



## Full wwPDB EM Validation Report ⓘ

Dec 16, 2024 – 08:27 PM EST

PDB ID : 5T5H  
EMDB ID : EMD-8361  
Title : Structure and assembly model for the Trypanosoma cruzi 60S ribosomal sub-unit  
Authors : Liu, Z.; Gutierrez-Vargas, C.; Wei, J.; Grassucci, R.A.; Ramesh, M.; Espina, N.; Sun, M.; Tutuncuoglu, B.; Madison-Antenucci, S.; Woolford Jr., J.L.; Tong, L.; Frank, J.  
Deposited on : 2016-08-31  
Resolution : 2.54 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

EMDB validation analysis : 0.0.1.dev113  
Mogul : 2022.3.0, CSD as543be (2022)  
MolProbity : 4.02b-467  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.40

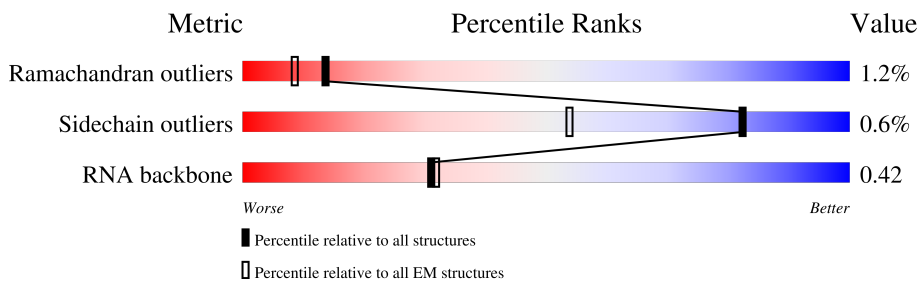
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 2.54 Å.

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



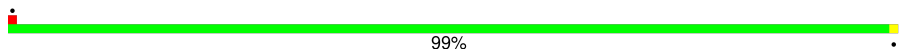
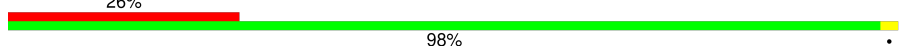

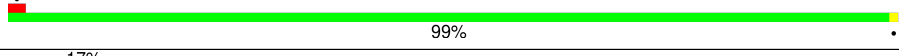
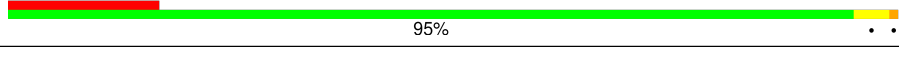
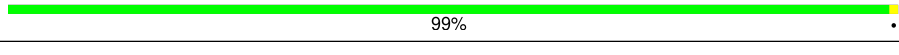
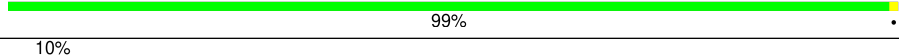
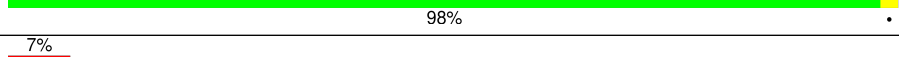
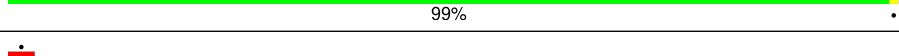
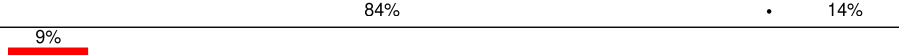
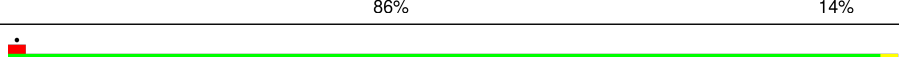
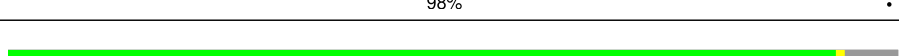
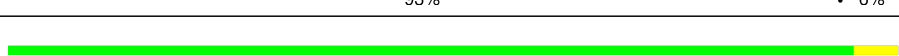
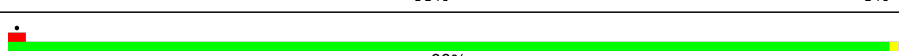
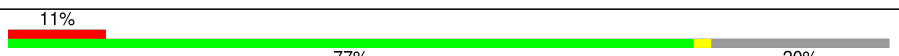
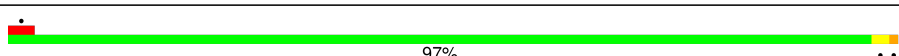
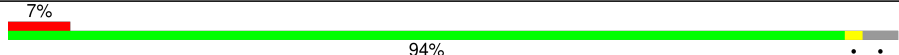
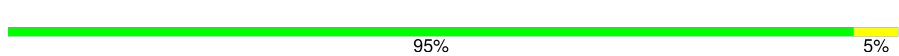
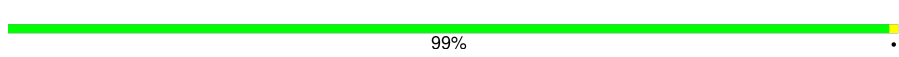
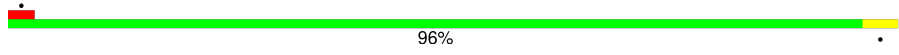
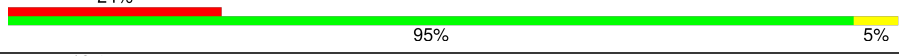
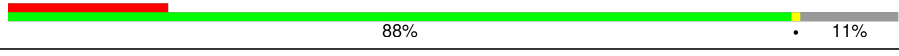
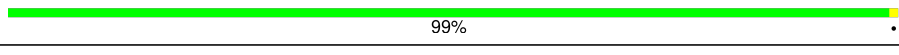


Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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

Mol	Chain	Length	Quality of chain
1	A	1278	
2	B	941	
3	C	169	
4	D	118	
5	E	146	
6	F	46	
7	G	123	
8	H	91	

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Mol	Chain	Length	Quality of chain
9	I	192	 99%
10	L	65	 26% 98%
11	N	205	 81% 16%
12	O	203	 99%
13	P	149	 17% 95%
14	Q	203	 99%
15	R	152	 99%
16	S	177	 10% 98%
17	T	150	 7% 99%
18	U	146	 9% 84% 14%
19	V	99	 9% 86% 14%
20	W	127	 98%
21	X	116	 93% 6%
22	Y	61	 95% 5%
23	Z	113	 99%
24	a	132	 11% 77% 20%
25	b	144	 97%
26	c	125	 7% 94%
27	d	63	 95% 5%
28	e	245	 99%
29	f	397	 96%
30	g	66	 24% 95% 5%
31	h	169	 18% 88% 11%
32	i	113	 99%
33	j	104	 100%

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Mol	Chain	Length	Quality of chain
34	k	120	
35	l	136	
36	m	95	
37	n	81	
38	o	85	
39	p	58	
40	q	50	
41	r	337	
42	t	93	
43	u	254	
44	v	171	
45	w	215	
46	x	223	

## 2 Entry composition

There are 49 unique types of molecules in this entry. The entry contains 105124 atoms, of which 12 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called RNA LARGE SUBUNIT ALPHA.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			P
1	A	1278	27453	12272	12	5035	8856	1278	0	0

- Molecule 2 is a RNA chain called RNA LARGE SUBUNIT BETA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	B	941	20110	9007	3606	6556	941	0	0

- Molecule 3 is a RNA chain called 5.8S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	C	147	3140	1408	557	1028	147	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	D	114	2432	1084	435	799	114	0	0

- Molecule 5 is a RNA chain called srRNA1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
5	E	146	3110	1390	552	1022	146	0	0

- Molecule 6 is a RNA chain called srRNA3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
6	F	46	965	433	165	321	46	0	0

- Molecule 7 is a RNA chain called srRNA2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
7	G	121	2578	1150	455	852	121	0	0

- Molecule 8 is a RNA chain called srRNA4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
8	H	91	1946	867	354	634	91	0	0

- Molecule 9 is a protein called 60S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	I	192	1515	951	308	250	6	0	0

- Molecule 10 is a protein called 60S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	L	65	535	333	112	85	5	0	0

- Molecule 11 is a protein called 60S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	N	172	1413	892	291	224	6	0	0

- Molecule 12 is a protein called 60S ribosomal protein L13a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	O	203	1642	1046	322	269	5	0	1

- Molecule 13 is a protein called 40S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	P	149	1186	746	235	203	2	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
P	72	LYS	ARG	conflict	UNP Q4DQ35

- Molecule 14 is a protein called Ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	Q	203	1710	1076	365	263	6	1	0

- Molecule 15 is a protein called 60S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	R	152	1226	768	243	205	10	0	0

- Molecule 16 is a protein called 60S ribosomal protein L18a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	S	177	1449	919	282	242	6	0	0

- Molecule 17 is a protein called Ribosomal protein L19-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	T	150	1273	789	273	205	6	0	0

- Molecule 18 is a protein called Ribosomal protein L21E (60S).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	U	126	1016	642	207	163	4	0	0

- Molecule 19 is a protein called 60S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	V	85	730	481	127	120	2	0	0

- Molecule 20 is a protein called 60S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	W	127	960	611	180	166	3	0	0

- Molecule 21 is a protein called 60S ribosomal protein L23a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	X	109	890	565	164	157	4	0	0

- Molecule 22 is a protein called Ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	Y	61	519	340	98	77	4	0	0

- Molecule 23 is a protein called 60S ribosomal protein L26.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	Z	113	919	571	195	150	3	0	0

- Molecule 24 is a protein called Ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	a	105	877	565	175	135	2	0	0

- Molecule 25 is a protein called 60S ribosomal protein L27A/L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	b	144	1135	720	226	185	4	0	0

- Molecule 26 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	c	120	935	583	187	161	4	0	0

- Molecule 27 is a protein called Ribosomal protein L29.



Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	d	63	518	314	122	81	1	0	0

- Molecule 28 is a protein called 60S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	e	245	1874	1170	379	314	11	0	0

- Molecule 29 is a protein called Ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	f	397	3189	2010	630	537	12	0	0

- Molecule 30 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	g	66	523	335	91	93	4	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
g	91	VAL	ALA	conflict	UNP Q4DIC9
g	92	LEU	GLY	conflict	UNP Q4DIC9
g	93	SER	ASN	conflict	UNP Q4DIC9
g	94	ILE	ASN	conflict	UNP Q4DIC9
g	95	THR	LEU	conflict	UNP Q4DIC9
g	97	VAL	LEU	conflict	UNP Q4DIC9

- Molecule 31 is a protein called 60S ribosomal subunit protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	h	150	1064	671	208	183	2	0	0

- Molecule 32 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	i	113	928	585	185	154	4	0	0

- Molecule 33 is a protein called 60S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	j	104	863	532	191	137	3	0	0

- Molecule 34 is a protein called 60S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	k	113	967	602	212	150	3	0	0

- Molecule 35 is a protein called Ribosomal protein L35A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	l	136	1057	662	217	174	4	0	0

- Molecule 36 is a protein called Ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	m	95	757	474	159	121	3	0	0

- Molecule 37 is a protein called Ribosomal protein L37.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	n	81	679	413	154	106	6	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
n	64	MET	CYS	conflict	UNP Q4DXW6

- Molecule 38 is a protein called 60S ribosomal protein L37a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	o	85	669	413	141	108	7	0	0

- Molecule 39 is a protein called Ribosomal protein L38.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	p	52	Total	C	N	O	S	0	0
			432	277	82	71	2		

- Molecule 40 is a protein called Ribosomal protein L39.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	q	50	Total	C	N	O	S	0	0
			456	297	98	61			

- Molecule 41 is a protein called 60S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	r	325	Total	C	N	O	S	0	0
			2513	1575	489	434	15		

- Molecule 42 is a protein called 60S ribosomal protein L44.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	t	93	Total	C	N	O	S	0	0
			763	486	149	123	5		

- Molecule 43 is a protein called 60S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	u	193	Total	C	N	O	S	0	0
			1541	982	292	262	5		

- Molecule 44 is a protein called 60S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	v	132	Total	C	N	O	S	0	0
			1037	661	194	179	3		

- Molecule 45 is a protein called 60S ribosomal protein L7.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	w	215	Total	C	N	O	S	0	0
			1749	1110	342	288	9		

- Molecule 46 is a protein called Ribosomal protein L7a-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
46	x	208	1690	1062	338	284	6	0	0

- Molecule 47 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
47	A	57	Total	Mg	0
			57	57	
47	B	38	Total	Mg	0
			38	38	
47	C	2	Total	Mg	0
			2	2	
47	D	1	Total	Mg	0
			1	1	
47	E	1	Total	Mg	0
			1	1	
47	F	1	Total	Mg	0
			1	1	
47	G	1	Total	Mg	0
			1	1	
47	H	1	Total	Mg	0
			1	1	
47	R	1	Total	Mg	0
			1	1	
47	U	1	Total	Mg	0
			1	1	
47	q	1	Total	Mg	0
			1	1	

- Molecule 48 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
48	n	1	Total	Zn	0
			1	1	
48	o	1	Total	Zn	0
			1	1	
48	t	1	Total	Zn	0
			1	1	

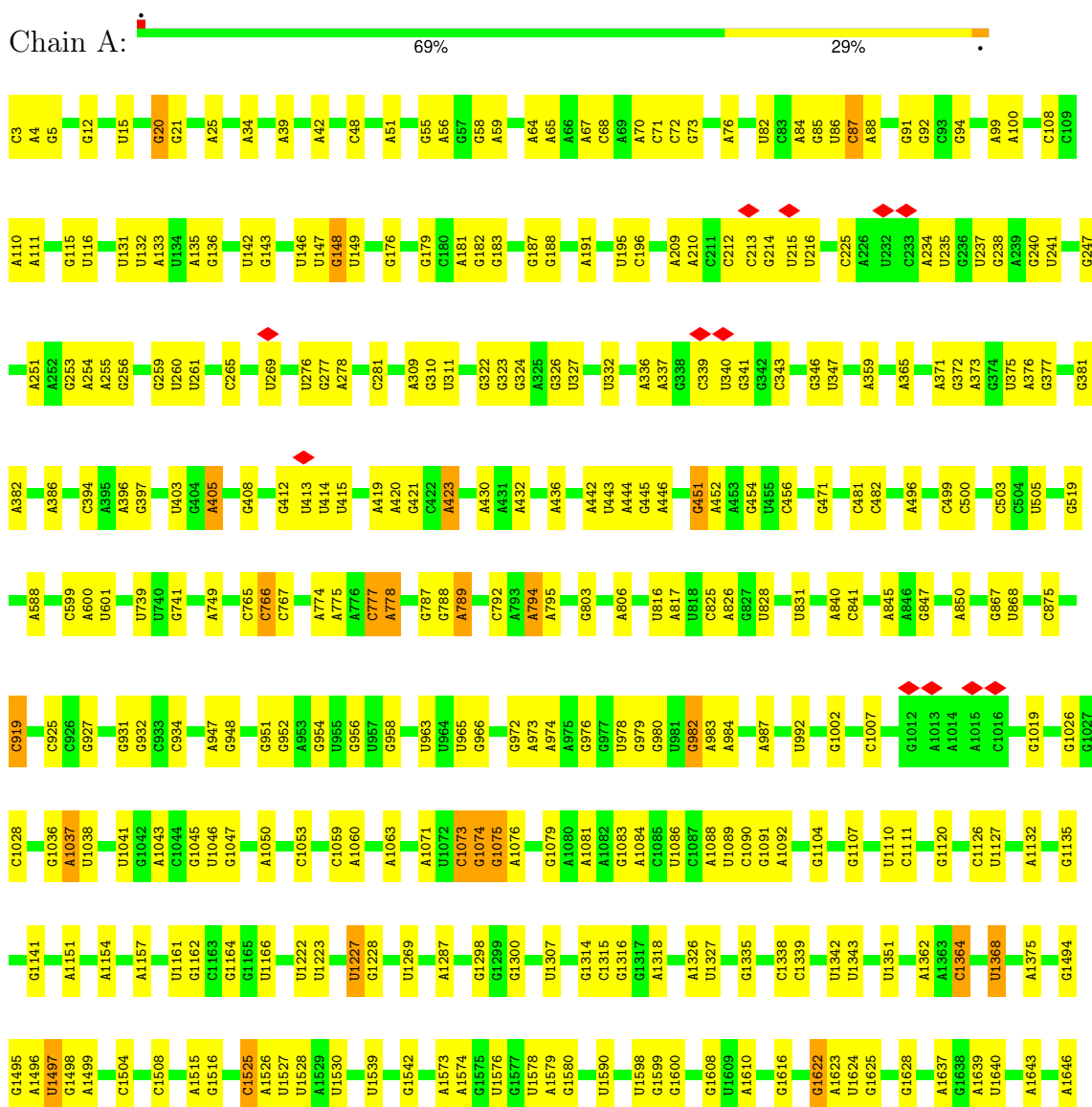
- Molecule 49 is water.

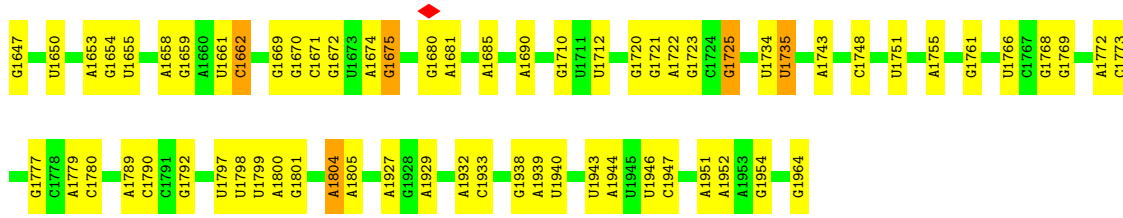
Mol	Chain	Residues	Atoms	AltConf
49	A	38	Total O 38 38	0
49	B	26	Total O 26 26	0
49	C	1	Total O 1 1	0
49	E	1	Total O 1 1	0
49	G	3	Total O 3 3	0
49	H	2	Total O 2 2	0
49	I	1	Total O 1 1	0
49	R	1	Total O 1 1	0
49	a	1	Total O 1 1	0
49	b	1	Total O 1 1	0
49	e	2	Total O 2 2	0
49	f	1	Total O 1 1	0
49	j	1	Total O 1 1	0
49	k	1	Total O 1 1	0
49	n	1	Total O 1 1	0
49	w	1	Total O 1 1	0
49	x	1	Total O 1 1	0

### 3 Residue-property plots

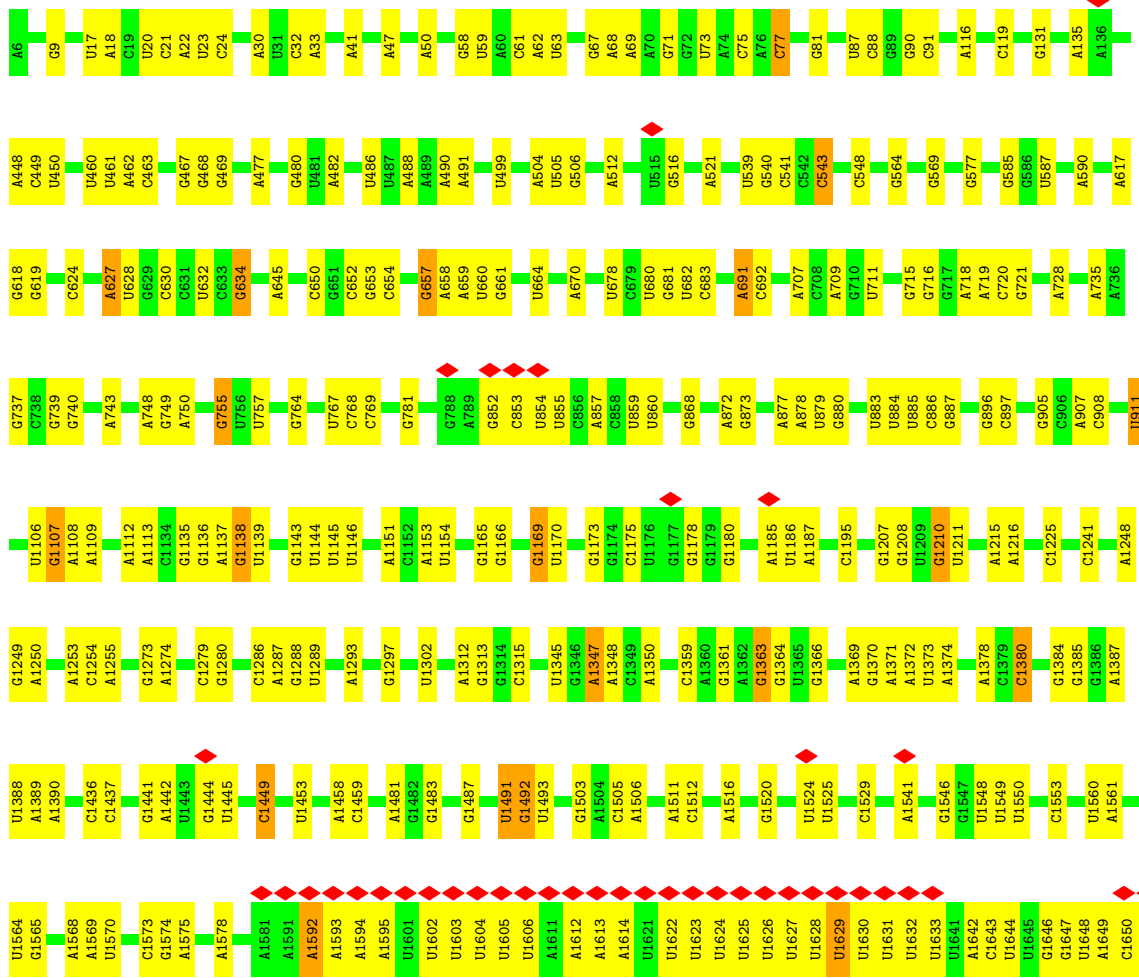
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

#### • Molecule 1: RNA LARGE SUBUNIT ALPHA

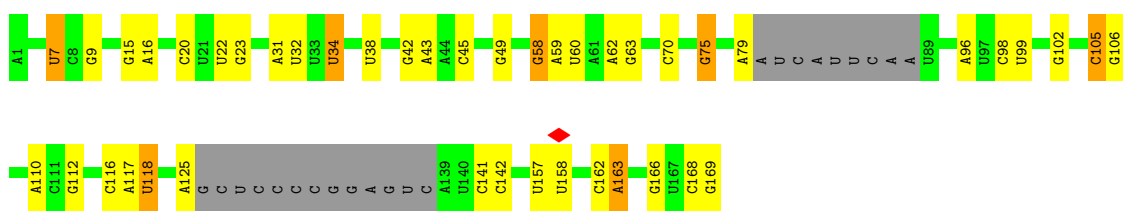




• Molecule 2: RNA LARGE SUBUNIT BETA

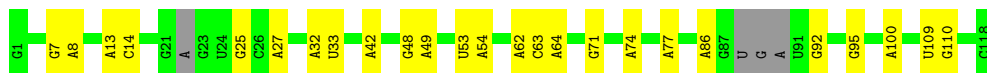


• Molecule 3: 5.8S rRNA




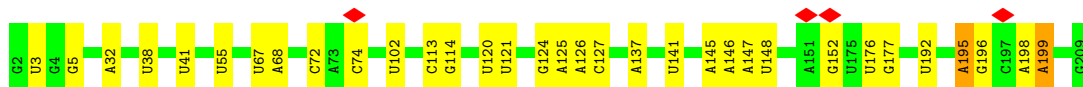
- Molecule 4: 5S rRNA

Chain D:  75% 21%



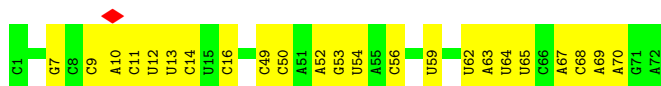
- Molecule 5: srRNA1

Chain E:  77% 21%



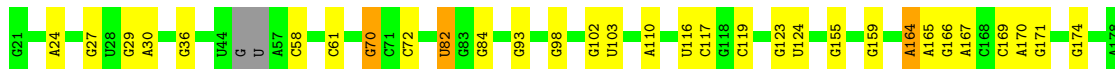
- Molecule 6: srRNA3

Chain F:  50% 50%



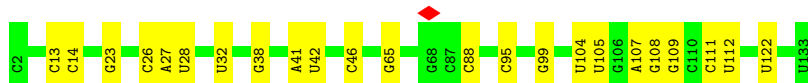
- Molecule 7: srRNA2

Chain G:  73% 23%



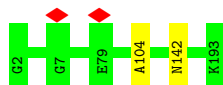
- Molecule 8: srRNA4

Chain H:  75% 25%



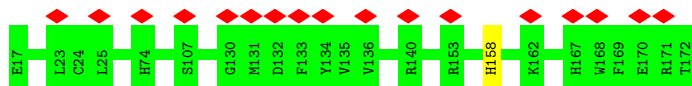
- Molecule 9: 60S ribosomal protein L18

Chain I:  99%




- Molecule 10: 60S ribosomal protein L11

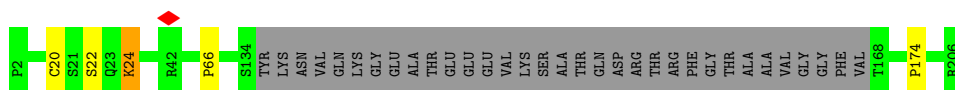
Chain L:  26% 98%





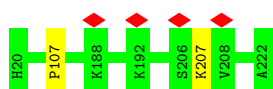
- Molecule 11: 60S ribosomal protein L13

Chain N:  81% 16%



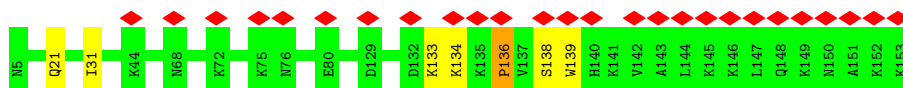
- Molecule 12: 60S ribosomal protein L13a

Chain O:  99%



- Molecule 13: 40S ribosomal protein L14

Chain P:  17% 95%



- Molecule 14: Ribosomal protein L15

Chain Q:  99%



- Molecule 15: 60S ribosomal protein L17

Chain R:  99%



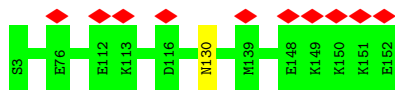
- Molecule 16: 60S ribosomal protein L18a

Chain S:  10% 98%

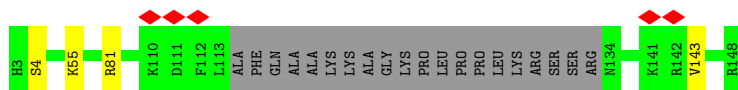
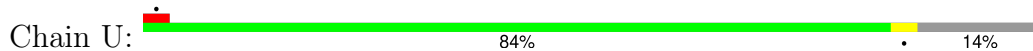


- Molecule 17: Ribosomal protein L19-like protein

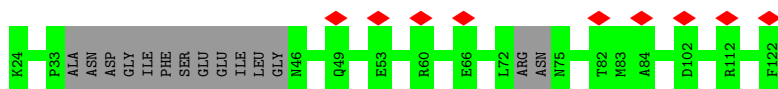
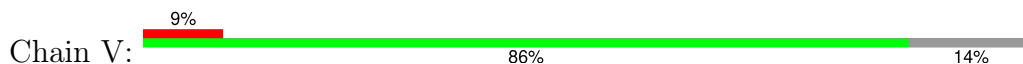
Chain T:  7% 99%



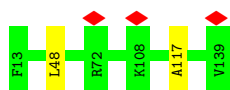
- Molecule 18: Ribosomal protein L21E (60S)



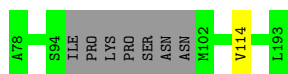
- Molecule 19: 60S ribosomal protein L22



- Molecule 20: 60S ribosomal protein L23



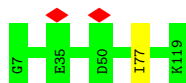
- Molecule 21: 60S ribosomal protein L23a



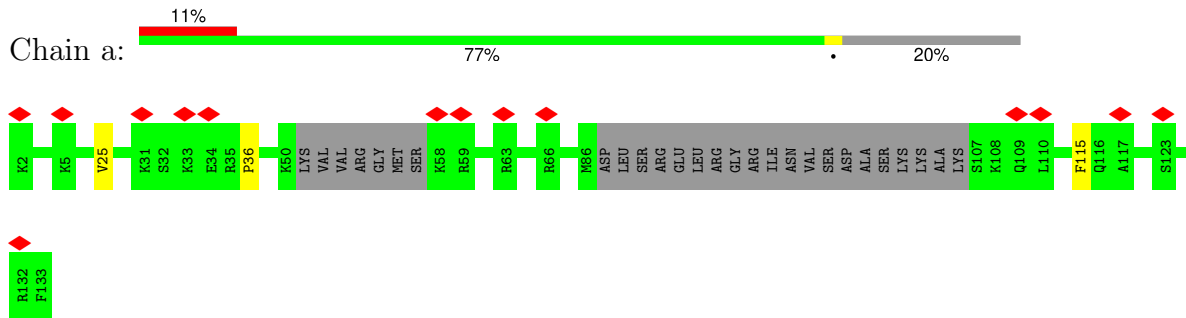
- Molecule 22: Ribosomal protein L24



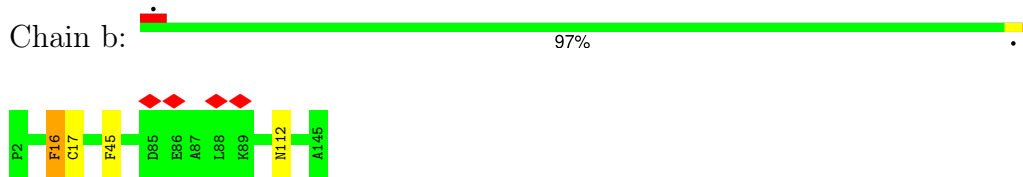
- Molecule 23: 60S ribosomal protein L26



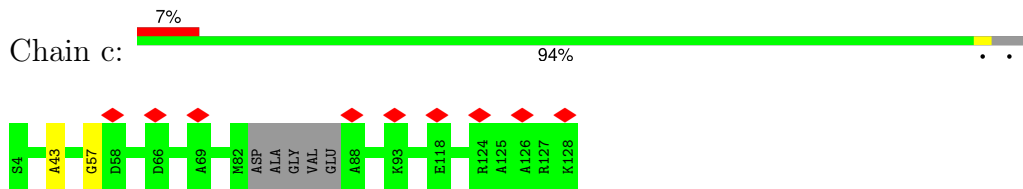
- Molecule 24: Ribosomal protein L27



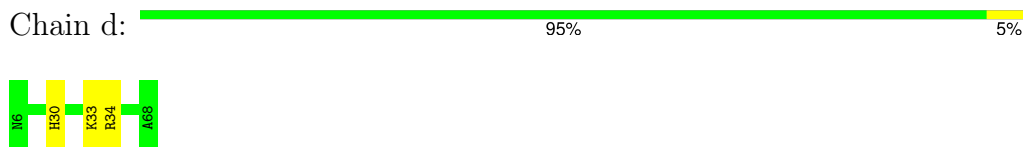
- Molecule 25: 60S ribosomal protein L27A/L29



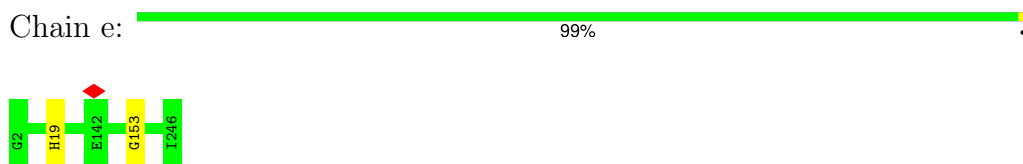
- Molecule 26: 60S ribosomal protein L28



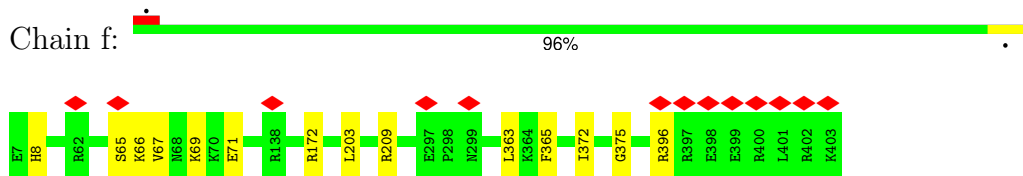
- Molecule 27: Ribosomal protein L29



- Molecule 28: 60S ribosomal protein L2

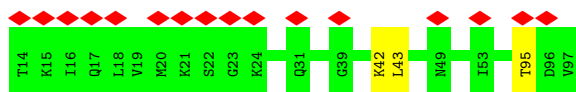


- Molecule 29: Ribosomal protein L13

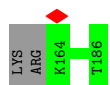
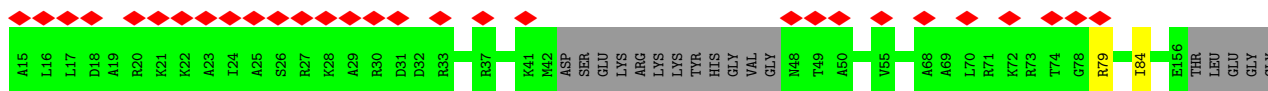
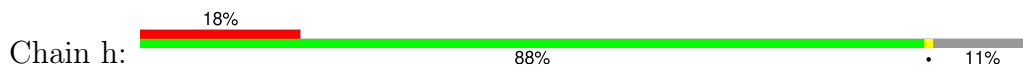


- Molecule 30: 60S ribosomal protein L30

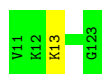




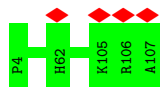
- Molecule 31: 60S ribosomal subunit protein L31



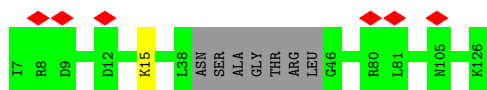
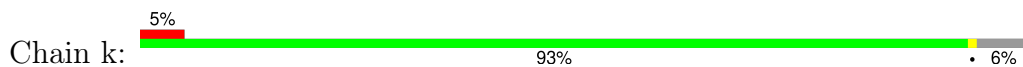
- Molecule 32: 60S ribosomal protein L32



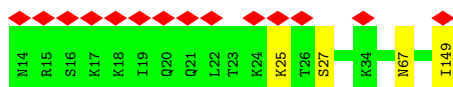
- Molecule 33: 60S ribosomal protein L34



- Molecule 34: 60S ribosomal protein L35

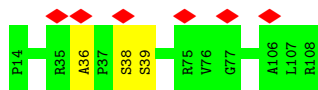


- Molecule 35: Ribosomal protein L35A

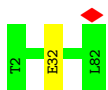


- Molecule 36: Ribosomal protein L36

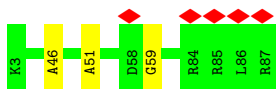




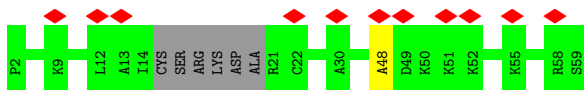
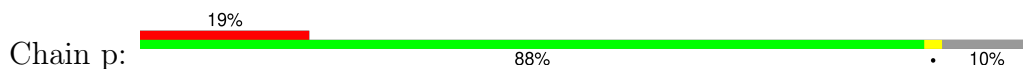
- Molecule 37: Ribosomal protein L37



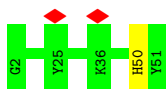
- Molecule 38: 60S ribosomal protein L37a



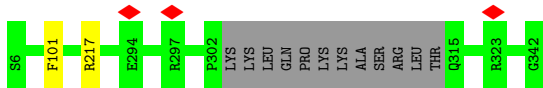
- Molecule 39: Ribosomal protein L38



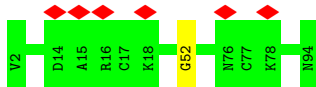
- Molecule 40: Ribosomal protein L39



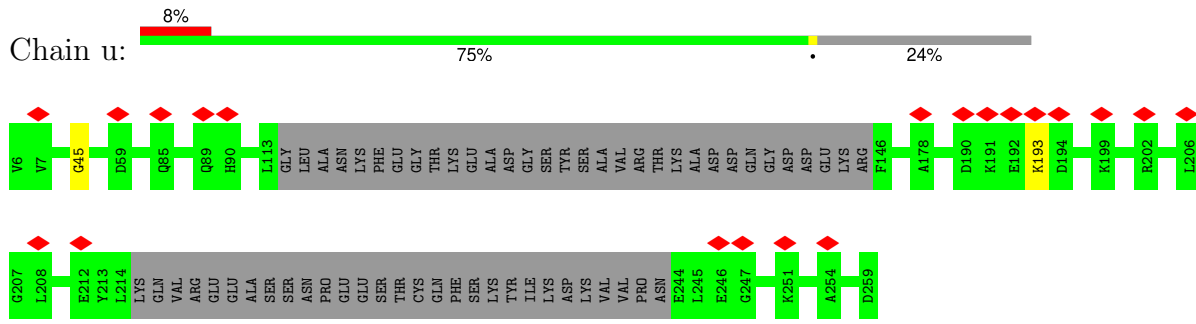
- Molecule 41: 60S ribosomal protein L4



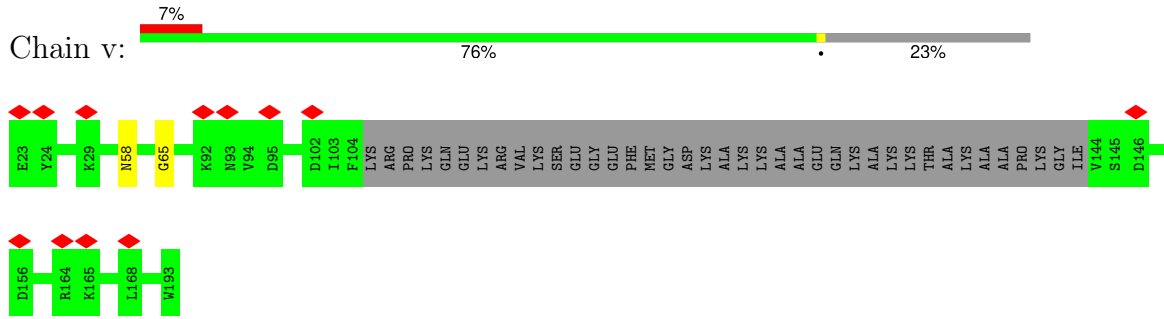
- Molecule 42: 60S ribosomal protein L44



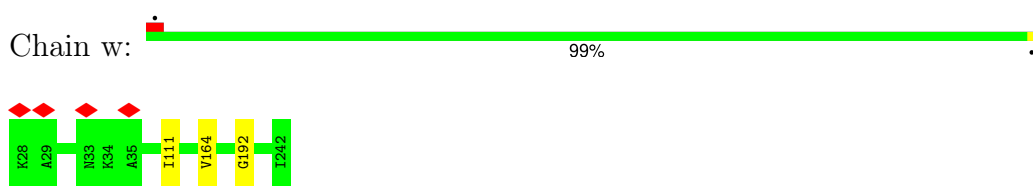
- Molecule 43: 60S ribosomal protein L5



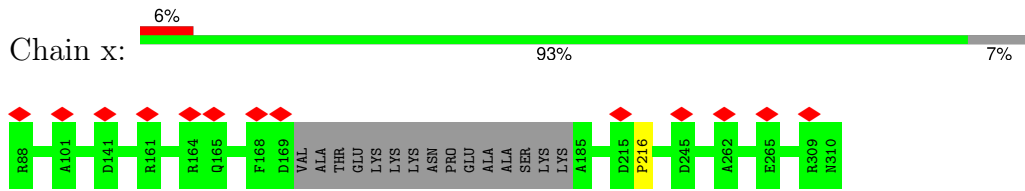
• Molecule 44: 60S ribosomal protein L6



• Molecule 45: 60S ribosomal protein L7



• Molecule 46: Ribosomal protein L7a-like protein



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	235000	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	27	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.816	Depositor
Minimum map value	-0.455	Depositor
Average map value	0.004	Depositor
Map value standard deviation	0.053	Depositor
Recommended contour level	0.07	Depositor
Map size (Å)	240.34999, 240.34999, 240.34999	wwPDB
Map dimensions	230, 230, 230	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.045, 1.045, 1.045	Depositor

## 5 Model quality i

### 5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: OMG, 7MG, OMC, A2M, OMU, MG, 5MC, ZN

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	A	1.31	11/29897 (0.0%)	1.06	45/46554 (0.1%)
2	B	1.14	4/21699 (0.0%)	1.00	16/33776 (0.0%)
3	C	1.23	0/3306	1.04	3/5144 (0.1%)
4	D	0.83	0/2715	0.90	0/4226
5	E	0.95	2/3472 (0.1%)	0.92	1/5396 (0.0%)
6	F	0.88	0/1074	0.98	3/1665 (0.2%)
7	G	1.25	1/2849 (0.0%)	1.06	5/4431 (0.1%)
8	H	1.16	0/2171	1.01	1/3374 (0.0%)
9	I	0.67	0/1540	0.67	0/2058
10	L	0.38	0/542	0.52	0/718
11	N	0.66	0/1442	0.65	1/1926 (0.1%)
12	O	0.67	0/1673	0.62	0/2244
13	P	0.51	0/1204	0.60	1/1618 (0.1%)
14	Q	0.82	0/1752	0.80	7/2341 (0.3%)
15	R	0.74	0/1251	0.67	0/1678
16	S	0.62	0/1484	0.60	0/1997
17	T	0.57	0/1292	0.58	0/1711
18	U	0.67	0/1037	0.62	0/1389
19	V	0.49	0/742	0.57	0/986
20	W	0.64	0/977	0.61	0/1318
21	X	0.65	0/905	0.65	0/1215
22	Y	0.69	0/539	0.66	0/728
23	Z	0.56	0/934	0.59	0/1249
24	a	0.45	0/895	0.55	0/1190
25	b	0.73	0/1164	0.69	2/1558 (0.1%)
26	c	0.55	0/946	0.58	0/1263
27	d	0.57	0/527	0.67	0/703
28	e	0.72	0/1915	0.66	0/2576
29	f	0.72	0/3257	0.69	3/4376 (0.1%)
30	g	0.43	0/530	0.55	0/712
31	h	0.61	0/1076	0.60	0/1450
32	i	0.74	0/948	0.67	0/1265



Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
33	j	0.62	0/879	0.62	0/1174
34	k	0.53	0/972	0.61	0/1283
35	l	0.77	0/1079	0.66	0/1451
36	m	0.53	0/767	0.62	0/1017
37	n	0.85	0/692	0.75	0/921
38	o	0.74	0/681	0.67	0/905
39	p	0.45	0/437	0.56	0/579
40	q	0.66	0/470	0.65	0/626
41	r	0.70	0/2560	0.63	0/3444
42	t	0.62	0/777	0.65	0/1030
43	u	0.52	0/1568	0.56	0/2104
44	v	0.51	0/1055	0.57	0/1420
45	w	0.68	0/1780	0.62	0/2384
46	x	0.60	0/1715	0.64	0/2306
All	All	1.02	18/111187 (0.0%)	0.90	88/163479 (0.1%)

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
14	Q	0	1
24	a	0	1
All	All	0	2

All (18) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1610	A	N9-C4	-6.70	1.33	1.37
1	A	1079	G	N9-C4	-6.39	1.32	1.38
2	B	1347	A	N9-C4	-6.00	1.34	1.37
1	A	20	G	N9-C4	-5.97	1.33	1.38
1	A	405	A	N9-C4	-5.83	1.34	1.37
2	B	18	A	N9-C4	-5.81	1.34	1.37
1	A	789	A	N9-C4	-5.81	1.34	1.37
5	E	199	A	N9-C4	-5.76	1.34	1.37
1	A	1120	G	N9-C4	-5.51	1.33	1.38
2	B	1592	A	O3'-P	-5.47	1.54	1.61
1	A	1074	G	C5-C4	-5.46	1.34	1.38
7	G	164	A	N9-C4	-5.44	1.34	1.37
1	A	1628	G	N9-C4	-5.32	1.33	1.38

*Continued on next page...*

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	982	G	C5-C4	-5.27	1.34	1.38
1	A	1060	A	N9-C4	-5.26	1.34	1.37
2	B	716	G	C5-C4	-5.22	1.34	1.38
5	E	195	A	N9-C4	-5.14	1.34	1.37
1	A	1110	U	C2-N3	-5.08	1.34	1.37

All (88) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1578	U	OP2-P-O3'	-10.15	82.87	105.20
1	A	1578	U	OP1-P-O3'	-9.94	83.34	105.20
14	Q	40[A]	ARG	CA-C-O	9.91	140.91	120.10
14	Q	40[B]	ARG	CA-C-O	9.91	140.91	120.10
1	A	20	G	N3-C4-C5	9.68	133.44	128.60
2	B	1629	U	O5'-P-OP2	9.65	122.28	110.70
1	A	1646	A	N1-C6-N6	8.05	123.43	118.60
1	A	1579	A	OP1-P-OP2	7.81	131.32	119.60
1	A	20	G	C4-C5-N7	7.72	113.89	110.80
1	A	1610	A	C2-N3-C4	-7.17	107.02	110.60
14	Q	40[A]	ARG	CA-C-N	-6.91	102.00	117.20
14	Q	40[B]	ARG	CA-C-N	-6.91	102.00	117.20
11	N	24	LYS	N-CA-C	-6.80	92.64	111.00
1	A	1089	U	C2-N1-C1'	6.49	125.49	117.70
2	B	1629	U	O5'-P-OP1	-6.41	99.94	105.70
2	B	1286	C	C6-N1-C2	-6.38	117.75	120.30
1	A	1735	U	C5-C6-N1	-6.34	119.53	122.70
1	A	825	C	C2-N1-C1'	6.26	125.69	118.80
1	A	1646	A	N9-C4-C5	-6.22	103.31	105.80
2	B	469	G	N3-C4-C5	6.19	131.69	128.60
1	A	20	G	N3-C4-N9	-6.18	122.29	126.00
1	A	1622	G	C4-N9-C1'	-6.14	118.52	126.50
2	B	1286	C	N3-C2-O2	-6.02	117.69	121.90
1	A	148	G	P-O3'-C3'	6.00	126.90	119.70
1	A	1933	C	N1-C2-O2	-6.00	115.30	118.90
6	F	49	C	C2-N1-C1'	6.00	125.39	118.80
1	A	1610	A	N3-C4-N9	-5.95	122.64	127.40
7	G	159	G	C4-C5-N7	5.90	113.16	110.80
1	A	1037	A	P-O3'-C3'	5.89	126.77	119.70
1	A	20	G	C5-N7-C8	-5.85	101.38	104.30
2	B	1520	G	O4'-C1'-N9	5.83	112.87	108.20
1	A	788	G	N3-C4-N9	5.83	129.50	126.00
7	G	159	G	C6-C5-N7	-5.83	126.90	130.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1364	C	N1-C2-O2	5.73	122.34	118.90
1	A	20	G	C4-N9-C1'	-5.72	119.06	126.50
1	A	1120	G	N3-C4-N9	-5.71	122.57	126.00
1	A	451	G	O4'-C1'-N9	5.71	112.77	108.20
29	f	203	LEU	CA-CB-CG	5.70	128.41	115.30
25	b	17	CYS	CA-CB-SG	-5.69	103.75	114.00
2	B	678	U	C2-N1-C1'	5.66	124.49	117.70
1	A	1646	A	C5-C6-N6	-5.66	119.17	123.70
1	A	1364	C	C2-N1-C1'	5.57	124.92	118.80
1	A	979	G	C4-C5-N7	5.54	113.02	110.80
2	B	585	G	N3-C4-N9	-5.52	122.69	126.00
1	A	1622	G	N3-C4-N9	-5.51	122.69	126.00
29	f	363	LEU	CB-CG-CD2	-5.50	101.66	111.00
8	H	104	U	C5-C6-N1	-5.49	119.96	122.70
25	b	16	PHE	N-CA-C	-5.48	96.21	111.00
3	C	102	G	N3-C4-C5	5.48	131.34	128.60
1	A	1943	U	N1-C2-O2	5.47	126.63	122.80
1	A	980	G	N9-C4-C5	-5.47	103.21	105.40
1	A	1368	U	C2-N1-C1'	5.46	124.26	117.70
1	A	1107	G	N3-C4-N9	-5.46	122.72	126.00
1	A	1079	G	N3-C4-C5	5.46	131.33	128.60
1	A	1943	U	N3-C2-O2	-5.44	118.39	122.20
1	A	1120	G	C4-N9-C1'	-5.43	119.45	126.50
1	A	1107	G	N3-C4-C5	5.39	131.30	128.60
7	G	72	C	N3-C2-O2	-5.36	118.15	121.90
1	A	1622	G	C8-N9-C1'	5.36	133.96	127.00
1	A	1135	G	N9-C4-C5	-5.31	103.28	105.40
3	C	58	G	N9-C4-C5	-5.31	103.28	105.40
2	B	718	A	C8-N9-C4	5.29	107.92	105.80
1	A	87	C	OP2-P-O3'	5.29	116.84	105.20
1	A	1120	G	N3-C4-C5	5.28	131.24	128.60
14	Q	201	ARG	C-N-CD	5.28	139.49	128.40
1	A	20	G	C8-N9-C1'	5.27	133.85	127.00
14	Q	40[A]	ARG	N-CA-C	5.26	125.20	111.00
14	Q	40[B]	ARG	N-CA-C	5.26	125.20	111.00
3	C	34	U	C5-C6-N1	-5.25	120.08	122.70
1	A	766	C	N1-C2-O2	-5.22	115.77	118.90
2	B	911	U	C2-N1-C1'	5.20	123.94	117.70
1	A	1135	G	N3-C4-N9	5.19	129.12	126.00
1	A	1768	G	N3-C4-C5	5.19	131.20	128.60
2	B	1195	C	C2-N1-C1'	5.19	124.51	118.80
2	B	587	U	C5-C4-O4	5.18	129.01	125.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	E	192	U	N1-C2-O2	-5.17	119.18	122.80
2	B	87	U	C2-N1-C1'	5.16	123.89	117.70
7	G	84	G	C6-C5-N7	5.14	133.48	130.40
1	A	454	G	C6-C5-N7	-5.13	127.32	130.40
6	F	49	C	N1-C2-O2	5.12	121.97	118.90
6	F	49	C	N3-C2-O2	-5.11	118.32	121.90
7	G	82	U	N1-C2-O2	5.10	126.37	122.80
29	f	8	HIS	C-N-CD	5.10	139.10	128.40
1	A	1622	G	N3-C4-C5	5.05	131.13	128.60
2	B	737	G	N9-C4-C5	-5.05	103.38	105.40
13	P	136	PRO	CA-N-CD	-5.05	104.43	111.50
2	B	20	U	N3-C4-C5	5.02	117.61	114.60
2	B	715	G	N3-C4-N9	-5.01	122.99	126.00

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
14	Q	200	LEU	Peptide
24	a	115	PHE	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
9	I	190/192 (99%)	177 (93%)	11 (6%)	2 (1%)	12 15
10	L	57/65 (88%)	51 (90%)	5 (9%)	1 (2%)	7 8
11	N	168/205 (82%)	154 (92%)	12 (7%)	2 (1%)	11 14

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
12	O	201/203 (99%)	191 (95%)	8 (4%)	2 (1%)	13	18
13	P	147/149 (99%)	133 (90%)	11 (8%)	3 (2%)	6	6
14	Q	202/203 (100%)	188 (93%)	14 (7%)	0	100	100
15	R	150/152 (99%)	138 (92%)	10 (7%)	2 (1%)	10	13
16	S	175/177 (99%)	158 (90%)	13 (7%)	4 (2%)	5	5
17	T	148/150 (99%)	144 (97%)	3 (2%)	1 (1%)	19	26
18	U	122/146 (84%)	111 (91%)	7 (6%)	4 (3%)	3	2
19	V	79/99 (80%)	70 (89%)	9 (11%)	0	100	100
20	W	125/127 (98%)	120 (96%)	3 (2%)	2 (2%)	8	10
21	X	105/116 (90%)	101 (96%)	3 (3%)	1 (1%)	13	18
22	Y	59/61 (97%)	57 (97%)	2 (3%)	0	100	100
23	Z	111/113 (98%)	100 (90%)	10 (9%)	1 (1%)	14	21
24	a	99/132 (75%)	92 (93%)	5 (5%)	2 (2%)	6	6
25	b	142/144 (99%)	130 (92%)	11 (8%)	1 (1%)	19	26
26	c	116/125 (93%)	108 (93%)	6 (5%)	2 (2%)	7	9
27	d	61/63 (97%)	56 (92%)	2 (3%)	3 (5%)	2	1
28	e	243/245 (99%)	225 (93%)	16 (7%)	2 (1%)	16	23
29	f	395/397 (100%)	372 (94%)	19 (5%)	4 (1%)	13	18
30	g	62/66 (94%)	59 (95%)	2 (3%)	1 (2%)	8	10
31	h	140/169 (83%)	133 (95%)	7 (5%)	0	100	100
32	i	111/113 (98%)	108 (97%)	2 (2%)	1 (1%)	14	21
33	j	102/104 (98%)	98 (96%)	4 (4%)	0	100	100
34	k	109/120 (91%)	105 (96%)	3 (3%)	1 (1%)	14	21
35	l	134/136 (98%)	123 (92%)	9 (7%)	2 (2%)	8	11
36	m	93/95 (98%)	87 (94%)	3 (3%)	3 (3%)	3	2
37	n	79/81 (98%)	71 (90%)	7 (9%)	1 (1%)	10	13
38	o	83/85 (98%)	76 (92%)	4 (5%)	3 (4%)	3	1
39	p	48/58 (83%)	44 (92%)	3 (6%)	1 (2%)	5	6
40	q	48/50 (96%)	43 (90%)	4 (8%)	1 (2%)	5	6
41	r	321/337 (95%)	309 (96%)	10 (3%)	2 (1%)	22	29
42	t	91/93 (98%)	86 (94%)	4 (4%)	1 (1%)	12	15

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
43	u	187/254 (74%)	176 (94%)	9 (5%)	2 (1%)	12	15
44	v	128/171 (75%)	119 (93%)	7 (6%)	2 (2%)	8	10
45	w	213/215 (99%)	194 (91%)	16 (8%)	3 (1%)	9	12
46	x	204/223 (92%)	196 (96%)	7 (3%)	1 (0%)	25	34
All	All	5248/5634 (93%)	4903 (93%)	281 (5%)	64 (1%)	14	14

All (64) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
9	I	142	ASN
11	N	66	PRO
11	N	174	PRO
13	P	21	GLN
15	R	132	ALA
16	S	70	LYS
18	U	55	LYS
18	U	81	ARG
18	U	143	VAL
25	b	112	ASN
29	f	372	ILE
35	l	67	ASN
36	m	36	ALA
37	n	32	GLU
38	o	51	ALA
44	v	58	ASN
45	w	111	ILE
16	S	71	LEU
17	T	130	ASN
20	W	48	LEU
28	e	19	HIS
28	e	153	GLY
29	f	172	ARG
34	k	15	LYS
35	l	27	SER
36	m	39	SER
38	o	46	ALA
39	p	48	ALA
40	q	50	HIS
41	r	217	ARG
45	w	192	GLY
9	I	104	ALA

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Mol	Chain	Res	Type
10	L	158	HIS
15	R	64	ASN
16	S	89	TYR
20	W	117	ALA
27	d	30	HIS
41	r	101	PHE
12	O	207	LYS
16	S	133	ASN
18	U	4	SER
21	X	114	VAL
27	d	33	LYS
29	f	365	PHE
24	a	36	PRO
26	c	43	ALA
27	d	34	ARG
29	f	375	GLY
30	g	43	LEU
36	m	38	SER
42	t	52	GLY
43	u	193	LYS
32	i	13	LYS
45	w	164	VAL
46	x	216	PRO
12	O	107	PRO
43	u	45	GLY
13	P	31	ILE
24	a	25	VAL
44	v	65	GLY
23	Z	77	ILE
26	c	57	GLY
38	o	59	GLY
13	P	136	PRO

### 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	
9	I	160/160 (100%)	160 (100%)	0	100	100
10	L	57/57 (100%)	57 (100%)	0	100	100
11	N	153/178 (86%)	150 (98%)	3 (2%)	50	69
12	O	175/175 (100%)	175 (100%)	0	100	100
13	P	119/131 (91%)	115 (97%)	4 (3%)	32	47
14	Q	177/176 (101%)	177 (100%)	0	100	100
15	R	131/131 (100%)	131 (100%)	0	100	100
16	S	158/158 (100%)	158 (100%)	0	100	100
17	T	134/134 (100%)	134 (100%)	0	100	100
18	U	108/123 (88%)	108 (100%)	0	100	100
19	V	79/90 (88%)	79 (100%)	0	100	100
20	W	99/99 (100%)	99 (100%)	0	100	100
21	X	96/103 (93%)	96 (100%)	0	100	100
22	Y	55/55 (100%)	52 (94%)	3 (6%)	18	25
23	Z	97/97 (100%)	97 (100%)	0	100	100
24	a	93/116 (80%)	93 (100%)	0	100	100
25	b	116/116 (100%)	114 (98%)	2 (2%)	56	73
26	c	99/102 (97%)	99 (100%)	0	100	100
27	d	52/52 (100%)	52 (100%)	0	100	100
28	e	194/194 (100%)	194 (100%)	0	100	100
29	f	339/339 (100%)	332 (98%)	7 (2%)	48	66
30	g	62/62 (100%)	60 (97%)	2 (3%)	34	49
31	h	91/144 (63%)	89 (98%)	2 (2%)	47	65
32	i	100/100 (100%)	100 (100%)	0	100	100
33	j	90/90 (100%)	90 (100%)	0	100	100
34	k	103/108 (95%)	103 (100%)	0	100	100
35	l	102/112 (91%)	100 (98%)	2 (2%)	50	69
36	m	77/77 (100%)	77 (100%)	0	100	100
37	n	69/69 (100%)	69 (100%)	0	100	100
38	o	68/68 (100%)	68 (100%)	0	100	100
39	p	48/53 (91%)	48 (100%)	0	100	100
40	q	46/46 (100%)	46 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
41	r	262/273 (96%)	262 (100%)	0	100	100
42	t	82/82 (100%)	82 (100%)	0	100	100
43	u	155/207 (75%)	155 (100%)	0	100	100
44	v	112/141 (79%)	112 (100%)	0	100	100
45	w	180/180 (100%)	180 (100%)	0	100	100
46	x	182/194 (94%)	182 (100%)	0	100	100
All	All	4520/4792 (94%)	4495 (99%)	25 (1%)	82	92

All (25) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
11	N	20	CYS
11	N	22	SER
11	N	24	LYS
13	P	133	LYS
13	P	134	LYS
13	P	138	SER
13	P	139	TRP
22	Y	28	SER
22	Y	30	LYS
22	Y	51	ARG
25	b	16	PHE
25	b	45	PHE
29	f	65	SER
29	f	66	LYS
29	f	67	VAL
29	f	69	LYS
29	f	71	GLU
29	f	209	ARG
29	f	396	ARG
30	g	42	LYS
30	g	95	THR
31	h	79	ARG
31	h	84	ILE
35	l	25	LYS
35	l	149	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (80) such sidechains are listed below:

Mol	Chain	Res	Type
9	I	45	ASN
9	I	158	HIS
10	L	167	HIS
11	N	6	ASN
11	N	23	GLN
12	O	20	HIS
12	O	68	ASN
12	O	119	GLN
12	O	143	GLN
13	P	5	ASN
13	P	21	GLN
14	Q	39	GLN
14	Q	92	HIS
14	Q	113	ASN
14	Q	133	ASN
14	Q	195	HIS
15	R	28	ASN
15	R	97	ASN
15	R	116	HIS
15	R	147	GLN
16	S	57	HIS
16	S	121	HIS
16	S	122	ASN
16	S	145	HIS
18	U	3	HIS
18	U	33	ASN
18	U	54	HIS
18	U	107	GLN
19	V	58	ASN
19	V	118	GLN
20	W	30	ASN
20	W	49	ASN
20	W	106	ASN
21	X	83	GLN
21	X	163	ASN
22	Y	17	HIS
23	Z	97	HIS
23	Z	100	ASN
24	a	124	ASN
25	b	49	HIS
25	b	60	HIS
26	c	34	ASN
27	d	7	HIS

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Mol	Chain	Res	Type
27	d	9	ASN
27	d	30	HIS
28	e	17	GLN
28	e	38	HIS
28	e	100	ASN
28	e	194	ASN
28	e	211	HIS
28	e	217	GLN
28	e	221	HIS
29	f	11	HIS
29	f	109	HIS
29	f	173	ASN
29	f	182	HIS
29	f	189	ASN
29	f	248	HIS
29	f	279	HIS
29	f	289	GLN
31	h	125	ASN
31	h	137	HIS
32	i	21	HIS
32	i	28	GLN
33	j	13	HIS
33	j	51	HIS
34	k	37	GLN
35	l	116	HIS
37	n	10	GLN
38	o	21	ASN
41	r	33	HIS
41	r	42	ASN
42	t	83	ASN
43	u	201	HIS
45	w	104	GLN
45	w	110	GLN
45	w	120	ASN
45	w	159	GLN
45	w	177	ASN
46	x	117	GLN

### 5.3.3 RNA

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	1249/1278 (97%)	348 (27%)	33 (2%)
2	B	925/941 (98%)	275 (29%)	18 (1%)
3	C	144/169 (85%)	39 (27%)	2 (1%)
4	D	111/118 (94%)	23 (20%)	4 (3%)
5	E	141/146 (96%)	30 (21%)	4 (2%)
6	F	44/46 (95%)	21 (47%)	7 (15%)
7	G	117/123 (95%)	28 (23%)	2 (1%)
8	H	86/91 (94%)	20 (23%)	3 (3%)
All	All	2817/2912 (96%)	784 (27%)	73 (2%)

All (784) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	4	A
1	A	5	G
1	A	12	G
1	A	15	U
1	A	20	G
1	A	21	G
1	A	25	A
1	A	34	A
1	A	39	A
1	A	42	A
1	A	48	C
1	A	51	A
1	A	55	G
1	A	56	A
1	A	59	A
1	A	64	A
1	A	65	A
1	A	67	A
1	A	68	C
1	A	70	A
1	A	71	C
1	A	72	C
1	A	73	G
1	A	76	A
1	A	82	U
1	A	84	A
1	A	85	G
1	A	86	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	88	A
1	A	91	G
1	A	92	G
1	A	94	G
1	A	99	A
1	A	100	A
1	A	108	C
1	A	110	A
1	A	111	A
1	A	115	G
1	A	116	U
1	A	131	U
1	A	132	U
1	A	133	A
1	A	135	A
1	A	136	G
1	A	142	U
1	A	143	G
1	A	147	U
1	A	148	G
1	A	149	U
1	A	176	G
1	A	179	G
1	A	181	A
1	A	182	G
1	A	183	G
1	A	187	G
1	A	188	G
1	A	191	A
1	A	195	U
1	A	196	C
1	A	209	A
1	A	210	A
1	A	212	C
1	A	213	C
1	A	214	G
1	A	215	U
1	A	216	U
1	A	225	C
1	A	234	A
1	A	235	U
1	A	237	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	238	G
1	A	240	G
1	A	241	U
1	A	247	G
1	A	251	A
1	A	253	G
1	A	254	A
1	A	255	A
1	A	256	G
1	A	259	G
1	A	260	U
1	A	261	U
1	A	265	C
1	A	269	U
1	A	276	U
1	A	277	G
1	A	278	A
1	A	281	C
1	A	309	A
1	A	310	G
1	A	311	U
1	A	322	G
1	A	324	G
1	A	326	G
1	A	327	U
1	A	332	U
1	A	336	A
1	A	337	A
1	A	339	C
1	A	340	U
1	A	341	G
1	A	346	G
1	A	347	U
1	A	359	A
1	A	365	A
1	A	371	A
1	A	372	G
1	A	373	A
1	A	375	U
1	A	376	A
1	A	377	G
1	A	381	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	382	A
1	A	386	A
1	A	394	C
1	A	396	A
1	A	397	G
1	A	403	U
1	A	405	A
1	A	408	G
1	A	412	G
1	A	413	U
1	A	414	U
1	A	415	U
1	A	420	A
1	A	421	G
1	A	423	A2M
1	A	430	A
1	A	432	A
1	A	436	A
1	A	443	U
1	A	444	A
1	A	446	A
1	A	451	G
1	A	452	A
1	A	456	C
1	A	471	G
1	A	481	C
1	A	482	C
1	A	496	A
1	A	499	C
1	A	500	C
1	A	503	C
1	A	505	U
1	A	519	G
1	A	588	A
1	A	600	A
1	A	601	U
1	A	739	U
1	A	741	G
1	A	749	A
1	A	765	C
1	A	766	C
1	A	767	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	774	A
1	A	777	OMC
1	A	778	A2M
1	A	787	G
1	A	789	A
1	A	794	A2M
1	A	795	A
1	A	803	G
1	A	806	A
1	A	816	U
1	A	817	A
1	A	826	A
1	A	828	U
1	A	831	U
1	A	840	A
1	A	841	C
1	A	845	A
1	A	847	G
1	A	850	A
1	A	867	G
1	A	868	U
1	A	875	C
1	A	919	OMC
1	A	925	C
1	A	932	G
1	A	934	C
1	A	947	A
1	A	948	G
1	A	951	G
1	A	952	G
1	A	954	G
1	A	956	G
1	A	965	U
1	A	966	G
1	A	973	A
1	A	976	G
1	A	978	U
1	A	982	G
1	A	983	A
1	A	984	A
1	A	987	A
1	A	992	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	1002	G
1	A	1007	C
1	A	1019	G
1	A	1026	G
1	A	1028	C
1	A	1036	G
1	A	1037	A
1	A	1038	U
1	A	1041	U
1	A	1046	U
1	A	1047	G
1	A	1050	A
1	A	1059	C
1	A	1063	A
1	A	1073	5MC
1	A	1074	G
1	A	1075	OMG
1	A	1076	A
1	A	1081	A
1	A	1083	G
1	A	1084	A
1	A	1086	U
1	A	1088	A
1	A	1090	C
1	A	1091	G
1	A	1092	A
1	A	1104	G
1	A	1111	C
1	A	1126	C
1	A	1132	A
1	A	1141	G
1	A	1151	A
1	A	1154	A
1	A	1157	A
1	A	1161	U
1	A	1162	G
1	A	1164	G
1	A	1166	U
1	A	1222	U
1	A	1223	U
1	A	1227	OMU
1	A	1228	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	1269	U
1	A	1287	A
1	A	1298	G
1	A	1300	G
1	A	1307	U
1	A	1314	G
1	A	1315	C
1	A	1318	A
1	A	1327	U
1	A	1335	G
1	A	1338	C
1	A	1339	C
1	A	1342	U
1	A	1343	U
1	A	1351	U
1	A	1362	A
1	A	1364	C
1	A	1368	U
1	A	1375	A
1	A	1494	G
1	A	1495	G
1	A	1496	A
1	A	1497	OMU
1	A	1498	G
1	A	1499	A
1	A	1504	C
1	A	1508	C
1	A	1515	A
1	A	1516	G
1	A	1525	5MC
1	A	1526	A
1	A	1527	U
1	A	1528	U
1	A	1530	U
1	A	1539	U
1	A	1542	G
1	A	1573	A
1	A	1574	A
1	A	1576	U
1	A	1580	G
1	A	1590	U
1	A	1598	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	1599	G
1	A	1600	G
1	A	1608	G
1	A	1616	G
1	A	1623	A
1	A	1624	U
1	A	1625	G
1	A	1637	A
1	A	1639	A
1	A	1640	U
1	A	1643	A
1	A	1647	G
1	A	1650	U
1	A	1653	A
1	A	1654	G
1	A	1655	U
1	A	1658	A
1	A	1661	U
1	A	1662	OMC
1	A	1669	G
1	A	1670	G
1	A	1671	C
1	A	1672	G
1	A	1675	OMG
1	A	1680	G
1	A	1681	A
1	A	1685	A
1	A	1690	A
1	A	1712	U
1	A	1720	G
1	A	1721	G
1	A	1722	A
1	A	1723	G
1	A	1725	7MG
1	A	1734	U
1	A	1735	U
1	A	1743	A
1	A	1748	C
1	A	1751	U
1	A	1755	A
1	A	1761	G
1	A	1766	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	1769	G
1	A	1772	A
1	A	1773	C
1	A	1777	G
1	A	1780	C
1	A	1789	A
1	A	1790	C
1	A	1792	G
1	A	1798	U
1	A	1799	U
1	A	1800	A
1	A	1801	G
1	A	1804	A2M
1	A	1805	A
1	A	1927	A
1	A	1929	A
1	A	1932	A
1	A	1939	A
1	A	1940	U
1	A	1944	A
1	A	1946	U
1	A	1947	C
1	A	1951	A
1	A	1952	A
1	A	1954	G
1	A	1964	G
2	B	9	G
2	B	17	U
2	B	22	A
2	B	23	U
2	B	24	C
2	B	30	A
2	B	32	C
2	B	33	A
2	B	41	A
2	B	47	A
2	B	58	G
2	B	59	U
2	B	61	C
2	B	62	A
2	B	63	U
2	B	67	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	B	68	A
2	B	69	A
2	B	75	C
2	B	77	OMC
2	B	81	G
2	B	88	C
2	B	90	G
2	B	91	C
2	B	116	A
2	B	119	C
2	B	131	G
2	B	135	A
2	B	448	A
2	B	449	C
2	B	450	U
2	B	460	U
2	B	461	U
2	B	462	A
2	B	463	C
2	B	467	G
2	B	468	G
2	B	477	A
2	B	480	G
2	B	486	U
2	B	488	A
2	B	490	A
2	B	491	A
2	B	499	U
2	B	504	A
2	B	505	U
2	B	506	G
2	B	512	A
2	B	516	G
2	B	521	A
2	B	539	U
2	B	540	G
2	B	541	C
2	B	543	OMC
2	B	548	C
2	B	569	G
2	B	577	G
2	B	590	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	B	617	A
2	B	618	G
2	B	619	G
2	B	627	A2M
2	B	628	U
2	B	630	C
2	B	632	U
2	B	634	OMG
2	B	645	A
2	B	650	C
2	B	652	C
2	B	653	G
2	B	654	C
2	B	657	7MG
2	B	658	A
2	B	659	A
2	B	660	U
2	B	661	G
2	B	664	U
2	B	670	A
2	B	680	U
2	B	681	G
2	B	682	U
2	B	691	A2M
2	B	692	C
2	B	707	A
2	B	709	A
2	B	711	U
2	B	719	A
2	B	720	C
2	B	721	G
2	B	735	A
2	B	740	G
2	B	743	A
2	B	748	A
2	B	749	G
2	B	750	A
2	B	755	OMG
2	B	757	U
2	B	764	G
2	B	768	C
2	B	769	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	B	781	G
2	B	853	C
2	B	855	U
2	B	857	A
2	B	859	U
2	B	860	U
2	B	868	G
2	B	872	A
2	B	873	G
2	B	877	A
2	B	878	A
2	B	879	U
2	B	880	G
2	B	883	U
2	B	884	U
2	B	885	U
2	B	886	C
2	B	887	G
2	B	896	G
2	B	897	C
2	B	905	G
2	B	907	A
2	B	908	C
2	B	911	U
2	B	1106	U
2	B	1108	A
2	B	1109	A
2	B	1112	A
2	B	1113	A
2	B	1135	G
2	B	1136	G
2	B	1137	A
2	B	1138	7MG
2	B	1139	U
2	B	1143	G
2	B	1144	U
2	B	1145	U
2	B	1146	U
2	B	1151	A
2	B	1153	A
2	B	1154	U
2	B	1165	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	B	1166	G
2	B	1169	OMG
2	B	1170	U
2	B	1173	G
2	B	1175	C
2	B	1178	G
2	B	1180	G
2	B	1185	A
2	B	1187	A
2	B	1207	G
2	B	1208	G
2	B	1210	OMG
2	B	1211	U
2	B	1216	A
2	B	1225	C
2	B	1241	C
2	B	1248	A
2	B	1249	G
2	B	1250	A
2	B	1253	A
2	B	1255	A
2	B	1273	G
2	B	1274	A
2	B	1279	C
2	B	1280	G
2	B	1287	A
2	B	1288	G
2	B	1289	U
2	B	1293	A
2	B	1297	G
2	B	1302	U
2	B	1312	A
2	B	1313	G
2	B	1315	C
2	B	1347	A
2	B	1348	A
2	B	1350	A
2	B	1359	C
2	B	1363	OMG
2	B	1364	G
2	B	1366	G
2	B	1369	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	B	1370	G
2	B	1371	A
2	B	1372	A
2	B	1373	U
2	B	1374	A
2	B	1378	A
2	B	1380	OMC
2	B	1384	G
2	B	1387	A
2	B	1388	U
2	B	1389	A
2	B	1390	A
2	B	1436	C
2	B	1437	C
2	B	1441	G
2	B	1442	A
2	B	1445	U
2	B	1449	OMC
2	B	1453	U
2	B	1458	A
2	B	1459	C
2	B	1481	A
2	B	1483	G
2	B	1487	G
2	B	1491	OMU
2	B	1492	OMG
2	B	1493	U
2	B	1503	G
2	B	1505	C
2	B	1506	A
2	B	1511	A
2	B	1512	C
2	B	1524	U
2	B	1525	U
2	B	1541	A
2	B	1546	G
2	B	1548	U
2	B	1549	U
2	B	1550	U
2	B	1553	C
2	B	1560	U
2	B	1561	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	B	1564	U
2	B	1565	G
2	B	1568	A
2	B	1569	A
2	B	1570	U
2	B	1573	C
2	B	1574	G
2	B	1575	A
2	B	1578	A
2	B	1592	A
2	B	1593	A
2	B	1594	A
2	B	1595	A
2	B	1602	U
2	B	1603	U
2	B	1604	U
2	B	1605	U
2	B	1606	U
2	B	1612	A
2	B	1613	A
2	B	1614	A
2	B	1622	U
2	B	1623	U
2	B	1624	U
2	B	1625	U
2	B	1626	U
2	B	1627	U
2	B	1628	U
2	B	1629	U
2	B	1630	U
2	B	1631	U
2	B	1632	U
2	B	1633	U
2	B	1642	A
2	B	1643	C
2	B	1644	U
2	B	1646	G
2	B	1647	G
2	B	1648	U
2	B	1649	A
2	B	1650	C
2	B	1651	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	B	1652	A
2	B	1653	A
2	B	1654	A
2	B	1655	A
2	B	1656	A
2	B	1657	A
2	B	1658	A
3	C	7	OMU
3	C	9	G
3	C	16	A
3	C	20	C
3	C	22	U
3	C	23	G
3	C	31	A
3	C	32	U
3	C	34	U
3	C	38	U
3	C	45	C
3	C	49	G
3	C	58	G
3	C	59	A
3	C	60	U
3	C	62	A
3	C	63	G
3	C	70	C
3	C	75	OMG
3	C	79	A
3	C	96	A
3	C	98	C
3	C	99	U
3	C	105	OMC
3	C	106	G
3	C	110	A
3	C	112	G
3	C	116	C
3	C	117	A
3	C	118	OMU
3	C	125	A
3	C	141	C
3	C	142	C
3	C	157	U
3	C	158	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	C	162	C
3	C	163	A2M
3	C	168	C
3	C	169	G
4	D	7	G
4	D	8	A
4	D	13	A
4	D	14	C
4	D	25	G
4	D	27	A
4	D	32	A
4	D	33	U
4	D	42	A
4	D	48	G
4	D	49	A
4	D	54	A
4	D	62	A
4	D	63	C
4	D	64	A
4	D	71	G
4	D	74	A
4	D	77	A
4	D	86	A
4	D	92	G
4	D	95	G
4	D	100	A
4	D	110	G
5	E	3	U
5	E	5	G
5	E	32	A
5	E	38	U
5	E	41	U
5	E	55	U
5	E	67	U
5	E	68	A
5	E	72	C
5	E	74	C
5	E	102	U
5	E	114	G
5	E	120	U
5	E	121	U
5	E	124	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
5	E	125	A
5	E	127	C
5	E	137	A
5	E	141	U
5	E	145	A
5	E	146	A
5	E	147	A
5	E	148	U
5	E	152	G
5	E	176	U
5	E	177	G
5	E	195	A
5	E	196	G
5	E	198	A
5	E	199	A
6	F	7	G
6	F	9	C
6	F	10	A
6	F	11	C
6	F	12	U
6	F	13	U
6	F	14	C
6	F	16	C
6	F	50	C
6	F	52	A
6	F	53	G
6	F	54	U
6	F	56	C
6	F	59	U
6	F	63	A
6	F	64	U
6	F	65	U
6	F	67	A
6	F	68	C
6	F	69	A
6	F	70	A
7	G	24	A
7	G	27	G
7	G	29	G
7	G	30	A
7	G	36	G
7	G	58	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
7	G	61	C
7	G	70	OMG
7	G	82	U
7	G	93	G
7	G	98	G
7	G	102	G
7	G	103	U
7	G	110	A
7	G	116	U
7	G	117	C
7	G	119	C
7	G	123	G
7	G	124	U
7	G	155	G
7	G	164	A
7	G	165	A
7	G	166	G
7	G	167	A
7	G	169	C
7	G	170	A
7	G	171	G
7	G	174	G
8	H	13	C
8	H	14	C
8	H	23	G
8	H	26	C
8	H	27	A
8	H	28	U
8	H	32	U
8	H	38	G
8	H	42	U
8	H	46	C
8	H	65	G
8	H	88	C
8	H	95	C
8	H	99	G
8	H	105	U
8	H	107	A
8	H	108	G
8	H	109	G
8	H	112	U
8	H	122	U

All (73) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	3	C
1	A	4	A
1	A	20	G
1	A	58	G
1	A	87	C
1	A	110	A
1	A	132	U
1	A	142	U
1	A	146	U
1	A	148	G
1	A	214	G
1	A	254	A
1	A	323	G
1	A	394	C
1	A	396	A
1	A	412	G
1	A	419	A
1	A	442	A
1	A	445	G
1	A	451	G
1	A	599	C
1	A	766	C
1	A	1037	A
1	A	1075	OMG
1	A	1083	G
1	A	1326	A
1	A	1515	A
1	A	1599	G
1	A	1622	G
1	A	1722	A
1	A	1779	A
1	A	1797	U
1	A	1938	G
2	B	68	A
2	B	719	A
2	B	739	G
2	B	852	G
2	B	854	U
2	B	884	U
2	B	1107	7MG
2	B	1112	A
2	B	1138	7MG

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Mol	Chain	Res	Type
2	B	1153	A
2	B	1186	U
2	B	1215	A
2	B	1254	C
2	B	1273	G
2	B	1444	G
2	B	1568	A
2	B	1642	A
2	B	1649	A
3	C	15	G
3	C	105	OMC
4	D	13	A
4	D	32	A
4	D	53	U
4	D	109	U
5	E	67	U
5	E	113	C
5	E	126	A
5	E	147	A
6	F	10	A
6	F	12	U
6	F	13	U
6	F	53	G
6	F	62	U
6	F	63	A
6	F	67	A
7	G	123	G
7	G	170	A
8	H	26	C
8	H	41	A
8	H	111	C

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

72 non-standard protein/DNA/RNA residues are modelled in this entry.

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



Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	OMG	B	1492	2	19,26,27	1.66	5 (26%)	21,38,41	1.42	5 (23%)
1	A2M	A	423	1	18,25,26	4.22	7 (38%)	20,36,39	2.67	5 (25%)
1	OMC	A	343	1	19,22,23	2.30	5 (26%)	25,31,34	0.88	0
1	OMG	A	927	1	19,26,27	1.69	5 (26%)	21,38,41	1.60	6 (28%)
1	A2M	A	1674	2,1,47	18,25,26	4.22	8 (44%)	20,36,39	2.51	4 (20%)
2	A2M	B	482	2	18,25,26	4.14	7 (38%)	20,36,39	2.68	4 (20%)
3	A2M	C	163	1,3	18,25,26	4.13	7 (38%)	20,36,39	2.54	3 (15%)
7	OMG	G	70	7	19,26,27	1.56	5 (26%)	21,38,41	1.66	6 (28%)
1	OMC	A	792	1	19,22,23	2.29	5 (26%)	25,31,34	0.81	1 (4%)
1	A2M	A	1071	1	18,25,26	4.25	7 (38%)	20,36,39	2.58	4 (20%)
2	OMG	B	1169	2	19,26,27	1.60	5 (26%)	21,38,41	1.63	5 (23%)
2	OMG	B	1210	2	19,26,27	1.61	5 (26%)	21,38,41	2.01	9 (42%)
1	OMG	A	1659	1	19,26,27	1.59	5 (26%)	21,38,41	1.83	8 (38%)
2	OMG	B	755	2	19,26,27	1.66	5 (26%)	21,38,41	1.83	5 (23%)
2	5MC	B	624	2	19,22,23	2.51	5 (26%)	26,32,35	1.30	4 (15%)
3	OMU	C	118	3	19,22,23	2.32	4 (21%)	25,31,34	2.04	5 (20%)
2	OMU	B	767	2	19,22,23	2.29	4 (21%)	25,31,34	1.87	4 (16%)
1	7MG	A	1045	1	23,26,27	2.11	7 (30%)	27,39,42	2.06	8 (29%)
1	5MC	A	1525	1	19,22,23	2.55	6 (31%)	26,32,35	1.15	2 (7%)
2	OMC	B	1380	2	19,22,23	2.29	5 (26%)	25,31,34	0.86	0
2	OMG	B	1385	2	19,26,27	1.65	5 (26%)	21,38,41	1.61	6 (28%)
2	A2M	B	627	2	18,25,26	4.05	7 (38%)	20,36,39	2.88	7 (35%)
1	OMG	A	972	1	19,26,27	1.65	4 (21%)	21,38,41	1.82	7 (33%)
2	A2M	B	1516	47,2	18,25,26	4.30	7 (38%)	20,36,39	2.72	5 (25%)
1	7MG	A	1725	1,2	23,26,27	2.06	8 (34%)	27,39,42	2.14	9 (33%)
1	OMC	A	919	1	19,22,23	2.41	5 (26%)	25,31,34	1.28	3 (12%)
1	A2M	A	1804	1	18,25,26	4.24	7 (38%)	20,36,39	2.75	6 (30%)
2	OMG	B	564	2	19,26,27	1.73	5 (26%)	21,38,41	1.54	5 (23%)
1	OMU	A	1497	1	19,22,23	2.35	5 (26%)	25,31,34	2.30	7 (28%)
2	A2M	B	728	2	18,25,26	4.14	7 (38%)	20,36,39	2.83	5 (25%)
2	OMU	B	1345	2	19,22,23	2.33	4 (21%)	25,31,34	1.93	5 (20%)
2	OMC	B	1529	2	19,22,23	2.19	5 (26%)	25,31,34	0.78	0
2	OMC	B	543	2	19,22,23	2.22	5 (26%)	25,31,34	0.71	0
1	A2M	A	974	1	18,25,26	4.11	7 (38%)	20,36,39	3.33	6 (30%)
1	OMU	A	963	1	19,22,23	2.40	5 (26%)	25,31,34	1.97	5 (20%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	OMG	B	634	2	19,26,27	1.57	5 (26%)	21,38,41	1.54	5 (23%)
2	OMC	B	1449	2	19,22,23	2.24	6 (31%)	25,31,34	0.86	0
1	OMC	A	777	1,2	19,22,23	2.36	6 (31%)	25,31,34	0.74	0
2	OMC	B	21	1,2	19,22,23	2.32	5 (26%)	25,31,34	0.84	0
1	OMC	A	1053	1	19,22,23	2.15	6 (31%)	25,31,34	1.60	5 (20%)
2	OMC	B	683	2	19,22,23	2.23	5 (26%)	25,31,34	0.84	0
3	OMU	C	7	1,3	19,22,23	2.46	6 (31%)	25,31,34	1.93	4 (16%)
1	A2M	A	794	1	18,25,26	4.26	7 (38%)	20,36,39	3.43	9 (45%)
2	7MG	B	1107	2	23,26,27	2.30	8 (34%)	27,39,42	2.24	9 (33%)
2	7MG	B	1138	2	23,26,27	2.38	8 (34%)	27,39,42	2.23	8 (29%)
2	OMG	B	71	2	19,26,27	1.75	5 (26%)	21,38,41	1.86	6 (28%)
2	OMG	B	1363	2	19,26,27	1.76	5 (26%)	21,38,41	1.78	6 (28%)
2	OMG	B	1361	2	19,26,27	1.63	5 (26%)	21,38,41	1.63	5 (23%)
1	OMG	A	1675	1,2	19,26,27	1.57	5 (26%)	21,38,41	1.61	7 (33%)
1	A2M	A	778	1	18,25,26	4.12	7 (38%)	20,36,39	2.36	4 (20%)
2	7MG	B	657	47,2	23,26,27	2.11	8 (34%)	27,39,42	2.30	10 (37%)
2	A2M	B	691	2	18,25,26	4.31	8 (44%)	20,36,39	3.26	9 (45%)
2	OMU	B	1491	2	19,22,23	2.17	4 (21%)	25,31,34	2.21	6 (24%)
1	OMG	A	958	1	19,26,27	1.58	5 (26%)	21,38,41	1.71	5 (23%)
1	OMU	A	1127	1,2	19,22,23	2.38	5 (26%)	25,31,34	1.79	6 (24%)
3	OMG	C	75	3	19,26,27	1.68	5 (26%)	21,38,41	1.58	6 (28%)
1	OMG	A	1710	1	19,26,27	1.70	5 (26%)	21,38,41	1.60	5 (23%)
2	A2M	B	50	47,2	18,25,26	4.17	7 (38%)	20,36,39	2.47	3 (15%)
2	OMC	B	77	2	19,22,23	2.39	6 (31%)	25,31,34	0.83	0
1	OMG	A	1075	1	19,26,27	1.69	5 (26%)	21,38,41	1.69	5 (23%)
1	OMC	A	1662	1	19,22,23	2.19	6 (31%)	25,31,34	0.70	0
1	OMG	A	1316	1,2	19,26,27	1.70	5 (26%)	21,38,41	1.80	5 (23%)
3	OMC	C	105	47,3	19,22,23	2.27	7 (36%)	25,31,34	1.13	1 (4%)
1	7MG	A	931	1	23,26,27	1.95	8 (34%)	27,39,42	2.12	10 (37%)
3	7MG	C	42	3	23,26,27	2.05	8 (34%)	27,39,42	2.31	9 (33%)
1	A2M	A	775	1,2	18,25,26	4.28	7 (38%)	20,36,39	2.57	4 (20%)
3	A2M	C	43	3	18,25,26	4.20	7 (38%)	20,36,39	2.49	5 (25%)
3	OMG	C	166	1,3	19,26,27	1.64	5 (26%)	21,38,41	1.69	5 (23%)
2	OMU	B	73	2	19,22,23	2.31	5 (26%)	25,31,34	1.81	5 (20%)
1	OMU	A	1227	1	19,22,23	2.31	5 (26%)	25,31,34	1.93	4 (16%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
1	5MC	A	1073	1	19,22,23	2.55	7 (36%)	26,32,35	1.28	3 (11%)
1	A2M	A	1043	1	18,25,26	4.14	7 (38%)	20,36,39	2.87	3 (15%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	OMG	B	1492	2	-	2/5/27/28	0/3/3/3
1	A2M	A	423	1	-	2/5/27/28	0/3/3/3
1	OMC	A	343	1	-	0/9/27/28	0/2/2/2
1	OMG	A	927	1	-	0/5/27/28	0/3/3/3
1	A2M	A	1674	2,1,47	-	0/5/27/28	0/3/3/3
2	A2M	B	482	2	-	0/5/27/28	0/3/3/3
3	A2M	C	163	1,3	-	2/5/27/28	0/3/3/3
7	OMG	G	70	7	-	2/5/27/28	0/3/3/3
1	OMC	A	792	1	-	0/9/27/28	0/2/2/2
1	A2M	A	1071	1	-	1/5/27/28	0/3/3/3
2	OMG	B	1169	2	-	2/5/27/28	0/3/3/3
2	OMG	B	1210	2	-	2/5/27/28	0/3/3/3
1	OMG	A	1659	1	-	0/5/27/28	0/3/3/3
2	OMG	B	755	2	-	3/5/27/28	0/3/3/3
2	5MC	B	624	2	-	2/7/25/26	0/2/2/2
3	OMU	C	118	3	-	3/9/27/28	0/2/2/2
2	OMU	B	767	2	-	0/9/27/28	0/2/2/2
1	7MG	A	1045	1	-	0/7/37/38	0/3/3/3
1	5MC	A	1525	1	-	2/7/25/26	0/2/2/2
2	OMC	B	1380	2	-	3/9/27/28	0/2/2/2
2	OMG	B	1385	2	-	0/5/27/28	0/3/3/3
2	A2M	B	627	2	-	3/5/27/28	0/3/3/3
1	OMG	A	972	1	-	0/5/27/28	0/3/3/3
2	A2M	B	1516	47,2	-	1/5/27/28	0/3/3/3
1	7MG	A	1725	1,2	-	2/7/37/38	0/3/3/3
1	OMC	A	919	1	-	5/9/27/28	0/2/2/2
1	A2M	A	1804	1	-	3/5/27/28	0/3/3/3
2	OMG	B	564	2	-	2/5/27/28	0/3/3/3
1	OMU	A	1497	1	-	2/9/27/28	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	A2M	B	728	2	-	1/5/27/28	0/3/3/3
2	OMU	B	1345	2	-	0/9/27/28	0/2/2/2
2	OMC	B	1529	2	-	0/9/27/28	0/2/2/2
2	OMC	B	543	2	-	6/9/27/28	0/2/2/2
1	A2M	A	974	1	-	0/5/27/28	0/3/3/3
1	OMU	A	963	1	-	0/9/27/28	0/2/2/2
2	OMG	B	634	2	-	1/5/27/28	0/3/3/3
2	OMC	B	1449	2	-	0/9/27/28	0/2/2/2
1	OMC	A	777	1,2	-	2/9/27/28	0/2/2/2
2	OMC	B	21	1,2	-	0/9/27/28	0/2/2/2
1	OMC	A	1053	1	-	3/9/27/28	0/2/2/2
2	OMC	B	683	2	-	0/9/27/28	0/2/2/2
3	OMU	C	7	1,3	-	2/9/27/28	0/2/2/2
1	A2M	A	794	1	-	2/5/27/28	0/3/3/3
2	7MG	B	1107	2	-	0/7/37/38	0/3/3/3
2	7MG	B	1138	2	-	2/7/37/38	0/3/3/3
2	OMG	B	71	2	-	0/5/27/28	0/3/3/3
2	OMG	B	1363	2	-	0/5/27/28	0/3/3/3
2	OMG	B	1361	2	-	2/5/27/28	0/3/3/3
1	OMG	A	1675	1,2	-	1/5/27/28	0/3/3/3
1	A2M	A	778	1	-	3/5/27/28	0/3/3/3
2	7MG	B	657	47,2	-	2/7/37/38	0/3/3/3
2	A2M	B	691	2	-	3/5/27/28	0/3/3/3
2	OMU	B	1491	2	-	0/9/27/28	0/2/2/2
1	OMG	A	958	1	-	0/5/27/28	0/3/3/3
1	OMU	A	1127	1,2	-	3/9/27/28	0/2/2/2
3	OMG	C	75	3	-	2/5/27/28	0/3/3/3
1	OMG	A	1710	1	-	0/5/27/28	0/3/3/3
2	A2M	B	50	47,2	-	0/5/27/28	0/3/3/3
2	OMC	B	77	2	-	2/9/27/28	0/2/2/2
1	OMG	A	1075	1	-	0/5/27/28	0/3/3/3
1	OMC	A	1662	1	-	1/9/27/28	0/2/2/2
1	OMG	A	1316	1,2	-	0/5/27/28	0/3/3/3
3	OMC	C	105	47,3	-	3/9/27/28	0/2/2/2
1	7MG	A	931	1	-	0/7/37/38	0/3/3/3
3	7MG	C	42	3	-	0/7/37/38	0/3/3/3
1	A2M	A	775	1,2	-	0/5/27/28	0/3/3/3
3	A2M	C	43	3	-	0/5/27/28	0/3/3/3
3	OMG	C	166	1,3	-	0/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	OMU	B	73	2	-	3/9/27/28	0/2/2/2
1	OMU	A	1227	1	-	2/9/27/28	0/2/2/2
1	5MC	A	1073	1	-	2/7/25/26	0/2/2/2
1	A2M	A	1043	1	-	0/5/27/28	0/3/3/3

All (422) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	794	A2M	O4'-C1'	15.75	1.61	1.40
2	B	691	A2M	O4'-C1'	15.63	1.61	1.40
2	B	1516	A2M	O4'-C1'	15.37	1.61	1.40
1	A	1804	A2M	O4'-C1'	15.26	1.60	1.40
1	A	775	A2M	O4'-C1'	15.13	1.60	1.40
1	A	423	A2M	O4'-C1'	15.05	1.60	1.40
1	A	1071	A2M	O4'-C1'	14.98	1.60	1.40
1	A	1674	A2M	O4'-C1'	14.87	1.60	1.40
3	C	43	A2M	O4'-C1'	14.78	1.60	1.40
1	A	778	A2M	O4'-C1'	14.73	1.60	1.40
2	B	50	A2M	O4'-C1'	14.70	1.60	1.40
1	A	1043	A2M	O4'-C1'	14.69	1.60	1.40
2	B	482	A2M	O4'-C1'	14.52	1.59	1.40
3	C	163	A2M	O4'-C1'	14.51	1.59	1.40
2	B	627	A2M	O4'-C1'	14.46	1.59	1.40
2	B	728	A2M	O4'-C1'	14.38	1.59	1.40
1	A	974	A2M	O4'-C1'	14.31	1.59	1.40
1	A	1525	5MC	C6-C5	7.29	1.46	1.34
1	A	1073	5MC	C6-C5	7.08	1.46	1.34
2	B	624	5MC	C6-C5	6.92	1.45	1.34
1	A	1071	A2M	O4'-C4'	-6.91	1.29	1.45
2	B	728	A2M	O4'-C4'	-6.88	1.29	1.45
1	A	1674	A2M	O4'-C4'	-6.78	1.29	1.45
1	A	974	A2M	O4'-C4'	-6.70	1.30	1.45
1	A	775	A2M	O4'-C4'	-6.69	1.30	1.45
2	B	482	A2M	O4'-C4'	-6.55	1.30	1.45
3	C	163	A2M	O4'-C4'	-6.52	1.30	1.45
3	C	43	A2M	O4'-C4'	-6.50	1.30	1.45
1	A	1043	A2M	O4'-C4'	-6.48	1.30	1.45
2	B	50	A2M	O4'-C4'	-6.42	1.30	1.45
3	C	7	OMU	C2-N3	6.38	1.49	1.38
2	B	691	A2M	O4'-C4'	-6.38	1.30	1.45
1	A	963	OMU	C2-N3	6.38	1.49	1.38
2	B	1345	OMU	C2-N3	6.34	1.49	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1516	A2M	O4'-C4'	-6.32	1.30	1.45
1	A	778	A2M	O4'-C4'	-6.31	1.31	1.45
1	A	1804	A2M	O4'-C4'	-6.27	1.31	1.45
3	C	118	OMU	C2-N3	6.21	1.48	1.38
2	B	627	A2M	O4'-C4'	-6.18	1.31	1.45
1	A	423	A2M	O4'-C4'	-6.14	1.31	1.45
1	A	1227	OMU	C2-N3	6.14	1.48	1.38
2	B	73	OMU	C2-N3	6.13	1.48	1.38
1	A	794	A2M	O4'-C4'	-6.11	1.31	1.45
1	A	1127	OMU	C2-N3	6.06	1.48	1.38
2	B	767	OMU	C2-N3	5.93	1.48	1.38
1	A	1497	OMU	C2-N3	5.80	1.48	1.38
1	A	963	OMU	O4-C4	-5.43	1.13	1.24
2	B	624	5MC	C4-N3	5.31	1.42	1.34
2	B	767	OMU	O4-C4	-5.28	1.14	1.24
2	B	1491	OMU	C2-N3	5.27	1.47	1.38
2	B	1345	OMU	O4-C4	-5.26	1.14	1.24
3	C	118	OMU	O4-C4	-5.14	1.14	1.24
2	B	73	OMU	O4-C4	-5.12	1.14	1.24
3	C	7	OMU	O4-C4	-5.09	1.14	1.24
2	B	1491	OMU	O4-C4	-5.02	1.14	1.24
2	B	77	OMC	C4-N4	5.02	1.46	1.33
1	A	343	OMC	C4-N4	5.01	1.46	1.33
1	A	1497	OMU	O4-C4	-5.00	1.14	1.24
1	A	777	OMC	C4-N4	4.98	1.46	1.33
2	B	543	OMC	C4-N4	4.97	1.45	1.33
1	A	1227	OMU	O4-C4	-4.96	1.14	1.24
1	A	919	OMC	C4-N4	4.96	1.45	1.33
3	C	105	OMC	C6-C5	4.94	1.46	1.35
2	B	1380	OMC	C4-N4	4.93	1.45	1.33
2	B	1138	7MG	C5-N7	4.92	1.41	1.35
3	C	105	OMC	C4-N4	4.88	1.45	1.33
1	A	343	OMC	C2-N3	4.88	1.46	1.36
2	B	77	OMC	C6-C5	4.88	1.46	1.35
1	A	1053	OMC	C4-N4	4.84	1.45	1.33
1	A	792	OMC	C4-N4	4.81	1.45	1.33
1	A	1662	OMC	C4-N4	4.81	1.45	1.33
2	B	1138	7MG	C4-N3	4.81	1.45	1.34
1	A	1127	OMU	O4-C4	-4.80	1.15	1.24
2	B	1529	OMC	C4-N4	4.78	1.45	1.33
2	B	21	OMC	C2-N3	4.78	1.45	1.36
1	A	1497	OMU	C6-C5	4.77	1.46	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	7	OMU	C6-C5	4.77	1.46	1.35
2	B	1449	OMC	C4-N4	4.76	1.45	1.33
1	A	777	OMC	C2-N3	4.76	1.45	1.36
2	B	21	OMC	C4-N4	4.76	1.45	1.33
2	B	683	OMC	C4-N4	4.73	1.45	1.33
2	B	624	5MC	C2-N3	4.72	1.45	1.36
2	B	1107	7MG	C5-N7	4.71	1.41	1.35
1	A	919	OMC	C2-N3	4.70	1.45	1.36
2	B	77	OMC	C2-N3	4.69	1.45	1.36
1	A	919	OMC	C6-C5	4.68	1.45	1.35
2	B	1380	OMC	C6-C5	4.68	1.45	1.35
2	B	1380	OMC	C2-N3	4.66	1.45	1.36
2	B	1449	OMC	C6-C5	4.64	1.45	1.35
1	A	1525	5MC	C4-N3	4.63	1.41	1.34
2	B	657	7MG	C4-N3	4.63	1.44	1.34
1	A	1073	5MC	C4-N3	4.61	1.41	1.34
2	B	683	OMC	C6-C5	4.57	1.45	1.35
2	B	1345	OMU	C6-C5	4.56	1.45	1.35
1	A	777	OMC	C6-C5	4.56	1.45	1.35
1	A	792	OMC	C2-N3	4.55	1.45	1.36
2	B	1107	7MG	C4-N3	4.54	1.44	1.34
2	B	683	OMC	C2-N3	4.54	1.45	1.36
2	B	543	OMC	C6-C5	4.53	1.45	1.35
1	A	1227	OMU	C6-C5	4.52	1.45	1.35
2	B	1529	OMC	C6-C5	4.51	1.45	1.35
2	B	1138	7MG	C2-N3	4.51	1.44	1.33
2	B	1107	7MG	C8-N9	4.49	1.48	1.45
1	A	1045	7MG	C5-N7	4.48	1.41	1.35
1	A	1127	OMU	C6-C5	4.46	1.45	1.35
1	A	792	OMC	C6-C5	4.46	1.45	1.35
1	A	1073	5MC	C2-N3	4.45	1.45	1.36
2	B	543	OMC	C2-N3	4.45	1.45	1.36
1	A	343	OMC	C6-C5	4.44	1.45	1.35
1	A	963	OMU	C6-C5	4.44	1.45	1.35
2	B	657	7MG	C5-N7	4.43	1.41	1.35
2	B	1107	7MG	C2-N3	4.40	1.43	1.33
1	A	1525	5MC	C2-N3	4.40	1.45	1.36
2	B	767	OMU	C6-C5	4.40	1.45	1.35
2	B	1491	OMU	C6-C5	4.40	1.45	1.35
2	B	21	OMC	C6-C5	4.39	1.45	1.35
1	A	1725	7MG	C4-N3	4.37	1.44	1.34
1	A	1045	7MG	C4-N3	4.36	1.44	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1662	OMC	C6-C5	4.36	1.45	1.35
3	C	118	OMU	C6-C5	4.35	1.45	1.35
3	C	42	7MG	C4-N3	4.32	1.44	1.34
1	A	931	7MG	C4-N3	4.31	1.44	1.34
2	B	73	OMU	C6-C5	4.29	1.45	1.35
3	C	42	7MG	C5-N7	4.26	1.41	1.35
2	B	1138	7MG	C8-N9	4.24	1.48	1.45
2	B	1529	OMC	C2-N3	4.20	1.44	1.36
2	B	657	7MG	C2-N3	4.19	1.43	1.33
1	A	1662	OMC	C2-N3	4.15	1.44	1.36
3	C	42	7MG	C2-N3	4.12	1.43	1.33
1	A	1725	7MG	C2-N3	4.07	1.43	1.33
1	A	1045	7MG	C2-N3	4.07	1.43	1.33
2	B	1449	OMC	C2-N3	4.06	1.44	1.36
1	A	919	OMC	C2-N1	4.05	1.48	1.40
1	A	777	OMC	C4-N3	4.05	1.42	1.34
1	A	1053	OMC	C2-N3	4.03	1.44	1.36
1	A	931	7MG	C2-N3	4.00	1.42	1.33
3	C	105	OMC	C2-N3	3.98	1.44	1.36
1	A	1071	A2M	O3'-C3'	-3.96	1.33	1.43
1	A	1053	OMC	C2-N1	3.95	1.48	1.40
2	B	77	OMC	C4-N3	3.88	1.42	1.34
2	B	21	OMC	C4-N3	3.87	1.42	1.34
1	A	775	A2M	O3'-C3'	-3.85	1.33	1.43
1	A	343	OMC	C4-N3	3.84	1.42	1.34
2	B	1516	A2M	O3'-C3'	-3.78	1.33	1.43
2	B	1380	OMC	C4-N3	3.77	1.42	1.34
1	A	919	OMC	C4-N3	3.77	1.42	1.34
1	A	1043	A2M	O3'-C3'	-3.76	1.33	1.43
1	A	1053	OMC	C6-C5	3.76	1.43	1.35
2	B	71	OMG	C5-C4	-3.74	1.33	1.43
2	B	1210	OMG	C5-C4	-3.74	1.33	1.43
2	B	755	OMG	C5-C4	-3.73	1.33	1.43
2	B	1363	OMG	C5-C4	-3.73	1.33	1.43
1	A	972	OMG	C5-C4	-3.70	1.33	1.43
3	C	163	A2M	O3'-C3'	-3.70	1.33	1.43
1	A	1725	7MG	C5-N7	3.69	1.40	1.35
3	C	43	A2M	O3'-C3'	-3.69	1.33	1.43
1	A	958	OMG	C5-C4	-3.69	1.33	1.43
3	C	75	OMG	C2-N2	3.68	1.42	1.34
3	C	166	OMG	C5-C4	-3.68	1.34	1.43
7	G	70	OMG	C5-C4	-3.67	1.34	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1449	OMC	C4-N3	3.65	1.41	1.34
1	A	1725	7MG	C8-N9	3.64	1.48	1.45
1	A	1497	OMU	C2-N1	3.64	1.44	1.38
1	A	1675	OMG	C5-C4	-3.64	1.34	1.43
1	A	927	OMG	C2-N2	3.63	1.42	1.34
1	A	1659	OMG	C5-C4	-3.63	1.34	1.43
1	A	927	OMG	C5-C4	-3.61	1.34	1.43
1	A	1662	OMC	C4-N3	3.60	1.41	1.34
1	A	792	OMC	C2-N1	3.60	1.47	1.40
2	B	1363	OMG	C2-N2	3.59	1.42	1.34
1	A	1316	OMG	C5-C4	-3.57	1.34	1.43
1	A	792	OMC	C4-N3	3.57	1.41	1.34
3	C	105	OMC	C4-N3	3.56	1.41	1.34
2	B	1385	OMG	C5-C4	-3.56	1.34	1.43
1	A	931	7MG	C5-N7	3.54	1.40	1.35
1	A	1710	OMG	C2-N2	3.53	1.42	1.34
2	B	728	A2M	O3'-C3'	-3.52	1.34	1.43
2	B	564	OMG	C2-N2	3.48	1.42	1.34
2	B	1492	OMG	C2-N2	3.47	1.42	1.34
2	B	21	OMC	C2-N1	3.46	1.47	1.40
2	B	564	OMG	C2-N3	3.46	1.41	1.33
2	B	1138	7MG	C2-N2	3.46	1.42	1.34
2	B	1529	OMC	C4-N3	3.44	1.41	1.34
1	A	423	A2M	O3'-C3'	-3.44	1.34	1.43
1	A	1710	OMG	C2-N3	3.43	1.41	1.33
2	B	1169	OMG	C5-C4	-3.43	1.34	1.43
2	B	482	A2M	O3'-C3'	-3.43	1.34	1.43
1	A	1127	OMU	C2-N1	3.42	1.43	1.38
2	B	1361	OMG	C5-C4	-3.42	1.34	1.43
2	B	1449	OMC	C2-N1	3.40	1.47	1.40
1	A	423	A2M	C6-N6	3.40	1.46	1.34
1	A	1674	A2M	O3'-C3'	-3.39	1.34	1.43
2	B	77	OMC	C2-N1	3.39	1.47	1.40
2	B	543	OMC	C4-N3	3.39	1.41	1.34
2	B	1361	OMG	C2-N2	3.39	1.42	1.34
2	B	1385	OMG	C2-N2	3.37	1.42	1.34
1	A	1075	OMG	C2-N2	3.36	1.42	1.34
1	A	972	OMG	C2-N2	3.34	1.42	1.34
2	B	1169	OMG	C2-N2	3.33	1.42	1.34
1	A	1075	OMG	C2-N3	3.33	1.41	1.33
1	A	1073	5MC	C5-C4	3.32	1.46	1.44
1	A	1316	OMG	C2-N2	3.32	1.42	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1675	OMG	C2-N2	3.30	1.41	1.34
2	B	657	7MG	C2-N2	3.29	1.41	1.34
2	B	1363	OMG	C2-N3	3.29	1.41	1.33
2	B	634	OMG	C5-C4	-3.29	1.34	1.43
3	C	75	OMG	C5-C4	-3.28	1.35	1.43
2	B	755	OMG	C2-N2	3.28	1.41	1.34
1	A	778	A2M	O3'-C3'	-3.26	1.34	1.43
3	C	43	A2M	C1'-N9	-3.26	1.41	1.49
1	A	1804	A2M	C6-N6	3.25	1.45	1.34
2	B	683	OMC	C4-N3	3.25	1.41	1.34
3	C	7	OMU	C2-N1	3.25	1.43	1.38
2	B	1107	7MG	C2-N2	3.24	1.41	1.34
1	A	1659	OMG	C2-N2	3.23	1.41	1.34
1	A	1710	OMG	C5-C4	-3.23	1.35	1.43
2	B	1516	A2M	C6-N6	3.22	1.45	1.34
2	B	71	OMG	C2-N2	3.22	1.41	1.34
1	A	1043	A2M	C6-N6	3.22	1.45	1.34
1	A	974	A2M	O3'-C3'	-3.21	1.35	1.43
2	B	1492	OMG	C2-N3	3.21	1.41	1.33
3	C	166	OMG	C2-N2	3.21	1.41	1.34
2	B	627	A2M	C6-N6	3.21	1.45	1.34
1	A	974	A2M	C6-N6	3.21	1.45	1.34
1	A	794	A2M	C6-N6	3.20	1.45	1.34
1	A	775	A2M	C6-N6	3.20	1.45	1.34
2	B	50	A2M	C2-N3	3.19	1.37	1.32
2	B	634	OMG	C2-N2	3.19	1.41	1.34
1	A	423	A2M	C2-N3	3.18	1.37	1.32
2	B	50	A2M	O3'-C3'	-3.17	1.35	1.43
2	B	564	OMG	C4-N3	3.17	1.44	1.37
2	B	1138	7MG	C2-N1	3.15	1.45	1.37
7	G	70	OMG	C2-N2	3.14	1.41	1.34
1	A	1045	7MG	C2-N1	3.14	1.45	1.37
1	A	1804	A2M	O2'-C2'	3.13	1.50	1.42
1	A	1075	OMG	C5-C4	-3.13	1.35	1.43
2	B	728	A2M	C6-N6	3.12	1.45	1.34
1	A	958	OMG	C2-N2	3.11	1.41	1.34
1	A	1045	7MG	C8-N9	3.10	1.47	1.45
2	B	50	A2M	C6-N6	3.09	1.45	1.34
2	B	683	OMC	C2-N1	3.09	1.46	1.40
3	C	163	A2M	C6-N6	3.08	1.45	1.34
2	B	564	OMG	C5-C4	-3.08	1.35	1.43
2	B	71	OMG	C2-N3	3.06	1.40	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	71	OMG	C4-N3	3.06	1.44	1.37
3	C	75	OMG	C2-N3	3.06	1.40	1.33
2	B	691	A2M	C6-N6	3.06	1.45	1.34
1	A	1316	OMG	C2-N3	3.05	1.40	1.33
2	B	1492	OMG	C5-C4	-3.05	1.35	1.43
2	B	1363	OMG	C4-N3	3.04	1.44	1.37
2	B	482	A2M	C2-N3	3.04	1.36	1.32
2	B	1492	OMG	C4-N3	3.02	1.44	1.37
1	A	1045	7MG	C2-N2	3.01	1.41	1.34
3	C	43	A2M	C6-N6	3.00	1.44	1.34
1	A	778	A2M	C6-N6	2.99	1.44	1.34
1	A	974	A2M	C2-N3	2.99	1.36	1.32
1	A	931	7MG	C2-N2	2.97	1.41	1.34
1	A	1071	A2M	C6-N6	2.96	1.44	1.34
2	B	482	A2M	C6-N6	2.95	1.44	1.34
2	B	657	7MG	C2-N1	2.95	1.44	1.37
1	A	777	OMC	C2-N1	2.94	1.46	1.40
2	B	728	A2M	C1'-N9	-2.94	1.42	1.49
2	B	1210	OMG	C2-N2	2.94	1.41	1.34
1	A	927	OMG	C2-N3	2.93	1.40	1.33
1	A	963	OMU	C2-N1	2.93	1.43	1.38
1	A	1662	OMC	C2-N1	2.92	1.46	1.40
1	A	1075	OMG	C4-N3	2.91	1.44	1.37
1	A	1725	7MG	C2-N1	2.91	1.44	1.37
2	B	1107	7MG	C2-N1	2.90	1.44	1.37
1	A	1710	OMG	C4-N3	2.89	1.44	1.37
3	C	166	OMG	C2-N3	2.89	1.40	1.33
3	C	42	7MG	C2-N2	2.88	1.40	1.34
1	A	972	OMG	C4-N3	2.88	1.44	1.37
2	B	1361	OMG	C2-N3	2.88	1.40	1.33
2	B	1361	OMG	C4-N3	2.87	1.44	1.37
2	B	627	A2M	O3'-C3'	-2.87	1.35	1.43
2	B	1529	OMC	C2-N1	2.87	1.46	1.40
2	B	1516	A2M	C1'-N9	-2.87	1.42	1.49
2	B	767	OMU	C2-N1	2.87	1.43	1.38
1	A	931	7MG	C8-N9	2.86	1.47	1.45
1	A	343	OMC	C2-N1	2.85	1.46	1.40
2	B	755	OMG	C4-N3	2.85	1.44	1.37
2	B	627	A2M	C2-N3	2.85	1.36	1.32
3	C	105	OMC	C2-N1	2.84	1.46	1.40
1	A	1674	A2M	C6-N6	2.84	1.44	1.34
2	B	1380	OMC	C2-N1	2.84	1.46	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	118	OMU	C2-N1	2.83	1.42	1.38
2	B	691	A2M	O3'-C3'	-2.82	1.36	1.43
2	B	543	OMC	C2-N1	2.82	1.46	1.40
2	B	1107	7MG	C5-C6	2.82	1.50	1.43
2	B	634	OMG	C2-N3	2.82	1.40	1.33
2	B	755	OMG	C2-N3	2.81	1.40	1.33
1	A	423	A2M	O2'-C2'	2.80	1.49	1.42
1	A	1071	A2M	C1'-N9	-2.78	1.43	1.49
1	A	1316	OMG	C4-N3	2.78	1.43	1.37
2	B	728	A2M	O2'-C2'	2.77	1.49	1.42
3	C	75	OMG	C4-N3	2.75	1.43	1.37
1	A	1804	A2M	O3'-C3'	-2.74	1.36	1.43
1	A	1725	7MG	C2-N2	2.74	1.40	1.34
2	B	634	OMG	C4-N3	2.74	1.43	1.37
3	C	42	7MG	C2-N1	2.74	1.44	1.37
1	A	1045	7MG	C5-C6	2.73	1.50	1.43
2	B	1169	OMG	C4-N3	2.73	1.43	1.37
1	A	927	OMG	C4-N3	2.73	1.43	1.37
2	B	482	A2M	C1'-N9	-2.73	1.43	1.49
1	A	1674	A2M	C2-N3	2.72	1.36	1.32
2	B	624	5MC	C2-N1	2.72	1.45	1.40
2	B	1138	7MG	C5-C6	2.71	1.50	1.43
1	A	775	A2M	C2-N3	2.71	1.36	1.32
3	C	42	7MG	C8-N9	2.71	1.47	1.45
2	B	627	A2M	C1'-N9	-2.70	1.43	1.49
1	A	778	A2M	C1'-N9	-2.70	1.43	1.49
1	A	1674	A2M	C1'-N9	-2.70	1.43	1.49
2	B	50	A2M	O2'-C2'	2.70	1.49	1.42
1	A	1675	OMG	C2-N3	2.70	1.39	1.33
2	B	691	A2M	C2-N3	2.69	1.36	1.32
2	B	50	A2M	C1'-N9	-2.69	1.43	1.49
3	C	163	A2M	C1'-N9	-2.67	1.43	1.49
2	B	691	A2M	C1'-N9	-2.67	1.43	1.49
2	B	1385	OMG	C2-N3	2.66	1.39	1.33
1	A	974	A2M	O2'-C2'	2.65	1.49	1.42
3	C	163	A2M	O2'-C2'	2.65	1.49	1.42
1	A	1674	A2M	O2'-C2'	2.65	1.49	1.42
1	A	1073	5MC	C2-N1	2.65	1.45	1.40
3	C	166	OMG	C4-N3	2.64	1.43	1.37
2	B	1385	OMG	C4-N3	2.63	1.43	1.37
1	A	1525	5MC	C5-C4	2.63	1.46	1.44
1	A	1525	5MC	C4-N4	2.63	1.40	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1516	A2M	C2-N3	2.63	1.36	1.32
3	C	43	A2M	O2'-C2'	2.62	1.49	1.42
2	B	1210	OMG	C2-N3	2.62	1.39	1.33
2	B	627	A2M	O2'-C2'	2.61	1.49	1.42
2	B	482	A2M	O2'-C2'	2.60	1.49	1.42
2	B	1210	OMG	C4-N3	2.60	1.43	1.37
1	A	1075	OMG	C2-N1	2.60	1.43	1.37
1	A	1053	OMC	C4-N3	2.59	1.39	1.34
1	A	794	A2M	O3'-C3'	-2.59	1.36	1.43
3	C	42	7MG	O6-C6	-2.58	1.18	1.23
3	C	42	7MG	C5-C6	2.57	1.49	1.43
1	A	775	A2M	O2'-C2'	2.57	1.49	1.42
3	C	163	A2M	C2-N3	2.56	1.36	1.32
2	B	1169	OMG	C2-N3	2.55	1.39	1.33
1	A	931	7MG	C2-N1	2.55	1.43	1.37
1	A	958	OMG	C4-N3	2.55	1.43	1.37
1	A	972	OMG	C2-N3	2.54	1.39	1.33
2	B	1516	A2M	O2'-C2'	2.54	1.48	1.42
1	A	1127	OMU	C4-N3	2.54	1.43	1.38
1	A	1043	A2M	C1'-N9	-2.53	1.43	1.49
1	A	1043	A2M	O2'-C2'	2.53	1.48	1.42
2	B	1492	OMG	C2-N1	2.53	1.43	1.37
1	A	1227	OMU	C2-N1	2.53	1.42	1.38
2	B	564	OMG	C2-N1	2.52	1.43	1.37
1	A	1804	A2M	C1'-N9	-2.51	1.43	1.49
1	A	1073	5MC	C4-N4	2.50	1.40	1.34
2	B	73	OMU	C2-N1	2.49	1.42	1.38
1	A	1659	OMG	C2-N3	2.48	1.39	1.33
1	A	775	A2M	C1'-N9	-2.48	1.43	1.49
1	A	1053	OMC	O2-C2	-2.46	1.19	1.23
1	A	1071	A2M	O2'-C2'	2.46	1.48	1.42
1	A	423	A2M	C1'-N9	-2.45	1.43	1.49
1	A	1316	OMG	C2-N1	2.45	1.43	1.37
2	B	1385	OMG	C2-N1	2.42	1.43	1.37
1	A	931	7MG	O6-C6	-2.42	1.19	1.23
1	A	1710	OMG	C2-N1	2.42	1.43	1.37
2	B	73	OMU	C4-N3	2.41	1.42	1.38
2	B	624	5MC	C4-N4	2.40	1.40	1.34
1	A	1725	7MG	C5-C6	2.40	1.49	1.43
1	A	1804	A2M	C2-N3	2.39	1.35	1.32
1	A	1525	5MC	C2-N1	2.38	1.45	1.40
3	C	7	OMU	C4-N3	2.38	1.42	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	958	OMG	C2-N3	2.38	1.39	1.33
2	B	691	A2M	O2'-C2'	2.38	1.48	1.42
1	A	974	A2M	C1'-N9	-2.37	1.44	1.49
3	C	75	OMG	C2-N1	2.36	1.43	1.37
2	B	657	7MG	O6-C6	-2.36	1.19	1.23
7	G	70	OMG	C4-N3	2.36	1.42	1.37
2	B	1361	OMG	C2-N1	2.35	1.43	1.37
1	A	1725	7MG	O6-C6	-2.35	1.19	1.23
1	A	1659	OMG	C4-N3	2.35	1.42	1.37
2	B	657	7MG	C5-C6	2.35	1.49	1.43
2	B	1491	OMU	C2-N1	2.34	1.42	1.38
3	C	43	A2M	C2-N3	2.32	1.35	1.32
1	A	778	A2M	C2-N3	2.32	1.35	1.32
7	G	70	OMG	C2-N3	2.31	1.38	1.33
1	A	927	OMG	C2-N1	2.30	1.43	1.37
1	A	1675	OMG	C4-N3	2.30	1.42	1.37
1	A	778	A2M	O2'-C2'	2.29	1.48	1.42
2	B	1363	OMG	C2-N1	2.29	1.43	1.37
1	A	1043	A2M	C2-N3	2.28	1.35	1.32
1	A	794	A2M	C1'-N9	-2.28	1.44	1.49
1	A	1227	OMU	C4-N3	2.26	1.42	1.38
2	B	71	OMG	C2-N1	2.25	1.43	1.37
2	B	1210	OMG	C2-N1	2.24	1.43	1.37
2	B	728	A2M	C2-N3	2.24	1.35	1.32
1	A	794	A2M	O2'-C2'	2.22	1.48	1.42
3	C	105	OMC	O2-C2	-2.21	1.19	1.23
1	A	1659	OMG	C2-N1	2.19	1.42	1.37
2	B	634	OMG	C2-N1	2.19	1.42	1.37
1	A	1073	5MC	O2-C2	-2.19	1.19	1.23
1	A	777	OMC	C6-N1	2.17	1.43	1.38
1	A	1662	OMC	O2-C2	-2.16	1.19	1.23
1	A	931	7MG	C5-C6	2.16	1.48	1.43
3	C	7	OMU	C6-N1	2.15	1.43	1.38
2	B	1169	OMG	C2-N1	2.13	1.42	1.37
2	B	1138	7MG	O6-C6	-2.13	1.19	1.23
2	B	755	OMG	C2-N1	2.12	1.42	1.37
1	A	794	A2M	C2-N3	2.11	1.35	1.32
3	C	166	OMG	C2-N1	2.09	1.42	1.37
3	C	105	OMC	C6-N1	2.09	1.43	1.38
1	A	958	OMG	C2-N1	2.08	1.42	1.37
1	A	963	OMU	C4-N3	2.07	1.42	1.38
1	A	1071	A2M	C2-N3	2.06	1.35	1.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	657	7MG	C8-N9	2.06	1.47	1.45
2	B	1345	OMU	C4-N3	2.03	1.42	1.38
2	B	77	OMC	C6-N1	2.03	1.42	1.38
1	A	1675	OMG	C2-N1	2.02	1.42	1.37
2	B	1449	OMC	C6-N1	2.02	1.42	1.38
7	G	70	OMG	C2-N1	2.01	1.42	1.37
1	A	1674	A2M	C6-C5	-2.01	1.35	1.43
2	B	1107	7MG	O6-C6	-2.01	1.19	1.23
1	A	1497	OMU	C6-N1	2.00	1.42	1.38
2	B	691	A2M	C6-C5	-2.00	1.35	1.43

All (341) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	794	A2M	C5-C6-N6	8.88	133.84	120.31
1	A	1043	A2M	C5-C6-N6	8.26	132.89	120.31
2	B	728	A2M	C5-C6-N6	7.88	132.32	120.31
1	A	974	A2M	C4'-O4'-C1'	-7.84	102.74	109.92
1	A	974	A2M	C5-C6-N6	7.56	131.82	120.31
2	B	482	A2M	C5-C6-N6	7.54	131.79	120.31
2	B	691	A2M	C5-C6-N6	7.51	131.75	120.31
1	A	1804	A2M	C5-C6-N6	7.50	131.74	120.31
1	A	423	A2M	C5-C6-N6	7.40	131.58	120.31
1	A	1043	A2M	N3-C2-N1	-7.36	118.68	128.67
2	B	1516	A2M	C5-C6-N6	7.35	131.51	120.31
3	C	163	A2M	C5-C6-N6	7.29	131.42	120.31
2	B	627	A2M	C5-C6-N6	7.26	131.37	120.31
2	B	691	A2M	N3-C2-N1	-7.12	119.00	128.67
2	B	50	A2M	C5-C6-N6	7.10	131.13	120.31
2	B	1491	OMU	C4-N3-C2	-7.04	117.87	126.61
2	B	1516	A2M	N3-C2-N1	-6.99	119.18	128.67
1	A	1071	A2M	C5-C6-N6	6.92	130.85	120.31
1	A	1804	A2M	N3-C2-N1	-6.90	119.31	128.67
1	A	1674	A2M	C5-C6-N6	6.84	130.73	120.31
1	A	775	A2M	C5-C6-N6	6.83	130.72	120.31
3	C	43	A2M	N3-C2-N1	-6.83	119.40	128.67
2	B	482	A2M	N3-C2-N1	-6.81	119.43	128.67
1	A	794	A2M	N3-C2-N1	-6.69	119.59	128.67
1	A	1071	A2M	N3-C2-N1	-6.53	119.81	128.67
1	A	423	A2M	N3-C2-N1	-6.51	119.84	128.67
1	A	1674	A2M	N3-C2-N1	-6.43	119.94	128.67
1	A	778	A2M	C5-C6-N6	6.39	130.04	120.31

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	118	OMU	C4-N3-C2	-6.31	118.78	126.61
3	C	43	A2M	C5-C6-N6	6.25	129.83	120.31
3	C	163	A2M	N3-C2-N1	-6.14	120.33	128.67
1	A	1227	OMU	C4-N3-C2	-6.13	119.00	126.61
2	B	50	A2M	N3-C2-N1	-6.13	120.36	128.67
1	A	775	A2M	N3-C2-N1	-6.06	120.44	128.67
1	A	1497	OMU	C4-N3-C2	-6.05	119.11	126.61
3	C	7	OMU	C4-N3-C2	-5.95	119.23	126.61
1	A	778	A2M	N3-C2-N1	-5.90	120.66	128.67
2	B	627	A2M	N3-C2-N1	-5.87	120.70	128.67
1	A	963	OMU	C4-N3-C2	-5.85	119.35	126.61
2	B	1345	OMU	C4-N3-C2	-5.75	119.47	126.61
1	A	794	A2M	N6-C6-N1	-5.71	106.13	118.33
2	B	767	OMU	C4-N3-C2	-5.63	119.62	126.61
1	A	974	A2M	N3-C2-N1	-5.61	121.05	128.67
2	B	73	OMU	C4-N3-C2	-5.60	119.66	126.61
2	B	728	A2M	N3-C2-N1	-5.52	121.18	128.67
1	A	1043	A2M	N6-C6-N1	-5.42	106.75	118.33
3	C	42	7MG	C5-C6-N1	5.38	120.41	110.94
2	B	657	7MG	C5-C6-N1	5.36	120.37	110.94
2	B	691	A2M	N6-C6-N1	-5.24	107.14	118.33
2	B	1138	7MG	C5-C6-N1	5.15	120.00	110.94
2	B	728	A2M	N6-C6-N1	-5.09	107.45	118.33
2	B	482	A2M	N6-C6-N1	-5.09	107.46	118.33
1	A	931	7MG	C5-C6-N1	5.07	119.87	110.94
2	B	1107	7MG	C5-C6-N1	5.04	119.81	110.94
1	A	974	A2M	O4'-C1'-N9	5.03	115.42	108.75
1	A	794	A2M	O4'-C1'-N9	4.82	115.14	108.75
3	C	42	7MG	C2-N3-C4	4.81	120.59	112.30
1	A	1045	7MG	C5-C6-N1	4.79	119.37	110.94
2	B	627	A2M	N6-C6-N1	-4.79	108.10	118.33
2	B	657	7MG	C2-N3-C4	4.75	120.48	112.30
2	B	1138	7MG	C2-N3-C4	4.72	120.42	112.30
1	A	1497	OMU	N3-C2-N1	4.70	121.01	114.89
1	A	423	A2M	N6-C6-N1	-4.66	108.37	118.33
2	B	1491	OMU	C5-C4-N3	4.66	121.33	114.80
2	B	1107	7MG	C2-N3-C4	4.63	120.27	112.30
1	A	974	A2M	N6-C6-N1	-4.61	108.49	118.33
3	C	163	A2M	N6-C6-N1	-4.60	108.52	118.33
2	B	50	A2M	N6-C6-N1	-4.59	108.53	118.33
1	A	1127	OMU	C4-N3-C2	-4.58	120.93	126.61
1	A	1725	7MG	C4-C5-N7	4.57	110.78	105.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	1516	A2M	N6-C6-N1	-4.57	108.57	118.33
1	A	931	7MG	C2-N3-C4	4.56	120.16	112.30
1	A	1725	7MG	C5-C6-N1	4.52	118.90	110.94
1	A	1071	A2M	N6-C6-N1	-4.48	108.77	118.33
2	B	657	7MG	C4-C5-N7	4.45	110.64	105.38
1	A	1497	OMU	C1'-N1-C2	4.42	125.53	117.59
3	C	42	7MG	C5-C4-N3	-4.41	119.84	128.13
2	B	1491	OMU	N3-C2-N1	4.39	120.60	114.89
1	A	1674	A2M	N6-C6-N1	-4.33	109.09	118.33
1	A	775	A2M	N6-C6-N1	-4.30	109.15	118.33
3	C	7	OMU	C5-C4-N3	4.29	120.81	114.80
1	A	1804	A2M	N6-C6-N1	-4.27	109.21	118.33
1	A	1045	7MG	C2-N3-C4	4.25	119.62	112.30
1	A	1725	7MG	C2-N3-C4	4.25	119.62	112.30
3	C	42	7MG	C4-C5-N7	4.07	110.19	105.38
1	A	1227	OMU	N3-C2-N1	4.07	120.19	114.89
3	C	118	OMU	N3-C2-N1	4.06	120.17	114.89
1	A	1127	OMU	C1'-N1-C2	4.05	124.87	117.59
2	B	728	A2M	O4'-C1'-N9	-4.04	103.39	108.75
1	A	931	7MG	C4-C5-N7	4.02	110.13	105.38
2	B	767	OMU	N3-C2-N1	4.02	120.12	114.89
2	B	1345	OMU	N3-C2-N1	4.02	120.12	114.89
1	A	1053	OMC	O2-C2-N3	-3.96	116.08	122.33
1	A	1725	7MG	C5-C4-N3	-3.96	120.70	128.13
1	A	1045	7MG	C4-C5-N7	3.96	110.05	105.38
3	C	43	A2M	N6-C6-N1	-3.95	109.90	118.33
1	A	963	OMU	C5-C4-N3	3.94	120.32	114.80
2	B	1138	7MG	C5-C4-N3	-3.93	120.75	128.13
2	B	627	A2M	O4'-C1'-N9	3.90	113.92	108.75
2	B	1138	7MG	C4-C5-N7	3.85	109.93	105.38
3	C	118	OMU	C5-C4-N3	3.83	120.17	114.80
2	B	1107	7MG	C5-C4-N3	-3.83	120.93	128.13
1	A	778	A2M	N6-C6-N1	-3.79	110.23	118.33
2	B	657	7MG	C5-C4-N3	-3.77	121.06	128.13
2	B	71	OMG	C5-C6-N1	3.75	121.23	114.07
1	A	1227	OMU	C5-C4-N3	3.75	120.06	114.80
1	A	963	OMU	N3-C2-N1	3.72	119.73	114.89
2	B	73	OMU	C5-C4-N3	3.72	120.00	114.80
1	A	1497	OMU	C5-C4-N3	3.70	119.99	114.80
2	B	1345	OMU	C5-C4-N3	3.70	119.98	114.80
3	C	7	OMU	N3-C2-N1	3.70	119.71	114.89
1	A	794	A2M	O3'-C3'-C2'	3.70	121.54	111.19

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	624	5MC	C1'-N1-C6	-3.68	115.10	121.15
2	B	691	A2M	O3'-C3'-C2'	3.67	121.46	111.19
2	B	1107	7MG	C4-C5-N7	3.65	109.69	105.38
2	B	71	OMG	C8-N7-C5	3.63	108.73	102.55
1	A	963	OMU	O4-C4-C5	-3.62	118.92	125.16
2	B	755	OMG	C5-C6-N1	3.62	120.98	114.07
2	B	767	OMU	C5-C4-N3	3.62	119.87	114.80
2	B	1210	OMG	C8-N7-C5	3.60	108.67	102.55
2	B	1363	OMG	C8-N7-C5	3.60	108.67	102.55
2	B	1107	7MG	C5-C4-N9	3.58	110.91	106.33
1	A	974	A2M	O4'-C4'-C3'	-3.56	98.09	105.15
2	B	657	7MG	O6-C6-C5	-3.55	118.90	127.62
1	A	1045	7MG	C5-C4-N3	-3.52	121.52	128.13
2	B	691	A2M	C4'-O4'-C1'	-3.52	106.70	109.92
1	A	1075	OMG	O6-C6-C5	-3.50	117.39	124.32
2	B	1363	OMG	C5-C6-N1	3.47	120.70	114.07
1	A	1659	OMG	N2-C2-N1	3.45	124.05	116.76
1	A	1073	5MC	C5-C6-N1	-3.44	119.58	123.31
1	A	931	7MG	C5-C4-N3	-3.43	121.69	128.13
2	B	755	OMG	C8-N7-C5	3.42	108.38	102.55
1	A	919	OMC	O2-C2-N3	-3.41	116.95	122.33
2	B	627	A2M	C2'-C1'-N9	-3.41	104.98	112.56
1	A	1710	OMG	C2-N1-C6	-3.41	118.87	125.11
1	A	1053	OMC	C6-C5-C4	3.40	123.10	117.53
1	A	972	OMG	C8-N7-C5	3.39	108.33	102.55
2	B	73	OMU	O4-C4-C5	-3.38	119.33	125.16
1	A	1710	OMG	C5-C6-N1	3.34	120.45	114.07
1	A	972	OMG	C5-C6-N1	3.31	120.39	114.07
7	G	70	OMG	C5-C6-N1	3.31	120.38	114.07
3	C	166	OMG	C8-N7-C5	3.31	108.18	102.55
7	G	70	OMG	C8-N7-C5	3.31	108.18	102.55
1	A	1316	OMG	C8-N7-C5	3.29	108.14	102.55
1	A	1075	OMG	C5-C6-N1	3.29	120.34	114.07
2	B	1138	7MG	O6-C6-C5	-3.28	119.57	127.62
3	C	42	7MG	C2-N1-C6	-3.28	119.17	125.11
1	A	1127	OMU	C5-C4-N3	3.23	119.33	114.80
1	A	1675	OMG	C5-C6-N1	3.23	120.23	114.07
1	A	1497	OMU	O2-C2-N3	-3.23	115.53	121.49
1	A	1075	OMG	C2-N1-C6	-3.23	119.20	125.11
1	A	958	OMG	C5-C6-N1	3.22	120.22	114.07
2	B	755	OMG	C2-N1-C6	-3.22	119.22	125.11
2	B	1210	OMG	C5-C6-N1	3.22	120.20	114.07

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1316	OMG	C5-C6-N1	3.21	120.20	114.07
2	B	1210	OMG	C2-N1-C6	-3.21	119.23	125.11
1	A	931	7MG	O6-C6-C5	-3.21	119.75	127.62
1	A	958	OMG	N2-C2-N1	3.18	123.48	116.76
2	B	1385	OMG	C5-C6-N1	3.18	120.14	114.07
2	B	1363	OMG	C2-N1-C6	-3.17	119.30	125.11
2	B	691	A2M	C1'-N9-C4	-3.17	121.08	126.64
2	B	73	OMU	N3-C2-N1	3.16	119.01	114.89
2	B	691	A2M	O4'-C4'-C3'	-3.16	98.88	105.15
2	B	728	A2M	C4'-O4'-C1'	-3.16	107.03	109.92
2	B	1138	7MG	C5-C4-N9	3.15	110.37	106.33
2	B	1345	OMU	O4-C4-C5	-3.15	119.73	125.16
3	C	42	7MG	C5-C4-N9	3.14	110.36	106.33
1	A	1659	OMG	C5-C6-N1	3.14	120.06	114.07
1	A	927	OMG	C5-C6-N1	3.13	120.05	114.07
2	B	1169	OMG	C5-C6-N1	3.13	120.04	114.07
2	B	691	A2M	C3'-C2'-C1'	-3.12	96.84	102.81
2	B	564	OMG	C8-N7-C5	3.10	107.83	102.55
2	B	71	OMG	C2-N1-C6	-3.09	119.45	125.11
2	B	1516	A2M	C4'-O4'-C1'	-3.07	107.11	109.92
1	A	1316	OMG	C2-N1-C6	-3.07	119.49	125.11
1	A	927	OMG	C8-N7-C5	3.05	107.75	102.55
1	A	1127	OMU	N3-C2-N1	3.05	118.87	114.89
3	C	118	OMU	O4-C4-C5	-3.05	119.90	125.16
3	C	75	OMG	C5-C6-N1	3.05	119.88	114.07
3	C	7	OMU	O4-C4-C5	-3.03	119.93	125.16
2	B	627	A2M	C4'-O4'-C1'	-3.01	107.17	109.92
1	A	1525	5MC	CM5-C5-C6	-2.99	118.80	122.85
2	B	1491	OMU	O4-C4-C5	-2.99	120.01	125.16
2	B	1361	OMG	C5-C6-N1	2.98	119.76	114.07
2	B	1107	7MG	O6-C6-C5	-2.97	120.33	127.62
2	B	1492	OMG	C5-C6-N1	2.97	119.73	114.07
1	A	1045	7MG	O6-C6-C5	-2.96	120.35	127.62
1	A	1725	7MG	O6-C6-C5	-2.96	120.36	127.62
1	A	958	OMG	C8-N7-C5	2.96	107.58	102.55
3	C	42	7MG	N9-C4-N3	2.96	129.79	125.46
2	B	634	OMG	C8-N7-C5	2.96	107.58	102.55
2	B	564	OMG	C2-N1-C6	-2.95	119.70	125.11
2	B	1210	OMG	N2-C2-N1	2.95	122.98	116.76
3	C	166	OMG	C5-C6-N1	2.94	119.67	114.07
2	B	634	OMG	C5-C6-N1	2.93	119.66	114.07
2	B	564	OMG	C5-C6-N1	2.93	119.66	114.07

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	1169	OMG	C8-N7-C5	2.93	107.53	102.55
1	A	1525	5MC	C5-C6-N1	-2.92	120.14	123.31
3	C	75	OMG	C8-N7-C5	2.88	107.45	102.55
2	B	657	7MG	N9-C4-N3	2.88	129.68	125.46
2	B	1361	OMG	C2-N1-C6	-2.88	119.84	125.11
1	A	775	A2M	C5'-C4'-C3'	-2.88	104.86	115.21
1	A	919	OMC	C1'-N1-C2	2.86	124.76	118.44
1	A	1227	OMU	O4-C4-C5	-2.85	120.24	125.16
7	G	70	OMG	N2-C2-N1	2.85	122.77	116.76
2	B	634	OMG	N2-C2-N1	2.84	122.75	116.76
1	A	1071	A2M	C4'-O4'-C1'	-2.83	107.33	109.92
3	C	166	OMG	C2-N1-C6	-2.83	119.93	125.11
2	B	1385	OMG	C8-N7-C5	2.83	107.36	102.55
1	A	958	OMG	C2-N1-C6	-2.82	119.94	125.11
1	A	794	A2M	C1'-N9-C4	-2.82	121.69	126.64
1	A	778	A2M	C4'-O4'-C1'	-2.82	107.35	109.92
1	A	1710	OMG	C8-N7-C5	2.81	107.33	102.55
2	B	1361	OMG	C8-N7-C5	2.79	107.31	102.55
2	B	691	A2M	C2'-C1'-N9	-2.79	106.37	112.56
1	A	1045	7MG	C2-N1-C6	-2.78	120.06	125.11
3	C	166	OMG	N2-C2-N1	2.78	122.63	116.76
1	A	1316	OMG	N2-C2-N1	2.77	122.61	116.76
1	A	972	OMG	C2-N1-C6	-2.77	120.04	125.11
3	C	42	7MG	O6-C6-C5	-2.77	120.82	127.62
1	A	1675	OMG	C2-N1-C6	-2.77	120.04	125.11
1	A	1053	OMC	C1'-N1-C2	2.77	124.56	118.44
1	A	1725	7MG	N9-C4-N3	2.77	129.52	125.46
2	B	1138	7MG	C2-N1-C6	-2.77	120.09	125.11
1	A	1675	OMG	N2-C2-N1	2.77	122.60	116.76
2	B	1492	OMG	C2-N1-C6	-2.77	120.05	125.11
1	A	931	7MG	C5-C4-N9	2.76	109.86	106.33
1	A	794	A2M	O4'-C4'-C3'	-2.76	99.68	105.15
1	A	1659	OMG	C2-N1-C6	-2.75	120.07	125.11
1	A	423	A2M	C4'-O4'-C1'	-2.75	107.41	109.92
1	A	1075	OMG	N2-C2-N1	2.75	122.56	116.76
2	B	1361	OMG	O6-C6-C5	-2.73	118.92	124.32
2	B	755	OMG	N2-C2-N1	2.72	122.51	116.76
1	A	1053	OMC	C5-C6-N1	-2.72	117.41	121.84
2	B	1385	OMG	C2-N1-C6	-2.72	120.13	125.11
2	B	627	A2M	O4'-C1'-C2'	-2.71	101.98	106.61
2	B	634	OMG	C2-N1-C6	-2.70	120.17	125.11
1	A	1675	OMG	C8-N7-C5	2.69	107.14	102.55

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1725	7MG	C5-C4-N9	2.69	109.78	106.33
2	B	657	7MG	C2-N1-C6	-2.69	120.23	125.11
3	C	75	OMG	N2-C2-N1	2.68	122.42	116.76
7	G	70	OMG	C2-N1-C6	-2.67	120.22	125.11
2	B	1169	OMG	C2-N1-C6	-2.67	120.23	125.11
2	B	1107	7MG	C2-N1-C6	-2.67	120.28	125.11
2	B	767	OMU	O4-C4-C5	-2.66	120.58	125.16
1	A	1127	OMU	O4-C4-C5	-2.65	120.59	125.16
1	A	1804	A2M	C1'-N9-C4	-2.65	121.98	126.64
1	A	1659	OMG	C8-N7-C5	2.65	107.06	102.55
3	C	75	OMG	C2-N1-C6	-2.65	120.27	125.11
1	A	1045	7MG	C5-C4-N9	2.64	109.72	106.33
2	B	755	OMG	O6-C6-C5	-2.63	119.11	124.32
2	B	1492	OMG	C8-N7-C5	2.63	107.03	102.55
1	A	972	OMG	N2-C2-N1	2.62	122.29	116.76
1	A	1073	5MC	CM5-C5-C6	-2.61	119.31	122.85
2	B	1385	OMG	N2-C2-N1	2.61	122.27	116.76
2	B	624	5MC	C5-C6-N1	-2.61	120.48	123.31
2	B	1210	OMG	C3'-C2'-C1'	-2.60	97.82	102.81
1	A	1659	OMG	O6-C6-C5	-2.60	119.16	124.32
3	C	166	OMG	O6-C6-C5	-2.59	119.19	124.32
1	A	927	OMG	C2-N1-C6	-2.58	120.39	125.11
1	A	1073	5MC	C1'-N1-C6	-2.55	116.94	121.15
1	A	1316	OMG	O6-C6-C5	-2.55	119.26	124.32
1	A	1497	OMU	C1'-N1-C6	-2.55	115.33	120.78
7	G	70	OMG	N1-C2-N3	-2.54	118.66	123.32
1	A	1725	7MG	C2-N1-C6	-2.54	120.51	125.11
1	A	927	OMG	N2-C2-N1	2.52	122.09	116.76
2	B	1492	OMG	O6-C6-C5	-2.52	119.33	124.32
3	C	43	A2M	C4'-O4'-C1'	-2.52	107.62	109.92
1	A	972	OMG	O4'-C1'-N9	2.50	112.06	108.75
2	B	71	OMG	O6-C6-C5	-2.50	119.37	124.32
1	A	1725	7MG	N9-C8-N7	2.48	106.88	103.37
1	A	931	7MG	C2-N1-C6	-2.47	120.62	125.11
1	A	1497	OMU	O4-C4-C5	-2.47	120.89	125.16
2	B	1169	OMG	N2-C2-N1	2.47	121.98	116.76
3	C	75	OMG	O6-C6-C5	-2.47	119.42	124.32
2	B	1361	OMG	N2-C2-N1	2.46	121.96	116.76
1	A	1127	OMU	C1'-N1-C6	-2.46	115.52	120.78
1	A	1075	OMG	C8-N7-C5	2.46	106.74	102.55
2	B	1210	OMG	O6-C6-C5	-2.44	119.49	124.32
1	A	927	OMG	N1-C2-N3	-2.43	118.87	123.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1710	OMG	N2-C2-N1	2.39	121.81	116.76
2	B	1210	OMG	C4'-O4'-C1'	-2.39	107.74	109.92
2	B	1491	OMU	O2-C2-N1	-2.36	119.72	122.80
2	B	624	5MC	C1'-N1-C2	2.34	123.61	118.44
2	B	1138	7MG	N9-C4-N3	2.33	128.87	125.46
2	B	1385	OMG	O6-C6-C5	-2.32	119.71	124.32
2	B	1492	OMG	N2-C2-N1	2.32	121.66	116.76
2	B	1516	A2M	C2'-C1'-N9	-2.31	107.42	112.56
2	B	1210	OMG	C2'-C1'-N9	2.30	117.67	112.56
2	B	1363	OMG	N2-C2-N1	2.29	121.60	116.76
2	B	1345	OMU	O2-C2-N1	-2.28	119.83	122.80
1	A	1710	OMG	O6-C6-C5	-2.28	119.81	124.32
2	B	564	OMG	O6-C6-C5	-2.27	119.81	124.32
1	A	1053	OMC	C1'-N1-C6	-2.27	115.93	120.78
2	B	1210	OMG	O3'-C3'-C2'	-2.27	104.84	111.19
1	A	1675	OMG	O6-C6-C5	-2.27	119.83	124.32
1	A	931	7MG	N1-C2-N3	-2.26	119.18	123.32
2	B	624	5MC	CM5-C5-C6	-2.26	119.80	122.85
2	B	657	7MG	C5-C4-N9	2.26	109.22	106.33
1	A	1045	7MG	N9-C4-N3	2.25	128.76	125.46
1	A	792	OMC	O2-C2-N3	-2.25	118.78	122.33
1	A	963	OMU	C1'-N1-C2	2.25	121.63	117.59
1	A	794	A2M	C2'-C1'-N9	-2.25	107.57	112.56
2	B	71	OMG	N1-C2-N3	-2.24	119.21	123.32
1	A	931	7MG	C6-C5-C4	-2.23	118.47	122.40
3	C	75	OMG	N1-C2-N3	-2.23	119.23	123.32
2	B	1363	OMG	O6-C6-C5	-2.23	119.91	124.32
2	B	1491	OMU	C5-C6-N1	-2.22	118.23	121.84
2	B	1385	OMG	N1-C2-N3	-2.22	119.25	123.32
2	B	564	OMG	N2-C2-N1	2.22	121.44	116.76
2	B	657	7MG	N1-C2-N3	-2.21	119.28	123.32
2	B	657	7MG	C6-C5-C4	-2.18	118.57	122.40
3	C	43	A2M	C2'-C1'-N9	-2.17	107.74	112.56
2	B	482	A2M	O4'-C1'-N9	-2.16	105.88	108.75
1	A	1804	A2M	C5'-C4'-C3'	-2.16	107.45	115.21
1	A	1674	A2M	C4'-O4'-C1'	-2.16	107.95	109.92
2	B	71	OMG	N2-C2-N1	2.15	121.29	116.76
1	A	919	OMC	C1'-N1-C6	-2.13	116.22	120.78
1	A	972	OMG	C2'-C1'-N9	-2.13	107.84	112.56
3	C	105	OMC	C1'-N1-C6	2.12	125.31	120.78
1	A	423	A2M	C1'-N9-C4	-2.12	122.92	126.64
1	A	1659	OMG	N1-C2-N3	-2.11	119.45	123.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	1107	7MG	N9-C8-N7	2.11	106.36	103.37
1	A	1659	OMG	C4'-O4'-C1'	-2.11	108.00	109.92
1	A	1675	OMG	N1-C2-N3	-2.10	119.47	123.32
1	A	972	OMG	CM2-O2'-C2'	-2.09	109.11	114.47
1	A	1659	OMG	C2'-C1'-N9	2.09	117.19	112.56
3	C	118	OMU	C2'-C1'-N1	-2.08	110.29	114.24
2	B	1169	OMG	O6-C6-C5	-2.07	120.21	124.32
1	A	794	A2M	C3'-C2'-C1'	-2.07	98.85	102.81
1	A	1804	A2M	C3'-C2'-C1'	2.07	106.76	102.81
2	B	634	OMG	O6-C6-C5	-2.06	120.24	124.32
3	C	42	7MG	N9-C8-N7	2.06	106.29	103.37
1	A	1675	OMG	CM2-O2'-C2'	-2.05	109.20	114.47
2	B	1107	7MG	C6-C5-C4	-2.05	118.79	122.40
7	G	70	OMG	O6-C6-C5	-2.05	120.26	124.32
1	A	931	7MG	N9-C4-N3	2.04	128.45	125.46
1	A	958	OMG	N1-C2-N3	-2.03	119.60	123.32
2	B	1363	OMG	N1-C2-N3	-2.03	119.60	123.32
1	A	927	OMG	O6-C6-C5	-2.03	120.30	124.32
2	B	73	OMU	O2-C2-N1	-2.03	120.16	122.80

There are no chirality outliers.

All (92) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	73	OMU	C1'-C2'-O2'-CM2
2	B	543	OMC	C2'-C1'-N1-C6
2	B	543	OMC	O4'-C4'-C5'-O5'
2	B	634	OMG	C1'-C2'-O2'-CM2
2	B	657	7MG	O4'-C4'-C5'-O5'
2	B	691	A2M	C1'-C2'-O2'-CM'
2	B	728	A2M	C1'-C2'-O2'-CM'
3	C	7	OMU	O4'-C4'-C5'-O5'
3	C	118	OMU	C1'-C2'-O2'-CM2
3	C	118	OMU	C3'-C4'-C5'-O5'
3	C	118	OMU	O4'-C4'-C5'-O5'
1	A	423	A2M	O4'-C4'-C5'-O5'
1	A	778	A2M	O4'-C4'-C5'-O5'
1	A	919	OMC	O4'-C1'-N1-C2
1	A	919	OMC	O4'-C1'-N1-C6
1	A	1053	OMC	O4'-C1'-N1-C2
1	A	1053	OMC	O4'-C1'-N1-C6
1	A	1053	OMC	C1'-C2'-O2'-CM2

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Mol	Chain	Res	Type	Atoms
1	A	1071	A2M	C1'-C2'-O2'-CM'
1	A	1073	5MC	O4'-C4'-C5'-O5'
1	A	1073	5MC	C3'-C4'-C5'-O5'
1	A	1227	OMU	C3'-C4'-C5'-O5'
1	A	1227	OMU	O4'-C4'-C5'-O5'
1	A	1497	OMU	O4'-C1'-N1-C2
1	A	1497	OMU	O4'-C1'-N1-C6
1	A	1725	7MG	O4'-C4'-C5'-O5'
1	A	1725	7MG	C3'-C4'-C5'-O5'
2	B	1361	OMG	C1'-C2'-O2'-CM2
2	B	1380	OMC	C3'-C4'-C5'-O5'
2	B	1380	OMC	O4'-C4'-C5'-O5'
2	B	1492	OMG	O4'-C4'-C5'-O5'
2	B	543	OMC	C2'-C1'-N1-C2
2	B	77	OMC	C3'-C4'-C5'-O5'
2	B	627	A2M	C3'-C4'-C5'-O5'
2	B	691	A2M	C3'-C4'-C5'-O5'
3	C	7	OMU	C3'-C4'-C5'-O5'
3	C	75	OMG	O4'-C4'-C5'-O5'
3	C	75	OMG	C3'-C4'-C5'-O5'
1	A	423	A2M	C3'-C4'-C5'-O5'
1	A	1525	5MC	C3'-C4'-C5'-O5'
2	B	564	OMG	C3'-C4'-C5'-O5'
2	B	1138	7MG	O4'-C4'-C5'-O5'
2	B	77	OMC	O4'-C4'-C5'-O5'
2	B	543	OMC	C3'-C4'-C5'-O5'
2	B	627	A2M	O4'-C4'-C5'-O5'
3	C	163	A2M	C3'-C4'-C5'-O5'
7	G	70	OMG	C3'-C4'-C5'-O5'
1	A	794	A2M	O4'-C4'-C5'-O5'
1	A	794	A2M	C3'-C4'-C5'-O5'
1	A	1804	A2M	O4'-C4'-C5'-O5'
2	B	657	7MG	C3'-C4'-C5'-O5'
1	A	778	A2M	C3'-C4'-C5'-O5'
1	A	1804	A2M	C3'-C4'-C5'-O5'
2	B	564	OMG	O4'-C4'-C5'-O5'
2	B	1492	OMG	C3'-C4'-C5'-O5'
3	C	163	A2M	O4'-C4'-C5'-O5'
1	A	1525	5MC	O4'-C4'-C5'-O5'
2	B	624	5MC	O4'-C4'-C5'-O5'
2	B	755	OMG	O4'-C4'-C5'-O5'
7	G	70	OMG	O4'-C4'-C5'-O5'

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Mol	Chain	Res	Type	Atoms
2	B	691	A2M	O4'-C4'-C5'-O5'
2	B	1138	7MG	C3'-C4'-C5'-O5'
2	B	755	OMG	C3'-C4'-C5'-O5'
1	A	919	OMC	C4'-C5'-O5'-P
2	B	1169	OMG	O4'-C4'-C5'-O5'
2	B	1169	OMG	C3'-C4'-C5'-O5'
2	B	1210	OMG	O4'-C4'-C5'-O5'
1	A	919	OMC	C1'-C2'-O2'-CM2
2	B	1210	OMG	C3'-C4'-C5'-O5'
2	B	73	OMU	C3'-C4'-C5'-O5'
2	B	755	OMG	C3'-C2'-O2'-CM2
2	B	1516	A2M	C3'-C2'-O2'-CM'
1	A	1675	OMG	C4'-C5'-O5'-P
2	B	543	OMC	O4'-C1'-N1-C2
2	B	73	OMU	O4'-C4'-C5'-O5'
1	A	1127	OMU	O4'-C1'-N1-C6
2	B	543	OMC	O4'-C1'-N1-C6
3	C	105	OMC	C4'-C5'-O5'-P
3	C	105	OMC	C3'-C4'-C5'-O5'
1	A	1127	OMU	O4'-C1'-N1-C2
1	A	1804	A2M	C1'-C2'-O2'-CM'
1	A	778	A2M	C4'-C5'-O5'-P
2	B	1361	OMG	C3'-C4'-C5'-O5'
3	C	105	OMC	O4'-C4'-C5'-O5'
1	A	777	OMC	O4'-C4'-C5'-O5'
2	B	627	A2M	C4'-C5'-O5'-P
2	B	624	5MC	C3'-C4'-C5'-O5'
1	A	919	OMC	C3'-C4'-C5'-O5'
1	A	777	OMC	C4'-C5'-O5'-P
1	A	1127	OMU	C2'-C1'-N1-C2
1	A	1662	OMC	C2'-C1'-N1-C2
2	B	1380	OMC	C2'-C1'-N1-C2

There are no ring outliers.

No monomer is involved in short contacts.

## 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 108 ligands modelled in this entry, 108 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	30
2	B	16
5	E	5
8	H	4
10	L	3
7	G	2
31	h	2
6	F	1
30	g	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	282:U	O3'	304:A	P	49.48
1	A	1269:U	O3'	1283:A	P	36.80
1	B	913:U	O3'	1105:C	P	35.79
1	A	1233:A	O3'	1245:C	P	34.48
1	A	154:A	O3'	175:U	P	29.48
1	B	551:U	O3'	562:G	P	29.28
1	A	1385:C	O3'	1491:A	P	24.19
1	E	12:G	O3'	21:G	P	24.03

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Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	E	104:U	O3'	113:C	P	23.15
1	A	1545:C	O3'	1569:G	P	22.63
1	L	78:ARG	C	105:THR	N	20.48
1	A	506:C	O3'	515:U	P	20.44
1	B	1113:A	O3'	1134:C	P	19.75
1	A	1805:A	O3'	1918:A	P	19.24
1	E	152:G	O3'	175:U	P	18.88
1	B	1595:A	O3'	1601:U	P	16.94
1	A	226:A	O3'	232:U	P	16.86
1	B	1633:U	O3'	1641:U	P	16.77
1	A	219:U	O3'	224:A	P	16.61
1	F	17:U	O3'	44:C	P	16.06
1	A	936:C	O3'	941:G	P	15.93
1	E	185:U	O3'	190:A	P	15.65
1	B	1232:A	O3'	1240:U	P	15.59
1	A	1171:C	O3'	1221:U	P	15.47
1	H	68:G	O3'	87:C	P	15.09
1	B	136:A	O3'	446:C	P	15.00
1	G	128:U	O3'	154:A	P	14.98
1	B	1465:G	O3'	1477:G	P	14.92
1	A	519:G	O3'	585:A	P	14.88
1	B	1614:A	O3'	1621:U	P	14.82
1	B	789:A	O3'	852:G	P	14.50
1	A	1517:U	O3'	1522:G	P	14.31
1	L	109:GLY	C	130:GLY	N	14.03
1	B	594:C	O3'	616:A	P	13.93
1	A	853:U	O3'	866:U	P	13.58
1	B	1397:U	O3'	1434:A	P	13.52
1	B	577:G	O3'	580:G	P	13.36
1	A	744:G	O3'	748:G	P	12.66
1	A	487:C	O3'	492:G	P	11.73
1	B	1581:A	O3'	1591:A	P	11.70
1	A	464:U	O3'	468:A	P	11.67
1	A	198:A	O3'	205:A	P	11.65
1	A	880:U	O3'	916:U	P	11.06
1	H	47:G	O3'	62:C	P	10.99
1	E	74:C	O3'	95:U	P	10.78
1	A	1691:A	O3'	1709:C	P	10.06
1	A	818:U	O3'	825:C	P	9.59
1	g	72:TYR	C	91:VAL	N	9.54
1	h	74:THR	C	78:GLY	N	9.37
1	H	125:U	O3'	128:G	P	8.75

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Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	1375:A	O3'	1380:C	P	7.78
1	A	1254:A	O3'	1263:G	P	7.61
1	A	604:U	O3'	738:U	P	7.07
1	A	1794:U	O3'	1797:U	P	6.68
1	A	446:A	O3'	448:C	P	5.86
1	A	1382:A	O3'	1384:A	P	5.70
1	H	112:U	O3'	120:C	P	5.37
1	B	1330:G	O3'	1343:U	P	5.26
1	B	1606:U	O3'	1611:A	P	5.09
1	h	56:ARG	C	64:GLY	N	4.76
1	L	27:ILE	C	73:VAL	N	4.66
1	A	1145:G	O3'	1150:A	P	3.85
1	A	1247:U	O3'	1249:G	P	3.62
1	G	177:C	O3'	178:A	P	3.32

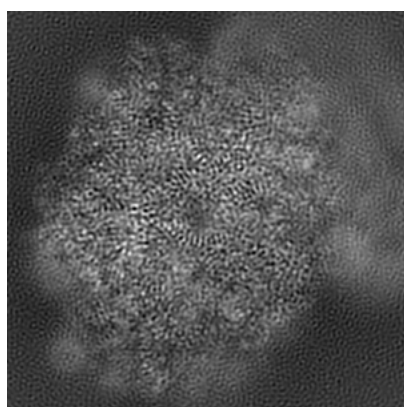
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-8361. These allow visual inspection of the internal detail of the map and identification of artifacts.

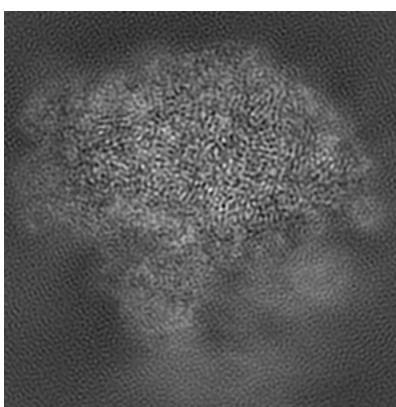
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

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

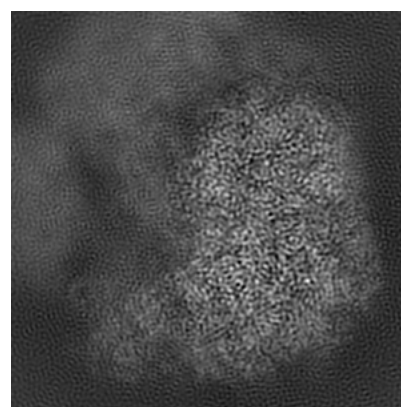
#### 6.1.1 Primary map



X



Y

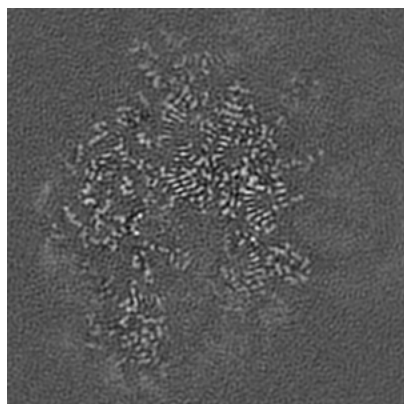


Z

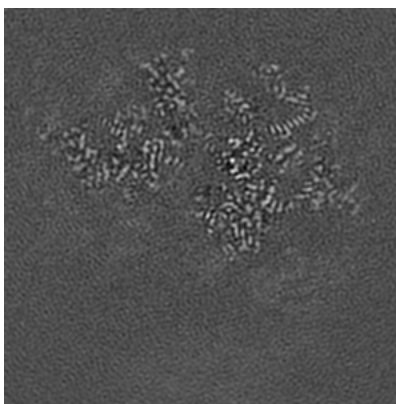
The images above show the map projected in three orthogonal directions.

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

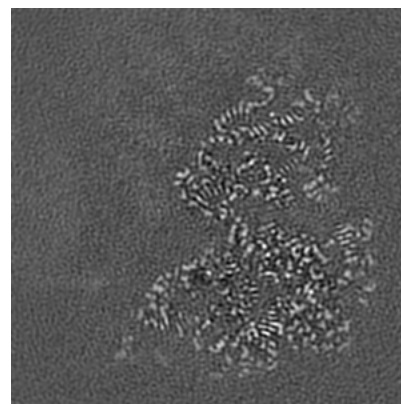
#### 6.2.1 Primary map



X Index: 115



Y Index: 115

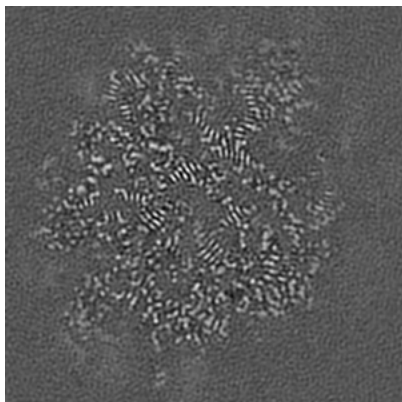


Z Index: 115

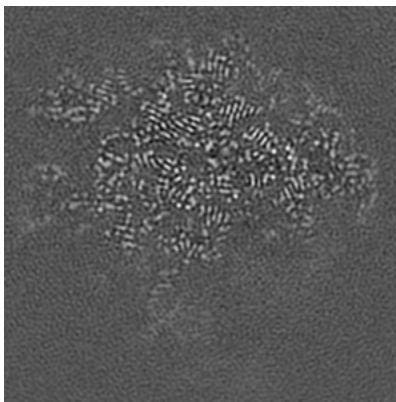
The images above show central slices of the map in three orthogonal directions.

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

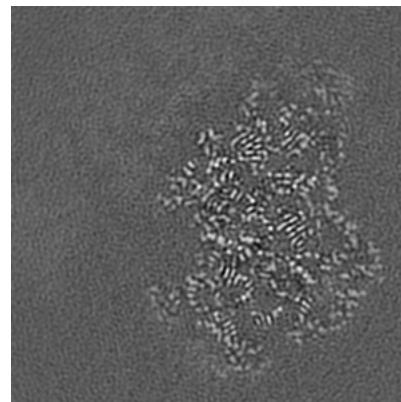
### 6.3.1 Primary map



X Index: 144



Y Index: 74

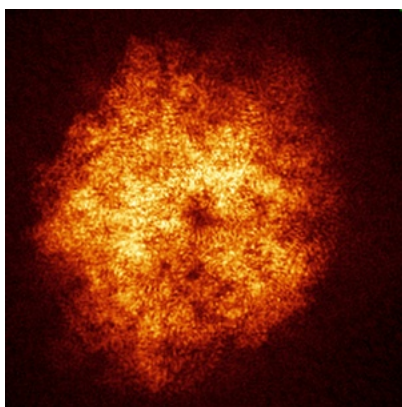


Z Index: 128

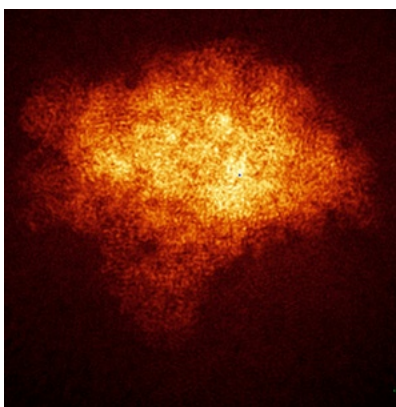
The images above show the largest variance slices of the map in three orthogonal directions.

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

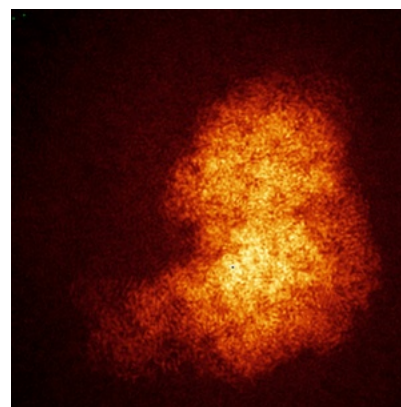
### 6.4.1 Primary map



X



Y

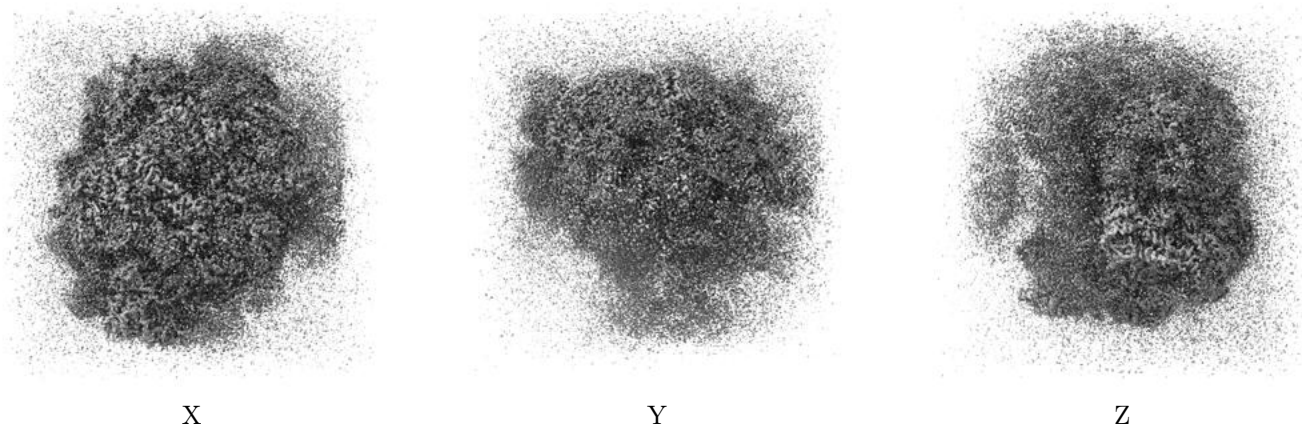


Z

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

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

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.07. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

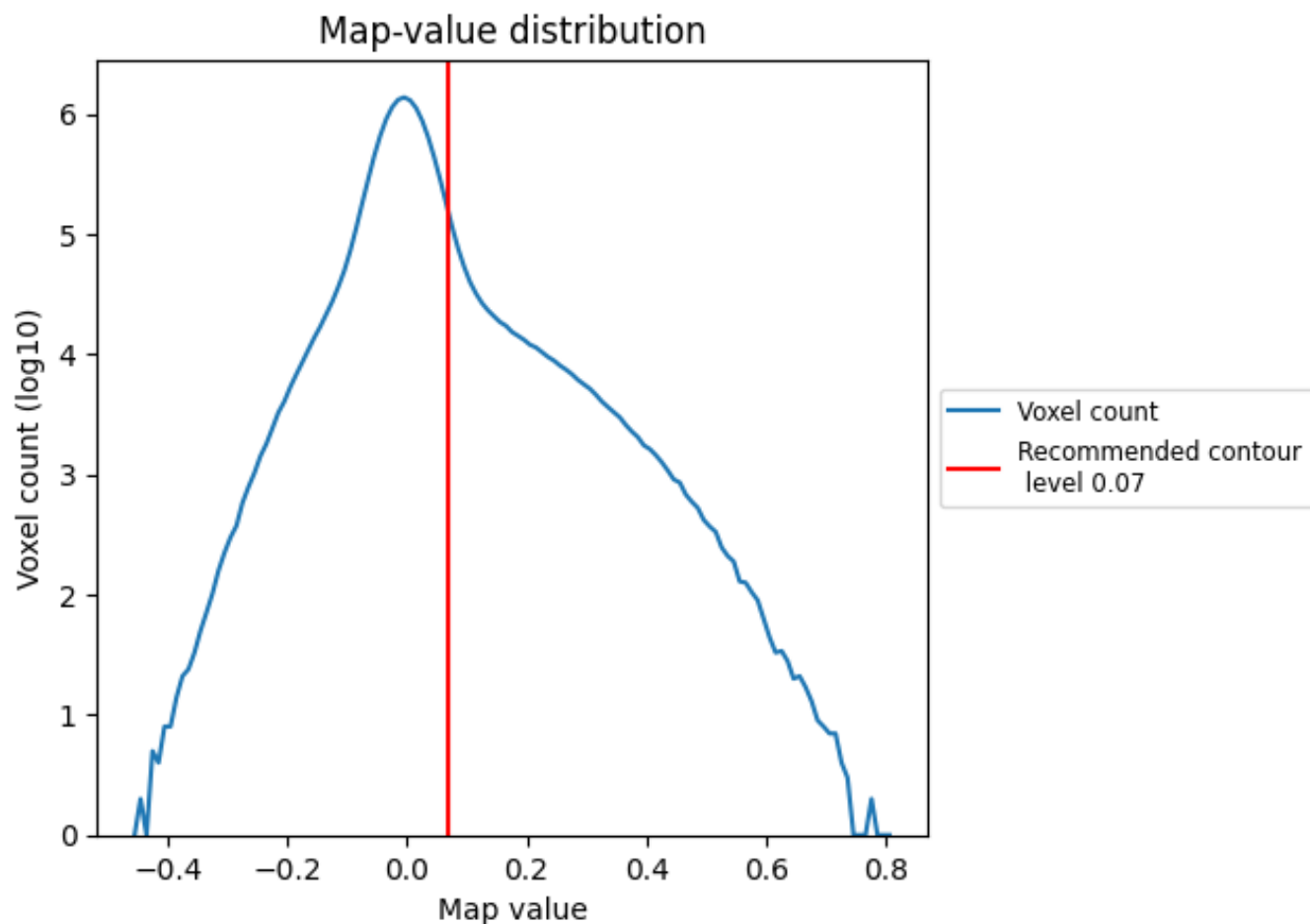
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

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

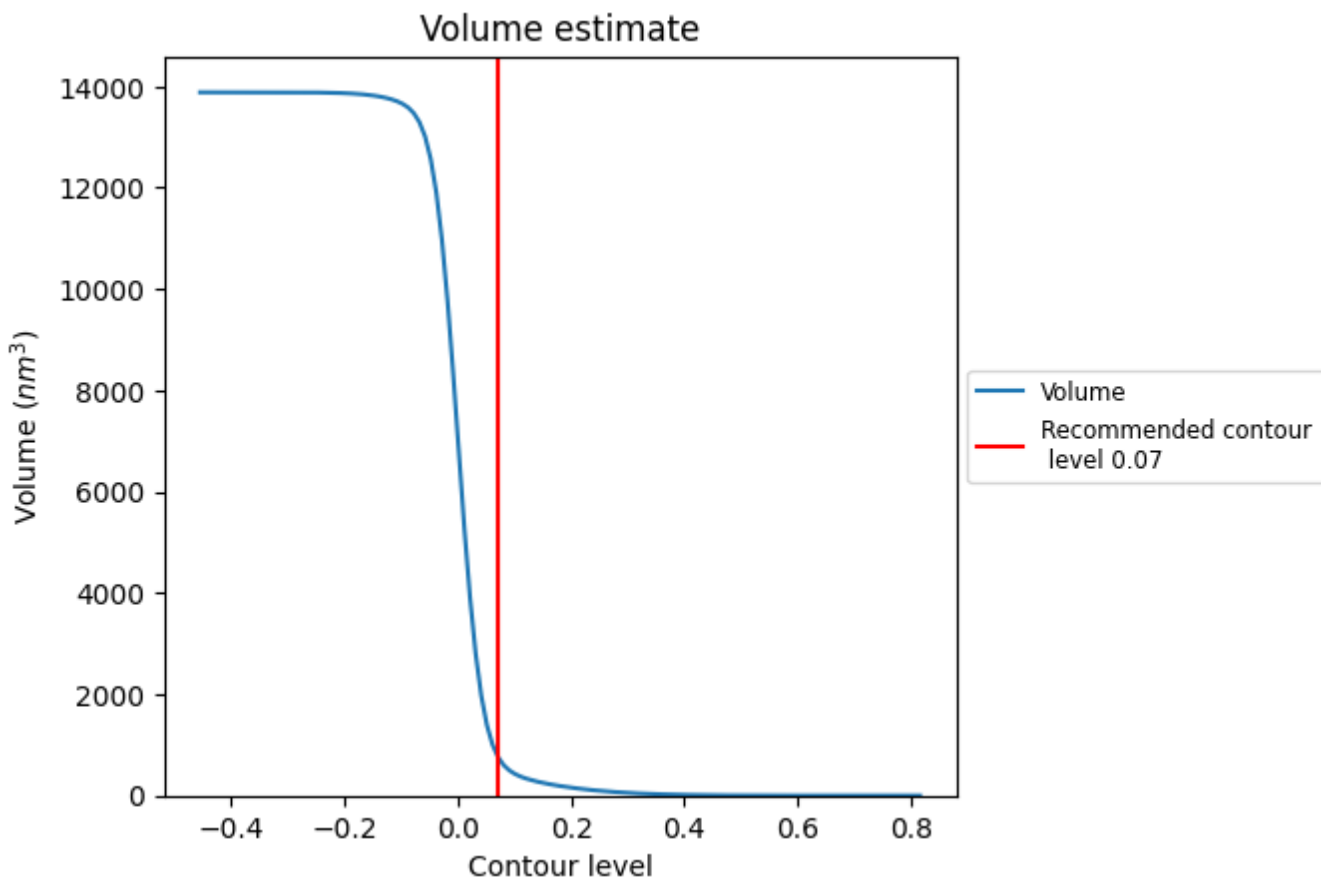
### 7.1 Map-value distribution [i](#)



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



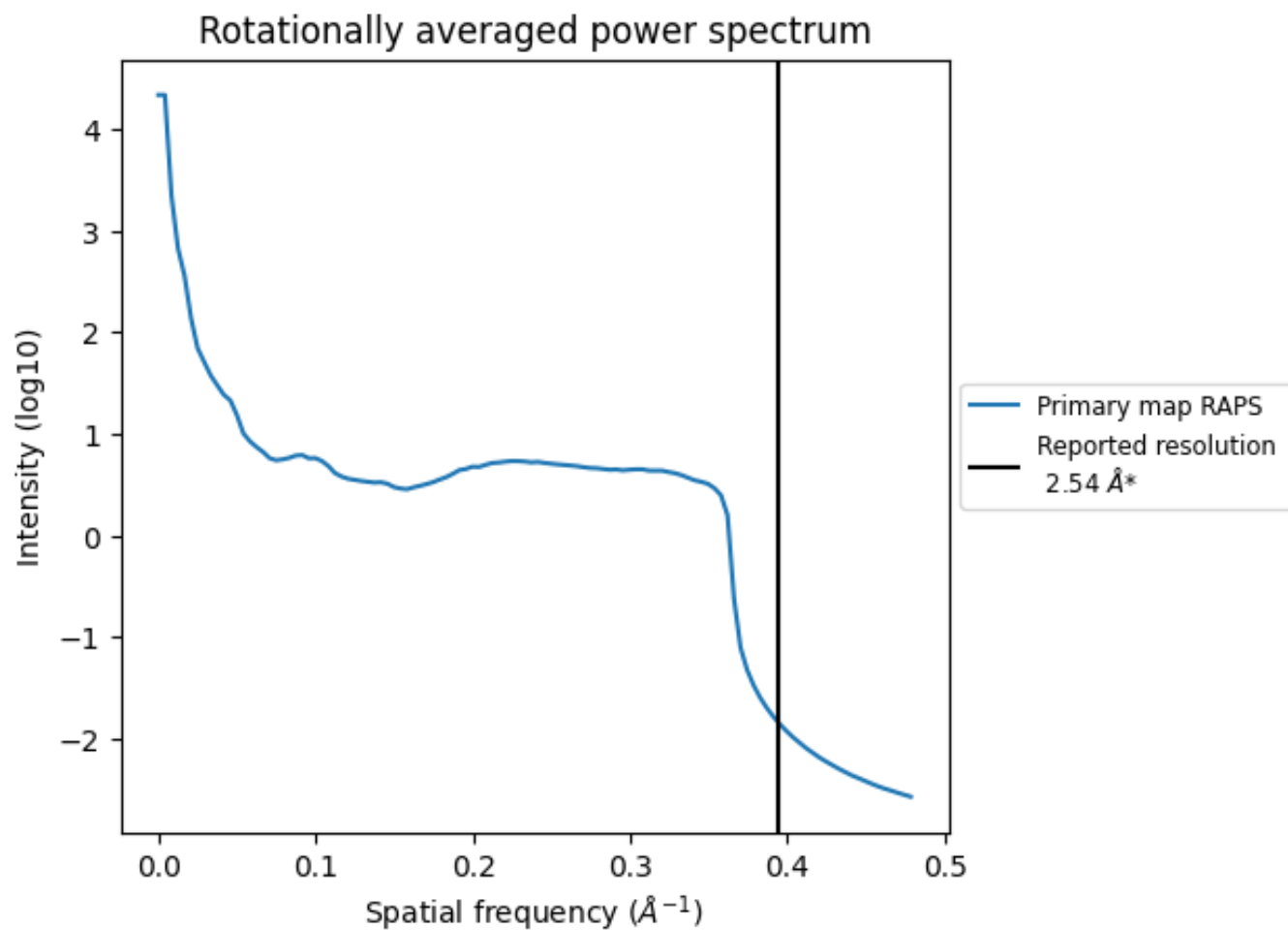
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 791 nm<sup>3</sup>; this corresponds to an approximate mass of 715 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 0.394 Å<sup>-1</sup>

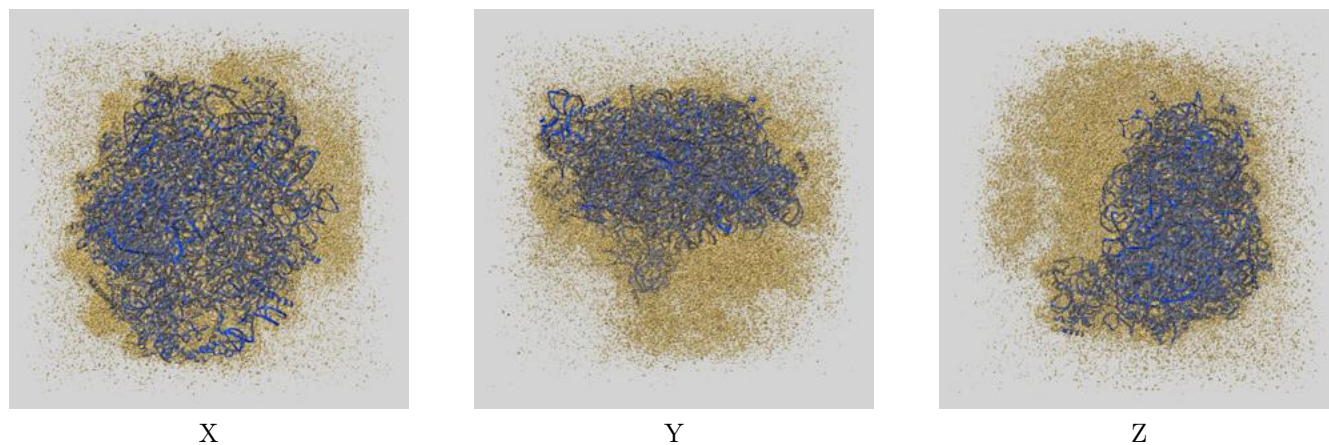
## 8 Fourier-Shell correlation

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

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

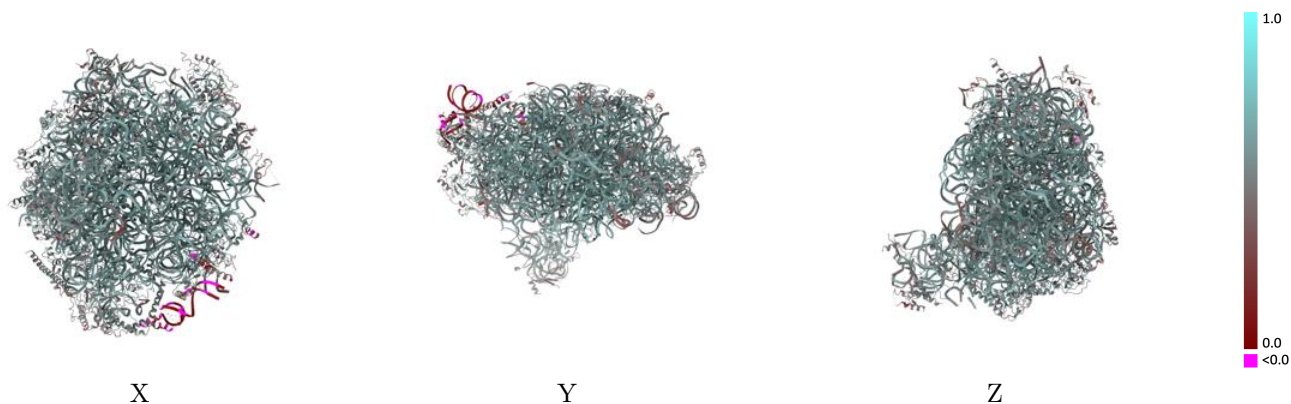
This section contains information regarding the fit between EMDB map EMD-8361 and PDB model 5T5H. Per-residue inclusion information can be found in section 3 on page 14.

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



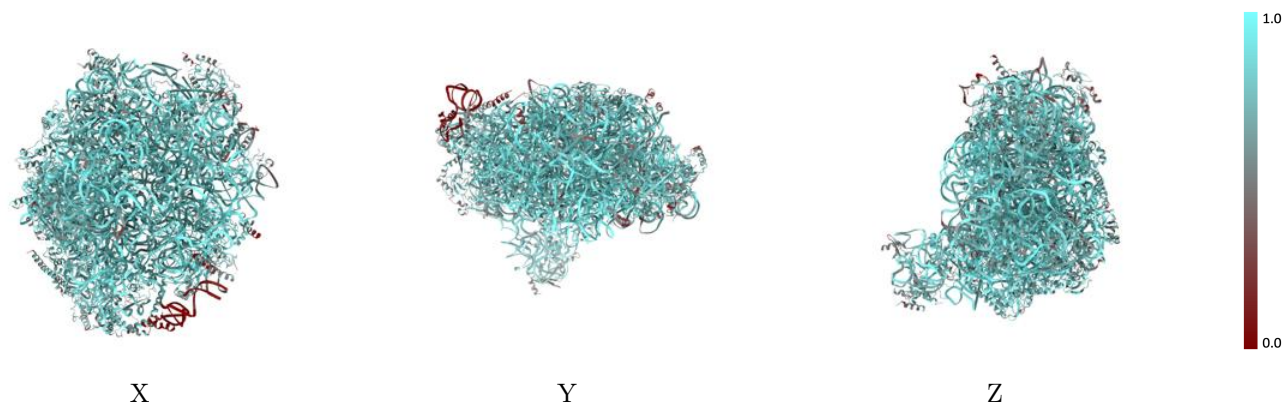
The images above show the 3D surface view of the map at the recommended contour level 0.07 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



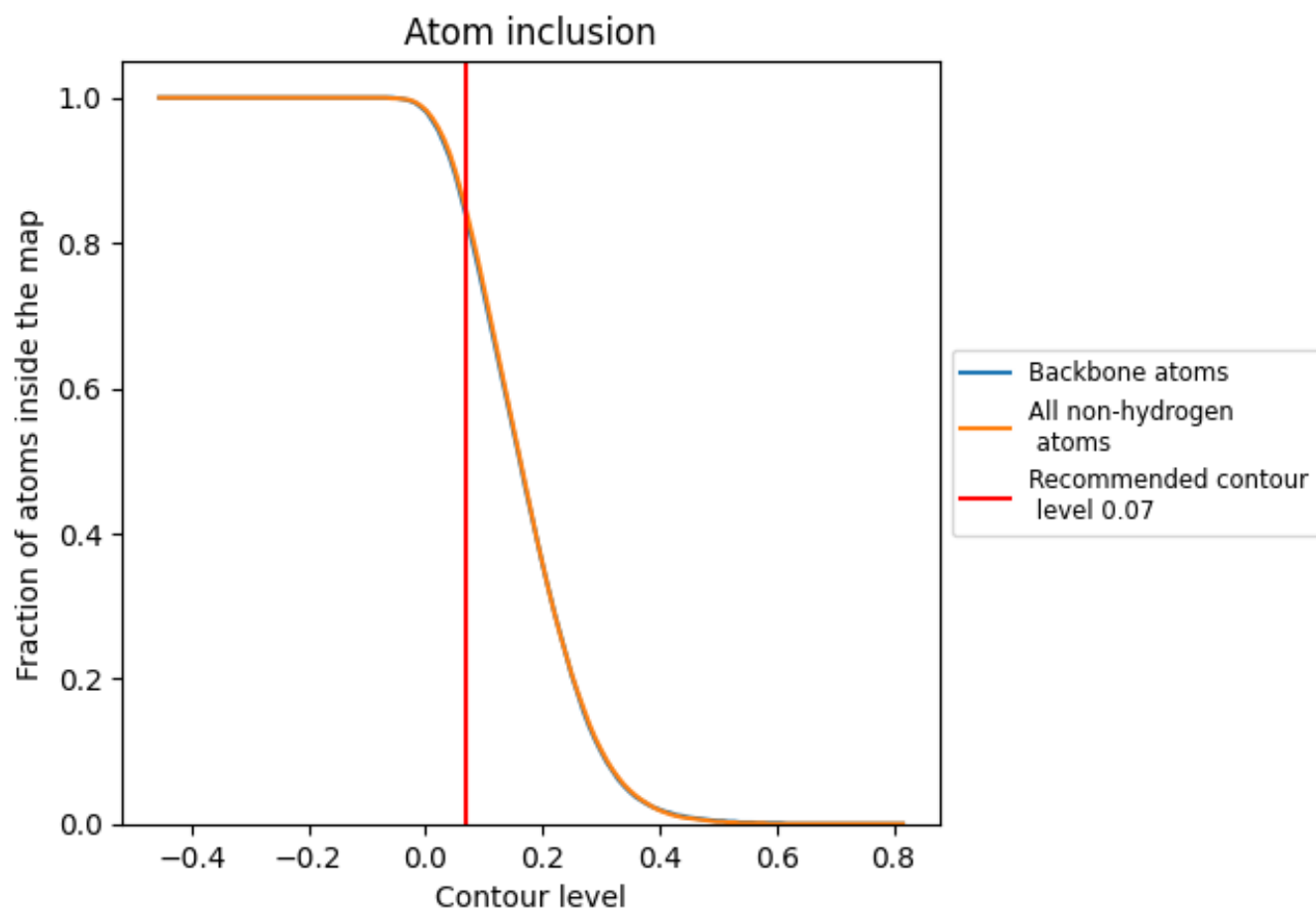
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.07).







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 84% of all backbone atoms, 84% 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 (0.07) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8430	 0.5690
A	 0.9170	 0.6020
B	 0.8570	 0.5680
C	 0.9280	 0.6040
D	 0.8340	 0.5320
E	 0.8530	 0.5690
F	 0.8430	 0.5310
G	 0.9070	 0.5890
H	 0.8800	 0.5810
I	 0.8460	 0.5800
L	 0.5500	 0.4390
N	 0.8220	 0.5520
O	 0.8200	 0.5570
P	 0.6520	 0.4780
Q	 0.8980	 0.6060
R	 0.8590	 0.5870
S	 0.7320	 0.5270
T	 0.7400	 0.5390
U	 0.7960	 0.5600
V	 0.6440	 0.4670
W	 0.8090	 0.5480
X	 0.8180	 0.5700
Y	 0.7800	 0.5520
Z	 0.7660	 0.5280
a	 0.6640	 0.4860
b	 0.8540	 0.5800
c	 0.7230	 0.5200
d	 0.8190	 0.5680
e	 0.8790	 0.5990
f	 0.8160	 0.5600
g	 0.5300	 0.4320
h	 0.7160	 0.5060
i	 0.8670	 0.5970
j	 0.7890	 0.5600
k	 0.7560	 0.5150



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Chain	Atom inclusion	Q-score
l	 0.8190	 0.5670
m	 0.7610	 0.5160
n	 0.9020	 0.6160
o	 0.8030	 0.5680
p	 0.5950	 0.4730
q	 0.8450	 0.5900
r	 0.8330	 0.5730
t	 0.7510	 0.5290
u	 0.7020	 0.4910
v	 0.7330	 0.5140
w	 0.8270	 0.5810
x	 0.7630	 0.5270