



## Full wwPDB EM Validation Report ⓘ

May 18, 2024 – 09:28 AM EDT

PDB ID : 7K52  
EMDB ID : EMD-22671  
Title : Near post-translocated non-frameshifting(CCA-A) complex with EF-G and GDCPC (Structure III)  
Authors : Demo, G.; Loveland, A.B.; Svidritskiy, E.; Gamper, H.B.; Hou, Y.M.; Korostelev, A.A.  
Deposited on : 2020-09-16  
Resolution : 3.40 Å (reported)  
Based on initial models : 4V9P, 4V7D, 6ENJ, 5UYM

This is a Full wwPDB EM Validation 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:

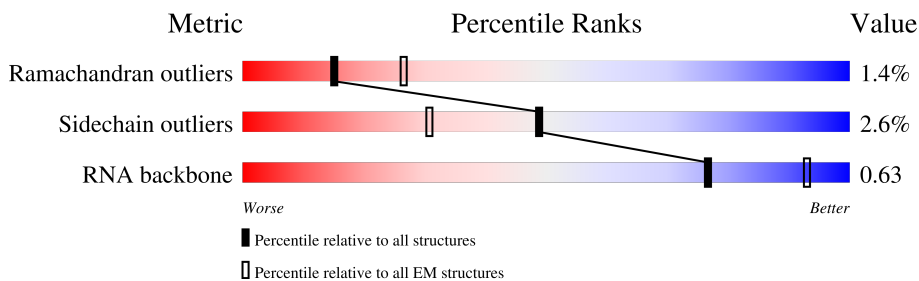
EMDB validation analysis : 0.0.1.dev92  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36.2

# 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 3.40 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	b	271	
2	c	209	
3	d	201	
4	e	177	
5	f	176	
6	g	149	
7	h	131	
8	i	141	

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Mol	Chain	Length	Quality of chain
9	j	142	95% 5%
10	k	122	96% ..
11	l	143	98% .
12	m	136	95% 5%
13	n	120	95% 5%
14	o	116	95% 5%
15	p	114	93% 7%
16	q	117	98% .
17	r	103	98% .
18	s	110	97% .
19	t	93	97% .
20	u	102	96% .
21	v	94	97% .
22	w	75	99% .
23	x	77	97% .
24	y	63	5% 94% 6%
25	z	58	97% .
26	A	66	15% 97% .
27	B	56	98% .
28	C	50	12% 94% 6%
29	D	46	96% .
30	E	64	95% 5%
31	F	38	97% .
32	G	225	18% 92% 5% .
33	H	206	38% 90% 9%

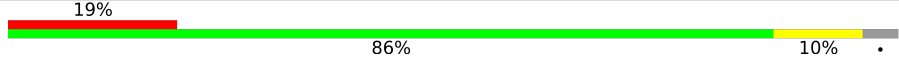
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Mol	Chain	Length	Quality of chain
34	I	205	23% 82% 17%
35	J	157	92% 7%
36	K	100	88% 10%
37	L	151	29% 89% 11%
38	M	129	92% 7%
39	N	127	13% 89% 11%
40	O	98	56% 84% 15%
41	P	116	90% 10%
42	Q	123	6% 85% 12%
43	R	114	24% 91% 7%
44	S	100	16% 92% 7%
45	T	88	97%
46	U	82	21% 82% 17%
47	V	80	94% 5%
48	W	65	91% 9%
49	X	79	49% 91% 9%
50	Y	85	95% 5%
51	Z	65	9% 83% 17%
52	a	223	50% 50% 9% 40%
53	3	1539	6% 88% 11%
54	1	2903	87% 13%
55	2	120	88% 12%
56	5	77	81% 18%
57	6	77	39% 75% 25%
58	4	16	19% 81% 19%

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Mol	Chain	Length	Quality of chain
59	8	711	 <p>A horizontal bar chart representing the quality of chain. The bar is divided into three segments: a red segment on the left labeled '19%', a large green segment in the middle labeled '86%', and a yellow segment on the right labeled '10%'. A small grey dot is visible at the far right end of the bar.</p>

## 2 Entry composition [i](#)

There are 63 unique types of molecules in this entry. The entry contains 153370 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 protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	b	271	2083	1288	423	365	7	0	0

- Molecule 2 is a protein called 50S ribosomal protein L3.

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

- Molecule 3 is a protein called 50S ribosomal protein L4.

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

- Molecule 4 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	e	177	1411	899	249	257	6	0	0

- Molecule 5 is a protein called 50S ribosomal protein L6.

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

- Molecule 6 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	g	125	936	590	166	179	1	0	0

- Molecule 7 is a protein called 50S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	h	84	633	397	114	118	4	0	0

- Molecule 8 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	i	74	551	358	91	99	3	0	0

- Molecule 9 is a protein called 50S ribosomal protein L13.

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

- Molecule 10 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	k	122	939	587	180	166	6	0	0

- Molecule 11 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	l	143	1045	649	206	189	1	0	0

- Molecule 12 is a protein called 50S ribosomal protein L16.

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

- Molecule 13 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	n	120	961	593	196	167	5	0	0

- Molecule 14 is a protein called 50S ribosomal protein L18.

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

- Molecule 15 is a protein called 50S ribosomal protein L19.

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

- Molecule 16 is a protein called 50S ribosomal protein L20.

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

- Molecule 17 is a protein called 50S ribosomal protein L21.

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

- Molecule 18 is a protein called 50S ribosomal protein L22.

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

- Molecule 19 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	t	93	Total	C	N	O	S	0	0
			739	466	139	132	2		

- Molecule 20 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms				AltConf	Trace
20	u	102	Total	C	N	O	0	0
			780	492	146	142		

- Molecule 21 is a protein called 50S ribosomal protein L25.



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

- Molecule 22 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	w	75	Total	C	N	O	S	0	0
			575	356	116	102	1		

- Molecule 23 is a protein called 50S ribosomal protein L28.

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

- Molecule 24 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	y	63	Total	C	N	O	S	0	0
			509	313	99	95	2		

- Molecule 25 is a protein called 50S ribosomal protein L30.

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

- Molecule 26 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	A	66	Total	C	N	O	S	0	0
			523	323	99	95	6		

- Molecule 27 is a protein called 50S ribosomal protein L32.

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

- Molecule 28 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
28	C	50	Total	C	N	O	0	0
			410	263	75	72		

- Molecule 29 is a protein called 50S ribosomal protein L34.

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

- Molecule 30 is a protein called 50S ribosomal protein L35.

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

- Molecule 31 is a protein called 50S ribosomal protein L36.

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

- Molecule 32 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	G	218	Total	C	N	O	S	0	0
			1705	1081	305	312	7		

- Molecule 33 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	H	206	Total	C	N	O	S	0	0
			1625	1028	305	289	3		

- Molecule 34 is a protein called 30S ribosomal protein S4.

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

- Molecule 35 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	J	157	Total	C	N	O	S	0	0
			1157	719	218	214	6		

- Molecule 36 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	K	100	Total	C	N	O	S	0	0
			818	515	148	149	6		

- Molecule 37 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	L	151	Total	C	N	O	S	0	0
			1182	735	227	216	4		

- Molecule 38 is a protein called 30S ribosomal protein S8.

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

- Molecule 39 is a protein called 30S ribosomal protein S9.

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

- Molecule 40 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	O	98	Total	C	N	O	S	0	0
			787	493	150	143	1		

- Molecule 41 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	P	116	Total	C	N	O	S	0	0
			870	535	173	159	3		

- Molecule 42 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	Q	123	955	590	196	165	4	0	0

- Molecule 43 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	R	114	884	546	178	157	3	0	0

- Molecule 44 is a protein called 30S ribosomal protein S14.

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

- Molecule 45 is a protein called 30S ribosomal protein S15.

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

- Molecule 46 is a protein called 30S ribosomal protein S16.

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

- Molecule 47 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
47	V	80	649	411	121	114	3	0	0

- Molecule 48 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
48	W	65	536	339	100	96	1	0	0

- Molecule 49 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	X	79	Total	C	N	O	S	0	0
			638	408	120	108	2		

- Molecule 50 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	Y	85	Total	C	N	O	S	0	0
			665	411	137	114	3		

- Molecule 51 is a protein called 30S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	Z	65	Total	C	N	O	S	0	0
			545	335	117	92	1		

- Molecule 52 is a protein called 50S ribosomal protein L1.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	a	134	Total	C	N	O	S	0	0
			1027	645	186	194	2		

- Molecule 53 is a RNA chain called 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	3	1539	Total	C	N	O	P	0	0
			33012	14725	6052	10697	1538		

- Molecule 54 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	1	2903	Total	C	N	O	P	0	0
			62317	27801	11468	20146	2902		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
1	747	C	U	conflict	GB 802133627

- Molecule 55 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
55	2	120	2568	1145	471	833	119	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
2	120	A	-	insertion	GB 1266961702

- Molecule 56 is a RNA chain called tRNAPro.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
56	5	77	1647	733	295	542	77	0	0

- Molecule 57 is a RNA chain called tRNAfMet.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
57	6	77	1640	732	297	535	76	0	0

- Molecule 58 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
58	4	16	348	156	70	106	16	0	0

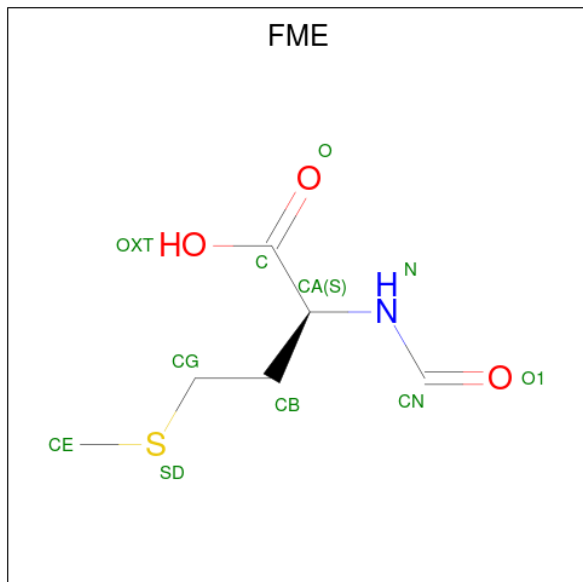
- Molecule 59 is a protein called Elongation factor G.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
59	8	685	5312	3351	911	1025	25	0	0

There are 8 discrepancies between the modelled and reference sequences:

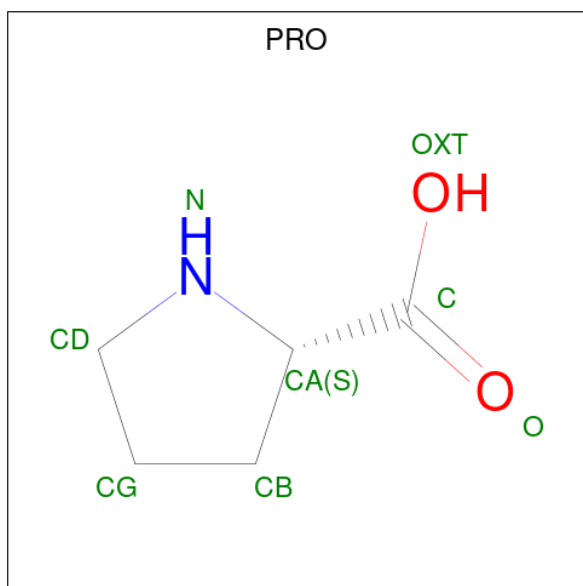
Chain	Residue	Modelled	Actual	Comment	Reference
8	705	LEU	-	expression tag	UNP U9XYS4
8	706	GLU	-	expression tag	UNP U9XYS4
8	707	HIS	-	expression tag	UNP U9XYS4
8	708	HIS	-	expression tag	UNP U9XYS4
8	709	HIS	-	expression tag	UNP U9XYS4
8	710	HIS	-	expression tag	UNP U9XYS4
8	711	HIS	-	expression tag	UNP U9XYS4
8	712	HIS	-	expression tag	UNP U9XYS4

- Molecule 60 is N-FORMYLMETHIONINE (three-letter code: FME) (formula:  $C_6H_{11}NO_3S$ ) (labeled as "Ligand of Interest" by depositor).



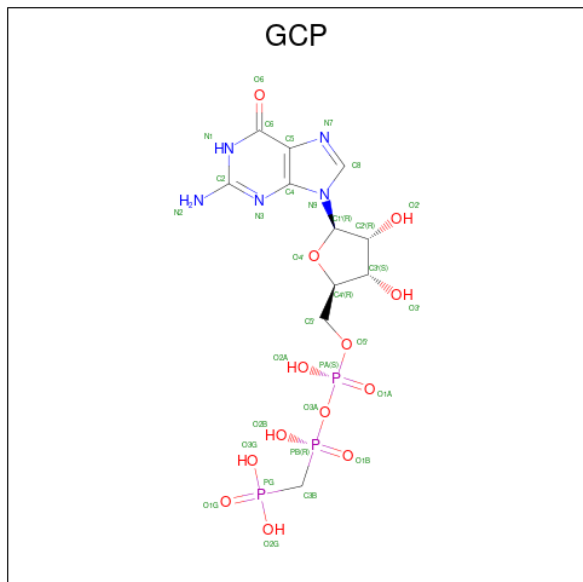
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	S	
60	1	1	10	6	1	2	1	0

- Molecule 61 is PROLINE (three-letter code: PRO) (formula:  $C_5H_9NO_2$ ) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
61	5	1	7	5	1	1	0

- Molecule 62 is PHOSPHOMETHYLPHOSPHONIC ACID GUANYLATE ESTER (three-letter code: GCP) (formula:  $C_{11}H_{18}N_5O_{13}P_3$ ) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
62	8	1	32	11	5	13	3	0

- Molecule 63 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

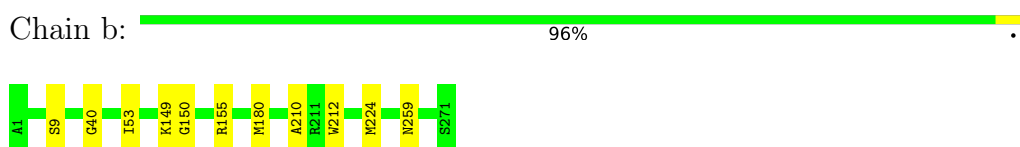
Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
63	8	1	1	1	0



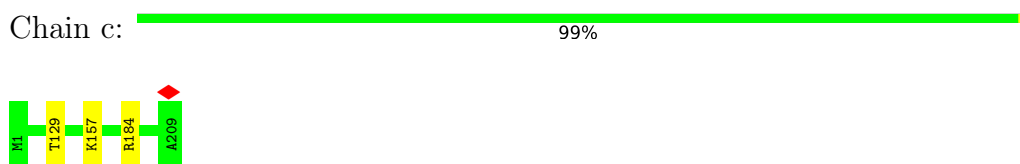
### 3 Residue-property plots [i](#)

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 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.

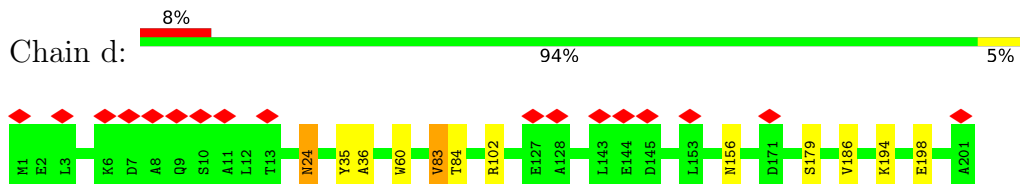
- Molecule 1: 50S ribosomal protein L2



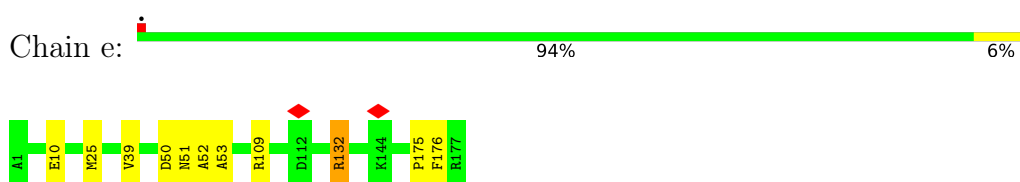
- Molecule 2: 50S ribosomal protein L3



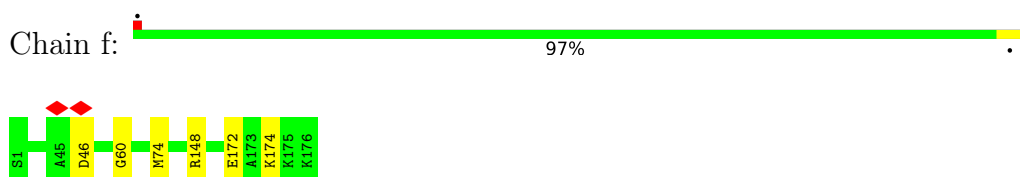
- Molecule 3: 50S ribosomal protein L4



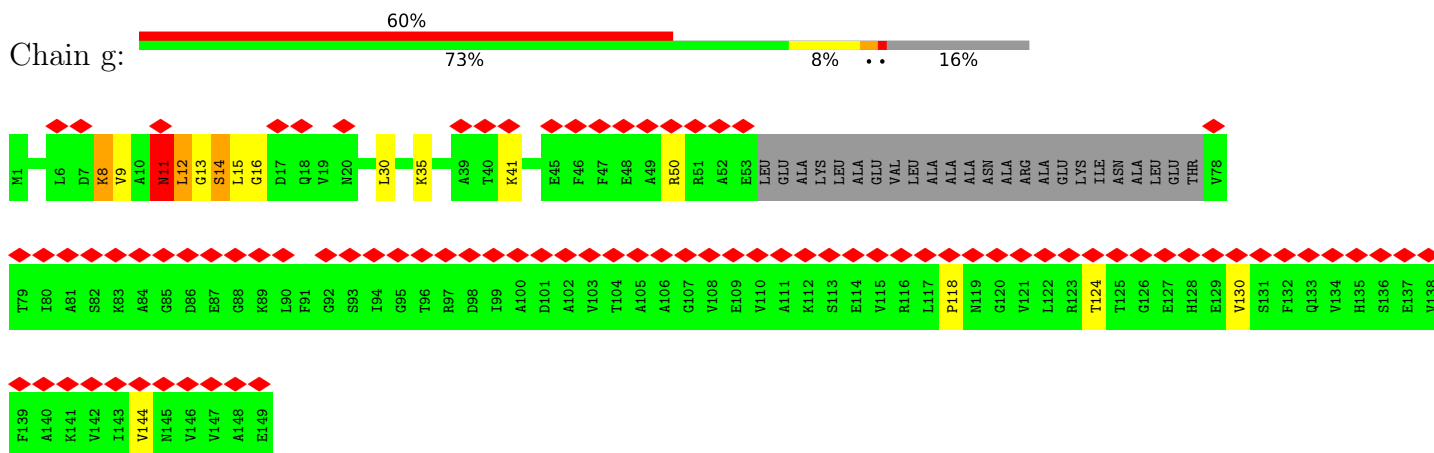
- Molecule 4: 50S ribosomal protein L5



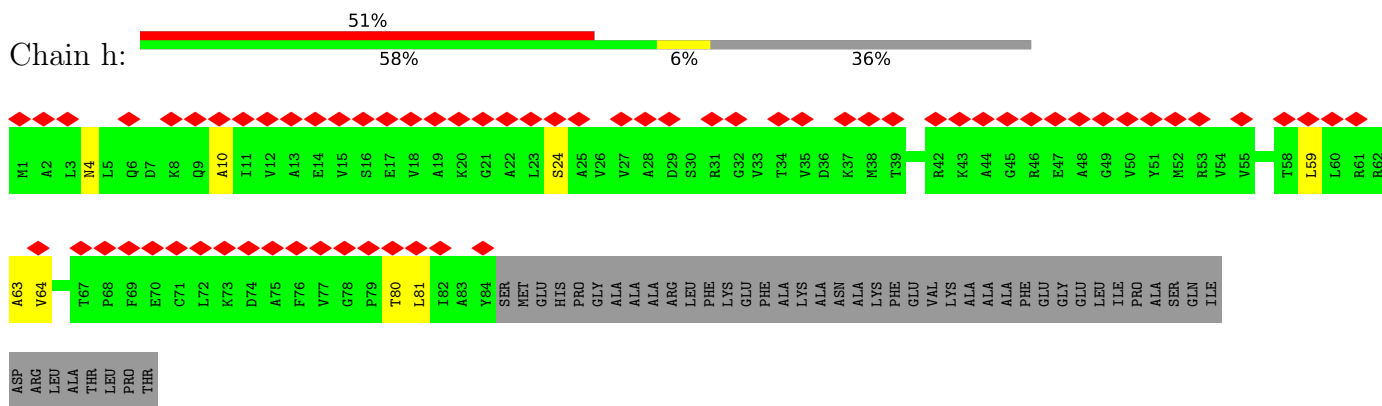
- Molecule 5: 50S ribosomal protein L6



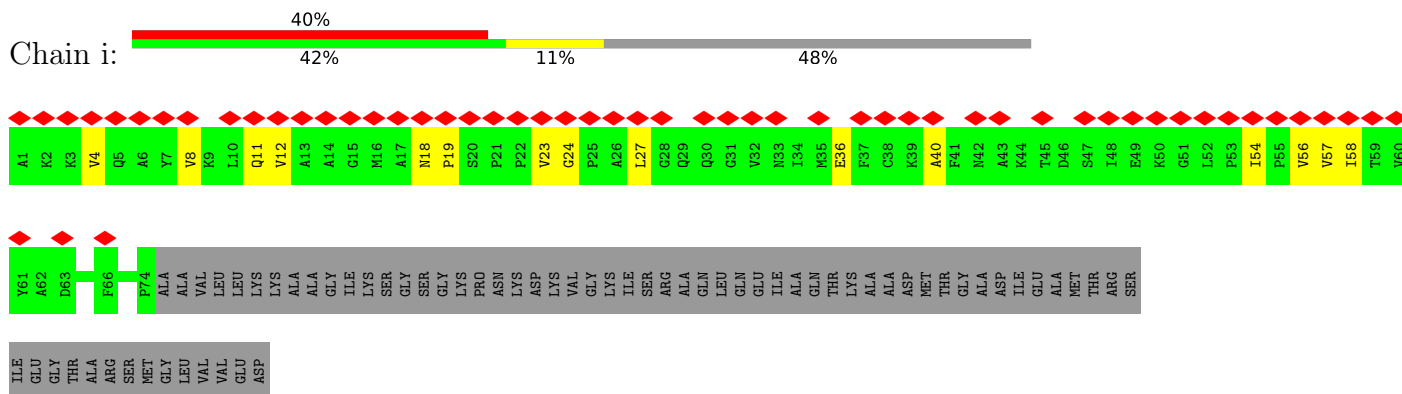
• Molecule 6: 50S ribosomal protein L9



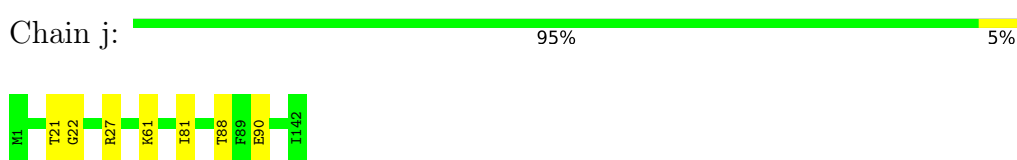
• Molecule 7: 50S ribosomal protein L10



• Molecule 8: 50S ribosomal protein L11

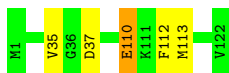


• Molecule 9: 50S ribosomal protein L13



• Molecule 10: 50S ribosomal protein L14

Chain k:  96%



- Molecule 11: 50S ribosomal protein L15

Chain l:  98%



- Molecule 12: 50S ribosomal protein L16

Chain m:  95%



- Molecule 13: 50S ribosomal protein L17

Chain n:  95%



- Molecule 14: 50S ribosomal protein L18

Chain o:  95%



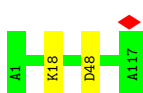
- Molecule 15: 50S ribosomal protein L19

Chain p:  93%



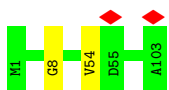
- Molecule 16: 50S ribosomal protein L20

Chain q:  98%



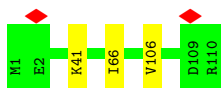
- Molecule 17: 50S ribosomal protein L21

Chain r:  98%



• Molecule 18: 50S ribosomal protein L22

Chain s:  97%



• Molecule 19: 50S ribosomal protein L23

Chain t:  97%



• Molecule 20: 50S ribosomal protein L24

Chain u:  96%



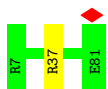
• Molecule 21: 50S ribosomal protein L25

Chain v:  97%



• Molecule 22: 50S ribosomal protein L27

Chain w:  99%

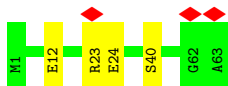
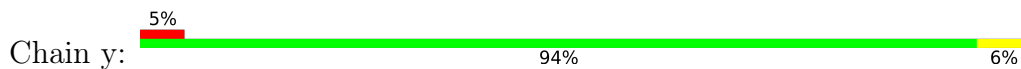


• Molecule 23: 50S ribosomal protein L28

Chain x:  97%



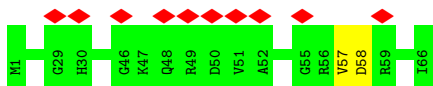
- Molecule 24: 50S ribosomal protein L29



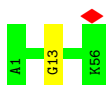
- Molecule 25: 50S ribosomal protein L30



- Molecule 26: 50S ribosomal protein L31



- Molecule 27: 50S ribosomal protein L32



- Molecule 28: 50S ribosomal protein L33



- Molecule 29: 50S ribosomal protein L34



- Molecule 30: 50S ribosomal protein L35





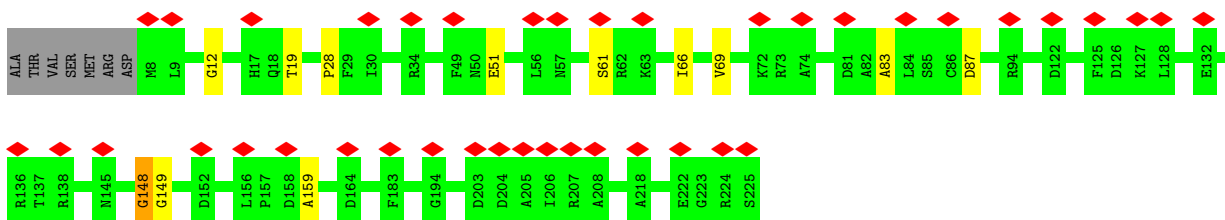
- Molecule 31: 50S ribosomal protein L36

Chain F: 97%



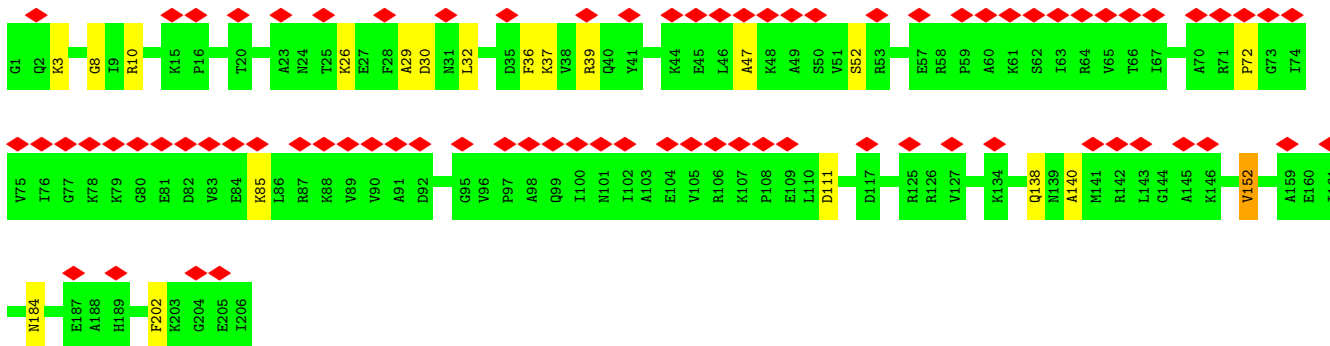
- Molecule 32: 30S ribosomal protein S2

Chain G: 18% 92% 5%



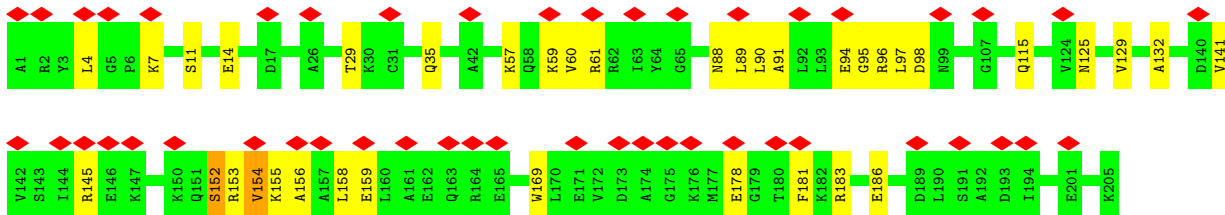
- Molecule 33: 30S ribosomal protein S3

Chain H: 38% 90% 9%




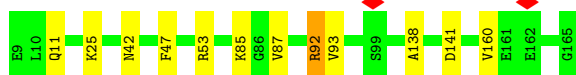
- Molecule 34: 30S ribosomal protein S4

Chain I: 23% 82% 17%




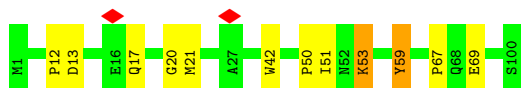
- Molecule 35: 30S ribosomal protein S5

Chain J:  92% 7%




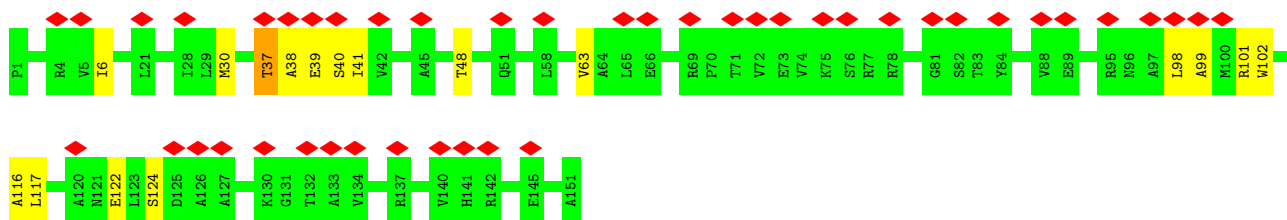
- Molecule 36: 30S ribosomal protein S6

Chain K:  88% 10%



- Molecule 37: 30S ribosomal protein S7

Chain L:  29% 89% 11%




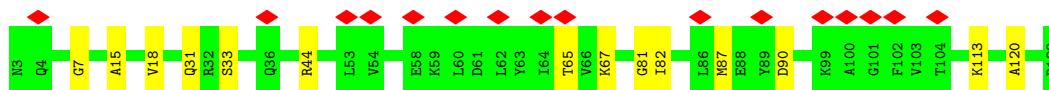
- Molecule 38: 30S ribosomal protein S8

Chain M:  92% 7%




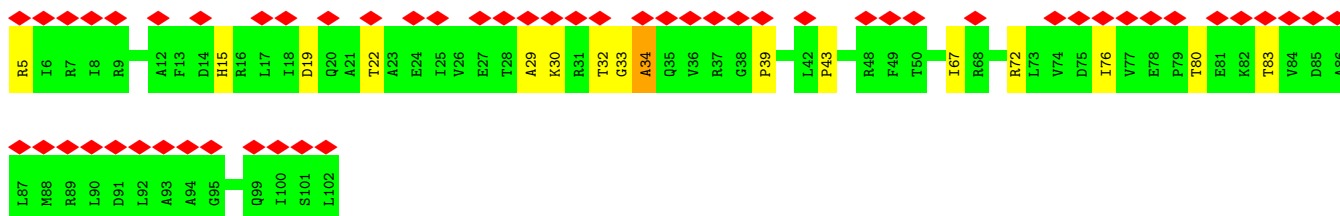
- Molecule 39: 30S ribosomal protein S9

Chain N:  13% 89% 11%

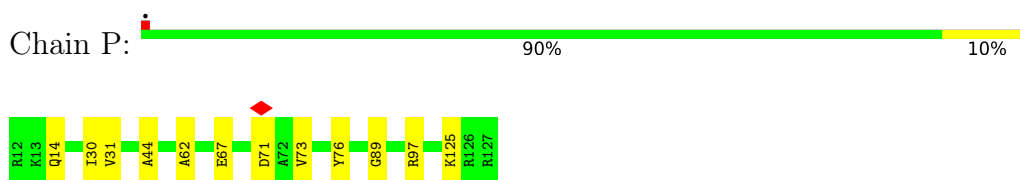


- Molecule 40: 30S ribosomal protein S10

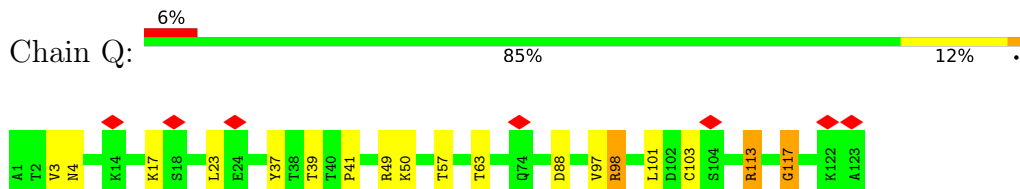
Chain O:  56% 84% 15%



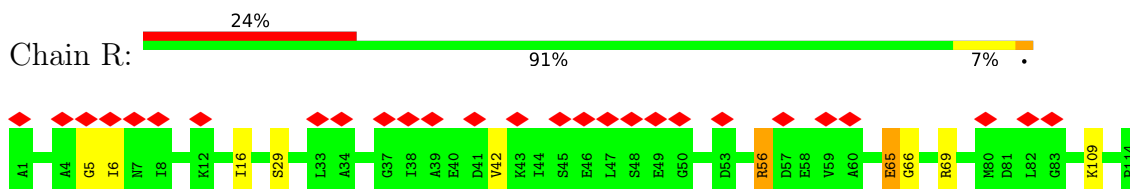
- Molecule 41: 30S ribosomal protein S11



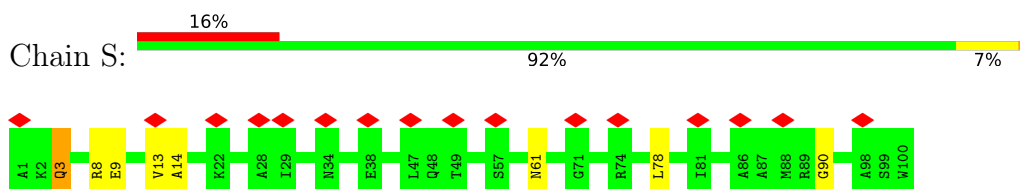
- Molecule 42: 30S ribosomal protein S12



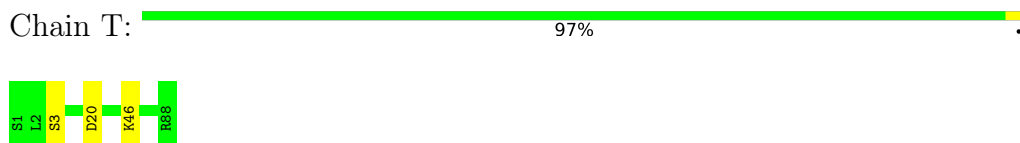
- Molecule 43: 30S ribosomal protein S13



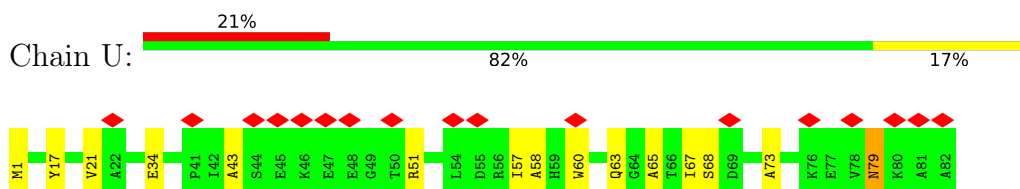
- Molecule 44: 30S ribosomal protein S14



- Molecule 45: 30S ribosomal protein S15



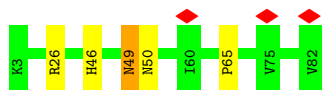
- Molecule 46: 30S ribosomal protein S16



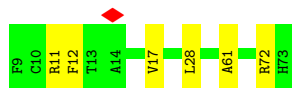
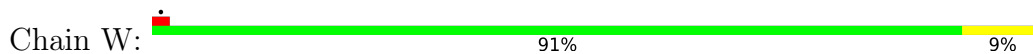
- Molecule 47: 30S ribosomal protein S17







• Molecule 48: 30S ribosomal protein S18



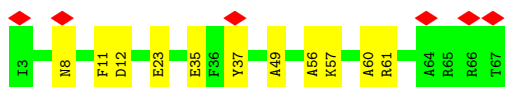
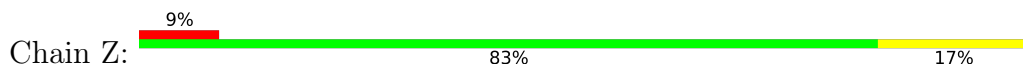
• Molecule 49: 30S ribosomal protein S19



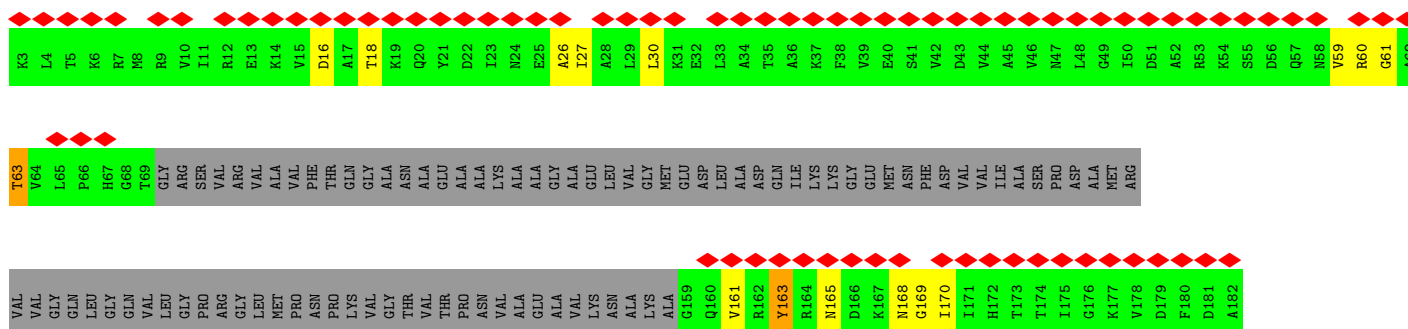
• Molecule 50: 30S ribosomal protein S20

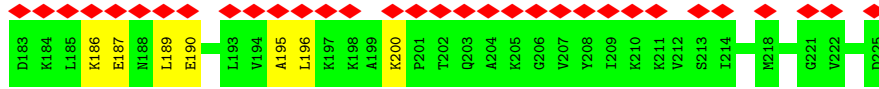


• Molecule 51: 30S ribosomal protein S21

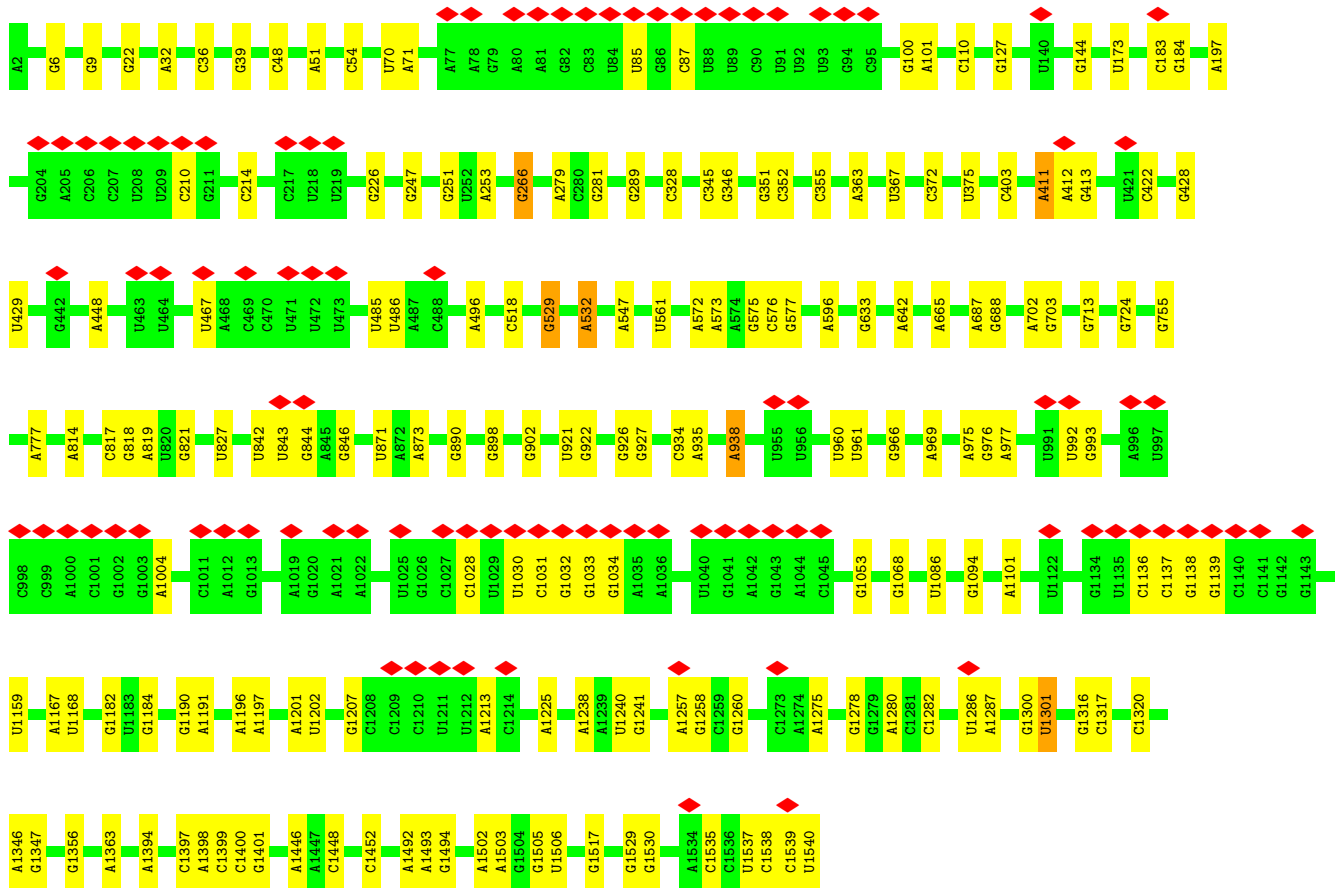
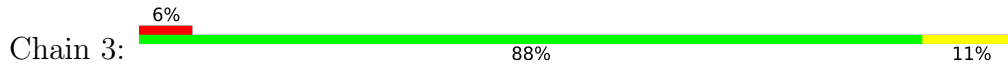


• Molecule 52: 50S ribosomal protein L1

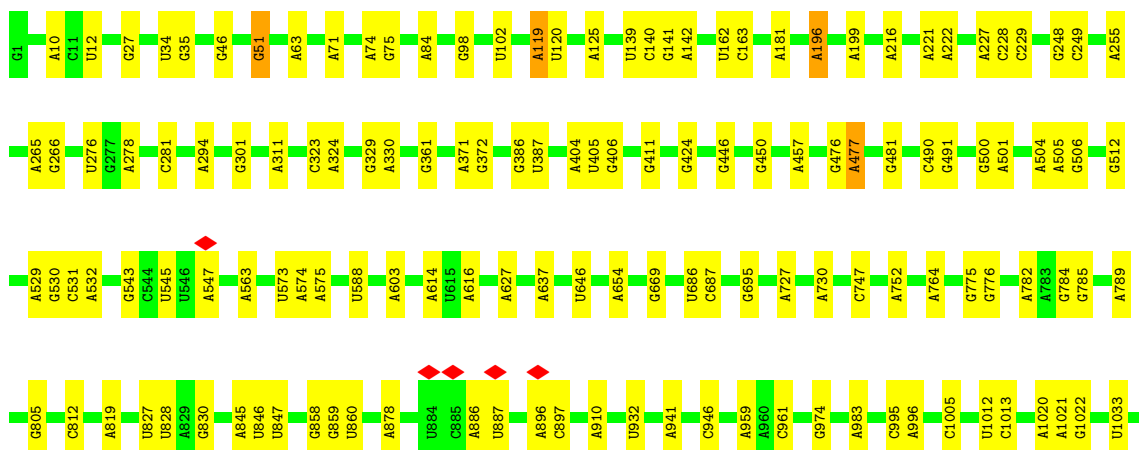
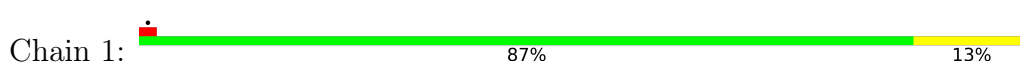


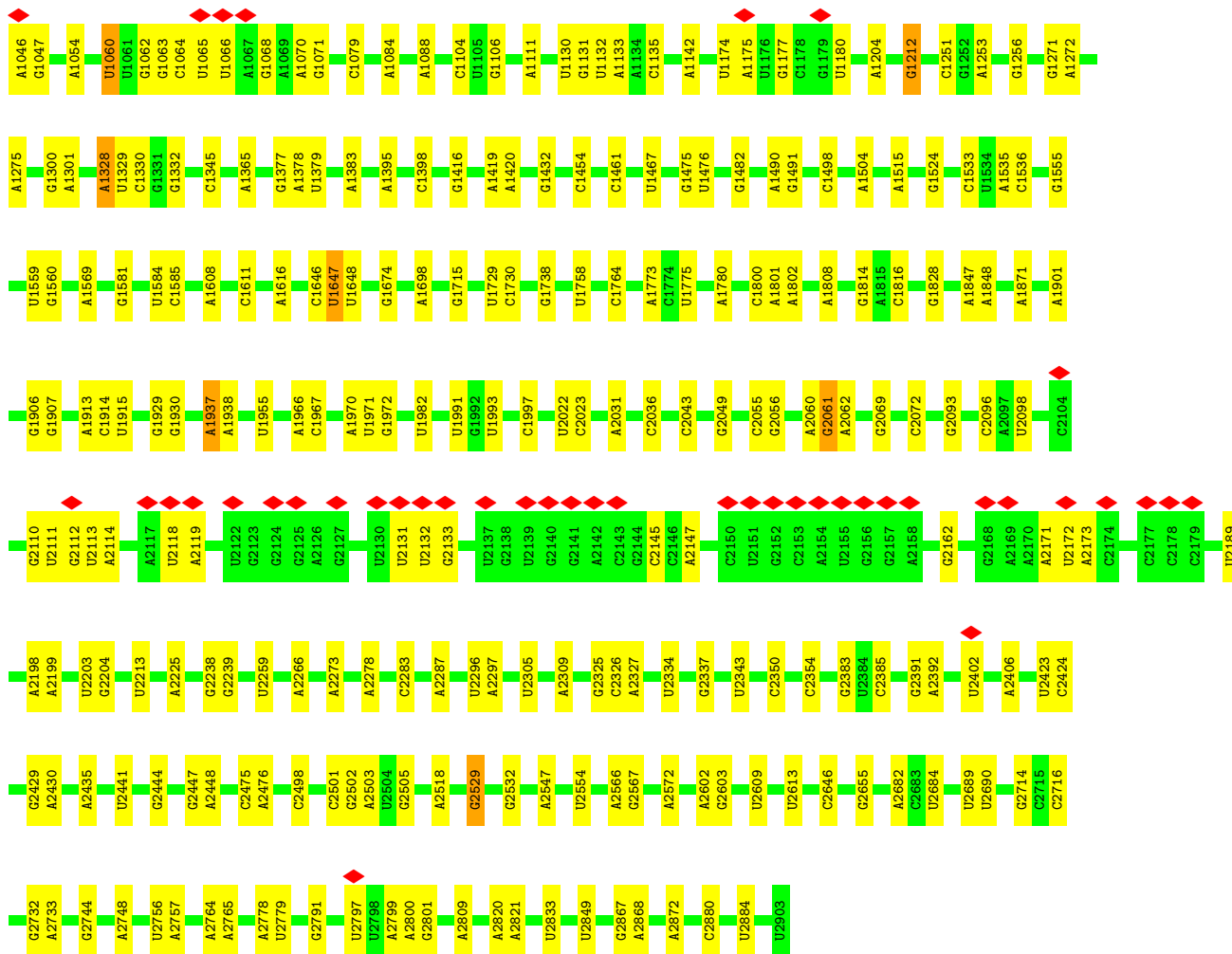


• Molecule 53: 16S ribosomal RNA

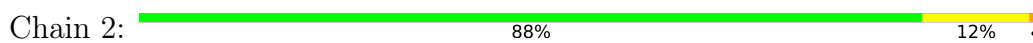


• Molecule 54: 23S ribosomal RNA

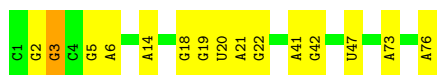
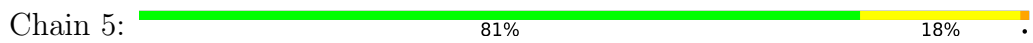




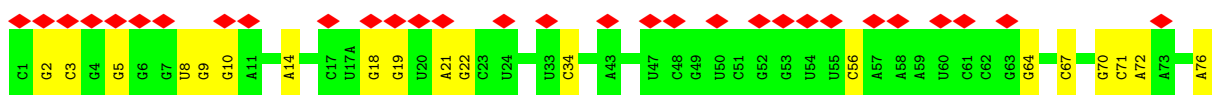
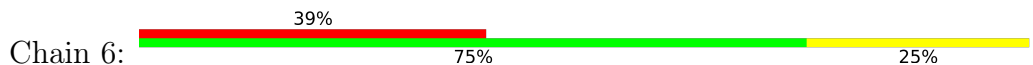
• Molecule 55: 5S ribosomal RNA



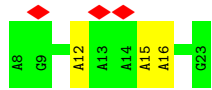
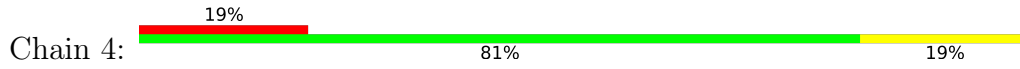
• Molecule 56: tRNAPro



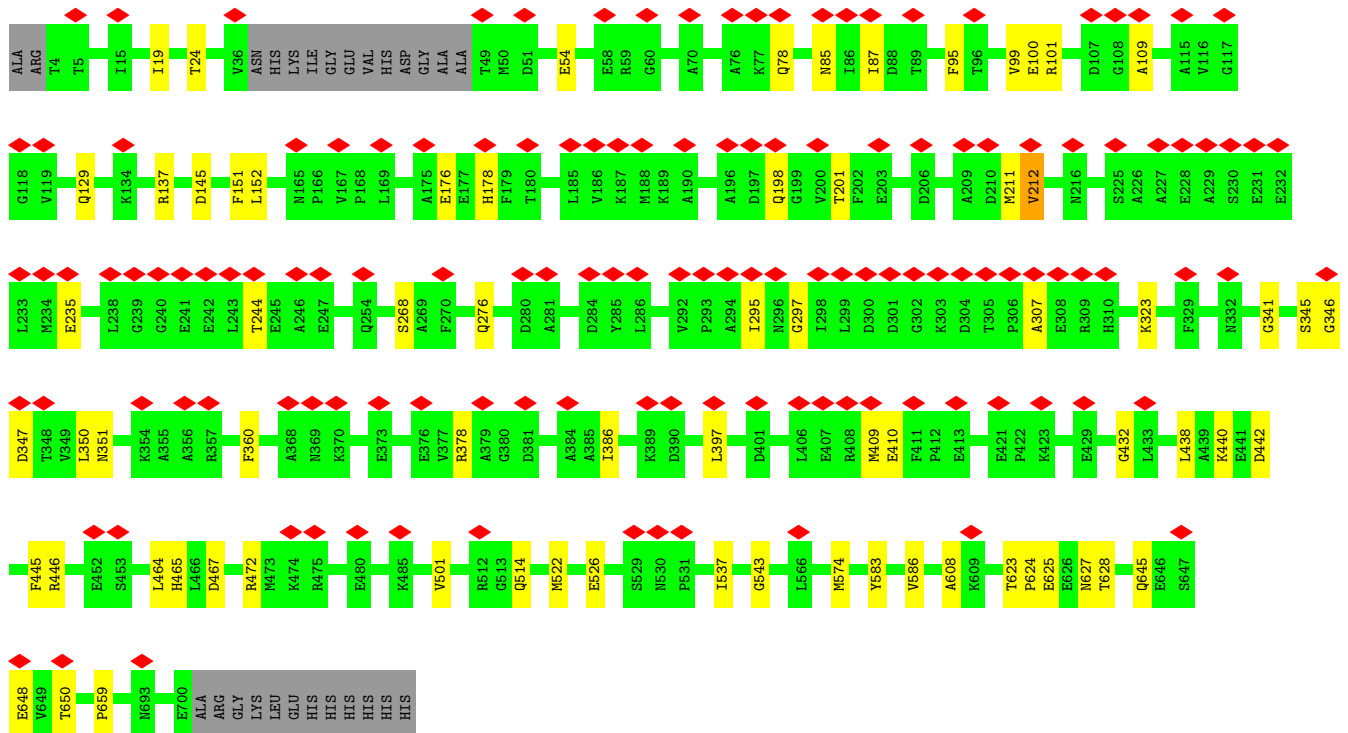
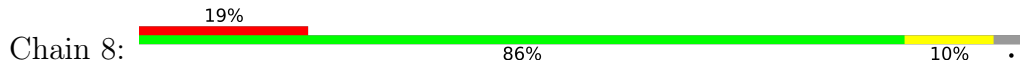
• Molecule 57: tRNAfMet



• Molecule 58: mRNA



• Molecule 59: Elongation factor G



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	4612	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 ( $e^-/\text{\AA}^2$ )	47.5	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	130000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	22.957	Depositor
Minimum map value	-8.179	Depositor
Average map value	0.018	Depositor
Map value standard deviation	1.385	Depositor
Recommended contour level	3.7	Depositor
Map size ( $\text{\AA}$ )	419.99997, 419.99997, 419.99997	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	1.05, 1.05, 1.05	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: FME, GCP, MG

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	b	0.64	2/2122 (0.1%)	0.75	0/2852
2	c	0.58	1/1586 (0.1%)	0.73	0/2134
3	d	0.71	5/1571 (0.3%)	0.75	1/2113 (0.0%)
4	e	0.71	5/1435 (0.3%)	0.74	0/1926
5	f	0.65	2/1343 (0.1%)	0.74	0/1816
6	g	1.29	12/946 (1.3%)	1.37	8/1275 (0.6%)
7	h	1.01	4/638 (0.6%)	0.85	1/860 (0.1%)
8	i	1.61	15/564 (2.7%)	1.14	3/768 (0.4%)
9	j	0.67	3/1152 (0.3%)	0.72	1/1551 (0.1%)
10	k	0.74	4/948 (0.4%)	0.85	2/1268 (0.2%)
11	l	0.54	0/1054	0.69	0/1403
12	m	0.62	1/1093 (0.1%)	0.71	0/1460
13	n	0.67	0/974	0.70	1/1301 (0.1%)
14	o	0.75	3/902 (0.3%)	0.73	0/1209
15	p	0.67	3/929 (0.3%)	0.75	1/1242 (0.1%)
16	q	0.69	0/960	0.69	0/1278
17	r	0.52	0/829	0.74	0/1107
18	s	0.70	2/864 (0.2%)	0.73	1/1156 (0.1%)
19	t	0.68	1/745 (0.1%)	0.73	0/994
20	u	0.50	0/788	0.70	0/1051
21	v	0.56	0/766	0.71	0/1025
22	w	0.57	0/582	0.67	0/769
23	x	0.74	1/635 (0.2%)	0.76	0/848
24	y	0.81	2/510 (0.4%)	0.78	0/677
25	z	0.59	1/453 (0.2%)	0.71	0/605
26	A	0.75	2/532 (0.4%)	0.71	0/709
27	B	0.53	1/450 (0.2%)	0.71	0/599
28	C	0.65	1/417 (0.2%)	0.66	0/554
29	D	0.68	1/380 (0.3%)	0.71	0/498
30	E	0.73	1/513 (0.2%)	0.73	0/676
31	F	0.52	0/303	0.72	0/397
32	G	0.78	5/1736 (0.3%)	0.81	1/2338 (0.0%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
33	H	0.94	12/1652 (0.7%)	0.81	1/2225 (0.0%)
34	I	1.40	28/1665 (1.7%)	1.13	15/2227 (0.7%)
35	J	0.75	2/1170 (0.2%)	0.81	2/1573 (0.1%)
36	K	1.14	10/836 (1.2%)	0.95	4/1128 (0.4%)
37	L	1.10	10/1196 (0.8%)	0.90	5/1602 (0.3%)
38	M	0.84	6/989 (0.6%)	0.79	0/1326
39	N	0.98	7/1034 (0.7%)	0.88	2/1375 (0.1%)
40	O	1.02	9/797 (1.1%)	0.94	3/1077 (0.3%)
41	P	0.85	6/886 (0.7%)	0.87	2/1195 (0.2%)
42	Q	0.97	8/969 (0.8%)	0.95	2/1300 (0.2%)
43	R	0.95	6/893 (0.7%)	0.85	3/1193 (0.3%)
44	S	0.81	5/817 (0.6%)	0.76	0/1088
45	T	0.68	1/722 (0.1%)	0.70	0/964
46	U	1.04	7/659 (1.1%)	0.95	1/884 (0.1%)
47	V	0.64	1/658 (0.2%)	0.72	0/881
48	W	0.67	2/545 (0.4%)	0.69	0/731
49	X	1.01	5/653 (0.8%)	0.90	2/877 (0.2%)
50	Y	0.90	2/671 (0.3%)	0.80	1/888 (0.1%)
51	Z	0.82	2/551 (0.4%)	0.84	1/728 (0.1%)
52	a	1.35	13/1034 (1.3%)	1.04	9/1387 (0.6%)
53	3	0.60	0/36963	0.69	5/57662 (0.0%)
54	1	0.48	0/69796	0.67	3/108888 (0.0%)
55	2	0.44	0/2872	0.67	1/4479 (0.0%)
56	5	0.45	0/1840	0.70	1/2868 (0.0%)
57	6	0.50	0/1832	0.70	0/2855
58	4	0.61	0/391	0.74	0/608
59	8	0.97	39/5411 (0.7%)	0.88	7/7323 (0.1%)
All	All	0.65	259/166222 (0.2%)	0.72	90/247791 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
6	g	0	4
34	I	0	2
35	J	0	1
36	K	0	1
46	U	0	1
53	3	0	11
54	1	0	37

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Mol	Chain	#Chirality outliers	#Planarity outliers
55	2	0	2
59	8	0	1
All	All	0	60

All (259) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	I	132	ALA	C-O	15.52	1.52	1.23
52	a	170	ILE	C-O	15.18	1.52	1.23
34	I	91	ALA	C-O	14.90	1.51	1.23
8	i	19	PRO	C-O	14.46	1.52	1.23
7	h	59	LEU	C-O	13.55	1.49	1.23
59	8	360	PHE	C-O	13.47	1.49	1.23
34	I	90	LEU	C-O	12.84	1.47	1.23
6	g	15	LEU	C-N	12.41	1.55	1.33
34	I	155	LYS	N-CA	11.64	1.69	1.46
34	I	156	ALA	C-O	11.58	1.45	1.23
8	i	8	VAL	C-O	11.48	1.45	1.23
59	8	297	GLY	C-O	11.34	1.41	1.23
52	a	61	GLY	C-O	11.24	1.41	1.23
43	R	66	GLY	C-O	11.13	1.41	1.23
34	I	59	LYS	C-O	11.12	1.44	1.23
37	L	99	ALA	C-O	11.09	1.44	1.23
39	N	7	GLY	C-O	10.95	1.41	1.23
59	8	650	THR	C-O	10.91	1.44	1.23
52	a	161	VAL	C-O	10.90	1.44	1.23
36	K	53	LYS	C-O	-10.62	1.03	1.23
33	H	10	ARG	C-O	10.58	1.43	1.23
59	8	100	GLU	C-O	10.47	1.43	1.23
8	i	27	LEU	C-O	10.20	1.42	1.23
8	i	54	ILE	C-O	10.13	1.42	1.23
52	a	186	LYS	C-O	10.06	1.42	1.23
37	L	38	ALA	C-O	10.05	1.42	1.23
6	g	8	LYS	C-O	-9.83	1.04	1.23
6	g	12	LEU	N-CA	-9.81	1.26	1.46
52	a	26	ALA	C-O	9.75	1.41	1.23
37	L	39	GLU	C-O	9.67	1.41	1.23
52	a	195	ALA	C-O	9.63	1.41	1.23
6	g	12	LEU	CA-C	-9.51	1.28	1.52
40	O	80	THR	C-O	9.39	1.41	1.23
52	a	59	VAL	C-O	9.26	1.41	1.23
52	a	163	TYR	C-O	9.21	1.40	1.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
36	K	20	GLY	C-O	9.13	1.38	1.23
59	8	386	ILE	C-O	8.97	1.40	1.23
59	8	574	MET	C-O	8.93	1.40	1.23
34	I	95	GLY	N-CA	8.73	1.59	1.46
49	X	68	HIS	C-O	8.65	1.39	1.23
34	I	89	LEU	C-O	8.64	1.39	1.23
36	K	13	ASP	C-O	8.64	1.39	1.23
47	V	46	HIS	C-O	8.50	1.39	1.23
39	N	81	GLY	C-O	8.47	1.37	1.23
43	R	16	ILE	C-O	8.42	1.39	1.23
8	i	58	ILE	C-O	8.38	1.39	1.23
10	k	112	PHE	C-O	8.37	1.39	1.23
6	g	30	LEU	C-O	8.35	1.39	1.23
34	I	152	SER	C-O	-8.31	1.07	1.23
59	8	101	ARG	C-O	8.21	1.39	1.23
36	K	59	TYR	C-O	8.09	1.38	1.23
59	8	397	LEU	C-O	8.06	1.38	1.23
8	i	36	GLU	C-O	8.03	1.38	1.23
34	I	88	ASN	C-O	8.00	1.38	1.23
49	X	20	LYS	C-O	7.98	1.38	1.23
42	Q	4	ASN	C-O	7.92	1.38	1.23
59	8	176	GLU	C-O	-7.90	1.08	1.23
40	O	76	ILE	C-O	7.87	1.38	1.23
59	8	307	ALA	C-O	7.85	1.38	1.23
32	G	159	ALA	C-O	7.78	1.38	1.23
40	O	29	ALA	C-O	7.75	1.38	1.23
7	h	10	ALA	C-O	7.72	1.38	1.23
23	x	65	THR	C-O	7.69	1.38	1.23
6	g	144	VAL	C-O	7.69	1.38	1.23
41	P	73	VAL	C-O	7.61	1.37	1.23
5	f	148	ARG	C-O	7.60	1.37	1.23
52	a	63	THR	C-O	7.59	1.37	1.23
34	I	169	TRP	C-O	7.58	1.37	1.23
37	L	37	THR	C-O	7.58	1.37	1.23
39	N	18	VAL	C-O	7.58	1.37	1.23
9	j	61	LYS	C-O	7.57	1.37	1.23
34	I	60	VAL	C-O	7.54	1.37	1.23
34	I	141	VAL	C-O	7.51	1.37	1.23
59	8	360	PHE	C-N	7.48	1.46	1.33
3	d	35	TYR	C-O	7.36	1.37	1.23
59	8	350	LEU	C-O	7.28	1.37	1.23
34	I	155	LYS	C-O	7.26	1.37	1.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	d	194	LYS	C-O	7.25	1.37	1.23
50	Y	57	VAL	C-O	7.25	1.37	1.23
34	I	95	GLY	CA-C	7.24	1.63	1.51
3	d	36	ALA	C-O	7.24	1.37	1.23
59	8	109	ALA	C-O	7.21	1.37	1.23
59	8	438	LEU	C-O	7.19	1.37	1.23
39	N	33	SER	N-CA	7.16	1.60	1.46
37	L	117	LEU	C-O	7.14	1.36	1.23
8	i	8	VAL	N-CA	7.10	1.60	1.46
42	Q	39	THR	C-O	7.05	1.36	1.23
37	L	98	LEU	C-O	7.05	1.36	1.23
41	P	31	VAL	N-CA	7.05	1.60	1.46
4	e	52	ALA	C-O	7.04	1.36	1.23
59	8	627	ASN	C-N	7.03	1.50	1.34
46	U	68	SER	C-O	7.03	1.36	1.23
34	I	61	ARG	C-O	7.02	1.36	1.23
42	Q	88	ASP	C-O	7.00	1.36	1.23
6	g	11	ASN	CA-C	-6.99	1.34	1.52
49	X	17	LYS	C-O	6.94	1.36	1.23
35	J	138	ALA	C-O	6.84	1.36	1.23
33	H	32	LEU	C-O	6.82	1.36	1.23
4	e	132	ARG	C-O	6.81	1.36	1.23
12	m	119	LEU	C-O	6.81	1.36	1.23
8	i	40	ALA	C-O	6.80	1.36	1.23
15	p	85	VAL	N-CA	6.79	1.59	1.46
39	N	82	ILE	C-O	6.76	1.36	1.23
36	K	12	PRO	C-O	6.71	1.36	1.23
15	p	68	GLY	C-O	6.67	1.34	1.23
59	8	347	ASP	C-O	6.67	1.36	1.23
36	K	21	MET	C-O	6.65	1.35	1.23
59	8	465	HIS	C-O	6.64	1.35	1.23
49	X	35	ARG	C-O	6.63	1.35	1.23
34	I	129	VAL	N-CA	6.63	1.59	1.46
6	g	130	VAL	C-O	6.63	1.35	1.23
59	8	152	LEU	C-O	6.61	1.35	1.23
34	I	178	GLU	C-O	6.61	1.35	1.23
36	K	67	PRO	C-O	6.58	1.36	1.23
59	8	268	SER	C-O	6.58	1.35	1.23
59	8	467	ASP	C-O	6.56	1.35	1.23
46	U	21	VAL	C-O	6.55	1.35	1.23
36	K	51	ILE	N-CA	6.53	1.59	1.46
8	i	58	ILE	N-CA	6.52	1.59	1.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
59	8	351	ASN	C-O	6.51	1.35	1.23
30	E	53	ASP	C-O	6.48	1.35	1.23
32	G	51	GLU	C-O	6.46	1.35	1.23
59	8	472	ARG	C-O	6.46	1.35	1.23
34	I	11	SER	C-O	6.43	1.35	1.23
59	8	212	VAL	C-O	6.40	1.35	1.23
46	U	57	ILE	C-O	6.38	1.35	1.23
26	A	58	ASP	C-O	6.37	1.35	1.23
40	O	72	ARG	C-O	6.36	1.35	1.23
43	R	42	VAL	C-O	6.36	1.35	1.23
37	L	116	ALA	C-O	6.35	1.35	1.23
59	8	608	ALA	C-O	6.35	1.35	1.23
37	L	122	GLU	C-O	6.34	1.35	1.23
44	S	13	VAL	C-O	6.34	1.35	1.23
6	g	14	SER	N-CA	6.33	1.59	1.46
7	h	24	SER	C-O	6.31	1.35	1.23
52	a	169	GLY	N-CA	6.28	1.55	1.46
52	a	196	LEU	C-O	6.28	1.35	1.23
46	U	73	ALA	C-O	6.28	1.35	1.23
2	c	157	LYS	C-O	6.28	1.35	1.23
8	i	56	VAL	C-O	6.28	1.35	1.23
4	e	51	ASN	C-O	6.26	1.35	1.23
34	I	97	LEU	N-CA	6.26	1.58	1.46
33	H	30	ASP	C-O	6.26	1.35	1.23
14	o	75	GLY	C-O	6.24	1.33	1.23
43	R	65	GLU	C-O	6.20	1.35	1.23
34	I	98	ASP	C-O	6.20	1.35	1.23
49	X	61	VAL	C-O	6.20	1.35	1.23
42	Q	113	ARG	C-O	6.18	1.35	1.23
59	8	346	GLY	N-CA	6.17	1.55	1.46
34	I	153	ARG	C-O	6.16	1.35	1.23
34	I	94	GLU	N-CA	6.16	1.58	1.46
59	8	514	GLN	C-O	6.15	1.35	1.23
59	8	295	ILE	C-O	6.15	1.35	1.23
38	M	34	ALA	C-O	6.14	1.35	1.23
19	t	86	THR	C-O	6.13	1.35	1.23
44	S	14	ALA	C-O	6.12	1.34	1.23
3	d	24	ASN	C-O	6.11	1.34	1.23
39	N	67	LYS	C-O	6.10	1.34	1.23
8	i	12	VAL	C-O	6.10	1.34	1.23
59	8	464	LEU	C-O	6.06	1.34	1.23
44	S	9	GLU	C-O	6.02	1.34	1.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
42	Q	97	VAL	N-CA	6.01	1.58	1.46
10	k	110	GLU	C-O	-6.00	1.11	1.23
18	s	106	VAL	C-O	5.96	1.34	1.23
46	U	58	ALA	C-O	5.95	1.34	1.23
18	s	41	LYS	C-O	5.94	1.34	1.23
6	g	35	LYS	C-O	5.92	1.34	1.23
35	J	85	LYS	C-N	5.92	1.43	1.33
38	M	84	ILE	C-O	5.91	1.34	1.23
59	8	659	PRO	C-O	5.91	1.35	1.23
41	P	67	GLU	C-O	5.89	1.34	1.23
33	H	37	LYS	C-O	5.88	1.34	1.23
9	j	22	GLY	N-CA	5.86	1.54	1.46
33	H	152	VAL	C-O	5.84	1.34	1.23
40	O	22	THR	C-O	5.84	1.34	1.23
1	b	180	MET	C-O	5.82	1.34	1.23
51	Z	56	ALA	C-O	5.79	1.34	1.23
42	Q	103	CYS	C-O	5.79	1.34	1.23
59	8	537	ILE	C-O	5.78	1.34	1.23
52	a	63	THR	N-CA	5.76	1.57	1.46
43	R	56	ARG	C-O	5.75	1.34	1.23
15	p	36	LYS	C-O	5.75	1.34	1.23
24	y	40	SER	C-O	5.74	1.34	1.23
8	i	24	GLY	N-CA	5.72	1.54	1.46
40	O	30	LYS	C-O	5.72	1.34	1.23
32	G	69	VAL	C-O	5.71	1.34	1.23
10	k	113	MET	N-CA	5.70	1.57	1.46
6	g	15	LEU	C-O	5.70	1.34	1.23
42	Q	49	ARG	C-O	5.69	1.34	1.23
38	M	124	ILE	C-O	5.67	1.34	1.23
59	8	341	GLY	C-O	5.66	1.32	1.23
34	I	154	VAL	C-O	5.66	1.34	1.23
26	A	57	VAL	C-O	5.64	1.34	1.23
33	H	85	LYS	C-O	5.63	1.34	1.23
59	8	151	PHE	C-O	5.63	1.34	1.23
32	G	83	ALA	C-O	5.63	1.34	1.23
33	H	39	ARG	C-O	5.63	1.34	1.23
46	U	67	ILE	N-CA	5.62	1.57	1.46
59	8	87	ILE	N-CA	5.62	1.57	1.46
14	o	58	ILE	C-O	5.60	1.33	1.23
4	e	53	ALA	C-O	5.58	1.33	1.23
9	j	90	GLU	C-O	5.56	1.33	1.23
59	8	211	MET	C-O	5.55	1.33	1.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	g	16	GLY	N-CA	5.52	1.54	1.46
36	K	17	GLN	N-CA	5.50	1.57	1.46
44	S	8	ARG	C-O	5.48	1.33	1.23
34	I	57	LYS	C-O	5.48	1.33	1.23
33	H	111	ASP	C-O	5.47	1.33	1.23
8	i	11	GLN	C-N	-5.47	1.21	1.34
34	I	145	ARG	C-O	5.46	1.33	1.23
59	8	95	PHE	C-O	5.44	1.33	1.23
32	G	148	GLY	C-O	5.44	1.32	1.23
41	P	44	ALA	C-O	5.42	1.33	1.23
59	8	378	ARG	C-O	5.40	1.33	1.23
44	S	90	GLY	C-O	5.40	1.32	1.23
40	O	5	ARG	N-CA	5.39	1.57	1.46
7	h	64	VAL	N-CA	5.38	1.57	1.46
34	I	159	GLU	N-CA	5.38	1.57	1.46
33	H	36	PHE	C-O	5.37	1.33	1.23
40	O	83	THR	C-O	5.37	1.33	1.23
10	k	112	PHE	C-N	5.36	1.46	1.34
3	d	179	SER	C-O	5.36	1.33	1.23
50	Y	4	LYS	C-O	5.36	1.33	1.23
4	e	50	ASP	C-O	5.36	1.33	1.23
36	K	69	GLU	C-O	5.35	1.33	1.23
48	W	61	ALA	C-O	5.32	1.33	1.23
14	o	56	LYS	C-O	5.32	1.33	1.23
59	8	345	SER	C-N	5.31	1.42	1.33
51	Z	49	ALA	C-O	5.30	1.33	1.23
40	O	34	ALA	N-CA	5.30	1.56	1.46
43	R	29	SER	C-O	5.28	1.33	1.23
52	a	187	GLU	C-O	5.26	1.33	1.23
41	P	97	ARG	C-O	5.25	1.33	1.23
59	8	432	GLY	C-O	5.24	1.32	1.23
41	P	62	ALA	C-O	5.22	1.33	1.23
1	b	210	ALA	C-O	5.22	1.33	1.23
42	Q	98	ARG	C-O	5.21	1.33	1.23
37	L	102	TRP	N-CA	5.20	1.56	1.46
33	H	184	ASN	C-O	5.18	1.33	1.23
45	T	3	SER	C-O	5.17	1.33	1.23
33	H	140	ALA	C-O	5.15	1.33	1.23
59	8	99	VAL	C-O	5.14	1.33	1.23
24	y	12	GLU	C-O	5.13	1.33	1.23
38	M	36	ALA	C-O	5.13	1.33	1.23
33	H	29	ALA	C-O	5.12	1.33	1.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
39	N	15	ALA	N-CA	5.11	1.56	1.46
34	I	186	GLU	N-CA	5.11	1.56	1.46
46	U	60	TRP	C-O	5.09	1.33	1.23
37	L	40	SER	C-O	5.07	1.32	1.23
8	i	24	GLY	C-O	5.07	1.31	1.23
38	M	4	ASP	C-O	5.07	1.32	1.23
28	C	18	HIS	C-O	5.05	1.32	1.23
25	z	42	ALA	C-O	5.04	1.32	1.23
48	W	12	PHE	C-O	5.04	1.32	1.23
8	i	57	VAL	C-O	5.03	1.32	1.23
27	B	13	GLY	C-O	5.02	1.31	1.23
29	D	24	THR	C-O	5.02	1.32	1.23
5	f	74	MET	C-O	5.02	1.32	1.23
38	M	59	GLU	C-O	5.01	1.32	1.23

All (90) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	g	11	ASN	C-N-CA	-22.56	65.30	121.70
6	g	11	ASN	CA-C-N	-17.62	78.43	117.20
34	I	152	SER	O-C-N	-10.84	105.36	122.70
34	I	154	VAL	C-N-CA	-10.15	96.33	121.70
52	a	168	ASN	C-N-CA	-9.02	103.35	122.30
59	8	345	SER	C-N-CA	-8.91	103.59	122.30
10	k	112	PHE	C-N-CA	-8.87	99.53	121.70
6	g	11	ASN	O-C-N	8.77	136.72	122.70
35	J	85	LYS	C-N-CA	-8.16	105.17	122.30
10	k	110	GLU	O-C-N	-7.73	110.33	122.70
59	8	178	HIS	C-N-CA	-7.41	103.18	121.70
59	8	360	PHE	O-C-N	7.39	135.76	123.20
34	I	96	ARG	C-N-CA	-7.39	103.23	121.70
34	I	95	GLY	O-C-N	-7.19	111.20	122.70
6	g	15	LEU	C-N-CA	6.94	136.88	122.30
9	j	21	THR	C-N-CA	-6.84	107.93	122.30
34	I	95	GLY	CA-C-O	6.78	132.81	120.60
37	L	124	SER	C-N-CA	-6.76	104.79	121.70
39	N	31	GLN	O-C-N	-6.71	111.95	122.70
59	8	85	ASN	C-N-CA	-6.67	105.03	121.70
34	I	95	GLY	N-CA-C	6.59	129.57	113.10
34	I	132	ALA	CA-C-O	6.49	133.73	120.10
8	i	23	VAL	C-N-CA	-6.48	108.70	122.30
36	K	50	PRO	C-N-CA	-6.44	105.60	121.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	g	15	LEU	O-C-N	6.43	134.13	123.20
37	L	101	ARG	C-N-CA	-6.37	105.79	121.70
15	p	83	ILE	O-C-N	-6.24	112.72	122.70
49	X	20	LYS	C-N-CA	-6.13	106.37	121.70
52	a	165	ASN	N-CA-C	6.13	127.55	111.00
36	K	59	TYR	O-C-N	6.02	132.34	122.70
53	3	1301	U	N1-C1'-C2'	6.01	121.81	114.00
34	I	156	ALA	C-N-CA	-5.99	106.72	121.70
7	h	63	ALA	C-N-CA	-5.96	106.81	121.70
53	3	428	G	N9-C1'-C2'	5.92	121.70	114.00
56	5	3	G	N9-C1'-C2'	5.91	121.68	114.00
55	2	119	A	N9-C1'-C2'	5.90	121.67	114.00
37	L	99	ALA	CA-C-O	5.89	132.47	120.10
54	1	1328	A	N9-C1'-C2'	5.89	121.66	114.00
34	I	94	GLU	C-N-CA	-5.85	110.02	122.30
41	P	76	TYR	C-N-CA	-5.84	110.03	122.30
52	a	161	VAL	O-C-N	5.82	132.01	122.70
40	O	39	PRO	N-CA-C	5.80	127.18	112.10
37	L	41	ILE	C-N-CA	-5.76	107.31	121.70
34	I	14	GLU	C-N-CA	-5.74	110.25	122.30
52	a	189	LEU	C-N-CA	-5.71	107.41	121.70
34	I	158	LEU	C-N-CA	-5.71	107.43	121.70
52	a	18	THR	C-N-CA	-5.70	107.45	121.70
6	g	16	GLY	N-CA-C	5.69	127.33	113.10
6	g	12	LEU	CA-CB-CG	5.68	128.35	115.30
40	O	67	ILE	O-C-N	-5.61	113.73	122.70
43	R	6	ILE	N-CA-C	5.55	125.99	111.00
40	O	33	GLY	C-N-CA	-5.51	107.92	121.70
6	g	11	ASN	CA-C-O	5.42	131.49	120.10
43	R	69	ARG	C-N-CA	-5.41	108.16	121.70
8	i	27	LEU	C-N-CA	-5.41	110.94	122.30
42	Q	117	GLY	N-CA-C	5.40	126.60	113.10
53	3	1167	A	N9-C1'-C2'	5.39	121.01	114.00
52	a	60	ARG	C-N-CA	-5.38	111.00	122.30
39	N	31	GLN	CA-C-O	5.37	131.38	120.10
34	I	59	LYS	C-N-CA	-5.35	108.32	121.70
36	K	42	TRP	C-N-CA	-5.34	111.08	122.30
41	P	30	ILE	C-N-CA	-5.33	108.37	121.70
49	X	44	ILE	C-N-CA	-5.33	111.10	122.30
35	J	92	ARG	O-C-N	-5.33	114.18	122.70
51	Z	60	ALA	C-N-CA	-5.29	108.46	121.70
18	s	106	VAL	O-C-N	5.29	131.17	122.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
42	Q	117	GLY	C-N-CA	-5.29	108.48	121.70
36	K	13	ASP	CA-C-O	5.26	131.15	120.10
34	I	94	GLU	N-CA-C	5.26	125.20	111.00
54	1	2343	U	N1-C1'-C2'	5.25	120.83	114.00
37	L	39	GLU	C-N-CA	-5.25	108.59	121.70
52	a	27	ILE	C-N-CA	-5.25	108.59	121.70
59	8	176	GLU	O-C-N	-5.24	114.32	122.70
34	I	155	LYS	CA-C-N	-5.24	105.68	117.20
33	H	202	PHE	O-C-N	5.23	131.07	122.70
13	n	86	ARG	C-N-CA	-5.23	108.63	121.70
54	1	477	A	N9-C1'-C2'	5.22	120.78	114.00
50	Y	65	LEU	C-N-CA	-5.19	108.73	121.70
59	8	627	ASN	C-N-CA	-5.17	108.78	121.70
43	R	109	LYS	C-N-CA	-5.15	111.49	122.30
46	U	65	ALA	O-C-N	-5.14	114.47	122.70
52	a	190	GLU	C-N-CA	-5.13	108.88	121.70
59	8	625	GLU	N-CA-C	5.13	124.84	111.00
53	3	375	U	N1-C1'-C2'	5.12	120.65	114.00
34	I	91	ALA	CA-C-N	-5.08	106.03	117.20
8	i	11	GLN	C-N-CA	5.07	134.38	121.70
3	d	186	VAL	O-C-N	-5.07	114.59	122.70
53	3	938	A	N9-C1'-C2'	5.06	120.58	114.00
52	a	170	ILE	CA-C-N	-5.05	106.10	117.20
32	G	66	ILE	C-N-CA	-5.00	109.19	121.70

There are no chirality outliers.

All (60) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
54	1	1060	U	Sidechain
54	1	119	A	Sidechain
54	1	1204	A	Sidechain
54	1	1212	G	Sidechain
54	1	1328	A	Sidechain
54	1	1377	G	Sidechain
54	1	1432	G	Sidechain
54	1	1647	U	Sidechain
54	1	1698	A	Sidechain
54	1	1775	U	Sidechain
54	1	1814	G	Sidechain
54	1	1828	G	Sidechain
54	1	1937	A	Sidechain

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>Group</b>
54	1	196	A	Sidechain
54	1	2061	G	Sidechain
54	1	2266	A	Sidechain
54	1	2273	A	Sidechain
54	1	2444	G	Sidechain
54	1	2447	G	Sidechain
54	1	2475	C	Sidechain
54	1	2501	C	Sidechain
54	1	2529	G	Sidechain
54	1	2532	G	Sidechain
54	1	2684	U	Sidechain
54	1	27	G	Sidechain
54	1	2732	G	Sidechain
54	1	446	G	Sidechain
54	1	450	G	Sidechain
54	1	476	G	Sidechain
54	1	477	A	Sidechain
54	1	500	G	Sidechain
54	1	501	A	Sidechain
54	1	506	G	Sidechain
54	1	51	G	Sidechain
54	1	512	G	Sidechain
54	1	727	A	Sidechain
54	1	775	G	Sidechain
55	2	1	U	Sidechain
55	2	119	A	Sidechain
53	3	1316	G	Sidechain
53	3	1356	G	Sidechain
53	3	1538	C	Sidechain
53	3	266	G	Sidechain
53	3	411	A	Sidechain
53	3	448	A	Sidechain
53	3	529	G	Sidechain
53	3	532	A	Sidechain
53	3	827	U	Sidechain
53	3	898	G	Sidechain
53	3	938	A	Sidechain
59	8	623	THR	Mainchain
34	I	152	SER	Mainchain
34	I	154	VAL	Mainchain
35	J	92	ARG	Mainchain
36	K	53	LYS	Mainchain

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Mol	Chain	Res	Type	Group
46	U	17	TYR	Sidechain
6	g	11	ASN	Mainchain
6	g	13	GLY	Mainchain,Peptide
6	g	8	LYS	Mainchain

## 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	
1	b	269/271 (99%)	223 (83%)	43 (16%)	3 (1%)	14	44
2	c	207/209 (99%)	177 (86%)	30 (14%)	0	100	100
3	d	199/201 (99%)	166 (83%)	31 (16%)	2 (1%)	15	46
4	e	175/177 (99%)	141 (81%)	31 (18%)	3 (2%)	9	34
5	f	174/176 (99%)	155 (89%)	17 (10%)	2 (1%)	14	44
6	g	121/149 (81%)	99 (82%)	17 (14%)	5 (4%)	3	18
7	h	82/131 (63%)	57 (70%)	23 (28%)	2 (2%)	6	28
8	i	72/141 (51%)	52 (72%)	19 (26%)	1 (1%)	11	37
9	j	140/142 (99%)	119 (85%)	20 (14%)	1 (1%)	22	55
10	k	120/122 (98%)	102 (85%)	16 (13%)	2 (2%)	9	34
11	l	141/143 (99%)	110 (78%)	29 (21%)	2 (1%)	11	37
12	m	134/136 (98%)	115 (86%)	18 (13%)	1 (1%)	22	55
13	n	118/120 (98%)	97 (82%)	20 (17%)	1 (1%)	19	51
14	o	114/116 (98%)	94 (82%)	20 (18%)	0	100	100
15	p	112/114 (98%)	97 (87%)	14 (12%)	1 (1%)	17	49

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
16	q	115/117 (98%)	106 (92%)	9 (8%)	0	100	100
17	r	101/103 (98%)	82 (81%)	17 (17%)	2 (2%)	7	30
18	s	108/110 (98%)	91 (84%)	17 (16%)	0	100	100
19	t	91/93 (98%)	78 (86%)	13 (14%)	0	100	100
20	u	100/102 (98%)	80 (80%)	16 (16%)	4 (4%)	3	18
21	v	92/94 (98%)	78 (85%)	14 (15%)	0	100	100
22	w	73/75 (97%)	63 (86%)	10 (14%)	0	100	100
23	x	75/77 (97%)	70 (93%)	5 (7%)	0	100	100
24	y	61/63 (97%)	55 (90%)	5 (8%)	1 (2%)	9	34
25	z	56/58 (97%)	53 (95%)	2 (4%)	1 (2%)	8	32
26	A	64/66 (97%)	51 (80%)	13 (20%)	0	100	100
27	B	54/56 (96%)	44 (82%)	10 (18%)	0	100	100
28	C	48/50 (96%)	42 (88%)	6 (12%)	0	100	100
29	D	44/46 (96%)	37 (84%)	7 (16%)	0	100	100
30	E	62/64 (97%)	50 (81%)	10 (16%)	2 (3%)	4	22
31	F	36/38 (95%)	30 (83%)	6 (17%)	0	100	100
32	G	216/225 (96%)	173 (80%)	37 (17%)	6 (3%)	5	24
33	H	204/206 (99%)	177 (87%)	23 (11%)	4 (2%)	7	30
34	I	203/205 (99%)	160 (79%)	39 (19%)	4 (2%)	7	30
35	J	155/157 (99%)	122 (79%)	28 (18%)	5 (3%)	4	22
36	K	98/100 (98%)	83 (85%)	15 (15%)	0	100	100
37	L	149/151 (99%)	129 (87%)	17 (11%)	3 (2%)	7	30
38	M	127/129 (98%)	109 (86%)	17 (13%)	1 (1%)	19	51
39	N	125/127 (98%)	103 (82%)	20 (16%)	2 (2%)	9	34
40	O	96/98 (98%)	74 (77%)	20 (21%)	2 (2%)	7	30
41	P	114/116 (98%)	95 (83%)	17 (15%)	2 (2%)	8	32
42	Q	121/123 (98%)	82 (68%)	33 (27%)	6 (5%)	2	14
43	R	112/114 (98%)	92 (82%)	18 (16%)	2 (2%)	8	32
44	S	98/100 (98%)	81 (83%)	16 (16%)	1 (1%)	15	46
45	T	86/88 (98%)	74 (86%)	11 (13%)	1 (1%)	13	41
46	U	80/82 (98%)	61 (76%)	17 (21%)	2 (2%)	5	26

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
47	V	78/80 (98%)	58 (74%)	17 (22%)	3 (4%)	3	19
48	W	63/65 (97%)	55 (87%)	7 (11%)	1 (2%)	9	34
49	X	77/79 (98%)	65 (84%)	12 (16%)	0	100	100
50	Y	83/85 (98%)	73 (88%)	10 (12%)	0	100	100
51	Z	63/65 (97%)	38 (60%)	22 (35%)	3 (5%)	2	15
52	a	130/223 (58%)	113 (87%)	15 (12%)	2 (2%)	10	36
59	8	681/711 (96%)	552 (81%)	121 (18%)	8 (1%)	13	41
All	All	6517/6889 (95%)	5383 (83%)	1040 (16%)	94 (1%)	15	37

All (94) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	d	84	THR
4	e	175	PRO
4	e	176	PHE
6	g	14	SER
6	g	50	ARG
7	h	80	THR
17	r	54	VAL
24	y	24	GLU
30	E	31	ILE
34	I	7	LYS
35	J	87	VAL
39	N	90	ASP
45	T	46	LYS
51	Z	8	ASN
59	8	501	VAL
59	8	586	VAL
59	8	624	PRO
5	f	174	LYS
6	g	9	VAL
6	g	41	LYS
32	G	19	THR
32	G	87	ASP
32	G	149	GLY
33	H	3	LYS
34	I	4	LEU
35	J	93	VAL
37	L	6	ILE
41	P	89	GLY

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
42	Q	101	LEU
42	Q	117	GLY
51	Z	12	ASP
51	Z	37	TYR
59	8	78	GLN
59	8	628	THR
1	b	40	GLY
7	h	81	LEU
9	j	81	ILE
20	u	97	SER
33	H	47	ALA
34	I	29	THR
34	I	125	ASN
35	J	11	GLN
35	J	25	LYS
40	O	43	PRO
43	R	5	GLY
43	R	65	GLU
44	S	3	GLN
46	U	43	ALA
48	W	17	VAL
59	8	543	GLY
1	b	149	LYS
11	l	31	GLY
11	l	52	GLY
20	u	87	GLU
20	u	98	ASN
40	O	34	ALA
41	P	125	LYS
42	Q	23	LEU
42	Q	41	PRO
47	V	49	ASN
52	a	30	LEU
59	8	198	GLN
4	e	39	VAL
10	k	110	GLU
12	m	69	PRO
13	n	117	ASP
20	u	99	SER
32	G	28	PRO
37	L	48	THR
39	N	120	ALA

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Mol	Chain	Res	Type
52	a	200	LYS
32	G	148	GLY
42	Q	98	ARG
46	U	79	ASN
47	V	50	ASN
8	i	4	VAL
35	J	160	VAL
38	M	91	LEU
5	f	60	GLY
25	z	13	ILE
1	b	150	GLY
6	g	118	PRO
10	k	35	VAL
17	r	8	GLY
30	E	62	PRO
32	G	12	GLY
33	H	72	PRO
3	d	83	VAL
37	L	63	VAL
42	Q	3	VAL
47	V	65	PRO
15	p	104	GLY
33	H	8	GLY
59	8	212	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
1	b	216/216 (100%)	210 (97%)	6 (3%)	43 70
2	c	164/164 (100%)	162 (99%)	2 (1%)	71 85
3	d	165/165 (100%)	159 (96%)	6 (4%)	35 63
4	e	148/148 (100%)	144 (97%)	4 (3%)	44 70
5	f	137/137 (100%)	135 (98%)	2 (2%)	65 82

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
6	g	98/114 (86%)	95 (97%)	3 (3%)	40	68
7	h	66/100 (66%)	65 (98%)	1 (2%)	65	82
8	i	60/109 (55%)	59 (98%)	1 (2%)	60	80
9	j	116/116 (100%)	114 (98%)	2 (2%)	60	80
10	k	103/103 (100%)	102 (99%)	1 (1%)	76	88
11	l	102/102 (100%)	101 (99%)	1 (1%)	76	88
12	m	109/109 (100%)	104 (95%)	5 (5%)	27	57
13	n	100/100 (100%)	96 (96%)	4 (4%)	31	60
14	o	86/86 (100%)	83 (96%)	3 (4%)	36	65
15	p	99/99 (100%)	96 (97%)	3 (3%)	41	68
16	q	89/89 (100%)	87 (98%)	2 (2%)	52	75
17	r	84/84 (100%)	84 (100%)	0	100	100
18	s	93/93 (100%)	92 (99%)	1 (1%)	73	86
19	t	80/80 (100%)	78 (98%)	2 (2%)	47	72
20	u	83/83 (100%)	83 (100%)	0	100	100
21	v	78/78 (100%)	75 (96%)	3 (4%)	33	61
22	w	57/57 (100%)	56 (98%)	1 (2%)	59	79
23	x	67/67 (100%)	66 (98%)	1 (2%)	65	82
24	y	55/55 (100%)	54 (98%)	1 (2%)	59	79
25	z	48/48 (100%)	48 (100%)	0	100	100
26	A	59/59 (100%)	59 (100%)	0	100	100
27	B	47/47 (100%)	47 (100%)	0	100	100
28	C	45/45 (100%)	43 (96%)	2 (4%)	28	58
29	D	38/38 (100%)	37 (97%)	1 (3%)	46	72
30	E	51/51 (100%)	51 (100%)	0	100	100
31	F	34/34 (100%)	33 (97%)	1 (3%)	42	69
32	G	180/186 (97%)	179 (99%)	1 (1%)	86	94
33	H	170/170 (100%)	166 (98%)	4 (2%)	49	74
34	I	172/172 (100%)	168 (98%)	4 (2%)	50	74
35	J	119/119 (100%)	115 (97%)	4 (3%)	37	65
36	K	87/87 (100%)	86 (99%)	1 (1%)	73	86

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
37	L	124/124 (100%)	122 (98%)	2 (2%)	62	81
38	M	104/104 (100%)	100 (96%)	4 (4%)	33	61
39	N	105/105 (100%)	101 (96%)	4 (4%)	33	61
40	O	86/86 (100%)	83 (96%)	3 (4%)	36	65
41	P	89/89 (100%)	87 (98%)	2 (2%)	52	75
42	Q	103/103 (100%)	97 (94%)	6 (6%)	20	50
43	R	92/92 (100%)	91 (99%)	1 (1%)	73	86
44	S	83/83 (100%)	80 (96%)	3 (4%)	35	63
45	T	76/76 (100%)	75 (99%)	1 (1%)	69	84
46	U	65/65 (100%)	60 (92%)	5 (8%)	13	40
47	V	74/74 (100%)	72 (97%)	2 (3%)	44	70
48	W	56/56 (100%)	53 (95%)	3 (5%)	22	52
49	X	70/70 (100%)	69 (99%)	1 (1%)	67	83
50	Y	65/65 (100%)	64 (98%)	1 (2%)	65	82
51	Z	55/55 (100%)	50 (91%)	5 (9%)	9	32
52	a	110/174 (63%)	107 (97%)	3 (3%)	44	70
59	8	566/585 (97%)	544 (96%)	22 (4%)	32	61
All	All	5428/5616 (97%)	5287 (97%)	141 (3%)	49	72

All (141) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	b	9	SER
1	b	53	ILE
1	b	155	ARG
1	b	212	TRP
1	b	224	MET
1	b	259	ASN
2	c	129	THR
2	c	184	ARG
3	d	24	ASN
3	d	60	TRP
3	d	83	VAL
3	d	102	ARG
3	d	156	ASN
3	d	198	GLU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
4	e	10	GLU
4	e	25	MET
4	e	109	ARG
4	e	132	ARG
5	f	46	ASP
5	f	172	GLU
6	g	11	ASN
6	g	12	LEU
6	g	124	THR
7	h	4	ASN
8	i	18	ASN
9	j	27	ARG
9	j	88	THR
10	k	37	ASP
11	l	123	ARG
12	m	17	ASN
12	m	63	ILE
12	m	88	ASN
12	m	91	TYR
12	m	97	GLN
13	n	16	HIS
13	n	35	LYS
13	n	90	ARG
13	n	107	ASN
14	o	31	THR
14	o	46	GLU
14	o	60	GLU
15	p	52	ARG
15	p	80	VAL
15	p	88	ARG
16	q	18	LYS
16	q	48	ASP
18	s	66	ILE
19	t	6	ARG
19	t	32	LEU
21	v	42	LEU
21	v	76	ASP
21	v	82	TYR
22	w	37	ARG
23	x	69	GLU
24	y	23	ARG
28	C	26	LYS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
28	C	50	GLU
29	D	41	ARG
31	F	36	ARG
32	G	61	SER
33	H	26	LYS
33	H	52	SER
33	H	138	GLN
33	H	152	VAL
34	I	35	GLN
34	I	115	GLN
34	I	181	PHE
34	I	183	ARG
35	J	42	ASN
35	J	47	PHE
35	J	53	ARG
35	J	141	ASP
36	K	59	TYR
37	L	30	MET
37	L	37	THR
38	M	3	GLN
38	M	40	LYS
38	M	59	GLU
38	M	120	LEU
39	N	44	ARG
39	N	65	THR
39	N	87	MET
39	N	113	LYS
40	O	15	HIS
40	O	19	ASP
40	O	32	THR
41	P	14	GLN
41	P	71	ASP
42	Q	17	LYS
42	Q	37	TYR
42	Q	50	LYS
42	Q	57	THR
42	Q	63	THR
42	Q	113	ARG
43	R	56	ARG
44	S	3	GLN
44	S	61	ASN
44	S	78	LEU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
45	T	20	ASP
46	U	1	MET
46	U	34	GLU
46	U	51	ARG
46	U	63	GLN
46	U	79	ASN
47	V	26	ARG
47	V	49	ASN
48	W	11	ARG
48	W	28	LEU
48	W	72	ARG
49	X	77	ARG
50	Y	22	SER
51	Z	11	PHE
51	Z	23	GLU
51	Z	35	GLU
51	Z	57	LYS
51	Z	61	ARG
52	a	16	ASP
52	a	63	THR
52	a	163	TYR
59	8	19	ILE
59	8	24	THR
59	8	54	GLU
59	8	129	GLN
59	8	137	ARG
59	8	145	ASP
59	8	201	THR
59	8	235	GLU
59	8	244	THR
59	8	276	GLN
59	8	323	LYS
59	8	409	MET
59	8	410	GLU
59	8	440	LYS
59	8	442	ASP
59	8	445	PHE
59	8	446	ARG
59	8	522	MET
59	8	526	GLU
59	8	583	TYR
59	8	645	GLN

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Mol	Chain	Res	Type
59	8	648	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (33) such sidechains are listed below:

Mol	Chain	Res	Type
1	b	196	ASN
2	c	32	ASN
2	c	49	GLN
5	f	142	GLN
6	g	145	ASN
9	j	76	HIS
12	m	97	GLN
15	p	114	ASN
17	r	18	GLN
18	s	9	HIS
26	A	61	ASN
32	G	35	ASN
33	H	68	HIS
33	H	175	HIS
34	I	58	GLN
34	I	88	ASN
34	I	195	ASN
35	J	81	GLN
35	J	121	ASN
36	K	52	ASN
37	L	121	ASN
41	P	118	ASN
43	R	7	ASN
46	U	9	HIS
47	V	30	HIS
47	V	44	HIS
50	Y	51	ASN
52	a	57	GLN
52	a	188	ASN
59	8	18	HIS
59	8	192	ASN
59	8	194	ASN
59	8	560	GLN

### 5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
53	3	1538/1539 (99%)	169 (10%)	5 (0%)
54	1	2902/2903 (99%)	350 (12%)	11 (0%)
55	2	119/120 (99%)	12 (10%)	2 (1%)
56	5	76/77 (98%)	13 (17%)	2 (2%)
57	6	76/77 (98%)	19 (25%)	0
58	4	15/16 (93%)	3 (20%)	0
All	All	4726/4732 (99%)	566 (11%)	20 (0%)

All (566) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
53	3	6	G
53	3	9	G
53	3	22	G
53	3	32	A
53	3	36	C
53	3	39	G
53	3	48	C
53	3	51	A
53	3	54	C
53	3	71	A
53	3	85	U
53	3	87	C
53	3	100	G
53	3	101	A
53	3	110	C
53	3	127	G
53	3	144	G
53	3	173	U
53	3	183	C
53	3	184	G
53	3	197	A
53	3	210	C
53	3	214	C
53	3	226	G
53	3	247	G
53	3	251	G
53	3	253	A
53	3	266	G
53	3	279	A
53	3	281	G
53	3	289	G
53	3	328	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
53	3	345	C
53	3	346	G
53	3	351	G
53	3	352	C
53	3	355	C
53	3	363	A
53	3	367	U
53	3	372	C
53	3	403	C
53	3	411	A
53	3	412	A
53	3	413	G
53	3	422	C
53	3	429	U
53	3	467	U
53	3	485	U
53	3	486	U
53	3	496	A
53	3	518	C
53	3	529	G
53	3	532	A
53	3	547	A
53	3	561	U
53	3	572	A
53	3	573	A
53	3	575	G
53	3	576	C
53	3	577	G
53	3	596	A
53	3	633	G
53	3	642	A
53	3	665	A
53	3	687	A
53	3	688	G
53	3	702	A
53	3	703	G
53	3	713	G
53	3	724	G
53	3	755	G
53	3	777	A
53	3	814	A
53	3	817	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
53	3	818	G
53	3	819	A
53	3	821	G
53	3	842	U
53	3	843	U
53	3	844	G
53	3	846	G
53	3	871	U
53	3	873	A
53	3	890	G
53	3	902	G
53	3	921	U
53	3	922	G
53	3	926	G
53	3	927	G
53	3	934	C
53	3	935	A
53	3	960	U
53	3	961	U
53	3	966	G
53	3	969	A
53	3	975	A
53	3	976	G
53	3	977	A
53	3	992	U
53	3	993	G
53	3	1004	A
53	3	1028	C
53	3	1030	U
53	3	1031	C
53	3	1032	G
53	3	1033	G
53	3	1034	G
53	3	1053	G
53	3	1068	G
53	3	1086	U
53	3	1094	G
53	3	1101	A
53	3	1136	C
53	3	1137	C
53	3	1138	G
53	3	1139	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
53	3	1159	U
53	3	1168	U
53	3	1182	G
53	3	1184	G
53	3	1191	A
53	3	1196	A
53	3	1197	A
53	3	1201	A
53	3	1202	U
53	3	1207	G
53	3	1213	A
53	3	1225	A
53	3	1238	A
53	3	1240	U
53	3	1241	G
53	3	1257	A
53	3	1258	G
53	3	1260	G
53	3	1275	A
53	3	1278	G
53	3	1280	A
53	3	1282	C
53	3	1286	U
53	3	1287	A
53	3	1300	G
53	3	1301	U
53	3	1317	C
53	3	1320	C
53	3	1346	A
53	3	1347	G
53	3	1363	A
53	3	1394	A
53	3	1397	C
53	3	1398	A
53	3	1399	C
53	3	1400	C
53	3	1401	G
53	3	1446	A
53	3	1448	C
53	3	1452	C
53	3	1492	A
53	3	1494	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
53	3	1502	A
53	3	1503	A
53	3	1505	G
53	3	1506	U
53	3	1517	G
53	3	1529	G
53	3	1530	G
53	3	1535	C
53	3	1537	U
53	3	1539	C
53	3	1540	U
54	1	10	A
54	1	12	U
54	1	34	U
54	1	35	G
54	1	46	G
54	1	51	G
54	1	63	A
54	1	71	A
54	1	74	A
54	1	75	G
54	1	84	A
54	1	98	G
54	1	102	U
54	1	119	A
54	1	120	U
54	1	125	A
54	1	139	U
54	1	140	C
54	1	141	G
54	1	142	A
54	1	162	U
54	1	163	C
54	1	181	A
54	1	196	A
54	1	199	A
54	1	216	A
54	1	221	A
54	1	222	A
54	1	228	C
54	1	229	C
54	1	248	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
54	1	249	C
54	1	255	A
54	1	265	A
54	1	266	G
54	1	276	U
54	1	278	A
54	1	281	C
54	1	294	A
54	1	301	G
54	1	311	A
54	1	323	C
54	1	324	A
54	1	329	G
54	1	330	A
54	1	361	G
54	1	371	A
54	1	372	G
54	1	386	G
54	1	387	U
54	1	404	A
54	1	405	U
54	1	406	G
54	1	411	G
54	1	424	G
54	1	457	A
54	1	481	G
54	1	491	G
54	1	504	A
54	1	505	A
54	1	529	A
54	1	530	G
54	1	531	C
54	1	532	A
54	1	543	G
54	1	545	U
54	1	547	A
54	1	563	A
54	1	573	U
54	1	574	A
54	1	575	A
54	1	588	U
54	1	603	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
54	1	614	A
54	1	616	A
54	1	627	A
54	1	637	A
54	1	646	U
54	1	654	A
54	1	669	G
54	1	686	U
54	1	687	C
54	1	695	G
54	1	730	A
54	1	747	C
54	1	752	A
54	1	764	A
54	1	776	G
54	1	782	A
54	1	784	G
54	1	785	G
54	1	789	A
54	1	805	G
54	1	812	C
54	1	819	A
54	1	827	U
54	1	828	U
54	1	830	G
54	1	845	A
54	1	846	U
54	1	847	U
54	1	858	G
54	1	859	G
54	1	860	U
54	1	878	A
54	1	886	A
54	1	887	U
54	1	896	A
54	1	897	C
54	1	910	A
54	1	932	U
54	1	941	A
54	1	946	C
54	1	959	A
54	1	961	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
54	1	974	G
54	1	983	A
54	1	995	C
54	1	996	A
54	1	1005	C
54	1	1012	U
54	1	1013	C
54	1	1021	A
54	1	1022	G
54	1	1033	U
54	1	1046	A
54	1	1047	G
54	1	1054	A
54	1	1060	U
54	1	1062	G
54	1	1063	G
54	1	1064	C
54	1	1065	U
54	1	1066	U
54	1	1068	G
54	1	1070	A
54	1	1071	G
54	1	1079	C
54	1	1084	A
54	1	1088	A
54	1	1104	C
54	1	1106	G
54	1	1111	A
54	1	1131	G
54	1	1132	U
54	1	1133	A
54	1	1135	C
54	1	1142	A
54	1	1174	U
54	1	1175	A
54	1	1177	G
54	1	1180	U
54	1	1212	G
54	1	1251	C
54	1	1253	A
54	1	1256	G
54	1	1271	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
54	1	1272	A
54	1	1275	A
54	1	1300	G
54	1	1301	A
54	1	1329	U
54	1	1330	C
54	1	1332	G
54	1	1345	C
54	1	1365	A
54	1	1378	A
54	1	1379	U
54	1	1383	A
54	1	1395	A
54	1	1398	C
54	1	1416	G
54	1	1419	A
54	1	1420	A
54	1	1454	C
54	1	1461	C
54	1	1467	U
54	1	1476	U
54	1	1482	G
54	1	1490	A
54	1	1491	G
54	1	1498	C
54	1	1504	A
54	1	1515	A
54	1	1524	G
54	1	1533	C
54	1	1535	A
54	1	1536	C
54	1	1555	G
54	1	1559	U
54	1	1560	G
54	1	1569	A
54	1	1581	G
54	1	1584	U
54	1	1585	C
54	1	1608	A
54	1	1611	C
54	1	1616	A
54	1	1646	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
54	1	1647	U
54	1	1648	U
54	1	1674	G
54	1	1715	G
54	1	1729	U
54	1	1730	C
54	1	1738	G
54	1	1758	U
54	1	1764	C
54	1	1773	A
54	1	1780	A
54	1	1800	C
54	1	1801	A
54	1	1802	A
54	1	1808	A
54	1	1816	C
54	1	1847	A
54	1	1848	A
54	1	1871	A
54	1	1901	A
54	1	1906	G
54	1	1907	G
54	1	1913	A
54	1	1914	C
54	1	1915	U
54	1	1929	G
54	1	1930	G
54	1	1937	A
54	1	1938	A
54	1	1955	U
54	1	1966	A
54	1	1967	C
54	1	1970	A
54	1	1971	U
54	1	1972	G
54	1	1982	U
54	1	1991	U
54	1	1993	U
54	1	1997	C
54	1	2022	U
54	1	2023	C
54	1	2031	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
54	1	2036	C
54	1	2043	C
54	1	2049	G
54	1	2055	C
54	1	2056	G
54	1	2060	A
54	1	2061	G
54	1	2062	A
54	1	2069	G
54	1	2072	C
54	1	2093	G
54	1	2096	C
54	1	2098	U
54	1	2110	G
54	1	2111	U
54	1	2112	G
54	1	2113	U
54	1	2114	A
54	1	2118	U
54	1	2119	A
54	1	2131	U
54	1	2132	U
54	1	2133	G
54	1	2145	C
54	1	2147	A
54	1	2162	G
54	1	2171	A
54	1	2172	U
54	1	2173	A
54	1	2189	U
54	1	2198	A
54	1	2199	A
54	1	2203	U
54	1	2204	G
54	1	2213	U
54	1	2225	A
54	1	2238	G
54	1	2239	G
54	1	2259	U
54	1	2278	A
54	1	2283	C
54	1	2287	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
54	1	2297	A
54	1	2305	U
54	1	2309	A
54	1	2325	G
54	1	2327	A
54	1	2334	U
54	1	2337	G
54	1	2350	C
54	1	2354	C
54	1	2383	G
54	1	2385	C
54	1	2392	A
54	1	2402	U
54	1	2406	A
54	1	2423	U
54	1	2424	C
54	1	2429	G
54	1	2430	A
54	1	2435	A
54	1	2441	U
54	1	2448	A
54	1	2476	A
54	1	2498	C
54	1	2502	G
54	1	2503	A
54	1	2505	G
54	1	2518	A
54	1	2529	G
54	1	2547	A
54	1	2554	U
54	1	2566	A
54	1	2567	G
54	1	2572	A
54	1	2602	A
54	1	2603	G
54	1	2609	U
54	1	2613	U
54	1	2646	C
54	1	2655	G
54	1	2682	A
54	1	2689	U
54	1	2690	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
54	1	2714	G
54	1	2716	C
54	1	2733	A
54	1	2744	G
54	1	2748	A
54	1	2757	A
54	1	2764	A
54	1	2765	A
54	1	2778	A
54	1	2779	U
54	1	2791	G
54	1	2797	U
54	1	2799	A
54	1	2800	A
54	1	2801	G
54	1	2809	A
54	1	2820	A
54	1	2821	A
54	1	2833	U
54	1	2849	U
54	1	2867	G
54	1	2868	A
54	1	2872	A
54	1	2880	C
54	1	2884	U
55	2	4	C
55	2	13	G
55	2	15	A
55	2	24	G
55	2	35	C
55	2	41	G
55	2	44	G
55	2	67	G
55	2	88	C
55	2	89	U
55	2	108	A
55	2	109	A
56	5	3	G
56	5	5	G
56	5	6	A
56	5	14	A
56	5	18	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
56	5	19	G
56	5	20	U
56	5	21	A
56	5	22	G
56	5	42	G
56	5	47	U
56	5	73	A
56	5	76	A
57	6	2	G
57	6	3	C
57	6	5	G
57	6	8	U
57	6	9	G
57	6	10	G
57	6	14	A
57	6	18	G
57	6	19	G
57	6	21	A
57	6	22	G
57	6	34	C
57	6	56	C
57	6	64	G
57	6	67	C
57	6	70	G
57	6	71	C
57	6	72	A
57	6	76	A
58	4	12	A
58	4	15	A
58	4	16	A

All (20) RNA pucker outliers are listed below:

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
53	3	70	U
53	3	1190	G
53	3	1201	A
53	3	1398	A
53	3	1493	A
54	1	227	A
54	1	490	C
54	1	859	G

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Mol	Chain	Res	Type
54	1	1020	A
54	1	1130	U
54	1	1475	G
54	1	1914	C
54	1	2296	U
54	1	2326	C
54	1	2391	G
54	1	2756	U
55	2	66	A
55	2	88	C
56	5	2	G
56	5	41	A

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

There are no non-standard protein/DNA/RNA residues in this entry.

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 4 ligands modelled in this entry, 1 is monoatomic - leaving 3 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z  > 2$	Counts	RMSZ	$\# Z  > 2$
60	FME	1	3001	61	8,9,10	0.64	0	7,9,11	0.96	0
62	GCP	8	801	63	27,34,34	2.08	7 (25%)	34,54,54	3.85	19 (55%)
61	PRO	5	101	56,60	5,7,8	0.58	0	7,8,10	0.99	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the

Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
60	FME	1	3001	61	-	1/7/9/11	-
62	GCP	8	801	63	-	8/15/38/38	0/3/3/3
61	PRO	5	101	56,60	-	0/0/9/11	0/1/1/1

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
62	8	801	GCP	PB-O3A	-5.60	1.52	1.58
62	8	801	GCP	O4'-C1'	5.07	1.48	1.41
62	8	801	GCP	PG-O3G	-3.58	1.46	1.54
62	8	801	GCP	C2-N1	3.02	1.40	1.35
62	8	801	GCP	C6-N1	2.95	1.38	1.33
62	8	801	GCP	PB-O2B	-2.22	1.51	1.56
62	8	801	GCP	C8-N7	-2.22	1.30	1.34

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
62	8	801	GCP	C1'-N9-C4	14.05	151.33	126.64
62	8	801	GCP	C5-C6-N1	-8.53	111.77	123.43
62	8	801	GCP	C2-N1-C6	6.54	126.32	115.93
62	8	801	GCP	C2-N3-C4	-5.10	109.53	115.36
62	8	801	GCP	O4'-C1'-C2'	-5.00	99.61	106.93
62	8	801	GCP	O3G-PG-O2G	4.13	120.13	108.08
62	8	801	GCP	O2G-PG-C3B	-3.91	96.91	106.40
62	8	801	GCP	O2B-PB-O1B	3.74	122.57	110.07
62	8	801	GCP	O3'-C3'-C4'	-3.54	100.82	111.05
62	8	801	GCP	C4-C5-C6	-3.39	117.56	120.80
62	8	801	GCP	C4-C5-N7	3.21	112.74	109.40
62	8	801	GCP	O2A-PA-O5'	-2.93	94.16	107.75
62	8	801	GCP	PB-O3A-PA	2.73	141.21	132.56
62	8	801	GCP	O4'-C4'-C5'	2.60	117.94	109.37
62	8	801	GCP	N3-C2-N1	-2.47	123.93	127.22
62	8	801	GCP	C3'-C2'-C1'	-2.44	97.31	100.98
62	8	801	GCP	O3G-PG-O1G	-2.33	106.22	112.39
62	8	801	GCP	O2A-PA-O1A	2.08	122.54	112.24
62	8	801	GCP	O1B-PB-C3B	2.07	114.56	109.07

There are no chirality outliers.

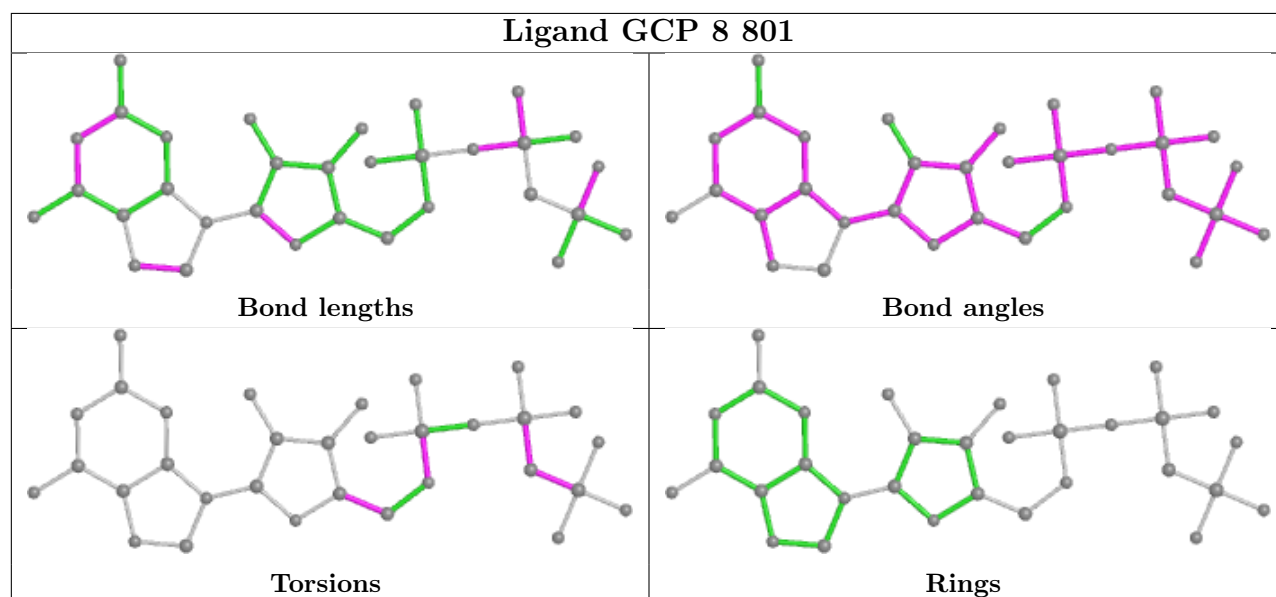
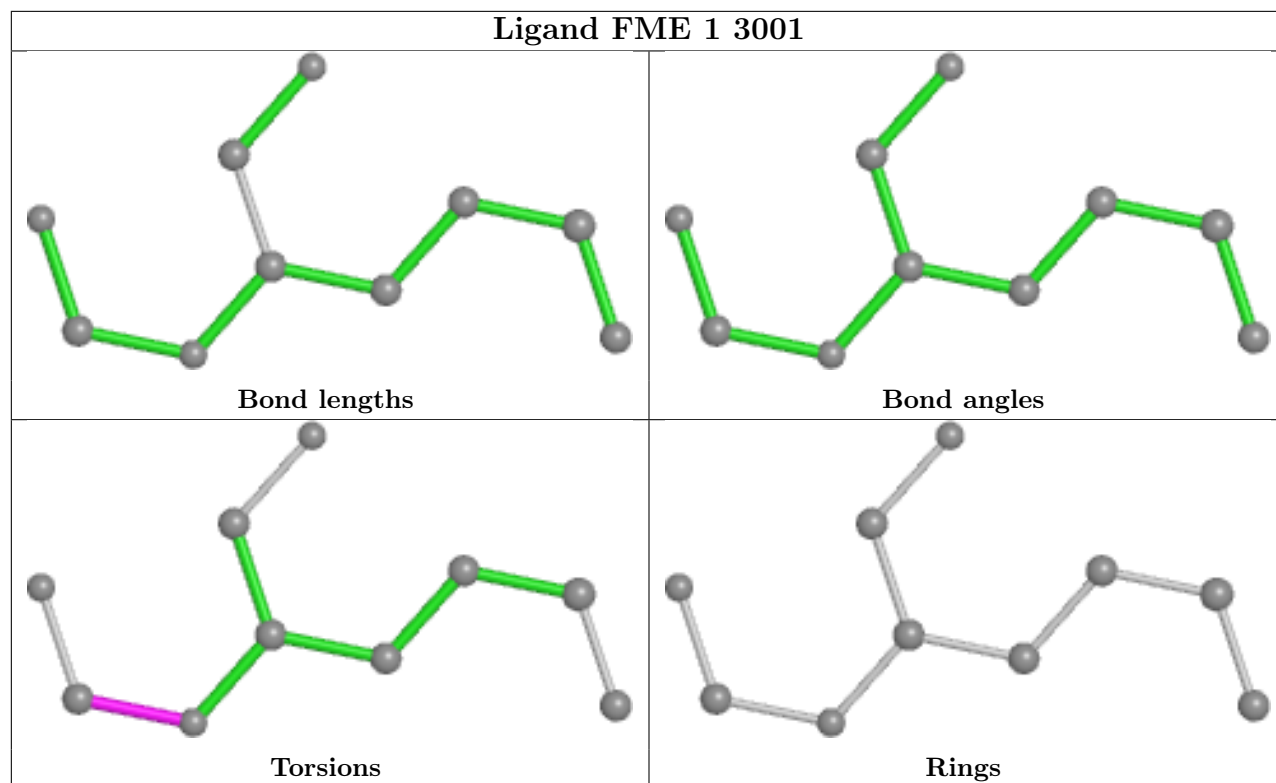
All (9) torsion outliers are listed below:

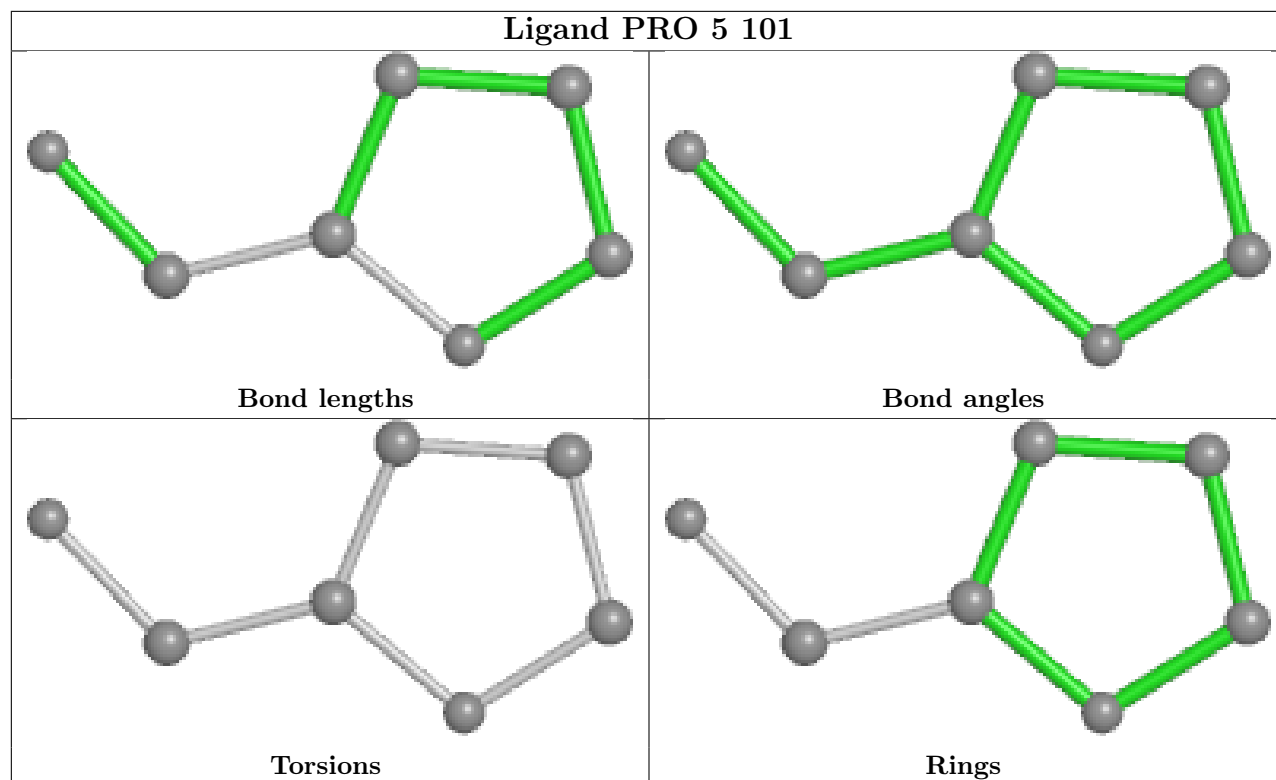
Mol	Chain	Res	Type	Atoms
60	1	3001	FME	O1-CN-N-CA
62	8	801	GCP	PB-C3B-PG-O1G
62	8	801	GCP	PG-C3B-PB-O1B
62	8	801	GCP	C5'-O5'-PA-O3A
62	8	801	GCP	C5'-O5'-PA-O1A
62	8	801	GCP	C5'-O5'-PA-O2A
62	8	801	GCP	O4'-C4'-C5'-O5'
62	8	801	GCP	PB-C3B-PG-O2G
62	8	801	GCP	PB-C3B-PG-O3G

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.

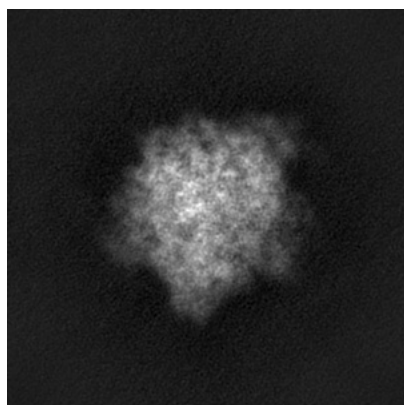
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-22671. These allow visual inspection of the internal detail of the map and identification of artifacts.

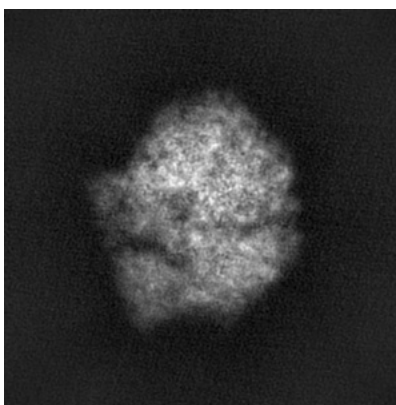
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

### 6.1 Orthogonal projections [i](#)

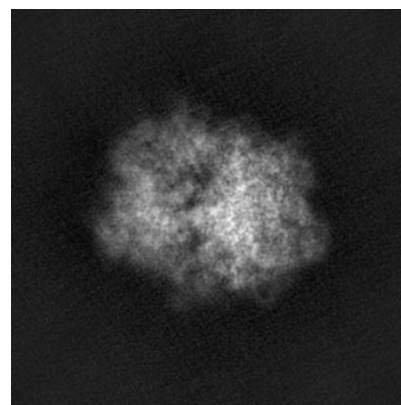
#### 6.1.1 Primary map



X



Y

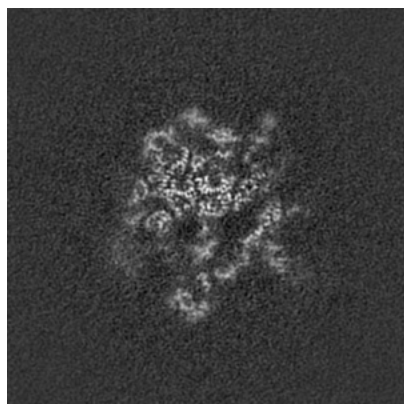


Z

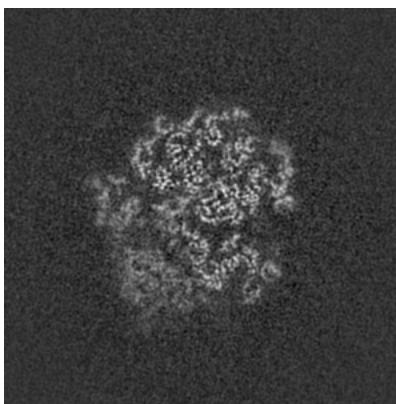
The images above show the map projected in three orthogonal directions.

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

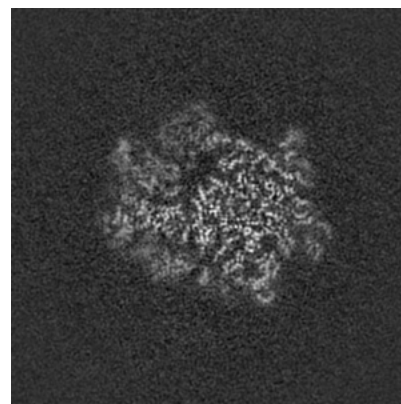
#### 6.2.1 Primary map



X Index: 200



Y Index: 200



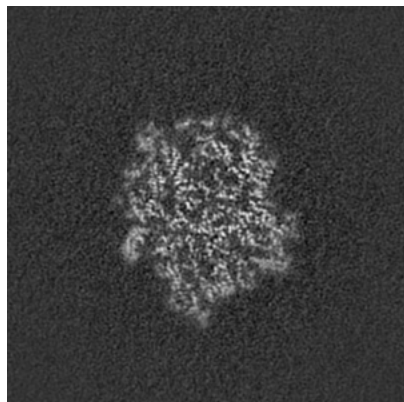
Z Index: 200



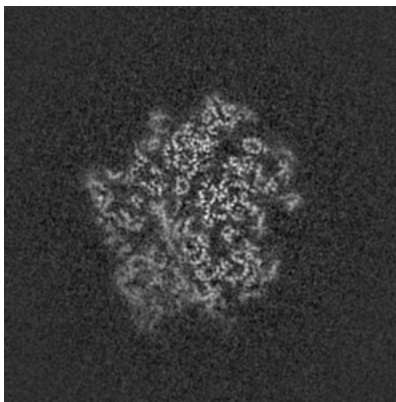
The images above show central slices of the map in three orthogonal directions.

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

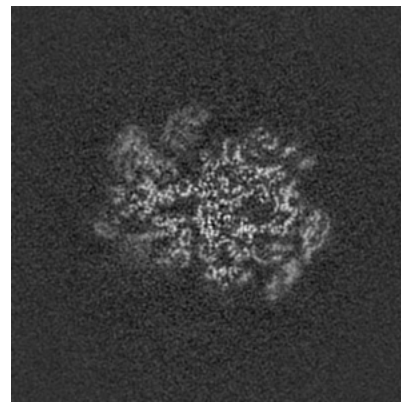
### 6.3.1 Primary map



X Index: 225



Y Index: 193

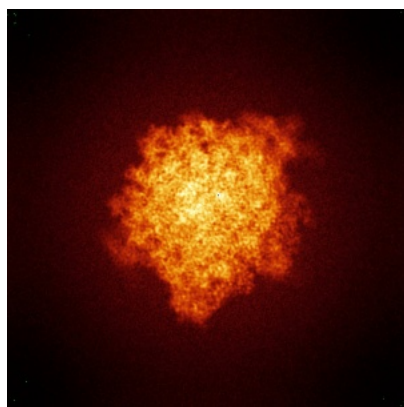


Z Index: 214

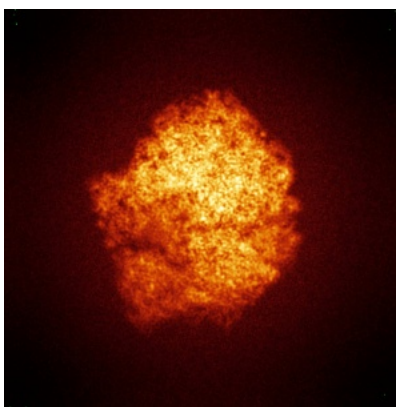
The images above show the largest variance slices of the map in three orthogonal directions.

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

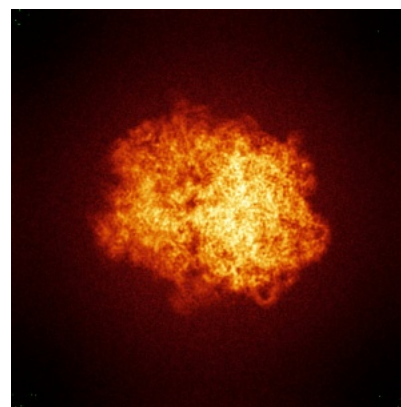
### 6.4.1 Primary map



X



Y



Z

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

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

### 6.5.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 3.7. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

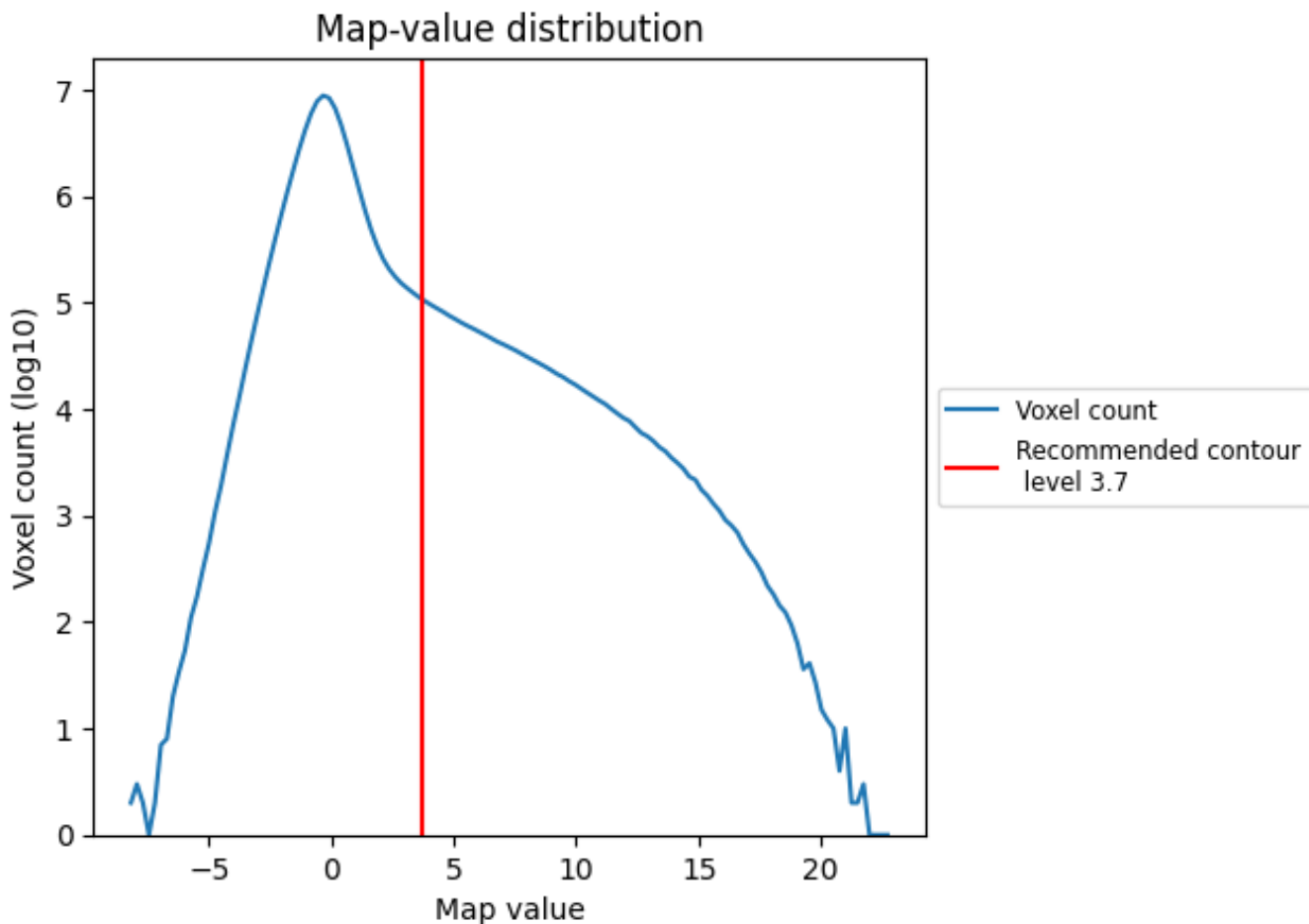
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

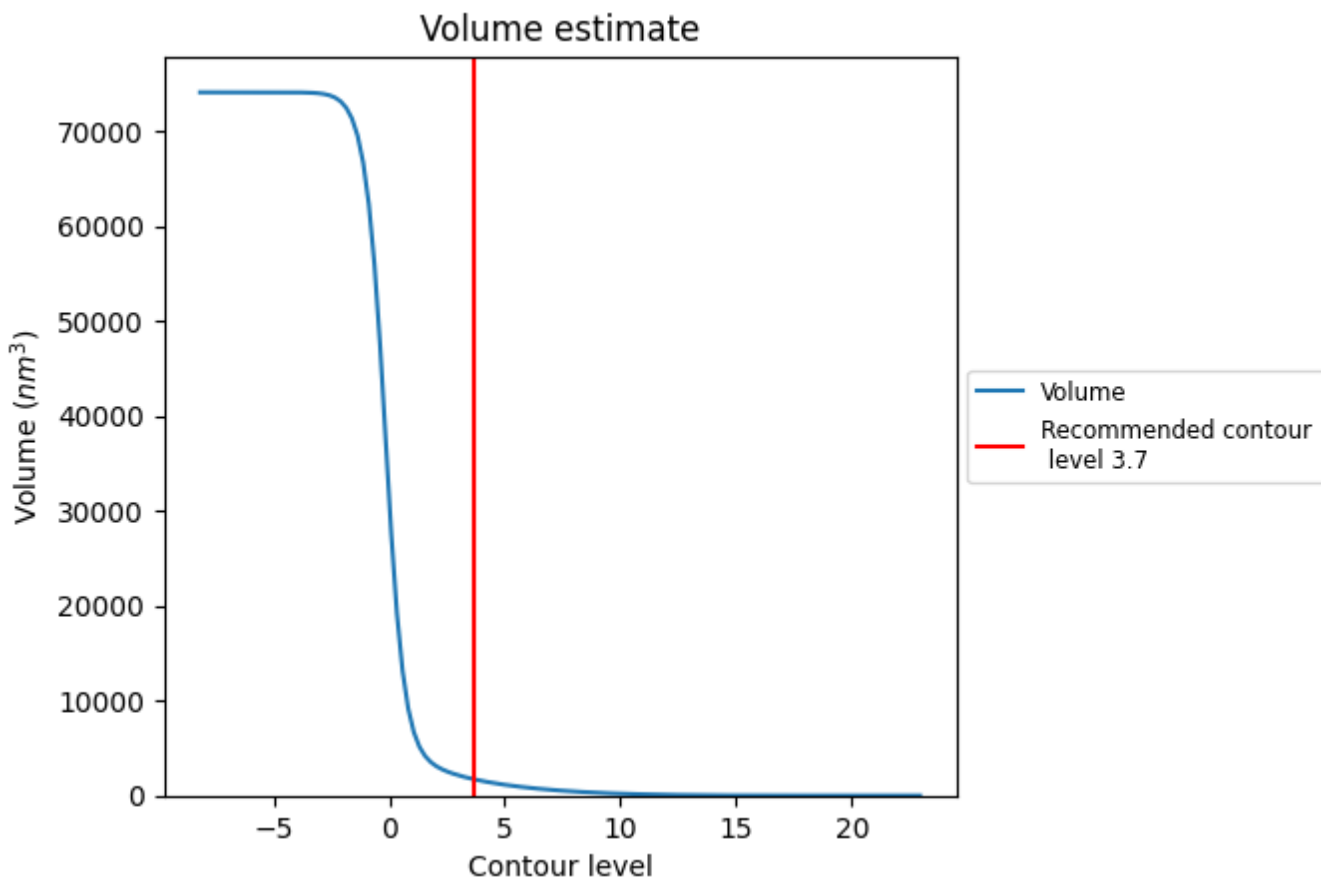
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



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

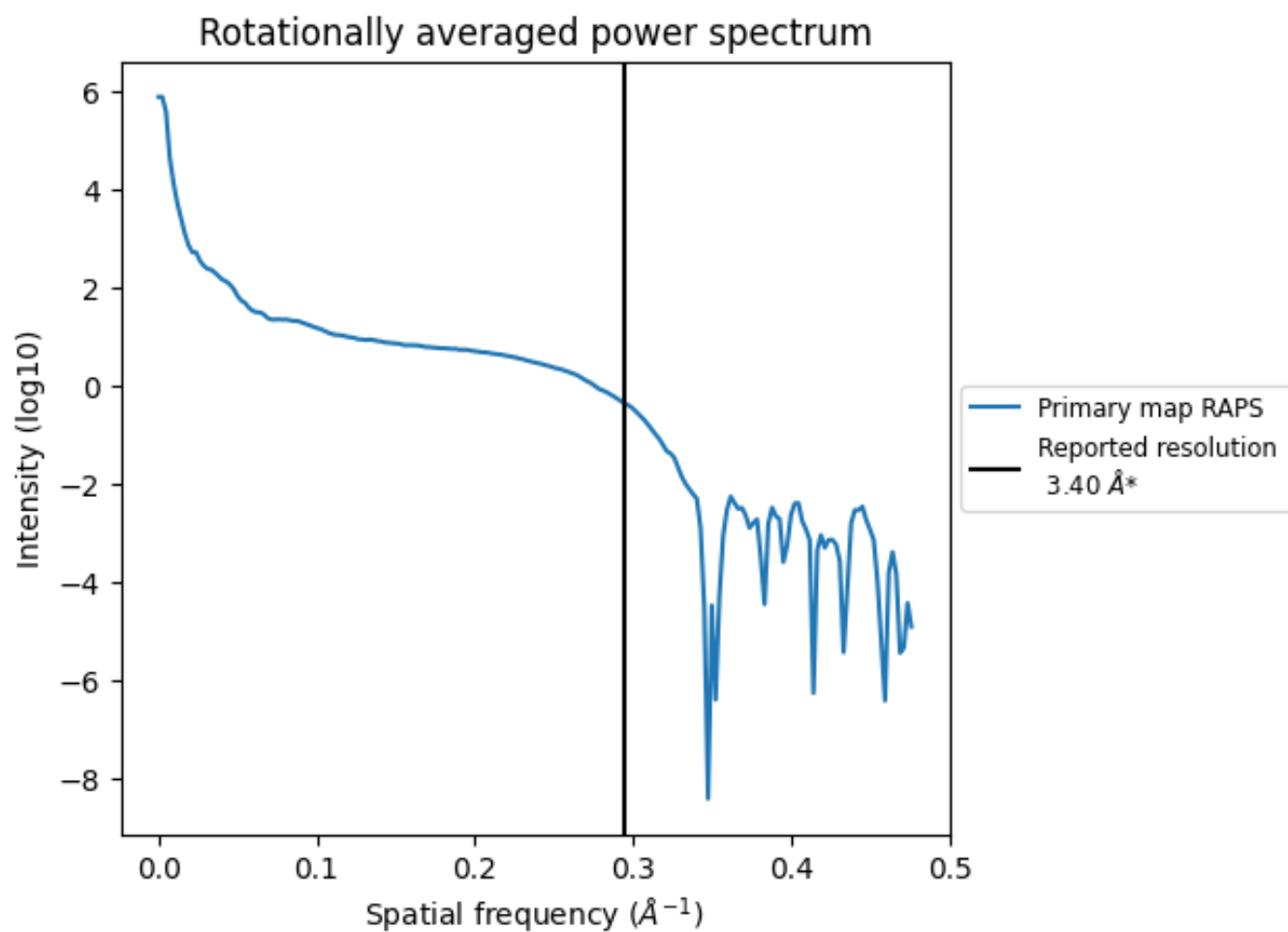
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1699  $\text{nm}^3$ ; this corresponds to an approximate mass of 1535 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  $0.294 \text{\AA}^{-1}$

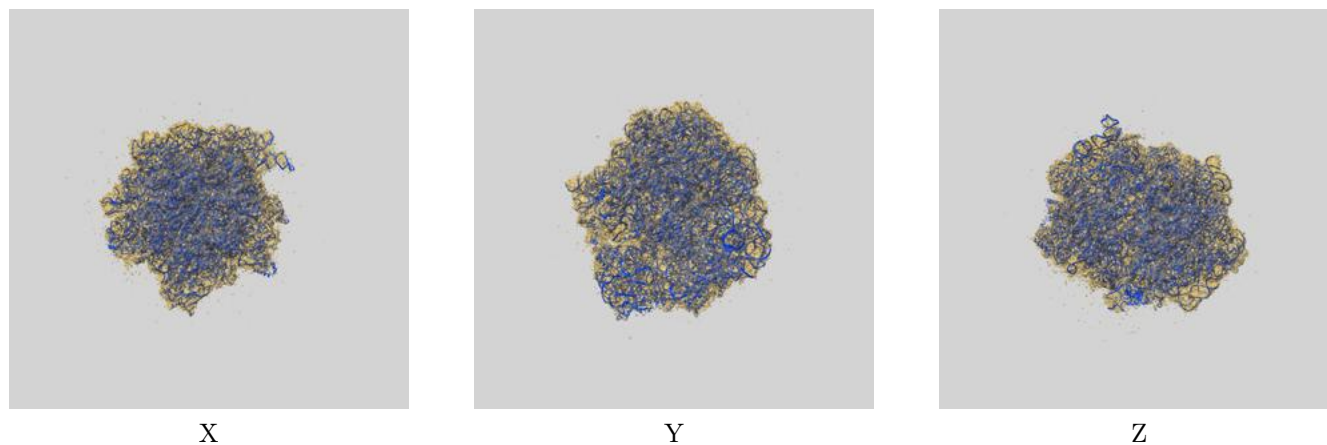
## 8 Fourier-Shell correlation

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

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

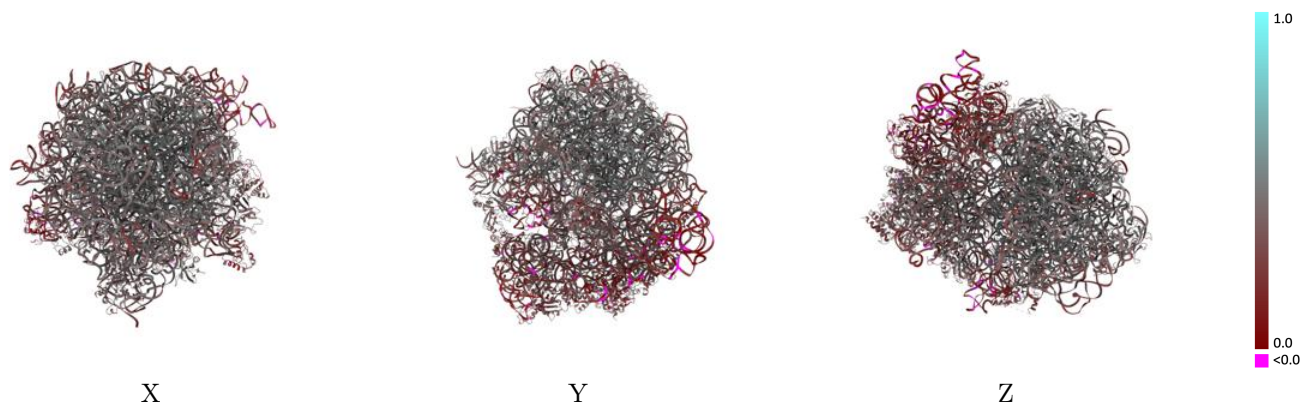
This section contains information regarding the fit between EMDB map EMD-22671 and PDB model 7K52. Per-residue inclusion information can be found in section [3](#) on page [17](#).

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



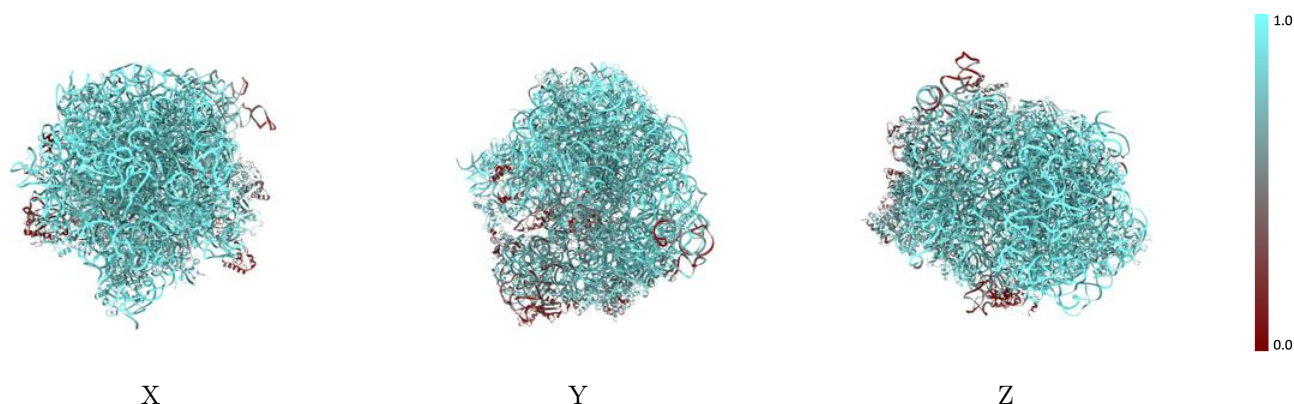
The images above show the 3D surface view of the map at the recommended contour level 3.7 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



The images above show the model with each residue coloured according 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.

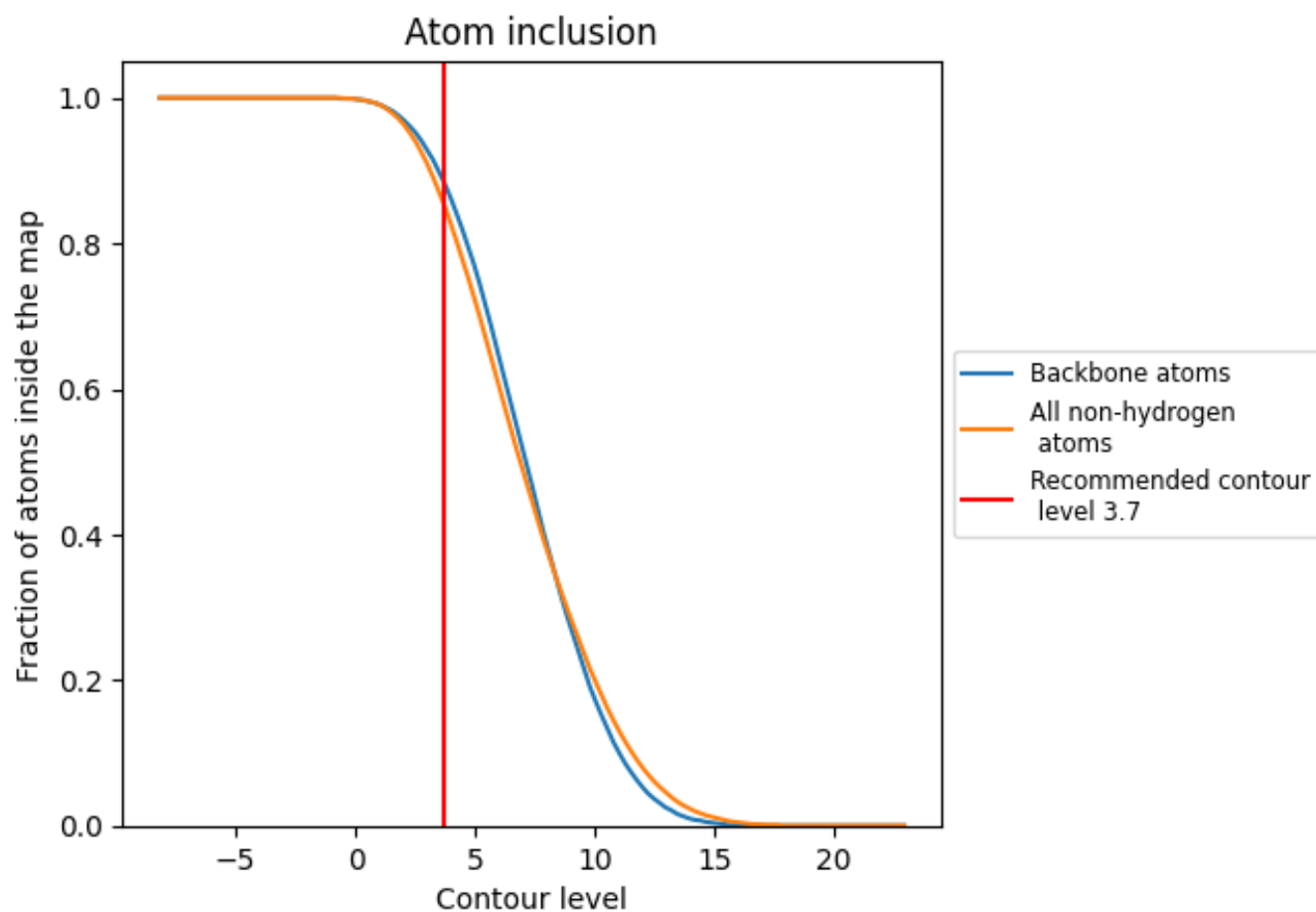
## 9.3 Atom inclusion mapped to coordinate model [i](#)



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 (3.7).









































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 88% of all backbone atoms, 86% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary



















































The table lists the average atom inclusion at the recommended contour level (3.7) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8550	 0.3750
1	 0.9560	 0.4180
2	 0.9690	 0.3950
3	 0.8560	 0.3000
4	 0.6720	 0.2250
5	 0.9290	 0.3290
6	 0.4910	 0.1360
8	 0.6390	 0.3430
A	 0.7090	 0.3430
B	 0.8900	 0.4540
C	 0.6470	 0.4040
D	 0.8900	 0.4550
E	 0.9180	 0.4870
F	 0.8700	 0.4560
G	 0.6130	 0.3470
H	 0.4950	 0.3260
I	 0.6370	 0.2430
J	 0.8470	 0.4140
K	 0.8330	 0.3990
L	 0.5880	 0.3090
M	 0.8240	 0.4020
N	 0.6870	 0.3060
O	 0.4410	 0.3080
P	 0.8710	 0.3910
Q	 0.8020	 0.3300
R	 0.6970	 0.3050
S	 0.6720	 0.3240
T	 0.8610	 0.3930
U	 0.6810	 0.2790
V	 0.7990	 0.3440
W	 0.8350	 0.3980
X	 0.4570	 0.2840
Y	 0.7750	 0.3070
Z	 0.7050	 0.3310
a	 0.1560	 0.2200



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Chain	Atom inclusion	Q-score
b	 0.9170	 0.4800
c	 0.8870	 0.4620
d	 0.7820	 0.4270
e	 0.7980	 0.3590
f	 0.8180	 0.4050
g	 0.2440	 0.2780
h	 0.2220	 0.2420
i	 0.2390	 0.2360
j	 0.8900	 0.4520
k	 0.8700	 0.4680
l	 0.8750	 0.4530
m	 0.8850	 0.4710
n	 0.9080	 0.4600
o	 0.8620	 0.4090
p	 0.8640	 0.4490
q	 0.9020	 0.4630
r	 0.8470	 0.4400
s	 0.8550	 0.4540
t	 0.8220	 0.4260
u	 0.8100	 0.4070
v	 0.8250	 0.4320
w	 0.8750	 0.4720
x	 0.9000	 0.4540
y	 0.7870	 0.3780
z	 0.8720	 0.4460