



## Full wwPDB EM Validation Report ⓘ

Apr 6, 2026 – 11:33 AM EDT

PDB ID : 9P0E / pdb\_00009p0e  
EMDB ID : EMD-71069  
Title : Flavobacterium johnsoniae ZAM64 mutant 70S initiation complex with rpsU mRNA containing Shine-Dalgarno sequence.  
Authors : Ortega, J.; Arpin, D.  
Deposited on : 2025-06-06  
Resolution : 2.80 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:

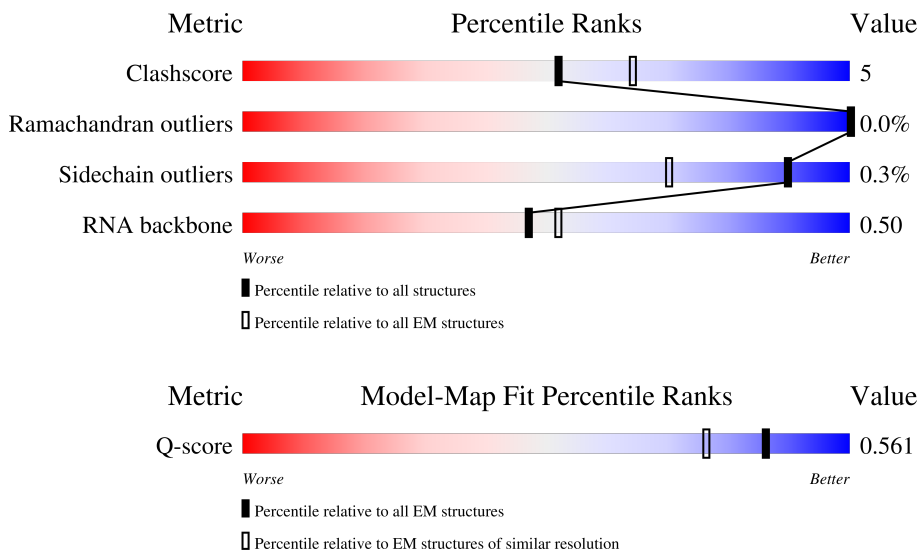
EMDB validation analysis : 0.0.1.dev132  
MolProbity : 4-5-2 with Phenix2.0  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.48.1

# 1 Overall quality at a glance

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

The reported resolution of this entry is 2.80 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.



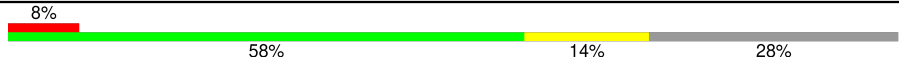







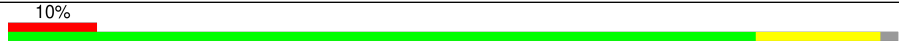

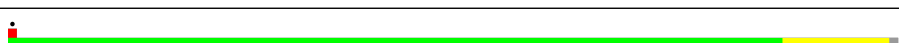


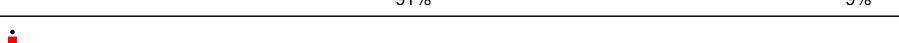
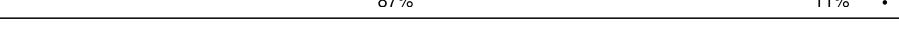
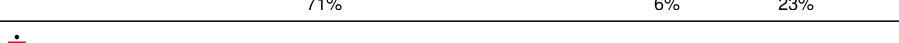
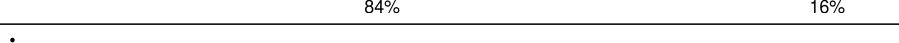
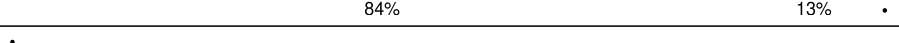
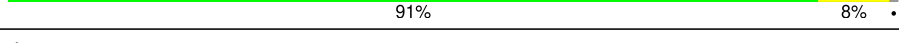






Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
RNA backbone	6643	2191	-
Q-score	-	25397	11806 ( 2.30 - 3.30 )

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	1	2862	72% 21% 6% . .
2	2	1520	64% 27% 6% . .
3	3	111	79% 18% . .

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Mol	Chain	Length	Quality of chain
4	4	50	
5	5	30	
6	6	23	
7	A	77	
8	B	274	
9	C	205	
10	D	209	
11	E	183	
12	F	180	
13	G	146	
14	J	151	
15	K	122	
16	L	150	
17	M	141	
18	N	163	
19	O	116	
20	P	116	
21	Q	114	
22	R	147	
23	S	137	
24	T	96	
25	U	104	
26	V	203	
27	W	86	
28	X	78	

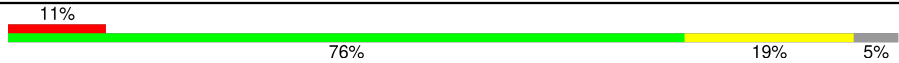
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Mol	Chain	Length	Quality of chain
29	Y	63	
30	Z	60	
31	a	84	
32	b	64	
33	c	60	
34	d	53	
35	e	65	
36	f	38	
37	h	252	
38	i	201	
39	j	173	
40	k	113	
41	l	158	
42	m	132	
43	n	128	
44	o	101	
45	p	127	
46	q	127	
47	r	124	
48	s	89	
49	t	88	
50	u	188	
51	v	86	
52	w	98	
53	x	92	

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Mol	Chain	Length	Quality of chain
54	y	83	 <p>A horizontal bar chart representing the quality of chain. The bar is divided into four segments: a red segment (11%), a green segment (76%), a yellow segment (19%), and a grey segment (5%).</p>

## 2 Entry composition

There are 54 unique types of molecules in this entry. The entry contains 135913 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called 23S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	1	2754	59085	26384	10861	19086	2754	0	0

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
1	342	A	U	conflict	GB 1735479352
1	406	A	G	conflict	GB 1735479352
1	429	C	U	conflict	GB 1735479352
1	645	C	U	conflict	GB 1735479352
1	925	C	U	conflict	GB 1735479352
1	1510	A	U	conflict	GB 1735479352
1	1687	U	G	conflict	GB 1735479352
1	1745	U	C	conflict	GB 1735479352
1	1746	G	C	conflict	GB 1735479352
1	1753	C	G	conflict	GB 1735479352
1	1754	A	G	conflict	GB 1735479352
1	1815	U	C	conflict	GB 1735479352
1	2098	C	U	conflict	GB 1735479352
1	2209	U	C	conflict	GB 1735479352
1	2471	U	C	conflict	GB 1735479352
1	2569	U	C	conflict	GB 1735479352

- Molecule 2 is a RNA chain called 16S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	2	1481	31728	14167	5801	10279	1481	0	0

- Molecule 3 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	3	110	2339	1043	406	780	110	0	0

- Molecule 4 is a protein called 50S ribosomal protein L38.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	4	36	278	183	44	49	2	0	0

- Molecule 5 is a protein called 30S ribosomal protein S22.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
5	5	27	231	140	61	30	0	0

- Molecule 6 is a RNA chain called rpsU mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
6	6	19	415	184	78	134	19	0	0

- Molecule 7 is a RNA chain called fMet-tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
7	A	73	1562	696	286	507	73	0	0

- Molecule 8 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	B	271	2053	1277	403	365	8	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	35	SER	ALA	conflict	UNP A0A1B2U0Q0
B	194	GLU	ALA	conflict	UNP A0A1B2U0Q0

- Molecule 9 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	C	204	1515	956	280	272	7	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	87	ALA	THR	conflict	UNP A0A1M5L9Q4
C	88	ALA	GLU	conflict	UNP A0A1M5L9Q4
C	90	ALA	LYS	conflict	UNP A0A1M5L9Q4
C	138	GLN	ASN	conflict	UNP A0A1M5L9Q4

- Molecule 10 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
10	D	206	1509	964	281	264	0	0

- Molecule 11 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	E	179	1300	836	229	230	5	0	0

- Molecule 12 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	F	177	1255	805	230	219	1	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	96	ALA	SER	conflict	UNP A0A1M5L807
F	100	ASN	GLN	conflict	UNP A0A1M5L807
F	128	ALA	LYS	conflict	UNP A0A1M5L807
F	130	ALA	LYS	conflict	UNP A0A1M5L807

- Molecule 13 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	G	57	414	271	72	70	1	0	0

- Molecule 14 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	J	150	1112	705	207	195	5	0	0

- Molecule 15 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	K	121	889	559	173	153	4	0	0

- Molecule 16 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	L	150	1048	654	209	183	2	0	0

- Molecule 17 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	M	139	1056	683	199	167	7	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
M	96	TRP	ALA	conflict	UNP A0A1B2U0I0

- Molecule 18 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	N	125	980	615	189	170	6	0	0

- Molecule 19 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
19	O	115	846	532	164	150	0	0

- Molecule 20 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
20	P	112	848	554	154	140	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
P	115	LEU	ARG	conflict	UNP A0A1M5PX52

- Molecule 21 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	Q	113	904	571	185	143	5	0	0

- Molecule 22 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
22	R	104	768	499	145	124	0	0

- Molecule 23 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	S	128	964	600	198	163	3	0	0

- Molecule 24 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	T	85	647	416	116	114	1	0	0

- Molecule 25 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
25	U	94	679	433	134	112	0	0

- Molecule 26 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	V	124	871	570	148	151	2	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
V	66	ALA	LYS	conflict	UNP A0A1M5HDD0

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Chain	Residue	Modelled	Actual	Comment	Reference
V	137	ILE	LEU	conflict	UNP A0A1M5HDD0
V	139	GLU	ASP	conflict	UNP A0A1M5HDD0
V	175	ALA	CYS	conflict	UNP A0A1M5HDD0

- Molecule 27 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
27	W	78	586	365	119	102	0	0

- Molecule 28 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	X	76	586	370	114	99	3	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
X	52	GLN	ALA	conflict	UNP A0A1B2U1R1
X	53	ARG	ALA	conflict	UNP A0A1B2U1R1
X	74	ALA	GLU	conflict	UNP A0A1B2U1R1

- Molecule 29 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
29	Y	59	409	257	80	72	0	0

- Molecule 30 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	Z	56	400	254	77	67	2	0	0

- Molecule 31 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	a	58	421	271	71	77	2	0	0

- Molecule 32 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	b	59	475	300	99	75	1	0	0

- Molecule 33 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	c	54	415	263	81	70	1	0	0

- Molecule 34 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	d	51	416	252	101	61	2	0	0

- Molecule 35 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	e	64	506	322	103	80	1	0	0

- Molecule 36 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	f	38	305	190	68	45	2	0	0

- Molecule 37 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	h	215	1600	1015	290	289	6	0	0

- Molecule 38 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	i	200	1576	998	291	284	3	0	0

- Molecule 39 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	j	172	1179	744	229	205	1	0	0

- Molecule 40 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	k	107	815	534	149	130	2	0	0

- Molecule 41 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	l	153	1183	747	231	200	5	0	0

- Molecule 42 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	m	131	961	623	167	169	2	0	0

- Molecule 43 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	n	125	972	612	188	168	4	0	0

- Molecule 44 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
44	o	98	701	450	123	126	2	0	0

- Molecule 45 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
45	p	117	823	515	160	143	5	0	0

- Molecule 46 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
46	q	121	922	567	195	157	3	0	0

- Molecule 47 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
47	r	117	883	544	181	155	3	0	0

There are 10 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
r	115	THR	-	expression tag	UNP P0A7T1
r	116	VAL	-	expression tag	UNP P0A7T1
r	117	ALA	-	expression tag	UNP P0A7T1
r	118	ASN	-	expression tag	UNP P0A7T1
r	119	LYS	-	expression tag	UNP P0A7T1
r	120	LYS	-	expression tag	UNP P0A7T1
r	121	LYS	-	expression tag	UNP P0A7T1
r	122	ALA	-	expression tag	UNP P0A7T1
r	123	THR	-	expression tag	UNP P0A7T1
r	124	LYS	-	expression tag	UNP P0A7T1

- Molecule 48 is a protein called 30S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
48	s	88	665	416	136	110	3	0	0

- Molecule 49 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
49	t	88	694	443	136	115	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
t	71	ARG	LYS	conflict	UNP A0A1M6QTP8

- Molecule 50 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms				AltConf	Trace
50	u	109	Total	C	N	O	0	0
			783	492	151	140		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
u	56	ILE	ALA	conflict	UNP A0A1M6QGN9
u	62	GLN	ASN	conflict	UNP A0A1M6QGN9

- Molecule 51 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	v	80	Total	C	N	O	S	0	0
			638	404	124	107	3		

- Molecule 52 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	w	57	Total	C	N	O	S	0	0
			452	297	83	71	1		

- Molecule 53 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	x	83	Total	C	N	O	S	0	0
			636	406	118	110	2		

- Molecule 54 is a protein called 30S ribosomal protein S20.

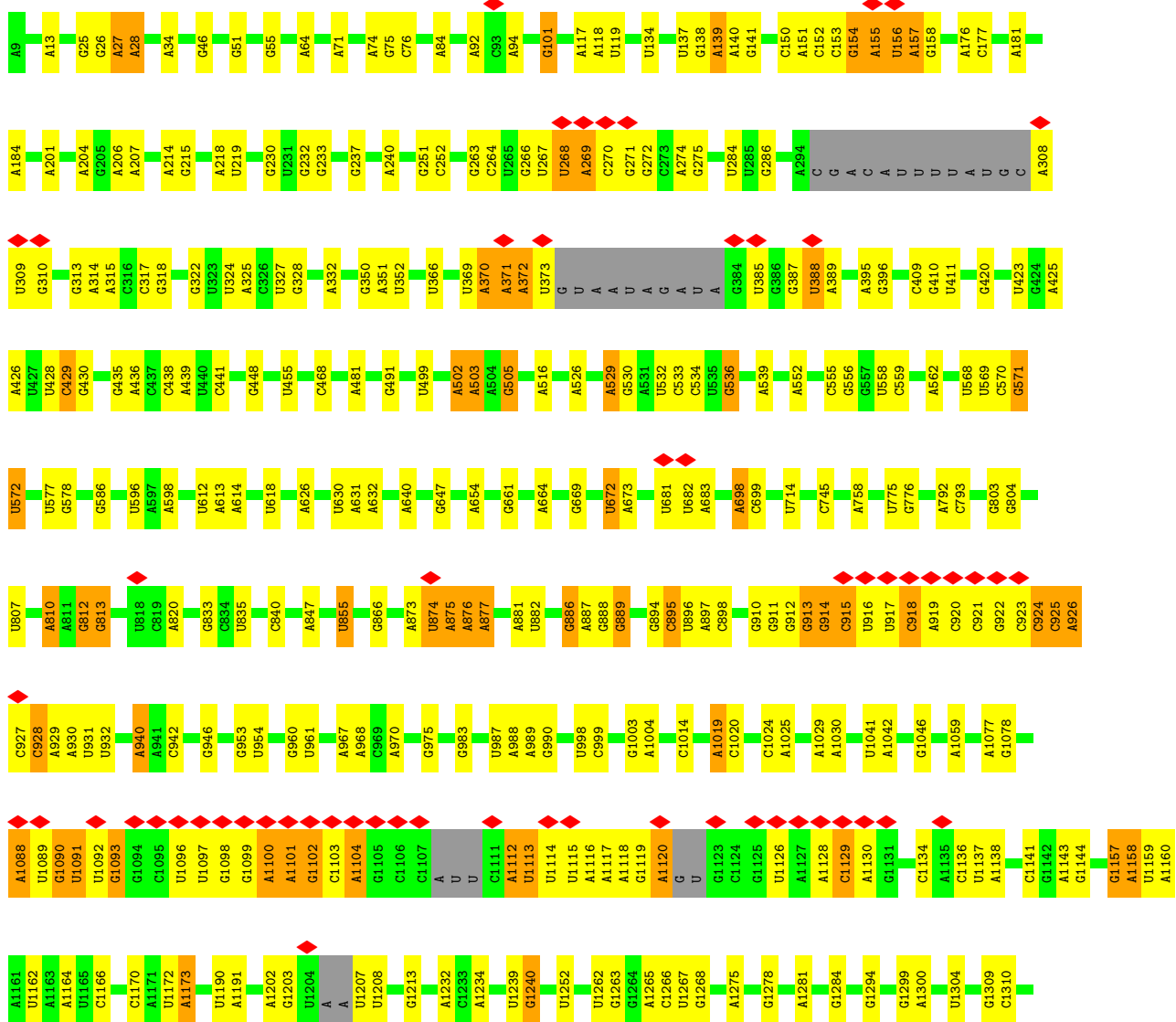
Mol	Chain	Residues	Atoms					AltConf	Trace
54	y	79	Total	C	N	O	S	0	0
			615	381	129	104	1		

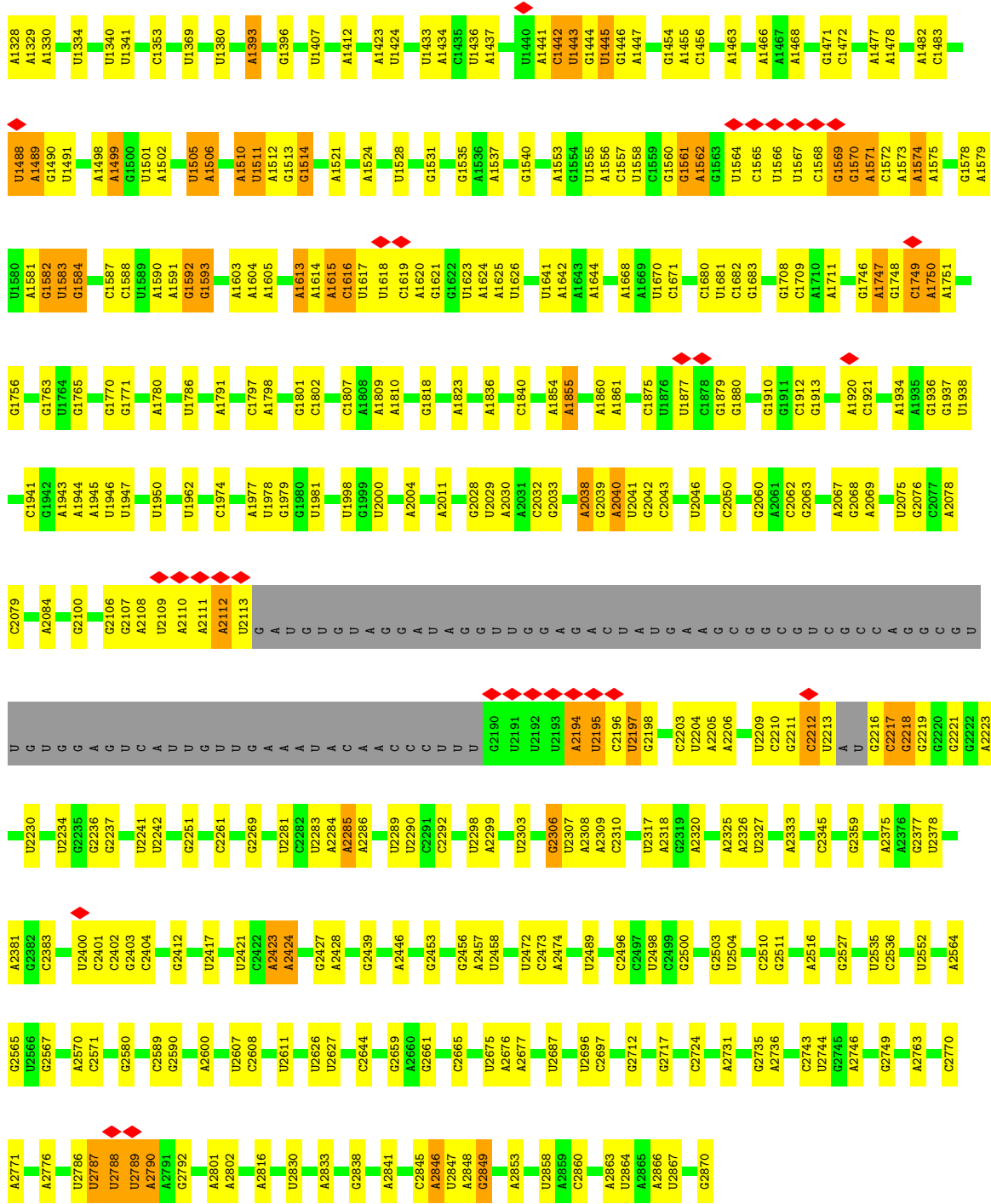
### 3 Residue-property plots

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: 23S rRNA

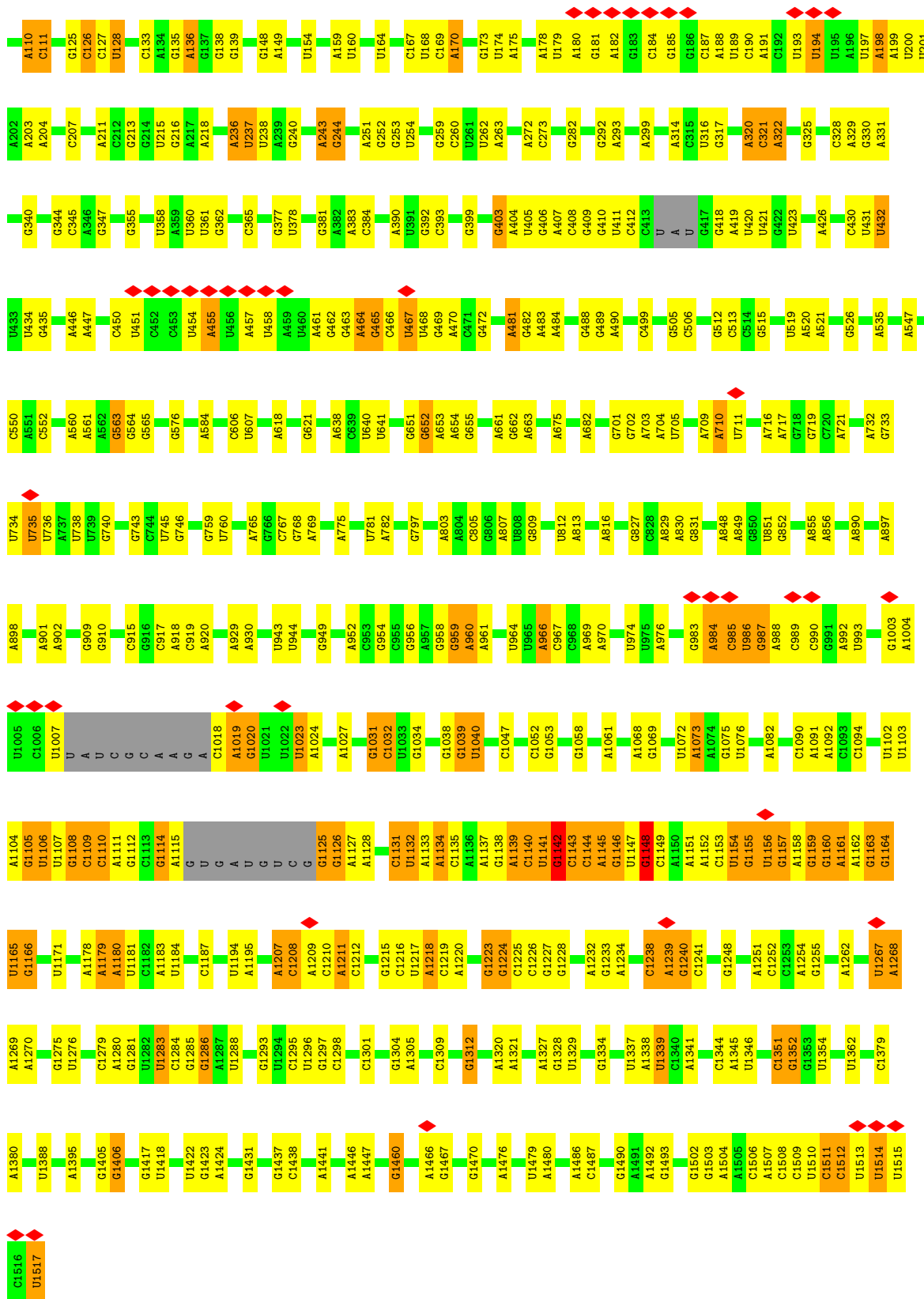
Chain 1:



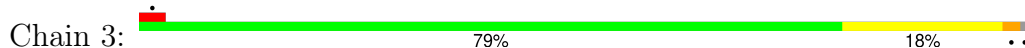


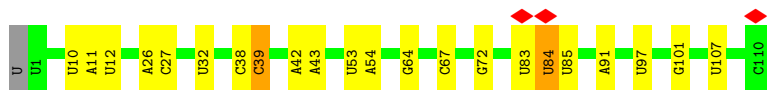
• Molecule 2: 16S rRNA



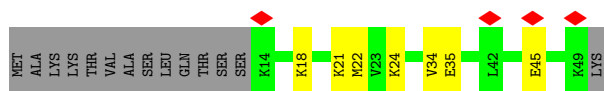


• Molecule 3: 5S rRNA

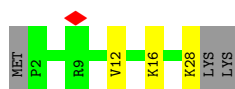
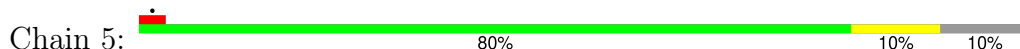




• Molecule 4: 50S ribosomal protein L38



• Molecule 5: 30S ribosomal protein S22



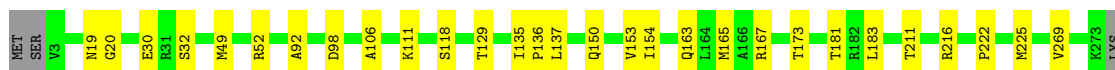
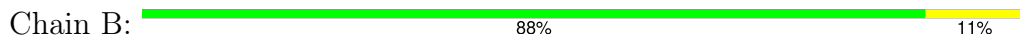
• Molecule 6: rpsU mRNA



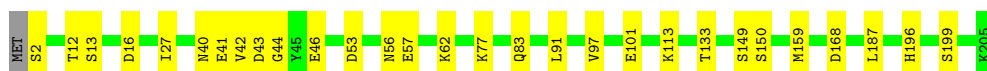
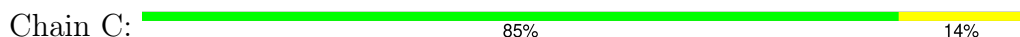
• Molecule 7: fMet-tRNA




• Molecule 8: 50S ribosomal protein L2



• Molecule 9: 50S ribosomal protein L3




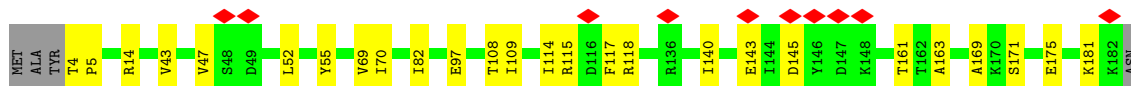
• Molecule 10: 50S ribosomal protein L4

Chain D:  85% 14%




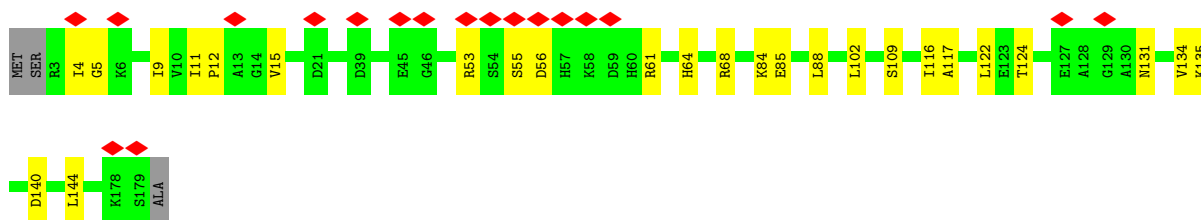
- Molecule 11: 50S ribosomal protein L5

Chain E:  5% 84% 14%



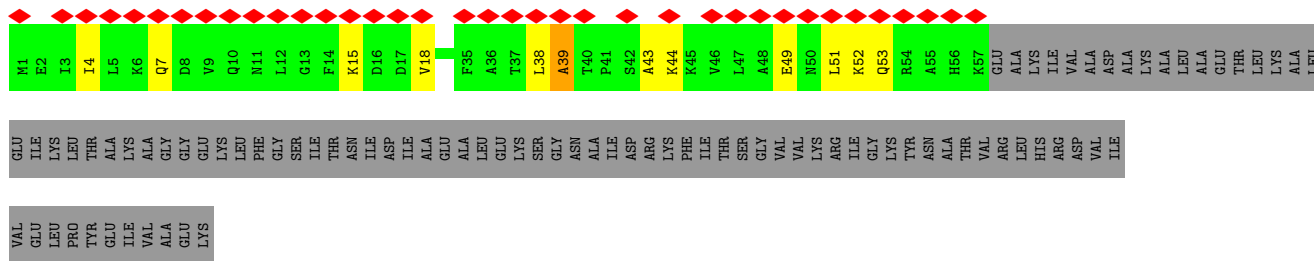
- Molecule 12: 50S ribosomal protein L6

Chain F:  10% 84% 14%




- Molecule 13: 50S ribosomal protein L9

Chain G:  25% 31% 8% 61%




- Molecule 14: 50S ribosomal protein L13

Chain J:  87% 12%

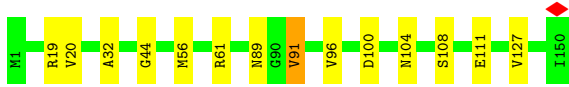


- Molecule 15: 50S ribosomal protein L14

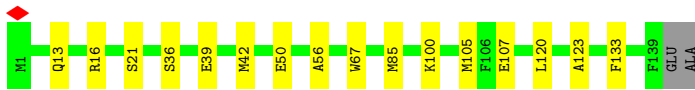
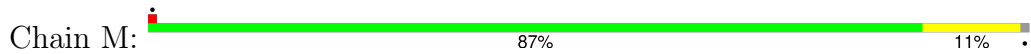
Chain K:  89% 10%



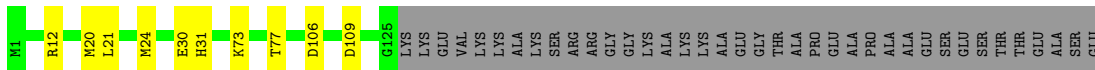
- Molecule 16: 50S ribosomal protein L15



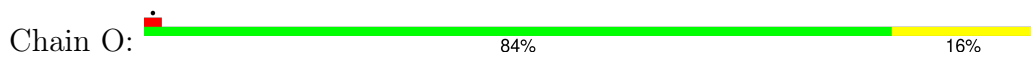
- Molecule 17: 50S ribosomal protein L16



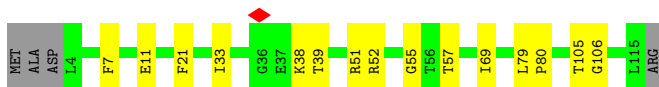
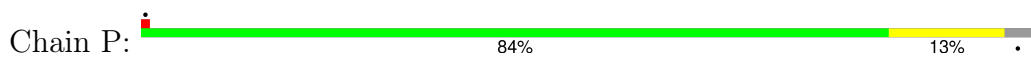
- Molecule 18: 50S ribosomal protein L17



- Molecule 19: 50S ribosomal protein L18



- Molecule 20: 50S ribosomal protein L19

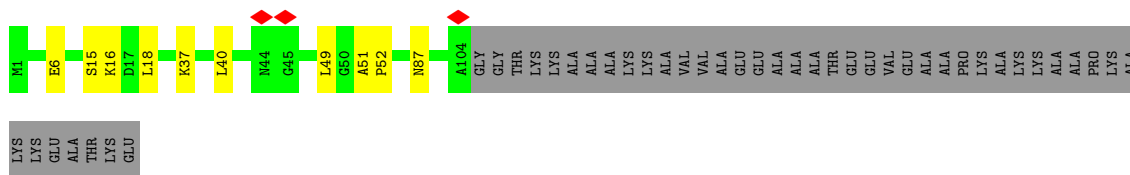


- Molecule 21: 50S ribosomal protein L20




- Molecule 22: 50S ribosomal protein L21

Chain R:  64% 7% 29%



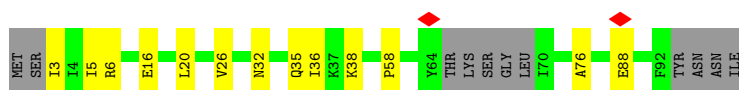
- Molecule 23: 50S ribosomal protein L22

Chain S:  89% 7%



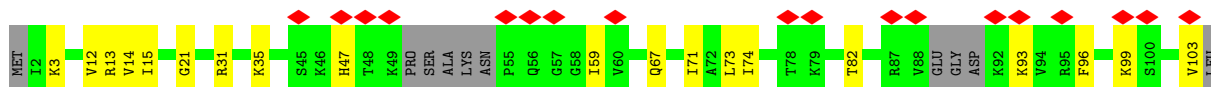
- Molecule 24: 50S ribosomal protein L23

Chain T:  75% 14% 11%



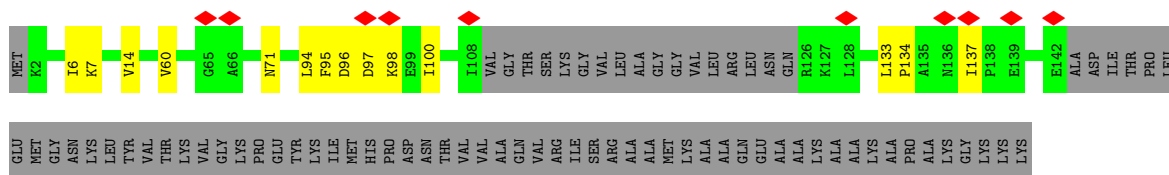
- Molecule 25: 50S ribosomal protein L24

Chain U:  17% 72% 18% 10%




- Molecule 26: 50S ribosomal protein L25

Chain V:  5% 54% 7% 39%

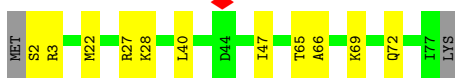
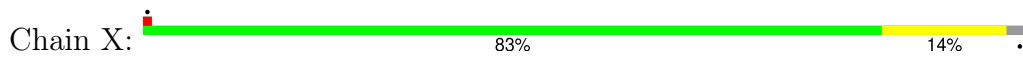


- Molecule 27: 50S ribosomal protein L27

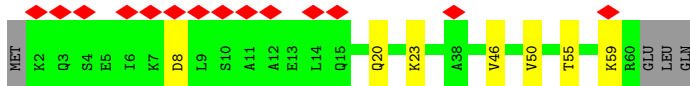
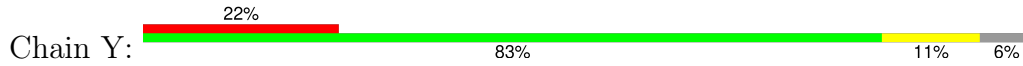
Chain W:  83% 8% 9%



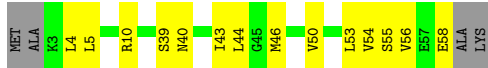
- Molecule 28: 50S ribosomal protein L28



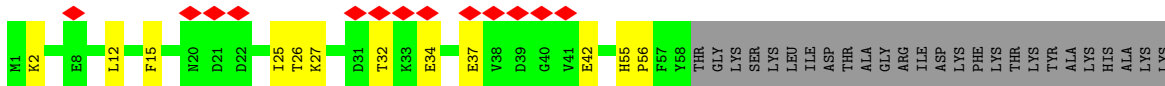
- Molecule 29: 50S ribosomal protein L29



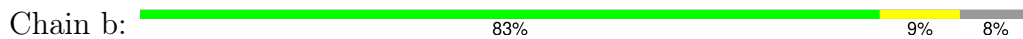
- Molecule 30: 50S ribosomal protein L30



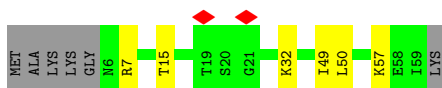
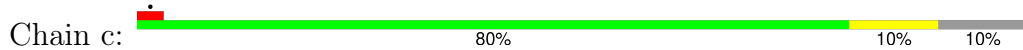
- Molecule 31: 50S ribosomal protein L31



- Molecule 32: 50S ribosomal protein L32



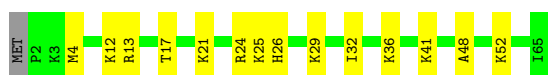
- Molecule 33: 50S ribosomal protein L33



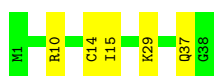
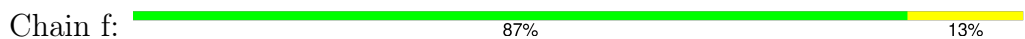
- Molecule 34: 50S ribosomal protein L34



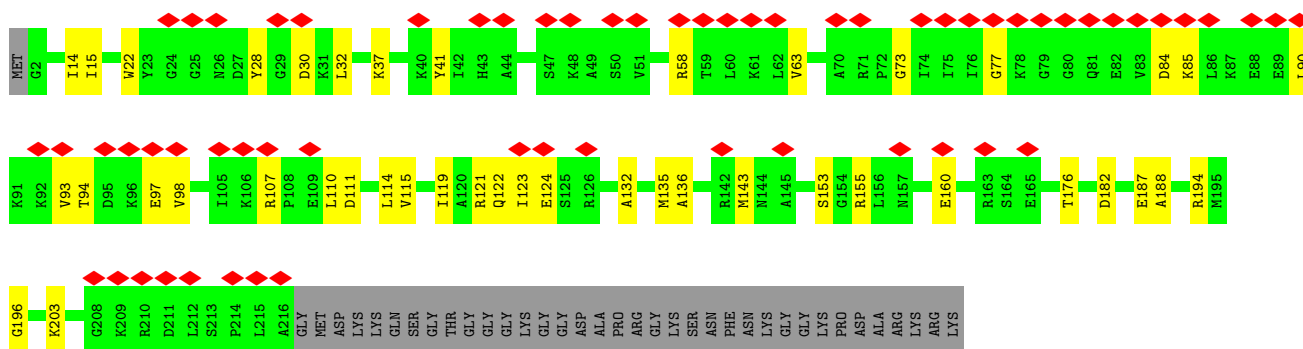
- Molecule 35: 50S ribosomal protein L35



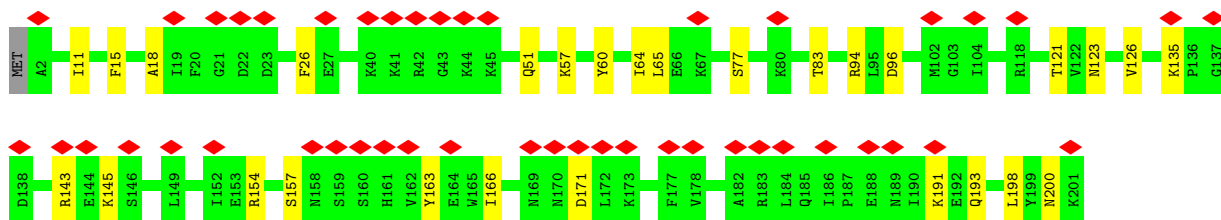
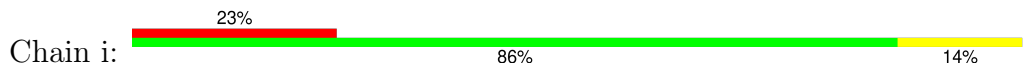
• Molecule 36: 50S ribosomal protein L36



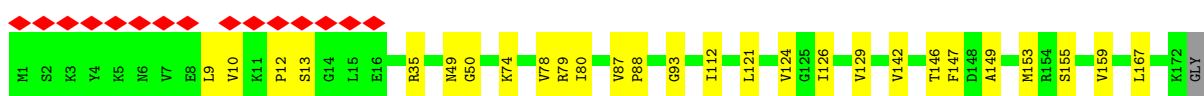
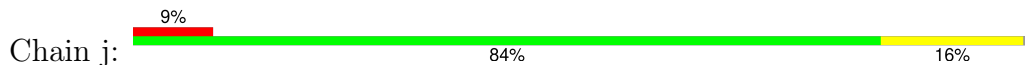
• Molecule 37: 30S ribosomal protein S3



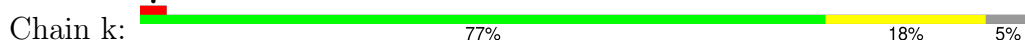
• Molecule 38: 30S ribosomal protein S4

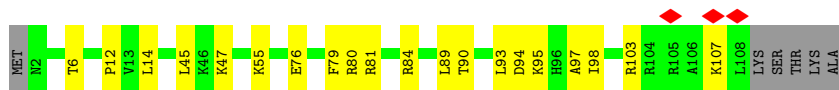


• Molecule 39: 30S ribosomal protein S5



• Molecule 40: 30S ribosomal protein S6

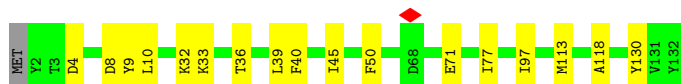
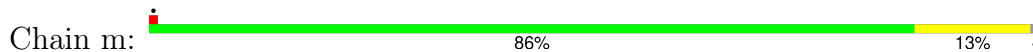




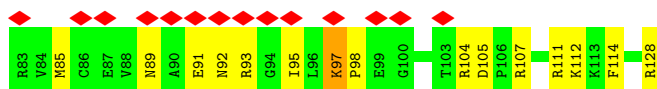
• Molecule 41: 30S ribosomal protein S7



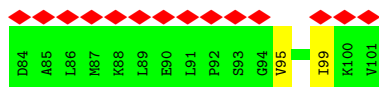
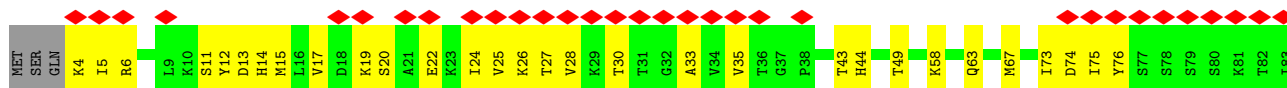
• Molecule 42: 30S ribosomal protein S8



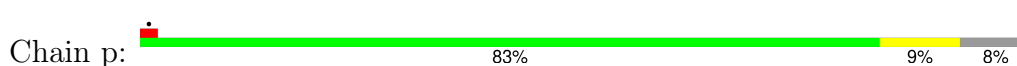
• Molecule 43: 30S ribosomal protein S9

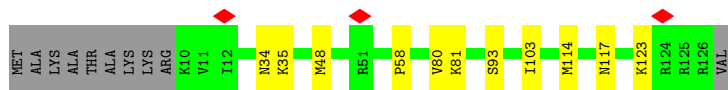


• Molecule 44: 30S ribosomal protein S10

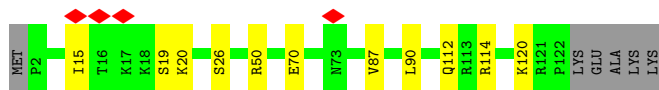
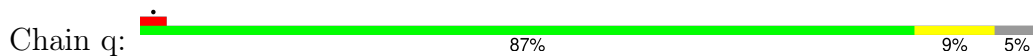


• Molecule 45: 30S ribosomal protein S11

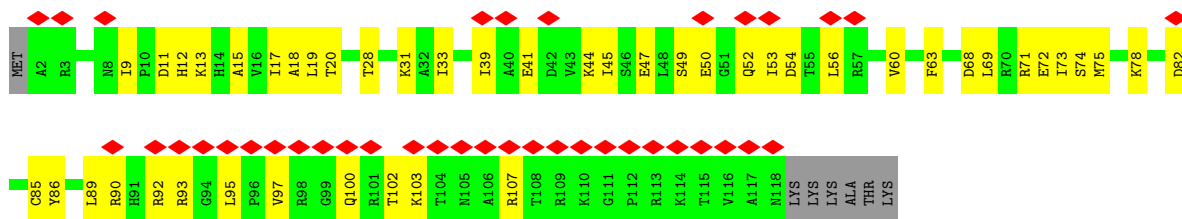




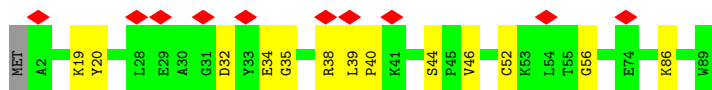
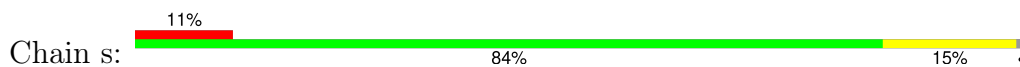
• Molecule 46: 30S ribosomal protein S12



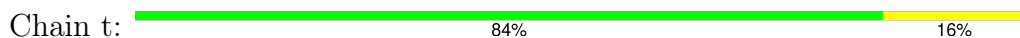
• Molecule 47: 30S ribosomal protein S13



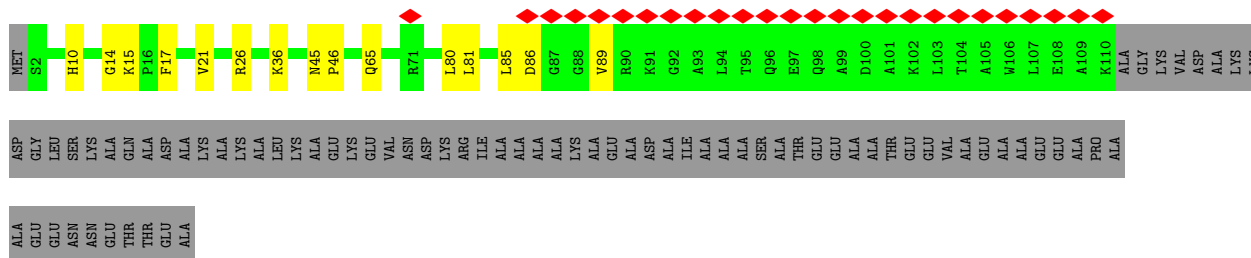
• Molecule 48: 30S ribosomal protein S14



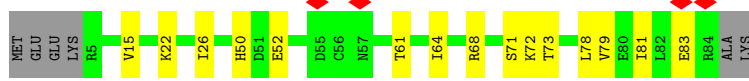
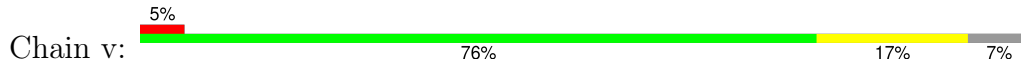
• Molecule 49: 30S ribosomal protein S15



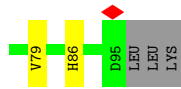
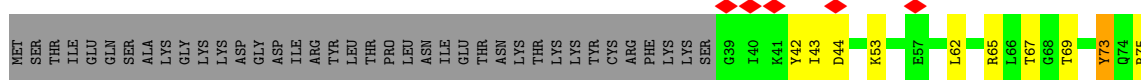
• Molecule 50: 30S ribosomal protein S16



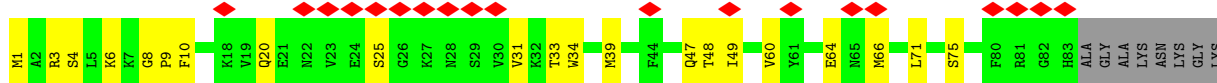
• Molecule 51: 30S ribosomal protein S17



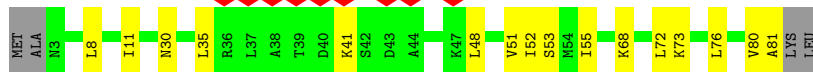
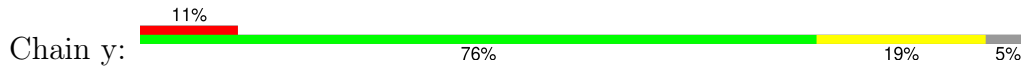
• Molecule 52: 30S ribosomal protein S18



• Molecule 53: 30S ribosomal protein S19



• Molecule 54: 30S ribosomal protein S20



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	249488	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	50	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.420	Depositor
Minimum map value	-0.088	Depositor
Average map value	0.004	Depositor
Map value standard deviation	0.019	Depositor
Recommended contour level	0.08	Depositor
Map size ( $\text{\AA}$ )	410.40002, 410.40002, 410.40002	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	0.8550001, 0.8550001, 0.8550001	Depositor

## 5 Model quality i

### 5.1 Standard geometry i

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	1	0.26	0/66183	0.32	0/103212
2	2	0.22	6/35523 (0.0%)	0.32	2/55388 (0.0%)
3	3	0.19	0/2611	0.23	0/4067
4	4	0.19	0/282	0.53	0/377
5	5	0.19	0/234	0.33	0/301
6	6	0.14	0/464	0.26	0/719
7	A	0.15	0/1745	0.26	0/2717
8	B	0.25	0/2090	0.40	0/2815
9	C	0.25	0/1538	0.39	0/2061
10	D	0.23	0/1530	0.37	0/2065
11	E	0.19	0/1321	0.42	0/1789
12	F	0.17	0/1272	0.35	0/1720
13	G	0.25	0/420	0.61	0/567
14	J	0.24	0/1130	0.39	0/1529
15	K	0.25	0/896	0.39	0/1204
16	L	0.24	0/1060	0.40	1/1422 (0.1%)
17	M	0.24	0/1077	0.38	0/1442
18	N	0.25	0/994	0.40	0/1331
19	O	0.19	0/854	0.39	0/1144
20	P	0.24	0/863	0.37	0/1163
21	Q	0.27	0/918	0.37	0/1220
22	R	0.22	0/778	0.42	0/1045
23	S	0.23	0/974	0.37	0/1305
24	T	0.21	0/652	0.41	0/877
25	U	0.17	0/682	0.38	0/911
26	V	0.19	0/888	0.42	0/1216
27	W	0.25	0/594	0.38	0/794
28	X	0.23	0/593	0.40	0/794
29	Y	0.17	0/412	0.42	0/561
30	Z	0.22	0/403	0.36	0/545
31	a	0.16	0/431	0.40	0/586
32	b	0.25	0/488	0.36	0/657
33	c	0.20	0/421	0.38	0/569
34	d	0.25	0/422	0.33	0/553

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
35	e	0.25	0/512	0.45	0/672
36	f	0.22	0/307	0.36	0/405
37	h	0.16	0/1623	0.38	0/2190
38	i	0.16	0/1606	0.35	0/2157
39	j	0.18	0/1194	0.40	0/1615
40	k	0.20	0/834	0.43	0/1129
41	l	0.18	0/1204	0.45	0/1619
42	m	0.19	0/976	0.38	0/1324
43	n	0.22	0/986	0.56	0/1322
44	o	0.20	0/712	0.50	0/973
45	p	0.19	0/837	0.37	0/1134
46	q	0.19	0/935	0.36	0/1258
47	r	0.20	0/891	0.54	0/1192
48	s	0.18	0/676	0.48	0/906
49	t	0.22	0/704	0.44	0/946
50	u	0.18	0/799	0.41	0/1086
51	v	0.18	0/646	0.43	0/866
52	w	0.25	0/460	0.44	0/617
53	x	0.20	0/652	0.50	0/881
54	y	0.17	0/619	0.42	0/825
All	All	0.24	6/147916 (0.0%)	0.34	3/221783 (0.0%)

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
13	G	0	1

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	2	1142	G	C1'-N9	-7.05	1.37	1.48
2	2	1148	G	C1'-N9	-6.61	1.38	1.48
2	2	1147	U	C1'-N1	5.62	1.56	1.48
2	2	1149	C	C1'-N1	5.41	1.56	1.48
2	2	1132	U	C1'-N1	5.33	1.56	1.48
2	2	1135	C	C1'-N1	5.28	1.56	1.48

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	2	1157	G	O5'-P-OP1	-17.98	54.06	108.00
2	2	1157	G	O5'-P-OP2	-12.69	69.94	108.00
16	L	91	VAL	N-CA-C	-5.60	108.39	113.71

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
13	G	39	ALA	Peptide

## 5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	1	59085	0	29705	278	0
2	2	31728	0	15978	270	0
3	3	2339	0	1181	6	0
4	4	278	0	295	5	0
5	5	231	0	268	2	0
6	6	415	0	206	8	0
7	A	1562	0	794	8	0
8	B	2053	0	2127	20	0
9	C	1515	0	1548	24	0
10	D	1509	0	1532	20	0
11	E	1300	0	1267	18	0
12	F	1255	0	1275	22	0
13	G	414	0	430	10	0
14	J	1112	0	1149	12	0
15	K	889	0	946	10	0
16	L	1048	0	1048	8	0
17	M	1056	0	1109	14	0
18	N	980	0	1017	8	0
19	O	846	0	873	11	0
20	P	848	0	846	11	0
21	Q	904	0	956	8	0
22	R	768	0	810	7	0
23	S	964	0	992	8	0
24	T	647	0	696	9	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
25	U	679	0	733	14	0
26	V	871	0	839	13	0
27	W	586	0	607	8	0
28	X	586	0	618	9	0
29	Y	409	0	405	6	0
30	Z	400	0	416	14	0
31	a	421	0	384	8	0
32	b	475	0	468	4	0
33	c	415	0	432	6	0
34	d	416	0	449	1	0
35	e	506	0	574	9	0
36	f	305	0	337	4	0
37	h	1600	0	1604	34	0
38	i	1576	0	1592	22	0
39	j	1179	0	1185	23	0
40	k	815	0	780	13	0
41	l	1183	0	1192	30	0
42	m	961	0	978	11	0
43	n	972	0	1005	33	0
44	o	701	0	694	26	0
45	p	823	0	820	8	0
46	q	922	0	973	10	0
47	r	883	0	921	39	0
48	s	665	0	669	11	0
49	t	694	0	703	11	0
50	u	783	0	739	10	0
51	v	638	0	684	11	0
52	w	452	0	484	10	0
53	x	636	0	628	20	0
54	y	615	0	672	16	0
All	All	135913	0	89633	1146	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 5.

All (1146) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:2:1148:G:N2	2:2:1151:A:OP2	1.71	1.23
1:1:2749:G:H4'	12:F:4:ILE:HD11	1.22	1.13
38:i:200:ASN:HD22	39:j:112:ILE:HD12	1.08	1.13

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:2:1148:G:C2	2:2:1151:A:OP2	2.01	1.11
2:2:1148:G:N2	2:2:1151:A:C8	2.18	1.10
50:u:86:ASP:O	50:u:89:VAL:HG12	1.53	1.06
2:2:1148:G:N1	2:2:1151:A:OP2	1.88	1.06
38:i:200:ASN:ND2	39:j:112:ILE:HD12	1.74	1.03
43:n:19:VAL:HG13	43:n:61:VAL:HG12	1.42	1.02
2:2:1143:C:H2'	2:2:1144:C:C6	1.95	1.01
53:x:9:PRO:HB3	53:x:39:MET:CE	1.91	1.00
2:2:1102:U:H3	2:2:1134:A:N6	1.61	0.98
2:2:1148:G:N2	2:2:1151:A:N7	2.13	0.96
1:1:2749:G:C4'	12:F:4:ILE:HD11	1.95	0.96
2:2:1143:C:H2'	2:2:1144:C:C5	2.04	0.93
53:x:9:PRO:HB3	53:x:39:MET:HE1	1.49	0.93
1:1:1234:A:N1	1:1:1268:G:N2	2.18	0.91
1:1:1157:G:H5'	1:1:1158:A:H5''	1.51	0.91
2:2:1102:U:H3	2:2:1134:A:H61	0.94	0.90
2:2:1160:G:H22	2:2:1162:A:H3'	1.39	0.87
2:2:410:G:H22	2:2:419:A:H2	1.23	0.87
2:2:1106:U:H2'	2:2:1108:G:H21	1.39	0.87
1:1:911:G:H3'	1:1:912:G:H8	1.42	0.85
27:W:7:VAL:HG12	27:W:8:GLY:N	1.92	0.85
1:1:2106:G:H1	1:1:2197:U:H3	1.24	0.84
27:W:7:VAL:HG12	27:W:8:GLY:H	1.43	0.83
44:o:11:SER:HB2	44:o:95:VAL:HG12	1.58	0.83
39:j:49:ASN:OD1	39:j:50:GLY:N	2.11	0.82
1:1:1059:A:H62	1:1:1158:A:H2	1.28	0.80
8:B:173:THR:HG22	8:B:183:LEU:HD23	1.63	0.80
2:2:1517:U:N3	6:6:-20:C:N4	2.30	0.79
7:A:48:U:H5''	7:A:49:C:H5'	1.65	0.78
1:1:1157:G:H8	1:1:1157:G:H5''	1.50	0.77
43:n:46:VAL:HG13	43:n:47:LEU:HD12	1.66	0.77
2:2:1112:G:H1	2:2:1126:G:H1'	1.48	0.77
2:2:181:G:H1	2:2:194:U:H3	1.33	0.76
44:o:11:SER:OG	44:o:17:VAL:HG23	1.86	0.76
47:r:41:GLU:N	47:r:41:GLU:OE2	2.20	0.75
45:p:48:MET:HE3	45:p:48:MET:HA	1.69	0.75
1:1:925:C:H3'	1:1:926:A:H8	1.52	0.75
1:1:1560:G:H21	1:1:1575:A:H62	1.35	0.75
2:2:1143:C:H2'	2:2:1144:C:H6	1.48	0.74
2:2:1517:U:H3	6:6:-20:C:N4	1.83	0.74
2:2:1148:G:N2	2:2:1151:A:H8	1.79	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
38:i:193:GLN:OE1	38:i:193:GLN:N	2.17	0.74
37:h:14:ILE:HG22	37:h:15:ILE:HG23	1.69	0.73
53:x:1:MET:N	53:x:8:GLY:O	2.20	0.73
44:o:49:THR:HG23	44:o:63:GLN:HG2	1.70	0.73
2:2:1106:U:H2'	2:2:1108:G:N2	2.02	0.73
13:G:39:ALA:O	13:G:43:ALA:N	2.22	0.73
2:2:1148:G:H22	2:2:1151:A:P	2.12	0.73
9:C:41:GLU:OE2	9:C:41:GLU:N	2.21	0.72
54:y:8:LEU:HD12	54:y:8:LEU:O	1.89	0.72
2:2:136:A:N6	2:2:168:U:O4	2.18	0.72
11:E:143:GLU:N	11:E:143:GLU:OE1	2.23	0.71
4:4:45:GLU:N	4:4:45:GLU:OE1	2.22	0.71
1:1:1943:A:H2	1:1:1950:U:H5	1.37	0.71
1:1:915:C:H42	1:1:923:C:H42	1.36	0.71
2:2:1160:G:N2	2:2:1162:A:H3'	2.05	0.71
11:E:114:ILE:HG22	11:E:140:ILE:HG21	1.73	0.71
2:2:983:G:N1	2:2:1023:U:N3	2.38	0.71
2:2:983:G:O6	2:2:984:A:N6	2.23	0.71
2:2:1514:U:H3	6:6:-17:G:H1	1.39	0.71
20:P:38:LYS:HE3	20:P:39:THR:H	1.56	0.71
2:2:1144:C:H2'	2:2:1144:C:O2	1.90	0.70
51:v:52:GLU:OE1	51:v:52:GLU:N	2.24	0.70
2:2:661:A:H2'	2:2:662:G:C8	2.26	0.70
41:l:115:GLU:HG2	41:l:121:ARG:HG2	1.70	0.70
8:B:163:GLN:HG2	8:B:165:MET:HE3	1.72	0.70
1:1:989:A:H61	17:M:85:MET:HE3	1.56	0.70
2:2:930:A:H61	2:2:1216:C:H42	1.39	0.70
1:1:268:U:H2'	1:1:269:A:C8	2.27	0.70
1:1:138:G:H4'	1:1:139:A:H5'	1.73	0.70
2:2:1114:G:C2	2:2:1125:G:H5''	2.27	0.70
1:1:2863:A:OP2	32:b:52:ARG:NH2	2.25	0.70
1:1:2749:G:H4'	12:F:4:ILE:CD1	2.14	0.69
49:t:71:ARG:HE	49:t:71:ARG:C	1.99	0.69
53:x:47:GLN:OE1	53:x:47:GLN:N	2.25	0.69
1:1:924:C:H2'	1:1:925:C:C6	2.28	0.69
15:K:112:MET:HE3	15:K:112:MET:HA	1.73	0.69
1:1:1570:G:H2'	1:1:1571:A:C8	2.28	0.69
8:B:173:THR:HG22	8:B:183:LEU:CD2	2.21	0.69
2:2:1337:U:H2'	2:2:1338:A:H8	1.58	0.68
41:l:11:LEU:HD12	41:l:12:LEU:H	1.57	0.68
39:j:78:VAL:HG12	39:j:79:ARG:N	2.07	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
49:t:71:ARG:O	49:t:71:ARG:NE	2.25	0.68
27:W:73:ARG:HG3	27:W:74:ASP:OD1	1.94	0.68
2:2:411:U:H3	2:2:418:G:H1	1.41	0.67
53:x:9:PRO:HB3	53:x:39:MET:HE2	1.75	0.67
2:2:701:G:H2'	2:2:702:G:C8	2.29	0.67
37:h:143:MET:HE2	37:h:143:MET:HA	1.76	0.67
42:m:10:LEU:HD22	42:m:77:ILE:HD11	1.75	0.67
47:r:9:ILE:HG21	47:r:45:ILE:HG12	1.77	0.67
17:M:39:GLU:OE2	17:M:39:GLU:N	2.28	0.67
1:1:911:G:H3'	1:1:912:G:C8	2.27	0.66
1:1:1157:G:H5''	1:1:1157:G:C8	2.31	0.66
38:i:143:ARG:HH21	38:i:145:LYS:HE3	1.59	0.66
47:r:71:ARG:NH2	47:r:74:SER:OG	2.26	0.66
37:h:153:SER:HG	37:h:196:GLY:H	1.44	0.66
1:1:1393:A:OP2	28:X:2:SER:OG	2.14	0.66
1:1:1748:G:N2	1:1:1751:A:OP2	2.28	0.66
41:l:117:SER:H	41:l:120:GLN:NE2	1.93	0.66
2:2:1431:G:OP1	54:y:30:ASN:ND2	2.28	0.66
24:T:5:ILE:HB	24:T:26:VAL:HG23	1.76	0.66
2:2:1139:A:H4'	2:2:1140:C:O5'	1.95	0.66
23:S:47:GLU:OE2	23:S:47:GLU:N	2.19	0.65
1:1:2456:G:O2'	1:1:2458:U:O4	2.13	0.65
31:a:32:THR:HG22	31:a:34:GLU:H	1.61	0.65
21:Q:104:GLU:OE2	21:Q:104:GLU:N	2.21	0.65
30:Z:40:ASN:H	30:Z:43:ILE:HD11	1.62	0.65
47:r:17:ILE:O	47:r:20:THR:OG1	2.13	0.65
51:v:83:GLU:OE2	51:v:83:GLU:N	2.30	0.65
2:2:1102:U:C4	2:2:1134:A:N6	2.62	0.65
1:1:1099:G:H21	1:1:1128:A:H5'	1.61	0.65
1:1:2269:G:OP1	27:W:18:SER:OG	2.12	0.65
1:1:1570:G:H2'	1:1:1571:A:H8	1.62	0.65
17:M:67:TRP:HB2	17:M:107:GLU:HB2	1.79	0.64
1:1:2456:G:H8	1:1:2457:A:H62	1.45	0.64
2:2:1337:U:H2'	2:2:1338:A:C8	2.33	0.64
37:h:122:GLN:OE1	37:h:132:ALA:HB1	1.97	0.64
41:l:120:GLN:OE1	41:l:120:GLN:N	2.26	0.64
1:1:28:A:N6	1:1:536:G:O2'	2.31	0.64
41:l:12:LEU:HD23	41:l:13:PRO:HD2	1.80	0.64
48:s:52:CYS:HB3	48:s:56:GLY:H	1.62	0.64
12:F:85:GLU:OE2	12:F:135:LYS:NZ	2.30	0.63
1:1:1116:A:H2'	1:1:1117:A:C8	2.33	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:2:956:G:OP1	44:o:58:LYS:NZ	2.31	0.63
2:2:662:G:H2'	2:2:663:A:H8	1.63	0.63
2:2:959:G:OP2	2:2:1339:U:O2'	2.15	0.63
46:q:50:ARG:HD2	46:q:90:LEU:HD21	1.80	0.63
7:A:51:U:H3	7:A:65:G:H1	1.45	0.63
1:1:2217:C:H2'	1:1:2218:G:H8	1.62	0.63
1:1:25:G:H21	1:1:539:A:H62	1.46	0.63
37:h:93:VAL:HG23	37:h:94:THR:HG23	1.80	0.63
2:2:1248:G:N2	2:2:1251:A:OP2	2.31	0.62
44:o:27:THR:O	44:o:30:THR:OG1	2.16	0.62
2:2:915:C:H5''	41:l:3:LYS:HE2	1.79	0.62
47:r:12:HIS:O	47:r:12:HIS:ND1	2.32	0.62
2:2:1154:U:H2'	2:2:1154:U:O2	2.00	0.62
10:D:8:PHE:O	10:D:9:ASN:ND2	2.32	0.62
18:N:12:ARG:NH1	18:N:20:MET:SD	2.72	0.62
23:S:4:ARG:HH22	23:S:6:ARG:HG2	1.65	0.62
44:o:15:MET:HE2	44:o:15:MET:HA	1.82	0.62
2:2:254:U:OP1	54:y:68:LYS:NZ	2.33	0.62
38:i:200:ASN:HD22	39:j:112:ILE:CD1	1.98	0.62
19:O:66:ASN:HB3	19:O:101:ARG:HD3	1.82	0.62
1:1:1505:U:H2'	1:1:1506:A:H8	1.64	0.61
26:V:133:LEU:HD13	26:V:134:PRO:HD2	1.82	0.61
28:X:40:LEU:HD11	28:X:47:ILE:HD13	1.81	0.61
1:1:1089:U:O2	1:1:1113:U:N3	2.33	0.61
1:1:505:G:OP2	25:U:47:HIS:ND1	2.32	0.61
1:1:2838:G:N2	1:1:2841:A:OP2	2.27	0.61
1:1:913:G:H2'	1:1:914:G:C8	2.36	0.61
2:2:702:G:H2'	2:2:703:A:C8	2.35	0.61
1:1:154:G:H21	1:1:157:A:H2	1.49	0.61
2:2:1163:G:H1'	2:2:1164:G:C5	2.36	0.61
47:r:52:GLN:O	47:r:56:LEU:HD13	2.00	0.61
50:u:81:LEU:O	50:u:85:LEU:HD22	2.01	0.61
1:1:387:G:N2	1:1:388:U:O4	2.33	0.61
2:2:1038:G:H5''	37:h:153:SER:HB2	1.83	0.61
1:1:1749:C:H2'	1:1:1750:A:C8	2.36	0.61
2:2:1112:G:H1	2:2:1126:G:C1'	2.11	0.61
37:h:182:ASP:OD1	37:h:203:LYS:NZ	2.34	0.61
43:n:89:ASN:HB3	43:n:92:ASN:ND2	2.16	0.60
1:1:84:A:N6	1:1:101:G:O2'	2.34	0.60
1:1:1137:U:H2'	1:1:1138:A:H8	1.66	0.60
22:R:15:SER:OG	22:R:16:LYS:N	2.33	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:1:2283:U:OP2	33:c:7:ARG:NH1	2.33	0.60
43:n:104:ARG:NH1	43:n:105:ASP:O	2.35	0.60
47:r:53:ILE:HD12	47:r:54:ASP:N	2.15	0.60
7:A:34:U:OP2	43:n:128:ARG:NH2	2.34	0.60
10:D:2:GLU:N	10:D:17:VAL:O	2.35	0.60
15:K:58:SER:OG	15:K:59:THR:N	2.34	0.60
1:1:1263:G:OP2	23:S:4:ARG:NH2	2.35	0.60
8:B:181:THR:HG23	8:B:269:VAL:HB	1.83	0.60
25:U:31:ARG:HG3	25:U:31:ARG:HH11	1.67	0.60
30:Z:43:ILE:HG22	30:Z:46:MET:HE3	1.83	0.60
33:c:15:THR:HG21	33:c:57:LYS:HZ3	1.67	0.60
1:1:1683:G:O2'	18:N:106:ASP:OD2	2.17	0.59
46:q:19:SER:OG	46:q:20:LYS:N	2.33	0.59
1:1:1089:U:H3	1:1:1112:A:H61	1.49	0.59
1:1:1562:A:N6	1:1:1573:A:O2'	2.35	0.59
31:a:55:HIS:ND1	31:a:56:PRO:O	2.32	0.59
24:T:58:PRO:HG3	24:T:76:ALA:HB2	1.84	0.59
2:2:1133:A:O2'	2:2:1134:A:O5'	2.17	0.59
9:C:40:ASN:HA	9:C:44:GLY:H	1.66	0.59
43:n:53:THR:HG22	43:n:95:ILE:HD11	1.84	0.59
2:2:127:C:O3'	50:u:65:GLN:NE2	2.36	0.59
47:r:75:MET:HA	47:r:78:LYS:HG2	1.83	0.59
2:2:159:A:H2'	2:2:160:U:O4'	2.02	0.59
12:F:53:ARG:NH1	12:F:56:ASP:OD1	2.36	0.59
1:1:1567:U:H1'	1:1:1569:G:C6	2.37	0.59
19:O:19:THR:HG23	19:O:20:ILE:HG13	1.83	0.59
22:R:51:ALA:HB3	22:R:52:PRO:HD3	1.83	0.59
28:X:2:SER:OG	28:X:3:ARG:N	2.36	0.58
1:1:1860:A:H2'	1:1:1861:A:C8	2.38	0.58
2:2:125:G:O2'	2:2:126:C:O5'	2.20	0.58
2:2:179:U:H2'	2:2:180:A:C8	2.37	0.58
16:L:56:MET:O	16:L:61:ARG:NH1	2.37	0.58
14:J:24:ASP:OD2	14:J:25:ALA:N	2.36	0.58
2:2:1131:C:H2'	2:2:1132:U:C6	2.38	0.58
43:n:91:GLU:N	43:n:91:GLU:OE1	2.36	0.58
45:p:34:ASN:OD1	45:p:35:LYS:N	2.36	0.58
46:q:26:SER:O	46:q:26:SER:OG	2.21	0.58
47:r:68:ASP:OD2	47:r:68:ASP:N	2.34	0.58
1:1:529:A:OP2	23:S:6:ARG:NH2	2.37	0.58
8:B:153:VAL:HG23	8:B:154:ILE:HG13	1.85	0.58
34:d:2:SER:OG	34:d:3:LYS:N	2.34	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
43:n:89:ASN:HB3	43:n:92:ASN:HD22	1.69	0.58
44:o:19:LYS:HA	44:o:22:GLU:OE1	2.04	0.58
2:2:505:G:N2	2:2:521:A:OP2	2.32	0.58
9:C:97:VAL:O	9:C:97:VAL:HG12	2.03	0.58
23:S:29:THR:O	23:S:121:ASN:ND2	2.36	0.58
30:Z:53:LEU:HD12	30:Z:53:LEU:O	2.02	0.57
43:n:95:ILE:C	43:n:98:PRO:HD2	2.29	0.57
2:2:705:U:H4'	45:p:117:ASN:HD22	1.68	0.57
1:1:1059:A:N6	1:1:1158:A:H2	1.99	0.57
1:1:2195:U:H2'	1:1:2196:C:C6	2.39	0.57
2:2:198:A:H2'	2:2:199:A:H8	1.68	0.57
2:2:1139:A:H1'	2:2:1140:C:OP2	2.04	0.57
2:2:1158:A:H3'	2:2:1159:G:H8	1.69	0.57
37:h:153:SER:OG	37:h:196:GLY:N	2.31	0.57
2:2:173:G:OP2	2:2:173:G:N2	2.33	0.57
41:l:70:ASN:ND2	41:l:132:GLU:OE1	2.37	0.57
15:K:34:SER:OG	15:K:35:VAL:N	2.38	0.57
29:Y:59:LYS:O	29:Y:59:LYS:HD3	2.05	0.57
37:h:63:VAL:HG23	37:h:98:VAL:HG12	1.87	0.57
14:J:78:ILE:HG23	14:J:91:THR:HG23	1.86	0.57
1:1:1510:A:H4'	1:1:1511:U:H5''	1.86	0.57
1:1:1560:G:N2	1:1:1575:A:H62	2.02	0.57
28:X:27:ARG:HG2	28:X:28:LYS:H	1.70	0.57
26:V:94:LEU:HD21	26:V:100:ILE:HG12	1.87	0.57
37:h:22:TRP:HB3	37:h:58:ARG:H	1.70	0.57
43:n:19:VAL:HG12	43:n:20:SER:H	1.70	0.57
47:r:52:GLN:OE1	47:r:52:GLN:N	2.26	0.57
47:r:69:LEU:O	47:r:73:ILE:HG12	2.05	0.56
2:2:184:C:H2'	2:2:185:G:C8	2.39	0.56
2:2:197:U:H2'	2:2:198:A:H8	1.69	0.56
39:j:121:LEU:HD13	39:j:129:VAL:HG21	1.87	0.56
39:j:10:VAL:O	39:j:13:SER:OG	2.21	0.56
43:n:28:VAL:HG12	43:n:63:VAL:HB	1.86	0.56
1:1:571:G:O2'	1:1:572:U:OP2	2.23	0.56
2:2:1223:G:H2'	2:2:1224:G:H8	1.70	0.56
26:V:98:LYS:N	26:V:98:LYS:HE2	2.20	0.56
1:1:913:G:H1	1:1:925:C:H42	1.53	0.56
1:1:2788:U:O3'	1:1:2789:U:H4'	2.04	0.56
26:V:71:ASN:O	26:V:94:LEU:HB2	2.05	0.56
41:l:151:LYS:O	41:l:154:SER:OG	2.24	0.56
2:2:1405:G:H2'	2:2:1406:G:C8	2.41	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:B:92:ALA:HB2	8:B:106:ALA:HB2	1.88	0.56
1:1:232:G:O6	35:e:12:LYS:NZ	2.38	0.56
1:1:2217:C:O2'	1:1:2218:G:OP1	2.23	0.56
2:2:463:G:C2	2:2:464:A:H1'	2.41	0.56
11:E:181:LYS:O	11:E:181:LYS:HG3	2.06	0.56
46:q:70:GLU:N	46:q:70:GLU:OE1	2.38	0.56
50:u:45:ASN:HB3	50:u:46:PRO:HD3	1.88	0.56
1:1:1137:U:H2'	1:1:1138:A:C8	2.41	0.56
10:D:178:THR:HG23	10:D:180:SER:H	1.70	0.56
14:J:23:VAL:HG13	14:J:147:LEU:HD21	1.86	0.56
2:2:463:G:H2'	2:2:464:A:H4'	1.86	0.56
41:l:117:SER:H	41:l:120:GLN:HE22	1.52	0.56
50:u:80:LEU:HD12	50:u:80:LEU:H	1.70	0.56
1:1:2040:A:O2'	1:1:2042:G:OP2	2.21	0.55
2:2:179:U:H2'	2:2:180:A:H8	1.70	0.55
52:w:69:THR:CG2	52:w:73:TYR:HB3	2.36	0.55
16:L:100:ASP:O	16:L:104:ASN:ND2	2.40	0.55
1:1:1445:U:O2'	1:1:1621:G:O2'	2.22	0.55
10:D:82:LEU:O	10:D:82:LEU:HD12	2.06	0.55
2:2:1107:U:P	44:o:6:ARG:HH22	2.29	0.55
1:1:27:A:HO2'	1:1:28:A:P	2.29	0.55
2:2:330:G:H2'	2:2:331:A:H8	1.71	0.55
3:3:72:G:H5''	26:V:14:VAL:HG11	1.88	0.55
30:Z:5:LEU:N	30:Z:58:GLU:O	2.38	0.55
44:o:20:SER:O	44:o:24:ILE:HG22	2.05	0.55
2:2:986:U:O2	2:2:1020:G:N2	2.35	0.55
1:1:1943:A:C2	1:1:1950:U:H5	2.21	0.55
52:w:62:LEU:HD11	52:w:67:THR:OG1	2.07	0.55
1:1:1442:C:H2'	1:1:1443:U:C6	2.42	0.55
31:a:26:THR:HG22	31:a:27:LYS:H	1.72	0.55
2:2:812:U:H2'	2:2:813:A:H8	1.72	0.55
1:1:2284:A:H4'	1:1:2285:A:O4'	2.07	0.55
4:4:21:LYS:HG2	4:4:34:VAL:HG22	1.89	0.55
50:u:14:GLY:C	50:u:15:LYS:HD2	2.32	0.55
1:1:916:U:O2	1:1:922:G:O6	2.25	0.54
43:n:19:VAL:CG1	43:n:61:VAL:HG12	2.28	0.54
53:x:71:LEU:HD12	53:x:71:LEU:H	1.71	0.54
1:1:2216:G:H2'	1:1:2217:C:C6	2.43	0.54
2:2:987:G:C6	2:2:1019:A:H2	2.25	0.54
10:D:136:THR:O	10:D:140:ILE:HG22	2.07	0.54
26:V:7:LYS:NZ	26:V:7:LYS:HB3	2.21	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
38:i:154:ARG:O	38:i:157:SER:OG	2.25	0.54
39:j:78:VAL:CG1	39:j:79:ARG:N	2.68	0.54
54:y:55:ILE:HD11	54:y:73:LYS:HD3	1.89	0.54
2:2:1126:G:H8	2:2:1126:G:P	2.30	0.54
2:2:1232:A:H2'	2:2:1233:G:C8	2.42	0.54
38:i:64:ILE:HD11	38:i:94:ARG:CZ	2.37	0.54
1:1:926:A:N3	1:1:926:A:H2'	2.21	0.54
2:2:184:C:H2'	2:2:185:G:H8	1.72	0.54
2:2:983:G:N2	2:2:1023:U:O2	2.40	0.54
2:2:1144:C:O2	2:2:1144:C:C2'	2.55	0.54
47:r:56:LEU:O	47:r:60:VAL:HG23	2.07	0.54
1:1:502:A:O2'	1:1:503:A:OP1	2.23	0.54
44:o:11:SER:OG	44:o:17:VAL:CG2	2.54	0.54
2:2:960:A:H2'	2:2:961:A:H5''	1.87	0.54
43:n:9:ARG:HG2	43:n:14:VAL:HG12	1.89	0.54
1:1:2032:C:H2'	1:1:2033:G:C8	2.43	0.54
1:1:2106:G:O6	1:1:2197:U:O4	2.25	0.54
2:2:1152:A:H2'	2:2:1153:C:C6	2.43	0.54
8:B:19:ASN:OD1	8:B:20:GLY:N	2.40	0.54
37:h:63:VAL:CG2	37:h:98:VAL:HG12	2.38	0.54
54:y:41:LYS:HE3	54:y:81:ALA:HA	1.89	0.54
42:m:40:PHE:HB2	42:m:45:ILE:HD11	1.89	0.54
20:P:21:PHE:O	20:P:51:ARG:NH1	2.41	0.54
23:S:4:ARG:NH2	23:S:6:ARG:HG2	2.23	0.54
24:T:16:GLU:HG3	24:T:20:LEU:HD23	1.90	0.54
38:i:163:TYR:HB2	38:i:166:ILE:HD11	1.90	0.54
41:l:95:PRO:HA	41:l:98:LYS:HE3	1.89	0.54
2:2:330:G:H2'	2:2:331:A:C8	2.42	0.54
2:2:1111:A:C8	2:2:1128:A:C2	2.96	0.54
19:O:23:SER:OG	19:O:25:ALA:O	2.26	0.54
19:O:46:VAL:HG23	19:O:47:ASN:OD1	2.08	0.54
41:l:11:LEU:HD12	41:l:12:LEU:N	2.22	0.54
5:5:12:VAL:O	5:5:16:LYS:HG2	2.08	0.53
1:1:911:G:C3'	1:1:912:G:H8	2.18	0.53
2:2:1145:A:H2'	2:2:1145:A:N3	2.23	0.53
2:2:1507:A:H2'	2:2:1508:C:C6	2.43	0.53
14:J:146:ASN:ND2	14:J:148:ASN:OD1	2.41	0.53
36:f:37:GLN:O	36:f:37:GLN:HG3	2.08	0.53
37:h:107:ARG:HB3	37:h:110:LEU:HD13	1.90	0.53
43:n:93:ARG:O	43:n:97:LYS:HB2	2.09	0.53
1:1:1090:G:H2'	1:1:1091:U:C6	2.44	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:1:2789:U:H2'	1:1:2870:G:C5	2.44	0.53
15:K:93:MET:HG2	15:K:113:LYS:HD2	1.90	0.53
1:1:921:C:H3'	1:1:922:G:H8	1.74	0.53
43:n:105:ASP:OD2	43:n:107:ARG:HG3	2.09	0.53
51:v:72:LYS:HG2	51:v:73:THR:HG23	1.89	0.53
1:1:138:G:N2	1:1:141:G:O6	2.41	0.53
2:2:198:A:H2'	2:2:199:A:C8	2.44	0.53
19:O:69:ILE:O	19:O:73:VAL:HG23	2.09	0.53
23:S:86:GLU:OE2	23:S:86:GLU:N	2.28	0.53
25:U:96:PHE:HA	25:U:103:VAL:HA	1.91	0.53
37:h:115:VAL:O	37:h:119:ILE:HG12	2.08	0.53
1:1:275:G:H5'	13:G:44:LYS:CE	2.39	0.53
1:1:2261:C:N4	27:W:15:GLU:OE1	2.40	0.53
2:2:1137:A:H2'	2:2:1138:G:C8	2.44	0.53
17:M:50:GLU:OE1	17:M:50:GLU:HA	2.09	0.53
10:D:126:LEU:HB3	10:D:196:LEU:HD13	1.90	0.52
21:Q:48:ARG:C	21:Q:50:ARG:H	2.16	0.52
40:k:12:PRO:HD2	40:k:55:LYS:HD3	1.92	0.52
1:1:1329:A:O2'	1:1:1330:A:H2'	2.09	0.52
1:1:1615:A:O2'	1:1:1616:C:OP1	2.20	0.52
2:2:482:G:O2'	2:2:484:A:H1'	2.08	0.52
53:x:25:SER:O	53:x:25:SER:OG	2.22	0.52
2:2:1018:C:H2'	2:2:1019:A:C5	2.44	0.52
1:1:894:G:H2'	1:1:895:C:C6	2.44	0.52
2:2:734:U:HO2'	2:2:735:U:H6	1.55	0.52
2:2:1114:G:H3'	2:2:1115:A:H8	1.74	0.52
2:2:432:U:O2'	2:2:434:U:O4	2.27	0.52
2:2:435:G:H1	2:2:481:A:H62	1.57	0.52
2:2:1210:C:P	47:r:107:ARG:HH12	2.32	0.52
41:l:117:SER:O	41:l:121:ARG:HG3	2.09	0.52
47:r:9:ILE:HG22	47:r:11:ASP:H	1.74	0.52
54:y:48:LEU:HD13	54:y:80:VAL:HG21	1.92	0.52
1:1:1613:A:H3'	1:1:1614:A:H8	1.75	0.52
38:i:171:ASP:OD1	38:i:171:ASP:N	2.42	0.52
1:1:1670:U:H2'	1:1:1671:C:C6	2.45	0.52
2:2:1114:G:C5	2:2:1125:G:O4'	2.62	0.52
2:2:1293:G:N7	53:x:3:ARG:NH2	2.57	0.52
12:F:102:LEU:HD13	12:F:122:LEU:HD21	1.92	0.52
2:2:662:G:H2'	2:2:663:A:C8	2.42	0.52
2:2:1112:G:N1	2:2:1126:G:H1'	2.20	0.52
9:C:168:ASP:OD1	9:C:168:ASP:N	2.42	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
39:j:35:ARG:HG3	39:j:35:ARG:HH11	1.74	0.52
39:j:78:VAL:CG1	39:j:79:ARG:H	2.23	0.52
1:1:1117:A:H2'	1:1:1118:A:C4	2.45	0.52
1:1:1514:G:H22	1:1:1537:A:H2	1.58	0.52
47:r:85:CYS:O	47:r:89:LEU:HD22	2.09	0.52
1:1:1565:C:H2'	1:1:1566:U:O4'	2.10	0.52
2:2:1058:G:N2	2:2:1061:A:OP2	2.37	0.52
2:2:1148:G:H22	2:2:1151:A:H8	1.56	0.52
2:2:1288:U:OP1	47:r:100:GLN:NE2	2.43	0.52
7:A:24:C:H2'	7:A:25:U:C6	2.44	0.52
37:h:119:ILE:O	37:h:123:ILE:HG12	2.10	0.52
1:1:1747:A:H3'	1:1:1748:G:H8	1.76	0.51
1:1:1809:A:H2'	1:1:1810:A:C8	2.45	0.51
1:1:1561:G:O2'	1:1:1562:A:O5'	2.26	0.51
2:2:1132:U:O5'	2:2:1132:U:H6	1.93	0.51
49:t:32:THR:HG21	49:t:86:ILE:HD11	1.93	0.51
49:t:77:TYR:O	49:t:81:ILE:HG13	2.10	0.51
53:x:1:MET:HA	53:x:10:PHE:HB2	1.92	0.51
1:1:1623:U:H2'	1:1:1624:A:H8	1.75	0.51
43:n:39:THR:HG23	43:n:42:LEU:HB2	1.92	0.51
53:x:66:MET:O	53:x:66:MET:HG2	2.10	0.51
1:1:1100:A:H4'	1:1:1101:A:H5''	1.91	0.51
2:2:1052:C:H2'	2:2:1053:G:H8	1.75	0.51
2:2:1517:U:O2	6:6:-20:C:N3	2.43	0.51
37:h:187:GLU:CD	37:h:194:ARG:HE	2.19	0.51
47:r:31:LYS:NZ	47:r:41:GLU:HG2	2.26	0.51
1:1:27:A:O2'	1:1:28:A:O5'	2.23	0.51
39:j:93:GLY:HA3	39:j:149:ALA:HB2	1.92	0.51
2:2:17:U:H2'	2:2:18:C:C6	2.46	0.51
2:2:464:A:H3'	2:2:465:G:H8	1.74	0.51
12:F:9:ILE:HD11	12:F:68:ARG:HG2	1.93	0.51
38:i:64:ILE:HG22	38:i:65:LEU:N	2.25	0.51
1:1:2789:U:H2'	1:1:2870:G:C6	2.45	0.51
2:2:69:G:N1	2:2:89:A:OP1	2.31	0.51
2:2:716:A:H2'	2:2:717:A:C8	2.46	0.51
2:2:1161:A:H2'	2:2:1162:A:O4'	2.11	0.51
44:o:26:LYS:O	44:o:30:THR:HG23	2.11	0.51
1:1:2109:U:H2'	1:1:2110:A:C8	2.46	0.51
1:1:2717:G:OP1	20:P:52:ARG:NH2	2.43	0.51
2:2:377:G:H2'	2:2:378:U:C6	2.46	0.51
2:2:929:A:H2'	2:2:930:A:C8	2.46	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:V:95:PHE:HB2	26:V:98:LYS:NZ	2.26	0.51
40:k:14:LEU:HD11	40:k:84:ARG:HD2	1.93	0.51
1:1:2241:U:H2'	1:1:2242:U:C6	2.46	0.51
2:2:1295:C:H2'	2:2:1296:U:C6	2.45	0.50
2:2:1304:G:H2'	2:2:1305:A:C8	2.46	0.50
16:L:96:VAL:CG2	16:L:127:VAL:HG13	2.41	0.50
32:b:15:LYS:O	32:b:18:THR:OG1	2.24	0.50
41:l:132:GLU:N	41:l:132:GLU:OE2	2.45	0.50
1:1:1172:U:H4'	1:1:1173:A:O4'	2.11	0.50
9:C:27:ILE:HD11	9:C:187:LEU:HD23	1.93	0.50
20:P:79:LEU:HD12	20:P:80:PRO:HD2	1.93	0.50
47:r:93:ARG:HD3	47:r:95:LEU:HD12	1.92	0.50
52:w:42:TYR:HE1	52:w:44:ASP:HA	1.76	0.50
2:2:243:A:H4'	2:2:244:G:O5'	2.10	0.50
2:2:1508:C:H2'	2:2:1509:C:H6	1.76	0.50
8:B:222:PRO:HA	8:B:225:MET:SD	2.51	0.50
38:i:77:SER:HA	38:i:83:THR:HG22	1.94	0.50
40:k:107:LYS:HE3	40:k:107:LYS:HA	1.93	0.50
52:w:65:ARG:NH1	52:w:65:ARG:HB3	2.27	0.50
1:1:428:U:H4'	1:1:429:C:H5''	1.92	0.50
1:1:1571:A:H2'	1:1:1572:C:C6	2.47	0.50
2:2:328:C:H2'	2:2:329:A:H8	1.77	0.50
2:2:1143:C:H2'	2:2:1144:C:H5	1.70	0.50
9:C:101:GLU:N	9:C:101:GLU:OE1	2.45	0.50
43:n:19:VAL:HG13	43:n:61:VAL:CG1	2.30	0.50
1:1:2210:C:O2'	8:B:150:GLN:NE2	2.44	0.50
2:2:464:A:C5	2:2:465:G:C5	3.00	0.50
2:2:640:U:O4	2:2:740:G:O2'	2.25	0.50
2:2:1114:G:N3	2:2:1125:G:H5''	2.26	0.50
1:1:1113:U:H2'	1:1:1114:U:C6	2.46	0.50
2:2:178:A:H2'	2:2:179:U:C6	2.47	0.50
8:B:135:ILE:O	8:B:167:ARG:NH2	2.45	0.50
39:j:167:LEU:O	39:j:167:LEU:HD23	2.12	0.50
42:m:113:MET:HG3	42:m:118:ALA:HB2	1.93	0.50
52:w:43:ILE:HD11	52:w:73:TYR:OH	2.11	0.50
2:2:355:G:N2	2:2:358:U:OP2	2.41	0.50
14:J:78:ILE:CG2	14:J:91:THR:HG23	2.41	0.50
1:1:998:U:H2'	1:1:999:C:C6	2.47	0.50
1:1:1309:G:H2'	1:1:1310:C:C6	2.46	0.50
2:2:489:G:H2'	2:2:490:A:C8	2.47	0.50
30:Z:39:SER:HA	30:Z:43:ILE:HD11	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:1:874:U:O2'	1:1:875:A:H5'	2.13	0.49
2:2:1039:G:O2'	2:2:1040:U:OP1	2.27	0.49
53:x:33:THR:OG1	53:x:34:TRP:N	2.45	0.49
1:1:2298:U:H2'	1:1:2299:A:H8	1.76	0.49
1:1:2848:A:H2'	1:1:2849:G:C8	2.47	0.49
2:2:1417:G:H2'	2:2:1418:U:C6	2.47	0.49
7:A:19:G:N2	7:A:59:A:OP2	2.45	0.49
20:P:38:LYS:HE3	20:P:39:THR:N	2.26	0.49
39:j:78:VAL:HG12	39:j:79:ARG:H	1.75	0.49
1:1:1505:U:H2'	1:1:1506:A:C8	2.47	0.49
1:1:2112:A:H2'	1:1:2113:U:C6	2.47	0.49
50:u:86:ASP:O	50:u:89:VAL:CG1	2.44	0.49
1:1:983:G:OP2	17:M:16:ARG:NH2	2.45	0.49
1:1:1240:G:OP2	1:1:1240:G:H8	1.95	0.49
1:1:2326:A:H2'	1:1:2327:U:C6	2.48	0.49
2:2:110:A:HO2'	2:2:111:C:P	2.36	0.49
2:2:403:G:H21	2:2:426:A:H62	1.61	0.49
1:1:155:A:H2'	1:1:156:U:C6	2.48	0.49
1:1:2209:U:H3	1:1:2219:G:H1	1.60	0.49
2:2:167:C:H2'	2:2:168:U:O2	2.12	0.49
2:2:983:G:N1	2:2:1023:U:C2	2.81	0.49
10:D:13:THR:HG23	10:D:15:ARG:H	1.76	0.49
46:q:87:VAL:HG11	46:q:90:LEU:HD23	1.93	0.49
1:1:2665:C:N3	12:F:109:SER:OG	2.43	0.49
37:h:122:GLN:OE1	37:h:132:ALA:CB	2.60	0.49
41:l:46:ILE:HD12	41:l:47:ASP:N	2.28	0.49
48:s:39:LEU:CD1	48:s:40:PRO:HD2	2.42	0.49
2:2:488:G:H2'	2:2:489:G:C8	2.47	0.49
2:2:1161:A:H2'	2:2:1162:A:C8	2.48	0.49
10:D:155:PHE:HB2	10:D:176:VAL:HG22	1.93	0.49
17:M:120:LEU:HD12	17:M:133:PHE:HE1	1.78	0.49
26:V:96:ASP:N	26:V:98:LYS:HZ1	2.11	0.49
37:h:97:GLU:OE1	37:h:97:GLU:N	2.37	0.49
54:y:68:LYS:O	54:y:72:LEU:HG	2.13	0.49
1:1:925:C:H3'	1:1:926:A:C8	2.41	0.49
2:2:138:G:H2'	2:2:139:G:C8	2.48	0.49
2:2:1108:G:H4'	2:2:1108:G:OP1	2.12	0.49
12:F:85:GLU:OE1	12:F:85:GLU:HA	2.11	0.49
16:L:108:SER:HB3	16:L:111:GLU:HG3	1.94	0.49
2:2:489:G:OP1	46:q:114:ARG:NH2	2.42	0.49
2:2:1208:C:N4	47:r:103:LYS:HD2	2.27	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:2:1286:G:N2	2:2:1312:G:O2'	2.21	0.49
28:X:69:LYS:HD2	28:X:69:LYS:O	2.13	0.49
1:1:150:C:H2'	1:1:151:A:H8	1.78	0.49
1:1:960:G:OP2	1:1:960:G:N2	2.38	0.49
2:2:197:U:H2'	2:2:198:A:C8	2.47	0.49
2:2:489:G:H2'	2:2:490:A:H8	1.78	0.49
2:2:929:A:H2'	2:2:930:A:H8	1.78	0.49
12:F:124:THR:HG22	12:F:134:VAL:HG13	1.94	0.49
1:1:1571:A:H2'	1:1:1572:C:H6	1.78	0.48
2:2:812:U:H2'	2:2:813:A:C8	2.47	0.48
2:2:1446:A:H2'	2:2:1447:A:C8	2.48	0.48
12:F:84:LYS:HG3	12:F:144:LEU:HD21	1.95	0.48
2:2:383:A:H2'	2:2:384:C:C6	2.48	0.48
2:2:488:G:H2'	2:2:489:G:H8	1.76	0.48
11:E:169:ALA:C	11:E:171:SER:H	2.20	0.48
47:r:49:SER:H	47:r:52:GLN:NE2	2.10	0.48
53:x:9:PRO:CB	53:x:39:MET:CE	2.79	0.48
12:F:88:LEU:O	12:F:131:ASN:HB3	2.13	0.48
35:e:36:LYS:HG3	35:e:41:LYS:HD2	1.95	0.48
39:j:80:ILE:C	39:j:80:ILE:HD12	2.38	0.48
43:n:20:SER:O	43:n:60:ASP:N	2.33	0.48
1:1:274:A:H2'	1:1:275:G:C8	2.48	0.48
1:1:613:A:H2'	1:1:614:A:C8	2.48	0.48
2:2:745:U:H2'	2:2:746:G:O4'	2.13	0.48
3:3:12:U:OP2	3:3:67:C:O2'	2.31	0.48
26:V:6:ILE:HD13	26:V:60:VAL:HG13	1.94	0.48
47:r:33:ILE:HD11	47:r:63:PHE:CE2	2.49	0.48
1:1:153:C:O2'	1:1:154:G:O5'	2.28	0.48
1:1:275:G:H5'	13:G:44:LYS:HE2	1.95	0.48
8:B:165:MET:HE2	8:B:165:MET:HA	1.96	0.48
43:n:4:ILE:HD12	43:n:19:VAL:HB	1.94	0.48
1:1:1101:A:H3'	1:1:1103:C:OP2	2.14	0.48
2:2:1155:G:N3	2:2:1155:G:H2'	2.28	0.48
11:E:161:THR:HG23	11:E:163:ALA:H	1.79	0.48
25:U:13:ARG:HB3	25:U:74:ILE:HD11	1.93	0.48
1:1:2456:G:H1'	1:1:2457:A:N7	2.28	0.48
2:2:1108:G:H5''	2:2:1109:C:H5	1.78	0.48
2:2:1141:U:H4'	2:2:1142:G:O5'	2.12	0.48
2:2:1508:C:H2'	2:2:1509:C:C6	2.49	0.48
26:V:97:ASP:H	26:V:98:LYS:NZ	2.11	0.48
33:c:15:THR:HG21	33:c:57:LYS:NZ	2.29	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
44:o:43:THR:HG22	44:o:44:HIS:N	2.28	0.48
1:1:1088:A:H2'	1:1:1089:U:O4'	2.13	0.48
1:1:2217:C:H2'	1:1:2218:G:C8	2.45	0.48
2:2:1031:G:O2'	2:2:1032:C:OP1	2.27	0.48
11:E:43:VAL:HG12	11:E:43:VAL:O	2.14	0.48
1:1:27:A:O2'	1:1:28:A:H8	1.97	0.48
1:1:324:U:H2'	1:1:325:A:C8	2.49	0.48
1:1:1854:A:O2'	1:1:1855:A:N7	2.45	0.48
2:2:1283:U:OP1	47:r:13:LYS:NZ	2.35	0.48
9:C:12:THR:OG1	9:C:13:SER:N	2.46	0.48
1:1:1488:U:O2'	1:1:1489:A:OP1	2.26	0.47
1:1:2289:U:H2'	1:1:2290:U:C6	2.49	0.47
2:2:41:G:H2'	2:2:42:G:H8	1.78	0.47
2:2:969:A:H2'	2:2:970:A:C8	2.49	0.47
2:2:1142:G:C6	2:2:1143:C:C2	3.01	0.47
30:Z:40:ASN:OD1	30:Z:43:ILE:HG13	2.13	0.47
40:k:6:THR:HG22	40:k:90:THR:HG23	1.96	0.47
1:1:1262:U:OP2	23:S:4:ARG:HD2	2.14	0.47
2:2:1309:C:H5''	47:r:28:THR:HG21	1.96	0.47
16:L:20:VAL:CG1	16:L:32:ALA:HB1	2.44	0.47
47:r:31:LYS:HD2	47:r:31:LYS:HA	1.67	0.47
2:2:317:G:N2	2:2:320:A:OP2	2.46	0.47
45:p:103:ILE:HD12	45:p:103:ILE:H	1.79	0.47
1:1:176:A:H2'	1:1:177:C:C6	2.49	0.47
1:1:266:G:N2	13:G:52:LYS:NZ	2.62	0.47
1:1:1267:U:H2'	1:1:1268:G:C8	2.49	0.47
1:1:1531:G:N2	8:B:98:ASP:O	2.41	0.47
1:1:2060:G:H5'	9:C:149:SER:O	2.14	0.47
1:1:2570:A:N7	9:C:150:SER:OG	2.42	0.47
42:m:9:TYR:HD2	42:m:10:LEU:HD23	1.79	0.47
47:r:33:ILE:HD11	47:r:63:PHE:HE2	1.79	0.47
1:1:268:U:O2'	1:1:269:A:O4'	2.29	0.47
9:C:46:GLU:OE1	9:C:46:GLU:N	2.48	0.47
35:e:29:LYS:HB3	35:e:29:LYS:HE2	1.69	0.47
42:m:32:LYS:O	42:m:36:THR:HG22	2.15	0.47
15:K:105:GLU:OE2	15:K:105:GLU:N	2.47	0.47
22:R:37:LYS:HD2	22:R:37:LYS:HA	1.73	0.47
37:h:90:LEU:HD11	37:h:98:VAL:HG21	1.95	0.47
47:r:86:TYR:CZ	47:r:90:ARG:HD2	2.50	0.47
1:1:268:U:C4	1:1:269:A:C6	3.03	0.47
1:1:669:G:N1	1:1:672:U:OP2	2.34	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:1:1278:G:N7	16:L:19:ARG:NH2	2.59	0.47
1:1:2786:U:H2'	1:1:2787:U:O4'	2.15	0.47
2:2:41:G:H2'	2:2:42:G:C8	2.49	0.47
2:2:409:G:H3'	2:2:410:G:H8	1.79	0.47
2:2:1092:A:N1	37:h:176:THR:OG1	2.40	0.47
2:2:1208:C:OP2	47:r:102:THR:OG1	2.23	0.47
10:D:23:VAL:HG23	10:D:24:PHE:CD2	2.50	0.47
19:O:104:SER:HA	19:O:107:GLU:HG3	1.96	0.47
27:W:7:VAL:CG1	27:W:8:GLY:H	2.12	0.47
48:s:19:LYS:HD2	48:s:20:TYR:N	2.30	0.47
54:y:8:LEU:HA	54:y:11:ILE:HG12	1.96	0.47
1:1:2112:A:OP2	1:1:2112:A:H8	1.96	0.47
2:2:200:U:H2'	2:2:201:U:C6	2.50	0.47
41:l:47:ASP:O	41:l:50:GLU:HG3	2.15	0.47
43:n:69:GLY:O	43:n:73:GLN:HG3	2.14	0.47
1:1:318:G:OP1	25:U:93:LYS:NZ	2.37	0.47
2:2:1210:C:H2'	2:2:1211:A:C8	2.49	0.47
2:2:1298:C:OP1	48:s:44:SER:OG	2.30	0.47
8:B:118:SER:HB2	8:B:129:THR:OG1	2.15	0.47
11:E:114:ILE:HD11	11:E:117:PHE:HA	1.96	0.47
30:Z:56:VAL:HG13	30:Z:56:VAL:O	2.15	0.47
35:e:52:LYS:H	35:e:52:LYS:HE2	1.80	0.47
44:o:13:ASP:OD2	44:o:15:MET:N	2.46	0.47
46:q:15:ILE:HD12	46:q:15:ILE:H	1.80	0.47
53:x:4:SER:C	53:x:6:LYS:H	2.23	0.47
2:2:1103:U:H2'	2:2:1104:A:C8	2.50	0.47
2:2:1517:U:C4	6:6:-20:C:N4	2.83	0.47
20:P:7:PHE:O	20:P:11:GLU:HB2	2.15	0.47
52:w:53:LYS:H	52:w:53:LYS:HD2	1.80	0.47
54:y:55:ILE:HD13	54:y:72:LEU:HD11	1.96	0.47
2:2:236:A:H4'	2:2:237:U:O5'	2.14	0.46
2:2:1354:U:OP1	43:n:71:THR:OG1	2.33	0.46
49:t:13:ALA:HB2	49:t:18:ALA:HB2	1.98	0.46
53:x:49:ILE:O	53:x:60:VAL:N	2.47	0.46
1:1:317:C:OP1	25:U:3:LYS:NZ	2.34	0.46
1:1:2845:C:H2'	1:1:2846:A:C2	2.51	0.46
2:2:1142:G:H3'	2:2:1143:C:C6	2.50	0.46
2:2:1295:C:H2'	2:2:1296:U:H6	1.81	0.46
9:C:42:VAL:HG13	9:C:43:ASP:OD1	2.15	0.46
9:C:196:HIS:O	9:C:199:SER:OG	2.27	0.46
18:N:20:MET:HE3	18:N:24:MET:HE1	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
39:j:87:VAL:HB	39:j:153:MET:HE1	1.96	0.46
54:y:72:LEU:O	54:y:76:LEU:HG	2.15	0.46
1:1:267:U:O2'	1:1:268:U:C2	2.68	0.46
1:1:1582:G:O2'	1:1:1583:U:OP1	2.30	0.46
1:1:2211:G:H2'	1:1:2212:C:C6	2.50	0.46
2:2:317:G:N1	2:2:320:A:OP2	2.48	0.46
2:2:466:C:H2'	2:2:467:U:C6	2.50	0.46
8:B:49:MET:HE3	8:B:52:ARG:HB3	1.97	0.46
11:E:69:VAL:HG22	11:E:70:ILE:H	1.80	0.46
43:n:19:VAL:HG12	43:n:20:SER:N	2.29	0.46
53:x:48:THR:O	53:x:49:ILE:HD13	2.15	0.46
1:1:76:C:O2'	29:Y:55:THR:HG21	2.16	0.46
1:1:267:U:C2	1:1:268:U:C4	3.03	0.46
2:2:1269:A:H2'	2:2:1270:A:C8	2.51	0.46
26:V:97:ASP:N	26:V:97:ASP:OD1	2.49	0.46
37:h:135:MET:SD	37:h:136:ALA:N	2.89	0.46
1:1:915:C:H42	1:1:923:C:N4	2.08	0.46
2:2:1509:C:H2'	2:2:1510:U:H6	1.80	0.46
41:l:117:SER:HB3	41:l:120:GLN:HE22	1.81	0.46
1:1:1433:U:H2'	1:1:1434:A:C8	2.51	0.46
2:2:1362:U:O4	41:l:2:ARG:N	2.48	0.46
21:Q:83:VAL:HA	21:Q:113:VAL:HG21	1.97	0.46
24:T:32:ASN:O	24:T:36:ILE:HD12	2.15	0.46
24:T:38:LYS:HB2	24:T:38:LYS:HE3	1.73	0.46
40:k:76:GLU:O	40:k:80:ARG:HG2	2.16	0.46
41:l:22:VAL:O	41:l:26:VAL:HG23	2.15	0.46
1:1:855:U:O2'	1:1:2075:U:C2	2.68	0.46
26:V:137:ILE:HD12	26:V:137:ILE:O	2.16	0.46
31:a:37:GLU:HA	31:a:42:GLU:HA	1.97	0.46
37:h:124:GLU:HG3	37:h:188:ALA:HB1	1.98	0.46
40:k:94:ASP:O	40:k:98:ILE:HG13	2.16	0.46
50:u:10:HIS:O	50:u:17:PHE:HB3	2.15	0.46
1:1:267:U:O2'	1:1:268:U:N3	2.48	0.46
1:1:2735:G:H2'	1:1:2736:A:C8	2.51	0.46
53:x:31:VAL:HB	53:x:49:ILE:HD12	1.98	0.46
1:1:266:G:N2	13:G:52:LYS:HZ2	2.13	0.45
1:1:812:G:H5'	1:1:813:G:OP1	2.16	0.45
2:2:1233:G:H2'	2:2:1234:A:C8	2.51	0.45
10:D:77:SER:OG	10:D:78:VAL:N	2.49	0.45
53:x:75:SER:O	53:x:75:SER:OG	2.34	0.45
1:1:1572:C:H2'	1:1:1573:A:O4'	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:2:1223:G:H2'	2:2:1224:G:C8	2.51	0.45
30:Z:43:ILE:HD12	30:Z:44:LEU:N	2.31	0.45
47:r:39:ILE:HD12	47:r:39:ILE:N	2.31	0.45
1:1:1570:G:O2'	1:1:1571:A:OP1	2.33	0.45
1:1:2306:G:N3	1:1:2306:G:H2'	2.31	0.45
2:2:1102:U:H2'	2:2:1103:U:C6	2.51	0.45
2:2:1145:A:H3'	2:2:1146:G:H5''	1.99	0.45
32:b:9:SER:OG	32:b:10:LYS:N	2.49	0.45
35:e:17:THR:HG22	35:e:21:LYS:H	1.82	0.45
37:h:73:GLY:O	37:h:77:GLY:N	2.42	0.45
43:n:85:MET:HA	43:n:85:MET:HE2	1.98	0.45
1:1:313:G:N2	1:1:369:U:O4	2.49	0.45
1:1:894:G:H2'	1:1:895:C:H6	1.81	0.45
1:1:1093:G:H1'	1:1:1120:A:C5	2.51	0.45
1:1:2423:A:H4'	1:1:2424:A:O5'	2.16	0.45
2:2:1106:U:C2'	2:2:1108:G:H21	2.18	0.45
2:2:1267:U:O2'	2:2:1268:A:O5'	2.24	0.45
2:2:1507:A:H2'	2:2:1508:C:H6	1.81	0.45
3:3:83:U:H2'	3:3:84:U:O4'	2.17	0.45
8:B:30:GLU:OE2	8:B:32:SER:HB3	2.16	0.45
9:C:53:ASP:HB3	9:C:77:LYS:HB2	1.99	0.45
41:l:44:ASP:O	41:l:48:ILE:HG13	2.17	0.45
54:y:8:LEU:O	54:y:8:LEU:CD1	2.61	0.45
21:Q:48:ARG:NH1	21:Q:49:ASP:OD1	2.48	0.45
41:l:29:LEU:O	41:l:29:LEU:HD12	2.16	0.45
1:1:153:C:O2'	1:1:154:G:H8	1.99	0.45
1:1:1557:C:H2'	1:1:1558:U:C6	2.52	0.45
2:2:463:G:C6	2:2:464:A:C8	3.05	0.45
7:A:20:G:H4'	7:A:21:U:OP2	2.16	0.45
10:D:162:LYS:HE2	10:D:162:LYS:HB2	1.80	0.45
12:F:53:ARG:HH22	12:F:56:ASP:HA	1.82	0.45
1:1:25:G:H2'	1:1:26:G:C8	2.51	0.45
1:1:612:U:H2'	1:1:613:A:H8	1.81	0.45
1:1:2788:U:H4'	1:1:2790:A:C8	2.52	0.45
17:M:21:SER:HB3	17:M:100:LYS:HB2	1.99	0.45
18:N:109:ASP:OD1	18:N:109:ASP:N	2.48	0.45
38:i:135:LYS:HB3	38:i:135:LYS:HE2	1.88	0.45
39:j:74:LYS:HE3	39:j:74:LYS:HB2	1.81	0.45
40:k:93:LEU:HD22	40:k:97:ALA:HB1	1.98	0.45
1:1:1592:G:H2'	1:1:1593:G:C8	2.51	0.45
2:2:252:G:H2'	2:2:253:G:C8	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:2:377:G:H2'	2:2:378:U:H6	1.81	0.45
2:2:563:G:O2'	2:2:809:G:OP2	2.25	0.45
2:2:966:A:H5''	2:2:967:C:OP2	2.17	0.45
25:U:12:VAL:HG12	25:U:73:LEU:HA	1.98	0.45
47:r:50:GLU:N	47:r:50:GLU:OE1	2.49	0.45
48:s:86:LYS:HB3	48:s:86:LYS:HE3	1.68	0.45
54:y:52:ILE:HD12	54:y:52:ILE:C	2.42	0.45
1:1:1239:U:H3'	1:1:1240:G:H5'	1.99	0.45
1:1:2289:U:OP1	1:1:2378:U:O2'	2.35	0.45
2:2:292:G:H2'	2:2:293:A:C8	2.52	0.45
4:4:24:LYS:HE2	4:4:24:LYS:HB2	1.81	0.45
21:Q:104:GLU:H	21:Q:104:GLU:CD	2.18	0.45
25:U:15:ILE:HD13	25:U:15:ILE:HA	1.85	0.45
30:Z:54:VAL:HG22	30:Z:55:SER:N	2.32	0.45
1:1:928:C:H2'	1:1:929:A:O4'	2.16	0.45
1:1:2402:C:H2'	1:1:2403:G:O4'	2.16	0.45
2:2:451:U:C2	2:2:464:A:C5	3.05	0.45
2:2:703:A:H2'	2:2:704:A:C8	2.52	0.45
2:2:1072:U:O2'	2:2:1073:A:O5'	2.35	0.45
2:2:1153:C:C2	2:2:1154:U:C6	3.05	0.45
3:3:39:C:OP2	31:a:2:LYS:NZ	2.48	0.45
8:B:111:LYS:HB3	8:B:111:LYS:HE3	1.71	0.45
11:E:97:GLU:HA	11:E:97:GLU:OE2	2.17	0.45
17:M:56:ALA:HB2	17:M:123:ALA:HB2	1.99	0.45
18:N:30:GLU:OE1	18:N:31:HIS:N	2.50	0.45
24:T:32:ASN:OD1	24:T:35:GLN:NE2	2.40	0.45
1:1:1433:U:H2'	1:1:1434:A:H8	1.82	0.44
1:1:1513:G:H2'	1:1:1514:G:C8	2.52	0.44
2:2:1297:G:H4'	48:s:46:VAL:HG11	1.99	0.44
51:v:22:LYS:O	51:v:50:HIS:ND1	2.49	0.44
1:1:1252:U:O2'	22:R:87:ASN:OD1	2.30	0.44
1:1:1498:A:H2'	1:1:1499:A:C8	2.53	0.44
1:1:1625:A:H2'	1:1:1626:U:C6	2.52	0.44
2:2:189:U:O2	51:v:68:ARG:NH1	2.50	0.44
11:E:108:THR:HG22	11:E:109:ILE:HG13	1.98	0.44
41:l:60:SER:HA	41:l:63:ILE:HG12	2.00	0.44
44:o:75:ILE:HD12	44:o:76:TYR:H	1.83	0.44
1:1:1029:A:H2'	1:1:1030:A:C8	2.52	0.44
1:1:2195:U:H2'	1:1:2196:C:H6	1.83	0.44
2:2:512:G:H2'	2:2:513:C:C6	2.53	0.44
2:2:661:A:H2'	2:2:662:G:H8	1.75	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:E:14:ARG:HH12	11:E:175:GLU:CD	2.26	0.44
15:K:12:ASP:OD2	15:K:12:ASP:C	2.60	0.44
24:T:3:ILE:HD12	24:T:3:ILE:O	2.16	0.44
39:j:124:VAL:HG13	39:j:126:ILE:HG12	2.00	0.44
1:1:369:U:H2'	1:1:370:A:O4'	2.18	0.44
1:1:940:A:N7	17:M:13:GLN:HG2	2.33	0.44
1:1:967:A:H2'	1:1:968:A:C8	2.52	0.44
1:1:1786:U:H5	1:1:1791:A:N7	2.15	0.44
9:C:97:VAL:O	9:C:97:VAL:CG1	2.65	0.44
12:F:140:ASP:OD1	12:F:140:ASP:C	2.60	0.44
27:W:32:ILE:HD13	27:W:32:ILE:HA	1.84	0.44
38:i:121:THR:HG22	38:i:126:VAL:HG22	2.00	0.44
54:y:35:LEU:HD12	54:y:35:LEU:O	2.17	0.44
1:1:327:U:H2'	1:1:328:G:O4'	2.17	0.44
1:1:876:A:H2'	1:1:877:A:O4'	2.17	0.44
2:2:1155:G:O2'	2:2:1156:U:P	2.75	0.44
33:c:49:ILE:C	33:c:49:ILE:HD12	2.42	0.44
36:f:14:CYS:C	36:f:15:ILE:HD13	2.42	0.44
48:s:39:LEU:HD13	48:s:40:PRO:HD2	1.99	0.44
49:t:1:MET:HA	49:t:37:HIS:ND1	2.33	0.44
51:v:15:VAL:HG12	51:v:26:ILE:HG22	2.00	0.44
52:w:43:ILE:HD11	52:w:73:TYR:CZ	2.53	0.44
1:1:324:U:H2'	1:1:325:A:H8	1.82	0.44
2:2:526:G:OP2	46:q:112:GLN:HG3	2.18	0.44
2:2:606:C:H5'	2:2:607:U:H5''	1.98	0.44
2:2:1090:C:C2	2:2:1091:A:C8	3.06	0.44
11:E:4:THR:HB	11:E:5:PRO:HD3	2.00	0.44
15:K:101:PRO:CD	20:P:69:ILE:HD11	2.47	0.44
30:Z:50:VAL:O	30:Z:54:VAL:CG1	2.66	0.44
38:i:51:GLN:HB3	38:i:198:LEU:HB2	1.99	0.44
41:l:30:MET:HE1	41:l:35:LYS:HE2	1.98	0.44
43:n:111:ARG:HG2	43:n:112:LYS:N	2.32	0.44
1:1:1746:G:H2'	1:1:1747:A:O4'	2.18	0.44
1:1:1801:G:H2'	1:1:1802:C:C6	2.53	0.44
1:1:2589:C:H2'	1:1:2590:G:C8	2.52	0.44
2:2:1179:A:O2'	2:2:1180:A:OP1	2.33	0.44
10:D:101:LEU:HG	10:D:105:LEU:HD23	1.99	0.44
30:Z:50:VAL:O	30:Z:54:VAL:HG12	2.18	0.44
1:1:308:A:H2'	1:1:309:U:C6	2.52	0.44
1:1:310:G:N1	1:1:371:A:N1	2.66	0.44
1:1:502:A:HO2'	1:1:503:A:P	2.40	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:1:1557:C:H2'	1:1:1558:U:H6	1.82	0.44
2:2:1102:U:N3	2:2:1134:A:N6	2.29	0.44
9:C:2:SER:O	9:C:2:SER:OG	2.27	0.44
18:N:73:LYS:O	18:N:77:THR:HG22	2.18	0.44
29:Y:46:VAL:O	29:Y:50:VAL:HG23	2.18	0.44
41:l:140:ARG:O	41:l:143:THR:HG22	2.17	0.44
44:o:13:ASP:OD2	44:o:14:HIS:N	2.50	0.44
47:r:82:ASP:OD1	47:r:82:ASP:N	2.44	0.44
1:1:2110:A:N1	1:1:2194:A:C6	2.86	0.44
2:2:901:A:H2'	2:2:902:A:C8	2.53	0.44
9:C:46:GLU:O	9:C:83:GLN:NE2	2.47	0.44
10:D:126:LEU:HD12	10:D:126:LEU:HA	1.80	0.44
17:M:42:MET:HE3	17:M:42:MET:HB3	1.78	0.44
19:O:107:GLU:OE1	19:O:107:GLU:C	2.61	0.44
26:V:133:LEU:HD13	26:V:134:PRO:CD	2.48	0.44
43:n:57:ASN:CG	43:n:58:ASN:H	2.24	0.44
51:v:61:THR:HG23	51:v:61:THR:O	2.17	0.44
1:1:2078:A:H2'	1:1:2079:C:C6	2.53	0.43
1:1:2510:C:H2'	1:1:2511:G:O4'	2.18	0.43
2:2:1068:A:H2'	2:2:1069:G:H8	1.82	0.43
7:A:36:A:OP2	43:n:128:ARG:NH1	2.50	0.43
10:D:182:LEU:HD23	10:D:182:LEU:HA	1.80	0.43
21:Q:71:LEU:HD12	21:Q:71:LEU:HA	1.86	0.43
21:Q:74:MET:HG2	21:Q:78:GLN:HE21	1.83	0.43
40:k:103:ARG:HB2	40:k:103:ARG:CZ	2.48	0.43
42:m:33:LYS:HG2	42:m:50:PHE:CE1	2.52	0.43
48:s:19:LYS:HE3	48:s:20:TYR:CE1	2.52	0.43
50:u:21:VAL:HG12	50:u:36:LYS:HA	2.00	0.43
1:1:263:G:H2'	1:1:264:C:C6	2.53	0.43
1:1:1207:U:H2'	1:1:1208:U:C6	2.53	0.43
2:2:178:A:H2'	2:2:179:U:H6	1.83	0.43
2:2:651:G:H2'	2:2:652:G:C8	2.53	0.43
2:2:1125:G:O3'	2:2:1126:G:H8	2.01	0.43
2:2:1180:A:H2'	2:2:1181:U:C6	2.54	0.43
9:C:133:THR:O	9:C:133:THR:OG1	2.33	0.43
25:U:35:LYS:HG2	25:U:67:GLN:HA	2.00	0.43
27:W:7:VAL:CG1	27:W:8:GLY:N	2.63	0.43
1:1:370:A:H2'	1:1:371:A:C4	2.53	0.43
1:1:2675:U:H2'	1:1:2676:A:C8	2.53	0.43
2:2:987:G:N1	2:2:1019:A:H2	2.16	0.43
2:2:1187:C:H4'	37:h:194:ARG:HH11	1.82	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:F:53:ARG:HD2	12:F:64:HIS:ND1	2.34	0.43
14:J:18:LYS:NZ	14:J:54:ASP:O	2.51	0.43
25:U:59:ILE:O	25:U:59:ILE:HD12	2.18	0.43
33:c:50:LEU:HD23	33:c:50:LEU:HA	1.86	0.43
1:1:370:A:H8	1:1:370:A:OP2	2.01	0.43
2:2:1155:G:H4'	2:2:1156:U:OP2	2.18	0.43
10:D:144:LYS:HE2	10:D:144:LYS:HB3	1.87	0.43
14:J:1:MET:SD	14:J:3:ALA:HB2	2.58	0.43
28:X:65:THR:HG23	28:X:66:ALA:N	2.32	0.43
30:Z:53:LEU:HD12	30:Z:53:LEU:C	2.43	0.43
52:w:69:THR:HG22	52:w:73:TYR:HB3	2.01	0.43
54:y:52:ILE:O	54:y:55:ILE:HG13	2.18	0.43
1:1:388:U:C2	1:1:389:A:C8	3.06	0.43
1:1:889:G:O2'	1:1:946:G:O6	2.32	0.43
1:1:915:C:N4	1:1:923:C:H42	2.09	0.43
1:1:1128:A:H2'	1:1:1129:C:O4'	2.18	0.43
1:1:1190:U:C2	1:1:1191:A:C8	3.07	0.43
1:1:1471:G:H2'	1:1:1472:C:C6	2.53	0.43
1:1:1797:C:H2'	1:1:1798:A:C8	2.53	0.43
2:2:1486:A:H2'	2:2:1487:C:C6	2.54	0.43
10:D:143:LEU:HD23	10:D:143:LEU:HA	1.85	0.43
17:M:36:SER:HB2	17:M:105:MET:HE2	2.00	0.43
25:U:31:ARG:HG3	25:U:31:ARG:NH1	2.33	0.43
25:U:82:THR:HB	25:U:99:LYS:HD2	2.00	0.43
37:h:84:ASP:OD1	37:h:85:LYS:N	2.51	0.43
44:o:4:LYS:C	44:o:5:ILE:HD13	2.43	0.43
44:o:24:ILE:O	44:o:28:VAL:HG12	2.17	0.43
1:1:1619:C:H2'	1:1:1620:A:O4'	2.19	0.43
2:2:851:U:H2'	2:2:852:G:O4'	2.18	0.43
2:2:1109:C:O2'	2:2:1110:C:P	2.77	0.43
2:2:1110:C:O2'	2:2:1125:G:N2	2.51	0.43
2:2:1114:G:H1'	2:2:1125:G:OP1	2.19	0.43
3:3:26:A:H2'	3:3:27:C:H6	1.84	0.43
17:M:107:GLU:OE2	17:M:107:GLU:HA	2.17	0.43
30:Z:10:ARG:HB2	30:Z:53:LEU:HB2	2.01	0.43
39:j:142:VAL:O	39:j:146:THR:HG22	2.18	0.43
47:r:72:GLU:HG3	47:r:73:ILE:HD13	2.00	0.43
1:1:204:A:N3	1:1:219:U:O2'	2.46	0.43
1:1:630:U:C5	1:1:647:G:C5	3.07	0.43
2:2:738:U:O2'	49:t:20:ASN:OD1	2.36	0.43
2:2:1395:A:H61	2:2:1460:G:H1	1.67	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:Y:20:GLN:O	29:Y:23:LYS:HG2	2.19	0.43
38:i:135:LYS:H	38:i:135:LYS:HG2	1.52	0.43
43:n:45:LYS:O	43:n:48:GLN:HG2	2.18	0.43
45:p:58:PRO:HB3	45:p:93:SER:OG	2.18	0.43
49:t:25:GLU:OE1	49:t:25:GLU:N	2.52	0.43
53:x:64:GLU:C	53:x:64:GLU:OE1	2.61	0.43
1:1:438:C:H2'	1:1:439:A:H8	1.84	0.43
1:1:1477:A:H2'	1:1:1478:A:H8	1.84	0.43
2:2:169:C:H2'	2:2:170:A:H5''	2.01	0.43
32:b:33:THR:HG22	32:b:33:THR:O	2.18	0.43
36:f:29:LYS:N	36:f:29:LYS:HD2	2.33	0.43
48:s:19:LYS:HD2	48:s:20:TYR:CD1	2.53	0.43
1:1:918:C:H42	47:r:92:ARG:NH2	2.16	0.43
2:2:447:A:N6	2:2:467:U:O2	2.52	0.43
2:2:1422:U:H2'	2:2:1423:G:O4'	2.18	0.43
2:2:1437:G:H2'	2:2:1438:C:H6	1.83	0.43
9:C:159:MET:HE2	9:C:159:MET:HB2	1.78	0.43
11:E:52:LEU:HA	11:E:55:TYR:HD2	1.83	0.43
49:t:81:ILE:HD12	49:t:82:LYS:N	2.34	0.43
1:1:151:A:H2'	1:1:152:C:H6	1.84	0.43
1:1:372:A:H2'	1:1:373:U:C6	2.54	0.43
1:1:558:U:H2'	1:1:559:C:C6	2.54	0.43
2:2:321:C:H4'	2:2:322:A:O5'	2.19	0.43
14:J:24:ASP:OD2	14:J:24:ASP:C	2.61	0.43
17:M:67:TRP:HB2	17:M:107:GLU:CB	2.47	0.43
18:N:30:GLU:OE1	18:N:30:GLU:C	2.61	0.43
28:X:22:MET:HB3	28:X:22:MET:HE3	1.74	0.43
1:1:266:G:H2'	1:1:267:U:C6	2.53	0.42
1:1:1498:A:H2'	1:1:1499:A:H8	1.83	0.42
2:2:56:U:H2'	2:2:57:G:H8	1.84	0.42
2:2:446:A:H62	2:2:468:U:H3	1.67	0.42
2:2:1112:G:N2	2:2:1126:G:O2'	2.52	0.42
2:2:1154:U:H3'	2:2:1155:G:H8	1.83	0.42
39:j:153:MET:HB3	39:j:153:MET:HE3	1.80	0.42
41:l:20:GLN:HA	41:l:20:GLN:OE1	2.19	0.42
43:n:50:LEU:HB3	43:n:56:VAL:HA	2.00	0.42
1:1:1477:A:H2'	1:1:1478:A:C8	2.54	0.42
1:1:1750:A:H2'	1:1:1751:A:O4'	2.18	0.42
1:1:2375:A:O2'	19:O:116:PHE:O	2.37	0.42
2:2:1140:C:C5	2:2:1142:G:H1'	2.54	0.42
2:2:1275:G:H2'	2:2:1276:U:C6	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:D:101:LEU:HD12	10:D:101:LEU:HA	1.87	0.42
11:E:118:ARG:O	11:E:181:LYS:HE3	2.20	0.42
37:h:28:TYR:HB3	37:h:32:LEU:HG	2.01	0.42
37:h:153:SER:HG	37:h:196:GLY:N	2.12	0.42
41:l:68:LEU:HD23	41:l:68:LEU:HA	1.80	0.42
1:1:1501:U:C2	1:1:1502:A:C8	3.08	0.42
2:2:411:U:H2'	2:2:412:C:C6	2.53	0.42
2:2:919:C:C2	2:2:920:A:C8	3.07	0.42
12:F:53:ARG:NH2	12:F:61:ARG:HG2	2.34	0.42
15:K:45:ASP:OD1	15:K:45:ASP:C	2.63	0.42
41:l:17:PHE:N	41:l:17:PHE:CD2	2.87	0.42
49:t:74:ILE:HD12	49:t:75:ASN:N	2.34	0.42
2:2:430:C:H2'	2:2:431:U:C6	2.55	0.42
2:2:1141:U:H3'	2:2:1141:U:H6	1.83	0.42
2:2:1511:C:C2	2:2:1512:C:C5	3.08	0.42
12:F:116:ILE:H	12:F:116:ILE:HG13	1.60	0.42
28:X:72:GLN:OE1	28:X:72:GLN:C	2.61	0.42
1:1:269:A:H2'	1:1:270:C:C6	2.54	0.42
1:1:1582:G:H2'	1:1:1584:G:H5''	2.01	0.42
2:2:710:A:H2	2:2:721:A:H61	1.67	0.42
2:2:759:G:H2'	2:2:760:U:C6	2.55	0.42
2:2:1139:A:C6	2:2:1163:G:C6	3.07	0.42
9:C:56:ASN:OD1	9:C:57:GLU:N	2.51	0.42
12:F:11:ILE:HA	12:F:12:PRO:HD3	1.94	0.42
24:T:6:ARG:O	24:T:26:VAL:HG22	2.18	0.42
29:Y:23:LYS:N	29:Y:23:LYS:HD2	2.34	0.42
31:a:55:HIS:HD1	31:a:56:PRO:N	2.18	0.42
44:o:74:ASP:OD2	44:o:74:ASP:C	2.62	0.42
46:q:120:LYS:HB2	46:q:120:LYS:HE2	1.58	0.42
47:r:9:ILE:HG23	47:r:18:ALA:HB1	2.01	0.42
51:v:26:ILE:HD11	51:v:64:ILE:HD13	2.00	0.42
1:1:2230:U:OP2	28:X:27:ARG:NH2	2.53	0.42
2:2:316:U:H2'	2:2:317:G:O4'	2.19	0.42
2:2:1052:C:H2'	2:2:1053:G:C8	2.54	0.42
2:2:1126:G:N2	2:2:1128:A:N7	2.66	0.42
9:C:62:LYS:HE2	9:C:62:LYS:HB3	1.85	0.42
16:L:89:ASN:O	16:L:91:VAL:HG13	2.18	0.42
20:P:33:ILE:HD12	20:P:33:ILE:C	2.43	0.42
22:R:18:LEU:HD23	22:R:18:LEU:HA	1.80	0.42
22:R:40:LEU:HD23	22:R:49:LEU:HD13	2.01	0.42
35:e:24:ARG:NH1	35:e:25:LYS:O	2.52	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
42:m:71:GLU:C	42:m:71:GLU:OE1	2.63	0.42
1:1:613:A:H2'	1:1:614:A:H8	1.84	0.42
2:2:1142:G:C6	2:2:1143:C:N3	2.87	0.42
10:D:192:ASN:OD1	10:D:192:ASN:N	2.53	0.42
38:i:191:LYS:HB3	38:i:193:GLN:HE22	1.84	0.42
44:o:35:VAL:HG13	44:o:73:ILE:HD11	2.01	0.42
44:o:67:MET:HE3	44:o:67:MET:HB3	1.77	0.42
48:s:32:ASP:OD2	48:s:35:GLY:N	2.46	0.42
1:1:886:G:H2'	1:1:887:A:C8	2.55	0.42
1:1:1136:C:H2'	1:1:1137:U:C6	2.55	0.42
1:1:2535:U:H2'	1:1:2536:C:C6	2.55	0.42
6:6:-9:G:H2'	6:6:-8:U:C6	2.55	0.42
35:e:32:ILE:HG22	35:e:32:ILE:O	2.20	0.42
37:h:30:ASP:OD1	37:h:30:ASP:N	2.51	0.42
38:i:191:LYS:HB3	38:i:193:GLN:NE2	2.34	0.42
40:k:89:LEU:HD12	52:w:86:HIS:ND1	2.35	0.42
42:m:4:ASP:OD1	42:m:4:ASP:C	2.63	0.42
43:n:55:ASN:HB3	43:n:59:PHE:HE2	1.85	0.42
1:1:1096:U:H3	1:1:1104:A:N6	2.18	0.42
1:1:1561:G:H21	1:1:1574:A:H8	1.62	0.42
12:F:5:GLY:HA2	12:F:68:ARG:HD2	2.01	0.42
25:U:14:VAL:HG23	25:U:21:GLY:H	1.85	0.42
39:j:88:PRO:HD2	39:j:153:MET:CE	2.50	0.42
41:l:12:LEU:HD23	41:l:13:PRO:CD	2.48	0.42
42:m:39:LEU:HD12	42:m:39:LEU:HA	1.90	0.42
46:q:15:ILE:HD12	46:q:15:ILE:N	2.34	0.42
1:1:274:A:H2'	1:1:275:G:H8	1.85	0.42
1:1:931:U:H2'	1:1:932:U:C6	2.55	0.42
1:1:1981:U:O2	5:5:28:LYS:HE3	2.19	0.42
2:2:19:C:H2'	2:2:20:U:C6	2.54	0.42
6:6:-10:U:H2'	6:6:-9:G:C8	2.55	0.42
7:A:22:A:H61	7:A:47:A:H2'	1.85	0.42
9:C:16:ASP:OD1	9:C:16:ASP:C	2.62	0.42
13:G:38:LEU:HD12	13:G:38:LEU:HA	1.74	0.42
37:h:121:ARG:HA	37:h:121:ARG:HD3	1.94	0.42
40:k:95:LYS:HB2	40:k:95:LYS:NZ	2.35	0.42
51:v:71:SER:OG	51:v:72:LYS:N	2.52	0.42
51:v:81:ILE:O	51:v:81:ILE:HG13	2.20	0.42
14:J:104:LEU:HD23	14:J:104:LEU:HA	1.84	0.41
21:Q:48:ARG:O	21:Q:49:ASP:HB2	2.20	0.41
29:Y:8:ASP:OD1	29:Y:8:ASP:C	2.63	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
38:i:18:ALA:HB2	38:i:26:PHE:CE2	2.55	0.41
45:p:114:MET:O	45:p:114:MET:HG3	2.19	0.41
1:1:155:A:O2'	1:1:156:U:P	2.78	0.41
1:1:1004:A:H1'	1:1:1019:A:C2	2.55	0.41
1:1:1096:U:H2'	1:1:1097:U:O4'	2.21	0.41
1:1:1555:U:C2	1:1:1556:A:C8	3.08	0.41
2:2:985:C:H2'	2:2:986:U:N3	2.35	0.41
4:4:18:LYS:HD3	4:4:35:GLU:OE2	2.20	0.41
39:j:80:ILE:HD12	39:j:80:ILE:O	2.20	0.41
40:k:47:LYS:HB3	40:k:47:LYS:NZ	2.35	0.41
42:m:97:ILE:HG12	42:m:130:TYR:HB2	2.02	0.41
47:r:90:ARG:HB2	47:r:97:VAL:HG22	2.02	0.41
1:1:577:U:H2'	1:1:578:G:O4'	2.20	0.41
1:1:953:G:H2'	1:1:954:U:C6	2.54	0.41
1:1:1102:G:H22	1:1:1134:C:H42	1.69	0.41
13:G:4:ILE:HG12	13:G:18:VAL:HG12	2.02	0.41
14:J:28:HIS:O	14:J:67:ILE:HD12	2.19	0.41
35:e:26:HIS:CE1	35:e:48:ALA:HB2	2.56	0.41
44:o:33:ALA:HB1	44:o:75:ILE:HD11	2.01	0.41
47:r:86:TYR:CE2	47:r:90:ARG:HD2	2.56	0.41
1:1:698:A:H3'	16:L:44:GLY:HA2	2.02	0.41
1:1:1566:U:H2'	1:1:1567:U:N1	2.35	0.41
1:1:1604:A:H2'	1:1:1605:A:C8	2.55	0.41
11:E:145:ASP:OD2	11:E:145:ASP:C	2.62	0.41
35:e:4:MET:HE3	35:e:4:MET:HB2	1.79	0.41
40:k:45:LEU:HD12	40:k:45:LEU:HA	1.94	0.41
45:p:80:VAL:HG22	45:p:81:LYS:N	2.35	0.41
47:r:15:ALA:O	47:r:19:LEU:HD13	2.20	0.41
54:y:51:VAL:O	54:y:55:ILE:HG23	2.21	0.41
1:1:1623:U:H2'	1:1:1624:A:C8	2.56	0.41
2:2:446:A:H2'	2:2:447:A:O4'	2.20	0.41
2:2:454:U:H2'	2:2:455:A:C8	2.56	0.41
3:3:42:A:C4	3:3:43:A:C8	3.08	0.41
13:G:49:GLU:O	13:G:53:GLN:N	2.52	0.41
15:K:45:ASP:OD1	15:K:46:ALA:N	2.54	0.41
42:m:8:ASP:OD2	42:m:8:ASP:C	2.63	0.41
48:s:34:GLU:O	48:s:38:ARG:NH1	2.53	0.41
53:x:9:PRO:CB	53:x:39:MET:HE2	2.48	0.41
1:1:1172:U:H2'	14:J:70:THR:HG21	2.02	0.41
1:1:1436:U:H2'	1:1:1437:A:H8	1.85	0.41
1:1:1490:G:H2'	1:1:1491:U:C6	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:1:2676:A:H2'	1:1:2677:A:C8	2.56	0.41
2:2:1:A:H2'	2:2:2:C:C6	2.56	0.41
2:2:21:G:H2'	2:2:22:G:C8	2.56	0.41
2:2:127:C:O2'	2:2:128:U:H6	2.04	0.41
9:C:57:GLU:C	9:C:57:GLU:OE2	2.63	0.41
39:j:9:LEU:C	39:j:12:PRO:HD2	2.46	0.41
41:l:30:MET:HE2	41:l:35:LYS:HG3	2.02	0.41
1:1:317:C:H2'	1:1:318:G:C8	2.55	0.41
1:1:425:A:H2'	1:1:426:A:C8	2.56	0.41
2:2:262:U:H2'	2:2:263:A:C8	2.56	0.41
2:2:1106:U:O3'	44:o:6:ARG:NH2	2.54	0.41
2:2:1114:G:H3'	2:2:1115:A:C8	2.53	0.41
2:2:1138:G:O5'	2:2:1138:G:H8	2.04	0.41
2:2:1240:G:H2'	2:2:1241:C:C6	2.56	0.41
9:C:91:LEU:HA	9:C:91:LEU:HD23	1.81	0.41
12:F:11:ILE:HD11	12:F:15:VAL:HG23	2.02	0.41
12:F:53:ARG:HH12	12:F:55:SER:C	2.29	0.41
20:P:55:GLY:C	20:P:57:THR:H	2.27	0.41
33:c:32:LYS:HE2	33:c:32:LYS:HB3	1.87	0.41
37:h:160:GLU:OE1	37:h:160:GLU:N	2.54	0.41
1:1:2108:A:H2'	1:1:2109:U:C6	2.56	0.41
2:2:710:A:N3	2:2:710:A:H2'	2.35	0.41
2:2:1207:A:N3	2:2:1207:A:H2'	2.35	0.41
2:2:1351:C:H2'	2:2:1352:G:C8	2.55	0.41
2:2:1506:C:H2'	2:2:1507:A:C8	2.56	0.41
4:4:22:MET:HE2	12:F:117:ALA:HB2	2.03	0.41
11:E:47:VAL:HG21	11:E:82:ILE:HG22	2.03	0.41
19:O:4:THR:C	19:O:6:SER:H	2.29	0.41
20:P:105:THR:OG1	20:P:106:GLY:N	2.54	0.41
38:i:15:PHE:CE1	38:i:57:LYS:HA	2.56	0.41
39:j:155:SER:O	39:j:159:VAL:HG13	2.20	0.41
41:l:80:ARG:HE	41:l:80:ARG:HB3	1.61	0.41
51:v:78:LEU:HD13	51:v:79:VAL:N	2.35	0.41
1:1:438:C:H2'	1:1:439:A:C8	2.55	0.41
1:1:631:A:H2'	1:1:632:A:C8	2.55	0.41
1:1:1587:C:H2'	1:1:1588:C:O4'	2.21	0.41
1:1:2111:A:C2'	1:1:2112:A:H5'	2.51	0.41
2:2:110:A:H4'	2:2:111:C:OP1	2.20	0.41
2:2:170:A:N6	2:2:203:A:H62	2.19	0.41
2:2:392:G:H2'	2:2:393:C:C6	2.56	0.41
2:2:734:U:O2'	2:2:735:U:H5'	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:2:1165:U:O2'	2:2:1166:G:OP1	2.34	0.41
2:2:1218:A:H2'	2:2:1219:C:C6	2.56	0.41
6:6:-11:G:H2'	6:6:-10:U:C6	2.56	0.41
8:B:211:THR:HG22	8:B:216:ARG:HB2	2.03	0.41
9:C:113:LYS:H	9:C:113:LYS:HG2	1.67	0.41
10:D:154:LEU:HB2	10:D:190:THR:HG21	2.02	0.41
14:J:133:SER:O	14:J:133:SER:OG	2.35	0.41
31:a:12:LEU:HD22	31:a:25:ILE:HG22	2.03	0.41
31:a:15:PHE:HD2	31:a:15:PHE:HA	1.78	0.41
38:i:96:ASP:OD2	38:i:96:ASP:C	2.64	0.41
44:o:22:GLU:HA	44:o:25:VAL:HB	2.03	0.41
1:1:810:A:N1	8:B:225:MET:HE2	2.36	0.41
1:1:2028:G:H2'	1:1:2028:G:N3	2.36	0.41
1:1:2696:U:H2'	1:1:2697:C:C6	2.56	0.41
2:2:1144:C:H3'	2:2:1145:A:H8	1.86	0.41
2:2:1159:G:N2	2:2:1160:G:H1'	2.36	0.41
2:2:1238:C:O2'	2:2:1239:A:OP2	2.33	0.41
13:G:7:GLN:HA	13:G:15:LYS:NZ	2.36	0.41
18:N:21:LEU:HD23	18:N:21:LEU:HA	1.90	0.41
37:h:182:ASP:OD2	37:h:182:ASP:N	2.54	0.41
38:i:123:ASN:OD1	38:i:123:ASN:N	2.54	0.41
43:n:114:PHE:CD1	44:o:63:GLN:NE2	2.89	0.41
50:u:26:ARG:HE	50:u:26:ARG:HB2	1.63	0.41
1:1:2833:A:H61	1:1:2846:A:H62	1.68	0.40
2:2:420:U:H2'	2:2:421:U:C6	2.56	0.40
2:2:1179:A:HO2'	2:2:1180:A:P	2.44	0.40
8:B:137:LEU:HA	8:B:137:LEU:HD23	1.88	0.40
15:K:101:PRO:HD2	20:P:69:ILE:HD11	2.02	0.40
24:T:88:GLU:OE1	24:T:88:GLU:N	2.54	0.40
37:h:111:ASP:OD2	37:h:114:LEU:HD13	2.20	0.40
43:n:33:PHE:HZ	43:n:46:VAL:HG11	1.86	0.40
44:o:12:TYR:CZ	44:o:95:VAL:HG13	2.56	0.40
44:o:99:ILE:HD12	44:o:99:ILE:C	2.46	0.40
47:r:75:MET:SD	47:r:75:MET:C	3.04	0.40
1:1:988:A:N6	17:M:85:MET:HE1	2.36	0.40
1:1:2203:C:H2'	1:1:2204:U:C6	2.56	0.40
1:1:2770:C:H2'	1:1:2771:A:C8	2.57	0.40
2:2:215:U:H2'	2:2:216:G:C8	2.56	0.40
2:2:1296:U:O2'	2:2:1341:A:N3	2.50	0.40
10:D:188:LEU:HD23	10:D:188:LEU:HA	1.88	0.40
30:Z:4:LEU:HA	30:Z:58:GLU:C	2.46	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
37:h:37:LYS:HE2	37:h:37:LYS:HB2	1.69	0.40
37:h:41:TYR:CD2	37:h:41:TYR:C	2.99	0.40
43:n:5:HIS:CE1	43:n:18:TYR:CD2	3.09	0.40
1:1:2038:A:N3	1:1:2453:G:O2'	2.46	0.40
1:1:2211:G:H5'	8:B:150:GLN:OE1	2.21	0.40
2:2:767:C:H2'	2:2:768:G:O4'	2.22	0.40
37:h:155:ARG:HD2	37:h:155:ARG:HA	1.87	0.40
41:l:77:VAL:HA	41:l:90:PRO:HA	2.03	0.40
52:w:75:ARG:O	52:w:79:VAL:HG13	2.21	0.40
54:y:52:ILE:HD12	54:y:53:SER:N	2.36	0.40
1:1:309:U:H3'	1:1:310:G:C8	2.57	0.40
1:1:881:A:H2'	1:1:882:U:C6	2.57	0.40
1:1:2743:C:H2'	1:1:2744:U:C6	2.56	0.40
1:1:2848:A:H2'	1:1:2849:G:H8	1.86	0.40
2:2:89:A:C2	2:2:90:G:H1'	2.56	0.40
2:2:732:A:H2'	2:2:733:G:C8	2.57	0.40
2:2:1105:G:N2	2:2:1106:U:O4	2.38	0.40
11:E:114:ILE:C	11:E:114:ILE:HD12	2.46	0.40
19:O:82:LEU:HA	19:O:82:LEU:HD12	1.76	0.40
19:O:89:ILE:HD12	19:O:89:ILE:C	2.46	0.40
36:f:10:ARG:O	36:f:10:ARG:HG3	2.22	0.40
38:i:11:ILE:HD11	38:i:60:TYR:CD2	2.57	0.40
40:k:107:LYS:HD3	40:k:107:LYS:O	2.21	0.40
45:p:123:LYS:HE2	45:p:123:LYS:HB3	1.71	0.40
47:r:44:LYS:O	47:r:47:GLU:HG3	2.22	0.40
49:t:1:MET:HA	49:t:37:HIS:CG	2.57	0.40
53:x:20:GLN:C	53:x:20:GLN:OE1	2.64	0.40
1:1:266:G:H21	13:G:52:LYS:NZ	2.19	0.40
1:1:925:C:C3'	1:1:926:A:H8	2.28	0.40
1:1:2108:A:H2'	1:1:2109:U:H6	1.86	0.40
2:2:848:A:H2'	2:2:849:A:C8	2.56	0.40
11:E:115:ARG:HD3	11:E:115:ARG:HA	1.85	0.40
22:R:6:GLU:C	22:R:6:GLU:OE1	2.64	0.40
25:U:71:ILE:HD12	25:U:71:ILE:HA	1.84	0.40
43:n:17:VAL:HG22	43:n:19:VAL:HG22	2.03	0.40
47:r:47:GLU:OE2	47:r:47:GLU:C	2.64	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles

### 5.3.1 Protein backbone

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	
4	4	34/50 (68%)	32 (94%)	2 (6%)	0	100	100
5	5	25/30 (83%)	25 (100%)	0	0	100	100
8	B	269/274 (98%)	252 (94%)	16 (6%)	1 (0%)	30	61
9	C	202/205 (98%)	189 (94%)	13 (6%)	0	100	100
10	D	204/209 (98%)	191 (94%)	13 (6%)	0	100	100
11	E	177/183 (97%)	164 (93%)	13 (7%)	0	100	100
12	F	175/180 (97%)	169 (97%)	6 (3%)	0	100	100
13	G	55/146 (38%)	48 (87%)	7 (13%)	0	100	100
14	J	148/151 (98%)	127 (86%)	21 (14%)	0	100	100
15	K	119/122 (98%)	113 (95%)	6 (5%)	0	100	100
16	L	148/150 (99%)	136 (92%)	12 (8%)	0	100	100
17	M	137/141 (97%)	129 (94%)	8 (6%)	0	100	100
18	N	123/163 (76%)	116 (94%)	7 (6%)	0	100	100
19	O	113/116 (97%)	104 (92%)	9 (8%)	0	100	100
20	P	110/116 (95%)	102 (93%)	8 (7%)	0	100	100
21	Q	111/114 (97%)	106 (96%)	5 (4%)	0	100	100
22	R	102/147 (69%)	90 (88%)	12 (12%)	0	100	100
23	S	126/137 (92%)	122 (97%)	4 (3%)	0	100	100
24	T	81/96 (84%)	75 (93%)	6 (7%)	0	100	100
25	U	88/104 (85%)	80 (91%)	8 (9%)	0	100	100
26	V	120/203 (59%)	113 (94%)	7 (6%)	0	100	100
27	W	76/86 (88%)	72 (95%)	4 (5%)	0	100	100
28	X	74/78 (95%)	71 (96%)	3 (4%)	0	100	100
29	Y	57/63 (90%)	53 (93%)	4 (7%)	0	100	100
30	Z	54/60 (90%)	47 (87%)	7 (13%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
31	a	56/84 (67%)	52 (93%)	4 (7%)	0	100	100
32	b	57/64 (89%)	50 (88%)	7 (12%)	0	100	100
33	c	52/60 (87%)	51 (98%)	1 (2%)	0	100	100
34	d	49/53 (92%)	49 (100%)	0	0	100	100
35	e	62/65 (95%)	53 (86%)	9 (14%)	0	100	100
36	f	36/38 (95%)	35 (97%)	1 (3%)	0	100	100
37	h	213/252 (84%)	202 (95%)	11 (5%)	0	100	100
38	i	198/201 (98%)	189 (96%)	9 (4%)	0	100	100
39	j	170/173 (98%)	159 (94%)	11 (6%)	0	100	100
40	k	105/113 (93%)	103 (98%)	2 (2%)	0	100	100
41	l	151/158 (96%)	144 (95%)	7 (5%)	0	100	100
42	m	129/132 (98%)	124 (96%)	5 (4%)	0	100	100
43	n	123/128 (96%)	115 (94%)	8 (6%)	0	100	100
44	o	96/101 (95%)	89 (93%)	7 (7%)	0	100	100
45	p	115/127 (91%)	108 (94%)	7 (6%)	0	100	100
46	q	119/127 (94%)	112 (94%)	7 (6%)	0	100	100
47	r	115/124 (93%)	108 (94%)	7 (6%)	0	100	100
48	s	86/89 (97%)	80 (93%)	6 (7%)	0	100	100
49	t	86/88 (98%)	84 (98%)	2 (2%)	0	100	100
50	u	107/188 (57%)	105 (98%)	2 (2%)	0	100	100
51	v	78/86 (91%)	76 (97%)	2 (3%)	0	100	100
52	w	55/98 (56%)	54 (98%)	1 (2%)	0	100	100
53	x	81/92 (88%)	76 (94%)	5 (6%)	0	100	100
54	y	77/83 (93%)	75 (97%)	2 (3%)	0	100	100
All	All	5344/6048 (88%)	5019 (94%)	324 (6%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
8	B	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	
4	4	30/44 (68%)	30 (100%)	0	100	100
5	5	23/26 (88%)	23 (100%)	0	100	100
8	B	215/225 (96%)	215 (100%)	0	100	100
9	C	156/162 (96%)	156 (100%)	0	100	100
10	D	150/181 (83%)	150 (100%)	0	100	100
11	E	121/156 (78%)	121 (100%)	0	100	100
12	F	121/148 (82%)	121 (100%)	0	100	100
13	G	40/118 (34%)	39 (98%)	1 (2%)	42	75
14	J	115/128 (90%)	114 (99%)	1 (1%)	75	92
15	K	89/100 (89%)	89 (100%)	0	100	100
16	L	93/115 (81%)	93 (100%)	0	100	100
17	M	102/116 (88%)	102 (100%)	0	100	100
18	N	101/131 (77%)	101 (100%)	0	100	100
19	O	79/90 (88%)	78 (99%)	1 (1%)	65	88
20	P	78/98 (80%)	78 (100%)	0	100	100
21	Q	89/94 (95%)	89 (100%)	0	100	100
22	R	72/112 (64%)	72 (100%)	0	100	100
23	S	93/116 (80%)	93 (100%)	0	100	100
24	T	70/85 (82%)	70 (100%)	0	100	100
25	U	68/89 (76%)	68 (100%)	0	100	100
26	V	81/163 (50%)	81 (100%)	0	100	100
27	W	60/69 (87%)	60 (100%)	0	100	100
28	X	62/69 (90%)	62 (100%)	0	100	100
29	Y	36/55 (66%)	36 (100%)	0	100	100
30	Z	41/52 (79%)	41 (100%)	0	100	100
31	a	40/75 (53%)	40 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
32	b	44/53 (83%)	44 (100%)	0	100	100
33	c	45/56 (80%)	45 (100%)	0	100	100
34	d	42/46 (91%)	42 (100%)	0	100	100
35	e	55/59 (93%)	54 (98%)	1 (2%)	54	83
36	f	31/34 (91%)	31 (100%)	0	100	100
37	h	153/201 (76%)	153 (100%)	0	100	100
38	i	163/173 (94%)	163 (100%)	0	100	100
39	j	111/138 (80%)	110 (99%)	1 (1%)	75	92
40	k	74/101 (73%)	72 (97%)	2 (3%)	40	74
41	l	114/136 (84%)	113 (99%)	1 (1%)	75	92
42	m	93/111 (84%)	93 (100%)	0	100	100
43	n	99/107 (92%)	95 (96%)	4 (4%)	27	60
44	o	72/94 (77%)	72 (100%)	0	100	100
45	p	80/102 (78%)	80 (100%)	0	100	100
46	q	97/107 (91%)	97 (100%)	0	100	100
47	r	87/100 (87%)	87 (100%)	0	100	100
48	s	61/73 (84%)	61 (100%)	0	100	100
49	t	66/79 (84%)	66 (100%)	0	100	100
50	u	68/136 (50%)	68 (100%)	0	100	100
51	v	71/81 (88%)	71 (100%)	0	100	100
52	w	45/87 (52%)	44 (98%)	1 (2%)	47	79
53	x	67/78 (86%)	67 (100%)	0	100	100
54	y	65/72 (90%)	65 (100%)	0	100	100
All	All	4028/5041 (80%)	4015 (100%)	13 (0%)	90	97

All (13) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
13	G	51	LEU
14	J	137	HIS
19	O	41	GLN
35	e	13	ARG
39	j	147	PHE
40	k	79	PHE

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Mol	Chain	Res	Type
40	k	81	ARG
41	l	31	TRP
43	n	4	ILE
43	n	7	ILE
43	n	19	VAL
43	n	97	LYS
52	w	73	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (26) such sidechains are listed below:

Mol	Chain	Res	Type
9	C	109	GLN
9	C	185	ASN
10	D	49	HIS
10	D	161	ASN
11	E	30	GLN
12	F	146	GLN
14	J	68	ASN
14	J	89	GLN
14	J	146	ASN
15	K	88	ASN
22	R	95	GLN
26	V	56	ASN
26	V	58	HIS
27	W	75	ASN
28	X	23	ASN
36	f	35	GLN
38	i	36	HIS
38	i	113	GLN
38	i	200	ASN
40	k	53	GLN
43	n	29	ASN
43	n	73	GLN
45	p	117	ASN
46	q	112	GLN
47	r	100	GLN
54	y	3	ASN

### 5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	1	2746/2862 (95%)	447 (16%)	23 (0%)
2	2	1477/1520 (97%)	288 (19%)	32 (2%)
3	3	109/111 (98%)	14 (12%)	0
6	6	17/23 (73%)	7 (41%)	0
7	A	71/77 (92%)	16 (22%)	0
All	All	4420/4593 (96%)	772 (17%)	55 (1%)

All (772) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	1	13	A
1	1	28	A
1	1	34	A
1	1	46	G
1	1	51	G
1	1	55	G
1	1	64	A
1	1	71	A
1	1	74	A
1	1	75	G
1	1	92	A
1	1	94	A
1	1	101	G
1	1	117	A
1	1	118	A
1	1	119	U
1	1	134	U
1	1	137	U
1	1	139	A
1	1	140	A
1	1	154	G
1	1	155	A
1	1	156	U
1	1	157	A
1	1	158	G
1	1	181	A
1	1	184	A
1	1	201	A
1	1	206	A
1	1	207	A
1	1	214	A
1	1	215	G
1	1	218	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	230	G
1	1	233	G
1	1	237	G
1	1	240	A
1	1	251	G
1	1	252	C
1	1	268	U
1	1	269	A
1	1	271	G
1	1	272	G
1	1	284	U
1	1	286	G
1	1	314	A
1	1	315	A
1	1	322	G
1	1	332	A
1	1	350	G
1	1	351	A
1	1	352	U
1	1	366	U
1	1	370	A
1	1	371	A
1	1	372	A
1	1	385	U
1	1	388	U
1	1	395	A
1	1	396	G
1	1	409	C
1	1	410	G
1	1	411	U
1	1	420	G
1	1	423	U
1	1	429	C
1	1	430	G
1	1	435	G
1	1	436	A
1	1	441	C
1	1	448	G
1	1	455	U
1	1	468	C
1	1	481	A
1	1	491	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	499	U
1	1	503	A
1	1	505	G
1	1	516	A
1	1	526	A
1	1	529	A
1	1	530	G
1	1	532	U
1	1	533	C
1	1	534	C
1	1	536	G
1	1	552	A
1	1	555	C
1	1	556	G
1	1	562	A
1	1	569	U
1	1	570	C
1	1	571	G
1	1	572	U
1	1	586	G
1	1	596	U
1	1	598	A
1	1	618	U
1	1	626	A
1	1	640	A
1	1	654	A
1	1	661	G
1	1	664	A
1	1	672	U
1	1	673	A
1	1	681	U
1	1	682	U
1	1	683	A
1	1	699	C
1	1	714	U
1	1	745	C
1	1	758	A
1	1	775	U
1	1	776	G
1	1	792	A
1	1	793	C
1	1	803	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	804	G
1	1	807	U
1	1	810	A
1	1	812	G
1	1	813	G
1	1	820	A
1	1	833	G
1	1	835	U
1	1	840	C
1	1	847	A
1	1	855	U
1	1	866	G
1	1	873	A
1	1	874	U
1	1	875	A
1	1	877	A
1	1	886	G
1	1	888	G
1	1	889	G
1	1	896	U
1	1	898	C
1	1	910	G
1	1	913	G
1	1	914	G
1	1	915	C
1	1	917	U
1	1	918	C
1	1	919	A
1	1	920	C
1	1	924	C
1	1	925	C
1	1	926	A
1	1	927	C
1	1	928	C
1	1	930	A
1	1	940	A
1	1	942	C
1	1	961	U
1	1	970	A
1	1	975	G
1	1	987	U
1	1	990	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	1003	G
1	1	1014	C
1	1	1019	A
1	1	1020	C
1	1	1024	C
1	1	1025	A
1	1	1041	U
1	1	1042	A
1	1	1046	G
1	1	1077	A
1	1	1078	G
1	1	1088	A
1	1	1090	G
1	1	1091	U
1	1	1092	U
1	1	1093	G
1	1	1098	G
1	1	1100	A
1	1	1101	A
1	1	1102	G
1	1	1104	A
1	1	1112	A
1	1	1113	U
1	1	1115	U
1	1	1119	G
1	1	1120	A
1	1	1126	U
1	1	1129	C
1	1	1130	A
1	1	1141	C
1	1	1143	A
1	1	1144	G
1	1	1157	G
1	1	1158	A
1	1	1159	U
1	1	1160	A
1	1	1162	U
1	1	1164	A
1	1	1166	C
1	1	1170	C
1	1	1173	A
1	1	1202	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	1203	G
1	1	1213	G
1	1	1232	A
1	1	1240	G
1	1	1265	A
1	1	1266	C
1	1	1275	A
1	1	1281	A
1	1	1284	G
1	1	1294	G
1	1	1299	G
1	1	1300	A
1	1	1304	U
1	1	1328	A
1	1	1334	U
1	1	1340	U
1	1	1341	U
1	1	1353	C
1	1	1369	U
1	1	1380	U
1	1	1393	A
1	1	1396	G
1	1	1407	U
1	1	1412	A
1	1	1423	A
1	1	1424	U
1	1	1441	A
1	1	1442	C
1	1	1443	U
1	1	1444	G
1	1	1445	U
1	1	1446	G
1	1	1447	A
1	1	1454	G
1	1	1455	A
1	1	1456	C
1	1	1463	A
1	1	1466	A
1	1	1468	A
1	1	1482	A
1	1	1483	C
1	1	1489	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	1499	A
1	1	1506	A
1	1	1510	A
1	1	1511	U
1	1	1512	A
1	1	1514	G
1	1	1521	A
1	1	1524	A
1	1	1528	U
1	1	1535	G
1	1	1540	G
1	1	1553	A
1	1	1561	G
1	1	1562	A
1	1	1564	U
1	1	1568	C
1	1	1569	G
1	1	1570	G
1	1	1571	A
1	1	1574	A
1	1	1578	G
1	1	1579	A
1	1	1581	A
1	1	1582	G
1	1	1583	U
1	1	1584	G
1	1	1590	A
1	1	1591	A
1	1	1592	G
1	1	1593	G
1	1	1603	A
1	1	1613	A
1	1	1615	A
1	1	1616	C
1	1	1617	U
1	1	1618	U
1	1	1641	U
1	1	1642	A
1	1	1644	A
1	1	1668	A
1	1	1680	C
1	1	1681	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	1682	C
1	1	1708	G
1	1	1709	C
1	1	1711	A
1	1	1747	A
1	1	1749	C
1	1	1750	A
1	1	1756	G
1	1	1763	G
1	1	1765	G
1	1	1770	G
1	1	1771	G
1	1	1780	A
1	1	1807	C
1	1	1818	G
1	1	1823	A
1	1	1836	A
1	1	1840	C
1	1	1855	A
1	1	1875	C
1	1	1877	U
1	1	1879	G
1	1	1880	G
1	1	1910	G
1	1	1912	C
1	1	1913	G
1	1	1920	A
1	1	1921	C
1	1	1934	A
1	1	1936	G
1	1	1937	G
1	1	1938	U
1	1	1941	C
1	1	1944	A
1	1	1945	A
1	1	1946	U
1	1	1947	U
1	1	1962	U
1	1	1974	C
1	1	1977	A
1	1	1978	U
1	1	1979	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	1998	U
1	1	2000	U
1	1	2004	A
1	1	2011	A
1	1	2029	U
1	1	2030	A
1	1	2038	A
1	1	2039	G
1	1	2040	A
1	1	2041	U
1	1	2043	C
1	1	2046	U
1	1	2050	C
1	1	2062	C
1	1	2063	G
1	1	2067	A
1	1	2068	G
1	1	2069	A
1	1	2076	G
1	1	2084	A
1	1	2100	G
1	1	2107	G
1	1	2112	A
1	1	2194	A
1	1	2195	U
1	1	2197	U
1	1	2198	G
1	1	2205	A
1	1	2206	A
1	1	2212	C
1	1	2213	U
1	1	2218	G
1	1	2221	G
1	1	2223	A
1	1	2234	U
1	1	2236	G
1	1	2237	G
1	1	2251	G
1	1	2281	U
1	1	2285	A
1	1	2286	A
1	1	2292	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	2303	U
1	1	2306	G
1	1	2307	U
1	1	2308	A
1	1	2309	A
1	1	2310	C
1	1	2317	U
1	1	2318	A
1	1	2320	A
1	1	2325	A
1	1	2333	A
1	1	2345	C
1	1	2359	G
1	1	2377	G
1	1	2381	A
1	1	2383	C
1	1	2400	U
1	1	2401	C
1	1	2404	C
1	1	2412	G
1	1	2417	U
1	1	2421	U
1	1	2423	A
1	1	2424	A
1	1	2427	G
1	1	2428	A
1	1	2439	G
1	1	2446	A
1	1	2473	C
1	1	2474	A
1	1	2489	U
1	1	2496	C
1	1	2498	U
1	1	2500	G
1	1	2503	G
1	1	2504	U
1	1	2516	A
1	1	2527	G
1	1	2552	U
1	1	2564	A
1	1	2565	G
1	1	2567	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	2571	C
1	1	2580	G
1	1	2600	A
1	1	2607	U
1	1	2608	C
1	1	2611	U
1	1	2626	U
1	1	2627	U
1	1	2644	C
1	1	2659	G
1	1	2661	G
1	1	2687	U
1	1	2712	G
1	1	2724	C
1	1	2731	A
1	1	2746	A
1	1	2763	A
1	1	2776	A
1	1	2787	U
1	1	2788	U
1	1	2789	U
1	1	2790	A
1	1	2792	G
1	1	2801	A
1	1	2802	A
1	1	2816	A
1	1	2830	U
1	1	2846	A
1	1	2847	U
1	1	2849	G
1	1	2853	A
1	1	2858	U
1	1	2860	C
1	1	2864	U
1	1	2866	A
1	1	2867	U
2	2	0	U
2	2	3	G
2	2	4	A
2	2	9	G
2	2	22	G
2	2	29	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	2	32	A
2	2	39	G
2	2	47	C
2	2	48	U
2	2	51	A
2	2	58	C
2	2	61	G
2	2	64	G
2	2	69	G
2	2	72	G
2	2	110	A
2	2	111	C
2	2	126	C
2	2	128	U
2	2	133	C
2	2	135	G
2	2	136	A
2	2	148	G
2	2	149	A
2	2	154	U
2	2	164	U
2	2	170	A
2	2	174	U
2	2	175	A
2	2	182	A
2	2	187	C
2	2	188	A
2	2	190	C
2	2	191	A
2	2	193	U
2	2	194	U
2	2	198	A
2	2	204	A
2	2	207	C
2	2	211	A
2	2	213	G
2	2	218	A
2	2	236	A
2	2	237	U
2	2	238	U
2	2	240	G
2	2	243	A

*Continued on next page...*

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	2	244	G
2	2	251	A
2	2	259	G
2	2	260	C
2	2	272	A
2	2	273	C
2	2	282	G
2	2	299	A
2	2	314	A
2	2	320	A
2	2	321	C
2	2	322	A
2	2	325	G
2	2	340	G
2	2	344	G
2	2	345	C
2	2	347	G
2	2	360	U
2	2	361	U
2	2	362	G
2	2	365	C
2	2	381	G
2	2	390	A
2	2	399	G
2	2	403	G
2	2	404	A
2	2	405	U
2	2	406	G
2	2	407	A
2	2	408	C
2	2	423	U
2	2	432	U
2	2	450	C
2	2	455	A
2	2	457	A
2	2	458	U
2	2	461	A
2	2	462	G
2	2	464	A
2	2	465	G
2	2	467	U
2	2	469	G

*Continued on next page...*

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	2	470	A
2	2	472	G
2	2	481	A
2	2	483	A
2	2	499	C
2	2	506	C
2	2	515	G
2	2	519	U
2	2	520	A
2	2	535	A
2	2	547	A
2	2	550	C
2	2	552	C
2	2	560	A
2	2	561	A
2	2	563	G
2	2	564	G
2	2	565	G
2	2	576	G
2	2	584	A
2	2	618	A
2	2	621	G
2	2	638	A
2	2	641	U
2	2	652	G
2	2	653	A
2	2	654	A
2	2	655	G
2	2	675	A
2	2	682	A
2	2	709	A
2	2	710	A
2	2	711	U
2	2	719	G
2	2	735	U
2	2	736	U
2	2	743	G
2	2	765	A
2	2	769	A
2	2	775	A
2	2	781	U
2	2	782	A

*Continued on next page...*

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	2	797	G
2	2	803	A
2	2	805	C
2	2	807	A
2	2	816	A
2	2	827	G
2	2	829	A
2	2	830	A
2	2	831	G
2	2	855	A
2	2	856	A
2	2	890	A
2	2	897	A
2	2	898	A
2	2	909	G
2	2	910	G
2	2	917	C
2	2	918	A
2	2	943	U
2	2	944	U
2	2	949	G
2	2	952	A
2	2	954	G
2	2	958	G
2	2	959	G
2	2	960	A
2	2	964	U
2	2	966	A
2	2	974	U
2	2	976	A
2	2	984	A
2	2	985	C
2	2	986	U
2	2	987	G
2	2	988	A
2	2	989	C
2	2	990	C
2	2	992	A
2	2	993	U
2	2	1003	G
2	2	1004	A
2	2	1007	U

*Continued on next page...*

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	2	1019	A
2	2	1020	G
2	2	1023	U
2	2	1024	A
2	2	1027	A
2	2	1032	C
2	2	1034	G
2	2	1040	U
2	2	1047	C
2	2	1073	A
2	2	1075	G
2	2	1076	U
2	2	1082	A
2	2	1094	C
2	2	1105	G
2	2	1106	U
2	2	1108	G
2	2	1109	C
2	2	1110	C
2	2	1114	G
2	2	1126	G
2	2	1127	A
2	2	1131	C
2	2	1134	A
2	2	1139	A
2	2	1140	C
2	2	1141	U
2	2	1142	G
2	2	1143	C
2	2	1144	C
2	2	1145	A
2	2	1146	G
2	2	1148	G
2	2	1154	U
2	2	1155	G
2	2	1156	U
2	2	1157	G
2	2	1159	G
2	2	1160	G
2	2	1161	A
2	2	1163	G
2	2	1164	G

*Continued on next page...*

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	2	1165	U
2	2	1166	G
2	2	1171	U
2	2	1178	A
2	2	1179	A
2	2	1180	A
2	2	1183	A
2	2	1184	U
2	2	1194	U
2	2	1195	A
2	2	1207	A
2	2	1208	C
2	2	1209	A
2	2	1212	C
2	2	1215	G
2	2	1218	A
2	2	1220	A
2	2	1223	G
2	2	1225	C
2	2	1226	C
2	2	1228	G
2	2	1239	A
2	2	1240	G
2	2	1252	C
2	2	1254	A
2	2	1255	G
2	2	1262	A
2	2	1267	U
2	2	1268	A
2	2	1279	C
2	2	1280	A
2	2	1281	G
2	2	1283	U
2	2	1284	C
2	2	1286	G
2	2	1301	C
2	2	1312	G
2	2	1320	A
2	2	1321	A
2	2	1327	A
2	2	1328	G
2	2	1329	U

*Continued on next page...*

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	2	1334	G
2	2	1339	U
2	2	1344	C
2	2	1345	A
2	2	1346	U
2	2	1352	G
2	2	1380	A
2	2	1388	U
2	2	1406	G
2	2	1424	A
2	2	1441	A
2	2	1460	G
2	2	1466	A
2	2	1467	G
2	2	1470	G
2	2	1476	A
2	2	1479	U
2	2	1480	A
2	2	1490	G
2	2	1492	A
2	2	1493	G
2	2	1502	G
2	2	1503	G
2	2	1504	A
2	2	1511	C
2	2	1512	C
2	2	1513	U
2	2	1514	U
2	2	1515	U
2	2	1517	U
3	3	10	U
3	3	11	A
3	3	32	U
3	3	38	C
3	3	39	C
3	3	53	U
3	3	54	A
3	3	64	G
3	3	84	U
3	3	85	U
3	3	91	A
3	3	97	U

*Continued on next page...*

*Continued from previous page...*

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	3	101	G
3	3	107	U
6	6	-18	A
6	6	-17	G
6	6	-15	G
6	6	-14	G
6	6	-13	A
6	6	-11	G
6	6	1	A
7	A	5	G
7	A	6	G
7	A	7	G
7	A	9	G
7	A	20	G
7	A	21	U
7	A	22	A
7	A	48	U
7	A	49	C
7	A	53	G
7	A	54	G
7	A	55	U
7	A	59	A
7	A	66	C
7	A	71	G
7	A	77	A

All (55) RNA pucker outliers are listed below:

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	27	A
1	1	155	A
1	1	502	A
1	1	568	U
1	1	570	C
1	1	698	A
1	1	812	G
1	1	876	A
1	1	895	C
1	1	897	A
1	1	1157	G
1	1	1441	A
1	1	1488	U

*Continued on next page...*

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	1505	U
1	1	1561	G
1	1	1570	G
1	1	1582	G
1	1	1592	G
1	1	1615	A
1	1	1937	G
1	1	2217	C
1	1	2423	A
1	1	2472	U
2	2	2	C
2	2	3	G
2	2	110	A
2	2	236	A
2	2	243	A
2	2	321	C
2	2	404	A
2	2	989	C
2	2	992	A
2	2	1023	U
2	2	1031	G
2	2	1039	G
2	2	1109	C
2	2	1125	G
2	2	1139	A
2	2	1141	U
2	2	1154	U
2	2	1155	G
2	2	1156	U
2	2	1165	U
2	2	1179	A
2	2	1211	A
2	2	1217	U
2	2	1224	G
2	2	1225	C
2	2	1227	G
2	2	1238	C
2	2	1280	A
2	2	1285	G
2	2	1328	G
2	2	1351	C
2	2	1379	C

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

There are no non-standard protein/DNA/RNA residues in this entry.

## 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

There are no ligands in this entry.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

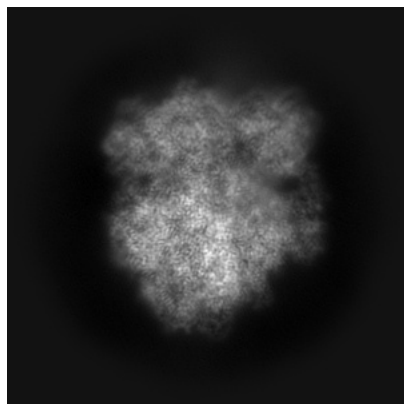
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-71069. These allow visual inspection of the internal detail of the map and identification of artifacts.

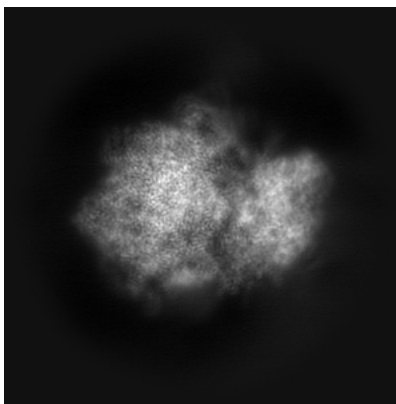
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

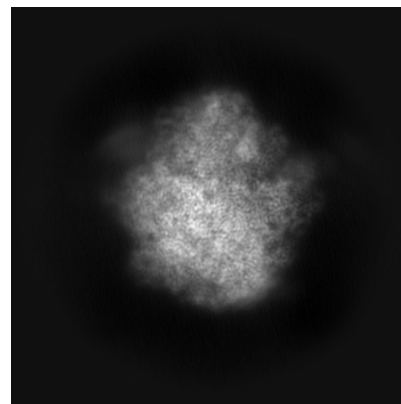
#### 6.1.1 Primary map



X

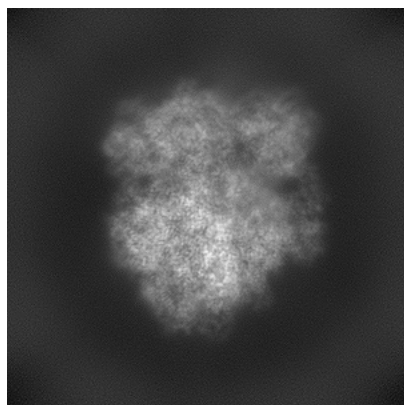


Y

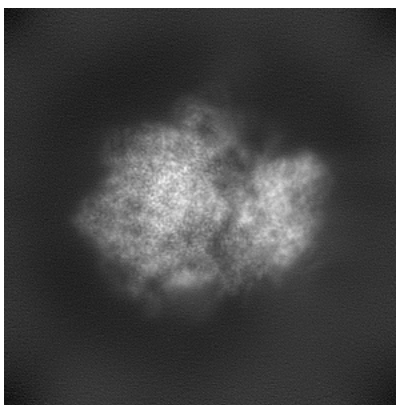


Z

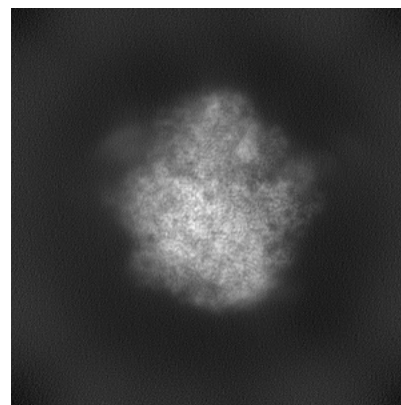
#### 6.1.2 Raw map



X



Y

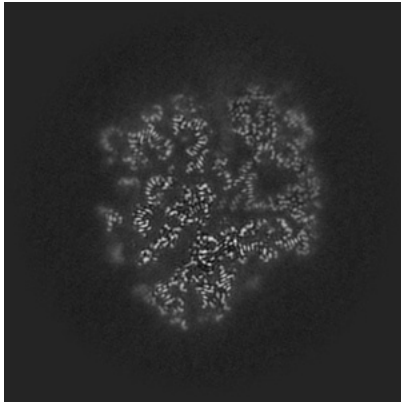


Z

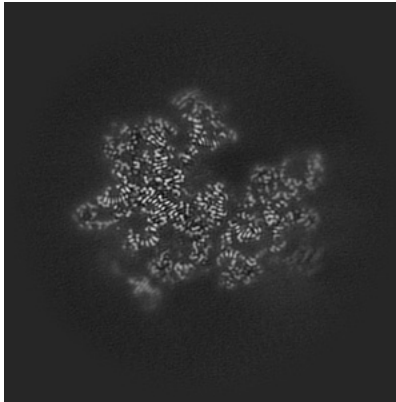
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

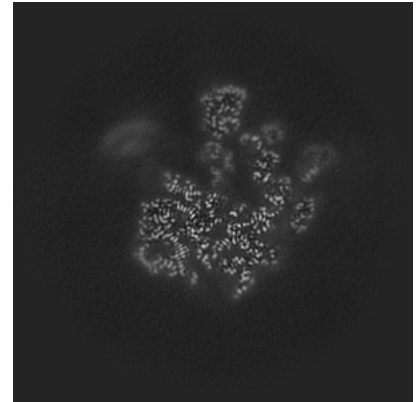
### 6.2.1 Primary map



X Index: 240

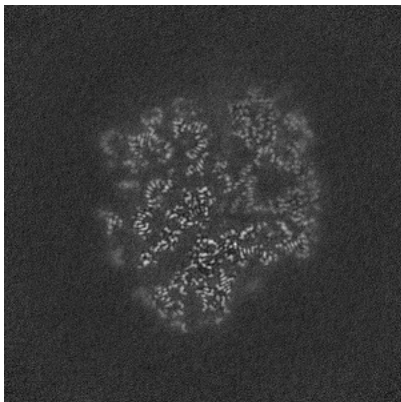


Y Index: 240

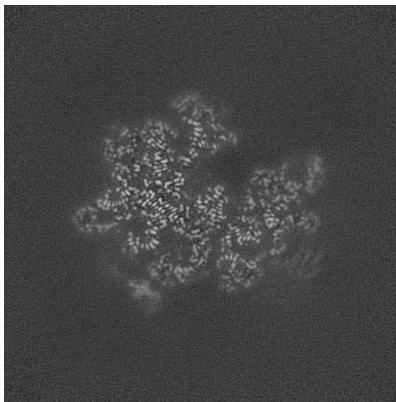


Z Index: 240

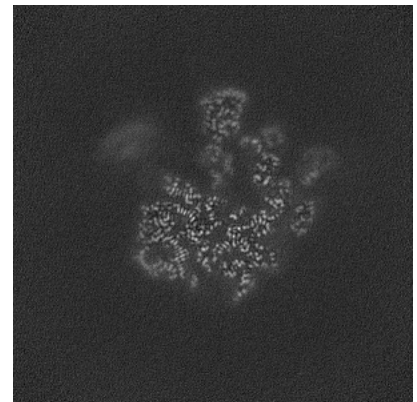
### 6.2.2 Raw map



X Index: 240



Y Index: 240

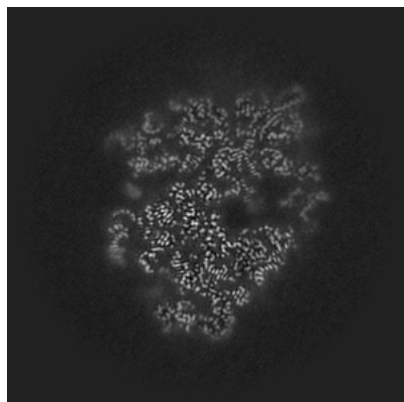


Z Index: 240

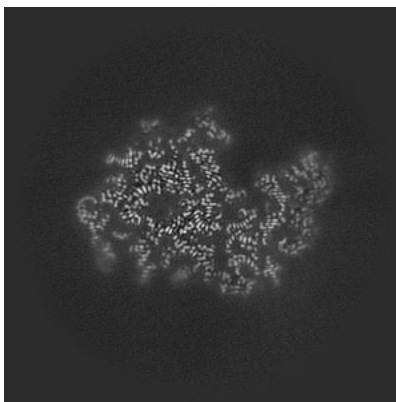
The images above show central slices of the map in three orthogonal directions.

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

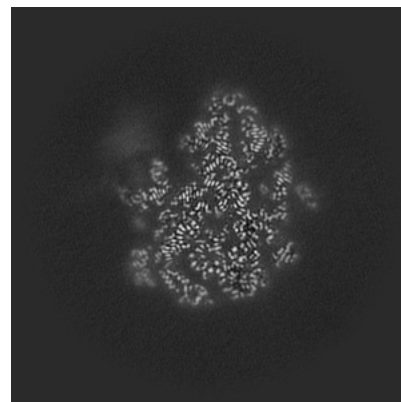
### 6.3.1 Primary map



X Index: 228

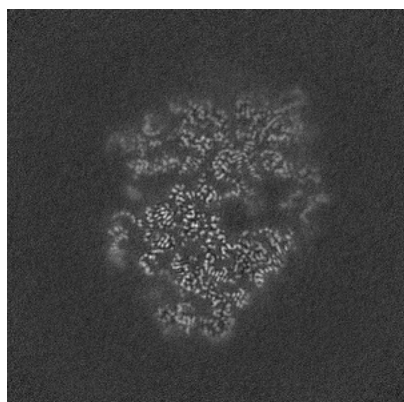


Y Index: 217

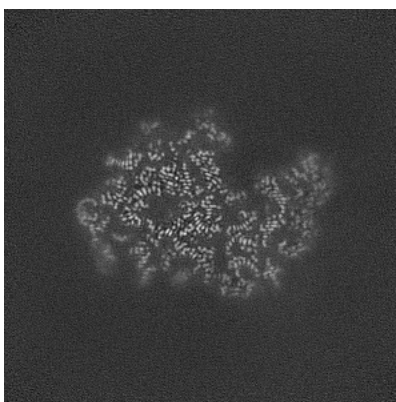


Z Index: 205

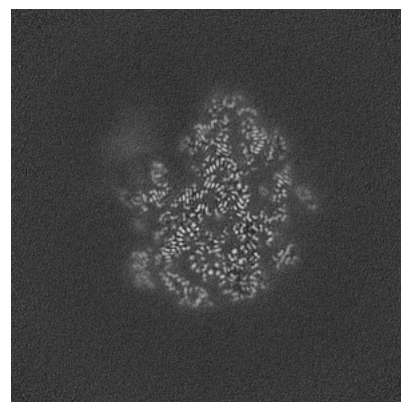
### 6.3.2 Raw map



X Index: 228



Y Index: 217

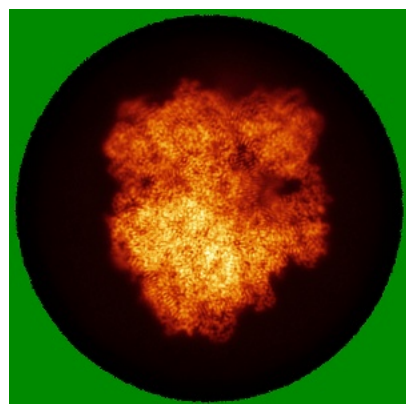


Z Index: 205

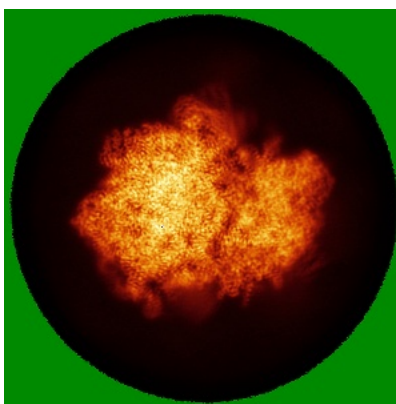
The images above show the largest variance slices of the map in three orthogonal directions.

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

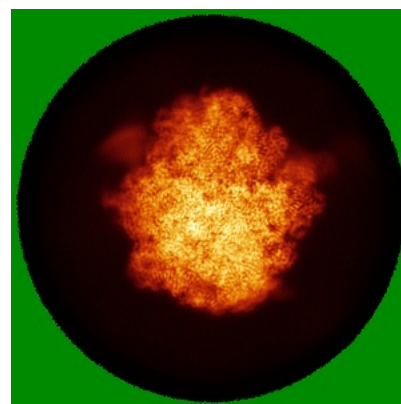
### 6.4.1 Primary map



X

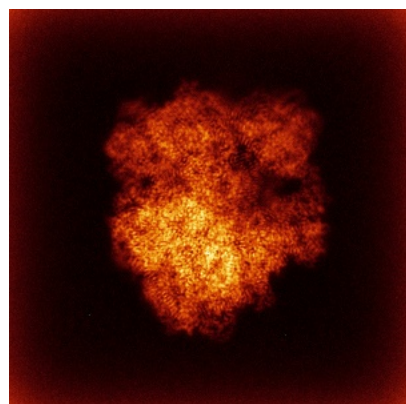


Y

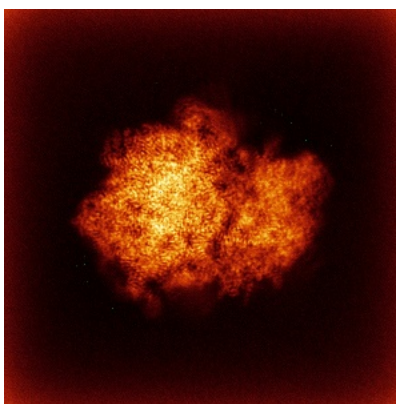


Z

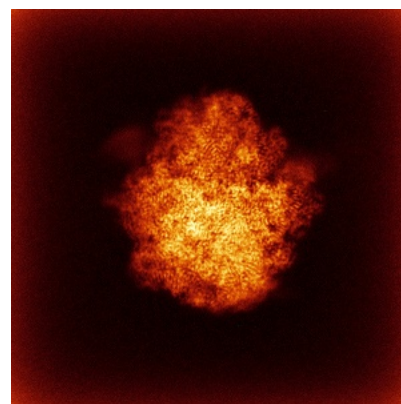
### 6.4.2 Raw map



X



Y

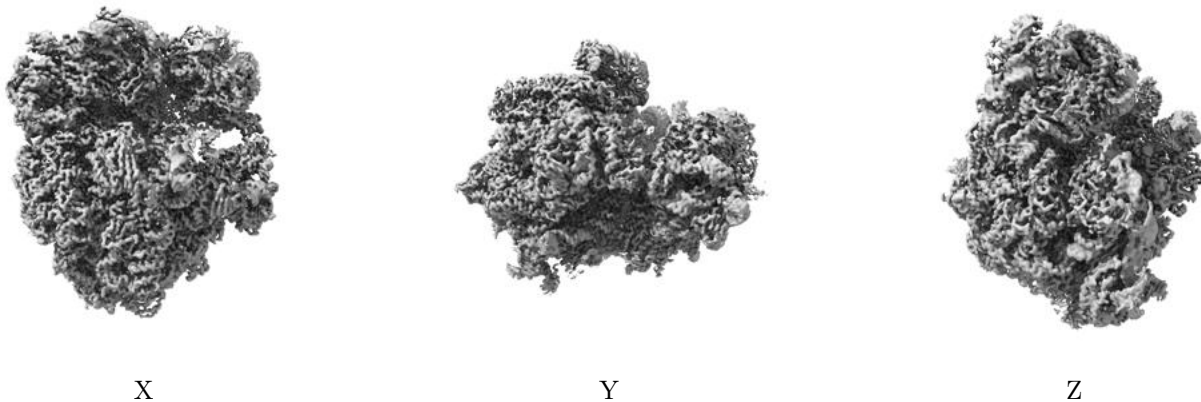


Z

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.

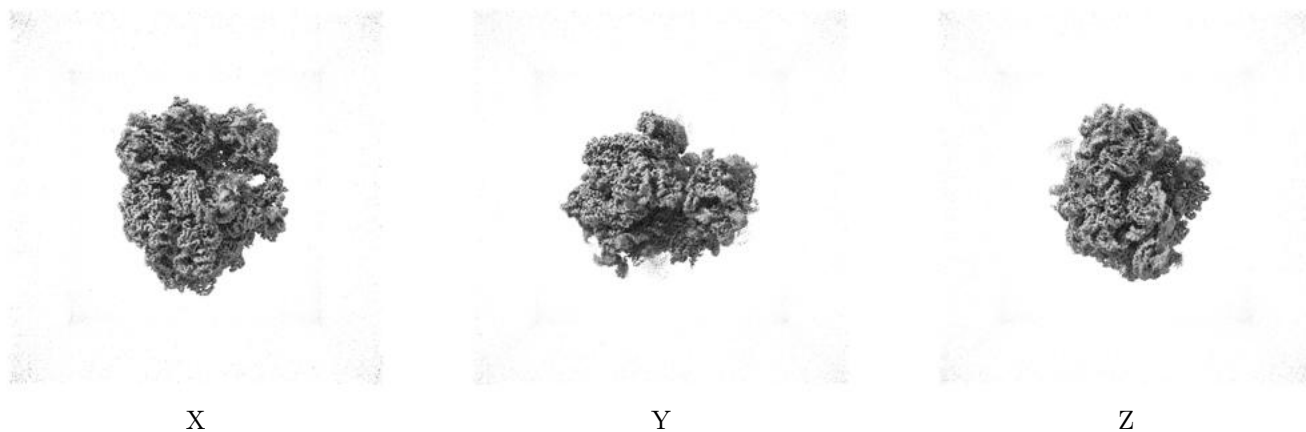
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.08. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

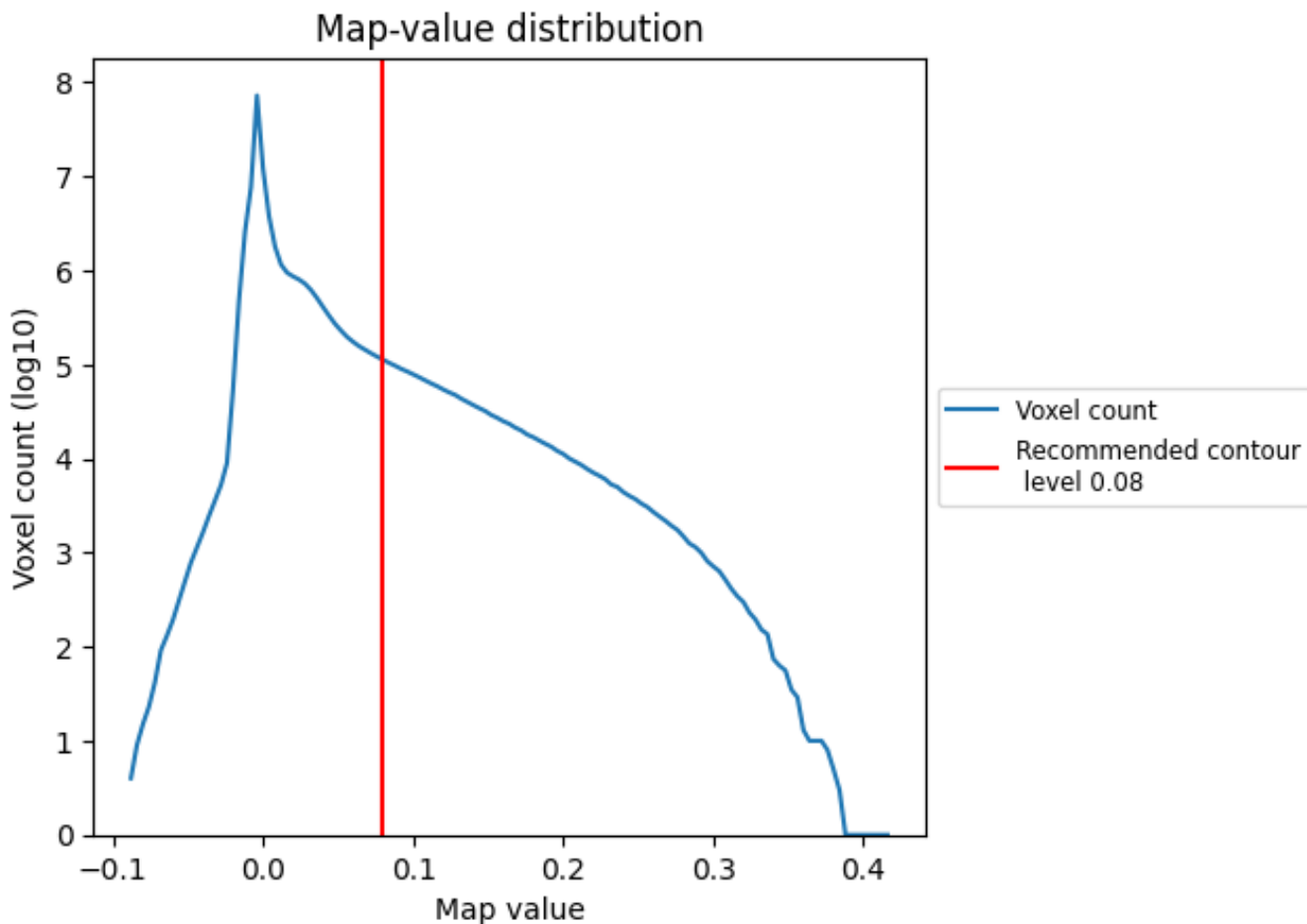
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

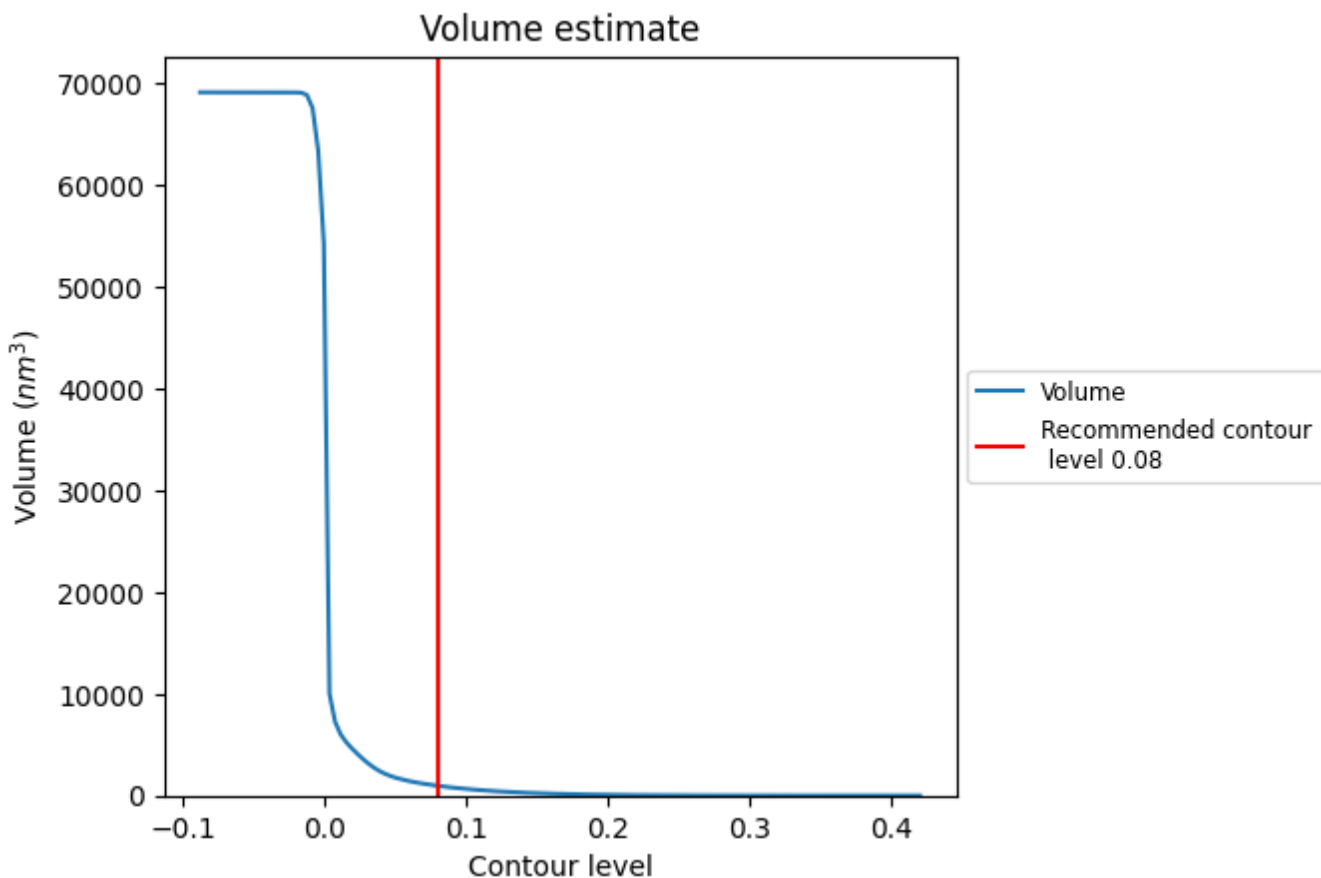
This section contains the results of statistical analysis of the map.

### 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.

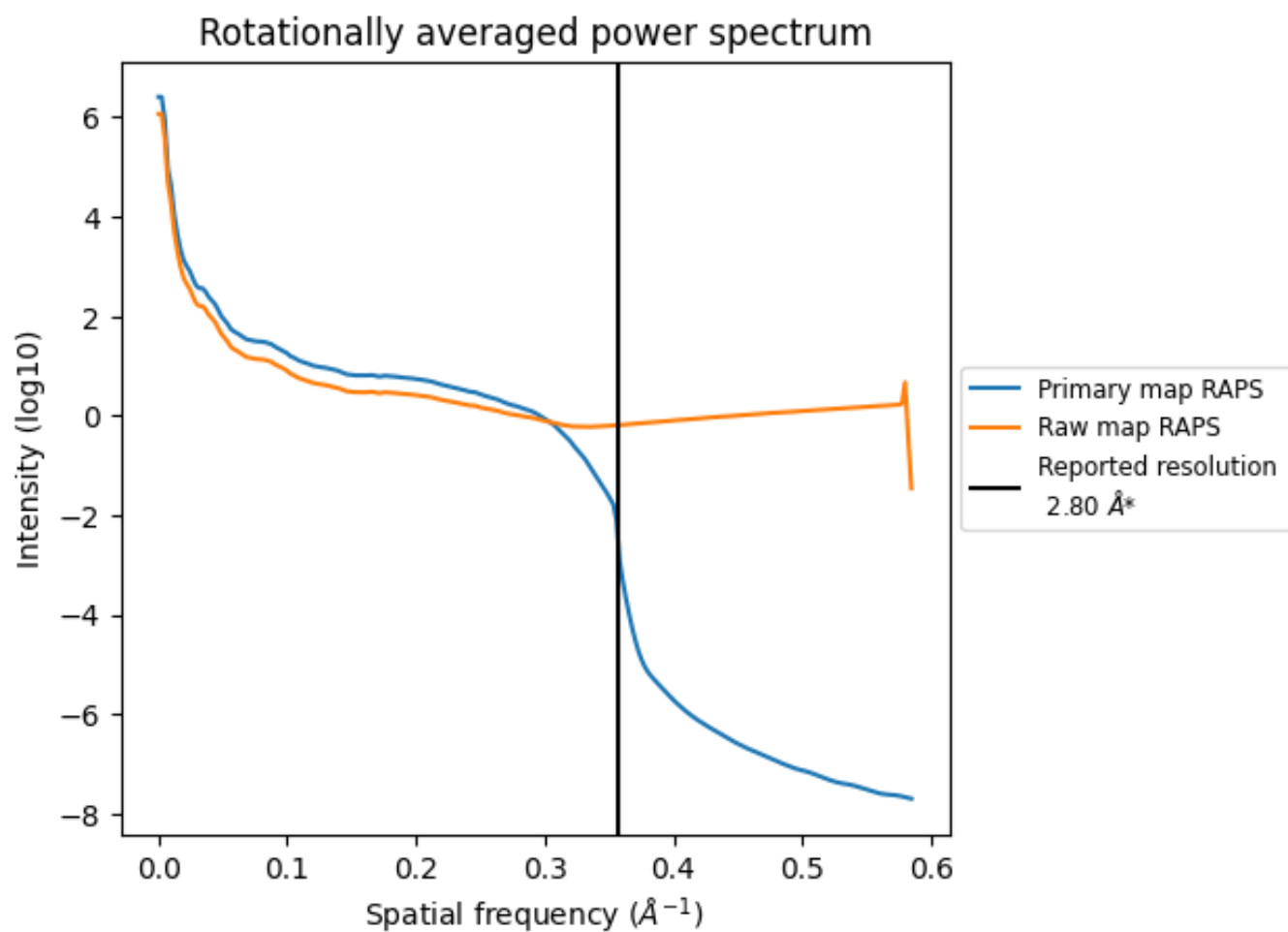
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 954 nm<sup>3</sup>; this corresponds to an approximate mass of 862 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

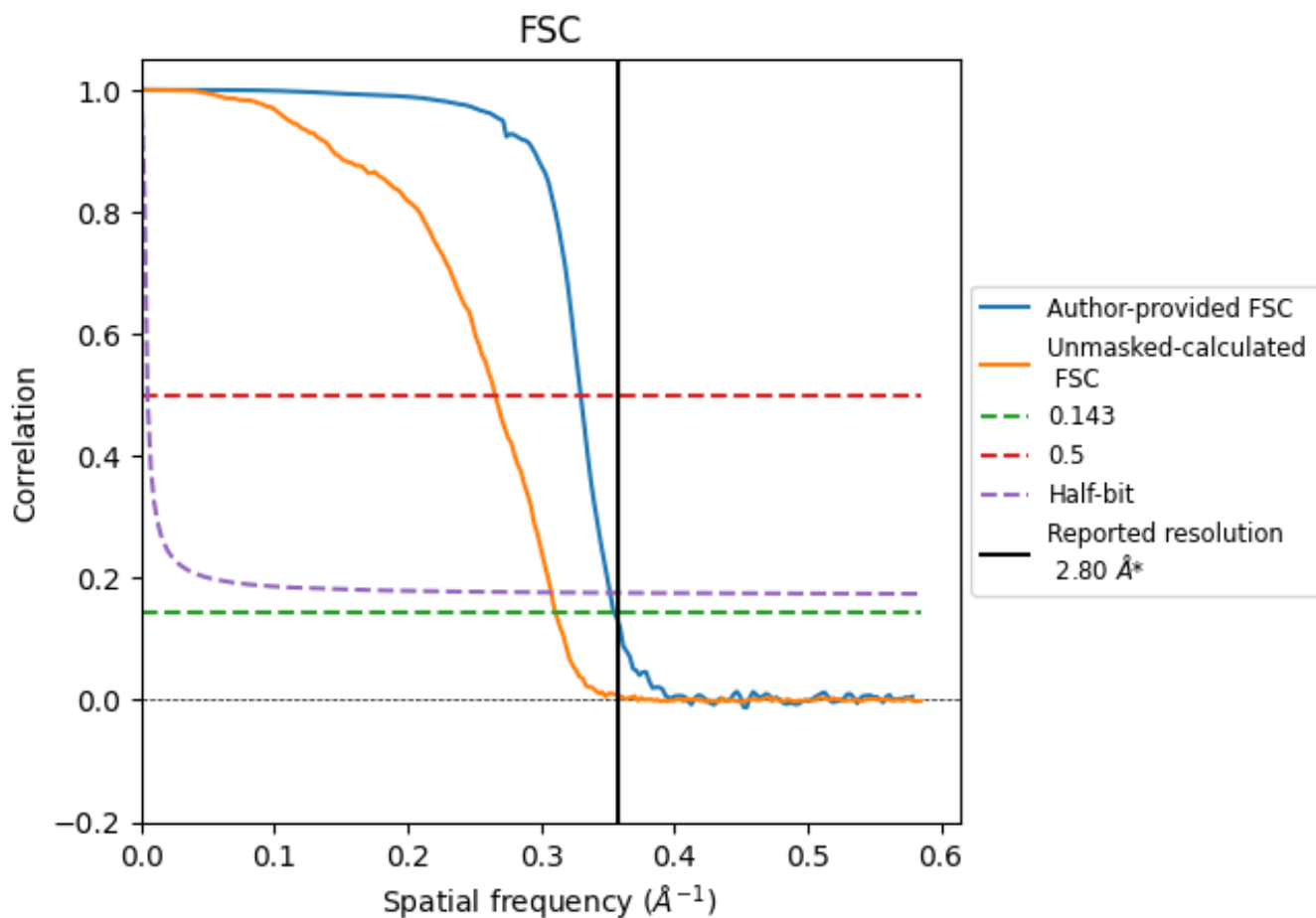


\*Reported resolution corresponds to spatial frequency of 0.357 Å<sup>-1</sup>

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

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

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of 0.357 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

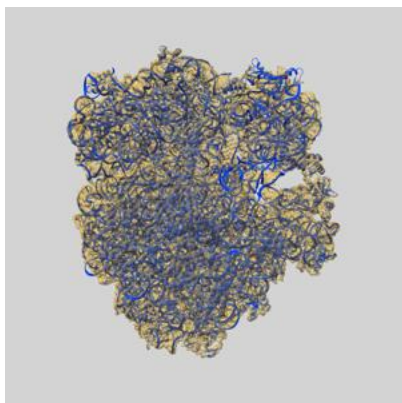
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.80	-	-
Author-provided FSC curve	2.82	3.03	2.84
Unmasked-calculated*	3.22	3.77	3.25

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.22 differs from the reported value 2.8 by more than 10 %

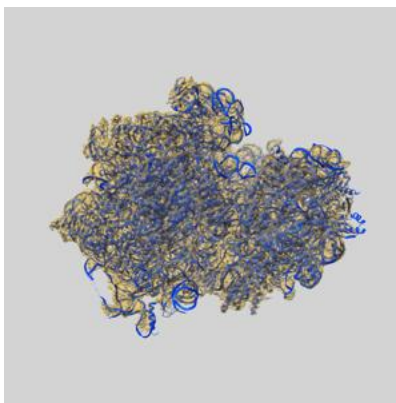
## 9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-71069 and PDB model 9P0E. Per-residue inclusion information can be found in section 3 on page 16.

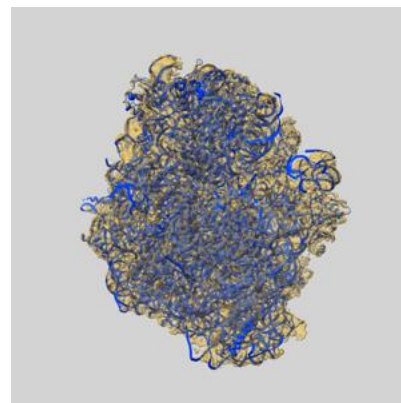
### 9.1 Map-model overlay [i](#)



X



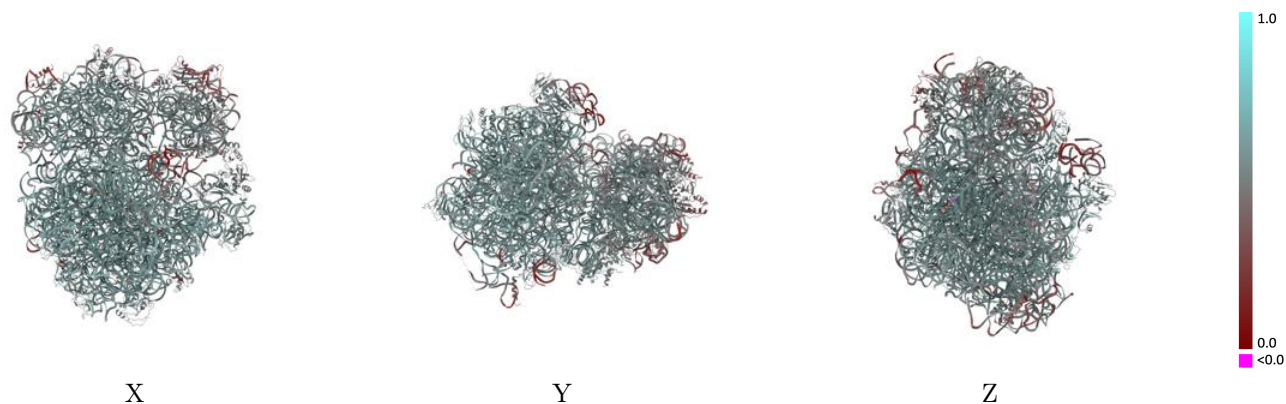
Y



Z

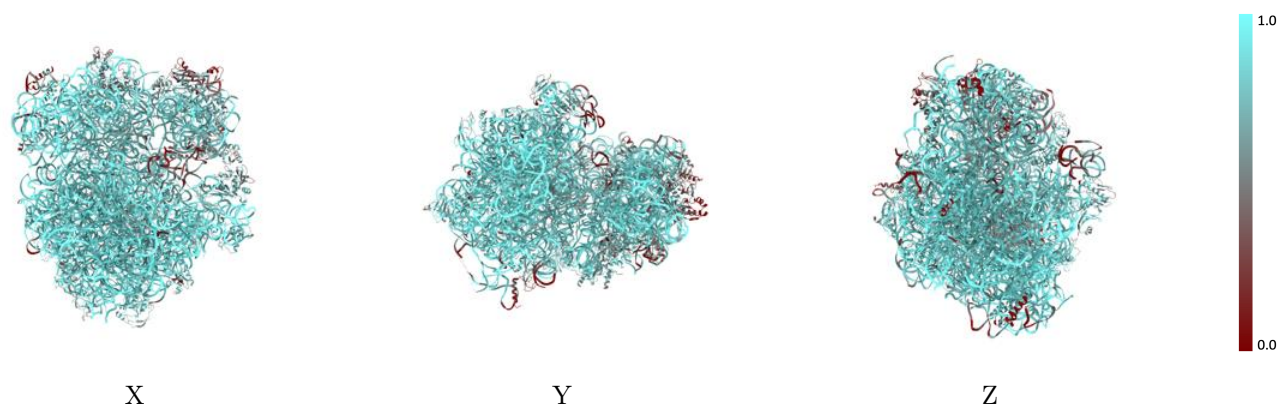
The images above show the 3D surface view of the map at the recommended contour level 0.08 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



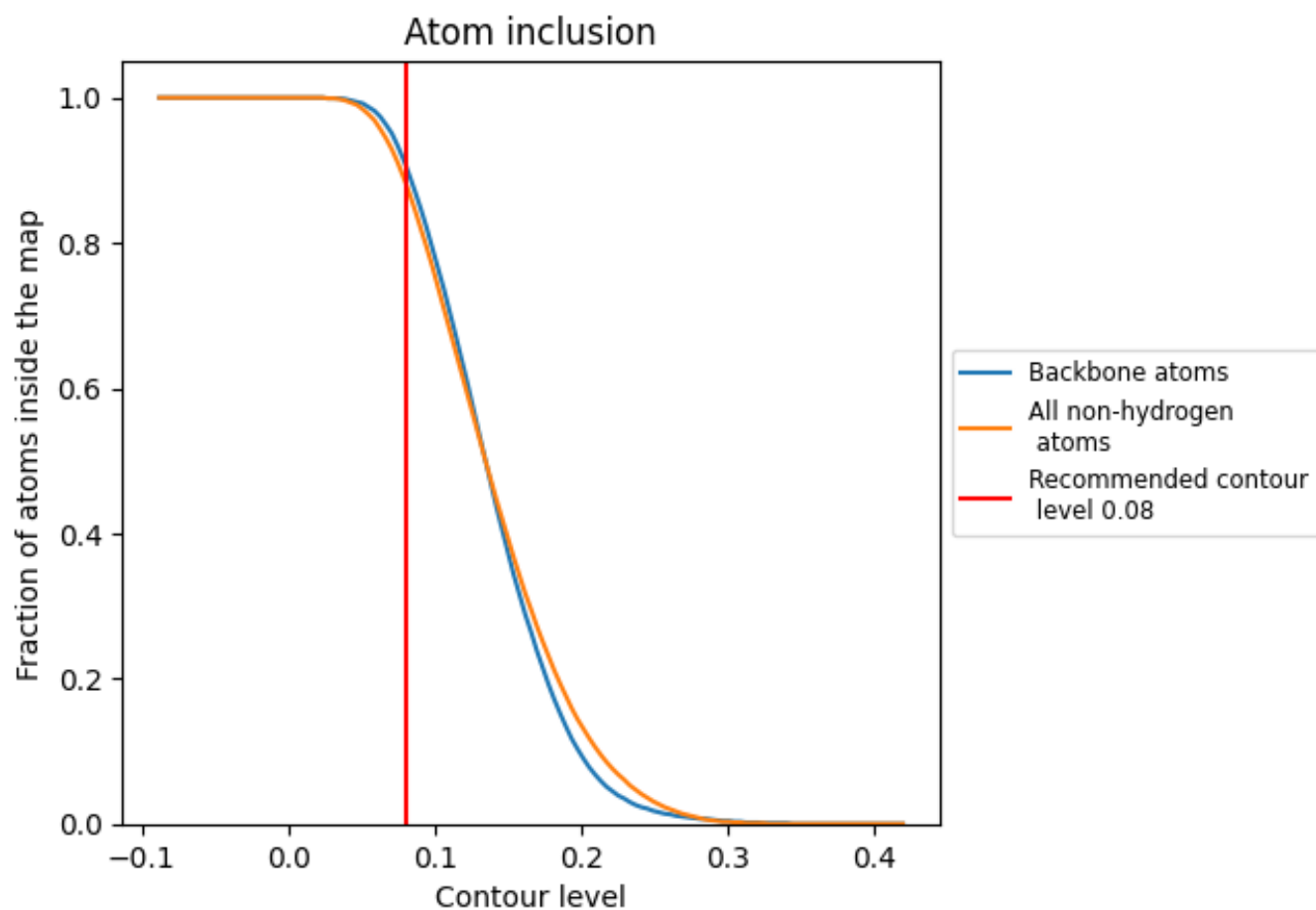
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.08).







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 91% of all backbone atoms, 88% 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 (0.08) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8840	 0.5610
1	 0.9460	 0.5820
2	 0.9240	 0.5430
3	 0.9570	 0.5620
4	 0.6840	 0.5150
5	 0.8130	 0.5900
6	 0.5660	 0.4050
A	 0.7410	 0.5480
B	 0.9030	 0.5970
C	 0.9060	 0.5960
D	 0.8680	 0.5750
E	 0.7410	 0.5280
F	 0.7220	 0.5290
G	 0.3310	 0.4600
J	 0.8790	 0.5780
K	 0.8850	 0.5990
L	 0.8710	 0.5810
M	 0.9010	 0.5950
N	 0.9290	 0.5920
O	 0.8040	 0.5500
P	 0.8830	 0.5890
Q	 0.9130	 0.5880
R	 0.8620	 0.5920
S	 0.9140	 0.5860
T	 0.8180	 0.5570
U	 0.6100	 0.5290
V	 0.7680	 0.5440
W	 0.9160	 0.6010
X	 0.8530	 0.5770
Y	 0.6230	 0.5000
Z	 0.9060	 0.5770
a	 0.5870	 0.5240
b	 0.9470	 0.6090
c	 0.8100	 0.5650
d	 0.9720	 0.6240



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Chain	Atom inclusion	Q-score
e	 0.9340	 0.6010
f	 0.8930	 0.5930
h	 0.5180	 0.4790
i	 0.5670	 0.4940
j	 0.7500	 0.5430
k	 0.8020	 0.5470
l	 0.5230	 0.5020
m	 0.8290	 0.5600
n	 0.5540	 0.4640
o	 0.4490	 0.4420
p	 0.7590	 0.5550
q	 0.7820	 0.5760
r	 0.4520	 0.4280
s	 0.7170	 0.5230
t	 0.8360	 0.5430
u	 0.6650	 0.4900
v	 0.7640	 0.5490
w	 0.7530	 0.5310
x	 0.5890	 0.4850
y	 0.7180	 0.5110