU	C4-N3-C2	-6.88	120.66	127.34
55	DD	8	4SU	C5-C4-N3	5.94	120.20	114.69

There are no chirality outliers.

5 of 7 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
55	DD	8	4SU	O4'-C4'-C5'-O5'
55	DD	33	OMC	O4'-C4'-C5'-O5'
55	DD	33	OMC	C3'-C4'-C5'-O5'
55	DD	56	PSU	C3'-C4'-C5'-O5'
55	DD	56	PSU	O4'-C4'-C5'-O5'

There are no ring outliers.

No monomer is involved in short contacts.

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 4 ligands modelled in this entry, 2 are monoatomic - leaving 2 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
58	ANP	EE	501	56	29,33,33	1.86	5 (17%)	31,52,52	1.88	8 (25%)
58	ANP	EE	502	-	29,33,33	1.86	5 (17%)	31,52,52	1.89	8 (25%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
58	ANP	EE	501	56	-	7/14/38/38	0/3/3/3
58	ANP	EE	502	-	-	6/14/38/38	0/3/3/3

The worst 5 of 10 bond length outliers are listed below:



Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
58	EE	501	ANP	PB-N3B	4.63	1.75	1.63
58	EE	502	ANP	PB-N3B	4.62	1.75	1.63
58	EE	502	ANP	PG-N3B	4.62	1.75	1.63
58	EE	501	ANP	PG-N3B	4.60	1.75	1.63
58	EE	502	ANP	PG-O1G	3.37	1.51	1.46

The worst 5 of 16 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
58	EE	502	ANP	O1G-PG-N3B	-4.85	104.63	111.77
58	EE	501	ANP	O1G-PG-N3B	-4.84	104.64	111.77
58	EE	501	ANP	O2B-PB-O1B	4.04	118.40	109.92
58	EE	502	ANP	O2B-PB-O1B	4.04	118.40	109.92
58	EE	502	ANP	PB-O3A-PA	-3.46	120.44	132.62

There are no chirality outliers.

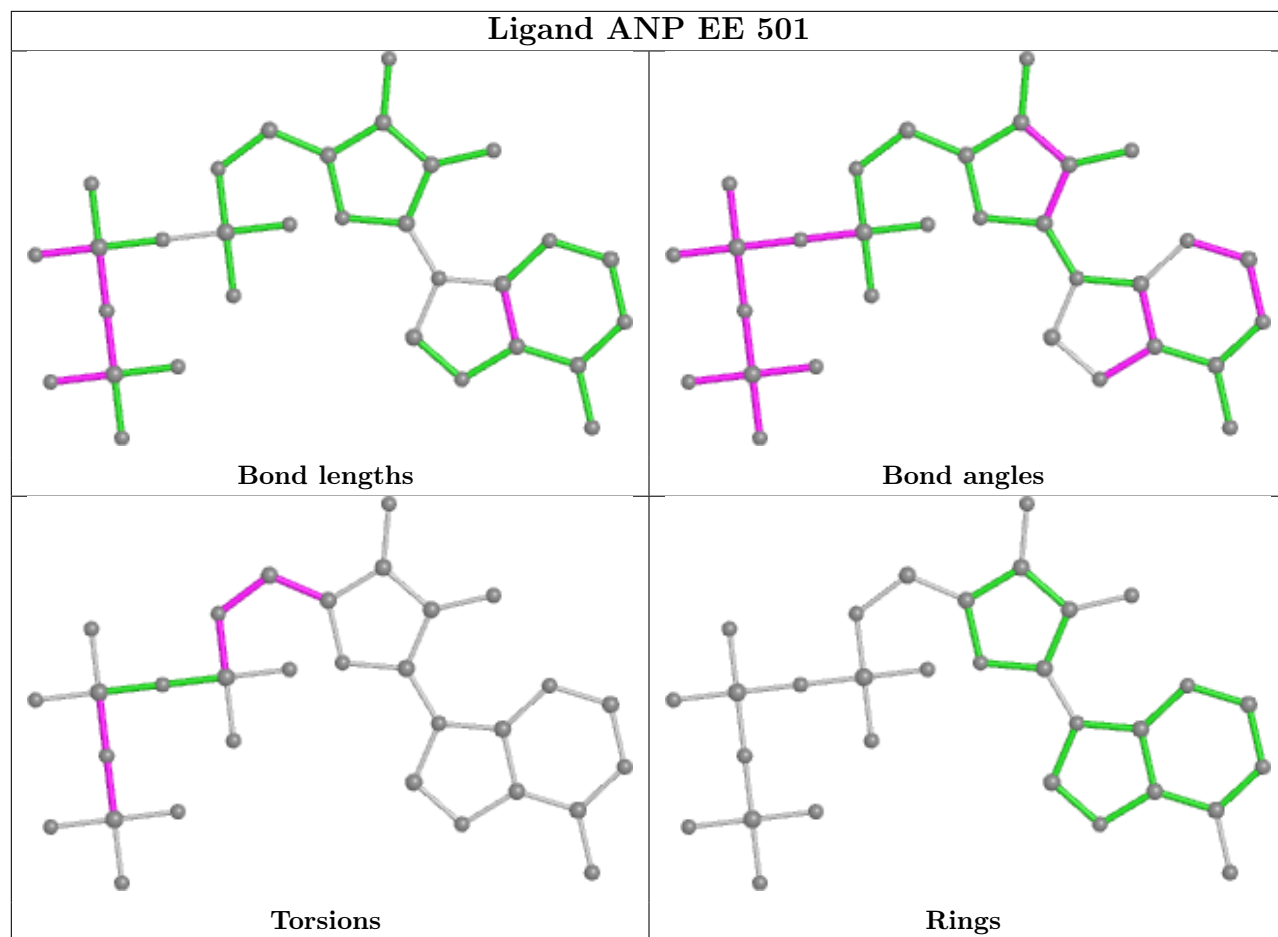
5 of 13 torsion outliers are listed below:

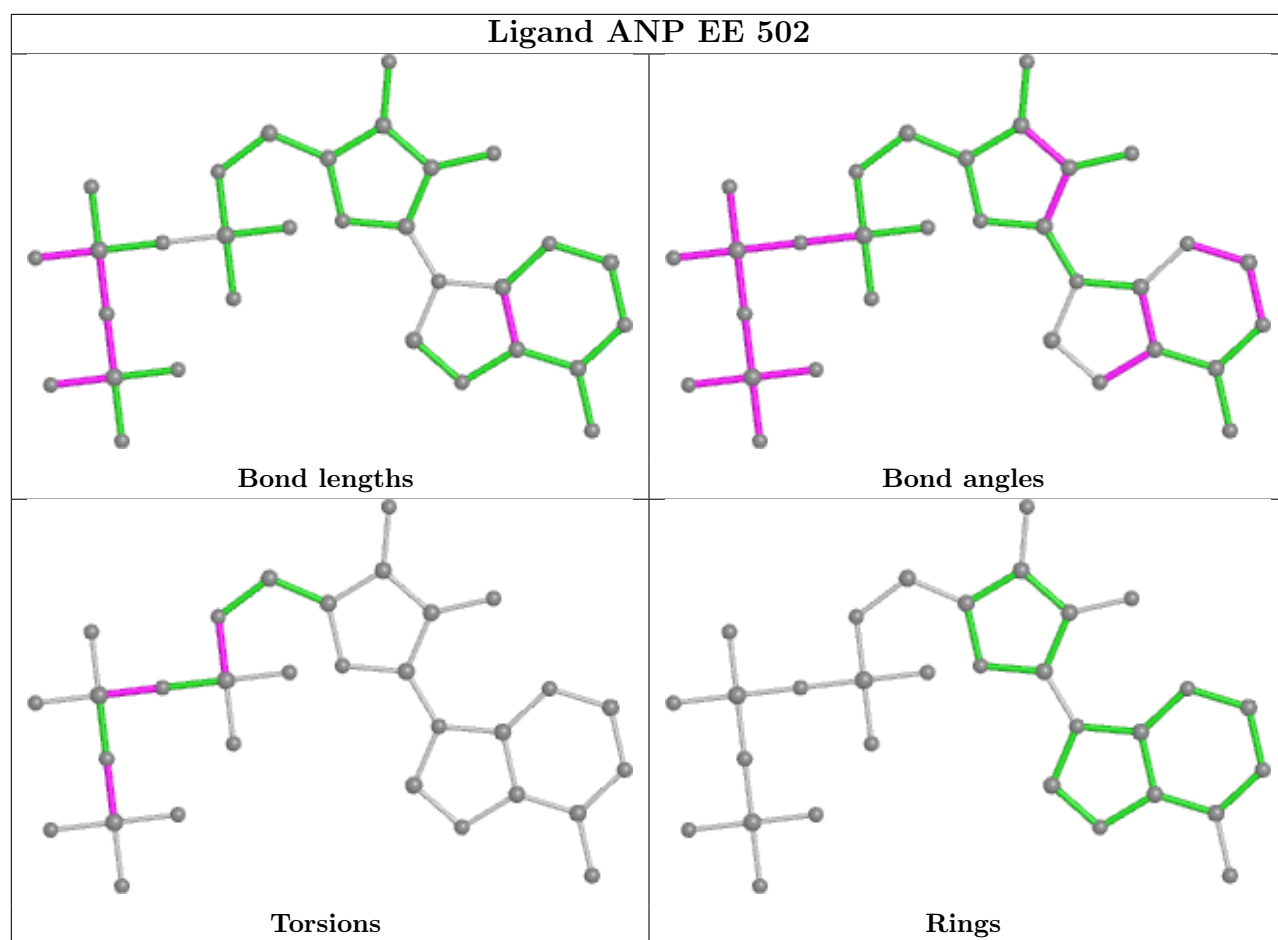
Mol	Chain	Res	Type	Atoms
58	EE	501	ANP	PB-N3B-PG-O1G
58	EE	501	ANP	PG-N3B-PB-O1B
58	EE	501	ANP	C3'-C4'-C5'-O5'
58	EE	502	ANP	PB-N3B-PG-O1G
58	EE	502	ANP	PA-O3A-PB-O1B

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less 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.

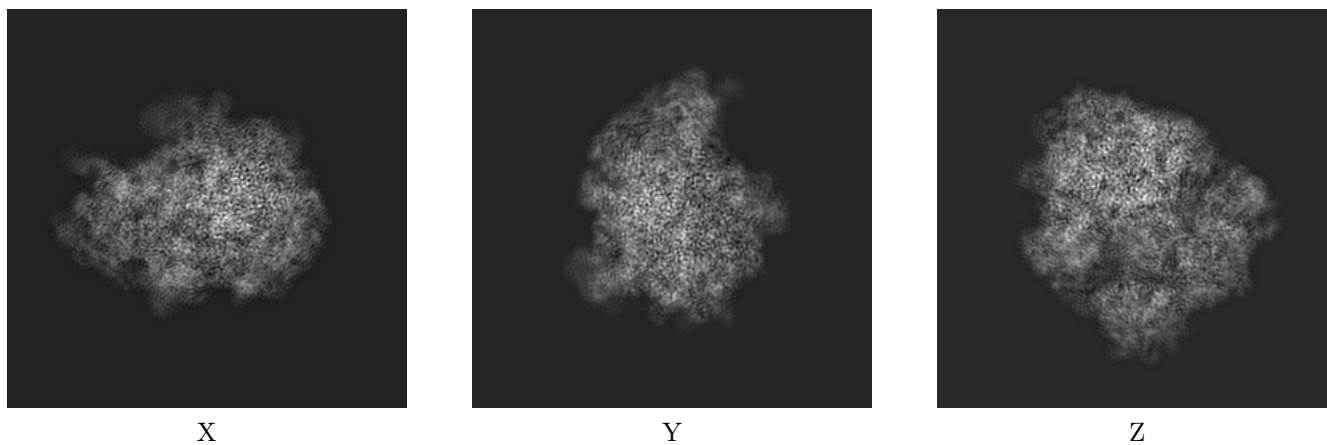
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-6934. 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 [i](#)

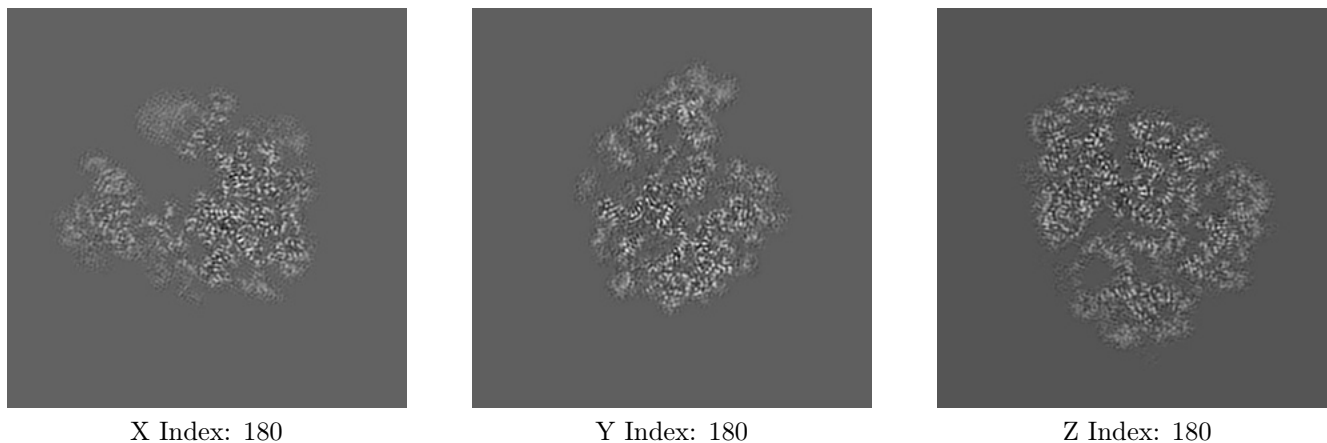
#### 6.1.1 Primary map



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

### 6.2 Central slices [i](#)

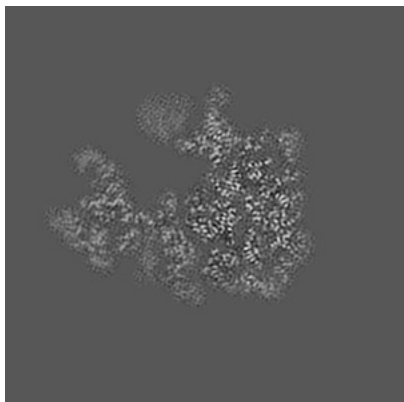
#### 6.2.1 Primary map



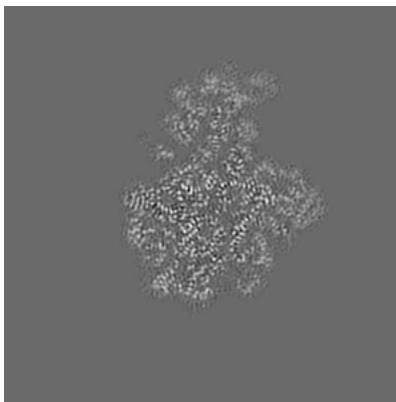
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

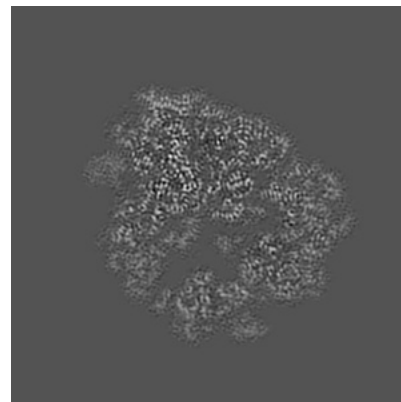
### 6.3.1 Primary map



X Index: 187



Y Index: 189



Z Index: 190

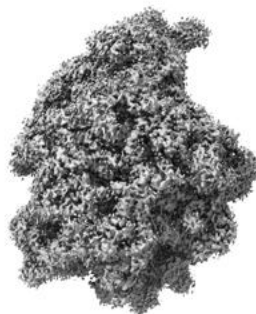
The images above show the largest variance slices of the map in three orthogonal directions.

## 6.4 Orthogonal surface views [i](#)

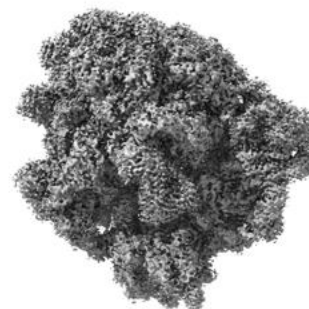
### 6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.052. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

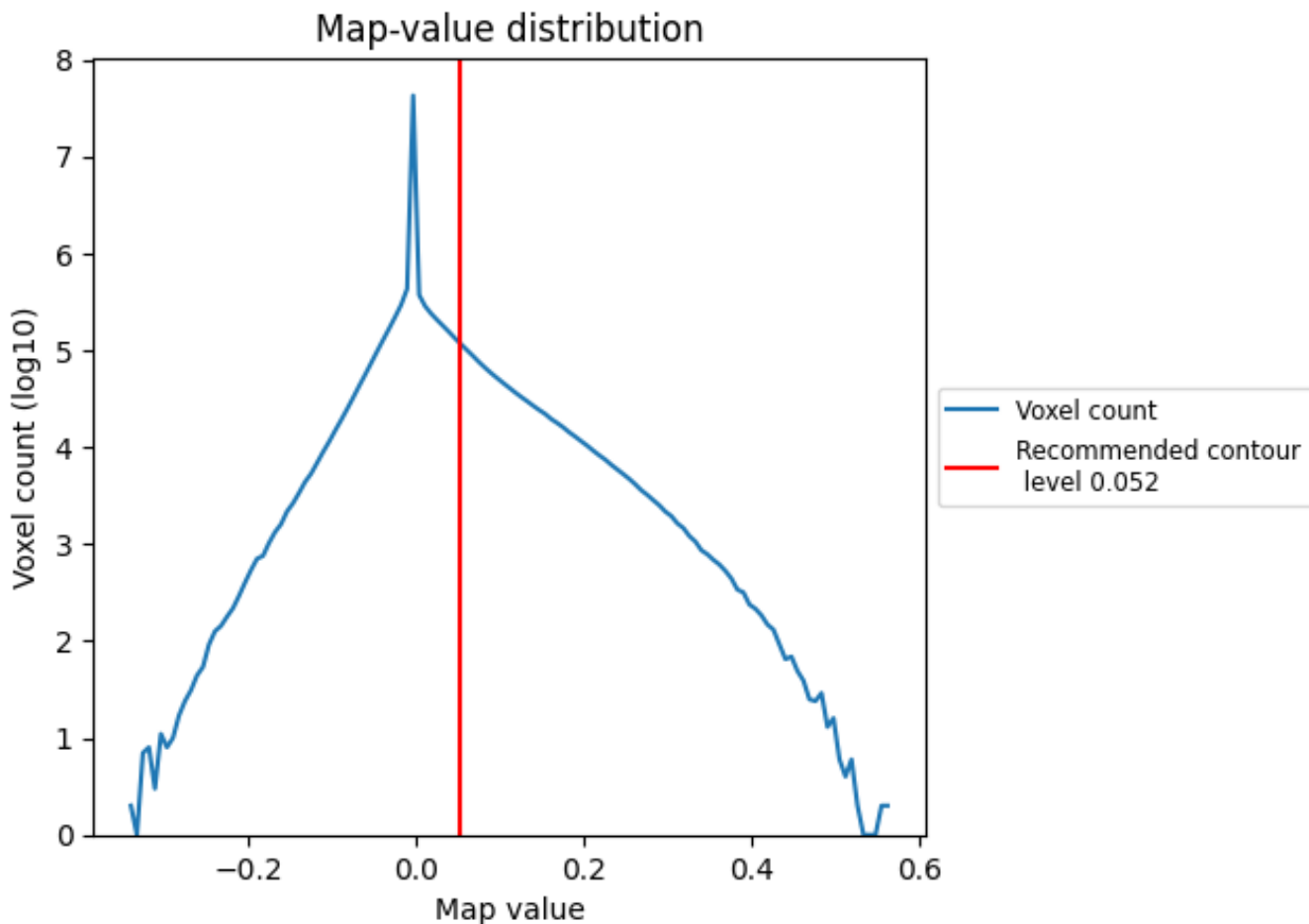
## 6.5 Mask visualisation

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

## 7 Map analysis [i](#)

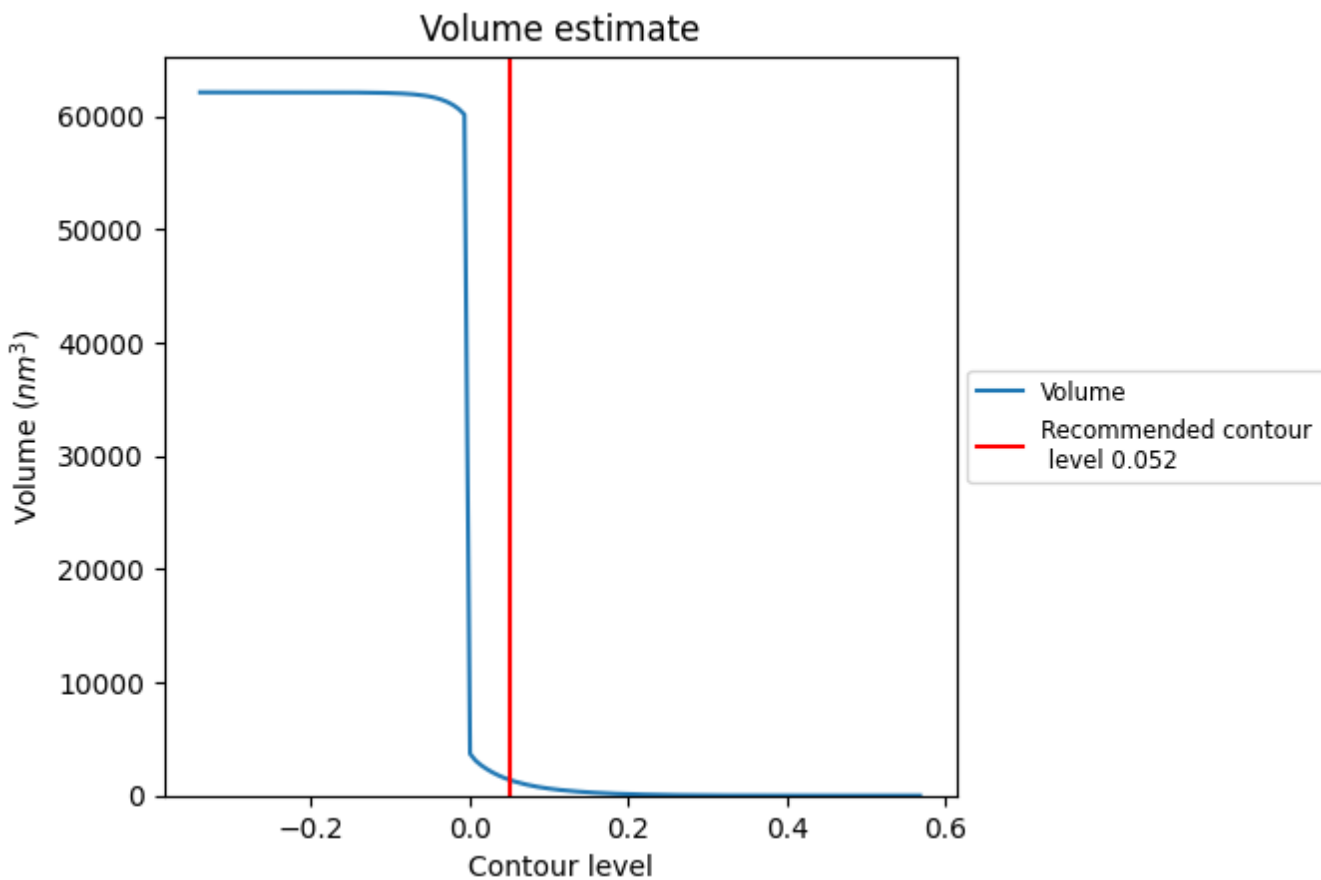
This section contains the results of statistical analysis of the map.

### 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](#)

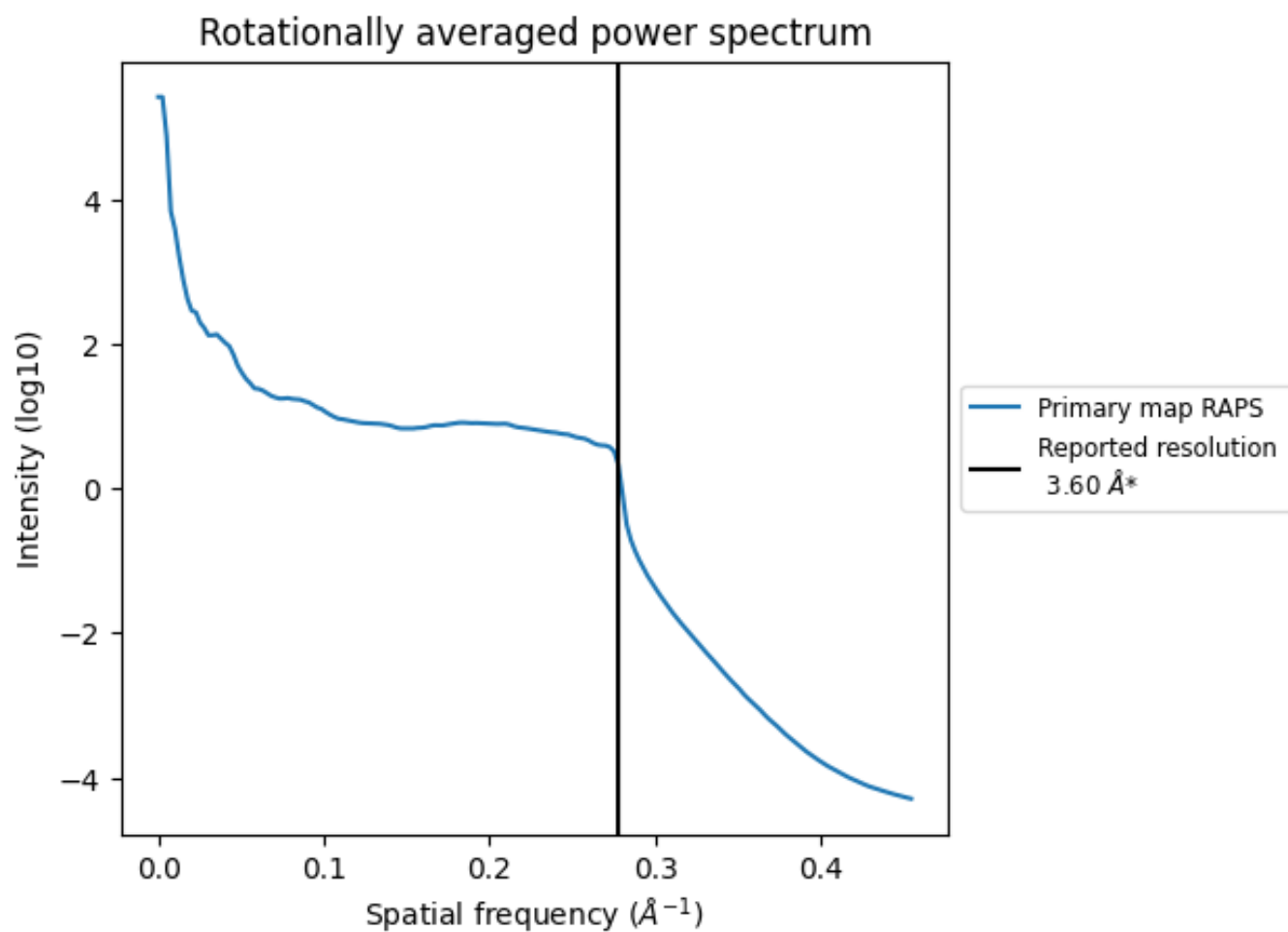


The volume at the recommended contour level is 1361 nm<sup>3</sup>; this corresponds to an approximate mass of 1230 kDa.

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



### 7.3 Rotationally averaged power spectrum i

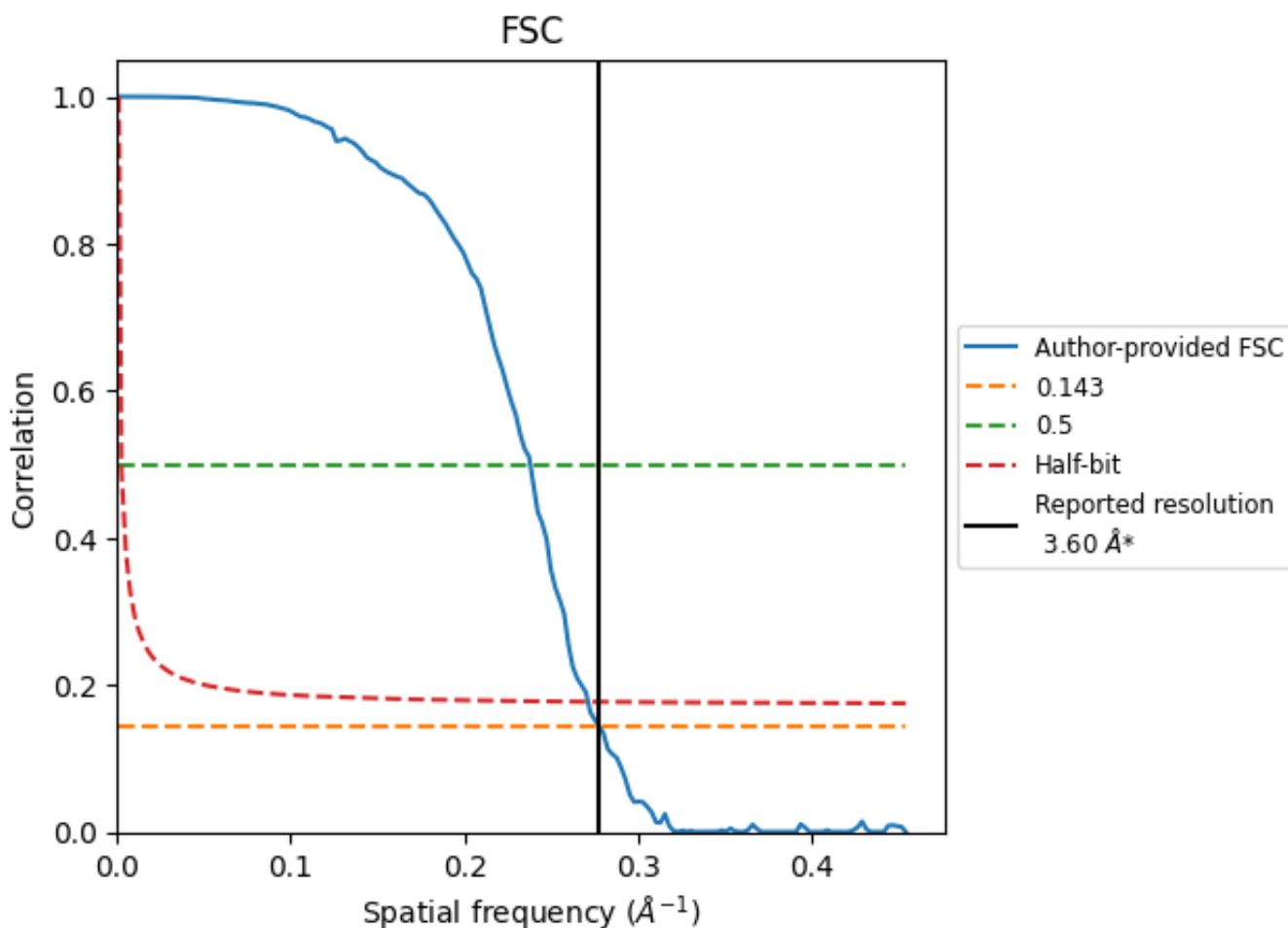


\*Reported resolution corresponds to spatial frequency of 0.278 Å<sup>-1</sup>

## 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 0.278 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

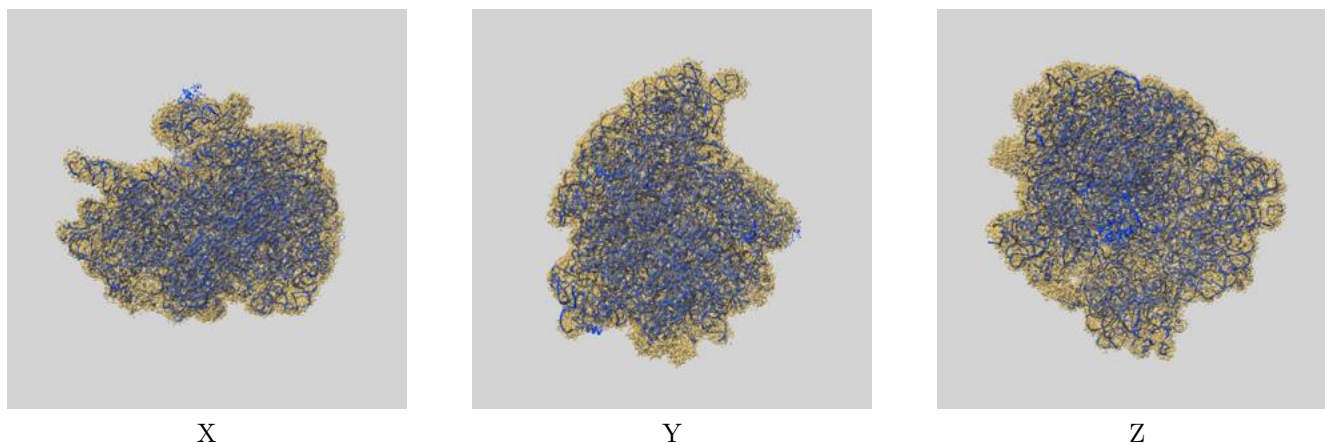
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.60	-	-
Author-provided FSC curve	3.60	4.20	3.68
Unmasked-calculated*	-	-	-

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

## 9 Map-model fit [i](#)

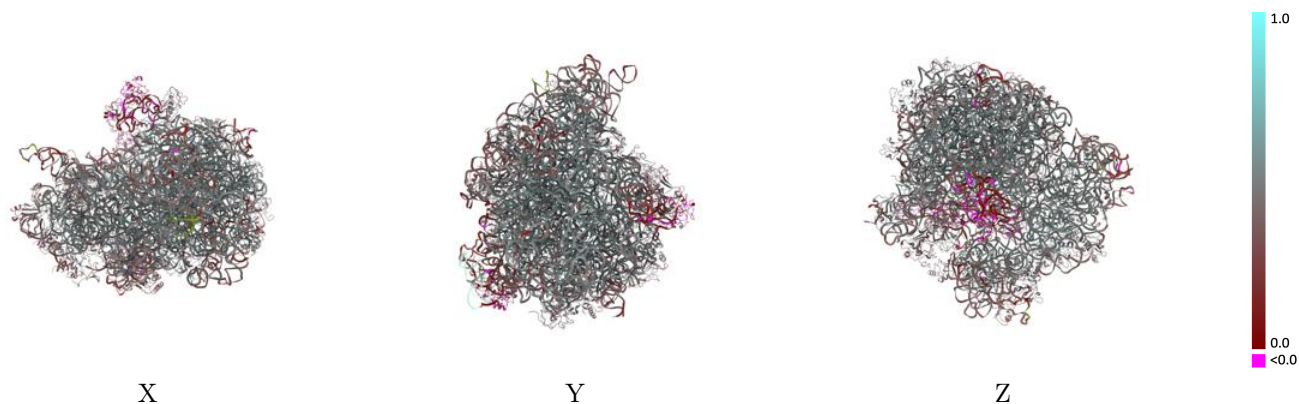
This section contains information regarding the fit between EMDB map EMD-6934 and PDB model 5ZLU. Per-residue inclusion information can be found in section 3 on page 15.

### 9.1 Map-model overlay [i](#)



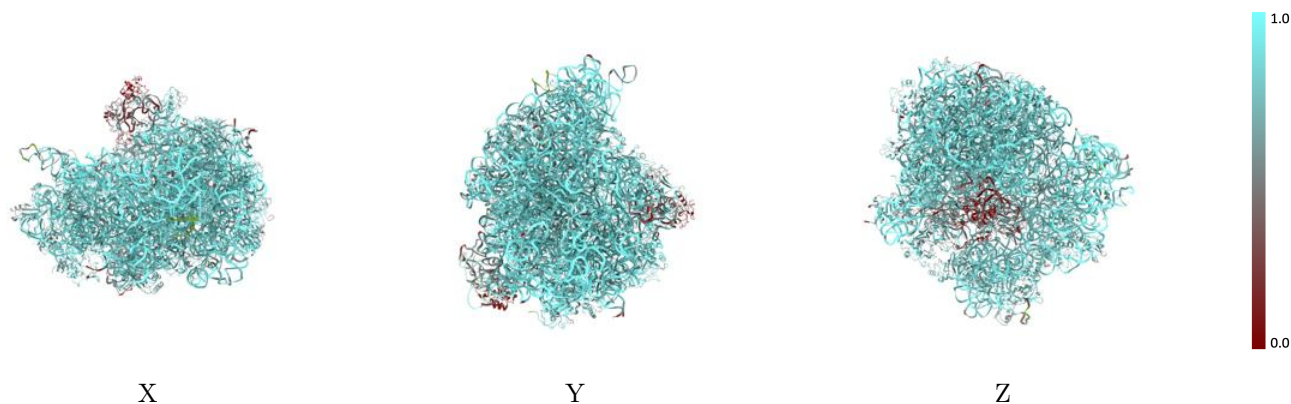
The images above show the 3D surface view of the map at the recommended contour level 0.052 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



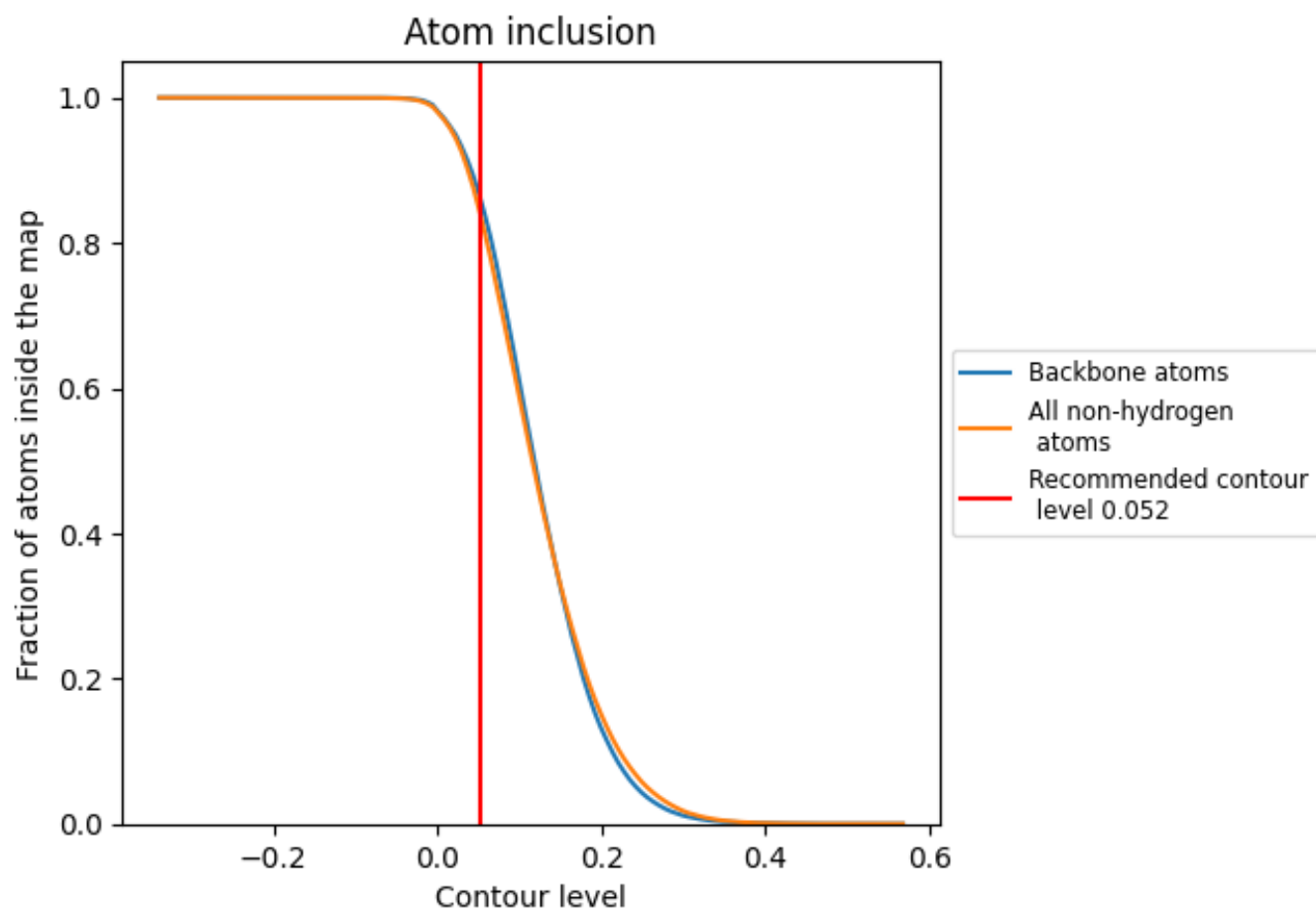
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

## 9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.052).







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 86% of all backbone atoms, 84% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary















































The table lists the average atom inclusion at the recommended contour level (0.052) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8410	 0.4410
A	 0.8123	 0.4810
AA	 0.8012	 0.4720
B	 0.7003	 0.3950
BB	 0.8571	 0.4720
C	 0.8417	 0.4670
CC	 0.8280	 0.3980
D	 0.7641	 0.3880
DD	 0.7603	 0.3870
E	 0.7221	 0.4220
EE	 0.6979	 0.4220
F	 0.8377	 0.4520
G	 0.9125	 0.4540
H	 0.7459	 0.4140
I	 0.8112	 0.4550
J	 0.8128	 0.4490
K	 0.8209	 0.4780
L	 0.6814	 0.3630
M	 0.7666	 0.4510
N	 0.8138	 0.4580
O	 0.7819	 0.4280
P	 0.7671	 0.4050
Q	 0.7887	 0.4870
R	 0.7646	 0.4160
S	 0.8266	 0.4560
T	 0.8362	 0.4370
U	 0.8606	 0.4590
V	 0.8802	 0.4530
W	 0.7785	 0.3830
X	 0.9080	 0.4350
Y	 0.2396	 0.1340
Z	 0.8705	 0.5170
a	 0.8225	 0.4760
b	 0.8266	 0.4600
c	 0.7116	 0.3730



*Continued on next page...*

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Chain	Atom inclusion	Q-score
d	 0.7704	 0.4070
e	 0.1417	 0.0750
f	 0.2853	 0.1400
g	 0.8148	 0.4530
h	 0.7670	 0.4310
i	 0.8183	 0.4410
j	 0.7837	 0.4440
k	 0.8836	 0.5150
l	 0.7948	 0.4110
m	 0.7419	 0.4260
n	 0.8774	 0.5010
o	 0.7756	 0.4210
p	 0.8909	 0.5200
q	 0.8487	 0.4810
r	 0.6747	 0.3630
s	 0.4746	 0.2800
t	 0.8669	 0.5210
u	 0.8263	 0.4510
v	 0.8399	 0.4780
w	 0.7268	 0.3990
x	 0.8476	 0.4760
y	 0.8074	 0.4540
z	 0.8568	 0.5170