



Full wwPDB EM Validation Report ⓘ

Mar 21, 2022 – 07:41 pm GMT

PDB ID : 7QG8
EMDB ID : EMD-13952
Title : Structure of the collided E. coli disome - VemP-stalled 70S ribosome
Authors : Kratzat, H.; Buschauer, R.; Berninghausen, O.; Beckmann, R.
Deposited on : 2021-12-07
Resolution : 3.97 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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

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

EMDB validation analysis : 0.0.0.dev97
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.27

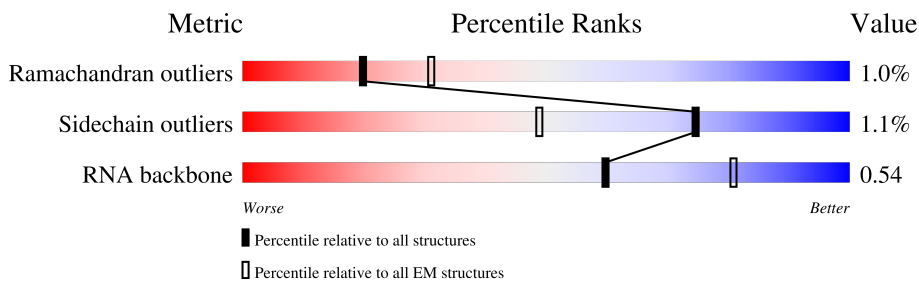
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.97 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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

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






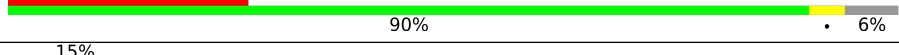
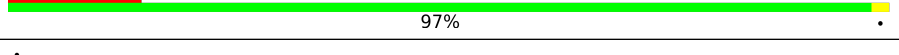


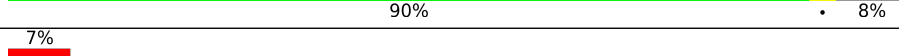
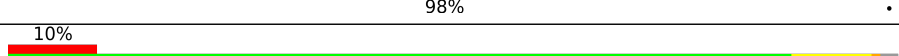
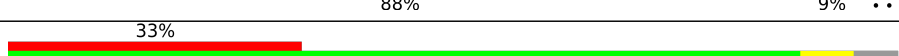

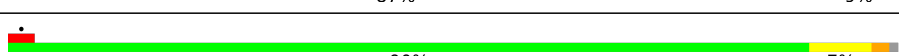
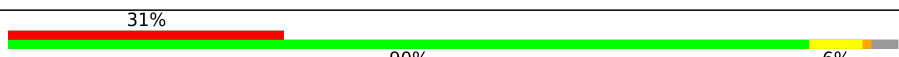
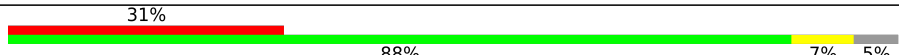
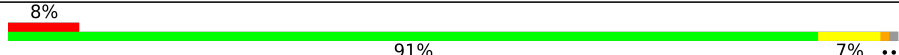
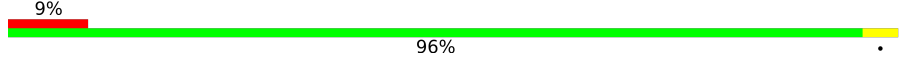



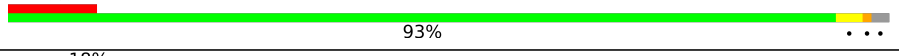
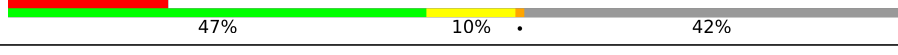

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Mol	Chain	Length	Quality of chain
9	T	177	6% 98% ..
10	U	149	55% 93% 7% .
11	V	142	39% 98% ..
12	W	142	. 95% 5%
13	X	123	41% 95% ..
14	Y	144	12% 89% 8% ..
15	Z	136	. 90% 9% .
16	a	127	. 83% 10% 6%
17	b	117	. 94% 5% .
18	c	115	17% 91% 6% ..
19	d	118	. 88% 10% ..
20	e	103	17% 95% ..
21	f	110	. 97% .
22	g	100	8% 90% . 7%
23	h	104	7% 94% ...
24	i	94	7% 100%
25	j	85	. 85% .. 12%
26	k	78	8% 91% 8% .
27	l	63	29% 94% 6%
28	m	59	5% 95% ..
29	n	57	5% 82% 16% .
30	o	55	5% 85% 5% 9%
31	p	46	. 89% 11%
32	q	65	. 88% 9% ..
33	r	55	. 60% 9% 31%

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Mol	Chain	Length	Quality of chain
34	N	2903	
35	L	70	
36	C	223	
37	0	1539	
38	1	239	
39	2	218	
40	3	206	
41	4	162	
42	5	131	
43	6	156	
44	7	130	
45	8	130	
46	9	103	
47	D	129	
48	E	124	
49	F	118	
50	G	101	
51	H	89	
52	I	82	
53	J	84	
54	K	75	
55	t	92	
56	u	87	
57	v	88	

2 Entry composition

There are 60 unique types of molecules in this entry. The entry contains 147108 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 VemP nascent chain.

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

- Molecule 3 is a RNA chain called P-site tRNA.

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

- Molecule 4 is a RNA chain called 5S rRNA.

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

- Molecule 5 is a protein called 50S ribosomal protein L2.

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

- Molecule 6 is a protein called 50S ribosomal protein L3.

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

- Molecule 7 is a protein called 50S ribosomal protein L4.

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

- Molecule 8 is a protein called 50S ribosomal protein L5.

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

- Molecule 9 is a protein called 50S ribosomal protein L6.

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

- Molecule 10 is a protein called 50S ribosomal protein L9.

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

- Molecule 11 is a protein called 50S ribosomal protein L11.

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

- Molecule 12 is a protein called 50S ribosomal protein L13.

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

- Molecule 13 is a protein called 50S ribosomal protein L14.

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

- Molecule 14 is a protein called 50S ribosomal protein L15.

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

- Molecule 15 is a protein called 50S ribosomal protein L16.

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

- Molecule 16 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	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 P0AG44

- Molecule 17 is a protein called 50S ribosomal protein L18.

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

- Molecule 18 is a protein called 50S ribosomal protein L19.

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

- Molecule 19 is a protein called 50S ribosomal protein L20.

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

- Molecule 20 is a protein called 50S ribosomal protein L21.

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

- Molecule 21 is a protein called 50S ribosomal protein L22.

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

- Molecule 22 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	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 P0ADZ0

- Molecule 23 is a protein called 50S ribosomal protein L24.

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

- Molecule 24 is a protein called 50S ribosomal protein L25.

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

- Molecule 25 is a protein called 50S ribosomal protein L27.

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

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
j	3	UNK	HIS	variant	UNP P0A7L8

- Molecule 26 is a protein called 50S ribosomal protein L28.

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

- Molecule 27 is a protein called 50S ribosomal protein L29.

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

- Molecule 28 is a protein called 50S ribosomal protein L30.

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

- Molecule 29 is a protein called 50S ribosomal protein L32.

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

- Molecule 30 is a protein called 50S ribosomal protein L33.

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

- Molecule 31 is a protein called 50S ribosomal protein L34.

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

- Molecule 32 is a protein called 50S ribosomal protein L35.

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

- Molecule 33 is a protein called 50S ribosomal protein L36.

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

- Molecule 34 is a RNA chain called 23S rRNA.

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

- Molecule 35 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	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 P0A7M9

- Molecule 36 is a protein called 50S ribosomal protein L1.

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

- Molecule 37 is a RNA chain called 16S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	0	1532	Total	C	N	O	P	0	0
			32873	14661	6031	10649	1532		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
38	1	218	Total	C	N	O	S	0	0
			1704	1081	305	311	7		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	2	206	1624	1028	305	288	3	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	3	205	1642	1026	315	297	4	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	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 P0A7W1

- Molecule 42 is a protein called 30S ribosomal protein S6, non-modified isoform.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	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 P02358

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	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 P02359

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
44	7	129	978	616	173	183	6	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
45	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 P0A7X3

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
46	9	98	786	493	150	142	1	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
47	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 P0A7R9

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
49	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 P0A7S9

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
50	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	ASP	variant	UNP P0AG59

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

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

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
53	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 P0AG63

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

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

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
K	15	THR	ALA	variant	UNP P0A7T7
K	19	VAL	GLN	variant	UNP P0A7T7

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
55	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 P0A7U3
t	83	TYR	HIS	variant	UNP P0A7U3

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
56	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 P0A7U7

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
57	v	51	421	263	86	71	1	0	0

- Molecule 58 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

- Molecule 59 is POTASSIUM ION (three-letter code: K) (formula: K).

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

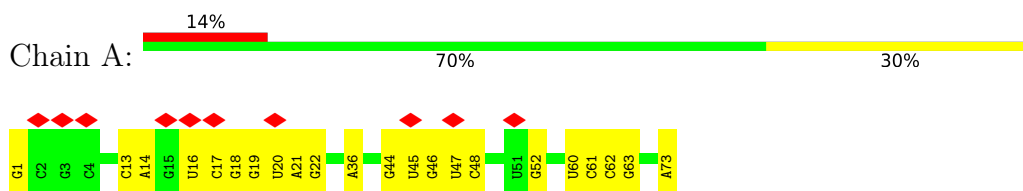
- Molecule 60 is water.

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

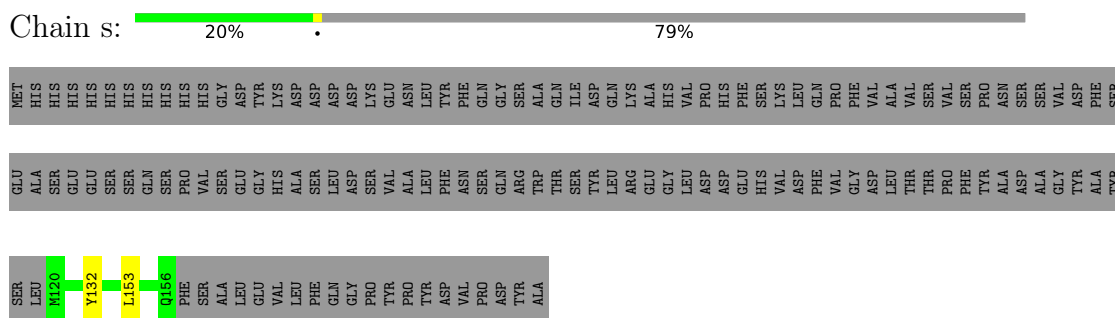
3 Residue-property plots [i](#)

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.

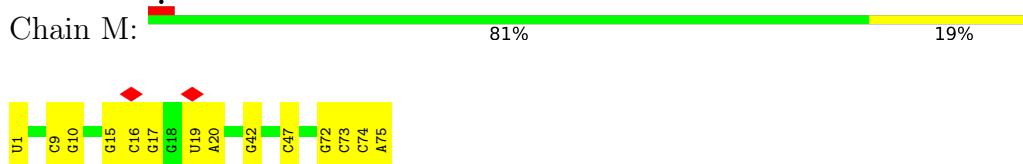
- Molecule 1: A-site tRNA



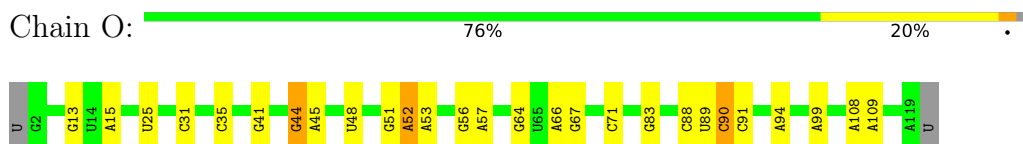
- Molecule 2: VemP nascent chain



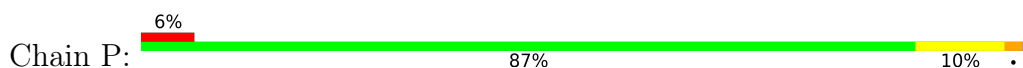
- Molecule 3: P-site tRNA

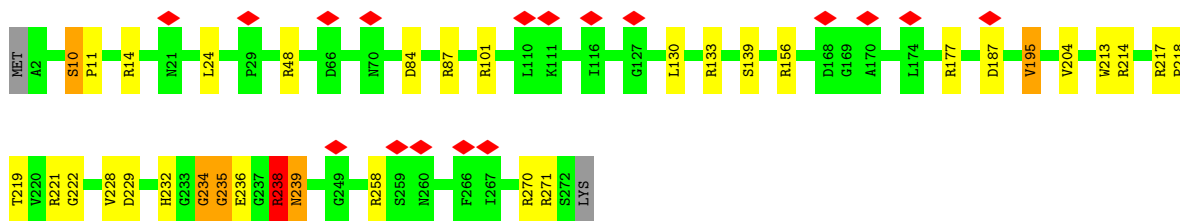


- Molecule 4: 5S rRNA

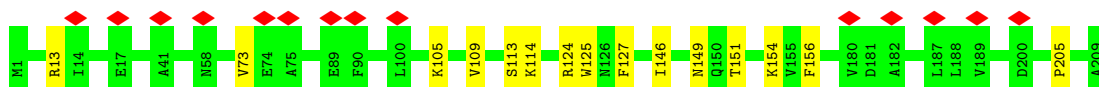


- Molecule 5: 50S ribosomal protein L2





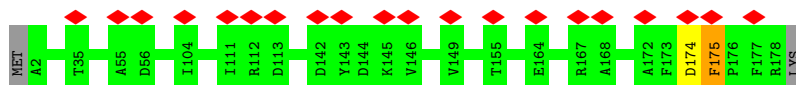
- Molecule 6: 50S ribosomal protein L3



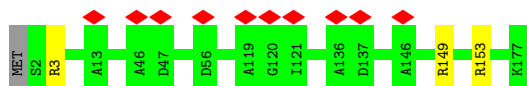
- Molecule 7: 50S ribosomal protein L4



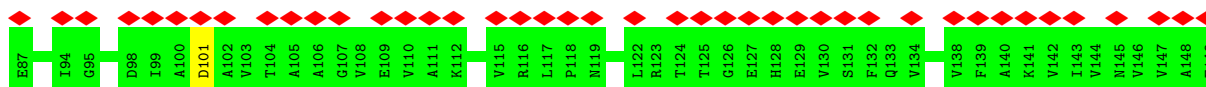
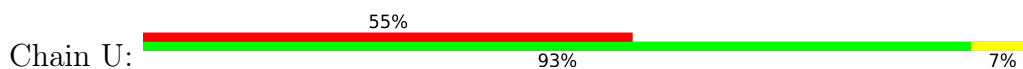
- Molecule 8: 50S ribosomal protein L5



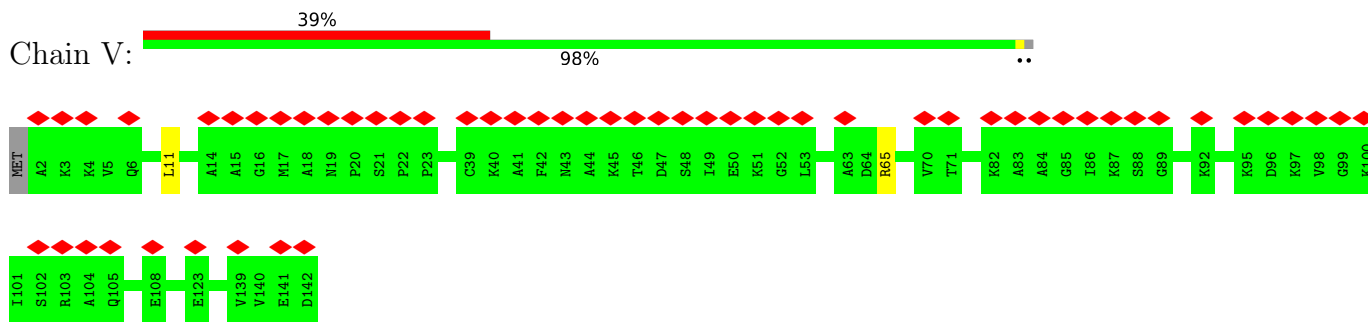
- Molecule 9: 50S ribosomal protein L6



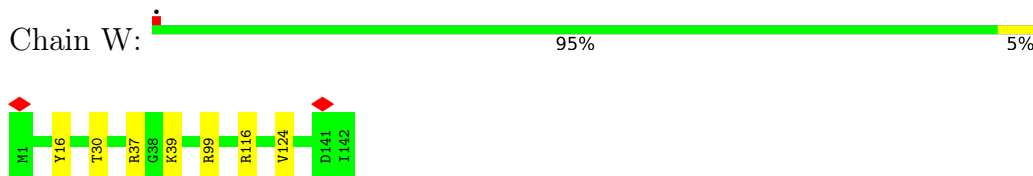
- Molecule 10: 50S ribosomal protein L9



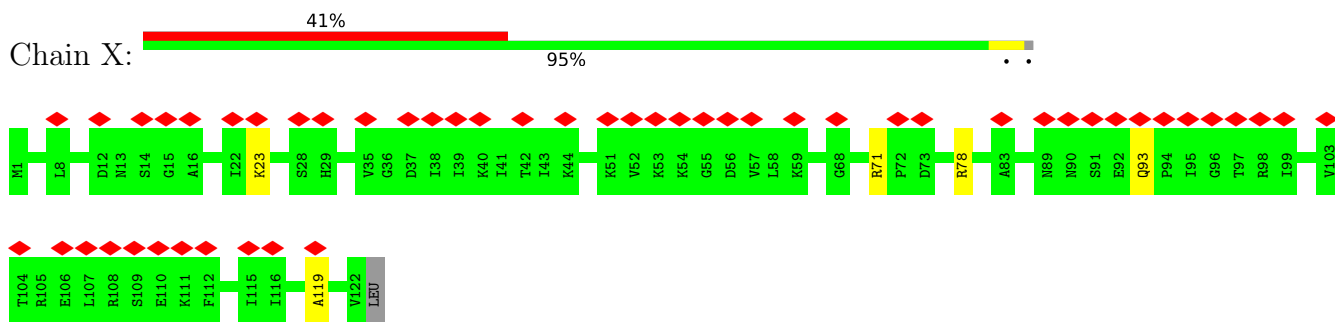
- Molecule 11: 50S ribosomal protein L11



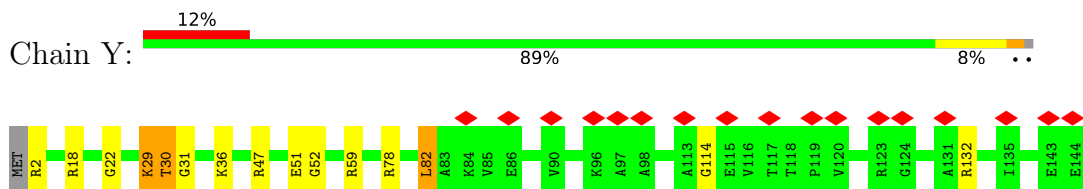
• Molecule 12: 50S ribosomal protein L13



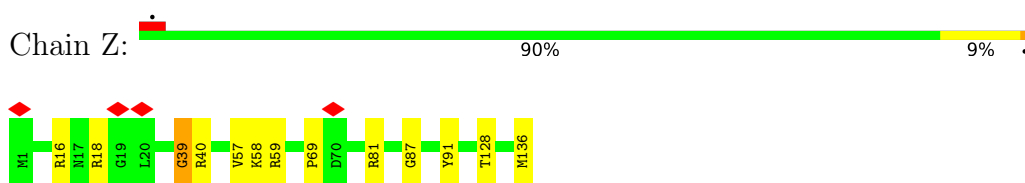
• Molecule 13: 50S ribosomal protein L14



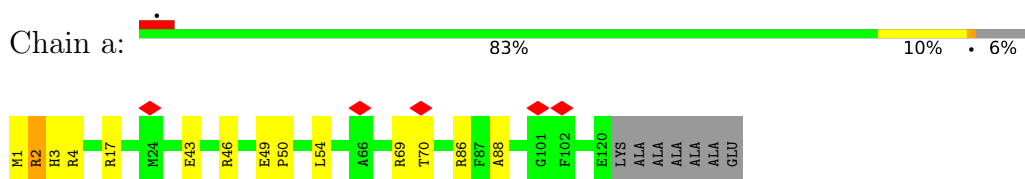
• Molecule 14: 50S ribosomal protein L15



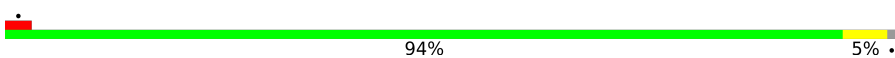
• Molecule 15: 50S ribosomal protein L16

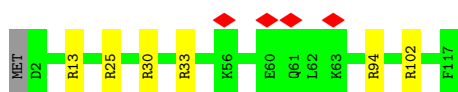


• Molecule 16: 50S ribosomal protein L17

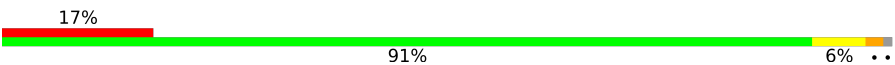


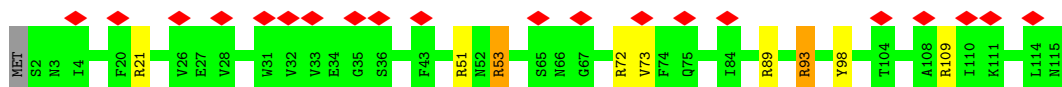
- Molecule 17: 50S ribosomal protein L18

Chain b:  94% 5%




- Molecule 18: 50S ribosomal protein L19

Chain c:  17% 91% 6%

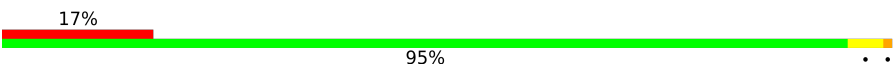


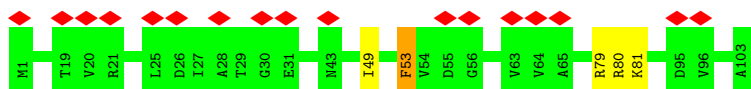
- Molecule 19: 50S ribosomal protein L20

Chain d:  88% 10%



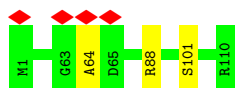
- Molecule 20: 50S ribosomal protein L21

Chain e:  17% 95%

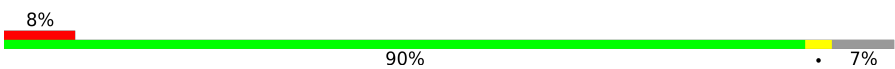


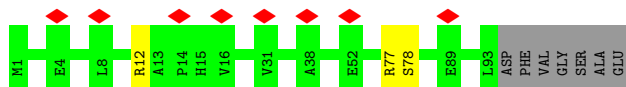
- Molecule 21: 50S ribosomal protein L22

Chain f:  97%

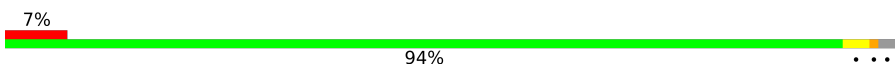


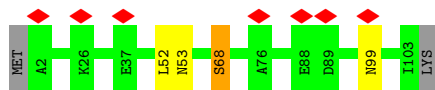
- Molecule 22: 50S ribosomal protein L23

Chain g:  8% 90% 7%

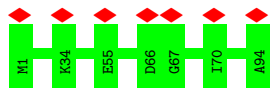


- Molecule 23: 50S ribosomal protein L24

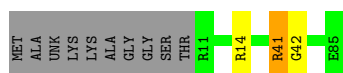
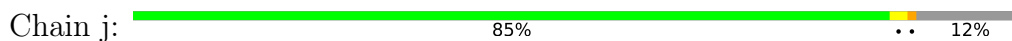
Chain h:  7% 94%



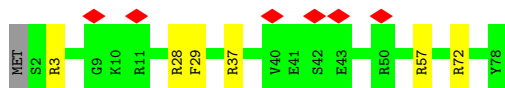
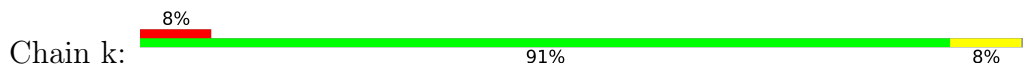
- Molecule 24: 50S ribosomal protein L25



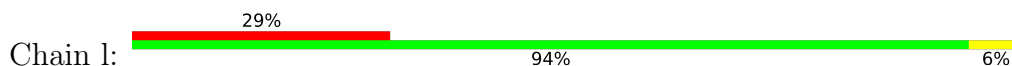
- Molecule 25: 50S ribosomal protein L27



- Molecule 26: 50S ribosomal protein L28



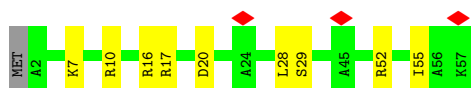
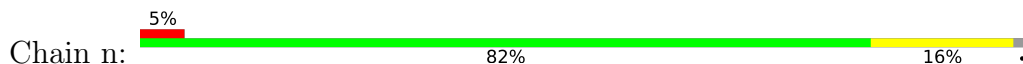
- Molecule 27: 50S ribosomal protein L29



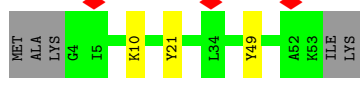
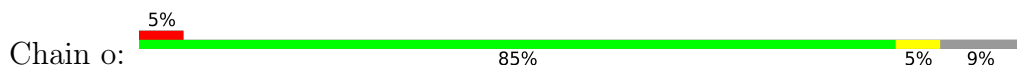
- Molecule 28: 50S ribosomal protein L30



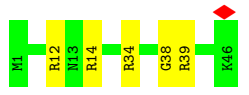
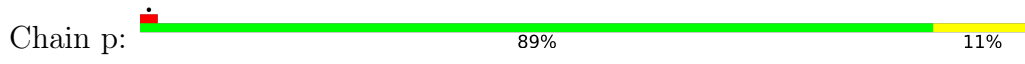
- Molecule 29: 50S ribosomal protein L32



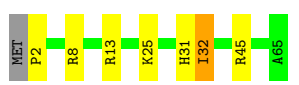
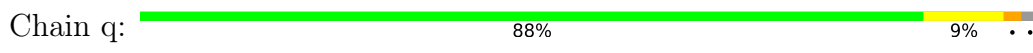
- Molecule 30: 50S ribosomal protein L33



• Molecule 31: 50S ribosomal protein L34



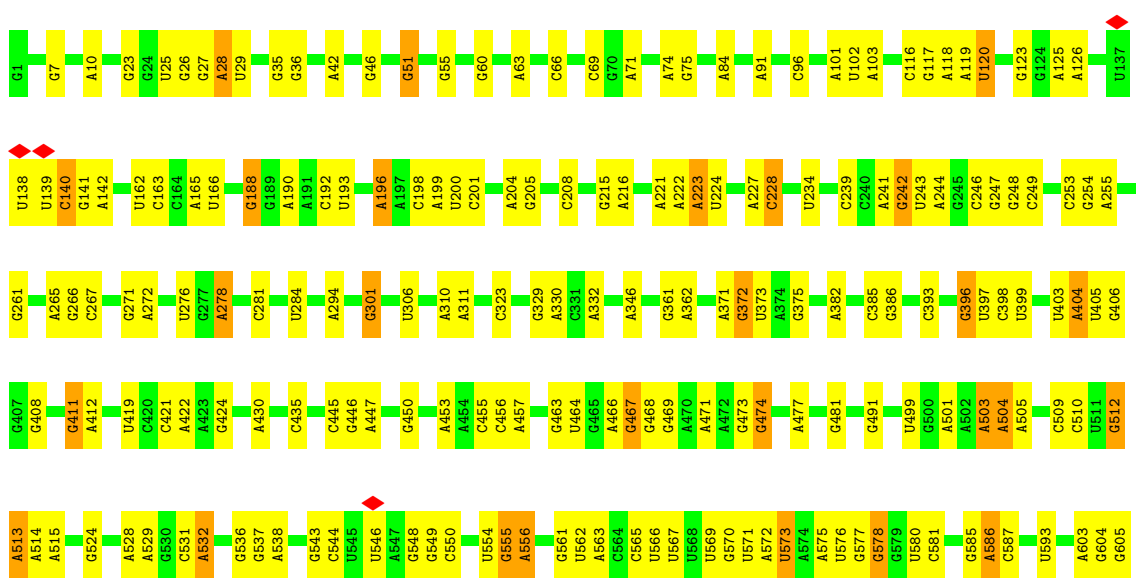
• Molecule 32: 50S ribosomal protein L35



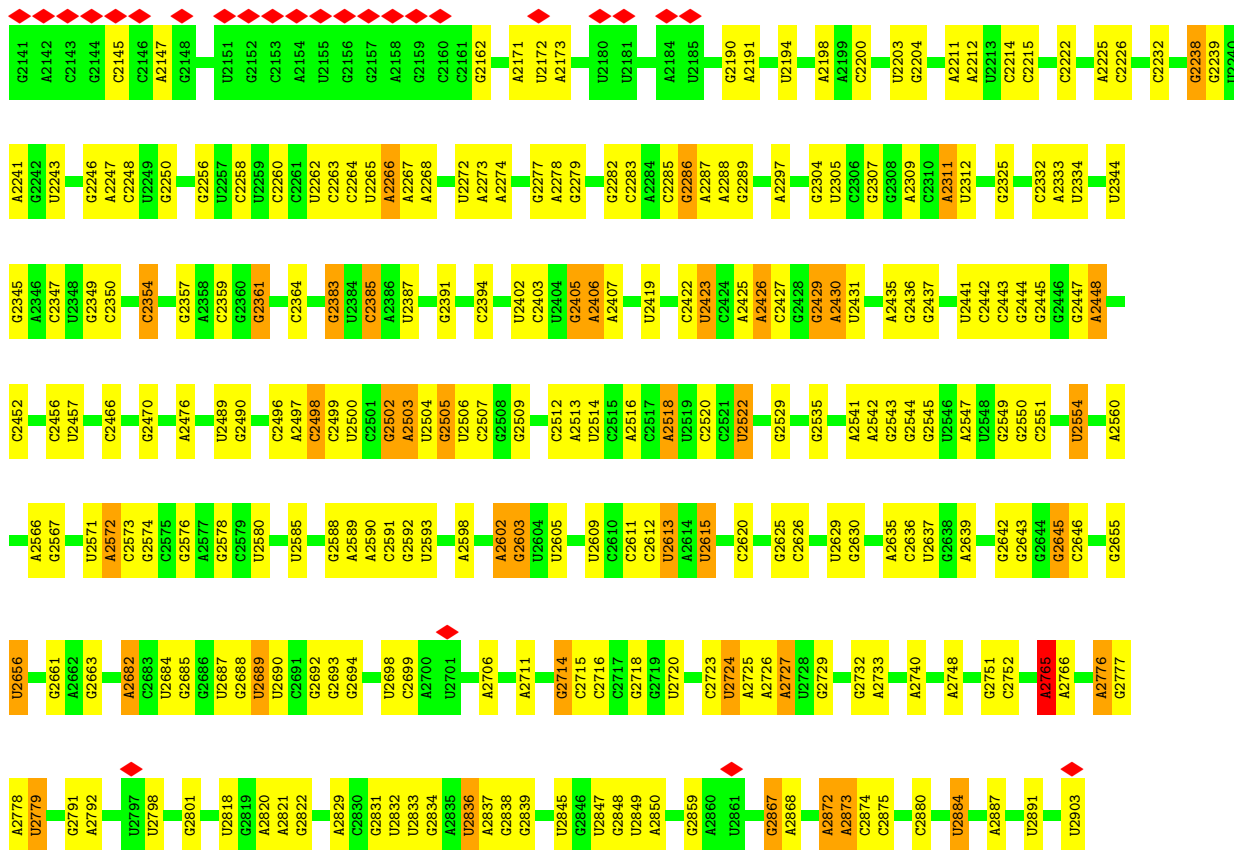
• Molecule 33: 50S ribosomal protein L36



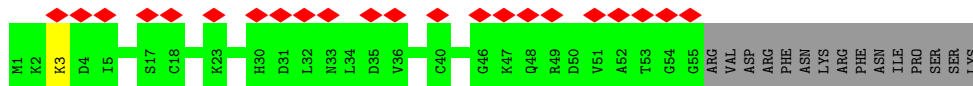
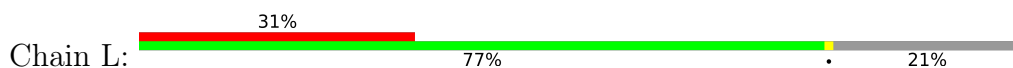
• Molecule 34: 23S rRNA



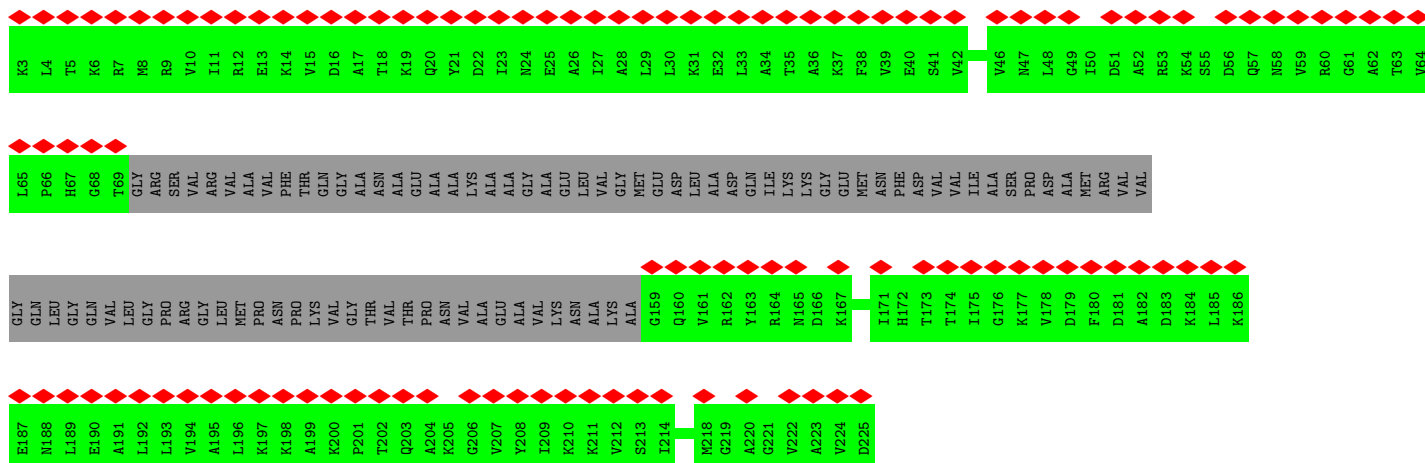
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C1764	G1770	C1771	A1772	A1773	C1774	U1777	U1778	U1779	A1780	U1781	U1782	A1783	A1784	A1785	A1786	C1787	C1788	A1789	C1790	C1793	A1794	C1795	U1796	U1797	U1798	G1799	C1800	A1801	A1802	A1805	A1808	A1809	A1810	G1811	U1812	G1813	G1814	A1815	C1816	G1817	C1822	G1823	G1824	U1825	G1826	U1827	G1828	U1829	C1830	G1831	C1832	C1833
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G697	C698	A699	G704	C717	G725	U726	A727	G728	C729	A730	G733	U738	A739	C740	A742	G745	U746	U747	G748	A752	G760	A761	A764	C765	G771	C772	U773	G774	G775	G776	G777	G780	A781	A782	A783	G784	C785	C787	C788	U790	A792	C795	C796									
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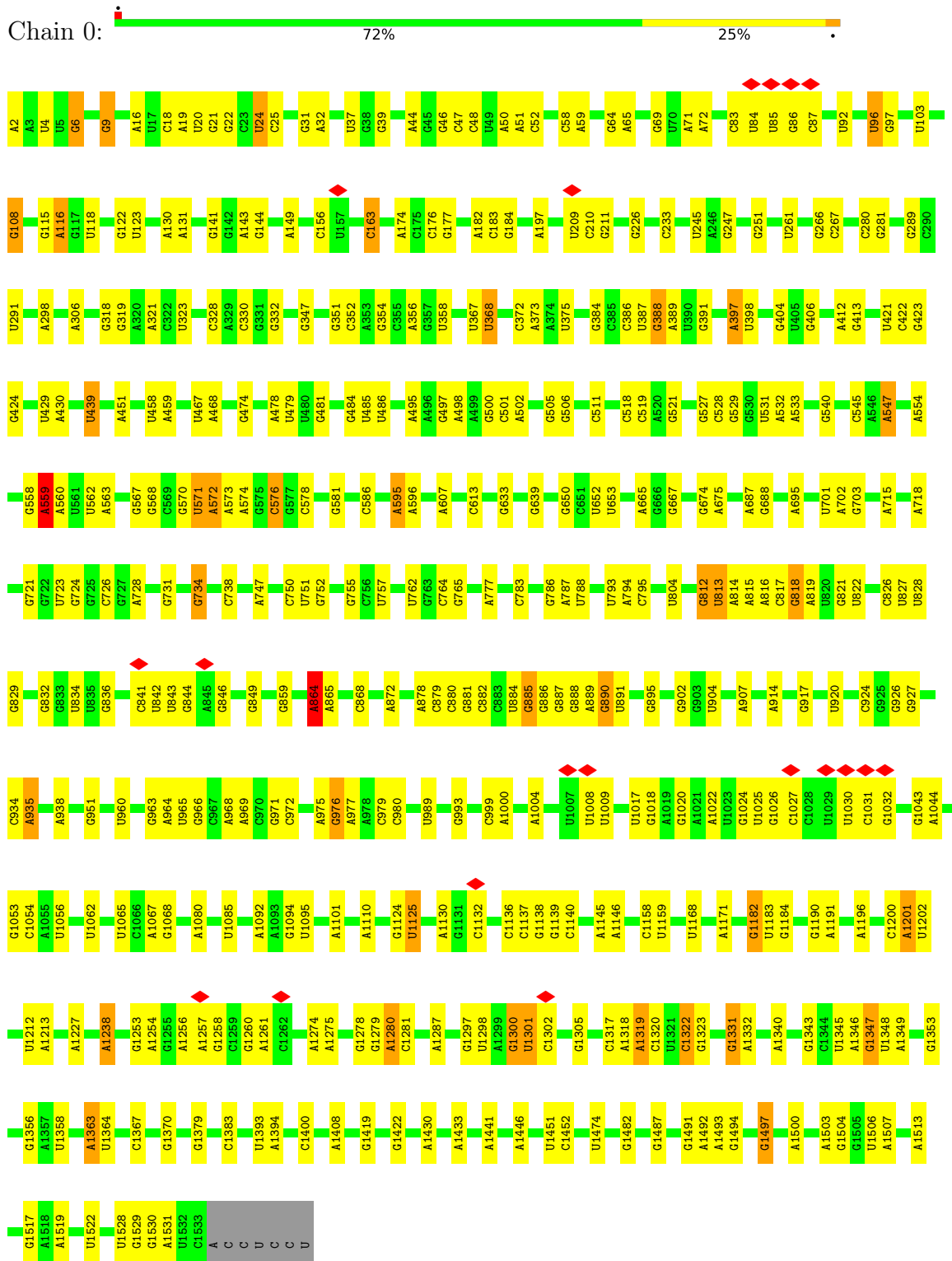
• Molecule 35: 50S ribosomal protein L31

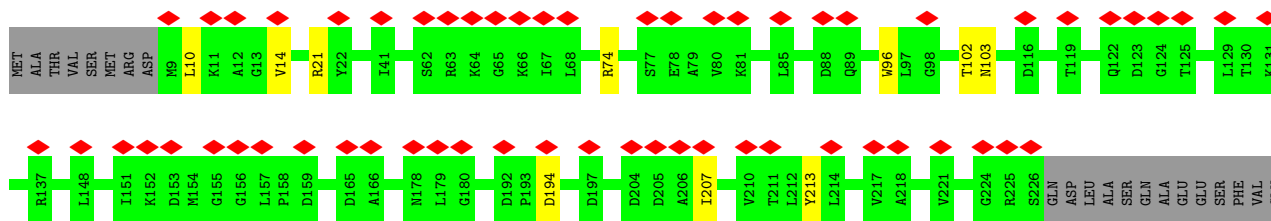


• Molecule 36: 50S ribosomal protein L1

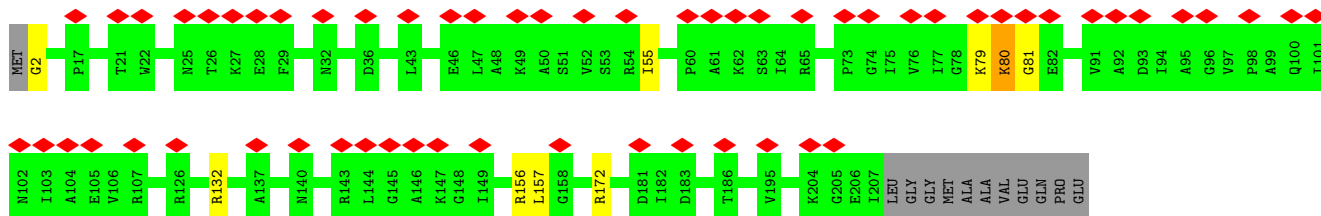


• Molecule 37: 16S rRNA





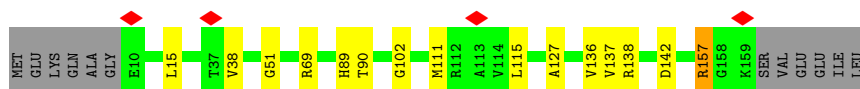
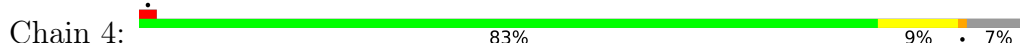
• Molecule 39: 30S ribosomal protein S3



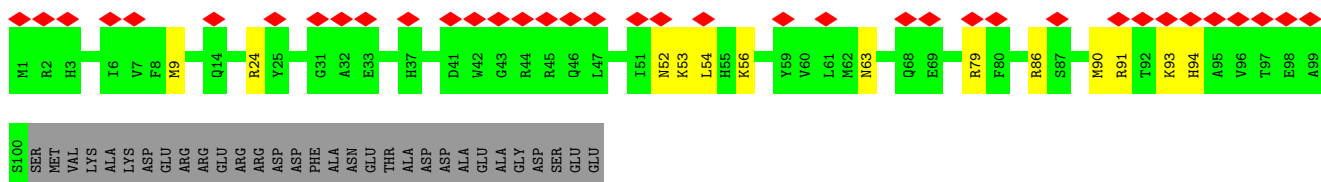
• Molecule 40: 30S ribosomal protein S4



• Molecule 41: 30S ribosomal protein S5

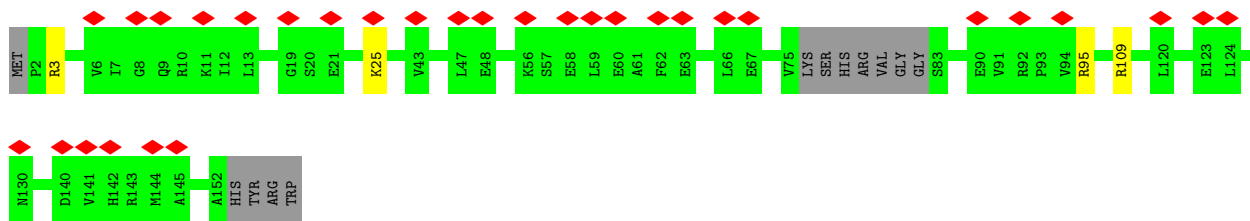


• Molecule 42: 30S ribosomal protein S6, non-modified isoform

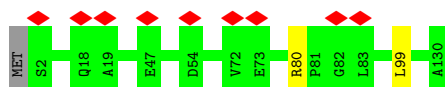


• Molecule 43: 30S ribosomal protein S7

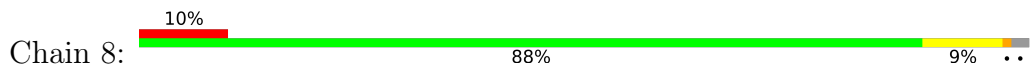




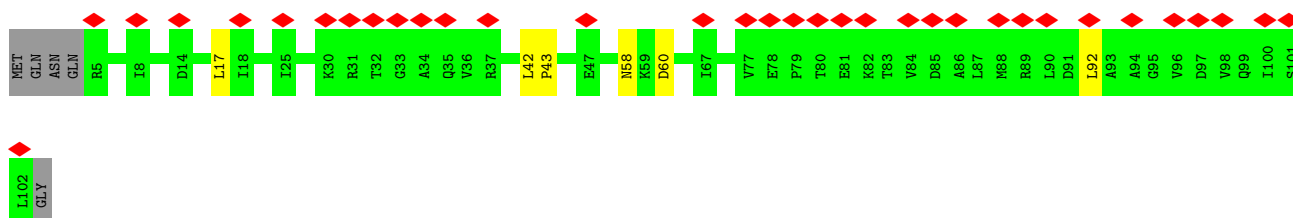
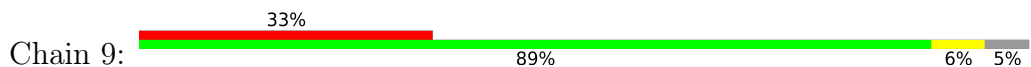
- Molecule 44: 30S ribosomal protein S8



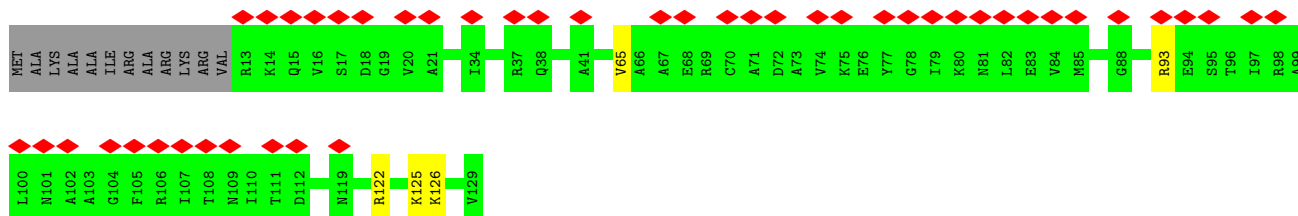
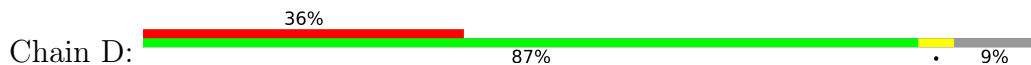
- Molecule 45: 30S ribosomal protein S9



- Molecule 46: 30S ribosomal protein S10

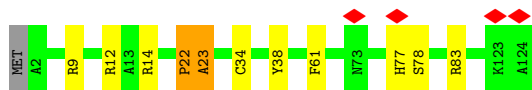


- Molecule 47: 30S ribosomal protein S11

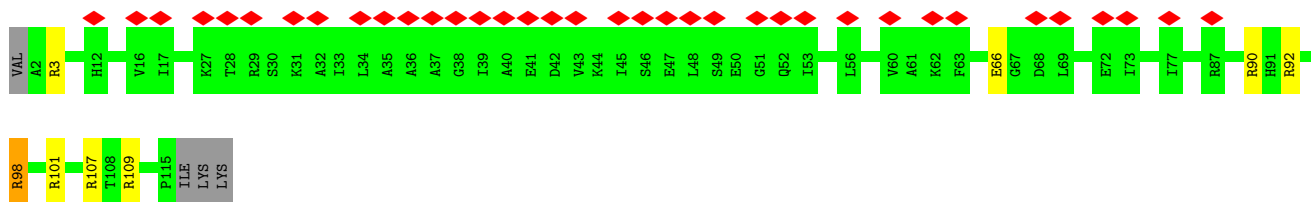
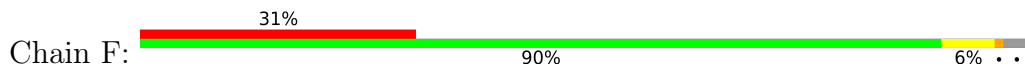


- Molecule 48: 30S ribosomal protein S12

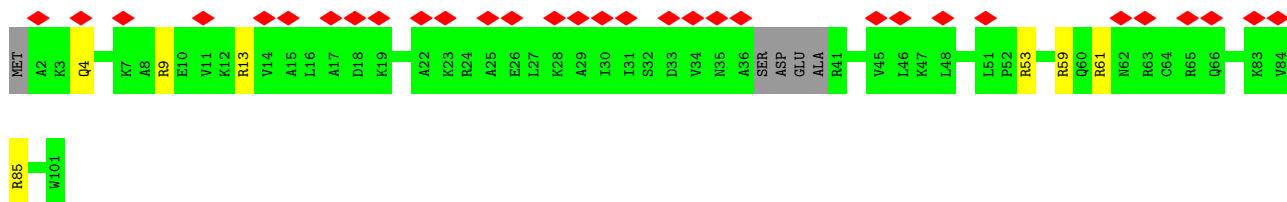
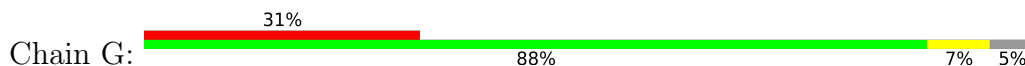




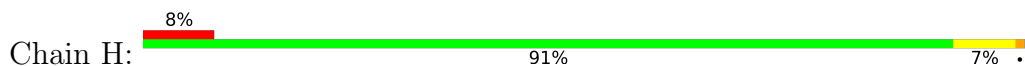
• Molecule 49: 30S ribosomal protein S13



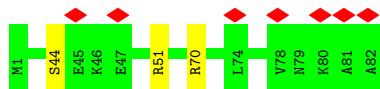
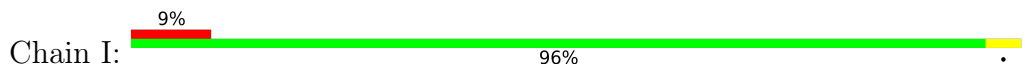
• Molecule 50: 30S ribosomal protein S14



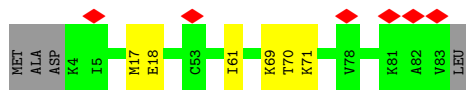
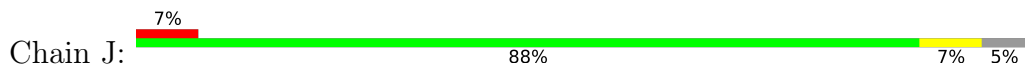
• Molecule 51: 30S ribosomal protein S15



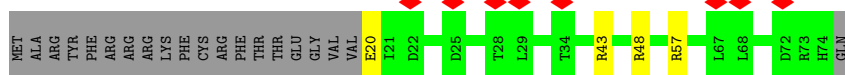
• Molecule 52: 30S ribosomal protein S16



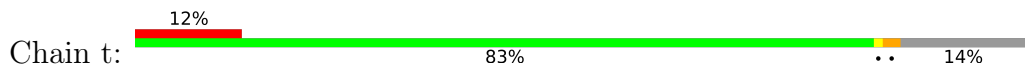
• Molecule 53: 30S ribosomal protein S17



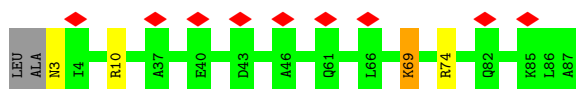
• Molecule 54: 30S ribosomal protein S18



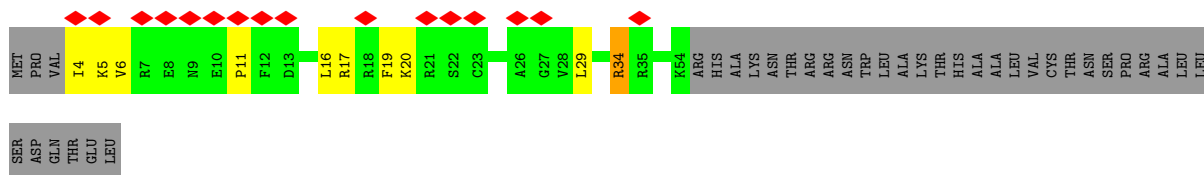
• Molecule 55: 30S ribosomal protein S19



• Molecule 56: 30S ribosomal protein S20



• Molecule 57: 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	75081	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 ($e^-/\text{\AA}^2$)	40	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	4000	Depositor
Magnification	Not provided	
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	2.540	Depositor
Minimum map value	-0.736	Depositor
Average map value	-0.008	Depositor
Map value standard deviation	0.148	Depositor
Recommended contour level	0.45	Depositor
Map size (\AA)	654.0, 654.0, 654.0	wwPDB
Map dimensions	600, 600, 600	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.09, 1.09, 1.09	Depositor

5 Model quality i

5.1 Standard geometry i

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.66	1/1744 (0.1%)	0.86	0/2716
2	s	0.90	1/326 (0.3%)	0.80	1/441 (0.2%)
3	M	0.63	3/1779 (0.2%)	0.83	2/2768 (0.1%)
4	O	0.79	1/2828 (0.0%)	0.88	7/4410 (0.2%)
5	P	1.41	22/2121 (1.0%)	1.32	27/2852 (0.9%)
6	Q	1.18	3/1585 (0.2%)	1.13	8/2134 (0.4%)
7	R	0.97	3/1571 (0.2%)	1.02	9/2113 (0.4%)
8	S	0.67	0/1434	0.85	0/1926
9	T	0.67	0/1342	0.83	4/1816 (0.2%)
10	U	0.51	0/1122	0.78	1/1515 (0.1%)
11	V	0.53	0/1045	0.66	0/1410
12	W	1.10	3/1151 (0.3%)	1.10	7/1551 (0.5%)
13	X	1.15	0/947	1.19	4/1268 (0.3%)
14	Y	1.30	3/1053 (0.3%)	1.38	12/1403 (0.9%)
15	Z	1.13	2/1092 (0.2%)	1.19	6/1460 (0.4%)
16	a	1.28	3/973 (0.3%)	1.29	10/1301 (0.8%)
17	b	0.84	2/901 (0.2%)	1.08	8/1209 (0.7%)
18	c	1.09	3/927 (0.3%)	1.19	8/1240 (0.6%)
19	d	1.32	4/959 (0.4%)	1.37	15/1278 (1.2%)
20	e	1.08	1/828 (0.1%)	1.08	3/1107 (0.3%)
21	f	1.02	1/864 (0.1%)	1.09	1/1156 (0.1%)
22	g	0.91	0/744	1.01	1/994 (0.1%)
23	h	0.82	1/787 (0.1%)	0.89	0/1051
24	i	0.78	0/765	0.87	0/1025
25	j	1.21	2/575 (0.3%)	1.29	5/762 (0.7%)
26	k	1.09	1/634 (0.2%)	1.15	6/848 (0.7%)
27	l	0.71	0/509	1.04	4/677 (0.6%)
28	m	0.86	0/452	1.08	2/605 (0.3%)
29	n	1.16	2/449 (0.4%)	1.42	7/599 (1.2%)
30	o	1.31	7/416 (1.7%)	0.96	1/554 (0.2%)
31	p	1.38	3/379 (0.8%)	1.76	6/498 (1.2%)
32	q	1.15	0/512	1.26	6/676 (0.9%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
33	r	1.16	1/302 (0.3%)	1.35	5/397 (1.3%)
34	N	1.24	514/69681 (0.7%)	1.04	349/108706 (0.3%)
35	L	0.61	0/426	0.78	0/570
36	C	0.28	0/1034	0.51	0/1387
37	0	0.97	134/36809 (0.4%)	0.93	106/57423 (0.2%)
38	1	0.82	2/1735 (0.1%)	0.94	4/2338 (0.2%)
39	2	0.85	1/1651 (0.1%)	0.95	4/2225 (0.2%)
40	3	0.76	0/1664	0.98	6/2227 (0.3%)
41	4	1.12	1/1118 (0.1%)	1.21	7/1504 (0.5%)
42	5	0.90	1/835 (0.1%)	1.03	4/1128 (0.4%)
43	6	0.66	0/1142	0.95	6/1532 (0.4%)
44	7	0.88	0/988	0.99	2/1326 (0.2%)
45	8	0.86	0/1033	1.13	7/1375 (0.5%)
46	9	0.74	0/796	1.01	2/1077 (0.2%)
47	D	0.86	1/892 (0.1%)	1.03	3/1205 (0.2%)
48	E	1.09	3/968 (0.3%)	1.22	7/1300 (0.5%)
49	F	0.85	1/892 (0.1%)	1.12	9/1193 (0.8%)
50	G	0.86	0/784	1.14	7/1043 (0.7%)
51	H	0.94	0/717	1.13	8/959 (0.8%)
52	I	0.94	0/658	1.16	3/884 (0.3%)
53	J	0.82	0/657	1.02	0/881
54	K	0.98	1/462 (0.2%)	1.10	2/621 (0.3%)
55	t	0.81	0/652	1.05	3/877 (0.3%)
56	u	0.89	0/670	1.06	3/888 (0.3%)
57	v	0.99	1/426 (0.2%)	1.15	2/565 (0.4%)
All	All	1.09	733/159806 (0.5%)	1.02	720/238994 (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
5	P	0	3
6	Q	0	1
8	S	0	2
10	U	0	1
11	V	0	1
14	Y	0	2
15	Z	0	2
23	h	0	1
32	q	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
34	N	0	6
37	0	0	5
38	1	0	3
39	2	0	2
41	4	0	5
42	5	0	2
45	8	0	4
47	D	0	1
48	E	0	2
53	J	0	2
55	t	0	1
56	u	0	1
57	v	0	1
All	All	0	49

All (733) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	N	2873	A	C6-N1	-20.40	1.21	1.35
34	N	2765	A	C6-N1	-18.58	1.22	1.35
34	N	2502	G	P-OP2	16.61	1.77	1.49
34	N	503	A	C6-N1	-15.24	1.24	1.35
34	N	1156	A	P-OP2	15.21	1.74	1.49
37	0	1238	A	C6-N1	-13.82	1.25	1.35
5	P	213	TRP	CD2-CE2	13.68	1.57	1.41
37	0	24	U	N3-C4	-13.61	1.26	1.38
34	N	1333	G	P-OP2	12.80	1.70	1.49
34	N	783	A	P-OP2	12.72	1.70	1.49
34	N	945	A	P-OP2	12.25	1.69	1.49
34	N	1639	C	P-OP1	12.09	1.69	1.49
34	N	1664	A	P-OP2	11.93	1.69	1.49
34	N	945	A	P-OP1	11.82	1.69	1.49
34	N	310	A	C6-N1	-11.74	1.27	1.35
34	N	1670	C	P-OP1	11.55	1.68	1.49
5	P	213	TRP	CZ3-CH2	11.48	1.58	1.40
34	N	1141	U	N3-C4	-11.46	1.28	1.38
37	0	559	A	N1-C2	11.42	1.44	1.34
34	N	2074	U	P-OP1	11.36	1.68	1.49
34	N	234	U	N3-C4	-11.32	1.28	1.38
37	0	368	U	N3-C4	-11.30	1.28	1.38
5	P	213	TRP	CB-CG	-11.08	1.30	1.50
37	0	37	U	N3-C4	-11.07	1.28	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	N	2588	G	P-OP1	11.04	1.67	1.49
34	N	828	U	O3'-P	-10.86	1.48	1.61
34	N	2005	A	P-OP1	10.77	1.67	1.49
34	N	2349	G	O3'-P	-10.74	1.48	1.61
34	N	2445	G	O3'-P	-10.73	1.48	1.61
34	N	827	U	P-OP1	10.61	1.67	1.49
34	N	450	G	P-OP2	10.60	1.67	1.49
1	A	1	G	OP3-P	-10.57	1.48	1.61
34	N	2272	U	N3-C4	-10.56	1.28	1.38
34	N	963	U	O3'-P	-10.44	1.48	1.61
34	N	932	U	N3-C4	-10.41	1.29	1.38
34	N	943	A	P-OP2	10.32	1.66	1.49
34	N	2589	A	O3'-P	-10.25	1.48	1.61
34	N	2060	A	O3'-P	-10.19	1.49	1.61
23	h	68	SER	CB-OG	10.17	1.55	1.42
34	N	1777	U	O3'-P	-10.17	1.49	1.61
3	M	1	U	OP3-P	-10.14	1.49	1.61
34	N	2025	C	P-OP2	10.07	1.66	1.49
37	0	757	U	O3'-P	-10.06	1.49	1.61
37	0	1358	U	N3-C4	-10.02	1.29	1.38
34	N	567	U	P-OP1	10.02	1.66	1.49
37	0	578	C	P-OP1	10.01	1.66	1.49
37	0	1301	U	N3-C4	9.97	1.47	1.38
34	N	800	A	P-OP1	9.96	1.65	1.49
34	N	782	A	O3'-P	-9.89	1.49	1.61
37	0	20	U	O3'-P	-9.86	1.49	1.61
34	N	1968	G	O3'-P	-9.84	1.49	1.61
30	o	21	TYR	CE2-CZ	-9.82	1.25	1.38
37	0	24	U	C2-N3	9.81	1.44	1.37
34	N	787	C	O3'-P	-9.81	1.49	1.61
34	N	692	C	O3'-P	-9.78	1.49	1.61
34	N	2687	U	O3'-P	-9.75	1.49	1.61
34	N	825	A	O3'-P	-9.71	1.49	1.61
34	N	1604	C	P-OP1	9.71	1.65	1.49
34	N	1009	A	O3'-P	-9.69	1.49	1.61
34	N	2720	U	C2-N3	9.69	1.44	1.37
34	N	2615	U	P-OP1	9.68	1.65	1.49
34	N	1774	C	P-OP1	9.67	1.65	1.49
37	0	21	G	P-OP1	9.66	1.65	1.49
34	N	2522	U	C2-N3	9.66	1.44	1.37
34	N	585	G	O3'-P	-9.60	1.49	1.61
34	N	1257	C	O3'-P	-9.49	1.49	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	N	2344	U	N3-C4	-9.41	1.29	1.38
34	N	963	U	P-OP1	9.30	1.64	1.49
34	N	554	U	O3'-P	-9.30	1.50	1.61
34	N	2019	A	O3'-P	-9.29	1.50	1.61
34	N	809	G	O3'-P	-9.27	1.50	1.61
34	N	1828	G	P-OP2	9.25	1.64	1.49
34	N	2025	C	O3'-P	-9.24	1.50	1.61
34	N	2550	G	O3'-P	-9.23	1.50	1.61
34	N	576	U	P-OP1	9.21	1.64	1.49
34	N	2593	U	O3'-P	-9.19	1.50	1.61
37	0	667	G	O3'-P	-9.14	1.50	1.61
34	N	116	C	O3'-P	-9.13	1.50	1.61
34	N	2050	C	O3'-P	-9.09	1.50	1.61
34	N	1269	A	P-OP2	9.07	1.64	1.49
34	N	445	C	O3'-P	-9.06	1.50	1.61
34	N	984	A	O3'-P	-9.06	1.50	1.61
34	N	306	U	N3-C4	9.03	1.46	1.38
34	N	948	C	P-OP1	9.03	1.64	1.49
37	0	882	C	O3'-P	-9.03	1.50	1.61
34	N	1375	U	O3'-P	-8.94	1.50	1.61
34	N	1152	C	O3'-P	-8.93	1.50	1.61
34	N	673	C	O3'-P	-8.85	1.50	1.61
34	N	2588	G	O3'-P	-8.84	1.50	1.61
34	N	2588	G	P-OP2	8.75	1.63	1.49
34	N	397	U	O3'-P	-8.73	1.50	1.61
34	N	859	G	O3'-P	8.73	1.71	1.61
37	0	827	U	N3-C4	-8.71	1.30	1.38
34	N	2543	G	P-OP1	8.66	1.63	1.49
34	N	1019	U	O3'-P	-8.65	1.50	1.61
34	N	2052	A	O3'-P	-8.64	1.50	1.61
34	N	1774	C	O3'-P	-8.60	1.50	1.61
34	N	2576	G	P-OP1	8.59	1.63	1.49
34	N	120	U	P-OP1	8.58	1.63	1.49
34	N	1612	C	O3'-P	-8.58	1.50	1.61
34	N	1664	A	P-OP1	8.49	1.63	1.49
34	N	2714	G	P-OP2	8.49	1.63	1.49
34	N	2698	U	O3'-P	-8.47	1.50	1.61
33	r	38	GLY	N-CA	8.46	1.58	1.46
34	N	2635	A	O3'-P	-8.46	1.50	1.61
34	N	200	U	O3'-P	-8.44	1.51	1.61
5	P	195	VAL	CB-CG1	-8.42	1.35	1.52
34	N	503	A	N1-C2	8.38	1.41	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	N	1994	C	O3'-P	-8.35	1.51	1.61
34	N	1658	C	O3'-P	-8.34	1.51	1.61
37	0	812	G	O3'-P	8.32	1.71	1.61
34	N	1751	U	O3'-P	-8.29	1.51	1.61
37	0	1500	A	O3'-P	-8.29	1.51	1.61
34	N	499	U	N3-C4	8.28	1.46	1.38
34	N	2466	C	O3'-P	-8.28	1.51	1.61
34	N	1831	G	O3'-P	-8.27	1.51	1.61
34	N	641	U	O3'-P	-8.26	1.51	1.61
34	N	955	U	O3'-P	-8.26	1.51	1.61
34	N	1900	A	O3'-P	8.23	1.71	1.61
34	N	2503	A	P-OP2	8.23	1.62	1.49
34	N	2740	A	O3'-P	-8.21	1.51	1.61
34	N	2498	C	P-OP2	8.20	1.62	1.49
34	N	826	U	P-OP1	8.20	1.62	1.49
34	N	2613	U	N3-C4	-8.17	1.31	1.38
34	N	1780	A	P-OP1	8.16	1.62	1.49
34	N	453	A	P-OP1	8.15	1.62	1.49
34	N	2022	U	P-OP1	8.13	1.62	1.49
14	Y	18	ARG	CZ-NH1	8.12	1.43	1.33
34	N	1353	A	O3'-P	-8.10	1.51	1.61
34	N	2489	U	O3'-P	-8.06	1.51	1.61
34	N	2605	U	O3'-P	-8.00	1.51	1.61
34	N	1658	C	P-OP1	8.00	1.62	1.49
34	N	2437	G	O3'-P	-7.98	1.51	1.61
34	N	1254	A	O3'-P	-7.97	1.51	1.61
34	N	2264	C	O3'-P	-7.88	1.51	1.61
34	N	2006	C	P-OP1	7.87	1.62	1.49
34	N	1813	G	O3'-P	-7.86	1.51	1.61
34	N	839	U	O3'-P	-7.83	1.51	1.61
34	N	2590	A	O3'-P	-7.83	1.51	1.61
34	N	2502	G	O5'-C5'	-7.80	1.30	1.42
34	N	733	G	O3'-P	-7.78	1.51	1.61
34	N	2265	U	O3'-P	-7.77	1.51	1.61
34	N	192	C	P-OP1	7.76	1.62	1.49
34	N	192	C	O3'-P	-7.75	1.51	1.61
34	N	2062	A	P-OP2	7.75	1.62	1.49
37	0	726	C	O3'-P	-7.75	1.51	1.61
34	N	1782	U	P-OP1	7.73	1.62	1.49
34	N	1794	A	O3'-P	-7.71	1.51	1.61
34	N	1189	A	O3'-P	-7.71	1.51	1.61
34	N	2447	G	O3'-P	-7.69	1.51	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	N	372	G	O3'-P	7.67	1.70	1.61
5	P	204	VAL	CB-CG2	-7.65	1.36	1.52
34	N	515	A	O3'-P	-7.64	1.51	1.61
34	N	1778	U	O3'-P	-7.64	1.51	1.61
34	N	1268	A	P-OP1	7.64	1.61	1.49
34	N	569	U	O3'-P	-7.63	1.51	1.61
34	N	832	U	O3'-P	-7.60	1.52	1.61
34	N	2518	A	P-OP2	7.60	1.61	1.49
34	N	254	G	O3'-P	-7.60	1.52	1.61
34	N	2572	A	O3'-P	-7.58	1.52	1.61
34	N	1790	C	O3'-P	-7.58	1.52	1.61
34	N	810	U	P-OP1	7.58	1.61	1.49
34	N	464	U	O3'-P	-7.56	1.52	1.61
34	N	997	G	O3'-P	-7.56	1.52	1.61
34	N	2272	U	C4-O4	-7.52	1.17	1.23
34	N	2822	G	O3'-P	-7.52	1.52	1.61
14	Y	22	GLY	C-O	-7.51	1.11	1.23
34	N	821	A	O3'-P	-7.50	1.52	1.61
37	0	1367	C	O3'-P	-7.50	1.52	1.61
14	Y	51	GLU	C-O	7.50	1.37	1.23
17	b	30	ARG	CZ-NH1	7.50	1.42	1.33
34	N	2620	C	O3'-P	-7.50	1.52	1.61
34	N	1771	C	O3'-P	-7.48	1.52	1.61
34	N	2867	G	O3'-P	7.48	1.70	1.61
34	N	1970	A	P-OP2	7.47	1.61	1.49
37	0	1238	A	N1-C2	7.46	1.41	1.34
34	N	2031	A	P-OP1	-7.45	1.36	1.49
37	0	884	U	C4-O4	-7.43	1.17	1.23
34	N	1678	A	P-OP2	7.42	1.61	1.49
34	N	2061	G	C2'-O2'	7.42	1.51	1.41
34	N	2081	U	O3'-P	-7.42	1.52	1.61
34	N	2625	G	O3'-P	-7.41	1.52	1.61
37	0	1393	U	O3'-P	-7.41	1.52	1.61
34	N	1828	G	P-OP1	7.40	1.61	1.49
42	5	63	ASN	C-O	-7.39	1.09	1.23
34	N	676	A	O3'-P	-7.38	1.52	1.61
34	N	975	A	P-OP2	7.38	1.61	1.49
34	N	538	A	O3'-P	-7.38	1.52	1.61
34	N	566	U	O3'-P	-7.37	1.52	1.61
34	N	2837	A	O3'-P	-7.36	1.52	1.61
34	N	2637	U	O3'-P	-7.35	1.52	1.61
34	N	2444	G	O3'-P	-7.32	1.52	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	N	2359	C	O3'-P	-7.31	1.52	1.61
34	N	1822	C	O3'-P	-7.28	1.52	1.61
34	N	2232	C	O3'-P	-7.28	1.52	1.61
34	N	2072	C	O3'-P	-7.27	1.52	1.61
5	P	221	ARG	CB-CG	-7.24	1.32	1.52
34	N	2247	A	O3'-P	-7.24	1.52	1.61
34	N	2344	U	C2-N3	-7.24	1.32	1.37
34	N	2598	A	O3'-P	-7.24	1.52	1.61
37	O	22	G	O3'-P	-7.22	1.52	1.61
34	N	198	C	O3'-P	-7.22	1.52	1.61
34	N	1261	C	O3'-P	-7.21	1.52	1.61
34	N	2457	U	O3'-P	-7.19	1.52	1.61
34	N	2542	A	O3'-P	-7.19	1.52	1.61
34	N	2684	U	O3'-P	-7.19	1.52	1.61
34	N	1298	C	O3'-P	-7.17	1.52	1.61
37	O	387	U	O3'-P	-7.17	1.52	1.61
34	N	940	G	O3'-P	-7.16	1.52	1.61
34	N	2602	A	O3'-P	7.16	1.69	1.61
34	N	572	A	P-OP1	7.15	1.61	1.49
30	o	21	TYR	CG-CD1	-7.13	1.29	1.39
34	N	2016	U	O3'-P	-7.13	1.52	1.61
37	O	563	A	C6-N6	-7.11	1.28	1.33
34	N	1805	A	O3'-P	-7.11	1.52	1.61
34	N	796	C	O3'-P	-7.11	1.52	1.61
34	N	1681	G	O3'-P	-7.10	1.52	1.61
34	N	2013	A	O3'-P	-7.10	1.52	1.61
37	O	505	G	O3'-P	-7.09	1.52	1.61
34	N	25	U	O3'-P	-7.08	1.52	1.61
34	N	126	A	O3'-P	-7.07	1.52	1.61
48	E	34	CYS	CB-SG	-7.07	1.70	1.82
34	N	2013	A	C6-N6	-7.07	1.28	1.33
34	N	29	U	O3'-P	-7.06	1.52	1.61
34	N	818	G	P-OP2	7.06	1.60	1.49
34	N	571	U	O3'-P	-7.05	1.52	1.61
34	N	966	G	O3'-P	-7.05	1.52	1.61
34	N	671	C	P-OP2	7.03	1.60	1.49
34	N	1795	C	O3'-P	-7.01	1.52	1.61
34	N	2419	U	C4-O4	7.01	1.29	1.23
4	O	83	G	O3'-P	-7.01	1.52	1.61
34	N	2406	A	P-OP1	7.00	1.60	1.49
34	N	1141	U	C2-N3	-7.00	1.32	1.37
34	N	2049	G	O3'-P	-7.00	1.52	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
30	o	21	TYR	CG-CD2	-6.99	1.30	1.39
34	N	2385	C	P-OP1	6.98	1.60	1.49
34	N	773	U	O3'-P	-6.96	1.52	1.61
34	N	2499	C	P-OP2	6.96	1.60	1.49
37	0	1358	U	C4-O4	-6.96	1.18	1.23
34	N	927	A	N1-C2	6.92	1.40	1.34
34	N	680	C	O3'-P	-6.91	1.52	1.61
34	N	2332	C	O3'-P	-6.91	1.52	1.61
34	N	2051	A	O3'-P	6.91	1.69	1.61
34	N	2829	A	O3'-P	-6.91	1.52	1.61
37	0	765	G	O3'-P	-6.91	1.52	1.61
16	a	1	MET	C-O	6.90	1.36	1.23
34	N	730	A	P-OP2	6.89	1.60	1.49
34	N	2436	G	O3'-P	-6.88	1.52	1.61
34	N	784	G	O3'-P	6.86	1.69	1.61
34	N	1949	G	O3'-P	-6.86	1.52	1.61
37	0	764	C	O3'-P	-6.84	1.52	1.61
37	0	980	C	P-OP1	6.83	1.60	1.49
34	N	1824	G	P-OP2	6.80	1.60	1.49
37	0	37	U	C2-N3	-6.78	1.33	1.37
34	N	2443	C	C4'-C3'	-6.78	1.45	1.53
34	N	2572	A	P-OP1	-6.75	1.37	1.49
34	N	1394	U	O3'-P	-6.73	1.53	1.61
34	N	688	U	O3'-P	-6.73	1.53	1.61
34	N	2516	A	O3'-P	-6.72	1.53	1.61
34	N	2268	A	P-OP1	6.71	1.60	1.49
34	N	2048	G	O3'-P	-6.71	1.53	1.61
34	N	578	G	P-OP2	6.71	1.60	1.49
34	N	923	G	O3'-P	-6.71	1.53	1.61
34	N	419	U	O3'-P	-6.70	1.53	1.61
34	N	1662	U	P-OP2	6.69	1.60	1.49
5	P	10	SER	CA-CB	6.69	1.62	1.52
34	N	1782	U	O3'-P	-6.67	1.53	1.61
34	N	2694	G	O3'-P	-6.65	1.53	1.61
34	N	239	C	O3'-P	-6.65	1.53	1.61
37	0	1182	G	O3'-P	6.65	1.69	1.61
37	0	814	A	P-OP2	6.64	1.60	1.49
34	N	761	A	P-OP1	6.62	1.60	1.49
34	N	932	U	C4-O4	-6.61	1.18	1.23
34	N	1977	A	O3'-P	-6.60	1.53	1.61
34	N	2045	C	O3'-P	-6.60	1.53	1.61
34	N	2499	C	P-OP1	6.60	1.60	1.49

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	N	2260	C	O3'-P	-6.59	1.53	1.61
34	N	2289	G	O3'-P	-6.59	1.53	1.61
31	p	34	ARG	CG-CD	-6.58	1.35	1.51
34	N	117	G	O3'-P	-6.58	1.53	1.61
34	N	1649	G	O3'-P	-6.58	1.53	1.61
34	N	1191	G	O3'-P	-6.57	1.53	1.61
34	N	783	A	C4'-O4'	6.57	1.54	1.45
34	N	1960	A	O3'-P	-6.57	1.53	1.61
34	N	698	C	O3'-P	-6.56	1.53	1.61
34	N	2285	C	O3'-P	-6.56	1.53	1.61
18	c	98	TYR	CE1-CZ	6.55	1.47	1.38
5	P	271	ARG	CZ-NH1	6.55	1.41	1.33
34	N	2074	U	O3'-P	-6.55	1.53	1.61
41	4	127	ALA	C-O	-6.54	1.10	1.23
34	N	1234	U	O3'-P	-6.54	1.53	1.61
34	N	2028	U	O3'-P	-6.54	1.53	1.61
34	N	2723	C	O3'-P	-6.54	1.53	1.61
34	N	2452	C	O3'-P	-6.54	1.53	1.61
34	N	2072	C	P-OP1	6.54	1.60	1.49
34	N	1009	A	P-OP2	6.52	1.60	1.49
19	d	24	TYR	CG-CD1	6.52	1.47	1.39
34	N	393	C	P-OP1	6.51	1.60	1.49
37	0	864	A	N1-C2	6.51	1.40	1.34
5	P	139	SER	CB-OG	-6.50	1.33	1.42
34	N	2426	A	O3'-P	-6.50	1.53	1.61
34	N	193	U	O3'-P	-6.49	1.53	1.61
37	0	715	A	O3'-P	-6.49	1.53	1.61
25	j	42	GLY	N-CA	6.49	1.55	1.46
34	N	1010	A	P-OP2	6.48	1.59	1.49
34	N	1432	G	O3'-P	-6.48	1.53	1.61
34	N	2248	C	P-OP2	6.46	1.59	1.49
34	N	694	U	O3'-P	-6.46	1.53	1.61
34	N	1680	U	O3'-P	-6.46	1.53	1.61
34	N	1677	A	O3'-P	-6.45	1.53	1.61
31	p	38	GLY	CA-C	-6.45	1.41	1.51
34	N	960	A	O3'-P	-6.45	1.53	1.61
34	N	1993	U	O5'-C5'	-6.45	1.32	1.42
34	N	1334	G	O3'-P	-6.45	1.53	1.61
34	N	28	A	P-O5'	-6.44	1.53	1.59
34	N	2727	A	O3'-P	-6.44	1.53	1.61
34	N	499	U	C4-O4	-6.44	1.18	1.23
34	N	2699	C	O3'-P	-6.43	1.53	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	N	2262	U	O3'-P	-6.41	1.53	1.61
34	N	2502	G	O3'-P	-6.41	1.53	1.61
5	P	219	THR	C-O	6.40	1.35	1.23
37	0	37	U	C4-O4	-6.40	1.18	1.23
34	N	1186	G	P-OP2	6.40	1.59	1.49
19	d	49	ASP	CB-CG	6.40	1.65	1.51
37	0	1062	U	O3'-P	-6.39	1.53	1.61
34	N	632	A	O3'-P	-6.39	1.53	1.61
37	0	812	G	C3'-C2'	-6.39	1.45	1.52
34	N	1296	G	O3'-P	-6.38	1.53	1.61
6	Q	125	TRP	CE3-CZ3	-6.37	1.27	1.38
34	N	1652	A	O3'-P	-6.37	1.53	1.61
34	N	208	C	O3'-P	-6.37	1.53	1.61
30	o	49	TYR	CE1-CZ	-6.36	1.30	1.38
37	0	368	U	C2-N3	-6.36	1.33	1.37
34	N	1142	A	O3'-P	6.35	1.68	1.61
37	0	884	U	N3-C4	-6.35	1.32	1.38
34	N	745	G	O3'-P	-6.35	1.53	1.61
34	N	2243	U	P-OP1	6.34	1.59	1.49
34	N	1650	A	O3'-P	-6.34	1.53	1.61
34	N	783	A	C5-C6	-6.33	1.35	1.41
37	0	19	A	O3'-P	-6.33	1.53	1.61
57	v	34	ARG	CZ-NH1	6.32	1.41	1.33
34	N	1367	A	O3'-P	-6.32	1.53	1.61
37	0	1301	U	N1-C2	6.32	1.44	1.38
34	N	2554	U	P-OP2	-6.32	1.38	1.49
34	N	2444	G	C2'-C1'	-6.31	1.46	1.53
34	N	1671	U	P-OP2	6.30	1.59	1.49
5	P	213	TRP	CD1-NE1	6.30	1.48	1.38
34	N	1186	G	O3'-P	-6.29	1.53	1.61
34	N	408	G	O3'-P	-6.29	1.53	1.61
34	N	1327	A	P-OP2	6.28	1.59	1.49
34	N	1026	G	P-OP2	-6.27	1.38	1.49
34	N	2543	G	O5'-C5'	-6.26	1.32	1.42
37	0	920	U	O3'-P	-6.26	1.53	1.61
34	N	1004	U	O3'-P	-6.26	1.53	1.61
34	N	1141	U	C4-O4	-6.25	1.18	1.23
34	N	1142	A	C5-C6	-6.25	1.35	1.41
37	0	368	U	C4-O4	-6.24	1.18	1.23
12	W	16	TYR	CG-CD1	-6.24	1.31	1.39
37	0	613	C	O3'-P	-6.24	1.53	1.61
34	N	1006	C	O3'-P	-6.23	1.53	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	N	7	G	O3'-P	-6.23	1.53	1.61
34	N	120	U	P-OP2	6.22	1.59	1.49
37	0	572	A	P-OP1	6.22	1.59	1.49
34	N	576	U	O3'-P	-6.22	1.53	1.61
37	0	1474	U	O3'-P	-6.21	1.53	1.61
34	N	247	G	O3'-P	-6.21	1.53	1.61
34	N	26	G	O3'-P	-6.20	1.53	1.61
34	N	1342	A	P-OP2	6.20	1.59	1.49
34	N	2000	C	O3'-P	-6.20	1.53	1.61
34	N	1370	C	O3'-P	-6.19	1.53	1.61
48	E	23	ALA	N-CA	6.19	1.58	1.46
34	N	567	U	O3'-P	-6.18	1.53	1.61
37	0	439	U	C2-N3	6.18	1.42	1.37
34	N	2263	C	O3'-P	-6.18	1.53	1.61
37	0	787	A	O3'-P	-6.17	1.53	1.61
34	N	2035	G	O5'-C5'	-6.17	1.32	1.42
5	P	214	ARG	CZ-NH1	6.17	1.41	1.33
34	N	253	C	O3'-P	-6.17	1.53	1.61
34	N	411	G	P-OP1	6.17	1.59	1.49
34	N	946	C	P-OP2	6.17	1.59	1.49
37	0	1358	U	C2-N3	-6.17	1.33	1.37
37	0	498	A	N1-C2	6.17	1.39	1.34
34	N	2682	A	P-OP2	6.16	1.59	1.49
34	N	1816	C	O3'-P	-6.16	1.53	1.61
34	N	398	C	O3'-P	-6.15	1.53	1.61
34	N	1793	C	O3'-P	-6.15	1.53	1.61
34	N	1968	G	P-OP1	6.15	1.59	1.49
18	c	93	ARG	CD-NE	-6.14	1.36	1.46
34	N	244	A	O3'-P	-6.14	1.53	1.61
34	N	725	G	O3'-P	-6.12	1.53	1.61
34	N	1636	U	O3'-P	-6.12	1.53	1.61
37	0	568	G	O3'-P	-6.11	1.53	1.61
37	0	46	G	O3'-P	-6.11	1.53	1.61
34	N	1196	C	O3'-P	-6.11	1.53	1.61
37	0	581	G	O3'-P	-6.11	1.53	1.61
34	N	123	G	O3'-P	-6.10	1.53	1.61
34	N	593	U	O3'-P	-6.10	1.53	1.61
34	N	1827	U	O3'-P	-6.10	1.53	1.61
34	N	1153	C	P-OP2	6.09	1.59	1.49
34	N	1905	C	O3'-P	-6.09	1.53	1.61
34	N	2277	G	O3'-P	-6.08	1.53	1.61
37	0	356	A	O3'-P	-6.07	1.53	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	N	430	A	C6-N6	-6.07	1.29	1.33
34	N	2642	G	O3'-P	-6.06	1.53	1.61
34	N	1134	A	O3'-P	6.05	1.68	1.61
34	N	777	G	O3'-P	-6.05	1.53	1.61
16	a	2	ARG	C-O	-6.04	1.11	1.23
37	0	1522	U	O3'-P	-6.04	1.53	1.61
34	N	1368	G	O3'-P	-6.02	1.53	1.61
34	N	2776	A	C5-C6	-6.02	1.35	1.41
34	N	2503	A	P-OP1	6.02	1.59	1.49
37	0	816	A	O3'-P	-6.01	1.53	1.61
37	0	1110	A	P-OP2	6.01	1.59	1.49
34	N	1648	U	P-OP2	6.01	1.59	1.49
34	N	1205	A	O3'-P	6.01	1.68	1.61
34	N	190	A	O3'-P	-6.00	1.53	1.61
37	0	888	G	O3'-P	-6.00	1.53	1.61
34	N	1756	G	O3'-P	-5.99	1.53	1.61
34	N	727	A	P-OP1	5.99	1.59	1.49
37	0	500	G	O3'-P	-5.98	1.53	1.61
34	N	963	U	P-OP2	5.98	1.59	1.49
34	N	1324	G	O3'-P	-5.97	1.53	1.61
34	N	2003	A	O3'-P	-5.97	1.53	1.61
7	R	80	SER	C-O	-5.97	1.12	1.23
34	N	234	U	C2-N3	-5.97	1.33	1.37
34	N	699	A	O3'-P	-5.96	1.53	1.61
34	N	2442	C	O3'-P	-5.96	1.53	1.61
37	0	118	U	O3'-P	-5.96	1.54	1.61
34	N	2626	C	O3'-P	-5.96	1.54	1.61
34	N	1369	G	O3'-P	-5.95	1.54	1.61
34	N	2639	A	O3'-P	-5.95	1.54	1.61
34	N	1957	C	O3'-P	-5.95	1.54	1.61
34	N	1610	A	O3'-P	-5.95	1.54	1.61
34	N	932	U	C2-N3	-5.95	1.33	1.37
37	0	917	G	O3'-P	-5.95	1.54	1.61
37	0	1080	A	O3'-P	-5.95	1.54	1.61
34	N	524	G	O3'-P	-5.95	1.54	1.61
34	N	577	G	O3'-P	-5.94	1.54	1.61
34	N	1676	A	O3'-P	-5.93	1.54	1.61
34	N	580	U	O3'-P	-5.93	1.54	1.61
37	0	559	A	C2-N3	5.93	1.38	1.33
37	0	834	U	O3'-P	-5.92	1.54	1.61
37	0	498	A	C2-N3	5.92	1.38	1.33
34	N	2014	A	O3'-P	-5.91	1.54	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	N	1323	C	O3'-P	-5.91	1.54	1.61
34	N	2250	G	C5-C6	-5.90	1.36	1.42
34	N	1007	C	O3'-P	-5.89	1.54	1.61
34	N	2847	U	O3'-P	-5.89	1.54	1.61
34	N	1187	G	P-OP2	5.89	1.58	1.49
37	0	813	U	P-O5'	-5.88	1.53	1.59
37	0	1513	A	O3'-P	-5.88	1.54	1.61
34	N	2238	G	O3'-P	5.86	1.68	1.61
3	M	72	G	O3'-P	-5.86	1.54	1.61
34	N	1676	A	P-OP2	5.85	1.58	1.49
34	N	2571	U	O3'-P	-5.83	1.54	1.61
34	N	310	A	C5-C6	-5.83	1.35	1.41
34	N	2545	G	O3'-P	-5.83	1.54	1.61
37	0	116	A	P-OP2	5.83	1.58	1.49
34	N	1647	U	P-OP2	5.82	1.58	1.49
34	N	2272	U	O3'-P	-5.82	1.54	1.61
34	N	1264	A	O3'-P	-5.82	1.54	1.61
34	N	2779	U	O3'-P	-5.82	1.54	1.61
34	N	774	G	C2'-O2'	5.82	1.49	1.41
37	0	1054	C	P-OP2	5.82	1.58	1.49
34	N	1605	C	O3'-P	-5.81	1.54	1.61
37	0	879	C	O3'-P	-5.81	1.54	1.61
37	0	804	U	O3'-P	-5.80	1.54	1.61
37	0	323	U	O3'-P	-5.79	1.54	1.61
34	N	1665	A	P-OP2	5.79	1.58	1.49
34	N	2025	C	O5'-C5'	-5.79	1.33	1.42
37	0	788	U	O3'-P	-5.79	1.54	1.61
39	2	2	GLY	N-CA	5.78	1.54	1.46
37	0	1068	G	O3'-P	-5.77	1.54	1.61
34	N	2541	A	O3'-P	-5.77	1.54	1.61
34	N	2688	G	O3'-P	-5.77	1.54	1.61
34	N	2072	C	O5'-C5'	-5.77	1.33	1.42
37	0	545	C	O3'-P	-5.76	1.54	1.61
34	N	1602	U	C4-O4	5.76	1.28	1.23
37	0	786	G	O3'-P	-5.75	1.54	1.61
34	N	499	U	O3'-P	-5.75	1.54	1.61
37	0	233	C	O3'-P	-5.75	1.54	1.61
34	N	2612	C	O3'-P	-5.75	1.54	1.61
34	N	605	G	O3'-P	-5.74	1.54	1.61
34	N	2272	U	C2-N3	-5.74	1.33	1.37
34	N	570	G	O3'-P	-5.74	1.54	1.61
34	N	562	U	O3'-P	-5.72	1.54	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
37	0	439	U	C4-O4	-5.72	1.19	1.23
37	0	24	U	C4-O4	-5.72	1.19	1.23
34	N	382	A	O3'-P	-5.72	1.54	1.61
34	N	2429	G	P-OP2	5.71	1.58	1.49
5	P	213	TRP	CE3-CZ3	5.71	1.48	1.38
34	N	565	C	O3'-P	-5.70	1.54	1.61
34	N	28	A	O3'-P	-5.70	1.54	1.61
29	n	29	SER	CB-OG	-5.70	1.34	1.42
34	N	234	U	C4-O4	-5.70	1.19	1.23
34	N	628	G	O3'-P	-5.70	1.54	1.61
34	N	691	C	O3'-P	-5.69	1.54	1.61
34	N	2054	A	O3'-P	-5.69	1.54	1.61
34	N	2560	A	O3'-P	-5.69	1.54	1.61
5	P	221	ARG	CA-C	-5.68	1.38	1.52
26	k	29	PHE	CG-CD2	-5.68	1.30	1.38
34	N	2011	U	O3'-P	-5.68	1.54	1.61
37	0	1430	A	O3'-P	-5.67	1.54	1.61
12	W	30	THR	CB-CG2	-5.67	1.33	1.52
34	N	536	G	O3'-P	-5.66	1.54	1.61
34	N	2503	A	O3'-P	-5.66	1.54	1.61
37	0	1238	A	C5-C6	-5.66	1.35	1.41
12	W	16	TYR	CE1-CZ	-5.66	1.31	1.38
34	N	1796	U	O3'-P	-5.66	1.54	1.61
34	N	464	U	C4'-O4'	-5.65	1.38	1.45
34	N	2509	G	O3'-P	-5.65	1.54	1.61
5	P	238	ARG	C-O	5.65	1.34	1.23
37	0	868	C	O3'-P	-5.64	1.54	1.61
37	0	1363	A	C6-N6	-5.64	1.29	1.33
34	N	1742	U	O3'-P	-5.64	1.54	1.61
37	0	404	G	O3'-P	-5.63	1.54	1.61
34	N	1568	G	O3'-P	-5.62	1.54	1.61
34	N	810	U	O3'-P	-5.62	1.54	1.61
34	N	1790	C	N1-C2	-5.62	1.34	1.40
34	N	2685	G	O3'-P	-5.62	1.54	1.61
37	0	319	G	O3'-P	-5.61	1.54	1.61
37	0	570	G	O3'-P	-5.61	1.54	1.61
34	N	1783	A	O3'-P	-5.61	1.54	1.61
37	0	878	A	O3'-P	-5.61	1.54	1.61
37	0	826	C	O3'-P	-5.60	1.54	1.61
34	N	1338	G	O3'-P	-5.60	1.54	1.61
34	N	310	A	N1-C2	5.58	1.39	1.34
21	f	101	SER	CB-OG	-5.57	1.35	1.42

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	N	1351	C	O3'-P	-5.57	1.54	1.61
34	N	2448	A	P-OP1	5.57	1.58	1.49
34	N	2645	G	O3'-P	-5.56	1.54	1.61
5	P	222	GLY	C-O	-5.56	1.14	1.23
34	N	2732	G	C3'-O3'	5.56	1.50	1.42
37	0	750	C	O3'-P	-5.56	1.54	1.61
34	N	2591	C	O3'-P	-5.55	1.54	1.61
34	N	1446	C	O3'-P	-5.55	1.54	1.61
34	N	824	U	O3'-P	-5.55	1.54	1.61
34	N	2732	G	C2'-O2'	5.55	1.48	1.41
37	0	907	A	O3'-P	-5.54	1.54	1.61
7	R	81	GLY	N-CA	-5.54	1.37	1.46
34	N	1189	A	P-OP2	5.51	1.58	1.49
34	N	840	C	O3'-P	-5.51	1.54	1.61
34	N	783	A	N9-C4	-5.50	1.34	1.37
37	0	895	G	O3'-P	-5.49	1.54	1.61
34	N	693	A	O3'-P	-5.49	1.54	1.61
34	N	1802	A	C5-C6	-5.49	1.36	1.41
34	N	1328	A	O3'-P	-5.49	1.54	1.61
19	d	45	TYR	CG-CD1	-5.48	1.32	1.39
34	N	246	C	O3'-P	-5.48	1.54	1.61
37	0	963	G	O3'-P	-5.48	1.54	1.61
34	N	375	G	P-OP1	5.48	1.58	1.49
37	0	547	A	P-OP1	5.48	1.58	1.49
34	N	1670	C	O3'-P	-5.47	1.54	1.61
34	N	1021	A	C6-N6	-5.46	1.29	1.33
34	N	1708	C	O3'-P	-5.46	1.54	1.61
34	N	2445	G	P-OP2	5.46	1.58	1.49
34	N	2062	A	O5'-C5'	-5.46	1.34	1.42
34	N	973	A	O3'-P	-5.45	1.54	1.61
34	N	2266	A	P-OP1	5.45	1.58	1.49
37	0	885	G	O3'-P	-5.45	1.54	1.61
34	N	1973	G	O3'-P	-5.45	1.54	1.61
34	N	1770	G	O3'-P	-5.44	1.54	1.61
37	0	927	G	O3'-P	-5.44	1.54	1.61
34	N	468	G	O3'-P	-5.44	1.54	1.61
34	N	2643	G	O3'-P	-5.44	1.54	1.61
34	N	973	A	P-O5'	-5.43	1.54	1.59
34	N	188	G	O3'-P	-5.43	1.54	1.61
37	0	1497	G	O3'-P	-5.43	1.54	1.61
16	a	43	GLU	CG-CD	5.43	1.60	1.51
37	0	827	U	C4-O4	-5.43	1.19	1.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	N	742	A	O3'-P	-5.43	1.54	1.61
34	N	787	C	P-OP1	5.42	1.58	1.49
34	N	2715	C	O3'-P	-5.42	1.54	1.61
34	N	1648	U	O3'-P	-5.42	1.54	1.61
34	N	2821	A	P-O5'	-5.41	1.54	1.59
37	0	872	A	C6-N6	-5.41	1.29	1.33
34	N	2274	A	O3'-P	-5.41	1.54	1.61
34	N	990	A	P-OP2	5.40	1.58	1.49
34	N	1995	U	P-OP1	5.40	1.58	1.49
34	N	1990	C	C2'-C1'	-5.40	1.47	1.53
34	N	1265	A	P-O5'	-5.39	1.54	1.59
34	N	1786	A	O3'-P	-5.39	1.54	1.61
34	N	2243	U	N3-C4	-5.39	1.33	1.38
3	M	73	C	O3'-P	-5.39	1.54	1.61
34	N	2005	A	O3'-P	-5.39	1.54	1.61
34	N	528	A	C5-C6	-5.38	1.36	1.41
34	N	1934	C	O3'-P	-5.37	1.54	1.61
34	N	2720	U	C4-O4	-5.37	1.19	1.23
29	n	20	ASP	CB-CG	5.37	1.63	1.51
54	K	20	GLU	CD-OE1	5.37	1.31	1.25
34	N	66	C	O3'-P	-5.35	1.54	1.61
34	N	1255	U	O5'-C5'	-5.35	1.34	1.42
37	0	1322	C	O3'-P	5.35	1.67	1.61
37	0	391	G	O3'-P	-5.35	1.54	1.61
34	N	784	G	C4'-C3'	-5.34	1.47	1.52
34	N	2024	G	O3'-P	-5.34	1.54	1.61
17	b	102	ARG	CZ-NH2	5.34	1.40	1.33
34	N	1833	C	O3'-P	-5.34	1.54	1.61
34	N	2549	G	O3'-P	-5.34	1.54	1.61
37	0	318	G	O3'-P	-5.34	1.54	1.61
37	0	528	C	O3'-P	-5.34	1.54	1.61
34	N	771	G	O3'-P	-5.34	1.54	1.61
34	N	1272	A	O3'-P	-5.34	1.54	1.61
34	N	1136	G	P-OP1	5.33	1.58	1.49
37	0	887	G	O3'-P	-5.33	1.54	1.61
34	N	2724	U	O3'-P	-5.33	1.54	1.61
37	0	373	A	O3'-P	-5.31	1.54	1.61
34	N	1141	U	C2-O2	-5.31	1.17	1.22
34	N	2023	C	O3'-P	-5.31	1.54	1.61
37	0	938	A	O3'-P	-5.31	1.54	1.61
34	N	927	A	C2-N3	5.30	1.38	1.33
34	N	561	G	O3'-P	-5.30	1.54	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
37	0	554	A	O3'-P	-5.30	1.54	1.61
37	0	386	C	O3'-P	-5.29	1.54	1.61
34	N	2500	U	O3'-P	-5.29	1.54	1.61
34	N	1632	A	O3'-P	-5.28	1.54	1.61
34	N	2036	C	O3'-P	-5.28	1.54	1.61
34	N	2845	U	O3'-P	-5.28	1.54	1.61
5	P	11	PRO	N-CA	5.27	1.56	1.47
31	p	39	ARG	NE-CZ	5.27	1.39	1.33
37	0	964	A	P-OP1	5.26	1.57	1.49
37	0	1507	A	O3'-P	-5.26	1.54	1.61
30	o	21	TYR	CE1-CZ	-5.26	1.31	1.38
34	N	1993	U	P-O5'	-5.26	1.54	1.59
37	0	24	U	O3'-P	-5.26	1.54	1.61
34	N	261	G	O3'-P	-5.26	1.54	1.61
5	P	48	ARG	C-O	-5.25	1.13	1.23
37	0	586	C	O3'-P	-5.25	1.54	1.61
6	Q	127	PHE	CE1-CZ	-5.25	1.27	1.37
18	c	53	ARG	CG-CD	-5.24	1.38	1.51
25	j	41	ARG	CG-CD	5.24	1.65	1.51
34	N	2241	A	O3'-P	-5.24	1.54	1.61
34	N	2766	A	O3'-P	-5.24	1.54	1.61
34	N	1832	C	O3'-P	-5.24	1.54	1.61
37	0	886	G	O3'-P	-5.24	1.54	1.61
15	Z	39	GLY	C-O	-5.24	1.15	1.23
37	0	123	U	O3'-P	-5.23	1.54	1.61
34	N	430	A	C6-N1	-5.23	1.31	1.35
34	N	1837	C	O3'-P	-5.22	1.54	1.61
34	N	1991	U	O3'-P	-5.22	1.54	1.61
34	N	385	C	O3'-P	-5.21	1.54	1.61
34	N	800	A	N9-C4	-5.21	1.34	1.37
34	N	1327	A	O3'-P	-5.21	1.54	1.61
34	N	978	G	O3'-P	-5.21	1.54	1.61
34	N	2267	A	C6-N1	-5.21	1.31	1.35
34	N	2445	G	C2-N2	5.21	1.39	1.34
34	N	2430	A	P-OP2	5.21	1.57	1.49
15	Z	91	TYR	CE1-CZ	-5.20	1.31	1.38
34	N	469	G	O3'-P	-5.20	1.54	1.61
34	N	2592	G	O3'-P	-5.20	1.54	1.61
34	N	2490	G	O3'-P	-5.20	1.54	1.61
34	N	2838	G	O3'-P	-5.19	1.54	1.61
37	0	25	C	O3'-P	-5.19	1.54	1.61
37	0	291	U	O3'-P	-5.19	1.54	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	R	77	ILE	CB-CG1	-5.19	1.39	1.54
34	N	69	C	O3'-P	-5.19	1.54	1.61
34	N	976	G	O3'-P	-5.18	1.54	1.61
34	N	981	A	P-OP1	5.18	1.57	1.49
34	N	1637	A	O3'-P	-5.18	1.54	1.61
37	0	924	C	O3'-P	-5.17	1.54	1.61
37	0	751	U	O3'-P	-5.17	1.54	1.61
49	F	101	ARG	CZ-NH1	5.17	1.39	1.33
34	N	223	A	O3'-P	-5.17	1.54	1.61
37	0	18	C	O3'-P	-5.17	1.54	1.61
34	N	784	G	P-OP1	5.17	1.57	1.49
34	N	787	C	P-O5'	-5.17	1.54	1.59
34	N	604	G	O3'-P	-5.16	1.54	1.61
34	N	1202	G	O3'-P	-5.16	1.54	1.61
34	N	2875	C	O3'-P	-5.16	1.54	1.61
5	P	234	GLY	C-O	-5.16	1.15	1.23
34	N	664	G	O3'-P	-5.16	1.54	1.61
47	D	65	VAL	CB-CG1	-5.16	1.42	1.52
34	N	419	U	P-OP1	5.15	1.57	1.49
34	N	989	G	C3'-O3'	5.15	1.49	1.42
48	E	38	TYR	CB-CG	-5.15	1.44	1.51
19	d	24	TYR	CE2-CZ	5.15	1.45	1.38
34	N	2448	A	P-OP2	5.14	1.57	1.49
37	0	783	C	O3'-P	-5.14	1.54	1.61
37	0	816	A	P-OP1	5.14	1.57	1.49
34	N	467	G	O3'-P	-5.14	1.54	1.61
34	N	2078	C	O3'-P	-5.14	1.54	1.61
5	P	213	TRP	CA-C	-5.13	1.39	1.52
34	N	503	A	O3'-P	5.13	1.67	1.61
34	N	1666	G	O3'-P	-5.13	1.54	1.61
34	N	2267	A	P-OP1	5.13	1.57	1.49
34	N	2361	G	O3'-P	-5.13	1.54	1.61
30	o	49	TYR	CE2-CZ	-5.12	1.31	1.38
20	e	80	ARG	CB-CG	-5.12	1.38	1.52
37	0	1363	A	C6-N1	-5.12	1.31	1.35
5	P	235	GLY	CA-C	-5.12	1.43	1.51
34	N	1254	A	C2'-O2'	5.12	1.48	1.41
34	N	513	A	P-O5'	-5.12	1.54	1.59
34	N	2839	G	O3'-P	-5.12	1.55	1.61
34	N	1864	U	O3'-P	-5.11	1.55	1.61
34	N	2387	U	O3'-P	-5.11	1.55	1.61
34	N	2017	U	N1-C2	-5.11	1.33	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	N	1826	G	O3'-P	-5.11	1.55	1.61
38	1	96	TRP	CG-CD1	5.11	1.43	1.36
34	N	1638	C	P-O5'	-5.10	1.54	1.59
37	0	397	A	C6-N6	-5.10	1.29	1.33
34	N	587	C	O3'-P	-5.10	1.55	1.61
37	0	951	G	O3'-P	-5.09	1.55	1.61
34	N	2706	A	O3'-P	-5.09	1.55	1.61
37	0	1301	U	C2-N3	5.09	1.41	1.37
38	1	213	TYR	CB-CG	-5.09	1.44	1.51
37	0	506	G	O3'-P	-5.08	1.55	1.61
34	N	1308	A	O3'-P	-5.08	1.55	1.61
34	N	1679	A	O3'-P	-5.08	1.55	1.61
6	Q	113	SER	CB-OG	-5.08	1.35	1.42
37	0	1500	A	P-OP2	5.08	1.57	1.49
37	0	979	C	O3'-P	-5.07	1.55	1.61
34	N	918	A	O3'-P	-5.07	1.55	1.61
34	N	954	G	O3'-P	-5.07	1.55	1.61
37	0	881	G	O3'-P	-5.06	1.55	1.61
34	N	2580	U	O3'-P	-5.06	1.55	1.61
34	N	1985	C	O3'-P	-5.06	1.55	1.61
34	N	2611	C	P-OP2	5.06	1.57	1.49
5	P	236	GLU	CD-OE2	5.06	1.31	1.25
34	N	396	G	O3'-P	-5.06	1.55	1.61
34	N	2551	C	P-OP2	5.05	1.57	1.49
30	o	49	TYR	CG-CD1	-5.04	1.32	1.39
34	N	948	C	N1-C2	-5.04	1.35	1.40
34	N	1237	A	P-OP2	5.04	1.57	1.49
34	N	1253	A	C4'-C3'	-5.04	1.47	1.52
34	N	752	A	P-O5'	-5.04	1.54	1.59
2	s	132	TYR	CG-CD1	5.03	1.45	1.39
34	N	1817	G	O3'-P	-5.03	1.55	1.61
37	0	108	G	P-OP2	-5.03	1.40	1.49
37	0	827	U	C2-N3	-5.01	1.34	1.37
34	N	1313	U	P-OP1	5.01	1.57	1.49
37	0	1482	G	O3'-P	-5.00	1.55	1.61
37	0	935	A	O3'-P	-5.00	1.55	1.61
37	0	1408	A	O3'-P	-5.00	1.55	1.61

All (720) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	N	2506[A]	U	OP1-P-O3'	17.17	142.97	105.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	N	2506[B]	U	OP1-P-O3'	17.17	142.97	105.20
31	p	39	ARG	NE-CZ-NH1	16.09	128.35	120.30
31	p	39	ARG	NE-CZ-NH2	-14.86	112.87	120.30
3	M	73	C	O3'-P-O5'	14.33	131.23	104.00
34	N	2720	U	C2-N3-C4	-13.77	118.74	127.00
34	N	2522	U	C2-N3-C4	-13.74	118.75	127.00
34	N	2062	A	O5'-P-OP1	-13.32	93.71	105.70
34	N	467	G	O5'-P-OP1	-13.17	93.84	105.70
34	N	2836	U	O5'-P-OP1	-12.85	94.14	105.70
55	t	5	LEU	CB-CG-CD2	12.65	132.50	111.00
19	d	53	ARG	NE-CZ-NH1	12.38	126.49	120.30
25	j	41	ARG	NE-CZ-NH1	12.36	126.48	120.30
34	N	2506[A]	U	O3'-P-O5'	-12.24	80.74	104.00
34	N	2506[B]	U	O3'-P-O5'	-12.24	80.74	104.00
34	N	1996	C	O5'-P-OP2	-12.24	94.69	105.70
34	N	2873	A	N1-C6-N6	-12.12	111.33	118.60
34	N	499	U	C2-N3-C4	-12.03	119.78	127.00
34	N	2821	A	O5'-P-OP1	-11.86	95.03	105.70
14	Y	18	ARG	NE-CZ-NH2	-11.60	114.50	120.30
26	k	28	ARG	NE-CZ-NH2	-11.54	114.53	120.30
29	n	20	ASP	CB-CG-OD1	11.50	128.65	118.30
37	o	559	A	C6-N1-C2	-11.34	111.80	118.60
37	o	1301	U	C2-N3-C4	-11.27	120.24	127.00
34	N	1665	A	O5'-P-OP1	-11.21	95.61	105.70
34	N	2505	G	P-O3'-C3'	-11.05	106.43	119.70
34	N	228	C	O5'-P-OP1	-11.00	95.80	105.70
37	o	752	G	O5'-P-OP1	-10.99	95.81	105.70
15	Z	16	ARG	NE-CZ-NH2	-10.95	114.83	120.30
31	p	34	ARG	NE-CZ-NH1	-10.95	114.83	120.30
34	N	2447	G	O5'-P-OP1	-10.85	95.93	105.70
12	W	116	ARG	NE-CZ-NH2	-10.82	114.89	120.30
34	N	2765	A	N1-C6-N6	-10.75	112.15	118.60
47	D	122	ARG	NE-CZ-NH1	10.73	125.67	120.30
5	P	214	ARG	NE-CZ-NH2	-10.65	114.97	120.30
34	N	1941	C	O5'-P-OP1	-10.64	96.13	105.70
49	F	109	ARG	NE-CZ-NH1	10.56	125.58	120.30
34	N	2067	G	O5'-P-OP1	-10.55	96.20	105.70
34	N	27	G	O5'-P-OP1	-10.47	96.28	105.70
37	o	16	A	O5'-P-OP1	-10.41	96.33	105.70
37	o	1497	G	O5'-P-OP2	-10.40	96.34	105.70
19	d	53	ARG	NE-CZ-NH2	-10.34	115.13	120.30
6	Q	13	ARG	NE-CZ-NH2	10.25	125.42	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
57	v	34	ARG	NE-CZ-NH2	-10.22	115.19	120.30
34	N	1965	C	O5'-P-OP2	-10.10	96.61	105.70
38	l	21	ARG	NE-CZ-NH1	10.07	125.33	120.30
19	d	6	ARG	NE-CZ-NH2	10.05	125.32	120.30
34	N	474	G	O5'-P-OP1	-9.94	96.76	105.70
34	N	953	G	O5'-P-OP1	-9.90	96.79	105.70
34	N	2059	A	O5'-P-OP2	-9.87	96.81	105.70
37	0	21	G	O5'-P-OP1	9.86	122.53	110.70
34	N	2072	C	O5'-P-OP1	-9.84	96.84	105.70
34	N	306	U	C2-N3-C4	-9.81	121.12	127.00
34	N	2060	A	O5'-P-OP1	-9.80	96.88	105.70
34	N	801	G	O5'-P-OP2	-9.67	97.00	105.70
10	U	27	ARG	NE-CZ-NH1	-9.65	115.47	120.30
34	N	2726	A	O5'-P-OP1	-9.55	97.11	105.70
34	N	537	G	O5'-P-OP1	-9.53	97.12	105.70
17	b	102	ARG	NE-CZ-NH2	9.51	125.06	120.30
34	N	2873	A	C5-C6-N6	9.49	131.29	123.70
34	N	1809	A	O5'-P-OP1	-9.44	97.20	105.70
33	r	36	ARG	NE-CZ-NH1	-9.42	115.59	120.30
37	0	795	C	O5'-P-OP1	-9.40	97.24	105.70
34	N	2776	A	C4-N9-C1'	9.38	143.18	126.30
34	N	2776	A	C8-N9-C1'	-9.37	110.83	127.70
43	6	109	ARG	NE-CZ-NH1	9.37	124.98	120.30
14	Y	47	ARG	NE-CZ-NH2	9.34	124.97	120.30
34	N	805	G	O5'-P-OP1	-9.28	97.34	105.70
34	N	2044	C	O5'-P-OP1	-9.26	97.36	105.70
34	N	1190	G	O5'-P-OP2	9.26	121.81	110.70
5	P	258	ARG	NE-CZ-NH1	-9.25	115.67	120.30
34	N	2543	G	O5'-P-OP1	-9.22	97.40	105.70
41	4	111	MET	CG-SD-CE	-9.16	85.55	100.20
34	N	2711	A	O5'-P-OP2	9.15	121.68	110.70
26	k	57	ARG	NE-CZ-NH2	9.14	124.87	120.30
34	N	1253	A	O5'-P-OP1	-9.10	97.51	105.70
34	N	1639	C	O5'-P-OP1	-9.10	97.51	105.70
34	N	2513	A	O5'-P-OP2	-9.09	97.52	105.70
34	N	2022	U	O5'-P-OP1	-9.06	97.55	105.70
18	c	72	ARG	NE-CZ-NH2	-9.05	115.77	120.30
34	N	2456	C	O5'-P-OP1	-8.98	97.62	105.70
38	l	21	ARG	NE-CZ-NH2	-8.95	115.83	120.30
17	b	102	ARG	NE-CZ-NH1	-8.85	115.88	120.30
37	0	968	A	O5'-P-OP2	-8.84	97.75	105.70
14	Y	78	ARG	NE-CZ-NH2	8.83	124.71	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
49	F	92	ARG	NE-CZ-NH1	8.82	124.71	120.30
34	N	684	G	O5'-P-OP1	-8.69	97.88	105.70
17	b	30	ARG	NE-CZ-NH2	-8.64	115.98	120.30
34	N	2725	A	O5'-P-OP1	-8.64	97.92	105.70
34	N	1798	U	O5'-P-OP2	-8.64	97.92	105.70
5	P	270	ARG	NE-CZ-NH2	-8.62	115.99	120.30
51	H	54	ARG	NE-CZ-NH2	-8.61	115.99	120.30
34	N	1994	C	O5'-P-OP1	-8.59	97.97	105.70
18	c	21	ARG	NE-CZ-NH1	-8.58	116.01	120.30
34	N	2497	A	O5'-P-OP2	8.58	121.00	110.70
52	I	70	ARG	NE-CZ-NH1	8.53	124.56	120.30
4	O	90	C	O5'-P-OP1	-8.52	98.03	105.70
37	0	816	A	O5'-P-OP1	-8.51	98.05	105.70
16	a	69	ARG	NE-CZ-NH2	8.50	124.55	120.30
41	4	157	ARG	NE-CZ-NH1	-8.49	116.06	120.30
56	u	10	ARG	CB-CG-CD	-8.44	89.65	111.60
32	q	8	ARG	NE-CZ-NH1	8.42	124.51	120.30
37	0	726	C	O5'-P-OP1	-8.29	98.23	105.70
5	P	271	ARG	NE-CZ-NH2	-8.29	116.16	120.30
5	P	221	ARG	CG-CD-NE	-8.23	94.52	111.80
34	N	2248	C	O5'-P-OP1	-8.19	98.33	105.70
37	0	1358	U	N3-C4-O4	-8.19	113.67	119.40
34	N	234	U	N3-C4-O4	-8.15	113.70	119.40
50	G	9	ARG	NE-CZ-NH1	8.15	124.37	120.30
34	N	2267	A	O5'-P-OP2	-8.14	98.38	105.70
37	0	674	G	O5'-P-OP1	-8.12	98.39	105.70
34	N	812	C	O5'-P-OP2	-8.11	98.40	105.70
19	d	51	ARG	NE-CZ-NH1	8.10	124.35	120.30
19	d	51	ARG	NE-CZ-NH2	-8.08	116.26	120.30
34	N	671	C	O5'-P-OP1	-8.08	98.43	105.70
3	M	73	C	OP1-P-O3'	-8.07	87.44	105.20
13	X	78	ARG	NE-CZ-NH2	-8.07	116.27	120.30
7	R	49	ARG	NE-CZ-NH1	-8.04	116.28	120.30
34	N	1141	U	N3-C4-O4	-8.04	113.77	119.40
34	N	234	U	C5-C4-O4	8.02	130.71	125.90
12	W	116	ARG	NE-CZ-NH1	8.02	124.31	120.30
17	b	30	ARG	NE-CZ-NH1	8.02	124.31	120.30
49	F	92	ARG	NE-CZ-NH2	-8.02	116.29	120.30
39	2	156	ARG	NE-CZ-NH1	8.01	124.31	120.30
41	4	38	VAL	CG1-CB-CG2	-8.01	98.08	110.90
48	E	12	ARG	NE-CZ-NH1	-8.00	116.30	120.30
29	n	7	LYS	CD-CE-NZ	7.99	130.08	111.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
19	d	3	ARG	NE-CZ-NH1	-7.98	116.31	120.30
7	R	69	ARG	NE-CZ-NH2	-7.97	116.31	120.30
7	R	61	ARG	NE-CZ-NH1	7.95	124.27	120.30
19	d	13	ARG	NE-CZ-NH2	7.93	124.26	120.30
34	N	2222	C	O5'-P-OP1	-7.93	98.57	105.70
34	N	2847	U	O5'-P-OP1	-7.90	98.59	105.70
34	N	1141	U	C5-C4-O4	7.87	130.62	125.90
34	N	704	G	O5'-P-OP1	-7.86	98.63	105.70
37	0	1191	A	O5'-P-OP1	-7.86	98.63	105.70
37	0	439	U	C2-N3-C4	-7.85	122.29	127.00
37	0	1054	C	O5'-P-OP2	7.85	120.12	110.70
34	N	2061	G	O4'-C1'-N9	7.81	114.45	108.20
34	N	927	A	C6-N1-C2	-7.79	113.92	118.60
19	d	58	ARG	NE-CZ-NH2	-7.77	116.42	120.30
34	N	581	C	O5'-P-OP1	-7.76	98.72	105.70
34	N	2277	G	O5'-P-OP1	-7.75	98.73	105.70
34	N	2765	A	C5-C6-N6	7.74	129.89	123.70
34	N	974	G	N9-C1'-C2'	7.73	124.05	114.00
34	N	1136	G	P-O5'-C5'	-7.71	108.56	120.90
34	N	1255	U	O5'-P-OP2	7.71	119.95	110.70
40	3	5	LEU	CA-CB-CG	7.67	132.95	115.30
34	N	1611	C	O5'-P-OP2	-7.66	98.81	105.70
34	N	430	A	N1-C6-N6	-7.65	114.01	118.60
42	5	79	ARG	NE-CZ-NH1	7.65	124.12	120.30
34	N	2544	G	O5'-P-OP2	-7.64	98.83	105.70
34	N	813	U	O5'-P-OP2	-7.63	98.83	105.70
34	N	2344	U	N3-C4-O4	-7.62	114.07	119.40
34	N	2447	G	P-O3'-C3'	7.62	128.84	119.70
45	8	49	ARG	NE-CZ-NH1	7.62	124.11	120.30
34	N	2022	U	OP1-P-OP2	7.60	131.01	119.60
34	N	698	C	O5'-P-OP2	-7.60	98.86	105.70
27	l	52	ARG	NE-CZ-NH1	-7.60	116.50	120.30
34	N	2729	G	O5'-P-OP1	-7.59	98.86	105.70
34	N	787	C	O5'-P-OP1	7.59	119.81	110.70
5	P	177	ARG	NE-CZ-NH1	-7.58	116.51	120.30
34	N	2060	A	O5'-P-OP2	7.58	119.79	110.70
37	0	567	G	O5'-P-OP1	-7.58	98.88	105.70
34	N	1255	U	O5'-P-OP1	-7.57	98.89	105.70
43	6	3	ARG	NE-CZ-NH1	7.56	124.08	120.30
37	0	37	U	N3-C4-O4	-7.55	114.11	119.40
34	N	512	G	P-O3'-C3'	7.55	128.76	119.70
34	N	784	G	C2'-C3'-O3'	7.51	126.03	109.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
37	0	571	U	C2-N3-C4	-7.49	122.51	127.00
27	l	29	ARG	NE-CZ-NH1	-7.46	116.57	120.30
37	0	368	U	N3-C4-O4	-7.46	114.18	119.40
34	N	1900	A	P-O3'-C3'	7.44	128.63	119.70
34	N	2693	G	O5'-P-OP1	-7.41	99.03	105.70
34	N	1639	C	O5'-P-OP2	7.40	119.58	110.70
34	N	1930	G	O5'-P-OP1	-7.38	99.06	105.70
34	N	1932	A	O5'-P-OP1	-7.38	99.06	105.70
34	N	850	U	C2-N3-C4	-7.37	122.58	127.00
34	N	2542	A	O5'-P-OP2	-7.36	99.08	105.70
34	N	784	G	P-O3'-C3'	7.35	128.52	119.70
37	0	498	A	C6-N1-C2	-7.34	114.20	118.60
50	G	85	ARG	NE-CZ-NH1	7.34	123.97	120.30
34	N	2692	G	O5'-P-OP2	-7.33	99.10	105.70
34	N	932	U	N3-C4-O4	-7.33	114.27	119.40
37	0	1363	A	N1-C6-N6	-7.33	114.20	118.60
37	0	1331	G	O5'-P-OP1	-7.32	99.11	105.70
34	N	2072	C	O5'-P-OP2	7.31	119.47	110.70
14	Y	29	LYS	CD-CE-NZ	-7.31	94.89	111.70
34	N	2256	G	O5'-P-OP1	-7.30	99.13	105.70
37	0	1507	A	O5'-P-OP1	-7.30	99.13	105.70
37	0	501	C	O5'-P-OP1	-7.25	99.18	105.70
34	N	2714	G	O5'-P-OP2	7.24	119.39	110.70
34	N	2497	A	C5'-C4'-C3'	-7.24	104.42	116.00
34	N	795	C	O5'-P-OP1	-7.24	99.19	105.70
25	j	14	ARG	CG-CD-NE	-7.20	96.69	111.80
34	N	760	G	OP1-P-O3'	7.16	120.96	105.20
56	u	74	ARG	NE-CZ-NH1	7.16	123.88	120.30
7	R	81	GLY	C-N-CA	-7.15	107.28	122.30
34	N	510	C	O5'-P-OP2	-7.14	99.27	105.70
44	7	80	ARG	NE-CZ-NH2	-7.13	116.73	120.30
34	N	1145	C	O5'-P-OP1	-7.13	99.28	105.70
34	N	2506[A]	U	OP2-P-O3'	-7.13	89.52	105.20
34	N	2506[B]	U	OP2-P-O3'	-7.13	89.52	105.20
14	Y	82	LEU	CA-CB-CG	7.12	131.69	115.30
55	t	5	LEU	CB-CG-CD1	-7.11	98.92	111.00
34	N	1026	G	O5'-P-OP2	-7.10	99.31	105.70
34	N	2637	U	O5'-P-OP1	-7.10	99.31	105.70
34	N	2344	U	O5'-P-OP1	-7.08	99.33	105.70
14	Y	59	ARG	NE-CZ-NH1	7.08	123.84	120.30
34	N	2344	U	C5-C4-O4	7.06	130.14	125.90
37	0	368	U	C5-C4-O4	7.06	130.14	125.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	N	1236	G	P-O3'-C3'	7.06	128.17	119.70
34	N	1962	C	O5'-P-OP1	-7.05	99.36	105.70
37	0	6	G	O5'-P-OP2	-7.04	99.36	105.70
54	K	43	ARG	NE-CZ-NH1	7.01	123.81	120.30
37	0	24	U	N1-C2-O2	-6.99	117.91	122.80
34	N	1790	C	O5'-P-OP1	-6.98	99.42	105.70
37	0	827	U	N3-C4-O4	-6.98	114.51	119.40
34	N	578	G	O5'-P-OP1	6.97	119.07	110.70
34	N	740	C	O5'-P-OP1	-6.97	99.43	105.70
43	6	109	ARG	CG-CD-NE	-6.96	97.19	111.80
34	N	2304	G	O5'-P-OP1	-6.95	99.44	105.70
34	N	967	U	O5'-P-OP1	-6.95	99.45	105.70
32	q	13	ARG	NE-CZ-NH1	-6.92	116.84	120.30
40	3	3	ARG	NE-CZ-NH1	6.91	123.76	120.30
34	N	1944	U	O5'-P-OP2	-6.91	99.48	105.70
34	N	2311	A	P-O3'-C3'	6.91	127.99	119.70
37	0	37	U	C5-C4-O4	6.89	130.04	125.90
34	N	196	A	O5'-P-OP1	-6.88	99.50	105.70
34	N	2059	A	O5'-P-OP1	6.87	118.94	110.70
31	p	14	ARG	NE-CZ-NH1	-6.86	116.87	120.30
7	R	77	ILE	CG1-CB-CG2	-6.86	96.31	111.40
18	c	93	ARG	CG-CD-NE	-6.85	97.41	111.80
34	N	2021	C	O5'-P-OP2	-6.85	99.54	105.70
34	N	2711	A	O5'-P-OP1	-6.84	99.54	105.70
37	0	865	A	O5'-P-OP1	-6.83	99.56	105.70
32	q	8	ARG	CD-NE-CZ	-6.82	114.05	123.60
25	j	41	ARG	CD-NE-CZ	6.82	133.14	123.60
6	Q	156	PHE	CB-CG-CD2	-6.81	116.03	120.80
37	0	904	U	O5'-P-OP1	-6.81	99.57	105.70
34	N	1607	C	O5'-P-OP1	-6.80	99.58	105.70
34	N	512	G	O4'-C1'-N9	6.80	113.64	108.20
34	N	630	G	O5'-P-OP1	-6.79	99.59	105.70
22	g	12	ARG	NE-CZ-NH1	6.77	123.69	120.30
34	N	1021	A	N1-C6-N6	-6.77	114.54	118.60
5	P	101	ARG	NE-CZ-NH2	-6.76	116.92	120.30
34	N	1836	C	O5'-P-OP1	-6.76	99.61	105.70
37	0	812	G	P-O3'-C3'	6.76	127.81	119.70
37	0	1358	U	C5-C4-O4	6.76	129.96	125.90
34	N	2543	G	P-O5'-C5'	-6.76	110.09	120.90
39	2	172	ARG	NE-CZ-NH2	-6.76	116.92	120.30
37	0	1349	A	O5'-P-OP2	6.74	118.79	110.70
37	0	1343	G	O5'-P-OP1	-6.74	99.64	105.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	N	2272	U	N3-C4-O4	-6.73	114.69	119.40
34	N	2576	G	O5'-P-OP2	-6.73	99.64	105.70
34	N	679	C	O5'-P-OP1	-6.72	99.65	105.70
37	0	1280	A	O5'-P-OP2	-6.69	99.68	105.70
42	5	24	ARG	NE-CZ-NH1	6.69	123.64	120.30
14	Y	59	ARG	NE-CZ-NH2	-6.67	116.97	120.30
16	a	4	ARG	NE-CZ-NH2	-6.67	116.97	120.30
34	N	932	U	C5-C4-O4	6.66	129.89	125.90
34	N	961	C	O5'-P-OP2	-6.65	99.72	105.70
37	0	261	U	O5'-P-OP1	-6.61	99.75	105.70
37	0	738	C	O5'-P-OP1	-6.61	99.76	105.70
49	F	90	ARG	NE-CZ-NH2	-6.60	117.00	120.30
43	6	95	ARG	NE-CZ-NH1	6.58	123.59	120.30
34	N	1666	G	O4'-C4'-C3'	-6.57	97.43	104.00
34	N	2060	A	O3'-P-O5'	6.56	116.46	104.00
34	N	2656	U	C2-N1-C1'	6.56	125.57	117.70
34	N	51	G	O4'-C1'-N9	6.54	113.43	108.20
34	N	2516	A	O5'-P-OP1	-6.54	99.81	105.70
9	T	3	ARG	NE-CZ-NH2	6.54	123.57	120.30
34	N	1648	U	P-O5'-C5'	-6.53	110.44	120.90
34	N	963	U	O5'-P-OP2	6.51	118.52	110.70
48	E	9	ARG	NE-CZ-NH1	6.51	123.56	120.30
50	G	53	ARG	NE-CZ-NH1	-6.50	117.05	120.30
33	r	24	ARG	NE-CZ-NH2	6.50	123.55	120.30
34	N	729	G	O5'-P-OP2	-6.49	99.86	105.70
17	b	25	ARG	NE-CZ-NH1	-6.47	117.06	120.30
34	N	204	A	O5'-P-OP2	-6.47	99.88	105.70
34	N	1439	A	O5'-P-OP1	-6.47	99.88	105.70
25	j	41	ARG	NH1-CZ-NH2	-6.46	112.29	119.40
34	N	555	G	O5'-P-OP1	-6.46	99.89	105.70
34	N	1902	C	O5'-P-OP1	-6.46	99.89	105.70
34	N	2048	G	O5'-P-OP1	-6.46	99.89	105.70
34	N	188	G	O5'-P-OP1	-6.45	99.89	105.70
16	a	69	ARG	NE-CZ-NH1	-6.45	117.08	120.30
5	P	87	ARG	NE-CZ-NH2	6.44	123.52	120.30
37	0	829	G	O5'-P-OP1	-6.43	99.91	105.70
34	N	2074	U	O5'-P-OP2	-6.42	99.92	105.70
13	X	71	ARG	NE-CZ-NH1	6.42	123.51	120.30
49	F	3	ARG	NE-CZ-NH1	6.41	123.50	120.30
48	E	83	ARG	NE-CZ-NH1	6.41	123.50	120.30
21	f	88	ARG	NE-CZ-NH1	-6.40	117.10	120.30
34	N	2443	C	O4'-C4'-C3'	-6.40	97.60	104.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	N	747	U	O5'-P-OP1	-6.39	99.95	105.70
34	N	310	A	O5'-P-OP1	-6.39	99.95	105.70
34	N	752	A	N9-C1'-C2'	6.39	122.31	114.00
34	N	1299	G	O5'-P-OP1	-6.39	99.95	105.70
29	n	17	ARG	NE-CZ-NH2	-6.39	117.11	120.30
12	W	99	ARG	NE-CZ-NH1	6.38	123.49	120.30
17	b	13	ARG	NE-CZ-NH1	6.38	123.49	120.30
34	N	1664	A	O5'-P-OP2	6.38	118.36	110.70
37	0	1279	G	N9-C1'-C2'	6.38	122.29	114.00
37	0	864	A	C6-N1-C2	-6.37	114.78	118.60
37	0	827	U	C5-C4-O4	6.37	129.72	125.90
34	N	2725	A	C3'-C2'-O2'	-6.36	94.86	113.30
15	Z	40	ARG	NE-CZ-NH2	6.36	123.48	120.30
37	0	397	A	N1-C6-N6	-6.36	114.79	118.60
34	N	792	A	O5'-P-OP1	-6.34	99.99	105.70
40	3	3	ARG	NE-CZ-NH2	-6.34	117.13	120.30
34	N	2055	C	O5'-P-OP1	-6.32	100.01	105.70
34	N	650	C	O5'-P-OP1	-6.32	100.01	105.70
28	m	11	ARG	NE-CZ-NH2	6.32	123.46	120.30
34	N	1313	U	C2-N1-C1'	6.31	125.28	117.70
34	N	2423	U	O5'-P-OP2	-6.31	100.02	105.70
34	N	2522	U	N1-C2-O2	-6.31	118.38	122.80
29	n	20	ASP	CB-CG-OD2	-6.31	112.62	118.30
34	N	2061	G	O5'-P-OP1	-6.31	100.02	105.70
37	0	890	G	O4'-C1'-N9	6.31	113.25	108.20
34	N	1933	G	O5'-P-OP1	-6.31	100.02	105.70
34	N	140	C	C2-N1-C1'	6.30	125.73	118.80
34	N	1967	C	O5'-P-OP1	-6.30	100.03	105.70
55	t	37	ARG	NE-CZ-NH1	6.30	123.45	120.30
34	N	995	C	C4'-C3'-O3'	-6.28	96.21	109.40
37	0	563	A	N1-C6-N6	-6.28	114.83	118.60
37	0	880	C	O5'-P-OP2	-6.27	100.06	105.70
5	P	229	ASP	CB-CG-OD1	-6.26	112.67	118.30
57	v	34	ARG	NE-CZ-NH1	6.25	123.42	120.30
34	N	1205	A	P-O3'-C3'	6.24	127.19	119.70
34	N	2364	C	O4'-C4'-C3'	-6.21	97.79	104.00
34	N	1313	U	N1-C1'-C2'	6.20	122.06	114.00
37	0	131	A	O5'-P-OP1	-6.19	100.13	105.70
47	D	122	ARG	NE-CZ-NH2	-6.19	117.20	120.30
34	N	1936	A	C4'-C3'-O3'	-6.18	96.42	109.40
37	0	1054	C	O5'-P-OP1	-6.18	100.14	105.70
19	d	48	ARG	NE-CZ-NH2	6.18	123.39	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	N	2258	C	O5'-P-OP1	-6.18	100.14	105.70
34	N	1141	U	N3-C2-O2	-6.17	117.88	122.20
34	N	310	A	C6-C5-N7	-6.14	128.00	132.30
34	N	1865	U	O5'-P-OP1	-6.14	100.17	105.70
37	0	1356	G	O5'-P-OP1	-6.14	100.18	105.70
32	q	25	LYS	CD-CE-NZ	-6.14	97.59	111.70
34	N	983	A	C5'-C4'-O4'	-6.14	101.73	109.10
34	N	2243	U	O5'-P-OP2	6.13	118.05	110.70
34	N	1844	C	O5'-P-OP1	-6.12	100.19	105.70
37	0	540	G	O5'-P-OP1	-6.12	100.19	105.70
37	0	576	C	O5'-P-OP2	-6.12	100.19	105.70
34	N	91	A	O5'-P-OP2	-6.12	100.19	105.70
34	N	2725	A	O5'-P-OP2	6.10	118.02	110.70
5	P	228	VAL	CG1-CB-CG2	-6.09	101.16	110.90
27	l	6	LEU	CB-CG-CD1	6.09	121.35	111.00
4	O	94	A	O5'-P-OP1	-6.08	100.23	105.70
5	P	229	ASP	CB-CG-OD2	6.08	123.77	118.30
37	0	1238	A	C6-C5-N7	-6.08	128.04	132.30
34	N	1501	G	O5'-P-OP1	-6.08	100.23	105.70
34	N	670	A	P-O3'-C3'	6.06	126.97	119.70
34	N	1264	A	O5'-P-OP1	-6.06	100.25	105.70
37	0	31	G	O5'-P-OP2	-6.05	100.25	105.70
54	K	57	ARG	CA-CB-CG	6.04	126.68	113.40
34	N	503	A	C4-C5-C6	6.03	120.02	117.00
15	Z	81	ARG	NE-CZ-NH2	-6.03	117.28	120.30
16	a	54	LEU	CB-CG-CD1	-6.03	100.75	111.00
19	d	28	ARG	NE-CZ-NH1	6.02	123.31	120.30
51	H	63	ARG	NE-CZ-NH1	6.01	123.31	120.30
37	0	762	U	O5'-P-OP1	-6.01	100.29	105.70
34	N	1328	A	O5'-P-OP1	6.01	117.91	110.70
34	N	2603	G	O5'-P-OP1	-6.01	100.30	105.70
34	N	948	C	O5'-P-OP1	6.00	117.90	110.70
49	F	107	ARG	NE-CZ-NH2	-6.00	117.30	120.30
6	Q	109	VAL	CG1-CB-CG2	-5.99	101.31	110.90
34	N	2576	G	O5'-P-OP1	5.99	117.89	110.70
37	0	529	G	O5'-P-OP2	-5.99	100.31	105.70
37	0	884	U	N3-C4-O4	-5.99	115.21	119.40
16	a	69	ARG	CG-CD-NE	5.98	124.36	111.80
9	T	153	ARG	NE-CZ-NH2	5.97	123.29	120.30
34	N	2512	C	O5'-P-OP1	-5.97	100.33	105.70
37	0	2	A	O5'-P-OP1	-5.97	100.33	105.70
37	0	687	A	O5'-P-OP1	-5.97	100.33	105.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	N	1795	C	O5'-P-OP1	-5.96	100.33	105.70
37	0	1238	A	C4-C5-C6	5.96	119.98	117.00
12	W	37	ARG	NE-CZ-NH2	5.96	123.28	120.30
34	N	536	G	O5'-P-OP2	-5.95	100.34	105.70
50	G	59	ARG	NE-CZ-NH1	5.95	123.28	120.30
5	P	177	ARG	CG-CD-NE	-5.95	99.31	111.80
37	0	59	A	O5'-P-OP1	5.94	117.83	110.70
34	N	2246	G	O4'-C4'-C3'	-5.94	98.06	104.00
34	N	404	A	P-O3'-C3'	5.93	126.82	119.70
46	9	60	ASP	CB-CG-OD2	5.93	123.64	118.30
31	p	12	ARG	NE-CZ-NH1	-5.92	117.34	120.30
29	n	52	ARG	NE-CZ-NH2	5.92	123.26	120.30
32	q	8	ARG	CG-CD-NE	5.91	124.22	111.80
30	o	10	LYS	CD-CE-NZ	5.91	125.30	111.70
34	N	310	A	C4-C5-C6	5.91	119.96	117.00
37	0	1301	U	N1-C1'-C2'	5.91	121.68	114.00
45	8	18	ARG	CB-CG-CD	-5.91	96.24	111.60
34	N	2699	C	O5'-P-OP1	-5.90	100.39	105.70
34	N	2267	A	N1-C6-N6	-5.90	115.06	118.60
13	X	23	LYS	CD-CE-NZ	-5.90	98.14	111.70
37	0	388	G	P-O3'-C3'	5.90	126.78	119.70
15	Z	136	MET	CG-SD-CE	5.89	109.63	100.20
34	N	27	G	C5'-C4'-O4'	-5.89	102.03	109.10
7	R	81	GLY	O-C-N	-5.89	113.19	123.20
34	N	466	A	O5'-P-OP1	5.88	117.76	110.70
34	N	2503	A	OP1-P-OP2	-5.88	110.78	119.60
34	N	2273	A	O5'-P-OP1	-5.88	100.41	105.70
40	3	91	LEU	CB-CG-CD1	-5.87	101.02	111.00
34	N	673	C	O5'-P-OP1	5.87	117.74	110.70
34	N	2028	U	O5'-P-OP1	-5.87	100.42	105.70
37	0	1347	G	P-O3'-C3'	5.86	126.73	119.70
7	R	65	THR	C-N-CA	-5.85	110.02	122.30
34	N	1134	A	P-O3'-C3'	5.84	126.71	119.70
34	N	578	G	O5'-P-OP2	-5.84	100.44	105.70
41	4	69	ARG	NE-CZ-NH1	5.84	123.22	120.30
14	Y	30	THR	N-CA-CB	5.83	121.38	110.30
37	0	1182	G	P-O3'-C3'	5.83	126.70	119.70
34	N	820	A	O4'-C4'-C3'	-5.83	98.17	104.00
34	N	2272	U	C5-C4-O4	5.83	129.40	125.90
31	p	12	ARG	CA-CB-CG	5.83	126.22	113.40
34	N	503	A	C6-C5-N7	-5.83	128.22	132.30
41	4	138	ARG	NE-CZ-NH1	-5.83	117.39	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	N	1427	A	O5'-P-OP1	-5.82	100.46	105.70
37	0	1201	A	P-O3'-C3'	5.82	126.68	119.70
34	N	1673	G	O5'-P-OP2	5.81	117.68	110.70
45	8	12	ARG	NE-CZ-NH2	-5.81	117.39	120.30
34	N	2383	G	O5'-P-OP2	-5.80	100.48	105.70
34	N	477	A	O5'-P-OP2	-5.80	100.48	105.70
32	q	45	ARG	NE-CZ-NH1	5.80	123.20	120.30
48	E	14	ARG	NE-CZ-NH1	5.80	123.20	120.30
40	3	70	ARG	NE-CZ-NH1	5.79	123.20	120.30
34	N	783	A	O5'-P-OP2	-5.79	100.49	105.70
34	N	2689	U	OP1-P-OP2	5.79	128.28	119.60
37	0	9	G	O5'-P-OP1	5.79	117.65	110.70
34	N	675	A	O5'-P-OP2	5.78	117.63	110.70
34	N	1617	C	O5'-P-OP2	-5.78	100.50	105.70
34	N	775	G	O5'-P-OP1	-5.77	100.50	105.70
34	N	679	C	OP1-P-OP2	5.77	128.26	119.60
34	N	2682	A	O5'-P-OP2	5.77	117.62	110.70
34	N	301	G	C4-N9-C1'	-5.76	119.01	126.50
34	N	859	G	P-O3'-C3'	5.76	126.61	119.70
37	0	1254	A	O5'-P-OP1	-5.76	100.52	105.70
34	N	1348	C	O5'-P-OP1	-5.75	100.52	105.70
42	5	90	MET	C-N-CA	5.75	136.09	121.70
26	k	37	ARG	NE-CZ-NH2	5.75	123.17	120.30
34	N	2688	G	O5'-P-OP1	-5.74	100.53	105.70
34	N	780	G	O5'-P-OP2	-5.74	100.54	105.70
16	a	49	GLU	OE1-CD-OE2	-5.72	116.44	123.30
34	N	1570	A	O5'-P-OP1	-5.71	100.56	105.70
34	N	504	A	O5'-P-OP2	-5.70	100.57	105.70
45	8	45	ARG	NE-CZ-NH1	5.70	123.15	120.30
4	O	44	G	N9-C1'-C2'	5.70	121.41	114.00
34	N	1843	C	O5'-P-OP1	-5.70	100.57	105.70
34	N	242	G	C4'-C3'-O3'	5.70	124.39	113.00
34	N	1130	U	O5'-P-OP1	-5.69	100.58	105.70
34	N	2645	G	C5'-C4'-C3'	-5.69	106.90	116.00
34	N	860	U	OP1-P-OP2	-5.69	111.07	119.60
34	N	1676	A	O5'-P-OP2	5.69	117.53	110.70
37	0	176	C	O5'-P-OP1	-5.68	100.59	105.70
34	N	1565	C	C5'-C4'-C3'	-5.68	106.92	116.00
51	H	54	ARG	NE-CZ-NH1	5.68	123.14	120.30
34	N	2873	A	C3'-C2'-C1'	5.67	106.04	101.50
51	H	70	LEU	CB-CG-CD2	-5.67	101.37	111.00
34	N	2499	C	O5'-P-OP1	5.66	117.50	110.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	Q	124	ARG	NE-CZ-NH1	5.65	123.13	120.30
5	P	130	LEU	CA-CB-CG	5.65	128.29	115.30
45	8	123	ARG	NE-CZ-NH1	5.64	123.12	120.30
20	e	80	ARG	NE-CZ-NH2	-5.63	117.48	120.30
34	N	1788	C	OP1-P-O3'	5.63	117.58	105.20
5	P	133	ARG	NE-CZ-NH2	5.62	123.11	120.30
34	N	2720	U	N1-C2-O2	-5.62	118.86	122.80
5	P	187	ASP	CB-CG-OD1	5.62	123.36	118.30
34	N	2260	C	O5'-P-OP1	-5.61	100.65	105.70
34	N	2580	U	O5'-P-OP2	-5.61	100.65	105.70
18	c	89	ARG	NE-CZ-NH2	5.61	123.10	120.30
37	0	1067	A	O5'-P-OP1	-5.61	100.65	105.70
37	0	1331	G	O4'-C1'-N9	5.61	112.69	108.20
34	N	2498	C	OP1-P-OP2	5.60	128.00	119.60
41	4	138	ARG	N-CA-CB	5.59	120.66	110.60
37	0	567	G	OP1-P-OP2	5.59	127.98	119.60
34	N	2725	A	C5'-C4'-O4'	-5.58	102.40	109.10
34	N	1261	C	O4'-C4'-C3'	-5.58	98.42	104.00
18	c	21	ARG	NH1-CZ-NH2	5.58	125.53	119.40
34	N	205	G	O4'-C1'-N9	5.58	112.66	108.20
34	N	573	U	P-O3'-C3'	5.58	126.39	119.70
19	d	6	ARG	NE-CZ-NH1	-5.57	117.51	120.30
34	N	1143	A	O5'-P-OP2	-5.57	100.69	105.70
34	N	1029	A	O5'-P-OP1	-5.57	100.69	105.70
39	2	132	ARG	NE-CZ-NH1	5.57	123.08	120.30
37	0	1474	U	O5'-P-OP1	-5.56	100.69	105.70
9	T	149	ARG	NE-CZ-NH2	-5.56	117.52	120.30
15	Z	40	ARG	NE-CZ-NH1	-5.56	117.52	120.30
34	N	2776	A	C2'-C3'-O3'	5.55	122.59	113.70
29	n	16	ARG	NE-CZ-NH1	-5.55	117.53	120.30
34	N	803	U	O5'-P-OP1	-5.55	100.71	105.70
34	N	1612	C	O5'-P-OP1	-5.55	100.71	105.70
5	P	156	ARG	NE-CZ-NH1	5.55	123.07	120.30
50	G	61	ARG	NE-CZ-NH2	-5.55	117.53	120.30
37	0	37	U	N3-C2-O2	-5.54	118.32	122.20
34	N	1952	A	O5'-P-OP1	-5.54	100.71	105.70
37	0	818	G	N9-C1'-C2'	5.54	121.20	114.00
19	d	28	ARG	NE-CZ-NH2	-5.54	117.53	120.30
34	N	372	G	P-O3'-C3'	5.54	126.35	119.70
51	H	43	PHE	CB-CG-CD1	-5.54	116.92	120.80
34	N	528	A	C8-N9-C1'	5.54	137.66	127.70
34	N	1688	U	O5'-P-OP1	-5.53	100.72	105.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	N	2543	G	C5'-C4'-C3'	-5.52	107.16	116.00
34	N	1990	C	O5'-P-OP1	-5.52	100.73	105.70
34	N	2452	C	O5'-P-OP2	-5.52	100.73	105.70
5	P	156	ARG	CG-CD-NE	5.52	123.38	111.80
12	W	39	LYS	CD-CE-NZ	-5.51	99.02	111.70
34	N	2514	U	O5'-P-OP2	-5.51	100.74	105.70
34	N	670	A	C2'-C3'-O3'	5.51	122.51	113.70
5	P	217	ARG	NE-CZ-NH1	-5.51	117.55	120.30
34	N	871	U	P-O5'-C5'	-5.50	112.09	120.90
5	P	232	HIS	O-C-N	-5.50	113.85	123.20
5	P	239	ASN	N-CA-C	5.50	125.85	111.00
16	a	46	ARG	NE-CZ-NH1	-5.50	117.55	120.30
14	Y	78	ARG	NE-CZ-NH1	-5.50	117.55	120.30
34	N	2720	U	N3-C4-C5	5.49	117.89	114.60
49	F	109	ARG	NE-CZ-NH2	-5.48	117.56	120.30
34	N	2872	A	O5'-P-OP1	-5.48	100.77	105.70
37	0	653	U	O5'-P-OP1	-5.48	100.77	105.70
34	N	2037	A	C5'-C4'-O4'	-5.47	102.53	109.10
37	0	330	C	P-O5'-C5'	-5.47	112.14	120.90
37	0	734	G	O5'-P-OP1	-5.47	100.78	105.70
34	N	2359	C	O5'-P-OP1	-5.47	100.78	105.70
4	O	48	U	O5'-P-OP1	-5.46	100.79	105.70
34	N	825	A	O5'-P-OP2	-5.46	100.79	105.70
34	N	463	G	O5'-P-OP2	-5.46	100.79	105.70
34	N	1695	G	O5'-P-OP2	-5.45	100.79	105.70
37	0	886	G	O5'-P-OP1	-5.45	100.79	105.70
45	8	99	ARG	NE-CZ-NH2	-5.45	117.58	120.30
37	0	880	C	O5'-P-OP1	5.45	117.24	110.70
34	N	301	G	C8-N9-C1'	5.45	134.08	127.00
34	N	790	U	O5'-P-OP2	-5.44	100.80	105.70
17	b	33	ARG	NE-CZ-NH2	-5.44	117.58	120.30
34	N	774	G	C1'-C2'-O2'	-5.44	94.29	110.60
34	N	1325	U	O5'-P-OP2	-5.44	100.81	105.70
34	N	2266	A	C4'-C3'-O3'	-5.43	97.99	109.40
7	R	88	ARG	NE-CZ-NH1	-5.43	117.59	120.30
46	9	92	LEU	CA-CB-CG	5.43	127.78	115.30
51	H	64	ARG	CG-CD-NE	-5.42	100.41	111.80
27	l	48	ARG	NE-CZ-NH2	-5.42	117.59	120.30
34	N	514	A	O5'-P-OP1	-5.42	100.82	105.70
12	W	124	VAL	CG1-CB-CG2	-5.42	102.23	110.90
43	6	3	ARG	NE-CZ-NH2	-5.42	117.59	120.30
37	0	816	A	O5'-P-OP2	5.42	117.20	110.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	N	234	U	N3-C2-O2	-5.41	118.42	122.20
34	N	1669	A	C8-N9-C1'	-5.41	117.97	127.70
19	d	3	ARG	NE-CZ-NH2	5.40	123.00	120.30
19	d	92	ARG	NE-CZ-NH2	5.40	123.00	120.30
34	N	748	G	O5'-P-OP2	-5.39	100.84	105.70
34	N	2873	A	P-O5'-C5'	-5.39	112.27	120.90
28	m	54	MET	CG-SD-CE	-5.39	91.57	100.20
17	b	94	ARG	NE-CZ-NH1	-5.39	117.61	120.30
34	N	2405	G	P-O3'-C3'	5.39	126.17	119.70
34	N	2765	A	C2-N3-C4	-5.39	107.91	110.60
37	0	976	G	O5'-P-OP2	5.39	117.17	110.70
34	N	2613	U	N3-C4-O4	-5.38	115.63	119.40
39	2	157	LEU	CA-CB-CG	5.38	127.69	115.30
34	N	430	A	C5-C6-N6	5.38	128.01	123.70
9	T	149	ARG	NE-CZ-NH1	5.38	122.99	120.30
14	Y	52	GLY	C-N-CA	-5.38	111.00	122.30
34	N	1031	G	O5'-P-OP2	-5.38	100.86	105.70
34	N	2848	G	O5'-P-OP1	-5.37	100.87	105.70
34	N	1322	A	O5'-P-OP1	-5.37	100.87	105.70
34	N	2848	G	O4'-C1'-N9	5.37	112.49	108.20
37	0	574	A	O5'-P-OP1	-5.37	100.87	105.70
34	N	1142	A	P-O3'-C3'	5.36	126.14	119.70
5	P	195	VAL	CG1-CB-CG2	-5.36	102.33	110.90
37	0	368	U	N3-C2-O2	-5.35	118.45	122.20
37	0	1500	A	O5'-P-OP2	-5.35	100.89	105.70
12	W	99	ARG	NE-CZ-NH2	-5.34	117.63	120.30
37	0	1301	U	C6-N1-C1'	-5.34	113.72	121.20
6	Q	146	ILE	CG1-CB-CG2	-5.34	99.65	111.40
34	N	2832	U	P-O3'-C3'	5.34	126.11	119.70
37	0	96	U	C2'-C3'-O3'	5.34	122.24	113.70
34	N	1783	A	O5'-P-OP1	5.33	117.10	110.70
37	0	1504	G	O5'-P-OP2	-5.33	100.90	105.70
34	N	932	U	N3-C2-O2	-5.33	118.47	122.20
34	N	2884	U	O4'-C1'-N1	5.33	112.46	108.20
34	N	2286	G	P-O3'-C3'	5.32	126.09	119.70
6	Q	154	LYS	CD-CE-NZ	-5.32	99.46	111.70
37	0	804	U	O5'-P-OP1	-5.32	100.92	105.70
33	r	1	MET	CB-CG-SD	-5.31	96.47	112.40
34	N	1021	A	C5-C6-N6	5.31	127.95	123.70
34	N	1142	A	C3'-C2'-C1'	5.31	105.75	101.50
34	N	1669	A	C4-N9-C1'	5.31	135.86	126.30
48	E	38	TYR	CB-CG-CD1	-5.31	117.81	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	N	771	G	O5'-P-OP1	-5.30	100.93	105.70
37	0	558	G	O5'-P-OP1	5.30	117.06	110.70
37	0	560	A	O5'-P-OP1	-5.30	100.93	105.70
34	N	140	C	C6-N1-C1'	-5.30	114.44	120.80
25	j	41	ARG	CB-CG-CD	5.30	125.38	111.60
34	N	1256	G	O4'-C1'-N9	-5.30	103.96	108.20
5	P	221	ARG	N-CA-CB	5.28	120.11	110.60
29	n	10	ARG	NE-CZ-NH2	5.28	122.94	120.30
34	N	1271	G	O5'-P-OP1	5.28	117.04	110.70
37	0	728	A	O5'-P-OP2	-5.28	100.95	105.70
44	7	99	LEU	CB-CG-CD1	-5.28	102.02	111.00
34	N	532	A	O5'-P-OP2	-5.28	100.95	105.70
34	N	2394	C	O4'-C4'-C3'	-5.28	98.72	104.00
18	c	109	ARG	NE-CZ-NH2	5.27	122.94	120.30
52	I	51	ARG	NE-CZ-NH1	5.26	122.93	120.30
5	P	14	ARG	NE-CZ-NH1	5.26	122.93	120.30
45	8	85	ARG	NE-CZ-NH2	-5.26	117.67	120.30
37	0	108	G	O4'-C1'-N9	5.25	112.40	108.20
34	N	2867	G	P-O3'-C3'	5.25	126.00	119.70
13	X	23	LYS	N-CA-CB	5.24	120.04	110.60
37	0	1319	A	O5'-P-OP1	-5.24	100.98	105.70
34	N	499	U	N3-C4-C5	5.24	117.75	114.60
49	F	98	ARG	CG-CD-NE	5.24	122.81	111.80
37	0	1363	A	C5-C6-N6	5.24	127.89	123.70
26	k	28	ARG	NH1-CZ-NH2	5.23	125.16	119.40
34	N	1800	C	O5'-P-OP2	-5.23	100.99	105.70
34	N	2007	U	O5'-P-OP2	-5.23	100.99	105.70
33	r	3	VAL	CG1-CB-CG2	-5.23	102.53	110.90
5	P	84	ASP	CB-CG-OD1	5.23	123.00	118.30
48	E	22	PRO	O-C-N	-5.23	114.34	122.70
34	N	1829	A	O5'-P-OP2	-5.22	101.00	105.70
34	N	528	A	C4-N9-C1'	-5.22	116.90	126.30
15	Z	18	ARG	NE-CZ-NH2	5.22	122.91	120.30
33	r	36	ARG	CG-CD-NE	-5.22	100.84	111.80
34	N	2831	G	O5'-P-OP1	-5.22	101.01	105.70
34	N	915	C	O5'-P-OP2	-5.21	101.01	105.70
16	a	17	ARG	NE-CZ-NH2	5.21	122.91	120.30
34	N	611	C	O5'-P-OP1	-5.21	101.01	105.70
37	0	822	U	O5'-P-OP1	-5.21	101.01	105.70
34	N	1815	A	C5'-C4'-O4'	-5.21	102.85	109.10
34	N	2874	C	O5'-P-OP2	-5.20	101.02	105.70
34	N	825	A	OP1-P-O3'	5.20	116.63	105.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
19	d	33	ARG	CB-CG-CD	-5.19	98.10	111.60
37	0	1358	U	N3-C2-O2	-5.19	118.56	122.20
6	Q	124	ARG	NE-CZ-NH2	-5.19	117.71	120.30
34	N	2243	U	O5'-P-OP1	-5.19	101.03	105.70
37	0	595	A	P-O3'-C3'	5.19	125.92	119.70
37	0	890	G	P-O3'-C3'	5.18	125.92	119.70
34	N	752	A	O4'-C1'-N9	5.18	112.34	108.20
48	E	61	PHE	CB-CG-CD1	5.17	124.42	120.80
26	k	57	ARG	NE-CZ-NH1	-5.17	117.72	120.30
34	N	2645	G	P-O5'-C5'	-5.17	112.63	120.90
38	1	103	ASN	N-CA-CB	5.16	119.89	110.60
5	P	156	ARG	CB-CG-CD	-5.16	98.20	111.60
41	4	138	ARG	NE-CZ-NH2	-5.16	117.72	120.30
50	G	13	ARG	NE-CZ-NH2	-5.16	117.72	120.30
20	e	79	ARG	CD-NE-CZ	-5.15	116.39	123.60
34	N	1313	U	C6-N1-C1'	-5.15	113.99	121.20
52	I	70	ARG	CG-CD-NE	5.15	122.61	111.80
18	c	51	ARG	NE-CZ-NH2	-5.15	117.73	120.30
34	N	1606	C	O5'-P-OP2	-5.15	101.07	105.70
49	F	3	ARG	CD-NE-CZ	5.14	130.80	123.60
37	0	887	G	O5'-P-OP2	-5.14	101.08	105.70
34	N	1270	C	O5'-P-OP1	-5.14	101.08	105.70
34	N	578	G	OP1-P-OP2	-5.13	111.90	119.60
50	G	85	ARG	NE-CZ-NH2	-5.13	117.73	120.30
34	N	2049	G	O4'-C4'-C3'	-5.13	98.87	104.00
34	N	2720	U	N1-C2-N3	5.13	117.98	114.90
14	Y	132	ARG	NE-CZ-NH2	-5.12	117.74	120.30
34	N	1998	A	O4'-C4'-C3'	-5.12	98.88	104.00
34	N	953	G	OP1-P-OP2	5.12	127.27	119.60
37	0	163	C	O5'-P-OP1	-5.11	101.10	105.70
34	N	1236	G	C5'-C4'-O4'	-5.11	102.97	109.10
37	0	1125	U	C2-N1-C1'	5.11	123.83	117.70
34	N	651	G	O5'-P-OP2	-5.10	101.11	105.70
34	N	1950	G	O5'-P-OP1	-5.10	101.11	105.70
34	N	1288	G	C4-N9-C1'	5.10	133.13	126.50
5	P	217	ARG	CG-CD-NE	-5.09	101.10	111.80
7	R	65	THR	O-C-N	-5.09	114.55	123.20
26	k	72	ARG	NE-CZ-NH1	5.09	122.84	120.30
34	N	830	G	O4'-C1'-N9	-5.08	104.13	108.20
34	N	704	G	O4'-C1'-N9	5.08	112.26	108.20
16	a	86	ARG	NE-CZ-NH2	-5.08	117.76	120.30
34	N	1020	A	P-O3'-C3'	5.08	125.79	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	P	24	LEU	CB-CG-CD1	-5.08	102.37	111.00
34	N	556	A	O5'-P-OP1	-5.08	101.13	105.70
18	c	53	ARG	CB-CG-CD	-5.08	98.40	111.60
34	N	555	G	P-O3'-C3'	5.08	125.79	119.70
47	D	126	LYS	CB-CA-C	5.08	120.55	110.40
6	Q	114	LYS	CA-CB-CG	5.07	124.56	113.40
34	N	1667	G	O5'-P-OP2	5.07	116.78	110.70
34	N	2267	A	N9-C1'-C2'	5.07	120.59	114.00
34	N	2656	U	C6-N1-C1'	-5.07	114.10	121.20
34	N	140	C	N1-C1'-C2'	5.07	120.59	114.00
34	N	1764	C	O5'-P-OP1	-5.07	101.14	105.70
34	N	658	U	O5'-P-OP2	-5.06	101.14	105.70
34	N	2049	G	OP1-P-OP2	-5.06	112.01	119.60
37	0	502	A	O5'-P-OP2	-5.06	101.14	105.70
38	1	74	ARG	NE-CZ-NH1	5.06	122.83	120.30
34	N	1997	C	O4'-C4'-C3'	-5.06	98.94	104.00
37	0	578	C	O5'-P-OP1	5.06	116.77	110.70
51	H	66	LEU	CB-CG-CD2	-5.06	102.40	111.00
34	N	1784	A	O5'-P-OP1	-5.05	101.15	105.70
37	0	578	C	O5'-P-OP2	-5.05	101.15	105.70
34	N	278	A	C4-N9-C1'	5.05	135.39	126.30
4	O	15	A	O4'-C1'-N9	5.05	112.24	108.20
20	e	81	LYS	CD-CE-NZ	5.05	123.31	111.70
34	N	997	G	O5'-P-OP1	-5.05	101.16	105.70
40	3	13	ARG	NE-CZ-NH1	5.05	122.82	120.30
34	N	918	A	O5'-P-OP1	-5.04	101.16	105.70
42	5	24	ARG	NE-CZ-NH2	-5.04	117.78	120.30
34	N	2765	A	C4-N9-C1'	5.04	135.37	126.30
51	H	58	ARG	NE-CZ-NH1	5.04	122.82	120.30
2	s	153	LEU	CA-CB-CG	5.04	126.89	115.30
37	0	1300	G	P-O3'-C3'	5.04	125.74	119.70
34	N	818	G	O5'-P-OP1	-5.04	101.17	105.70
37	0	103	U	O5'-P-OP1	-5.03	101.17	105.70
43	6	95	ARG	NE-CZ-NH2	-5.03	117.78	120.30
4	O	52	A	P-O3'-C3'	5.03	125.73	119.70
34	N	1026	G	O5'-P-OP1	5.03	116.73	110.70
34	N	2215	C	O5'-P-OP1	-5.03	101.18	105.70
34	N	569	U	O5'-P-OP2	-5.03	101.18	105.70
14	Y	2	ARG	NE-CZ-NH1	5.02	122.81	120.30
34	N	2496	C	O5'-P-OP2	-5.02	101.18	105.70
34	N	2354	C	C5'-C4'-C3'	-5.01	107.98	116.00
34	N	2033	A	O5'-P-OP2	-5.01	101.19	105.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	O	71	C	O5'-P-OP1	-5.01	101.19	105.70
16	a	2	ARG	NE-CZ-NH1	5.00	122.80	120.30
34	N	828	U	O5'-P-OP1	-5.00	101.20	105.70
56	u	69	LYS	N-CA-C	5.00	124.51	111.00
34	N	1968	G	O4'-C4'-C3'	-5.00	99.00	104.00

There are no chirality outliers.

All (49) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
37	0	24	U	Sidechain
37	0	368	U	Sidechain
37	0	559	A	Sidechain
37	0	571	U	Sidechain
37	0	864	A	Sidechain
38	1	10	LEU	Peptide
38	1	102	THR	Peptide
38	1	14	VAL	Peptide
39	2	79	LYS	Peptide
39	2	80	LYS	Peptide
41	4	102	GLY	Peptide
41	4	136	VAL	Peptide
41	4	137	VAL	Peptide
41	4	142	ASP	Peptide
41	4	89	HIS	Peptide
42	5	52	ASN	Peptide
42	5	93	LYS	Peptide
45	8	128	SER	Peptide
45	8	53	GLU	Peptide
45	8	54	LEU	Peptide
45	8	55	VAL	Peptide
47	D	125	LYS	Peptide
48	E	22	PRO	Peptide
48	E	77	HIS	Peptide
53	J	17	MET	Peptide
53	J	69	LYS	Peptide
34	N	1802	A	Sidechain
34	N	2522	U	Sidechain
34	N	2765	A	Sidechain
34	N	586	A	Sidechain
34	N	850	U	Sidechain
34	N	927	A	Sidechain

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Mol	Chain	Res	Type	Group
5	P	195	VAL	Peptide
5	P	234	GLY	Peptide
5	P	238	ARG	Peptide
6	Q	151	THR	Peptide
8	S	174	ASP	Peptide
8	S	175	PHE	Peptide
10	U	34	GLY	Peptide
11	V	11	LEU	Peptide
14	Y	114	GLY	Peptide
14	Y	82	LEU	Peptide
15	Z	57	VAL	Peptide,Mainchain
23	h	52	LEU	Peptide
32	q	31	HIS	Peptide
55	t	37	ARG	Peptide
56	u	3	ASN	Peptide
57	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.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	s	35/179 (20%)	32 (91%)	3 (9%)	0	100	100
5	P	269/273 (98%)	247 (92%)	18 (7%)	4 (2%)	10	45
6	Q	207/209 (99%)	195 (94%)	11 (5%)	1 (0%)	29	66
7	R	199/201 (99%)	191 (96%)	8 (4%)	0	100	100
8	S	175/179 (98%)	163 (93%)	11 (6%)	1 (1%)	25	62
9	T	174/177 (98%)	165 (95%)	9 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
10	U	147/149 (99%)	125 (85%)	19 (13%)	3 (2%)	7	39
11	V	139/142 (98%)	112 (81%)	27 (19%)	0	100	100
12	W	140/142 (99%)	136 (97%)	4 (3%)	0	100	100
13	X	120/123 (98%)	109 (91%)	9 (8%)	2 (2%)	9	42
14	Y	141/144 (98%)	121 (86%)	16 (11%)	4 (3%)	5	33
15	Z	134/136 (98%)	119 (89%)	10 (8%)	5 (4%)	3	27
16	a	118/127 (93%)	102 (86%)	14 (12%)	2 (2%)	9	42
17	b	114/117 (97%)	108 (95%)	6 (5%)	0	100	100
18	c	112/115 (97%)	104 (93%)	8 (7%)	0	100	100
19	d	115/118 (98%)	115 (100%)	0	0	100	100
20	e	101/103 (98%)	92 (91%)	8 (8%)	1 (1%)	15	52
21	f	108/110 (98%)	100 (93%)	7 (6%)	1 (1%)	17	54
22	g	91/100 (91%)	80 (88%)	9 (10%)	2 (2%)	6	37
23	h	100/104 (96%)	84 (84%)	14 (14%)	2 (2%)	7	39
24	i	92/94 (98%)	89 (97%)	3 (3%)	0	100	100
25	j	73/85 (86%)	71 (97%)	2 (3%)	0	100	100
26	k	75/78 (96%)	71 (95%)	3 (4%)	1 (1%)	12	47
27	l	61/63 (97%)	56 (92%)	5 (8%)	0	100	100
28	m	56/59 (95%)	52 (93%)	4 (7%)	0	100	100
29	n	54/57 (95%)	48 (89%)	5 (9%)	1 (2%)	8	40
30	o	48/55 (87%)	45 (94%)	3 (6%)	0	100	100
31	p	44/46 (96%)	40 (91%)	4 (9%)	0	100	100
32	q	62/65 (95%)	56 (90%)	5 (8%)	1 (2%)	9	44
33	r	36/55 (66%)	35 (97%)	1 (3%)	0	100	100
35	L	53/70 (76%)	45 (85%)	7 (13%)	1 (2%)	8	40
36	C	130/223 (58%)	123 (95%)	7 (5%)	0	100	100
38	1	216/239 (90%)	187 (87%)	28 (13%)	1 (0%)	29	66
39	2	204/218 (94%)	186 (91%)	16 (8%)	2 (1%)	15	52
40	3	203/206 (98%)	182 (90%)	21 (10%)	0	100	100
41	4	148/162 (91%)	116 (78%)	30 (20%)	2 (1%)	11	45
42	5	98/131 (75%)	81 (83%)	11 (11%)	6 (6%)	1	18

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
43	6	140/156 (90%)	130 (93%)	10 (7%)	0	100	100
44	7	127/130 (98%)	121 (95%)	6 (5%)	0	100	100
45	8	125/130 (96%)	103 (82%)	20 (16%)	2 (2%)	9	44
46	9	96/103 (93%)	84 (88%)	9 (9%)	3 (3%)	4	31
47	D	115/129 (89%)	102 (89%)	13 (11%)	0	100	100
48	E	121/124 (98%)	104 (86%)	15 (12%)	2 (2%)	9	42
49	F	112/118 (95%)	103 (92%)	8 (7%)	1 (1%)	17	54
50	G	92/101 (91%)	77 (84%)	14 (15%)	1 (1%)	14	50
51	H	86/89 (97%)	81 (94%)	5 (6%)	0	100	100
52	I	80/82 (98%)	69 (86%)	10 (12%)	1 (1%)	12	47
53	J	78/84 (93%)	66 (85%)	9 (12%)	3 (4%)	3	27
54	K	53/75 (71%)	49 (92%)	3 (6%)	1 (2%)	8	40
55	t	77/92 (84%)	73 (95%)	4 (5%)	0	100	100
56	u	83/87 (95%)	78 (94%)	4 (5%)	1 (1%)	13	49
57	v	49/88 (56%)	41 (84%)	7 (14%)	1 (2%)	7	39
All	All	5826/6442 (90%)	5264 (90%)	503 (9%)	59 (1%)	20	52

All (59) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
5	P	239	ASN
10	U	72	ILE
14	Y	36	LYS
15	Z	58	LYS
20	e	53	PHE
29	n	55	ILE
32	q	32	ILE
42	5	53	LYS
46	9	58	ASN
52	I	44	SER
53	J	70	THR
57	v	11	PRO
10	U	41	LYS
15	Z	59	ARG
16	a	3	HIS
39	2	81	GLY
42	5	56	LYS

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Mol	Chain	Res	Type
42	5	91	ARG
45	8	55	VAL
48	E	23	ALA
53	J	18	GLU
56	u	69	LYS
5	P	235	GLY
15	Z	39	GLY
22	g	78	SER
23	h	99	ASN
26	k	3	ARG
39	2	80	LYS
42	5	54	LEU
42	5	94	HIS
46	9	43	PRO
48	E	78	SER
53	J	71	LYS
54	K	48	ARG
5	P	10	SER
5	P	238	ARG
6	Q	149	ASN
8	S	175	PHE
10	U	35	LYS
13	X	93	GLN
14	Y	29	LYS
14	Y	30	THR
14	Y	31	GLY
15	Z	69	PRO
22	g	77	ARG
35	L	3	LYS
41	4	51	GLY
42	5	86	ARG
49	F	66	GLU
16	a	88	ALA
21	f	64	ALA
23	h	53	ASN
38	1	194	ASP
41	4	90	THR
50	G	4	GLN
15	Z	87	GLY
46	9	42	LEU
45	8	10	GLY
13	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	
2	s	34/158 (22%)	34 (100%)	0	100	100
5	P	216/218 (99%)	215 (100%)	1 (0%)	88	93
6	Q	164/164 (100%)	161 (98%)	3 (2%)	59	77
7	R	165/165 (100%)	161 (98%)	4 (2%)	49	69
8	S	148/150 (99%)	148 (100%)	0	100	100
9	T	137/138 (99%)	137 (100%)	0	100	100
10	U	114/114 (100%)	107 (94%)	7 (6%)	18	47
11	V	109/110 (99%)	108 (99%)	1 (1%)	78	87
12	W	116/116 (100%)	116 (100%)	0	100	100
13	X	103/104 (99%)	103 (100%)	0	100	100
14	Y	102/103 (99%)	102 (100%)	0	100	100
15	Z	109/109 (100%)	108 (99%)	1 (1%)	78	87
16	a	100/102 (98%)	97 (97%)	3 (3%)	41	64
17	b	86/87 (99%)	86 (100%)	0	100	100
18	c	98/100 (98%)	95 (97%)	3 (3%)	40	63
19	d	89/90 (99%)	88 (99%)	1 (1%)	73	84
20	e	84/84 (100%)	82 (98%)	2 (2%)	49	69
21	f	93/93 (100%)	93 (100%)	0	100	100
22	g	80/85 (94%)	80 (100%)	0	100	100
23	h	83/85 (98%)	82 (99%)	1 (1%)	71	83
24	i	78/78 (100%)	78 (100%)	0	100	100
25	j	56/62 (90%)	55 (98%)	1 (2%)	59	77
26	k	67/68 (98%)	67 (100%)	0	100	100
27	l	55/55 (100%)	55 (100%)	0	100	100
28	m	48/49 (98%)	48 (100%)	0	100	100
29	n	47/48 (98%)	46 (98%)	1 (2%)	53	72

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
30	o	45/49 (92%)	45 (100%)	0	100	100
31	p	38/38 (100%)	38 (100%)	0	100	100
32	q	51/52 (98%)	49 (96%)	2 (4%)	32	58
33	r	34/50 (68%)	34 (100%)	0	100	100
35	L	48/63 (76%)	48 (100%)	0	100	100
36	C	110/174 (63%)	110 (100%)	0	100	100
38	1	180/198 (91%)	179 (99%)	1 (1%)	86	91
39	2	170/178 (96%)	169 (99%)	1 (1%)	86	91
40	3	172/173 (99%)	171 (99%)	1 (1%)	86	91
41	4	113/123 (92%)	110 (97%)	3 (3%)	44	66
42	5	87/112 (78%)	86 (99%)	1 (1%)	73	84
43	6	119/129 (92%)	118 (99%)	1 (1%)	81	88
44	7	104/105 (99%)	104 (100%)	0	100	100
45	8	105/107 (98%)	104 (99%)	1 (1%)	76	85
46	9	86/90 (96%)	85 (99%)	1 (1%)	71	83
47	D	90/98 (92%)	89 (99%)	1 (1%)	73	84
48	E	103/104 (99%)	103 (100%)	0	100	100
49	F	92/96 (96%)	91 (99%)	1 (1%)	73	84
50	G	79/83 (95%)	79 (100%)	0	100	100
51	H	75/77 (97%)	74 (99%)	1 (1%)	69	81
52	I	65/65 (100%)	65 (100%)	0	100	100
53	J	74/77 (96%)	73 (99%)	1 (1%)	67	80
54	K	48/66 (73%)	48 (100%)	0	100	100
55	t	70/80 (88%)	68 (97%)	2 (3%)	42	64
56	u	65/66 (98%)	65 (100%)	0	100	100
57	v	43/76 (57%)	35 (81%)	8 (19%)	1	10
All	All	4847/5264 (92%)	4792 (99%)	55 (1%)	74	84

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

Mol	Chain	Res	Type
5	P	218	PRO
6	Q	73	VAL

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Mol	Chain	Res	Type
6	Q	105	LYS
6	Q	205	PRO
7	R	61	ARG
7	R	69	ARG
7	R	149	ILE
7	R	163	ASN
10	U	27	ARG
10	U	44	ILE
10	U	50	ARG
10	U	55	GLU
10	U	60	GLU
10	U	70	GLU
10	U	101	ASP
11	V	65	ARG
15	Z	128	THR
16	a	2	ARG
16	a	50	PRO
16	a	70	THR
18	c	53	ARG
18	c	73	VAL
18	c	93	ARG
19	d	33	ARG
20	e	49	ILE
20	e	53	PHE
23	h	68	SER
25	j	41	ARG
29	n	28	LEU
32	q	2	PRO
32	q	32	ILE
38	1	207	ILE
39	2	55	ILE
40	3	5	LEU
41	4	15	LEU
41	4	115	LEU
41	4	157	ARG
42	5	9	MET
43	6	25	LYS
45	8	120	LYS
46	9	17	LEU
47	D	93	ARG
49	F	98	ARG
51	H	70	LEU

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Mol	Chain	Res	Type
53	J	61	ILE
55	t	5	LEU
55	t	49	ILE
57	v	4	ILE
57	v	5	LYS
57	v	6	VAL
57	v	16	LEU
57	v	17	ARG
57	v	19	PHE
57	v	20	LYS
57	v	29	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (42) such sidechains are listed below:

Mol	Chain	Res	Type
2	s	126	HIS
5	P	53	HIS
5	P	86	ASN
5	P	134	ASN
5	P	260	ASN
6	Q	49	GLN
6	Q	149	ASN
6	Q	150	GLN
7	R	163	ASN
7	R	165	HIS
9	T	22	GLN
9	T	143	GLN
10	U	11	ASN
10	U	135	HIS
11	V	12	GLN
12	W	40	HIS
17	b	38	GLN
18	c	12	GLN
19	d	37	GLN
19	d	44	GLN
21	f	15	GLN
27	l	27	ASN
27	l	58	ASN
29	n	6	ASN
30	o	19	HIS
35	L	20	ASN
36	C	57	GLN

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Mol	Chain	Res	Type
36	C	58	ASN
36	C	172	HIS
38	1	177	ASN
41	4	89	HIS
42	5	3	HIS
42	5	11	HIS
42	5	55	HIS
43	6	28	ASN
45	8	32	GLN
47	D	118	HIS
49	F	8	ASN
50	G	49	GLN
52	I	63	GLN
53	J	31	HIS
54	K	52	GLN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	72/73 (98%)	19 (26%)	8 (11%)
3	M	74/75 (98%)	11 (14%)	0
34	N	2894/2903 (99%)	519 (17%)	34 (1%)
37	0	1531/1539 (99%)	275 (17%)	22 (1%)
4	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

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Mol	Chain	Res	Type
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
3	M	9	C
3	M	10	G
3	M	15	G
3	M	16	C
3	M	17	G
3	M	19	U
3	M	20	A
3	M	42	G
3	M	47	C
3	M	74	C
3	M	75	A
4	O	13	G
4	O	25	U
4	O	31	C
4	O	35	C
4	O	41	G
4	O	44	G
4	O	45	A
4	O	51	G
4	O	53	A
4	O	56	G
4	O	57	A
4	O	64	G
4	O	66	A
4	O	67	G
4	O	88	C
4	O	89	U
4	O	90	C
4	O	91	C
4	O	99	A
4	O	108	A
4	O	109	A
34	N	10	A
34	N	23	G
34	N	28	A

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Mol	Chain	Res	Type
34	N	35	G
34	N	36	G
34	N	42	A
34	N	46	G
34	N	51	G
34	N	55	G
34	N	60	G
34	N	63	A
34	N	71	A
34	N	74	A
34	N	75	G
34	N	84	A
34	N	96	C
34	N	101	A
34	N	102	U
34	N	103	A
34	N	118	A
34	N	119	A
34	N	120	U
34	N	125	A
34	N	138	U
34	N	139	U
34	N	140	C
34	N	141	G
34	N	142	A
34	N	162	U
34	N	163	C
34	N	165	A
34	N	166	U
34	N	188	G
34	N	196	A
34	N	199	A
34	N	201	C
34	N	215	G
34	N	216	A
34	N	221	A
34	N	222	A
34	N	223	A
34	N	224	U
34	N	228	C
34	N	241	A
34	N	242	G

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Mol	Chain	Res	Type
34	N	243	U
34	N	248	G
34	N	255	A
34	N	265	A
34	N	266	G
34	N	267	C
34	N	271	G
34	N	272	A
34	N	276	U
34	N	278	A
34	N	281	C
34	N	284	U
34	N	294	A
34	N	301	G
34	N	311	A
34	N	323	C
34	N	329	G
34	N	330	A
34	N	332	A
34	N	346	A
34	N	361	G
34	N	362	A
34	N	371	A
34	N	372	G
34	N	373	U
34	N	386	G
34	N	396	G
34	N	399	U
34	N	403	U
34	N	404	A
34	N	405	U
34	N	406	G
34	N	411	G
34	N	412	A
34	N	421	C
34	N	422	A
34	N	424	G
34	N	435	C
34	N	447	A
34	N	455	C
34	N	456	C
34	N	457	A

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Mol	Chain	Res	Type
34	N	467	G
34	N	471	A
34	N	473	G
34	N	481	G
34	N	491	G
34	N	501	A
34	N	504	A
34	N	505	A
34	N	509	C
34	N	513	A
34	N	529	A
34	N	531	C
34	N	532	A
34	N	543	G
34	N	544	C
34	N	546	U
34	N	548	G
34	N	549	G
34	N	550	C
34	N	556	A
34	N	563	A
34	N	573	U
34	N	575	A
34	N	578	G
34	N	586	A
34	N	603	A
34	N	613	A
34	N	614	A
34	N	616	A
34	N	622	G
34	N	627	A
34	N	637	A
34	N	645	C
34	N	646	U
34	N	647	G
34	N	648	G
34	N	654	A
34	N	655	A
34	N	669	G
34	N	670	A
34	N	671	C
34	N	677	A

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Mol	Chain	Res	Type
34	N	686	U
34	N	695	G
34	N	696	G
34	N	717	C
34	N	729	G
34	N	730	A
34	N	738	G
34	N	747	U
34	N	764	A
34	N	765	C
34	N	775	G
34	N	776	G
34	N	782	A
34	N	783	A
34	N	784	G
34	N	785	G
34	N	792	A
34	N	800	A
34	N	805	G
34	N	806	C
34	N	812	C
34	N	819	A
34	N	827	U
34	N	828	U
34	N	829	A
34	N	845	A
34	N	846	U
34	N	858	G
34	N	860	U
34	N	866	A
34	N	869	G
34	N	878	A
34	N	885	C
34	N	896	A
34	N	897	C
34	N	907	G
34	N	910	A
34	N	914	G
34	N	919	U
34	N	932	U
34	N	941	A
34	N	945	A

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Mol	Chain	Res	Type
34	N	946	C
34	N	953	G
34	N	961	C
34	N	973	A
34	N	974	G
34	N	983	A
34	N	985	C
34	N	989	G
34	N	995	C
34	N	996	A
34	N	997	G
34	N	1004	U
34	N	1012	U
34	N	1013	C
34	N	1020	A
34	N	1021	A
34	N	1022	G
34	N	1023	U
34	N	1025	G
34	N	1026	G
34	N	1033	U
34	N	1046	A
34	N	1047	G
34	N	1057	A
34	N	1060	U
34	N	1062	G
34	N	1064	C
34	N	1066	U
34	N	1067	A
34	N	1068	G
34	N	1070	A
34	N	1077	A
34	N	1082	U
34	N	1083	U
34	N	1088	A
34	N	1089	A
34	N	1090	A
34	N	1094	U
34	N	1096	A
34	N	1097	U
34	N	1100	C
34	N	1104	C

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Mol	Chain	Res	Type
34	N	1110	G
34	N	1111	A
34	N	1112	G
34	N	1119	U
34	N	1122	G
34	N	1130	U
34	N	1132	U
34	N	1133	A
34	N	1135	C
34	N	1136	G
34	N	1141	U
34	N	1142	A
34	N	1143	A
34	N	1155	A
34	N	1168	G
34	N	1171	G
34	N	1173	U
34	N	1174	U
34	N	1175	A
34	N	1180	U
34	N	1186	G
34	N	1195	G
34	N	1204	A
34	N	1205	A
34	N	1206	G
34	N	1210	G
34	N	1212	G
34	N	1237	A
34	N	1238	G
34	N	1250	G
34	N	1251	C
34	N	1253	A
34	N	1256	G
34	N	1257	C
34	N	1265	A
34	N	1266	G
34	N	1268	A
34	N	1271	G
34	N	1272	A
34	N	1275	A
34	N	1300	G
34	N	1301	A

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Mol	Chain	Res	Type
34	N	1321	A
34	N	1329	U
34	N	1332	G
34	N	1345	C
34	N	1352	U
34	N	1365	A
34	N	1368	G
34	N	1376	C
34	N	1379	U
34	N	1383	A
34	N	1386	C
34	N	1395	A
34	N	1403	A
34	N	1416	G
34	N	1419	A
34	N	1420	A
34	N	1421	G
34	N	1427	A
34	N	1428	C
34	N	1434	A
34	N	1437	C
34	N	1453	A
34	N	1458	U
34	N	1461	C
34	N	1478	G
34	N	1482	G
34	N	1504	A
34	N	1508	A
34	N	1509	A
34	N	1515	A
34	N	1524	G
34	N	1529	G
34	N	1535	A
34	N	1536	C
34	N	1537	G
34	N	1538	G
34	N	1554	U
34	N	1565	C
34	N	1566	A
34	N	1569	A
34	N	1578	U
34	N	1583	A

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Mol	Chain	Res	Type
34	N	1584	U
34	N	1585	C
34	N	1587	G
34	N	1607	C
34	N	1608	A
34	N	1610	A
34	N	1613	G
34	N	1622	G
34	N	1647	U
34	N	1648	U
34	N	1651	G
34	N	1674	G
34	N	1675	C
34	N	1676	A
34	N	1698	A
34	N	1699	G
34	N	1713	A
34	N	1715	G
34	N	1728	C
34	N	1729	U
34	N	1730	C
34	N	1733	G
34	N	1738	G
34	N	1757	A
34	N	1758	U
34	N	1760	C
34	N	1764	C
34	N	1773	A
34	N	1784	A
34	N	1787	A
34	N	1800	C
34	N	1801	A
34	N	1802	A
34	N	1808	A
34	N	1811	G
34	N	1816	C
34	N	1829	A
34	N	1833	C
34	N	1835	G
34	N	1857	G
34	N	1869	G
34	N	1870	C

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Mol	Chain	Res	Type
34	N	1900	A
34	N	1901	A
34	N	1906	G
34	N	1913	A
34	N	1919	A
34	N	1927	A
34	N	1929	G
34	N	1930	G
34	N	1931	U
34	N	1938	A
34	N	1955	U
34	N	1964	G
34	N	1967	C
34	N	1970	A
34	N	1971	U
34	N	1972	G
34	N	1991	U
34	N	1993	U
34	N	1997	C
34	N	2004	G
34	N	2006	C
34	N	2020	A
34	N	2022	U
34	N	2023	C
34	N	2031	A
34	N	2033	A
34	N	2043	C
34	N	2046	G
34	N	2055	C
34	N	2056	G
34	N	2060	A
34	N	2061	G
34	N	2062	A
34	N	2069	G
34	N	2072	C
34	N	2077	A
34	N	2092	U
34	N	2094	A
34	N	2097	A
34	N	2099	U
34	N	2110	G
34	N	2111	U

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Mol	Chain	Res	Type
34	N	2112	G
34	N	2113	U
34	N	2118	U
34	N	2119	A
34	N	2132	U
34	N	2133	G
34	N	2145	C
34	N	2147	A
34	N	2162	G
34	N	2171	A
34	N	2172	U
34	N	2173	A
34	N	2190	G
34	N	2191	A
34	N	2194	U
34	N	2198	A
34	N	2200	C
34	N	2203	U
34	N	2204	G
34	N	2211	A
34	N	2212	A
34	N	2214	C
34	N	2225	A
34	N	2226	C
34	N	2238	G
34	N	2239	G
34	N	2266	A
34	N	2278	A
34	N	2279	G
34	N	2283	C
34	N	2286	G
34	N	2287	A
34	N	2288	A
34	N	2297	A
34	N	2305	U
34	N	2307	G
34	N	2309	A
34	N	2312	U
34	N	2325	G
34	N	2333	A
34	N	2334	U
34	N	2345	G

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Mol	Chain	Res	Type
34	N	2347	C
34	N	2350	C
34	N	2354	C
34	N	2357	G
34	N	2361	G
34	N	2383	G
34	N	2385	C
34	N	2391	G
34	N	2402	U
34	N	2403	C
34	N	2406	A
34	N	2407	A
34	N	2422	C
34	N	2423	U
34	N	2425	A
34	N	2426	A
34	N	2427	C
34	N	2429	G
34	N	2430	A
34	N	2431	U
34	N	2435	A
34	N	2441	U
34	N	2448	A
34	N	2470	G
34	N	2476	A
34	N	2498	C
34	N	2502	G
34	N	2503	A
34	N	2504	U
34	N	2505	G
34	N	2507	C
34	N	2518	A
34	N	2520	C
34	N	2529	G
34	N	2535	G
34	N	2547	A
34	N	2554	U
34	N	2566	A
34	N	2567	G
34	N	2572	A
34	N	2573	C
34	N	2574	G

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Mol	Chain	Res	Type
34	N	2578	G
34	N	2585	U
34	N	2602	A
34	N	2603	G
34	N	2609	U
34	N	2613	U
34	N	2615	U
34	N	2629	U
34	N	2630	G
34	N	2636	C
34	N	2645	G
34	N	2646	C
34	N	2655	G
34	N	2656	U
34	N	2661	G
34	N	2663	G
34	N	2682	A
34	N	2689	U
34	N	2690	U
34	N	2714	G
34	N	2716	C
34	N	2718	G
34	N	2724	U
34	N	2727	A
34	N	2733	A
34	N	2748	A
34	N	2751	G
34	N	2752	C
34	N	2765	A
34	N	2776	A
34	N	2777	G
34	N	2778	A
34	N	2779	U
34	N	2791	G
34	N	2792	A
34	N	2798	U
34	N	2801	G
34	N	2818	U
34	N	2820	A
34	N	2833	U
34	N	2834	G
34	N	2836	U

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Mol	Chain	Res	Type
34	N	2849	U
34	N	2850	A
34	N	2859	G
34	N	2867	G
34	N	2868	A
34	N	2872	A
34	N	2873	A
34	N	2880	C
34	N	2884	U
34	N	2887	A
34	N	2891	U
34	N	2903	U
37	0	4	U
37	0	6	G
37	0	9	G
37	0	32	A
37	0	39	G
37	0	44	A
37	0	47	C
37	0	48	C
37	0	50	A
37	0	51	A
37	0	52	C
37	0	58	C
37	0	65	A
37	0	69	G
37	0	71	A
37	0	72	A
37	0	83	C
37	0	84	U
37	0	85	U
37	0	86	G
37	0	87	C
37	0	92	U
37	0	97	G
37	0	108	G
37	0	115	G
37	0	116	A
37	0	122	G
37	0	130	A
37	0	141	G
37	0	143	A

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Mol	Chain	Res	Type
37	0	144	G
37	0	149	A
37	0	156	C
37	0	163	C
37	0	174	A
37	0	177	G
37	0	182	A
37	0	183	C
37	0	184	G
37	0	197	A
37	0	209	U
37	0	210	C
37	0	211	G
37	0	226	G
37	0	245	U
37	0	247	G
37	0	251	G
37	0	266	G
37	0	267	C
37	0	280	C
37	0	281	G
37	0	289	G
37	0	298	A
37	0	306	A
37	0	321	A
37	0	328	C
37	0	332	G
37	0	347	G
37	0	351	G
37	0	352	C
37	0	354	G
37	0	358	U
37	0	367	U
37	0	372	C
37	0	375	U
37	0	384	G
37	0	389	A
37	0	397	A
37	0	398	U
37	0	406	G
37	0	412	A
37	0	413	G

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Mol	Chain	Res	Type
37	0	421	U
37	0	422	C
37	0	423	G
37	0	424	G
37	0	429	U
37	0	430	A
37	0	439	U
37	0	451	A
37	0	458	U
37	0	459	A
37	0	467	U
37	0	468	A
37	0	474	G
37	0	478	A
37	0	479	U
37	0	481	G
37	0	484	G
37	0	485	U
37	0	486	U
37	0	495	A
37	0	497	G
37	0	511	C
37	0	518	C
37	0	519	C
37	0	521	G
37	0	527	G
37	0	531	U
37	0	532	A
37	0	533	A
37	0	547	A
37	0	559	A
37	0	562	U
37	0	572	A
37	0	573	A
37	0	576	C
37	0	596	A
37	0	607	A
37	0	633	G
37	0	639	G
37	0	650	G
37	0	652	U
37	0	665	A

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Mol	Chain	Res	Type
37	0	675	A
37	0	688	G
37	0	695	A
37	0	701	U
37	0	702	A
37	0	703	G
37	0	718	A
37	0	721	G
37	0	723	U
37	0	724	G
37	0	731	G
37	0	734	G
37	0	747	A
37	0	755	G
37	0	777	A
37	0	793	U
37	0	794	A
37	0	813	U
37	0	815	A
37	0	817	C
37	0	818	G
37	0	819	A
37	0	821	G
37	0	828	U
37	0	832	G
37	0	836	G
37	0	841	C
37	0	842	U
37	0	843	U
37	0	844	G
37	0	846	G
37	0	849	G
37	0	859	G
37	0	864	A
37	0	885	G
37	0	889	A
37	0	890	G
37	0	891	U
37	0	902	G
37	0	914	A
37	0	926	G
37	0	934	C

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Mol	Chain	Res	Type
37	0	935	A
37	0	960	U
37	0	965	U
37	0	966	G
37	0	969	A
37	0	971	G
37	0	972	C
37	0	975	A
37	0	976	G
37	0	977	A
37	0	989	U
37	0	993	G
37	0	999	C
37	0	1000	A
37	0	1004	A
37	0	1008	U
37	0	1009	U
37	0	1017	U
37	0	1018	G
37	0	1020	G
37	0	1022	A
37	0	1024	G
37	0	1025	U
37	0	1026	G
37	0	1027	C
37	0	1030	U
37	0	1031	C
37	0	1032	G
37	0	1043	G
37	0	1044	A
37	0	1053	G
37	0	1056	U
37	0	1065	U
37	0	1085	U
37	0	1092	A
37	0	1094	G
37	0	1095	U
37	0	1101	A
37	0	1125	U
37	0	1130	A
37	0	1132	C
37	0	1136	C

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Mol	Chain	Res	Type
37	0	1137	C
37	0	1138	G
37	0	1139	G
37	0	1140	C
37	0	1146	A
37	0	1158	C
37	0	1159	U
37	0	1168	U
37	0	1171	A
37	0	1182	G
37	0	1183	U
37	0	1184	G
37	0	1190	G
37	0	1196	A
37	0	1200	C
37	0	1201	A
37	0	1202	U
37	0	1212	U
37	0	1213	A
37	0	1227	A
37	0	1238	A
37	0	1253	G
37	0	1256	A
37	0	1257	A
37	0	1258	G
37	0	1260	G
37	0	1261	A
37	0	1274	A
37	0	1275	A
37	0	1278	G
37	0	1280	A
37	0	1281	C
37	0	1287	A
37	0	1297	G
37	0	1298	U
37	0	1300	G
37	0	1301	U
37	0	1302	C
37	0	1305	G
37	0	1317	C
37	0	1318	A
37	0	1319	A

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Mol	Chain	Res	Type
37	0	1320	C
37	0	1322	C
37	0	1323	G
37	0	1331	G
37	0	1332	A
37	0	1340	A
37	0	1346	A
37	0	1347	G
37	0	1348	U
37	0	1353	G
37	0	1363	A
37	0	1364	U
37	0	1370	G
37	0	1379	G
37	0	1383	C
37	0	1394	A
37	0	1400	C
37	0	1419	G
37	0	1422	G
37	0	1433	A
37	0	1441	A
37	0	1446	A
37	0	1451	U
37	0	1452	C
37	0	1487	G
37	0	1492	A
37	0	1494	G
37	0	1497	G
37	0	1503	A
37	0	1506	U
37	0	1517	G
37	0	1519	A
37	0	1529	G
37	0	1530	G
37	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

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Mol	Chain	Res	Type
1	A	21	A
1	A	44	G
1	A	45	U
1	A	46	G
1	A	60	U
4	O	52	A
34	N	60	G
34	N	227	A
34	N	242	G
34	N	249	C
34	N	372	G
34	N	404	A
34	N	421	C
34	N	446	G
34	N	456	C
34	N	474	G
34	N	503	A
34	N	512	G
34	N	555	G
34	N	670	A
34	N	774	G
34	N	784	G
34	N	859	G
34	N	995	C
34	N	1020	A
34	N	1134	A
34	N	1141	U
34	N	1142	A
34	N	1236	G
34	N	1900	A
34	N	2062	A
34	N	2225	A
34	N	2282	G
34	N	2286	G
34	N	2311	A
34	N	2405	G
34	N	2655	G
34	N	2776	A
34	N	2867	G
34	N	2873	A
37	0	64	G
37	0	85	U

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Mol	Chain	Res	Type
37	0	96	U
37	0	115	G
37	0	388	G
37	0	429	U
37	0	518	C
37	0	595	A
37	0	812	G
37	0	890	G
37	0	965	U
37	0	1124	G
37	0	1145	A
37	0	1182	G
37	0	1190	G
37	0	1201	A
37	0	1300	G
37	0	1345	U
37	0	1347	G
37	0	1491	G
37	0	1493	A
37	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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

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.

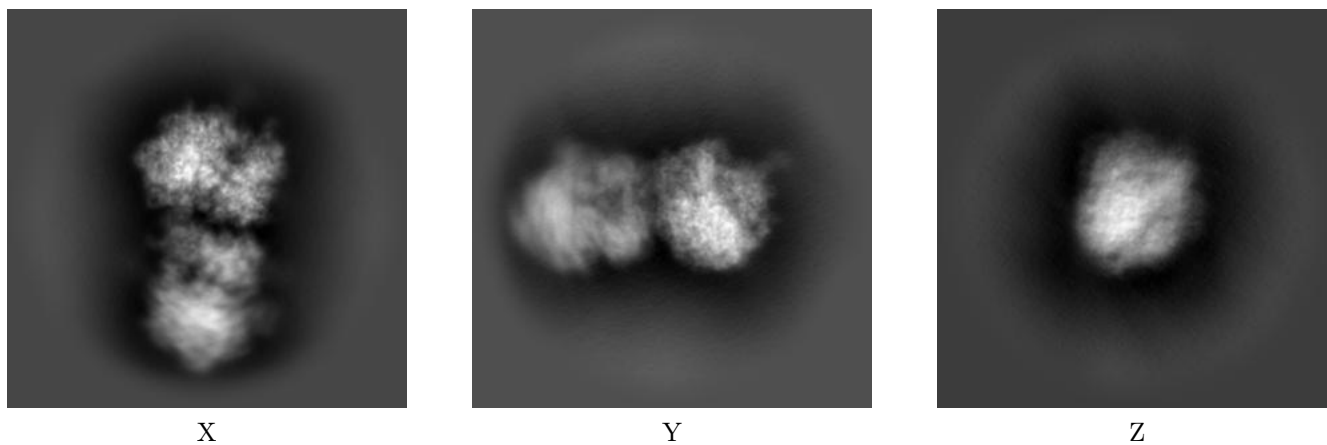
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-13952. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

6.1 Orthogonal projections [i](#)

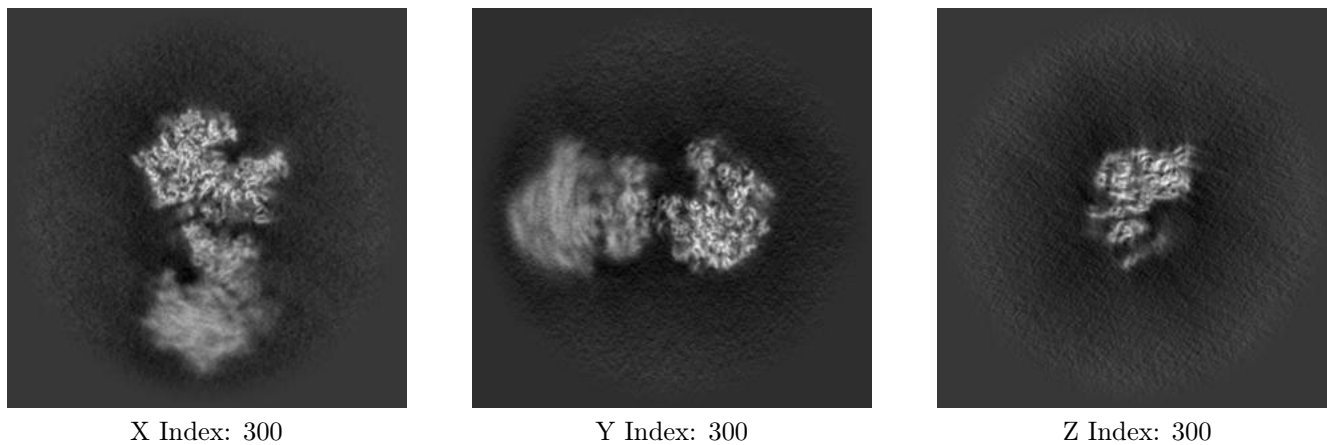
6.1.1 Primary map



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

6.2 Central slices [i](#)

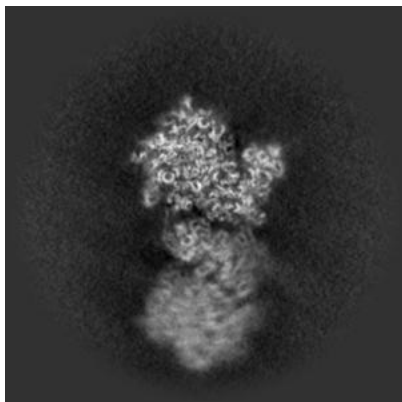
6.2.1 Primary map



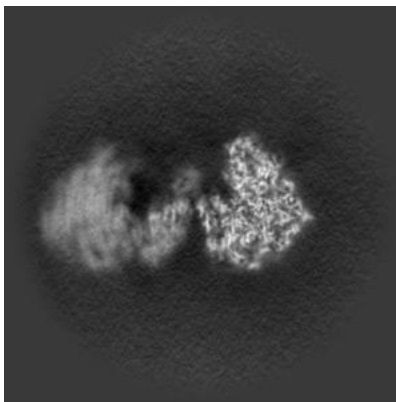
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

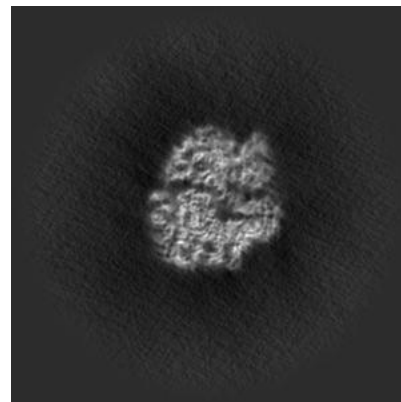
6.3.1 Primary map



X Index: 282



Y Index: 275



Z Index: 348

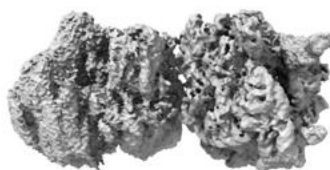
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



X



Y



Z

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

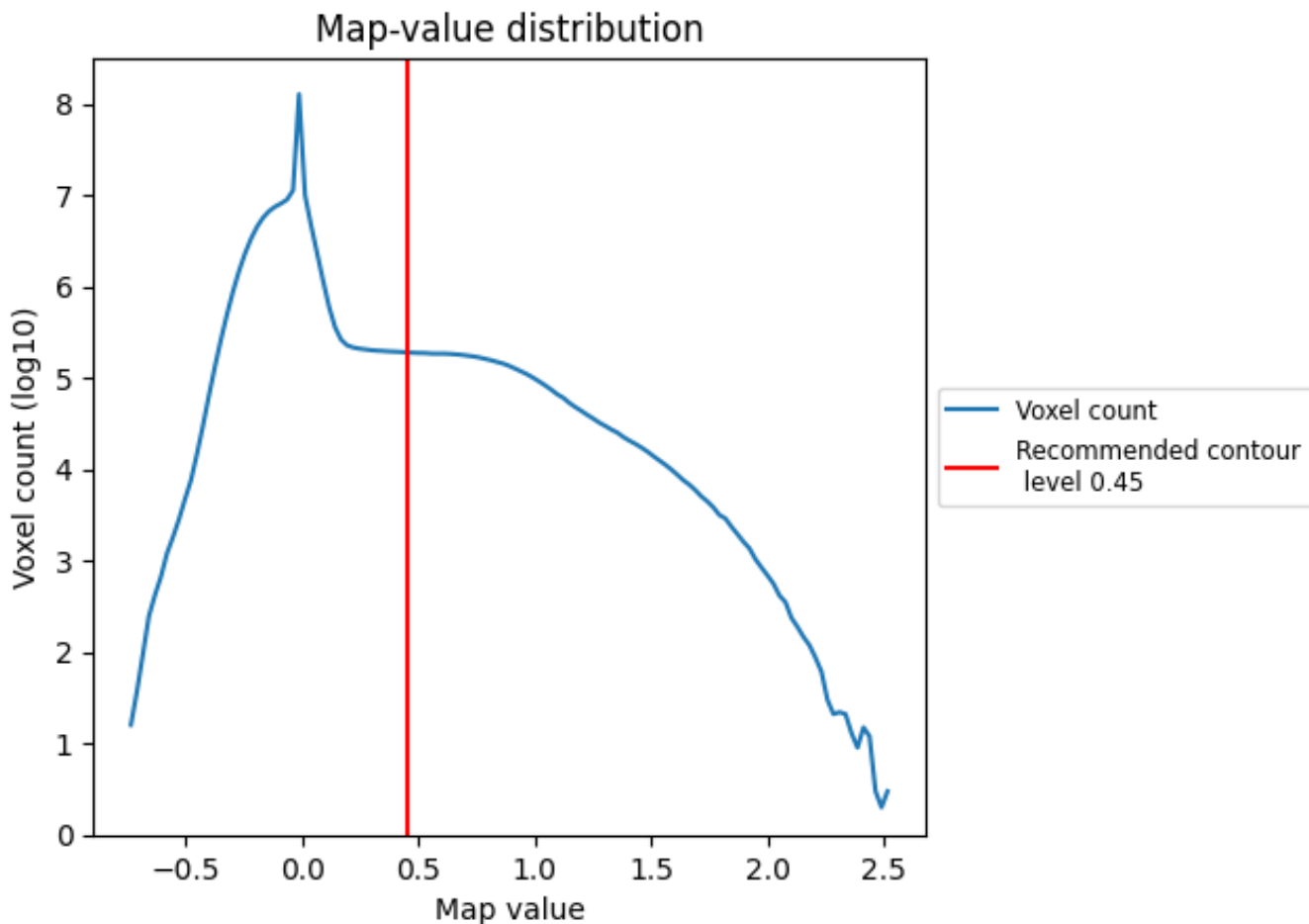
6.5 Mask visualisation

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

7 Map analysis [i](#)

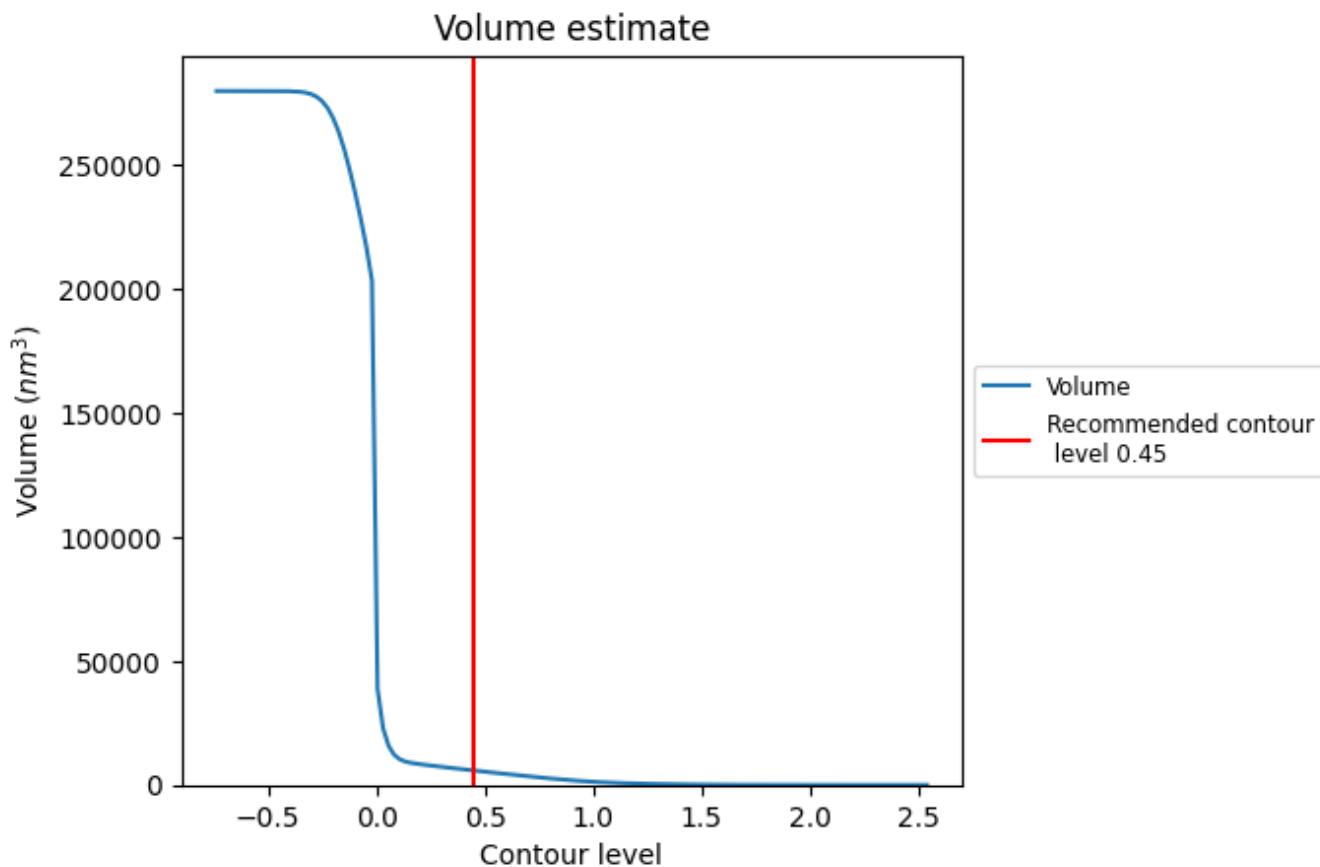
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

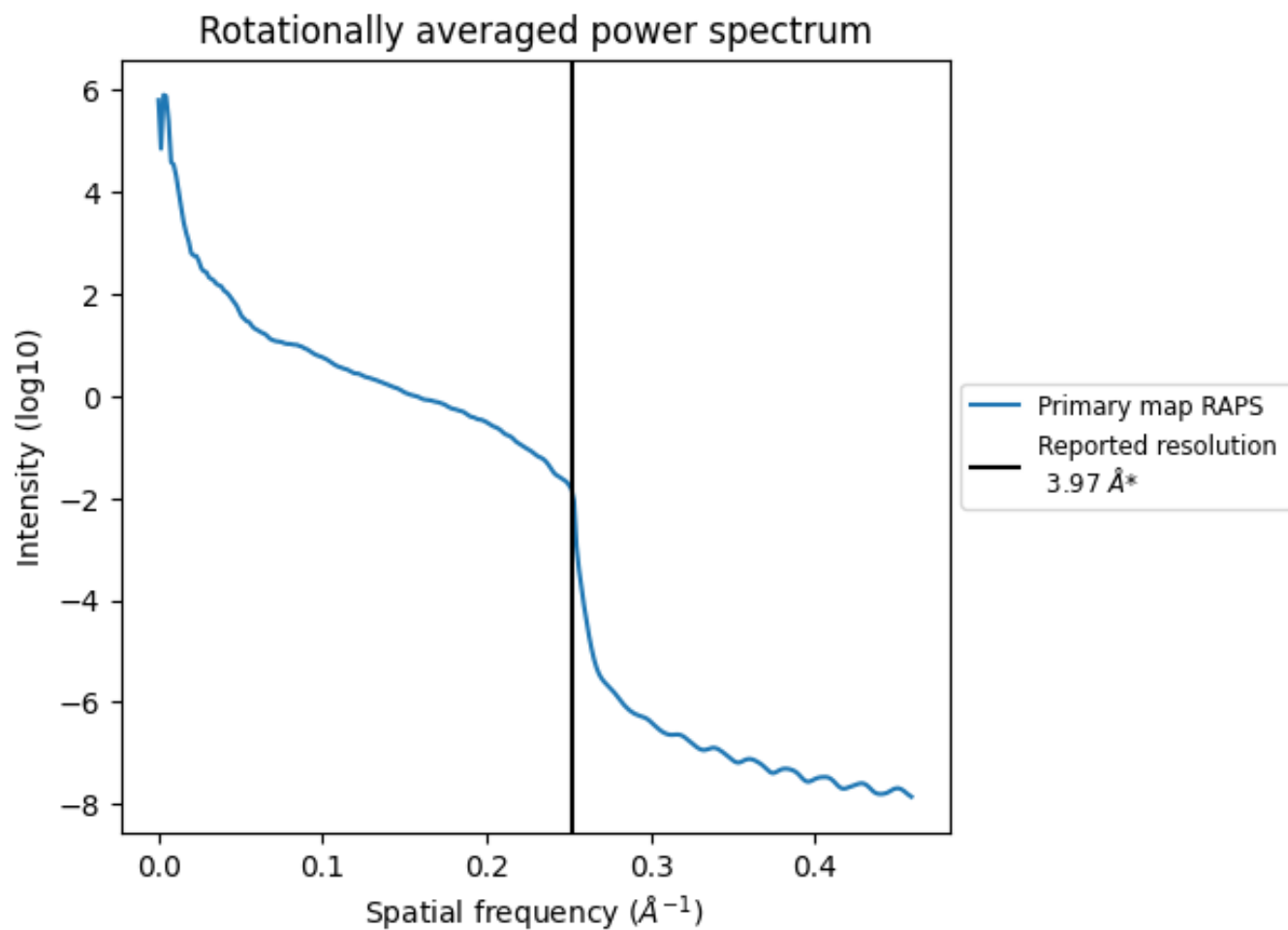
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 5826 nm^3 ; this corresponds to an approximate mass of 5263 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 0.252\AA^{-1}

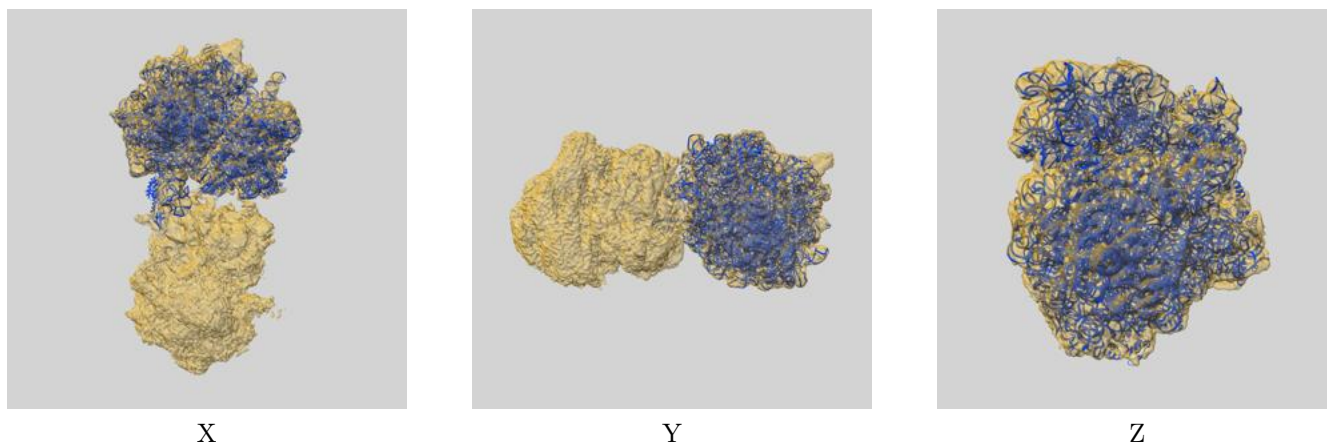
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

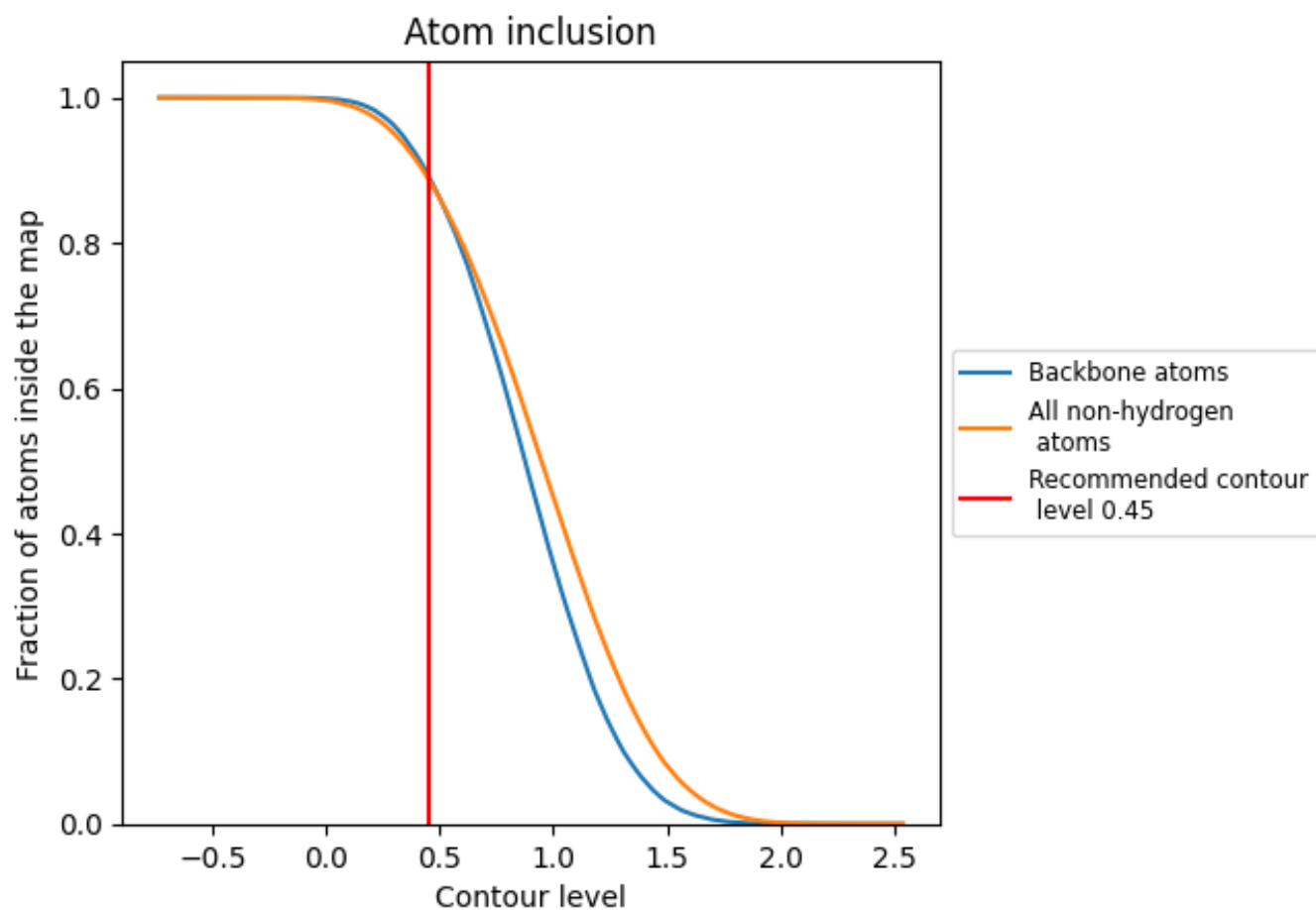
This section contains information regarding the fit between EMDB map EMD-13952 and PDB model 7QG8. Per-residue inclusion information can be found in section 3 on page 16.

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 Atom inclusion [i](#)



At the recommended contour level, 89% of all backbone atoms, 89% of all non-hydrogen atoms, are inside the map.