Full wwPDB EM Validation Report

May 20, 2024 – 12:00 AM JST

PDB ID	:	7D80
EMDB ID	:	EMD-30611
Title	:	Molecular model of the cryo-EM structure of 70S ribosome in complex with peptide deformylase, trigger factor, and methionine aminopeptidase
Authors	:	Akbar, S.; Bhakta, S.; Sengupta, J.
Deposited on	:	2020-10-06
Resolution	:	4.10 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 types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

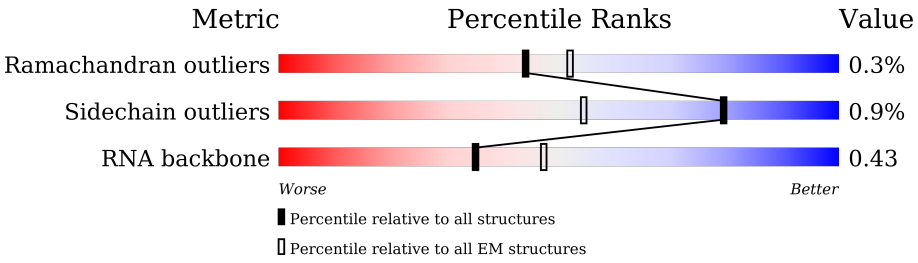
EMDB validation analysis	:	0.0.1.dev92
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

1 Overall quality at a glance

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

The reported resolution of this entry is 4.10 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 <=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	0	46	100%
2	1	65	94% 5%
3	2	38	95% 5%
4	3	169	99%
5	5	432	28% 100%
6	6	57	96%
7	A	2903	64% 32%
8	B	1539	70% 29%

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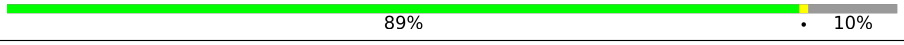
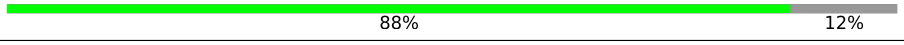
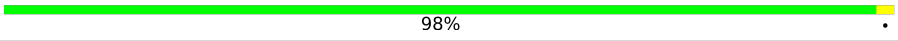
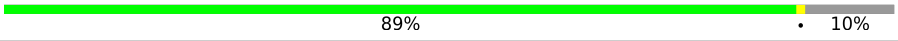
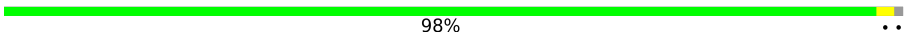
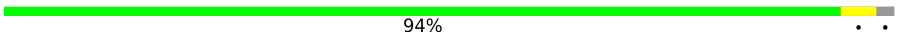
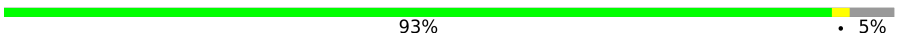
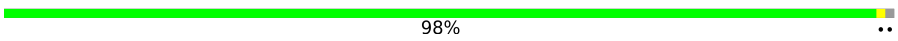
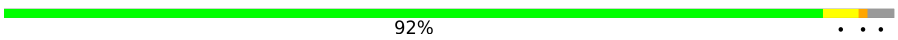
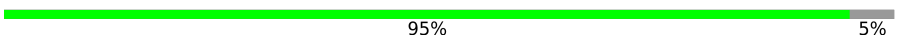
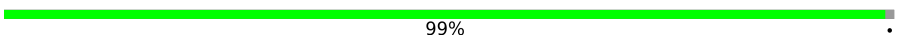
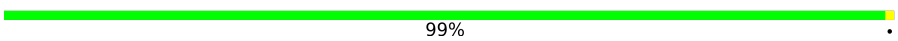
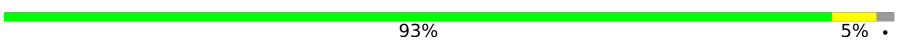
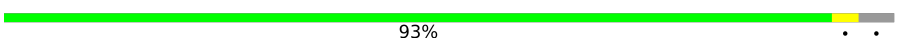
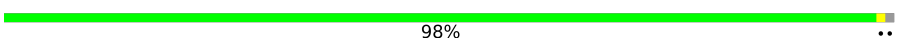
Mol	Chain	Length	Quality of chain
9	C	241	
10	D	233	
11	E	206	
12	F	167	
13	G	135	
14	H	179	
15	I	130	
16	J	130	
17	K	103	
18	L	129	
19	M	124	
20	N	118	
21	O	101	
22	P	89	
23	Q	82	
24	R	84	
25	S	75	
26	T	92	
27	U	87	
28	V	71	
29	W	100	
30	X	73	
31	Z	76	
32	a	118	
33	b	273	

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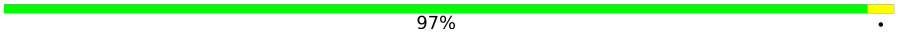
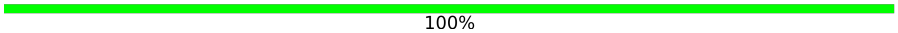
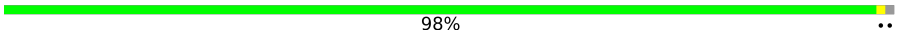
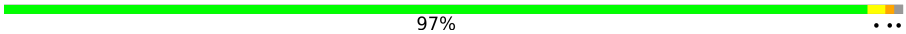
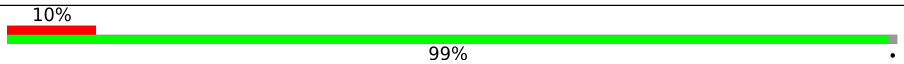
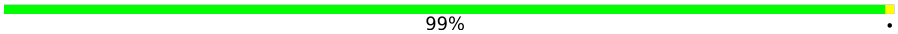
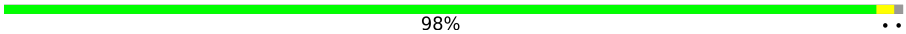
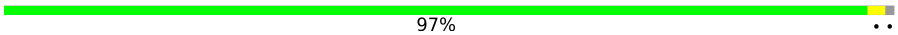
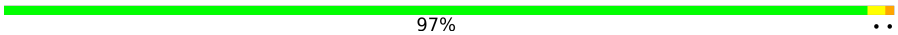
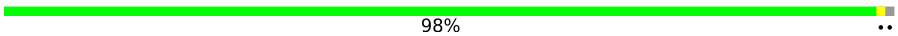
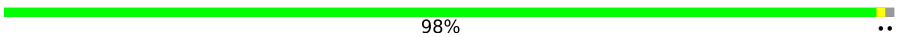
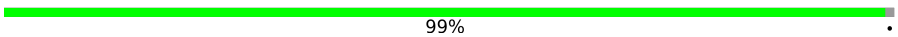
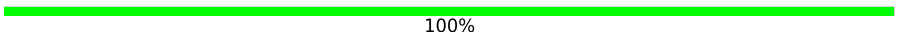
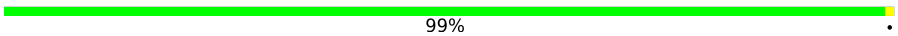
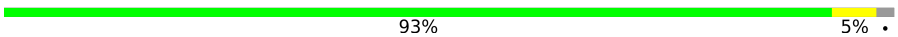
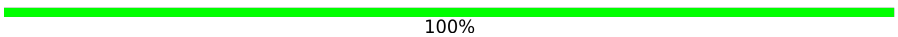
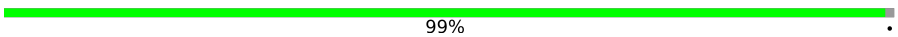
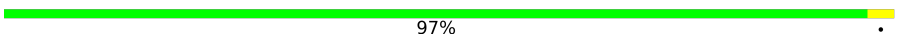
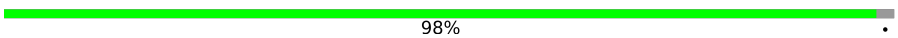
Mol	Chain	Length	Quality of chain
34	c	209	
35	d	201	
36	e	179	
37	f	177	
38	g	149	
39	h	142	
40	i	142	
41	j	123	
42	k	144	
43	l	136	
44	m	127	
45	n	117	
46	o	115	
47	p	118	
48	q	103	
49	r	110	
50	s	104	
51	t	94	
52	u	85	
53	v	78	
54	w	63	
55	x	59	
56	y	77	
57	z	55	

2 Entry composition

There are 57 unique types of molecules in this entry. The entry contains 150808 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	0	46	377	228	90	57	2	0	0

- Molecule 2 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	1	64	504	323	105	74	2	0	0

- Molecule 3 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	2	38	302	185	65	48	4	0	0

- Molecule 4 is a protein called Peptide deformylase.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	3	168	1346	844	241	255	6	0	0

- Molecule 5 is a protein called Trigger factor.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	5	432	3386	2119	582	674	11	0	0

- Molecule 6 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	6	56	444	269	94	80	1	0	0

- Molecule 7 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	A	2903	Total 62317	C 27801	N 11467	O 20147	P 2902	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
8	B	1539	Total 33015	C 14725	N 6052	O 10699	P 1539	0	0

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

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

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

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

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

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

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

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

- Molecule 13 is a protein called 30S ribosomal protein S6, fully modified isoform.

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
14	H	151	Total	C	N	O	S	0	0
			1181	735	227	215	4		

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

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

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

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

- Molecule 17 is a protein called 30S ribosomal protein S10.

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

- Molecule 18 is a protein called 30S ribosomal protein S11.

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

- Molecule 19 is a protein called 30S ribosomal protein S12.

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

- Molecule 20 is a protein called 30S ribosomal protein S13.

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

- Molecule 21 is a protein called 30S ribosomal protein S14.

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

- Molecule 22 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	P	88	Total 710	C 437	N 143	O 129	S 1	0	0

- Molecule 23 is a protein called 30S ribosomal protein S16.

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

- Molecule 24 is a protein called 30S ribosomal protein S17.

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

- Molecule 25 is a protein called 30S ribosomal protein S18.

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

- Molecule 26 is a protein called 30S ribosomal protein S19.

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

- Molecule 27 is a protein called 30S ribosomal protein S20.

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

- Molecule 28 is a protein called 30S ribosomal protein S21.

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

- Molecule 29 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	W	96	Total	C	N	O	S	0	0
			764	484	142	136	2		

- Molecule 30 is a RNA chain called E-site tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	X	65	Total	C	N	O	P	0	0
			1392	621	258	449	64		

- Molecule 31 is a RNA chain called A-site tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	Z	66	Total	C	N	O	P	0	0
			1406	629	255	457	65		

- Molecule 32 is a RNA chain called 5S ribosomal RNA.

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

- Molecule 33 is a protein called 50S ribosomal protein L2.

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

- Molecule 34 is a protein called 50S ribosomal protein L3.

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

- Molecule 35 is a protein called 50S ribosomal protein L4.

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

- Molecule 36 is a protein called 50S ribosomal protein L5.

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

- Molecule 37 is a protein called 50S ribosomal protein L6.

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

- Molecule 38 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	g	47	Total	C	N	O	S	0	0
			359	233	62	63	1		

- Molecule 39 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	h	141	Total	C	N	O	S	0	0
			1032	651	179	196	6		

- Molecule 40 is a protein called 50S ribosomal protein L13.

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

- Molecule 41 is a protein called 50S ribosomal protein L14.

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

- Molecule 42 is a protein called 50S ribosomal protein L15.

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

- Molecule 43 is a protein called 50S ribosomal protein L16.

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

- Molecule 44 is a protein called 50S ribosomal protein L17.

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

- Molecule 45 is a protein called 50S ribosomal protein L18.

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

- Molecule 46 is a protein called 50S ribosomal protein L19.

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

- Molecule 47 is a protein called 50S ribosomal protein L20.

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

- Molecule 48 is a protein called 50S ribosomal protein L21.

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

- Molecule 49 is a protein called 50S ribosomal protein L22.

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

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

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

- Molecule 51 is a protein called 50S ribosomal protein L25.

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

- Molecule 52 is a protein called 50S ribosomal protein L27.

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

- Molecule 53 is a protein called 50S ribosomal protein L28.

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

- Molecule 54 is a protein called 50S ribosomal protein L29.

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

- Molecule 55 is a protein called 50S ribosomal protein L30.

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

- Molecule 56 is a RNA chain called P-site tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	y	70	Total	C	N	O	P	0	0
			1496	665	267	494	70		

- Molecule 57 is a protein called 50S ribosomal protein L33.

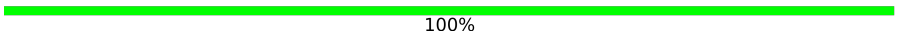
Mol	Chain	Residues	Atoms				AltConf	Trace
57	z	50	Total	C	N	O	0	0
			409	263	75	71		

3 Residue-property plots (i)

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

• Molecule 1: 50S ribosomal protein L34

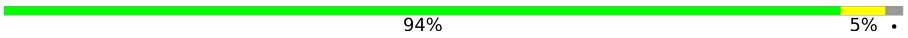
Chain 0:



There are no outlier residues recorded for this chain.

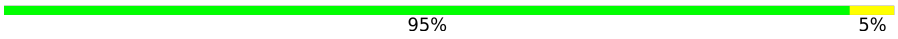
• Molecule 2: 50S ribosomal protein L35

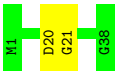
Chain 1:



• Molecule 3: 50S ribosomal protein L36

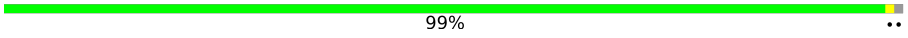
Chain 2:





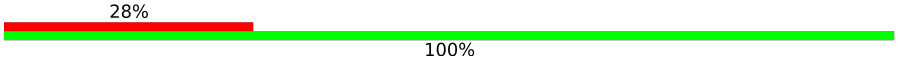
• Molecule 4: Peptide deformylase

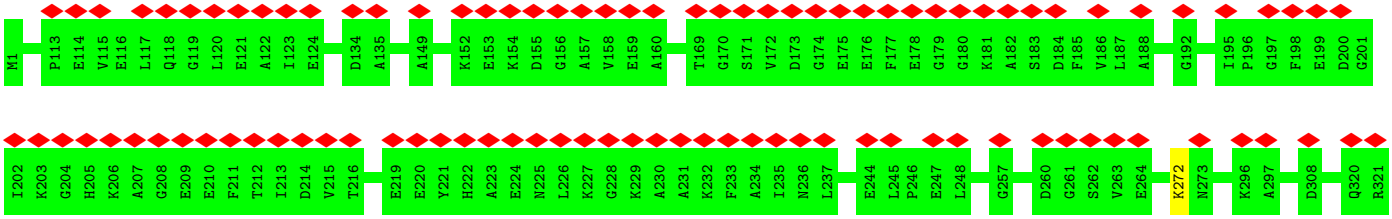
Chain 3:

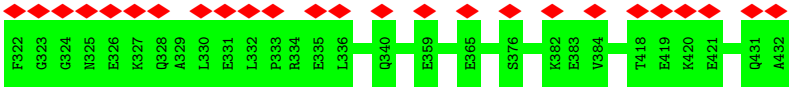


• Molecule 5: Trigger factor

Chain 5:

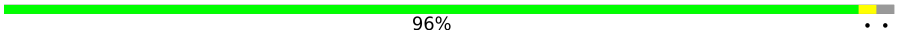


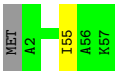




• Molecule 6: 50S ribosomal protein L32

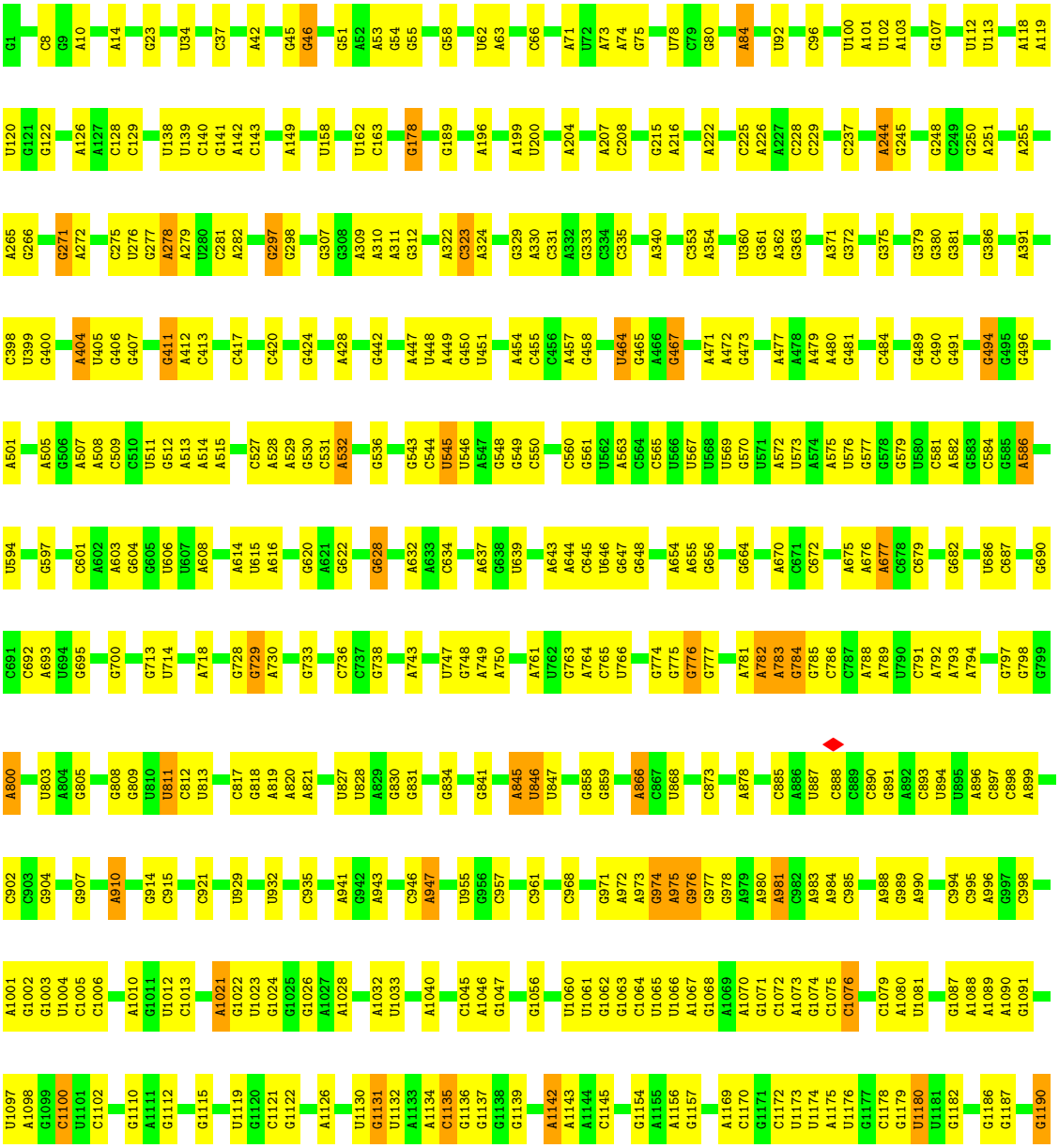
Chain 6:

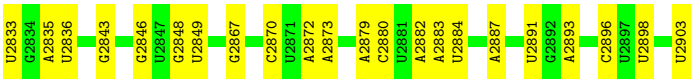




• Molecule 7: 23S ribosomal RNA

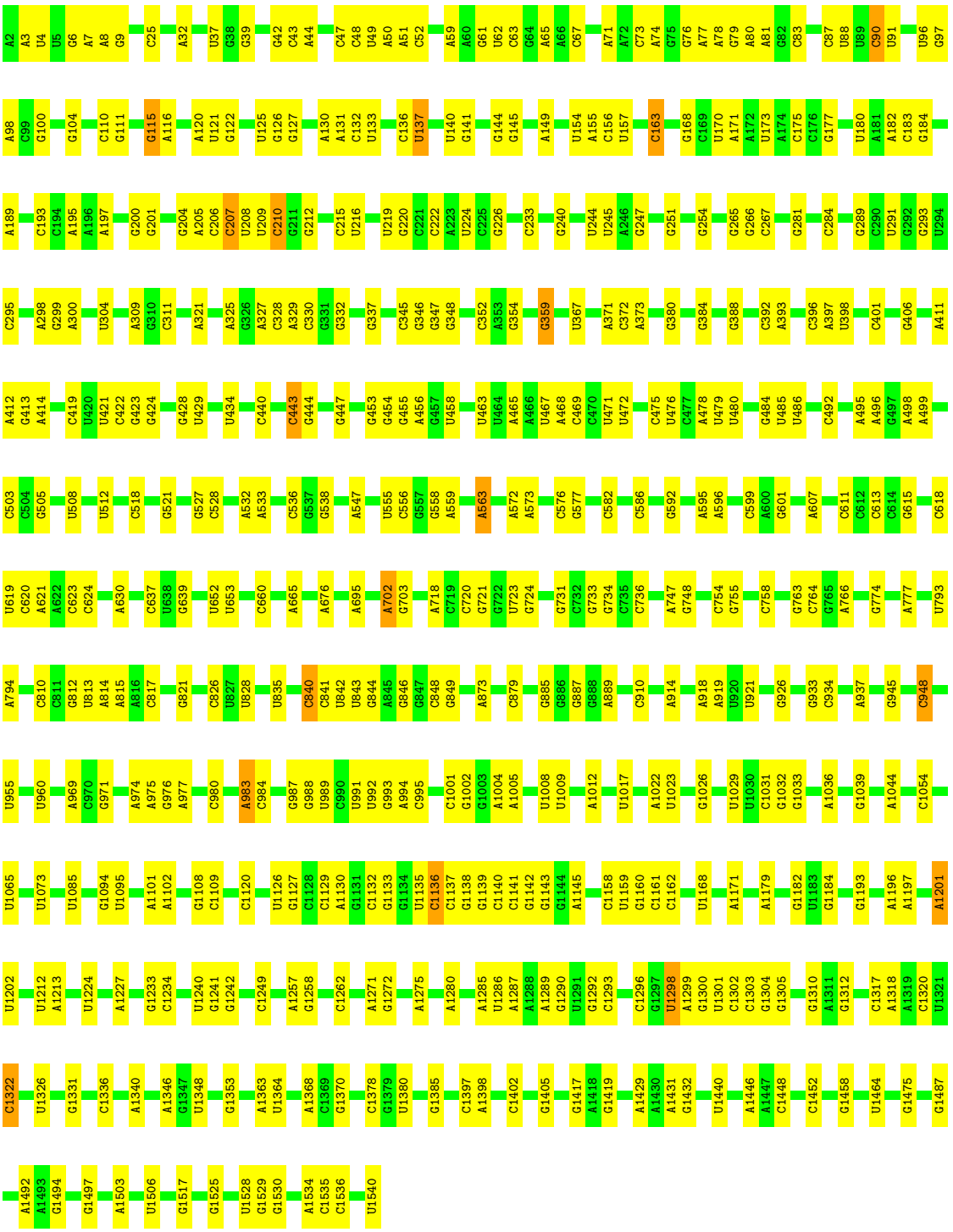
Chain A:





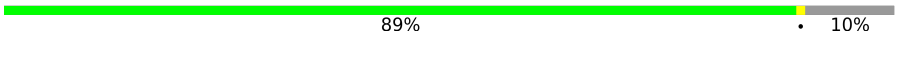
• Molecule 8: 16S ribosomal RNA

Chain B:



• Molecule 9: 30S ribosomal protein S2

Chain C:

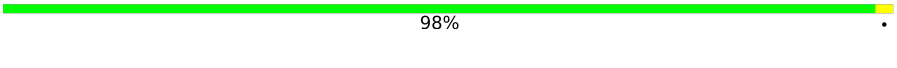


• Molecule 10: 30S ribosomal protein S3

Chain D:

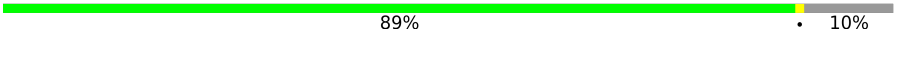
• Molecule 11: 30S ribosomal protein S4

Chain E:



• Molecule 12: 30S ribosomal protein S5

Chain F:



• Molecule 13: 30S ribosomal protein S6, fully modified isoform

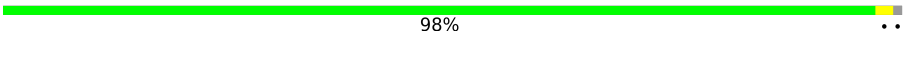
Chain G:

• Molecule 14: 30S ribosomal protein S7

Chain H:

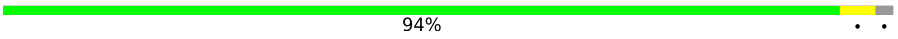
• Molecule 15: 30S ribosomal protein S8

Chain I:



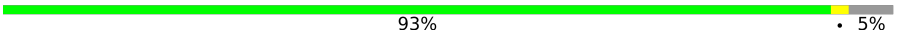
• Molecule 16: 30S ribosomal protein S9

Chain J:



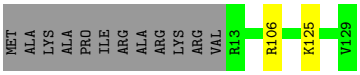
• Molecule 17: 30S ribosomal protein S10

Chain K:



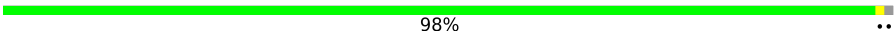
• Molecule 18: 30S ribosomal protein S11

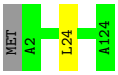
Chain L:



• Molecule 19: 30S ribosomal protein S12

Chain M:



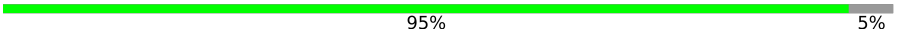


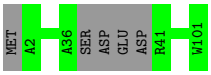
• Molecule 20: 30S ribosomal protein S13

Chain N:

• Molecule 21: 30S ribosomal protein S14

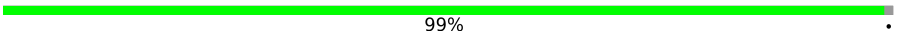
Chain O:





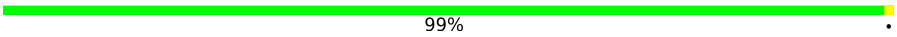
• Molecule 22: 30S ribosomal protein S15

Chain P:



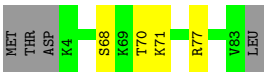
• Molecule 23: 30S ribosomal protein S16

Chain Q:



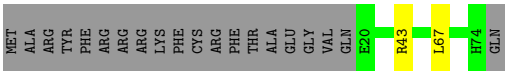
• Molecule 24: 30S ribosomal protein S17

Chain R:



• Molecule 25: 30S ribosomal protein S18

Chain S:

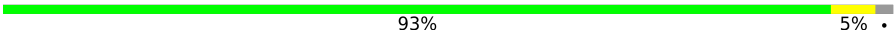


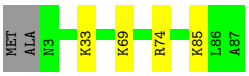
• Molecule 26: 30S ribosomal protein S19

Chain T:

• Molecule 27: 30S ribosomal protein S20

Chain U:



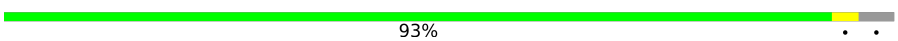


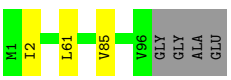
• Molecule 28: 30S ribosomal protein S21

Chain V:

• Molecule 29: 50S ribosomal protein L23

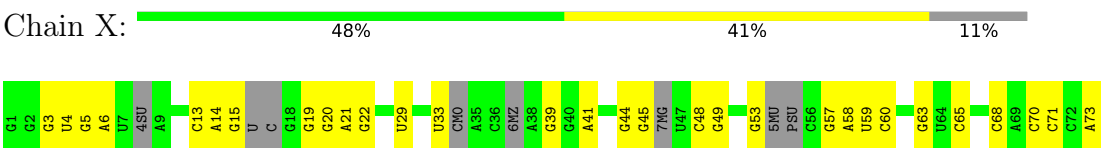
Chain W:





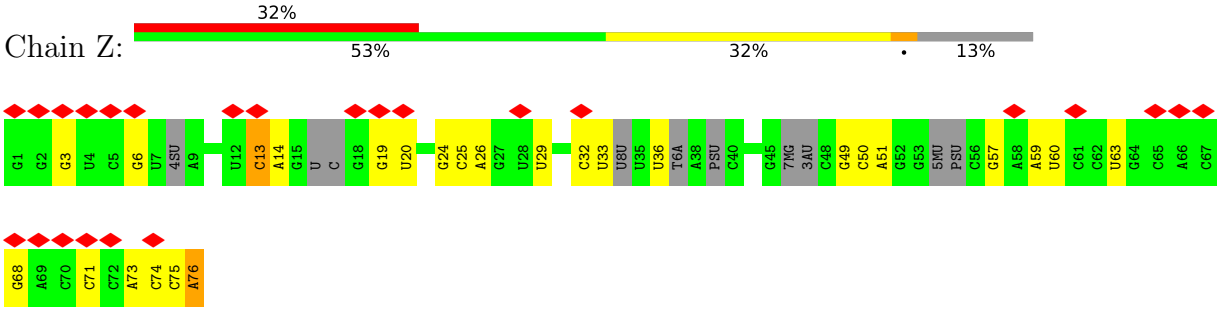
• Molecule 30: E-site tRNA

Chain X:



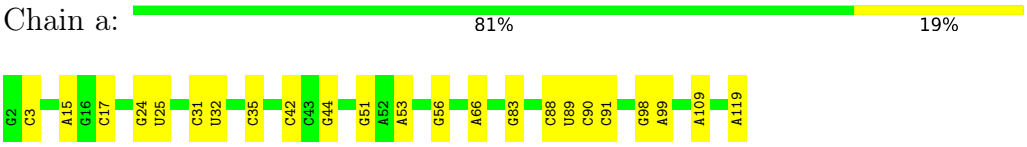
• Molecule 31: A-site tRNA

Chain Z:



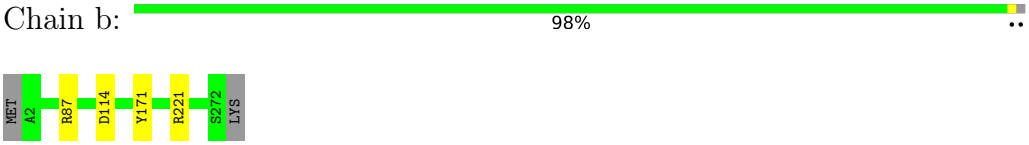
• Molecule 32: 5S ribosomal RNA

Chain a:



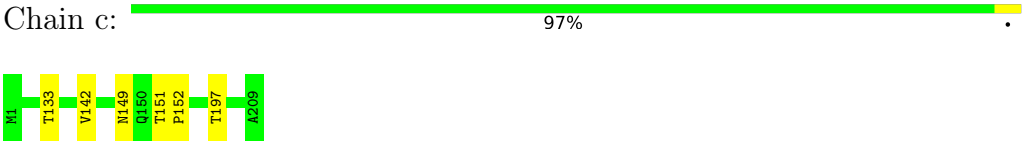
• Molecule 33: 50S ribosomal protein L2

Chain b:



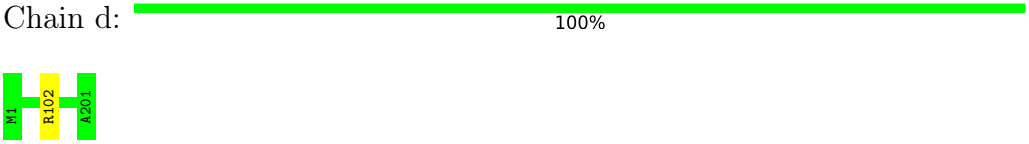
• Molecule 34: 50S ribosomal protein L3

Chain c:



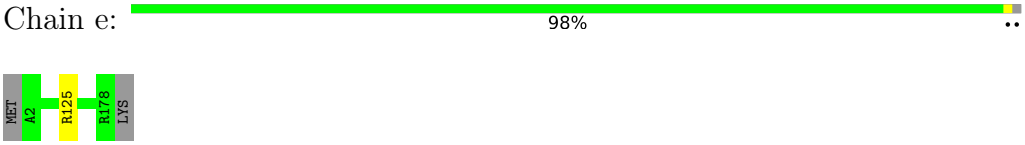
• Molecule 35: 50S ribosomal protein L4

Chain d:



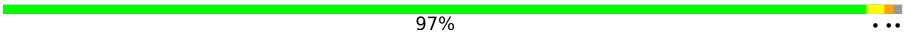
• Molecule 36: 50S ribosomal protein L5

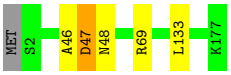
Chain e:



• Molecule 37: 50S ribosomal protein L6

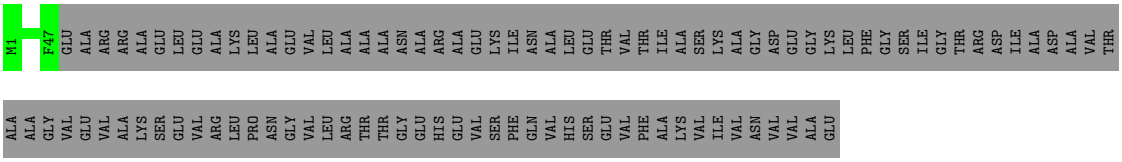
Chain f:





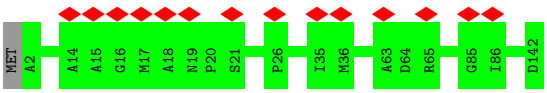
• Molecule 38: 50S ribosomal protein L9

Chain g:



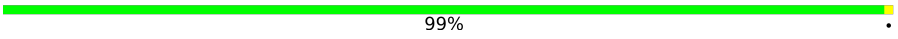
• Molecule 39: 50S ribosomal protein L11

Chain h:



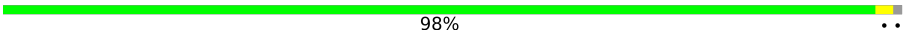
• Molecule 40: 50S ribosomal protein L13

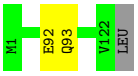
Chain i:



• Molecule 41: 50S ribosomal protein L14

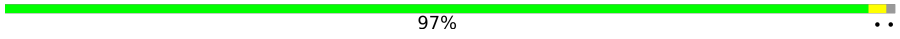
Chain j:





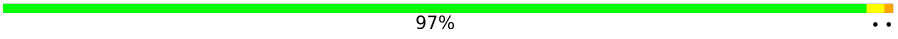
• Molecule 42: 50S ribosomal protein L15

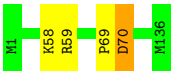
Chain k:



• Molecule 43: 50S ribosomal protein L16

Chain l:



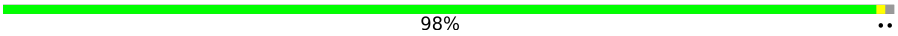


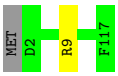
• Molecule 44: 50S ribosomal protein L17

Chain m:

• Molecule 45: 50S ribosomal protein L18

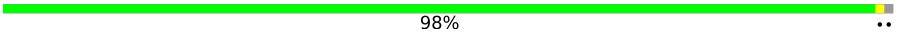
Chain n:





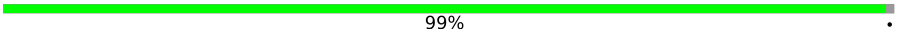
• Molecule 46: 50S ribosomal protein L19

Chain o:



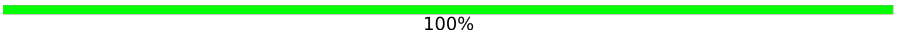
• Molecule 47: 50S ribosomal protein L20

Chain p:



• Molecule 48: 50S ribosomal protein L21

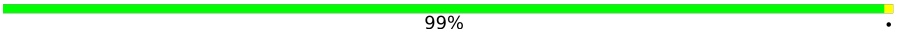
Chain q:



There are no outlier residues recorded for this chain.

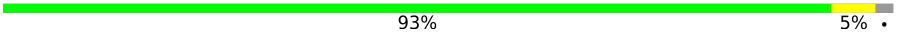
• Molecule 49: 50S ribosomal protein L22

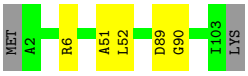
Chain r:



• Molecule 50: 50S ribosomal protein L24

Chain s:





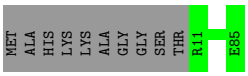
• Molecule 51: 50S ribosomal protein L25

Chain t:

There are no outlier residues recorded for this chain.

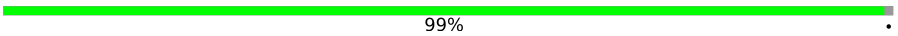
• Molecule 52: 50S ribosomal protein L27

Chain u:



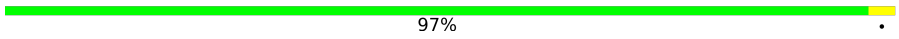
• Molecule 53: 50S ribosomal protein L28

Chain v:



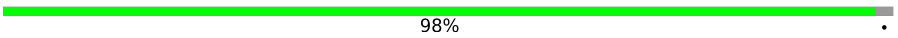
• Molecule 54: 50S ribosomal protein L29

Chain w:



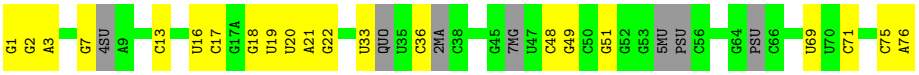
• Molecule 55: 50S ribosomal protein L30

Chain x:



• Molecule 56: P-site tRNA

Chain y:



• Molecule 57: 50S ribosomal protein L33

Chain z:

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	54875	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 ($e^-/Å^2$)	32.57	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	0.093	Depositor
Minimum map value	-0.024	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.007	Depositor
Recommended contour level	0.005	Depositor
Map size (Å)	441.6, 441.6, 441.6	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.38, 1.38, 1.38	Depositor

5 Model quality

5.1 Standard geometry

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	0	0.72	0/380	0.69	0/498
2	1	0.66	0/513	0.76	0/676
3	2	0.63	0/303	0.64	0/397
4	3	0.30	0/1361	0.61	0/1830
5	5	0.30	0/3426	0.58	0/4605
6	6	0.63	0/450	0.68	0/599
7	A	1.54	229/69796 (0.3%)	1.28	438/108888 (0.4%)
8	B	0.76	0/36966	1.07	76/57666 (0.1%)
9	C	0.38	0/1735	0.58	1/2338 (0.0%)
10	D	0.33	0/1651	0.58	0/2225
11	E	0.33	0/1665	0.57	0/2227
12	F	0.40	0/1118	0.63	0/1504
13	G	0.35	0/835	0.63	1/1128 (0.1%)
14	H	0.29	0/1195	0.52	0/1602
15	I	0.39	0/989	0.57	0/1326
16	J	0.29	0/1034	0.56	0/1375
17	K	0.30	0/796	0.61	0/1077
18	L	0.36	0/893	0.58	0/1205
19	M	0.41	0/969	0.64	0/1300
20	N	0.29	0/892	0.62	1/1193 (0.1%)
21	O	0.30	0/785	0.56	0/1043
22	P	0.37	0/718	0.58	0/959
23	Q	0.37	0/659	0.63	0/884
24	R	0.38	0/657	0.61	0/881
25	S	0.35	0/462	0.59	1/621 (0.2%)
26	T	0.30	0/652	0.54	0/877
27	U	0.32	0/671	0.56	0/888
28	V	0.38	0/430	0.77	1/570 (0.2%)
29	W	0.67	0/771	0.70	0/1031
30	X	0.39	0/1551	1.04	0/2404
31	Z	0.44	1/1565 (0.1%)	1.01	5/2421 (0.2%)
32	a	1.10	0/2828	1.09	5/4410 (0.1%)
33	b	0.71	0/2121	0.67	0/2852
34	c	0.70	0/1586	0.67	0/2134

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
35	d	0.70	0/1571	0.63	0/2113
36	e	0.37	0/1434	0.58	0/1926
37	f	0.48	0/1343	0.59	1/1816 (0.1%)
38	g	0.44	0/364	0.66	0/490
39	h	0.32	0/1046	0.61	0/1410
40	i	0.75	0/1152	0.64	0/1551
41	j	0.67	0/947	0.70	0/1268
42	k	0.63	0/1054	0.73	0/1403
43	l	0.63	0/1093	0.69	1/1460 (0.1%)
44	m	0.69	0/973	0.78	1/1301 (0.1%)
45	n	0.48	0/902	0.56	0/1209
46	o	0.67	0/929	0.65	1/1242 (0.1%)
47	p	0.85	0/960	0.65	0/1278
48	q	0.72	0/829	0.67	0/1107
49	r	0.71	0/864	0.64	0/1156
50	s	0.60	0/787	0.62	0/1051
51	t	0.57	0/766	0.57	0/1025
52	u	0.66	0/576	0.60	0/762
53	v	0.69	0/635	0.63	0/848
54	w	0.59	0/510	0.66	1/677 (0.1%)
55	x	0.63	0/453	0.69	0/605
56	y	0.51	1/1664 (0.1%)	1.02	2/2577 (0.1%)
57	z	0.47	0/416	0.54	0/554
All	All	1.12	231/163691 (0.1%)	1.08	536/244463 (0.2%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
2	1	0	1
3	2	0	1
9	C	0	1
11	E	0	2
12	F	0	2
13	G	0	1
16	J	0	2
17	K	0	1
19	M	0	1
20	N	0	1
23	Q	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
24	R	0	2
28	V	0	2
29	W	0	1
34	c	0	1
37	f	0	2
41	j	0	1
42	k	0	1
43	l	0	1
50	s	0	3
All	All	0	28

All (231) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
56	y	1	G	OP3-P	-10.67	1.48	1.61
7	A	783	A	N9-C4	-8.57	1.32	1.37
7	A	1142	A	N9-C4	-8.35	1.32	1.37
7	A	984	A	N9-C4	-8.20	1.32	1.37
7	A	447	A	N9-C4	-8.01	1.33	1.37
7	A	782	A	N9-C4	-7.67	1.33	1.37
7	A	2037	A	N9-C4	-7.55	1.33	1.37
7	A	783	A	C5-C6	-7.45	1.34	1.41
7	A	514	A	N9-C4	-7.26	1.33	1.37
7	A	1676	A	N9-C4	-7.06	1.33	1.37
7	A	528	A	N7-C5	-6.96	1.35	1.39
7	A	1889	A	N9-C4	-6.95	1.33	1.37
7	A	783	A	N7-C5	-6.91	1.35	1.39
7	A	1262	A	N9-C4	-6.81	1.33	1.37
7	A	783	A	N3-C4	-6.74	1.30	1.34
7	A	761	A	C5-C6	-6.73	1.34	1.41
7	A	1614	A	N9-C4	-6.73	1.33	1.37
7	A	800	A	N9-C4	-6.71	1.33	1.37
7	A	1678	A	N9-C4	-6.62	1.33	1.37
7	A	676	A	N9-C4	-6.62	1.33	1.37
7	A	1269	A	N7-C5	-6.62	1.35	1.39
7	A	1264	A	N7-C5	-6.56	1.35	1.39
7	A	981	A	N9-C4	-6.51	1.33	1.37
7	A	1605	C	N1-C6	-6.49	1.33	1.37
7	A	977	G	N7-C5	-6.41	1.35	1.39
7	A	1191	G	N7-C5	-6.33	1.35	1.39
7	A	947	A	N3-C4	-6.22	1.31	1.34
7	A	988	A	N7-C5	-6.18	1.35	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	A	1824	G	N7-C5	-6.17	1.35	1.39
7	A	687	C	C4-C5	-6.16	1.38	1.43
7	A	788	A	N9-C4	-6.13	1.34	1.37
7	A	1754	A	N9-C4	-6.13	1.34	1.37
7	A	582	A	N7-C5	-6.12	1.35	1.39
31	Z	76	A	C5-C6	-6.11	1.35	1.41
7	A	1791	A	N3-C4	-6.07	1.31	1.34
7	A	1304	A	N9-C4	-6.06	1.34	1.37
7	A	2882	A	N9-C4	-6.04	1.34	1.37
7	A	528	A	N3-C4	-6.04	1.31	1.34
7	A	1791	A	N9-C4	-6.02	1.34	1.37
7	A	1333	G	N7-C5	-5.99	1.35	1.39
7	A	1649	G	N7-C5	-5.98	1.35	1.39
7	A	1977	A	N9-C4	-5.96	1.34	1.37
7	A	2052	A	N9-C4	-5.96	1.34	1.37
7	A	1157	G	N7-C5	-5.95	1.35	1.39
7	A	1353	A	N9-C4	-5.91	1.34	1.37
7	A	449	A	N7-C5	-5.89	1.35	1.39
7	A	1187	G	N7-C5	-5.89	1.35	1.39
7	A	984	A	N3-C4	-5.88	1.31	1.34
7	A	1028	A	N9-C4	-5.88	1.34	1.37
7	A	808	G	N3-C4	-5.87	1.31	1.35
7	A	2019	A	N9-C4	-5.86	1.34	1.37
7	A	1783	A	N9-C4	-5.85	1.34	1.37
7	A	1960	A	N9-C4	-5.84	1.34	1.37
7	A	1993	U	C2-N3	-5.81	1.33	1.37
7	A	2501	C	N1-C6	-5.81	1.33	1.37
7	A	1137	G	N7-C5	-5.80	1.35	1.39
7	A	910	A	N9-C4	-5.79	1.34	1.37
7	A	2037	A	N3-C4	-5.78	1.31	1.34
7	A	2052	A	N7-C5	-5.78	1.35	1.39
7	A	570	G	N9-C4	-5.77	1.33	1.38
7	A	528	A	N9-C4	-5.76	1.34	1.37
7	A	972	A	N7-C5	-5.76	1.35	1.39
7	A	1378	A	N9-C4	-5.75	1.34	1.37
7	A	791	C	N3-C4	-5.72	1.29	1.33
7	A	1010	A	N7-C5	-5.71	1.35	1.39
7	A	1156	A	N7-C5	-5.71	1.35	1.39
7	A	809	G	N3-C4	-5.70	1.31	1.35
7	A	178	G	C5-C4	-5.69	1.34	1.38
7	A	1253	A	N9-C4	-5.68	1.34	1.37
7	A	975	A	N7-C5	-5.67	1.35	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	A	1024	G	N7-C5	-5.67	1.35	1.39
7	A	788	A	C5-C6	-5.67	1.35	1.41
7	A	2829	A	N9-C4	-5.67	1.34	1.37
7	A	1650	A	N7-C5	-5.67	1.35	1.39
7	A	1650	A	N9-C4	-5.66	1.34	1.37
7	A	677	A	N9-C4	-5.65	1.34	1.37
7	A	1678	A	N3-C4	-5.64	1.31	1.34
7	A	1670	C	N1-C6	-5.63	1.33	1.37
7	A	980	A	N7-C5	-5.63	1.35	1.39
7	A	1998	A	N9-C4	-5.60	1.34	1.37
7	A	513	A	N7-C5	-5.60	1.35	1.39
7	A	1655	A	N7-C5	-5.60	1.35	1.39
7	A	1259	G	N7-C5	-5.59	1.35	1.39
7	A	1665	A	N7-C5	-5.58	1.35	1.39
7	A	1787	A	N7-C5	-5.58	1.35	1.39
7	A	794	A	N9-C4	-5.57	1.34	1.37
7	A	2029	G	N7-C5	-5.57	1.35	1.39
7	A	1259	G	N3-C4	-5.56	1.31	1.35
7	A	981	A	N3-C4	-5.54	1.31	1.34
7	A	1266	G	N3-C4	-5.54	1.31	1.35
7	A	513	A	N9-C4	-5.53	1.34	1.37
7	A	1821	A	N9-C4	-5.52	1.34	1.37
7	A	2024	G	N7-C5	-5.52	1.35	1.39
7	A	1661	G	N7-C5	-5.51	1.35	1.39
7	A	818	G	N7-C5	-5.50	1.35	1.39
7	A	579	G	N7-C5	-5.50	1.35	1.39
7	A	1307	A	N9-C4	-5.50	1.34	1.37
7	A	1788	C	N1-C6	-5.50	1.33	1.37
7	A	53	A	N9-C4	-5.48	1.34	1.37
7	A	472	A	N7-C5	-5.48	1.35	1.39
7	A	2624	G	N7-C5	-5.48	1.35	1.39
7	A	1788	C	C4-C5	-5.47	1.38	1.43
7	A	1571	A	N9-C4	-5.47	1.34	1.37
7	A	1784	A	N9-C4	-5.47	1.34	1.37
7	A	467	G	C5-C6	-5.46	1.36	1.42
7	A	582	A	N9-C4	-5.45	1.34	1.37
7	A	1797	G	N7-C5	-5.45	1.35	1.39
7	A	821	A	N7-C5	-5.44	1.35	1.39
7	A	581	C	N1-C6	-5.43	1.33	1.37
7	A	586	A	N3-C4	-5.43	1.31	1.34
7	A	809	G	C5-C4	-5.43	1.34	1.38
7	A	1936	A	N9-C4	-5.43	1.34	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	A	1265	A	N9-C4	-5.42	1.34	1.37
7	A	207	A	N7-C5	-5.41	1.36	1.39
7	A	693	A	N9-C4	-5.41	1.34	1.37
7	A	1853	A	N9-C4	-5.41	1.34	1.37
7	A	2738	A	N9-C4	-5.41	1.34	1.37
7	A	1187	G	C5-C6	-5.40	1.36	1.42
7	A	471	A	N7-C5	-5.39	1.36	1.39
7	A	978	G	N7-C5	-5.39	1.36	1.39
7	A	1248	G	C5-C4	-5.39	1.34	1.38
7	A	974	G	N7-C5	-5.38	1.36	1.39
7	A	2444	G	N7-C5	-5.38	1.36	1.39
7	A	947	A	N7-C5	-5.38	1.36	1.39
7	A	1810	A	N7-C5	-5.38	1.36	1.39
7	A	2582	G	N7-C5	-5.38	1.36	1.39
7	A	1783	A	N7-C5	-5.37	1.36	1.39
7	A	1776	G	N7-C5	-5.37	1.36	1.39
7	A	947	A	N9-C4	-5.36	1.34	1.37
7	A	1269	A	C5-C6	-5.36	1.36	1.41
7	A	2005	A	N3-C4	-5.34	1.31	1.34
7	A	2823	A	N7-C5	-5.34	1.36	1.39
7	A	675	A	N9-C4	-5.34	1.34	1.37
7	A	207	A	N9-C4	-5.34	1.34	1.37
7	A	977	G	C5-C4	-5.33	1.34	1.38
7	A	532	A	N7-C5	-5.33	1.36	1.39
7	A	1252	G	N3-C4	-5.33	1.31	1.35
7	A	2082	A	N7-C5	-5.33	1.36	1.39
7	A	813	U	N1-C2	-5.32	1.33	1.38
7	A	1789	A	N7-C5	-5.32	1.36	1.39
7	A	1252	G	C5-C4	-5.31	1.34	1.38
7	A	976	G	N7-C5	-5.31	1.36	1.39
7	A	2542	A	N9-C4	-5.30	1.34	1.37
7	A	1276	A	N9-C4	-5.30	1.34	1.37
7	A	310	A	N9-C4	-5.30	1.34	1.37
7	A	1570	A	N7-C5	-5.29	1.36	1.39
7	A	244	A	N7-C5	-5.28	1.36	1.39
7	A	467	G	C5-C4	-5.28	1.34	1.38
7	A	943	A	N7-C5	-5.27	1.36	1.39
7	A	586	A	N9-C4	-5.27	1.34	1.37
7	A	84	A	N9-C4	-5.25	1.34	1.37
7	A	1136	G	N9-C4	-5.25	1.33	1.38
7	A	1215	G	N7-C5	-5.25	1.36	1.39
7	A	1284	A	N9-C4	-5.25	1.34	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	A	2274	A	N9-C4	-5.24	1.34	1.37
7	A	729	G	N7-C5	-5.24	1.36	1.39
7	A	1777	U	N1-C2	-5.24	1.33	1.38
7	A	1377	G	C5-C4	-5.24	1.34	1.38
7	A	512	G	N9-C4	-5.23	1.33	1.38
7	A	975	A	N3-C4	-5.23	1.31	1.34
7	A	1784	A	N7-C5	-5.23	1.36	1.39
7	A	2686	G	N7-C5	-5.23	1.36	1.39
7	A	1655	A	N9-C4	-5.23	1.34	1.37
7	A	454	A	C5-C6	-5.22	1.36	1.41
7	A	1260	A	N9-C4	-5.22	1.34	1.37
7	A	1772	A	N9-C4	-5.22	1.34	1.37
7	A	2014	A	N3-C4	-5.22	1.31	1.34
7	A	2600	A	N7-C5	-5.21	1.36	1.39
7	A	2015	A	N9-C4	-5.20	1.34	1.37
7	A	2054	A	N7-C5	-5.20	1.36	1.39
7	A	250	G	C5-C4	-5.20	1.34	1.38
7	A	2247	A	N9-C4	-5.19	1.34	1.37
7	A	1339	G	N3-C4	-5.18	1.31	1.35
7	A	943	A	N9-C4	-5.18	1.34	1.37
7	A	782	A	N3-C4	-5.17	1.31	1.34
7	A	515	A	N7-C5	-5.17	1.36	1.39
7	A	2019	A	N3-C4	-5.16	1.31	1.34
7	A	1798	U	N1-C2	-5.16	1.33	1.38
7	A	1791	A	C5-C4	-5.16	1.35	1.38
7	A	582	A	C5-C6	-5.15	1.36	1.41
7	A	278	A	N9-C4	5.15	1.41	1.37
7	A	1824	G	C5-C6	-5.14	1.37	1.42
7	A	834	G	N7-C5	-5.14	1.36	1.39
7	A	2014	A	N7-C5	-5.14	1.36	1.39
7	A	1984	G	N7-C5	-5.13	1.36	1.39
7	A	528	A	C5-C6	-5.13	1.36	1.41
7	A	458	G	N9-C4	-5.13	1.33	1.38
7	A	743	A	N7-C5	-5.13	1.36	1.39
7	A	1522	A	N9-C4	-5.13	1.34	1.37
7	A	584	C	C4-C5	-5.13	1.38	1.43
7	A	1805	A	N3-C4	-5.12	1.31	1.34
7	A	781	A	N7-C5	-5.12	1.36	1.39
7	A	467	G	N7-C5	-5.12	1.36	1.39
7	A	2550	G	N7-C5	-5.12	1.36	1.39
7	A	808	G	N7-C5	-5.12	1.36	1.39
7	A	1809	A	N7-C5	-5.12	1.36	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	A	2035	G	C6-N1	-5.12	1.35	1.39
7	A	340	A	N9-C4	-5.11	1.34	1.37
7	A	782	A	N7-C5	-5.11	1.36	1.39
7	A	1327	A	N7-C5	-5.11	1.36	1.39
7	A	1142	A	N7-C5	-5.11	1.36	1.39
7	A	577	G	N7-C5	-5.11	1.36	1.39
7	A	1606	C	N1-C6	-5.11	1.34	1.37
7	A	608	A	N9-C4	-5.10	1.34	1.37
7	A	1021	A	N7-C5	-5.10	1.36	1.39
7	A	820	A	N7-C5	-5.10	1.36	1.39
7	A	73	A	N9-C4	-5.09	1.34	1.37
7	A	988	A	C5-C6	-5.09	1.36	1.41
7	A	1247	A	N9-C4	-5.08	1.34	1.37
7	A	312	G	N7-C5	-5.08	1.36	1.39
7	A	1803	A	N7-C5	-5.06	1.36	1.39
7	A	1383	A	N9-C4	-5.06	1.34	1.37
7	A	1614	A	N7-C5	-5.06	1.36	1.39
7	A	2686	G	C5-C6	-5.05	1.37	1.42
7	A	798	G	N7-C5	-5.04	1.36	1.39
7	A	1949	G	N7-C5	-5.04	1.36	1.39
7	A	2020	A	N9-C4	-5.04	1.34	1.37
7	A	2625	G	N7-C5	-5.03	1.36	1.39
7	A	761	A	N7-C5	-5.03	1.36	1.39
7	A	1212	G	N9-C4	-5.03	1.33	1.38
7	A	454	A	N7-C5	-5.03	1.36	1.39
7	A	1277	G	N7-C5	-5.02	1.36	1.39
7	A	1665	A	C5-C6	-5.02	1.36	1.41
7	A	251	A	N7-C5	-5.01	1.36	1.39
7	A	1779	U	C2-N3	-5.01	1.34	1.37
7	A	2394	C	C4-C5	-5.01	1.39	1.43
7	A	2446	G	N7-C5	-5.01	1.36	1.39
7	A	2607	G	N7-C5	-5.01	1.36	1.39
7	A	733	G	N7-C5	-5.01	1.36	1.39
7	A	1004	U	C2-N3	-5.00	1.34	1.37
7	A	1246	A	N7-C5	-5.00	1.36	1.39

All (536) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	A	761	A	N1-C6-N6	11.81	125.69	118.60
7	A	545	U	C2-N1-C1'	11.52	131.53	117.70
7	A	761	A	C5-N7-C8	-11.09	98.35	103.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	A	545	U	N3-C2-O2	-10.48	114.86	122.20
7	A	545	U	N1-C2-O2	10.40	130.08	122.80
7	A	761	A	C4-C5-N7	10.30	115.85	110.70
7	A	783	A	C5-N7-C8	-10.29	98.75	103.90
7	A	528	A	C8-N9-C4	-10.04	101.78	105.80
7	A	528	A	N7-C8-N9	9.92	118.76	113.80
7	A	208	C	C6-N1-C2	-9.38	116.55	120.30
7	A	528	A	C5-N7-C8	-9.26	99.27	103.90
7	A	974	G	C4-C5-N7	9.02	114.41	110.80
7	A	974	G	C6-C5-N7	-8.99	125.00	130.40
7	A	761	A	N7-C8-N9	8.87	118.23	113.80
7	A	1607	C	C6-N1-C2	-8.63	116.85	120.30
7	A	1006	C	N1-C2-O2	8.60	124.06	118.90
7	A	733	G	C6-C5-N7	-8.56	125.27	130.40
7	A	1010	A	C8-N9-C4	-8.48	102.41	105.80
7	A	1187	G	C6-C5-N7	-8.30	125.42	130.40
7	A	783	A	C4-C5-N7	8.29	114.84	110.70
7	A	1187	G	C4-C5-N7	8.24	114.09	110.80
7	A	307	G	C4-C5-N7	8.23	114.09	110.80
7	A	307	G	C5-N7-C8	-8.04	100.28	104.30
8	B	206	C	N1-C2-O2	7.91	123.65	118.90
7	A	1006	C	N3-C2-O2	-7.76	116.46	121.90
7	A	687	C	C5-C6-N1	7.71	124.86	121.00
7	A	1607	C	C5-C6-N1	7.71	124.86	121.00
8	B	175	C	C6-N1-C2	-7.71	117.22	120.30
8	B	736	C	N1-C2-O2	7.71	123.53	118.90
7	A	994	C	C2-N1-C1'	7.56	127.11	118.80
7	A	2064	C	C6-N1-C2	-7.56	117.28	120.30
7	A	783	A	N7-C8-N9	7.53	117.57	113.80
7	A	776	G	C4-N9-C1'	7.53	136.29	126.50
7	A	1136	G	C4-C5-N7	7.49	113.80	110.80
7	A	761	A	C5-C6-N6	-7.47	117.73	123.70
7	A	594	U	N3-C2-O2	-7.46	116.98	122.20
7	A	381	G	C4-C5-N7	7.44	113.78	110.80
7	A	628	G	C4-C5-N7	7.41	113.76	110.80
7	A	761	A	C6-C5-N7	-7.39	127.12	132.30
7	A	2601	C	C6-N1-C2	-7.37	117.35	120.30
8	B	443	C	N1-C2-O2	7.30	123.28	118.90
8	B	90	C	C6-N1-C2	-7.25	117.40	120.30
8	B	620	C	N1-C2-O2	7.24	123.25	118.90
7	A	577	G	C6-C5-N7	-7.22	126.07	130.40
7	A	672	C	C6-N1-C2	-7.21	117.42	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	A	1874	C	N1-C2-O2	7.21	123.22	118.90
7	A	1135	C	N1-C2-O2	7.20	123.22	118.90
7	A	37	C	C6-N1-C2	-7.20	117.42	120.30
7	A	1332	G	N3-C4-N9	7.19	130.31	126.00
7	A	381	G	C6-C5-N7	-7.17	126.10	130.40
7	A	974	G	C5-N7-C8	-7.16	100.72	104.30
7	A	307	G	N1-C6-O6	7.12	124.17	119.90
7	A	545	U	C6-N1-C1'	-7.12	111.23	121.20
7	A	1577	C	N1-C2-O2	7.08	123.15	118.90
7	A	1996	C	N1-C2-O2	7.01	123.11	118.90
7	A	1187	G	C5-N7-C8	-7.01	100.80	104.30
7	A	1135	C	N3-C2-O2	-7.01	117.00	121.90
7	A	733	G	N3-C4-N9	7.00	130.20	126.00
32	a	98	G	C4-C5-N7	6.96	113.59	110.80
7	A	783	A	N1-C6-N6	6.96	122.78	118.60
7	A	1196	C	C6-N1-C2	-6.96	117.52	120.30
7	A	398	C	C6-N1-C2	-6.94	117.52	120.30
7	A	774	G	C4-C5-N7	6.90	113.56	110.80
7	A	1135	C	C2-N1-C1'	6.89	126.39	118.80
7	A	381	G	C5-N7-C8	-6.88	100.86	104.30
7	A	594	U	N1-C2-O2	6.87	127.61	122.80
25	S	67	LEU	C-N-CA	6.87	138.87	121.70
7	A	1190	G	C4-C5-N7	6.85	113.54	110.80
7	A	570	G	N3-C4-N9	-6.84	121.90	126.00
31	Z	76	A	C4-C5-N7	6.83	114.11	110.70
7	A	2486	C	C6-N1-C2	-6.80	117.58	120.30
7	A	411	G	C4-C5-N7	6.78	113.51	110.80
28	V	16	LEU	CA-CB-CG	6.76	130.86	115.30
8	B	702	A	O5'-P-OP2	6.75	118.79	110.70
7	A	733	G	C4-C5-N7	6.72	113.49	110.80
7	A	978	G	C6-C5-N7	-6.72	126.37	130.40
7	A	974	G	C4-N9-C1'	6.70	135.21	126.50
8	B	137	U	N1-C2-O2	6.68	127.48	122.80
7	A	1136	G	C5-N7-C8	-6.68	100.96	104.30
7	A	1660	G	C4-C5-N7	6.64	113.46	110.80
7	A	994	C	C6-N1-C2	-6.64	117.64	120.30
7	A	733	G	C4-N9-C1'	6.63	135.12	126.50
7	A	776	G	N3-C4-N9	6.62	129.97	126.00
43	l	70	ASP	CB-CG-OD1	6.62	124.25	118.30
7	A	271	G	P-O3'-C3'	6.60	127.62	119.70
7	A	776	G	C8-N9-C1'	-6.59	118.43	127.00
32	a	42	C	N1-C2-O2	6.59	122.85	118.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
8	B	840	C	N1-C2-O2	6.58	122.85	118.90
7	A	1730	C	P-O3'-C3'	6.55	127.56	119.70
7	A	2006	C	C6-N1-C2	-6.54	117.69	120.30
7	A	375	G	C6-C5-N7	-6.53	126.48	130.40
7	A	404	A	P-O3'-C3'	6.53	127.54	119.70
7	A	2626	C	C6-N1-C2	-6.51	117.70	120.30
7	A	581	C	C6-N1-C2	-6.50	117.70	120.30
7	A	628	G	C5-N7-C8	-6.50	101.05	104.30
7	A	1642	G	C4-C5-N7	6.50	113.40	110.80
8	B	1201	A	P-O3'-C3'	6.50	127.50	119.70
7	A	307	G	C6-C5-N7	-6.48	126.51	130.40
7	A	528	A	C4-C5-N7	6.48	113.94	110.70
7	A	1887	C	C2-N1-C1'	6.48	125.92	118.80
8	B	599	C	C5-C6-N1	6.47	124.23	121.00
7	A	1010	A	N7-C8-N9	6.46	117.03	113.80
7	A	2696	U	N3-C2-O2	-6.46	117.68	122.20
7	A	1190	G	C5-N7-C8	-6.39	101.10	104.30
8	B	90	C	C5-C6-N1	6.38	124.19	121.00
7	A	776	G	N3-C4-C5	-6.37	125.41	128.60
7	A	208	C	C5-C6-N1	6.36	124.18	121.00
7	A	561	G	C4-C5-N7	6.35	113.34	110.80
7	A	307	G	N7-C8-N9	6.35	116.27	113.10
7	A	208	C	N3-C2-O2	-6.33	117.47	121.90
7	A	417	C	C6-N1-C2	-6.32	117.77	120.30
7	A	1676	A	N3-C4-N9	-6.32	122.34	127.40
7	A	2006	C	C5-C6-N1	6.30	124.15	121.00
7	A	464	U	C5-C4-O4	-6.30	122.12	125.90
7	A	494	G	C4-N9-C1'	6.30	134.69	126.50
7	A	1309	G	C4-C5-N7	6.29	113.32	110.80
7	A	1651	G	C6-C5-N7	-6.29	126.63	130.40
7	A	700	G	C4-C5-N7	6.27	113.31	110.80
8	B	623	C	C6-N1-C2	-6.27	117.79	120.30
8	B	115	G	P-O3'-C3'	6.26	127.22	119.70
7	A	545	U	C6-N1-C2	-6.26	117.24	121.00
7	A	375	G	C5-C6-O6	-6.26	124.85	128.60
7	A	1728	C	N1-C2-O2	6.25	122.65	118.90
7	A	1006	C	C2-N1-C1'	6.25	125.68	118.80
7	A	1996	C	C2-N1-C1'	6.23	125.66	118.80
7	A	2200	C	C6-N1-C2	-6.23	117.81	120.30
7	A	976	G	C6-C5-N7	-6.21	126.67	130.40
7	A	1899	A	C5-C6-N1	6.21	120.81	117.70
7	A	1253	A	O4'-C1'-N9	-6.21	103.23	108.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	A	817	C	C6-N1-C2	-6.20	117.82	120.30
8	B	618	C	N1-C2-O2	6.18	122.61	118.90
8	B	736	C	N3-C2-O2	-6.17	117.58	121.90
46	o	114	LEU	CA-CB-CG	6.16	129.47	115.30
7	A	783	A	C8-N9-C4	-6.15	103.34	105.80
8	B	620	C	C2-N1-C1'	6.14	125.56	118.80
7	A	994	C	N3-C2-O2	-6.14	117.60	121.90
8	B	136	C	N1-C2-O2	6.14	122.58	118.90
7	A	1665	A	N1-C6-N6	6.12	122.27	118.60
7	A	208	C	C2-N1-C1'	6.12	125.53	118.80
7	A	208	C	N1-C2-O2	6.12	122.57	118.90
7	A	1836	C	C6-N1-C2	-6.12	117.85	120.30
7	A	1119	U	N3-C2-O2	-6.11	117.92	122.20
9	C	85	LEU	CA-CB-CG	6.11	129.36	115.30
7	A	1715	G	C4-C5-N7	6.10	113.24	110.80
8	B	618	C	C2-N1-C1'	6.10	125.51	118.80
8	B	1322	C	C2-N1-C1'	6.10	125.51	118.80
7	A	450	G	C6-C5-N7	-6.10	126.74	130.40
7	A	2420	C	O5'-P-OP1	-6.10	100.21	105.70
7	A	1574	C	C6-N1-C2	-6.09	117.86	120.30
7	A	733	G	C5-C6-O6	-6.09	124.95	128.60
7	A	777	G	C4-C5-N7	6.09	113.24	110.80
7	A	811	U	N1-C2-N3	6.08	118.55	114.90
7	A	1001	A	C8-N9-C4	-6.07	103.37	105.80
7	A	1343	G	C6-C5-N7	-6.07	126.76	130.40
7	A	1301	A	C4-N9-C1'	6.06	137.20	126.30
7	A	1187	G	N7-C8-N9	6.05	116.13	113.10
13	G	54	LEU	CA-CB-CG	6.05	129.21	115.30
7	A	1651	G	C4-C5-N7	6.04	113.22	110.80
7	A	1631	G	C4-C5-N7	6.03	113.21	110.80
7	A	1004	U	C6-N1-C2	-6.03	117.39	121.00
7	A	994	C	N1-C2-O2	6.02	122.51	118.90
7	A	528	A	C2-N3-C4	-6.02	107.59	110.60
7	A	353	C	N1-C2-O2	6.02	122.51	118.90
7	A	37	C	C5-C6-N1	6.01	124.00	121.00
7	A	353	C	C6-N1-C2	-5.99	117.90	120.30
7	A	1006	C	C6-N1-C2	-5.99	117.90	120.30
7	A	360	U	C5-C6-N1	5.99	125.69	122.70
7	A	545	U	C5-C6-N1	5.98	125.69	122.70
7	A	375	G	C4-C5-N7	5.98	113.19	110.80
7	A	971	G	C4-C5-N7	5.97	113.19	110.80
7	A	974	G	N7-C8-N9	5.97	116.08	113.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	A	1136	G	N1-C6-O6	5.97	123.48	119.90
7	A	1649	G	C6-C5-N7	-5.97	126.82	130.40
7	A	1311	G	C6-C5-N7	-5.96	126.82	130.40
7	A	2512	C	C6-N1-C2	-5.96	117.92	120.30
8	B	1298	U	N3-C2-O2	-5.96	118.03	122.20
7	A	1874	C	N3-C2-O2	-5.96	117.73	121.90
7	A	692	C	C5-C6-N1	5.95	123.98	121.00
7	A	143	C	N1-C2-O2	5.95	122.47	118.90
7	A	1941	C	N1-C2-O2	5.95	122.47	118.90
8	B	163	C	C6-N1-C2	-5.95	117.92	120.30
7	A	1656	C	C6-N1-C2	-5.94	117.92	120.30
7	A	297	G	P-O3'-C3'	5.92	126.81	119.70
7	A	682	G	C4-N9-C1'	5.92	134.20	126.50
7	A	1283	G	C4-C5-N7	5.92	113.17	110.80
7	A	2691	C	C5-C6-N1	5.91	123.95	121.00
7	A	1301	A	C8-N9-C1'	-5.91	117.07	127.70
7	A	601	C	C6-N1-C2	-5.90	117.94	120.30
7	A	955	U	C5-C6-N1	5.90	125.65	122.70
7	A	577	G	C4-C5-N7	5.90	113.16	110.80
7	A	511	U	C4-C5-C6	5.89	123.24	119.70
7	A	375	G	N1-C6-O6	5.89	123.43	119.90
54	w	6	LEU	CA-CB-CG	5.89	128.84	115.30
7	A	1283	G	C6-C5-N7	-5.88	126.87	130.40
7	A	975	A	P-O3'-C3'	5.88	126.76	119.70
7	A	1887	C	C6-N1-C2	-5.88	117.95	120.30
7	A	1675	C	C6-N1-C2	-5.87	117.95	120.30
7	A	1995	U	C2-N1-C1'	5.86	124.73	117.70
7	A	1904	G	P-O3'-C3'	5.86	126.73	119.70
8	B	443	C	N3-C2-O2	-5.85	117.80	121.90
7	A	333	G	C4-N9-C1'	5.85	134.11	126.50
7	A	2658	C	N3-C2-O2	-5.85	117.80	121.90
7	A	2505	G	O4'-C1'-N9	5.85	112.88	108.20
7	A	1669	A	C5-C6-N1	5.84	120.62	117.70
8	B	563	A	C4-N9-C1'	5.84	136.81	126.30
37	f	133	LEU	CA-CB-CG	5.83	128.72	115.30
7	A	1728	C	N3-C2-O2	-5.83	117.82	121.90
8	B	137	U	N3-C2-O2	-5.82	118.12	122.20
7	A	2619	C	C6-N1-C2	-5.82	117.97	120.30
7	A	846	U	C2-N1-C1'	5.80	124.66	117.70
7	A	955	U	C6-N1-C2	-5.80	117.52	121.00
7	A	2818	U	N3-C2-O2	-5.80	118.14	122.20
7	A	528	A	C6-C5-N7	-5.80	128.24	132.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	A	1993	U	C6-N1-C1'	5.79	129.30	121.20
8	B	1109	C	C6-N1-C2	-5.79	117.98	120.30
7	A	978	G	C2-N3-C4	-5.78	109.01	111.90
7	A	733	G	C8-N9-C1'	-5.77	119.50	127.00
7	A	594	U	C2-N1-C1'	5.77	124.62	117.70
7	A	237	C	C5-C6-N1	5.76	123.88	121.00
7	A	2029	G	C6-C5-N7	-5.76	126.94	130.40
7	A	278	A	C4-N9-C1'	5.76	136.67	126.30
7	A	381	G	N7-C8-N9	5.76	115.98	113.10
7	A	978	G	C5-N7-C8	-5.75	101.42	104.30
7	A	323	C	N1-C2-O2	5.75	122.35	118.90
7	A	2427	C	C6-N1-C2	-5.75	118.00	120.30
7	A	1368	G	C6-C5-N7	-5.74	126.96	130.40
7	A	1996	C	N3-C2-O2	-5.74	117.88	121.90
7	A	978	G	N1-C6-O6	5.73	123.34	119.90
7	A	1267	U	N3-C2-O2	-5.72	118.19	122.20
7	A	1577	C	N3-C2-O2	-5.72	117.89	121.90
8	B	840	C	C5-C6-N1	5.72	123.86	121.00
7	A	1100	C	C6-N1-C2	-5.72	118.01	120.30
7	A	1913	A	P-O3'-C3'	5.71	126.56	119.70
7	A	1172	C	N1-C2-O2	5.70	122.32	118.90
7	A	971	G	N9-C4-C5	-5.70	103.12	105.40
7	A	189	G	C6-C5-N7	-5.70	126.98	130.40
7	A	581	C	C5-C6-N1	5.69	123.84	121.00
7	A	606	U	C5-C6-N1	5.69	125.54	122.70
8	B	538	G	C4-C5-N7	5.69	113.08	110.80
7	A	783	A	C6-C5-N7	-5.68	128.32	132.30
7	A	1604	C	C6-N1-C2	-5.68	118.03	120.30
7	A	2870	C	C6-N1-C2	-5.68	118.03	120.30
7	A	1905	C	C6-N1-C2	-5.68	118.03	120.30
7	A	2486	C	C5-C6-N1	5.67	123.83	121.00
7	A	1157	G	C6-C5-N7	-5.67	127.00	130.40
8	B	848	C	C5-C6-N1	5.67	123.83	121.00
8	B	1158	C	C2-N1-C1'	5.66	125.03	118.80
7	A	798	G	C6-C5-N7	-5.65	127.01	130.40
7	A	974	G	C8-N9-C1'	-5.65	119.65	127.00
7	A	1311	G	C4-N9-C1'	5.65	133.85	126.50
7	A	2437	G	C6-C5-N7	-5.65	127.01	130.40
7	A	1667	G	C6-C5-N7	-5.64	127.01	130.40
8	B	599	C	C6-N1-C2	-5.64	118.05	120.30
7	A	244	A	P-O3'-C3'	5.64	126.46	119.70
7	A	2512	C	C5-C6-N1	5.63	123.82	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
20	N	34	LEU	CA-CB-CG	5.63	128.26	115.30
7	A	561	G	C5-N7-C8	-5.63	101.49	104.30
7	A	1414	C	N1-C2-O2	5.63	122.28	118.90
7	A	1119	U	N1-C2-O2	5.62	126.74	122.80
8	B	163	C	N3-C2-O2	-5.62	117.97	121.90
8	B	1136	C	N1-C2-O2	5.62	122.27	118.90
8	B	163	C	N1-C2-O2	5.62	122.27	118.90
7	A	2626	C	C5-C6-N1	5.61	123.81	121.00
7	A	307	G	C5-C6-O6	-5.60	125.24	128.60
7	A	2772	C	C6-N1-C1'	5.60	127.52	120.80
7	A	1660	G	C6-C5-N7	-5.59	127.04	130.40
7	A	1824	G	C6-C5-N7	-5.59	127.05	130.40
7	A	1967	C	C6-N1-C2	-5.58	118.07	120.30
7	A	2624	G	C6-C5-N7	-5.58	127.05	130.40
8	B	59	A	C2-N3-C4	5.58	113.39	110.60
7	A	565	C	C6-N1-C2	-5.58	118.07	120.30
7	A	1332	G	N3-C4-C5	-5.58	125.81	128.60
7	A	1343	G	C4-C5-N7	5.58	113.03	110.80
7	A	2232	C	C6-N1-C2	-5.57	118.07	120.30
7	A	978	G	C4-C5-N7	5.57	113.03	110.80
7	A	353	C	N3-C2-O2	-5.57	118.00	121.90
7	A	2499	C	C6-N1-C2	-5.57	118.07	120.30
7	A	576	U	C5-C4-O4	-5.56	122.56	125.90
7	A	278	A	N3-C4-N9	5.55	131.84	127.40
7	A	442	G	C6-C5-N7	-5.55	127.07	130.40
7	A	1797	G	C5-N7-C8	-5.54	101.53	104.30
7	A	2305	U	N3-C2-O2	-5.54	118.32	122.20
7	A	1468	U	N3-C2-O2	-5.54	118.32	122.20
7	A	92	U	C5-C6-N1	5.54	125.47	122.70
7	A	451	U	C5-C6-N1	-5.54	119.93	122.70
7	A	1024	G	C6-C5-N7	-5.54	127.08	130.40
31	Z	76	A	C5-N7-C8	-5.54	101.13	103.90
7	A	2710	C	C6-N1-C2	-5.54	118.08	120.30
7	A	1797	G	C4-C5-N7	5.53	113.01	110.80
7	A	576	U	N3-C2-O2	5.53	126.07	122.20
32	a	98	G	C5-N7-C8	-5.53	101.53	104.30
8	B	582	C	C6-N1-C2	-5.53	118.09	120.30
7	A	679	C	C6-N1-C2	-5.52	118.09	120.30
7	A	158	U	N3-C2-O2	-5.52	118.34	122.20
7	A	777	G	C6-C5-N7	-5.52	127.09	130.40
7	A	1371	G	C4-C5-N7	5.52	113.01	110.80
8	B	1417	G	C6-C5-N7	-5.51	127.09	130.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	A	2456	C	C5-C6-N1	5.51	123.76	121.00
7	A	1779	U	C2-N1-C1'	-5.51	111.09	117.70
8	B	233	C	N1-C2-O2	5.51	122.20	118.90
7	A	1379	U	C5-C6-N1	5.50	125.45	122.70
7	A	1468	U	N1-C2-O2	5.50	126.65	122.80
7	A	1841	U	C6-N1-C2	-5.50	117.70	121.00
7	A	682	G	C8-N9-C1'	-5.50	119.85	127.00
7	A	1776	G	C6-C5-N7	-5.50	127.10	130.40
7	A	846	U	N1-C2-O2	5.49	126.64	122.80
7	A	2581	G	C5-C6-N1	5.49	114.25	111.50
7	A	2825	G	C6-C5-N7	-5.49	127.11	130.40
8	B	193	C	C6-N1-C2	-5.47	118.11	120.30
7	A	2884	U	C2-N1-C1'	5.47	124.26	117.70
8	B	475	C	C5-C6-N1	5.47	123.73	121.00
7	A	1414	C	N3-C2-O2	-5.46	118.08	121.90
8	B	624	C	N1-C2-O2	5.46	122.18	118.90
31	Z	60	U	N3-C2-O2	-5.46	118.38	122.20
7	A	1498	C	N3-C2-O2	-5.46	118.08	121.90
7	A	333	G	C8-N9-C1'	-5.46	119.91	127.00
7	A	1187	G	N1-C6-O6	5.46	123.17	119.90
8	B	555	U	C2-N1-C1'	5.46	124.25	117.70
7	A	1314	C	C5-C6-N1	5.44	123.72	121.00
31	Z	60	U	C2-N1-C1'	5.44	124.23	117.70
8	B	528	C	C6-N1-C2	-5.44	118.12	120.30
7	A	1669	A	C5-N7-C8	-5.43	101.18	103.90
7	A	2617	U	C5-C6-N1	5.43	125.42	122.70
7	A	277	G	O4'-C1'-N9	5.43	112.55	108.20
7	A	1368	G	C5-N7-C8	-5.43	101.58	104.30
7	A	784	G	C8-N9-C4	5.43	108.57	106.40
7	A	1301	A	N3-C4-N9	5.43	131.74	127.40
7	A	1667	G	C4-C5-N7	5.43	112.97	110.80
7	A	2243	U	C5-C6-N1	5.42	125.41	122.70
7	A	312	G	C4-N9-C1'	5.42	133.54	126.50
7	A	1136	G	N3-C4-C5	5.42	131.31	128.60
7	A	1154	G	C4-C5-N7	5.42	112.97	110.80
7	A	1368	G	C4-C5-N7	5.41	112.97	110.80
7	A	1616	A	OP2-P-O3'	5.41	117.11	105.20
8	B	206	C	C2-N1-C1'	5.41	124.75	118.80
7	A	46	G	C4-N9-C1'	5.41	133.53	126.50
8	B	848	C	C6-N1-C2	-5.41	118.14	120.30
8	B	582	C	C5-C6-N1	5.41	123.70	121.00
7	A	1196	C	C5-C6-N1	5.41	123.70	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	A	1235	G	C6-C5-N7	-5.41	127.16	130.40
7	A	1256	G	C6-C5-N7	-5.40	127.16	130.40
8	B	25	C	C6-N1-C2	-5.40	118.14	120.30
7	A	604	G	C4-C5-N7	5.39	112.96	110.80
7	A	1200	C	C6-N1-C2	-5.39	118.14	120.30
7	A	866	A	N9-C4-C5	-5.39	103.65	105.80
7	A	1267	U	C2-N1-C1'	5.39	124.16	117.70
7	A	577	G	N7-C8-N9	5.38	115.79	113.10
7	A	2150	C	C6-N1-C2	-5.38	118.15	120.30
7	A	1076	C	C6-N1-C2	-5.38	118.15	120.30
7	A	2068	U	N3-C2-O2	-5.38	118.44	122.20
8	B	637	C	N1-C2-O2	5.38	122.13	118.90
7	A	2825	G	C4-C5-N7	5.37	112.95	110.80
7	A	1703	G	C4-N9-C1'	5.37	133.48	126.50
8	B	1322	C	N1-C2-O2	5.37	122.12	118.90
7	A	2496	C	C6-N1-C2	-5.36	118.16	120.30
7	A	464	U	N3-C4-O4	5.36	123.15	119.40
7	A	1619	G	C4-C5-N7	5.35	112.94	110.80
7	A	1995	U	N1-C2-O2	5.35	126.55	122.80
7	A	2078	C	C6-N1-C2	-5.35	118.16	120.30
8	B	840	C	C2-N1-C1'	5.35	124.69	118.80
7	A	1332	G	C8-N9-C1'	-5.35	120.05	127.00
7	A	2826	A	N1-C2-N3	-5.34	126.63	129.30
7	A	511	U	C5-C6-N1	-5.34	120.03	122.70
7	A	1824	G	C4-C5-N7	5.34	112.94	110.80
7	A	976	G	C5-C6-O6	-5.34	125.39	128.60
7	A	1660	G	C5-N7-C8	-5.34	101.63	104.30
7	A	1535	A	C2-N3-C4	5.33	113.27	110.60
7	A	1669	A	C4-C5-N7	5.33	113.37	110.70
8	B	538	G	C5-C6-O6	-5.33	125.40	128.60
7	A	1836	C	N1-C2-O2	5.33	122.10	118.90
7	A	971	G	C6-C5-N7	-5.33	127.20	130.40
7	A	902	C	N1-C2-O2	5.33	122.10	118.90
8	B	157	U	N3-C2-O2	-5.33	118.47	122.20
7	A	2788	C	C6-N1-C2	-5.33	118.17	120.30
8	B	206	C	N3-C2-O2	-5.33	118.17	121.90
8	B	538	G	C6-C5-N7	-5.32	127.21	130.40
7	A	528	A	N1-C6-N6	5.32	121.79	118.60
7	A	1377	G	C5-C6-N1	5.32	114.16	111.50
8	B	443	C	C6-N1-C2	-5.32	118.17	120.30
7	A	278	A	N3-C4-C5	-5.31	123.08	126.80
44	m	51	LEU	CB-CG-CD1	-5.31	101.97	111.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	A	1676	A	N3-C4-C5	5.31	130.51	126.80
8	B	945	G	N3-C4-C5	-5.31	125.95	128.60
7	A	1405	U	N3-C2-O2	-5.30	118.49	122.20
7	A	984	A	C2-N3-C4	-5.30	107.95	110.60
7	A	2581	G	N3-C4-C5	-5.30	125.95	128.60
8	B	620	C	N3-C2-O2	-5.30	118.19	121.90
7	A	158	U	N1-C2-O2	5.29	126.50	122.80
7	A	1157	G	C4-N9-C1'	5.29	133.38	126.50
7	A	1685	C	C6-N1-C2	-5.29	118.19	120.30
7	A	1743	G	C4-C5-N7	5.29	112.92	110.80
7	A	1899	A	C5-C6-N6	-5.29	119.47	123.70
7	A	1649	G	C4-N9-C1'	5.28	133.37	126.50
7	A	729	G	C4-N9-C1'	5.28	133.36	126.50
7	A	2696	U	C2-N1-C1'	5.28	124.03	117.70
8	B	284	C	C6-N1-C2	-5.28	118.19	120.30
7	A	1404	C	C6-N1-C2	-5.27	118.19	120.30
7	A	2068	U	N1-C2-O2	5.27	126.49	122.80
7	A	2668	G	C4-C5-N7	5.27	112.91	110.80
7	A	102	U	C2-N1-C1'	5.27	124.02	117.70
7	A	692	C	C6-N1-C2	-5.26	118.19	120.30
7	A	1343	G	C4-N9-C1'	5.26	133.34	126.50
7	A	512	G	N3-C4-N9	-5.25	122.85	126.00
8	B	538	G	N3-C4-N9	5.25	129.15	126.00
7	A	1191	G	C4-C5-N7	5.25	112.90	110.80
7	A	1135	C	C6-N1-C2	-5.24	118.20	120.30
7	A	1090	A	C2-N3-C4	5.24	113.22	110.60
8	B	210	C	N1-C2-O2	5.24	122.04	118.90
7	A	1180	U	N1-C2-O2	5.24	126.47	122.80
7	A	1199	U	C2-N1-C1'	5.24	123.99	117.70
7	A	2514	U	N3-C2-O2	-5.23	118.54	122.20
7	A	687	C	C4-C5-C6	-5.23	114.78	117.40
7	A	978	G	N7-C8-N9	5.23	115.72	113.10
7	A	915	C	N1-C2-O2	5.23	122.04	118.90
7	A	2499	C	C5-C6-N1	5.23	123.61	121.00
7	A	2087	G	C6-C5-N7	-5.22	127.27	130.40
7	A	2271	G	C6-C5-N7	-5.21	127.27	130.40
7	A	1313	U	C2-N1-C1'	5.21	123.95	117.70
7	A	122	G	C6-C5-N7	-5.21	127.28	130.40
7	A	442	G	C8-N9-C1'	-5.21	120.23	127.00
7	A	845	A	C2-N3-C4	5.20	113.20	110.60
7	A	846	U	N3-C2-O2	-5.20	118.56	122.20
7	A	2224	G	C4-C5-N7	5.20	112.88	110.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	A	2824	C	N3-C4-C5	5.20	123.98	121.90
7	A	417	C	C2-N1-C1'	5.20	124.52	118.80
7	A	2244	U	C5-C6-N1	5.19	125.30	122.70
7	A	579	G	C4-N9-C1'	5.19	133.25	126.50
7	A	700	G	C6-C5-N7	-5.19	127.29	130.40
7	A	733	G	N1-C6-O6	5.19	123.01	119.90
7	A	1631	G	C5-N7-C8	-5.19	101.70	104.30
7	A	2773	C	C6-N1-C2	-5.19	118.22	120.30
7	A	2005	A	C8-N9-C4	-5.19	103.73	105.80
7	A	584	C	C6-N1-C2	-5.18	118.23	120.30
32	a	42	C	N3-C2-O2	-5.18	118.27	121.90
7	A	988	A	C4-C5-N7	5.18	113.29	110.70
7	A	2575	C	C6-N1-C1'	5.18	127.01	120.80
7	A	750	A	C8-N9-C4	-5.17	103.73	105.80
7	A	1371	G	C6-C5-N7	-5.17	127.30	130.40
8	B	754	C	C2-N1-C1'	5.17	124.49	118.80
7	A	400	G	C8-N9-C4	-5.17	104.33	106.40
7	A	1685	C	N3-C2-O2	-5.17	118.28	121.90
7	A	1795	C	C6-N1-C2	-5.16	118.23	120.30
7	A	2773	C	C5-C6-N1	5.16	123.58	121.00
7	A	1156	A	C8-N9-C4	-5.16	103.74	105.80
7	A	1790	C	C2-N1-C1'	-5.15	113.13	118.80
7	A	1995	U	N3-C2-O2	-5.15	118.59	122.20
31	Z	13	C	P-O3'-C3'	5.15	125.88	119.70
7	A	868	U	N3-C2-O2	-5.15	118.59	122.20
7	A	1836	C	N3-C2-O2	-5.15	118.30	121.90
7	A	2658	C	N1-C2-O2	5.15	121.99	118.90
7	A	381	G	N1-C6-O6	5.15	122.99	119.90
7	A	577	G	C5-N7-C8	-5.15	101.73	104.30
7	A	1786	A	N1-C6-N6	-5.15	115.51	118.60
7	A	2330	G	C6-C5-N7	-5.15	127.31	130.40
8	B	443	C	C5-C6-N1	5.14	123.57	121.00
7	A	494	G	N7-C8-N9	5.14	115.67	113.10
7	A	786	C	C6-N1-C2	-5.14	118.24	120.30
8	B	111	G	C8-N9-C4	-5.14	104.34	106.40
8	B	359	G	C4-N9-C1'	5.14	133.18	126.50
7	A	413	C	C6-N1-C2	-5.14	118.25	120.30
7	A	1888	G	C4-C5-N7	5.13	112.85	110.80
8	B	983	A	C4-N9-C1'	5.13	135.53	126.30
7	A	1180	U	C2-N1-C1'	5.12	123.85	117.70
7	A	143	C	N3-C2-O2	-5.12	118.31	121.90
7	A	893	C	C6-N1-C2	-5.12	118.25	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	A	791	C	N3-C4-N4	-5.12	114.42	118.00
7	A	1338	G	C4-N9-C1'	5.12	133.16	126.50
7	A	1332	G	C4-N9-C1'	5.11	133.15	126.50
7	A	55	G	C4-N9-C1'	5.11	133.14	126.50
7	A	494	G	C6-C5-N7	-5.11	127.33	130.40
7	A	2256	G	C6-C5-N7	-5.11	127.34	130.40
7	A	1187	G	C8-N9-C4	-5.10	104.36	106.40
7	A	2150	C	N1-C2-O2	5.10	121.96	118.90
7	A	178	G	C5-C6-N1	5.10	114.05	111.50
7	A	2601	C	C6-N1-C1'	5.10	126.92	120.80
7	A	1355	G	C4-C5-N7	5.10	112.84	110.80
7	A	1131	G	C8-N9-C4	-5.09	104.36	106.40
7	A	1941	C	N3-C2-O2	-5.09	118.33	121.90
7	A	1899	A	N1-C2-N3	-5.09	126.76	129.30
7	A	1368	G	N7-C8-N9	5.09	115.64	113.10
7	A	2222	C	C5-C6-N1	5.08	123.54	121.00
8	B	618	C	N3-C2-O2	-5.08	118.34	121.90
7	A	679	C	C5-C6-N1	5.08	123.54	121.00
7	A	2317	A	P-O3'-C3'	5.08	125.79	119.70
8	B	948	C	C5-C6-N1	5.08	123.54	121.00
7	A	391	A	C4-C5-N7	5.07	113.24	110.70
7	A	1642	G	C5-N7-C8	-5.07	101.77	104.30
7	A	581	C	C2-N1-C1'	5.07	124.38	118.80
7	A	976	G	N1-C6-O6	5.07	122.94	119.90
7	A	1967	C	C5-C6-N1	5.06	123.53	121.00
7	A	278	A	C2-N3-C4	5.06	113.13	110.60
7	A	442	G	C4-N9-C1'	5.06	133.08	126.50
7	A	8	C	C5-C6-N1	5.06	123.53	121.00
7	A	1288	G	N3-C4-C5	-5.06	126.07	128.60
7	A	761	A	C8-N9-C4	-5.06	103.78	105.80
7	A	2581	G	N3-C4-N9	5.06	129.03	126.00
7	A	2068	U	C2-N1-C1'	5.06	123.77	117.70
7	A	2645	G	N3-C4-N9	5.06	129.03	126.00
7	A	391	A	N1-C6-N6	5.05	121.63	118.60
7	A	868	U	C2-N1-C1'	5.05	123.77	117.70
8	B	1234	C	C6-N1-C2	-5.05	118.28	120.30
7	A	1253	A	N1-C6-N6	5.05	121.63	118.60
7	A	761	A	N9-C4-C5	-5.05	103.78	105.80
7	A	1949	G	C6-C5-N7	-5.05	127.37	130.40
7	A	2822	G	C4-C5-N7	5.05	112.82	110.80
7	A	733	G	N3-C4-C5	-5.05	126.08	128.60
8	B	624	C	N3-C2-O2	-5.04	118.37	121.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	A	1752	C	C6-N1-C2	-5.04	118.29	120.30
8	B	207	C	C6-N1-C2	-5.04	118.29	120.30
8	B	764	C	C6-N1-C2	-5.03	118.29	120.30
8	B	563	A	C8-N9-C1'	-5.03	118.65	127.70
56	y	2	G	N3-C4-C5	-5.03	126.09	128.60
8	B	1120	C	C6-N1-C2	-5.03	118.29	120.30
56	y	2	G	C4-N9-C1'	5.02	133.03	126.50
7	A	577	G	C8-N9-C4	-5.02	104.39	106.40
7	A	831	G	C4-C5-N7	5.02	112.81	110.80
7	A	998	C	C6-N1-C2	-5.02	118.29	120.30
7	A	1309	G	C5-N7-C8	-5.02	101.79	104.30
7	A	998	C	C5-C6-N1	5.02	123.51	121.00
8	B	311	C	C5-C6-N1	5.02	123.51	121.00
7	A	915	C	N3-C2-O2	-5.02	118.39	121.90
7	A	868	U	C6-N1-C2	-5.01	117.99	121.00
7	A	2305	U	N1-C2-O2	5.01	126.31	122.80
7	A	2696	U	N1-C2-O2	5.01	126.31	122.80
8	B	1158	C	N1-C2-O2	5.01	121.91	118.90
7	A	400	G	C6-C5-N7	-5.01	127.39	130.40
32	a	98	G	C5-C6-O6	-5.01	125.59	128.60
7	A	2383	G	C4-C5-N7	5.01	112.81	110.80
7	A	2898	U	N3-C2-O2	-5.01	118.69	122.20
7	A	1379	U	C2-N1-C1'	5.01	123.71	117.70
7	A	976	G	C4-C5-N7	5.00	112.80	110.80
7	A	1311	G	C8-N9-C1'	-5.00	120.50	127.00
7	A	1887	C	C5-C6-N1	5.00	123.50	121.00
7	A	1993	U	C2-N1-C1'	-5.00	111.70	117.70
7	A	2896	C	C6-N1-C2	-5.00	118.30	120.30
8	B	1326	U	N1-C2-O2	5.00	126.30	122.80

There are no chirality outliers.

All (28) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	1	31	HIS	Peptide
3	2	20	ASP	Peptide
9	C	84	ALA	Peptide
11	E	173	VAL	Peptide
11	E	20	PHE	Peptide
12	F	102	GLY	Peptide
12	F	105	ILE	Peptide
13	G	53	LYS	Peptide

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Mol	Chain	Res	Type	Group
16	J	55	VAL	Peptide
16	J	60	LYS	Peptide
17	K	57	VAL	Peptide
19	M	24	LEU	Peptide
20	N	66	GLU	Peptide
23	Q	46	LYS	Peptide
24	R	68	SER	Peptide
24	R	70	THR	Peptide
28	V	34	ARG	Peptide
28	V	9	ASN	Peptide
29	W	2	ILE	Peptide
34	c	151	THR	Peptide
37	f	46	ALA	Peptide
37	f	47	ASP	Peptide
41	j	92	GLU	Peptide
42	k	53	GLY	Peptide
43	l	58	LYS	Peptide
50	s	52	LEU	Peptide
50	s	6	ARG	Peptide
50	s	89	ASP	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
1	0	44/46 (96%)	41 (93%)	3 (7%)	0	100 100
2	1	62/65 (95%)	51 (82%)	9 (14%)	2 (3%)	4 30
3	2	36/38 (95%)	30 (83%)	5 (14%)	1 (3%)	5 32

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
4	3	166/169 (98%)	145 (87%)	21 (13%)	0	100	100
5	5	430/432 (100%)	387 (90%)	43 (10%)	0	100	100
6	6	54/57 (95%)	45 (83%)	8 (15%)	1 (2%)	8	39
9	C	216/241 (90%)	178 (82%)	38 (18%)	0	100	100
10	D	204/233 (88%)	176 (86%)	28 (14%)	0	100	100
11	E	203/206 (98%)	179 (88%)	24 (12%)	0	100	100
12	F	148/167 (89%)	114 (77%)	34 (23%)	0	100	100
13	G	98/135 (73%)	84 (86%)	14 (14%)	0	100	100
14	H	149/179 (83%)	138 (93%)	11 (7%)	0	100	100
15	I	127/130 (98%)	119 (94%)	8 (6%)	0	100	100
16	J	125/130 (96%)	111 (89%)	14 (11%)	0	100	100
17	K	96/103 (93%)	84 (88%)	12 (12%)	0	100	100
18	L	115/129 (89%)	92 (80%)	23 (20%)	0	100	100
19	M	121/124 (98%)	95 (78%)	26 (22%)	0	100	100
20	N	112/118 (95%)	97 (87%)	13 (12%)	2 (2%)	8	40
21	O	92/101 (91%)	81 (88%)	11 (12%)	0	100	100
22	P	86/89 (97%)	78 (91%)	8 (9%)	0	100	100
23	Q	80/82 (98%)	66 (82%)	14 (18%)	0	100	100
24	R	78/84 (93%)	58 (74%)	19 (24%)	1 (1%)	12	47
25	S	53/75 (71%)	51 (96%)	2 (4%)	0	100	100
26	T	77/92 (84%)	69 (90%)	8 (10%)	0	100	100
27	U	83/87 (95%)	78 (94%)	4 (5%)	1 (1%)	13	48
28	V	49/71 (69%)	37 (76%)	12 (24%)	0	100	100
29	W	94/100 (94%)	80 (85%)	14 (15%)	0	100	100
33	b	269/273 (98%)	230 (86%)	39 (14%)	0	100	100
34	c	207/209 (99%)	187 (90%)	18 (9%)	2 (1%)	15	52
35	d	199/201 (99%)	185 (93%)	14 (7%)	0	100	100
36	e	175/179 (98%)	153 (87%)	22 (13%)	0	100	100
37	f	174/177 (98%)	159 (91%)	13 (8%)	2 (1%)	14	50
38	g	45/149 (30%)	34 (76%)	11 (24%)	0	100	100
39	h	139/142 (98%)	115 (83%)	24 (17%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
40	i	140/142 (99%)	126 (90%)	14 (10%)	0	100 100
41	j	120/123 (98%)	89 (74%)	30 (25%)	1 (1%)	19 58
42	k	141/144 (98%)	121 (86%)	19 (14%)	1 (1%)	22 60
43	l	134/136 (98%)	118 (88%)	13 (10%)	3 (2%)	6 37
44	m	118/127 (93%)	99 (84%)	17 (14%)	2 (2%)	9 42
45	n	114/117 (97%)	103 (90%)	11 (10%)	0	100 100
46	o	112/115 (97%)	97 (87%)	15 (13%)	0	100 100
47	p	115/118 (98%)	109 (95%)	6 (5%)	0	100 100
48	q	101/103 (98%)	85 (84%)	16 (16%)	0	100 100
49	r	108/110 (98%)	99 (92%)	9 (8%)	0	100 100
50	s	100/104 (96%)	81 (81%)	17 (17%)	2 (2%)	7 39
51	t	92/94 (98%)	87 (95%)	5 (5%)	0	100 100
52	u	73/85 (86%)	62 (85%)	11 (15%)	0	100 100
53	v	75/78 (96%)	64 (85%)	11 (15%)	0	100 100
54	w	61/63 (97%)	54 (88%)	7 (12%)	0	100 100
55	x	56/59 (95%)	51 (91%)	5 (9%)	0	100 100
57	z	48/55 (87%)	42 (88%)	6 (12%)	0	100 100
All	All	6114/6586 (93%)	5314 (87%)	779 (13%)	21 (0%)	44 75

All (21) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	1	32	ILE
20	N	67	GLY
37	f	48	ASN
2	1	33	LEU
3	2	21	GLY
6	6	55	ILE
24	R	71	LYS
27	U	69	LYS
37	f	47	ASP
42	k	82	LEU
43	l	59	ARG
50	s	90	GLY
34	c	152	PRO
20	N	66	GLU

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Mol	Chain	Res	Type
34	c	149	ASN
43	l	70	ASP
44	m	3	HIS
44	m	71	ARG
41	j	93	GLN
43	l	69	PRO
50	s	51	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	
1	0	38/38 (100%)	38 (100%)	0	100	100
2	1	51/52 (98%)	51 (100%)	0	100	100
3	2	34/34 (100%)	34 (100%)	0	100	100
4	3	148/149 (99%)	147 (99%)	1 (1%)	84	90
5	5	359/359 (100%)	358 (100%)	1 (0%)	92	95
6	6	47/48 (98%)	47 (100%)	0	100	100
9	C	180/199 (90%)	179 (99%)	1 (1%)	86	92
10	D	170/190 (90%)	170 (100%)	0	100	100
11	E	172/173 (99%)	170 (99%)	2 (1%)	71	83
12	F	113/126 (90%)	113 (100%)	0	100	100
13	G	87/116 (75%)	85 (98%)	2 (2%)	50	70
14	H	124/147 (84%)	123 (99%)	1 (1%)	81	88
15	I	104/105 (99%)	102 (98%)	2 (2%)	57	75
16	J	105/107 (98%)	102 (97%)	3 (3%)	42	64
17	K	86/90 (96%)	85 (99%)	1 (1%)	71	83
18	L	90/99 (91%)	88 (98%)	2 (2%)	52	71
19	M	103/104 (99%)	103 (100%)	0	100	100
20	N	92/96 (96%)	89 (97%)	3 (3%)	38	62

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
21	O	79/84 (94%)	79 (100%)	0	100	100
22	P	75/77 (97%)	75 (100%)	0	100	100
23	Q	65/65 (100%)	65 (100%)	0	100	100
24	R	74/78 (95%)	73 (99%)	1 (1%)	67	80
25	S	48/65 (74%)	47 (98%)	1 (2%)	53	72
26	T	70/79 (89%)	70 (100%)	0	100	100
27	U	65/66 (98%)	62 (95%)	3 (5%)	27	54
28	V	44/61 (72%)	43 (98%)	1 (2%)	50	70
29	W	83/84 (99%)	81 (98%)	2 (2%)	49	69
33	b	216/218 (99%)	212 (98%)	4 (2%)	57	75
34	c	164/164 (100%)	161 (98%)	3 (2%)	59	77
35	d	165/165 (100%)	164 (99%)	1 (1%)	86	92
36	e	148/150 (99%)	147 (99%)	1 (1%)	84	90
37	f	137/138 (99%)	136 (99%)	1 (1%)	84	90
38	g	38/114 (33%)	38 (100%)	0	100	100
39	h	109/110 (99%)	109 (100%)	0	100	100
40	i	116/116 (100%)	115 (99%)	1 (1%)	78	87
41	j	103/104 (99%)	103 (100%)	0	100	100
42	k	102/103 (99%)	101 (99%)	1 (1%)	76	85
43	l	109/109 (100%)	109 (100%)	0	100	100
44	m	100/103 (97%)	97 (97%)	3 (3%)	41	64
45	n	86/87 (99%)	85 (99%)	1 (1%)	71	83
46	o	99/100 (99%)	99 (100%)	0	100	100
47	p	89/90 (99%)	89 (100%)	0	100	100
48	q	84/84 (100%)	84 (100%)	0	100	100
49	r	93/93 (100%)	92 (99%)	1 (1%)	73	84
50	s	83/85 (98%)	83 (100%)	0	100	100
51	t	78/78 (100%)	78 (100%)	0	100	100
52	u	56/63 (89%)	56 (100%)	0	100	100
53	v	67/68 (98%)	67 (100%)	0	100	100
54	w	55/55 (100%)	54 (98%)	1 (2%)	59	77

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
55	x	48/49 (98%)	48 (100%)	0	100 100
57	z	45/49 (92%)	43 (96%)	2 (4%)	28 55
All	All	5096/5386 (95%)	5049 (99%)	47 (1%)	79 87

All (47) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	3	116	LYS
5	5	272	LYS
9	C	225	ARG
11	E	14	ARG
11	E	184	ARG
13	G	18	VAL
13	G	91	ARG
14	H	136	LYS
15	I	27	MET
15	I	69	LYS
16	J	27	LYS
16	J	45	ARG
16	J	106	ARG
17	K	14	ASP
18	L	106	ARG
18	L	125	LYS
20	N	17	ILE
20	N	65	VAL
20	N	93	ARG
24	R	77	ARG
25	S	43	ARG
27	U	33	LYS
27	U	74	ARG
27	U	85	LYS
28	V	33	ARG
29	W	61	LEU
29	W	85	VAL
33	b	87	ARG
33	b	114	ASP
33	b	171	TYR
33	b	221	ARG
34	c	133	THR
34	c	142	VAL
34	c	197	THR

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Mol	Chain	Res	Type
35	d	102	ARG
36	e	125	ARG
37	f	69	ARG
40	i	17	VAL
42	k	121	THR
44	m	2	ARG
44	m	37	THR
44	m	51	LEU
45	n	9	ARG
49	r	40	ASN
54	w	48	ARG
57	z	28	ARG
57	z	53	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (50) such sidechains are listed below:

Mol	Chain	Res	Type
1	0	6	GLN
1	0	13	ASN
1	0	16	HIS
3	2	13	ASN
4	3	7	HIS
4	3	131	GLN
9	C	42	ASN
9	C	89	GLN
9	C	177	ASN
10	D	19	ASN
10	D	123	GLN
12	F	61	GLN
15	I	67	GLN
16	J	4	ASN
17	K	56	HIS
19	M	96	HIS
21	O	4	GLN
21	O	35	ASN
21	O	62	ASN
22	P	42	HIS
22	P	62	GLN
23	Q	63	GLN
23	Q	79	ASN
24	R	31	HIS
26	T	69	HIS

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Mol	Chain	Res	Type
28	V	9	ASN
34	c	32	ASN
34	c	49	GLN
34	c	130	GLN
35	d	9	GLN
35	d	97	ASN
36	e	63	GLN
37	f	88	GLN
37	f	104	ASN
37	f	116	GLN
37	f	143	GLN
38	g	18	GLN
39	h	31	GLN
40	i	47	HIS
41	j	3	GLN
42	k	35	HIS
43	l	22	GLN
45	n	38	GLN
45	n	100	HIS
46	o	77	HIS
47	p	37	GLN
47	p	71	GLN
49	r	7	HIS
50	s	69	ASN
51	t	49	ASN

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
30	X	58/73 (79%)	30 (51%)	0
31	Z	58/76 (76%)	24 (41%)	1 (1%)
32	a	117/118 (99%)	21 (17%)	0
56	y	63/77 (81%)	19 (30%)	0
7	A	2902/2903 (99%)	740 (25%)	13 (0%)
8	B	1538/1539 (99%)	426 (27%)	3 (0%)
All	All	4736/4786 (98%)	1260 (26%)	17 (0%)

All (1260) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
7	A	10	A

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Mol	Chain	Res	Type
7	A	14	A
7	A	23	G
7	A	34	U
7	A	42	A
7	A	45	G
7	A	46	G
7	A	51	G
7	A	54	G
7	A	58	G
7	A	62	U
7	A	63	A
7	A	66	C
7	A	71	A
7	A	74	A
7	A	75	G
7	A	78	U
7	A	80	G
7	A	84	A
7	A	96	C
7	A	100	U
7	A	101	A
7	A	103	A
7	A	107	G
7	A	112	U
7	A	113	U
7	A	118	A
7	A	119	A
7	A	120	U
7	A	126	A
7	A	128	C
7	A	129	C
7	A	138	U
7	A	139	U
7	A	140	C
7	A	141	G
7	A	142	A
7	A	149	A
7	A	162	U
7	A	163	C
7	A	178	G
7	A	196	A
7	A	199	A

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Mol	Chain	Res	Type
7	A	200	U
7	A	204	A
7	A	215	G
7	A	216	A
7	A	222	A
7	A	225	C
7	A	226	A
7	A	228	C
7	A	229	C
7	A	245	G
7	A	248	G
7	A	255	A
7	A	265	A
7	A	266	G
7	A	271	G
7	A	272	A
7	A	275	C
7	A	276	U
7	A	278	A
7	A	279	A
7	A	281	C
7	A	282	A
7	A	298	G
7	A	309	A
7	A	311	A
7	A	322	A
7	A	323	C
7	A	324	A
7	A	329	G
7	A	330	A
7	A	331	C
7	A	335	C
7	A	354	A
7	A	361	G
7	A	362	A
7	A	363	G
7	A	371	A
7	A	372	G
7	A	379	G
7	A	380	G
7	A	386	G
7	A	399	U

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Mol	Chain	Res	Type
7	A	404	A
7	A	405	U
7	A	406	G
7	A	407	G
7	A	411	G
7	A	412	A
7	A	420	C
7	A	424	G
7	A	428	A
7	A	448	U
7	A	455	C
7	A	457	A
7	A	464	U
7	A	465	G
7	A	467	G
7	A	473	G
7	A	477	A
7	A	479	A
7	A	480	A
7	A	481	G
7	A	484	C
7	A	489	G
7	A	490	C
7	A	491	G
7	A	494	G
7	A	496	G
7	A	501	A
7	A	505	A
7	A	507	A
7	A	508	A
7	A	509	C
7	A	527	C
7	A	529	A
7	A	530	G
7	A	531	C
7	A	532	A
7	A	536	G
7	A	543	G
7	A	544	C
7	A	545	U
7	A	546	U
7	A	548	G

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Mol	Chain	Res	Type
7	A	549	G
7	A	550	C
7	A	560	C
7	A	563	A
7	A	567	U
7	A	569	U
7	A	572	A
7	A	573	U
7	A	575	A
7	A	586	A
7	A	597	G
7	A	603	A
7	A	614	A
7	A	615	U
7	A	616	A
7	A	620	G
7	A	622	G
7	A	628	G
7	A	632	A
7	A	634	C
7	A	637	A
7	A	639	U
7	A	643	A
7	A	644	A
7	A	645	C
7	A	646	U
7	A	647	G
7	A	648	G
7	A	654	A
7	A	655	A
7	A	656	G
7	A	664	G
7	A	670	A
7	A	677	A
7	A	686	U
7	A	690	G
7	A	695	G
7	A	713	G
7	A	714	U
7	A	718	A
7	A	728	G
7	A	729	G

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Mol	Chain	Res	Type
7	A	730	A
7	A	736	C
7	A	738	G
7	A	747	U
7	A	748	G
7	A	749	A
7	A	763	G
7	A	764	A
7	A	765	C
7	A	766	U
7	A	775	G
7	A	776	G
7	A	782	A
7	A	783	A
7	A	784	G
7	A	785	G
7	A	789	A
7	A	792	A
7	A	793	A
7	A	797	G
7	A	800	A
7	A	803	U
7	A	805	G
7	A	811	U
7	A	812	C
7	A	819	A
7	A	827	U
7	A	828	U
7	A	830	G
7	A	841	G
7	A	845	A
7	A	846	U
7	A	847	U
7	A	858	G
7	A	859	G
7	A	866	A
7	A	873	C
7	A	878	A
7	A	885	C
7	A	887	U
7	A	888	C
7	A	890	C

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Mol	Chain	Res	Type
7	A	891	G
7	A	894	U
7	A	896	A
7	A	898	C
7	A	899	A
7	A	904	G
7	A	907	G
7	A	910	A
7	A	914	G
7	A	921	C
7	A	929	U
7	A	932	U
7	A	935	C
7	A	941	A
7	A	946	C
7	A	947	A
7	A	957	C
7	A	961	C
7	A	968	C
7	A	973	A
7	A	974	G
7	A	975	A
7	A	976	G
7	A	981	A
7	A	983	A
7	A	985	C
7	A	989	G
7	A	990	A
7	A	995	C
7	A	996	A
7	A	1002	G
7	A	1003	G
7	A	1005	C
7	A	1012	U
7	A	1013	C
7	A	1021	A
7	A	1022	G
7	A	1023	U
7	A	1026	G
7	A	1032	A
7	A	1033	U
7	A	1040	A

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Mol	Chain	Res	Type
7	A	1045	C
7	A	1046	A
7	A	1047	G
7	A	1056	G
7	A	1060	U
7	A	1061	U
7	A	1062	G
7	A	1063	G
7	A	1064	C
7	A	1065	U
7	A	1066	U
7	A	1067	A
7	A	1068	G
7	A	1070	A
7	A	1071	G
7	A	1072	C
7	A	1073	A
7	A	1074	G
7	A	1075	C
7	A	1076	C
7	A	1079	C
7	A	1080	A
7	A	1081	U
7	A	1087	G
7	A	1088	A
7	A	1089	A
7	A	1091	G
7	A	1097	U
7	A	1098	A
7	A	1100	C
7	A	1102	C
7	A	1110	G
7	A	1112	G
7	A	1115	G
7	A	1121	C
7	A	1122	G
7	A	1126	A
7	A	1130	U
7	A	1131	G
7	A	1132	U
7	A	1134	A
7	A	1135	C

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Mol	Chain	Res	Type
7	A	1139	G
7	A	1142	A
7	A	1143	A
7	A	1145	C
7	A	1169	A
7	A	1170	C
7	A	1173	U
7	A	1174	U
7	A	1175	A
7	A	1176	U
7	A	1178	C
7	A	1179	G
7	A	1180	U
7	A	1182	G
7	A	1186	G
7	A	1190	G
7	A	1195	G
7	A	1204	A
7	A	1208	C
7	A	1210	G
7	A	1211	C
7	A	1212	G
7	A	1219	U
7	A	1237	A
7	A	1238	G
7	A	1243	C
7	A	1247	A
7	A	1248	G
7	A	1252	G
7	A	1253	A
7	A	1256	G
7	A	1257	C
7	A	1258	U
7	A	1265	A
7	A	1266	G
7	A	1271	G
7	A	1272	A
7	A	1273	U
7	A	1284	A
7	A	1294	U
7	A	1297	C
7	A	1299	G

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Mol	Chain	Res	Type
7	A	1300	G
7	A	1301	A
7	A	1302	A
7	A	1304	A
7	A	1305	C
7	A	1309	G
7	A	1310	G
7	A	1321	A
7	A	1324	G
7	A	1325	U
7	A	1328	A
7	A	1329	U
7	A	1330	C
7	A	1338	G
7	A	1341	G
7	A	1349	C
7	A	1352	U
7	A	1355	G
7	A	1359	A
7	A	1362	C
7	A	1365	A
7	A	1366	A
7	A	1368	G
7	A	1375	U
7	A	1376	C
7	A	1379	U
7	A	1383	A
7	A	1386	C
7	A	1387	A
7	A	1392	A
7	A	1395	A
7	A	1401	G
7	A	1403	A
7	A	1416	G
7	A	1428	C
7	A	1432	G
7	A	1433	A
7	A	1434	A
7	A	1437	C
7	A	1451	C
7	A	1452	G
7	A	1453	A

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Mol	Chain	Res	Type
7	A	1454	C
7	A	1455	G
7	A	1456	G
7	A	1458	U
7	A	1460	U
7	A	1461	C
7	A	1466	U
7	A	1478	G
7	A	1482	G
7	A	1490	A
7	A	1493	C
7	A	1503	A
7	A	1510	G
7	A	1515	A
7	A	1523	U
7	A	1524	G
7	A	1529	G
7	A	1533	C
7	A	1535	A
7	A	1536	C
7	A	1537	G
7	A	1540	G
7	A	1558	C
7	A	1566	A
7	A	1568	G
7	A	1569	A
7	A	1578	U
7	A	1581	G
7	A	1583	A
7	A	1584	U
7	A	1585	C
7	A	1602	U
7	A	1607	C
7	A	1608	A
7	A	1610	A
7	A	1611	C
7	A	1616	A
7	A	1617	C
7	A	1619	G
7	A	1630	A
7	A	1632	A
7	A	1635	A

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Mol	Chain	Res	Type
7	A	1642	G
7	A	1646	C
7	A	1647	U
7	A	1648	U
7	A	1667	G
7	A	1668	A
7	A	1669	A
7	A	1674	G
7	A	1677	A
7	A	1679	A
7	A	1690	A
7	A	1693	U
7	A	1694	C
7	A	1698	A
7	A	1701	A
7	A	1703	G
7	A	1705	A
7	A	1714	U
7	A	1715	G
7	A	1716	U
7	A	1729	U
7	A	1731	G
7	A	1732	C
7	A	1733	G
7	A	1738	G
7	A	1756	G
7	A	1757	A
7	A	1758	U
7	A	1761	C
7	A	1764	C
7	A	1773	A
7	A	1774	C
7	A	1775	U
7	A	1781	U
7	A	1791	A
7	A	1800	C
7	A	1801	A
7	A	1802	A
7	A	1808	A
7	A	1809	A
7	A	1811	G
7	A	1815	A

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Mol	Chain	Res	Type
7	A	1816	C
7	A	1819	A
7	A	1822	C
7	A	1825	U
7	A	1826	G
7	A	1827	U
7	A	1829	A
7	A	1833	C
7	A	1834	U
7	A	1835	G
7	A	1847	A
7	A	1855	U
7	A	1869	G
7	A	1870	C
7	A	1871	A
7	A	1872	A
7	A	1873	G
7	A	1882	U
7	A	1905	C
7	A	1906	G
7	A	1907	G
7	A	1913	A
7	A	1914	C
7	A	1919	A
7	A	1926	U
7	A	1929	G
7	A	1930	G
7	A	1936	A
7	A	1944	U
7	A	1946	U
7	A	1953	A
7	A	1955	U
7	A	1956	U
7	A	1960	A
7	A	1964	G
7	A	1966	A
7	A	1967	C
7	A	1970	A
7	A	1971	U
7	A	1972	G
7	A	1989	G
7	A	1990	C

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Mol	Chain	Res	Type
7	A	1991	U
7	A	1993	U
7	A	1997	C
7	A	2001	C
7	A	2002	G
7	A	2013	A
7	A	2022	U
7	A	2023	C
7	A	2025	C
7	A	2026	U
7	A	2030	A
7	A	2031	A
7	A	2032	G
7	A	2033	A
7	A	2035	G
7	A	2043	C
7	A	2055	C
7	A	2056	G
7	A	2059	A
7	A	2060	A
7	A	2061	G
7	A	2062	A
7	A	2069	G
7	A	2075	U
7	A	2093	G
7	A	2095	A
7	A	2098	U
7	A	2100	G
7	A	2102	G
7	A	2107	G
7	A	2109	U
7	A	2110	G
7	A	2111	U
7	A	2112	G
7	A	2113	U
7	A	2115	G
7	A	2116	G
7	A	2118	U
7	A	2119	A
7	A	2120	G
7	A	2121	G
7	A	2123	G

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Mol	Chain	Res	Type
7	A	2124	G
7	A	2125	G
7	A	2126	A
7	A	2127	G
7	A	2128	G
7	A	2130	U
7	A	2132	U
7	A	2135	A
7	A	2137	U
7	A	2140	G
7	A	2141	G
7	A	2145	C
7	A	2146	C
7	A	2147	A
7	A	2152	G
7	A	2157	G
7	A	2158	A
7	A	2162	G
7	A	2164	C
7	A	2165	C
7	A	2167	U
7	A	2169	A
7	A	2170	A
7	A	2171	A
7	A	2172	U
7	A	2173	A
7	A	2175	C
7	A	2178	C
7	A	2182	U
7	A	2183	A
7	A	2189	U
7	A	2198	A
7	A	2203	U
7	A	2204	G
7	A	2211	A
7	A	2212	A
7	A	2213	U
7	A	2214	C
7	A	2223	G
7	A	2225	A
7	A	2228	G
7	A	2238	G

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Mol	Chain	Res	Type
7	A	2239	G
7	A	2242	G
7	A	2243	U
7	A	2250	G
7	A	2251	G
7	A	2252	G
7	A	2255	G
7	A	2257	U
7	A	2259	U
7	A	2266	A
7	A	2279	G
7	A	2283	C
7	A	2287	A
7	A	2288	A
7	A	2289	G
7	A	2297	A
7	A	2305	U
7	A	2309	A
7	A	2318	G
7	A	2319	G
7	A	2322	A
7	A	2325	G
7	A	2327	A
7	A	2330	G
7	A	2331	G
7	A	2333	A
7	A	2335	A
7	A	2338	C
7	A	2344	U
7	A	2345	G
7	A	2346	A
7	A	2347	C
7	A	2354	C
7	A	2357	G
7	A	2358	A
7	A	2361	G
7	A	2376	A
7	A	2383	G
7	A	2384	U
7	A	2385	C
7	A	2390	U
7	A	2402	U

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Mol	Chain	Res	Type
7	A	2403	C
7	A	2404	U
7	A	2406	A
7	A	2407	A
7	A	2420	C
7	A	2423	U
7	A	2425	A
7	A	2427	C
7	A	2428	G
7	A	2429	G
7	A	2430	A
7	A	2432	A
7	A	2435	A
7	A	2441	U
7	A	2447	G
7	A	2448	A
7	A	2455	G
7	A	2463	C
7	A	2464	G
7	A	2469	A
7	A	2470	G
7	A	2474	U
7	A	2476	A
7	A	2478	A
7	A	2479	U
7	A	2480	C
7	A	2484	G
7	A	2490	G
7	A	2491	U
7	A	2498	C
7	A	2500	U
7	A	2502	G
7	A	2503	A
7	A	2504	U
7	A	2505	G
7	A	2507	C
7	A	2508	G
7	A	2518	A
7	A	2520	C
7	A	2527	C
7	A	2529	G
7	A	2547	A

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Mol	Chain	Res	Type
7	A	2552	U
7	A	2554	U
7	A	2556	C
7	A	2558	C
7	A	2566	A
7	A	2567	G
7	A	2572	A
7	A	2576	G
7	A	2582	G
7	A	2585	U
7	A	2586	U
7	A	2588	G
7	A	2596	U
7	A	2597	G
7	A	2602	A
7	A	2609	U
7	A	2610	C
7	A	2613	U
7	A	2629	U
7	A	2630	G
7	A	2635	A
7	A	2636	C
7	A	2645	G
7	A	2646	C
7	A	2654	A
7	A	2661	G
7	A	2663	G
7	A	2669	G
7	A	2680	U
7	A	2682	A
7	A	2689	U
7	A	2690	U
7	A	2714	G
7	A	2722	G
7	A	2724	U
7	A	2726	A
7	A	2733	A
7	A	2744	G
7	A	2748	A
7	A	2757	A
7	A	2776	A
7	A	2778	A

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Mol	Chain	Res	Type
7	A	2779	U
7	A	2793	C
7	A	2799	A
7	A	2807	U
7	A	2808	G
7	A	2818	U
7	A	2820	A
7	A	2826	A
7	A	2833	U
7	A	2835	A
7	A	2836	U
7	A	2843	G
7	A	2846	G
7	A	2848	G
7	A	2849	U
7	A	2867	G
7	A	2872	A
7	A	2873	A
7	A	2879	A
7	A	2880	C
7	A	2883	A
7	A	2887	A
7	A	2891	U
7	A	2893	A
7	A	2903	U
8	B	3	A
8	B	4	U
8	B	6	G
8	B	7	A
8	B	8	A
8	B	9	G
8	B	32	A
8	B	37	U
8	B	39	G
8	B	42	G
8	B	43	C
8	B	44	A
8	B	47	C
8	B	48	C
8	B	49	U
8	B	50	A
8	B	51	A

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Mol	Chain	Res	Type
8	B	52	C
8	B	61	G
8	B	62	U
8	B	63	C
8	B	65	A
8	B	67	C
8	B	71	A
8	B	73	C
8	B	74	A
8	B	76	G
8	B	77	A
8	B	78	A
8	B	79	G
8	B	80	A
8	B	81	A
8	B	83	C
8	B	87	C
8	B	88	U
8	B	90	C
8	B	91	U
8	B	96	U
8	B	97	G
8	B	98	A
8	B	100	G
8	B	104	G
8	B	110	C
8	B	116	A
8	B	120	A
8	B	121	U
8	B	122	G
8	B	125	U
8	B	126	G
8	B	127	G
8	B	130	A
8	B	131	A
8	B	132	C
8	B	133	U
8	B	137	U
8	B	140	U
8	B	141	G
8	B	144	G
8	B	145	G

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Mol	Chain	Res	Type
8	B	149	A
8	B	154	U
8	B	155	A
8	B	156	C
8	B	163	C
8	B	168	G
8	B	170	U
8	B	171	A
8	B	173	U
8	B	177	G
8	B	180	U
8	B	182	A
8	B	183	C
8	B	184	G
8	B	189	A
8	B	195	A
8	B	197	A
8	B	200	G
8	B	201	G
8	B	204	G
8	B	205	A
8	B	207	C
8	B	208	U
8	B	209	U
8	B	210	C
8	B	212	G
8	B	215	C
8	B	216	U
8	B	219	U
8	B	220	G
8	B	222	C
8	B	224	U
8	B	226	G
8	B	240	G
8	B	244	U
8	B	245	U
8	B	247	G
8	B	251	G
8	B	254	G
8	B	265	G
8	B	266	G
8	B	267	C

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Mol	Chain	Res	Type
8	B	281	G
8	B	289	G
8	B	291	U
8	B	293	G
8	B	295	C
8	B	298	A
8	B	299	G
8	B	300	A
8	B	304	U
8	B	309	A
8	B	321	A
8	B	325	A
8	B	327	A
8	B	328	C
8	B	329	A
8	B	330	C
8	B	332	G
8	B	337	G
8	B	345	C
8	B	346	G
8	B	347	G
8	B	348	G
8	B	352	C
8	B	354	G
8	B	359	G
8	B	367	U
8	B	371	A
8	B	372	C
8	B	373	A
8	B	380	G
8	B	384	G
8	B	388	G
8	B	392	C
8	B	393	A
8	B	396	C
8	B	397	A
8	B	398	U
8	B	401	C
8	B	406	G
8	B	411	A
8	B	412	A
8	B	413	G

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Mol	Chain	Res	Type
8	B	414	A
8	B	419	C
8	B	421	U
8	B	422	C
8	B	423	G
8	B	424	G
8	B	428	G
8	B	429	U
8	B	434	U
8	B	440	C
8	B	443	C
8	B	444	G
8	B	447	G
8	B	453	G
8	B	454	G
8	B	455	G
8	B	456	A
8	B	458	U
8	B	463	U
8	B	465	A
8	B	467	U
8	B	468	A
8	B	469	C
8	B	471	U
8	B	472	U
8	B	476	U
8	B	478	A
8	B	479	U
8	B	480	U
8	B	484	G
8	B	485	U
8	B	486	U
8	B	492	C
8	B	495	A
8	B	496	A
8	B	498	A
8	B	499	A
8	B	503	C
8	B	505	G
8	B	508	U
8	B	512	U
8	B	518	C

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Mol	Chain	Res	Type
8	B	521	G
8	B	527	G
8	B	532	A
8	B	533	A
8	B	536	C
8	B	547	A
8	B	556	C
8	B	558	G
8	B	559	A
8	B	563	A
8	B	572	A
8	B	573	A
8	B	576	C
8	B	577	G
8	B	586	C
8	B	592	G
8	B	595	A
8	B	596	A
8	B	601	G
8	B	607	A
8	B	611	C
8	B	613	C
8	B	615	G
8	B	619	U
8	B	621	A
8	B	630	A
8	B	639	G
8	B	652	U
8	B	653	U
8	B	660	C
8	B	665	A
8	B	676	A
8	B	695	A
8	B	702	A
8	B	703	G
8	B	718	A
8	B	720	C
8	B	721	G
8	B	723	U
8	B	724	G
8	B	731	G
8	B	733	G

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Mol	Chain	Res	Type
8	B	734	G
8	B	747	A
8	B	748	G
8	B	755	G
8	B	758	C
8	B	763	G
8	B	766	A
8	B	774	G
8	B	777	A
8	B	793	U
8	B	794	A
8	B	810	C
8	B	812	G
8	B	813	U
8	B	814	A
8	B	815	A
8	B	817	C
8	B	821	G
8	B	826	C
8	B	828	U
8	B	835	U
8	B	840	C
8	B	841	C
8	B	842	U
8	B	843	U
8	B	844	G
8	B	846	G
8	B	849	G
8	B	873	A
8	B	879	C
8	B	885	G
8	B	887	G
8	B	889	A
8	B	910	C
8	B	914	A
8	B	918	A
8	B	919	A
8	B	921	U
8	B	926	G
8	B	933	G
8	B	934	C
8	B	937	A

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Mol	Chain	Res	Type
8	B	948	C
8	B	955	U
8	B	960	U
8	B	969	A
8	B	971	G
8	B	974	A
8	B	975	A
8	B	976	G
8	B	977	A
8	B	980	C
8	B	983	A
8	B	984	C
8	B	987	G
8	B	988	G
8	B	989	U
8	B	991	U
8	B	992	U
8	B	993	G
8	B	994	A
8	B	995	C
8	B	1001	C
8	B	1002	G
8	B	1004	A
8	B	1005	A
8	B	1008	U
8	B	1009	U
8	B	1012	A
8	B	1017	U
8	B	1022	A
8	B	1023	U
8	B	1026	G
8	B	1029	U
8	B	1031	C
8	B	1032	G
8	B	1033	G
8	B	1036	A
8	B	1039	G
8	B	1044	A
8	B	1054	C
8	B	1065	U
8	B	1073	U
8	B	1085	U

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Mol	Chain	Res	Type
8	B	1094	G
8	B	1095	U
8	B	1101	A
8	B	1102	A
8	B	1108	G
8	B	1126	U
8	B	1127	G
8	B	1129	C
8	B	1130	A
8	B	1132	C
8	B	1133	G
8	B	1135	U
8	B	1136	C
8	B	1137	C
8	B	1138	G
8	B	1139	G
8	B	1140	C
8	B	1141	C
8	B	1142	G
8	B	1143	G
8	B	1145	A
8	B	1159	U
8	B	1160	G
8	B	1161	C
8	B	1162	C
8	B	1168	U
8	B	1171	A
8	B	1179	A
8	B	1182	G
8	B	1184	G
8	B	1193	G
8	B	1196	A
8	B	1197	A
8	B	1202	U
8	B	1212	U
8	B	1213	A
8	B	1224	U
8	B	1227	A
8	B	1233	G
8	B	1240	U
8	B	1241	G
8	B	1242	G

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Mol	Chain	Res	Type
8	B	1249	C
8	B	1257	A
8	B	1258	G
8	B	1262	C
8	B	1271	A
8	B	1272	G
8	B	1275	A
8	B	1280	A
8	B	1285	A
8	B	1286	U
8	B	1287	A
8	B	1289	A
8	B	1290	G
8	B	1292	G
8	B	1293	C
8	B	1296	C
8	B	1298	U
8	B	1299	A
8	B	1300	G
8	B	1301	U
8	B	1302	C
8	B	1303	C
8	B	1304	G
8	B	1305	G
8	B	1310	G
8	B	1312	G
8	B	1317	C
8	B	1318	A
8	B	1320	C
8	B	1322	C
8	B	1331	G
8	B	1336	C
8	B	1340	A
8	B	1346	A
8	B	1348	U
8	B	1353	G
8	B	1363	A
8	B	1364	U
8	B	1368	A
8	B	1370	G
8	B	1378	C
8	B	1380	U

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Mol	Chain	Res	Type
8	B	1385	G
8	B	1397	C
8	B	1398	A
8	B	1402	C
8	B	1405	G
8	B	1419	G
8	B	1429	A
8	B	1431	A
8	B	1432	G
8	B	1440	U
8	B	1446	A
8	B	1448	C
8	B	1452	C
8	B	1458	G
8	B	1464	U
8	B	1475	G
8	B	1487	G
8	B	1492	A
8	B	1494	G
8	B	1497	G
8	B	1503	A
8	B	1506	U
8	B	1517	G
8	B	1525	G
8	B	1528	U
8	B	1529	G
8	B	1530	G
8	B	1534	A
8	B	1535	C
8	B	1536	C
8	B	1540	U
30	X	3	G
30	X	4	U
30	X	5	G
30	X	6	A
30	X	13	C
30	X	14	A
30	X	15	G
30	X	19	G
30	X	20	G
30	X	21	A
30	X	22	G

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Mol	Chain	Res	Type
30	X	29	U
30	X	33	U
30	X	39	G
30	X	41	A
30	X	44	G
30	X	45	G
30	X	48	C
30	X	49	G
30	X	53	G
30	X	57	G
30	X	58	A
30	X	59	U
30	X	60	C
30	X	63	G
30	X	65	C
30	X	68	C
30	X	70	C
30	X	71	C
30	X	73	A
31	Z	3	G
31	Z	6	G
31	Z	14	A
31	Z	19	G
31	Z	20	U
31	Z	24	G
31	Z	25	C
31	Z	26	A
31	Z	29	U
31	Z	32	C
31	Z	33	U
31	Z	36	U
31	Z	49	G
31	Z	50	C
31	Z	51	A
31	Z	57	G
31	Z	59	A
31	Z	63	U
31	Z	68	G
31	Z	71	C
31	Z	73	A
31	Z	74	C
31	Z	75	C

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Mol	Chain	Res	Type
31	Z	76	A
32	a	3	C
32	a	15	A
32	a	17	C
32	a	24	G
32	a	25	U
32	a	31	C
32	a	32	U
32	a	35	C
32	a	44	G
32	a	51	G
32	a	53	A
32	a	56	G
32	a	66	A
32	a	83	G
32	a	88	C
32	a	89	U
32	a	90	C
32	a	91	C
32	a	99	A
32	a	109	A
32	a	119	A
56	y	3	A
56	y	7	G
56	y	13	C
56	y	16	U
56	y	17	C
56	y	18	G
56	y	19	U
56	y	20	U
56	y	21	A
56	y	22	G
56	y	33	U
56	y	36	C
56	y	48	C
56	y	49	G
56	y	51	G
56	y	69	U
56	y	71	C
56	y	75	C
56	y	76	A

All (17) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
7	A	141	G
7	A	244	A
7	A	271	G
7	A	297	G
7	A	404	A
7	A	897	C
7	A	975	A
7	A	1730	C
7	A	1904	G
7	A	1913	A
7	A	2317	A
7	A	2346	A
7	A	2756	U
8	B	115	G
8	B	428	G
8	B	1201	A
31	Z	13	C

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)

There are no ligands in this entry.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

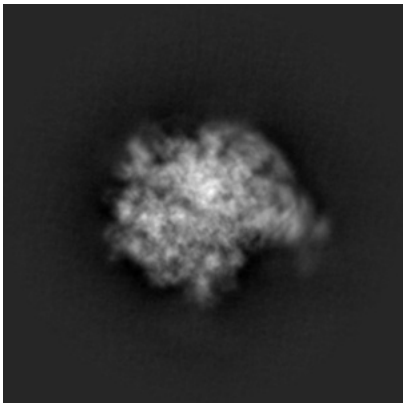
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-30611. These allow visual inspection of the internal detail of the map and identification of artifacts.

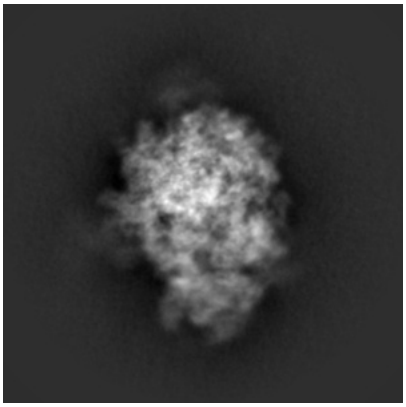
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

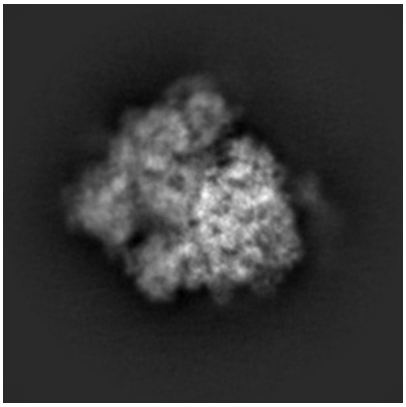
6.1.1 Primary map



X



Y

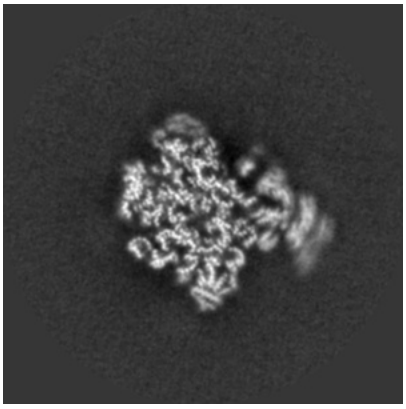


Z

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

6.2 Central slices

6.2.1 Primary map



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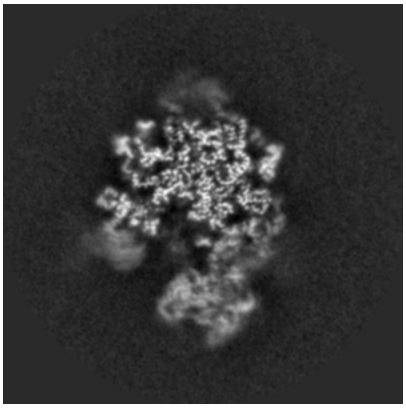
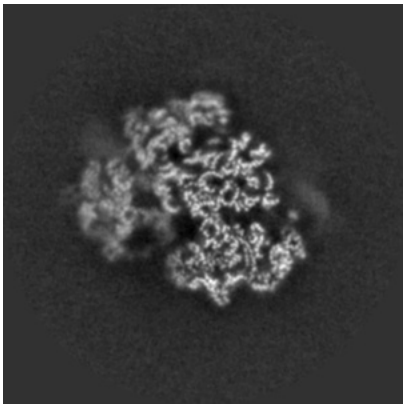


Y Index: 160



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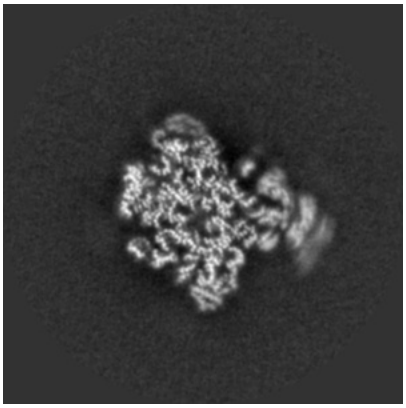
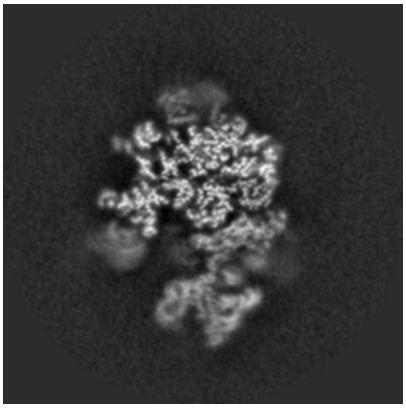
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

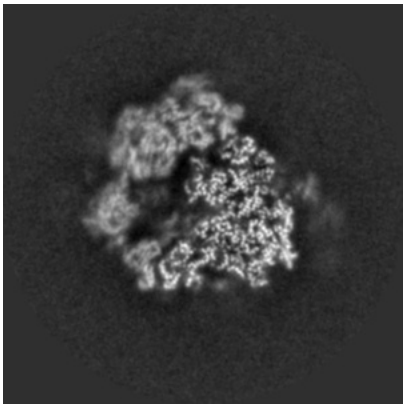
6.3.1 Primary map



X Index: 161



Y Index: 165

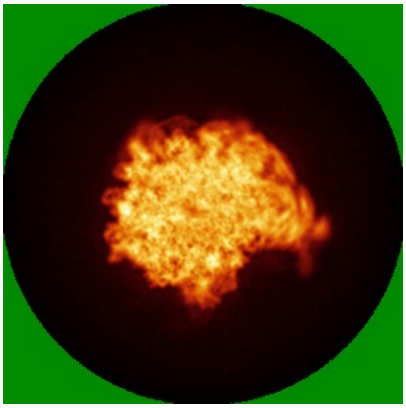


Z Index: 147

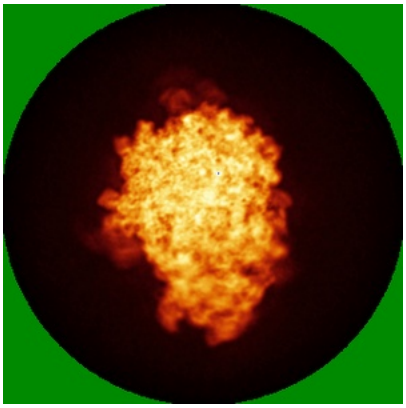
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

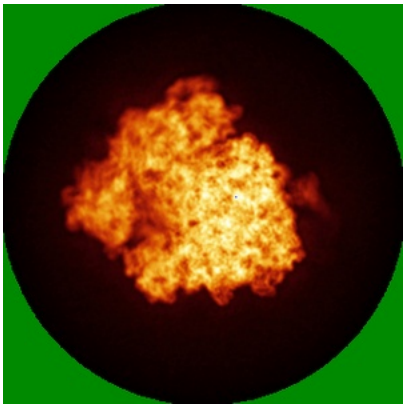
6.4.1 Primary map



X



Y



Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.005. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

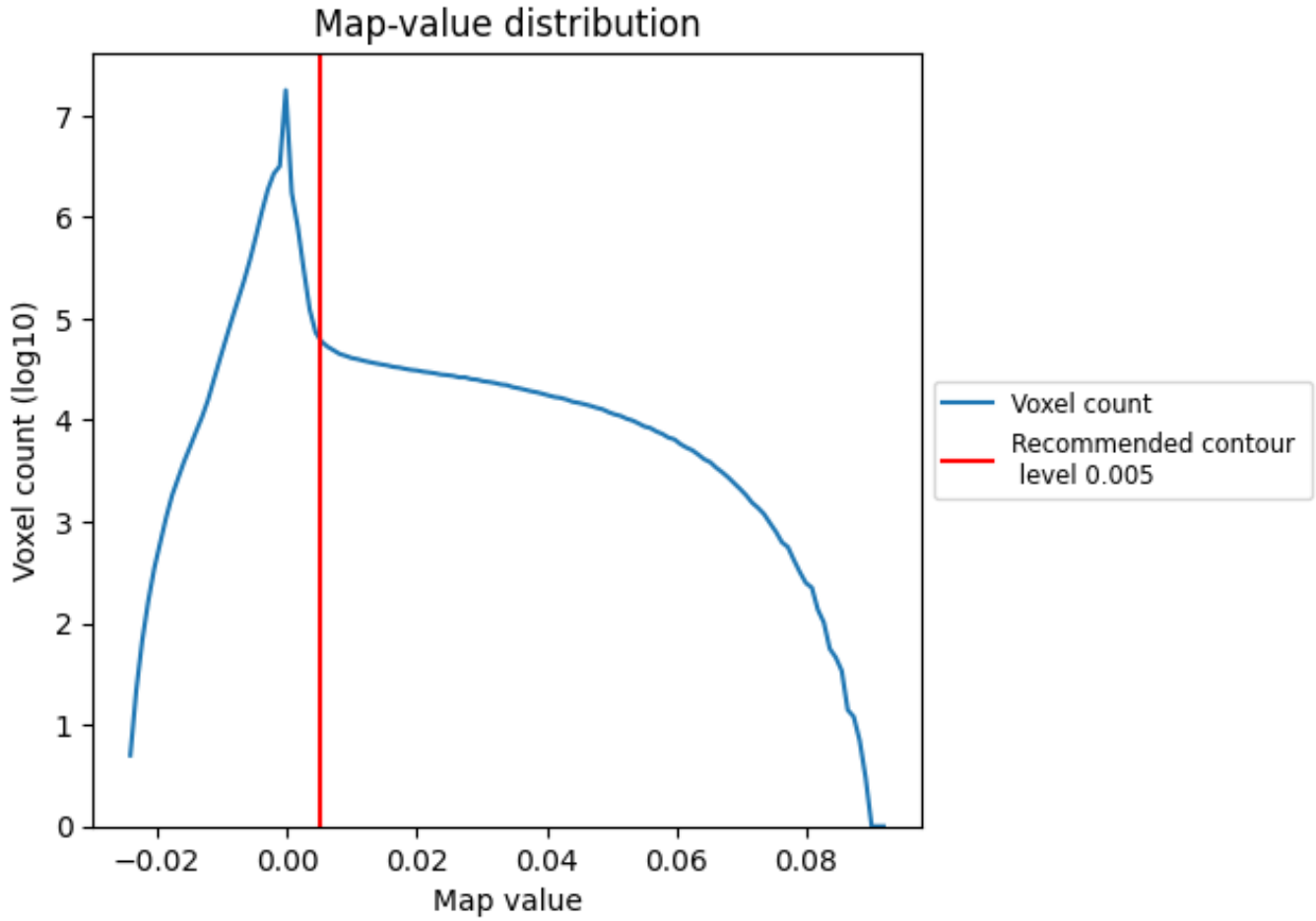
6.6 Mask visualisation (i)

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

7 Map analysis

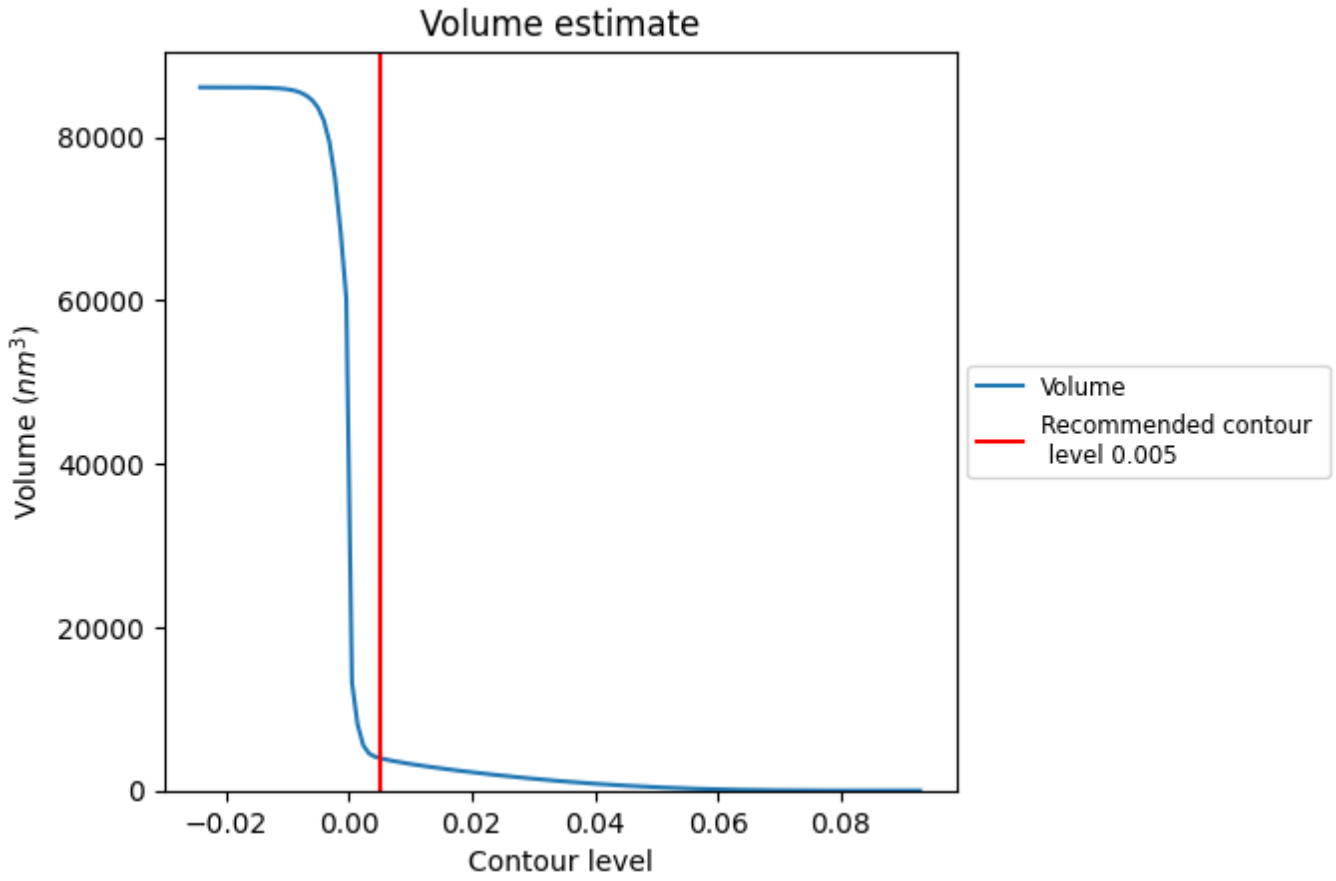
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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.

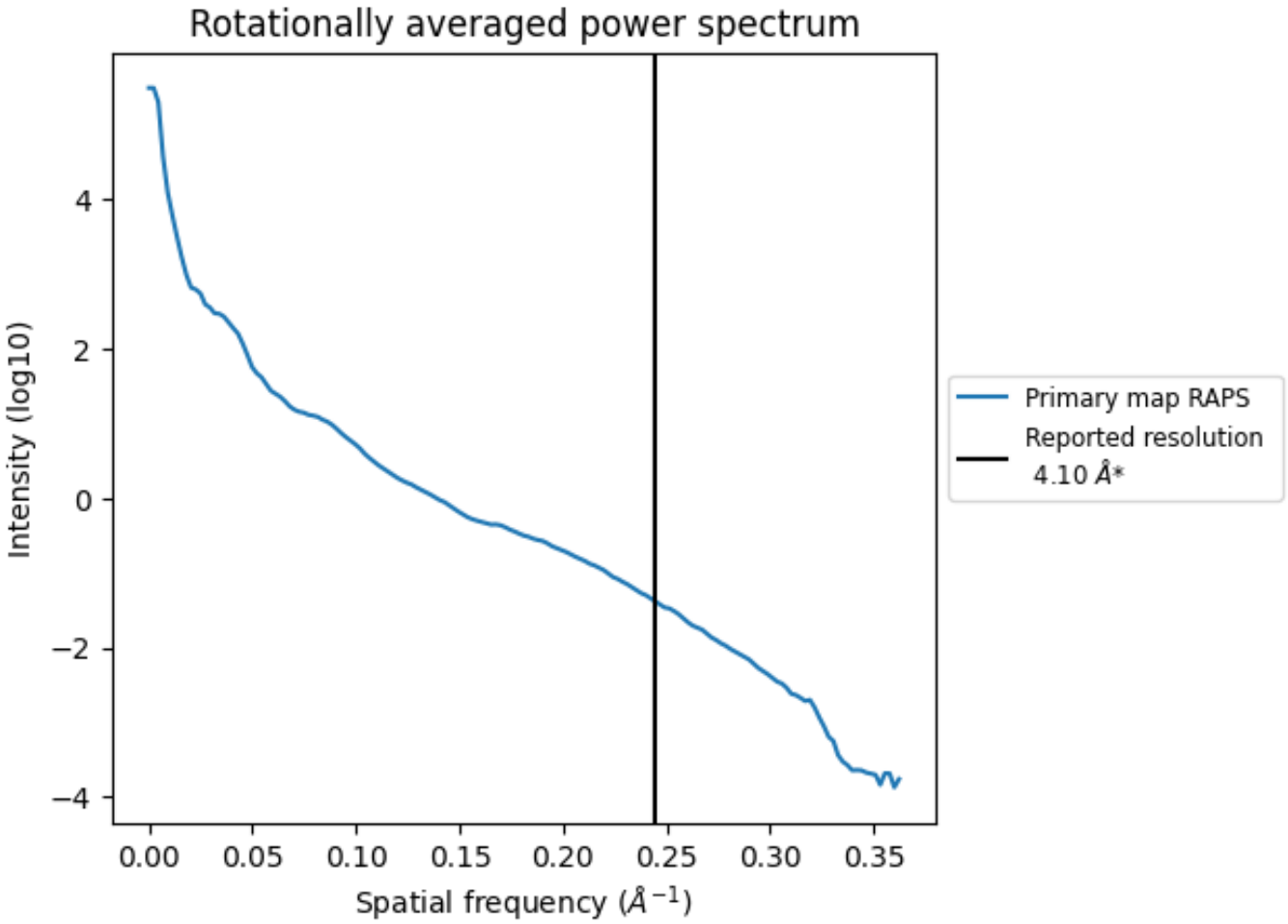
7.2 Volume estimate



The volume at the recommended contour level is 3991 nm^3; this corresponds to an approximate mass of 3605 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)

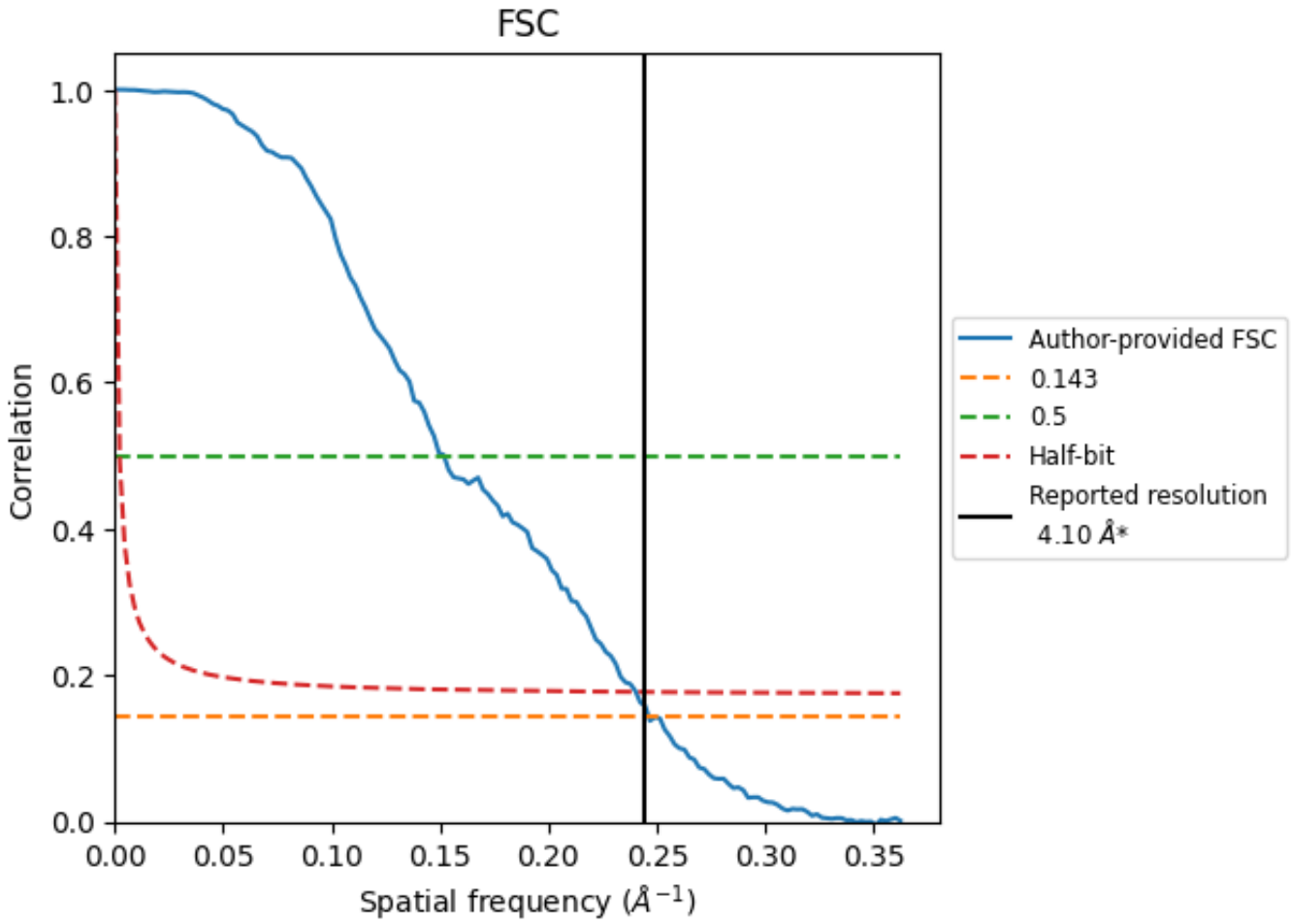


*Reported resolution corresponds to spatial frequency of 0.244 Å^{-1}

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.244 Å^{-1}

8.2 Resolution estimates (i)

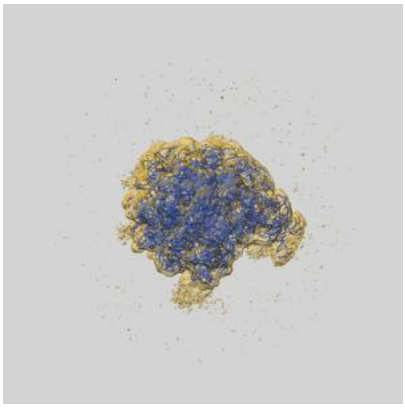
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.10	-	-
Author-provided FSC curve	4.06	6.59	4.16
Unmasked-calculated*	-	-	-

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

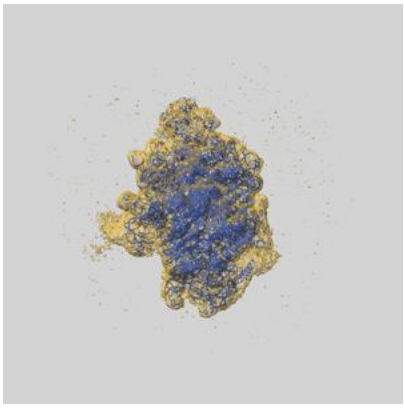
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-30611 and PDB model 7D80. Per-residue inclusion information can be found in section 3 on page 14.

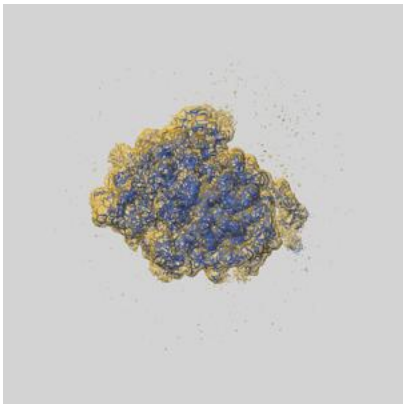
9.1 Map-model overlay



X



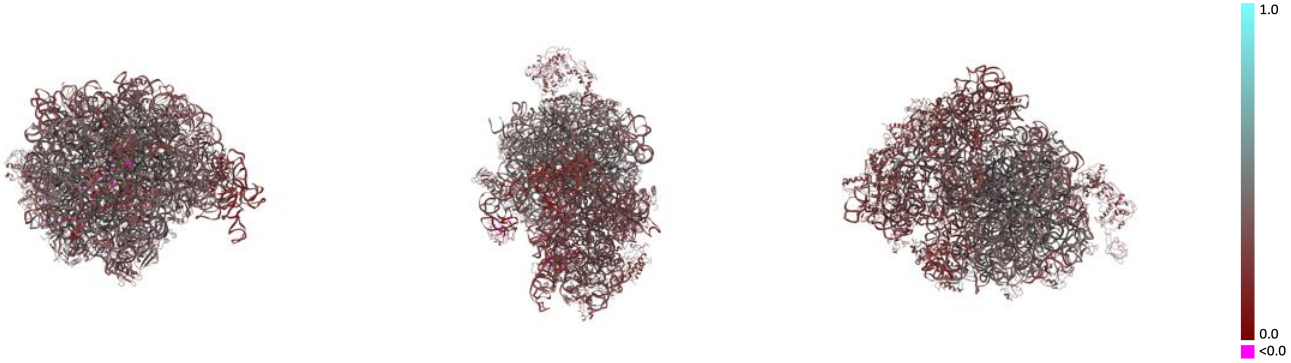
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.005 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

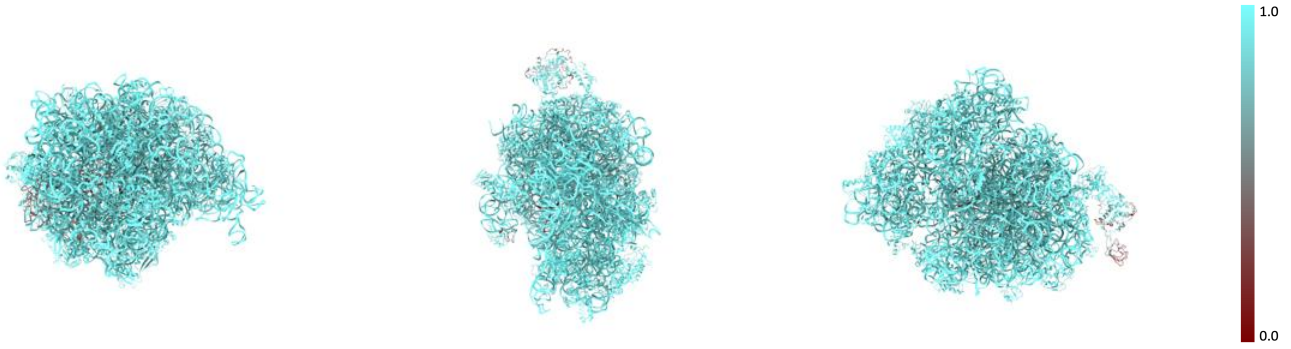
9.2 Q-score mapped to coordinate model



X Y Z

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

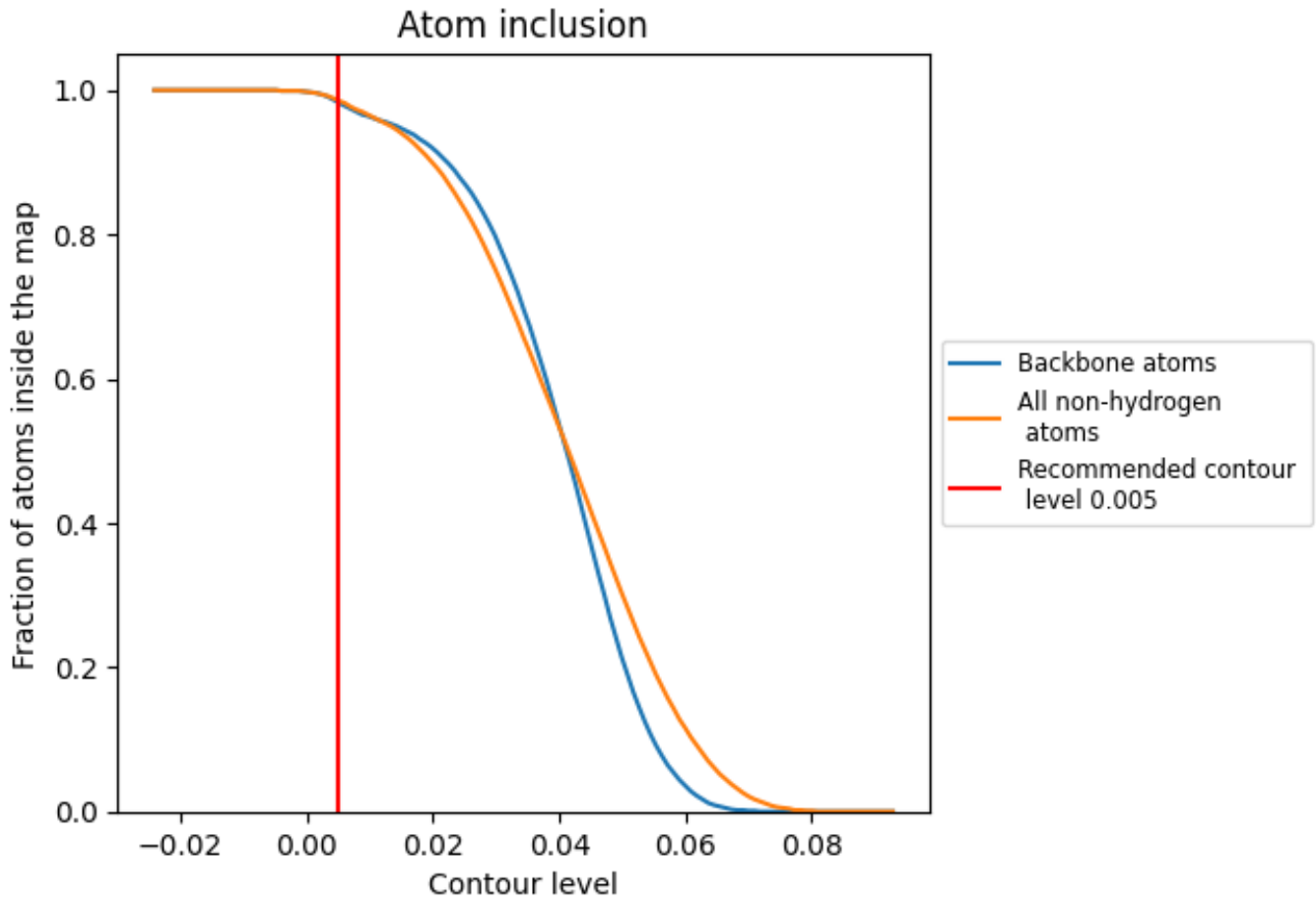
9.3 Atom inclusion mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.005).

9.4 Atom inclusion (i)



At the recommended contour level, 98% of all backbone atoms, 99% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.005) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9860	0.3390
0	0.9750	0.3790
1	0.9940	0.3960
2	1.0000	0.3610
3	0.9890	0.2710
5	0.6750	0.2400
6	1.0000	0.3920
A	0.9990	0.3870
B	1.0000	0.3000
C	1.0000	0.2690
D	0.9980	0.2850
E	1.0000	0.2120
F	0.9980	0.3040
G	0.9940	0.2860
H	0.9990	0.2410
I	0.9990	0.2790
J	1.0000	0.2260
K	0.9970	0.2560
L	0.9970	0.2910
M	0.9940	0.2620
N	0.9980	0.2210
O	1.0000	0.2350
P	0.9960	0.2560
Q	0.9980	0.2510
R	1.0000	0.2680
S	1.0000	0.3140
T	0.9980	0.2050
U	0.9970	0.2250
V	0.9930	0.2600
W	0.9950	0.3610
X	0.9980	0.2180
Z	0.5280	0.2640
a	1.0000	0.3520
b	0.9910	0.4030
c	0.9940	0.4000

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Chain	Atom inclusion	Q-score
d	0.9970	0.3740
e	0.9990	0.2550
f	1.0000	0.3330
g	1.0000	0.3360
h	0.8800	0.1720
i	0.9960	0.3910
j	0.9910	0.4010
k	0.9950	0.3920
l	0.9970	0.3940
m	0.9980	0.3800
n	1.0000	0.3220
o	0.9930	0.3830
p	0.9990	0.3670
q	0.9960	0.4020
r	0.9920	0.3850
s	0.9960	0.3580
t	1.0000	0.3620
u	0.9980	0.4010
v	0.9970	0.3730
w	1.0000	0.2840
x	0.9950	0.3850
y	0.9700	0.2890
z	0.9880	0.3580