



## Full wwPDB EM Validation Report ⓘ

Oct 6, 2024 – 04:17 am BST

PDB ID : 7QGN  
EMDB ID : EMD-13956  
Title : Structure of the SmrB-bound E. coli disome - stalled 70S ribosome  
Authors : Kratzat, H.; Buschauer, R.; Berninghausen, O.; Beckmann, R.  
Deposited on : 2021-12-09  
Resolution : 3.37 Å (reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

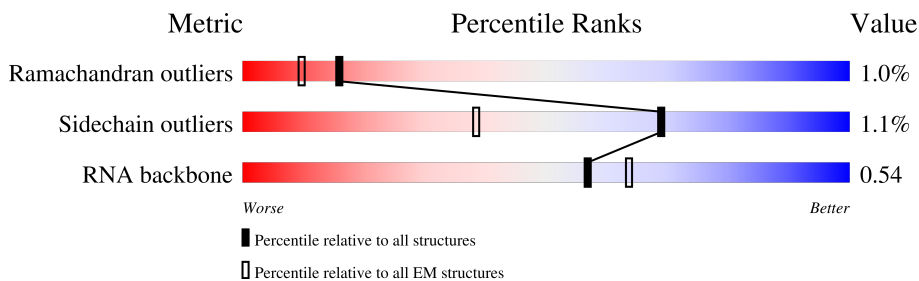
EMDB validation analysis : 0.0.1.dev113  
MolProbity : 4.02b-467  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.39

# 1 Overall quality at a glance i

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

The reported resolution of this entry is 3.37 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	73	
2	B	183	
3	s	179	
4	M	75	
5	O	120	
6	P	273	
7	Q	209	
8	R	201	

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Mol	Chain	Length	Quality of chain
9	S	179	56% 98%
10	T	177	53% 98%
11	U	149	81% 93% 7%
12	V	142	80% 98%
13	W	142	8% 94% 6%
14	X	123	41% 95%
15	Y	144	30% 88% 9%
16	Z	136	8% 90% 9%
17	a	127	83% 10% 6%
18	b	117	49% 94% 5%
19	c	115	32% 91% 6%
20	d	118	11% 88% 10%
21	e	103	33% 95%
22	f	110	97%
23	g	100	90% 7%
24	h	104	12% 94%
25	i	94	36% 100%
26	j	85	85% 12%
27	k	78	5% 91% 8%
28	l	63	13% 94% 6%
29	m	59	10% 95%
30	n	57	5% 82% 16%
31	o	55	16% 85% 5% 9%
32	p	46	89% 11%
33	q	65	88% 9%

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Mol	Chain	Length	Quality of chain
34	r	55	60% 9% 31%
35	N	2903	66% 29% 5%
36	L	70	66% 77% 21%
37	C	223	60% 60% 40%
38	0	1539	72% 25%
39	1	239	20% 87% 9%
40	2	218	7% 90% 6%
41	3	206	31% 97%
42	4	162	6% 83% 9% 7%
43	5	131	21% 66% 10% 24%
44	6	156	31% 90% 8%
45	7	130	5% 98%
46	8	130	12% 88% 9% 2%
47	9	103	19% 89% 5% 5%
48	D	129	33% 87% 9%
49	E	124	7% 90% 7% 2%
50	F	118	31% 90% 6% 2%
51	G	101	7% 88% 7% 5%
52	H	89	91% 7% 2%
53	I	82	24% 95% 5%
54	J	84	18% 88% 7% 5%
55	K	75	12% 68% 5% 27%
56	t	92	10% 83% 14%
57	u	87	30% 93% 2% 3%
58	v	88	8% 47% 10% 42%

## 2 Entry composition [i](#)

There are 61 unique types of molecules in this entry. The entry contains 147306 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 A-site tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	A	73	1561	695	279	514	73	0	0

- Molecule 2 is a protein called UPF0115 protein YfcN.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
2	B	39	194	116	39	39	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	99	ALA	ASP	variant	UNP Q6KCY1
B	101	ALA	HIS	variant	UNP Q6KCY1

- Molecule 3 is a protein called VemP nascent chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	s	37	316	198	58	58	2	0	0

- Molecule 4 is a RNA chain called P-site tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	M	75	1594	711	281	527	75	0	0

- Molecule 5 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
5	O	118	2529	1126	464	821	118	0	0

- Molecule 6 is a protein called 50S ribosomal protein L2.

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

- Molecule 7 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	Q	209	1564	979	288	293	4	0	0

- Molecule 8 is a protein called 50S ribosomal protein L4.

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

- Molecule 9 is a protein called 50S ribosomal protein L5.

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

- Molecule 10 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	T	176	1322	832	243	245	2	0	0

- Molecule 11 is a protein called 50S ribosomal protein L9.

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

- Molecule 12 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	V	141	1031	651	179	195	6	0	0

- Molecule 13 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	W	142	1128	714	212	198	4	0	0

- Molecule 14 is a protein called 50S ribosomal protein L14.

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

- Molecule 15 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	Y	143	1044	649	206	188	1	0	0

- Molecule 16 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	Z	136	1073	686	205	176	6	0	0

- Molecule 17 is a protein called Ribosomal protein L17.

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

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
a	123	ALA	GLU	variant	UNP A0A829CNM8

- Molecule 18 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
18	b	116	891	552	178	161	0	0

- Molecule 19 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	c	114	915	573	179	162	1	0	0

- Molecule 20 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	d	117	946	604	192	150		0	0

- Molecule 21 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	e	103	815	516	153	144	2	0	0

- Molecule 22 is a protein called 50S ribosomal protein L22.

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

- Molecule 23 is a protein called 50S ribosomal protein L23.

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

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
g	98	SER	GLY	variant	UNP A0A829CFV1

- Molecule 24 is a protein called 50S ribosomal protein L24.

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

- Molecule 25 is a protein called 50S ribosomal protein L25.



Mol	Chain	Residues	Atoms					AltConf	Trace
25	i	94	Total	C	N	O	S	0	0
			752	479	137	133	3		

- Molecule 26 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	j	75	Total	C	N	O	S	0	0
			568	353	113	101	1		

- Molecule 27 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	k	77	Total	C	N	O	S	0	0
			624	388	129	105	2		

- Molecule 28 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	l	63	Total	C	N	O	S	0	0
			508	313	99	94	2		

- Molecule 29 is a protein called 50S ribosomal protein L30.

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

- Molecule 30 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	n	56	Total	C	N	O	S	0	0
			443	269	94	79	1		

- Molecule 31 is a protein called 50S ribosomal protein L33.

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

- Molecule 32 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	p	46	Total	C	N	O	S	0	0
			376	228	90	56	2		

- Molecule 33 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	q	64	Total	C	N	O	S	0	0
			503	323	105	73	2		

- Molecule 34 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	r	38	Total	C	N	O	S	0	0
			301	185	65	47	4		

- Molecule 35 is a RNA chain called 23S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	N	2897	Total	C	N	O	P	1	0
			62215	27754	11448	20115	2898		

- Molecule 36 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	L	55	Total	C	N	O	S	0	0
			419	258	76	79	6		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
L	68	SER	GLY	variant	UNP J7R8B2

- Molecule 37 is a protein called 50S ribosomal protein L1.

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

- Molecule 38 is a RNA chain called 16S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
38	0	1532	32873	14661	6031	10649	1532	0	0

- Molecule 39 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	1	218	1704	1081	305	311	7	0	0

- Molecule 40 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	2	206	1624	1028	305	288	3	0	0

- Molecule 41 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	3	205	1642	1026	315	297	4	0	0

- Molecule 42 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	4	150	1105	687	211	201	6	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
4	4	MET	ILE	variant	UNP A0A377C6M5

- Molecule 43 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	5	100	817	515	148	148	6	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
5	101	SER	PRO	variant	UNP C3SFQ7

- Molecule 44 is a protein called Ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
44	6	144	1129	705	213	207	4	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
6	78	HIS	ARG	variant	UNP A0A829CQ35

- Molecule 45 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
45	7	129	978	616	173	183	6	0	0

- Molecule 46 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
46	8	127	1021	634	206	178	3	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
8	3	ASP	GLU	variant	UNP A0A1Z3UZ18

- Molecule 47 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
47	9	98	786	493	150	142	1	0	0

- Molecule 48 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
48	D	117	876	540	174	159	3	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	5	ALA	PRO	variant	UNP A0A829AF87

- Molecule 49 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
49	E	123	954	590	196	164	4	0	0

- Molecule 50 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
50	F	114	883	546	178	156	3	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	1	VAL	MET	variant	UNP A0A7U9IV78

- Molecule 51 is a protein called 30S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
51	G	96	773	483	160	127	3	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
G	40	ALA	GLU	variant	UNP A0A090BZT4

- Molecule 52 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
52	H	88	709	437	143	128	1	0	0

- Molecule 53 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
53	I	82	648	406	128	113	1	0	0

- Molecule 54 is a protein called 30S ribosomal protein S17.

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

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
J	2	ALA	THR	variant	UNP A0A829A8C6

- Molecule 55 is a protein called 30S ribosomal protein S18.

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

- Molecule 56 is a protein called 30S ribosomal protein S19.

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

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
t	82	TYR	GLY	variant	UNP S1EA57
t	83	TYR	HIS	variant	UNP S1EA57

- Molecule 57 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
57	u	85	664	411	137	113	3	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
u	1	LEU	MET	variant	UNP C3TRH7

- Molecule 58 is a protein called 30S ribosomal protein S21.

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

- Molecule 59 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
59	A	2	Total	Mg	0
			2	2	

- Molecule 60 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms		AltConf
60	A	1	Total	K	0
			1	1	

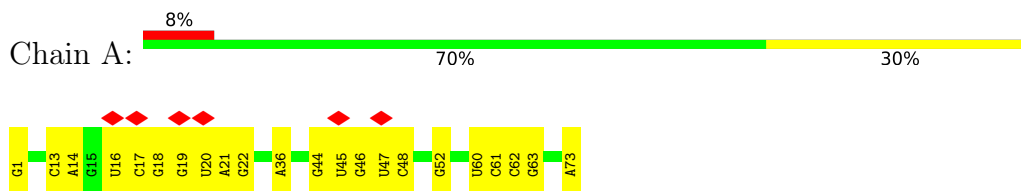
- Molecule 61 is water.

Mol	Chain	Residues	Atoms		AltConf
61	A	9	Total	O	0
			9	9	

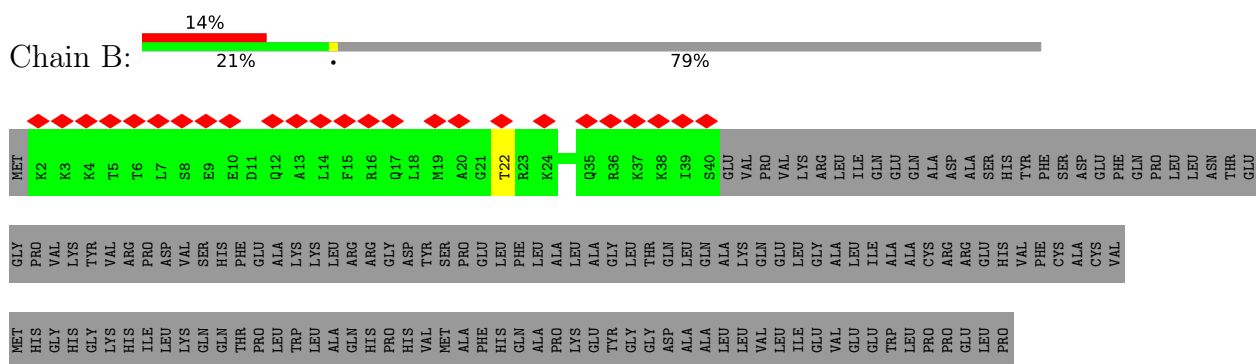
### 3 Residue-property plots [i](#)

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

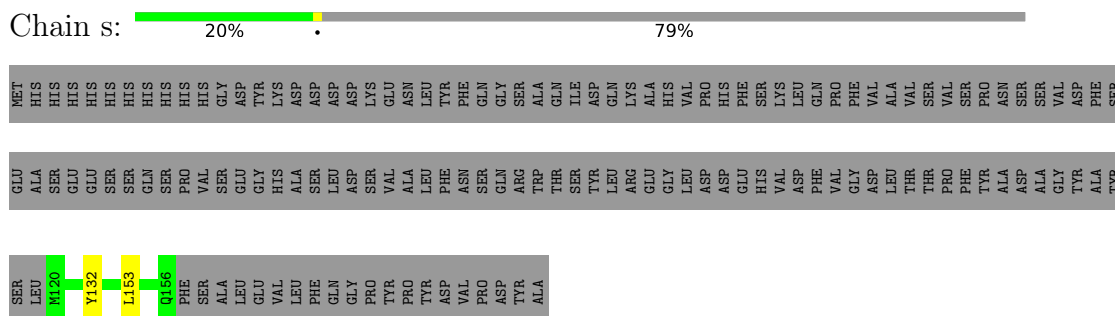
- Molecule 1: A-site tRNA



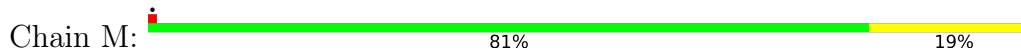
- Molecule 2: UPF0115 protein YfcN



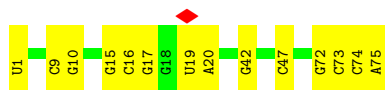
- Molecule 3: VemP nascent chain



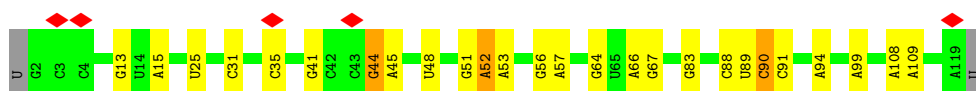
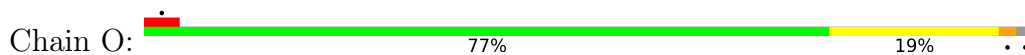
- Molecule 4: P-site tRNA



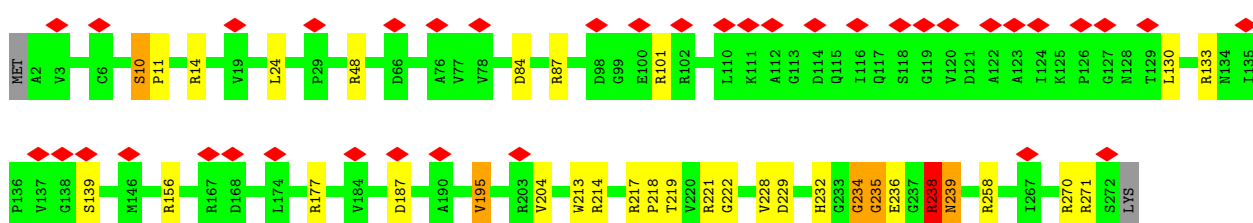




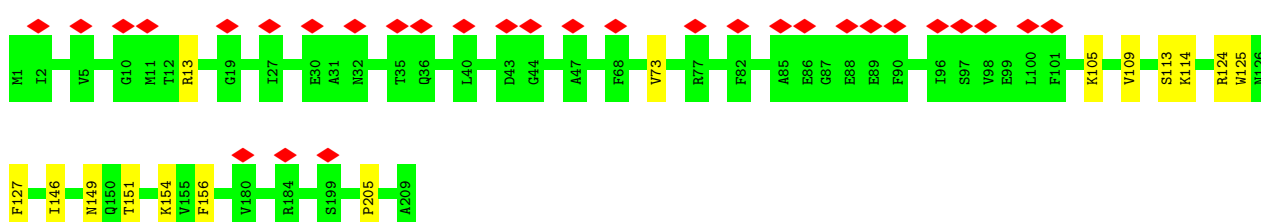
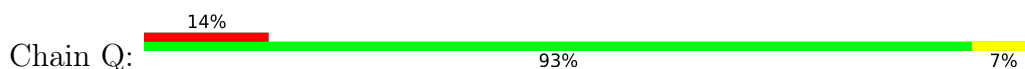
• Molecule 5: 5S rRNA



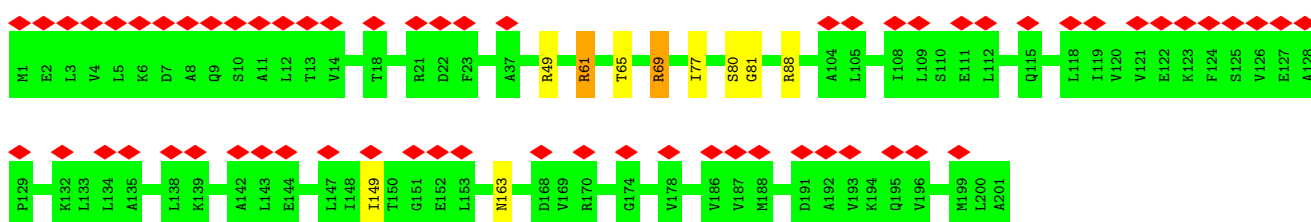
• Molecule 6: 50S ribosomal protein L2



• Molecule 7: 50S ribosomal protein L3

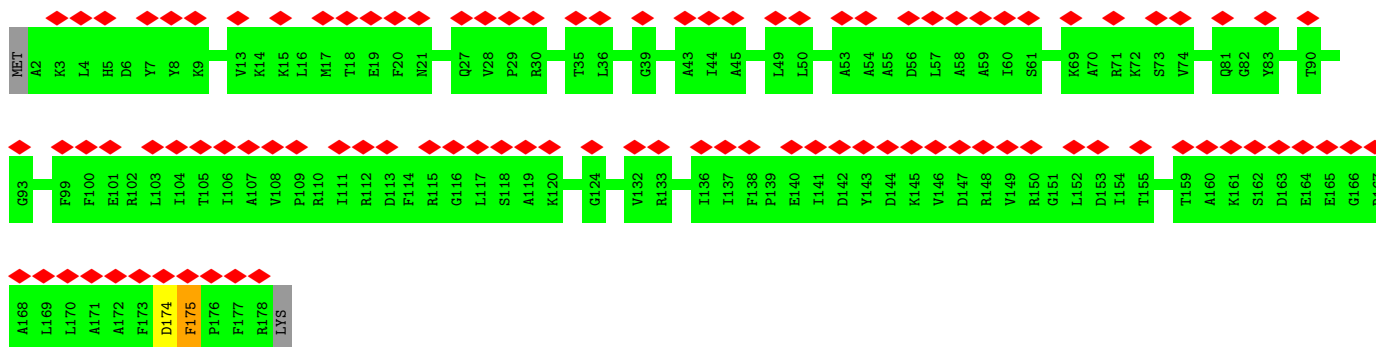


• Molecule 8: 50S ribosomal protein L4

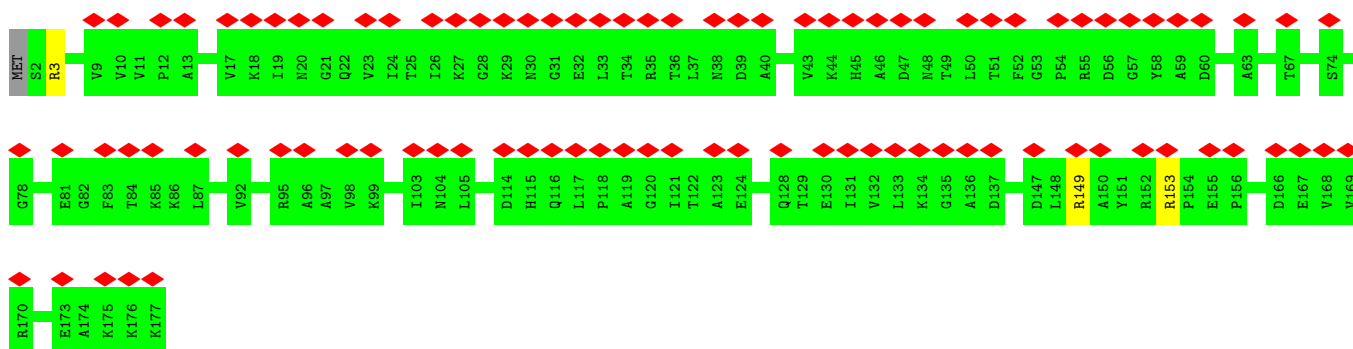


• Molecule 9: 50S ribosomal protein L5

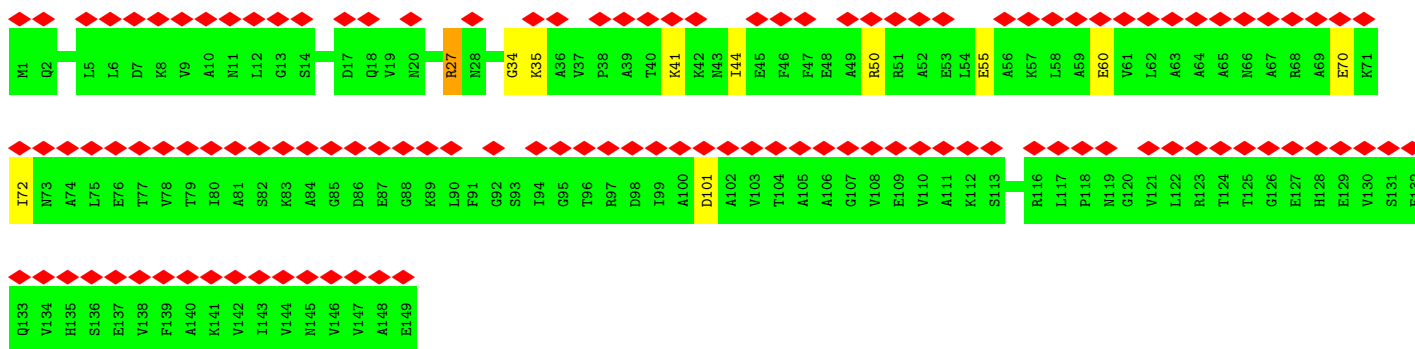
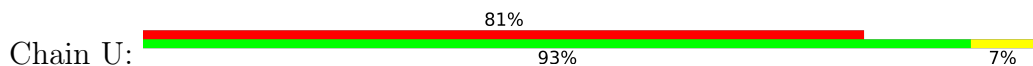




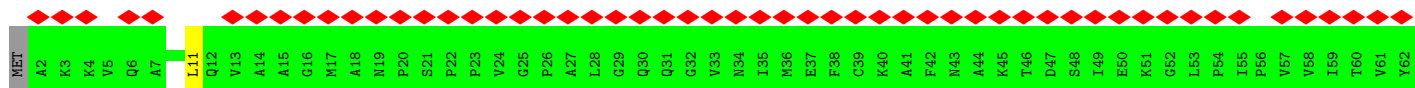
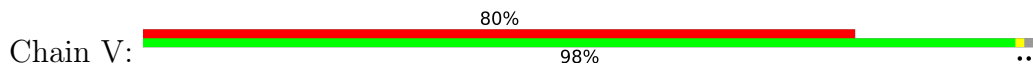
• Molecule 10: 50S ribosomal protein L6

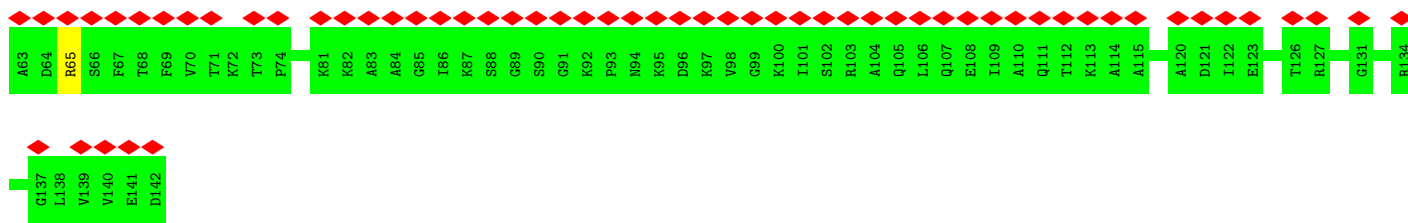


• Molecule 11: 50S ribosomal protein L9

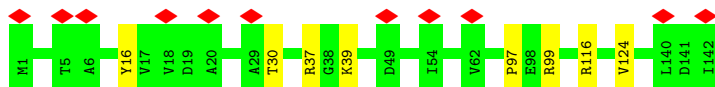


• Molecule 12: 50S ribosomal protein L11

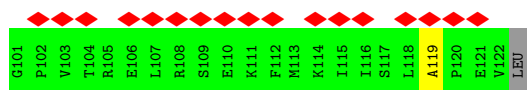
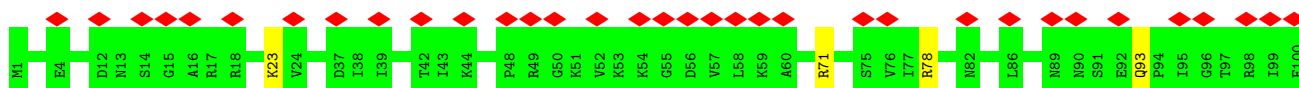
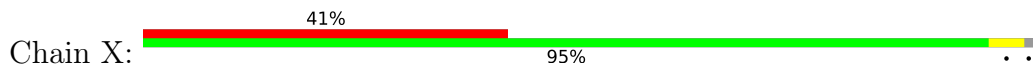




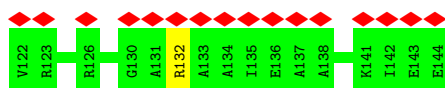
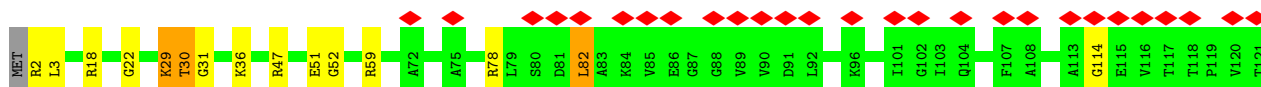
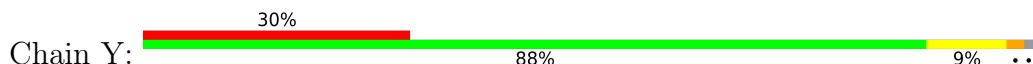
• Molecule 13: 50S ribosomal protein L13



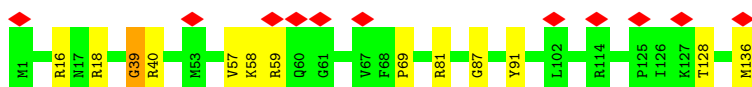
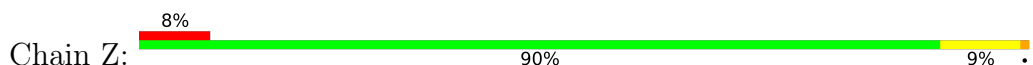
• Molecule 14: 50S ribosomal protein L14



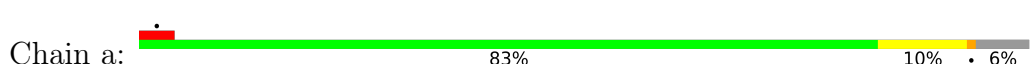
• Molecule 15: 50S ribosomal protein L15

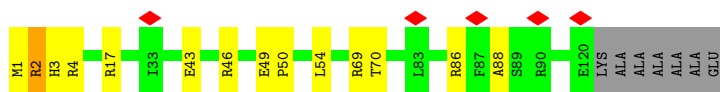


• Molecule 16: 50S ribosomal protein L16

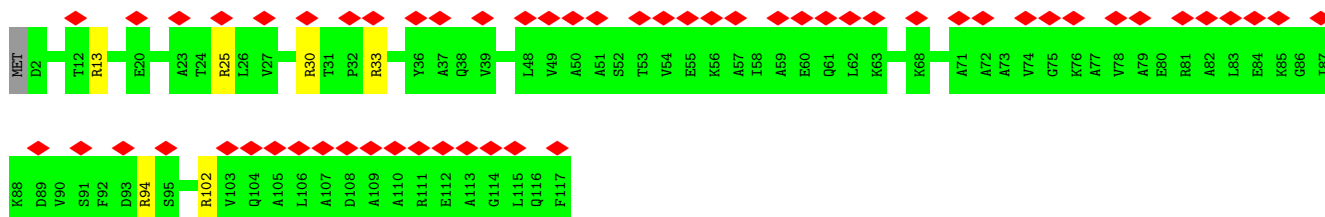
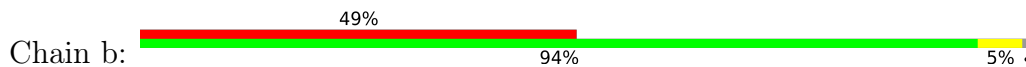


• Molecule 17: Ribosomal protein L17

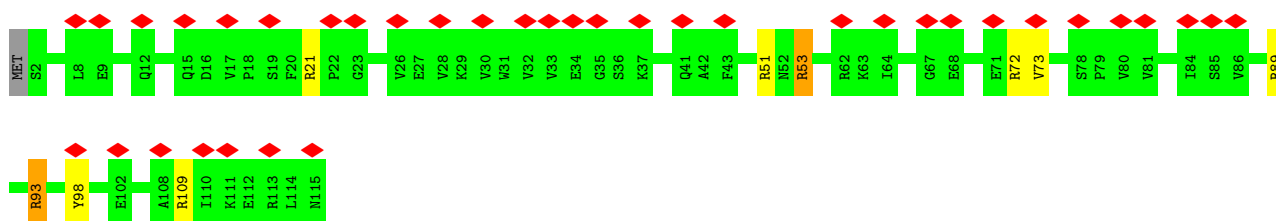
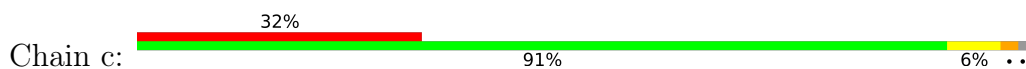




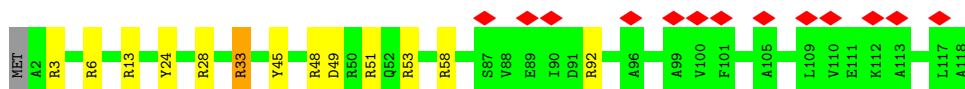
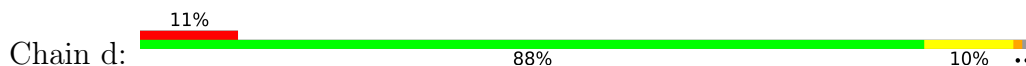
- Molecule 18: 50S ribosomal protein L18



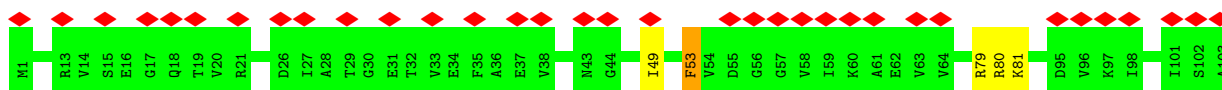
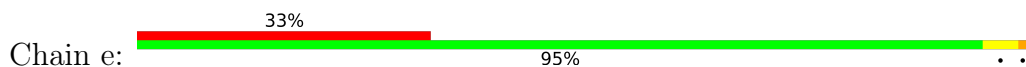
- Molecule 19: 50S ribosomal protein L19



- Molecule 20: 50S ribosomal protein L20



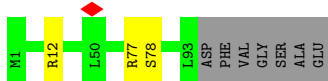
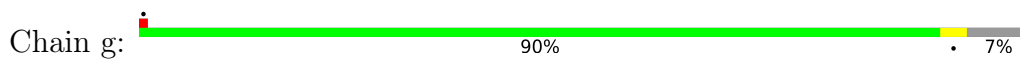
- Molecule 21: 50S ribosomal protein L21



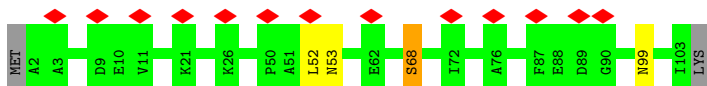
- Molecule 22: 50S ribosomal protein L22



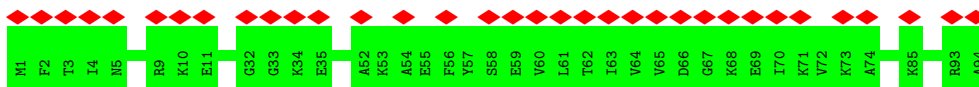
- Molecule 23: 50S ribosomal protein L23



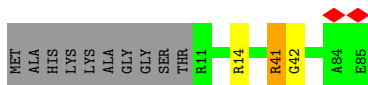
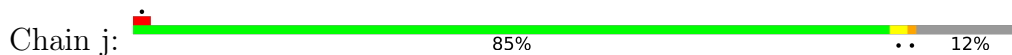
- Molecule 24: 50S ribosomal protein L24



- Molecule 25: 50S ribosomal protein L25



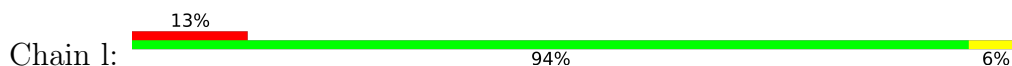
- Molecule 26: 50S ribosomal protein L27



- Molecule 27: 50S ribosomal protein L28

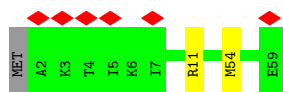


- Molecule 28: 50S ribosomal protein L29

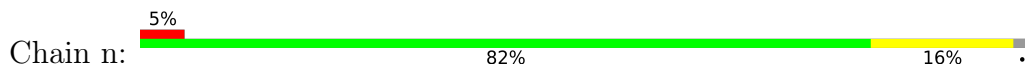


- Molecule 29: 50S ribosomal protein L30

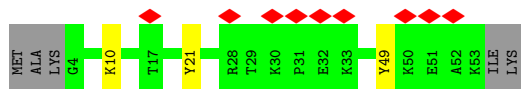
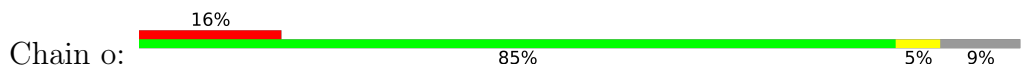




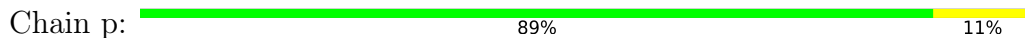
• Molecule 30: 50S ribosomal protein L32



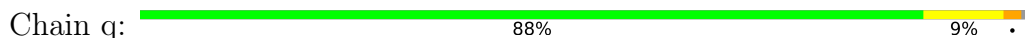
• Molecule 31: 50S ribosomal protein L33



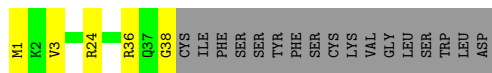
• Molecule 32: 50S ribosomal protein L34



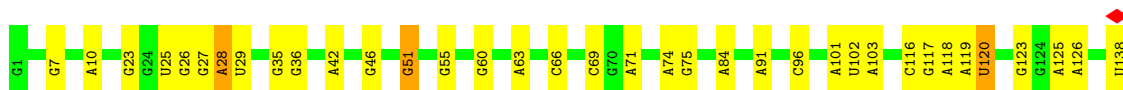
• Molecule 33: 50S ribosomal protein L35

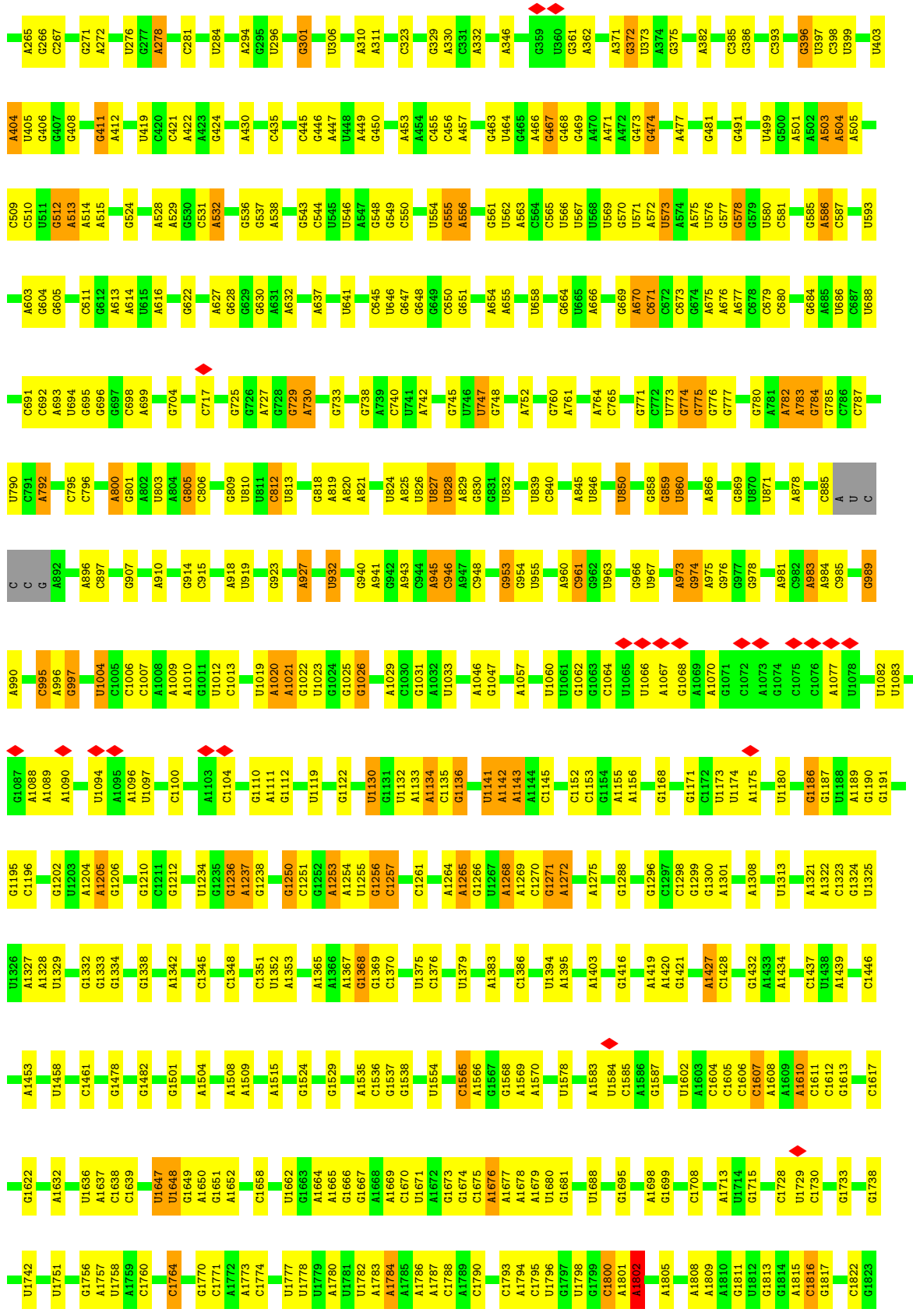


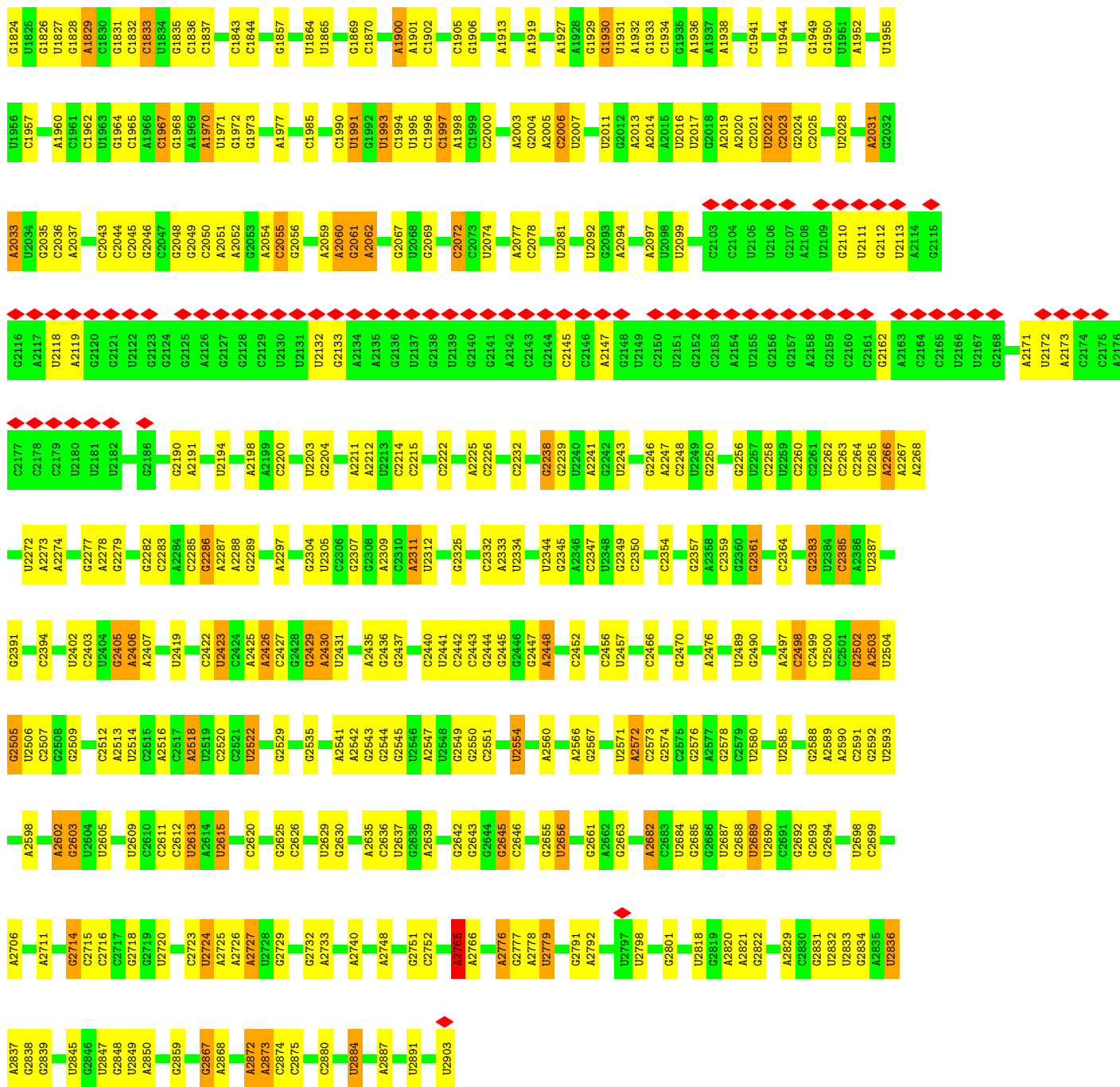
• Molecule 34: 50S ribosomal protein L36



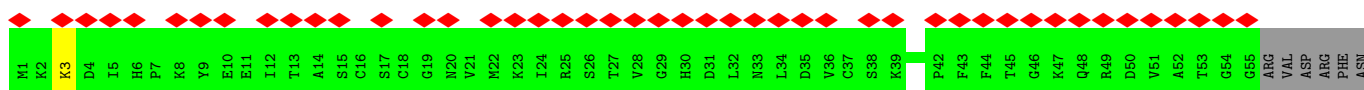
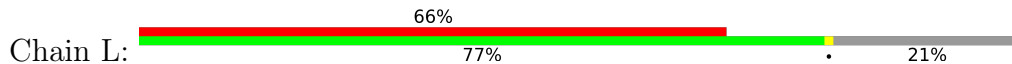
• Molecule 35: 23S rRNA





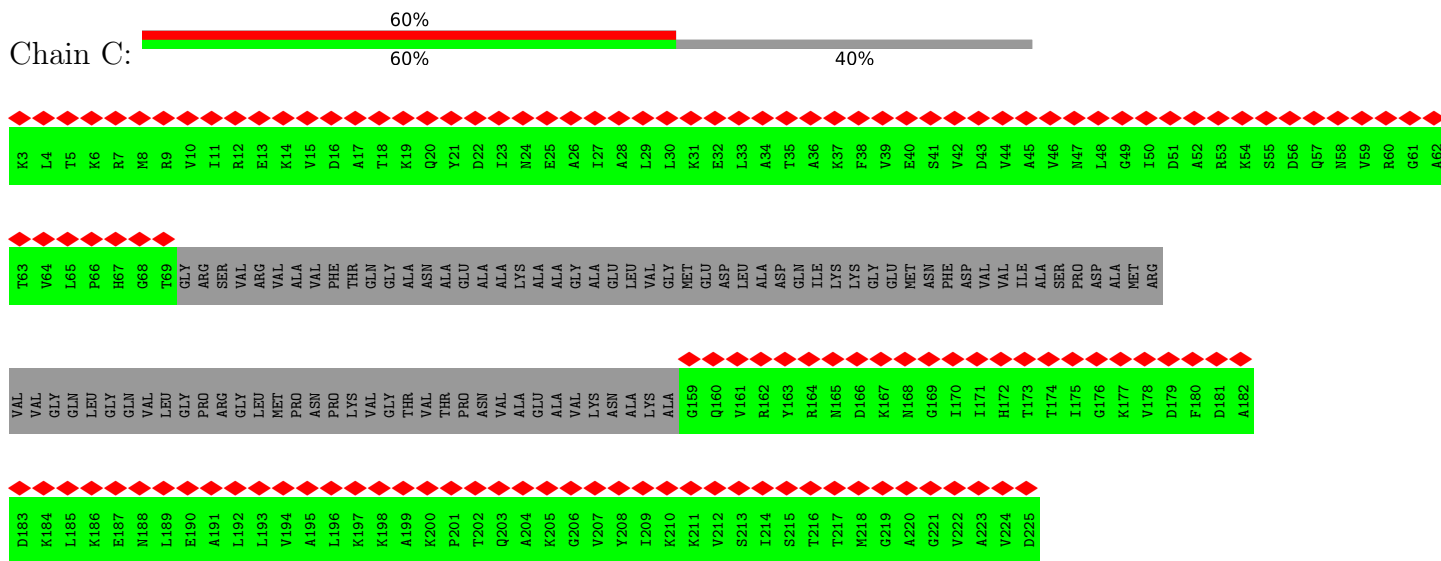


- Molecule 36: 50S ribosomal protein L31

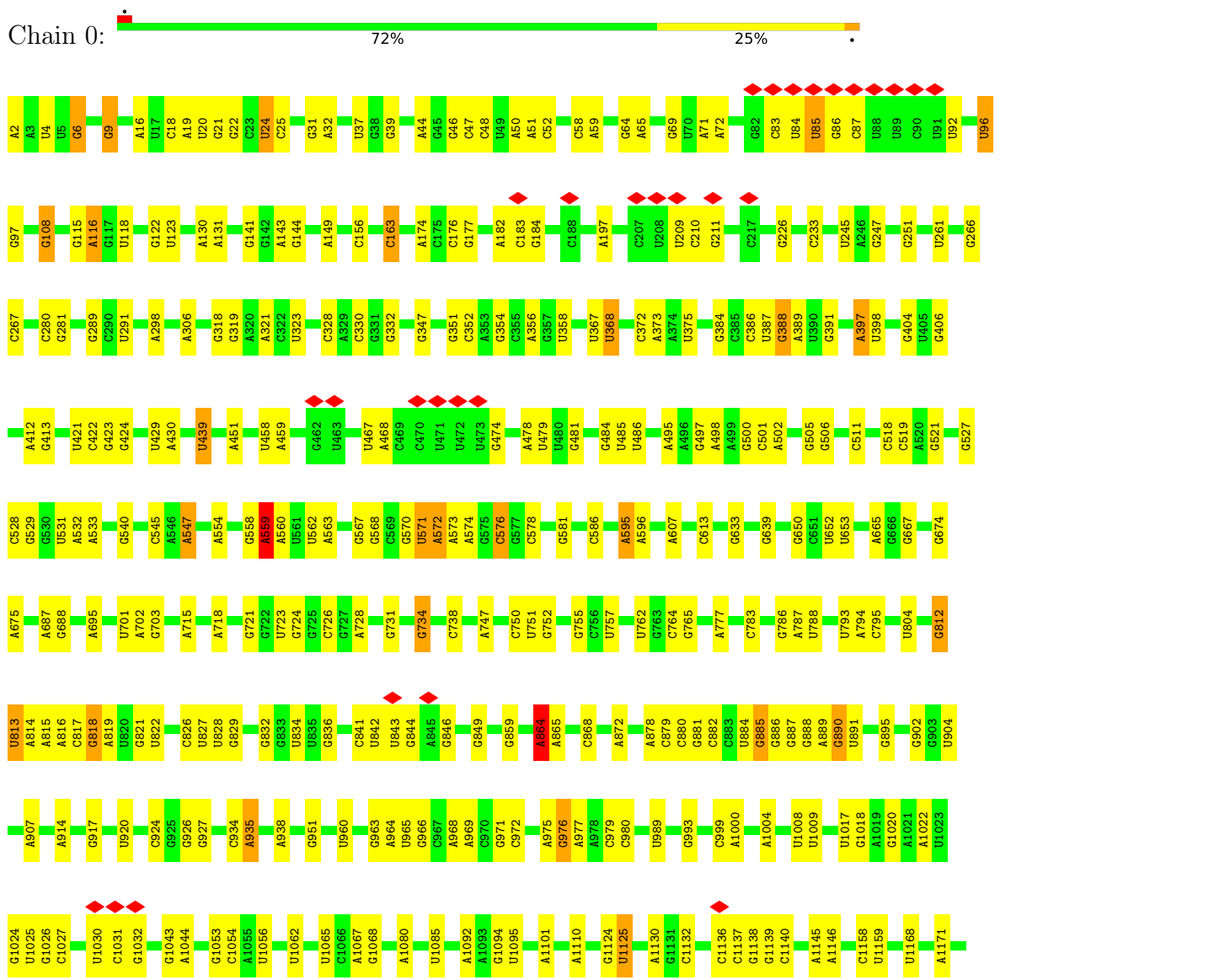


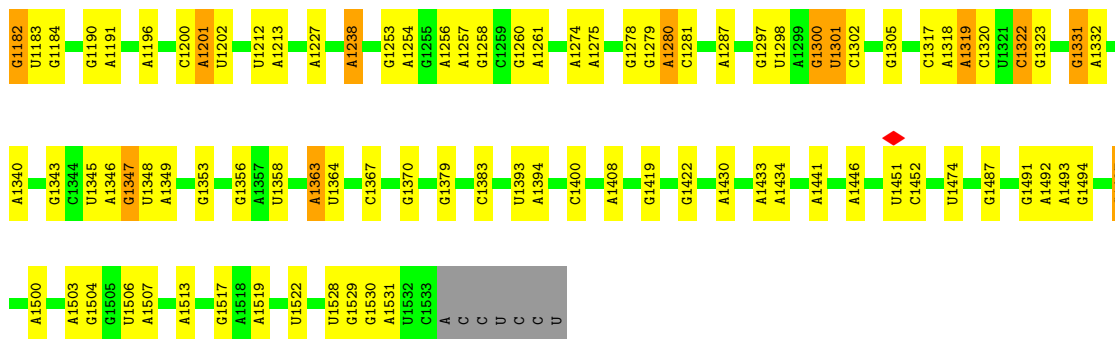
- Molecule 37: 50S ribosomal protein L1



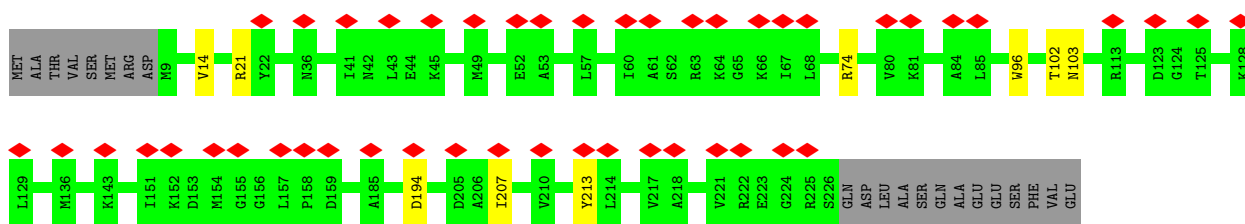
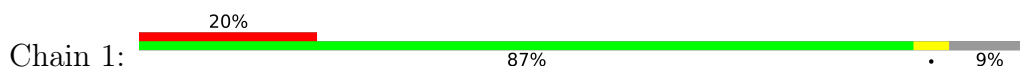


• Molecule 38: 16S rRNA

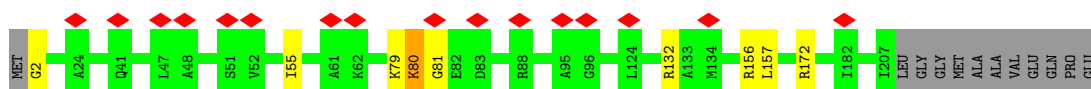




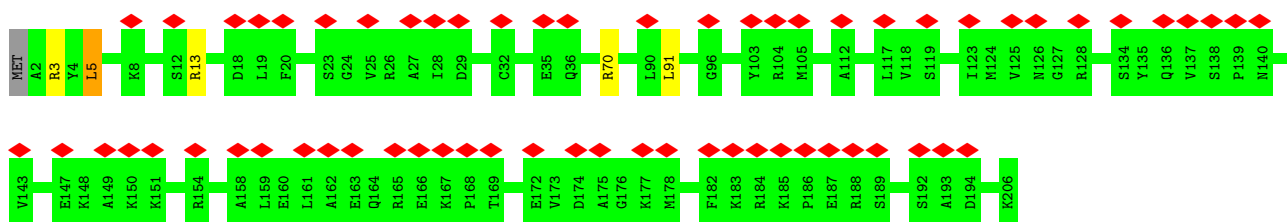
• Molecule 39: 30S ribosomal protein S2



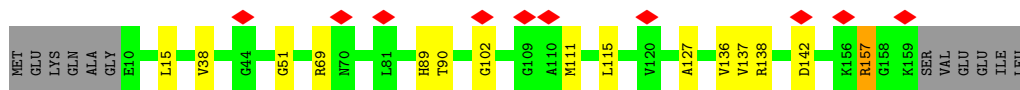
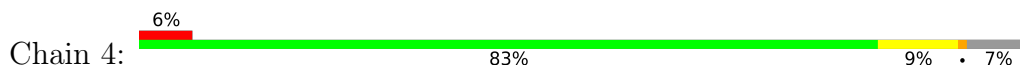
• Molecule 40: 30S ribosomal protein S3



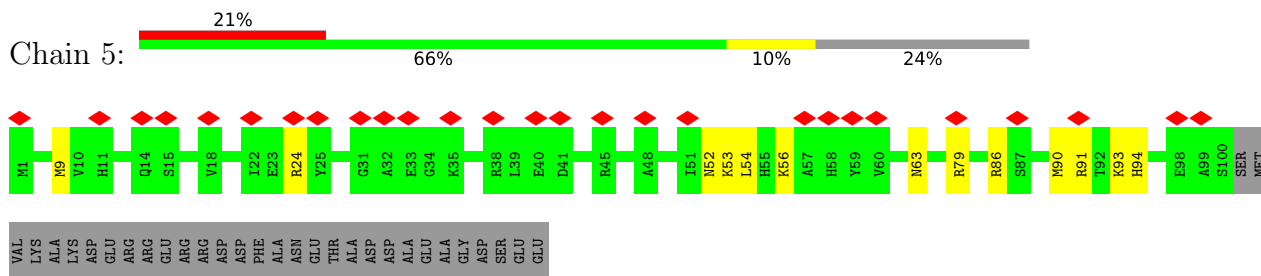
• Molecule 41: 30S ribosomal protein S4



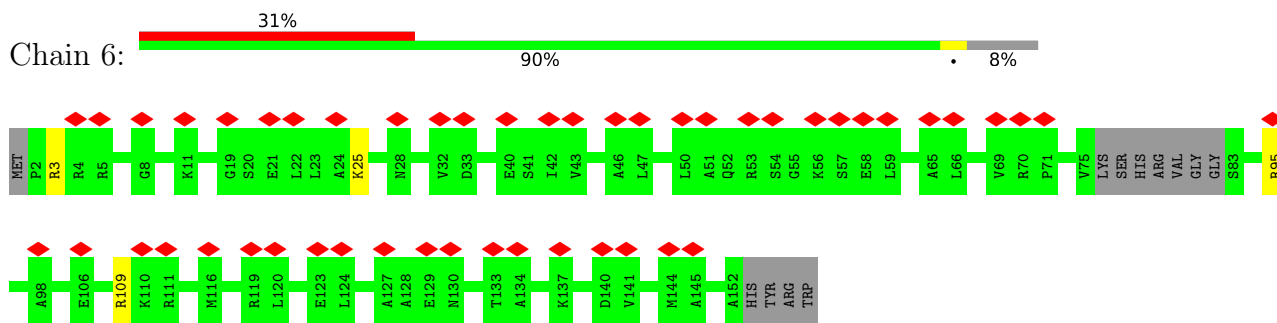
• Molecule 42: 30S ribosomal protein S5



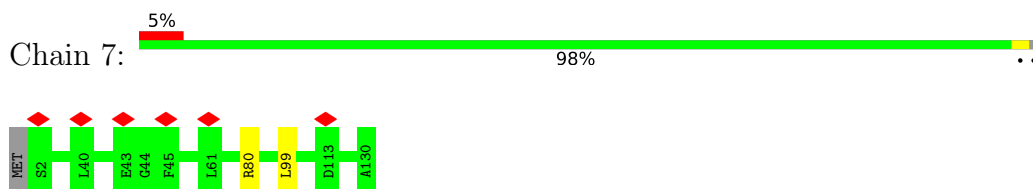
• Molecule 43: 30S ribosomal protein S6



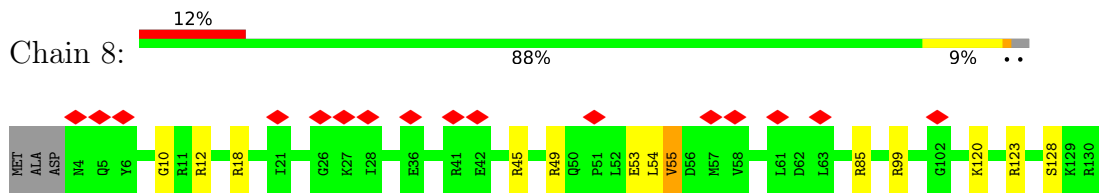
• Molecule 44: Ribosomal protein S7



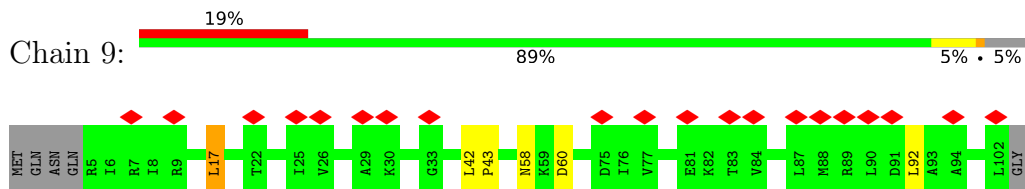
• Molecule 45: 30S ribosomal protein S8



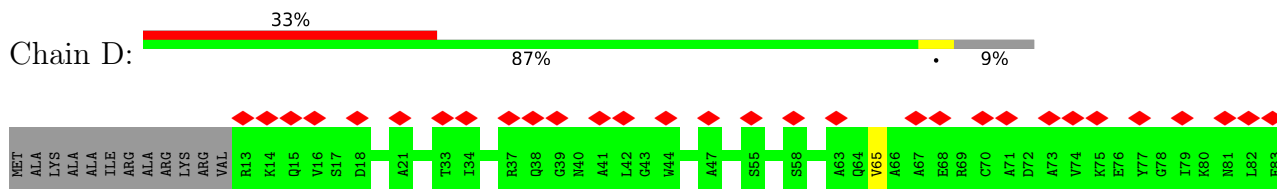
• Molecule 46: 30S ribosomal protein S9

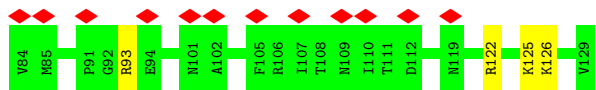


• Molecule 47: 30S ribosomal protein S10

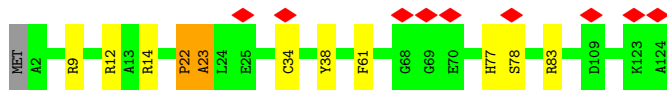
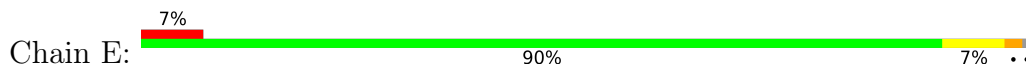


• Molecule 48: 30S ribosomal protein S11

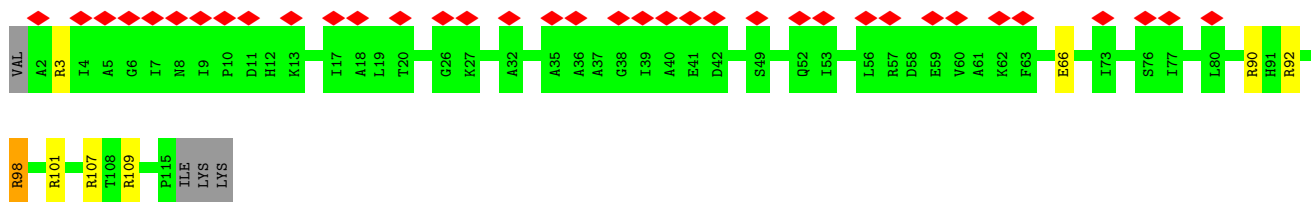
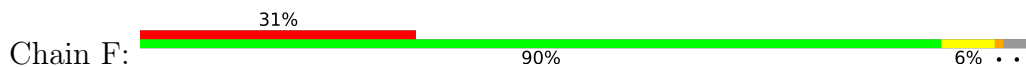




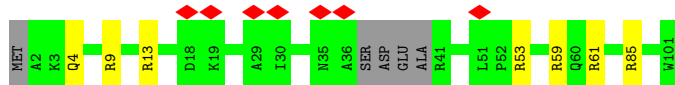
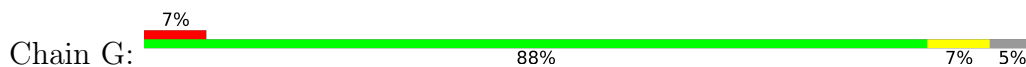
- Molecule 49: 30S ribosomal protein S12



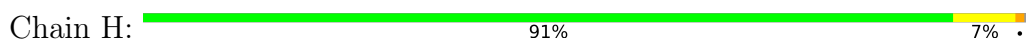
- Molecule 50: 30S ribosomal protein S13



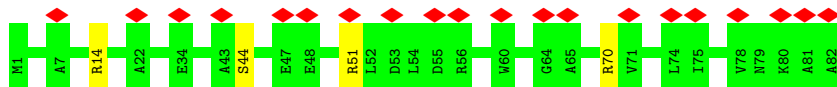
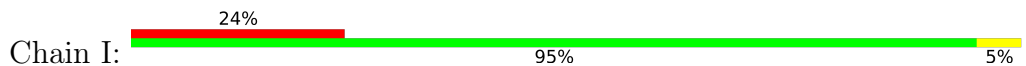
- Molecule 51: 30S ribosomal protein S14



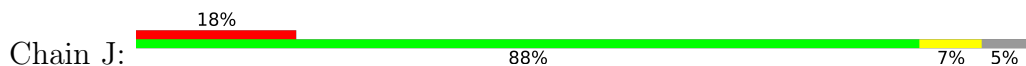
- Molecule 52: 30S ribosomal protein S15

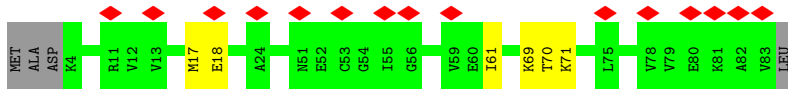


- Molecule 53: 30S ribosomal protein S16

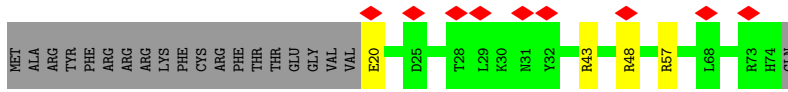


- Molecule 54: 30S ribosomal protein S17

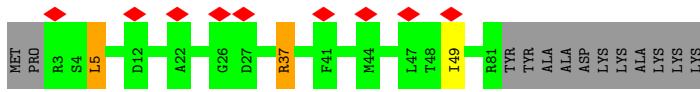
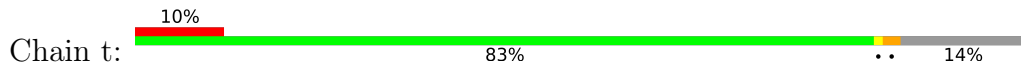




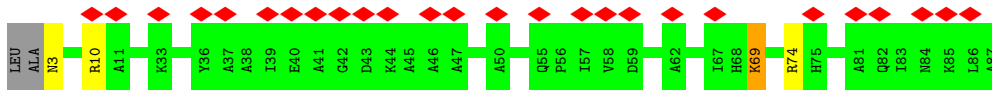
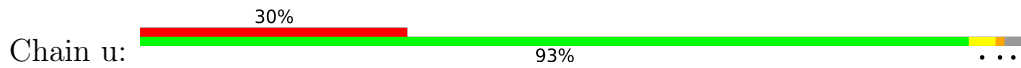
• Molecule 55: 30S ribosomal protein S18



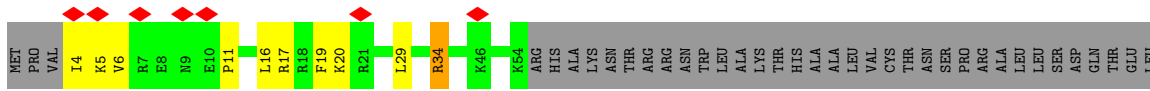
• Molecule 56: 30S ribosomal protein S19



• Molecule 57: 30S ribosomal protein S20



• Molecule 58: 30S ribosomal protein S21



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	32412	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	42.4	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	3500	Depositor
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	1.782	Depositor
Minimum map value	-0.457	Depositor
Average map value	0.020	Depositor
Map value standard deviation	0.141	Depositor
Recommended contour level	0.45	Depositor
Map size (Å)	476.55002, 476.55002, 476.55002	wwPDB
Map dimensions	450, 450, 450	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.059, 1.059, 1.059	Depositor

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: MG, K

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	0.66	1/1744 (0.1%)	0.86	0/2716
2	B	0.26	0/193	0.37	0/268
3	s	0.90	1/326 (0.3%)	0.80	1/441 (0.2%)
4	M	0.63	3/1779 (0.2%)	0.83	2/2768 (0.1%)
5	O	0.79	1/2828 (0.0%)	0.87	6/4410 (0.1%)
6	P	1.41	22/2121 (1.0%)	1.32	27/2852 (0.9%)
7	Q	1.18	3/1585 (0.2%)	1.13	8/2134 (0.4%)
8	R	0.97	3/1571 (0.2%)	1.02	9/2113 (0.4%)
9	S	0.67	0/1434	0.85	0/1926
10	T	0.67	0/1342	0.83	4/1816 (0.2%)
11	U	0.51	0/1122	0.78	1/1515 (0.1%)
12	V	0.52	0/1045	0.65	0/1410
13	W	1.10	4/1151 (0.3%)	1.10	7/1551 (0.5%)
14	X	1.15	0/947	1.20	5/1268 (0.4%)
15	Y	1.30	3/1053 (0.3%)	1.38	13/1403 (0.9%)
16	Z	1.13	2/1092 (0.2%)	1.19	6/1460 (0.4%)
17	a	1.28	3/973 (0.3%)	1.30	10/1301 (0.8%)
18	b	0.84	2/901 (0.2%)	1.08	8/1209 (0.7%)
19	c	1.09	3/927 (0.3%)	1.19	8/1240 (0.6%)
20	d	1.32	4/959 (0.4%)	1.37	15/1278 (1.2%)
21	e	1.08	1/828 (0.1%)	1.08	3/1107 (0.3%)
22	f	1.02	1/864 (0.1%)	1.09	1/1156 (0.1%)
23	g	0.91	0/744	1.01	1/994 (0.1%)
24	h	0.82	1/787 (0.1%)	0.89	0/1051
25	i	0.78	0/765	0.87	0/1025
26	j	1.21	2/575 (0.3%)	1.29	5/762 (0.7%)
27	k	1.09	1/634 (0.2%)	1.15	6/848 (0.7%)
28	l	0.71	0/509	1.04	4/677 (0.6%)
29	m	0.86	0/452	1.08	2/605 (0.3%)
30	n	1.16	2/449 (0.4%)	1.42	7/599 (1.2%)
31	o	1.31	7/416 (1.7%)	0.96	1/554 (0.2%)
32	p	1.38	3/379 (0.8%)	1.76	6/498 (1.2%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
33	q	1.15	0/512	1.26	6/676 (0.9%)
34	r	1.16	1/302 (0.3%)	1.35	5/397 (1.3%)
35	N	1.24	520/69681 (0.7%)	1.04	345/108706 (0.3%)
36	L	0.61	0/426	0.78	0/570
37	C	0.28	0/1034	0.51	0/1387
38	0	0.97	134/36809 (0.4%)	0.93	106/57423 (0.2%)
39	1	0.82	2/1735 (0.1%)	0.94	4/2338 (0.2%)
40	2	0.85	1/1651 (0.1%)	0.95	4/2225 (0.2%)
41	3	0.75	0/1664	0.98	6/2227 (0.3%)
42	4	1.11	1/1118 (0.1%)	1.21	7/1504 (0.5%)
43	5	0.90	1/835 (0.1%)	1.04	4/1128 (0.4%)
44	6	0.66	0/1142	0.95	6/1532 (0.4%)
45	7	0.88	0/988	0.99	2/1326 (0.2%)
46	8	0.86	0/1033	1.13	7/1375 (0.5%)
47	9	0.74	0/796	1.01	3/1077 (0.3%)
48	D	0.86	1/892 (0.1%)	1.03	3/1205 (0.2%)
49	E	1.09	3/968 (0.3%)	1.22	7/1300 (0.5%)
50	F	0.85	1/892 (0.1%)	1.12	9/1193 (0.8%)
51	G	0.86	0/784	1.14	7/1043 (0.7%)
52	H	0.94	0/717	1.13	8/959 (0.8%)
53	I	0.94	0/658	1.16	4/884 (0.5%)
54	J	0.82	0/657	1.02	0/881
55	K	0.98	1/462 (0.2%)	1.10	2/621 (0.3%)
56	t	0.81	0/652	1.05	3/877 (0.3%)
57	u	0.89	0/670	1.06	3/888 (0.3%)
58	v	0.99	1/430 (0.2%)	1.15	2/570 (0.4%)
All	All	1.09	740/160003 (0.5%)	1.02	719/239267 (0.3%)

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
2	B	0	1
6	P	0	3
7	Q	0	1
9	S	0	2
11	U	0	1
12	V	0	1
15	Y	0	2
16	Z	0	2

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Mol	Chain	#Chirality outliers	#Planarity outliers
24	h	0	1
33	q	0	1
35	N	0	6
38	0	0	5
39	1	0	2
40	2	0	2
42	4	0	5
43	5	0	2
46	8	0	4
48	D	0	1
49	E	0	2
54	J	0	2
56	t	0	1
57	u	0	1
58	v	0	1
All	All	0	49

All (740) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	N	2873	A	C6-N1	-20.39	1.21	1.35
35	N	2765	A	C6-N1	-18.67	1.22	1.35
35	N	2502	G	P-OP2	16.64	1.77	1.49
35	N	503	A	C6-N1	-15.24	1.24	1.35
35	N	1156	A	P-OP2	15.23	1.74	1.49
6	P	213	TRP	CD2-CE2	13.70	1.57	1.41
38	0	1238	A	C6-N1	-13.68	1.25	1.35
38	0	24	U	N3-C4	-13.65	1.26	1.38
35	N	1333	G	P-OP2	12.84	1.70	1.49
35	N	783	A	P-OP2	12.70	1.70	1.49
35	N	945	A	P-OP2	12.28	1.69	1.49
35	N	1639	C	P-OP1	12.12	1.69	1.49
35	N	1664	A	P-OP2	11.87	1.69	1.49
35	N	945	A	P-OP1	11.83	1.69	1.49
35	N	310	A	C6-N1	-11.73	1.27	1.35
35	N	1670	C	P-OP1	11.54	1.68	1.49
35	N	1141	U	N3-C4	-11.50	1.28	1.38
6	P	213	TRP	CZ3-CH2	11.48	1.58	1.40
38	0	559	A	N1-C2	11.41	1.44	1.34
35	N	2074	U	P-OP1	11.40	1.68	1.49
35	N	234	U	N3-C4	-11.35	1.28	1.38
38	0	368	U	N3-C4	-11.35	1.28	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	P	213	TRP	CB-CG	-11.09	1.30	1.50
38	0	37	U	N3-C4	-11.06	1.28	1.38
35	N	2588	G	P-OP1	11.01	1.67	1.49
35	N	828	U	O3'-P	-10.92	1.48	1.61
35	N	2349	G	O3'-P	-10.78	1.48	1.61
35	N	2005	A	P-OP1	10.72	1.67	1.49
35	N	2445	G	O3'-P	-10.72	1.48	1.61
1	A	1	G	OP3-P	-10.64	1.48	1.61
35	N	450	G	P-OP2	10.62	1.67	1.49
35	N	827	U	P-OP1	10.62	1.67	1.49
35	N	2272	U	N3-C4	-10.62	1.28	1.38
35	N	963	U	O3'-P	-10.41	1.48	1.61
35	N	932	U	N3-C4	-10.36	1.29	1.38
35	N	943	A	P-OP2	10.32	1.66	1.49
35	N	2589	A	O3'-P	-10.24	1.48	1.61
35	N	1777	U	O3'-P	-10.24	1.48	1.61
24	h	68	SER	CB-OG	10.20	1.55	1.42
4	M	1	U	OP3-P	-10.13	1.49	1.61
35	N	2025	C	P-OP2	10.11	1.66	1.49
35	N	2060	A	O3'-P	-10.10	1.49	1.61
38	0	1358	U	N3-C4	-10.07	1.29	1.38
38	0	757	U	O3'-P	-10.04	1.49	1.61
38	0	1301	U	N3-C4	10.02	1.47	1.38
35	N	567	U	P-OP1	10.01	1.66	1.49
38	0	578	C	P-OP1	9.97	1.65	1.49
35	N	800	A	P-OP1	9.97	1.65	1.49
35	N	782	A	O3'-P	-9.87	1.49	1.61
38	0	24	U	C2-N3	9.86	1.44	1.37
35	N	692	C	O3'-P	-9.81	1.49	1.61
35	N	787	C	O3'-P	-9.81	1.49	1.61
31	o	21	TYR	CE2-CZ	-9.80	1.25	1.38
35	N	1968	G	O3'-P	-9.80	1.49	1.61
38	0	20	U	O3'-P	-9.79	1.49	1.61
35	N	825	A	O3'-P	-9.74	1.49	1.61
35	N	2687	U	O3'-P	-9.73	1.49	1.61
35	N	1009	A	O3'-P	-9.72	1.49	1.61
35	N	2522	U	C2-N3	9.71	1.44	1.37
35	N	2720	U	C2-N3	9.71	1.44	1.37
35	N	1604	C	P-OP1	9.69	1.65	1.49
38	0	21	G	P-OP1	9.68	1.65	1.49
35	N	2615	U	P-OP1	9.67	1.65	1.49
35	N	585	G	O3'-P	-9.64	1.49	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	N	1774	C	P-OP1	9.62	1.65	1.49
35	N	1257	C	O3'-P	-9.49	1.49	1.61
35	N	2344	U	N3-C4	-9.38	1.30	1.38
35	N	963	U	P-OP1	9.33	1.64	1.49
35	N	1828	G	P-OP2	9.31	1.64	1.49
35	N	809	G	O3'-P	-9.29	1.50	1.61
35	N	2019	A	O3'-P	-9.28	1.50	1.61
35	N	2025	C	O3'-P	-9.26	1.50	1.61
35	N	554	U	O3'-P	-9.26	1.50	1.61
35	N	2593	U	O3'-P	-9.22	1.50	1.61
35	N	576	U	P-OP1	9.21	1.64	1.49
35	N	116	C	O3'-P	-9.20	1.50	1.61
35	N	2550	G	O3'-P	-9.18	1.50	1.61
35	N	445	C	O3'-P	-9.10	1.50	1.61
38	0	667	G	O3'-P	-9.09	1.50	1.61
35	N	306	U	N3-C4	9.08	1.46	1.38
35	N	984	A	O3'-P	-9.07	1.50	1.61
35	N	948	C	P-OP1	9.06	1.64	1.49
35	N	1269	A	P-OP2	9.06	1.64	1.49
35	N	2050	C	O3'-P	-9.04	1.50	1.61
38	0	882	C	O3'-P	-9.04	1.50	1.61
35	N	1375	U	O3'-P	-8.97	1.50	1.61
35	N	1152	C	O3'-P	-8.95	1.50	1.61
35	N	2588	G	O3'-P	-8.91	1.50	1.61
35	N	673	C	O3'-P	-8.82	1.50	1.61
35	N	397	U	O3'-P	-8.78	1.50	1.61
38	0	827	U	N3-C4	-8.78	1.30	1.38
35	N	2588	G	P-OP2	8.75	1.63	1.49
35	N	2543	G	P-OP1	8.69	1.63	1.49
35	N	859	G	O3'-P	8.68	1.71	1.61
35	N	1774	C	O3'-P	-8.63	1.50	1.61
35	N	1019	U	O3'-P	-8.63	1.50	1.61
35	N	2052	A	O3'-P	-8.62	1.50	1.61
35	N	2576	G	P-OP1	8.62	1.63	1.49
35	N	120	U	P-OP1	8.58	1.63	1.49
35	N	1664	A	P-OP1	8.52	1.63	1.49
35	N	1612	C	O3'-P	-8.51	1.50	1.61
35	N	2635	A	O3'-P	-8.51	1.50	1.61
35	N	2714	G	P-OP2	8.48	1.63	1.49
35	N	2698	U	O3'-P	-8.47	1.50	1.61
35	N	200	U	O3'-P	-8.47	1.50	1.61
34	r	38	GLY	N-CA	8.46	1.58	1.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	N	1994	C	O3'-P	-8.39	1.51	1.61
6	P	195	VAL	CB-CG1	-8.38	1.35	1.52
35	N	2466	C	O3'-P	-8.35	1.51	1.61
38	0	812	G	O3'-P	8.34	1.71	1.61
35	N	1658	C	O3'-P	-8.32	1.51	1.61
35	N	503	A	N1-C2	8.30	1.41	1.34
35	N	1751	U	O3'-P	-8.29	1.51	1.61
38	0	1500	A	O3'-P	-8.28	1.51	1.61
35	N	499	U	N3-C4	8.26	1.45	1.38
35	N	641	U	O3'-P	-8.24	1.51	1.61
35	N	1831	G	O3'-P	-8.24	1.51	1.61
35	N	1900	A	O3'-P	8.24	1.71	1.61
35	N	2613	U	N3-C4	-8.24	1.31	1.38
35	N	2503	A	P-OP2	8.23	1.62	1.49
35	N	2740	A	O3'-P	-8.22	1.51	1.61
35	N	955	U	O3'-P	-8.22	1.51	1.61
35	N	826	U	P-OP1	8.19	1.62	1.49
35	N	2498	C	P-OP2	8.18	1.62	1.49
35	N	2022	U	P-OP1	8.14	1.62	1.49
35	N	453	A	P-OP1	8.13	1.62	1.49
35	N	1780	A	P-OP1	8.13	1.62	1.49
35	N	1353	A	O3'-P	-8.11	1.51	1.61
15	Y	18	ARG	CZ-NH1	8.10	1.43	1.33
35	N	1254	A	O3'-P	-8.04	1.51	1.61
35	N	1658	C	P-OP1	8.01	1.62	1.49
35	N	2605	U	O3'-P	-8.01	1.51	1.61
35	N	2489	U	O3'-P	-7.98	1.51	1.61
35	N	2437	G	O3'-P	-7.94	1.51	1.61
35	N	2264	C	O3'-P	-7.93	1.51	1.61
35	N	1813	G	O3'-P	-7.92	1.51	1.61
35	N	2006	C	P-OP1	7.86	1.62	1.49
35	N	839	U	O3'-P	-7.83	1.51	1.61
35	N	2502	G	O5'-C5'	-7.83	1.30	1.42
35	N	2590	A	O3'-P	-7.83	1.51	1.61
35	N	2062	A	P-OP2	7.79	1.62	1.49
35	N	2265	U	O3'-P	-7.79	1.51	1.61
35	N	192	C	P-OP1	7.77	1.62	1.49
35	N	1782	U	P-OP1	7.76	1.62	1.49
35	N	733	G	O3'-P	-7.75	1.51	1.61
38	0	726	C	O3'-P	-7.75	1.51	1.61
35	N	1189	A	O3'-P	-7.75	1.51	1.61
35	N	372	G	O3'-P	7.72	1.70	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	N	192	C	O3'-P	-7.72	1.51	1.61
35	N	1794	A	O3'-P	-7.70	1.51	1.61
6	P	204	VAL	CB-CG2	-7.68	1.36	1.52
35	N	2447	G	O3'-P	-7.67	1.51	1.61
35	N	1268	A	P-OP1	7.65	1.61	1.49
35	N	1778	U	O3'-P	-7.65	1.51	1.61
35	N	832	U	O3'-P	-7.64	1.51	1.61
35	N	2572	A	O3'-P	-7.63	1.51	1.61
35	N	2518	A	P-OP2	7.63	1.61	1.49
35	N	515	A	O3'-P	-7.63	1.51	1.61
35	N	1790	C	O3'-P	-7.62	1.52	1.61
35	N	997	G	O3'-P	-7.61	1.52	1.61
35	N	810	U	P-OP1	7.58	1.61	1.49
35	N	569	U	O3'-P	-7.55	1.52	1.61
35	N	2620	C	O3'-P	-7.53	1.52	1.61
35	N	464	U	O3'-P	-7.52	1.52	1.61
35	N	821	A	O3'-P	-7.52	1.52	1.61
35	N	1771	C	O3'-P	-7.51	1.52	1.61
35	N	254	G	O3'-P	-7.51	1.52	1.61
35	N	2272	U	C4-O4	-7.50	1.17	1.23
35	N	2867	G	O3'-P	7.50	1.70	1.61
15	Y	22	GLY	C-O	-7.50	1.11	1.23
38	0	884	U	C4-O4	-7.49	1.17	1.23
18	b	30	ARG	CZ-NH1	7.48	1.42	1.33
35	N	2822	G	O3'-P	-7.48	1.52	1.61
38	0	1238	A	N1-C2	7.47	1.41	1.34
15	Y	51	GLU	C-O	7.47	1.37	1.23
35	N	1970	A	P-OP2	7.46	1.61	1.49
35	N	2031	A	P-OP1	-7.46	1.36	1.49
35	N	2061	G	C2'-O2'	7.44	1.51	1.41
38	0	1367	C	O3'-P	-7.44	1.52	1.61
35	N	1678	A	P-OP2	7.43	1.61	1.49
35	N	1828	G	P-OP1	7.43	1.61	1.49
35	N	2081	U	O3'-P	-7.43	1.52	1.61
35	N	676	A	O3'-P	-7.42	1.52	1.61
43	5	63	ASN	C-O	-7.42	1.09	1.23
35	N	2625	G	O3'-P	-7.38	1.52	1.61
38	0	1393	U	O3'-P	-7.38	1.52	1.61
35	N	975	A	P-OP2	7.37	1.61	1.49
35	N	2444	G	O3'-P	-7.36	1.52	1.61
35	N	2637	U	O3'-P	-7.36	1.52	1.61
35	N	2359	C	O3'-P	-7.33	1.52	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	N	566	U	O3'-P	-7.32	1.52	1.61
35	N	538	A	O3'-P	-7.31	1.52	1.61
35	N	2837	A	O3'-P	-7.31	1.52	1.61
35	N	2232	C	O3'-P	-7.30	1.52	1.61
35	N	2247	A	O3'-P	-7.29	1.52	1.61
35	N	2072	C	O3'-P	-7.29	1.52	1.61
35	N	198	C	O3'-P	-7.27	1.52	1.61
35	N	1822	C	O3'-P	-7.26	1.52	1.61
6	P	221	ARG	CB-CG	-7.26	1.32	1.52
35	N	2598	A	O3'-P	-7.24	1.52	1.61
35	N	2344	U	C2-N3	-7.21	1.32	1.37
38	0	387	U	O3'-P	-7.21	1.52	1.61
35	N	2457	U	O3'-P	-7.20	1.52	1.61
38	0	22	G	O3'-P	-7.18	1.52	1.61
35	N	572	A	P-OP1	7.18	1.61	1.49
38	0	563	A	C6-N6	-7.18	1.28	1.33
35	N	1298	C	O3'-P	-7.17	1.52	1.61
35	N	2684	U	O3'-P	-7.16	1.52	1.61
35	N	1805	A	O3'-P	-7.15	1.52	1.61
35	N	2013	A	O3'-P	-7.15	1.52	1.61
35	N	2542	A	O3'-P	-7.14	1.52	1.61
35	N	2602	A	O3'-P	7.14	1.69	1.61
35	N	1261	C	O3'-P	-7.14	1.52	1.61
35	N	126	A	O3'-P	-7.12	1.52	1.61
35	N	940	G	O3'-P	-7.12	1.52	1.61
31	o	21	TYR	CG-CD1	-7.12	1.29	1.39
35	N	966	G	O3'-P	-7.10	1.52	1.61
35	N	796	C	O3'-P	-7.09	1.52	1.61
35	N	2419	U	C4-O4	7.08	1.29	1.23
35	N	1681	G	O3'-P	-7.08	1.52	1.61
35	N	29	U	O3'-P	-7.07	1.52	1.61
35	N	2016	U	O3'-P	-7.07	1.52	1.61
38	0	505	G	O3'-P	-7.06	1.52	1.61
49	E	34	CYS	CB-SG	-7.06	1.70	1.82
35	N	671	C	P-OP2	7.06	1.60	1.49
35	N	818	G	P-OP2	7.04	1.60	1.49
35	N	25	U	O3'-P	-7.04	1.52	1.61
35	N	571	U	O3'-P	-7.03	1.52	1.61
35	N	2013	A	C6-N6	-7.03	1.28	1.33
5	O	83	G	O3'-P	-7.01	1.52	1.61
35	N	1141	U	C2-N3	-7.01	1.32	1.37
31	o	21	TYR	CG-CD2	-7.01	1.30	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	N	2049	G	O3'-P	-7.00	1.52	1.61
35	N	2406	A	P-OP1	7.00	1.60	1.49
35	N	1795	C	O3'-P	-7.00	1.52	1.61
38	0	1358	U	C4-O4	-7.00	1.18	1.23
35	N	2385	C	P-OP1	6.98	1.60	1.49
35	N	2499	C	P-OP2	6.98	1.60	1.49
35	N	773	U	O3'-P	-6.96	1.52	1.61
35	N	2829	A	O3'-P	-6.94	1.52	1.61
35	N	680	C	O3'-P	-6.92	1.52	1.61
35	N	2436	G	O3'-P	-6.92	1.52	1.61
35	N	1949	G	O3'-P	-6.90	1.52	1.61
35	N	2332	C	O3'-P	-6.90	1.52	1.61
38	0	765	G	O3'-P	-6.89	1.52	1.61
17	a	1	MET	C-O	6.87	1.36	1.23
35	N	2051	A	O3'-P	6.87	1.69	1.61
38	0	764	C	O3'-P	-6.87	1.52	1.61
35	N	730	A	P-OP2	6.86	1.60	1.49
35	N	784	G	O3'-P	6.86	1.69	1.61
38	0	980	C	P-OP1	6.85	1.60	1.49
35	N	2443	C	C4'-C3'	-6.85	1.45	1.53
35	N	927	A	N1-C2	6.83	1.40	1.34
35	N	1824	G	P-OP2	6.81	1.60	1.49
35	N	688	U	O3'-P	-6.79	1.53	1.61
38	0	37	U	C2-N3	-6.76	1.33	1.37
35	N	2572	A	P-OP1	-6.74	1.37	1.49
35	N	1394	U	O3'-P	-6.74	1.53	1.61
35	N	2268	A	P-OP1	6.74	1.60	1.49
35	N	2516	A	O3'-P	-6.71	1.53	1.61
35	N	419	U	O3'-P	-6.71	1.53	1.61
35	N	578	G	P-OP2	6.69	1.60	1.49
35	N	923	G	O3'-P	-6.69	1.53	1.61
35	N	239	C	O3'-P	-6.69	1.53	1.61
35	N	1662	U	P-OP2	6.68	1.60	1.49
6	P	10	SER	CA-CB	6.68	1.62	1.52
35	N	2048	G	O3'-P	-6.66	1.53	1.61
35	N	2694	G	O3'-P	-6.65	1.53	1.61
38	0	814	A	P-OP2	6.65	1.60	1.49
35	N	1782	U	O3'-P	-6.65	1.53	1.61
35	N	932	U	C4-O4	-6.64	1.18	1.23
35	N	2045	C	O3'-P	-6.63	1.53	1.61
35	N	2260	C	O3'-P	-6.63	1.53	1.61
38	0	1182	G	O3'-P	6.63	1.69	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	N	2499	C	P-OP1	6.62	1.60	1.49
35	N	117	G	O3'-P	-6.61	1.53	1.61
32	p	34	ARG	CG-CD	-6.59	1.35	1.51
6	P	271	ARG	CZ-NH1	6.59	1.41	1.33
35	N	698	C	O3'-P	-6.59	1.53	1.61
35	N	1649	G	O3'-P	-6.58	1.53	1.61
35	N	783	A	C4'-O4'	6.58	1.54	1.45
35	N	1977	A	O3'-P	-6.58	1.53	1.61
35	N	761	A	P-OP1	6.58	1.60	1.49
35	N	2285	C	O3'-P	-6.57	1.53	1.61
35	N	2452	C	O3'-P	-6.57	1.53	1.61
35	N	1234	U	O3'-P	-6.56	1.53	1.61
42	4	127	ALA	C-O	-6.56	1.10	1.23
35	N	1960	A	O3'-P	-6.56	1.53	1.61
19	c	98	TYR	CE1-CZ	6.56	1.47	1.38
35	N	2074	U	O3'-P	-6.55	1.53	1.61
35	N	2289	G	O3'-P	-6.54	1.53	1.61
35	N	2072	C	P-OP1	6.54	1.60	1.49
35	N	2723	C	O3'-P	-6.54	1.53	1.61
35	N	1009	A	P-OP2	6.53	1.60	1.49
6	P	139	SER	CB-OG	-6.52	1.33	1.42
26	j	42	GLY	N-CA	6.52	1.55	1.46
35	N	1432	G	O3'-P	-6.52	1.53	1.61
35	N	393	C	P-OP1	6.50	1.60	1.49
35	N	499	U	C4-O4	-6.50	1.18	1.23
35	N	2028	U	O3'-P	-6.50	1.53	1.61
35	N	193	U	O3'-P	-6.49	1.53	1.61
35	N	1191	G	O3'-P	-6.49	1.53	1.61
20	d	24	TYR	CG-CD1	6.49	1.47	1.39
35	N	1010	A	P-OP2	6.49	1.59	1.49
35	N	1677	A	O3'-P	-6.49	1.53	1.61
38	0	864	A	N1-C2	6.48	1.40	1.34
35	N	2426	A	O3'-P	-6.48	1.53	1.61
35	N	1680	U	O3'-P	-6.47	1.53	1.61
35	N	2248	C	P-OP2	6.46	1.59	1.49
35	N	2727	A	O3'-P	-6.45	1.53	1.61
35	N	1186	G	P-OP2	6.43	1.59	1.49
32	p	38	GLY	CA-C	-6.43	1.41	1.51
35	N	960	A	O3'-P	-6.43	1.53	1.61
35	N	1334	G	O3'-P	-6.43	1.53	1.61
35	N	2699	C	O3'-P	-6.43	1.53	1.61
35	N	694	U	O3'-P	-6.43	1.53	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	N	1993	U	O5'-C5'	-6.42	1.32	1.42
38	0	368	U	C2-N3	-6.42	1.33	1.37
35	N	1142	A	O3'-P	6.42	1.68	1.61
38	0	1062	U	O3'-P	-6.41	1.53	1.61
35	N	2262	U	O3'-P	-6.41	1.53	1.61
35	N	28	A	P-O5'	-6.41	1.53	1.59
6	P	219	THR	C-O	6.40	1.35	1.23
35	N	1652	A	O3'-P	-6.39	1.53	1.61
20	d	49	ASP	CB-CG	6.39	1.65	1.51
38	0	715	A	O3'-P	-6.39	1.53	1.61
7	Q	125	TRP	CE3-CZ3	-6.39	1.27	1.38
38	0	812	G	C3'-C2'	-6.39	1.45	1.52
35	N	1296	G	O3'-P	-6.38	1.53	1.61
35	N	1367	A	O3'-P	-6.37	1.53	1.61
38	0	884	U	N3-C4	-6.35	1.32	1.38
35	N	745	G	O3'-P	-6.35	1.53	1.61
38	0	19	A	O3'-P	-6.35	1.53	1.61
35	N	208	C	O3'-P	-6.35	1.53	1.61
35	N	632	A	O3'-P	-6.35	1.53	1.61
35	N	1671	U	P-OP2	6.35	1.59	1.49
35	N	2502	G	O3'-P	-6.35	1.53	1.61
35	N	2243	U	P-OP1	6.34	1.59	1.49
31	o	49	TYR	CE1-CZ	-6.32	1.30	1.38
35	N	1141	U	C4-O4	-6.31	1.18	1.23
38	0	1301	U	N1-C2	6.31	1.44	1.38
6	P	213	TRP	CD1-NE1	6.31	1.48	1.38
38	0	37	U	C4-O4	-6.31	1.18	1.23
35	N	1186	G	O3'-P	-6.30	1.53	1.61
35	N	2444	G	C2'-C1'	-6.30	1.46	1.53
38	0	368	U	C4-O4	-6.29	1.18	1.23
35	N	2554	U	P-OP2	-6.29	1.38	1.49
58	v	34	ARG	CZ-NH1	6.29	1.41	1.33
35	N	1650	A	O3'-P	-6.29	1.53	1.61
35	N	1004	U	O3'-P	-6.29	1.53	1.61
35	N	1006	C	O3'-P	-6.28	1.53	1.61
35	N	1026	G	P-OP2	-6.28	1.38	1.49
35	N	408	G	O3'-P	-6.27	1.53	1.61
35	N	1327	A	P-OP2	6.27	1.59	1.49
35	N	783	A	C5-C6	-6.25	1.35	1.41
38	0	920	U	O3'-P	-6.25	1.53	1.61
38	0	572	A	P-OP1	6.25	1.59	1.49
38	0	613	C	O3'-P	-6.24	1.53	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	N	576	U	O3'-P	-6.24	1.53	1.61
35	N	7	G	O3'-P	-6.23	1.53	1.61
35	N	247	G	O3'-P	-6.23	1.53	1.61
35	N	2543	G	O5'-C5'	-6.23	1.32	1.42
35	N	411	G	P-OP1	6.22	1.59	1.49
35	N	567	U	O3'-P	-6.22	1.53	1.61
35	N	1142	A	C5-C6	-6.22	1.35	1.41
35	N	120	U	P-OP2	6.22	1.59	1.49
35	N	2000	C	O3'-P	-6.22	1.53	1.61
13	W	16	TYR	CG-CD1	-6.21	1.31	1.39
35	N	26	G	O3'-P	-6.21	1.53	1.61
35	N	1816	C	O3'-P	-6.20	1.53	1.61
38	0	787	A	O3'-P	-6.20	1.53	1.61
35	N	946	C	P-OP2	6.19	1.59	1.49
6	P	214	ARG	CZ-NH1	6.19	1.41	1.33
35	N	253	C	O3'-P	-6.18	1.53	1.61
38	0	439	U	C2-N3	6.18	1.42	1.37
38	0	1358	U	C2-N3	-6.18	1.33	1.37
38	0	1474	U	O3'-P	-6.18	1.53	1.61
35	N	2263	C	O3'-P	-6.18	1.53	1.61
38	0	568	G	O3'-P	-6.18	1.53	1.61
49	E	23	ALA	N-CA	6.17	1.58	1.46
35	N	1196	C	O3'-P	-6.17	1.53	1.61
35	N	1342	A	P-OP2	6.17	1.59	1.49
35	N	1827	U	O3'-P	-6.17	1.53	1.61
35	N	593	U	O3'-P	-6.15	1.53	1.61
35	N	2035	G	O5'-C5'	-6.14	1.33	1.42
38	0	498	A	N1-C2	6.14	1.39	1.34
35	N	725	G	O3'-P	-6.14	1.53	1.61
35	N	2682	A	P-OP2	6.14	1.59	1.49
35	N	1370	C	O3'-P	-6.13	1.53	1.61
38	0	581	G	O3'-P	-6.13	1.53	1.61
38	0	46	G	O3'-P	-6.12	1.53	1.61
19	c	93	ARG	CD-NE	-6.12	1.36	1.46
35	N	244	A	O3'-P	-6.12	1.53	1.61
35	N	398	C	O3'-P	-6.12	1.53	1.61
35	N	1968	G	P-OP1	6.12	1.59	1.49
38	0	356	A	O3'-P	-6.11	1.53	1.61
35	N	2277	G	O3'-P	-6.11	1.53	1.61
35	N	1793	C	O3'-P	-6.11	1.53	1.61
35	N	1636	U	O3'-P	-6.10	1.53	1.61
35	N	123	G	O3'-P	-6.10	1.53	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	N	777	G	O3'-P	-6.09	1.53	1.61
35	N	1153	C	P-OP2	6.08	1.59	1.49
38	0	816	A	O3'-P	-6.07	1.53	1.61
35	N	1905	C	O3'-P	-6.07	1.53	1.61
17	a	2	ARG	C-O	-6.06	1.11	1.23
35	N	932	U	C2-N3	-6.06	1.33	1.37
35	N	1134	A	O3'-P	6.06	1.68	1.61
35	N	234	U	C2-N3	-6.06	1.33	1.37
35	N	430	A	C6-N6	-6.06	1.29	1.33
35	N	190	A	O3'-P	-6.05	1.53	1.61
35	N	1756	G	O3'-P	-6.04	1.53	1.61
35	N	1368	G	O3'-P	-6.04	1.53	1.61
35	N	2642	G	O3'-P	-6.02	1.53	1.61
35	N	2776	A	C5-C6	-6.02	1.35	1.41
35	N	2503	A	P-OP1	6.01	1.59	1.49
35	N	1648	U	P-OP2	6.01	1.59	1.49
38	0	1522	U	O3'-P	-6.01	1.53	1.61
35	N	963	U	P-OP2	6.00	1.59	1.49
35	N	524	G	O3'-P	-6.00	1.53	1.61
38	0	1080	A	O3'-P	-5.99	1.53	1.61
38	0	917	G	O3'-P	-5.99	1.53	1.61
38	0	1110	A	P-OP2	5.98	1.59	1.49
35	N	727	A	P-OP1	5.98	1.59	1.49
35	N	1957	C	O3'-P	-5.98	1.53	1.61
35	N	2639	A	O3'-P	-5.98	1.53	1.61
35	N	1676	A	O3'-P	-5.98	1.53	1.61
35	N	2442	C	O3'-P	-5.98	1.53	1.61
8	R	80	SER	C-O	-5.98	1.11	1.23
35	N	1205	A	O3'-P	5.97	1.68	1.61
35	N	2003	A	O3'-P	-5.97	1.53	1.61
38	0	834	U	O3'-P	-5.96	1.53	1.61
38	0	118	U	O3'-P	-5.96	1.54	1.61
35	N	2626	C	O3'-P	-5.95	1.54	1.61
35	N	1610	A	O3'-P	-5.95	1.54	1.61
35	N	1324	G	O3'-P	-5.94	1.54	1.61
38	0	888	G	O3'-P	-5.94	1.54	1.61
35	N	699	A	O3'-P	-5.93	1.54	1.61
35	N	2847	U	O3'-P	-5.93	1.54	1.61
38	0	1513	A	O3'-P	-5.93	1.54	1.61
35	N	577	G	O3'-P	-5.93	1.54	1.61
38	0	500	G	O3'-P	-5.93	1.54	1.61
38	0	559	A	C2-N3	5.92	1.38	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	N	1323	C	O3'-P	-5.92	1.54	1.61
35	N	2250	G	C5-C6	-5.92	1.36	1.42
38	0	813	U	P-O5'	-5.91	1.53	1.59
35	N	2014	A	O3'-P	-5.91	1.54	1.61
38	0	498	A	C2-N3	5.91	1.38	1.33
35	N	2571	U	O3'-P	-5.90	1.54	1.61
35	N	1369	G	O3'-P	-5.90	1.54	1.61
35	N	2238	G	O3'-P	5.89	1.68	1.61
35	N	1187	G	P-OP2	5.89	1.58	1.49
35	N	1676	A	P-OP2	5.88	1.58	1.49
38	0	879	C	O3'-P	-5.87	1.54	1.61
35	N	1007	C	O3'-P	-5.87	1.54	1.61
35	N	1264	A	O3'-P	-5.85	1.54	1.61
35	N	774	G	C2'-O2'	5.84	1.49	1.41
35	N	580	U	O3'-P	-5.84	1.54	1.61
38	0	545	C	O3'-P	-5.84	1.54	1.61
35	N	310	A	C5-C6	-5.83	1.35	1.41
35	N	2272	U	O3'-P	-5.83	1.54	1.61
4	M	72	G	O3'-P	-5.82	1.54	1.61
35	N	2025	C	O5'-C5'	-5.82	1.33	1.42
38	0	116	A	P-OP2	5.81	1.58	1.49
38	0	1054	C	P-OP2	5.81	1.58	1.49
35	N	2545	G	O3'-P	-5.81	1.54	1.61
35	N	2779	U	O3'-P	-5.80	1.54	1.61
38	0	1068	G	O3'-P	-5.80	1.54	1.61
35	N	1647	U	P-OP2	5.79	1.58	1.49
35	N	2541	A	O3'-P	-5.79	1.54	1.61
40	2	2	GLY	N-CA	5.79	1.54	1.46
35	N	605	G	O3'-P	-5.79	1.54	1.61
35	N	1665	A	P-OP2	5.79	1.58	1.49
38	0	786	G	O3'-P	-5.78	1.54	1.61
38	0	788	U	O3'-P	-5.78	1.54	1.61
35	N	628	G	O3'-P	-5.78	1.54	1.61
35	N	2688	G	O3'-P	-5.78	1.54	1.61
38	0	804	U	O3'-P	-5.77	1.54	1.61
35	N	2072	C	O5'-C5'	-5.77	1.33	1.42
38	0	233	C	O3'-P	-5.77	1.54	1.61
38	0	323	U	O3'-P	-5.77	1.54	1.61
35	N	1602	U	C4-O4	5.75	1.28	1.23
35	N	562	U	O3'-P	-5.74	1.54	1.61
35	N	1605	C	O3'-P	-5.74	1.54	1.61
35	N	28	A	O3'-P	-5.73	1.54	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	N	499	U	O3'-P	-5.73	1.54	1.61
35	N	565	C	O3'-P	-5.72	1.54	1.61
35	N	2612	C	O3'-P	-5.71	1.54	1.61
35	N	2272	U	C2-N3	-5.71	1.33	1.37
35	N	2011	U	O3'-P	-5.71	1.54	1.61
38	0	868	C	O3'-P	-5.71	1.54	1.61
27	k	29	PHE	CG-CD2	-5.71	1.30	1.38
35	N	1796	U	O3'-P	-5.71	1.54	1.61
35	N	2054	A	O3'-P	-5.70	1.54	1.61
38	0	1238	A	C5-C6	-5.70	1.35	1.41
30	n	29	SER	CB-OG	-5.70	1.34	1.42
35	N	2509	G	O3'-P	-5.70	1.54	1.61
6	P	213	TRP	CE3-CZ3	5.70	1.48	1.38
35	N	570	G	O3'-P	-5.69	1.54	1.61
38	0	1363	A	C6-N6	-5.69	1.29	1.33
6	P	221	ARG	CA-C	-5.69	1.38	1.52
35	N	2429	G	P-OP2	5.69	1.58	1.49
38	0	24	U	C4-O4	-5.68	1.19	1.23
35	N	234	U	C4-O4	-5.68	1.19	1.23
35	N	382	A	O3'-P	-5.68	1.54	1.61
38	0	439	U	C4-O4	-5.67	1.19	1.23
13	W	30	THR	CB-CG2	-5.67	1.33	1.52
35	N	536	G	O3'-P	-5.67	1.54	1.61
38	0	1430	A	O3'-P	-5.67	1.54	1.61
35	N	2560	A	O3'-P	-5.67	1.54	1.61
35	N	691	C	O3'-P	-5.66	1.54	1.61
35	N	2503	A	O3'-P	-5.66	1.54	1.61
35	N	310	A	N1-C2	5.66	1.39	1.34
35	N	1790	C	N1-C2	-5.65	1.34	1.40
38	0	570	G	O3'-P	-5.64	1.54	1.61
35	N	1338	G	O3'-P	-5.64	1.54	1.61
35	N	1351	C	O3'-P	-5.64	1.54	1.61
38	0	404	G	O3'-P	-5.64	1.54	1.61
6	P	238	ARG	C-O	5.63	1.34	1.23
35	N	1568	G	O3'-P	-5.63	1.54	1.61
38	0	826	C	O3'-P	-5.63	1.54	1.61
38	0	750	C	O3'-P	-5.62	1.54	1.61
35	N	2732	G	C3'-O3'	5.62	1.50	1.42
38	0	319	G	O3'-P	-5.61	1.54	1.61
35	N	1446	C	O3'-P	-5.60	1.54	1.61
35	N	1742	U	O3'-P	-5.60	1.54	1.61
35	N	464	U	C4'-O4'	-5.60	1.38	1.45

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	N	810	U	O3'-P	-5.59	1.54	1.61
13	W	16	TYR	CE1-CZ	-5.59	1.31	1.38
35	N	2591	C	O3'-P	-5.58	1.54	1.61
8	R	81	GLY	N-CA	-5.58	1.37	1.46
38	0	878	A	O3'-P	-5.58	1.54	1.61
6	P	222	GLY	C-O	-5.58	1.14	1.23
35	N	2448	A	P-OP1	5.58	1.58	1.49
35	N	824	U	O3'-P	-5.57	1.54	1.61
35	N	2685	G	O3'-P	-5.56	1.54	1.61
35	N	1783	A	O3'-P	-5.56	1.54	1.61
35	N	2645	G	O3'-P	-5.56	1.54	1.61
38	0	907	A	O3'-P	-5.54	1.54	1.61
35	N	1670	C	O3'-P	-5.53	1.54	1.61
35	N	2732	G	C2'-O2'	5.52	1.48	1.41
22	f	101	SER	CB-OG	-5.52	1.35	1.42
35	N	1328	A	O3'-P	-5.50	1.54	1.61
38	0	895	G	O3'-P	-5.50	1.54	1.61
35	N	375	G	P-OP1	5.50	1.58	1.49
38	0	547	A	P-OP1	5.50	1.58	1.49
35	N	1802	A	C5-C6	-5.50	1.36	1.41
35	N	1973	G	O3'-P	-5.48	1.54	1.61
17	a	43	GLU	CG-CD	5.48	1.60	1.51
38	0	963	G	O3'-P	-5.48	1.54	1.61
35	N	246	C	O3'-P	-5.48	1.54	1.61
35	N	693	A	O3'-P	-5.47	1.54	1.61
35	N	1189	A	P-OP2	5.47	1.58	1.49
20	d	45	TYR	CG-CD1	-5.46	1.32	1.39
35	N	2821	A	P-O5'	-5.46	1.54	1.59
38	0	885	G	O3'-P	-5.46	1.54	1.61
35	N	468	G	O3'-P	-5.46	1.54	1.61
35	N	2062	A	O5'-C5'	-5.46	1.34	1.42
35	N	840	C	O3'-P	-5.46	1.54	1.61
35	N	2266	A	P-OP1	5.45	1.58	1.49
35	N	1770	G	O3'-P	-5.45	1.54	1.61
35	N	2445	G	P-OP2	5.44	1.58	1.49
35	N	973	A	O3'-P	-5.44	1.54	1.61
35	N	990	A	P-OP2	5.44	1.58	1.49
35	N	973	A	P-O5'	-5.44	1.54	1.59
35	N	188	G	O3'-P	-5.43	1.54	1.61
38	0	927	G	O3'-P	-5.43	1.54	1.61
35	N	1265	A	P-O5'	-5.42	1.54	1.59
35	N	2643	G	O3'-P	-5.42	1.54	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	N	1708	C	O3'-P	-5.41	1.54	1.61
35	N	1995	U	P-OP1	5.41	1.58	1.49
35	N	1648	U	O3'-P	-5.41	1.54	1.61
38	0	827	U	C4-O4	-5.40	1.19	1.23
35	N	742	A	O3'-P	-5.40	1.54	1.61
35	N	771	G	O3'-P	-5.40	1.54	1.61
38	0	1497	G	O3'-P	-5.40	1.54	1.61
35	N	1934	C	O3'-P	-5.40	1.54	1.61
35	N	787	C	P-OP1	5.39	1.58	1.49
4	M	73	C	O3'-P	-5.39	1.54	1.61
35	N	784	G	C4'-C3'	-5.39	1.47	1.52
35	N	1021	A	C6-N6	-5.39	1.29	1.33
38	0	528	C	O3'-P	-5.39	1.54	1.61
35	N	528	A	C5-C6	-5.38	1.36	1.41
35	N	783	A	N9-C4	-5.38	1.34	1.37
35	N	2720	U	C4-O4	-5.38	1.19	1.23
35	N	2005	A	O3'-P	-5.37	1.54	1.61
35	N	1990	C	C2'-C1'	-5.36	1.47	1.53
35	N	2274	A	O3'-P	-5.36	1.54	1.61
35	N	2715	C	O3'-P	-5.36	1.54	1.61
35	N	66	C	O3'-P	-5.36	1.54	1.61
35	N	1255	U	O5'-C5'	-5.36	1.34	1.42
18	b	102	ARG	CZ-NH2	5.35	1.40	1.33
30	n	20	ASP	CB-CG	5.35	1.62	1.51
38	0	872	A	C6-N6	-5.35	1.29	1.33
35	N	1136	G	P-OP1	5.34	1.58	1.49
35	N	1786	A	O3'-P	-5.34	1.54	1.61
38	0	391	G	O3'-P	-5.34	1.54	1.61
38	0	1322	C	O3'-P	5.33	1.67	1.61
38	0	318	G	O3'-P	-5.33	1.54	1.61
38	0	887	G	O3'-P	-5.33	1.54	1.61
35	N	2243	U	N3-C4	-5.33	1.33	1.38
35	N	2023	C	O3'-P	-5.33	1.54	1.61
38	0	938	A	O3'-P	-5.33	1.54	1.61
35	N	2549	G	O3'-P	-5.32	1.54	1.61
35	N	561	G	O3'-P	-5.32	1.54	1.61
35	N	1993	U	P-O5'	-5.32	1.54	1.59
35	N	1272	A	O3'-P	-5.31	1.54	1.61
35	N	2024	G	O3'-P	-5.30	1.54	1.61
6	P	11	PRO	N-CA	5.30	1.56	1.47
35	N	1833	C	O3'-P	-5.30	1.54	1.61
35	N	2724	U	O3'-P	-5.30	1.54	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	N	927	A	C2-N3	5.29	1.38	1.33
35	N	2845	U	O3'-P	-5.29	1.54	1.61
35	N	1832	C	O3'-P	-5.29	1.54	1.61
35	N	1837	C	O3'-P	-5.29	1.54	1.61
55	K	20	GLU	CD-OE1	5.29	1.31	1.25
16	Z	39	GLY	C-O	-5.29	1.15	1.23
35	N	385	C	O3'-P	-5.28	1.54	1.61
38	0	386	C	O3'-P	-5.27	1.54	1.61
26	j	41	ARG	CG-CD	5.27	1.65	1.51
35	N	2500	U	O3'-P	-5.27	1.54	1.61
35	N	978	G	O3'-P	-5.27	1.54	1.61
35	N	2445	G	C2-N2	5.27	1.39	1.34
35	N	2036	C	O3'-P	-5.26	1.54	1.61
38	0	24	U	O3'-P	-5.26	1.54	1.61
38	0	554	A	O3'-P	-5.26	1.54	1.61
38	0	1507	A	O3'-P	-5.26	1.54	1.61
7	Q	127	PHE	CE1-CZ	-5.26	1.27	1.37
35	N	1632	A	O3'-P	-5.26	1.54	1.61
38	0	291	U	O3'-P	-5.26	1.54	1.61
6	P	48	ARG	C-O	-5.25	1.13	1.23
35	N	261	G	O3'-P	-5.25	1.54	1.61
38	0	964	A	P-OP1	5.25	1.57	1.49
32	p	39	ARG	NE-CZ	5.25	1.39	1.33
35	N	1141	U	C2-O2	-5.25	1.17	1.22
38	0	586	C	O3'-P	-5.25	1.54	1.61
38	0	886	G	O3'-P	-5.25	1.54	1.61
35	N	2766	A	O3'-P	-5.24	1.54	1.61
38	0	373	A	O3'-P	-5.24	1.54	1.61
19	c	53	ARG	CG-CD	-5.24	1.38	1.51
35	N	2241	A	O3'-P	-5.24	1.54	1.61
38	0	123	U	O3'-P	-5.23	1.54	1.61
16	Z	91	TYR	CE1-CZ	-5.21	1.31	1.38
35	N	2430	A	P-OP2	5.21	1.57	1.49
38	0	751	U	O3'-P	-5.21	1.54	1.61
35	N	430	A	C6-N1	-5.21	1.31	1.35
35	N	1991	U	O3'-P	-5.21	1.54	1.61
35	N	69	C	O3'-P	-5.20	1.54	1.61
38	0	25	C	O3'-P	-5.20	1.54	1.61
35	N	469	G	O3'-P	-5.20	1.54	1.61
31	o	21	TYR	CE1-CZ	-5.20	1.31	1.38
50	F	101	ARG	CZ-NH1	5.20	1.39	1.33
35	N	2490	G	O3'-P	-5.20	1.54	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	R	77	ILE	CB-CG1	-5.19	1.39	1.54
35	N	989	G	C3'-O3'	5.19	1.49	1.42
35	N	1327	A	O3'-P	-5.19	1.54	1.61
38	0	924	C	O3'-P	-5.19	1.54	1.61
35	N	1637	A	O3'-P	-5.18	1.54	1.61
35	N	2267	A	C6-N1	-5.18	1.31	1.35
35	N	2267	A	P-OP1	5.18	1.57	1.49
6	P	234	GLY	C-O	-5.18	1.15	1.23
20	d	24	TYR	CE2-CZ	5.18	1.45	1.38
35	N	2592	G	O3'-P	-5.18	1.54	1.61
38	0	18	C	O3'-P	-5.17	1.54	1.61
35	N	604	G	O3'-P	-5.17	1.54	1.61
35	N	2839	G	O3'-P	-5.17	1.54	1.61
38	0	816	A	P-OP1	5.17	1.57	1.49
35	N	981	A	P-OP1	5.17	1.57	1.49
35	N	223	A	O3'-P	-5.16	1.54	1.61
35	N	787	C	P-O5'	-5.16	1.54	1.59
35	N	2448	A	P-OP2	5.16	1.57	1.49
35	N	976	G	O3'-P	-5.15	1.54	1.61
49	E	38	TYR	CB-CG	-5.15	1.44	1.51
35	N	1864	U	O3'-P	-5.14	1.54	1.61
35	N	2838	G	O3'-P	-5.14	1.54	1.61
35	N	1202	G	O3'-P	-5.14	1.54	1.61
6	P	213	TRP	CA-C	-5.13	1.39	1.52
35	N	784	G	P-OP1	5.13	1.57	1.49
38	0	783	C	O3'-P	-5.13	1.54	1.61
35	N	419	U	P-OP1	5.13	1.57	1.49
35	N	664	G	O3'-P	-5.13	1.54	1.61
21	e	80	ARG	CB-CG	-5.12	1.38	1.52
35	N	513	A	P-O5'	-5.12	1.54	1.59
38	0	1301	U	C2-N3	5.12	1.41	1.37
35	N	1254	A	C2'-O2'	5.12	1.48	1.41
38	0	951	G	O3'-P	-5.12	1.55	1.61
48	D	65	VAL	CB-CG1	-5.12	1.42	1.52
35	N	800	A	N9-C4	-5.12	1.34	1.37
35	N	467	G	O3'-P	-5.12	1.55	1.61
7	Q	113	SER	CB-OG	-5.11	1.35	1.42
35	N	1679	A	O3'-P	-5.11	1.55	1.61
35	N	503	A	O3'-P	5.11	1.67	1.61
38	0	1500	A	P-OP2	5.11	1.57	1.49
31	o	49	TYR	CE2-CZ	-5.10	1.31	1.38
35	N	1826	G	O3'-P	-5.10	1.55	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	P	235	GLY	CA-C	-5.10	1.43	1.51
35	N	2078	C	O3'-P	-5.10	1.55	1.61
35	N	2387	U	O3'-P	-5.10	1.55	1.61
35	N	1638	C	P-O5'	-5.10	1.54	1.59
35	N	2017	U	N1-C2	-5.10	1.33	1.38
39	1	213	TYR	CB-CG	-5.09	1.44	1.51
39	1	96	TRP	CG-CD1	5.09	1.43	1.36
35	N	1985	C	O3'-P	-5.08	1.55	1.61
35	N	954	G	O3'-P	-5.08	1.55	1.61
35	N	2706	A	O3'-P	-5.08	1.55	1.61
35	N	1666	G	O3'-P	-5.07	1.55	1.61
35	N	2611	C	P-OP2	5.07	1.57	1.49
35	N	2875	C	O3'-P	-5.07	1.55	1.61
35	N	2361	G	O3'-P	-5.07	1.55	1.61
38	0	397	A	C6-N6	-5.07	1.29	1.33
31	o	49	TYR	CG-CD1	-5.06	1.32	1.39
38	0	881	G	O3'-P	-5.06	1.55	1.61
35	N	948	C	N1-C2	-5.06	1.35	1.40
6	P	236	GLU	CD-OE2	5.06	1.31	1.25
35	N	1817	G	O3'-P	-5.05	1.55	1.61
35	N	587	C	O3'-P	-5.05	1.55	1.61
38	0	1363	A	C6-N1	-5.05	1.32	1.35
35	N	752	A	P-O5'	-5.05	1.54	1.59
35	N	1308	A	O3'-P	-5.05	1.55	1.61
38	0	979	C	O3'-P	-5.05	1.55	1.61
35	N	1253	A	C4'-C3'	-5.04	1.47	1.52
35	N	2551	C	P-OP2	5.04	1.57	1.49
35	N	396	G	O3'-P	-5.04	1.55	1.61
3	s	132	TYR	CG-CD1	5.04	1.45	1.39
35	N	1250	G	P-OP1	5.03	1.57	1.49
35	N	918	A	O3'-P	-5.03	1.55	1.61
38	0	506	G	O3'-P	-5.03	1.55	1.61
38	0	108	G	P-OP2	-5.03	1.40	1.49
35	N	2580	U	O3'-P	-5.03	1.55	1.61
35	N	449	A	O3'-P	-5.02	1.55	1.61
35	N	666	A	O3'-P	-5.02	1.55	1.61
38	0	827	U	C2-N3	-5.02	1.34	1.37
35	N	2440	C	O3'-P	-5.02	1.55	1.61
38	0	935	A	O3'-P	-5.02	1.55	1.61
35	N	1313	U	P-OP1	5.01	1.57	1.49
38	0	1408	A	O3'-P	-5.01	1.55	1.61
38	0	1434	A	O3'-P	-5.01	1.55	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	W	97	PRO	C-O	5.00	1.33	1.23
35	N	296	U	O3'-P	-5.00	1.55	1.61
35	N	1237	A	P-OP2	5.00	1.57	1.49
35	N	1998	A	C2'-C1'	-5.00	1.47	1.53

All (719) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
35	N	2506[A]	U	OP1-P-O3'	17.17	142.97	105.20
35	N	2506[B]	U	OP1-P-O3'	17.17	142.97	105.20
32	p	39	ARG	NE-CZ-NH1	16.14	128.37	120.30
32	p	39	ARG	NE-CZ-NH2	-14.83	112.89	120.30
4	M	73	C	O3'-P-O5'	14.35	131.26	104.00
35	N	2720	U	C2-N3-C4	-13.72	118.77	127.00
35	N	2522	U	C2-N3-C4	-13.70	118.78	127.00
35	N	2062	A	O5'-P-OP1	-13.28	93.75	105.70
35	N	467	G	O5'-P-OP1	-13.15	93.87	105.70
35	N	2836	U	O5'-P-OP1	-12.84	94.14	105.70
56	t	5	LEU	CB-CG-CD2	12.62	132.46	111.00
20	d	53	ARG	NE-CZ-NH1	12.39	126.49	120.30
26	j	41	ARG	NE-CZ-NH1	12.32	126.46	120.30
35	N	2506[A]	U	O3'-P-O5'	-12.25	80.73	104.00
35	N	2506[B]	U	O3'-P-O5'	-12.25	80.73	104.00
35	N	1996	C	O5'-P-OP2	-12.23	94.70	105.70
35	N	2873	A	N1-C6-N6	-12.06	111.36	118.60
35	N	499	U	C2-N3-C4	-12.06	119.77	127.00
35	N	2821	A	O5'-P-OP1	-11.86	95.02	105.70
27	k	28	ARG	NE-CZ-NH2	-11.60	114.50	120.30
15	Y	18	ARG	NE-CZ-NH2	-11.59	114.51	120.30
30	n	20	ASP	CB-CG-OD1	11.48	128.63	118.30
38	0	559	A	C6-N1-C2	-11.37	111.78	118.60
38	0	1301	U	C2-N3-C4	-11.29	120.23	127.00
35	N	1665	A	O5'-P-OP1	-11.23	95.59	105.70
35	N	2505	G	P-O3'-C3'	-11.06	106.43	119.70
35	N	228	C	O5'-P-OP1	-10.99	95.80	105.70
38	0	752	G	O5'-P-OP1	-10.98	95.81	105.70
32	p	34	ARG	NE-CZ-NH1	-10.87	114.86	120.30
16	Z	16	ARG	NE-CZ-NH2	-10.86	114.87	120.30
35	N	2447	G	O5'-P-OP1	-10.83	95.95	105.70
13	W	116	ARG	NE-CZ-NH2	-10.81	114.89	120.30
48	D	122	ARG	NE-CZ-NH1	10.72	125.66	120.30
35	N	2765	A	N1-C6-N6	-10.71	112.17	118.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
35	N	1941	C	O5'-P-OP1	-10.63	96.13	105.70
6	P	214	ARG	NE-CZ-NH2	-10.61	115.00	120.30
50	F	109	ARG	NE-CZ-NH1	10.61	125.60	120.30
35	N	2067	G	O5'-P-OP1	-10.52	96.23	105.70
35	N	27	G	O5'-P-OP1	-10.49	96.25	105.70
38	0	16	A	O5'-P-OP1	-10.41	96.33	105.70
38	0	1497	G	O5'-P-OP2	-10.37	96.37	105.70
20	d	53	ARG	NE-CZ-NH2	-10.36	115.12	120.30
58	v	34	ARG	NE-CZ-NH2	-10.32	115.14	120.30
7	Q	13	ARG	NE-CZ-NH2	10.24	125.42	120.30
35	N	1965	C	O5'-P-OP2	-10.09	96.62	105.70
20	d	6	ARG	NE-CZ-NH2	10.04	125.32	120.30
39	1	21	ARG	NE-CZ-NH1	10.00	125.30	120.30
35	N	953	G	O5'-P-OP1	-9.96	96.74	105.70
35	N	474	G	O5'-P-OP1	-9.94	96.75	105.70
35	N	2059	A	O5'-P-OP2	-9.88	96.81	105.70
38	0	21	G	O5'-P-OP1	9.86	122.53	110.70
35	N	2072	C	O5'-P-OP1	-9.85	96.84	105.70
35	N	2060	A	O5'-P-OP1	-9.79	96.89	105.70
35	N	306	U	C2-N3-C4	-9.78	121.13	127.00
11	U	27	ARG	NE-CZ-NH1	-9.71	115.44	120.30
35	N	801	G	O5'-P-OP2	-9.63	97.04	105.70
35	N	2726	A	O5'-P-OP1	-9.57	97.08	105.70
35	N	537	G	O5'-P-OP1	-9.56	97.10	105.70
18	b	102	ARG	NE-CZ-NH2	9.56	125.08	120.30
35	N	2873	A	C5-C6-N6	9.50	131.30	123.70
35	N	1809	A	O5'-P-OP1	-9.44	97.20	105.70
38	0	795	C	O5'-P-OP1	-9.39	97.25	105.70
35	N	2776	A	C8-N9-C1'	-9.39	110.80	127.70
44	6	109	ARG	NE-CZ-NH1	9.38	124.99	120.30
35	N	2776	A	C4-N9-C1'	9.37	143.16	126.30
34	r	36	ARG	NE-CZ-NH1	-9.35	115.62	120.30
15	Y	47	ARG	NE-CZ-NH2	9.30	124.95	120.30
35	N	805	G	O5'-P-OP1	-9.28	97.35	105.70
35	N	2044	C	O5'-P-OP1	-9.27	97.36	105.70
35	N	2543	G	O5'-P-OP1	-9.23	97.39	105.70
35	N	1190	G	O5'-P-OP2	9.23	121.77	110.70
35	N	2711	A	O5'-P-OP2	9.19	121.72	110.70
6	P	258	ARG	NE-CZ-NH1	-9.18	115.71	120.30
42	4	111	MET	CG-SD-CE	-9.15	85.56	100.20
27	k	57	ARG	NE-CZ-NH2	9.14	124.87	120.30
35	N	1639	C	O5'-P-OP1	-9.11	97.50	105.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
35	N	2022	U	O5'-P-OP1	-9.09	97.52	105.70
35	N	1253	A	O5'-P-OP1	-9.08	97.53	105.70
35	N	2513	A	O5'-P-OP2	-9.07	97.53	105.70
19	c	72	ARG	NE-CZ-NH2	-9.07	115.76	120.30
39	l	21	ARG	NE-CZ-NH2	-8.97	115.81	120.30
35	N	2456	C	O5'-P-OP1	-8.97	97.63	105.70
50	F	92	ARG	NE-CZ-NH1	8.88	124.74	120.30
38	0	968	A	O5'-P-OP2	-8.83	97.75	105.70
18	b	102	ARG	NE-CZ-NH1	-8.83	115.89	120.30
15	Y	78	ARG	NE-CZ-NH2	8.74	124.67	120.30
18	b	30	ARG	NE-CZ-NH2	-8.73	115.94	120.30
35	N	2725	A	O5'-P-OP1	-8.68	97.89	105.70
52	H	54	ARG	NE-CZ-NH2	-8.68	115.96	120.30
35	N	1798	U	O5'-P-OP2	-8.68	97.89	105.70
35	N	684	G	O5'-P-OP1	-8.67	97.89	105.70
6	P	270	ARG	NE-CZ-NH2	-8.66	115.97	120.30
35	N	2497	A	O5'-P-OP2	8.60	121.02	110.70
17	a	69	ARG	NE-CZ-NH2	8.59	124.59	120.30
53	I	70	ARG	NE-CZ-NH1	8.59	124.59	120.30
35	N	1994	C	O5'-P-OP1	-8.57	97.98	105.70
19	c	21	ARG	NE-CZ-NH1	-8.54	116.03	120.30
42	4	157	ARG	NE-CZ-NH1	-8.54	116.03	120.30
5	O	90	C	O5'-P-OP1	-8.51	98.04	105.70
38	0	816	A	O5'-P-OP1	-8.49	98.05	105.70
57	u	10	ARG	CB-CG-CD	-8.45	89.63	111.60
33	q	8	ARG	NE-CZ-NH1	8.39	124.50	120.30
38	0	726	C	O5'-P-OP1	-8.29	98.24	105.70
6	P	271	ARG	NE-CZ-NH2	-8.27	116.17	120.30
51	G	9	ARG	NE-CZ-NH1	8.22	124.41	120.30
6	P	221	ARG	CG-CD-NE	-8.22	94.54	111.80
35	N	2248	C	O5'-P-OP1	-8.21	98.31	105.70
38	0	1358	U	N3-C4-O4	-8.16	113.69	119.40
50	F	92	ARG	NE-CZ-NH2	-8.16	116.22	120.30
35	N	2267	A	O5'-P-OP2	-8.14	98.37	105.70
18	b	30	ARG	NE-CZ-NH1	8.13	124.37	120.30
35	N	812	C	O5'-P-OP2	-8.13	98.39	105.70
35	N	234	U	N3-C4-O4	-8.12	113.71	119.40
14	X	78	ARG	NE-CZ-NH2	-8.10	116.25	120.30
38	0	674	G	O5'-P-OP1	-8.10	98.41	105.70
35	N	671	C	O5'-P-OP1	-8.08	98.43	105.70
4	M	73	C	OP1-P-O3'	-8.06	87.46	105.20
40	2	156	ARG	NE-CZ-NH1	8.06	124.33	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
20	d	51	ARG	NE-CZ-NH2	-8.04	116.28	120.30
13	W	116	ARG	NE-CZ-NH1	8.03	124.32	120.30
20	d	13	ARG	NE-CZ-NH2	8.03	124.31	120.30
8	R	49	ARG	NE-CZ-NH1	-8.02	116.29	120.30
35	N	1141	U	N3-C4-O4	-8.01	113.80	119.40
35	N	234	U	C5-C4-O4	7.98	130.69	125.90
42	4	38	VAL	CG1-CB-CG2	-7.98	98.13	110.90
49	E	12	ARG	NE-CZ-NH1	-7.98	116.31	120.30
30	n	7	LYS	CD-CE-NZ	7.98	130.05	111.70
20	d	51	ARG	NE-CZ-NH1	7.97	124.29	120.30
8	R	61	ARG	NE-CZ-NH1	7.95	124.28	120.30
8	R	69	ARG	NE-CZ-NH2	-7.94	116.33	120.30
20	d	3	ARG	NE-CZ-NH1	-7.94	116.33	120.30
35	N	2222	C	O5'-P-OP1	-7.92	98.57	105.70
38	0	439	U	C2-N3-C4	-7.92	122.25	127.00
38	0	1191	A	O5'-P-OP1	-7.88	98.61	105.70
38	0	1054	C	O5'-P-OP2	7.88	120.15	110.70
35	N	2847	U	O5'-P-OP1	-7.87	98.62	105.70
35	N	704	G	O5'-P-OP1	-7.87	98.62	105.70
35	N	1141	U	C5-C4-O4	7.86	130.62	125.90
35	N	2061	G	O4'-C1'-N9	7.82	114.46	108.20
20	d	58	ARG	NE-CZ-NH2	-7.77	116.41	120.30
35	N	927	A	C6-N1-C2	-7.74	113.95	118.60
35	N	974	G	N9-C1'-C2'	7.74	124.06	114.00
43	5	79	ARG	NE-CZ-NH1	7.74	124.17	120.30
35	N	2277	G	O5'-P-OP1	-7.73	98.74	105.70
35	N	581	C	O5'-P-OP1	-7.72	98.75	105.70
35	N	1136	G	P-O5'-C5'	-7.71	108.57	120.90
35	N	2344	U	N3-C4-O4	-7.70	114.01	119.40
46	8	49	ARG	NE-CZ-NH1	7.70	124.15	120.30
35	N	2765	A	C5-C6-N6	7.69	129.85	123.70
44	6	3	ARG	NE-CZ-NH1	7.69	124.14	120.30
35	N	1611	C	O5'-P-OP2	-7.67	98.79	105.70
35	N	1255	U	O5'-P-OP2	7.67	119.91	110.70
41	3	5	LEU	CA-CB-CG	7.65	132.90	115.30
35	N	2544	G	O5'-P-OP2	-7.65	98.82	105.70
35	N	430	A	N1-C6-N6	-7.64	114.02	118.60
35	N	813	U	O5'-P-OP2	-7.64	98.82	105.70
28	l	52	ARG	NE-CZ-NH1	-7.63	116.48	120.30
35	N	2022	U	OP1-P-OP2	7.63	131.04	119.60
35	N	2729	G	O5'-P-OP1	-7.61	98.86	105.70
35	N	698	C	O5'-P-OP2	-7.60	98.86	105.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
35	N	787	C	O5'-P-OP1	7.57	119.79	110.70
35	N	2447	G	P-O3'-C3'	7.57	128.79	119.70
38	0	37	U	N3-C4-O4	-7.57	114.10	119.40
35	N	512	G	P-O3'-C3'	7.56	128.77	119.70
35	N	1255	U	O5'-P-OP1	-7.54	98.91	105.70
35	N	2060	A	O5'-P-OP2	7.54	119.75	110.70
38	0	567	G	O5'-P-OP1	-7.52	98.94	105.70
6	P	177	ARG	NE-CZ-NH1	-7.50	116.55	120.30
35	N	784	G	C2'-C3'-O3'	7.50	126.00	109.50
38	0	571	U	C2-N3-C4	-7.48	122.51	127.00
35	N	1900	A	P-O3'-C3'	7.46	128.65	119.70
38	0	368	U	N3-C4-O4	-7.46	114.18	119.40
35	N	1930	G	O5'-P-OP1	-7.42	99.03	105.70
35	N	2693	G	O5'-P-OP1	-7.42	99.03	105.70
28	l	29	ARG	NE-CZ-NH1	-7.40	116.60	120.30
35	N	1639	C	O5'-P-OP2	7.38	119.56	110.70
35	N	1932	A	O5'-P-OP1	-7.38	99.06	105.70
35	N	2542	A	O5'-P-OP2	-7.37	99.07	105.70
35	N	850	U	C2-N3-C4	-7.36	122.58	127.00
35	N	784	G	P-O3'-C3'	7.35	128.52	119.70
35	N	2256	G	O5'-P-OP1	-7.35	99.09	105.70
51	G	85	ARG	NE-CZ-NH1	7.34	123.97	120.30
38	0	1363	A	N1-C6-N6	-7.33	114.20	118.60
38	0	498	A	C6-N1-C2	-7.33	114.20	118.60
35	N	2072	C	O5'-P-OP2	7.32	119.49	110.70
38	0	1331	G	O5'-P-OP1	-7.32	99.11	105.70
15	Y	29	LYS	CD-CE-NZ	-7.32	94.87	111.70
38	0	1507	A	O5'-P-OP1	-7.32	99.11	105.70
35	N	2692	G	O5'-P-OP2	-7.30	99.12	105.70
38	0	501	C	O5'-P-OP1	-7.29	99.14	105.70
35	N	932	U	N3-C4-O4	-7.27	114.31	119.40
35	N	2714	G	O5'-P-OP2	7.26	119.42	110.70
35	N	795	C	O5'-P-OP1	-7.25	99.17	105.70
35	N	2497	A	C5'-C4'-C3'	-7.25	104.40	116.00
57	u	74	ARG	NE-CZ-NH1	7.22	123.91	120.30
45	7	80	ARG	NE-CZ-NH2	-7.21	116.69	120.30
26	j	14	ARG	CG-CD-NE	-7.20	96.69	111.80
35	N	760	G	OP1-P-O3'	7.18	120.99	105.20
35	N	2344	U	C5-C4-O4	7.17	130.20	125.90
8	R	81	GLY	C-N-CA	-7.15	107.28	122.30
35	N	510	C	O5'-P-OP2	-7.14	99.27	105.70
15	Y	59	ARG	NE-CZ-NH1	7.13	123.86	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
35	N	2506[A]	U	OP2-P-O3'	-7.12	89.53	105.20
35	N	2506[B]	U	OP2-P-O3'	-7.12	89.53	105.20
35	N	1026	G	O5'-P-OP2	-7.12	99.29	105.70
15	Y	82	LEU	CA-CB-CG	7.11	131.66	115.30
35	N	1145	C	O5'-P-OP1	-7.10	99.31	105.70
56	t	5	LEU	CB-CG-CD1	-7.09	98.94	111.00
35	N	2344	U	O5'-P-OP1	-7.07	99.34	105.70
35	N	2637	U	O5'-P-OP1	-7.06	99.34	105.70
35	N	1236	G	P-O3'-C3'	7.06	128.17	119.70
38	0	368	U	C5-C4-O4	7.04	130.12	125.90
38	0	6	G	O5'-P-OP2	-7.02	99.39	105.70
55	K	43	ARG	NE-CZ-NH1	7.00	123.80	120.30
35	N	1962	C	O5'-P-OP1	-7.00	99.40	105.70
35	N	1790	C	O5'-P-OP1	-6.99	99.41	105.70
35	N	740	C	O5'-P-OP1	-6.98	99.42	105.70
38	0	24	U	N1-C2-O2	-6.97	117.92	122.80
44	6	109	ARG	CG-CD-NE	-6.96	97.18	111.80
38	0	827	U	N3-C4-O4	-6.96	114.53	119.40
35	N	578	G	O5'-P-OP1	6.96	119.05	110.70
35	N	2304	G	O5'-P-OP1	-6.95	99.44	105.70
35	N	967	U	O5'-P-OP1	-6.93	99.46	105.70
41	3	3	ARG	NE-CZ-NH1	6.92	123.76	120.30
35	N	2311	A	P-O3'-C3'	6.92	128.00	119.70
38	0	37	U	C5-C4-O4	6.92	130.05	125.90
33	q	13	ARG	NE-CZ-NH1	-6.91	116.84	120.30
35	N	1944	U	O5'-P-OP2	-6.91	99.48	105.70
35	N	196	A	O5'-P-OP1	-6.90	99.49	105.70
35	N	2059	A	O5'-P-OP1	6.86	118.94	110.70
32	p	14	ARG	NE-CZ-NH1	-6.86	116.87	120.30
35	N	2711	A	O5'-P-OP1	-6.86	99.53	105.70
8	R	77	ILE	CG1-CB-CG2	-6.85	96.34	111.40
19	c	93	ARG	CG-CD-NE	-6.85	97.42	111.80
35	N	2021	C	O5'-P-OP2	-6.84	99.54	105.70
38	0	865	A	O5'-P-OP1	-6.83	99.55	105.70
35	N	630	G	O5'-P-OP1	-6.82	99.56	105.70
33	q	8	ARG	CD-NE-CZ	-6.81	114.06	123.60
38	0	904	U	O5'-P-OP1	-6.81	99.57	105.70
26	j	41	ARG	CD-NE-CZ	6.81	133.13	123.60
35	N	1607	C	O5'-P-OP1	-6.81	99.58	105.70
7	Q	156	PHE	CB-CG-CD2	-6.80	116.04	120.80
35	N	1836	C	O5'-P-OP1	-6.80	99.58	105.70
35	N	1021	A	N1-C6-N6	-6.78	114.53	118.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
35	N	2543	G	P-O5'-C5'	-6.77	110.07	120.90
38	0	812	G	P-O3'-C3'	6.77	127.82	119.70
35	N	2272	U	N3-C4-O4	-6.76	114.67	119.40
38	0	1349	A	O5'-P-OP2	6.76	118.81	110.70
23	g	12	ARG	NE-CZ-NH1	6.76	123.68	120.30
6	P	101	ARG	NE-CZ-NH2	-6.75	116.93	120.30
38	0	1358	U	C5-C4-O4	6.73	129.94	125.90
35	N	679	C	O5'-P-OP1	-6.72	99.65	105.70
35	N	512	G	O4'-C1'-N9	6.72	113.57	108.20
15	Y	59	ARG	NE-CZ-NH2	-6.72	116.94	120.30
38	0	1343	G	O5'-P-OP1	-6.72	99.66	105.70
35	N	2576	G	O5'-P-OP2	-6.71	99.66	105.70
17	a	4	ARG	NE-CZ-NH2	-6.71	116.95	120.30
43	5	24	ARG	NE-CZ-NH1	6.71	123.65	120.30
40	2	172	ARG	NE-CZ-NH2	-6.68	116.96	120.30
38	0	1280	A	O5'-P-OP2	-6.68	99.69	105.70
35	N	932	U	C5-C4-O4	6.62	129.87	125.90
35	N	961	C	O5'-P-OP2	-6.61	99.75	105.70
38	0	738	C	O5'-P-OP1	-6.61	99.75	105.70
51	G	53	ARG	NE-CZ-NH1	-6.60	117.00	120.30
35	N	1666	G	O4'-C4'-C3'	-6.59	97.41	104.00
38	0	261	U	O5'-P-OP1	-6.59	99.77	105.70
35	N	51	G	O4'-C1'-N9	6.58	113.47	108.20
18	b	25	ARG	NE-CZ-NH1	-6.57	117.01	120.30
35	N	2060	A	O3'-P-O5'	6.56	116.46	104.00
35	N	1648	U	P-O5'-C5'	-6.54	110.44	120.90
35	N	2656	U	C2-N1-C1'	6.54	125.55	117.70
44	6	95	ARG	NE-CZ-NH1	6.53	123.57	120.30
35	N	729	G	O5'-P-OP2	-6.53	99.83	105.70
49	E	9	ARG	NE-CZ-NH1	6.52	123.56	120.30
35	N	2516	A	O5'-P-OP1	-6.52	99.83	105.70
35	N	963	U	O5'-P-OP2	6.51	118.52	110.70
50	F	90	ARG	NE-CZ-NH2	-6.50	117.05	120.30
22	f	88	ARG	NE-CZ-NH1	-6.50	117.05	120.30
35	N	204	A	O5'-P-OP2	-6.49	99.86	105.70
35	N	1902	C	O5'-P-OP1	-6.48	99.87	105.70
35	N	188	G	O5'-P-OP1	-6.47	99.88	105.70
35	N	2048	G	O5'-P-OP1	-6.45	99.90	105.70
10	T	3	ARG	NE-CZ-NH2	6.45	123.52	120.30
35	N	555	G	O5'-P-OP1	-6.44	99.90	105.70
35	N	1439	A	O5'-P-OP1	-6.44	99.90	105.70
38	0	829	G	O5'-P-OP1	-6.44	99.90	105.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
26	j	41	ARG	NH1-CZ-NH2	-6.44	112.32	119.40
35	N	747	U	O5'-P-OP1	-6.43	99.91	105.70
50	F	3	ARG	NE-CZ-NH1	6.42	123.51	120.30
6	P	87	ARG	NE-CZ-NH2	6.42	123.51	120.30
49	E	83	ARG	NE-CZ-NH1	6.42	123.51	120.30
35	N	2074	U	O5'-P-OP2	-6.42	99.93	105.70
17	a	69	ARG	NE-CZ-NH1	-6.41	117.09	120.30
38	0	864	A	C6-N1-C2	-6.41	114.75	118.60
35	N	1299	G	O5'-P-OP1	-6.41	99.93	105.70
34	r	24	ARG	NE-CZ-NH2	6.41	123.50	120.30
35	N	752	A	N9-C1'-C2'	6.41	122.33	114.00
16	Z	40	ARG	NE-CZ-NH2	6.41	123.50	120.30
35	N	1664	A	O5'-P-OP2	6.40	118.38	110.70
13	W	99	ARG	NE-CZ-NH1	6.39	123.50	120.30
14	X	71	ARG	NE-CZ-NH1	6.38	123.49	120.30
35	N	2725	A	C3'-C2'-O2'	-6.38	94.81	113.30
41	3	3	ARG	NE-CZ-NH2	-6.38	117.11	120.30
35	N	310	A	O5'-P-OP1	-6.38	99.96	105.70
56	t	37	ARG	NE-CZ-NH1	6.37	123.48	120.30
38	0	1279	G	N9-C1'-C2'	6.36	122.27	114.00
35	N	1933	G	O5'-P-OP1	-6.35	99.98	105.70
58	v	34	ARG	NE-CZ-NH1	6.35	123.47	120.30
35	N	2443	C	O4'-C4'-C3'	-6.34	97.66	104.00
18	b	13	ARG	NE-CZ-NH1	6.34	123.47	120.30
30	n	17	ARG	NE-CZ-NH2	-6.34	117.13	120.30
35	N	1313	U	C2-N1-C1'	6.34	125.31	117.70
38	0	397	A	N1-C6-N6	-6.33	114.80	118.60
35	N	2055	C	O5'-P-OP1	-6.33	100.00	105.70
35	N	650	C	O5'-P-OP1	-6.33	100.00	105.70
35	N	792	A	O5'-P-OP1	-6.33	100.01	105.70
38	0	563	A	N1-C6-N6	-6.32	114.81	118.60
35	N	1967	C	O5'-P-OP1	-6.32	100.02	105.70
35	N	2522	U	N1-C2-O2	-6.31	118.39	122.80
38	0	827	U	C5-C4-O4	6.30	129.68	125.90
29	m	11	ARG	NE-CZ-NH2	6.30	123.45	120.30
35	N	2061	G	O5'-P-OP1	-6.30	100.03	105.70
6	P	229	ASP	CB-CG-OD1	-6.29	112.64	118.30
35	N	2423	U	O5'-P-OP2	-6.29	100.04	105.70
35	N	140	C	C2-N1-C1'	6.29	125.72	118.80
35	N	995	C	C4'-C3'-O3'	-6.28	96.22	109.40
38	0	890	G	O4'-C1'-N9	6.26	113.21	108.20
38	0	880	C	O5'-P-OP2	-6.26	100.07	105.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
35	N	1205	A	P-O3'-C3'	6.25	127.19	119.70
35	N	2364	C	O4'-C4'-C3'	-6.24	97.76	104.00
48	D	122	ARG	NE-CZ-NH2	-6.24	117.18	120.30
30	n	20	ASP	CB-CG-OD2	-6.24	112.68	118.30
20	d	48	ARG	NE-CZ-NH2	6.24	123.42	120.30
35	N	1313	U	N1-C1'-C2'	6.20	122.06	114.00
38	0	131	A	O5'-P-OP1	-6.20	100.12	105.70
35	N	1141	U	N3-C2-O2	-6.20	117.86	122.20
35	N	1936	A	C4'-C3'-O3'	-6.18	96.42	109.40
38	0	1054	C	O5'-P-OP1	-6.17	100.14	105.70
35	N	91	A	O5'-P-OP2	-6.17	100.15	105.70
35	N	2258	C	O5'-P-OP1	-6.17	100.15	105.70
38	0	576	C	O5'-P-OP2	-6.16	100.16	105.70
35	N	2243	U	O5'-P-OP2	6.15	118.08	110.70
38	0	1356	G	O5'-P-OP1	-6.15	100.17	105.70
35	N	983	A	C5'-C4'-O4'	-6.14	101.73	109.10
33	q	25	LYS	CD-CE-NZ	-6.13	97.60	111.70
6	P	229	ASP	CB-CG-OD2	6.12	123.81	118.30
35	N	1844	C	O5'-P-OP1	-6.12	100.19	105.70
35	N	1865	U	O5'-P-OP1	-6.10	100.21	105.70
38	0	1238	A	C6-C5-N7	-6.10	128.03	132.30
35	N	1501	G	O5'-P-OP1	-6.10	100.21	105.70
35	N	2725	A	O5'-P-OP2	6.09	118.01	110.70
6	P	228	VAL	CG1-CB-CG2	-6.09	101.15	110.90
5	O	94	A	O5'-P-OP1	-6.09	100.22	105.70
35	N	503	A	C4-C5-C6	6.09	120.05	117.00
13	W	37	ARG	NE-CZ-NH2	6.08	123.34	120.30
35	N	310	A	C6-C5-N7	-6.08	128.04	132.30
28	l	6	LEU	CB-CG-CD1	6.08	121.33	111.00
35	N	1264	A	O5'-P-OP1	-6.07	100.24	105.70
38	0	540	G	O5'-P-OP1	-6.06	100.25	105.70
35	N	670	A	P-O3'-C3'	6.05	126.95	119.70
55	K	57	ARG	CA-CB-CG	6.04	126.70	113.40
17	a	54	LEU	CB-CG-CD1	-6.03	100.75	111.00
38	0	31	G	O5'-P-OP2	-6.03	100.28	105.70
50	F	107	ARG	NE-CZ-NH2	-6.03	117.29	120.30
38	0	2	A	O5'-P-OP1	-6.03	100.28	105.70
38	0	762	U	O5'-P-OP1	-6.01	100.29	105.70
16	Z	81	ARG	NE-CZ-NH2	-6.01	117.30	120.30
38	0	529	G	O5'-P-OP2	-6.01	100.29	105.70
35	N	1328	A	O5'-P-OP1	6.01	117.91	110.70
35	N	2576	G	O5'-P-OP1	6.01	117.91	110.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
38	0	687	A	O5'-P-OP1	-6.00	100.30	105.70
35	N	2603	G	O5'-P-OP1	-6.00	100.30	105.70
35	N	948	C	O5'-P-OP1	5.99	117.89	110.70
7	Q	109	VAL	CG1-CB-CG2	-5.99	101.32	110.90
20	d	28	ARG	NE-CZ-NH1	5.98	123.29	120.30
38	0	1238	A	C4-C5-C6	5.98	119.99	117.00
35	N	2512	C	O5'-P-OP1	-5.97	100.33	105.70
35	N	536	G	O5'-P-OP2	-5.96	100.33	105.70
52	H	63	ARG	NE-CZ-NH1	5.96	123.28	120.30
17	a	69	ARG	CG-CD-NE	5.96	124.31	111.80
10	T	153	ARG	NE-CZ-NH2	5.95	123.28	120.30
38	0	884	U	N3-C4-O4	-5.95	115.24	119.40
51	G	59	ARG	NE-CZ-NH1	5.94	123.27	120.30
35	N	1795	C	O5'-P-OP1	-5.94	100.36	105.70
6	P	177	ARG	CG-CD-NE	-5.93	99.34	111.80
47	9	60	ASP	CB-CG-OD2	5.93	123.64	118.30
35	N	2246	G	O4'-C4'-C3'	-5.93	98.07	104.00
30	n	52	ARG	NE-CZ-NH2	5.93	123.26	120.30
38	0	59	A	O5'-P-OP1	5.92	117.80	110.70
35	N	2699	C	O5'-P-OP1	-5.92	100.38	105.70
35	N	404	A	P-O3'-C3'	5.92	126.80	119.70
38	0	1301	U	N1-C1'-C2'	5.91	121.69	114.00
33	q	8	ARG	CG-CD-NE	5.91	124.21	111.80
38	0	388	G	P-O3'-C3'	5.91	126.79	119.70
8	R	81	GLY	O-C-N	-5.90	113.17	123.20
46	8	18	ARG	CB-CG-CD	-5.90	96.25	111.60
35	N	466	A	O5'-P-OP1	5.90	117.78	110.70
14	X	23	LYS	CD-CE-NZ	-5.90	98.14	111.70
35	N	673	C	O5'-P-OP1	5.89	117.77	110.70
31	o	10	LYS	CD-CE-NZ	5.89	125.24	111.70
35	N	27	G	C5'-C4'-O4'	-5.88	102.04	109.10
35	N	2028	U	O5'-P-OP1	-5.88	100.41	105.70
16	Z	136	MET	CG-SD-CE	5.88	109.61	100.20
35	N	2273	A	O5'-P-OP1	-5.88	100.41	105.70
35	N	2503	A	OP1-P-OP2	-5.88	110.79	119.60
38	0	1347	G	P-O3'-C3'	5.88	126.75	119.70
35	N	310	A	C4-C5-C6	5.87	119.94	117.00
35	N	2267	A	N1-C6-N6	-5.87	115.08	118.60
41	3	91	LEU	CB-CG-CD1	-5.87	101.02	111.00
42	4	138	ARG	NE-CZ-NH1	-5.87	117.37	120.30
33	q	45	ARG	NE-CZ-NH1	5.86	123.23	120.30
42	4	69	ARG	NE-CZ-NH1	5.85	123.23	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	R	65	THR	C-N-CA	-5.85	110.02	122.30
35	N	2272	U	C5-C4-O4	5.84	129.41	125.90
15	Y	30	THR	N-CA-CB	5.84	121.39	110.30
35	N	1617	C	O5'-P-OP2	-5.84	100.44	105.70
35	N	820	A	O4'-C4'-C3'	-5.84	98.16	104.00
35	N	1134	A	P-O3'-C3'	5.84	126.70	119.70
38	0	1201	A	P-O3'-C3'	5.84	126.70	119.70
46	8	12	ARG	NE-CZ-NH2	-5.84	117.38	120.30
35	N	578	G	O5'-P-OP2	-5.83	100.45	105.70
38	0	1182	G	P-O3'-C3'	5.83	126.69	119.70
32	p	12	ARG	CA-CB-CG	5.83	126.22	113.40
35	N	2383	G	O5'-P-OP2	-5.83	100.46	105.70
35	N	1427	A	O5'-P-OP1	-5.82	100.46	105.70
32	p	12	ARG	NE-CZ-NH1	-5.81	117.39	120.30
38	0	9	G	O5'-P-OP1	5.81	117.67	110.70
35	N	1673	G	O5'-P-OP2	5.81	117.67	110.70
35	N	503	A	C6-C5-N7	-5.80	128.24	132.30
41	3	70	ARG	NE-CZ-NH1	5.80	123.20	120.30
35	N	2689	U	OP1-P-OP2	5.80	128.30	119.60
35	N	679	C	OP1-P-OP2	5.80	128.29	119.60
35	N	675	A	O5'-P-OP2	5.79	117.64	110.70
35	N	775	G	O5'-P-OP1	-5.78	100.50	105.70
35	N	477	A	O5'-P-OP2	-5.78	100.50	105.70
35	N	859	G	P-O3'-C3'	5.77	126.62	119.70
17	a	49	GLU	OE1-CD-OE2	-5.76	116.39	123.30
35	N	301	G	C4-N9-C1'	-5.75	119.02	126.50
35	N	783	A	O5'-P-OP2	-5.75	100.52	105.70
49	E	14	ARG	NE-CZ-NH1	5.75	123.18	120.30
46	8	45	ARG	NE-CZ-NH1	5.75	123.17	120.30
43	5	90	MET	C-N-CA	5.74	136.04	121.70
52	H	54	ARG	NE-CZ-NH1	5.74	123.17	120.30
38	0	176	C	O5'-P-OP1	-5.74	100.54	105.70
38	0	1254	A	O5'-P-OP1	-5.74	100.54	105.70
35	N	504	A	O5'-P-OP2	-5.73	100.54	105.70
35	N	1348	C	O5'-P-OP1	-5.73	100.54	105.70
35	N	780	G	O5'-P-OP2	-5.73	100.54	105.70
35	N	2688	G	O5'-P-OP1	-5.73	100.54	105.70
35	N	2682	A	O5'-P-OP2	5.72	117.56	110.70
35	N	1130	U	O5'-P-OP1	-5.72	100.55	105.70
35	N	1570	A	O5'-P-OP1	-5.71	100.56	105.70
27	k	37	ARG	NE-CZ-NH2	5.71	123.16	120.30
35	N	242	G	C4'-C3'-O3'	5.70	124.40	113.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
21	e	80	ARG	NE-CZ-NH2	-5.68	117.46	120.30
35	N	2645	G	C5'-C4'-C3'	-5.68	106.91	116.00
35	N	1565	C	C5'-C4'-C3'	-5.68	106.91	116.00
35	N	1676	A	O5'-P-OP2	5.68	117.52	110.70
35	N	2873	A	C3'-C2'-C1'	5.68	106.04	101.50
7	Q	124	ARG	NE-CZ-NH1	5.68	123.14	120.30
35	N	860	U	OP1-P-OP2	-5.68	111.08	119.60
35	N	1843	C	O5'-P-OP1	-5.67	100.59	105.70
5	O	44	G	N9-C1'-C2'	5.67	121.38	114.00
6	P	133	ARG	NE-CZ-NH2	5.67	123.14	120.30
52	H	70	LEU	CB-CG-CD2	-5.67	101.36	111.00
6	P	130	LEU	CA-CB-CG	5.66	128.32	115.30
38	0	1067	A	O5'-P-OP1	-5.66	100.61	105.70
35	N	2720	U	N1-C2-O2	-5.65	118.84	122.80
35	N	1788	C	OP1-P-O3'	5.64	117.60	105.20
35	N	2499	C	O5'-P-OP1	5.63	117.46	110.70
38	0	1331	G	O4'-C1'-N9	5.63	112.71	108.20
42	4	138	ARG	N-CA-CB	5.61	120.69	110.60
6	P	187	ASP	CB-CG-OD1	5.60	123.34	118.30
35	N	205	G	O4'-C1'-N9	5.60	112.68	108.20
40	2	132	ARG	NE-CZ-NH1	5.60	123.10	120.30
35	N	2498	C	OP1-P-OP2	5.59	127.99	119.60
38	0	567	G	OP1-P-OP2	5.58	127.98	119.60
35	N	1143	A	O5'-P-OP2	-5.58	100.68	105.70
35	N	1261	C	O4'-C4'-C3'	-5.58	98.42	104.00
52	H	43	PHE	CB-CG-CD1	-5.58	116.89	120.80
38	0	1474	U	O5'-P-OP1	-5.58	100.68	105.70
6	P	156	ARG	NE-CZ-NH1	5.57	123.09	120.30
20	d	6	ARG	NE-CZ-NH1	-5.57	117.52	120.30
35	N	2580	U	O5'-P-OP2	-5.57	100.69	105.70
35	N	2725	A	C5'-C4'-O4'	-5.57	102.42	109.10
51	G	61	ARG	NE-CZ-NH2	-5.57	117.52	120.30
19	c	89	ARG	NE-CZ-NH2	5.57	123.08	120.30
16	Z	40	ARG	NE-CZ-NH1	-5.56	117.52	120.30
46	8	123	ARG	NE-CZ-NH1	5.56	123.08	120.30
19	c	21	ARG	NH1-CZ-NH2	5.56	125.52	119.40
35	N	528	A	C8-N9-C1'	5.56	137.71	127.70
35	N	1029	A	O5'-P-OP1	-5.56	100.70	105.70
35	N	1952	A	O5'-P-OP1	-5.55	100.70	105.70
35	N	2260	C	O5'-P-OP1	-5.55	100.70	105.70
20	d	28	ARG	NE-CZ-NH2	-5.55	117.52	120.30
35	N	2776	A	C2'-C3'-O3'	5.54	122.57	113.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
35	N	1612	C	O5'-P-OP1	-5.54	100.72	105.70
35	N	573	U	P-O3'-C3'	5.54	126.34	119.70
35	N	1688	U	O5'-P-OP1	-5.53	100.72	105.70
35	N	2452	C	O5'-P-OP2	-5.53	100.72	105.70
6	P	156	ARG	CG-CD-NE	5.53	123.41	111.80
50	F	109	ARG	NE-CZ-NH2	-5.53	117.54	120.30
10	T	149	ARG	NE-CZ-NH2	-5.52	117.54	120.30
35	N	372	G	P-O3'-C3'	5.52	126.32	119.70
35	N	1990	C	O5'-P-OP1	-5.51	100.74	105.70
35	N	2543	G	C5'-C4'-C3'	-5.51	107.18	116.00
6	P	232	HIS	O-C-N	-5.51	113.84	123.20
35	N	670	A	C2'-C3'-O3'	5.51	122.51	113.70
38	0	818	G	N9-C1'-C2'	5.51	121.16	114.00
13	W	39	LYS	CD-CE-NZ	-5.50	99.04	111.70
35	N	803	U	O5'-P-OP1	-5.50	100.75	105.70
35	N	790	U	O5'-P-OP2	-5.50	100.75	105.70
38	0	734	G	O5'-P-OP1	-5.50	100.75	105.70
6	P	239	ASN	N-CA-C	5.49	125.83	111.00
35	N	871	U	P-O5'-C5'	-5.49	112.11	120.90
35	N	2359	C	O5'-P-OP1	-5.49	100.76	105.70
28	l	48	ARG	NE-CZ-NH2	-5.49	117.56	120.30
35	N	463	G	O5'-P-OP2	-5.49	100.76	105.70
38	0	37	U	N3-C2-O2	-5.49	118.36	122.20
30	n	16	ARG	NE-CZ-NH1	-5.49	117.56	120.30
35	N	2514	U	O5'-P-OP2	-5.48	100.77	105.70
35	N	2720	U	N3-C4-C5	5.48	117.89	114.60
8	R	88	ARG	NE-CZ-NH1	-5.47	117.56	120.30
35	N	2872	A	O5'-P-OP1	-5.47	100.78	105.70
35	N	825	A	O5'-P-OP2	-5.47	100.78	105.70
17	a	46	ARG	NE-CZ-NH1	-5.46	117.57	120.30
35	N	2037	A	C5'-C4'-O4'	-5.46	102.55	109.10
38	0	886	G	O5'-P-OP1	-5.46	100.78	105.70
35	N	301	G	C8-N9-C1'	5.46	134.10	127.00
38	0	330	C	P-O5'-C5'	-5.46	112.17	120.90
35	N	1695	G	O5'-P-OP2	-5.45	100.79	105.70
38	0	653	U	O5'-P-OP1	-5.45	100.80	105.70
35	N	774	G	C1'-C2'-O2'	-5.44	94.27	110.60
35	N	2266	A	C4'-C3'-O3'	-5.44	97.98	109.40
44	6	3	ARG	NE-CZ-NH2	-5.43	117.58	120.30
35	N	1322	A	O5'-P-OP1	-5.43	100.81	105.70
35	N	2873	A	P-O5'-C5'	-5.43	112.22	120.90
13	W	124	VAL	CG1-CB-CG2	-5.42	102.22	110.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
35	N	514	A	O5'-P-OP1	-5.42	100.82	105.70
5	O	48	U	O5'-P-OP1	-5.42	100.82	105.70
47	9	92	LEU	CA-CB-CG	5.42	127.77	115.30
46	8	99	ARG	NE-CZ-NH2	-5.42	117.59	120.30
35	N	748	G	O5'-P-OP2	-5.42	100.83	105.70
38	0	880	C	O5'-P-OP1	5.41	117.19	110.70
52	H	64	ARG	CG-CD-NE	-5.41	100.44	111.80
38	0	816	A	O5'-P-OP2	5.41	117.19	110.70
35	N	2848	G	O5'-P-OP1	-5.41	100.84	105.70
35	N	1669	A	C8-N9-C1'	-5.40	117.98	127.70
20	d	92	ARG	NE-CZ-NH2	5.40	123.00	120.30
29	m	54	MET	CG-SD-CE	-5.40	91.56	100.20
35	N	2405	G	P-O3'-C3'	5.39	126.17	119.70
38	0	574	A	O5'-P-OP1	-5.39	100.85	105.70
35	N	234	U	N3-C2-O2	-5.39	118.43	122.20
35	N	1325	U	O5'-P-OP2	-5.39	100.85	105.70
40	2	157	LEU	CA-CB-CG	5.39	127.69	115.30
49	E	38	TYR	CB-CG-CD1	-5.39	117.77	121.00
15	Y	52	GLY	C-N-CA	-5.38	110.99	122.30
18	b	33	ARG	NE-CZ-NH2	-5.38	117.61	120.30
18	b	94	ARG	NE-CZ-NH1	-5.38	117.61	120.30
15	Y	78	ARG	NE-CZ-NH1	-5.38	117.61	120.30
6	P	195	VAL	CG1-CB-CG2	-5.38	102.30	110.90
35	N	2848	G	O4'-C1'-N9	5.37	112.50	108.20
35	N	1031	G	O5'-P-OP2	-5.37	100.87	105.70
38	0	1301	U	C6-N1-C1'	-5.36	113.69	121.20
38	0	976	G	O5'-P-OP2	5.36	117.13	110.70
6	P	217	ARG	NE-CZ-NH1	-5.35	117.62	120.30
35	N	430	A	C5-C6-N6	5.35	127.98	123.70
35	N	1142	A	P-O3'-C3'	5.35	126.12	119.70
35	N	2613	U	N3-C4-O4	-5.35	115.66	119.40
7	Q	146	ILE	CG1-CB-CG2	-5.34	99.66	111.40
38	0	368	U	N3-C2-O2	-5.34	118.47	122.20
20	d	3	ARG	NE-CZ-NH2	5.33	122.97	120.30
35	N	1783	A	O5'-P-OP1	5.33	117.10	110.70
38	0	1500	A	O5'-P-OP2	-5.33	100.90	105.70
35	N	1669	A	C4-N9-C1'	5.33	135.89	126.30
35	N	2832	U	P-O3'-C3'	5.32	126.09	119.70
7	Q	154	LYS	CD-CE-NZ	-5.31	99.48	111.70
13	W	99	ARG	NE-CZ-NH2	-5.31	117.65	120.30
35	N	2286	G	P-O3'-C3'	5.31	126.07	119.70
38	0	1504	G	O5'-P-OP2	-5.31	100.92	105.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	P	14	ARG	NE-CZ-NH1	5.30	122.95	120.30
35	N	2765	A	C2-N3-C4	-5.30	107.95	110.60
34	r	1	MET	CB-CG-SD	-5.30	96.50	112.40
35	N	140	C	C6-N1-C1'	-5.30	114.44	120.80
38	0	558	G	O5'-P-OP1	5.30	117.06	110.70
26	j	41	ARG	CB-CG-CD	5.30	125.38	111.60
38	0	96	U	C2'-C3'-O3'	5.29	122.17	113.70
45	7	99	LEU	CB-CG-CD1	-5.29	102.01	111.00
35	N	1021	A	C5-C6-N6	5.29	127.93	123.70
38	0	804	U	O5'-P-OP1	-5.29	100.94	105.70
35	N	771	G	O5'-P-OP1	-5.29	100.94	105.70
38	0	560	A	O5'-P-OP1	-5.29	100.94	105.70
38	0	728	A	O5'-P-OP2	-5.28	100.94	105.70
38	0	108	G	O4'-C1'-N9	5.28	112.43	108.20
35	N	932	U	N3-C2-O2	-5.28	118.50	122.20
35	N	1142	A	C3'-C2'-C1'	5.28	105.72	101.50
35	N	1256	G	O4'-C1'-N9	-5.27	103.98	108.20
35	N	2394	C	O4'-C4'-C3'	-5.27	98.73	104.00
35	N	2884	U	O4'-C1'-N1	5.27	112.41	108.20
50	F	98	ARG	CG-CD-NE	5.27	122.86	111.80
6	P	221	ARG	N-CA-CB	5.26	120.07	110.60
30	n	10	ARG	NE-CZ-NH2	5.26	122.93	120.30
6	P	84	ASP	CB-CG-OD1	5.26	123.03	118.30
16	Z	18	ARG	NE-CZ-NH2	5.25	122.93	120.30
35	N	1800	C	O5'-P-OP2	-5.25	100.97	105.70
10	T	149	ARG	NE-CZ-NH1	5.25	122.92	120.30
35	N	528	A	C4-N9-C1'	-5.25	116.85	126.30
35	N	1271	G	O5'-P-OP1	5.25	117.00	110.70
35	N	532	A	O5'-P-OP2	-5.25	100.98	105.70
46	8	85	ARG	NE-CZ-NH2	-5.25	117.68	120.30
38	0	1363	A	C5-C6-N6	5.24	127.89	123.70
35	N	611	C	O5'-P-OP1	-5.24	100.99	105.70
53	I	51	ARG	NE-CZ-NH1	5.24	122.92	120.30
14	X	23	LYS	N-CA-CB	5.23	120.02	110.60
19	c	109	ARG	NE-CZ-NH2	5.23	122.92	120.30
35	N	2867	G	P-O3'-C3'	5.23	125.97	119.70
34	r	36	ARG	CG-CD-NE	-5.22	100.83	111.80
38	0	822	U	O5'-P-OP1	-5.22	101.00	105.70
35	N	499	U	N3-C4-C5	5.22	117.73	114.60
38	0	1319	A	O5'-P-OP1	-5.22	101.00	105.70
35	N	915	C	O5'-P-OP2	-5.22	101.00	105.70
35	N	2831	G	O5'-P-OP1	-5.22	101.00	105.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
49	E	22	PRO	O-C-N	-5.22	114.35	122.70
27	k	28	ARG	NH1-CZ-NH2	5.21	125.14	119.40
34	r	3	VAL	CG1-CB-CG2	-5.21	102.56	110.90
49	E	61	PHE	CB-CG-CD1	5.21	124.45	120.80
7	Q	124	ARG	NE-CZ-NH2	-5.21	117.70	120.30
35	N	1829	A	O5'-P-OP2	-5.20	101.02	105.70
35	N	825	A	OP1-P-O3'	5.20	116.64	105.20
38	0	890	G	P-O3'-C3'	5.20	125.94	119.70
35	N	1815	A	C5'-C4'-O4'	-5.20	102.87	109.10
35	N	2007	U	O5'-P-OP2	-5.19	101.03	105.70
35	N	752	A	O4'-C1'-N9	5.19	112.35	108.20
38	0	595	A	P-O3'-C3'	5.19	125.93	119.70
35	N	2243	U	O5'-P-OP1	-5.18	101.03	105.70
20	d	33	ARG	CB-CG-CD	-5.18	98.13	111.60
39	l	103	ASN	N-CA-CB	5.18	119.92	110.60
35	N	1606	C	O5'-P-OP2	-5.17	101.04	105.70
35	N	1313	U	C6-N1-C1'	-5.17	113.96	121.20
17	a	17	ARG	NE-CZ-NH2	5.16	122.88	120.30
35	N	2874	C	O5'-P-OP2	-5.16	101.06	105.70
35	N	2645	G	P-O5'-C5'	-5.16	112.65	120.90
27	k	57	ARG	NE-CZ-NH1	-5.16	117.72	120.30
6	P	156	ARG	CB-CG-CD	-5.14	98.23	111.60
21	e	79	ARG	CD-NE-CZ	-5.14	116.40	123.60
35	N	1950	G	O5'-P-OP1	-5.14	101.07	105.70
53	I	70	ARG	CG-CD-NE	5.14	122.59	111.80
43	5	24	ARG	NE-CZ-NH2	-5.13	117.73	120.30
38	0	1358	U	N3-C2-O2	-5.13	118.61	122.20
27	k	72	ARG	NE-CZ-NH1	5.13	122.86	120.30
50	F	3	ARG	CD-NE-CZ	5.13	130.78	123.60
35	N	651	G	O5'-P-OP2	-5.12	101.09	105.70
38	0	1125	U	C2-N1-C1'	5.12	123.85	117.70
35	N	578	G	OP1-P-OP2	-5.12	111.92	119.60
35	N	1270	C	O5'-P-OP1	-5.12	101.09	105.70
35	N	1998	A	O4'-C4'-C3'	-5.12	98.89	104.00
51	G	85	ARG	NE-CZ-NH2	-5.12	117.74	120.30
6	P	217	ARG	CG-CD-NE	-5.11	101.06	111.80
17	a	86	ARG	NE-CZ-NH2	-5.11	117.74	120.30
35	N	704	G	O4'-C1'-N9	5.11	112.29	108.20
35	N	1288	G	C4-N9-C1'	5.11	133.15	126.50
35	N	953	G	OP1-P-OP2	5.11	127.26	119.60
35	N	1236	G	C5'-C4'-O4'	-5.11	102.97	109.10
35	N	2049	G	O4'-C4'-C3'	-5.11	98.89	104.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
38	0	887	G	O5'-P-OP2	-5.11	101.10	105.70
38	0	163	C	O5'-P-OP1	-5.10	101.11	105.70
8	R	65	THR	O-C-N	-5.09	114.54	123.20
35	N	830	G	O4'-C1'-N9	-5.09	104.13	108.20
35	N	1667	G	O5'-P-OP2	5.09	116.81	110.70
35	N	2720	U	N1-C2-N3	5.09	117.95	114.90
15	Y	132	ARG	NE-CZ-NH2	-5.09	117.76	120.30
35	N	1020	A	P-O3'-C3'	5.09	125.80	119.70
41	3	13	ARG	NE-CZ-NH1	5.08	122.84	120.30
42	4	138	ARG	NE-CZ-NH2	-5.08	117.76	120.30
52	H	58	ARG	NE-CZ-NH1	5.08	122.84	120.30
7	Q	114	LYS	CA-CB-CG	5.08	124.57	113.40
35	N	555	G	P-O3'-C3'	5.08	125.79	119.70
35	N	2656	U	C6-N1-C1'	-5.08	114.09	121.20
19	c	53	ARG	CB-CG-CD	-5.08	98.40	111.60
35	N	140	C	N1-C1'-C2'	5.08	120.60	114.00
39	1	74	ARG	NE-CZ-NH1	5.08	122.84	120.30
6	P	24	LEU	CB-CG-CD1	-5.07	102.38	111.00
35	N	658	U	O5'-P-OP2	-5.07	101.13	105.70
48	D	126	LYS	CB-CA-C	5.07	120.54	110.40
35	N	2267	A	N9-C1'-C2'	5.07	120.59	114.00
35	N	918	A	O5'-P-OP1	-5.07	101.14	105.70
35	N	2049	G	OP1-P-OP2	-5.07	112.00	119.60
51	G	13	ARG	NE-CZ-NH2	-5.07	117.77	120.30
35	N	1764	C	O5'-P-OP1	-5.06	101.14	105.70
35	N	2215	C	O5'-P-OP1	-5.06	101.14	105.70
21	e	81	LYS	CD-CE-NZ	5.06	123.34	111.70
38	0	578	C	O5'-P-OP1	5.06	116.77	110.70
15	Y	2	ARG	NE-CZ-NH1	5.06	122.83	120.30
35	N	997	G	O5'-P-OP1	-5.06	101.15	105.70
38	0	502	A	O5'-P-OP2	-5.06	101.15	105.70
52	H	66	LEU	CB-CG-CD2	-5.06	102.41	111.00
35	N	2765	A	C4-N9-C1'	5.05	135.40	126.30
17	a	2	ARG	NE-CZ-NH1	5.05	122.83	120.30
38	0	578	C	O5'-P-OP2	-5.05	101.16	105.70
5	O	15	A	O4'-C1'-N9	5.04	112.23	108.20
5	O	52	A	P-O3'-C3'	5.04	125.75	119.70
35	N	278	A	C4-N9-C1'	5.04	135.38	126.30
35	N	1026	G	O5'-P-OP1	5.04	116.75	110.70
38	0	1300	G	P-O3'-C3'	5.04	125.74	119.70
35	N	556	A	O5'-P-OP1	-5.04	101.17	105.70
35	N	1997	C	O4'-C4'-C3'	-5.03	98.97	104.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
38	0	85	U	P-O3'-C3'	5.03	125.73	119.70
15	Y	3	LEU	CB-CG-CD1	-5.02	102.47	111.00
35	N	1784	A	O5'-P-OP1	-5.02	101.18	105.70
3	s	153	LEU	CA-CB-CG	5.02	126.84	115.30
35	N	569	U	O5'-P-OP2	-5.01	101.19	105.70
47	9	17	LEU	CB-CG-CD2	-5.01	102.48	111.00
57	u	69	LYS	N-CA-C	5.01	124.53	111.00
19	c	51	ARG	NE-CZ-NH2	-5.01	117.80	120.30
35	N	818	G	O5'-P-OP1	-5.01	101.19	105.70
14	X	71	ARG	NE-CZ-NH2	-5.01	117.80	120.30
35	N	2033	A	O5'-P-OP2	-5.00	101.20	105.70
44	6	95	ARG	NE-CZ-NH2	-5.00	117.80	120.30
53	I	14	ARG	NE-CZ-NH2	-5.00	117.80	120.30

There are no chirality outliers.

All (49) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
38	0	24	U	Sidechain
38	0	368	U	Sidechain
38	0	559	A	Sidechain
38	0	571	U	Sidechain
38	0	864	A	Sidechain
39	1	102	THR	Peptide
39	1	14	VAL	Peptide
40	2	79	LYS	Peptide
40	2	80	LYS	Peptide
42	4	102	GLY	Peptide
42	4	136	VAL	Peptide
42	4	137	VAL	Peptide
42	4	142	ASP	Peptide
42	4	89	HIS	Peptide
43	5	52	ASN	Peptide
43	5	93	LYS	Peptide
46	8	128	SER	Peptide
46	8	53	GLU	Peptide
46	8	54	LEU	Peptide
46	8	55	VAL	Peptide
2	B	22	THR	Peptide
48	D	125	LYS	Peptide
49	E	22	PRO	Peptide
49	E	77	HIS	Peptide

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Mol	Chain	Res	Type	Group
54	J	17	MET	Peptide
54	J	69	LYS	Peptide
35	N	1802	A	Sidechain
35	N	2522	U	Sidechain
35	N	2765	A	Sidechain
35	N	586	A	Sidechain
35	N	850	U	Sidechain
35	N	927	A	Sidechain
6	P	195	VAL	Peptide
6	P	234	GLY	Peptide
6	P	238	ARG	Peptide
7	Q	151	THR	Peptide
9	S	174	ASP	Peptide
9	S	175	PHE	Peptide
11	U	34	GLY	Peptide
12	V	11	LEU	Peptide
15	Y	114	GLY	Peptide
15	Y	82	LEU	Peptide
16	Z	57	VAL	Mainchain,Peptide
24	h	52	LEU	Peptide
33	q	31	HIS	Peptide
56	t	37	ARG	Peptide
57	u	3	ASN	Peptide
58	v	34	ARG	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.

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	B	37/183 (20%)	36 (97%)	1 (3%)	0	100	100
3	s	35/179 (20%)	32 (91%)	3 (9%)	0	100	100
6	P	269/273 (98%)	247 (92%)	18 (7%)	4 (2%)	8	29
7	Q	207/209 (99%)	195 (94%)	11 (5%)	1 (0%)	25	54
8	R	199/201 (99%)	191 (96%)	8 (4%)	0	100	100
9	S	175/179 (98%)	163 (93%)	11 (6%)	1 (1%)	22	50
10	T	174/177 (98%)	165 (95%)	9 (5%)	0	100	100
11	U	147/149 (99%)	125 (85%)	19 (13%)	3 (2%)	6	25
12	V	139/142 (98%)	112 (81%)	27 (19%)	0	100	100
13	W	140/142 (99%)	136 (97%)	4 (3%)	0	100	100
14	X	120/123 (98%)	109 (91%)	9 (8%)	2 (2%)	7	27
15	Y	141/144 (98%)	121 (86%)	16 (11%)	4 (3%)	4	19
16	Z	134/136 (98%)	118 (88%)	11 (8%)	5 (4%)	2	15
17	a	118/127 (93%)	102 (86%)	14 (12%)	2 (2%)	7	27
18	b	114/117 (97%)	108 (95%)	6 (5%)	0	100	100
19	c	112/115 (97%)	104 (93%)	8 (7%)	0	100	100
20	d	115/118 (98%)	115 (100%)	0	0	100	100
21	e	101/103 (98%)	92 (91%)	8 (8%)	1 (1%)	13	39
22	f	108/110 (98%)	100 (93%)	7 (6%)	1 (1%)	14	41
23	g	91/100 (91%)	80 (88%)	9 (10%)	2 (2%)	5	24
24	h	100/104 (96%)	84 (84%)	14 (14%)	2 (2%)	6	25
25	i	92/94 (98%)	89 (97%)	3 (3%)	0	100	100
26	j	73/85 (86%)	71 (97%)	2 (3%)	0	100	100
27	k	75/78 (96%)	71 (95%)	3 (4%)	1 (1%)	10	33
28	l	61/63 (97%)	56 (92%)	5 (8%)	0	100	100
29	m	56/59 (95%)	52 (93%)	4 (7%)	0	100	100
30	n	54/57 (95%)	48 (89%)	5 (9%)	1 (2%)	6	26
31	o	48/55 (87%)	45 (94%)	3 (6%)	0	100	100
32	p	44/46 (96%)	40 (91%)	4 (9%)	0	100	100
33	q	62/65 (95%)	56 (90%)	5 (8%)	1 (2%)	8	28

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
34	r	36/55 (66%)	35 (97%)	1 (3%)	0	100	100
36	L	53/70 (76%)	45 (85%)	7 (13%)	1 (2%)	6	26
37	C	130/223 (58%)	123 (95%)	7 (5%)	0	100	100
39	1	216/239 (90%)	188 (87%)	27 (12%)	1 (0%)	25	54
40	2	204/218 (94%)	186 (91%)	16 (8%)	2 (1%)	13	39
41	3	203/206 (98%)	182 (90%)	21 (10%)	0	100	100
42	4	148/162 (91%)	116 (78%)	30 (20%)	2 (1%)	9	30
43	5	98/131 (75%)	81 (83%)	11 (11%)	6 (6%)	1	7
44	6	140/156 (90%)	130 (93%)	10 (7%)	0	100	100
45	7	127/130 (98%)	121 (95%)	6 (5%)	0	100	100
46	8	125/130 (96%)	103 (82%)	20 (16%)	2 (2%)	8	28
47	9	96/103 (93%)	84 (88%)	9 (9%)	3 (3%)	3	18
48	D	115/129 (89%)	102 (89%)	13 (11%)	0	100	100
49	E	121/124 (98%)	104 (86%)	15 (12%)	2 (2%)	7	27
50	F	112/118 (95%)	103 (92%)	8 (7%)	1 (1%)	14	41
51	G	92/101 (91%)	77 (84%)	14 (15%)	1 (1%)	12	37
52	H	86/89 (97%)	81 (94%)	5 (6%)	0	100	100
53	I	80/82 (98%)	69 (86%)	10 (12%)	1 (1%)	10	33
54	J	78/84 (93%)	66 (85%)	9 (12%)	3 (4%)	2	15
55	K	53/75 (71%)	49 (92%)	3 (6%)	1 (2%)	6	26
56	t	77/92 (84%)	73 (95%)	4 (5%)	0	100	100
57	u	83/87 (95%)	78 (94%)	4 (5%)	1 (1%)	11	35
58	v	49/88 (56%)	41 (84%)	7 (14%)	1 (2%)	6	25
All	All	5863/6625 (88%)	5300 (90%)	504 (9%)	59 (1%)	16	39

All (59) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
6	P	239	ASN
11	U	72	ILE
15	Y	36	LYS
16	Z	58	LYS
21	e	53	PHE
30	n	55	ILE

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
33	q	32	ILE
43	5	53	LYS
47	9	58	ASN
53	I	44	SER
54	J	70	THR
58	v	11	PRO
11	U	41	LYS
16	Z	59	ARG
17	a	3	HIS
40	2	81	GLY
43	5	56	LYS
43	5	91	ARG
46	8	55	VAL
49	E	23	ALA
54	J	18	GLU
57	u	69	LYS
6	P	235	GLY
16	Z	39	GLY
23	g	78	SER
24	h	99	ASN
27	k	3	ARG
40	2	80	LYS
43	5	54	LEU
43	5	94	HIS
47	9	43	PRO
49	E	78	SER
54	J	71	LYS
55	K	48	ARG
6	P	10	SER
6	P	238	ARG
7	Q	149	ASN
9	S	175	PHE
11	U	35	LYS
14	X	93	GLN
15	Y	29	LYS
15	Y	30	THR
15	Y	31	GLY
16	Z	69	PRO
23	g	77	ARG
36	L	3	LYS
42	4	51	GLY
43	5	86	ARG

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Mol	Chain	Res	Type
50	F	66	GLU
17	a	88	ALA
22	f	64	ALA
24	h	53	ASN
39	1	194	ASP
42	4	90	THR
51	G	4	GLN
16	Z	87	GLY
47	9	42	LEU
46	8	10	GLY
14	X	119	ALA

### 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	
3	s	34/158 (22%)	34 (100%)	0	100	100
6	P	216/218 (99%)	215 (100%)	1 (0%)	86	92
7	Q	164/164 (100%)	161 (98%)	3 (2%)	54	73
8	R	165/165 (100%)	161 (98%)	4 (2%)	44	67
9	S	148/150 (99%)	148 (100%)	0	100	100
10	T	137/138 (99%)	137 (100%)	0	100	100
11	U	114/114 (100%)	107 (94%)	7 (6%)	15	41
12	V	109/110 (99%)	108 (99%)	1 (1%)	75	86
13	W	116/116 (100%)	116 (100%)	0	100	100
14	X	103/104 (99%)	103 (100%)	0	100	100
15	Y	102/103 (99%)	102 (100%)	0	100	100
16	Z	109/109 (100%)	108 (99%)	1 (1%)	75	86
17	a	100/102 (98%)	97 (97%)	3 (3%)	36	62
18	b	86/87 (99%)	86 (100%)	0	100	100
19	c	98/100 (98%)	95 (97%)	3 (3%)	35	61

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
20	d	89/90 (99%)	88 (99%)	1 (1%)	70	82
21	e	84/84 (100%)	82 (98%)	2 (2%)	44	67
22	f	93/93 (100%)	93 (100%)	0	100	100
23	g	80/85 (94%)	80 (100%)	0	100	100
24	h	83/85 (98%)	82 (99%)	1 (1%)	67	80
25	i	78/78 (100%)	78 (100%)	0	100	100
26	j	56/63 (89%)	55 (98%)	1 (2%)	54	73
27	k	67/68 (98%)	67 (100%)	0	100	100
28	l	55/55 (100%)	55 (100%)	0	100	100
29	m	48/49 (98%)	48 (100%)	0	100	100
30	n	47/48 (98%)	46 (98%)	1 (2%)	48	70
31	o	45/49 (92%)	45 (100%)	0	100	100
32	p	38/38 (100%)	38 (100%)	0	100	100
33	q	51/52 (98%)	49 (96%)	2 (4%)	27	54
34	r	34/50 (68%)	34 (100%)	0	100	100
36	L	48/63 (76%)	48 (100%)	0	100	100
37	C	110/174 (63%)	110 (100%)	0	100	100
39	1	180/198 (91%)	179 (99%)	1 (1%)	84	91
40	2	170/178 (96%)	169 (99%)	1 (1%)	84	91
41	3	172/173 (99%)	171 (99%)	1 (1%)	84	91
42	4	113/123 (92%)	110 (97%)	3 (3%)	40	64
43	5	87/112 (78%)	86 (99%)	1 (1%)	70	82
44	6	119/129 (92%)	118 (99%)	1 (1%)	79	88
45	7	104/105 (99%)	104 (100%)	0	100	100
46	8	105/107 (98%)	104 (99%)	1 (1%)	73	84
47	9	86/90 (96%)	85 (99%)	1 (1%)	67	80
48	D	90/98 (92%)	89 (99%)	1 (1%)	70	82
49	E	103/104 (99%)	103 (100%)	0	100	100
50	F	92/96 (96%)	91 (99%)	1 (1%)	70	82
51	G	79/83 (95%)	79 (100%)	0	100	100
52	H	75/77 (97%)	74 (99%)	1 (1%)	65	79

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
53	I	65/65 (100%)	65 (100%)	0	100	100
54	J	74/77 (96%)	73 (99%)	1 (1%)	62	78
55	K	48/66 (73%)	48 (100%)	0	100	100
56	t	70/80 (88%)	68 (97%)	2 (3%)	37	62
57	u	65/66 (98%)	65 (100%)	0	100	100
58	v	44/76 (58%)	36 (82%)	8 (18%)	1	5
All	All	4848/5265 (92%)	4793 (99%)	55 (1%)	69	82

All (55) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
6	P	218	PRO
7	Q	73	VAL
7	Q	105	LYS
7	Q	205	PRO
8	R	61	ARG
8	R	69	ARG
8	R	149	ILE
8	R	163	ASN
11	U	27	ARG
11	U	44	ILE
11	U	50	ARG
11	U	55	GLU
11	U	60	GLU
11	U	70	GLU
11	U	101	ASP
12	V	65	ARG
16	Z	128	THR
17	a	2	ARG
17	a	50	PRO
17	a	70	THR
19	c	53	ARG
19	c	73	VAL
19	c	93	ARG
20	d	33	ARG
21	e	49	ILE
21	e	53	PHE
24	h	68	SER
26	j	41	ARG
30	n	28	LEU

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Mol	Chain	Res	Type
33	q	2	PRO
33	q	32	ILE
39	1	207	ILE
40	2	55	ILE
41	3	5	LEU
42	4	15	LEU
42	4	115	LEU
42	4	157	ARG
43	5	9	MET
44	6	25	LYS
46	8	120	LYS
47	9	17	LEU
48	D	93	ARG
50	F	98	ARG
52	H	70	LEU
54	J	61	ILE
56	t	5	LEU
56	t	49	ILE
58	v	4	ILE
58	v	5	LYS
58	v	6	VAL
58	v	16	LEU
58	v	17	ARG
58	v	19	PHE
58	v	20	LYS
58	v	29	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (41) such sidechains are listed below:

Mol	Chain	Res	Type
3	s	126	HIS
6	P	53	HIS
6	P	86	ASN
6	P	134	ASN
6	P	260	ASN
7	Q	49	GLN
7	Q	149	ASN
7	Q	150	GLN
8	R	163	ASN
8	R	165	HIS
10	T	22	GLN
10	T	143	GLN

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Mol	Chain	Res	Type
11	U	11	ASN
11	U	135	HIS
12	V	12	GLN
13	W	40	HIS
18	b	38	GLN
19	c	12	GLN
20	d	37	GLN
20	d	44	GLN
22	f	15	GLN
28	l	27	ASN
28	l	58	ASN
30	n	6	ASN
31	o	19	HIS
36	L	20	ASN
37	C	57	GLN
37	C	58	ASN
37	C	172	HIS
42	4	89	HIS
43	5	3	HIS
43	5	11	HIS
43	5	55	HIS
44	6	28	ASN
46	8	32	GLN
48	D	118	HIS
50	F	8	ASN
51	G	49	GLN
53	I	63	GLN
54	J	31	HIS
55	K	52	GLN

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	72/73 (98%)	19 (26%)	8 (11%)
35	N	2894/2903 (99%)	519 (17%)	34 (1%)
38	0	1531/1539 (99%)	275 (17%)	22 (1%)
4	M	74/75 (98%)	11 (14%)	0
5	O	117/120 (97%)	21 (17%)	1 (0%)
All	All	4688/4710 (99%)	845 (18%)	65 (1%)

All (845) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	13	C
1	A	14	A
1	A	16	U
1	A	17	C
1	A	18	G
1	A	19	G
1	A	20	U
1	A	21	A
1	A	22	G
1	A	36	A
1	A	45	U
1	A	46	G
1	A	47	U
1	A	48	C
1	A	52	G
1	A	61	C
1	A	62	C
1	A	63	G
1	A	73	A
4	M	9	C
4	M	10	G
4	M	15	G
4	M	16	C
4	M	17	G
4	M	19	U
4	M	20	A
4	M	42	G
4	M	47	C
4	M	74	C
4	M	75	A
5	O	13	G
5	O	25	U
5	O	31	C
5	O	35	C
5	O	41	G
5	O	44	G
5	O	45	A
5	O	51	G
5	O	53	A
5	O	56	G
5	O	57	A
5	O	64	G
5	O	66	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
5	O	67	G
5	O	88	C
5	O	89	U
5	O	90	C
5	O	91	C
5	O	99	A
5	O	108	A
5	O	109	A
35	N	10	A
35	N	23	G
35	N	28	A
35	N	35	G
35	N	36	G
35	N	42	A
35	N	46	G
35	N	51	G
35	N	55	G
35	N	60	G
35	N	63	A
35	N	71	A
35	N	74	A
35	N	75	G
35	N	84	A
35	N	96	C
35	N	101	A
35	N	102	U
35	N	103	A
35	N	118	A
35	N	119	A
35	N	120	U
35	N	125	A
35	N	138	U
35	N	139	U
35	N	140	C
35	N	141	G
35	N	142	A
35	N	162	U
35	N	163	C
35	N	165	A
35	N	166	U
35	N	188	G
35	N	196	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
35	N	199	A
35	N	201	C
35	N	215	G
35	N	216	A
35	N	221	A
35	N	222	A
35	N	223	A
35	N	224	U
35	N	228	C
35	N	241	A
35	N	242	G
35	N	243	U
35	N	248	G
35	N	255	A
35	N	265	A
35	N	266	G
35	N	267	C
35	N	271	G
35	N	272	A
35	N	276	U
35	N	278	A
35	N	281	C
35	N	284	U
35	N	294	A
35	N	301	G
35	N	311	A
35	N	323	C
35	N	329	G
35	N	330	A
35	N	332	A
35	N	346	A
35	N	361	G
35	N	362	A
35	N	371	A
35	N	372	G
35	N	373	U
35	N	386	G
35	N	396	G
35	N	399	U
35	N	403	U
35	N	404	A
35	N	405	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
35	N	406	G
35	N	411	G
35	N	412	A
35	N	421	C
35	N	422	A
35	N	424	G
35	N	435	C
35	N	447	A
35	N	455	C
35	N	456	C
35	N	457	A
35	N	467	G
35	N	471	A
35	N	473	G
35	N	481	G
35	N	491	G
35	N	501	A
35	N	504	A
35	N	505	A
35	N	509	C
35	N	513	A
35	N	529	A
35	N	531	C
35	N	532	A
35	N	543	G
35	N	544	C
35	N	546	U
35	N	548	G
35	N	549	G
35	N	550	C
35	N	556	A
35	N	563	A
35	N	573	U
35	N	575	A
35	N	578	G
35	N	586	A
35	N	603	A
35	N	613	A
35	N	614	A
35	N	616	A
35	N	622	G
35	N	627	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
35	N	637	A
35	N	645	C
35	N	646	U
35	N	647	G
35	N	648	G
35	N	654	A
35	N	655	A
35	N	669	G
35	N	670	A
35	N	671	C
35	N	677	A
35	N	686	U
35	N	695	G
35	N	696	G
35	N	717	C
35	N	729	G
35	N	730	A
35	N	738	G
35	N	747	U
35	N	764	A
35	N	765	C
35	N	775	G
35	N	776	G
35	N	782	A
35	N	783	A
35	N	784	G
35	N	785	G
35	N	792	A
35	N	800	A
35	N	805	G
35	N	806	C
35	N	812	C
35	N	819	A
35	N	827	U
35	N	828	U
35	N	829	A
35	N	845	A
35	N	846	U
35	N	858	G
35	N	860	U
35	N	866	A
35	N	869	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
35	N	878	A
35	N	885	C
35	N	896	A
35	N	897	C
35	N	907	G
35	N	910	A
35	N	914	G
35	N	919	U
35	N	932	U
35	N	941	A
35	N	945	A
35	N	946	C
35	N	953	G
35	N	961	C
35	N	973	A
35	N	974	G
35	N	983	A
35	N	985	C
35	N	989	G
35	N	995	C
35	N	996	A
35	N	997	G
35	N	1004	U
35	N	1012	U
35	N	1013	C
35	N	1020	A
35	N	1021	A
35	N	1022	G
35	N	1023	U
35	N	1025	G
35	N	1026	G
35	N	1033	U
35	N	1046	A
35	N	1047	G
35	N	1057	A
35	N	1060	U
35	N	1062	G
35	N	1064	C
35	N	1066	U
35	N	1067	A
35	N	1068	G
35	N	1070	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
35	N	1077	A
35	N	1082	U
35	N	1083	U
35	N	1088	A
35	N	1089	A
35	N	1090	A
35	N	1094	U
35	N	1096	A
35	N	1097	U
35	N	1100	C
35	N	1104	C
35	N	1110	G
35	N	1111	A
35	N	1112	G
35	N	1119	U
35	N	1122	G
35	N	1130	U
35	N	1132	U
35	N	1133	A
35	N	1135	C
35	N	1136	G
35	N	1141	U
35	N	1142	A
35	N	1143	A
35	N	1155	A
35	N	1168	G
35	N	1171	G
35	N	1173	U
35	N	1174	U
35	N	1175	A
35	N	1180	U
35	N	1186	G
35	N	1195	G
35	N	1204	A
35	N	1205	A
35	N	1206	G
35	N	1210	G
35	N	1212	G
35	N	1237	A
35	N	1238	G
35	N	1250	G
35	N	1251	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
35	N	1253	A
35	N	1256	G
35	N	1257	C
35	N	1265	A
35	N	1266	G
35	N	1268	A
35	N	1271	G
35	N	1272	A
35	N	1275	A
35	N	1300	G
35	N	1301	A
35	N	1321	A
35	N	1329	U
35	N	1332	G
35	N	1345	C
35	N	1352	U
35	N	1365	A
35	N	1368	G
35	N	1376	C
35	N	1379	U
35	N	1383	A
35	N	1386	C
35	N	1395	A
35	N	1403	A
35	N	1416	G
35	N	1419	A
35	N	1420	A
35	N	1421	G
35	N	1427	A
35	N	1428	C
35	N	1434	A
35	N	1437	C
35	N	1453	A
35	N	1458	U
35	N	1461	C
35	N	1478	G
35	N	1482	G
35	N	1504	A
35	N	1508	A
35	N	1509	A
35	N	1515	A
35	N	1524	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
35	N	1529	G
35	N	1535	A
35	N	1536	C
35	N	1537	G
35	N	1538	G
35	N	1554	U
35	N	1565	C
35	N	1566	A
35	N	1569	A
35	N	1578	U
35	N	1583	A
35	N	1584	U
35	N	1585	C
35	N	1587	G
35	N	1607	C
35	N	1608	A
35	N	1610	A
35	N	1613	G
35	N	1622	G
35	N	1647	U
35	N	1648	U
35	N	1651	G
35	N	1674	G
35	N	1675	C
35	N	1676	A
35	N	1698	A
35	N	1699	G
35	N	1713	A
35	N	1715	G
35	N	1728	C
35	N	1729	U
35	N	1730	C
35	N	1733	G
35	N	1738	G
35	N	1757	A
35	N	1758	U
35	N	1760	C
35	N	1764	C
35	N	1773	A
35	N	1784	A
35	N	1787	A
35	N	1800	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
35	N	1801	A
35	N	1802	A
35	N	1808	A
35	N	1811	G
35	N	1816	C
35	N	1829	A
35	N	1833	C
35	N	1835	G
35	N	1857	G
35	N	1869	G
35	N	1870	C
35	N	1900	A
35	N	1901	A
35	N	1906	G
35	N	1913	A
35	N	1919	A
35	N	1927	A
35	N	1929	G
35	N	1930	G
35	N	1931	U
35	N	1938	A
35	N	1955	U
35	N	1964	G
35	N	1967	C
35	N	1970	A
35	N	1971	U
35	N	1972	G
35	N	1991	U
35	N	1993	U
35	N	1997	C
35	N	2004	G
35	N	2006	C
35	N	2020	A
35	N	2022	U
35	N	2023	C
35	N	2031	A
35	N	2033	A
35	N	2043	C
35	N	2046	G
35	N	2055	C
35	N	2056	G
35	N	2060	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
35	N	2061	G
35	N	2062	A
35	N	2069	G
35	N	2072	C
35	N	2077	A
35	N	2092	U
35	N	2094	A
35	N	2097	A
35	N	2099	U
35	N	2110	G
35	N	2111	U
35	N	2112	G
35	N	2113	U
35	N	2118	U
35	N	2119	A
35	N	2132	U
35	N	2133	G
35	N	2145	C
35	N	2147	A
35	N	2162	G
35	N	2171	A
35	N	2172	U
35	N	2173	A
35	N	2190	G
35	N	2191	A
35	N	2194	U
35	N	2198	A
35	N	2200	C
35	N	2203	U
35	N	2204	G
35	N	2211	A
35	N	2212	A
35	N	2214	C
35	N	2225	A
35	N	2226	C
35	N	2238	G
35	N	2239	G
35	N	2266	A
35	N	2278	A
35	N	2279	G
35	N	2283	C
35	N	2286	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
35	N	2287	A
35	N	2288	A
35	N	2297	A
35	N	2305	U
35	N	2307	G
35	N	2309	A
35	N	2312	U
35	N	2325	G
35	N	2333	A
35	N	2334	U
35	N	2345	G
35	N	2347	C
35	N	2350	C
35	N	2354	C
35	N	2357	G
35	N	2361	G
35	N	2383	G
35	N	2385	C
35	N	2391	G
35	N	2402	U
35	N	2403	C
35	N	2406	A
35	N	2407	A
35	N	2422	C
35	N	2423	U
35	N	2425	A
35	N	2426	A
35	N	2427	C
35	N	2429	G
35	N	2430	A
35	N	2431	U
35	N	2435	A
35	N	2441	U
35	N	2448	A
35	N	2470	G
35	N	2476	A
35	N	2498	C
35	N	2502	G
35	N	2503	A
35	N	2504	U
35	N	2505	G
35	N	2507	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
35	N	2518	A
35	N	2520	C
35	N	2529	G
35	N	2535	G
35	N	2547	A
35	N	2554	U
35	N	2566	A
35	N	2567	G
35	N	2572	A
35	N	2573	C
35	N	2574	G
35	N	2578	G
35	N	2585	U
35	N	2602	A
35	N	2603	G
35	N	2609	U
35	N	2613	U
35	N	2615	U
35	N	2629	U
35	N	2630	G
35	N	2636	C
35	N	2645	G
35	N	2646	C
35	N	2655	G
35	N	2656	U
35	N	2661	G
35	N	2663	G
35	N	2682	A
35	N	2689	U
35	N	2690	U
35	N	2714	G
35	N	2716	C
35	N	2718	G
35	N	2724	U
35	N	2727	A
35	N	2733	A
35	N	2748	A
35	N	2751	G
35	N	2752	C
35	N	2765	A
35	N	2776	A
35	N	2777	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
35	N	2778	A
35	N	2779	U
35	N	2791	G
35	N	2792	A
35	N	2798	U
35	N	2801	G
35	N	2818	U
35	N	2820	A
35	N	2833	U
35	N	2834	G
35	N	2836	U
35	N	2849	U
35	N	2850	A
35	N	2859	G
35	N	2867	G
35	N	2868	A
35	N	2872	A
35	N	2873	A
35	N	2880	C
35	N	2884	U
35	N	2887	A
35	N	2891	U
35	N	2903	U
38	0	4	U
38	0	6	G
38	0	9	G
38	0	32	A
38	0	39	G
38	0	44	A
38	0	47	C
38	0	48	C
38	0	50	A
38	0	51	A
38	0	52	C
38	0	58	C
38	0	65	A
38	0	69	G
38	0	71	A
38	0	72	A
38	0	83	C
38	0	84	U
38	0	85	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
38	0	86	G
38	0	87	C
38	0	92	U
38	0	97	G
38	0	108	G
38	0	115	G
38	0	116	A
38	0	122	G
38	0	130	A
38	0	141	G
38	0	143	A
38	0	144	G
38	0	149	A
38	0	156	C
38	0	163	C
38	0	174	A
38	0	177	G
38	0	182	A
38	0	183	C
38	0	184	G
38	0	197	A
38	0	209	U
38	0	210	C
38	0	211	G
38	0	226	G
38	0	245	U
38	0	247	G
38	0	251	G
38	0	266	G
38	0	267	C
38	0	280	C
38	0	281	G
38	0	289	G
38	0	298	A
38	0	306	A
38	0	321	A
38	0	328	C
38	0	332	G
38	0	347	G
38	0	351	G
38	0	352	C
38	0	354	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
38	0	358	U
38	0	367	U
38	0	372	C
38	0	375	U
38	0	384	G
38	0	389	A
38	0	397	A
38	0	398	U
38	0	406	G
38	0	412	A
38	0	413	G
38	0	421	U
38	0	422	C
38	0	423	G
38	0	424	G
38	0	429	U
38	0	430	A
38	0	439	U
38	0	451	A
38	0	458	U
38	0	459	A
38	0	467	U
38	0	468	A
38	0	474	G
38	0	478	A
38	0	479	U
38	0	481	G
38	0	484	G
38	0	485	U
38	0	486	U
38	0	495	A
38	0	497	G
38	0	511	C
38	0	518	C
38	0	519	C
38	0	521	G
38	0	527	G
38	0	531	U
38	0	532	A
38	0	533	A
38	0	547	A
38	0	559	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
38	0	562	U
38	0	572	A
38	0	573	A
38	0	576	C
38	0	596	A
38	0	607	A
38	0	633	G
38	0	639	G
38	0	650	G
38	0	652	U
38	0	665	A
38	0	675	A
38	0	688	G
38	0	695	A
38	0	701	U
38	0	702	A
38	0	703	G
38	0	718	A
38	0	721	G
38	0	723	U
38	0	724	G
38	0	731	G
38	0	734	G
38	0	747	A
38	0	755	G
38	0	777	A
38	0	793	U
38	0	794	A
38	0	813	U
38	0	815	A
38	0	817	C
38	0	818	G
38	0	819	A
38	0	821	G
38	0	828	U
38	0	832	G
38	0	836	G
38	0	841	C
38	0	842	U
38	0	843	U
38	0	844	G
38	0	846	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
38	0	849	G
38	0	859	G
38	0	864	A
38	0	885	G
38	0	889	A
38	0	890	G
38	0	891	U
38	0	902	G
38	0	914	A
38	0	926	G
38	0	934	C
38	0	935	A
38	0	960	U
38	0	965	U
38	0	966	G
38	0	969	A
38	0	971	G
38	0	972	C
38	0	975	A
38	0	976	G
38	0	977	A
38	0	989	U
38	0	993	G
38	0	999	C
38	0	1000	A
38	0	1004	A
38	0	1008	U
38	0	1009	U
38	0	1017	U
38	0	1018	G
38	0	1020	G
38	0	1022	A
38	0	1024	G
38	0	1025	U
38	0	1026	G
38	0	1027	C
38	0	1030	U
38	0	1031	C
38	0	1032	G
38	0	1043	G
38	0	1044	A
38	0	1053	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
38	0	1056	U
38	0	1065	U
38	0	1085	U
38	0	1092	A
38	0	1094	G
38	0	1095	U
38	0	1101	A
38	0	1125	U
38	0	1130	A
38	0	1132	C
38	0	1136	C
38	0	1137	C
38	0	1138	G
38	0	1139	G
38	0	1140	C
38	0	1146	A
38	0	1158	C
38	0	1159	U
38	0	1168	U
38	0	1171	A
38	0	1182	G
38	0	1183	U
38	0	1184	G
38	0	1190	G
38	0	1196	A
38	0	1200	C
38	0	1201	A
38	0	1202	U
38	0	1212	U
38	0	1213	A
38	0	1227	A
38	0	1238	A
38	0	1253	G
38	0	1256	A
38	0	1257	A
38	0	1258	G
38	0	1260	G
38	0	1261	A
38	0	1274	A
38	0	1275	A
38	0	1278	G
38	0	1280	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
38	0	1281	C
38	0	1287	A
38	0	1297	G
38	0	1298	U
38	0	1300	G
38	0	1301	U
38	0	1302	C
38	0	1305	G
38	0	1317	C
38	0	1318	A
38	0	1319	A
38	0	1320	C
38	0	1322	C
38	0	1323	G
38	0	1331	G
38	0	1332	A
38	0	1340	A
38	0	1346	A
38	0	1347	G
38	0	1348	U
38	0	1353	G
38	0	1363	A
38	0	1364	U
38	0	1370	G
38	0	1379	G
38	0	1383	C
38	0	1394	A
38	0	1400	C
38	0	1419	G
38	0	1422	G
38	0	1433	A
38	0	1441	A
38	0	1446	A
38	0	1451	U
38	0	1452	C
38	0	1487	G
38	0	1492	A
38	0	1494	G
38	0	1497	G
38	0	1503	A
38	0	1506	U
38	0	1517	G

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Mol	Chain	Res	Type
38	0	1519	A
38	0	1529	G
38	0	1530	G
38	0	1531	A

All (65) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	16	U
1	A	19	G
1	A	20	U
1	A	21	A
1	A	44	G
1	A	45	U
1	A	46	G
1	A	60	U
5	O	52	A
35	N	60	G
35	N	227	A
35	N	242	G
35	N	249	C
35	N	372	G
35	N	404	A
35	N	421	C
35	N	446	G
35	N	456	C
35	N	474	G
35	N	503	A
35	N	512	G
35	N	555	G
35	N	670	A
35	N	774	G
35	N	784	G
35	N	859	G
35	N	995	C
35	N	1020	A
35	N	1134	A
35	N	1141	U
35	N	1142	A
35	N	1236	G
35	N	1900	A
35	N	2062	A

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Mol	Chain	Res	Type
35	N	2225	A
35	N	2282	G
35	N	2286	G
35	N	2311	A
35	N	2405	G
35	N	2655	G
35	N	2776	A
35	N	2867	G
35	N	2873	A
38	0	64	G
38	0	85	U
38	0	96	U
38	0	115	G
38	0	388	G
38	0	429	U
38	0	518	C
38	0	595	A
38	0	812	G
38	0	890	G
38	0	965	U
38	0	1124	G
38	0	1145	A
38	0	1182	G
38	0	1190	G
38	0	1201	A
38	0	1300	G
38	0	1345	U
38	0	1347	G
38	0	1491	G
38	0	1493	A
38	0	1528	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 oligosaccharides in this entry.

## 5.6 Ligand geometry

Of 3 ligands modelled in this entry, 3 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers

There are no such residues in this entry.

## 5.8 Polymer linkage issues

There are no chain breaks in this entry.

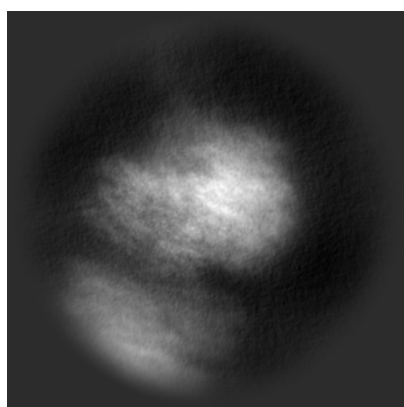
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-13956. These allow visual inspection of the internal detail of the map and identification of artifacts.

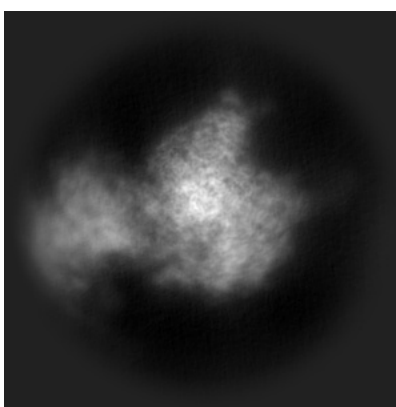
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

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

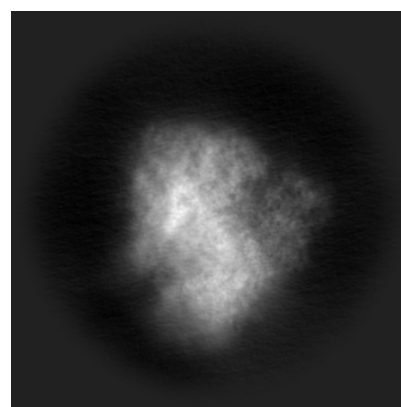
#### 6.1.1 Primary map



X



Y

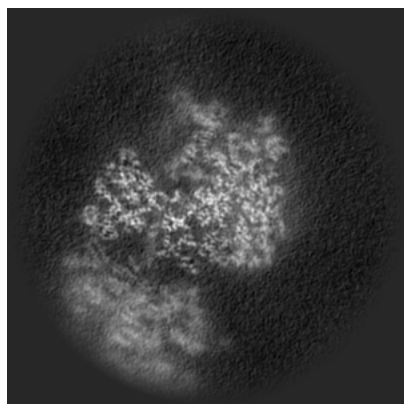


Z

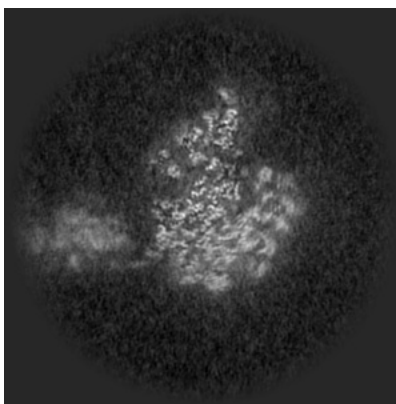
The images above show the map projected in three orthogonal directions.

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

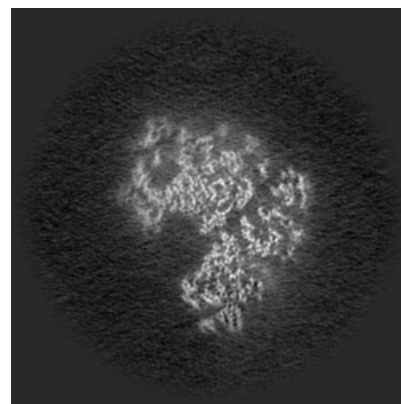
#### 6.2.1 Primary map



X Index: 225



Y Index: 225

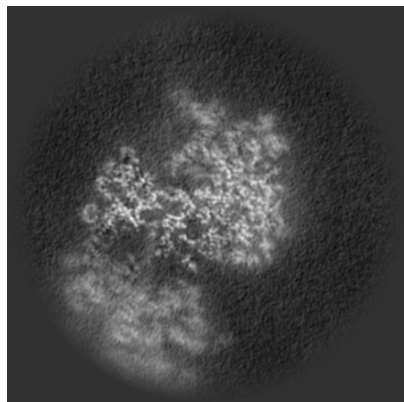


Z Index: 225

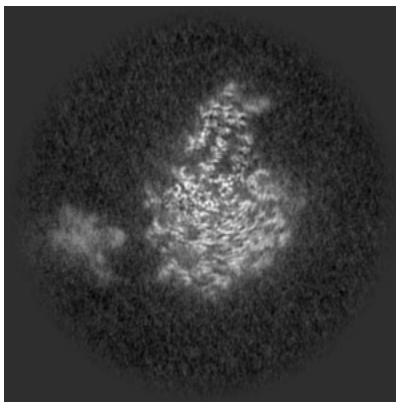
The images above show central slices of the map in three orthogonal directions.

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

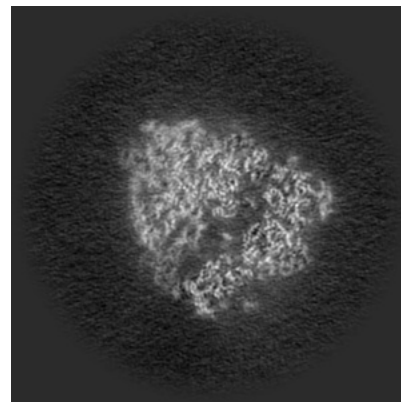
### 6.3.1 Primary map



X Index: 223



Y Index: 245

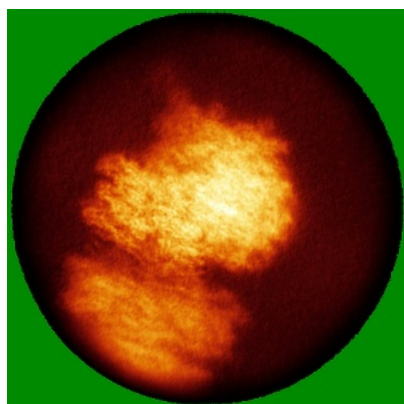


Z Index: 250

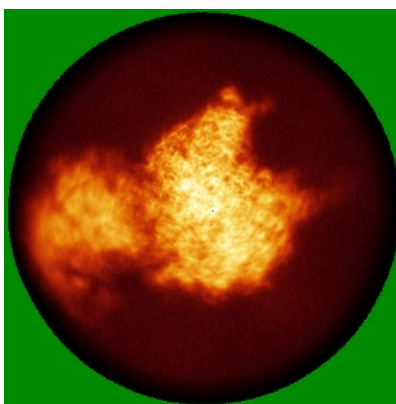
The images above show the largest variance slices of the map in three orthogonal directions.

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

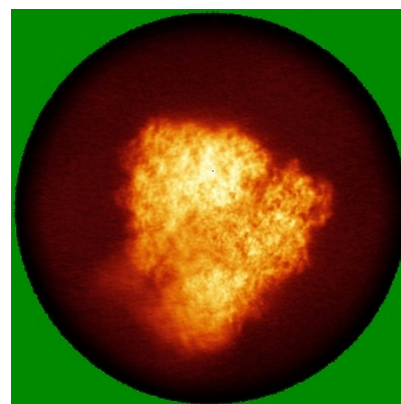
### 6.4.1 Primary map



X



Y



Z

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

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

### 6.5.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.45. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

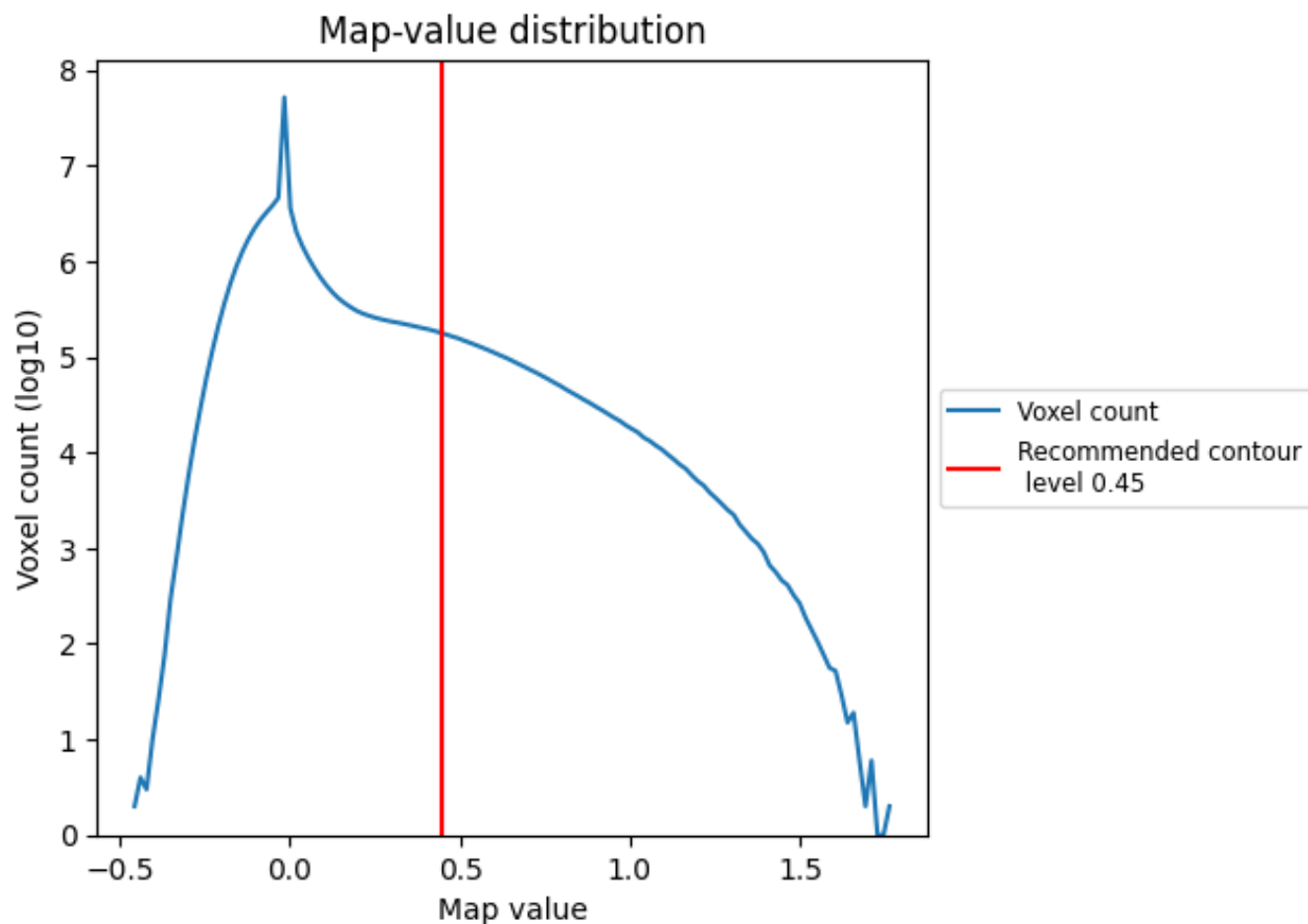
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

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

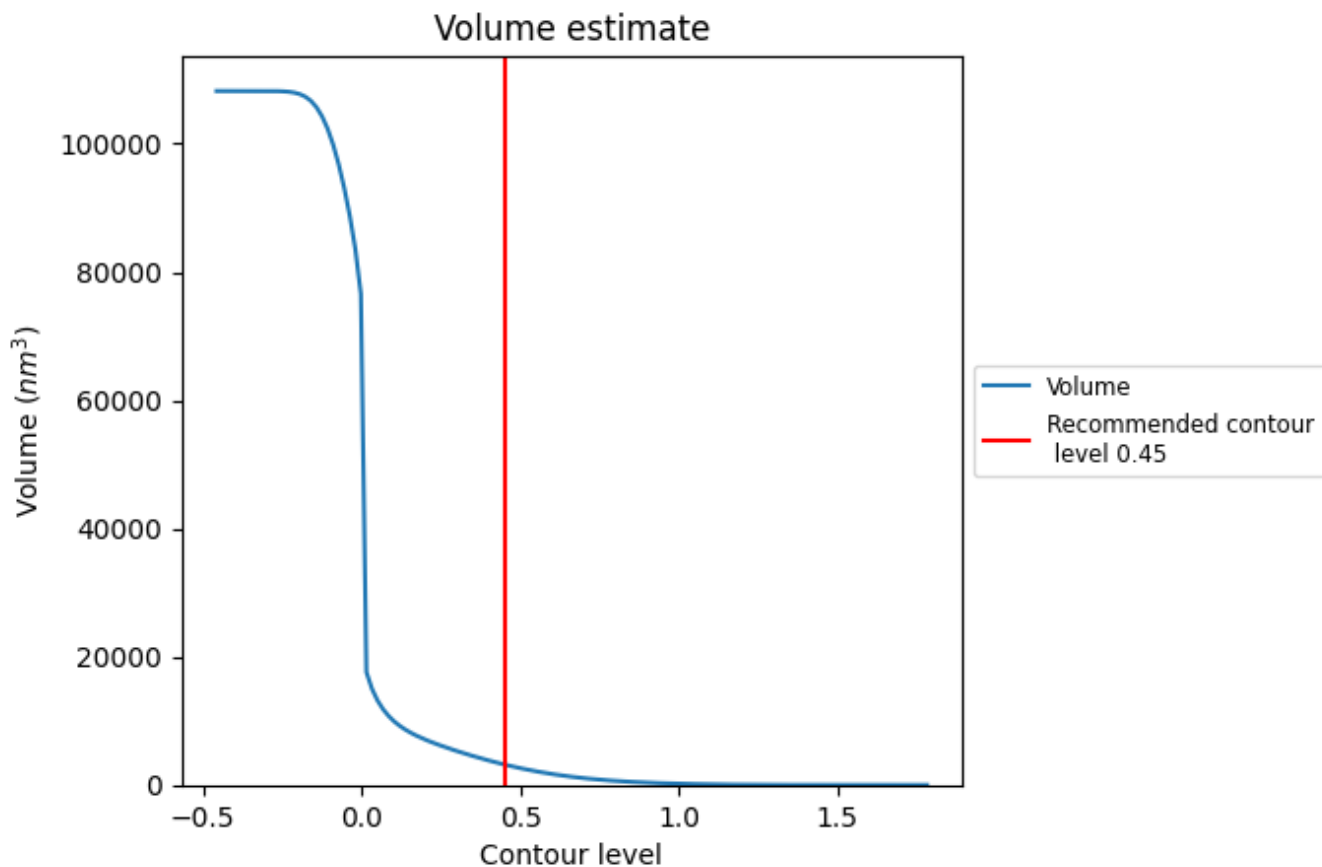
### 7.1 Map-value distribution [i](#)



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



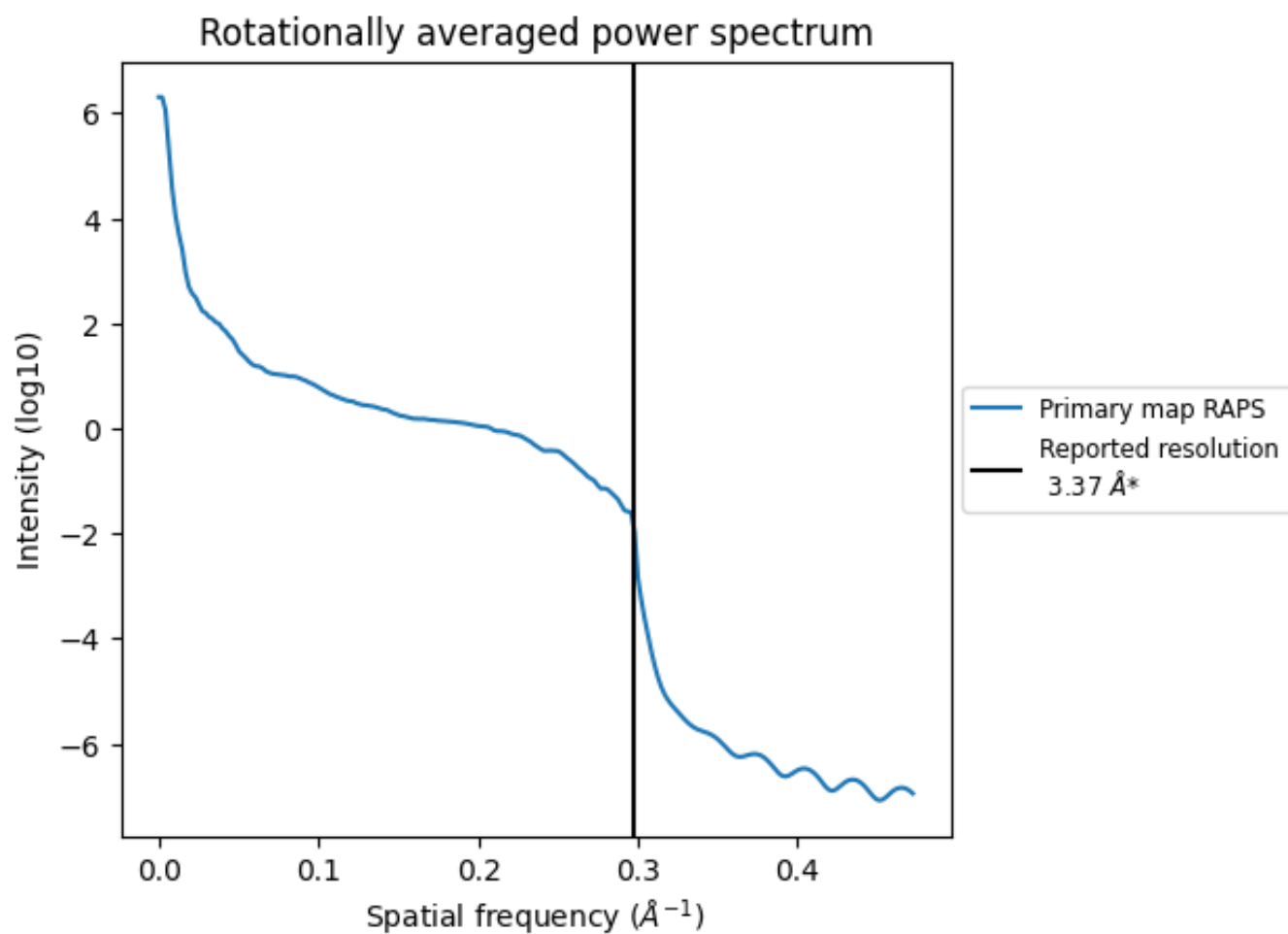
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 3188 nm<sup>3</sup>; this corresponds to an approximate mass of 2880 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  $0.297 \text{ \AA}^{-1}$

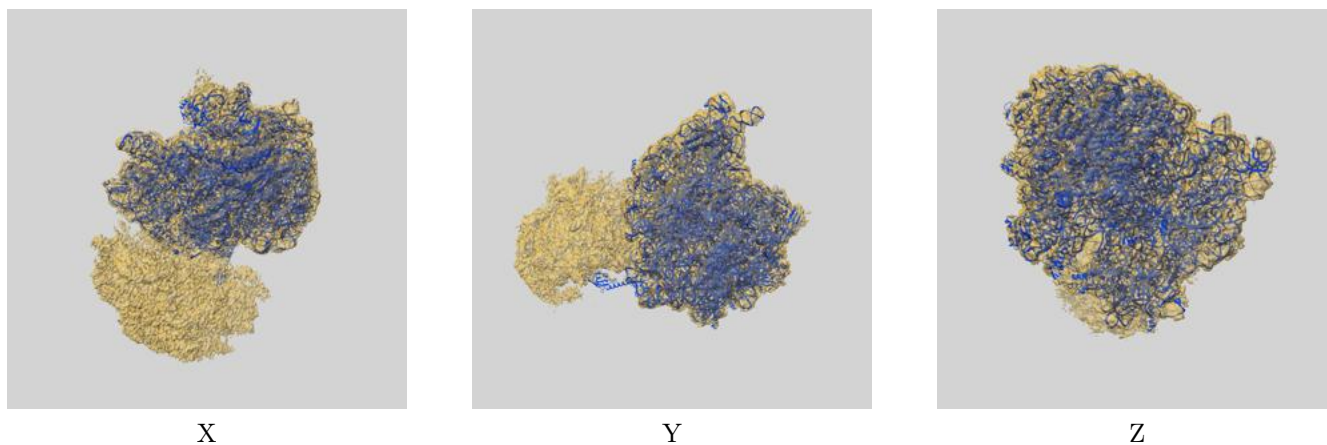
## 8 Fourier-Shell correlation

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

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

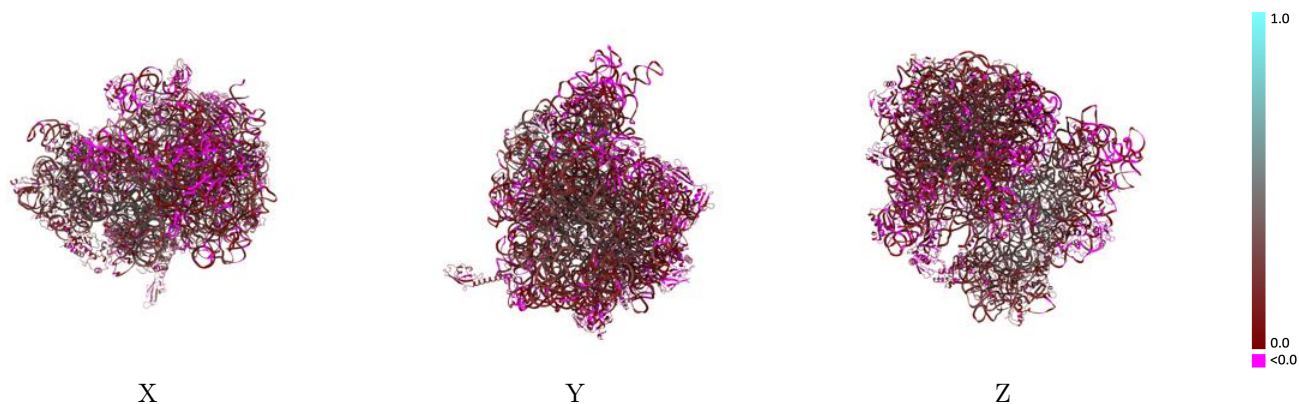
This section contains information regarding the fit between EMDB map EMD-13956 and PDB model 7QGN. Per-residue inclusion information can be found in section [3](#) on page [16](#).

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



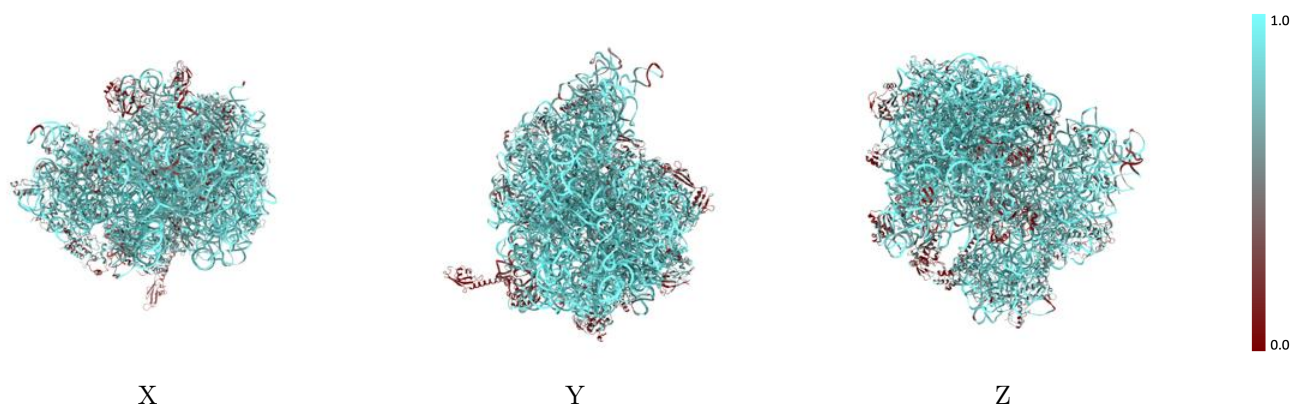
The images above show the 3D surface view of the map at the recommended contour level 0.45 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



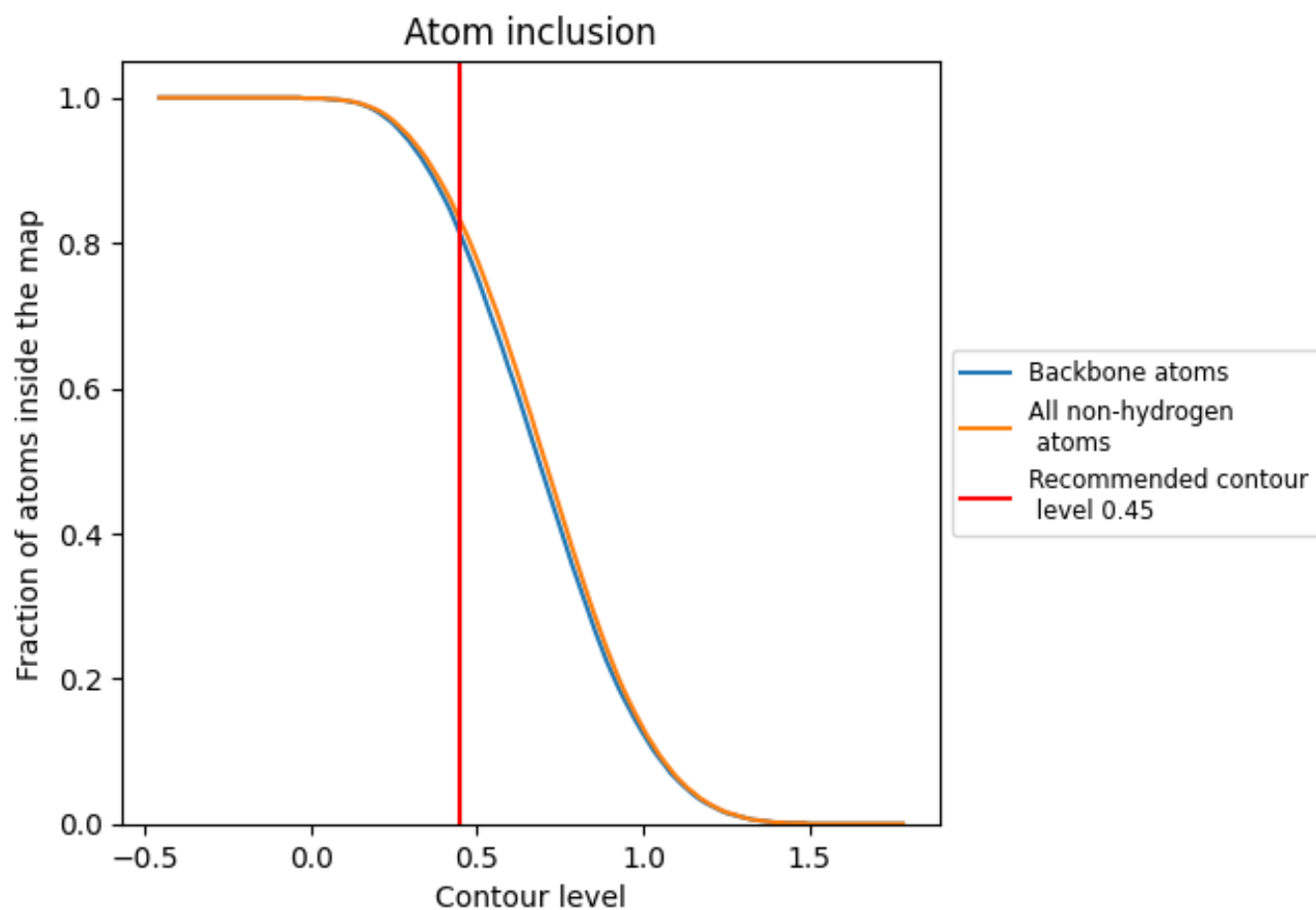
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.45).







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 81% of all backbone atoms, 83% 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 (0.45) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8300	 0.1810
0	 0.9180	 0.2440
1	 0.6360	 0.1660
2	 0.7410	 0.2820
3	 0.5910	 0.0580
4	 0.8140	 0.2370
5	 0.5280	 0.1490
6	 0.5480	 0.1290
7	 0.7670	 0.2440
8	 0.6910	 0.1920
9	 0.6620	 0.2430
A	 0.7370	 0.1610
B	 0.3250	 0.1890
C	 0.0120	 0.0460
D	 0.5350	 0.1080
E	 0.7850	 0.2330
F	 0.5780	 0.1350
G	 0.7600	 0.2470
H	 0.7960	 0.2870
I	 0.6450	 0.0550
J	 0.6660	 0.0690
K	 0.5960	 0.2170
L	 0.1810	 0.0110
M	 0.9210	 0.2460
N	 0.9270	 0.1880
O	 0.8580	 0.1050
P	 0.7560	 0.1160
Q	 0.7290	 0.0760
R	 0.6250	 0.1170
S	 0.3800	 0.0260
T	 0.4020	 0.0260
U	 0.2000	 0.1020
V	 0.1920	 0.0210
W	 0.8570	 0.0920
X	 0.4880	 0.0270



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Chain	Atom inclusion	Q-score
Y	 0.6730	 0.1330
Z	 0.7720	 0.1600
a	 0.8290	 0.1080
b	 0.4300	 0.0360
c	 0.5450	 -0.0020
d	 0.8450	 0.1180
e	 0.6220	 0.0650
f	 0.8740	 0.2120
g	 0.8240	 0.2060
h	 0.6980	 0.1080
i	 0.5650	 0.0630
j	 0.9060	 0.0930
k	 0.8200	 0.1870
l	 0.7040	 0.1660
m	 0.7890	 0.1120
n	 0.8270	 0.2010
o	 0.7060	 0.0740
p	 0.9690	 0.2970
q	 0.9180	 0.1700
r	 0.8280	 0.1380
s	 0.9450	 0.2580
t	 0.7070	 0.1800
u	 0.5950	 0.0730
v	 0.6480	 0.2470