



Full wwPDB EM Validation Report ⓘ

Dec 20, 2023 – 10:47 AM JST

PDB ID : 3JBV
EMDB ID : EMD-6486
Title : Mechanisms of Ribosome Stalling by SecM at Multiple Elongation Steps
Authors : Zhang, J.; Pan, X.J.; Yan, K.G.; Sun, S.; Gao, N.; Sui, S.F.
Deposited on : 2015-10-16
Resolution : 3.32 Å (reported)
Based on initial model : 4V7T

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

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

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

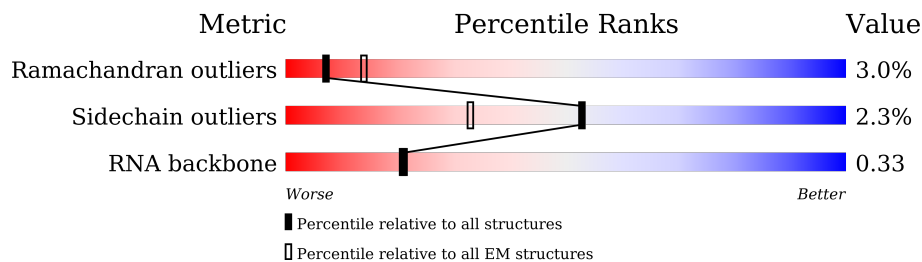
EMDB validation analysis : 0.0.1.dev70
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

1 Overall quality at a glance

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

The reported resolution of this entry is 3.32 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 ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1542	
2	B	241	
3	C	233	
4	D	206	
5	E	167	
6	F	131	
7	G	156	
8	H	130	

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Mol	Chain	Length	Quality of chain
9	I	130	73% 95% ..
10	J	103	81% 90% 5% 5%
11	K	129	36% 90% 9%
12	L	124	40% 95% ..
13	M	118	64% 90% 6%
14	N	101	61% 91% 5%
15	O	89	35% 98% ..
16	P	82	84% 79% 21%
17	Q	84	67% 94% 5%
18	R	75	33% 73% 27%
19	S	92	52% 83% 14%
20	T	87	63% 97% ..
21	U	71	51% 66% 6% 28%
22	V	76	75% 39% 59%
23	W	75	16% 41% 57%
24	X	11	36% 18% 73% 9%
25	0	78	19% 94% ..
26	1	63	46% 92% 6%
27	2	59	14% 95% ..
28	3	57	18% 89% 9%
29	4	55	20% 91% 9%
30	6	46	7% 93% 7%
31	7	65	8% 95% ..
32	8	38	5% 97% .
33	a	120	59% 37% ..

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Mol	Chain	Length	Quality of chain
34	b	2904	9% 55% 38% 5%
35	c	273	9% 96%
36	i	142	92% 76% 17% 6%
37	d	209	16% 97%
38	e	201	27% 94% 6%
39	f	179	53% 93% 6%
40	g	177	51% 95%
41	h	149	86% 97%
42	j	142	15% 96%
43	k	123	21% 95%
44	l	144	12% 92% 8%
45	m	136	11% 98%
46	n	127	9% 91% 6%
47	o	117	17% 93% 6%
48	p	115	34% 95%
49	q	118	8% 96%
50	r	103	20% 92% 8%
51	s	110	18% 95% 5%
52	t	100	23% 86% 7% 7%
53	u	104	31% 84% 14%
54	w	94	23% 98%
55	y	85	7% 87% 12%
56	z	27	96% 56% 44%

2 Entry composition [i](#)

There are 57 unique types of molecules in this entry. The entry contains 145911 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 (1530-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	A	1530	32831	14642	6024	10635	1530	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	218	1704	1081	305	311	7	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	206	1624	1028	305	288	3	0	0

- Molecule 4 is a protein called 30S ribosomal protein S4.

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

- Molecule 5 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	E	150	1105	687	211	201	6	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	F	100	817	515	148	148	6	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	125	ASP	GLU	conflict	UNP P02358

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	G	150	1174	730	226	214	4	0	0

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

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

- Molecule 9 is a protein called 30S ribosomal protein S9.

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

- Molecule 10 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	J	98	786	493	150	142	1	0	0

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

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

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	M	113	876	541	177	155	3	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	N	96	774	483	160	128	3	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	O	88	716	440	146	129	1	0	0

- Molecule 16 is a protein called 30S ribosomal protein S16.

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

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

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

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

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
18	R	55	455	288	86	81	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	S	79	637	408	120	107	2	0	0

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
21	U	51	Total	C	N	O	S	0	0
			425	265	86	73	1		

- Molecule 22 is a RNA chain called RNA (76-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
22	V	76	Total	C	N	O	P	0	0
			1620	723	290	532	75		

- Molecule 23 is a RNA chain called RNA (75-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
23	W	75	Total	C	N	O	P	0	0
			1599	713	287	525	74		

- Molecule 24 is a RNA chain called RNA (5'-R(P*CP*UP*GP*GP*CP*CP*CP*UP*CP*A P*A)-3').

Mol	Chain	Residues	Atoms					AltConf	Trace
24	X	11	Total	C	N	O	P	0	0
			231	103	39	78	11		

- Molecule 25 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	0	77	Total	C	N	O	S	0	0
			625	388	129	106	2		

- Molecule 26 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	1	62	Total	C	N	O	S	0	0
			501	308	98	94	1		

- Molecule 27 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	2	58	Total	C	N	O	S	0	0
			449	281	87	79	2		

- Molecule 28 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	3	56	Total	C	N	O	S	0	0
			444	269	94	80	1		

- Molecule 29 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
29	4	50	Total	C	N	O	0	0
			409	263	75	71		

- Molecule 30 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	6	46	Total	C	N	O	S	0	0
			377	228	90	57	2		

- Molecule 31 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	7	64	Total	C	N	O	S	0	0
			504	323	105	74	2		

- Molecule 32 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	8	38	Total	C	N	O	S	0	0
			302	185	65	48	4		

- Molecule 33 is a RNA chain called RNA (118-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
33	a	117	Total	C	N	O	P	0	0
			2506	1116	459	814	117		

- Molecule 34 is a RNA chain called RNA (2903-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
34	b	2903	62321	27801	11467	20150	2903	0	0

- Molecule 35 is a protein called 50S ribosomal protein L2.

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

- Molecule 36 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	i	134	976	614	169	187	6	0	0

- Molecule 37 is a protein called 50S ribosomal protein L3.

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

- Molecule 38 is a protein called 50S ribosomal protein L4.

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

- Molecule 39 is a protein called 50S ribosomal protein L5.

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

- Molecule 40 is a protein called 50S ribosomal protein L6.

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

- Molecule 41 is a protein called 50S ribosomal protein L9.

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

- Molecule 42 is a protein called 50S ribosomal protein L13.

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

- Molecule 43 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	k	122	Total	C	N	O	S	0	0
			938	587	180	165	6		

- Molecule 44 is a protein called 50S ribosomal protein L15.

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

- Molecule 45 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	m	135	Total	C	N	O	S	0	0
			1063	680	201	176	6		

- Molecule 46 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	n	120	Total	C	N	O	S	0	0
			960	593	196	166	5		

- Molecule 47 is a protein called 50S ribosomal protein L18.

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

- Molecule 48 is a protein called 50S ribosomal protein L19.

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

- Molecule 49 is a protein called 50S ribosomal protein L20.

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

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

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

- Molecule 51 is a protein called 50S ribosomal protein L22.

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

- Molecule 52 is a protein called 50S ribosomal protein L23.

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

- Molecule 53 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
53	u	102	779	492	146	141		0	0

- Molecule 54 is a protein called 50S ribosomal protein L25.

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

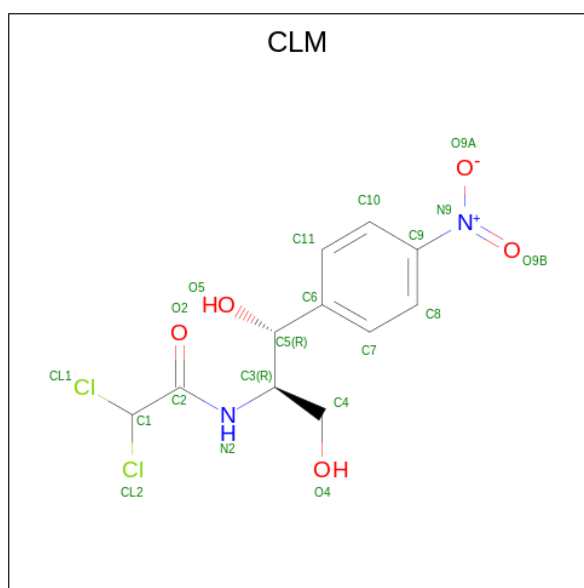
- Molecule 55 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
55	y	75	569	353	113	102	1	0	0

- Molecule 56 is a protein called Secretion monitor.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
56	z	27	211	134	35	42	0	0

- Molecule 57 is CHLORAMPHENICOL (three-letter code: CLM) (formula: $C_{11}H_{12}Cl_2N_2O_5$).

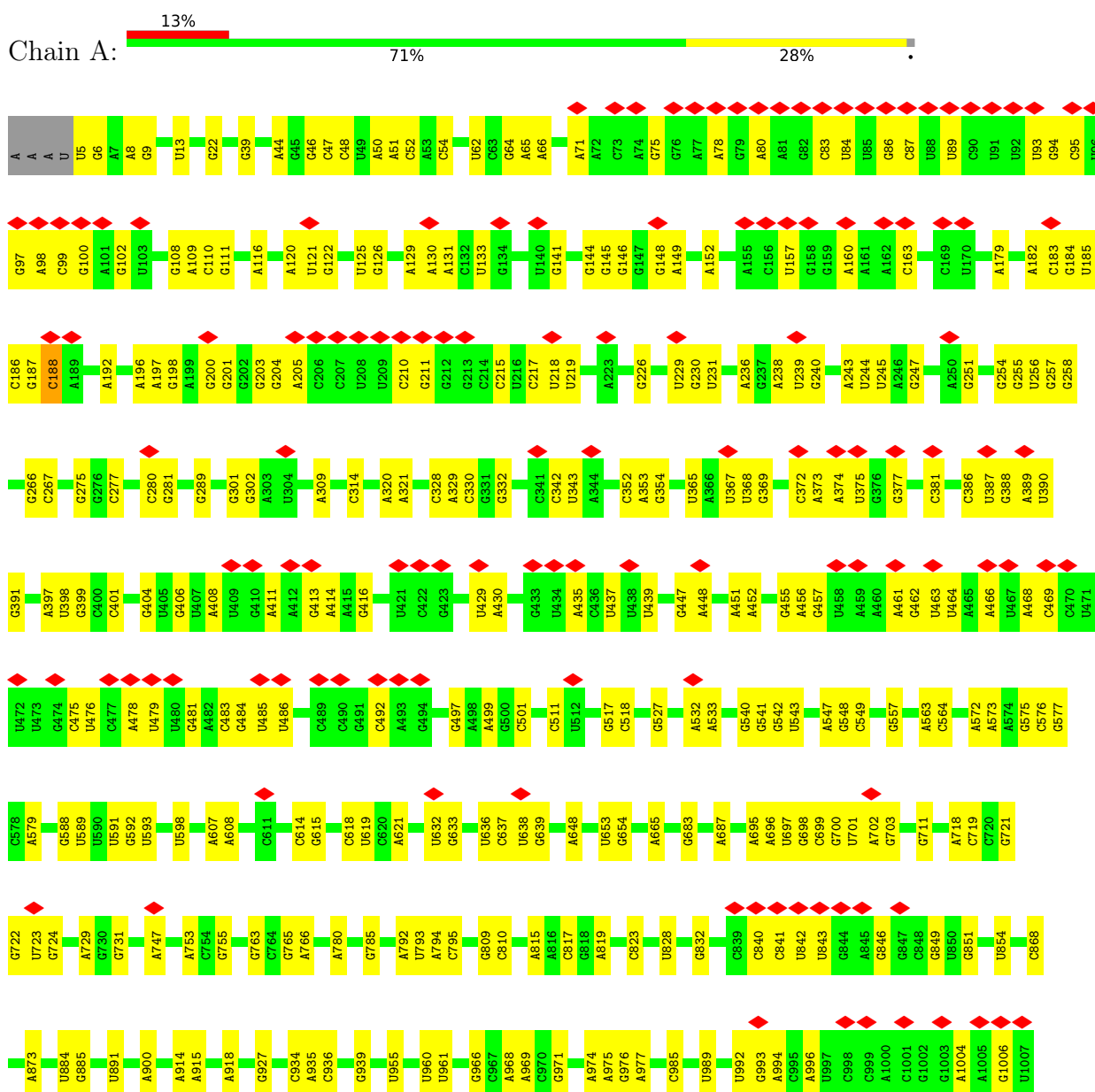


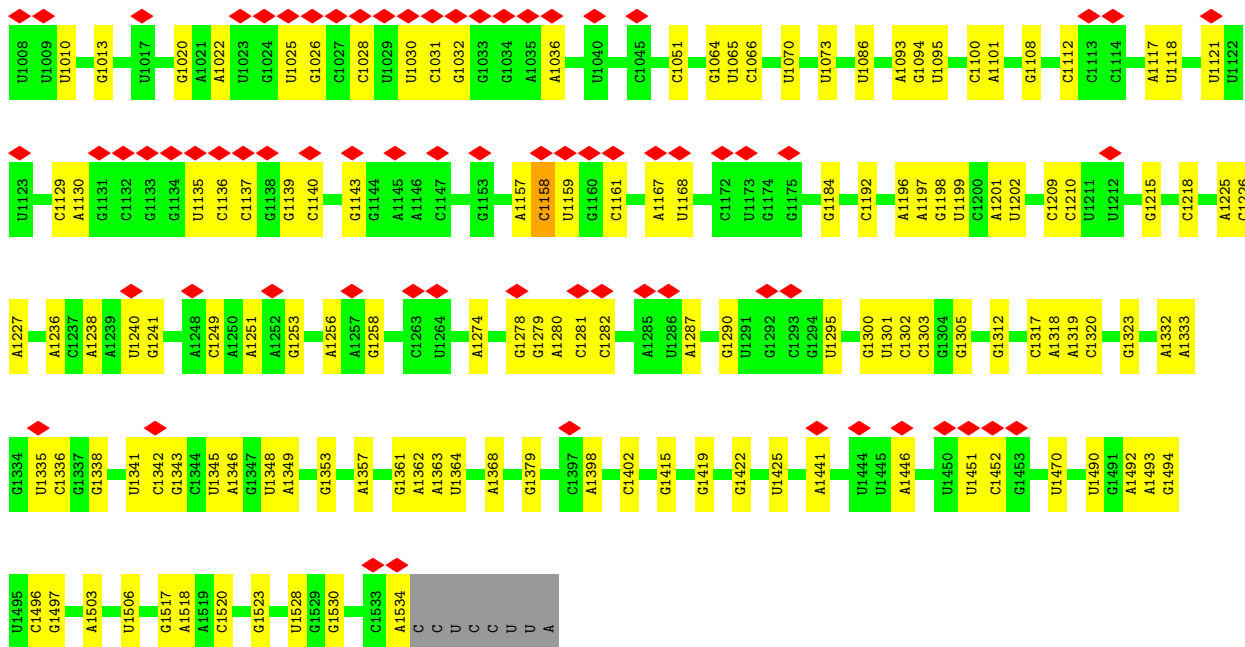
Mol	Chain	Residues	Atoms					AltConf
			Total	C	Cl	N	O	
57	b	1	20	11	2	2	5	0

3 Residue-property plots

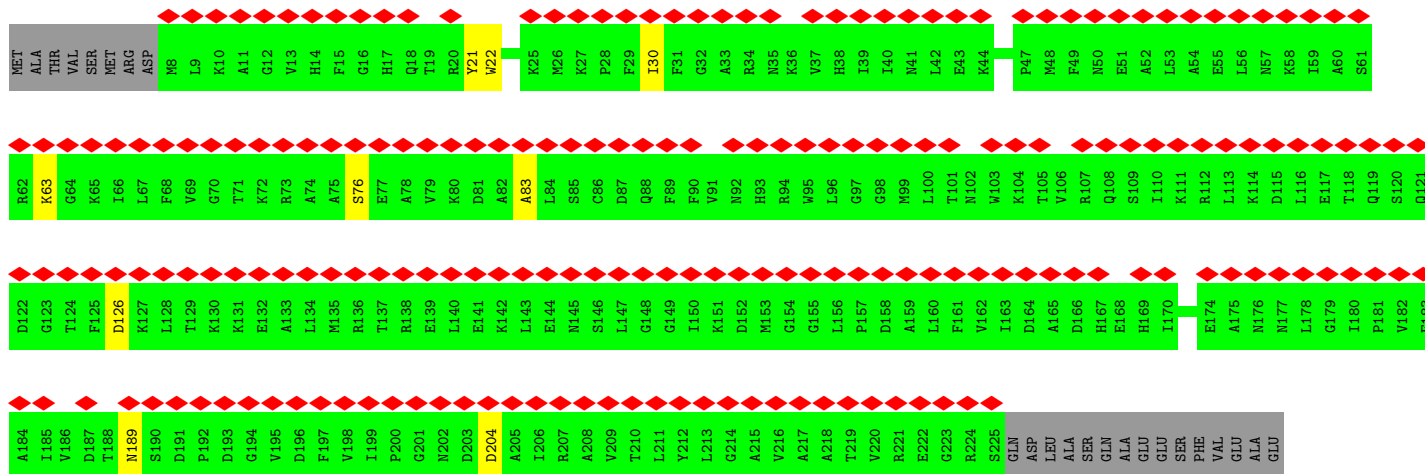
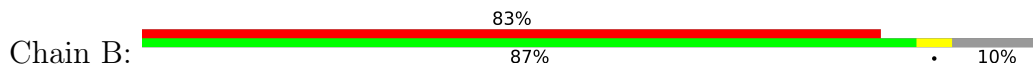
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: RNA (1530-MER)

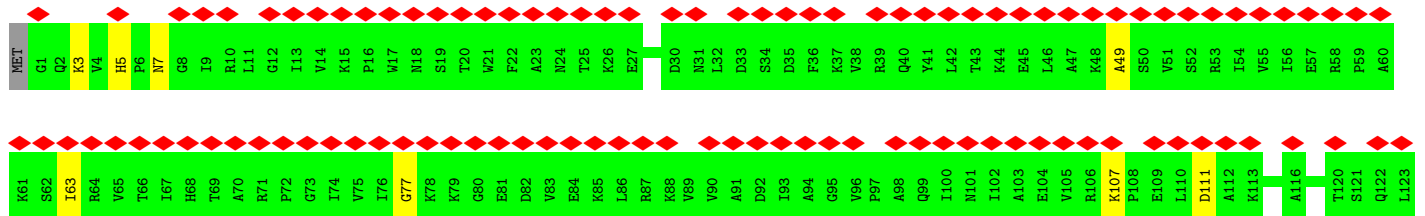
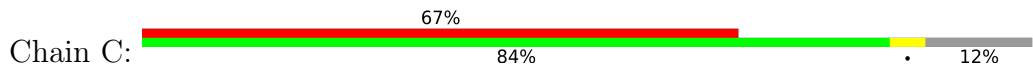


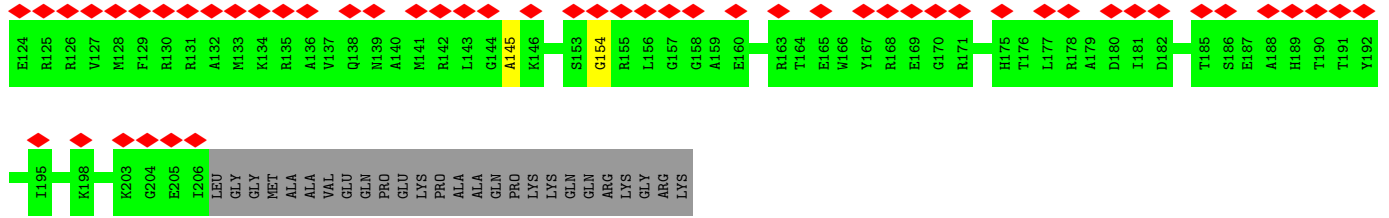


• Molecule 2: 30S ribosomal protein S2

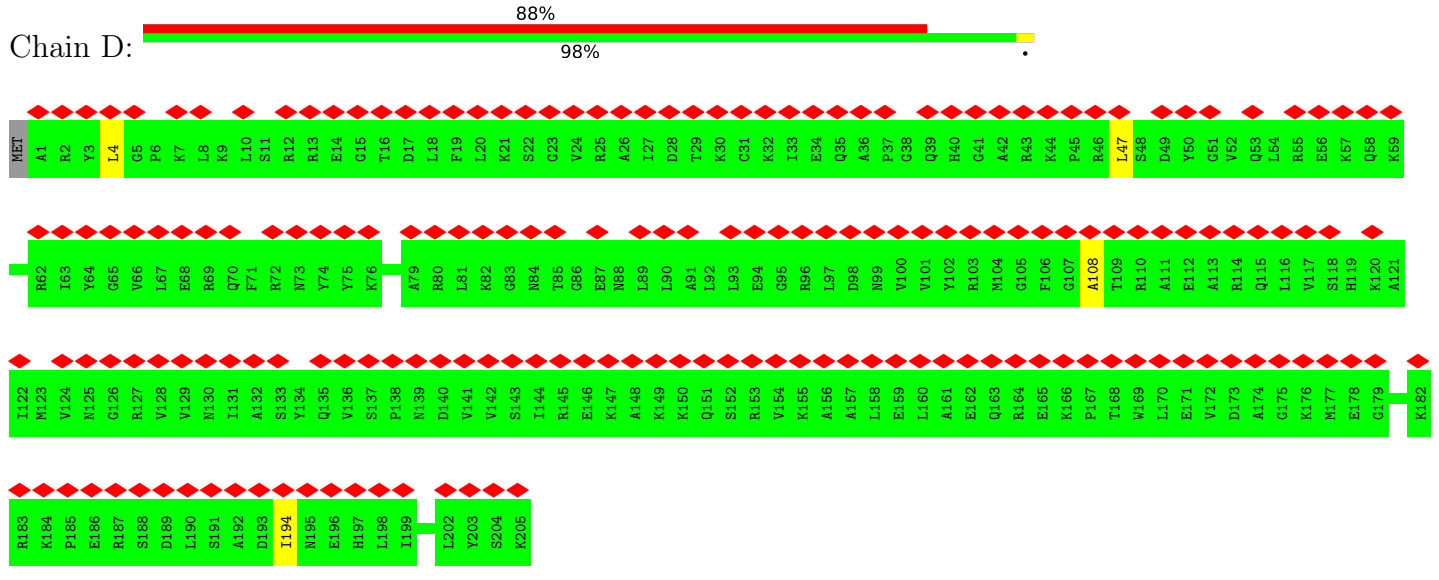


• Molecule 3: 30S ribosomal protein S3

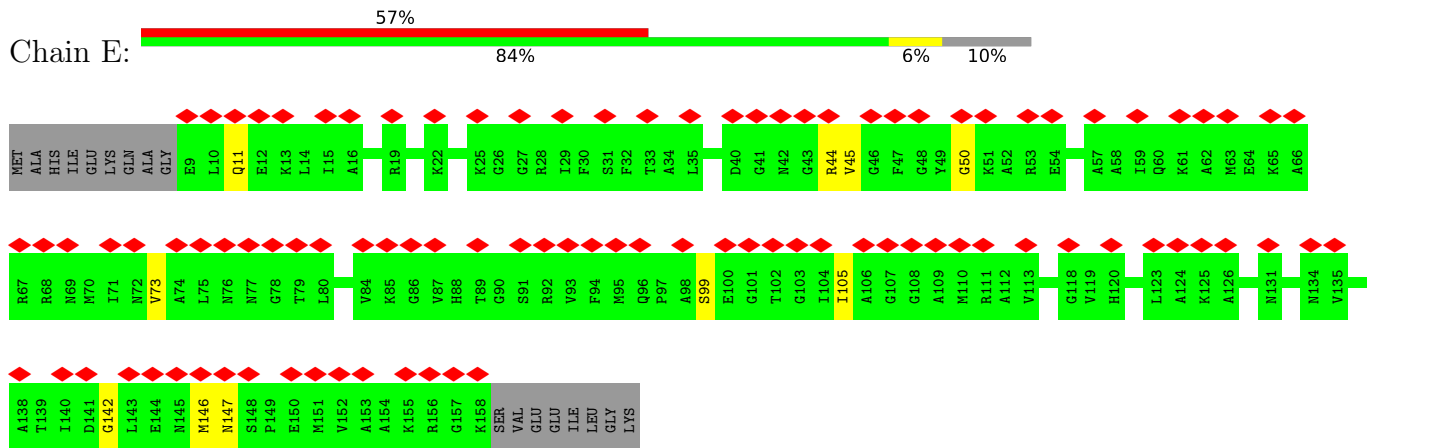




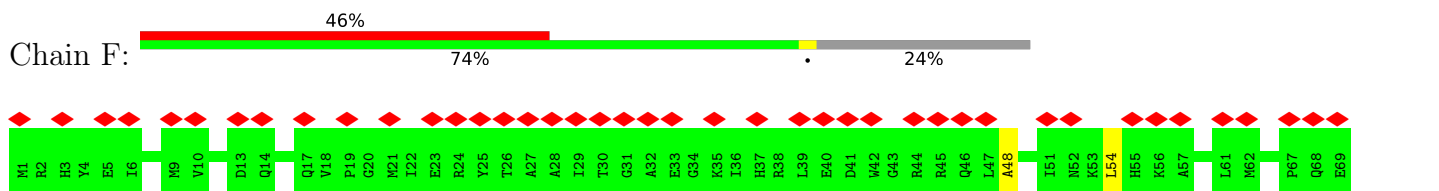
• Molecule 4: 30S ribosomal protein S4

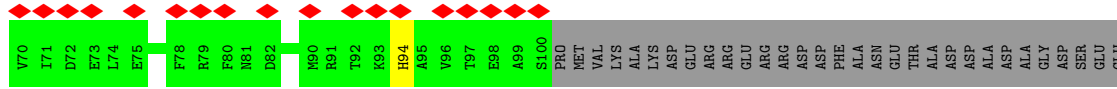


• Molecule 5: 30S ribosomal protein S5

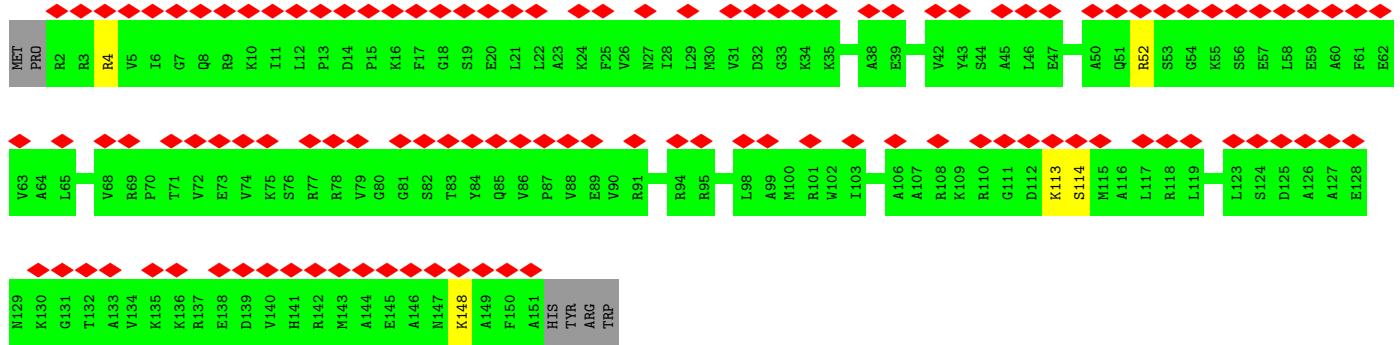
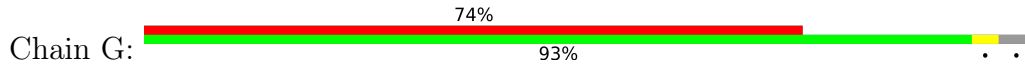


• Molecule 6: 30S ribosomal protein S6

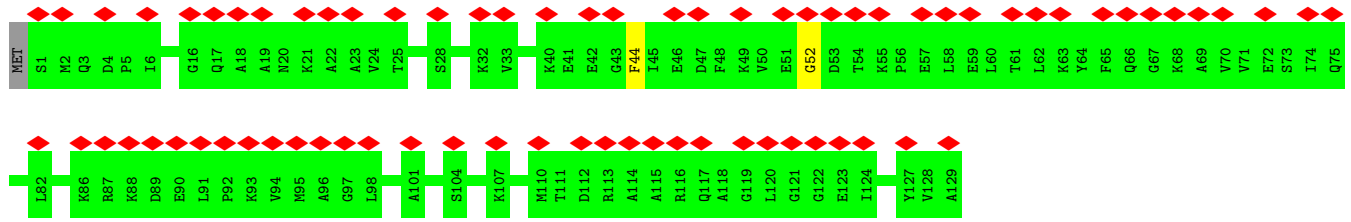




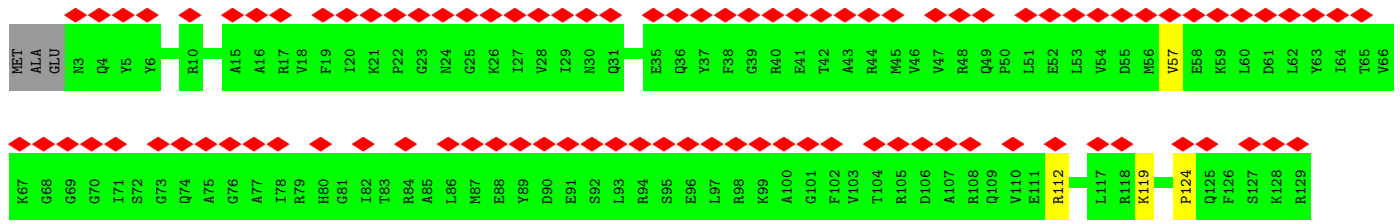
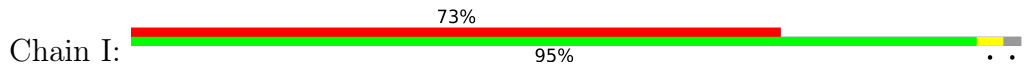
• Molecule 7: 30S ribosomal protein S7



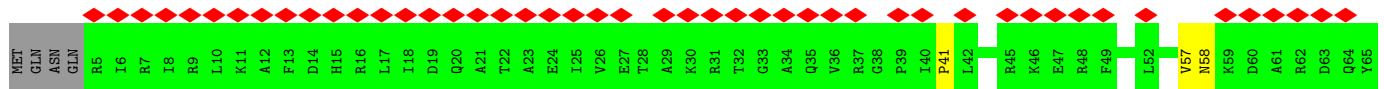
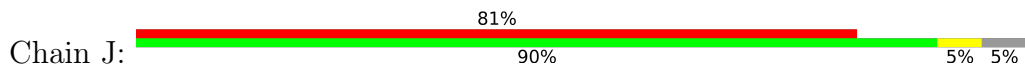
• Molecule 8: 30S ribosomal protein S8



• Molecule 9: 30S ribosomal protein S9

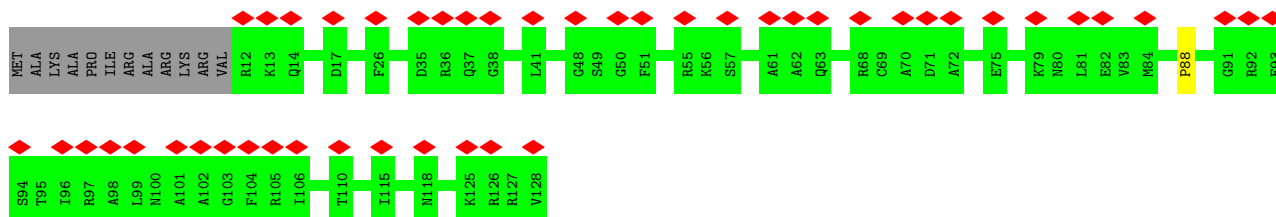
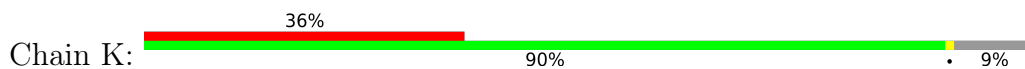


• Molecule 10: 30S ribosomal protein S10

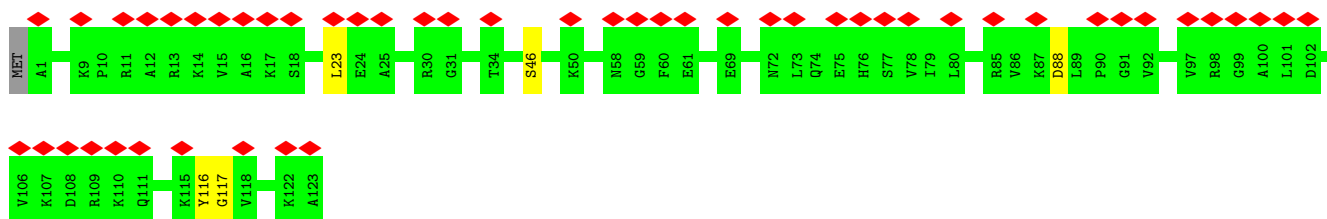
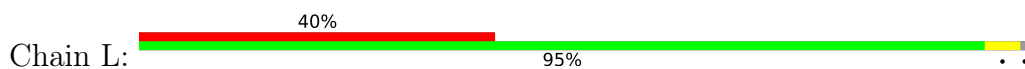




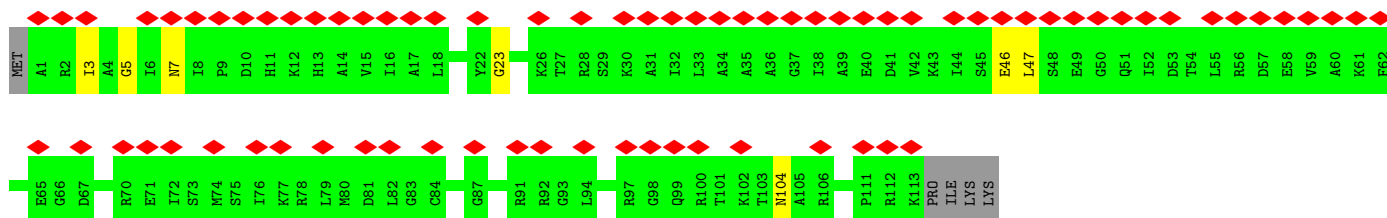
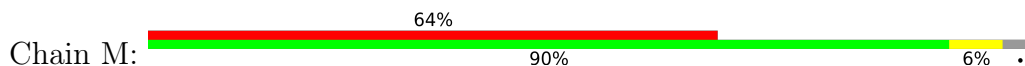
- Molecule 11: 30S ribosomal protein S11



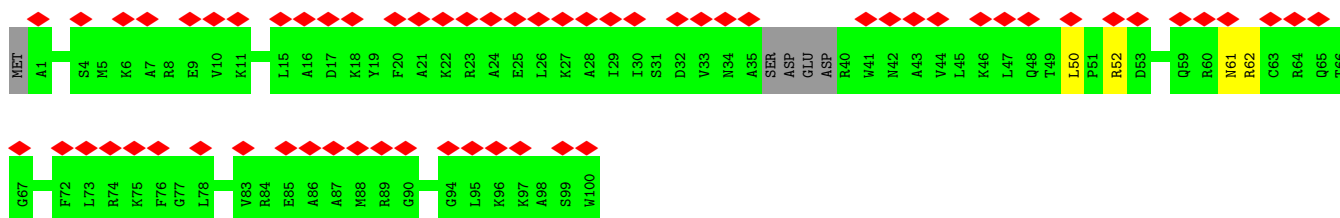
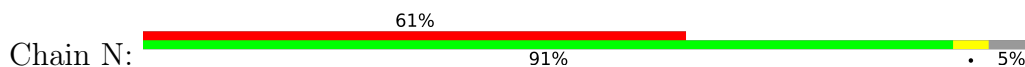
- Molecule 12: 30S ribosomal protein S12



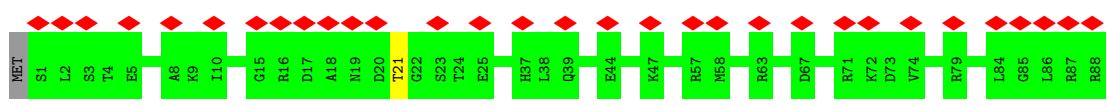
- Molecule 13: 30S ribosomal protein S13



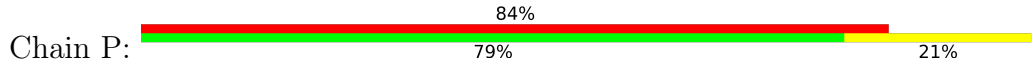
- Molecule 14: 30S ribosomal protein S14



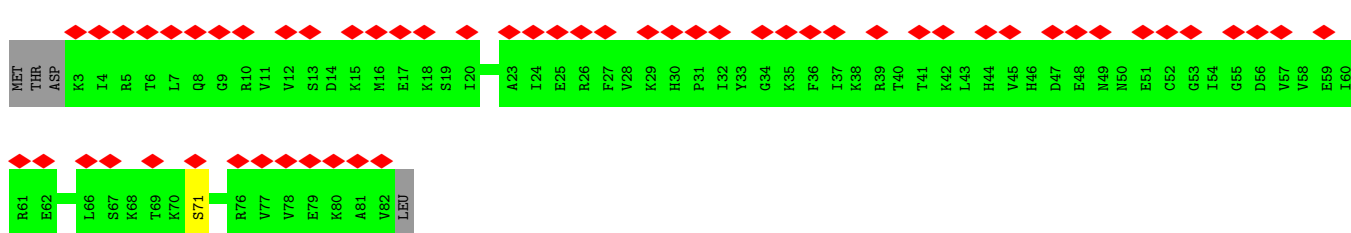
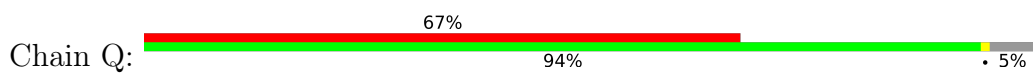
- Molecule 15: 30S ribosomal protein S15



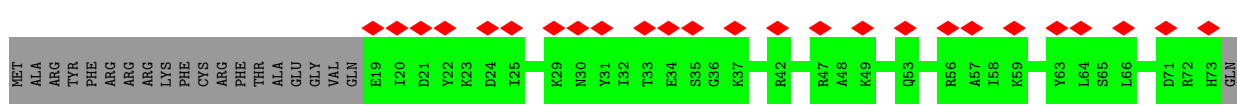
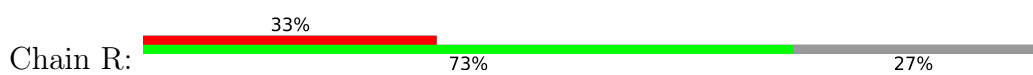
• Molecule 16: 30S ribosomal protein S16



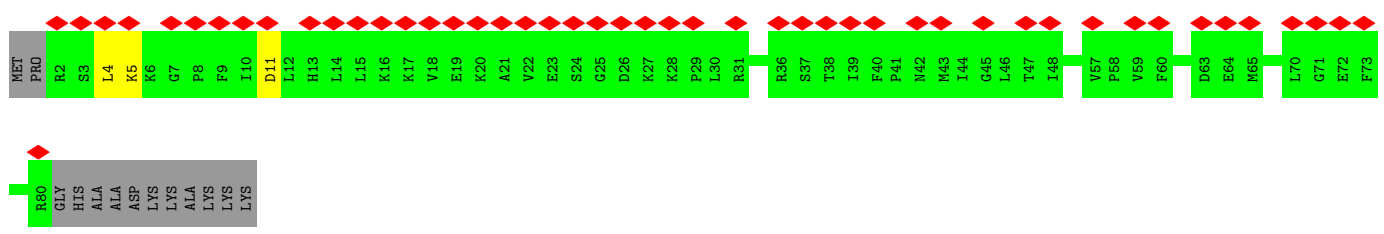
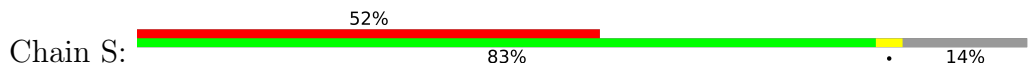
• Molecule 17: 30S ribosomal protein S17



• Molecule 18: 30S ribosomal protein S18

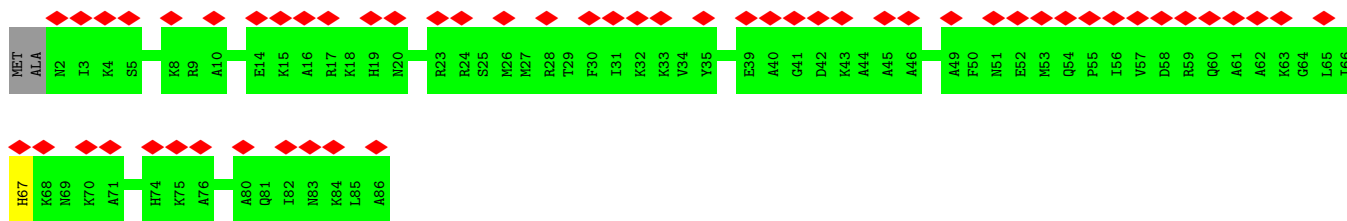


• Molecule 19: 30S ribosomal protein S19



• Molecule 20: 30S ribosomal protein S20

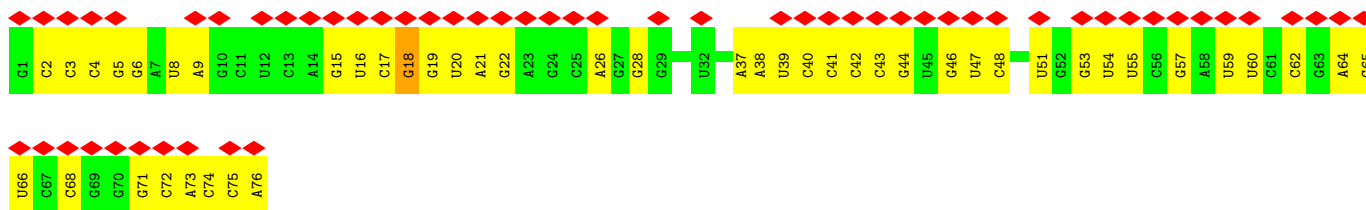
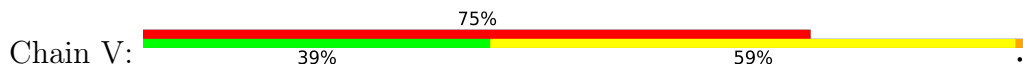




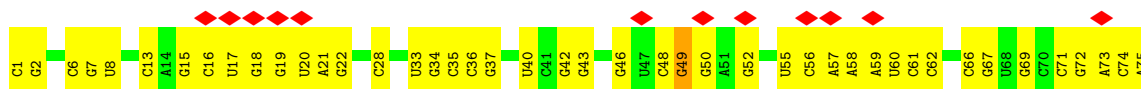
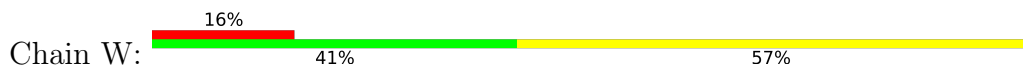
• Molecule 21: 30S ribosomal protein S21



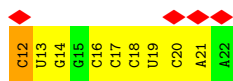
• Molecule 22: RNA (76-MER)



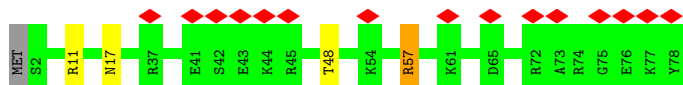
• Molecule 23: RNA (75-MER)



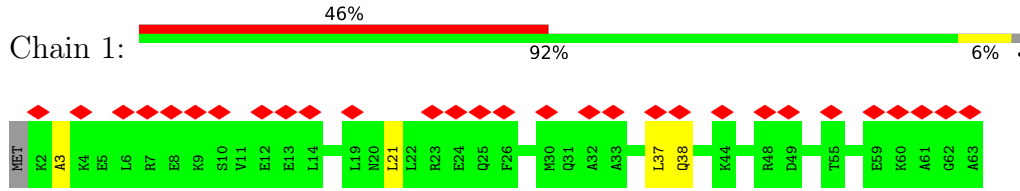
• Molecule 24: RNA (5'-R(P*CP*UP*GP*GP*CP*CP*CP*UP*CP*AP*A)-3')



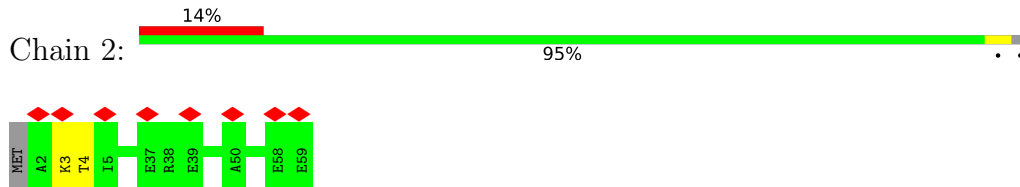
• Molecule 25: 50S ribosomal protein L28



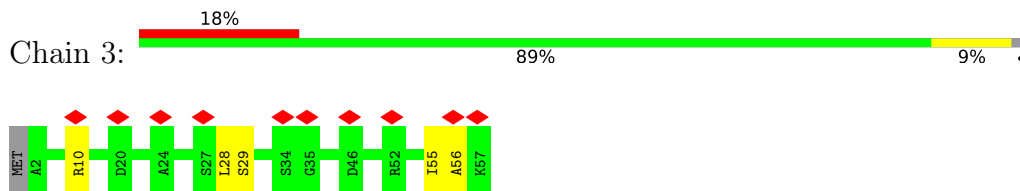
- Molecule 26: 50S ribosomal protein L29



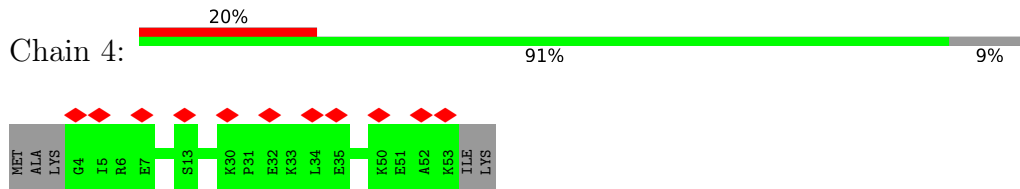
- Molecule 27: 50S ribosomal protein L30



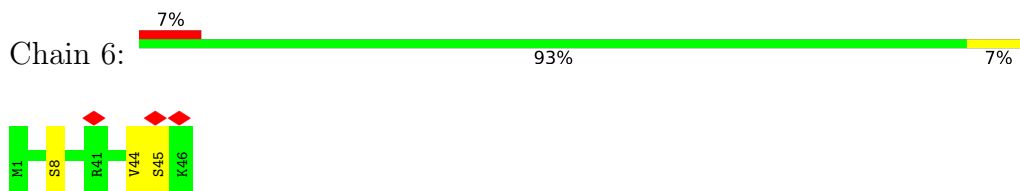
- Molecule 28: 50S ribosomal protein L32



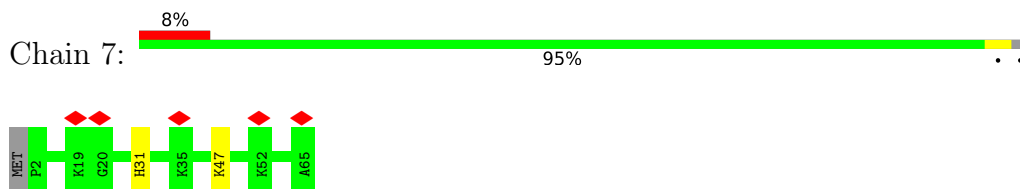
- Molecule 29: 50S ribosomal protein L33



- Molecule 30: 50S ribosomal protein L34

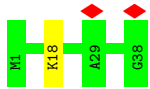


- Molecule 31: 50S ribosomal protein L35



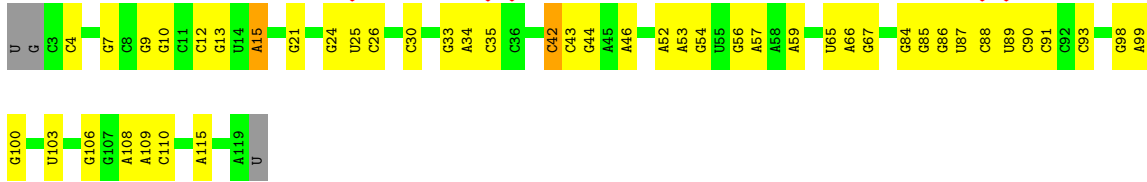
- Molecule 32: 50S ribosomal protein L36





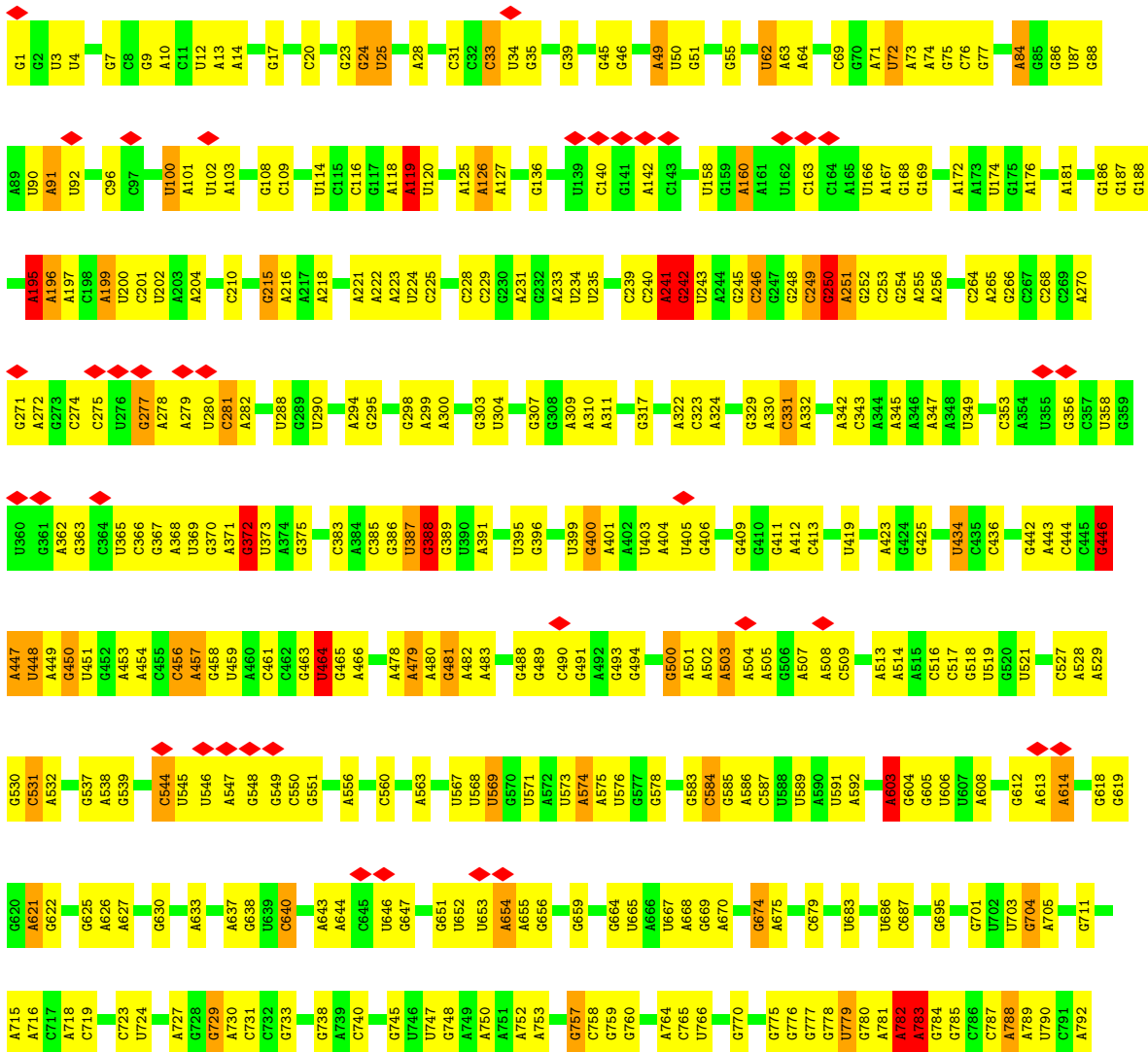
• Molecule 33: RNA (118-MER)

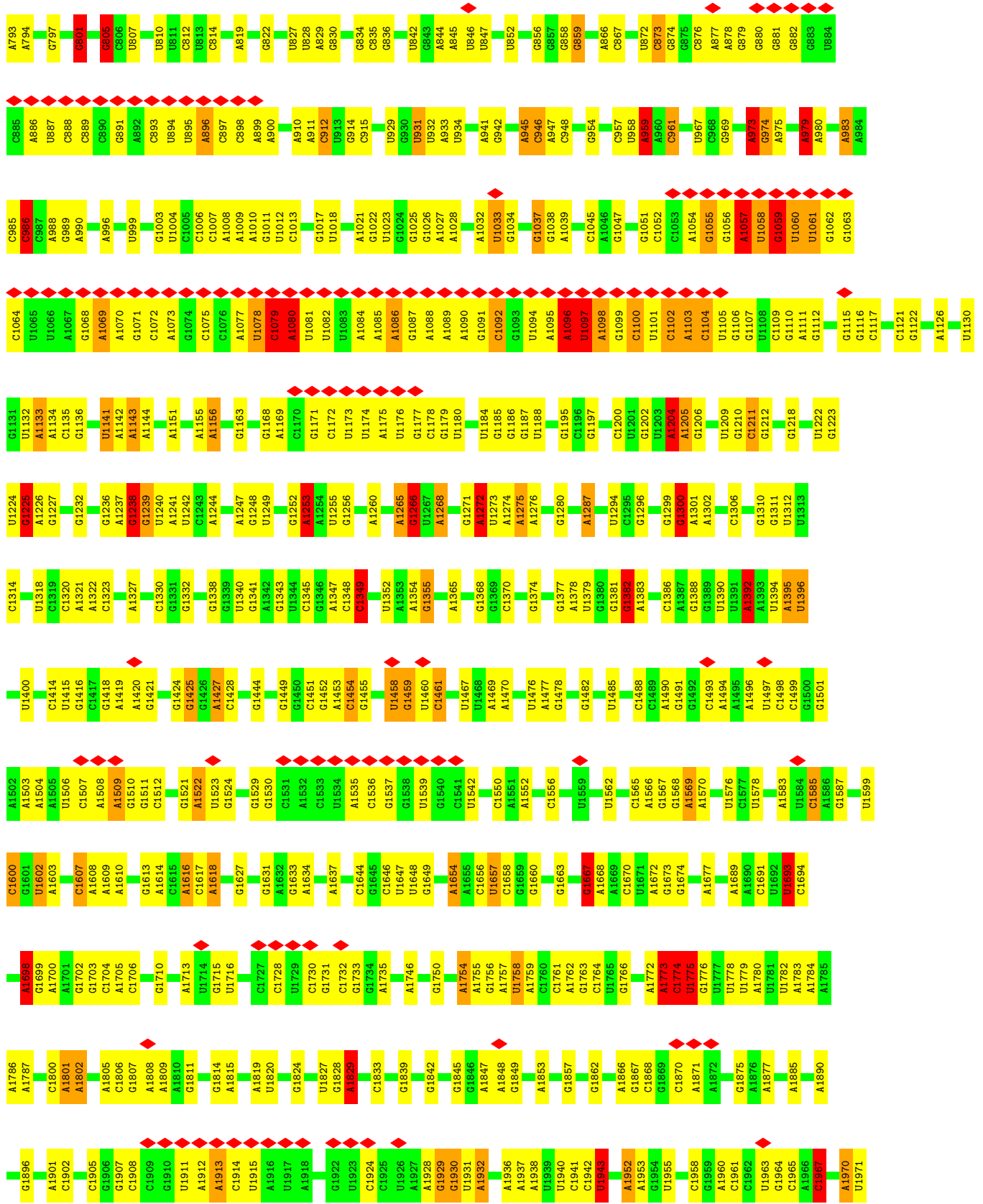
Chain a: 59% 37%

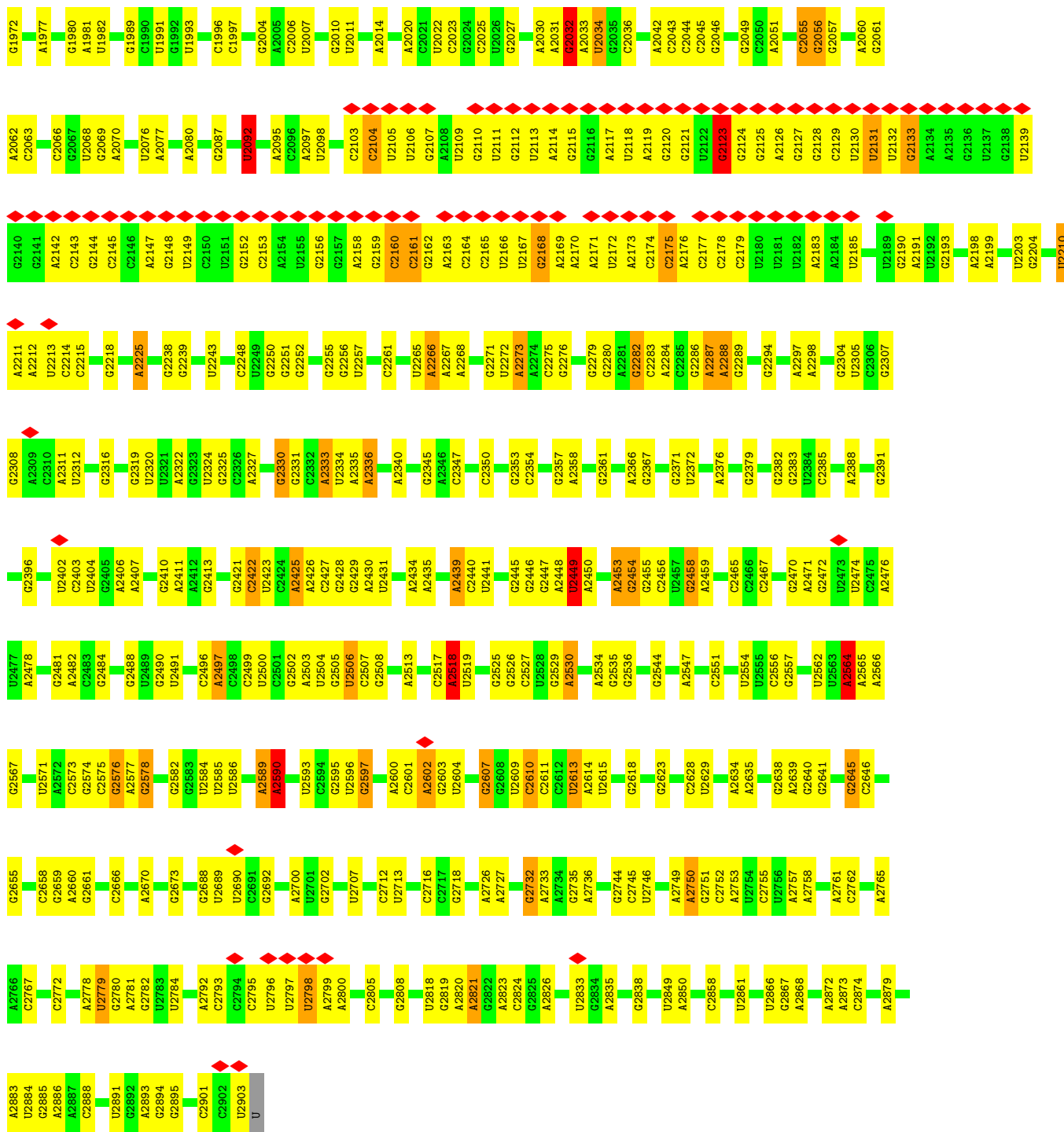


• Molecule 34: RNA (2903-MER)

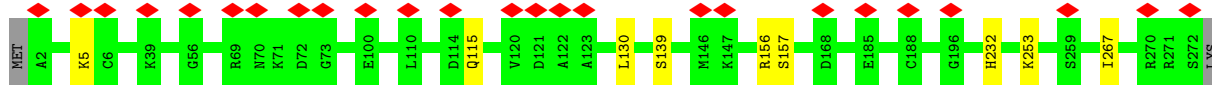
Chain b: 9% 55% 38% 5%



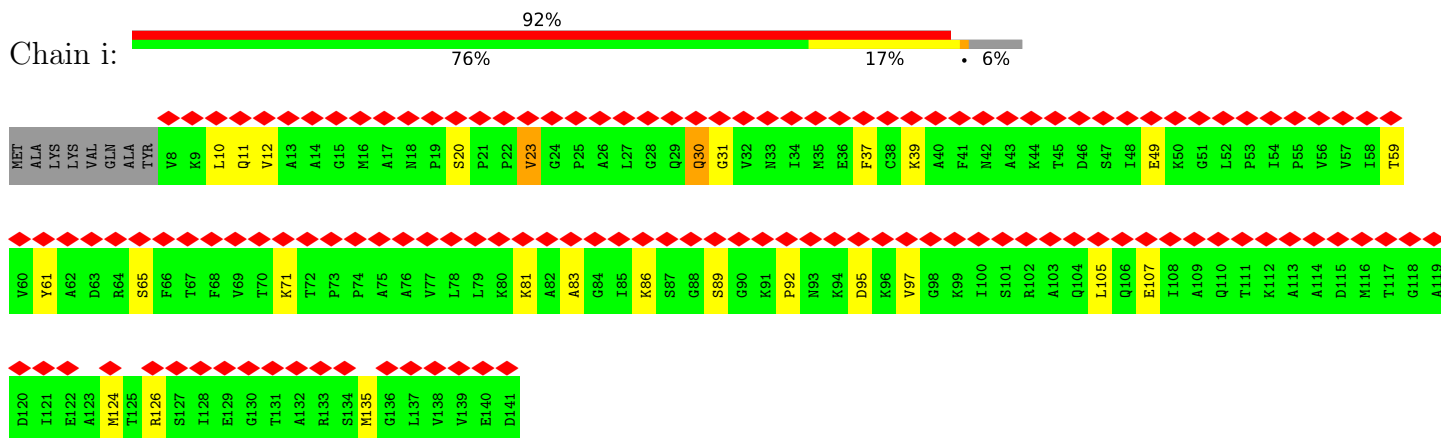




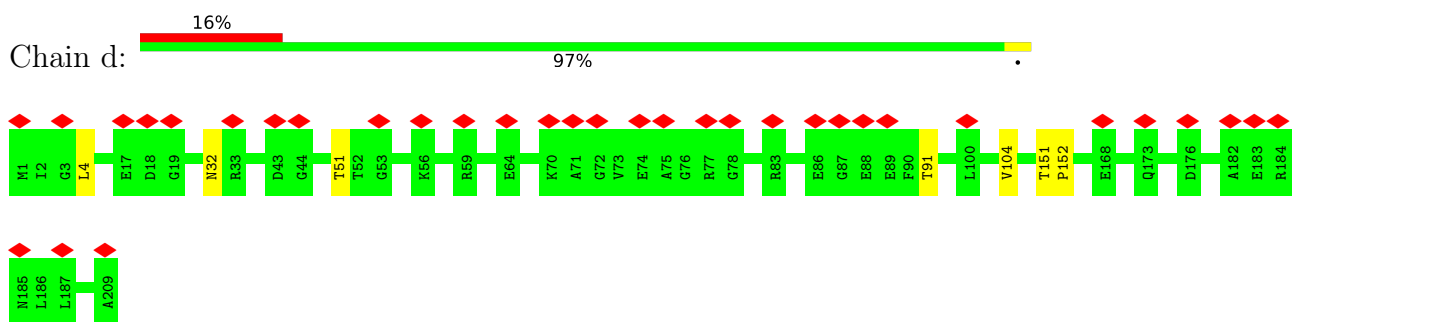
- Molecule 35: 50S ribosomal protein L2



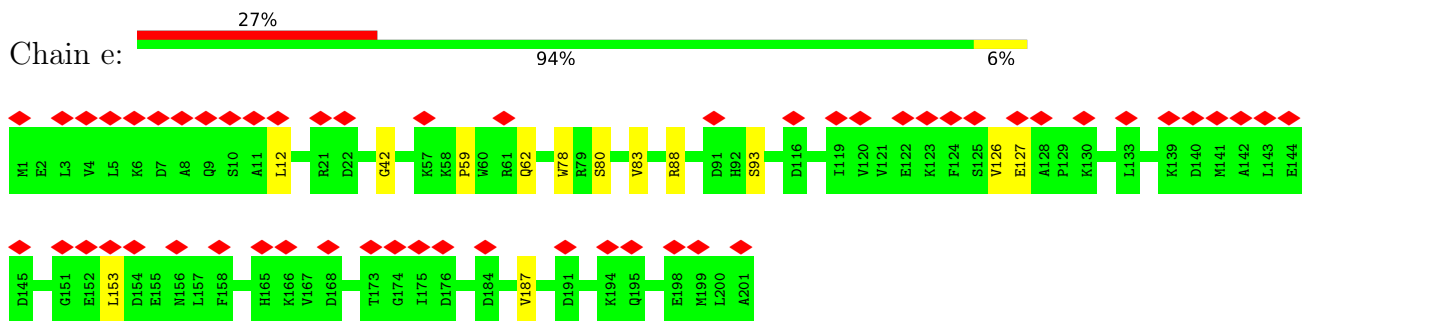
- Molecule 36: 50S ribosomal protein L11



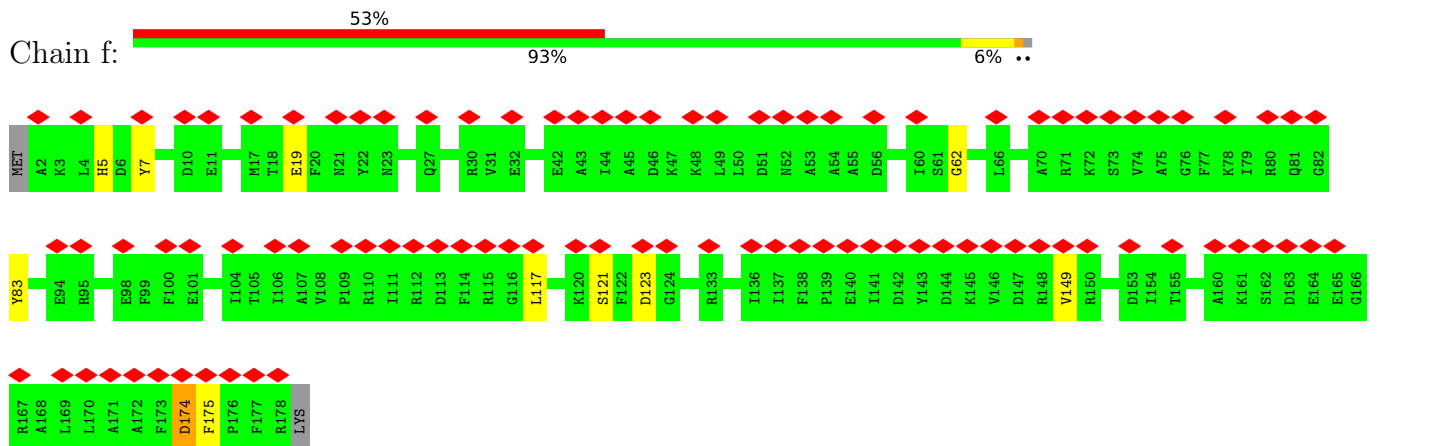
• Molecule 37: 50S ribosomal protein L3



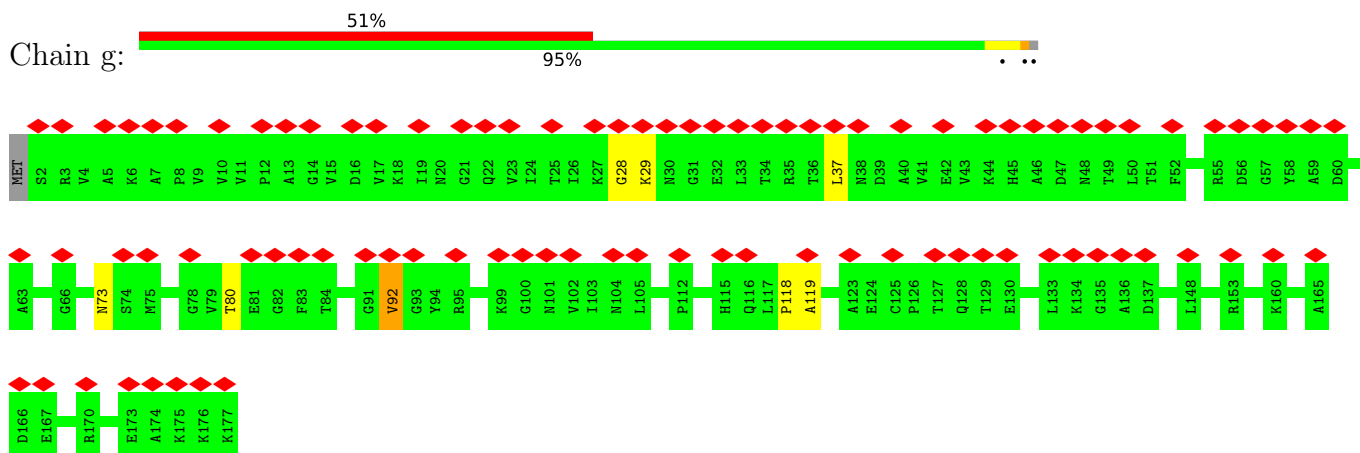
• Molecule 38: 50S ribosomal protein L4



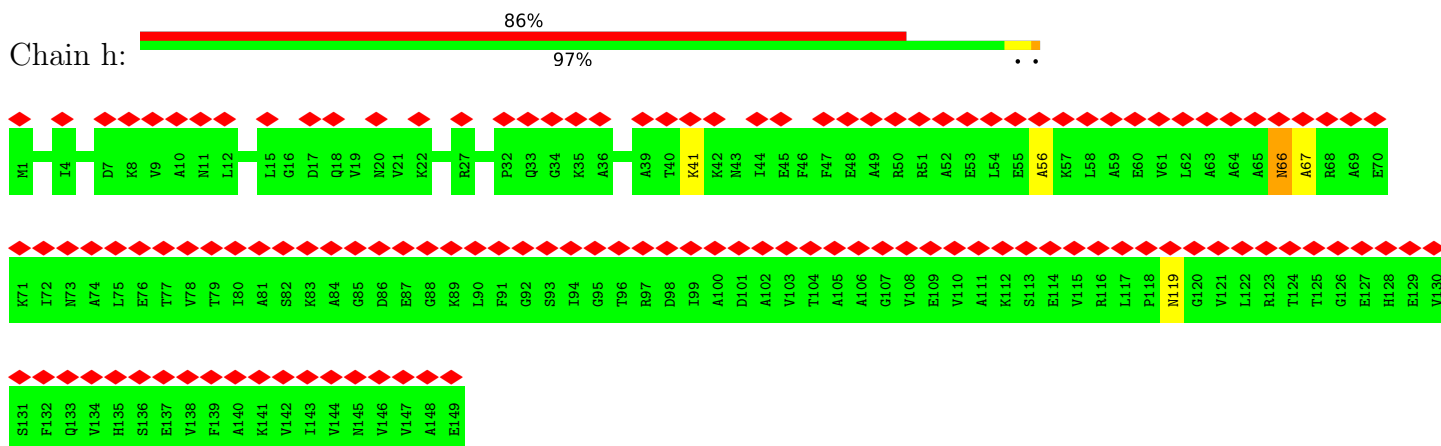
• Molecule 39: 50S ribosomal protein L5



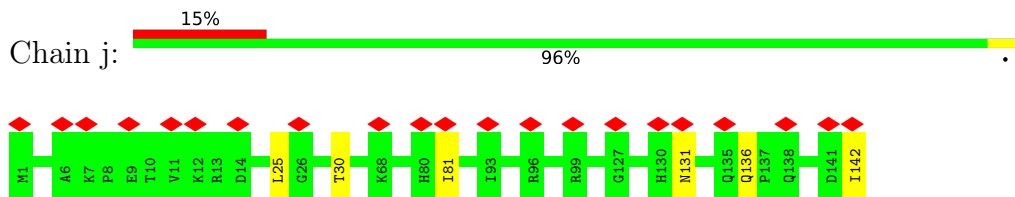
- Molecule 40: 50S ribosomal protein L6



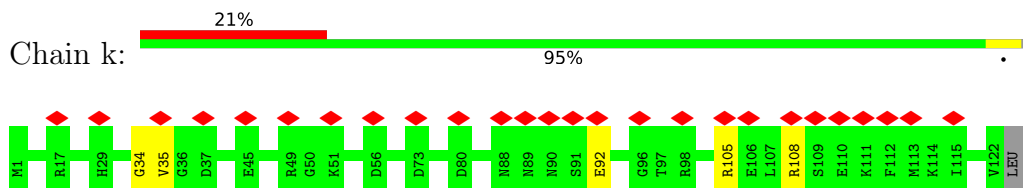
- Molecule 41: 50S ribosomal protein L9



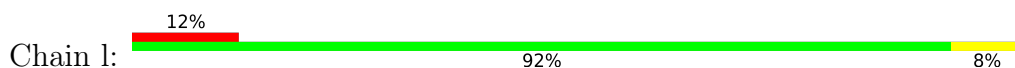
- Molecule 42: 50S ribosomal protein L13

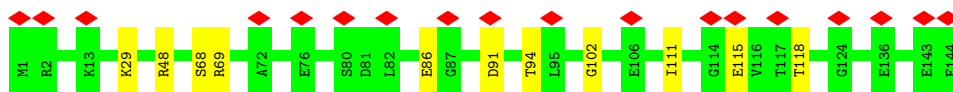


- Molecule 43: 50S ribosomal protein L14

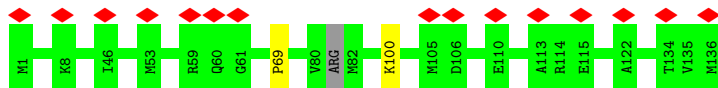


- Molecule 44: 50S ribosomal protein L15

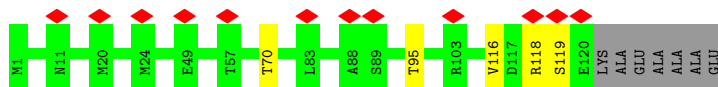
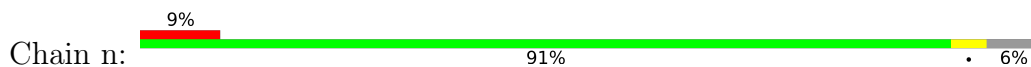




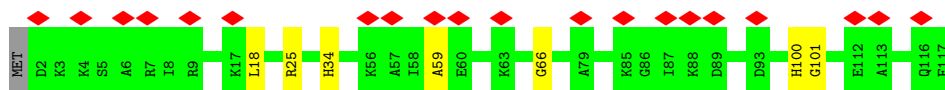
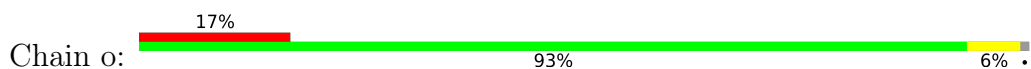
- Molecule 45: 50S ribosomal protein L16



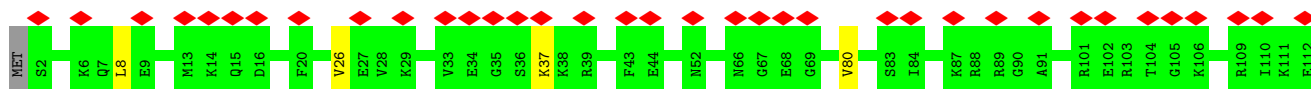
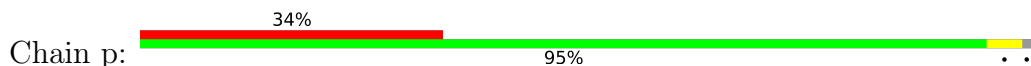
- Molecule 46: 50S ribosomal protein L17



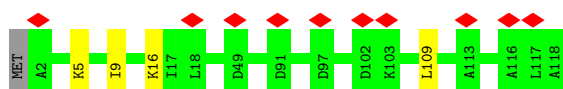
- Molecule 47: 50S ribosomal protein L18



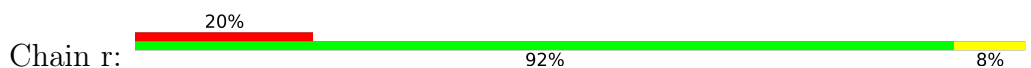
- Molecule 48: 50S ribosomal protein L19

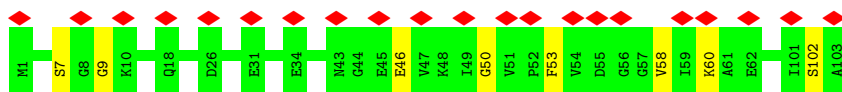


- Molecule 49: 50S ribosomal protein L20

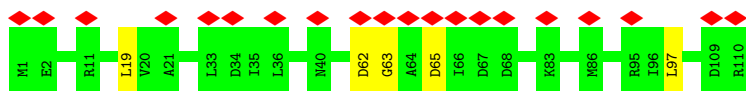
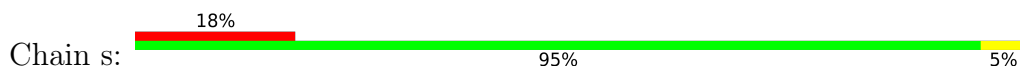


- Molecule 50: 50S ribosomal protein L21

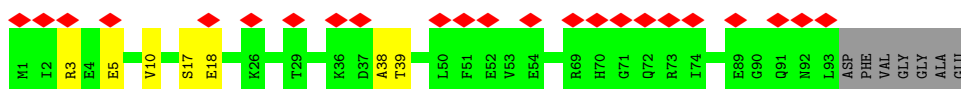
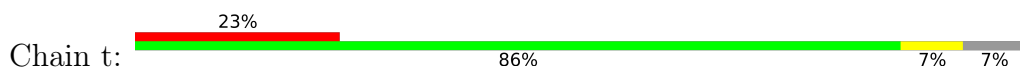




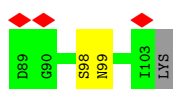
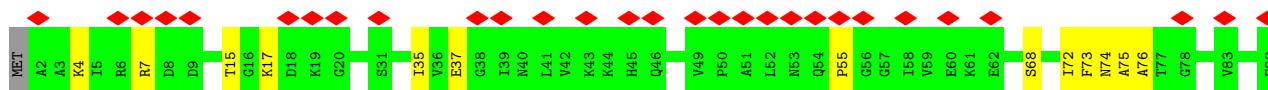
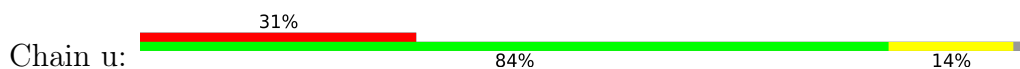
- Molecule 51: 50S ribosomal protein L22



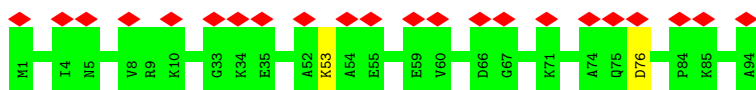
- Molecule 52: 50S ribosomal protein L23



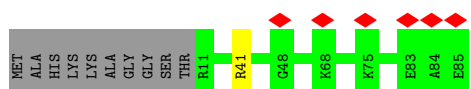
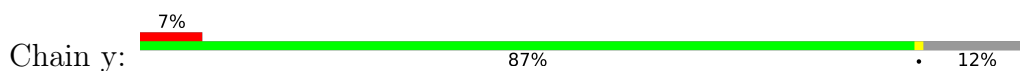
- Molecule 53: 50S ribosomal protein L24



- Molecule 54: 50S ribosomal protein L25



- Molecule 55: 50S ribosomal protein L27



- Molecule 56: Secretion monitor



E3	Q4	R6	L6	I7	S8	E9	E10	D11	L12	F13	S14	T15	P16	V17	M18	I19	S20	Q21	A22	Q23	G24	T25	R26	A27	G28	P29
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4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	60354	Depositor
Resolution determination method	Not provided	
CTF correction method	CTFFIND	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	16	Depositor
Minimum defocus (nm)	3500	Depositor
Maximum defocus (nm)	1000	Depositor
Magnification	37878	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.187	Depositor
Minimum map value	-0.107	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.009	Depositor
Recommended contour level	0.03	Depositor
Map size (\AA)	422.40002, 422.40002, 422.40002	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.32, 1.32, 1.32	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: CLM

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.47	0/36762	0.79	8/57350 (0.0%)
2	B	0.28	0/1735	0.50	0/2338
3	C	0.32	0/1651	0.53	0/2225
4	D	0.31	0/1665	0.52	0/2227
5	E	0.34	0/1118	0.56	0/1504
6	F	0.28	0/835	0.53	0/1128
7	G	0.28	0/1187	0.51	0/1591
8	H	0.32	0/989	0.52	0/1326
9	I	0.31	0/1034	0.58	0/1375
10	J	0.29	0/796	0.56	0/1077
11	K	0.28	0/893	0.52	0/1205
12	L	0.32	0/969	0.56	0/1300
13	M	0.27	0/884	0.49	0/1181
14	N	0.30	0/785	0.50	0/1043
15	O	0.30	0/724	0.48	0/966
16	P	0.29	0/659	0.49	0/884
17	Q	0.31	0/657	0.49	0/881
18	R	0.29	0/462	0.50	0/621
19	S	0.30	0/652	0.51	0/877
20	T	0.31	0/671	0.49	0/888
21	U	0.29	0/430	0.60	0/570
22	V	0.33	0/1810	0.80	3/2821 (0.1%)
23	W	0.35	1/1786 (0.1%)	0.92	6/2784 (0.2%)
24	X	0.87	1/256 (0.4%)	0.81	0/394
25	0	0.41	0/635	0.76	1/848 (0.1%)
26	1	0.35	0/502	0.63	0/667
27	2	0.39	0/453	0.64	0/605
28	3	0.42	0/450	0.80	1/599 (0.2%)
29	4	0.38	0/416	0.61	0/554
30	6	0.48	0/380	0.86	0/498
31	7	0.40	0/513	0.65	0/676
32	8	0.40	0/303	0.77	0/397

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
33	a	0.45	1/2802 (0.0%)	0.89	4/4369 (0.1%)
34	b	0.59	84/69800 (0.1%)	1.02	432/108892 (0.4%)
35	c	0.42	0/2121	0.76	2/2852 (0.1%)
36	i	0.24	0/989	0.48	0/1334
37	d	0.39	0/1586	0.67	2/2134 (0.1%)
38	e	0.39	0/1571	0.64	1/2113 (0.0%)
39	f	0.39	0/1434	0.66	0/1926
40	g	0.36	0/1343	0.59	1/1816 (0.1%)
41	h	0.27	0/1122	0.60	1/1515 (0.1%)
42	j	0.39	0/1152	0.63	0/1551
43	k	0.41	0/947	0.71	0/1268
44	l	0.41	0/1062	0.71	0/1413
45	m	0.41	0/1081	0.67	0/1443
46	n	0.42	0/973	0.71	0/1301
47	o	0.38	0/902	0.73	2/1209 (0.2%)
48	p	0.38	0/929	0.67	0/1242
49	q	0.45	0/960	0.74	0/1278
50	r	0.43	0/829	0.65	0/1107
51	s	0.39	0/864	0.70	0/1156
52	t	0.41	0/744	0.67	1/994 (0.1%)
53	u	0.39	0/787	0.68	0/1051
54	w	0.36	0/766	0.59	0/1025
55	y	0.38	0/576	0.64	0/762
56	z	0.46	1/215 (0.5%)	0.91	1/291 (0.3%)
All	All	0.50	88/158617 (0.1%)	0.87	466/237442 (0.2%)

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
9	I	0	1
27	2	0	1
34	b	0	64
35	c	0	1
37	d	0	1
43	k	0	1
44	l	0	1
50	r	0	1
All	All	0	71

All (88) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	b	2610	C	O3'-P	18.27	1.83	1.61
34	b	2123	G	C6-N1	17.59	1.51	1.39
34	b	2504	U	O3'-P	16.95	1.81	1.61
34	b	2123	G	N3-C4	16.78	1.47	1.35
34	b	2123	G	N9-C8	14.57	1.48	1.37
34	b	2248	C	O3'-P	14.30	1.78	1.61
34	b	399	U	C5'-C4'	13.61	1.67	1.51
34	b	1323	C	O3'-P	13.24	1.77	1.61
34	b	2131	U	N1-C6	13.03	1.49	1.38
34	b	2131	U	N3-C4	12.28	1.49	1.38
34	b	1585	C	N1-C6	11.40	1.44	1.37
34	b	2123	G	C5-C4	11.24	1.46	1.38
34	b	1096	A	O3'-P	10.45	1.73	1.61
34	b	1382	G	C2-N2	-10.45	1.24	1.34
34	b	1079	C	C2-O2	-10.30	1.15	1.24
24	X	12	C	OP3-P	-10.25	1.48	1.61
34	b	1	G	OP3-P	-9.96	1.49	1.61
34	b	1349	C	C4-N4	-9.60	1.25	1.33
34	b	1585	C	N3-C4	9.25	1.40	1.33
34	b	979	A	O3'-P	9.15	1.72	1.61
34	b	1059	G	C6-O6	-9.06	1.16	1.24
34	b	1654	A	N3-C4	8.92	1.40	1.34
34	b	2506	U	O3'-P	-8.90	1.50	1.61
34	b	1654	A	C6-N1	8.25	1.41	1.35
34	b	2602	A	O3'-P	-8.24	1.51	1.61
34	b	1057	A	O3'-P	8.21	1.71	1.61
34	b	514	A	N3-C4	8.18	1.39	1.34
34	b	1059	G	N9-C4	7.99	1.44	1.38
34	b	674	G	O3'-P	7.92	1.70	1.61
34	b	1059	G	C2-N3	7.79	1.39	1.32
34	b	2123	G	N1-C2	7.78	1.44	1.37
34	b	1349	C	N1-C2	7.74	1.47	1.40
34	b	1654	A	N7-C5	7.71	1.43	1.39
34	b	1654	A	N9-C8	7.68	1.43	1.37
34	b	514	A	N7-C5	7.67	1.43	1.39
34	b	2131	U	C2-O2	7.47	1.29	1.22
34	b	2446	G	O3'-P	7.33	1.70	1.61
34	b	1382	G	N1-C2	-7.25	1.31	1.37
34	b	2575	C	O3'-P	7.22	1.69	1.61
34	b	1079	C	O3'-P	7.12	1.69	1.61
34	b	1382	G	C5-C6	7.10	1.49	1.42
34	b	778	G	O3'-P	7.05	1.69	1.61
34	b	514	A	C6-N1	6.91	1.40	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	b	2161	C	O3'-P	6.90	1.69	1.61
34	b	1585	C	C2-O2	6.83	1.30	1.24
34	b	1079	C	C2-N3	-6.78	1.30	1.35
34	b	1059	G	N1-C2	-6.68	1.32	1.37
34	b	779	U	O3'-P	6.66	1.69	1.61
34	b	1079	C	N3-C4	-6.62	1.29	1.33
34	b	1349	C	C2-N3	-6.61	1.30	1.35
34	b	1382	G	C6-N1	-6.59	1.34	1.39
34	b	1058	U	O3'-P	6.46	1.69	1.61
34	b	1266	G	O3'-P	6.44	1.68	1.61
34	b	1773	A	O3'-P	6.43	1.68	1.61
34	b	1061	U	O3'-P	6.38	1.68	1.61
34	b	583	G	O3'-P	6.36	1.68	1.61
34	b	2453	A	O3'-P	6.34	1.68	1.61
33	a	25	U	C2-N3	6.31	1.42	1.37
34	b	1349	C	N3-C4	-6.21	1.29	1.33
34	b	1059	G	N3-C4	6.12	1.39	1.35
34	b	1585	C	C4-C5	6.06	1.47	1.43
34	b	1059	G	C6-N1	-6.00	1.35	1.39
34	b	1186	G	O3'-P	5.98	1.68	1.61
34	b	1058	U	N3-C4	-5.86	1.33	1.38
34	b	2449	U	O3'-P	5.69	1.68	1.61
34	b	1097	U	O5'-C5'	5.67	1.53	1.44
34	b	514	A	N9-C8	5.46	1.42	1.37
34	b	1268	A	O3'-P	5.45	1.67	1.61
34	b	757	G	O3'-P	5.43	1.67	1.61
34	b	2004	G	O3'-P	5.40	1.67	1.61
23	W	36	C	O3'-P	-5.40	1.54	1.61
34	b	2518	A	O3'-P	5.37	1.67	1.61
34	b	2123	G	C6-O6	5.36	1.28	1.24
34	b	760	G	O3'-P	5.34	1.67	1.61
56	z	29	PRO	N-CD	5.34	1.55	1.47
34	b	2578	G	O3'-P	5.30	1.67	1.61
34	b	780	G	O3'-P	5.29	1.67	1.61
34	b	942	G	O3'-P	5.28	1.67	1.61
34	b	331	C	N1-C2	5.25	1.45	1.40
34	b	1096	A	C3'-O3'	5.23	1.49	1.42
34	b	2574	G	O3'-P	5.14	1.67	1.61
34	b	87	U	O3'-P	5.11	1.67	1.61
34	b	17	G	O3'-P	5.10	1.67	1.61
34	b	948	C	O3'-P	5.06	1.67	1.61
34	b	1310	G	O3'-P	5.05	1.67	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	b	331	C	C4-C5	5.04	1.47	1.43
34	b	395	U	O3'-P	5.04	1.67	1.61
34	b	2551	C	O3'-P	5.01	1.67	1.61

All (466) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
23	W	36	C	O3'-P-O5'	22.33	146.43	104.00
34	b	2602	A	P-O3'-C3'	15.43	138.22	119.70
34	b	1275	A	N9-C1'-C2'	15.08	133.61	114.00
34	b	1096	A	N9-C1'-C2'	-14.60	95.02	114.00
34	b	400	G	N9-C1'-C2'	14.53	132.89	114.00
34	b	1079	C	O4'-C1'-N1	14.09	119.47	108.20
34	b	1058	U	O4'-C1'-N1	13.73	119.19	108.20
34	b	2123	G	N9-C1'-C2'	13.68	131.78	114.00
34	b	1300	G	N9-C1'-C2'	13.56	131.63	114.00
35	c	156	ARG	NE-CZ-NH2	-12.28	114.16	120.30
34	b	2597	G	N9-C1'-C2'	11.95	129.53	114.00
56	z	28	GLY	C-N-CD	-11.54	95.21	120.60
34	b	1059	G	N3-C2-N2	11.51	127.96	119.90
34	b	2504	U	P-O3'-C3'	11.35	133.31	119.70
34	b	1204	A	N9-C1'-C2'	10.77	128.00	114.00
34	b	959	A	N9-C1'-C2'	10.71	127.92	114.00
34	b	1059	G	C4-N9-C1'	10.71	140.42	126.50
34	b	1349	C	C2-N1-C1'	10.60	130.46	118.80
34	b	979	A	N9-C1'-C2'	-10.57	100.26	114.00
34	b	782	A	N9-C1'-C2'	10.51	127.66	114.00
34	b	2161	C	C2'-C3'-O3'	10.47	132.53	109.50
35	c	156	ARG	NE-CZ-NH1	10.43	125.51	120.30
34	b	2449	U	N1-C1'-C2'	-10.36	100.53	114.00
34	b	1349	C	N1-C2-O2	10.24	125.04	118.90
34	b	2160	C	C2'-C3'-O3'	10.20	131.94	109.50
34	b	1205	A	N9-C1'-C2'	10.14	127.18	114.00
34	b	1667	G	N9-C1'-C2'	-10.04	100.95	114.00
34	b	2454	G	N9-C1'-C2'	-9.94	101.07	112.00
34	b	1059	G	C8-N9-C1'	-9.93	114.09	127.00
23	W	36	C	P-O3'-C3'	9.77	131.42	119.70
23	W	36	C	OP2-P-O3'	-9.72	83.82	105.20
34	b	973	A	N9-C1'-C2'	9.66	126.56	114.00
34	b	2123	G	N9-C4-C5	-9.66	101.54	105.40
34	b	372	G	O4'-C1'-N9	9.62	115.90	108.20
34	b	49	A	N9-C1'-C2'	9.56	126.43	114.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	b	2123	G	C4-C5-N7	9.38	114.55	110.80
33	a	33	G	N9-C1'-C2'	-9.34	101.72	112.00
34	b	1266	G	O4'-C1'-N9	9.33	115.67	108.20
34	b	1057	A	N9-C1'-C2'	-9.20	101.88	112.00
34	b	986	C	N1-C1'-C2'	9.19	125.95	114.00
34	b	983	A	N9-C1'-C2'	9.13	125.87	114.00
34	b	2779	U	N1-C1'-C2'	8.96	125.65	114.00
34	b	2161	C	O4'-C4'-C3'	-8.95	95.05	104.00
34	b	1349	C	C6-N1-C1'	-8.89	110.13	120.80
34	b	873	C	C2'-C3'-O3'	8.77	128.78	109.50
34	b	1943	U	N1-C1'-C2'	8.75	125.37	114.00
34	b	242	G	N9-C1'-C2'	-8.69	102.44	112.00
34	b	1930	G	C2'-C3'-O3'	8.67	128.57	109.50
34	b	399	U	N1-C1'-C2'	8.66	125.25	114.00
34	b	1037	G	N9-C1'-C2'	-8.64	102.50	112.00
34	b	246	C	N1-C1'-C2'	8.54	125.10	114.00
34	b	1059	G	N1-C2-N2	-8.33	108.70	116.20
34	b	788	A	N9-C1'-C2'	-8.31	102.85	112.00
34	b	1657	U	C5'-C4'-C3'	8.29	129.27	116.00
34	b	1225	G	N9-C1'-C2'	8.27	124.75	114.00
34	b	2175	C	N1-C1'-C2'	-8.26	102.92	112.00
34	b	2248	C	O3'-P-O5'	-8.22	88.39	104.00
34	b	748	G	O3'-P-O5'	-8.20	88.42	104.00
34	b	614	A	N9-C1'-C2'	8.18	124.63	114.00
34	b	1454	C	N1-C1'-C2'	-8.13	103.06	112.00
34	b	2304	G	C2'-C3'-O3'	8.13	127.39	109.50
34	b	241	A	N9-C1'-C2'	8.12	124.55	114.00
34	b	1069	A	N9-C1'-C2'	-8.12	103.07	112.00
34	b	2266	A	N9-C1'-C2'	8.05	124.46	114.00
34	b	1970	A	N9-C1'-C2'	8.04	124.46	114.00
34	b	1059	G	N1-C6-O6	-8.02	115.09	119.90
34	b	2161	C	C5'-C4'-O4'	8.02	118.73	109.10
34	b	544	C	N1-C1'-C2'	8.02	124.42	114.00
34	b	1657	U	C5'-C4'-O4'	8.01	118.71	109.10
34	b	1943	U	O4'-C1'-N1	-8.00	101.80	108.20
34	b	1967	C	N1-C1'-C2'	7.92	124.30	114.00
34	b	2467	C	N1-C1'-C2'	-7.92	103.29	112.00
34	b	1079	C	N3-C4-N4	-7.91	112.46	118.00
34	b	446	G	N9-C1'-C2'	-7.84	103.38	112.00
34	b	1952	A	N9-C1'-C2'	7.83	124.18	114.00
34	b	974	G	O4'-C1'-N9	7.82	114.46	108.20
34	b	2092	U	N1-C1'-C2'	7.82	124.16	114.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	b	1079	C	N3-C2-O2	-7.80	116.44	121.90
34	b	753	A	P-O3'-C3'	-7.79	110.35	119.70
34	b	1392	A	O4'-C1'-N9	7.79	114.43	108.20
34	b	100	U	O4'-C1'-N1	7.78	114.43	108.20
34	b	537	G	N9-C1'-C2'	-7.75	103.47	112.00
34	b	748	G	OP2-P-O3'	7.71	122.17	105.20
34	b	1058	U	N1-C1'-C2'	7.68	123.99	114.00
34	b	1382	G	N1-C6-O6	-7.67	115.30	119.90
34	b	2506	U	OP2-P-O3'	-7.67	88.33	105.20
1	A	1158	C	C2-N1-C1'	7.63	127.19	118.80
34	b	2645	G	N9-C1'-C2'	-7.60	103.64	112.00
34	b	395	U	N1-C1'-C2'	-7.60	103.64	112.00
34	b	2092	U	O4'-C1'-N1	-7.58	102.13	108.20
34	b	25	U	N1-C1'-C2'	7.54	123.81	114.00
34	b	1097	U	O4'-C4'-C3'	-7.52	96.48	104.00
34	b	2032	G	N9-C1'-C2'	7.52	123.77	114.00
34	b	1057	A	C2'-C3'-O3'	7.51	126.02	109.50
34	b	2602	A	OP2-P-O3'	7.49	121.68	105.20
34	b	946	C	C2'-C3'-O3'	7.49	125.97	109.50
34	b	450	G	N9-C1'-C2'	-7.47	103.78	112.00
34	b	464	U	N1-C1'-C2'	7.47	123.72	114.00
34	b	1704	C	C2'-C3'-O3'	7.47	125.94	109.50
34	b	2613	U	N1-C1'-C2'	7.45	123.69	114.00
34	b	2518	A	C2'-C3'-O3'	7.43	125.85	109.50
34	b	1773	A	N9-C1'-C2'	-7.43	103.83	112.00
34	b	1395	A	O4'-C1'-N9	7.41	114.12	108.20
34	b	2449	U	O4'-C1'-N1	7.38	114.10	108.20
34	b	1829	A	N9-C1'-C2'	-7.38	103.89	112.00
34	b	423	A	N9-C1'-C2'	7.37	123.59	114.00
34	b	388	G	O4'-C1'-N9	7.36	114.09	108.20
34	b	167	A	N9-C1'-C2'	7.36	123.57	114.00
34	b	1096	A	C4'-C3'-O3'	7.33	127.67	113.00
34	b	1098	A	O4'-C4'-C3'	-7.33	96.67	104.00
34	b	801	G	O4'-C1'-N9	-7.31	102.35	108.20
34	b	2161	C	C4'-C3'-C2'	-7.29	95.31	102.60
34	b	1932	A	N9-C1'-C2'	7.28	123.47	114.00
34	b	1126	A	N9-C1'-C2'	7.24	123.41	114.00
34	b	2867	G	O4'-C1'-N9	7.24	113.99	108.20
34	b	2123	G	O4'-C1'-N9	7.24	113.99	108.20
34	b	1779	U	O4'-C1'-N1	7.21	113.97	108.20
34	b	479	A	C2'-C3'-O3'	7.21	125.37	109.50
34	b	1382	G	C5-C6-O6	7.21	132.92	128.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1158	C	N1-C2-O2	7.20	123.22	118.90
34	b	783	A	O5'-P-OP1	-7.19	99.23	105.70
34	b	2518	A	O4'-C1'-N9	-7.15	102.48	108.20
34	b	2051	A	N9-C1'-C2'	-7.13	104.15	112.00
34	b	2439	A	N9-C1'-C2'	-7.13	104.15	112.00
34	b	1698	A	N9-C1'-C2'	7.13	123.27	114.00
34	b	1392	A	C1'-O4'-C4'	-7.12	104.20	109.90
34	b	1395	A	C1'-O4'-C4'	-7.12	104.21	109.90
34	b	729	G	O5'-P-OP1	-7.11	99.30	105.70
34	b	1275	A	O4'-C1'-N9	7.10	113.88	108.20
34	b	783	A	O4'-C1'-N9	7.09	113.88	108.20
34	b	479	A	C4'-C3'-O3'	-7.09	94.52	109.40
34	b	1773	A	C2'-C3'-O3'	7.04	124.98	109.50
34	b	1929	G	N9-C1'-C2'	-7.04	104.26	112.00
34	b	576	U	N1-C1'-C2'	7.03	123.14	114.00
34	b	1037	G	C5'-C4'-O4'	7.02	117.53	109.10
34	b	1272	A	N9-C1'-C2'	7.02	123.12	114.00
34	b	1392	A	N9-C1'-C2'	7.01	123.12	114.00
34	b	2282	G	N9-C1'-C2'	-7.01	104.29	112.00
34	b	2504	U	O3'-P-O5'	-7.01	90.69	104.00
23	W	33	U	O3'-P-O5'	7.00	117.30	104.00
34	b	2530	A	N9-C1'-C2'	6.98	123.08	114.00
34	b	2589	A	N9-C1'-C2'	-6.95	104.36	112.00
34	b	1396	U	C5'-C4'-O4'	6.94	117.43	109.10
34	b	2210	U	N1-C1'-C2'	6.93	123.00	114.00
34	b	1774	C	N1-C1'-C2'	-6.87	104.44	112.00
34	b	531	C	N1-C1'-C2'	6.87	122.93	114.00
34	b	1103	A	O4'-C4'-C3'	-6.86	97.14	104.00
34	b	1103	A	O4'-C1'-N9	6.84	113.67	108.20
34	b	1096	A	C3'-C2'-C1'	6.84	106.97	101.50
34	b	1499	C	N1-C1'-C2'	-6.83	104.49	112.00
34	b	1079	C	C5-C4-N4	6.82	124.98	120.20
34	b	2272	U	N1-C1'-C2'	6.80	122.84	114.00
37	d	4	LEU	CB-CG-CD2	-6.79	99.45	111.00
34	b	1311	G	N9-C1'-C2'	-6.78	104.54	112.00
34	b	388	G	C1'-O4'-C4'	-6.75	104.50	109.90
34	b	199	A	O4'-C1'-N9	6.73	113.59	108.20
1	A	188	C	N1-C2-O2	6.73	122.94	118.90
34	b	2504	U	OP1-P-O3'	6.72	119.98	105.20
34	b	931	U	N1-C1'-C2'	6.71	122.73	114.00
34	b	704	G	C4'-C3'-O3'	6.70	126.39	113.00
34	b	912	C	N1-C1'-C2'	6.68	122.69	114.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	b	1168	G	C2'-C3'-O3'	6.68	124.39	113.70
34	b	202	U	N1-C1'-C2'	6.66	122.66	114.00
34	b	2340	A	N9-C1'-C2'	6.66	122.66	114.00
34	b	1754	A	N9-C1'-C2'	6.66	122.66	114.00
34	b	1775	U	N1-C1'-C2'	-6.65	104.68	112.00
34	b	989	G	N9-C1'-C2'	-6.63	104.70	112.00
34	b	674	G	N9-C1'-C2'	-6.63	104.71	112.00
34	b	1996	C	N1-C1'-C2'	6.63	122.61	114.00
34	b	748	G	P-O3'-C3'	6.61	127.63	119.70
34	b	2499	C	C4'-C3'-O3'	6.61	126.21	113.00
34	b	9	G	C2'-C3'-O3'	6.59	124.25	113.70
34	b	481	G	O4'-C1'-N9	6.58	113.47	108.20
34	b	1569	A	N9-C1'-C2'	6.58	122.56	114.00
34	b	1567	G	N9-C1'-C2'	6.55	122.52	114.00
34	b	2123	G	N3-C4-C5	6.55	131.88	128.60
34	b	2336	A	N9-C1'-C2'	6.54	122.50	114.00
34	b	2879	A	N9-C1'-C2'	6.54	122.50	114.00
34	b	2526	G	N9-C1'-C2'	-6.53	104.82	112.00
34	b	1092	C	N1-C1'-C2'	6.52	122.48	114.00
34	b	1058	U	C1'-O4'-C4'	-6.51	104.69	109.90
34	b	2097	A	C2'-C3'-O3'	6.50	124.11	113.70
34	b	1779	U	C1'-O4'-C4'	-6.50	104.70	109.90
34	b	1133	A	O4'-C1'-N9	6.50	113.40	108.20
34	b	1349	C	N3-C2-O2	-6.49	117.36	121.90
34	b	2161	C	C4'-C3'-O3'	6.47	125.94	113.00
34	b	1396	U	C5'-C4'-C3'	6.46	126.34	116.00
34	b	1057	A	C4'-C3'-C2'	-6.46	96.14	102.60
34	b	603	A	O4'-C1'-N9	-6.44	103.05	108.20
34	b	168	G	C2'-C3'-O3'	6.43	124.00	113.70
1	A	188	C	C2-N1-C1'	6.42	125.86	118.80
34	b	2248	C	OP2-P-O3'	6.42	119.32	105.20
34	b	1097	U	C5'-C4'-C3'	6.42	126.27	116.00
34	b	805	G	N9-C1'-C2'	6.41	122.34	114.00
34	b	1616	A	C5'-C4'-O4'	6.41	116.80	109.10
34	b	1458	U	N1-C1'-C2'	6.41	122.33	114.00
34	b	608	A	N9-C1'-C2'	6.41	122.33	114.00
34	b	630	G	N9-C1'-C2'	-6.41	104.95	112.00
34	b	1238	G	N9-C1'-C2'	-6.41	104.95	112.00
34	b	49	A	C8-N9-C1'	-6.40	116.18	127.70
34	b	503	A	C5'-C4'-O4'	6.39	116.77	109.10
34	b	961	C	O5'-P-OP2	-6.37	99.96	105.70
34	b	448	U	N1-C1'-C2'	-6.37	104.99	112.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	b	1693	U	N1-C1'-C2'	6.34	122.25	114.00
34	b	1323	C	OP2-P-O3'	6.34	119.16	105.20
34	b	2129	C	N1-C1'-C2'	6.31	122.20	114.00
34	b	2750	A	O4'-C1'-N9	-6.30	103.16	108.20
34	b	254	G	N9-C1'-C2'	-6.29	105.08	112.00
34	b	2175	C	C4'-C3'-O3'	6.29	125.59	113.00
34	b	2607	G	P-O3'-C3'	6.28	127.24	119.70
23	W	36	C	OP1-P-O3'	-6.28	91.39	105.20
34	b	409	G	C2'-C3'-O3'	6.27	123.73	113.70
34	b	2066	C	N1-C1'-C2'	6.27	122.15	114.00
34	b	2593	U	N1-C1'-C2'	6.26	122.14	114.00
34	b	1272	A	O4'-C1'-N9	-6.25	103.20	108.20
34	b	1058	U	N3-C4-O4	-6.25	115.02	119.40
34	b	488	G	N9-C1'-C2'	-6.23	105.14	112.00
34	b	787	C	N1-C1'-C2'	6.22	122.09	114.00
34	b	1253	A	N9-C1'-C2'	6.20	122.06	114.00
34	b	2425	A	N9-C1'-C2'	6.18	122.04	114.00
34	b	2160	C	O4'-C1'-N1	6.17	113.14	108.20
34	b	72	U	N1-C1'-C2'	6.17	122.02	114.00
34	b	2496	C	O5'-P-OP2	-6.17	100.15	105.70
34	b	2324	U	C4'-C3'-O3'	6.17	125.33	113.00
34	b	2821	A	N9-C1'-C2'	6.15	121.99	114.00
34	b	2123	G	C1'-O4'-C4'	-6.14	104.98	109.90
34	b	250	G	N9-C1'-C2'	6.14	121.98	114.00
34	b	1758	U	N1-C1'-C2'	6.12	121.95	114.00
34	b	703	U	C2'-C3'-O3'	6.12	123.48	113.70
34	b	215	G	N9-C1'-C2'	6.11	121.94	114.00
34	b	618	G	N9-C1'-C2'	6.11	121.94	114.00
34	b	1801	A	N9-C1'-C2'	6.11	121.94	114.00
34	b	753	A	O3'-P-O5'	6.11	115.60	104.00
34	b	1055	G	C8-N9-C1'	-6.09	119.08	127.00
34	b	1323	C	O3'-P-O5'	-6.07	92.47	104.00
34	b	500	G	N9-C1'-C2'	-6.05	105.34	112.00
40	g	37	LEU	CB-CG-CD1	-6.05	100.72	111.00
34	b	1078	U	C2'-C3'-O3'	6.05	123.38	113.70
34	b	1349	C	C5'-C4'-O4'	6.05	116.36	109.10
34	b	91	A	N9-C1'-C2'	6.04	121.85	114.00
34	b	1059	G	N3-C4-N9	6.01	129.61	126.00
34	b	2225	A	N9-C1'-C2'	-6.01	105.39	112.00
34	b	450	G	C2'-C3'-O3'	5.99	123.29	113.70
34	b	1239	G	N9-C1'-C2'	-5.99	105.41	112.00
34	b	1824	G	N9-C1'-C2'	-5.98	105.42	112.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	b	196	A	O4'-C1'-N9	5.98	112.98	108.20
34	b	1055	G	C4-N9-C1'	5.97	134.27	126.50
34	b	1616	A	C5'-C4'-C3'	5.97	125.55	116.00
34	b	945	A	O5'-P-OP1	-5.96	100.34	105.70
34	b	1098	A	C4'-C3'-O3'	5.96	124.91	113.00
34	b	84	A	N9-C1'-C2'	-5.96	105.45	112.00
34	b	2131	U	N1-C2-N3	-5.94	111.33	114.90
34	b	126	A	N9-C1'-C2'	5.94	121.72	114.00
34	b	603	A	C2'-C3'-O3'	5.93	123.18	113.70
34	b	457	A	N9-C1'-C2'	5.91	121.68	114.00
34	b	1057	A	C4'-C3'-O3'	5.90	124.81	113.00
34	b	158	U	N1-C1'-C2'	5.89	121.66	114.00
34	b	372	G	C1'-O4'-C4'	-5.89	105.19	109.90
34	b	1779	U	C5'-C4'-O4'	5.89	116.17	109.10
34	b	729	G	O4'-C1'-N9	5.88	112.91	108.20
33	a	42	C	N1-C1'-C2'	5.87	121.63	114.00
34	b	2658	C	C2'-C3'-O3'	5.87	123.09	113.70
34	b	456	C	N1-C1'-C2'	5.86	121.62	114.00
34	b	1275	A	C1'-O4'-C4'	-5.86	105.21	109.90
34	b	1097	U	N1-C1'-C2'	-5.86	105.55	112.00
34	b	1211	C	O4'-C1'-N1	-5.86	103.51	108.20
34	b	1327	A	N9-C1'-C2'	5.86	121.61	114.00
34	b	574	A	O4'-C1'-N9	-5.85	103.52	108.20
34	b	1096	A	O4'-C1'-N9	5.85	112.88	108.20
34	b	2453	A	N9-C1'-C2'	-5.85	105.57	112.00
28	3	10	ARG	NE-CZ-NH2	5.84	123.22	120.30
34	b	2518	A	N9-C1'-C2'	5.84	121.59	114.00
34	b	2104	C	C2'-C3'-O3'	5.83	123.04	113.70
34	b	2576	G	P-O5'-C5'	5.83	130.23	120.90
34	b	458	G	O4'-C1'-N9	5.82	112.86	108.20
34	b	603	A	N9-C1'-C2'	5.82	121.57	114.00
34	b	1102	C	N1-C1'-C2'	5.81	121.56	114.00
34	b	2330	G	N9-C1'-C2'	-5.81	105.61	112.00
34	b	2133	G	N9-C1'-C2'	5.80	121.54	114.00
34	b	2056	G	N9-C1'-C2'	5.79	121.53	114.00
34	b	2273	A	N9-C1'-C2'	5.79	121.53	114.00
34	b	434	U	N1-C1'-C2'	-5.78	105.64	112.00
34	b	2340	A	C8-N9-C1'	-5.78	117.29	127.70
34	b	49	A	C4-N9-C1'	5.78	136.71	126.30
34	b	1618	A	N9-C1'-C2'	5.78	121.51	114.00
34	b	1060	U	C4'-C3'-O3'	5.77	124.55	113.00
34	b	2160	C	C1'-O4'-C4'	-5.77	105.28	109.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	b	2210	U	O4'-C1'-N1	-5.77	103.58	108.20
34	b	1522	A	N9-C1'-C2'	5.76	121.49	114.00
34	b	1349	C	N3-C4-N4	-5.76	113.97	118.00
34	b	1266	G	C1'-O4'-C4'	-5.76	105.30	109.90
34	b	1079	C	C3'-C2'-C1'	-5.75	96.90	101.50
34	b	2454	G	C4-N9-C1'	-5.75	119.03	126.50
34	b	1266	G	O4'-C1'-C2'	-5.74	100.06	105.80
34	b	2160	C	N1-C1'-C2'	-5.74	105.69	112.00
34	b	1509	A	N9-C1'-C2'	5.72	121.44	114.00
34	b	896	A	O4'-C1'-N9	5.72	112.77	108.20
34	b	979	A	C4'-C3'-C2'	-5.71	96.89	102.60
34	b	1382	G	N1-C2-N2	-5.71	111.06	116.20
34	b	1103	A	C2'-C3'-O3'	5.71	122.83	113.70
34	b	640	C	N1-C1'-C2'	5.70	121.41	114.00
34	b	2271	G	N9-C1'-C2'	5.69	121.39	114.00
34	b	24	G	N9-C1'-C2'	5.68	121.39	114.00
34	b	1211	C	C4'-C3'-O3'	-5.68	97.47	109.40
34	b	2333	A	N9-C1'-C2'	-5.68	105.75	112.00
34	b	1080	A	N1-C6-N6	-5.68	115.19	118.60
34	b	2161	C	C3'-C2'-C1'	-5.68	96.96	101.50
34	b	2160	C	C4'-C3'-C2'	-5.67	96.93	102.60
34	b	2732	G	O4'-C1'-N9	5.67	112.73	108.20
34	b	249	C	N1-C1'-C2'	-5.66	105.77	112.00
34	b	1693	U	O4'-C1'-N1	-5.65	103.68	108.20
34	b	1459	G	N9-C1'-C2'	5.64	121.34	114.00
34	b	31	C	N1-C1'-C2'	-5.63	105.80	112.00
1	A	1158	C	N3-C2-O2	-5.63	117.96	121.90
22	V	18	G	N9-C1'-C2'	5.62	121.31	114.00
34	b	160	A	N9-C1'-C2'	5.62	121.31	114.00
34	b	2045	C	N1-C1'-C2'	-5.62	105.82	112.00
34	b	251	A	N9-C1'-C2'	5.61	121.30	114.00
34	b	516	C	C2'-C3'-O3'	5.61	122.67	113.70
34	b	569	U	N1-C1'-C2'	5.61	121.29	114.00
1	A	365	U	C2-N1-C1'	5.60	124.42	117.70
34	b	447	A	N9-C1'-C2'	-5.60	105.84	112.00
34	b	1226	A	N9-C1'-C2'	5.60	121.28	114.00
34	b	834	G	C2'-C3'-O3'	5.59	122.65	113.70
34	b	801	G	C2'-C3'-O3'	5.58	122.62	113.70
34	b	2287	A	O4'-C1'-N9	5.57	112.65	108.20
34	b	2508	G	N9-C1'-C2'	-5.57	105.88	112.00
34	b	1349	C	O4'-C1'-C2'	-5.56	100.24	105.80
34	b	1265	A	N9-C1'-C2'	5.55	121.22	114.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	b	1069	A	O4'-C1'-N9	5.55	112.64	108.20
34	b	2282	G	O4'-C1'-N9	5.54	112.63	108.20
33	a	15	A	N9-C1'-C2'	5.54	121.20	114.00
47	o	25	ARG	NE-CZ-NH2	5.54	123.07	120.30
34	b	1585	C	N3-C4-C5	5.54	124.11	121.90
34	b	108	G	N9-C1'-C2'	-5.54	105.91	112.00
34	b	2330	G	C5'-C4'-O4'	5.53	115.74	109.10
34	b	783	A	O4'-C4'-C3'	-5.52	98.48	104.00
47	o	18	LEU	CB-CA-C	5.51	120.68	110.20
34	b	974	G	C1'-O4'-C4'	-5.51	105.49	109.90
34	b	1055	G	C5'-C4'-O4'	5.51	115.72	109.10
34	b	2055	C	C2'-C3'-O3'	5.51	122.52	113.70
34	b	2458	G	N9-C1'-C2'	-5.51	105.94	112.00
22	V	18	G	O4'-C1'-N9	-5.51	103.80	108.20
34	b	119	A	N9-C1'-C2'	5.50	121.15	114.00
34	b	1343	G	N9-C1'-C2'	5.50	121.15	114.00
34	b	2051	A	O5'-P-OP1	-5.50	100.75	105.70
34	b	62	U	O4'-C1'-N1	5.49	112.59	108.20
34	b	1607	C	O4'-C1'-N1	-5.49	103.81	108.20
34	b	241	A	O4'-C1'-N9	-5.49	103.81	108.20
34	b	1815	A	N9-C1'-C2'	5.48	121.12	114.00
34	b	835	C	N1-C1'-C2'	-5.48	105.97	112.00
34	b	2506	U	O3'-P-O5'	5.47	114.39	104.00
34	b	1156	A	N9-C1'-C2'	5.46	121.10	114.00
34	b	2750	A	N9-C1'-C2'	5.46	121.10	114.00
34	b	753	A	OP1-P-O3'	-5.46	93.19	105.20
34	b	1600	C	N1-C1'-C2'	5.46	121.09	114.00
34	b	1104	C	C5'-C4'-O4'	5.45	115.64	109.10
34	b	1755	A	N9-C1'-C2'	5.45	121.08	114.00
34	b	87	U	C2'-C3'-O3'	5.44	122.41	113.70
34	b	2057	G	N9-C1'-C2'	5.42	121.05	114.00
34	b	277	G	O4'-C1'-C2'	-5.41	100.39	105.80
34	b	1602	U	N1-C1'-C2'	-5.41	106.05	112.00
34	b	1667	G	O4'-C1'-C2'	-5.41	100.39	105.80
34	b	1761	C	N1-C1'-C2'	5.41	121.03	114.00
34	b	2034	U	N1-C1'-C2'	5.41	121.03	114.00
34	b	463	G	N9-C1'-C2'	-5.40	106.06	112.00
34	b	2471	A	N9-C1'-C2'	-5.40	106.06	112.00
1	A	1158	C	C6-N1-C1'	-5.38	114.34	120.80
34	b	2266	A	O4'-C1'-N9	-5.38	103.89	108.20
34	b	1079	C	C1'-O4'-C4'	-5.38	105.60	109.90
34	b	2340	A	C4-N9-C1'	5.37	135.96	126.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	b	399	U	C5'-C4'-C3'	5.37	124.59	116.00
34	b	621	A	N9-C1'-C2'	5.37	120.98	114.00
34	b	1762	A	C2'-C3'-O3'	5.36	122.28	113.70
34	b	1103	A	C5'-C4'-O4'	5.35	115.52	109.10
34	b	1667	G	C1'-C2'-O2'	5.34	126.63	110.60
34	b	465	G	N9-C1'-C2'	5.34	120.94	114.00
34	b	503	A	C5'-C4'-C3'	5.34	124.54	116.00
34	b	1425	G	N9-C1'-C2'	5.34	120.94	114.00
34	b	2288	A	C4'-C3'-O3'	5.34	123.68	113.00
34	b	1069	A	O4'-C4'-C3'	-5.34	98.66	104.00
34	b	1033	U	C3'-C2'-C1'	5.33	105.76	101.50
34	b	2010	G	N9-C1'-C2'	-5.32	106.14	112.00
34	b	2161	C	P-O5'-C5'	5.32	129.41	120.90
34	b	387	U	N1-C1'-C2'	5.32	120.91	114.00
34	b	1814	G	N9-C1'-C2'	5.32	120.91	114.00
34	b	1100	C	C4'-C3'-O3'	5.31	123.62	113.00
34	b	49	A	C3'-C2'-C1'	-5.31	97.25	101.50
34	b	2175	C	C4'-C3'-C2'	-5.31	97.29	102.60
34	b	33	C	N1-C1'-C2'	-5.31	106.16	112.00
34	b	571	U	O4'-C1'-N1	5.30	112.44	108.20
34	b	1585	C	C6-N1-C2	5.30	122.42	120.30
34	b	859	G	O4'-C1'-N9	5.29	112.44	108.20
34	b	2564	A	N9-C1'-C2'	5.29	120.88	114.00
34	b	281	C	N1-C1'-C2'	5.29	120.88	114.00
34	b	1427	A	N9-C1'-C2'	5.28	120.86	114.00
34	b	1461	C	N1-C1'-C2'	5.27	120.85	114.00
34	b	2732	G	O4'-C1'-C2'	-5.27	100.53	105.80
34	b	2422	C	O4'-C1'-N1	5.26	112.41	108.20
34	b	1133	A	C1'-O4'-C4'	-5.26	105.69	109.90
34	b	1086	A	N9-C1'-C2'	5.25	120.83	114.00
34	b	896	A	C1'-O4'-C4'	-5.25	105.70	109.90
34	b	896	A	O4'-C4'-C3'	-5.24	98.76	104.00
34	b	446	G	C3'-C2'-C1'	5.23	105.68	101.50
52	t	3	ARG	NE-CZ-NH1	5.23	122.91	120.30
25	0	57	ARG	NE-CZ-NH2	5.22	122.91	120.30
34	b	1616	A	N9-C1'-C2'	5.21	120.77	114.00
34	b	783	A	C2'-C3'-O3'	5.21	122.03	113.70
34	b	2168	G	C4'-C3'-O3'	5.21	123.41	113.00
34	b	1055	G	C3'-C2'-C1'	5.20	105.66	101.50
34	b	1388	G	C2'-C3'-O3'	5.20	122.02	113.70
34	b	2282	G	O4'-C1'-C2'	-5.20	100.60	105.80
34	b	2590	A	N9-C1'-C2'	-5.20	106.28	112.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	b	2391	G	C1'-O4'-C4'	-5.19	105.75	109.90
34	b	2518	A	C5'-C4'-O4'	5.19	115.33	109.10
34	b	2422	C	C1'-O4'-C4'	-5.17	105.76	109.90
34	b	1253	A	O4'-C1'-N9	-5.17	104.07	108.20
37	d	4	LEU	CB-CG-CD1	5.17	119.78	111.00
34	b	979	A	C5'-C4'-O4'	5.15	115.28	109.10
34	b	2798	U	N1-C1'-C2'	5.14	120.69	114.00
34	b	1059	G	N3-C4-C5	-5.14	126.03	128.60
34	b	1287	A	N9-C1'-C2'	5.14	120.68	114.00
34	b	1772	A	C2'-C3'-O3'	5.13	121.90	113.70
34	b	2471	A	C4'-C3'-O3'	5.13	123.25	113.00
34	b	957	C	N1-C1'-C2'	5.12	120.66	114.00
34	b	1377	G	N9-C1'-C2'	5.12	120.66	114.00
34	b	1802	A	N9-C1'-C2'	5.12	120.66	114.00
23	W	49	G	C2'-C3'-O3'	5.12	121.89	113.70
34	b	1141	U	N1-C1'-C2'	5.11	120.65	114.00
34	b	242	G	O4'-C1'-N9	5.11	112.29	108.20
34	b	100	U	C1'-O4'-C4'	-5.09	105.83	109.90
34	b	974	G	O4'-C1'-C2'	-5.09	100.71	105.80
34	b	253	C	N1-C1'-C2'	-5.08	106.42	112.00
33	a	66	A	C2'-C3'-O3'	5.07	121.81	113.70
41	h	66	ASN	N-CA-C	5.07	124.69	111.00
34	b	1009	A	N9-C1'-C2'	5.07	120.59	114.00
34	b	2330	G	C4'-C3'-C2'	-5.07	97.53	102.60
34	b	250	G	O4'-C1'-N9	-5.07	104.15	108.20
22	V	18	G	O4'-C4'-C3'	-5.06	98.94	104.00
34	b	1698	A	O4'-C1'-N9	-5.06	104.15	108.20
34	b	2288	A	O4'-C1'-N9	5.06	112.25	108.20
34	b	584	C	O4'-C1'-C2'	-5.06	100.74	105.80
38	e	59	PRO	C-N-CA	5.06	134.34	121.70
34	b	196	A	C1'-O4'-C4'	-5.05	105.86	109.90
1	A	188	C	N3-C2-O2	-5.05	118.36	121.90
34	b	1204	A	O4'-C1'-N9	-5.05	104.16	108.20
34	b	801	G	N9-C1'-C2'	5.03	120.54	114.00
34	b	1266	G	N9-C1'-C2'	-5.03	106.47	112.00
34	b	2497	A	N9-C1'-C2'	-5.03	106.47	112.00
34	b	779	U	C5'-C4'-O4'	5.03	115.14	109.10
34	b	1599	U	N1-C1'-C2'	5.03	120.54	114.00
34	b	783	A	C4'-C3'-O3'	5.03	123.06	113.00
34	b	1143	A	N9-C1'-C2'	5.03	120.53	114.00
34	b	2488	G	N9-C1'-C2'	5.03	120.53	114.00
34	b	1037	G	C5'-C4'-C3'	5.03	124.04	116.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	b	1355	G	N9-C1'-C2'	-5.03	106.47	112.00
34	b	195	A	N9-C1'-C2'	-5.02	106.48	112.00
34	b	759	G	C2'-C3'-O3'	5.02	121.73	113.70
34	b	62	U	C1'-O4'-C4'	-5.02	105.89	109.90
34	b	1913	A	C2'-C3'-O3'	5.02	121.73	113.70
34	b	176	A	N9-C1'-C2'	5.01	120.51	114.00
34	b	654	A	C2'-C3'-O3'	5.01	121.71	113.70
34	b	1607	C	N1-C1'-C2'	5.01	120.51	114.00
34	b	2175	C	O4'-C4'-C3'	-5.01	98.99	104.00
34	b	1069	A	C4'-C3'-O3'	5.00	123.00	113.00
34	b	1101	U	N1-C1'-C2'	-5.00	106.50	112.00

There are no chirality outliers.

All (71) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
27	2	3	LYS	Peptide
9	I	124	PRO	Peptide
34	b	1057	A	Sidechain
34	b	1059	G	Sidechain
34	b	1079	C	Sidechain
34	b	1080	A	Sidechain
34	b	1096	A	Sidechain
34	b	1097	U	Sidechain
34	b	119	A	Sidechain
34	b	1204	A	Sidechain
34	b	1225	G	Sidechain
34	b	1238	G	Sidechain
34	b	1253	A	Sidechain
34	b	1266	G	Sidechain
34	b	1272	A	Sidechain
34	b	1275	A	Sidechain
34	b	1300	G	Sidechain
34	b	1349	C	Sidechain
34	b	1382	G	Sidechain
34	b	1392	A	Sidechain
34	b	1667	G	Sidechain
34	b	1693	U	Sidechain
34	b	1698	A	Sidechain
34	b	1759	A	Sidechain
34	b	1773	A	Sidechain
34	b	1774	C	Sidechain

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Mol	Chain	Res	Type	Group
34	b	1775	U	Sidechain
34	b	1829	A	Sidechain
34	b	1943	U	Sidechain
34	b	195	A	Sidechain
34	b	1967	C	Sidechain
34	b	2032	G	Sidechain
34	b	2092	U	Sidechain
34	b	2123	G	Sidechain
34	b	2266	A	Sidechain
34	b	2330	G	Sidechain
34	b	241	A	Sidechain
34	b	242	G	Sidechain
34	b	2449	U	Sidechain
34	b	2453	A	Sidechain
34	b	2454	G	Sidechain
34	b	246	C	Sidechain
34	b	25	U	Sidechain
34	b	250	G	Sidechain
34	b	2518	A	Sidechain
34	b	2564	A	Sidechain
34	b	2589	A	Sidechain
34	b	2590	A	Sidechain
34	b	2597	G	Sidechain
34	b	372	G	Sidechain
34	b	388	G	Sidechain
34	b	446	G	Sidechain
34	b	450	G	Sidechain
34	b	464	U	Sidechain
34	b	500	G	Sidechain
34	b	603	A	Sidechain
34	b	674	G	Sidechain
34	b	779	U	Sidechain
34	b	782	A	Sidechain
34	b	783	A	Sidechain
34	b	801	G	Sidechain
34	b	805	G	Sidechain
34	b	959	A	Sidechain
34	b	973	A	Sidechain
34	b	979	A	Sidechain
34	b	986	C	Sidechain
35	c	232	HIS	Peptide
37	d	151	THR	Peptide

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Mol	Chain	Res	Type	Group
43	k	34	GLY	Peptide
44	l	102	GLY	Peptide
50	r	50	GLY	Peptide

5.2 Too-close contacts [i](#)

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

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	B	216/241 (90%)	188 (87%)	19 (9%)	9 (4%)	3	18
3	C	204/233 (88%)	171 (84%)	23 (11%)	10 (5%)	2	15
4	D	203/206 (98%)	190 (94%)	9 (4%)	4 (2%)	7	33
5	E	148/167 (89%)	131 (88%)	7 (5%)	10 (7%)	1	9
6	F	98/131 (75%)	81 (83%)	14 (14%)	3 (3%)	4	24
7	G	148/156 (95%)	135 (91%)	8 (5%)	5 (3%)	3	23
8	H	127/130 (98%)	110 (87%)	15 (12%)	2 (2%)	9	37
9	I	125/130 (96%)	106 (85%)	16 (13%)	3 (2%)	6	29
10	J	96/103 (93%)	84 (88%)	7 (7%)	5 (5%)	2	14
11	K	115/129 (89%)	104 (90%)	10 (9%)	1 (1%)	17	49
12	L	121/124 (98%)	94 (78%)	22 (18%)	5 (4%)	3	18
13	M	111/118 (94%)	99 (89%)	5 (4%)	7 (6%)	1	10
14	N	92/101 (91%)	80 (87%)	8 (9%)	4 (4%)	2	18
15	O	86/89 (97%)	80 (93%)	5 (6%)	1 (1%)	13	43
16	P	80/82 (98%)	56 (70%)	15 (19%)	9 (11%)	0	3
17	Q	78/84 (93%)	66 (85%)	11 (14%)	1 (1%)	12	40

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
18	R	53/75 (71%)	51 (96%)	2 (4%)	0	100	100
19	S	77/92 (84%)	69 (90%)	5 (6%)	3 (4%)	3	20
20	T	83/87 (95%)	77 (93%)	5 (6%)	1 (1%)	13	43
21	U	49/71 (69%)	40 (82%)	5 (10%)	4 (8%)	1	6
25	0	75/78 (96%)	74 (99%)	1 (1%)	0	100	100
26	1	60/63 (95%)	53 (88%)	5 (8%)	2 (3%)	4	23
27	2	56/59 (95%)	52 (93%)	3 (5%)	1 (2%)	8	35
28	3	54/57 (95%)	49 (91%)	3 (6%)	2 (4%)	3	21
29	4	48/55 (87%)	39 (81%)	9 (19%)	0	100	100
30	6	44/46 (96%)	40 (91%)	2 (4%)	2 (4%)	2	16
31	7	62/65 (95%)	60 (97%)	2 (3%)	0	100	100
32	8	36/38 (95%)	35 (97%)	1 (3%)	0	100	100
35	c	269/273 (98%)	251 (93%)	17 (6%)	1 (0%)	34	66
36	i	132/142 (93%)	83 (63%)	38 (29%)	11 (8%)	1	6
37	d	207/209 (99%)	194 (94%)	11 (5%)	2 (1%)	15	47
38	e	199/201 (99%)	186 (94%)	7 (4%)	6 (3%)	4	25
39	f	175/179 (98%)	157 (90%)	12 (7%)	6 (3%)	3	23
40	g	174/177 (98%)	139 (80%)	31 (18%)	4 (2%)	6	30
41	h	147/149 (99%)	122 (83%)	20 (14%)	5 (3%)	3	23
42	j	140/142 (99%)	128 (91%)	10 (7%)	2 (1%)	11	39
43	k	120/123 (98%)	112 (93%)	6 (5%)	2 (2%)	9	36
44	l	142/144 (99%)	126 (89%)	10 (7%)	6 (4%)	3	18
45	m	131/136 (96%)	123 (94%)	7 (5%)	1 (1%)	19	51
46	n	118/127 (93%)	111 (94%)	4 (3%)	3 (2%)	5	28
47	o	114/117 (97%)	104 (91%)	5 (4%)	5 (4%)	2	17
48	p	112/115 (97%)	106 (95%)	5 (4%)	1 (1%)	17	49
49	q	115/118 (98%)	114 (99%)	1 (1%)	0	100	100
50	r	101/103 (98%)	91 (90%)	7 (7%)	3 (3%)	4	25
51	s	108/110 (98%)	103 (95%)	2 (2%)	3 (3%)	5	26
52	t	91/100 (91%)	80 (88%)	8 (9%)	3 (3%)	4	23
53	u	100/104 (96%)	77 (77%)	12 (12%)	11 (11%)	0	3

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
54	w	92/94 (98%)	91 (99%)	1 (1%)	0	100	100
55	y	73/85 (86%)	71 (97%)	2 (3%)	0	100	100
56	z	25/27 (93%)	20 (80%)	5 (20%)	0	100	100
All	All	5630/5985 (94%)	5003 (89%)	458 (8%)	169 (3%)	7	25

All (169) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	C	7	ASN
5	E	99	SER
8	H	44	PHE
9	I	57	VAL
12	L	88	ASP
16	P	11	ALA
16	P	80	LYS
19	S	4	LEU
20	T	67	HIS
21	U	26	GLY
21	U	27	VAL
21	U	30	GLU
26	1	3	ALA
28	3	56	ALA
30	6	44	VAL
36	i	65	SER
36	i	92	PRO
37	d	152	PRO
38	e	153	LEU
39	f	62	GLY
39	f	123	ASP
40	g	119	ALA
41	h	41	LYS
41	h	66	ASN
41	h	67	ALA
42	j	81	ILE
44	l	29	LYS
44	l	68	SER
44	l	111	ILE
44	l	115	GLU
46	n	70	THR
46	n	119	SER
48	p	114	LEU

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Mol	Chain	Res	Type
50	r	7	SER
51	s	65	ASP
52	t	17	SER
53	u	7	ARG
53	u	17	LYS
53	u	72	ILE
53	u	73	PHE
53	u	75	ALA
2	B	22	TRP
2	B	83	ALA
3	C	49	ALA
3	C	154	GLY
5	E	44	ARG
5	E	45	VAL
5	E	73	VAL
6	F	48	ALA
6	F	94	HIS
7	G	148	LYS
9	I	119	LYS
10	J	57	VAL
10	J	58	ASN
10	J	67	ILE
12	L	23	LEU
13	M	3	ILE
13	M	46	GLU
13	M	104	ASN
14	N	50	LEU
15	O	21	THR
16	P	10	GLY
16	P	16	PHE
16	P	36	VAL
17	Q	71	SER
19	S	5	LYS
28	3	55	ILE
36	i	30	GLN
36	i	105	LEU
40	g	92	VAL
41	h	119	ASN
43	k	35	VAL
44	l	69	ARG
47	o	59	ALA
47	o	101	GLY

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Mol	Chain	Res	Type
51	s	62	ASP
51	s	63	GLY
52	t	38	ALA
53	u	74	ASN
53	u	76	ALA
53	u	99	ASN
2	B	21	TYR
2	B	189	ASN
2	B	204	ASP
3	C	77	GLY
3	C	111	ASP
3	C	145	ALA
4	D	4	LEU
4	D	47	LEU
4	D	108	ALA
5	E	146	MET
6	F	54	LEU
7	G	114	SER
10	J	41	PRO
12	L	46	SER
13	M	5	GLY
13	M	7	ASN
13	M	23	GLY
14	N	62	ARG
16	P	49	GLY
16	P	78	VAL
21	U	24	LYS
35	c	253	LYS
36	i	59	THR
39	f	175	PHE
42	j	25	LEU
43	k	108	ARG
44	l	86	GLU
45	m	69	PRO
47	o	34	HIS
47	o	66	GLY
53	u	4	LYS
3	C	3	LYS
3	C	5	HIS
5	E	11	GLN
7	G	4	ARG
9	I	112	ARG

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Mol	Chain	Res	Type
11	K	88	PRO
13	M	47	LEU
26	1	37	LEU
27	2	4	THR
36	i	83	ALA
36	i	89	SER
38	e	62	GLN
38	e	127	GLU
39	f	121	SER
39	f	174	ASP
46	n	118	ARG
47	o	100	HIS
53	u	98	SER
2	B	63	LYS
2	B	76	SER
2	B	126	ASP
4	D	194	ILE
5	E	147	ASN
7	G	52	ARG
7	G	113	LYS
10	J	75	ASP
12	L	116	TYR
14	N	52	ARG
14	N	61	ASN
19	S	11	ASP
36	i	20	SER
38	e	80	SER
40	g	118	PRO
41	h	56	ALA
50	r	53	PHE
52	t	18	GLU
2	B	30	ILE
8	H	52	GLY
30	6	45	SER
37	d	104	VAL
3	C	63	ILE
16	P	42	ILE
36	i	97	VAL
38	e	42	GLY
38	e	83	VAL
39	f	149	VAL
40	g	28	GLY

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Mol	Chain	Res	Type
53	u	55	PRO
5	E	105	ILE
12	L	117	GLY
5	E	50	GLY
36	i	23	VAL
3	C	107	LYS
5	E	142	GLY
16	P	15	PRO
36	i	31	GLY
50	r	9	GLY

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	B	180/199 (90%)	180 (100%)	0	100	100
3	C	170/190 (90%)	170 (100%)	0	100	100
4	D	172/173 (99%)	172 (100%)	0	100	100
5	E	113/126 (90%)	113 (100%)	0	100	100
6	F	87/112 (78%)	87 (100%)	0	100	100
7	G	123/129 (95%)	123 (100%)	0	100	100
8	H	104/105 (99%)	104 (100%)	0	100	100
9	I	105/107 (98%)	105 (100%)	0	100	100
10	J	86/90 (96%)	86 (100%)	0	100	100
11	K	90/99 (91%)	90 (100%)	0	100	100
12	L	103/104 (99%)	103 (100%)	0	100	100
13	M	91/96 (95%)	91 (100%)	0	100	100
14	N	79/84 (94%)	79 (100%)	0	100	100
15	O	76/77 (99%)	76 (100%)	0	100	100
16	P	65/65 (100%)	57 (88%)	8 (12%)	4	20
17	Q	74/78 (95%)	74 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
18	R	48/65 (74%)	48 (100%)	0	100	100
19	S	70/79 (89%)	70 (100%)	0	100	100
20	T	65/66 (98%)	65 (100%)	0	100	100
21	U	44/61 (72%)	44 (100%)	0	100	100
25	0	67/68 (98%)	63 (94%)	4 (6%)	19	50
26	1	54/55 (98%)	52 (96%)	2 (4%)	34	64
27	2	48/49 (98%)	48 (100%)	0	100	100
28	3	47/48 (98%)	45 (96%)	2 (4%)	29	61
29	4	45/49 (92%)	45 (100%)	0	100	100
30	6	38/38 (100%)	37 (97%)	1 (3%)	46	72
31	7	51/52 (98%)	49 (96%)	2 (4%)	32	63
32	8	34/34 (100%)	33 (97%)	1 (3%)	42	70
35	c	216/218 (99%)	210 (97%)	6 (3%)	43	71
36	i	104/110 (94%)	87 (84%)	17 (16%)	2	10
37	d	164/164 (100%)	161 (98%)	3 (2%)	59	79
38	e	165/165 (100%)	159 (96%)	6 (4%)	35	65
39	f	148/150 (99%)	142 (96%)	6 (4%)	30	62
40	g	137/138 (99%)	133 (97%)	4 (3%)	42	70
41	h	114/114 (100%)	114 (100%)	0	100	100
42	j	116/116 (100%)	112 (97%)	4 (3%)	37	66
43	k	103/104 (99%)	101 (98%)	2 (2%)	57	78
44	l	103/103 (100%)	99 (96%)	4 (4%)	32	63
45	m	108/109 (99%)	107 (99%)	1 (1%)	78	88
46	n	100/103 (97%)	98 (98%)	2 (2%)	55	77
47	o	86/87 (99%)	86 (100%)	0	100	100
48	p	99/100 (99%)	95 (96%)	4 (4%)	31	62
49	q	89/90 (99%)	85 (96%)	4 (4%)	27	60
50	r	84/84 (100%)	80 (95%)	4 (5%)	25	58
51	s	93/93 (100%)	91 (98%)	2 (2%)	52	76
52	t	80/84 (95%)	77 (96%)	3 (4%)	33	63
53	u	83/85 (98%)	79 (95%)	4 (5%)	25	58

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
54	w	78/78 (100%)	76 (97%)	2 (3%)	46	72
55	y	56/63 (89%)	55 (98%)	1 (2%)	59	79
56	z	23/23 (100%)	13 (56%)	10 (44%)	0	0
All	All	4678/4879 (96%)	4569 (98%)	109 (2%)	53	75

All (109) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
16	P	6	LEU
16	P	19	VAL
16	P	33	ILE
16	P	46	LYS
16	P	55	ASP
16	P	63	GLN
16	P	68	SER
16	P	77	GLU
25	0	11	ARG
25	0	17	ASN
25	0	48	THR
25	0	57	ARG
26	1	21	LEU
26	1	38	GLN
28	3	28	LEU
28	3	29	SER
30	6	8	SER
31	7	31	HIS
31	7	47	LYS
32	8	18	LYS
35	c	5	LYS
35	c	115	GLN
35	c	130	LEU
35	c	139	SER
35	c	157	SER
35	c	267	ILE
36	i	10	LEU
36	i	11	GLN
36	i	12	VAL
36	i	23	VAL
36	i	30	GLN
36	i	37	PHE
36	i	39	LYS

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Mol	Chain	Res	Type
36	i	49	GLU
36	i	61	TYR
36	i	71	LYS
36	i	81	LYS
36	i	86	LYS
36	i	95	ASP
36	i	107	GLU
36	i	124	MET
36	i	126	ARG
36	i	135	MET
37	d	32	ASN
37	d	51	THR
37	d	91	THR
38	e	12	LEU
38	e	78	TRP
38	e	88	ARG
38	e	93	SER
38	e	126	VAL
38	e	187	VAL
39	f	5	HIS
39	f	7	TYR
39	f	19	GLU
39	f	83	TYR
39	f	117	LEU
39	f	174	ASP
40	g	29	LYS
40	g	73	ASN
40	g	80	THR
40	g	92	VAL
42	j	30	THR
42	j	131	ASN
42	j	136	GLN
42	j	142	ILE
43	k	92	GLU
43	k	105	ARG
44	l	48	ARG
44	l	91	ASP
44	l	94	THR
44	l	118	THR
45	m	100	LYS
46	n	95	THR
46	n	116	VAL

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Mol	Chain	Res	Type
48	p	8	LEU
48	p	26	VAL
48	p	37	LYS
48	p	80	VAL
49	q	5	LYS
49	q	9	ILE
49	q	16	LYS
49	q	109	LEU
50	r	46	GLU
50	r	58	VAL
50	r	60	LYS
50	r	102	SER
51	s	19	LEU
51	s	97	LEU
52	t	5	GLU
52	t	10	VAL
52	t	39	THR
53	u	15	THR
53	u	35	ILE
53	u	37	GLU
53	u	68	SER
54	w	53	LYS
54	w	76	ASP
55	y	41	ARG
56	z	4	GLN
56	z	5	LYS
56	z	9	GLU
56	z	10	GLU
56	z	12	LEU
56	z	15	THR
56	z	18	TRP
56	z	20	SER
56	z	21	GLN
56	z	26	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (67) such sidechains are listed below:

Mol	Chain	Res	Type
2	B	92	ASN
2	B	202	ASN
3	C	24	ASN
3	C	101	ASN

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Mol	Chain	Res	Type
4	D	84	ASN
4	D	115	GLN
4	D	119	HIS
4	D	125	ASN
4	D	130	ASN
4	D	139	ASN
4	D	151	GLN
4	D	195	ASN
5	E	11	GLN
5	E	82	HIS
5	E	88	HIS
5	E	134	ASN
6	F	11	HIS
6	F	37	HIS
6	F	68	GLN
7	G	129	ASN
7	G	141	HIS
8	H	3	GLN
8	H	15	ASN
8	H	37	ASN
9	I	3	ASN
9	I	30	ASN
11	K	23	HIS
11	K	39	ASN
12	L	4	ASN
12	L	19	ASN
12	L	45	ASN
13	M	99	GLN
14	N	34	ASN
14	N	65	GLN
14	N	70	HIS
15	O	34	GLN
15	O	37	HIS
15	O	41	HIS
15	O	49	HIS
15	O	50	HIS
16	P	29	ASN
16	P	59	HIS
16	P	63	GLN
17	Q	30	HIS
17	Q	50	ASN
19	S	51	HIS

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Mol	Chain	Res	Type
19	S	56	HIS
20	T	54	GLN
20	T	67	HIS
20	T	74	HIS
32	8	37	GLN
35	c	46	ASN
36	i	30	GLN
36	i	110	GLN
37	d	150	GLN
40	g	22	GLN
40	g	38	ASN
41	h	28	ASN
41	h	73	ASN
41	h	119	ASN
41	h	128	HIS
43	k	3	GLN
51	s	61	ASN
53	u	74	ASN
55	y	57	HIS
56	z	4	GLN
56	z	21	GLN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	1530/1542 (99%)	422 (27%)	30 (1%)
22	V	75/76 (98%)	45 (60%)	9 (12%)
23	W	75/75 (100%)	40 (53%)	10 (13%)
24	X	11/11 (100%)	8 (72%)	3 (27%)
33	a	116/120 (96%)	43 (37%)	0
34	b	2902/2904 (99%)	1204 (41%)	0
All	All	4709/4728 (99%)	1762 (37%)	52 (1%)

All (1762) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	6	G
1	A	8	A
1	A	9	G
1	A	13	U
1	A	22	G

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Mol	Chain	Res	Type
1	A	39	G
1	A	44	A
1	A	46	G
1	A	47	C
1	A	48	C
1	A	50	A
1	A	51	A
1	A	52	C
1	A	54	C
1	A	62	U
1	A	64	G
1	A	65	A
1	A	66	A
1	A	71	A
1	A	75	G
1	A	78	A
1	A	80	A
1	A	83	C
1	A	84	U
1	A	86	G
1	A	87	C
1	A	89	U
1	A	93	U
1	A	94	G
1	A	95	C
1	A	97	G
1	A	98	A
1	A	99	C
1	A	100	G
1	A	102	G
1	A	108	G
1	A	110	C
1	A	111	G
1	A	116	A
1	A	120	A
1	A	121	U
1	A	122	G
1	A	125	U
1	A	126	G
1	A	129	A
1	A	130	A
1	A	131	A

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Mol	Chain	Res	Type
1	A	133	U
1	A	141	G
1	A	144	G
1	A	145	G
1	A	146	G
1	A	149	A
1	A	152	A
1	A	157	U
1	A	160	A
1	A	163	C
1	A	179	A
1	A	182	A
1	A	183	C
1	A	184	G
1	A	185	U
1	A	186	C
1	A	187	G
1	A	188	C
1	A	192	A
1	A	196	A
1	A	197	A
1	A	198	G
1	A	200	G
1	A	201	G
1	A	203	G
1	A	204	G
1	A	205	A
1	A	210	C
1	A	211	G
1	A	215	C
1	A	217	C
1	A	218	U
1	A	219	U
1	A	226	G
1	A	229	U
1	A	230	G
1	A	231	U
1	A	236	A
1	A	238	A
1	A	239	U
1	A	240	G
1	A	244	U

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Mol	Chain	Res	Type
1	A	245	U
1	A	247	G
1	A	251	G
1	A	255	G
1	A	256	U
1	A	257	G
1	A	258	G
1	A	266	G
1	A	267	C
1	A	275	G
1	A	277	C
1	A	280	C
1	A	281	G
1	A	289	G
1	A	302	G
1	A	309	A
1	A	314	C
1	A	320	A
1	A	321	A
1	A	328	C
1	A	329	A
1	A	330	C
1	A	332	G
1	A	342	C
1	A	343	U
1	A	352	C
1	A	353	A
1	A	354	G
1	A	367	U
1	A	368	U
1	A	369	G
1	A	372	C
1	A	373	A
1	A	374	A
1	A	375	U
1	A	377	G
1	A	381	C
1	A	386	C
1	A	387	U
1	A	388	G
1	A	389	A
1	A	390	U

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Mol	Chain	Res	Type
1	A	391	G
1	A	397	A
1	A	398	U
1	A	399	G
1	A	401	C
1	A	404	G
1	A	406	G
1	A	408	A
1	A	411	A
1	A	413	G
1	A	414	A
1	A	416	G
1	A	429	U
1	A	430	A
1	A	435	A
1	A	437	U
1	A	439	U
1	A	448	A
1	A	451	A
1	A	452	A
1	A	455	G
1	A	456	A
1	A	457	G
1	A	461	A
1	A	462	G
1	A	463	U
1	A	464	U
1	A	466	A
1	A	468	A
1	A	469	C
1	A	475	C
1	A	476	U
1	A	479	U
1	A	481	G
1	A	483	C
1	A	484	G
1	A	485	U
1	A	486	U
1	A	492	C
1	A	497	G
1	A	499	A
1	A	501	C

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Mol	Chain	Res	Type
1	A	511	C
1	A	517	G
1	A	518	C
1	A	527	G
1	A	532	A
1	A	533	A
1	A	540	G
1	A	541	G
1	A	542	G
1	A	543	U
1	A	547	A
1	A	548	G
1	A	549	C
1	A	557	G
1	A	563	A
1	A	564	C
1	A	572	A
1	A	573	A
1	A	575	G
1	A	576	C
1	A	577	G
1	A	579	A
1	A	588	G
1	A	589	U
1	A	591	U
1	A	592	G
1	A	593	U
1	A	598	U
1	A	607	A
1	A	608	A
1	A	614	C
1	A	615	G
1	A	618	C
1	A	619	U
1	A	621	A
1	A	632	U
1	A	633	G
1	A	636	U
1	A	637	C
1	A	638	U
1	A	639	G
1	A	648	A

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Mol	Chain	Res	Type
1	A	653	U
1	A	654	G
1	A	665	A
1	A	683	G
1	A	687	A
1	A	696	A
1	A	697	U
1	A	698	G
1	A	699	C
1	A	700	G
1	A	701	U
1	A	702	A
1	A	703	G
1	A	711	G
1	A	718	A
1	A	719	C
1	A	721	G
1	A	723	U
1	A	724	G
1	A	729	A
1	A	731	G
1	A	747	A
1	A	753	A
1	A	755	G
1	A	763	G
1	A	765	G
1	A	766	A
1	A	780	A
1	A	785	G
1	A	792	A
1	A	793	U
1	A	794	A
1	A	795	C
1	A	809	G
1	A	810	C
1	A	815	A
1	A	817	C
1	A	819	A
1	A	823	C
1	A	828	U
1	A	832	G
1	A	840	C

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Mol	Chain	Res	Type
1	A	841	C
1	A	842	U
1	A	843	U
1	A	846	G
1	A	849	G
1	A	851	G
1	A	854	U
1	A	868	C
1	A	873	A
1	A	884	U
1	A	885	G
1	A	891	U
1	A	900	A
1	A	914	A
1	A	915	A
1	A	918	A
1	A	927	G
1	A	934	C
1	A	935	A
1	A	936	C
1	A	939	G
1	A	955	U
1	A	960	U
1	A	961	U
1	A	966	G
1	A	968	A
1	A	969	A
1	A	971	G
1	A	974	A
1	A	975	A
1	A	976	G
1	A	977	A
1	A	985	C
1	A	989	U
1	A	992	U
1	A	993	G
1	A	994	A
1	A	996	A
1	A	1004	A
1	A	1006	G
1	A	1010	U
1	A	1013	G

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Mol	Chain	Res	Type
1	A	1020	G
1	A	1022	A
1	A	1025	U
1	A	1026	G
1	A	1028	C
1	A	1030	U
1	A	1031	C
1	A	1032	G
1	A	1036	A
1	A	1051	C
1	A	1064	G
1	A	1065	U
1	A	1066	C
1	A	1070	U
1	A	1073	U
1	A	1086	U
1	A	1093	A
1	A	1094	G
1	A	1095	U
1	A	1100	C
1	A	1101	A
1	A	1108	G
1	A	1112	C
1	A	1118	U
1	A	1121	U
1	A	1130	A
1	A	1135	U
1	A	1136	C
1	A	1137	C
1	A	1139	G
1	A	1140	C
1	A	1143	G
1	A	1158	C
1	A	1159	U
1	A	1161	C
1	A	1167	A
1	A	1168	U
1	A	1184	G
1	A	1192	C
1	A	1196	A
1	A	1197	A
1	A	1198	G

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Mol	Chain	Res	Type
1	A	1199	U
1	A	1202	U
1	A	1209	C
1	A	1210	C
1	A	1215	G
1	A	1218	C
1	A	1225	A
1	A	1226	C
1	A	1227	A
1	A	1236	A
1	A	1238	A
1	A	1240	U
1	A	1241	G
1	A	1249	C
1	A	1251	A
1	A	1253	G
1	A	1256	A
1	A	1258	G
1	A	1274	A
1	A	1278	G
1	A	1279	G
1	A	1280	A
1	A	1281	C
1	A	1282	C
1	A	1287	A
1	A	1290	G
1	A	1295	U
1	A	1300	G
1	A	1301	U
1	A	1302	C
1	A	1303	C
1	A	1305	G
1	A	1312	G
1	A	1317	C
1	A	1318	A
1	A	1319	A
1	A	1320	C
1	A	1323	G
1	A	1333	A
1	A	1335	U
1	A	1336	C
1	A	1338	G

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Mol	Chain	Res	Type
1	A	1341	U
1	A	1342	C
1	A	1343	G
1	A	1345	U
1	A	1346	A
1	A	1349	A
1	A	1353	G
1	A	1357	A
1	A	1361	G
1	A	1362	A
1	A	1363	A
1	A	1364	U
1	A	1368	A
1	A	1379	G
1	A	1398	A
1	A	1402	C
1	A	1415	G
1	A	1419	G
1	A	1422	G
1	A	1425	U
1	A	1441	A
1	A	1446	A
1	A	1451	U
1	A	1452	C
1	A	1470	U
1	A	1490	U
1	A	1493	A
1	A	1494	G
1	A	1496	C
1	A	1497	G
1	A	1503	A
1	A	1506	U
1	A	1517	G
1	A	1518	A
1	A	1520	C
1	A	1523	G
1	A	1528	U
1	A	1530	G
1	A	1534	A
22	V	2	C
22	V	3	C
22	V	4	C

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Mol	Chain	Res	Type
22	V	5	G
22	V	6	G
22	V	8	U
22	V	15	G
22	V	16	U
22	V	17	C
22	V	18	G
22	V	19	G
22	V	20	U
22	V	21	A
22	V	22	G
22	V	26	A
22	V	28	G
22	V	37	A
22	V	38	A
22	V	39	U
22	V	40	C
22	V	41	C
22	V	42	C
22	V	43	C
22	V	44	G
22	V	46	G
22	V	47	U
22	V	48	C
22	V	51	U
22	V	53	G
22	V	54	U
22	V	55	U
22	V	57	G
22	V	59	U
22	V	60	U
22	V	62	C
22	V	64	A
22	V	65	G
22	V	66	U
22	V	68	C
22	V	71	G
22	V	72	C
22	V	73	A
22	V	74	C
22	V	75	C
22	V	76	A

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Mol	Chain	Res	Type
23	W	2	G
23	W	6	C
23	W	8	U
23	W	13	C
23	W	15	G
23	W	16	C
23	W	17	U
23	W	18	G
23	W	19	G
23	W	20	U
23	W	21	A
23	W	22	G
23	W	28	C
23	W	34	G
23	W	35	C
23	W	37	G
23	W	40	U
23	W	42	G
23	W	43	G
23	W	46	G
23	W	48	C
23	W	49	G
23	W	50	G
23	W	52	G
23	W	55	U
23	W	56	C
23	W	57	A
23	W	58	A
23	W	59	A
23	W	60	U
23	W	61	C
23	W	62	C
23	W	66	C
23	W	67	G
23	W	69	G
23	W	71	C
23	W	72	G
23	W	73	A
23	W	74	C
23	W	75	A
24	X	13	U
24	X	14	G

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Mol	Chain	Res	Type
24	X	16	C
24	X	17	C
24	X	18	C
24	X	19	U
24	X	20	C
24	X	21	A
33	a	4	C
33	a	7	G
33	a	9	G
33	a	10	G
33	a	12	C
33	a	13	G
33	a	15	A
33	a	21	G
33	a	24	G
33	a	26	C
33	a	30	C
33	a	34	A
33	a	35	C
33	a	42	C
33	a	43	C
33	a	44	G
33	a	46	A
33	a	52	A
33	a	53	A
33	a	54	G
33	a	56	G
33	a	57	A
33	a	59	A
33	a	65	U
33	a	67	G
33	a	84	G
33	a	85	G
33	a	86	G
33	a	87	U
33	a	88	C
33	a	89	U
33	a	90	C
33	a	91	C
33	a	93	C
33	a	98	G
33	a	99	A

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Mol	Chain	Res	Type
33	a	100	G
33	a	103	U
33	a	106	G
33	a	108	A
33	a	109	A
33	a	110	C
33	a	115	A
34	b	3	U
34	b	4	U
34	b	7	G
34	b	10	A
34	b	12	U
34	b	13	A
34	b	14	A
34	b	20	C
34	b	23	G
34	b	24	G
34	b	28	A
34	b	33	C
34	b	34	U
34	b	35	G
34	b	39	G
34	b	45	G
34	b	46	G
34	b	49	A
34	b	50	U
34	b	51	G
34	b	55	G
34	b	62	U
34	b	63	A
34	b	64	A
34	b	69	C
34	b	71	A
34	b	72	U
34	b	73	A
34	b	74	A
34	b	75	G
34	b	76	C
34	b	77	G
34	b	84	A
34	b	86	G
34	b	88	G

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Mol	Chain	Res	Type
34	b	90	U
34	b	91	A
34	b	92	U
34	b	96	C
34	b	100	U
34	b	101	A
34	b	102	U
34	b	103	A
34	b	109	C
34	b	114	U
34	b	116	C
34	b	118	A
34	b	119	A
34	b	120	U
34	b	125	A
34	b	126	A
34	b	127	A
34	b	136	G
34	b	140	C
34	b	142	A
34	b	160	A
34	b	163	C
34	b	166	U
34	b	169	G
34	b	172	A
34	b	174	U
34	b	181	A
34	b	186	G
34	b	187	G
34	b	188	G
34	b	195	A
34	b	196	A
34	b	197	A
34	b	199	A
34	b	200	U
34	b	201	C
34	b	204	A
34	b	210	C
34	b	215	G
34	b	216	A
34	b	218	A
34	b	221	A

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Mol	Chain	Res	Type
34	b	222	A
34	b	223	A
34	b	224	U
34	b	225	C
34	b	228	C
34	b	229	C
34	b	231	A
34	b	233	A
34	b	234	U
34	b	235	U
34	b	239	C
34	b	240	C
34	b	241	A
34	b	242	G
34	b	243	U
34	b	245	G
34	b	248	G
34	b	249	C
34	b	250	G
34	b	251	A
34	b	252	G
34	b	255	A
34	b	256	A
34	b	264	C
34	b	265	A
34	b	266	G
34	b	268	C
34	b	270	A
34	b	271	G
34	b	272	A
34	b	274	C
34	b	275	C
34	b	277	G
34	b	278	A
34	b	279	A
34	b	280	U
34	b	281	C
34	b	282	A
34	b	288	U
34	b	290	U
34	b	294	A
34	b	295	G

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Mol	Chain	Res	Type
34	b	298	G
34	b	299	A
34	b	300	A
34	b	303	G
34	b	304	U
34	b	307	G
34	b	309	A
34	b	310	A
34	b	311	A
34	b	317	G
34	b	322	A
34	b	323	C
34	b	324	A
34	b	329	G
34	b	330	A
34	b	331	C
34	b	332	A
34	b	342	A
34	b	343	C
34	b	345	A
34	b	347	A
34	b	349	U
34	b	353	C
34	b	356	G
34	b	358	U
34	b	362	A
34	b	363	G
34	b	365	U
34	b	366	C
34	b	367	G
34	b	368	A
34	b	369	U
34	b	370	G
34	b	371	A
34	b	372	G
34	b	373	U
34	b	375	G
34	b	383	C
34	b	385	C
34	b	386	G
34	b	387	U
34	b	388	G

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Mol	Chain	Res	Type
34	b	389	G
34	b	391	A
34	b	396	G
34	b	400	G
34	b	401	A
34	b	403	U
34	b	404	A
34	b	405	U
34	b	406	G
34	b	411	G
34	b	412	A
34	b	413	C
34	b	419	U
34	b	425	G
34	b	434	U
34	b	436	C
34	b	442	G
34	b	443	A
34	b	444	C
34	b	446	G
34	b	447	A
34	b	448	U
34	b	449	A
34	b	451	U
34	b	453	A
34	b	454	A
34	b	456	C
34	b	457	A
34	b	459	U
34	b	461	C
34	b	464	U
34	b	466	A
34	b	478	A
34	b	479	A
34	b	480	A
34	b	481	G
34	b	482	A
34	b	483	A
34	b	489	G
34	b	490	C
34	b	491	G
34	b	493	G

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Mol	Chain	Res	Type
34	b	494	G
34	b	501	A
34	b	502	A
34	b	503	A
34	b	504	A
34	b	505	A
34	b	507	A
34	b	508	A
34	b	509	C
34	b	513	A
34	b	517	C
34	b	518	G
34	b	519	U
34	b	521	U
34	b	527	C
34	b	528	A
34	b	529	A
34	b	530	G
34	b	531	C
34	b	532	A
34	b	538	A
34	b	539	G
34	b	544	C
34	b	545	U
34	b	546	U
34	b	547	A
34	b	548	G
34	b	549	G
34	b	550	C
34	b	551	G
34	b	556	A
34	b	560	C
34	b	563	A
34	b	567	U
34	b	568	U
34	b	569	U
34	b	573	U
34	b	574	A
34	b	575	A
34	b	578	G
34	b	584	C
34	b	585	G

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Mol	Chain	Res	Type
34	b	586	A
34	b	587	C
34	b	589	U
34	b	591	U
34	b	592	A
34	b	603	A
34	b	604	G
34	b	605	G
34	b	606	U
34	b	612	G
34	b	613	A
34	b	614	A
34	b	619	G
34	b	621	A
34	b	622	G
34	b	625	G
34	b	626	A
34	b	627	A
34	b	633	A
34	b	637	A
34	b	638	G
34	b	640	C
34	b	643	A
34	b	644	A
34	b	646	U
34	b	647	G
34	b	651	G
34	b	652	U
34	b	653	U
34	b	654	A
34	b	655	A
34	b	656	G
34	b	659	G
34	b	664	G
34	b	665	U
34	b	667	U
34	b	668	A
34	b	669	G
34	b	670	A
34	b	675	A
34	b	679	C
34	b	683	U

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Mol	Chain	Res	Type
34	b	686	U
34	b	687	C
34	b	695	G
34	b	701	G
34	b	704	G
34	b	705	A
34	b	711	G
34	b	715	A
34	b	716	A
34	b	718	A
34	b	719	C
34	b	723	C
34	b	724	U
34	b	727	A
34	b	729	G
34	b	730	A
34	b	731	C
34	b	733	G
34	b	738	G
34	b	740	C
34	b	745	G
34	b	747	U
34	b	750	A
34	b	752	A
34	b	757	G
34	b	758	C
34	b	764	A
34	b	765	C
34	b	766	U
34	b	770	G
34	b	775	G
34	b	776	G
34	b	777	G
34	b	781	A
34	b	782	A
34	b	783	A
34	b	784	G
34	b	785	G
34	b	788	A
34	b	789	A
34	b	790	U
34	b	792	A

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Mol	Chain	Res	Type
34	b	793	A
34	b	794	A
34	b	797	G
34	b	801	G
34	b	805	G
34	b	807	U
34	b	810	U
34	b	812	C
34	b	814	C
34	b	819	A
34	b	822	G
34	b	827	U
34	b	828	U
34	b	829	A
34	b	830	G
34	b	836	G
34	b	842	U
34	b	844	A
34	b	845	A
34	b	846	U
34	b	847	U
34	b	852	U
34	b	856	G
34	b	858	G
34	b	859	G
34	b	866	A
34	b	867	C
34	b	872	U
34	b	873	C
34	b	874	G
34	b	876	C
34	b	877	A
34	b	878	A
34	b	879	G
34	b	880	G
34	b	881	G
34	b	882	G
34	b	886	A
34	b	887	U
34	b	888	C
34	b	889	C
34	b	891	G

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Mol	Chain	Res	Type
34	b	893	C
34	b	894	U
34	b	895	U
34	b	896	A
34	b	897	C
34	b	898	C
34	b	899	A
34	b	900	A
34	b	910	A
34	b	911	A
34	b	912	C
34	b	914	G
34	b	915	C
34	b	929	U
34	b	931	U
34	b	932	U
34	b	933	A
34	b	934	U
34	b	941	A
34	b	945	A
34	b	946	C
34	b	947	A
34	b	954	G
34	b	958	U
34	b	959	A
34	b	961	C
34	b	967	U
34	b	969	G
34	b	973	A
34	b	974	G
34	b	975	A
34	b	979	A
34	b	980	A
34	b	983	A
34	b	985	C
34	b	986	C
34	b	988	A
34	b	990	A
34	b	996	A
34	b	999	U
34	b	1003	G
34	b	1004	U

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Mol	Chain	Res	Type
34	b	1006	C
34	b	1007	C
34	b	1008	A
34	b	1010	A
34	b	1011	G
34	b	1012	U
34	b	1013	C
34	b	1017	G
34	b	1018	U
34	b	1021	A
34	b	1022	G
34	b	1023	U
34	b	1025	G
34	b	1026	G
34	b	1027	A
34	b	1028	A
34	b	1032	A
34	b	1033	U
34	b	1034	G
34	b	1037	G
34	b	1038	G
34	b	1039	A
34	b	1045	C
34	b	1047	G
34	b	1051	G
34	b	1052	C
34	b	1054	A
34	b	1055	G
34	b	1056	G
34	b	1057	A
34	b	1058	U
34	b	1059	G
34	b	1060	U
34	b	1061	U
34	b	1062	G
34	b	1063	G
34	b	1064	C
34	b	1068	G
34	b	1069	A
34	b	1070	A
34	b	1071	G
34	b	1072	C

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Mol	Chain	Res	Type
34	b	1073	A
34	b	1075	C
34	b	1077	A
34	b	1078	U
34	b	1079	C
34	b	1080	A
34	b	1081	U
34	b	1082	U
34	b	1084	A
34	b	1085	A
34	b	1086	A
34	b	1087	G
34	b	1088	A
34	b	1089	A
34	b	1090	A
34	b	1091	G
34	b	1092	C
34	b	1094	U
34	b	1095	A
34	b	1096	A
34	b	1097	U
34	b	1098	A
34	b	1099	G
34	b	1100	C
34	b	1102	C
34	b	1103	A
34	b	1104	C
34	b	1105	U
34	b	1106	G
34	b	1107	G
34	b	1109	C
34	b	1110	G
34	b	1111	A
34	b	1112	G
34	b	1115	G
34	b	1116	G
34	b	1117	C
34	b	1121	C
34	b	1122	G
34	b	1130	U
34	b	1132	U
34	b	1133	A

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Mol	Chain	Res	Type
34	b	1134	A
34	b	1135	C
34	b	1136	G
34	b	1141	U
34	b	1142	A
34	b	1143	A
34	b	1144	A
34	b	1151	A
34	b	1155	A
34	b	1156	A
34	b	1163	G
34	b	1169	A
34	b	1171	G
34	b	1172	C
34	b	1173	U
34	b	1174	U
34	b	1175	A
34	b	1176	U
34	b	1177	G
34	b	1178	C
34	b	1179	G
34	b	1180	U
34	b	1184	U
34	b	1185	G
34	b	1187	G
34	b	1188	U
34	b	1195	G
34	b	1197	G
34	b	1200	C
34	b	1202	G
34	b	1204	A
34	b	1205	A
34	b	1206	G
34	b	1209	U
34	b	1210	G
34	b	1211	C
34	b	1212	G
34	b	1218	G
34	b	1222	U
34	b	1223	G
34	b	1224	U
34	b	1225	G

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Mol	Chain	Res	Type
34	b	1227	G
34	b	1232	G
34	b	1236	G
34	b	1237	A
34	b	1238	G
34	b	1239	G
34	b	1240	U
34	b	1241	A
34	b	1242	U
34	b	1244	A
34	b	1247	A
34	b	1248	G
34	b	1249	U
34	b	1252	G
34	b	1253	A
34	b	1255	U
34	b	1256	G
34	b	1260	A
34	b	1265	A
34	b	1266	G
34	b	1268	A
34	b	1271	G
34	b	1272	A
34	b	1273	U
34	b	1274	A
34	b	1276	A
34	b	1280	G
34	b	1287	A
34	b	1294	U
34	b	1296	G
34	b	1299	G
34	b	1300	G
34	b	1301	A
34	b	1302	A
34	b	1306	C
34	b	1312	U
34	b	1314	C
34	b	1318	U
34	b	1320	C
34	b	1321	A
34	b	1322	A
34	b	1330	C

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Mol	Chain	Res	Type
34	b	1332	G
34	b	1338	G
34	b	1340	U
34	b	1341	G
34	b	1345	C
34	b	1347	A
34	b	1348	C
34	b	1349	C
34	b	1352	U
34	b	1354	A
34	b	1355	G
34	b	1365	A
34	b	1368	G
34	b	1370	C
34	b	1374	G
34	b	1378	A
34	b	1379	U
34	b	1381	G
34	b	1382	G
34	b	1383	A
34	b	1386	C
34	b	1390	U
34	b	1392	A
34	b	1394	U
34	b	1395	A
34	b	1396	U
34	b	1400	U
34	b	1414	C
34	b	1415	U
34	b	1416	G
34	b	1418	G
34	b	1419	A
34	b	1420	A
34	b	1421	G
34	b	1424	G
34	b	1425	G
34	b	1427	A
34	b	1428	C
34	b	1444	G
34	b	1449	G
34	b	1451	C
34	b	1452	G

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Mol	Chain	Res	Type
34	b	1453	A
34	b	1454	C
34	b	1455	G
34	b	1458	U
34	b	1459	G
34	b	1460	U
34	b	1461	C
34	b	1467	U
34	b	1469	A
34	b	1470	A
34	b	1476	U
34	b	1477	A
34	b	1478	G
34	b	1482	G
34	b	1485	U
34	b	1488	C
34	b	1490	A
34	b	1491	G
34	b	1493	C
34	b	1494	A
34	b	1496	A
34	b	1497	U
34	b	1498	C
34	b	1501	G
34	b	1503	A
34	b	1504	A
34	b	1506	U
34	b	1507	C
34	b	1508	A
34	b	1509	A
34	b	1510	G
34	b	1511	G
34	b	1512	C
34	b	1521	G
34	b	1522	A
34	b	1523	U
34	b	1524	G
34	b	1529	G
34	b	1530	G
34	b	1535	A
34	b	1536	C
34	b	1537	G

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Mol	Chain	Res	Type
34	b	1539	U
34	b	1542	U
34	b	1550	C
34	b	1552	A
34	b	1556	C
34	b	1562	U
34	b	1565	C
34	b	1566	A
34	b	1568	G
34	b	1569	A
34	b	1570	A
34	b	1576	U
34	b	1578	U
34	b	1583	A
34	b	1585	C
34	b	1587	G
34	b	1600	C
34	b	1602	U
34	b	1603	A
34	b	1607	C
34	b	1608	A
34	b	1609	A
34	b	1610	A
34	b	1613	G
34	b	1614	A
34	b	1616	A
34	b	1617	C
34	b	1618	A
34	b	1627	G
34	b	1631	G
34	b	1633	G
34	b	1634	A
34	b	1637	A
34	b	1644	C
34	b	1646	C
34	b	1647	U
34	b	1648	U
34	b	1649	G
34	b	1654	A
34	b	1656	C
34	b	1657	U
34	b	1658	C

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Mol	Chain	Res	Type
34	b	1660	G
34	b	1663	G
34	b	1667	G
34	b	1668	A
34	b	1670	C
34	b	1672	A
34	b	1673	G
34	b	1674	G
34	b	1677	A
34	b	1689	A
34	b	1691	C
34	b	1693	U
34	b	1694	C
34	b	1698	A
34	b	1699	G
34	b	1700	A
34	b	1702	G
34	b	1703	G
34	b	1705	A
34	b	1706	C
34	b	1710	G
34	b	1713	A
34	b	1715	G
34	b	1716	U
34	b	1728	C
34	b	1730	C
34	b	1731	G
34	b	1732	C
34	b	1733	G
34	b	1735	A
34	b	1746	A
34	b	1750	G
34	b	1754	A
34	b	1756	G
34	b	1757	A
34	b	1758	U
34	b	1763	G
34	b	1764	C
34	b	1766	G
34	b	1773	A
34	b	1774	C
34	b	1775	U

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Mol	Chain	Res	Type
34	b	1776	G
34	b	1778	U
34	b	1780	A
34	b	1782	U
34	b	1783	A
34	b	1784	A
34	b	1786	A
34	b	1787	A
34	b	1800	C
34	b	1801	A
34	b	1802	A
34	b	1805	A
34	b	1806	C
34	b	1807	G
34	b	1808	A
34	b	1809	A
34	b	1811	G
34	b	1819	A
34	b	1820	U
34	b	1827	U
34	b	1828	G
34	b	1829	A
34	b	1833	C
34	b	1839	G
34	b	1842	G
34	b	1845	G
34	b	1847	A
34	b	1848	A
34	b	1849	G
34	b	1853	A
34	b	1857	G
34	b	1862	G
34	b	1866	A
34	b	1867	G
34	b	1868	C
34	b	1870	C
34	b	1871	A
34	b	1875	G
34	b	1877	A
34	b	1885	A
34	b	1890	A
34	b	1896	G

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Mol	Chain	Res	Type
34	b	1901	A
34	b	1902	C
34	b	1905	C
34	b	1907	G
34	b	1908	C
34	b	1911	U
34	b	1912	A
34	b	1913	A
34	b	1914	C
34	b	1915	U
34	b	1924	C
34	b	1928	A
34	b	1929	G
34	b	1930	G
34	b	1931	U
34	b	1932	A
34	b	1936	A
34	b	1937	A
34	b	1938	A
34	b	1940	U
34	b	1941	C
34	b	1942	C
34	b	1943	U
34	b	1952	A
34	b	1953	A
34	b	1955	U
34	b	1958	C
34	b	1960	A
34	b	1961	C
34	b	1963	U
34	b	1964	G
34	b	1965	C
34	b	1967	C
34	b	1970	A
34	b	1971	U
34	b	1972	G
34	b	1977	A
34	b	1980	G
34	b	1981	A
34	b	1982	U
34	b	1989	G
34	b	1991	U

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Mol	Chain	Res	Type
34	b	1993	U
34	b	1997	C
34	b	2006	C
34	b	2007	U
34	b	2011	U
34	b	2014	A
34	b	2020	A
34	b	2022	U
34	b	2023	C
34	b	2025	C
34	b	2027	G
34	b	2030	A
34	b	2031	A
34	b	2032	G
34	b	2033	A
34	b	2034	U
34	b	2036	C
34	b	2042	A
34	b	2043	C
34	b	2044	C
34	b	2046	G
34	b	2049	G
34	b	2055	C
34	b	2056	G
34	b	2060	A
34	b	2061	G
34	b	2062	A
34	b	2063	C
34	b	2068	U
34	b	2069	G
34	b	2070	A
34	b	2076	U
34	b	2077	A
34	b	2080	A
34	b	2087	G
34	b	2092	U
34	b	2095	A
34	b	2098	U
34	b	2103	C
34	b	2104	C
34	b	2105	U
34	b	2106	U

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Mol	Chain	Res	Type
34	b	2107	G
34	b	2109	U
34	b	2110	G
34	b	2111	U
34	b	2112	G
34	b	2113	U
34	b	2114	A
34	b	2115	G
34	b	2117	A
34	b	2118	U
34	b	2119	A
34	b	2120	G
34	b	2121	G
34	b	2123	G
34	b	2124	G
34	b	2125	G
34	b	2126	A
34	b	2127	G
34	b	2128	G
34	b	2130	U
34	b	2131	U
34	b	2132	U
34	b	2133	G
34	b	2139	U
34	b	2142	A
34	b	2143	C
34	b	2144	G
34	b	2145	C
34	b	2147	A
34	b	2148	G
34	b	2149	U
34	b	2152	G
34	b	2153	C
34	b	2156	G
34	b	2158	A
34	b	2159	G
34	b	2160	C
34	b	2161	C
34	b	2162	G
34	b	2163	A
34	b	2164	C
34	b	2165	C

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Mol	Chain	Res	Type
34	b	2166	U
34	b	2167	U
34	b	2168	G
34	b	2169	A
34	b	2170	A
34	b	2171	A
34	b	2172	U
34	b	2173	A
34	b	2174	C
34	b	2175	C
34	b	2176	A
34	b	2177	C
34	b	2178	C
34	b	2179	C
34	b	2183	A
34	b	2185	U
34	b	2190	G
34	b	2191	A
34	b	2193	G
34	b	2198	A
34	b	2199	A
34	b	2203	U
34	b	2204	G
34	b	2210	U
34	b	2211	A
34	b	2212	A
34	b	2213	U
34	b	2214	C
34	b	2215	C
34	b	2218	G
34	b	2225	A
34	b	2238	G
34	b	2239	G
34	b	2243	U
34	b	2250	G
34	b	2251	G
34	b	2252	G
34	b	2255	G
34	b	2256	G
34	b	2257	U
34	b	2261	C
34	b	2265	U

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Mol	Chain	Res	Type
34	b	2267	A
34	b	2268	A
34	b	2273	A
34	b	2275	C
34	b	2276	G
34	b	2279	G
34	b	2280	G
34	b	2282	G
34	b	2283	C
34	b	2284	A
34	b	2286	G
34	b	2287	A
34	b	2288	A
34	b	2289	G
34	b	2294	G
34	b	2297	A
34	b	2298	A
34	b	2305	U
34	b	2307	G
34	b	2308	G
34	b	2311	A
34	b	2312	U
34	b	2316	G
34	b	2319	G
34	b	2320	U
34	b	2322	A
34	b	2325	G
34	b	2327	A
34	b	2331	G
34	b	2333	A
34	b	2334	U
34	b	2335	A
34	b	2336	A
34	b	2345	G
34	b	2347	C
34	b	2350	C
34	b	2353	G
34	b	2354	C
34	b	2357	G
34	b	2358	A
34	b	2361	G
34	b	2366	A

Continued on next page...

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Mol	Chain	Res	Type
34	b	2367	G
34	b	2371	G
34	b	2372	U
34	b	2376	A
34	b	2379	G
34	b	2382	G
34	b	2383	G
34	b	2385	C
34	b	2388	A
34	b	2396	G
34	b	2402	U
34	b	2403	C
34	b	2404	U
34	b	2406	A
34	b	2407	A
34	b	2410	G
34	b	2411	A
34	b	2413	G
34	b	2421	G
34	b	2422	C
34	b	2423	U
34	b	2425	A
34	b	2426	A
34	b	2427	C
34	b	2428	G
34	b	2429	G
34	b	2430	A
34	b	2431	U
34	b	2434	A
34	b	2435	A
34	b	2439	A
34	b	2440	C
34	b	2441	U
34	b	2445	G
34	b	2447	G
34	b	2448	A
34	b	2449	U
34	b	2450	A
34	b	2455	G
34	b	2456	C
34	b	2458	G
34	b	2459	A

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Mol	Chain	Res	Type
34	b	2465	C
34	b	2470	G
34	b	2472	G
34	b	2474	U
34	b	2476	A
34	b	2478	A
34	b	2481	G
34	b	2482	A
34	b	2484	G
34	b	2490	G
34	b	2491	U
34	b	2497	A
34	b	2500	U
34	b	2502	G
34	b	2503	A
34	b	2505	G
34	b	2506	U
34	b	2507	C
34	b	2513	A
34	b	2517	C
34	b	2518	A
34	b	2519	U
34	b	2525	G
34	b	2527	C
34	b	2529	G
34	b	2530	A
34	b	2534	A
34	b	2535	G
34	b	2536	G
34	b	2544	G
34	b	2547	A
34	b	2554	U
34	b	2556	C
34	b	2557	G
34	b	2562	U
34	b	2564	A
34	b	2565	A
34	b	2566	A
34	b	2567	G
34	b	2571	U
34	b	2573	C
34	b	2576	G

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Mol	Chain	Res	Type
34	b	2577	A
34	b	2578	G
34	b	2582	G
34	b	2584	U
34	b	2585	U
34	b	2586	U
34	b	2590	A
34	b	2595	G
34	b	2596	U
34	b	2600	A
34	b	2601	C
34	b	2602	A
34	b	2603	G
34	b	2604	U
34	b	2607	G
34	b	2609	U
34	b	2610	C
34	b	2611	C
34	b	2613	U
34	b	2614	A
34	b	2615	U
34	b	2618	G
34	b	2623	G
34	b	2628	C
34	b	2629	U
34	b	2634	A
34	b	2635	A
34	b	2638	G
34	b	2639	A
34	b	2640	G
34	b	2641	G
34	b	2645	G
34	b	2646	C
34	b	2655	G
34	b	2659	G
34	b	2660	A
34	b	2661	G
34	b	2666	C
34	b	2670	A
34	b	2673	G
34	b	2688	G
34	b	2689	U

Continued on next page...

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Mol	Chain	Res	Type
34	b	2690	U
34	b	2692	G
34	b	2700	A
34	b	2702	G
34	b	2707	U
34	b	2712	C
34	b	2713	U
34	b	2716	C
34	b	2718	G
34	b	2726	A
34	b	2727	A
34	b	2732	G
34	b	2733	A
34	b	2735	G
34	b	2736	A
34	b	2744	G
34	b	2745	C
34	b	2746	U
34	b	2749	A
34	b	2750	A
34	b	2751	G
34	b	2752	C
34	b	2753	A
34	b	2755	C
34	b	2757	A
34	b	2758	A
34	b	2761	A
34	b	2762	C
34	b	2765	A
34	b	2767	C
34	b	2772	C
34	b	2778	A
34	b	2779	U
34	b	2780	G
34	b	2781	A
34	b	2782	G
34	b	2784	U
34	b	2792	A
34	b	2793	C
34	b	2795	C
34	b	2796	U
34	b	2797	U

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Mol	Chain	Res	Type
34	b	2798	U
34	b	2799	A
34	b	2800	A
34	b	2805	C
34	b	2808	G
34	b	2818	U
34	b	2819	G
34	b	2820	A
34	b	2821	A
34	b	2823	A
34	b	2824	C
34	b	2826	A
34	b	2833	U
34	b	2835	A
34	b	2838	G
34	b	2849	U
34	b	2850	A
34	b	2858	C
34	b	2861	U
34	b	2866	U
34	b	2868	A
34	b	2872	A
34	b	2873	A
34	b	2874	C
34	b	2883	A
34	b	2884	U
34	b	2885	G
34	b	2886	A
34	b	2888	C
34	b	2891	U
34	b	2893	A
34	b	2894	G
34	b	2895	G
34	b	2901	C
34	b	2903	U

All (52) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	5	U
1	A	51	A
1	A	66	A

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Mol	Chain	Res	Type
1	A	94	G
1	A	109	A
1	A	125	U
1	A	148	G
1	A	218	U
1	A	243	A
1	A	254	G
1	A	301	G
1	A	429	U
1	A	447	G
1	A	478	A
1	A	484	G
1	A	572	A
1	A	695	A
1	A	701	U
1	A	722	G
1	A	960	U
1	A	1065	U
1	A	1117	A
1	A	1129	C
1	A	1157	A
1	A	1201	A
1	A	1226	C
1	A	1300	G
1	A	1332	A
1	A	1348	U
1	A	1492	A
22	V	9	A
22	V	15	G
22	V	18	G
22	V	38	A
22	V	39	U
22	V	40	C
22	V	48	C
22	V	74	C
22	V	75	C
23	W	1	C
23	W	7	G
23	W	18	G
23	W	20	U
23	W	42	G
23	W	49	G

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Mol	Chain	Res	Type
23	W	57	A
23	W	60	U
23	W	73	A
23	W	74	C
24	X	12	C
24	X	18	C
24	X	19	U

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](#)

1 ligand is 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
57	CLM	b	9000	-	19,20,20	0.88	1 (5%)	23,27,27	0.80	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
57	CLM	b	9000	-	-	10/20/22/22	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
57	b	9000	CLM	C9-N9	-2.07	1.40	1.45

There are no bond angle outliers.

There are no chirality outliers.

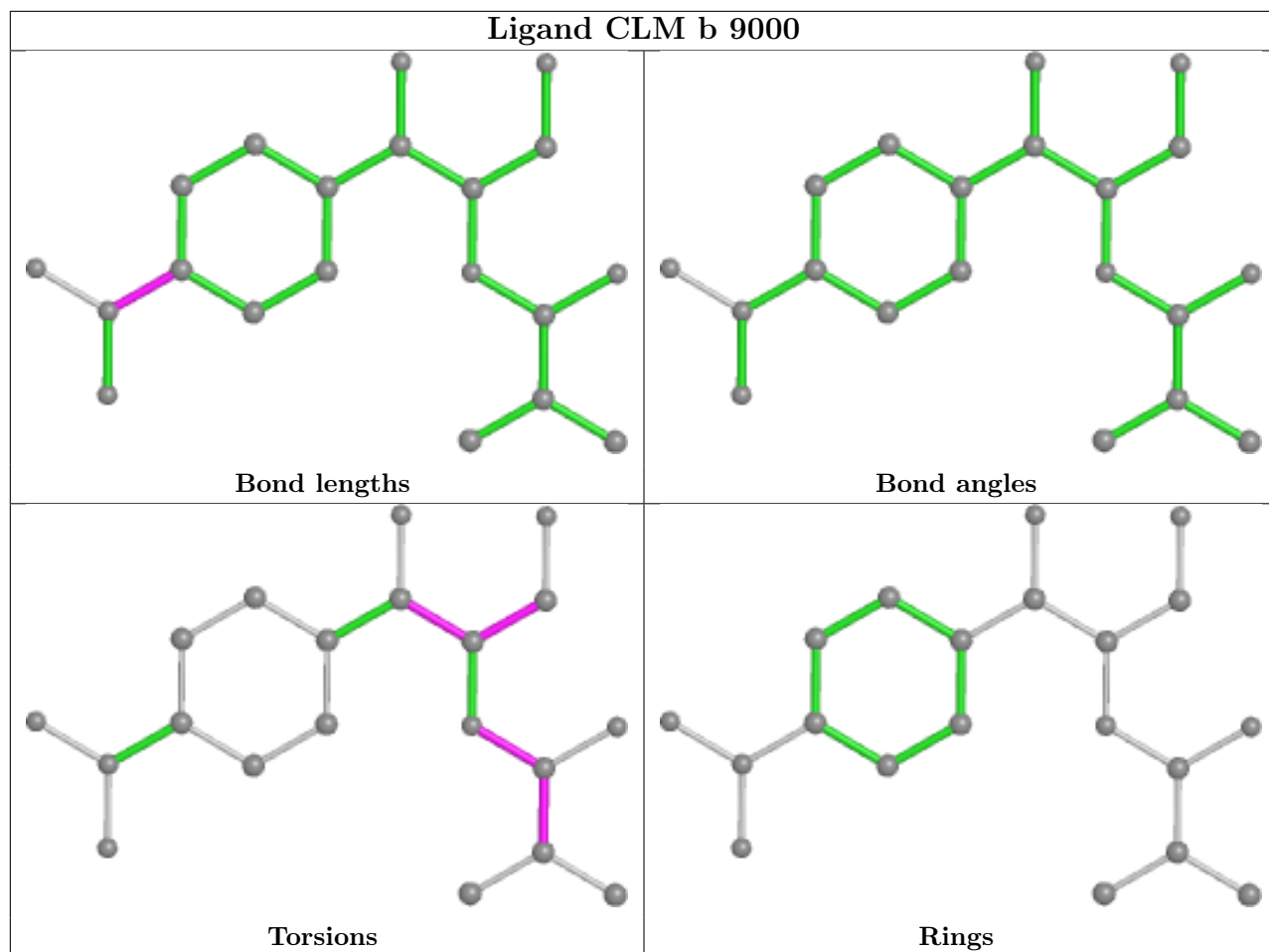
All (10) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
57	b	9000	CLM	N2-C3-C5-O5
57	b	9000	CLM	N2-C3-C5-C6
57	b	9000	CLM	C4-C3-C5-O5
57	b	9000	CLM	O2-C2-N2-C3
57	b	9000	CLM	C1-C2-N2-C3
57	b	9000	CLM	N2-C3-C4-O4
57	b	9000	CLM	C5-C3-C4-O4
57	b	9000	CLM	C4-C3-C5-C6
57	b	9000	CLM	CL1-C1-C2-O2
57	b	9000	CLM	CL1-C1-C2-N2

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](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
34	b	4

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	b	2610:C	O3'	2611:C	P	1.83
1	b	2504:U	O3'	2505:G	P	1.81
1	b	2248:C	O3'	2249:U	P	1.78
1	b	1323:C	O3'	1324:G	P	1.77

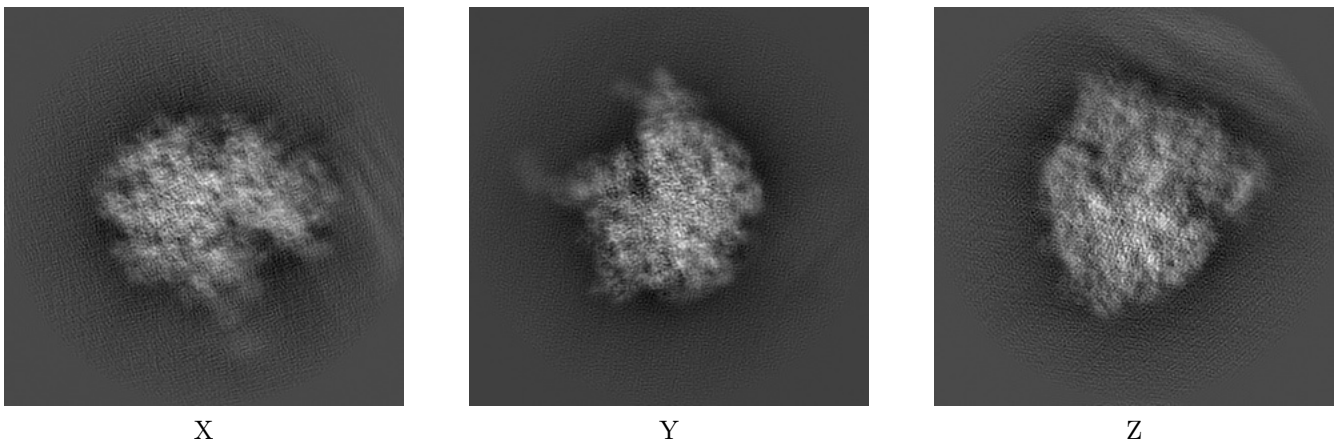
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-6486. 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](#)

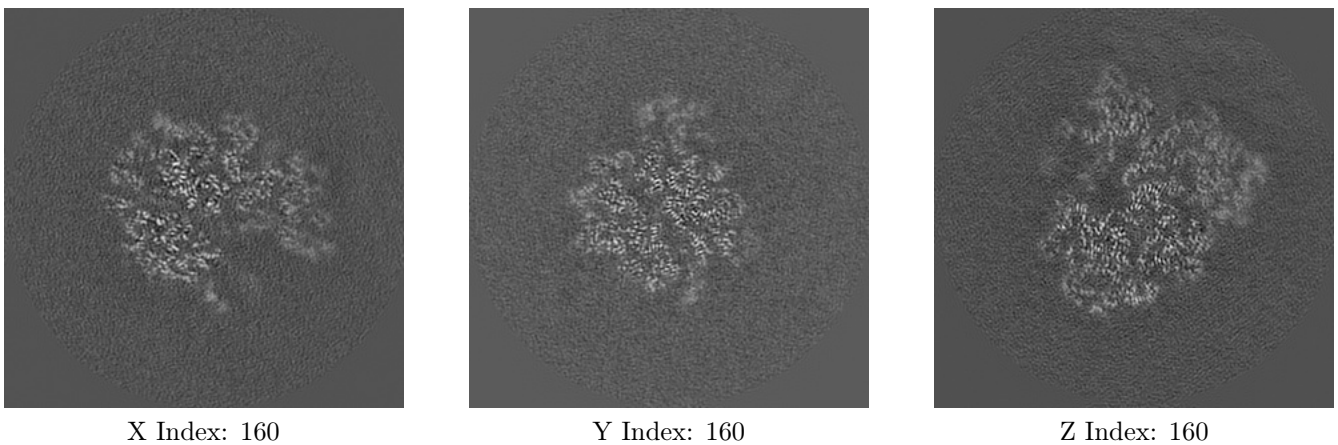
6.1.1 Primary map



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

6.2 Central slices [i](#)

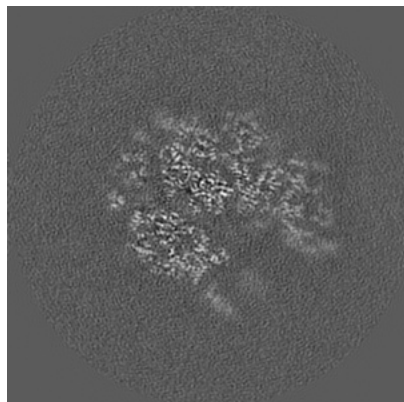
6.2.1 Primary map



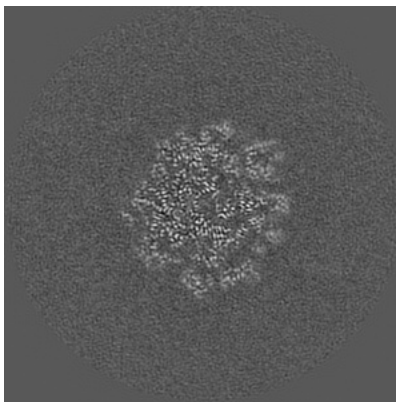
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

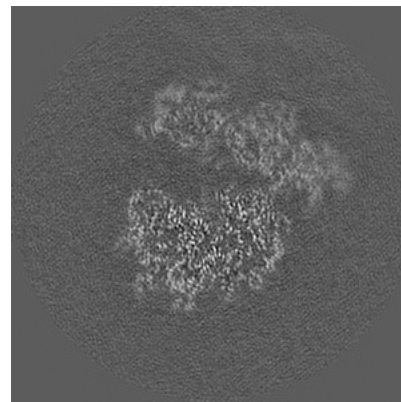
6.3.1 Primary map



X Index: 162



Y Index: 136

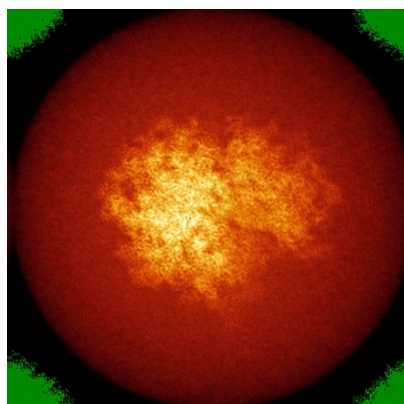


Z Index: 151

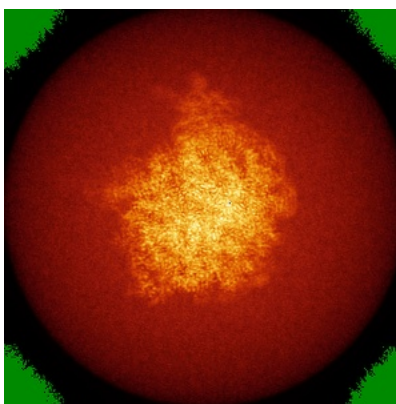
The images above show the largest variance slices of the map in three orthogonal directions.

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

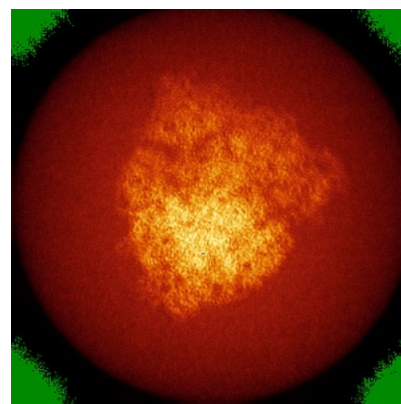
6.4.1 Primary map



X



Y

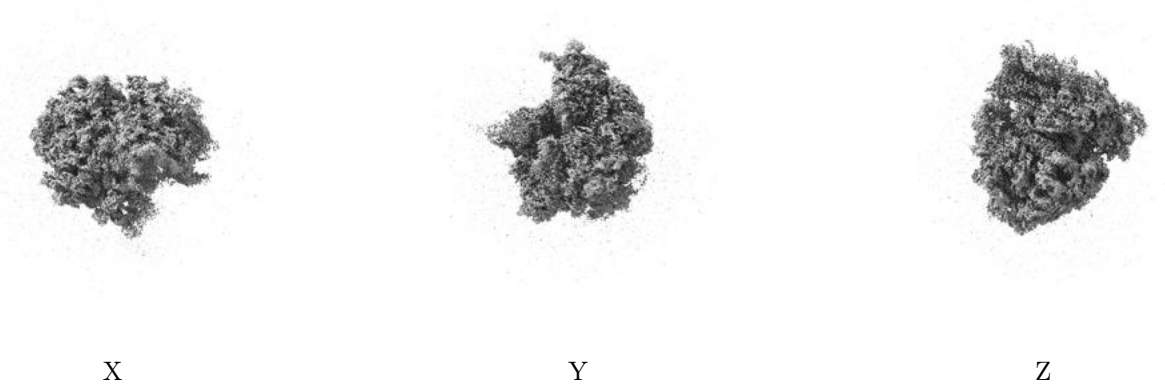


Z

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



The images above show the 3D surface view of the map at the recommended contour level 0.03. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

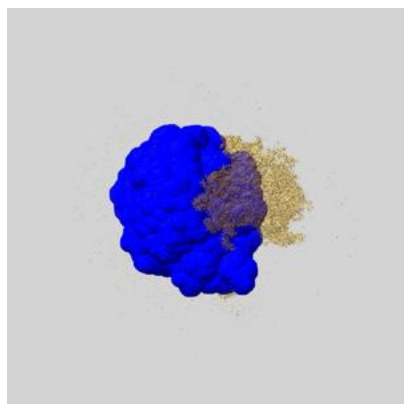
6.6 Mask visualisation [i](#)

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

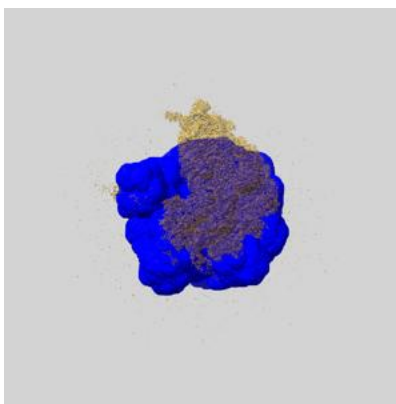
A mask typically either:

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

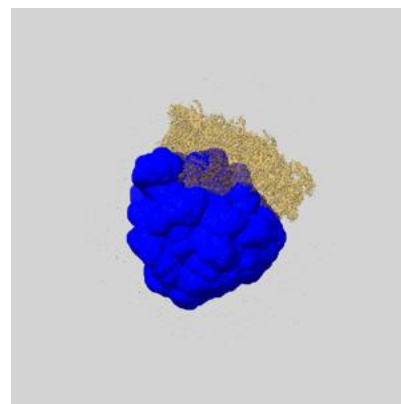
6.6.1 emd_6486_msk_1.map [i](#)



X



Y

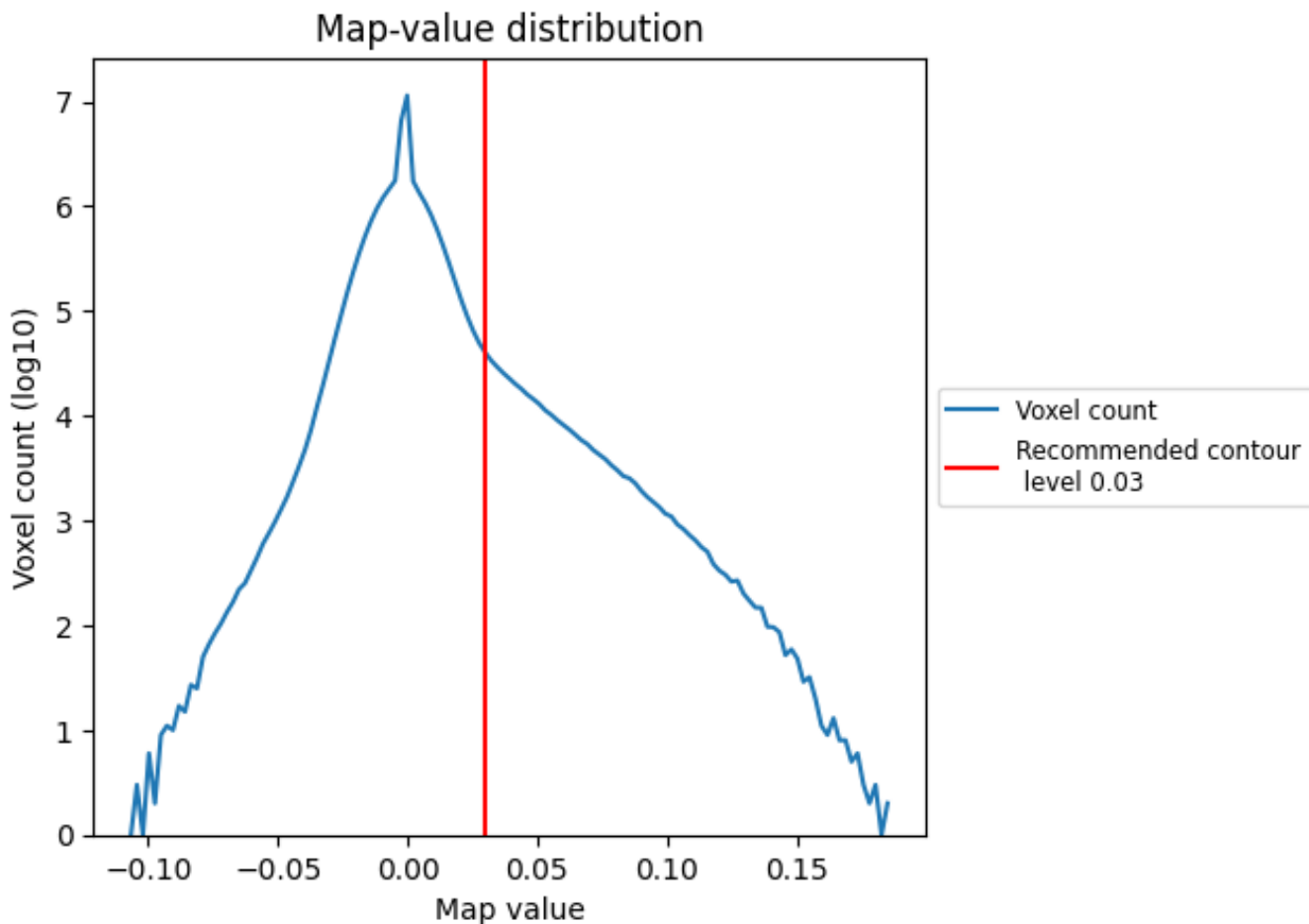


Z

7 Map analysis [i](#)

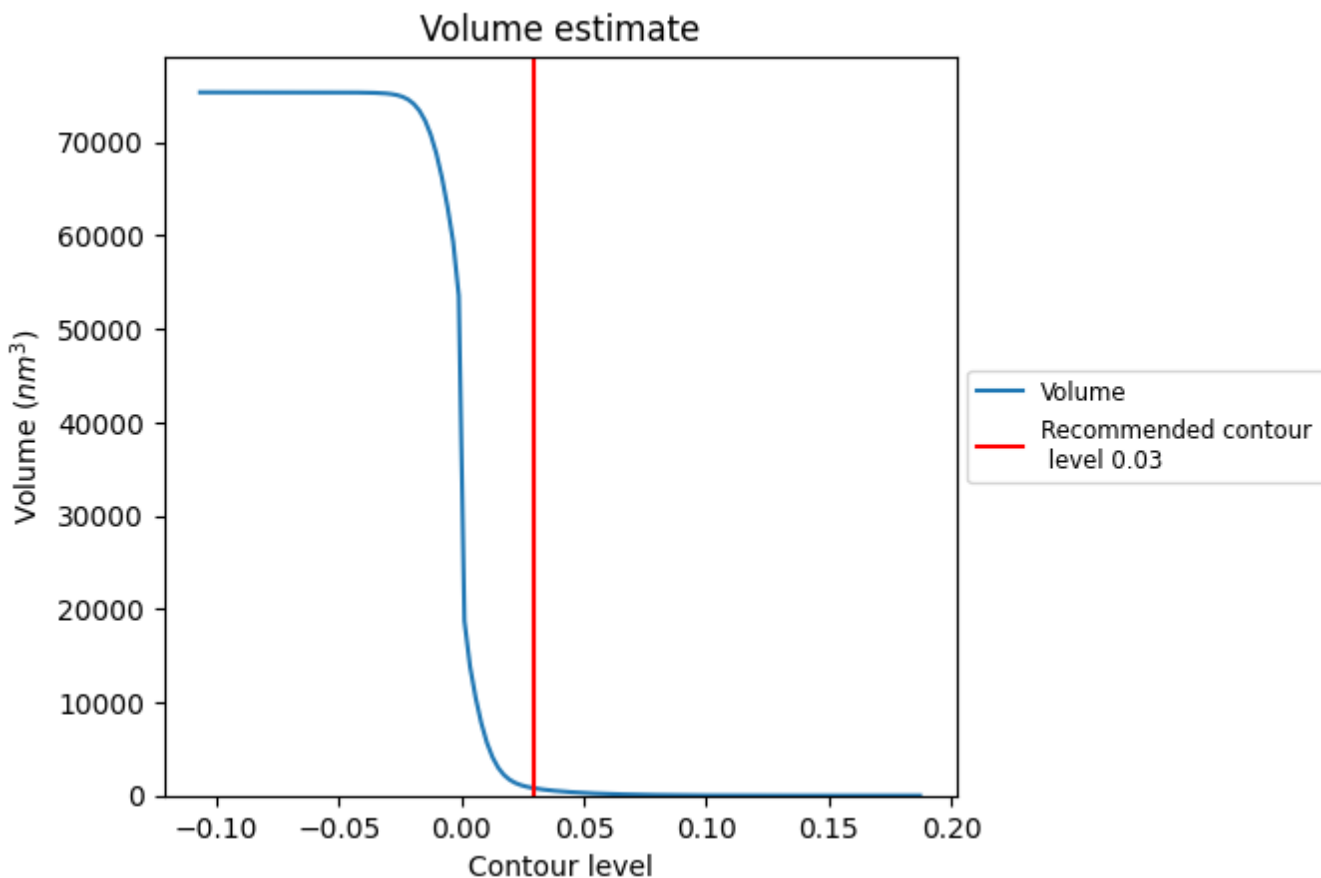
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

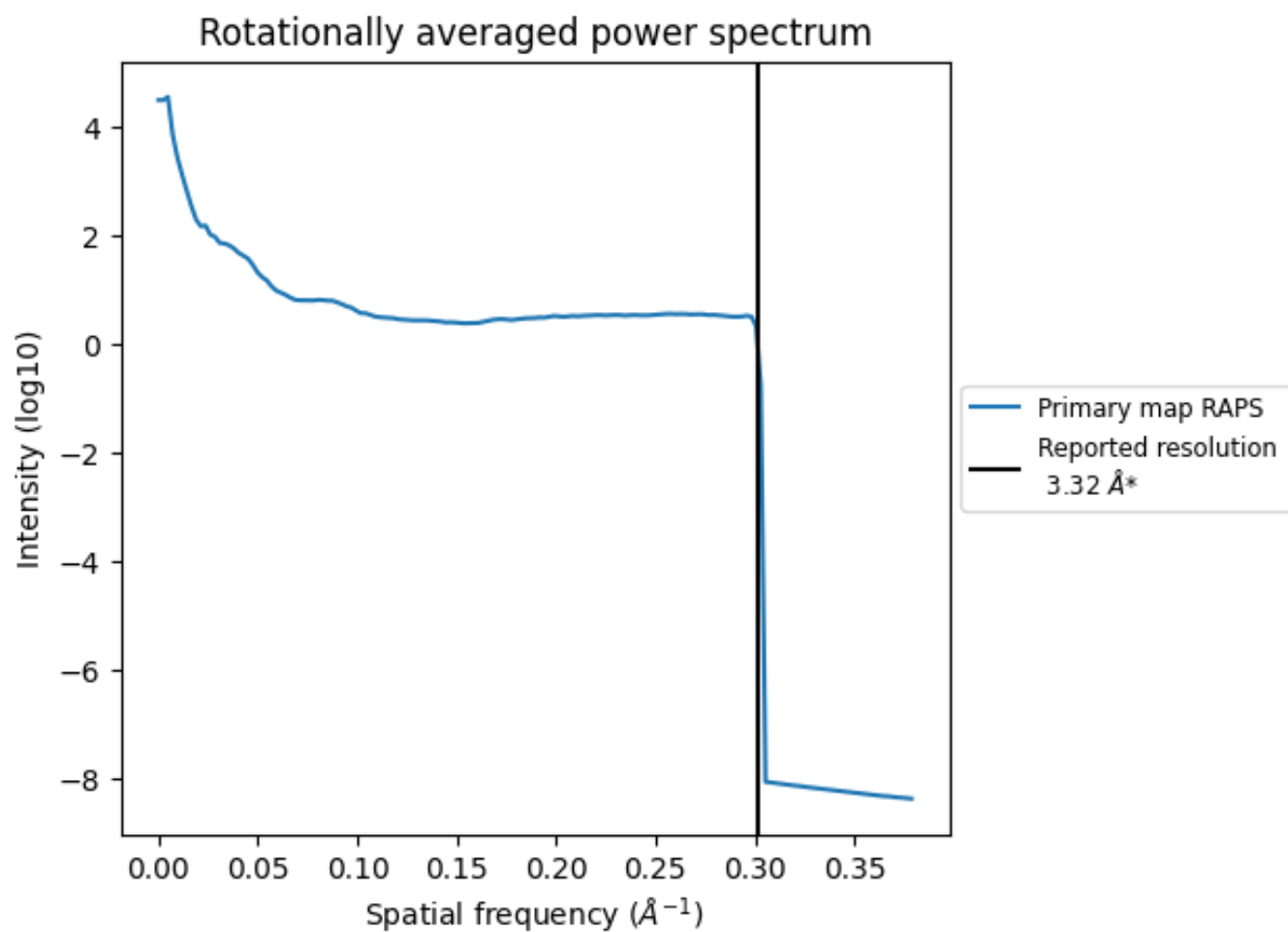
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 781 nm³; this corresponds to an approximate mass of 706 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](#)

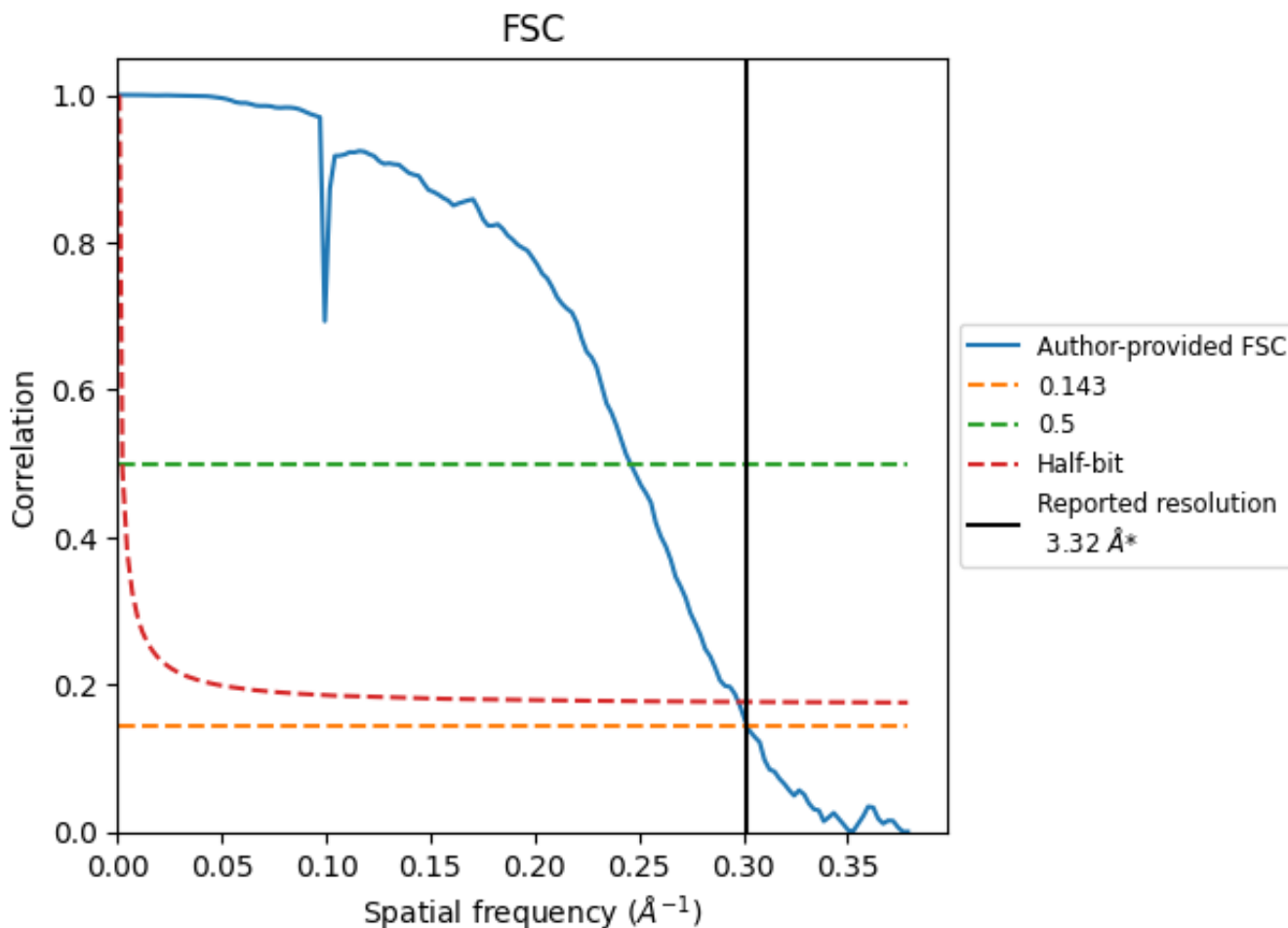


*Reported resolution corresponds to spatial frequency of 0.301 Å⁻¹

8 Fourier-Shell correlation [\(i\)](#)

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

8.1 FSC [\(i\)](#)



*Reported resolution corresponds to spatial frequency of 0.301 Å⁻¹

8.2 Resolution estimates [i](#)

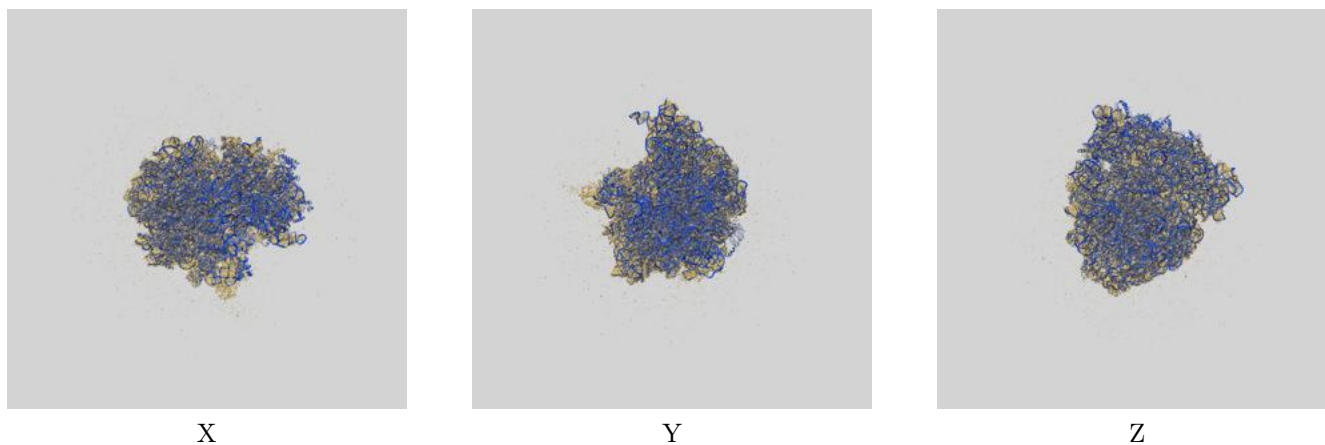
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	-	-	-
Author-provided FSC curve	3.31	4.07	3.36
Unmasked-calculated*	-	-	-

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

9 Map-model fit [i](#)

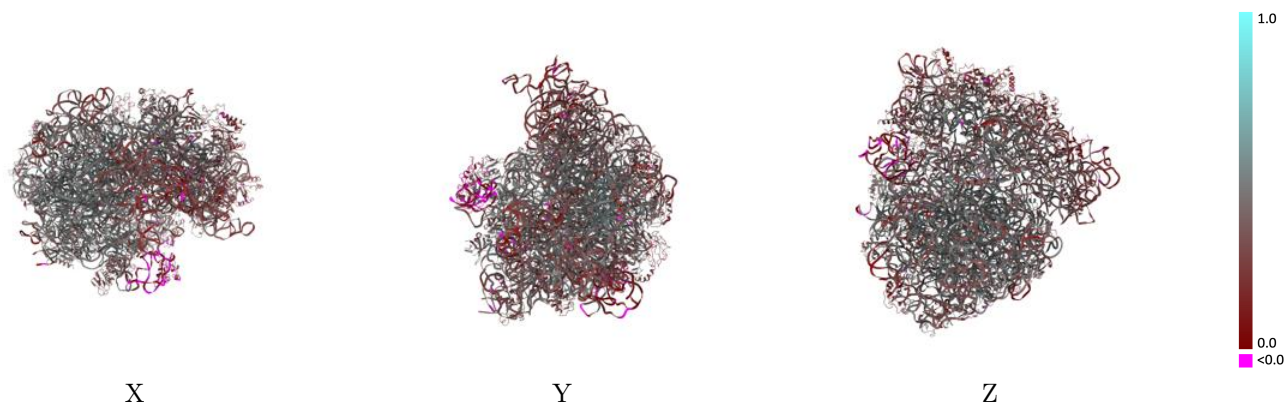
This section contains information regarding the fit between EMDB map EMD-6486 and PDB model 3JBV. Per-residue inclusion information can be found in section 3 on page 14.

9.1 Map-model overlay [i](#)



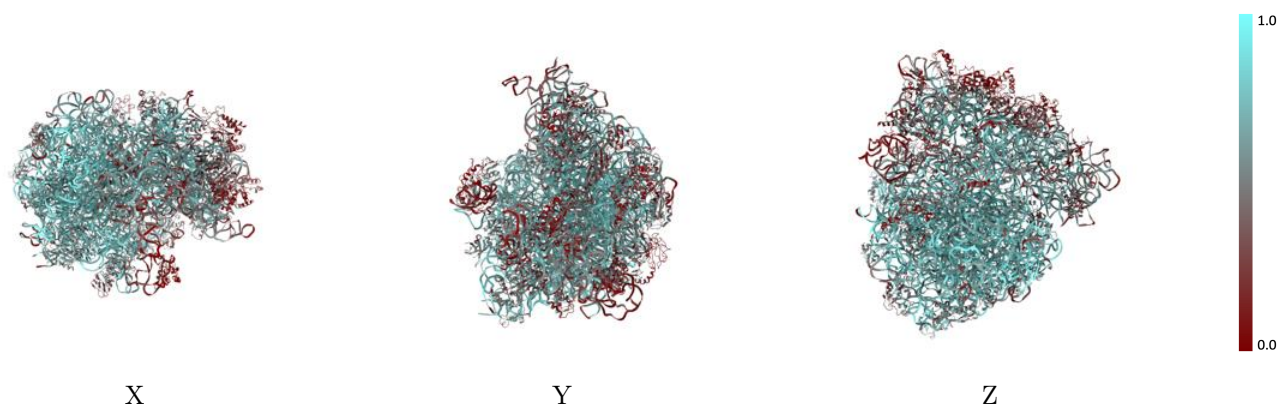
The images above show the 3D surface view of the map at the recommended contour level 0.03 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



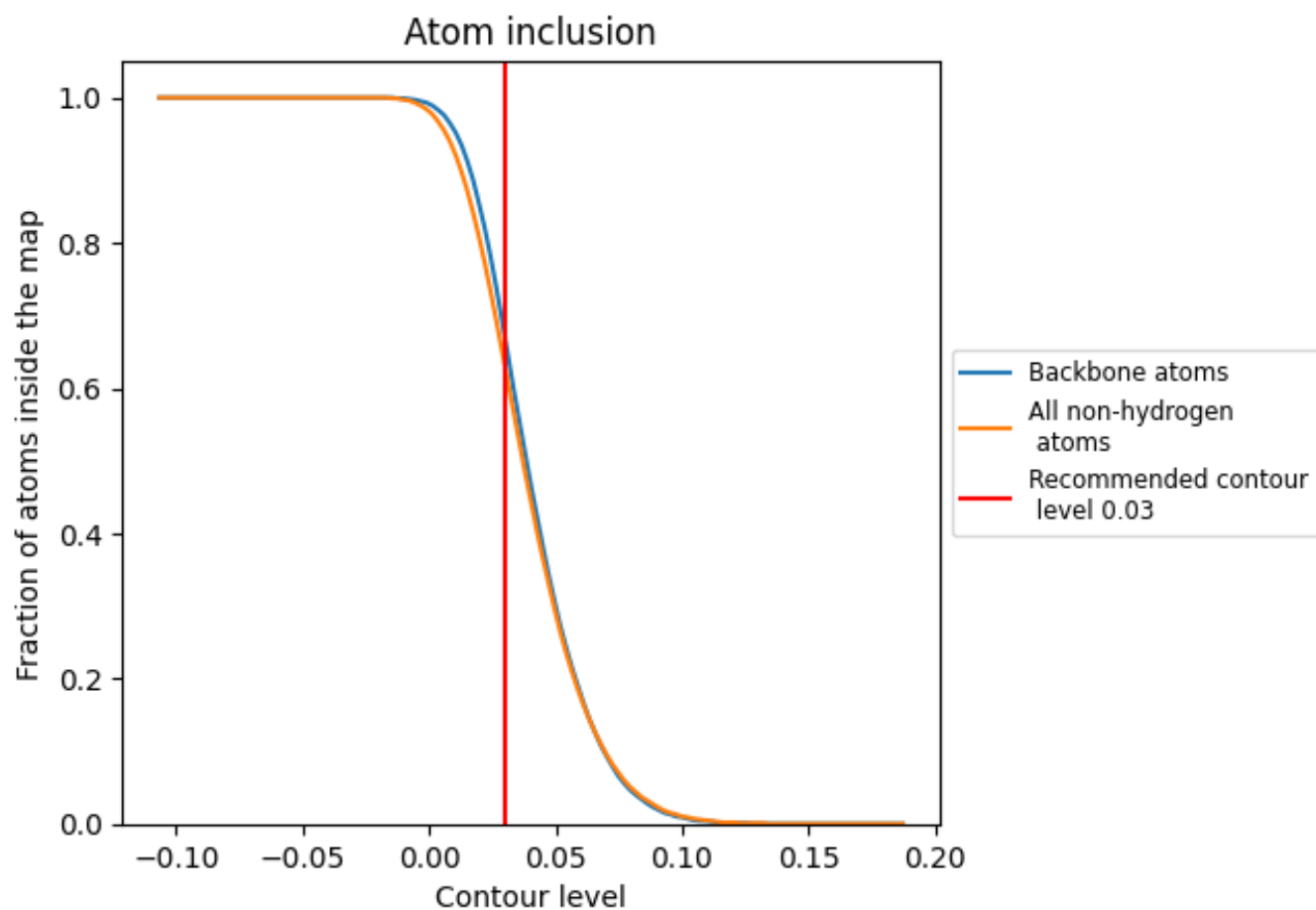
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.03).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 67% of all backbone atoms, 63% 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 (0.03) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6300	 0.3940
0	 0.5870	 0.4320
1	 0.4560	 0.3300
2	 0.6020	 0.4520
3	 0.6400	 0.4360
4	 0.5540	 0.3990
6	 0.7210	 0.4850
7	 0.6990	 0.5070
8	 0.6540	 0.4600
A	 0.6510	 0.3950
B	 0.1570	 0.2650
C	 0.2480	 0.3040
D	 0.1840	 0.2520
E	 0.3200	 0.3460
F	 0.3680	 0.3420
G	 0.2420	 0.2950
H	 0.3740	 0.3520
I	 0.2720	 0.2630
J	 0.2100	 0.2600
K	 0.4710	 0.3920
L	 0.4360	 0.3790
M	 0.3160	 0.3130
N	 0.3260	 0.3420
O	 0.5000	 0.3860
P	 0.2060	 0.1160
Q	 0.3420	 0.3360
R	 0.4450	 0.3770
S	 0.3690	 0.3650
T	 0.3350	 0.2890
U	 0.3150	 0.3170
V	 0.2700	 0.2560
W	 0.6120	 0.3470
X	 0.5370	 0.3990
a	 0.7500	 0.3890
b	 0.7590	 0.4220



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Chain	Atom inclusion	Q-score
c	 0.6770	 0.4680
d	 0.6030	 0.4520
e	 0.5470	 0.3900
f	 0.3860	 0.2860
g	 0.4130	 0.3360
h	 0.1500	 0.2440
i	 0.0620	 0.0360
j	 0.6230	 0.4430
k	 0.5610	 0.4450
l	 0.6280	 0.4350
m	 0.6140	 0.4560
n	 0.6430	 0.4500
o	 0.5700	 0.3650
p	 0.5170	 0.4020
q	 0.6730	 0.4670
r	 0.5820	 0.4160
s	 0.5910	 0.4500
t	 0.5280	 0.3770
u	 0.5060	 0.3570
w	 0.5530	 0.4060
y	 0.6680	 0.4770
z	 0.0620	 0.3120