Full wwPDB EM Validation Report

Mar 2, 2024 – 08:13 pm GMT

PDB ID	:	8RDV
EMDB ID	:	EMD-19076
Title	:	Cryo-EM structure of P. urativorans 70S ribosome in complex with hibernation factor Balon, mRNA and P-site tRNA (structure 2).
Authors	:	Helena-Bueno, K.; Rybak, M.Y.; Gagnon, M.G.; Hill, C.H.; Melnikov, S.V.
Deposited on	:	2023-12-08
Resolution	:	2.60 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

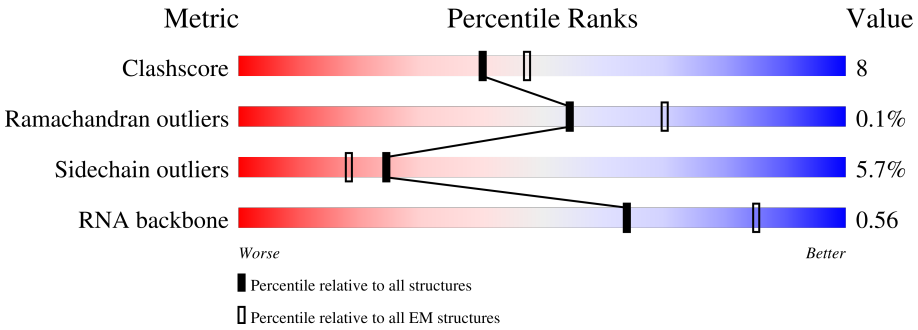
EMDB validation analysis	:	0.0.1.dev70
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 2.60 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)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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

Mol	Chain	Length	Quality of chain
1	B	369	15% 75% 21%
2	F	128	55% 70% 27%
3	H	396	38% 34% 11% 53%
4	Z2	2882	60% 30% 6%
5	R3	76	16% 61% 12% 26%
6	A4	269	57% 67% 19% 13%
7	E5	171	11% 73% 19% 9%

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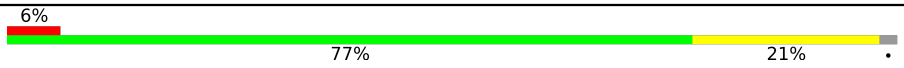
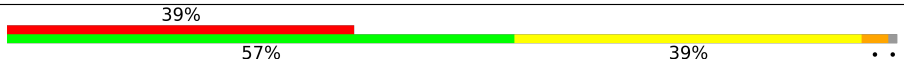
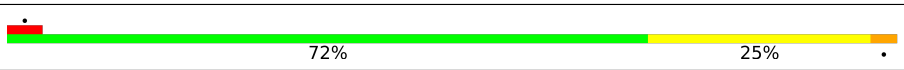
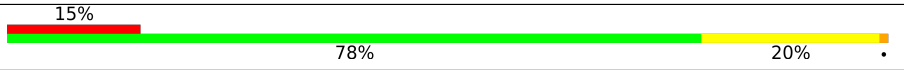
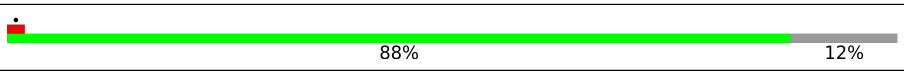
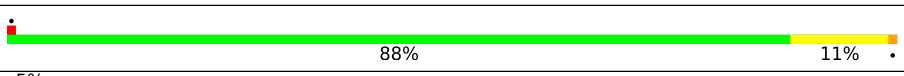
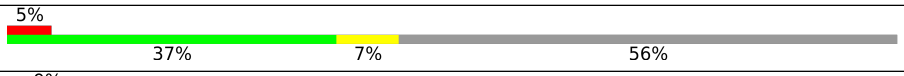
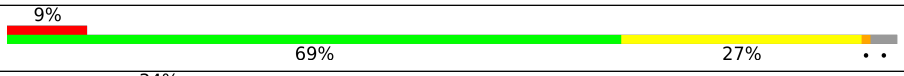
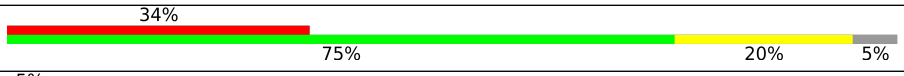
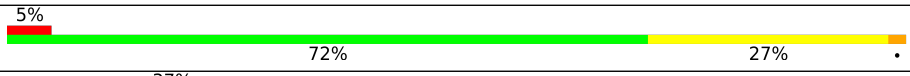
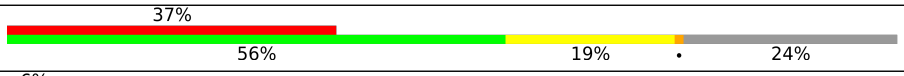
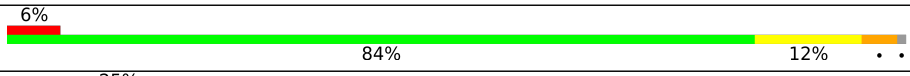
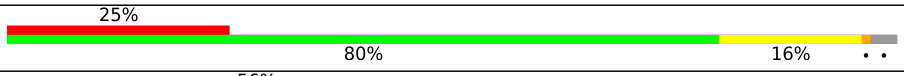
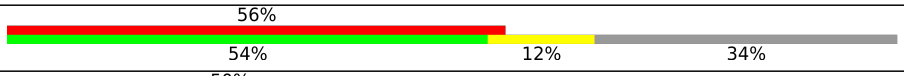
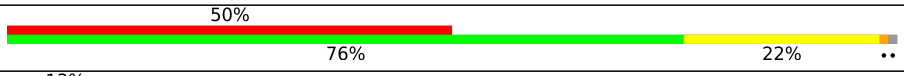
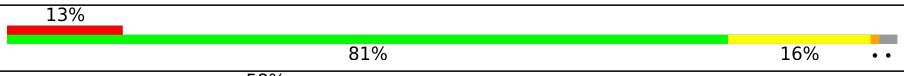
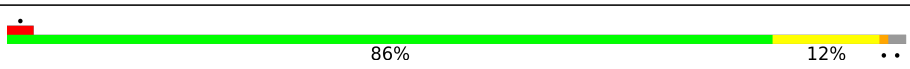
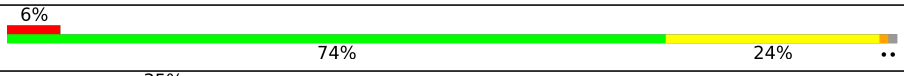
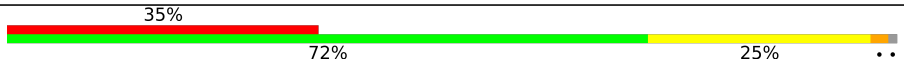
Mol	Chain	Length	Quality of chain
8	L6	124	
9	F7	178	
10	D8	115	
11	E9	200	
12	aA	60	
13	MB	119	
14	UC	219	
15	WD	78	
16	XE	65	
17	RF	109	
18	FG	134	
19	VH	85	
20	TI	105	
21	fJ	93	
22	HK	101	
23	OL	88	
24	MM	118	
25	PO	118	
26	SP	91	
27	BQ	132	
28	GR	177	
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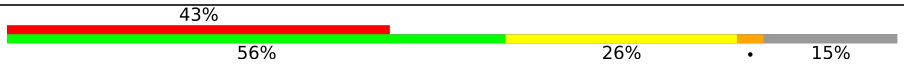
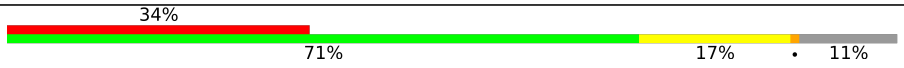
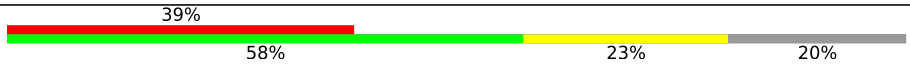
30	CT	241	
31	KU	129	
32	NV	71	

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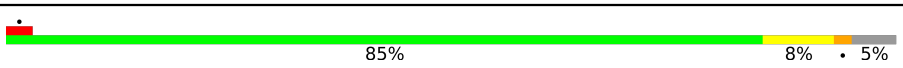
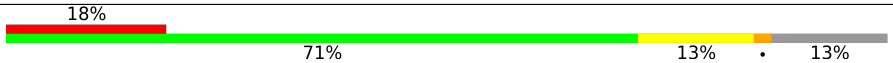
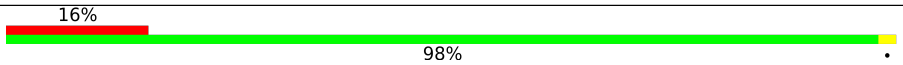
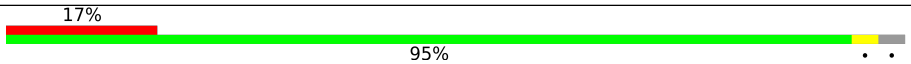
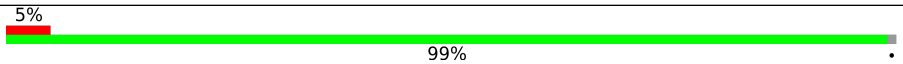
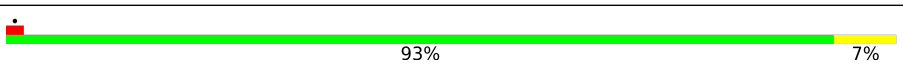
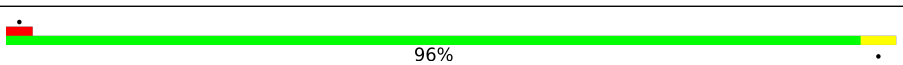
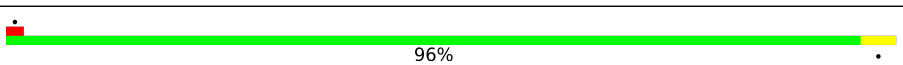
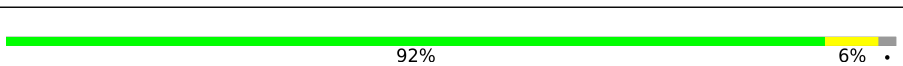
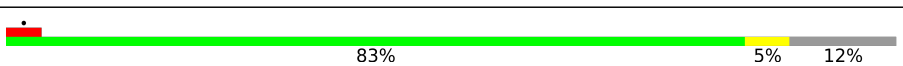
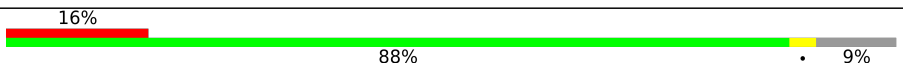
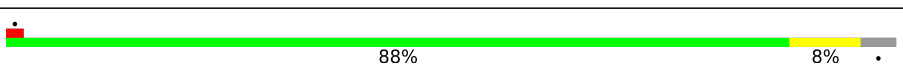
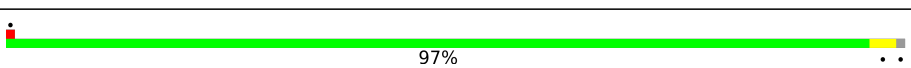
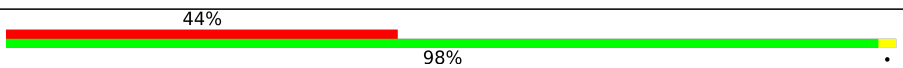
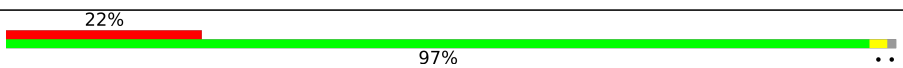
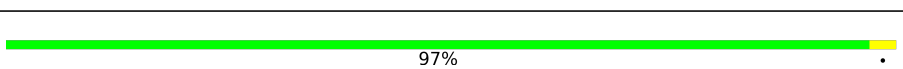
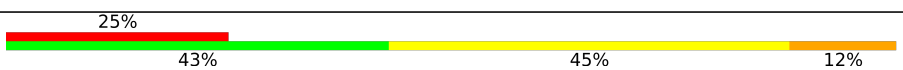
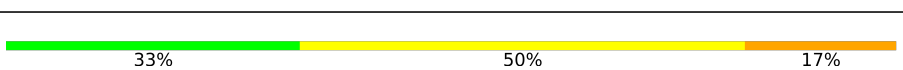
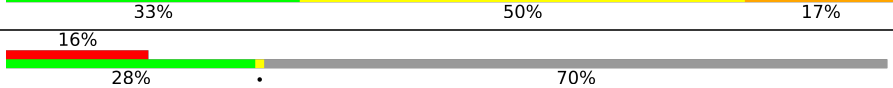
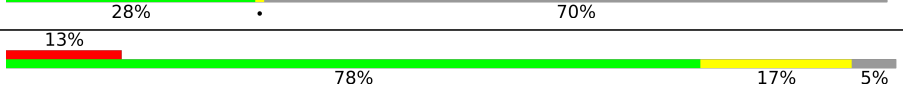
Mol	Chain	Length	Quality of chain
33	YW	59	
34	IX	142	
35	JY	103	
36	QZ	91	
37	Ba	44	
38	Qb	103	
39	Nc	116	
40	Kd	146	
41	Je	122	
42	Af	212	
43	Lg	137	
44	dh	65	
45	Oi	130	
46	Pj	89	
47	bk	51	
48	Cl	274	
49	Dm	213	
50	Sn	116	
51	To	88	
52	ep	38	
53	V	76	
54	Y	6	
55	C1	166	
56	iN	1590	

2 Entry composition

There are 56 unique types of molecules in this entry. The entry contains 142063 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Methyl-accepting chemotaxis protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	B	362	2829	1759	501	560	9	0	0

- Molecule 2 is a protein called Small ribosomal subunit protein uS9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	F	126	985	613	194	177	1	0	0

- Molecule 3 is a protein called Elongation factor Tu.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	H	185	1409	879	252	270	8	0	0

- Molecule 4 is a RNA chain called 23S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	Z2	2710	58145	25956	10675	18804	2710	0	0

- Molecule 5 is a protein called Small ribosomal subunit protein bS18.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
5	R3	56	457	290	80	87	0	0

- Molecule 6 is a protein called Small ribosomal subunit protein uS2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	A4	233	1816	1147	327	335	7	0	0

- Molecule 7 is a protein called Small ribosomal subunit protein uS5.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	E5	156	Total	C	N	O	S	0	0
			1151	716	218	211	6		

- Molecule 8 is a protein called Small ribosomal subunit protein uS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	L6	122	Total	C	N	O	S	0	0
			946	583	193	165	5		

- Molecule 9 is a protein called Large ribosomal subunit protein uL5.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	F7	177	Total	C	N	O	S	0	0
			1362	873	237	246	6		

- Molecule 10 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	D8	115	Total	C	N	O	P	0	0
			2446	1093	436	802	115		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D8	85	U	-	insertion	GB 930356181
D8	88	A	C	variant	GB 930356181

- Molecule 11 is a protein called Large ribosomal subunit protein uL4.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	E9	199	Total	C	N	O	S	0	0
			1537	966	282	284	5		

- Molecule 12 is a protein called Large ribosomal subunit protein bL32.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	aA	53	Total	C	N	O	S	0	0
			442	264	100	75	3		

- Molecule 13 is a protein called Large ribosomal subunit protein bL17.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	MB	119	Total	C	N	O	S	0	0
			947	587	188	164	8		

- Molecule 14 is a protein called Large ribosomal subunit protein bL25.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	UC	97	Total	C	N	O	S	0	0
			760	485	138	136	1		

- Molecule 15 is a protein called Large ribosomal subunit protein bL28.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	WD	76	Total	C	N	O	S	0	0
			618	383	131	101	3		

- Molecule 16 is a protein called Large ribosomal subunit protein uL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	XE	62	Total	C	N	O	S	0	0
			502	307	99	95	1		

- Molecule 17 is a protein called Large ribosomal subunit protein uL22.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	RF	109	Total	C	N	O	S	0	0
			834	521	159	151	3		

- Molecule 18 is a protein called Small ribosomal subunit protein bS6.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	FG	102	Total	C	N	O	S	0	0
			849	535	154	158	2		

- Molecule 19 is a protein called Large ribosomal subunit protein bL27.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	VH	84	Total	C	N	O	S	0	0
			626	389	124	110	3		

- Molecule 20 is a protein called Large ribosomal subunit protein uL24.

Mol	Chain	Residues	Atoms				AltConf	Trace
20	TI	102	Total	C	N	O	0	0
			784	487	149	148		

- Molecule 21 is a protein called Large ribosomal subunit protein bL31B.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	fJ	61	Total	C	N	O	S	0	0
			493	313	85	94	1		

- Molecule 22 is a protein called Small ribosomal subunit protein uS14.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	HK	100	Total	C	N	O	S	0	0
			811	498	162	144	7		

- Molecule 23 is a protein called Small ribosomal subunit protein uS15.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	OL	86	Total	C	N	O	S	0	0
			694	427	137	128	2		

- Molecule 24 is a protein called Small ribosomal subunit protein uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	MM	92	Total	C	N	O	S	0	0
			717	446	138	130	3		

- Molecule 25 is a protein called Large ribosomal subunit protein bL20.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	PO	116	Total	C	N	O	S	0	0
			935	586	199	148	2		

- Molecule 26 is a protein called Small ribosomal subunit protein uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	SP	80	Total	C	N	O	S	0	0
			637	405	121	108	3		

- Molecule 27 is a protein called Small ribosomal subunit protein uS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	BQ	131	Total	C	N	O	S	0	0
			974	602	179	187	6		

- Molecule 28 is a protein called Large ribosomal subunit protein uL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	GR	175	Total	C	N	O	S	0	0
			1357	848	248	259	2		

- Molecule 29 is a protein called Small ribosomal subunit protein uS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	GS	153	Total	C	N	O	S	0	0
			1200	744	233	216	7		

- Molecule 30 is a protein called Small ribosomal subunit protein uS3.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	CT	205	Total	C	N	O	S	0	0
			1613	1013	302	291	7		

- Molecule 31 is a protein called Small ribosomal subunit protein uS11.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	KU	115	Total	C	N	O	S	0	0
			842	521	163	157	1		

- Molecule 32 is a protein called Small ribosomal subunit protein bS21.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	NV	57	Total	C	N	O	S	0	0
			472	299	95	77	1		

- Molecule 33 is a protein called Large ribosomal subunit protein uL30.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	YW	56	Total	C	N	O	S	0	0
			438	272	88	76	2		

- Molecule 34 is a protein called Large ribosomal subunit protein uL13.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	IX	142	Total	C	N	O	S	0	0
			1108	710	198	197	3		

- Molecule 35 is a protein called Small ribosomal subunit protein uS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	JY	100	Total	C	N	O	S	0	0
			793	492	151	147	3		

- Molecule 36 is a protein called Small ribosomal subunit protein uS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	QZ	79	Total	C	N	O	S	0	0
			632	395	119	116	2		

- Molecule 37 is a protein called Large ribosomal subunit protein bL34.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	Ba	44	Total	C	N	O	S	0	0
			369	227	89	51	2		

- Molecule 38 is a protein called Large ribosomal subunit protein bL21.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	Qb	103	Total	C	N	O	S	0	0
			827	524	153	148	2		

- Molecule 39 is a protein called Large ribosomal subunit protein uL18.

Mol	Chain	Residues	Atoms				AltConf	Trace
39	Nc	113	Total	C	N	O	0	0
			852	530	170	152		

- Molecule 40 is a protein called Large ribosomal subunit protein uL15.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	Kd	144	Total	C	N	O	S	1	0
			1062	656	206	197	3		

- Molecule 41 is a protein called Large ribosomal subunit protein uL14.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	Je	122	Total	C	N	O	S	0	0
			937	585	181	166	5		

- Molecule 42 is a protein called Large ribosomal subunit protein uL3.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	Af	211	Total	C	N	O	S	0	0
			1548	954	292	296	6		

- Molecule 43 is a protein called Large ribosomal subunit protein uL16.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	Lg	137	Total	C	N	O	S	0	0
			1093	697	210	179	7		

- Molecule 44 is a protein called Large ribosomal subunit protein bL35.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	dh	64	Total	C	N	O	S	0	0
			519	326	107	82	4		

- Molecule 45 is a protein called Large ribosomal subunit protein bL19.

Mol	Chain	Residues	Atoms				AltConf	Trace
45	Oi	115	Total	C	N	O	0	0
			917	572	184	161		

- Molecule 46 is a protein called Small ribosomal subunit protein bS16.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	Pj	81	Total	C	N	O	S	0	0
			648	409	126	111	2		

- Molecule 47 is a protein called Large ribosomal subunit protein bL33.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	bk	49	Total	C	N	O	S	0	0
			394	254	68	69	3		

- Molecule 48 is a protein called Large ribosomal subunit protein uL2.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	Cl	272	Total	C	N	O	S	0	0
			2107	1305	432	364	6		

- Molecule 49 is a protein called Small ribosomal subunit protein uS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	Dm	212	Total	C	N	O	S	0	0
			1688	1058	318	309	3		

- Molecule 50 is a protein called Large ribosomal subunit protein uL23.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	Sn	88	Total	C	N	O	S	0	0
			698	446	126	124	2		

- Molecule 51 is a protein called Small ribosomal subunit protein bS20.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	To	87	Total	C	N	O	S	0	0
			684	415	146	121	2		

- Molecule 52 is a protein called Large ribosomal subunit protein bL36.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	ep	38	Total	C	N	O	S	0	0
			298	182	66	46	4		

- Molecule 53 is a RNA chain called Heterogenous tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	V	76	Total	C	N	O	P	0	0
			1521	686	160	600	75		

- Molecule 54 is a RNA chain called Heterogenous mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	Y	6	Total	C	N	O	P	0	0
			120	54	12	48	6		

- Molecule 55 is a protein called Large ribosomal subunit protein bL9.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	C1	49	Total	C	N	O	S	0	0
			374	244	64	65	1		

- Molecule 56 is a RNA chain called 16S rRNA.

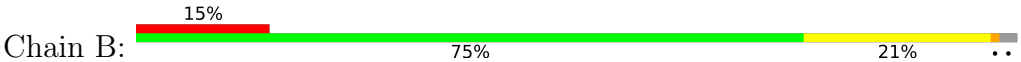
Mol	Chain	Residues	Atoms					AltConf	Trace
56	iN	1503	Total	C	N	O	P	0	0
			32246	14388	5917	10438	1503		

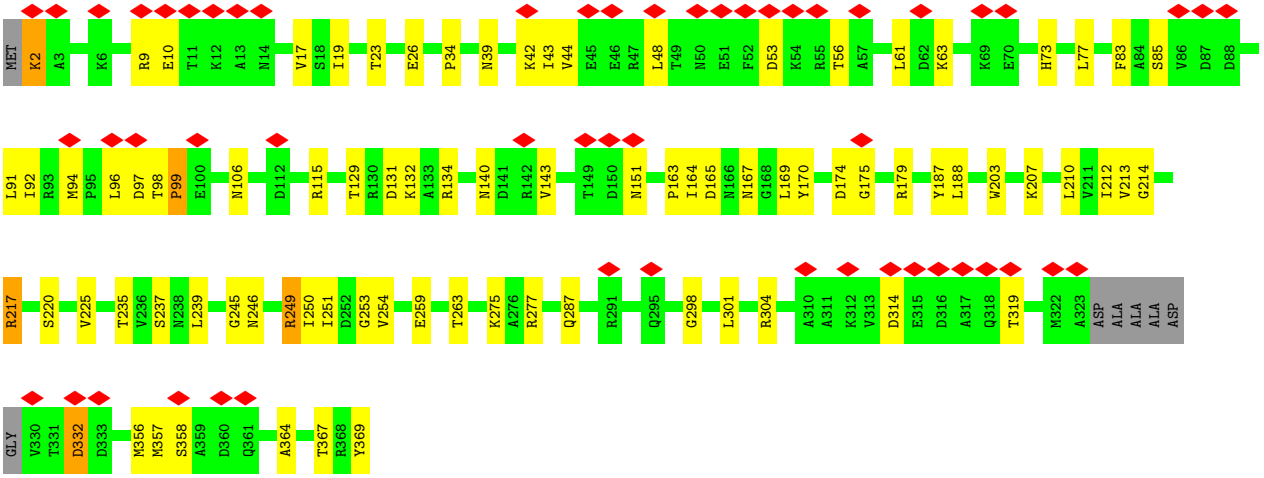
3 Residue-property plots (i)

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

• Molecule 1: Methyl-accepting chemotaxis protein

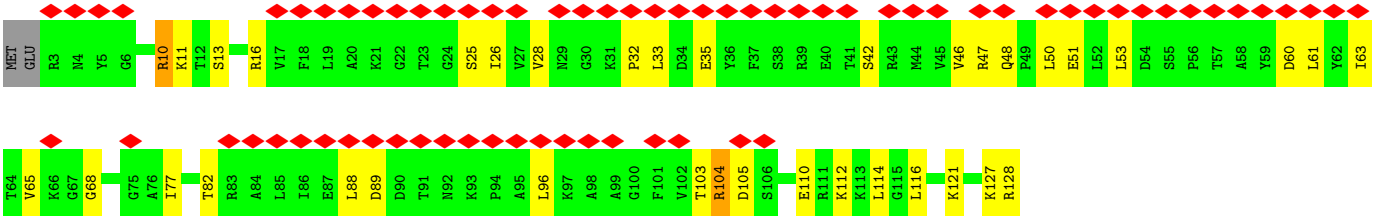
Chain B:





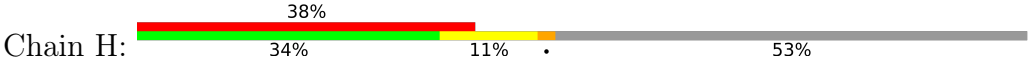
• Molecule 2: Small ribosomal subunit protein uS9

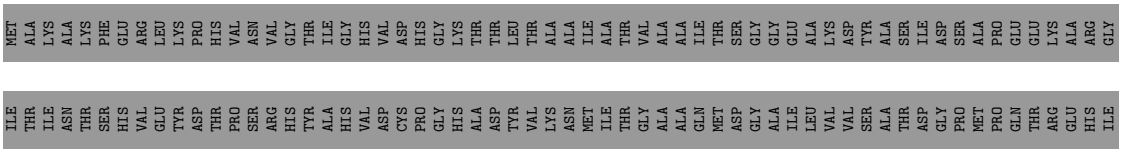
Chain F:



• Molecule 3: Elongation factor Tu

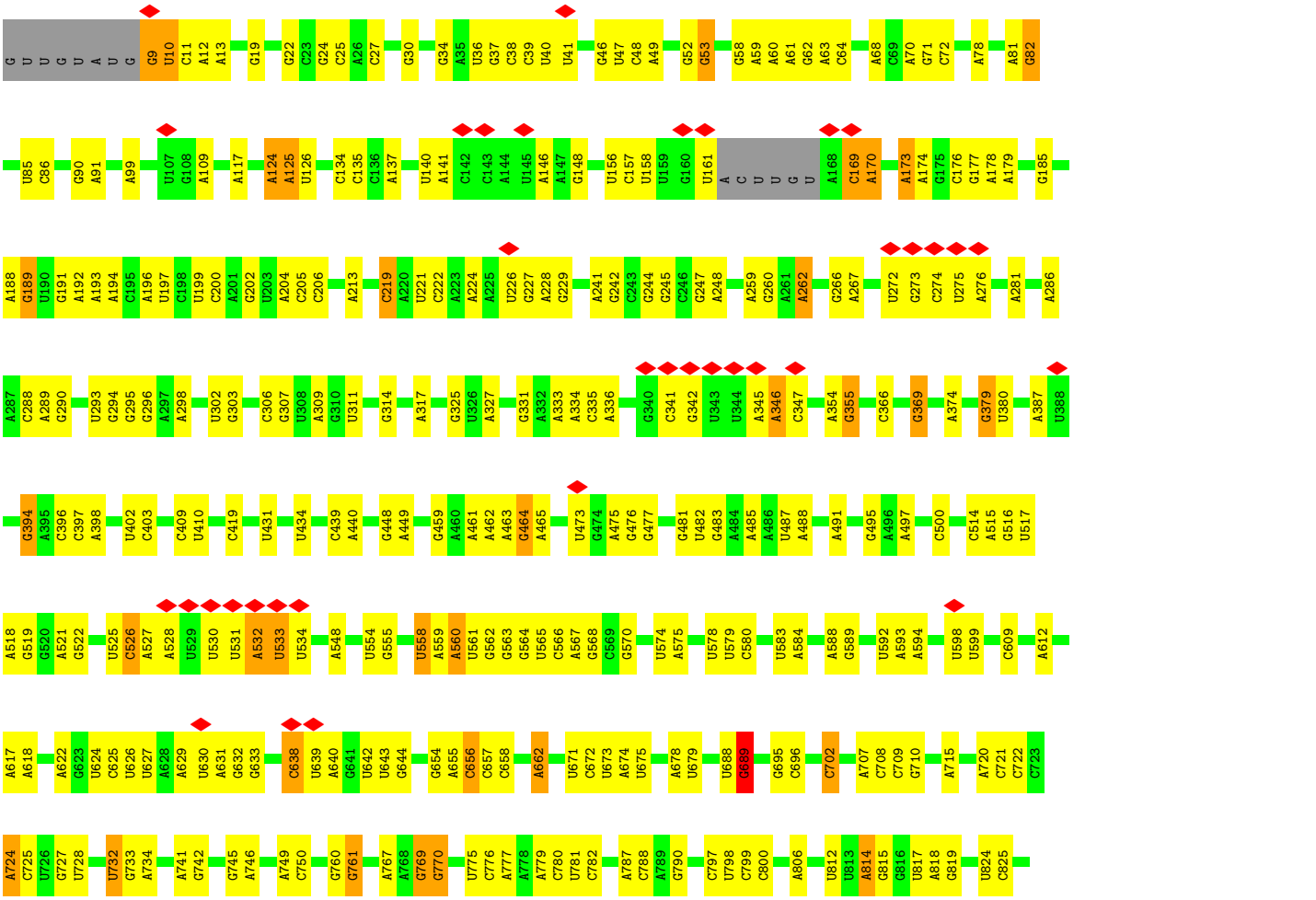
Chain H:

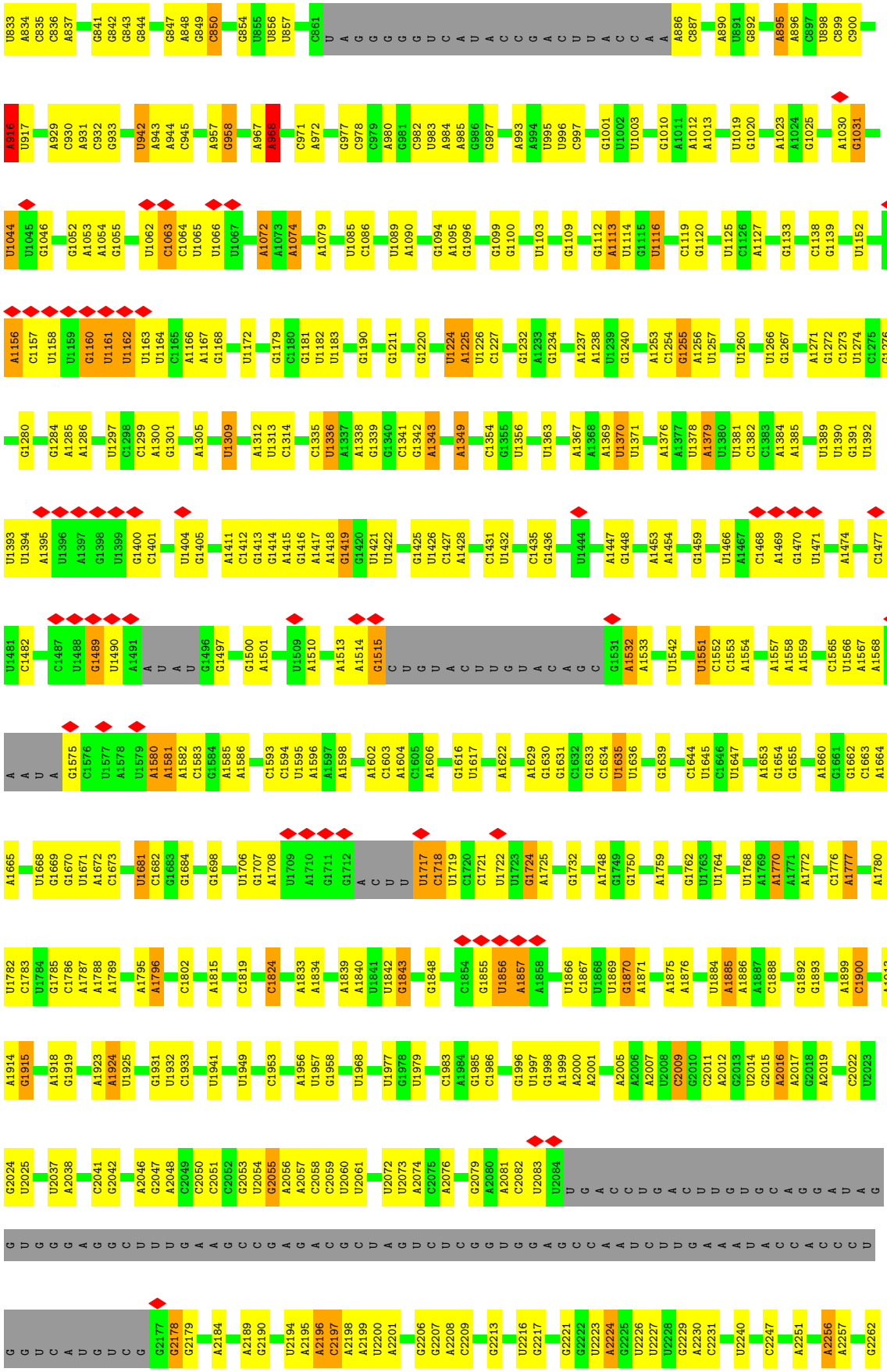


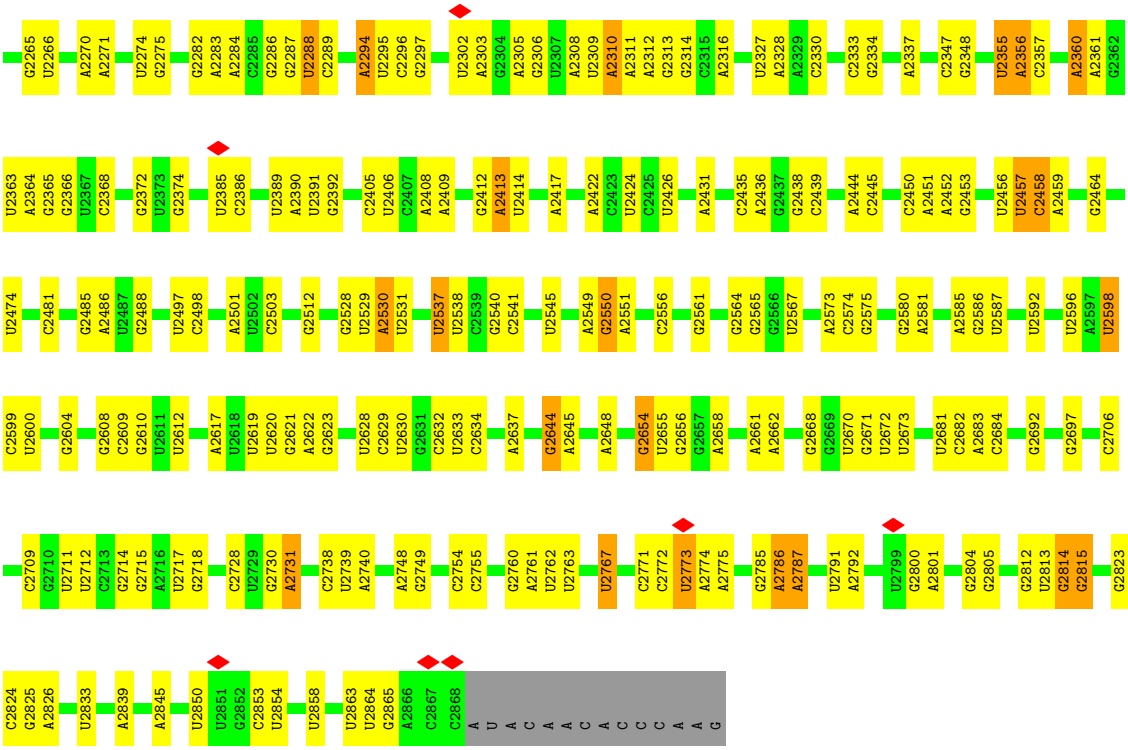


• Molecule 4: 23S rRNA

Chain Z2:

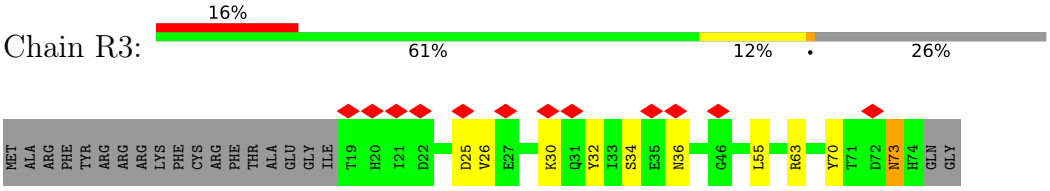






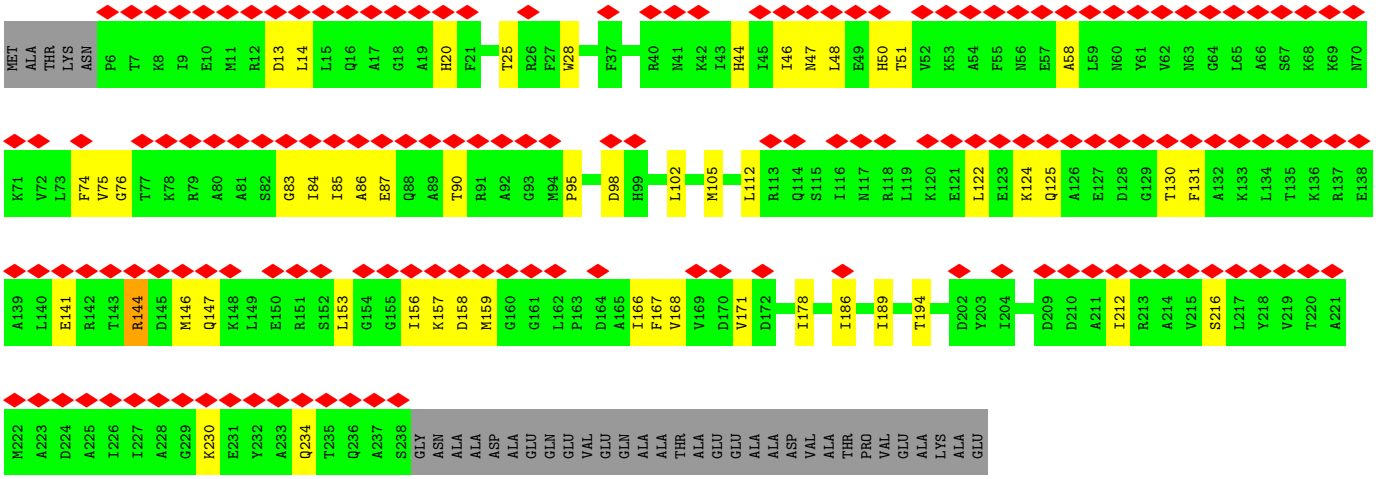
• Molecule 5: Small ribosomal subunit protein bS18

Chain R3:



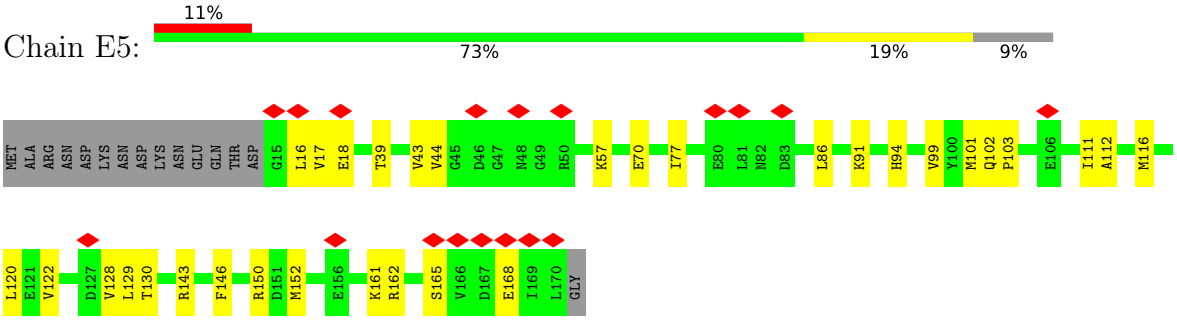
• Molecule 6: Small ribosomal subunit protein uS2

Chain A4:



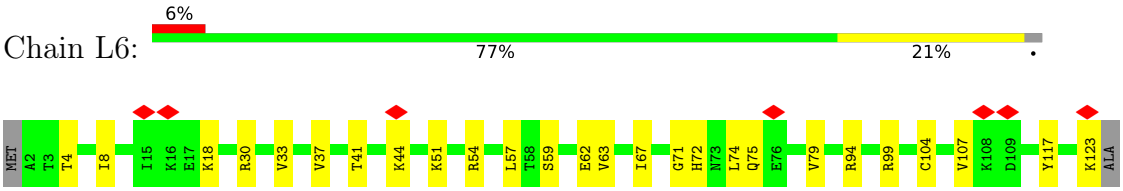
• Molecule 7: Small ribosomal subunit protein uS5

Chain E5:



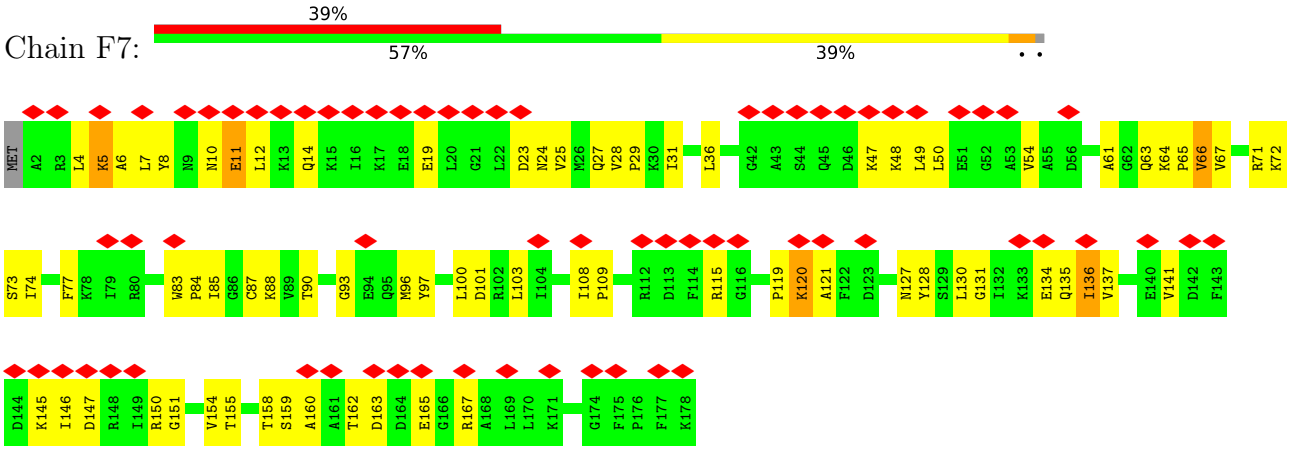
• Molecule 8: Small ribosomal subunit protein uS12

Chain L6:



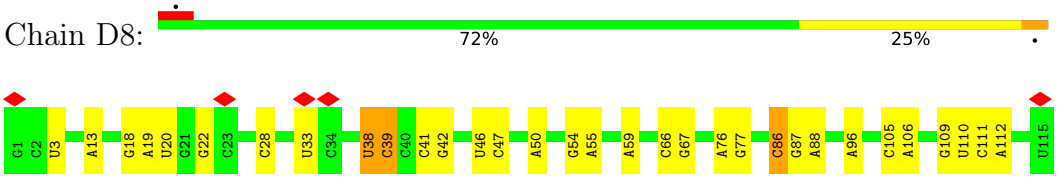
• Molecule 9: Large ribosomal subunit protein uL5

Chain F7:



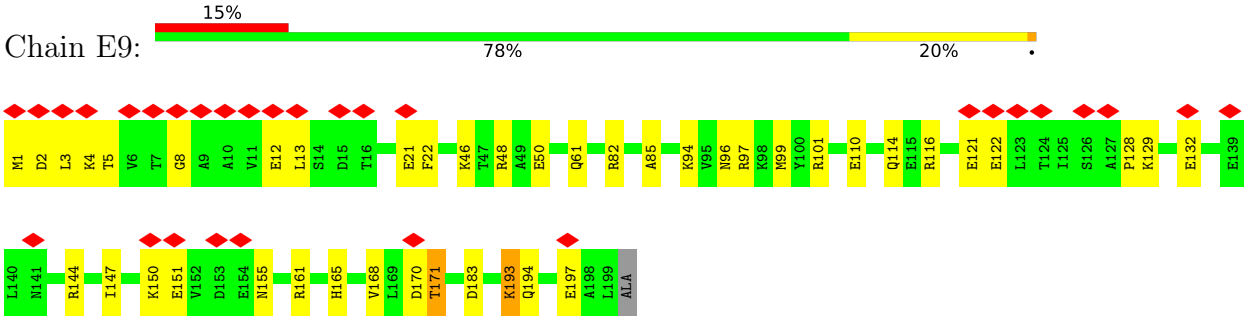
• Molecule 10: 5S rRNA

Chain D8:



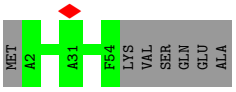
• Molecule 11: Large ribosomal subunit protein uL4

Chain E9:



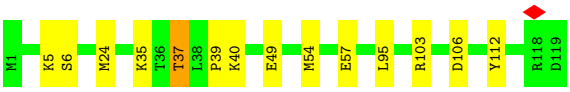
• Molecule 12: Large ribosomal subunit protein bL32

Chain aA:



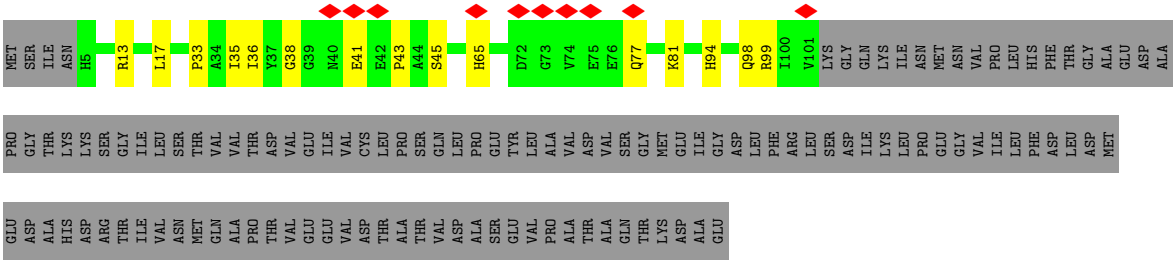
• Molecule 13: Large ribosomal subunit protein bL17

Chain MB:



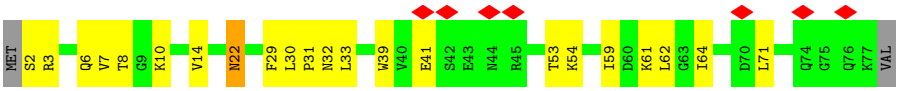
• Molecule 14: Large ribosomal subunit protein bL25

Chain UC:



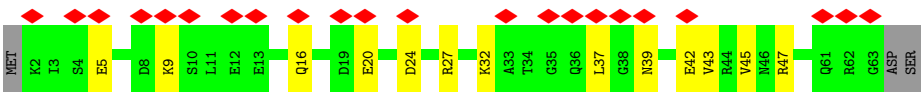
• Molecule 15: Large ribosomal subunit protein bL28

Chain WD:



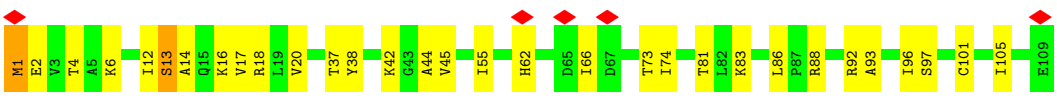
• Molecule 16: Large ribosomal subunit protein uL29

Chain XE:



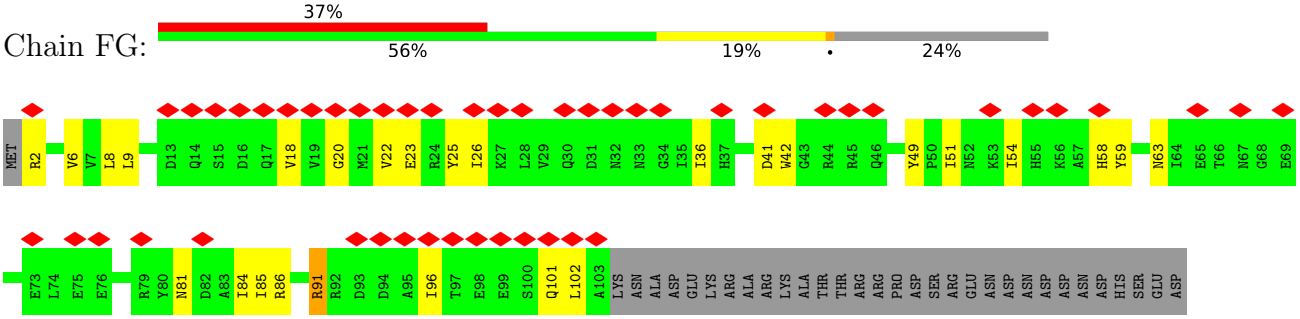
• Molecule 17: Large ribosomal subunit protein uL22

Chain RF:



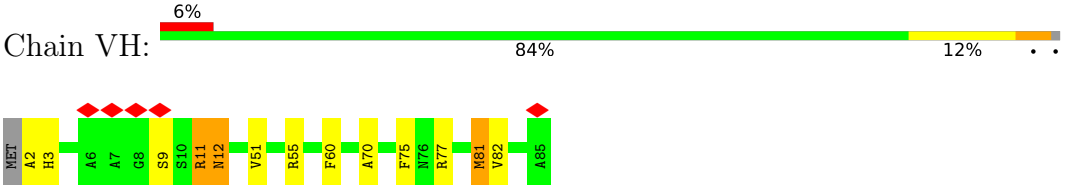
• Molecule 18: Small ribosomal subunit protein bS6

Chain FG:



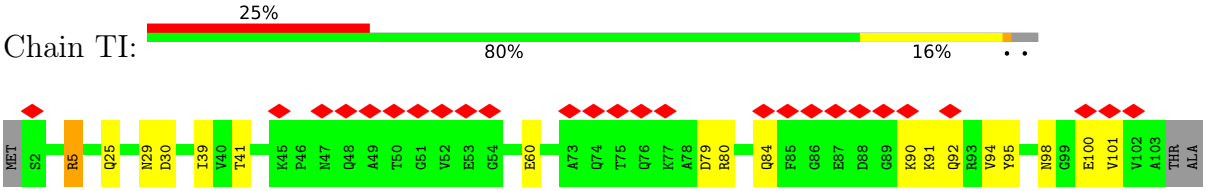
• Molecule 19: Large ribosomal subunit protein bL27

Chain VH:



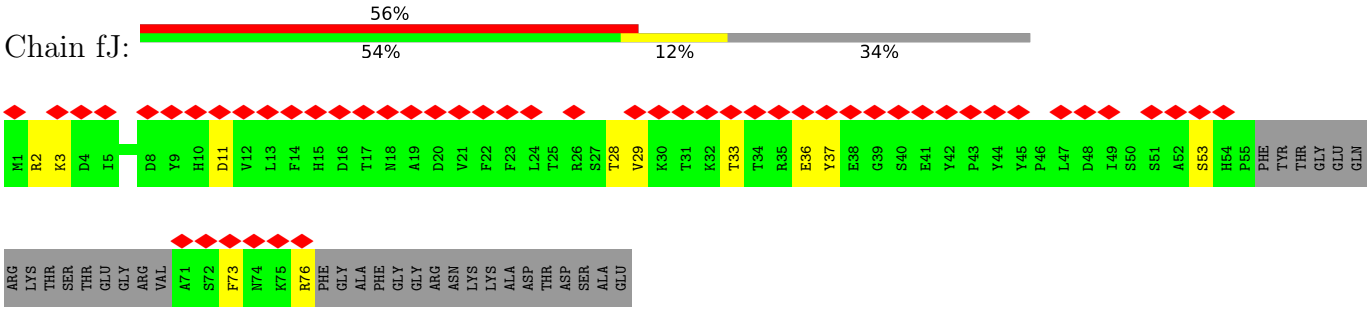
• Molecule 20: Large ribosomal subunit protein uL24

Chain TI:



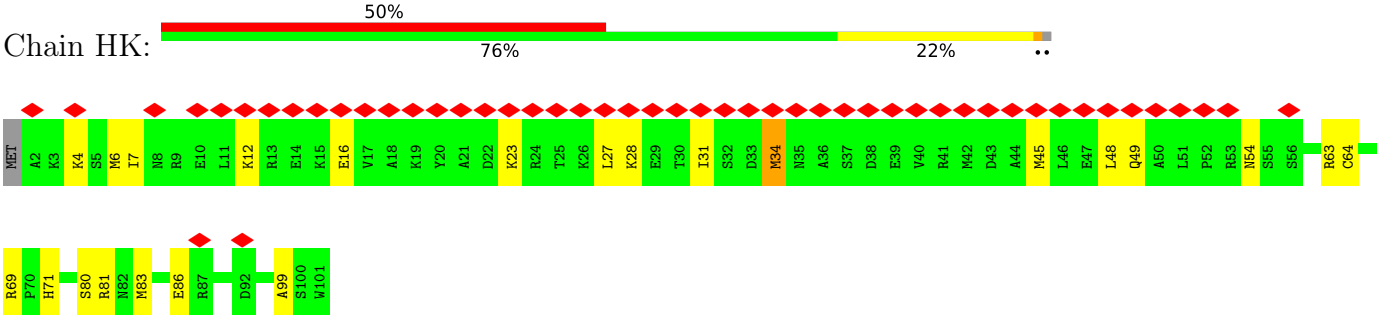
• Molecule 21: Large ribosomal subunit protein bL31B

Chain fJ:



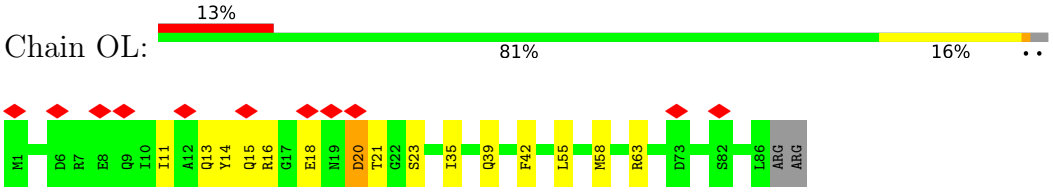
• Molecule 22: Small ribosomal subunit protein uS14

Chain HK:



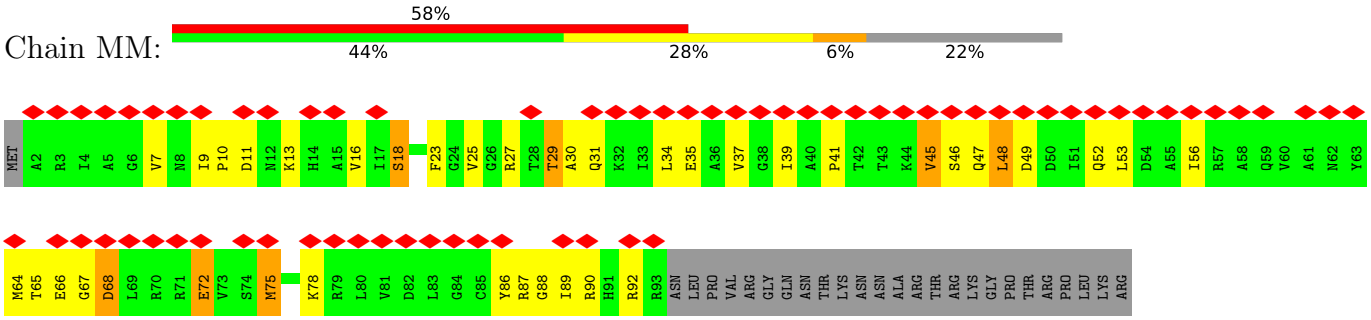
• Molecule 23: Small ribosomal subunit protein uS15

Chain OL:



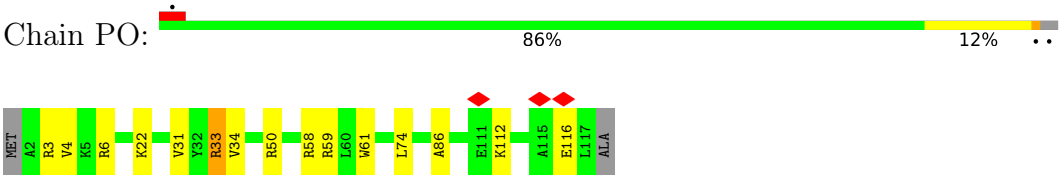
• Molecule 24: Small ribosomal subunit protein uS13

Chain MM:



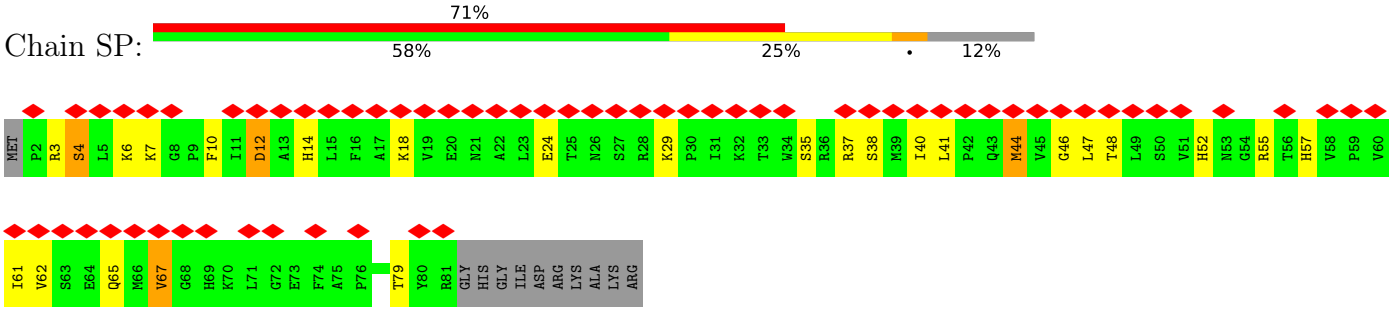
• Molecule 25: Large ribosomal subunit protein bL20

Chain PO:



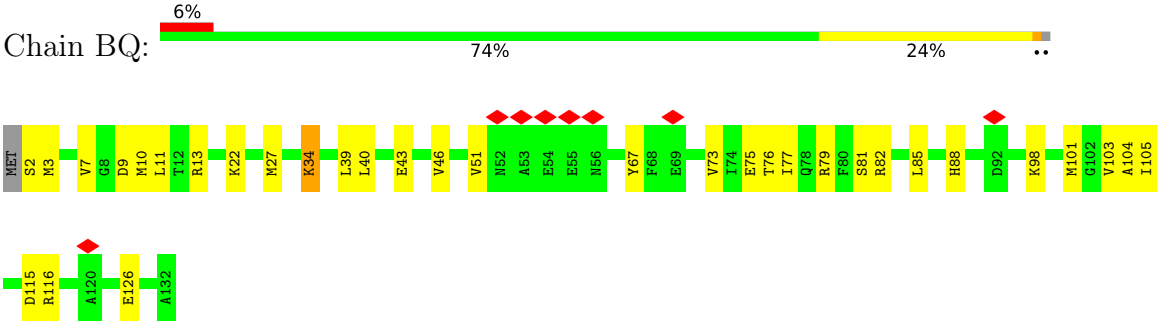
• Molecule 26: Small ribosomal subunit protein uS19

Chain SP:



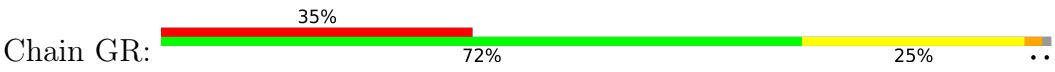
• Molecule 27: Small ribosomal subunit protein uS8

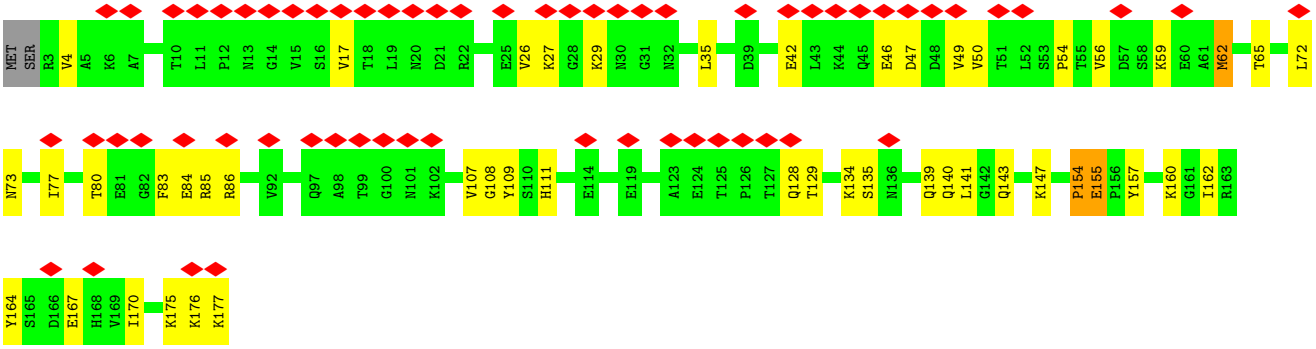
Chain BQ:



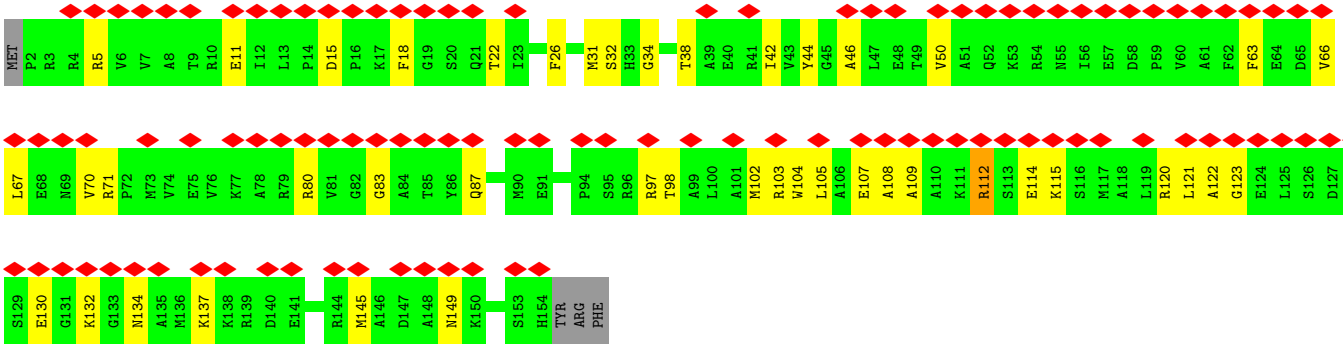
• Molecule 28: Large ribosomal subunit protein uL6

Chain GR:

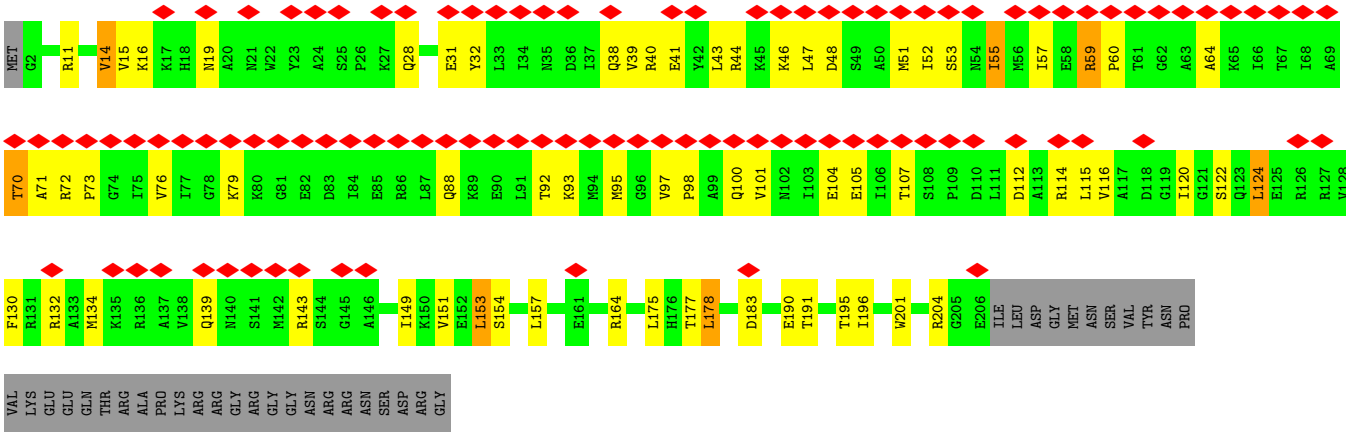




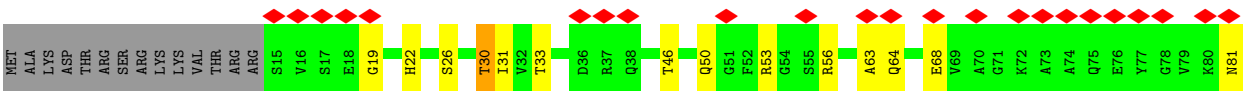
• Molecule 29: Small ribosomal subunit protein uS7

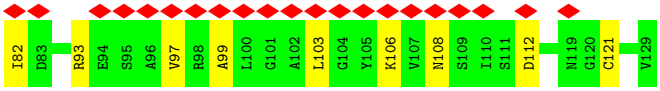


• Molecule 30: Small ribosomal subunit protein uS3



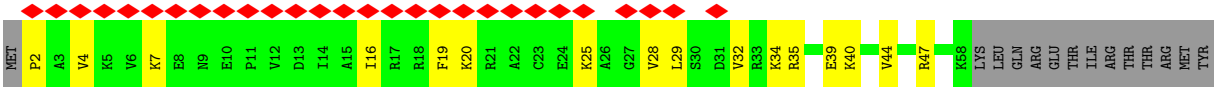
• Molecule 31: Small ribosomal subunit protein uS11





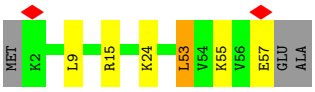
• Molecule 32: Small ribosomal subunit protein bS21

Chain NV:



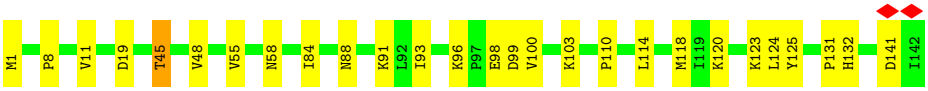
• Molecule 33: Large ribosomal subunit protein uL30

Chain YW:



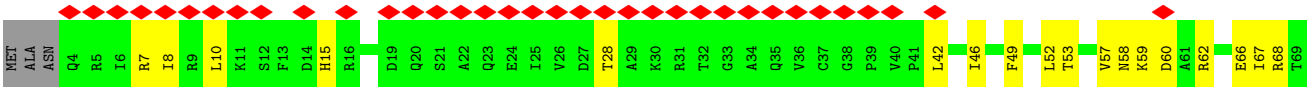
• Molecule 34: Large ribosomal subunit protein uL13

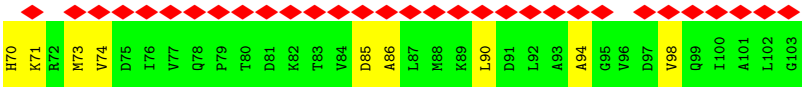
Chain IX:



• Molecule 35: Small ribosomal subunit protein uS10

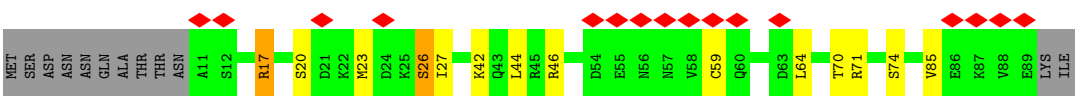
Chain JY:





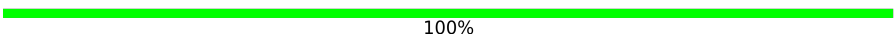
• Molecule 36: Small ribosomal subunit protein uS17

Chain QZ:



• Molecule 37: Large ribosomal subunit protein bL34

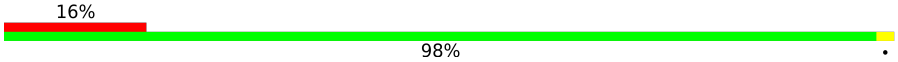
Chain Ba:

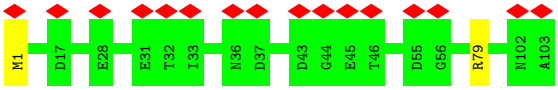


There are no outlier residues recorded for this chain.

• Molecule 38: Large ribosomal subunit protein bL21

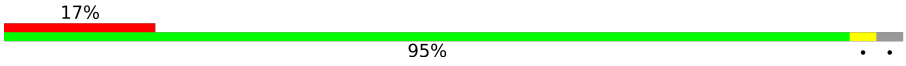
Chain Qb:

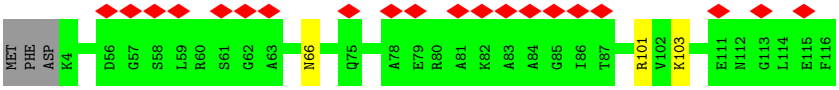




• Molecule 39: Large ribosomal subunit protein uL18

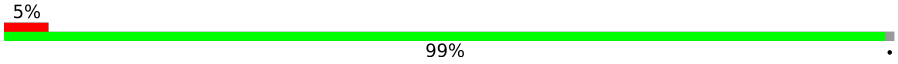
Chain Nc:

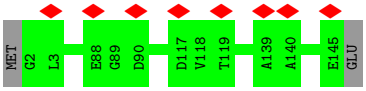




• Molecule 40: Large ribosomal subunit protein uL15

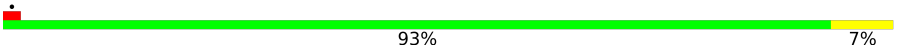
Chain Kd:

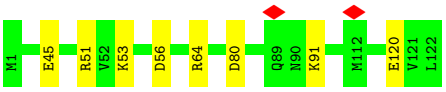




• Molecule 41: Large ribosomal subunit protein uL14

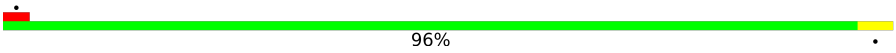
Chain Je:

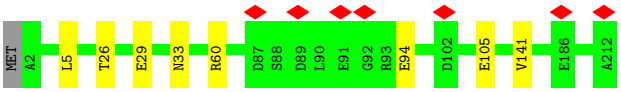




• Molecule 42: Large ribosomal subunit protein uL3

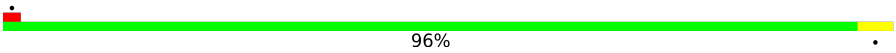
Chain Af:

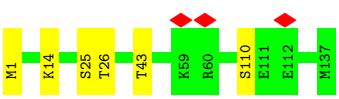




• Molecule 43: Large ribosomal subunit protein uL16

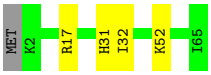
Chain Lg:





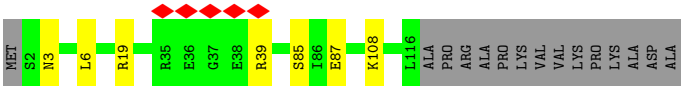
• Molecule 44: Large ribosomal subunit protein bL35

Chain dh:



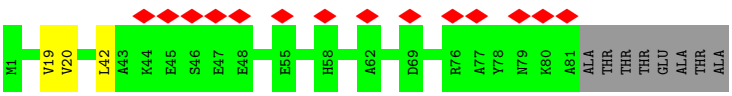
• Molecule 45: Large ribosomal subunit protein bL19

Chain Oi:



• Molecule 46: Small ribosomal subunit protein bS16

Chain Pj:

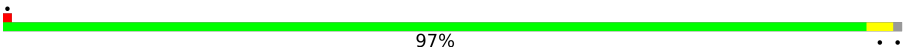


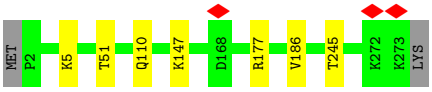
• Molecule 47: Large ribosomal subunit protein bL33

Chain bk:

• Molecule 48: Large ribosomal subunit protein uL2

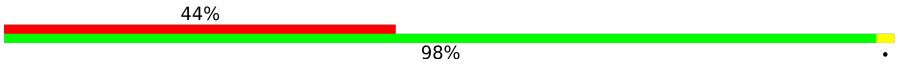
Chain Cl:

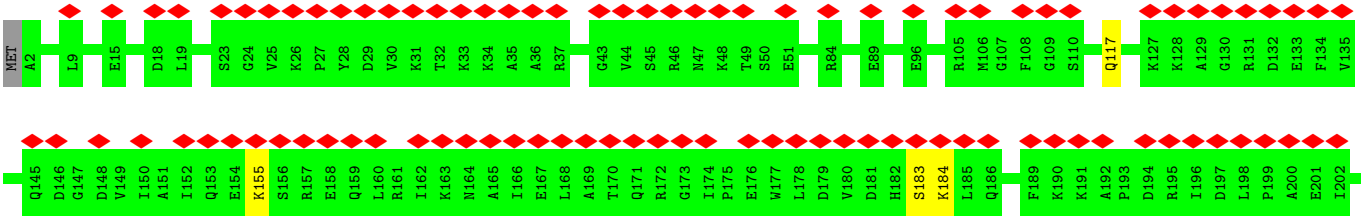




• Molecule 49: Small ribosomal subunit protein uS4

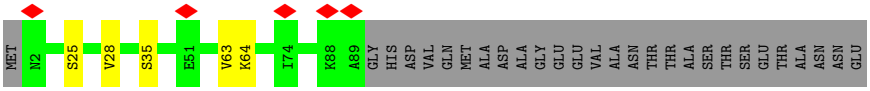
Chain Dm:



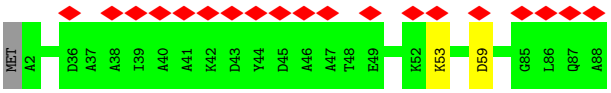


• Molecule 50: Large ribosomal subunit protein uL23

Chain Sn:

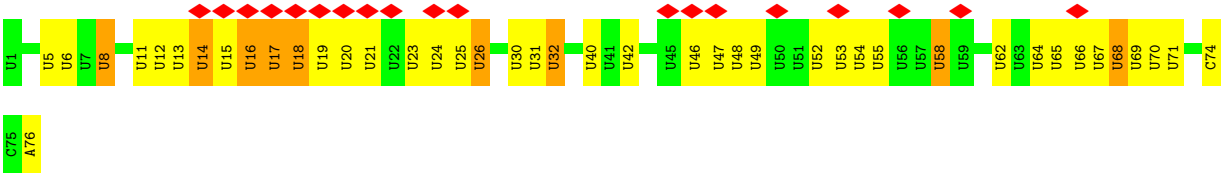


• Molecule 51: Small ribosomal subunit protein bS20

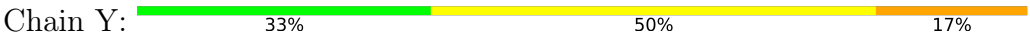


• Molecule 52: Large ribosomal subunit protein bL36

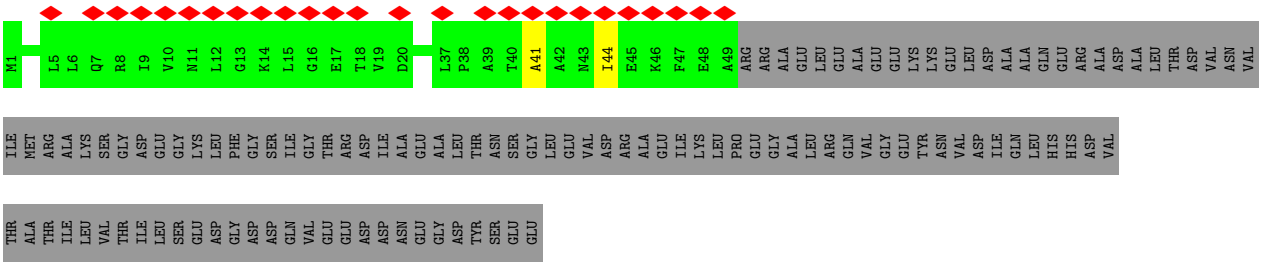
• Molecule 53: Heterogenous tRNA



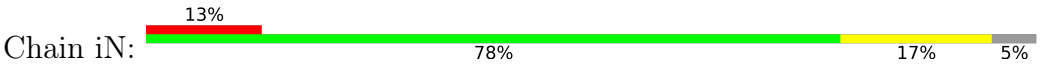
• Molecule 54: Heterogenous mRNA

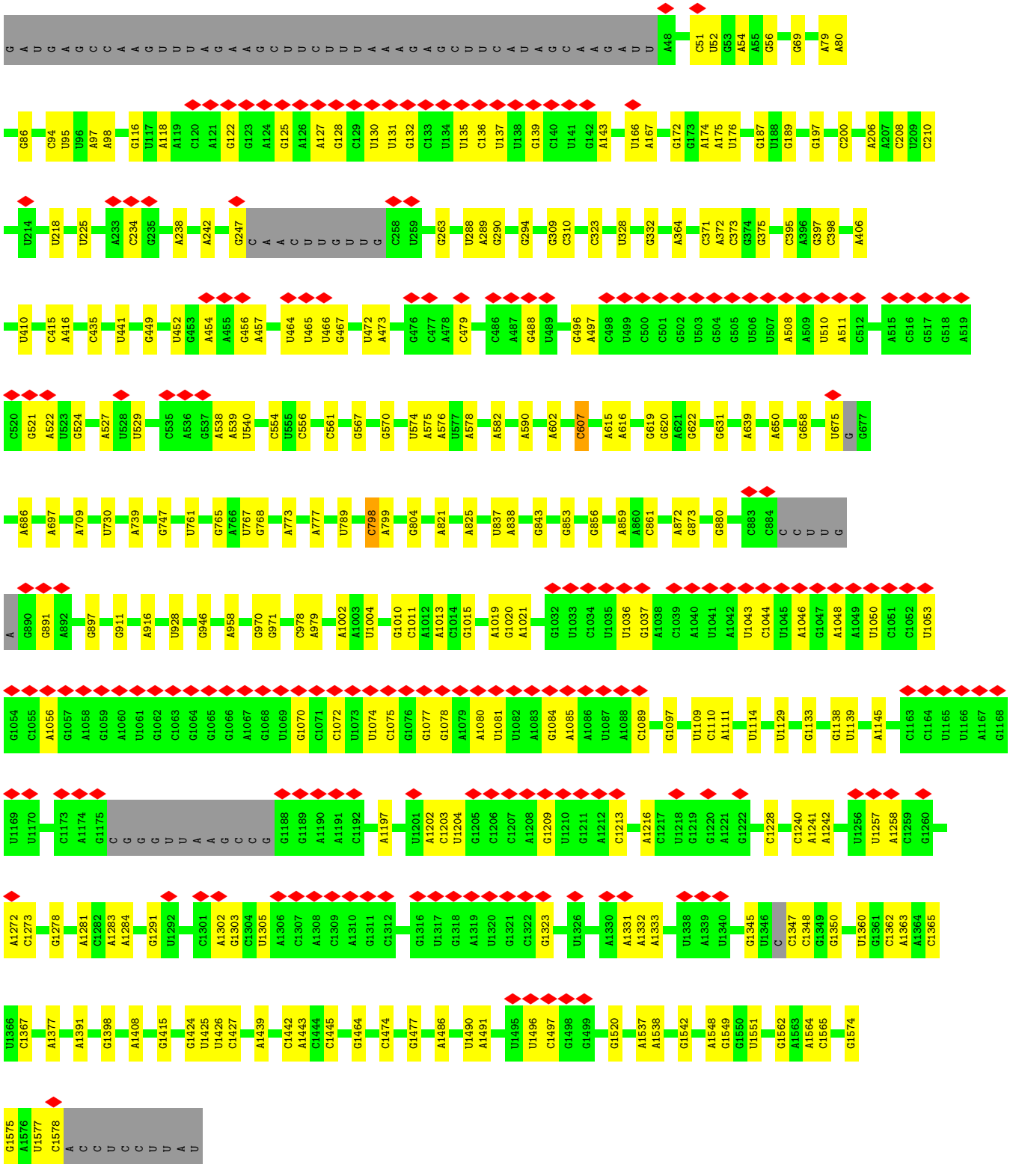


• Molecule 55: Large ribosomal subunit protein bL9



• Molecule 56: 16S rRNA





4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	30469	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 ($e^-/Å^2$)	40	Depositor
Minimum defocus (nm)	900	Depositor
Maximum defocus (nm)	2400	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	0.183	Depositor
Minimum map value	-0.089	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.005	Depositor
Recommended contour level	0.02	Depositor
Map size (Å)	390.41998, 390.41998, 390.41998	wwPDB
Map dimensions	540, 540, 540	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.723, 0.723, 0.723	Depositor

5 Model quality

5.1 Standard geometry

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|>5$	RMSZ	#$\|Z\|>5$
1	B	0.33	0/2870	0.56	1/3890 (0.0%)
2	F	0.30	0/998	0.65	0/1336
3	H	0.29	0/1429	0.57	0/1925
4	Z2	0.85	0/65123	0.86	27/101564 (0.0%)
5	R3	0.34	0/465	0.52	0/629
6	A4	0.30	0/1848	0.51	0/2494
7	E5	0.35	0/1163	0.58	0/1564
8	L6	0.37	0/959	0.60	0/1282
9	F7	0.30	0/1383	0.53	0/1858
10	D8	0.60	0/2733	0.81	1/4256 (0.0%)
11	E9	0.38	0/1559	0.58	0/2103
12	aA	0.36	0/450	0.63	0/596
13	MB	0.39	0/961	0.62	0/1282
14	UC	0.34	0/774	0.54	0/1043
15	WD	0.36	0/628	0.60	0/841
16	XE	0.27	0/503	0.57	0/670
17	RF	0.38	0/840	0.59	0/1125
18	FG	0.30	0/864	0.53	0/1169
19	VH	0.38	0/635	0.58	0/847
20	TI	0.33	0/790	0.51	0/1057
21	fJ	0.28	0/508	0.52	0/690
22	HK	0.27	0/821	0.53	0/1091
23	OL	0.33	0/702	0.53	0/941
24	MM	0.26	0/724	0.54	0/976
25	PO	0.43	0/947	0.65	0/1261
26	SP	0.27	0/652	0.58	0/879
27	BQ	0.32	0/982	0.55	0/1318
28	GR	0.32	0/1377	0.58	1/1861 (0.1%)
29	GS	0.30	0/1219	0.57	0/1634
30	CT	0.29	0/1637	0.59	0/2200
31	KU	0.30	0/857	0.55	0/1158
32	NV	0.33	0/478	0.55	0/632
33	YW	0.35	0/442	0.62	0/590
34	IX	0.39	0/1134	0.53	0/1529

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
35	JY	0.29	0/803	0.59	0/1084
36	QZ	0.31	0/638	0.63	0/858
37	Ba	0.38	0/373	0.75	0/489
38	Qb	0.37	0/839	0.58	0/1127
39	Nc	0.33	0/863	0.60	0/1158
40	Kd	0.37	0/1073	0.64	0/1429
41	Je	0.38	0/946	0.65	0/1271
42	Af	0.39	0/1566	0.58	0/2103
43	Lg	0.43	0/1112	0.63	0/1483
44	dh	0.40	0/524	0.63	0/686
45	Oi	0.38	0/927	0.64	0/1239
46	Pj	0.37	0/660	0.60	0/887
47	bk	0.40	0/401	0.58	0/534
48	Cl	0.39	0/2147	0.61	0/2883
49	Dm	0.31	0/1712	0.57	0/2296
50	Sn	0.38	0/705	0.57	0/939
51	To	0.30	0/688	0.57	0/916
52	ep	0.37	0/300	0.65	0/395
53	V	0.36	0/1674	0.95	0/2586
54	Y	0.39	0/131	0.87	0/200
55	C1	0.31	0/379	0.53	0/511
56	iN	0.59	0/36108	0.79	6/56315 (0.0%)
All	All	0.66	0/154024	0.77	36/229680 (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
19	VH	0	1
29	GS	0	1
All	All	0	2

There are no bond length outliers.

All (36) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	Z2	942	U	C2-N1-C1'	8.60	128.02	117.70
4	Z2	495	G	O4'-C1'-N9	7.98	114.58	108.20
1	B	99	PRO	CA-N-CD	-7.37	101.18	111.50
4	Z2	942	U	N1-C2-O2	7.33	127.93	122.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	Z2	1297	U	C2-N1-C1'	6.83	125.89	117.70
56	iN	607	C	N3-C2-O2	-6.61	117.27	121.90
4	Z2	638	C	C2-N1-C1'	6.47	125.92	118.80
4	Z2	775	U	C2-N1-C1'	6.46	125.45	117.70
56	iN	607	C	N1-C2-O2	6.44	122.76	118.90
56	iN	798	C	C2-N1-C1'	6.19	125.61	118.80
4	Z2	689	G	O4'-C1'-N9	5.96	112.97	108.20
4	Z2	942	U	C6-N1-C1'	-5.93	112.89	121.20
4	Z2	733	G	O4'-C1'-N9	5.87	112.89	108.20
4	Z2	638	C	N1-C2-O2	5.86	122.42	118.90
56	iN	607	C	C2-N1-C1'	5.78	125.16	118.80
28	GR	154	PRO	C-N-CA	5.76	136.11	121.70
56	iN	1203	C	C2-N1-C1'	5.57	124.92	118.80
4	Z2	942	U	N3-C2-O2	-5.44	118.39	122.20
4	Z2	1885	A	N7-C8-N9	5.43	116.52	113.80
4	Z2	2767	U	N3-C2-O2	-5.43	118.40	122.20
4	Z2	942	U	C5-C6-N1	5.43	125.41	122.70
4	Z2	189	G	C8-N9-C1'	-5.40	119.98	127.00
56	iN	1203	C	N1-C2-O2	5.31	122.08	118.90
4	Z2	638	C	C6-N1-C2	-5.30	118.18	120.30
4	Z2	464	G	O4'-C1'-N9	5.24	112.39	108.20
10	D8	86	C	N1-C2-O2	5.20	122.02	118.90
4	Z2	958	G	O4'-C1'-N9	5.17	112.34	108.20
4	Z2	775	U	N1-C2-O2	5.17	126.42	122.80
4	Z2	916	A	OP2-P-O3'	5.13	116.48	105.20
4	Z2	34	G	O4'-C1'-N9	5.11	112.29	108.20
4	Z2	702	C	C2-N1-C1'	5.11	124.42	118.80
4	Z2	1297	U	N1-C2-O2	5.10	126.37	122.80
4	Z2	1113	A	O4'-C1'-N9	5.07	112.26	108.20
4	Z2	968	A	O4'-C1'-N9	5.04	112.23	108.20
4	Z2	702	C	N1-C2-O2	5.03	121.92	118.90
4	Z2	2814	G	O4'-C1'-N9	5.01	112.21	108.20

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
29	GS	112	ARG	Sidechain
19	VH	2	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	B	2829	0	2781	55	0
2	F	985	0	1035	22	0
3	H	1409	0	1416	25	0
4	Z2	58145	0	29231	503	0
5	R3	457	0	466	8	0
6	A4	1816	0	1843	37	0
7	E5	1151	0	1205	19	0
8	L6	946	0	1008	15	0
9	F7	1362	0	1402	45	0
10	D8	2446	0	1241	17	0
11	E9	1537	0	1590	26	0
12	aA	442	0	432	0	0
13	MB	947	0	988	10	0
14	UC	760	0	774	7	0
15	WD	618	0	637	18	0
16	XE	502	0	527	8	0
17	RF	834	0	898	18	0
18	FG	849	0	838	19	0
19	VH	626	0	629	8	0
20	TI	784	0	820	12	0
21	fJ	493	0	441	0	0
22	HK	811	0	845	15	0
23	OL	694	0	710	8	0
24	MM	717	0	748	23	0
25	PO	935	0	999	16	0
26	SP	637	0	665	14	0
27	BQ	974	0	1009	21	0
28	GR	1357	0	1397	28	0
29	GS	1200	0	1231	28	0
30	CT	1613	0	1677	34	0
31	KU	842	0	850	16	0
32	NV	472	0	520	10	0
33	YW	438	0	476	4	0
34	IX	1108	0	1145	16	0
35	JY	793	0	821	18	0
36	QZ	632	0	676	12	0
37	Ba	369	0	418	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
38	Qb	827	0	862	0	0
39	Nc	852	0	880	0	0
40	Kd	1062	0	1123	0	0
41	Je	937	0	1003	0	0
42	Af	1548	0	1574	0	0
43	Lg	1093	0	1188	0	0
44	dh	519	0	581	0	0
45	Oi	917	0	969	0	0
46	Pj	648	0	661	0	0
47	bk	394	0	412	0	0
48	Cl	2107	0	2195	0	0
49	Dm	1688	0	1745	0	0
50	Sn	698	0	750	0	0
51	To	684	0	727	0	0
52	ep	298	0	334	0	0
53	V	1521	0	766	19	0
54	Y	120	0	61	1	0
55	C1	374	0	406	1	0
56	iN	32246	0	16224	0	0
All	All	142063	0	96850	1071	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 8.

All (1071) 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)
4:Z2:281:A:N7	4:Z2:331:G:N2	2.12	0.96
4:Z2:2083:U:H3	4:Z2:2178:G:H1	0.94	0.93
4:Z2:655:A:H4'	4:Z2:656:C:H5'	1.58	0.84
29:GS:112:ARG:HH22	29:GS:123:GLY:HA3	1.48	0.79
16:XE:16:GLN:NE2	16:XE:20:GLU:OE1	2.16	0.79
7:E5:39:THR:HG22	7:E5:57:LYS:HG2	1.64	0.79
4:Z2:68:A:OP2	16:XE:47:ARG:NH2	2.16	0.79
4:Z2:570:G:N7	25:PO:6:ARG:NH2	2.31	0.79
25:PO:86:ALA:HB2	25:PO:116:GLU:HG3	1.65	0.79
4:Z2:2288:U:H5"	9:F7:131:GLY:HA3	1.67	0.77
4:Z2:52:G:H5"	4:Z2:53:G:H5'	1.67	0.76
24:MM:23:PHE:HB3	24:MM:66:GLU:HB3	1.67	0.76
1:B:129:THR:HG22	1:B:131:ASP:H	1.50	0.76
4:Z2:2053:G:H1	4:Z2:2426:U:H3	1.30	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:Z2:1885:A:H8	4:Z2:1888:C:H41	1.33	0.75
31:KU:93:ARG:NH2	31:KU:112:ASP:OD2	2.19	0.75
20:TI:92:GLN:HG3	20:TI:101:VAL:HG13	1.69	0.74
4:Z2:219:C:H5	4:Z2:229:G:H21	1.34	0.73
4:Z2:1417:A:H2'	4:Z2:1418:A:C8	2.23	0.73
24:MM:64:MET:HG3	24:MM:68:ASP:HB2	1.71	0.73
28:GR:164:TYR:HB2	28:GR:167:GLU:HB2	1.70	0.72
4:Z2:2311:A:H2'	4:Z2:2312:A:C8	2.25	0.72
4:Z2:272:U:H3	4:Z2:342:G:H1	1.34	0.71
30:CT:19:ASN:O	30:CT:40:ARG:NH2	2.24	0.71
30:CT:51:MET:HG3	30:CT:71:ALA:HB3	1.73	0.71
11:E9:3:LEU:HD23	11:E9:13:LEU:HD12	1.72	0.71
2:F:112:LYS:NZ	2:F:116:LEU:O	2.23	0.71
4:Z2:1707:G:O2'	4:Z2:1725:A:N6	2.24	0.70
7:E5:111:ILE:O	7:E5:130:THR:OG1	2.09	0.70
4:Z2:197:U:H4'	15:WD:22:ASN:HB3	1.72	0.70
30:CT:11:ARG:HB3	30:CT:16:LYS:HG3	1.74	0.70
4:Z2:194:A:N6	4:Z2:2413:A:O2'	2.25	0.69
4:Z2:2083:U:O2	4:Z2:2178:G:N2	2.25	0.69
4:Z2:281:A:H62	4:Z2:331:G:H21	1.38	0.69
4:Z2:1453:A:H2'	4:Z2:1454:A:C8	2.27	0.69
2:F:82:THR:HG23	2:F:96:LEU:HD13	1.74	0.69
9:F7:8:TYR:HA	9:F7:12:LEU:HB2	1.73	0.69
17:RF:1:MET:SD	17:RF:62:HIS:ND1	2.66	0.69
7:E5:162:ARG:NH1	27:BQ:101:MET:O	2.26	0.69
15:WD:6:GLN:HB3	15:WD:71:LEU:HD11	1.75	0.68
4:Z2:562:G:O2'	4:Z2:1238:A:OP1	2.12	0.68
8:L6:99:ARG:HD2	8:L6:104:CYS:SG	2.34	0.68
1:B:277:ARG:O	3:H:384:ARG:NH1	2.27	0.68
4:Z2:2009:C:H5'	4:Z2:2600:U:H4'	1.75	0.68
30:CT:124:LEU:HD21	30:CT:153:LEU:HD11	1.74	0.68
31:KU:30:THR:HG21	31:KU:63:ALA:HB2	1.76	0.67
1:B:34:PRO:HG3	1:B:73:HIS:HD2	1.59	0.67
4:Z2:185:G:H5'	15:WD:14:VAL:HG11	1.75	0.67
9:F7:134:GLU:HB3	9:F7:136:ILE:HD13	1.77	0.67
3:H:252:ASP:OD1	3:H:252:ASP:N	2.27	0.66
1:B:19:ILE:HG12	1:B:44:VAL:HG21	1.77	0.66
1:B:63:LYS:NZ	1:B:85:SER:O	2.24	0.66
4:Z2:1020:G:H1	4:Z2:1103:U:H3	1.42	0.66
18:FG:25:TYR:OH	18:FG:81:ASN:ND2	2.28	0.66
2:F:26:ILE:HG12	2:F:61:LEU:HD12	1.77	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
30:CT:51:MET:HB2	30:CT:115:LEU:HD22	1.76	0.66
4:Z2:327:A:O2'	11:E9:161:ARG:NH2	2.29	0.66
7:E5:16:LEU:HD21	7:E5:44:VAL:HB	1.78	0.66
4:Z2:2196:A:H2'	4:Z2:2197:C:C6	2.31	0.66
1:B:212:ILE:HB	1:B:235:THR:HG22	1.76	0.66
22:HK:34:MET:SD	22:HK:34:MET:N	2.62	0.66
31:KU:22:HIS:HB2	31:KU:33:THR:HG22	1.79	0.65
4:Z2:2274:U:H2'	4:Z2:2275:G:C8	2.31	0.65
17:RF:12:ILE:HD12	17:RF:42:LYS:HE2	1.77	0.65
34:IX:114:LEU:O	34:IX:118:MET:HG3	1.95	0.65
4:Z2:2083:U:O4	4:Z2:2178:G:O6	2.14	0.65
35:JY:46:ILE:HG12	35:JY:68:ARG:HG2	1.78	0.65
24:MM:39:ILE:HD11	24:MM:52:GLN:HB2	1.79	0.65
16:XE:24:ASP:OD1	16:XE:27:ARG:NH1	2.29	0.64
2:F:50:LEU:HD21	2:F:61:LEU:HD11	1.79	0.64
16:XE:5:GLU:O	16:XE:9:LYS:NZ	2.30	0.64
1:B:304:ARG:NH1	1:B:357:MET:O	2.29	0.64
35:JY:66:GLU:OE2	35:JY:68:ARG:NH1	2.30	0.64
4:Z2:1089:U:H2'	4:Z2:1090:A:H8	1.62	0.64
23:OL:20:ASP:OD1	23:OL:21:THR:N	2.29	0.64
1:B:298:GLY:HA2	1:B:367:THR:HA	1.79	0.64
6:A4:20:HIS:HB3	6:A4:48:LEU:HD21	1.79	0.64
4:Z2:1160:G:H4'	4:Z2:1161:U:H3'	1.79	0.64
4:Z2:1788:A:H2'	4:Z2:1789:A:C8	2.32	0.64
14:UC:35:ILE:HD11	14:UC:43:PRO:HB2	1.80	0.64
6:A4:168:VAL:HG21	6:A4:178:ILE:HD11	1.78	0.63
30:CT:97:VAL:HB	30:CT:98:PRO:HD2	1.79	0.63
1:B:134:ARG:NH2	1:B:245:GLY:O	2.31	0.63
30:CT:52:ILE:HG22	30:CT:70:THR:HB	1.81	0.63
4:Z2:836:C:H2'	4:Z2:837:A:H8	1.63	0.63
4:Z2:2282:G:OP2	9:F7:71:ARG:NH2	2.31	0.63
9:F7:24:ASN:HB3	9:F7:27:GLN:HG3	1.80	0.63
4:Z2:578:U:H2'	4:Z2:579:U:C6	2.33	0.62
4:Z2:397:C:H2'	4:Z2:398:A:C8	2.35	0.62
36:QZ:71:ARG:HH11	36:QZ:71:ARG:HG3	1.62	0.62
4:Z2:2050:C:H2'	4:Z2:2051:C:C6	2.35	0.62
4:Z2:644:G:H4'	11:E9:94:LYS:HG2	1.80	0.62
4:Z2:836:C:H2'	4:Z2:837:A:C8	2.35	0.62
4:Z2:2617:A:N1	4:Z2:2767:U:H5	1.98	0.62
4:Z2:2226:U:H2'	4:Z2:2227:U:C6	2.35	0.62
16:XE:39:ASN:ND2	16:XE:42:GLU:OE2	2.32	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:10:ARG:HG3	2:F:11:LYS:HG2	1.80	0.62
4:Z2:345:A:HO2'	4:Z2:346:A:H8	1.46	0.62
4:Z2:527:A:H2'	4:Z2:528:A:C8	2.34	0.62
4:Z2:1580:A:O2'	4:Z2:1581:A:OP1	2.18	0.62
3:H:336:ARG:NH2	3:H:370:ALA:O	2.32	0.61
18:FG:18:VAL:HG11	18:FG:58:HIS:CE1	2.35	0.61
4:Z2:688:U:H2'	4:Z2:689:G:O4'	2.00	0.61
6:A4:171:VAL:HG13	6:A4:178:ILE:HG13	1.83	0.61
8:L6:8:ILE:HG21	36:QZ:44:LEU:HD21	1.82	0.61
31:KU:112:ASP:HB3	32:NV:2:PRO:HB2	1.83	0.61
36:QZ:64:LEU:HB3	36:QZ:85:VAL:HG23	1.81	0.61
6:A4:86:ALA:O	6:A4:90:THR:HG23	2.01	0.61
18:FG:2:ARG:HH21	18:FG:91:ARG:HE	1.46	0.60
27:BQ:104:ALA:HB3	27:BQ:115:ASP:HB3	1.82	0.60
4:Z2:1795:A:H2'	4:Z2:1796:A:C8	2.36	0.60
7:E5:43:VAL:HG12	7:E5:122:VAL:HG11	1.81	0.60
4:Z2:2216:U:H2'	4:Z2:2217:G:C8	2.37	0.60
9:F7:7:LEU:HD12	9:F7:11:GLU:HG3	1.82	0.60
34:IX:45:THR:HG23	34:IX:48:VAL:HB	1.84	0.60
18:FG:51:ILE:O	18:FG:54:ILE:HG12	2.02	0.60
4:Z2:169:C:O2'	4:Z2:170:A:OP1	2.18	0.60
18:FG:9:LEU:HB2	18:FG:86:ARG:HB3	1.84	0.60
8:L6:54:ARG:NH1	8:L6:62:GLU:O	2.34	0.60
24:MM:25:VAL:HG13	24:MM:29:THR:HG22	1.83	0.60
13:MB:37:THR:HG23	13:MB:39:PRO:HD2	1.83	0.59
30:CT:14:VAL:HG22	30:CT:15:VAL:HG13	1.84	0.59
4:Z2:2574:C:H2'	4:Z2:2575:G:C8	2.37	0.59
4:Z2:2328:A:N3	4:Z2:2364:A:H2'	2.17	0.59
4:Z2:2060:U:H2'	4:Z2:2061:U:C6	2.37	0.59
20:TI:92:GLN:OE1	20:TI:92:GLN:N	2.33	0.59
4:Z2:724:A:H1'	4:Z2:725:C:H5	1.68	0.59
30:CT:11:ARG:NH2	30:CT:177:THR:O	2.33	0.59
35:JY:57:VAL:HG22	35:JY:58:ASN:H	1.67	0.59
6:A4:122:LEU:HD23	6:A4:146:MET:HG3	1.83	0.59
18:FG:41:ASP:OD1	18:FG:58:HIS:NE2	2.36	0.59
4:Z2:1356:U:O2'	4:Z2:2196:A:N3	2.29	0.59
5:R3:25:ASP:OD1	18:FG:101:GLN:NE2	2.35	0.59
4:Z2:2310:A:H2'	4:Z2:2311:A:C8	2.36	0.59
18:FG:18:VAL:HG11	18:FG:58:HIS:HE1	1.68	0.58
20:TI:94:VAL:HG12	20:TI:101:VAL:HA	1.85	0.58
28:GR:139:GLN:OE1	28:GR:140:GLN:NE2	2.36	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
53:V:13:U:H2'	53:V:14:U:H5"	1.84	0.58
7:E5:99:VAL:HB	7:E5:116:MET:HE3	1.85	0.58
7:E5:112:ALA:HB1	7:E5:116:MET:HB3	1.85	0.58
1:B:23:THR:OG1	1:B:77:LEU:O	2.15	0.58
4:Z2:1413:G:H2'	4:Z2:1414:G:H8	1.69	0.58
4:Z2:2622:A:O2'	34:IX:96:LYS:NZ	2.34	0.58
6:A4:141:GLU:O	6:A4:144:ARG:HG3	2.04	0.58
27:BQ:43:GLU:HG3	27:BQ:103:VAL:HG21	1.86	0.58
4:Z2:1341:C:H2'	4:Z2:1342:G:O4'	2.03	0.58
4:Z2:1585:A:H5"	4:Z2:1586:A:H5'	1.83	0.58
4:Z2:2537:U:H2'	4:Z2:2538:U:C6	2.39	0.58
4:Z2:1447:A:H2'	4:Z2:1448:G:C8	2.39	0.58
17:RF:92:ARG:NH1	17:RF:92:ARG:HB3	2.19	0.58
4:Z2:642:U:H2'	4:Z2:643:U:C6	2.39	0.58
4:Z2:1012:A:N6	4:Z2:1109:G:H2'	2.19	0.58
4:Z2:2256:A:H2'	4:Z2:2257:A:C8	2.39	0.58
4:Z2:1782:U:H2'	4:Z2:1783:C:C6	2.39	0.58
4:Z2:2288:U:C2	9:F7:151:GLY:HA3	2.39	0.58
6:A4:166:ILE:HG13	6:A4:186:ILE:HD11	1.86	0.58
2:F:10:ARG:HG3	2:F:11:LYS:H	1.69	0.58
4:Z2:1343:A:H2	4:Z2:1356:U:H3	1.52	0.58
5:R3:63:ARG:HD3	5:R3:70:TYR:HA	1.85	0.58
24:MM:31:GLN:O	24:MM:35:GLU:HG2	2.04	0.58
1:B:44:VAL:HG12	1:B:61:LEU:HD21	1.84	0.57
8:L6:4:THR:HG21	27:BQ:85:LEU:HD13	1.86	0.57
18:FG:8:LEU:HD13	18:FG:84:ILE:HD13	1.86	0.57
2:F:32:PRO:HG2	2:F:35:GLU:HB3	1.86	0.57
4:Z2:12:A:H2'	4:Z2:13:A:C8	2.40	0.57
1:B:304:ARG:HG3	1:B:357:MET:HB3	1.87	0.57
4:Z2:380:U:OP2	15:WD:10:LYS:NZ	2.34	0.57
5:R3:34:SER:OG	5:R3:36:ASN:OD1	2.21	0.57
4:Z2:2011:C:H2'	4:Z2:2012:A:C8	2.39	0.57
4:Z2:798:U:H2'	4:Z2:799:C:C6	2.39	0.57
29:GS:46:ALA:HA	29:GS:122:ALA:HB2	1.86	0.57
4:Z2:1089:U:H2'	4:Z2:1090:A:C8	2.39	0.57
4:Z2:1639:G:OP1	13:MB:37:THR:HG21	2.05	0.57
4:Z2:2076:A:O2'	15:WD:53:THR:HG21	2.05	0.57
4:Z2:281:A:H62	4:Z2:331:G:N2	2.02	0.57
7:E5:99:VAL:HB	7:E5:116:MET:CE	2.35	0.57
18:FG:63:ASN:HD22	18:FG:96:ILE:HB	1.69	0.57
6:A4:84:ILE:HG21	6:A4:216:SER:HA	1.86	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:132:LYS:HE3	1:B:163:PRO:HB2	1.86	0.56
4:Z2:1453:A:H2'	4:Z2:1454:A:H8	1.70	0.56
4:Z2:2771:C:H2'	4:Z2:2772:C:C6	2.40	0.56
28:GR:84:GLU:OE2	28:GR:86:ARG:NH1	2.38	0.56
28:GR:107:VAL:HG23	28:GR:108:GLY:H	1.70	0.56
4:Z2:1480:A:N3	4:Z2:1565:C:O2'	2.34	0.56
4:Z2:1855:G:H3'	4:Z2:1856:U:H5"	1.87	0.56
9:F7:119:PRO:O	9:F7:167:ARG:NH2	2.37	0.56
4:Z2:1780:A:H2'	4:Z2:1781:C:C6	2.41	0.56
4:Z2:2413:A:H2'	4:Z2:2413:A:N3	2.19	0.56
18:FG:26:ILE:HG23	18:FG:36:ILE:HG13	1.87	0.56
4:Z2:579:U:H2'	4:Z2:580:C:C6	2.40	0.56
4:Z2:727:G:H2'	4:Z2:728:U:C6	2.40	0.56
4:Z2:1875:A:H2'	4:Z2:1876:A:C8	2.40	0.56
53:V:5:U:H3	53:V:68:U:H3	1.52	0.56
4:Z2:617:A:H2'	4:Z2:618:A:C8	2.41	0.56
32:NV:40:LYS:O	32:NV:44:VAL:HG23	2.06	0.56
1:B:287:GLN:NE2	1:B:319:THR:HA	2.21	0.56
6:A4:167:PHE:HA	6:A4:189:ILE:HG23	1.88	0.56
9:F7:14:GLN:OE1	9:F7:14:GLN:N	2.34	0.56
36:QZ:23:MET:HE3	36:QZ:26:SER:HB3	1.87	0.56
3:H:287:GLU:OE1	3:H:287:GLU:N	2.34	0.56
4:Z2:1681:U:H5"	4:Z2:1682:C:H5	1.70	0.56
9:F7:108:ILE:HG22	9:F7:109:PRO:HD3	1.88	0.56
22:HK:4:LYS:HA	22:HK:7:ILE:HD12	1.87	0.56
1:B:174:ASP:HB3	53:V:74:C:H41	1.71	0.56
6:A4:83:GLY:O	6:A4:87:GLU:HG2	2.06	0.56
9:F7:6:ALA:O	9:F7:10:ASN:ND2	2.38	0.56
4:Z2:462:A:H4'	4:Z2:463:A:H5'	1.88	0.56
4:Z2:1782:U:H2'	4:Z2:1783:C:H6	1.71	0.56
1:B:179:ARG:HD3	4:Z2:2567:U:H4'	1.88	0.55
4:Z2:2196:A:O2'	4:Z2:2197:C:OP1	2.21	0.55
18:FG:9:LEU:HD11	18:FG:59:TYR:CZ	2.41	0.55
4:Z2:1459:G:O2'	4:Z2:1500:G:O6	2.24	0.55
4:Z2:2661:A:H2'	4:Z2:2662:A:C8	2.41	0.55
28:GR:155:GLU:HG2	28:GR:157:TYR:H	1.71	0.55
2:F:63:ILE:HG21	2:F:77:ILE:HG12	1.88	0.55
4:Z2:397:C:H2'	4:Z2:398:A:H8	1.72	0.55
4:Z2:1031:G:O2'	4:Z2:1094:G:N1	2.39	0.55
4:Z2:2573:A:H2'	4:Z2:2574:C:C6	2.41	0.55
22:HK:83:MET:HA	22:HK:86:GLU:HG3	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:220:SER:OG	4:Z2:2541:C:H5'	2.06	0.55
4:Z2:2295:U:H5'	9:F7:85:ILE:HD11	1.89	0.55
35:JY:7:ARG:NH1	35:JY:73:MET:SD	2.77	0.55
3:H:216:PRO:HA	3:H:294:VAL:HG12	1.88	0.55
3:H:216:PRO:HG3	3:H:336:ARG:HD2	1.88	0.55
4:Z2:818:A:H2'	4:Z2:819:G:C8	2.41	0.55
4:Z2:984:A:H2'	4:Z2:985:A:C8	2.42	0.55
2:F:26:ILE:HG21	2:F:33:LEU:HD12	1.89	0.55
4:Z2:2194:U:H3	4:Z2:2199:A:H61	1.54	0.55
4:Z2:993:A:H5'	25:PO:59:ARG:HG3	1.89	0.55
6:A4:95:PRO:HG3	6:A4:159:MET:HG3	1.89	0.55
27:BQ:79:ARG:NH1	27:BQ:81:SER:O	2.40	0.55
4:Z2:275:U:H2'	4:Z2:276:A:C8	2.42	0.54
6:A4:125:GLN:OE1	6:A4:130:THR:OG1	2.25	0.54
18:FG:42:TRP:CD2	18:FG:102:LEU:HD22	2.43	0.54
15:WD:31:PRO:HB2	15:WD:33:LEU:HG	1.90	0.54
28:GR:135:SER:HB3	28:GR:141:LEU:HB2	1.88	0.54
53:V:5:U:H2'	53:V:6:U:O4'	2.07	0.54
18:FG:22:VAL:O	18:FG:26:ILE:HG12	2.08	0.54
30:CT:43:LEU:HD12	30:CT:55:ILE:HD13	1.88	0.54
4:Z2:71:G:H2'	4:Z2:72:C:C6	2.42	0.54
4:Z2:2632:C:H2'	4:Z2:2633:U:H6	1.73	0.54
4:Z2:2644:G:O6	28:GR:175:LYS:NZ	2.40	0.54
24:MM:49:ASP:HB3	24:MM:52:GLN:HG2	1.90	0.54
29:GS:26:PHE:HE2	29:GS:121:LEU:HD21	1.71	0.54
36:QZ:17:ARG:HD2	36:QZ:64:LEU:HD13	1.87	0.54
30:CT:88:GLN:NE2	30:CT:100:GLN:HA	2.22	0.54
4:Z2:1580:A:H2'	4:Z2:1581:A:C8	2.43	0.54
31:KU:31:ILE:HG12	31:KU:46:THR:HG22	1.90	0.54
4:Z2:788:C:O5'	4:Z2:788:C:H6	1.91	0.54
4:Z2:1833:A:H1'	4:Z2:1834:A:N7	2.23	0.54
10:D8:111:C:H2'	10:D8:112:A:H8	1.73	0.54
23:OL:11:ILE:HG21	23:OL:21:THR:HG22	1.89	0.54
34:IX:88:ASN:HB2	34:IX:91:LYS:HE2	1.88	0.54
6:A4:167:PHE:HA	6:A4:189:ILE:O	2.08	0.53
4:Z2:982:C:OP2	25:PO:58:ARG:NH2	2.38	0.53
4:Z2:1370:U:H2'	4:Z2:1371:U:C6	2.43	0.53
13:MB:24:MET:HE1	13:MB:40:LYS:HD2	1.90	0.53
26:SP:3:ARG:NH1	26:SP:7:LYS:HB3	2.23	0.53
4:Z2:380:U:H5"	15:WD:32:ASN:HB2	1.89	0.53
4:Z2:2057:A:H2'	4:Z2:2058:C:C6	2.43	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:E9:82:ARG:HB2	11:E9:85:ALA:HB2	1.90	0.53
7:E5:86:LEU:HB2	7:E5:103:PRO:HG3	1.90	0.53
4:Z2:932:C:H1'	4:Z2:968:A:C8	2.43	0.53
29:GS:67:LEU:HB3	29:GS:71:ARG:HH21	1.73	0.53
4:Z2:734:A:H4'	4:Z2:1255:G:N3	2.23	0.53
4:Z2:463:A:O2'	20:TI:41:THR:O	2.27	0.53
4:Z2:1413:G:H2'	4:Z2:1414:G:C8	2.44	0.53
53:V:8:U:H3	53:V:14:U:H5	1.57	0.53
4:Z2:1489:G:H2'	4:Z2:1490:U:C6	2.44	0.53
4:Z2:2286:G:O2'	9:F7:121:ALA:O	2.22	0.53
4:Z2:2444:A:H2'	4:Z2:2445:C:C6	2.44	0.53
4:Z2:2683:A:H2'	4:Z2:2684:C:C6	2.44	0.53
26:SP:24:GLU:OE1	26:SP:24:GLU:N	2.40	0.53
30:CT:134:MET:HG3	30:CT:153:LEU:HG	1.90	0.53
4:Z2:2573:A:H2'	4:Z2:2574:C:H6	1.73	0.53
5:R3:73:ASN:ND2	5:R3:73:ASN:O	2.37	0.53
6:A4:84:ILE:H	6:A4:84:ILE:HD12	1.73	0.53
3:H:221:PHE:HA	3:H:286:ARG:HE	1.72	0.52
4:Z2:477:G:H4'	17:RF:6:LYS:HB2	1.91	0.52
4:Z2:799:C:H2'	4:Z2:800:C:H6	1.74	0.52
4:Z2:1918:A:H2'	4:Z2:1919:G:O4'	2.09	0.52
4:Z2:2805:G:O2'	13:MB:49:GLU:OE2	2.27	0.52
30:CT:72:ARG:HH11	30:CT:72:ARG:HG3	1.75	0.52
36:QZ:27:ILE:HG21	36:QZ:59:CYS:SG	2.49	0.52
4:Z2:2024:G:H2'	4:Z2:2025:U:O4'	2.09	0.52
27:BQ:75:GLU:HG2	27:BQ:76:THR:HG23	1.91	0.52
4:Z2:124:A:H5'	4:Z2:125:A:H8	1.75	0.52
4:Z2:288:C:OP2	20:TI:80:ARG:NH2	2.37	0.52
4:Z2:593:A:H2'	4:Z2:594:A:C8	2.44	0.52
4:Z2:2550:G:H2'	4:Z2:2551:A:C8	2.44	0.52
2:F:13:SER:HB3	2:F:68:GLY:HA3	1.91	0.52
4:Z2:85:U:H2'	4:Z2:86:C:C6	2.45	0.52
4:Z2:1166:A:H2'	4:Z2:1167:A:C8	2.45	0.52
30:CT:47:LEU:HB2	30:CT:52:ILE:HD13	1.91	0.52
3:H:339:ASP:N	3:H:339:ASP:OD1	2.43	0.52
4:Z2:169:C:HO2'	4:Z2:170:A:P	2.31	0.52
4:Z2:293:U:H2'	4:Z2:294:G:O4'	2.10	0.52
4:Z2:931:A:H2'	4:Z2:932:C:C6	2.44	0.52
4:Z2:1986:C:OP1	13:MB:5:LYS:NZ	2.39	0.52
6:A4:47:ASN:O	6:A4:51:THR:HG23	2.10	0.52
4:Z2:156:U:H2'	4:Z2:157:C:C6	2.44	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:F7:4:LEU:HG	9:F7:101:ASP:HB2	1.92	0.52
10:D8:18:G:H2'	10:D8:19:A:C8	2.45	0.52
10:D8:111:C:H2'	10:D8:112:A:C8	2.44	0.52
2:F:48:GLN:HA	2:F:51:GLU:HG2	1.92	0.52
10:D8:18:G:H2'	10:D8:19:A:H8	1.73	0.52
3:H:310:GLU:HB3	3:H:390:VAL:HG13	1.91	0.52
4:Z2:37:G:H2'	4:Z2:38:C:C6	2.45	0.52
8:L6:107:VAL:HG23	8:L6:117:TYR:HB3	1.91	0.52
27:BQ:34:LYS:HD3	27:BQ:51:VAL:HG23	1.92	0.52
3:H:230:VAL:HG11	3:H:289:VAL:HG11	1.91	0.52
4:Z2:841:G:H2'	4:Z2:842:G:C8	2.44	0.52
4:Z2:1468:C:H2'	4:Z2:1469:A:H8	1.74	0.52
35:JY:10:LEU:HD22	35:JY:98:VAL:HG12	1.92	0.52
4:Z2:1062:U:H4'	4:Z2:1063:C:H5'	1.90	0.52
8:L6:67:ILE:HG12	8:L6:74:LEU:HD12	1.92	0.52
32:NV:4:VAL:HG21	32:NV:19:PHE:HA	1.91	0.52
4:Z2:46:G:H2'	4:Z2:47:U:C6	2.45	0.51
4:Z2:532:A:HO2'	4:Z2:533:U:H6	1.57	0.51
4:Z2:583:U:H2'	4:Z2:584:A:C8	2.44	0.51
4:Z2:2073:U:H2'	4:Z2:2074:A:H8	1.75	0.51
4:Z2:2580:G:H2'	4:Z2:2581:A:C8	2.45	0.51
35:JY:85:ASP:OD1	35:JY:86:ALA:N	2.43	0.51
4:Z2:275:U:H2'	4:Z2:276:A:H8	1.75	0.51
4:Z2:1633:G:H5"	4:Z2:1634:C:H5'	1.92	0.51
9:F7:63:GLN:HE22	10:D8:41:C:H4'	1.76	0.51
24:MM:16:VAL:HB	24:MM:41:PRO:HB3	1.92	0.51
7:E5:101:MET:HG2	7:E5:130:THR:HG22	1.91	0.51
4:Z2:1426:U:H2'	4:Z2:1427:C:C6	2.45	0.51
17:RF:81:THR:HG21	17:RF:97:SER:HB2	1.92	0.51
4:Z2:1839:A:H2'	4:Z2:1840:A:C8	2.45	0.51
18:FG:49:TYR:OH	18:FG:86:ARG:NH1	2.44	0.51
27:BQ:116:ARG:HG2	27:BQ:116:ARG:HH11	1.74	0.51
32:NV:29:LEU:HA	32:NV:32:VAL:HG12	1.92	0.51
4:Z2:1182:U:H2'	4:Z2:1183:U:C6	2.46	0.51
4:Z2:1996:G:H5"	17:RF:42:LYS:HB2	1.93	0.51
4:Z2:2316:A:OP1	19:VH:77:ARG:NH2	2.43	0.51
7:E5:77:ILE:HD13	7:E5:150:ARG:HB2	1.92	0.51
11:E9:129:LYS:HB3	11:E9:132:GLU:HG3	1.91	0.51
1:B:132:LYS:HD2	1:B:165:ASP:HA	1.92	0.51
11:E9:128:PRO:HB3	11:E9:155:ASN:HB2	1.92	0.51
28:GR:35:LEU:HD21	28:GR:72:LEU:HD13	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:Z2:27:C:OP1	25:PO:22:LYS:HE3	2.11	0.51
15:WD:39:TRP:HE1	15:WD:41:GLU:HG2	1.76	0.51
4:Z2:334:A:H2'	4:Z2:335:C:C6	2.46	0.51
4:Z2:655:A:H4'	4:Z2:656:C:C5'	2.36	0.51
4:Z2:1012:A:H2'	4:Z2:1013:A:C8	2.46	0.51
27:BQ:22:LYS:O	27:BQ:67:TYR:OH	2.22	0.51
3:H:357:ASP:OD1	3:H:357:ASP:N	2.42	0.50
4:Z2:1581:A:H2'	4:Z2:1582:A:C8	2.46	0.50
22:HK:81:ARG:HD2	35:JY:52:LEU:HB2	1.93	0.50
29:GS:26:PHE:CE2	29:GS:121:LEU:HD21	2.46	0.50
4:Z2:2240:U:H5"	19:VH:11:ARG:CZ	2.41	0.50
24:MM:9:ILE:HD12	24:MM:18:SER:HB3	1.93	0.50
4:Z2:566:C:OP1	25:PO:33:ARG:HB2	2.11	0.50
15:WD:61:LYS:HG2	15:WD:62:LEU:HD23	1.92	0.50
4:Z2:565:U:H2'	4:Z2:566:C:C6	2.46	0.50
4:Z2:2754:C:H2'	4:Z2:2755:C:C6	2.46	0.50
26:SP:3:ARG:HG2	26:SP:4:SER:H	1.76	0.50
4:Z2:2297:G:H1'	9:F7:155:THR:HG21	1.93	0.50
6:A4:25:THR:HG23	6:A4:44:HIS:NE2	2.27	0.50
28:GR:47:ASP:N	28:GR:47:ASP:OD1	2.44	0.50
30:CT:11:ARG:NH2	30:CT:175:LEU:O	2.39	0.50
4:Z2:624:U:H2'	4:Z2:625:C:C6	2.47	0.50
4:Z2:2540:G:H2'	4:Z2:2541:C:C6	2.47	0.50
9:F7:24:ASN:ND2	10:D8:55:A:C8	2.80	0.50
29:GS:50:VAL:HG13	29:GS:122:ALA:HB1	1.94	0.50
3:H:218:GLU:HG2	3:H:291:ARG:HH21	1.77	0.50
4:Z2:9:G:H2'	4:Z2:10:U:C6	2.47	0.50
4:Z2:566:C:H2'	4:Z2:567:A:C8	2.46	0.50
4:Z2:977:G:OP1	25:PO:50:ARG:NH1	2.36	0.50
8:L6:57:LEU:HD11	8:L6:63:VAL:HG22	1.92	0.50
4:Z2:244:G:H4'	4:Z2:369:G:C5	2.46	0.50
4:Z2:1392:U:H2'	4:Z2:1393:U:C6	2.46	0.50
4:Z2:1418:A:H2'	4:Z2:1419:G:O4'	2.12	0.50
4:Z2:2037:U:O2	4:Z2:2038:A:N6	2.42	0.50
10:D8:3:U:OP1	10:D8:59:A:O2'	2.28	0.50
24:MM:10:PRO:HB2	24:MM:13:LYS:HG3	1.94	0.50
27:BQ:10:MET:HG3	27:BQ:27:MET:SD	2.51	0.50
28:GR:128:GLN:HG3	28:GR:129:THR:HG23	1.94	0.50
29:GS:87:GLN:O	29:GS:149:ASN:ND2	2.45	0.50
1:B:169:LEU:HD13	1:B:175:GLY:HA3	1.92	0.50
4:Z2:741:A:H2'	4:Z2:742:G:O4'	2.12	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
19:VH:75:PHE:HB2	19:VH:77:ARG:HD2	1.93	0.50
4:Z2:781:U:H2'	4:Z2:782:C:C6	2.47	0.49
28:GR:17:VAL:HG21	28:GR:50:VAL:HG21	1.94	0.49
28:GR:73:ASN:O	28:GR:77:ILE:HG22	2.12	0.49
4:Z2:561:U:H2'	4:Z2:562:G:C8	2.47	0.49
4:Z2:1513:A:H2'	4:Z2:1514:A:H8	1.76	0.49
4:Z2:2356:A:H2'	4:Z2:2357:C:C6	2.47	0.49
4:Z2:2452:A:H2'	4:Z2:2453:G:O4'	2.12	0.49
2:F:10:ARG:CG	2:F:11:LYS:H	2.25	0.49
5:R3:32:TYR:CG	5:R3:55:LEU:HD21	2.47	0.49
6:A4:58:ALA:HB1	6:A4:189:ILE:HD12	1.94	0.49
7:E5:120:LEU:HD13	7:E5:128:VAL:HG11	1.95	0.49
23:OL:11:ILE:O	23:OL:15:GLN:HG2	2.12	0.49
28:GR:17:VAL:HG12	28:GR:26:VAL:HG22	1.93	0.49
30:CT:53:SER:HB2	30:CT:114:ARG:HB3	1.94	0.49
53:V:54:U:H3	53:V:58:U:H5	1.60	0.49
4:Z2:379:G:H1'	15:WD:29:PHE:HB3	1.93	0.49
31:KU:56:ARG:HG3	31:KU:56:ARG:HH11	1.76	0.49
3:H:218:GLU:HB2	3:H:232:GLY:HA2	1.93	0.49
4:Z2:842:G:H2'	4:Z2:843:G:O4'	2.12	0.49
4:Z2:1479:A:H2'	4:Z2:1480:A:C8	2.47	0.49
4:Z2:2073:U:H2'	4:Z2:2074:A:C8	2.46	0.49
4:Z2:2823:G:N2	4:Z2:2826:A:OP2	2.32	0.49
36:QZ:17:ARG:HH11	36:QZ:64:LEU:HD13	1.78	0.49
3:H:341:THR:HB	3:H:366:ILE:HD13	1.95	0.49
4:Z2:709:C:H2'	4:Z2:710:G:C8	2.48	0.49
4:Z2:2081:A:H2'	4:Z2:2082:C:C6	2.47	0.49
4:Z2:2081:A:H2'	4:Z2:2082:C:H6	1.77	0.49
4:Z2:2814:G:N2	4:Z2:2833:U:O2	2.45	0.49
22:HK:64:CYS:HB2	22:HK:80:SER:HB3	1.94	0.49
24:MM:65:THR:OG1	24:MM:66:GLU:OE1	2.23	0.49
29:GS:70:VAL:HG21	29:GS:105:LEU:HD21	1.95	0.49
4:Z2:1776:C:H2'	4:Z2:1777:A:C5	2.47	0.49
4:Z2:2294:A:C2	9:F7:77:PHE:HB3	2.48	0.49
11:E9:193:LYS:O	11:E9:197:GLU:HG2	2.12	0.49
28:GR:62:MET:HA	28:GR:65:THR:HG22	1.94	0.49
4:Z2:695:G:H2'	4:Z2:696:C:C6	2.48	0.49
4:Z2:916:A:N1	4:Z2:1152:U:O2'	2.43	0.49
4:Z2:1286:A:OP2	4:Z2:1595:U:O2'	2.30	0.49
4:Z2:1706:U:H2'	4:Z2:1707:G:O4'	2.13	0.49
4:Z2:1869:U:H2'	4:Z2:1870:G:O4'	2.13	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:UC:13:ARG:O	14:UC:45:SER:OG	2.31	0.49
16:XE:42:GLU:HA	16:XE:45:VAL:HG12	1.95	0.49
4:Z2:1514:A:N6	4:Z2:1515:G:O2'	2.46	0.48
4:Z2:2000:A:H2'	4:Z2:2001:A:C8	2.47	0.48
24:MM:86:TYR:CE1	24:MM:90:ARG:HD3	2.48	0.48
27:BQ:43:GLU:OE1	27:BQ:116:ARG:NH2	2.32	0.48
3:H:266:LYS:HE2	3:H:266:LYS:HB2	1.59	0.48
4:Z2:732:U:O2	4:Z2:2000:A:H1'	2.13	0.48
4:Z2:1668:U:H2'	4:Z2:1669:G:O4'	2.13	0.48
27:BQ:11:LEU:HD22	27:BQ:77:ILE:HD11	1.93	0.48
2:F:25:SER:OG	2:F:60:ASP:OD1	2.31	0.48
2:F:47:ARG:HA	2:F:50:LEU:HD12	1.95	0.48
4:Z2:10:U:H2'	4:Z2:11:C:C6	2.48	0.48
4:Z2:262:A:N1	4:Z2:410:U:O2'	2.41	0.48
4:Z2:779:A:H2'	4:Z2:780:C:C6	2.49	0.48
7:E5:17:VAL:HG12	7:E5:122:VAL:HG23	1.95	0.48
9:F7:96:MET:HG3	9:F7:97:TYR:N	2.27	0.48
4:Z2:2457:U:HO2'	4:Z2:2458:C:P	2.35	0.48
4:Z2:2632:C:H2'	4:Z2:2633:U:C6	2.48	0.48
6:A4:112:LEU:HD22	6:A4:153:LEU:HD21	1.95	0.48
9:F7:29:PRO:HB3	9:F7:160:ALA:HB2	1.94	0.48
29:GS:137:LYS:N	29:GS:137:LYS:HD2	2.28	0.48
53:V:17:U:H3'	53:V:18:U:H5"	1.96	0.48
4:Z2:1431:C:H2'	4:Z2:1432:U:C6	2.49	0.48
4:Z2:2497:U:H2'	4:Z2:2498:C:C6	2.48	0.48
8:L6:71:GLY:O	8:L6:99:ARG:NH2	2.37	0.48
11:E9:170:ASP:OD1	11:E9:171:THR:N	2.45	0.48
22:HK:27:LEU:CD2	22:HK:48:LEU:HB2	2.42	0.48
4:Z2:625:C:H2'	4:Z2:626:U:C6	2.49	0.48
4:Z2:1558:A:H2'	4:Z2:1559:A:C8	2.48	0.48
4:Z2:1866:U:H2'	4:Z2:1867:C:C6	2.49	0.48
4:Z2:2274:U:OP1	4:Z2:2363:U:O2'	2.29	0.48
4:Z2:2620:U:H2'	4:Z2:2621:G:O4'	2.13	0.48
9:F7:36:LEU:HD22	9:F7:154:VAL:HG22	1.95	0.48
25:PO:74:LEU:HD23	25:PO:74:LEU:H	1.78	0.48
4:Z2:178:A:H2'	4:Z2:179:A:C8	2.48	0.48
4:Z2:205:C:H2'	4:Z2:206:C:C6	2.48	0.48
4:Z2:1427:C:H2'	4:Z2:1428:A:O4'	2.13	0.48
11:E9:97:ARG:O	11:E9:101:ARG:HG3	2.14	0.48
19:VH:70:ALA:HB3	19:VH:81:MET:HE1	1.96	0.48
1:B:26:GLU:HG2	4:Z2:1900:C:C4	2.49	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:104:ARG:NH1	2:F:105:ASP:O	2.44	0.48
4:Z2:834:A:H2'	4:Z2:835:C:C6	2.49	0.48
4:Z2:2435:C:H2'	4:Z2:2436:A:C8	2.49	0.48
11:E9:21:GLU:HG3	11:E9:22:PHE:H	1.79	0.48
11:E9:46:LYS:HB3	11:E9:50:GLU:HB2	1.95	0.48
19:VH:12:ASN:O	19:VH:12:ASN:ND2	2.43	0.48
4:Z2:943:A:H2'	4:Z2:944:A:C8	2.48	0.48
4:Z2:1378:U:H2'	4:Z2:1379:A:O4'	2.14	0.48
9:F7:66:VAL:HG22	10:D8:39:C:C5	2.49	0.48
30:CT:191:THR:HG21	30:CT:196:ILE:HD12	1.94	0.48
31:KU:121:CYS:O	32:NV:35:ARG:NH2	2.33	0.48
4:Z2:1672:A:H2'	4:Z2:1673:C:C6	2.49	0.48
4:Z2:2311:A:H2'	4:Z2:2312:A:H8	1.74	0.48
4:Z2:2853:C:H2'	4:Z2:2854:U:C6	2.49	0.48
6:A4:75:VAL:HB	6:A4:168:VAL:HG12	1.95	0.48
9:F7:135:GLN:HE22	9:F7:146:ILE:HD11	1.79	0.48
34:IX:98:GLU:HB3	34:IX:124:LEU:HG	1.95	0.48
4:Z2:134:C:H2'	4:Z2:135:C:C6	2.49	0.47
4:Z2:205:C:H2'	4:Z2:206:C:H6	1.79	0.47
4:Z2:1932:U:H2'	4:Z2:1933:C:C6	2.49	0.47
5:R3:26:VAL:O	5:R3:30:LYS:HG2	2.14	0.47
9:F7:135:GLN:HG2	9:F7:150:ARG:HB2	1.95	0.47
27:BQ:40:LEU:HB3	27:BQ:46:VAL:HG22	1.96	0.47
4:Z2:459:G:H4'	4:Z2:485:A:N1	2.29	0.47
11:E9:116:ARG:HG2	11:E9:183:ASP:O	2.14	0.47
16:XE:32:LYS:HB2	16:XE:37:LEU:HD23	1.96	0.47
25:PO:58:ARG:HA	25:PO:61:TRP:CE3	2.49	0.47
34:IX:55:VAL:HA	34:IX:123:LYS:O	2.14	0.47
35:JY:53:THR:HG23	35:JY:62:ARG:HA	1.97	0.47
4:Z2:1480:A:H2'	4:Z2:1482:C:C5	2.49	0.47
4:Z2:2216:U:H2'	4:Z2:2217:G:H8	1.77	0.47
9:F7:10:ASN:O	9:F7:14:GLN:NE2	2.48	0.47
9:F7:135:GLN:HE21	9:F7:150:ARG:H	1.62	0.47
17:RF:37:THR:HG23	17:RF:38:TYR:CD2	2.48	0.47
1:B:97:ASP:O	1:B:115:ARG:NH2	2.48	0.47
4:Z2:1764:U:H2'	4:Z2:1770:A:N6	2.29	0.47
30:CT:175:LEU:HD21	30:CT:201:TRP:CD1	2.49	0.47
4:Z2:833:U:H2'	4:Z2:834:A:H8	1.77	0.47
4:Z2:1064:C:H2'	4:Z2:1065:U:H6	1.79	0.47
15:WD:39:TRP:NE1	15:WD:41:GLU:HG2	2.29	0.47
35:JY:59:LYS:HE3	35:JY:62:ARG:HH22	1.80	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:H:303:PRO:HA	3:H:370:ALA:HA	1.96	0.47
4:Z2:140:U:H2'	4:Z2:141:A:C8	2.50	0.47
4:Z2:1338:A:H2'	4:Z2:1339:G:O4'	2.14	0.47
4:Z2:1552:C:H2'	4:Z2:1553:C:C6	2.49	0.47
6:A4:13:ASP:OD1	6:A4:14:LEU:N	2.47	0.47
1:B:17:VAL:HG21	1:B:48:LEU:HD11	1.97	0.47
1:B:96:LEU:HD23	1:B:96:LEU:HA	1.78	0.47
1:B:213:VAL:HG11	1:B:239:LEU:HD22	1.95	0.47
4:Z2:346:A:H2'	4:Z2:347:C:C6	2.50	0.47
4:Z2:824:U:H2'	4:Z2:825:C:C6	2.49	0.47
4:Z2:1582:A:H2'	4:Z2:1583:C:O4'	2.15	0.47
4:Z2:2670:U:H2'	4:Z2:2671:G:O4'	2.15	0.47
26:SP:52:HIS:HB2	26:SP:57:HIS:CE1	2.50	0.47
27:BQ:75:GLU:OE1	27:BQ:98:LYS:NZ	2.36	0.47
1:B:10:GLU:CD	1:B:10:GLU:N	2.68	0.47
1:B:174:ASP:HB3	53:V:74:C:N4	2.29	0.47
4:Z2:633:G:H4'	4:Z2:2334:G:H5'	1.97	0.47
4:Z2:2530:A:H2'	4:Z2:2531:U:C6	2.50	0.47
31:KU:46:THR:O	31:KU:50:GLN:HG2	2.15	0.47
35:JY:28:THR:HG21	35:JY:90:LEU:HD22	1.96	0.47
4:Z2:728:U:O2'	4:Z2:1647:U:OP1	2.29	0.47
4:Z2:1255:G:N7	4:Z2:1309:U:H5	2.13	0.47
6:A4:230:LYS:O	6:A4:234:GLN:HG2	2.15	0.47
26:SP:44:MET:HB2	26:SP:47:LEU:HD21	1.97	0.47
27:BQ:7:VAL:O	27:BQ:11:LEU:HG	2.15	0.47
2:F:28:VAL:HG22	2:F:63:ILE:HB	1.97	0.47
4:Z2:1253:A:H2'	4:Z2:1254:C:C6	2.50	0.47
17:RF:14:ALA:O	17:RF:18:ARG:HG3	2.15	0.47
26:SP:12:ASP:OD2	26:SP:14:HIS:ND1	2.40	0.47
31:KU:64:GLN:HG2	31:KU:99:ALA:HB2	1.97	0.47
1:B:220:SER:HB3	4:Z2:2540:G:H4'	1.96	0.46
4:Z2:247:G:H2'	4:Z2:248:A:C8	2.50	0.46
4:Z2:295:G:H2'	4:Z2:296:G:C8	2.50	0.46
4:Z2:527:A:H2'	4:Z2:528:A:H8	1.80	0.46
4:Z2:1780:A:H2'	4:Z2:1781:C:H6	1.79	0.46
4:Z2:2283:A:H2'	4:Z2:2284:A:C8	2.50	0.46
4:Z2:2457:U:O2'	4:Z2:2458:C:OP1	2.30	0.46
4:Z2:2714:G:H2'	4:Z2:2715:G:C8	2.50	0.46
30:CT:60:PRO:HB3	35:JY:94:ALA:N	2.30	0.46
34:IX:19:ASP:OD1	34:IX:58:ASN:ND2	2.36	0.46
5:R3:73:ASN:C	5:R3:73:ASN:HD22	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A4:46:ILE:HD11	6:A4:194:THR:HB	1.97	0.46
11:E9:144:ARG:HB3	11:E9:165:HIS:HB2	1.97	0.46
24:MM:34:LEU:HD12	24:MM:39:ILE:HB	1.97	0.46
28:GR:77:ILE:HA	28:GR:80:THR:HG22	1.97	0.46
4:Z2:644:G:O2'	11:E9:94:LYS:O	2.31	0.46
4:Z2:2628:U:H4'	4:Z2:2715:G:O2'	2.15	0.46
8:L6:67:ILE:HG22	8:L6:99:ARG:HH11	1.80	0.46
9:F7:162:THR:HB	9:F7:165:GLU:HG3	1.98	0.46
29:GS:66:VAL:O	29:GS:70:VAL:HG23	2.14	0.46
53:V:24:U:H2'	53:V:25:U:C6	2.50	0.46
1:B:239:LEU:HD12	1:B:253:GLY:HA3	1.97	0.46
1:B:246:ASN:O	1:B:250:ILE:HG12	2.16	0.46
4:Z2:1181:G:H2'	4:Z2:1182:U:H6	1.80	0.46
4:Z2:1671:U:H2'	4:Z2:1672:A:C8	2.51	0.46
4:Z2:1843:G:H1'	4:Z2:1871:A:H61	1.80	0.46
23:OL:16:ARG:HA	23:OL:16:ARG:HD2	1.61	0.46
4:Z2:402:U:H2'	4:Z2:403:C:C6	2.51	0.46
26:SP:14:HIS:O	26:SP:18:LYS:HG3	2.16	0.46
34:IX:120:LYS:O	34:IX:123:LYS:NZ	2.46	0.46
1:B:99:PRO:HD2	1:B:99:PRO:O	2.16	0.46
4:Z2:1012:A:H61	4:Z2:1109:G:H2'	1.80	0.46
6:A4:84:ILE:HD11	6:A4:212:ILE:HD11	1.98	0.46
6:A4:122:LEU:O	6:A4:125:GLN:HG3	2.16	0.46
8:L6:72:HIS:HB3	8:L6:99:ARG:NH1	2.31	0.46
24:MM:86:TYR:O	24:MM:90:ARG:HG2	2.15	0.46
27:BQ:88:HIS:CE1	27:BQ:126:GLU:HB2	2.51	0.46
4:Z2:1139:G:OP2	25:PO:58:ARG:NH1	2.48	0.46
4:Z2:1349:A:OP2	15:WD:2:SER:OG	2.33	0.46
8:L6:8:ILE:HD11	36:QZ:42:LYS:HB3	1.97	0.46
1:B:214:GLY:O	1:B:237:SER:HA	2.15	0.46
4:Z2:1602:A:C2	17:RF:93:ALA:HB2	2.51	0.46
4:Z2:2072:U:H2'	4:Z2:2073:U:C6	2.51	0.46
4:Z2:2274:U:H2'	4:Z2:2275:G:H8	1.78	0.46
14:UC:41:GLU:N	14:UC:41:GLU:OE1	2.48	0.46
17:RF:20:VAL:HG11	17:RF:44:ALA:HA	1.97	0.46
28:GR:84:GLU:HG3	28:GR:134:LYS:HZ3	1.81	0.46
4:Z2:140:U:H2'	4:Z2:141:A:H8	1.80	0.46
4:Z2:191:G:H2'	4:Z2:192:A:O4'	2.16	0.46
4:Z2:942:U:O2	4:Z2:942:U:H2'	2.15	0.46
4:Z2:2355:U:O2'	4:Z2:2356:A:OP1	2.30	0.46
4:Z2:2629:C:H2'	4:Z2:2630:U:O4'	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:D8:46:U:H2'	10:D8:47:C:C6	2.50	0.46
11:E9:1:MET:O	11:E9:12:GLU:HA	2.16	0.46
24:MM:88:GLY:O	24:MM:92:ARG:HG2	2.16	0.46
1:B:249:ARG:NH1	1:B:249:ARG:HG2	2.31	0.46
4:Z2:1163:U:H2'	4:Z2:1164:U:O4'	2.16	0.46
4:Z2:1300:A:H2'	4:Z2:1301:G:C8	2.51	0.46
6:A4:166:ILE:HG22	6:A4:168:VAL:HG13	1.98	0.46
53:V:25:U:H2'	53:V:26:U:O4'	2.16	0.46
4:Z2:448:G:H2'	4:Z2:449:A:C8	2.51	0.45
4:Z2:932:C:H2'	4:Z2:933:G:C8	2.51	0.45
4:Z2:1266:U:H2'	4:Z2:1267:G:O4'	2.17	0.45
6:A4:153:LEU:HD23	6:A4:156:ILE:HD11	1.98	0.45
4:Z2:272:U:H2'	4:Z2:273:G:H8	1.81	0.45
4:Z2:1468:C:H2'	4:Z2:1469:A:C8	2.51	0.45
4:Z2:1698:G:H4'	4:Z2:2824:C:O2	2.16	0.45
4:Z2:2287:G:H22	4:Z2:2295:U:H3	1.65	0.45
4:Z2:2654:G:H2'	4:Z2:2655:U:C6	2.51	0.45
26:SP:46:GLY:H	26:SP:62:VAL:HG23	1.80	0.45
28:GR:143:GLN:O	28:GR:147:LYS:HG2	2.17	0.45
30:CT:39:VAL:HG21	30:CT:95:MET:SD	2.56	0.45
31:KU:97:VAL:HB	32:NV:16:ILE:HD12	1.97	0.45
33:YW:9:LEU:HD21	33:YW:55:LYS:HG2	1.98	0.45
2:F:88:LEU:HD12	2:F:89:ASP:HB2	1.98	0.45
4:Z2:476:G:H2'	4:Z2:477:G:O4'	2.16	0.45
4:Z2:2800:G:H2'	4:Z2:2845:A:H61	1.81	0.45
28:GR:154:PRO:HD3	28:GR:162:ILE:O	2.15	0.45
35:JY:15:HIS:HB3	35:JY:70:HIS:CE1	2.52	0.45
53:V:31:U:H2'	53:V:32:U:H6	1.81	0.45
53:V:53:U:H2'	53:V:54:U:C6	2.51	0.45
4:Z2:1644:C:H2'	4:Z2:1645:U:H6	1.82	0.45
4:Z2:2200:U:H2'	4:Z2:2201:A:C8	2.51	0.45
7:E5:18:GLU:HG2	7:E5:44:VAL:HG12	1.96	0.45
10:D8:19:A:H2'	10:D8:20:U:C6	2.52	0.45
11:E9:96:ASN:HB2	11:E9:99:MET:HB2	1.97	0.45
4:Z2:564:G:O2'	4:Z2:2005:A:OP1	2.35	0.45
9:F7:4:LEU:HD23	9:F7:4:LEU:HA	1.78	0.45
11:E9:147:ILE:HB	11:E9:168:VAL:HG22	1.99	0.45
18:FG:20:GLY:HA2	18:FG:23:GLU:HG3	1.98	0.45
4:Z2:533:U:H2'	4:Z2:534:U:C6	2.52	0.45
4:Z2:2610:G:N2	4:Z2:2760:G:OP2	2.48	0.45
30:CT:190:GLU:OE1	30:CT:195:THR:OG1	2.33	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
33:YW:9:LEU:HD11	33:YW:55:LYS:NZ	2.32	0.45
34:IX:8:PRO:O	34:IX:11:VAL:HG12	2.17	0.45
4:Z2:188:A:H2'	4:Z2:189:G:N3	2.32	0.45
4:Z2:199:U:H2'	4:Z2:200:C:O4'	2.17	0.45
4:Z2:1707:G:HO2'	4:Z2:1725:A:N6	2.14	0.45
4:Z2:2178:G:H2'	4:Z2:2179:G:C8	2.51	0.45
8:L6:37:VAL:HG11	8:L6:72:HIS:HE1	1.81	0.45
24:MM:68:ASP:OD1	24:MM:68:ASP:N	2.49	0.45
4:Z2:1470:G:H2'	4:Z2:1471:U:H6	1.81	0.45
4:Z2:1856:U:O2'	4:Z2:1857:A:OP1	2.32	0.45
17:RF:55:ILE:HG23	17:RF:66:ILE:HG13	1.99	0.45
22:HK:99:ALA:HB2	35:JY:66:GLU:HB3	1.98	0.45
29:GS:109:ALA:O	29:GS:120:ARG:HD2	2.17	0.45
29:GS:115:LYS:HD3	29:GS:115:LYS:HA	1.83	0.45
30:CT:116:VAL:O	30:CT:120:ILE:HG13	2.17	0.45
3:H:220:VAL:HG12	3:H:286:ARG:HG2	1.99	0.45
4:Z2:341:C:H2'	4:Z2:342:G:C8	2.51	0.45
4:Z2:525:U:H2'	4:Z2:526:C:C6	2.52	0.45
4:Z2:672:C:H2'	4:Z2:673:U:O4'	2.17	0.45
4:Z2:708:C:H2'	4:Z2:709:C:O4'	2.17	0.45
29:GS:130:GLU:HB2	29:GS:132:LYS:NZ	2.31	0.45
1:B:170:TYR:CE1	1:B:187:TYR:HB3	2.53	0.44
4:Z2:374:A:H1'	4:Z2:394:G:O4'	2.16	0.44
4:Z2:517:U:H2'	4:Z2:518:A:C8	2.52	0.44
6:A4:102:LEU:HG	6:A4:105:MET:HE2	1.98	0.44
9:F7:63:GLN:NE2	10:D8:41:C:H4'	2.32	0.44
9:F7:67:VAL:HG11	9:F7:84:PRO:HB3	1.98	0.44
30:CT:183:ASP:HB2	30:CT:204:ARG:NH2	2.32	0.44
31:KU:82:ILE:O	31:KU:108:ASN:N	2.45	0.44
2:F:42:SER:O	2:F:46:VAL:HG23	2.17	0.44
4:Z2:59:A:H2'	4:Z2:60:A:C8	2.51	0.44
4:Z2:817:U:H2'	4:Z2:818:A:C8	2.52	0.44
4:Z2:1116:U:H5"	34:IX:84:ILE:HG12	1.97	0.44
4:Z2:2196:A:H2'	4:Z2:2197:C:H6	1.79	0.44
11:E9:150:LYS:HG3	11:E9:194:GLN:OE1	2.17	0.44
15:WD:3:ARG:HG3	15:WD:33:LEU:HD12	1.99	0.44
1:B:83:PHE:HE2	1:B:92:ILE:HD11	1.81	0.44
1:B:239:LEU:HD21	1:B:250:ILE:HD13	1.99	0.44
2:F:10:ARG:HA	2:F:10:ARG:HD3	1.88	0.44
4:Z2:47:U:H2'	4:Z2:48:C:C6	2.52	0.44
4:Z2:82:G:H22	4:Z2:117:A:H2	1.63	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:Z2:272:U:H2'	4:Z2:273:G:C8	2.52	0.44
29:GS:130:GLU:HB2	29:GS:132:LYS:HZ2	1.82	0.44
1:B:369:TYR:HB3	4:Z2:1079:A:C8	2.52	0.44
4:Z2:221:U:O4	4:Z2:403:C:H5'	2.17	0.44
4:Z2:1997:U:H2'	4:Z2:1998:G:O4'	2.18	0.44
4:Z2:2265:G:H4'	4:Z2:2372:G:O2'	2.17	0.44
4:Z2:2288:U:O2	9:F7:151:GLY:HA3	2.17	0.44
26:SP:3:ARG:NH2	26:SP:10:PHE:HB2	2.32	0.44
34:IX:99:ASP:O	34:IX:103:LYS:HB2	2.18	0.44
4:Z2:609:C:O2'	4:Z2:642:U:OP1	2.30	0.44
4:Z2:707:A:H2'	4:Z2:708:C:O4'	2.18	0.44
4:Z2:1099:G:H2'	4:Z2:1100:G:H8	1.82	0.44
4:Z2:1421:U:H2'	4:Z2:1422:U:C6	2.52	0.44
4:Z2:1551:U:H2'	4:Z2:1552:C:C6	2.52	0.44
6:A4:194:THR:HG23	6:A4:194:THR:O	2.16	0.44
22:HK:27:LEU:HD22	22:HK:48:LEU:HB2	2.00	0.44
26:SP:44:MET:O	26:SP:47:LEU:HG	2.17	0.44
1:B:249:ARG:HG2	1:B:249:ARG:HH11	1.83	0.44
4:Z2:624:U:H2'	4:Z2:625:C:H6	1.83	0.44
4:Z2:721:C:H2'	4:Z2:722:C:C6	2.53	0.44
4:Z2:2229:G:H2'	4:Z2:2230:A:C8	2.53	0.44
7:E5:102:GLN:HE21	7:E5:129:LEU:HD12	1.82	0.44
13:MB:35:LYS:HB2	13:MB:112:TYR:CE1	2.53	0.44
19:VH:51:VAL:HG12	19:VH:82:VAL:HG23	2.00	0.44
24:MM:72:GLU:O	24:MM:75:MET:HG3	2.17	0.44
28:GR:147:LYS:HD2	28:GR:147:LYS:HA	1.83	0.44
29:GS:63:PHE:HA	29:GS:66:VAL:HG12	1.99	0.44
53:V:53:U:H2'	53:V:54:U:H6	1.82	0.44
4:Z2:12:A:H2'	4:Z2:13:A:H8	1.80	0.44
4:Z2:1276:G:H2'	4:Z2:1277:C:C6	2.53	0.44
4:Z2:1416:G:H2'	4:Z2:1417:A:C8	2.52	0.44
16:XE:39:ASN:OD1	16:XE:39:ASN:N	2.41	0.44
17:RF:92:ARG:HB3	17:RF:92:ARG:CZ	2.48	0.44
23:OL:13:GLN:HG2	23:OL:14:TYR:CD2	2.53	0.44
30:CT:130:PHE:HB2	30:CT:153:LEU:HD12	1.99	0.44
1:B:249:ARG:HH11	1:B:249:ARG:CG	2.31	0.44
4:Z2:91:A:C2	4:Z2:109:A:C5	3.06	0.44
4:Z2:194:A:H4'	4:Z2:2055:G:OP2	2.18	0.44
4:Z2:465:A:H1'	4:Z2:481:G:N2	2.33	0.44
4:Z2:516:G:H2'	4:Z2:517:U:C6	2.53	0.44
4:Z2:583:U:H2'	4:Z2:584:A:H8	1.82	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:Z2:849:G:H2'	4:Z2:850:C:C6	2.53	0.44
4:Z2:1593:C:H2'	4:Z2:1594:C:O4'	2.17	0.44
4:Z2:2450:C:H2'	4:Z2:2451:A:O4'	2.17	0.44
34:IX:93:ILE:HG12	34:IX:100:VAL:HG21	2.00	0.44
4:Z2:157:C:H2'	4:Z2:158:U:H6	1.83	0.44
4:Z2:221:U:O4	4:Z2:402:U:O2'	2.34	0.44
4:Z2:1447:A:H2'	4:Z2:1448:G:H8	1.82	0.44
13:MB:37:THR:CG2	13:MB:39:PRO:HD2	2.48	0.44
35:JY:42:LEU:HD12	35:JY:71:LYS:HE2	2.00	0.44
1:B:239:LEU:HD11	1:B:250:ILE:HA	1.99	0.43
4:Z2:204:A:H2'	4:Z2:205:C:O4'	2.18	0.43
4:Z2:2681:U:H2'	4:Z2:2682:C:C6	2.53	0.43
6:A4:144:ARG:HA	6:A4:147:GLN:HG3	2.00	0.43
9:F7:121:ALA:HB3	9:F7:128:TYR:CE1	2.53	0.43
30:CT:59:ARG:HA	30:CT:64:ALA:HA	1.99	0.43
4:Z2:555:G:H2'	4:Z2:2016:A:N7	2.33	0.43
4:Z2:1914:A:H2'	4:Z2:1915:G:O4'	2.19	0.43
4:Z2:2537:U:H2'	4:Z2:2538:U:H6	1.82	0.43
4:Z2:2786:A:O2'	4:Z2:2787:A:OP1	2.35	0.43
11:E9:4:LYS:HA	11:E9:4:LYS:HD3	1.74	0.43
24:MM:30:ALA:O	24:MM:34:LEU:HD23	2.18	0.43
24:MM:39:ILE:HD12	24:MM:56:ILE:HD11	1.99	0.43
29:GS:15:ASP:OD2	29:GS:18:PHE:HB2	2.18	0.43
29:GS:104:TRP:HA	29:GS:107:GLU:HG2	2.00	0.43
30:CT:73:PRO:HG3	30:CT:105:GLU:HG3	1.99	0.43
3:H:250:ILE:H	3:H:250:ILE:HG12	1.28	0.43
4:Z2:173:A:O2'	4:Z2:174:A:H5'	2.18	0.43
4:Z2:1162:U:C4	4:Z2:1163:U:N3	2.85	0.43
4:Z2:1280:G:OP1	4:Z2:2692:G:O2'	2.27	0.43
4:Z2:1394:U:H2'	4:Z2:1395:A:C8	2.53	0.43
4:Z2:1629:A:H2'	4:Z2:1630:G:O4'	2.17	0.43
4:Z2:2360:A:H2'	4:Z2:2361:A:C8	2.52	0.43
4:Z2:2598:U:H2'	4:Z2:2599:C:H6	1.83	0.43
22:HK:6:MET:HG2	22:HK:63:ARG:NH2	2.34	0.43
22:HK:45:MET:O	22:HK:49:GLN:HG3	2.17	0.43
30:CT:38:GLN:HA	30:CT:41:GLU:OE1	2.18	0.43
4:Z2:769:G:H5'	4:Z2:770:G:OP1	2.17	0.43
4:Z2:1183:U:H1'	25:PO:4:VAL:HG22	2.00	0.43
4:Z2:1312:A:H2'	4:Z2:1314:C:C4	2.54	0.43
4:Z2:1842:U:H2'	4:Z2:1843:G:O4'	2.18	0.43
4:Z2:2207:G:H4'	4:Z2:2209:C:C2	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:Z2:2230:A:H2'	4:Z2:2231:C:H6	1.84	0.43
4:Z2:2731:A:H5"	28:GR:4:VAL:HG21	1.99	0.43
13:MB:106:ASP:N	13:MB:106:ASP:OD1	2.51	0.43
24:MM:37:VAL:HG11	24:MM:56:ILE:HG13	2.00	0.43
28:GR:46:GLU:HB2	28:GR:49:VAL:HG12	2.00	0.43
4:Z2:482:U:H2'	4:Z2:483:G:O4'	2.18	0.43
4:Z2:656:C:H2'	4:Z2:657:C:C6	2.53	0.43
4:Z2:799:C:H2'	4:Z2:800:C:C6	2.52	0.43
4:Z2:898:U:H1'	4:Z2:899:C:H5	1.83	0.43
4:Z2:1138:C:H2'	4:Z2:1139:G:O4'	2.18	0.43
4:Z2:1161:U:H4'	4:Z2:1162:U:H5'	2.01	0.43
4:Z2:1226:U:H2'	4:Z2:1227:C:C6	2.53	0.43
4:Z2:1384:A:H2'	4:Z2:1385:A:C8	2.54	0.43
4:Z2:1425:G:H2'	4:Z2:1426:U:C6	2.53	0.43
4:Z2:2391:U:H2'	4:Z2:2392:G:C8	2.53	0.43
6:A4:47:ASN:HD22	6:A4:50:HIS:CE1	2.37	0.43
7:E5:77:ILE:HG12	7:E5:146:PHE:CZ	2.54	0.43
17:RF:86:LEU:HD23	17:RF:88:ARG:HD3	2.00	0.43
23:OL:35:ILE:O	23:OL:39:GLN:HG2	2.18	0.43
24:MM:11:ASP:HA	24:MM:45:VAL:HG12	2.01	0.43
29:GS:26:PHE:HZ	29:GS:121:LEU:HD11	1.83	0.43
1:B:2:LYS:HB2	1:B:2:LYS:HE2	1.75	0.43
4:Z2:341:C:H2'	4:Z2:342:G:H8	1.82	0.43
4:Z2:627:U:O2'	4:Z2:629:A:N7	2.45	0.43
4:Z2:2082:C:H2'	4:Z2:2083:U:H6	1.84	0.43
4:Z2:2213:G:H5"	15:WD:30:LEU:HD12	2.01	0.43
4:Z2:2574:C:H2'	4:Z2:2575:G:H8	1.84	0.43
4:Z2:2815:G:C6	4:Z2:2833:U:C2	3.06	0.43
9:F7:31:ILE:HA	9:F7:158:THR:HA	2.01	0.43
15:WD:59:ILE:HD12	15:WD:64:ILE:HD13	1.99	0.43
27:BQ:2:SER:OG	27:BQ:3:MET:N	2.48	0.43
30:CT:178:LEU:HD12	30:CT:178:LEU:HA	1.86	0.43
4:Z2:2812:G:H2'	4:Z2:2813:U:C6	2.53	0.43
11:E9:144:ARG:CB	11:E9:165:HIS:HB2	2.48	0.43
18:FG:9:LEU:O	18:FG:85:ILE:N	2.51	0.43
26:SP:3:ARG:HH11	26:SP:7:LYS:HB3	1.83	0.43
29:GS:80:ARG:HD2	29:GS:83:GLY:H	1.84	0.43
2:F:65:VAL:HG11	2:F:77:ILE:HD11	2.00	0.43
3:H:306:LYS:NZ	3:H:364:GLU:OE2	2.32	0.43
4:Z2:1072:A:N3	4:Z2:1072:A:H2'	2.34	0.43
4:Z2:1312:A:H2'	4:Z2:1314:C:C5	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A4:125:GLN:HE22	6:A4:131:PHE:HE1	1.67	0.43
8:L6:44:LYS:HE2	8:L6:44:LYS:HB2	1.61	0.43
10:D8:66:C:H2'	10:D8:67:G:O4'	2.18	0.43
10:D8:109:G:H2'	10:D8:110:U:C6	2.53	0.43
28:GR:170:ILE:H	28:GR:170:ILE:HD12	1.82	0.43
30:CT:139:GLN:HB3	30:CT:143:ARG:HH21	1.84	0.43
1:B:53:ASP:OD1	1:B:53:ASP:N	2.50	0.43
3:H:336:ARG:HE	3:H:336:ARG:HB2	1.50	0.43
4:Z2:91:A:P	20:TI:5:ARG:HD2	2.59	0.43
4:Z2:574:U:H2'	4:Z2:575:A:C8	2.54	0.43
4:Z2:745:G:H2'	4:Z2:746:A:O4'	2.19	0.43
4:Z2:1389:U:H2'	4:Z2:1390:U:C6	2.53	0.43
4:Z2:1567:A:H2'	4:Z2:1568:A:C8	2.54	0.43
14:UC:38:GLY:O	14:UC:99:ARG:NH1	2.52	0.43
20:TI:90:LYS:HE2	20:TI:92:GLN:HB3	2.00	0.43
31:KU:19:GLY:O	31:KU:82:ILE:HA	2.19	0.43
33:YW:15:ARG:HG3	33:YW:53:LEU:HD11	2.00	0.43
4:Z2:856:U:H2'	4:Z2:857:U:C6	2.54	0.43
9:F7:90:THR:HG23	10:D8:41:C:H1'	2.01	0.43
15:WD:10:LYS:HE3	15:WD:54:LYS:HD2	2.01	0.43
20:TI:39:ILE:HG12	20:TI:60:GLU:HG3	2.01	0.43
22:HK:23:LYS:HB2	22:HK:23:LYS:HE3	1.86	0.43
53:V:66:U:H2'	53:V:67:U:C6	2.53	0.43
4:Z2:1271:A:O2'	4:Z2:1272:G:H5'	2.19	0.42
4:Z2:2014:U:H2'	4:Z2:2015:G:C8	2.54	0.42
11:E9:110:GLU:O	11:E9:114:GLN:HG3	2.19	0.42
20:TI:79:ASP:OD2	20:TI:95:TYR:HB3	2.19	0.42
20:TI:92:GLN:HE21	20:TI:101:VAL:HG22	1.82	0.42
4:Z2:567:A:H2'	4:Z2:568:G:C8	2.55	0.42
4:Z2:2754:C:H2'	4:Z2:2755:C:H6	1.84	0.42
18:FG:25:TYR:HH	18:FG:81:ASN:ND2	2.16	0.42
30:CT:46:LYS:HE2	30:CT:46:LYS:HB2	1.69	0.42
1:B:167:ASN:OD1	19:VH:3:HIS:HA	2.19	0.42
4:Z2:720:A:H3'	4:Z2:721:C:H6	1.84	0.42
4:Z2:1074:A:C2	4:Z2:1086:C:H1'	2.53	0.42
4:Z2:1391:G:H2'	4:Z2:1392:U:C6	2.54	0.42
4:Z2:2288:U:H2'	4:Z2:2289:C:C6	2.54	0.42
9:F7:93:GLY:N	9:F7:96:MET:HG2	2.34	0.42
13:MB:37:THR:HG22	13:MB:40:LYS:H	1.84	0.42
22:HK:28:LYS:HA	22:HK:31:ILE:HG12	2.02	0.42
1:B:220:SER:HB3	4:Z2:2540:G:O3'	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:287:GLN:HE22	1:B:319:THR:HA	1.83	0.42
1:B:314:ASP:OD1	1:B:319:THR:OG1	2.31	0.42
4:Z2:629:A:H2'	4:Z2:631:A:N7	2.34	0.42
4:Z2:2813:U:H2'	4:Z2:2814:G:O4'	2.19	0.42
7:E5:161:LYS:HG2	27:BQ:73:VAL:HG22	2.00	0.42
9:F7:5:LYS:HB2	9:F7:97:TYR:CD2	2.54	0.42
9:F7:54:VAL:HG22	9:F7:87:CYS:SG	2.59	0.42
53:V:11:U:H2'	53:V:12:U:C6	2.55	0.42
4:Z2:286:A:N3	4:Z2:306:C:O2'	2.48	0.42
4:Z2:678:A:H2'	4:Z2:679:U:C6	2.54	0.42
4:Z2:895:A:H2'	4:Z2:896:A:C8	2.55	0.42
4:Z2:2197:C:H2'	4:Z2:2198:A:O4'	2.20	0.42
6:A4:157:LYS:HG3	6:A4:158:ASP:OD2	2.20	0.42
24:MM:66:GLU:HG2	24:MM:67:GLY:N	2.35	0.42
27:BQ:9:ASP:O	27:BQ:13:ARG:HG3	2.19	0.42
32:NV:34:LYS:N	32:NV:34:LYS:HD2	2.33	0.42
34:IX:141:ASP:N	34:IX:141:ASP:OD1	2.38	0.42
36:QZ:64:LEU:HD12	36:QZ:64:LEU:HA	1.92	0.42
1:B:203:TRP:CH2	1:B:207:LYS:HD3	2.55	0.42
4:Z2:9:G:O2'	4:Z2:10:U:OP1	2.34	0.42
4:Z2:355:G:OP2	15:WD:62:LEU:HD21	2.20	0.42
4:Z2:847:G:H2'	4:Z2:848:A:O4'	2.19	0.42
4:Z2:1273:C:H2'	4:Z2:1274:U:C6	2.54	0.42
4:Z2:1299:C:H2'	4:Z2:1300:A:H8	1.85	0.42
4:Z2:2082:C:H2'	4:Z2:2083:U:C6	2.55	0.42
6:A4:105:MET:HA	6:A4:112:LEU:HD12	2.01	0.42
26:SP:65:GLN:OE1	26:SP:65:GLN:N	2.47	0.42
28:GR:160:LYS:HB3	28:GR:160:LYS:HE2	1.87	0.42
4:Z2:36:U:H2'	4:Z2:37:G:C8	2.54	0.42
4:Z2:558:U:O2'	4:Z2:560:A:OP1	2.20	0.42
4:Z2:658:C:OP1	11:E9:48:ARG:HD2	2.19	0.42
4:Z2:1003:U:OP1	4:Z2:1019:U:O2'	2.23	0.42
4:Z2:1299:C:H2'	4:Z2:1300:A:C8	2.54	0.42
4:Z2:1824:C:N4	4:Z2:1884:U:H2'	2.35	0.42
4:Z2:2637:A:N1	4:Z2:2648:A:H5"	2.35	0.42
27:BQ:39:LEU:HD23	27:BQ:105:ILE:HG12	2.02	0.42
1:B:263:THR:HG23	1:B:356:MET:HE2	2.01	0.42
1:B:301:LEU:HD12	1:B:364:ALA:O	2.20	0.42
3:H:324:PRO:HB3	3:H:354:MET:HA	2.02	0.42
4:Z2:554:U:H5"	4:Z2:806:A:C2	2.54	0.42
4:Z2:629:A:H2'	4:Z2:631:A:C8	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:Z2:833:U:H2'	4:Z2:834:A:C8	2.54	0.42
4:Z2:895:A:N3	4:Z2:2247:C:O2'	2.50	0.42
4:Z2:1232:G:C2	25:PO:3:ARG:HD2	2.55	0.42
4:Z2:1417:A:H2'	4:Z2:1418:A:H8	1.78	0.42
4:Z2:2296:C:H5"	9:F7:88:LYS:HD2	2.01	0.42
4:Z2:2791:U:H2'	4:Z2:2792:A:O4'	2.19	0.42
4:Z2:2863:U:H2'	4:Z2:2864:U:C6	2.55	0.42
6:A4:74:PHE:HB3	6:A4:85:ILE:HG23	2.01	0.42
9:F7:7:LEU:HG	9:F7:12:LEU:HD13	2.01	0.42
14:UC:81:LYS:HG3	14:UC:98:GLN:HB2	2.01	0.42
17:RF:13:SER:HB2	17:RF:16:LYS:HG3	2.02	0.42
1:B:263:THR:HG23	1:B:356:MET:CE	2.50	0.42
4:Z2:134:C:H2'	4:Z2:135:C:H6	1.83	0.42
4:Z2:1653:A:H2'	4:Z2:1654:G:O4'	2.20	0.42
4:Z2:2312:A:H2'	4:Z2:2313:G:C8	2.54	0.42
5:R3:25:ASP:CG	18:FG:101:GLN:HE21	2.21	0.42
11:E9:121:GLU:O	11:E9:122:GLU:HG2	2.20	0.42
26:SP:40:ILE:HG22	26:SP:67:VAL:HA	2.01	0.42
3:H:241:VAL:HG22	3:H:260:GLY:HA2	2.01	0.42
4:Z2:720:A:H3'	4:Z2:721:C:C6	2.55	0.42
4:Z2:761:G:O2'	4:Z2:2224:A:OP2	2.25	0.42
4:Z2:1031:G:O2'	4:Z2:1094:G:N2	2.53	0.42
4:Z2:1044:U:C2	4:Z2:1046:G:H5'	2.55	0.42
4:Z2:1052:G:N2	4:Z2:1079:A:O2'	2.52	0.42
4:Z2:1664:A:H2'	4:Z2:1665:A:O4'	2.19	0.42
4:Z2:2348:G:H4'	19:VH:60:PHE:CZ	2.55	0.42
6:A4:167:PHE:HD1	6:A4:189:ILE:HG12	1.85	0.42
29:GS:103:ARG:O	29:GS:107:GLU:HG2	2.20	0.42
29:GS:114:GLU:O	29:GS:120:ARG:NH1	2.53	0.42
31:KU:68:GLU:HG2	31:KU:103:LEU:HD12	2.01	0.42
53:V:64:U:H2'	53:V:65:U:C6	2.54	0.42
4:Z2:302:U:H2'	4:Z2:303:G:O4'	2.20	0.41
4:Z2:1064:C:H2'	4:Z2:1065:U:C6	2.55	0.41
4:Z2:1616:G:H2'	4:Z2:1617:U:C6	2.55	0.41
4:Z2:2196:A:HO2'	4:Z2:2197:C:P	2.42	0.41
53:V:18:U:O4	53:V:55:U:H1'	2.20	0.41
3:H:310:GLU:HG3	3:H:310:GLU:O	2.20	0.41
4:Z2:24:G:H2'	4:Z2:25:C:C6	2.54	0.41
4:Z2:71:G:H2'	4:Z2:72:C:H6	1.84	0.41
4:Z2:1125:U:H4'	4:Z2:1127:A:O4'	2.20	0.41
4:Z2:1401:C:O2'	4:Z2:1575:G:O2'	2.36	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:Z2:1630:G:H2'	4:Z2:1631:G:O4'	2.20	0.41
4:Z2:1669:G:N3	4:Z2:1748:A:H2'	2.35	0.41
4:Z2:2056:A:H2'	4:Z2:2057:A:O4'	2.19	0.41
4:Z2:2804:G:H2'	4:Z2:2805:G:O4'	2.20	0.41
9:F7:36:LEU:HD12	9:F7:61:ALA:HB2	2.02	0.41
15:WD:8:THR:HG21	15:WD:54:LYS:HD3	2.01	0.41
25:PO:74:LEU:H	25:PO:74:LEU:CD2	2.33	0.41
34:IX:110:PRO:HG2	34:IX:118:MET:HE2	2.01	0.41
34:IX:125:TYR:OH	34:IX:132:HIS:NE2	2.33	0.41
3:H:267:LEU:HD12	3:H:267:LEU:HA	1.88	0.41
4:Z2:289:A:H2'	4:Z2:290:G:H8	1.85	0.41
4:Z2:1708:A:N6	4:Z2:1724:G:O2'	2.48	0.41
4:Z2:2390:A:H2'	4:Z2:2391:U:C6	2.56	0.41
6:A4:76:GLY:O	6:A4:98:ASP:HA	2.20	0.41
22:HK:69:ARG:NH2	22:HK:71:HIS:O	2.53	0.41
35:JY:8:ILE:HB	35:JY:74:VAL:HG22	2.02	0.41
36:QZ:71:ARG:HG3	36:QZ:71:ARG:NH1	2.31	0.41
3:H:307:PHE:CZ	3:H:335:PHE:HZ	2.39	0.41
4:Z2:273:G:H2'	4:Z2:274:C:C6	2.55	0.41
4:Z2:521:A:H2'	4:Z2:522:G:O4'	2.19	0.41
4:Z2:564:G:H2'	4:Z2:565:U:C6	2.55	0.41
4:Z2:1381:U:OP2	4:Z2:1382:C:N4	2.45	0.41
4:Z2:1414:G:H2'	4:Z2:1415:A:O4'	2.20	0.41
7:E5:165:SER:HB3	7:E5:168:GLU:HG3	2.02	0.41
10:D8:109:G:H2'	10:D8:110:U:H6	1.84	0.41
13:MB:103:ARG:HD2	13:MB:106:ASP:OD1	2.19	0.41
26:SP:48:THR:OG1	26:SP:61:ILE:HG22	2.21	0.41
29:GS:67:LEU:HD12	29:GS:67:LEU:HA	1.84	0.41
2:F:114:LEU:HD21	35:JY:62:ARG:NE	2.35	0.41
4:Z2:90:G:OP1	20:TI:91:LYS:NZ	2.39	0.41
4:Z2:2229:G:H2'	4:Z2:2230:A:H8	1.86	0.41
8:L6:33:VAL:HG12	8:L6:79:VAL:HG22	2.03	0.41
9:F7:54:VAL:HG13	9:F7:65:PRO:HG2	2.02	0.41
22:HK:16:GLU:OE1	22:HK:54:ASN:HB2	2.20	0.41
30:CT:157:LEU:HD12	30:CT:164:ARG:HG2	2.02	0.41
4:Z2:46:G:H2'	4:Z2:47:U:H6	1.85	0.41
4:Z2:241:A:H2'	4:Z2:242:G:O4'	2.21	0.41
4:Z2:562:G:H2'	4:Z2:563:G:C8	2.55	0.41
4:Z2:2608:G:H2'	4:Z2:2609:C:O4'	2.21	0.41
4:Z2:2683:A:H2'	4:Z2:2684:C:H6	1.83	0.41
4:Z2:2717:U:H4'	4:Z2:2718:G:H5"	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A4:58:ALA:HB1	6:A4:189:ILE:CD1	2.51	0.41
8:L6:4:THR:OG1	27:BQ:82:ARG:NH2	2.52	0.41
11:E9:5:THR:HG23	11:E9:8:GLY:H	1.86	0.41
22:HK:27:LEU:O	22:HK:31:ILE:HG23	2.21	0.41
24:MM:45:VAL:O	24:MM:48:LEU:HB2	2.20	0.41
28:GR:154:PRO:HA	28:GR:160:LYS:O	2.21	0.41
35:JY:49:PHE:HE2	35:JY:67:ILE:HG22	1.85	0.41
1:B:217:ARG:NH2	4:Z2:2538:U:O4	2.46	0.41
4:Z2:533:U:O2'	4:Z2:534:U:O4'	2.37	0.41
4:Z2:2347:C:H2'	4:Z2:2348:G:O4'	2.21	0.41
4:Z2:2785:G:H2'	4:Z2:2787:A:N7	2.35	0.41
17:RF:13:SER:O	17:RF:17:VAL:HG23	2.21	0.41
31:KU:56:ARG:HG3	31:KU:56:ARG:NH1	2.34	0.41
32:NV:44:VAL:HG13	32:NV:47:ARG:HH21	1.85	0.41
36:QZ:70:THR:OG1	36:QZ:71:ARG:N	2.54	0.41
54:Y:16:U:H2'	54:Y:17:U:O4'	2.21	0.41
1:B:39:ASN:O	1:B:43:ILE:HG22	2.19	0.41
2:F:61:LEU:HB3	2:F:63:ILE:HD11	2.03	0.41
4:Z2:307:G:H4'	4:Z2:309:A:C8	2.55	0.41
4:Z2:566:C:H2'	4:Z2:567:A:H8	1.86	0.41
4:Z2:834:A:H2'	4:Z2:835:C:H6	1.86	0.41
4:Z2:1156:A:N3	4:Z2:1156:A:H2'	2.35	0.41
4:Z2:1510:A:H8	4:Z2:1510:A:OP2	2.03	0.41
4:Z2:2633:U:H2'	4:Z2:2634:C:H6	1.83	0.41
4:Z2:2730:G:O6	4:Z2:2738:C:H5"	2.21	0.41
23:OL:42:PHE:CE2	23:OL:55:LEU:HD22	2.56	0.41
32:NV:39:GLU:CD	32:NV:44:VAL:HG22	2.41	0.41
53:V:52:U:C4	53:V:53:U:C5	3.09	0.41
1:B:132:LYS:HG3	1:B:164:ILE:O	2.21	0.41
4:Z2:13:A:H4'	34:IX:131:PRO:O	2.21	0.41
4:Z2:63:A:H2'	4:Z2:64:C:O4'	2.21	0.41
4:Z2:176:C:H2'	4:Z2:177:G:O4'	2.21	0.41
4:Z2:189:G:O2'	4:Z2:662:A:N1	2.48	0.41
4:Z2:224:A:C2	4:Z2:2390:A:H1'	2.55	0.41
4:Z2:259:A:H2'	4:Z2:260:G:O4'	2.21	0.41
4:Z2:674:A:H2'	4:Z2:675:U:C6	2.56	0.41
4:Z2:957:A:H5'	4:Z2:1172:U:H1'	2.01	0.41
4:Z2:1224:U:O2'	4:Z2:1225:A:O5'	2.34	0.41
4:Z2:1299:C:O2'	4:Z2:1376:A:N3	2.47	0.41
4:Z2:1335:C:H2'	4:Z2:1336:U:O4'	2.21	0.41
4:Z2:1580:A:HO2'	4:Z2:1581:A:P	2.39	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:Z2:1670:G:H2'	4:Z2:1671:U:C6	2.56	0.41
4:Z2:1772:A:H1'	4:Z2:1924:A:N6	2.36	0.41
4:Z2:2644:G:H2'	4:Z2:2645:A:C8	2.55	0.41
4:Z2:2825:G:H2'	4:Z2:2826:A:C8	2.56	0.41
4:Z2:2864:U:H2'	4:Z2:2865:G:C8	2.56	0.41
9:F7:120:LYS:HB2	9:F7:120:LYS:HE2	1.73	0.41
9:F7:134:GLU:O	9:F7:137:VAL:HG13	2.21	0.41
14:UC:36:ILE:O	14:UC:43:PRO:HA	2.21	0.41
24:MM:27:ARG:HE	24:MM:27:ARG:HB2	1.59	0.41
28:GR:77:ILE:HG23	28:GR:83:PHE:CZ	2.55	0.41
29:GS:71:ARG:NH1	29:GS:98:THR:HG22	2.36	0.41
32:NV:2:PRO:HG2	32:NV:28:VAL:HG21	2.03	0.41
4:Z2:396:C:H2'	4:Z2:397:C:C6	2.56	0.41
4:Z2:1717:U:H4'	4:Z2:1718:C:OP2	2.21	0.41
4:Z2:2058:C:H2'	4:Z2:2059:C:H6	1.86	0.41
4:Z2:2586:G:H2'	4:Z2:2587:U:O4'	2.21	0.41
11:E9:2:ASP:OD1	11:E9:2:ASP:N	2.46	0.41
14:UC:33:PRO:HB2	14:UC:94:HIS:HD2	1.86	0.41
17:RF:74:ILE:HG13	17:RF:105:ILE:HG12	2.03	0.41
29:GS:108:ALA:HB1	29:GS:134:ASN:HB2	2.02	0.41
30:CT:28:GLN:O	30:CT:31:GLU:HG2	2.21	0.41
30:CT:79:LYS:HB3	30:CT:79:LYS:HE2	1.89	0.41
4:Z2:814:A:N7	4:Z2:2230:A:O2'	2.47	0.40
4:Z2:1635:U:P	4:Z2:1635:U:H3'	2.61	0.40
4:Z2:1985:G:H5"	4:Z2:2706:C:O2'	2.21	0.40
20:TI:98:ASN:HB2	20:TI:100:GLU:OE1	2.20	0.40
25:PO:22:LYS:HB3	25:PO:22:LYS:HE2	1.85	0.40
28:GR:109:TYR:C	28:GR:111:HIS:H	2.24	0.40
29:GS:15:ASP:HB2	29:GS:44:TYR:OH	2.22	0.40
1:B:9:ARG:HB2	1:B:10:GLU:OE1	2.22	0.40
4:Z2:971:C:H2'	4:Z2:972:A:O4'	2.21	0.40
10:D8:38:U:N3	10:D8:42:G:OP2	2.44	0.40
17:RF:17:VAL:HG21	17:RF:101:CYS:SG	2.61	0.40
23:OL:20:ASP:OD2	23:OL:23:SER:OG	2.34	0.40
29:GS:22:THR:O	29:GS:102:MET:HE1	2.21	0.40
31:KU:81:ASN:OD1	31:KU:106:LYS:HD2	2.21	0.40
33:YW:55:LYS:HD2	33:YW:57:GLU:OE2	2.21	0.40
1:B:332:ASP:OD1	1:B:332:ASP:N	2.43	0.40
4:Z2:335:C:H2'	4:Z2:336:A:N3	2.36	0.40
4:Z2:978:C:OP2	25:PO:50:ARG:HG2	2.21	0.40
4:Z2:1470:G:H2'	4:Z2:1471:U:C6	2.54	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:Z2:1721:C:H2'	4:Z2:1722:U:C6	2.56	0.40
4:Z2:2528:G:H2'	4:Z2:2529:U:O4'	2.21	0.40
4:Z2:2773:U:OP2	4:Z2:2858:U:O2'	2.35	0.40
10:D8:76:A:H2'	10:D8:77:G:O4'	2.22	0.40
28:GR:54:PRO:HB2	28:GR:56:VAL:O	2.21	0.40
31:KU:53:ARG:HD2	31:KU:53:ARG:HA	1.78	0.40
1:B:251:ILE:HA	1:B:254:VAL:HG22	2.03	0.40
4:Z2:497:A:N3	4:Z2:566:C:O2'	2.49	0.40
4:Z2:632:G:H2'	4:Z2:633:G:O4'	2.22	0.40
4:Z2:727:G:H2'	4:Z2:728:U:H6	1.85	0.40
4:Z2:787:A:H2'	4:Z2:788:C:C6	2.57	0.40
4:Z2:1532:A:O2'	4:Z2:1533:A:O4'	2.37	0.40
4:Z2:1660:A:C2	4:Z2:2565:G:H5'	2.56	0.40
4:Z2:2005:A:H4'	25:PO:34:VAL:HG21	2.02	0.40
4:Z2:2438:G:H2'	4:Z2:2439:C:C6	2.57	0.40
4:Z2:2598:U:H2'	4:Z2:2599:C:C6	2.57	0.40
4:Z2:2711:U:H2'	4:Z2:2712:U:C6	2.57	0.40
7:E5:94:HIS:CE1	7:E5:143:ARG:HD2	2.56	0.40
9:F7:115:ARG:HA	9:F7:115:ARG:HD2	1.91	0.40
30:CT:132:ARG:HH11	30:CT:132:ARG:HG2	1.86	0.40
35:JY:10:LEU:O	35:JY:71:LYS:HA	2.21	0.40
36:QZ:44:LEU:HD13	36:QZ:46:ARG:NH2	2.37	0.40
53:V:16:U:H5"	53:V:17:U:H5	1.85	0.40
4:Z2:39:C:O2'	4:Z2:40:U:H5'	2.21	0.40
4:Z2:1999:A:H4'	17:RF:96:ILE:HD13	2.02	0.40
4:Z2:2564:G:OP2	4:Z2:2564:G:N2	2.54	0.40
4:Z2:2728:C:O2	28:GR:139:GLN:NE2	2.47	0.40
9:F7:8:TYR:OH	9:F7:29:PRO:O	2.30	0.40
11:E9:21:GLU:HG3	11:E9:22:PHE:N	2.36	0.40
29:GS:31:MET:SD	29:GS:34:GLY:HA2	2.62	0.40
29:GS:38:THR:O	29:GS:42:ILE:HG12	2.21	0.40
55:C1:41:ALA:HA	55:C1:44:ILE:HG12	2.02	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM

entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	358/369 (97%)	344 (96%)	13 (4%)	1 (0%)	41	64
2	F	124/128 (97%)	117 (94%)	7 (6%)	0	100	100
3	H	183/396 (46%)	175 (96%)	8 (4%)	0	100	100
5	R3	54/76 (71%)	53 (98%)	1 (2%)	0	100	100
6	A4	231/269 (86%)	220 (95%)	11 (5%)	0	100	100
7	E5	154/171 (90%)	147 (96%)	7 (4%)	0	100	100
8	L6	120/124 (97%)	111 (92%)	9 (8%)	0	100	100
9	F7	175/178 (98%)	166 (95%)	9 (5%)	0	100	100
11	E9	197/200 (98%)	191 (97%)	6 (3%)	0	100	100
12	aA	51/60 (85%)	51 (100%)	0	0	100	100
13	MB	117/119 (98%)	112 (96%)	5 (4%)	0	100	100
14	UC	95/219 (43%)	92 (97%)	3 (3%)	0	100	100
15	WD	74/78 (95%)	72 (97%)	2 (3%)	0	100	100
16	XE	60/65 (92%)	58 (97%)	2 (3%)	0	100	100
17	RF	107/109 (98%)	104 (97%)	3 (3%)	0	100	100
18	FG	100/134 (75%)	98 (98%)	2 (2%)	0	100	100
19	VH	82/85 (96%)	78 (95%)	4 (5%)	0	100	100
20	TI	100/105 (95%)	96 (96%)	4 (4%)	0	100	100
21	fJ	57/93 (61%)	56 (98%)	1 (2%)	0	100	100
22	HK	98/101 (97%)	97 (99%)	1 (1%)	0	100	100
23	OL	84/88 (96%)	81 (96%)	3 (4%)	0	100	100
24	MM	90/118 (76%)	87 (97%)	3 (3%)	0	100	100
25	PO	114/118 (97%)	111 (97%)	3 (3%)	0	100	100
26	SP	78/91 (86%)	75 (96%)	3 (4%)	0	100	100
27	BQ	129/132 (98%)	127 (98%)	2 (2%)	0	100	100
28	GR	173/177 (98%)	163 (94%)	10 (6%)	0	100	100
29	GS	151/157 (96%)	148 (98%)	3 (2%)	0	100	100
30	CT	203/241 (84%)	185 (91%)	18 (9%)	0	100	100
31	KU	113/129 (88%)	106 (94%)	7 (6%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
32	NV	55/71 (78%)	55 (100%)	0	0	100	100
33	YW	54/59 (92%)	54 (100%)	0	0	100	100
34	IX	140/142 (99%)	136 (97%)	4 (3%)	0	100	100
35	JY	98/103 (95%)	87 (89%)	11 (11%)	0	100	100
36	QZ	77/91 (85%)	75 (97%)	2 (3%)	0	100	100
37	Ba	42/44 (96%)	40 (95%)	2 (5%)	0	100	100
38	Qb	101/103 (98%)	99 (98%)	2 (2%)	0	100	100
39	Nc	111/116 (96%)	109 (98%)	2 (2%)	0	100	100
40	Kd	143/146 (98%)	133 (93%)	10 (7%)	0	100	100
41	Je	120/122 (98%)	117 (98%)	3 (2%)	0	100	100
42	Af	209/212 (99%)	199 (95%)	9 (4%)	1 (0%)	29	52
43	Lg	135/137 (98%)	128 (95%)	7 (5%)	0	100	100
44	dh	62/65 (95%)	61 (98%)	0	1 (2%)	9	19
45	Oi	113/130 (87%)	105 (93%)	8 (7%)	0	100	100
46	Pj	79/89 (89%)	78 (99%)	1 (1%)	0	100	100
47	bk	47/51 (92%)	45 (96%)	2 (4%)	0	100	100
48	Cl	270/274 (98%)	258 (96%)	12 (4%)	0	100	100
49	Dm	210/213 (99%)	195 (93%)	15 (7%)	0	100	100
50	Sn	86/116 (74%)	85 (99%)	1 (1%)	0	100	100
51	To	85/88 (97%)	82 (96%)	3 (4%)	0	100	100
52	ep	36/38 (95%)	36 (100%)	0	0	100	100
55	C1	47/166 (28%)	44 (94%)	3 (6%)	0	100	100
All	All	5992/6906 (87%)	5742 (96%)	247 (4%)	3 (0%)	54	75

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	140	ASN
42	Af	141	VAL
44	dh	32	ILE

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	303/310 (98%)	285 (94%)	18 (6%)	19	39
2	F	103/105 (98%)	94 (91%)	9 (9%)	10	20
3	H	151/327 (46%)	128 (85%)	23 (15%)	3	4
5	R3	51/67 (76%)	50 (98%)	1 (2%)	55	78
6	A4	188/211 (89%)	185 (98%)	3 (2%)	62	82
7	E5	118/131 (90%)	115 (98%)	3 (2%)	47	73
8	L6	102/103 (99%)	94 (92%)	8 (8%)	12	25
9	F7	139/146 (95%)	112 (81%)	27 (19%)	1	2
11	E9	159/159 (100%)	155 (98%)	4 (2%)	47	73
12	aA	46/53 (87%)	46 (100%)	0	100	100
13	MB	101/102 (99%)	96 (95%)	5 (5%)	24	47
14	UC	79/184 (43%)	76 (96%)	3 (4%)	33	59
15	WD	67/71 (94%)	65 (97%)	2 (3%)	41	67
16	XE	54/57 (95%)	53 (98%)	1 (2%)	57	79
17	RF	88/88 (100%)	81 (92%)	7 (8%)	12	24
18	FG	92/121 (76%)	90 (98%)	2 (2%)	52	76
19	VH	60/62 (97%)	55 (92%)	5 (8%)	11	22
20	TI	83/85 (98%)	78 (94%)	5 (6%)	19	39
21	fJ	52/81 (64%)	41 (79%)	11 (21%)	1	1
22	HK	87/88 (99%)	85 (98%)	2 (2%)	50	75
23	OL	75/77 (97%)	71 (95%)	4 (5%)	22	45
24	MM	76/99 (77%)	62 (82%)	14 (18%)	1	2
25	PO	88/90 (98%)	85 (97%)	3 (3%)	37	63
26	SP	71/79 (90%)	59 (83%)	12 (17%)	2	3
27	BQ	103/104 (99%)	102 (99%)	1 (1%)	76	90
28	GR	149/151 (99%)	140 (94%)	9 (6%)	19	39

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
29	GS	124/128 (97%)	119 (96%)	5 (4%)	31 57
30	CT	168/198 (85%)	146 (87%)	22 (13%)	4 7
31	KU	85/98 (87%)	83 (98%)	2 (2%)	49 74
32	NV	49/63 (78%)	46 (94%)	3 (6%)	18 38
33	YW	50/52 (96%)	48 (96%)	2 (4%)	31 57
34	IX	116/117 (99%)	114 (98%)	2 (2%)	60 81
35	JY	88/90 (98%)	87 (99%)	1 (1%)	73 88
36	QZ	73/84 (87%)	69 (94%)	4 (6%)	21 43
37	Ba	37/37 (100%)	37 (100%)	0	100 100
38	Qb	89/89 (100%)	87 (98%)	2 (2%)	52 76
39	Nc	81/85 (95%)	78 (96%)	3 (4%)	34 60
40	Kd	108/110 (98%)	108 (100%)	0	100 100
41	Je	102/102 (100%)	94 (92%)	8 (8%)	12 25
42	Af	161/162 (99%)	154 (96%)	7 (4%)	29 54
43	Lg	114/114 (100%)	108 (95%)	6 (5%)	22 45
44	dh	55/56 (98%)	52 (94%)	3 (6%)	21 43
45	Oi	97/108 (90%)	90 (93%)	7 (7%)	14 29
46	Pj	63/68 (93%)	60 (95%)	3 (5%)	25 49
47	bk	42/46 (91%)	38 (90%)	4 (10%)	8 16
48	Cl	219/221 (99%)	212 (97%)	7 (3%)	39 65
49	Dm	177/181 (98%)	173 (98%)	4 (2%)	50 75
50	Sn	76/97 (78%)	71 (93%)	5 (7%)	16 33
51	To	67/69 (97%)	65 (97%)	2 (3%)	41 67
52	ep	33/33 (100%)	32 (97%)	1 (3%)	41 67
55	C1	39/135 (29%)	39 (100%)	0	100 100
All	All	4998/5694 (88%)	4713 (94%)	285 (6%)	24 41

All (285) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	2	LYS
1	B	42	LYS
1	B	56	THR

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Mol	Chain	Res	Type
1	B	91	LEU
1	B	94	MET
1	B	98	THR
1	B	106	ASN
1	B	143	VAL
1	B	151	ASN
1	B	188	LEU
1	B	210	LEU
1	B	217	ARG
1	B	225	VAL
1	B	249	ARG
1	B	259	GLU
1	B	275	LYS
1	B	332	ASP
1	B	358	SER
2	F	10	ARG
2	F	16	ARG
2	F	53	LEU
2	F	103	THR
2	F	104	ARG
2	F	110	GLU
2	F	121	LYS
2	F	127	LYS
2	F	128	ARG
3	H	222	SER
3	H	235	GLU
3	H	250	ILE
3	H	252	ASP
3	H	269	ASP
3	H	270	GLU
3	H	277	CYS
3	H	279	VAL
3	H	286	ARG
3	H	293	GLN
3	H	300	SER
3	H	305	THR
3	H	308	ASP
3	H	314	LEU
3	H	316	LYS
3	H	336	ARG
3	H	339	ASP
3	H	348	ASP

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Mol	Chain	Res	Type
3	H	357	ASP
3	H	379	ILE
3	H	380	ARG
3	H	381	GLU
3	H	390	VAL
5	R3	73	ASN
6	A4	28	TRP
6	A4	124	LYS
6	A4	144	ARG
7	E5	70	GLU
7	E5	91	LYS
7	E5	152	MET
8	L6	18	LYS
8	L6	30	ARG
8	L6	41	THR
8	L6	51	LYS
8	L6	59	SER
8	L6	75	GLN
8	L6	94	ARG
8	L6	123	LYS
9	F7	5	LYS
9	F7	11	GLU
9	F7	19	GLU
9	F7	23	ASP
9	F7	25	VAL
9	F7	28	VAL
9	F7	47	LYS
9	F7	48	LYS
9	F7	49	LEU
9	F7	50	LEU
9	F7	64	LYS
9	F7	66	VAL
9	F7	72	LYS
9	F7	73	SER
9	F7	74	ILE
9	F7	83	TRP
9	F7	100	LEU
9	F7	103	LEU
9	F7	120	LYS
9	F7	127	ASN
9	F7	130	LEU
9	F7	136	ILE

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Mol	Chain	Res	Type
9	F7	141	VAL
9	F7	145	LYS
9	F7	147	ASP
9	F7	159	SER
9	F7	163	ASP
11	E9	61	GLN
11	E9	151	GLU
11	E9	171	THR
11	E9	193	LYS
13	MB	6	SER
13	MB	37	THR
13	MB	54	MET
13	MB	57	GLU
13	MB	95	LEU
14	UC	17	LEU
14	UC	65	HIS
14	UC	77	GLN
15	WD	7	VAL
15	WD	22	ASN
16	XE	43	VAL
17	RF	1	MET
17	RF	2	GLU
17	RF	4	THR
17	RF	13	SER
17	RF	45	VAL
17	RF	73	THR
17	RF	83	LYS
18	FG	6	VAL
18	FG	91	ARG
19	VH	9	SER
19	VH	11	ARG
19	VH	12	ASN
19	VH	55	ARG
19	VH	81	MET
20	TI	5	ARG
20	TI	25	GLN
20	TI	29	ASN
20	TI	30	ASP
20	TI	84	GLN
21	fJ	2	ARG
21	fJ	3	LYS
21	fJ	11	ASP

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Mol	Chain	Res	Type
21	fJ	28	THR
21	fJ	29	VAL
21	fJ	33	THR
21	fJ	36	GLU
21	fJ	37	TYR
21	fJ	53	SER
21	fJ	73	PHE
21	fJ	76	ARG
22	HK	12	LYS
22	HK	34	MET
23	OL	18	GLU
23	OL	20	ASP
23	OL	58	MET
23	OL	63	ARG
24	MM	7	VAL
24	MM	18	SER
24	MM	29	THR
24	MM	45	VAL
24	MM	46	SER
24	MM	47	GLN
24	MM	48	LEU
24	MM	53	LEU
24	MM	68	ASP
24	MM	72	GLU
24	MM	75	MET
24	MM	78	LYS
24	MM	87	ARG
24	MM	89	ILE
25	PO	31	VAL
25	PO	33	ARG
25	PO	112	LYS
26	SP	4	SER
26	SP	6	LYS
26	SP	12	ASP
26	SP	29	LYS
26	SP	35	SER
26	SP	37	ARG
26	SP	38	SER
26	SP	41	LEU
26	SP	44	MET
26	SP	55	ARG
26	SP	67	VAL

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Mol	Chain	Res	Type
26	SP	79	THR
27	BQ	34	LYS
28	GR	27	LYS
28	GR	29	LYS
28	GR	42	GLU
28	GR	59	LYS
28	GR	62	MET
28	GR	85	ARG
28	GR	155	GLU
28	GR	176	LYS
28	GR	177	LYS
29	GS	5	ARG
29	GS	11	GLU
29	GS	32	SER
29	GS	97	ARG
29	GS	145	MET
30	CT	14	VAL
30	CT	32	TYR
30	CT	44	ARG
30	CT	48	ASP
30	CT	55	ILE
30	CT	57	ILE
30	CT	59	ARG
30	CT	70	THR
30	CT	76	VAL
30	CT	92	THR
30	CT	93	LYS
30	CT	101	VAL
30	CT	104	GLU
30	CT	107	THR
30	CT	112	ASP
30	CT	122	SER
30	CT	124	LEU
30	CT	149	ILE
30	CT	151	VAL
30	CT	153	LEU
30	CT	154	SER
30	CT	178	LEU
31	KU	26	SER
31	KU	30	THR
32	NV	7	LYS
32	NV	20	LYS

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Mol	Chain	Res	Type
32	NV	25	LYS
33	YW	24	LYS
33	YW	53	LEU
34	IX	1	MET
34	IX	45	THR
35	JY	60	ASP
36	QZ	17	ARG
36	QZ	20	SER
36	QZ	26	SER
36	QZ	74	SER
38	Qb	1	MET
38	Qb	79	ARG
39	Nc	66	ASN
39	Nc	101	ARG
39	Nc	103	LYS
41	Je	45	GLU
41	Je	51	ARG
41	Je	53	LYS
41	Je	56	ASP
41	Je	64	ARG
41	Je	80	ASP
41	Je	91	LYS
41	Je	120	GLU
42	Af	5	LEU
42	Af	26	THR
42	Af	29	GLU
42	Af	33	ASN
42	Af	60	ARG
42	Af	94	GLU
42	Af	105	GLU
43	Lg	1	MET
43	Lg	14	LYS
43	Lg	25	SER
43	Lg	26	THR
43	Lg	43	THR
43	Lg	110	SER
44	dh	17	ARG
44	dh	31	HIS
44	dh	52	LYS
45	Oi	3	ASN
45	Oi	6	LEU
45	Oi	19	ARG

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Mol	Chain	Res	Type
45	Oi	39	ARG
45	Oi	85	SER
45	Oi	87	GLU
45	Oi	108	LYS
46	Pj	19	VAL
46	Pj	20	VAL
46	Pj	42	LEU
47	bk	18	THR
47	bk	26	MET
47	bk	38	LYS
47	bk	47	GLU
48	Cl	5	LYS
48	Cl	51	THR
48	Cl	110	GLN
48	Cl	147	LYS
48	Cl	177	ARG
48	Cl	186	VAL
48	Cl	245	THR
49	Dm	117	GLN
49	Dm	155	LYS
49	Dm	183	SER
49	Dm	184	LYS
50	Sn	25	SER
50	Sn	28	VAL
50	Sn	35	SER
50	Sn	63	VAL
50	Sn	64	LYS
51	To	53	LYS
51	To	59	ASP
52	ep	19	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	287	GLN
5	R3	73	ASN
9	F7	10	ASN
9	F7	135	GLN
18	FG	81	ASN
45	Oi	15	GLN
49	Dm	159	GLN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
10	D8	114/115 (99%)	14 (12%)	0
4	Z2	2705/2882 (93%)	387 (14%)	20 (0%)
53	V	75/76 (98%)	26 (34%)	0
54	Y	5/6 (83%)	3 (60%)	0
56	iN	1498/1590 (94%)	266 (17%)	0
All	All	4397/4669 (94%)	696 (15%)	20 (0%)

All (696) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
4	Z2	10	U
4	Z2	19	G
4	Z2	22	G
4	Z2	30	G
4	Z2	41	U
4	Z2	49	A
4	Z2	53	G
4	Z2	58	G
4	Z2	61	A
4	Z2	62	G
4	Z2	70	A
4	Z2	78	A
4	Z2	81	A
4	Z2	82	G
4	Z2	99	A
4	Z2	124	A
4	Z2	125	A
4	Z2	126	U
4	Z2	137	A
4	Z2	146	A
4	Z2	148	G
4	Z2	161	U
4	Z2	169	C
4	Z2	170	A
4	Z2	173	A
4	Z2	193	A
4	Z2	196	A
4	Z2	202	G
4	Z2	213	A
4	Z2	219	C
4	Z2	222	C

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Mol	Chain	Res	Type
4	Z2	226	U
4	Z2	227	G
4	Z2	228	A
4	Z2	245	G
4	Z2	262	A
4	Z2	266	G
4	Z2	267	A
4	Z2	298	A
4	Z2	311	U
4	Z2	314	G
4	Z2	317	A
4	Z2	325	G
4	Z2	333	A
4	Z2	346	A
4	Z2	354	A
4	Z2	355	G
4	Z2	366	C
4	Z2	369	G
4	Z2	379	G
4	Z2	387	A
4	Z2	394	G
4	Z2	409	C
4	Z2	419	C
4	Z2	431	U
4	Z2	434	U
4	Z2	439	C
4	Z2	440	A
4	Z2	461	A
4	Z2	464	G
4	Z2	473	U
4	Z2	475	A
4	Z2	487	U
4	Z2	488	A
4	Z2	491	A
4	Z2	500	C
4	Z2	514	C
4	Z2	515	A
4	Z2	519	G
4	Z2	526	C
4	Z2	530	U
4	Z2	531	U
4	Z2	532	A

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Mol	Chain	Res	Type
4	Z2	533	U
4	Z2	548	A
4	Z2	558	U
4	Z2	559	A
4	Z2	560	A
4	Z2	588	A
4	Z2	589	G
4	Z2	592	U
4	Z2	598	U
4	Z2	599	U
4	Z2	612	A
4	Z2	622	A
4	Z2	630	U
4	Z2	638	C
4	Z2	639	U
4	Z2	640	A
4	Z2	654	G
4	Z2	656	C
4	Z2	662	A
4	Z2	671	U
4	Z2	689	G
4	Z2	702	C
4	Z2	715	A
4	Z2	724	A
4	Z2	732	U
4	Z2	749	A
4	Z2	750	C
4	Z2	760	G
4	Z2	761	G
4	Z2	767	A
4	Z2	769	G
4	Z2	770	G
4	Z2	776	C
4	Z2	777	A
4	Z2	790	G
4	Z2	797	C
4	Z2	812	U
4	Z2	814	A
4	Z2	815	G
4	Z2	844	G
4	Z2	850	C
4	Z2	854	G

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Mol	Chain	Res	Type
4	Z2	887	C
4	Z2	890	A
4	Z2	892	G
4	Z2	895	A
4	Z2	900	C
4	Z2	917	U
4	Z2	929	A
4	Z2	930	C
4	Z2	945	C
4	Z2	958	G
4	Z2	967	A
4	Z2	968	A
4	Z2	980	A
4	Z2	983	U
4	Z2	987	G
4	Z2	995	U
4	Z2	996	U
4	Z2	997	C
4	Z2	1001	G
4	Z2	1010	G
4	Z2	1023	A
4	Z2	1025	G
4	Z2	1030	A
4	Z2	1031	G
4	Z2	1044	U
4	Z2	1053	A
4	Z2	1054	A
4	Z2	1055	G
4	Z2	1063	C
4	Z2	1066	U
4	Z2	1072	A
4	Z2	1074	A
4	Z2	1085	U
4	Z2	1095	A
4	Z2	1096	G
4	Z2	1112	G
4	Z2	1113	A
4	Z2	1114	U
4	Z2	1116	U
4	Z2	1119	C
4	Z2	1120	G
4	Z2	1133	G

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Mol	Chain	Res	Type
4	Z2	1156	A
4	Z2	1157	C
4	Z2	1158	U
4	Z2	1160	G
4	Z2	1161	U
4	Z2	1162	U
4	Z2	1168	G
4	Z2	1179	G
4	Z2	1190	G
4	Z2	1211	G
4	Z2	1220	G
4	Z2	1225	A
4	Z2	1234	G
4	Z2	1237	A
4	Z2	1240	G
4	Z2	1255	G
4	Z2	1256	A
4	Z2	1257	U
4	Z2	1260	U
4	Z2	1284	G
4	Z2	1285	A
4	Z2	1305	A
4	Z2	1309	U
4	Z2	1313	U
4	Z2	1336	U
4	Z2	1343	A
4	Z2	1349	A
4	Z2	1354	C
4	Z2	1363	U
4	Z2	1367	A
4	Z2	1369	A
4	Z2	1370	U
4	Z2	1379	A
4	Z2	1400	G
4	Z2	1404	U
4	Z2	1405	G
4	Z2	1411	A
4	Z2	1412	C
4	Z2	1419	G
4	Z2	1435	C
4	Z2	1436	G
4	Z2	1466	U

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Mol	Chain	Res	Type
4	Z2	1474	A
4	Z2	1477	C
4	Z2	1478	A
4	Z2	1479	A
4	Z2	1489	G
4	Z2	1497	G
4	Z2	1501	A
4	Z2	1515	G
4	Z2	1532	A
4	Z2	1542	U
4	Z2	1551	U
4	Z2	1554	A
4	Z2	1557	A
4	Z2	1566	U
4	Z2	1580	A
4	Z2	1581	A
4	Z2	1596	A
4	Z2	1598	A
4	Z2	1603	C
4	Z2	1604	A
4	Z2	1606	A
4	Z2	1622	A
4	Z2	1635	U
4	Z2	1636	U
4	Z2	1655	G
4	Z2	1662	G
4	Z2	1663	C
4	Z2	1681	U
4	Z2	1684	G
4	Z2	1718	C
4	Z2	1719	U
4	Z2	1724	G
4	Z2	1732	G
4	Z2	1750	G
4	Z2	1759	A
4	Z2	1762	G
4	Z2	1768	U
4	Z2	1770	A
4	Z2	1777	A
4	Z2	1785	G
4	Z2	1786	C
4	Z2	1787	A

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Mol	Chain	Res	Type
4	Z2	1796	A
4	Z2	1802	C
4	Z2	1815	A
4	Z2	1819	C
4	Z2	1824	C
4	Z2	1843	G
4	Z2	1848	G
4	Z2	1856	U
4	Z2	1857	A
4	Z2	1870	G
4	Z2	1886	A
4	Z2	1892	G
4	Z2	1893	G
4	Z2	1899	A
4	Z2	1900	C
4	Z2	1913	A
4	Z2	1915	G
4	Z2	1923	A
4	Z2	1924	A
4	Z2	1925	U
4	Z2	1931	G
4	Z2	1941	U
4	Z2	1949	U
4	Z2	1953	C
4	Z2	1956	A
4	Z2	1957	U
4	Z2	1958	G
4	Z2	1968	U
4	Z2	1977	U
4	Z2	1979	U
4	Z2	1983	C
4	Z2	2007	A
4	Z2	2009	C
4	Z2	2016	A
4	Z2	2017	A
4	Z2	2019	A
4	Z2	2022	C
4	Z2	2041	C
4	Z2	2042	G
4	Z2	2046	A
4	Z2	2047	G
4	Z2	2048	A

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Mol	Chain	Res	Type
4	Z2	2054	U
4	Z2	2055	G
4	Z2	2079	G
4	Z2	2178	G
4	Z2	2184	A
4	Z2	2189	A
4	Z2	2190	G
4	Z2	2195	A
4	Z2	2197	C
4	Z2	2206	G
4	Z2	2208	A
4	Z2	2221	G
4	Z2	2224	A
4	Z2	2251	A
4	Z2	2256	A
4	Z2	2262	G
4	Z2	2266	U
4	Z2	2270	A
4	Z2	2271	A
4	Z2	2288	U
4	Z2	2294	A
4	Z2	2302	U
4	Z2	2303	A
4	Z2	2305	A
4	Z2	2306	G
4	Z2	2308	A
4	Z2	2309	U
4	Z2	2310	A
4	Z2	2314	G
4	Z2	2327	U
4	Z2	2330	C
4	Z2	2333	C
4	Z2	2337	A
4	Z2	2356	A
4	Z2	2360	A
4	Z2	2365	G
4	Z2	2366	G
4	Z2	2368	C
4	Z2	2374	G
4	Z2	2385	U
4	Z2	2386	C
4	Z2	2389	U

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Mol	Chain	Res	Type
4	Z2	2405	C
4	Z2	2406	U
4	Z2	2408	A
4	Z2	2409	A
4	Z2	2412	G
4	Z2	2413	A
4	Z2	2414	U
4	Z2	2417	A
4	Z2	2422	A
4	Z2	2424	U
4	Z2	2431	A
4	Z2	2457	U
4	Z2	2458	C
4	Z2	2459	A
4	Z2	2474	U
4	Z2	2481	C
4	Z2	2485	G
4	Z2	2486	A
4	Z2	2488	G
4	Z2	2501	A
4	Z2	2503	C
4	Z2	2512	G
4	Z2	2530	A
4	Z2	2537	U
4	Z2	2545	U
4	Z2	2549	A
4	Z2	2550	G
4	Z2	2556	C
4	Z2	2561	G
4	Z2	2585	A
4	Z2	2592	U
4	Z2	2596	U
4	Z2	2598	U
4	Z2	2604	G
4	Z2	2612	U
4	Z2	2619	U
4	Z2	2623	G
4	Z2	2644	G
4	Z2	2654	G
4	Z2	2656	G
4	Z2	2658	A
4	Z2	2668	G

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Mol	Chain	Res	Type
4	Z2	2672	U
4	Z2	2673	U
4	Z2	2697	G
4	Z2	2709	C
4	Z2	2731	A
4	Z2	2740	A
4	Z2	2748	A
4	Z2	2749	G
4	Z2	2761	A
4	Z2	2762	U
4	Z2	2763	U
4	Z2	2773	U
4	Z2	2774	A
4	Z2	2775	A
4	Z2	2786	A
4	Z2	2787	A
4	Z2	2801	A
4	Z2	2815	G
4	Z2	2839	A
4	Z2	2850	U
10	D8	13	A
10	D8	22	G
10	D8	28	C
10	D8	33	U
10	D8	38	U
10	D8	39	C
10	D8	50	A
10	D8	54	G
10	D8	86	C
10	D8	87	G
10	D8	88	A
10	D8	96	A
10	D8	105	C
10	D8	106	A
53	V	8	U
53	V	14	U
53	V	15	U
53	V	16	U
53	V	17	U
53	V	18	U
53	V	19	U
53	V	20	U

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Mol	Chain	Res	Type
53	V	21	U
53	V	23	U
53	V	26	U
53	V	30	U
53	V	32	U
53	V	40	U
53	V	42	U
53	V	46	U
53	V	47	U
53	V	48	U
53	V	49	U
53	V	58	U
53	V	62	U
53	V	68	U
53	V	69	U
53	V	70	U
53	V	71	U
53	V	76	A
54	Y	14	U
54	Y	15	U
54	Y	16	U
56	iN	51	C
56	iN	52	U
56	iN	54	A
56	iN	56	G
56	iN	69	G
56	iN	79	A
56	iN	80	A
56	iN	86	G
56	iN	94	C
56	iN	95	U
56	iN	97	A
56	iN	98	A
56	iN	116	G
56	iN	118	A
56	iN	122	G
56	iN	125	G
56	iN	127	A
56	iN	128	G
56	iN	130	U
56	iN	131	U
56	iN	132	G

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Mol	Chain	Res	Type
56	iN	135	U
56	iN	136	C
56	iN	137	U
56	iN	139	G
56	iN	143	A
56	iN	166	U
56	iN	167	A
56	iN	172	G
56	iN	174	A
56	iN	175	A
56	iN	176	U
56	iN	187	G
56	iN	189	G
56	iN	197	G
56	iN	200	C
56	iN	206	A
56	iN	208	C
56	iN	210	C
56	iN	218	U
56	iN	225	U
56	iN	234	C
56	iN	238	A
56	iN	242	A
56	iN	247	G
56	iN	263	G
56	iN	288	U
56	iN	289	A
56	iN	290	G
56	iN	294	G
56	iN	309	G
56	iN	310	C
56	iN	323	C
56	iN	328	U
56	iN	332	G
56	iN	364	A
56	iN	371	C
56	iN	372	A
56	iN	373	C
56	iN	375	G
56	iN	395	C
56	iN	397	G
56	iN	398	C

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Mol	Chain	Res	Type
56	iN	406	A
56	iN	410	U
56	iN	415	C
56	iN	416	A
56	iN	435	C
56	iN	441	U
56	iN	449	G
56	iN	452	U
56	iN	454	A
56	iN	456	G
56	iN	457	A
56	iN	464	U
56	iN	465	U
56	iN	466	U
56	iN	467	G
56	iN	472	U
56	iN	473	A
56	iN	479	C
56	iN	488	G
56	iN	496	G
56	iN	497	A
56	iN	508	A
56	iN	510	U
56	iN	511	A
56	iN	521	G
56	iN	522	A
56	iN	524	G
56	iN	527	A
56	iN	529	U
56	iN	538	A
56	iN	539	A
56	iN	540	U
56	iN	554	C
56	iN	556	C
56	iN	561	C
56	iN	567	G
56	iN	570	G
56	iN	574	U
56	iN	575	A
56	iN	576	A
56	iN	578	A
56	iN	582	A

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Mol	Chain	Res	Type
56	iN	590	A
56	iN	602	A
56	iN	607	C
56	iN	615	A
56	iN	616	A
56	iN	619	G
56	iN	620	G
56	iN	622	G
56	iN	631	G
56	iN	639	A
56	iN	650	A
56	iN	658	G
56	iN	675	U
56	iN	686	A
56	iN	697	A
56	iN	709	A
56	iN	730	U
56	iN	739	A
56	iN	747	G
56	iN	761	U
56	iN	765	G
56	iN	767	U
56	iN	768	G
56	iN	773	A
56	iN	777	A
56	iN	789	U
56	iN	798	C
56	iN	799	A
56	iN	804	G
56	iN	821	A
56	iN	825	A
56	iN	837	U
56	iN	838	A
56	iN	843	G
56	iN	853	G
56	iN	856	G
56	iN	859	A
56	iN	861	C
56	iN	872	A
56	iN	873	G
56	iN	880	G
56	iN	891	G

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Mol	Chain	Res	Type
56	iN	897	G
56	iN	911	G
56	iN	916	A
56	iN	928	U
56	iN	946	G
56	iN	958	A
56	iN	970	G
56	iN	971	G
56	iN	978	C
56	iN	979	A
56	iN	1002	A
56	iN	1004	U
56	iN	1010	G
56	iN	1011	C
56	iN	1013	A
56	iN	1015	G
56	iN	1019	A
56	iN	1020	G
56	iN	1021	A
56	iN	1036	U
56	iN	1037	G
56	iN	1043	U
56	iN	1044	C
56	iN	1046	A
56	iN	1048	A
56	iN	1050	U
56	iN	1053	U
56	iN	1056	A
56	iN	1070	G
56	iN	1072	C
56	iN	1074	U
56	iN	1075	C
56	iN	1077	G
56	iN	1078	G
56	iN	1080	A
56	iN	1081	U
56	iN	1084	G
56	iN	1085	A
56	iN	1089	C
56	iN	1097	G
56	iN	1109	U
56	iN	1110	C

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Mol	Chain	Res	Type
56	iN	1111	A
56	iN	1114	U
56	iN	1129	U
56	iN	1133	G
56	iN	1138	G
56	iN	1139	U
56	iN	1145	A
56	iN	1197	A
56	iN	1202	A
56	iN	1204	U
56	iN	1209	G
56	iN	1213	C
56	iN	1216	A
56	iN	1228	C
56	iN	1240	C
56	iN	1241	A
56	iN	1242	A
56	iN	1257	U
56	iN	1258	A
56	iN	1272	A
56	iN	1273	C
56	iN	1278	G
56	iN	1281	A
56	iN	1283	A
56	iN	1284	A
56	iN	1291	G
56	iN	1302	A
56	iN	1303	G
56	iN	1305	U
56	iN	1323	G
56	iN	1331	A
56	iN	1332	A
56	iN	1333	A
56	iN	1345	G
56	iN	1347	C
56	iN	1348	C
56	iN	1350	G
56	iN	1360	U
56	iN	1362	C
56	iN	1363	A
56	iN	1365	C
56	iN	1367	C

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Mol	Chain	Res	Type
56	iN	1377	A
56	iN	1391	A
56	iN	1398	G
56	iN	1408	A
56	iN	1415	G
56	iN	1424	G
56	iN	1425	U
56	iN	1426	U
56	iN	1427	C
56	iN	1439	A
56	iN	1442	C
56	iN	1443	A
56	iN	1445	C
56	iN	1464	G
56	iN	1474	C
56	iN	1477	G
56	iN	1486	A
56	iN	1490	U
56	iN	1491	A
56	iN	1496	U
56	iN	1497	C
56	iN	1520	G
56	iN	1537	A
56	iN	1538	A
56	iN	1542	G
56	iN	1548	A
56	iN	1549	G
56	iN	1551	U
56	iN	1562	G
56	iN	1564	A
56	iN	1565	C
56	iN	1574	G
56	iN	1575	G
56	iN	1577	U
56	iN	1578	C

All (20) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
4	Z2	9	G
4	Z2	169	C
4	Z2	532	A

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Mol	Chain	Res	Type
4	Z2	769	G
4	Z2	812	U
4	Z2	886	A
4	Z2	916	A
4	Z2	1224	U
4	Z2	1580	A
4	Z2	1717	U
4	Z2	1856	U
4	Z2	2196	A
4	Z2	2223	U
4	Z2	2355	U
4	Z2	2405	C
4	Z2	2413	A
4	Z2	2456	U
4	Z2	2457	U
4	Z2	2464	G
4	Z2	2739	U

5.4 Non-standard residues in protein, DNA, RNA chains

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

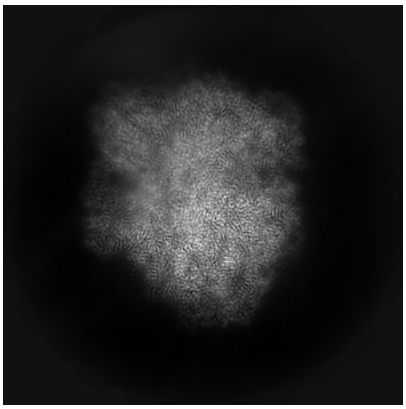
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-19076. These allow visual inspection of the internal detail of the map and identification of artifacts.

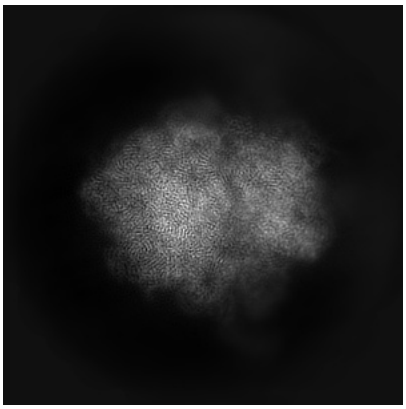
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

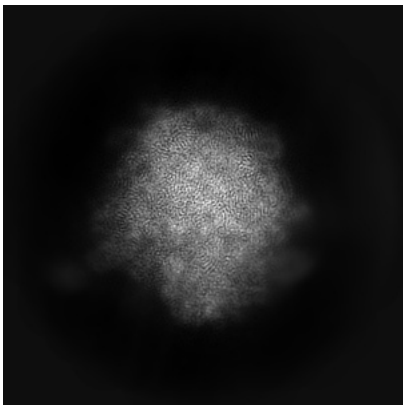
6.1.1 Primary map



X

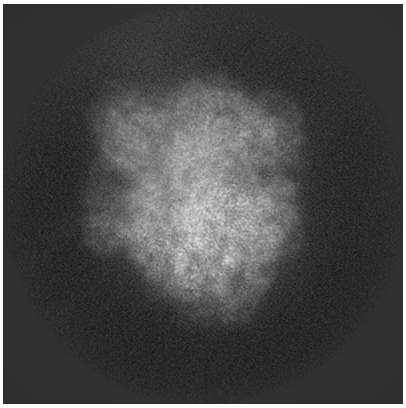


Y

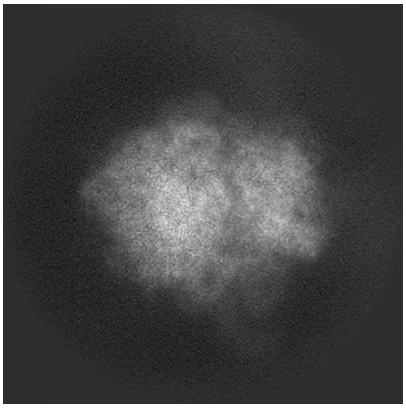


Z

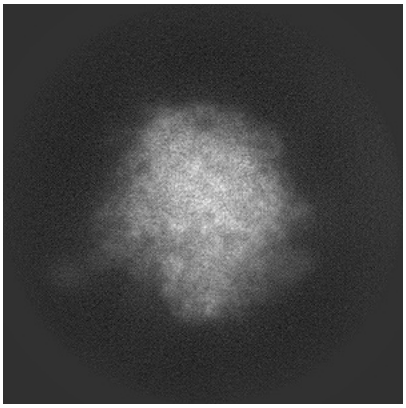
6.1.2 Raw map



X



Y

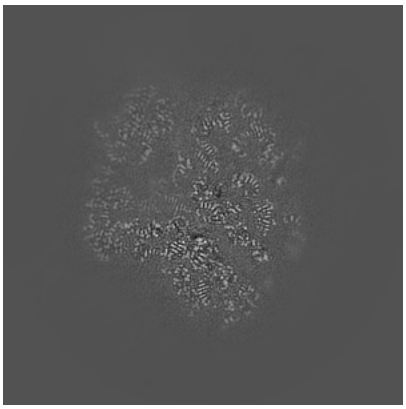


Z

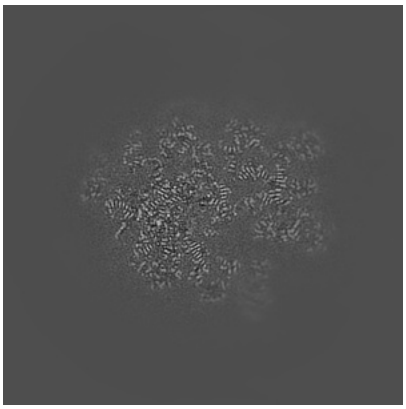
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

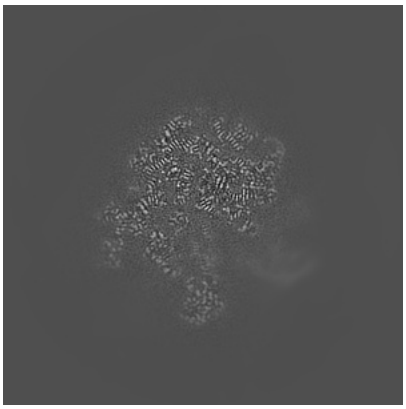
6.2.1 Primary map



X Index: 270

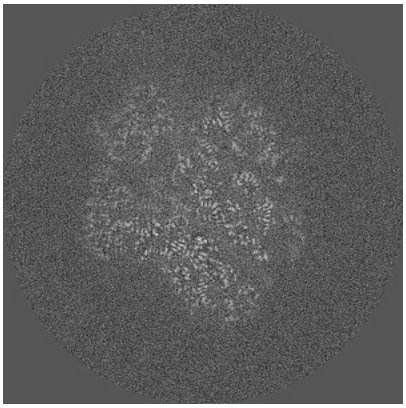


Y Index: 270

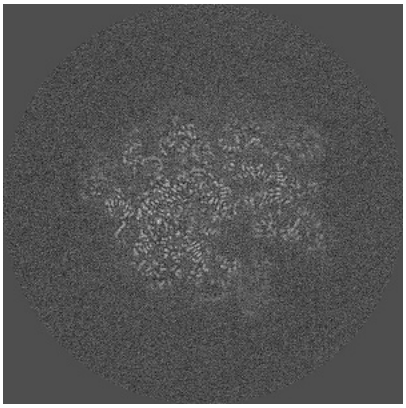


Z Index: 270

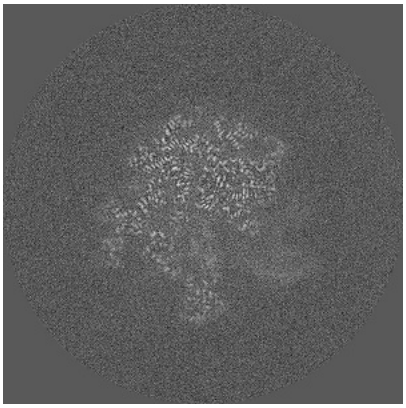
6.2.2 Raw map



X Index: 270



Y Index: 270

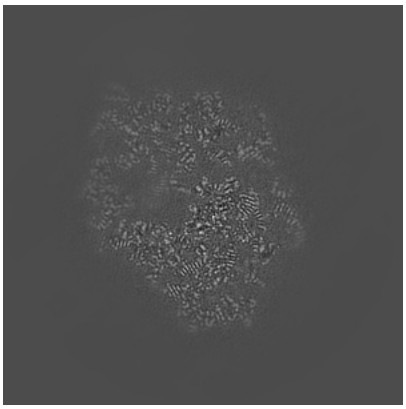


Z Index: 270

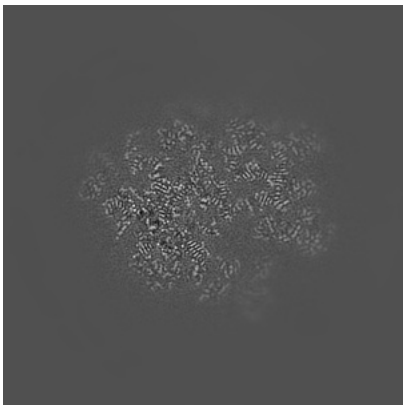
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

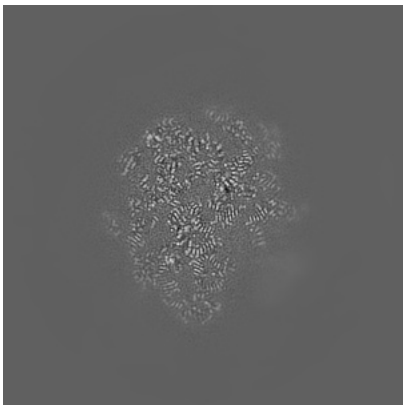
6.3.1 Primary map



X Index: 286

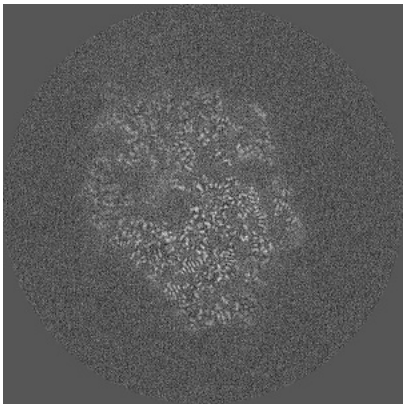


Y Index: 272

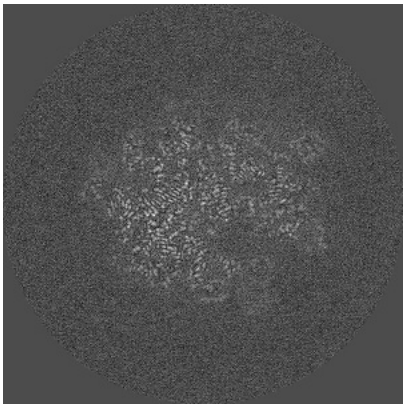


Z Index: 237

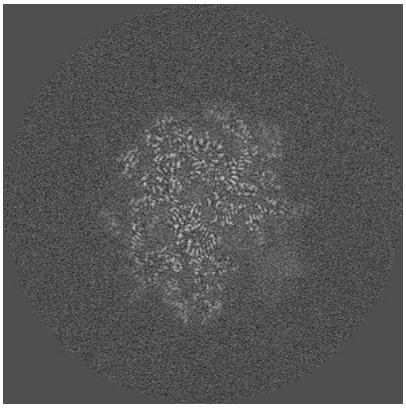
6.3.2 Raw map



X Index: 287



Y Index: 268

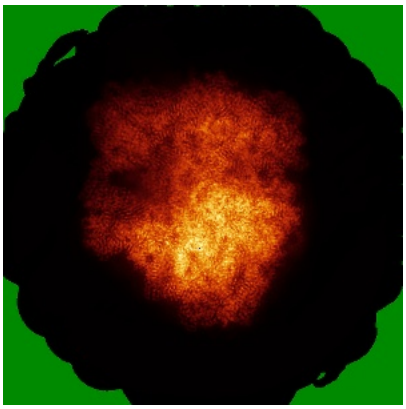


Z Index: 238

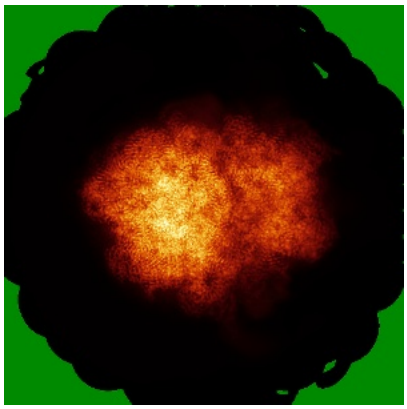
The images above show the largest variance slices of the map in three orthogonal directions.

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

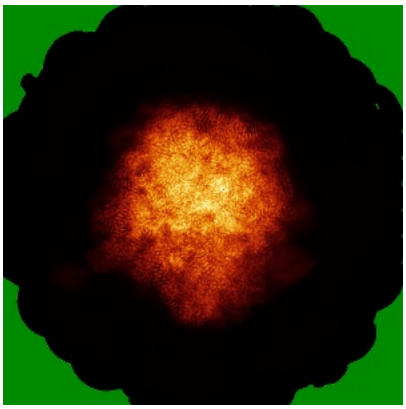
6.4.1 Primary map



X

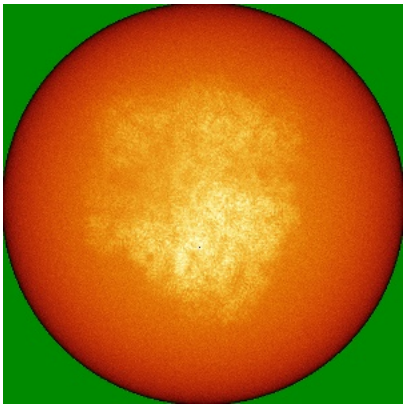


Y

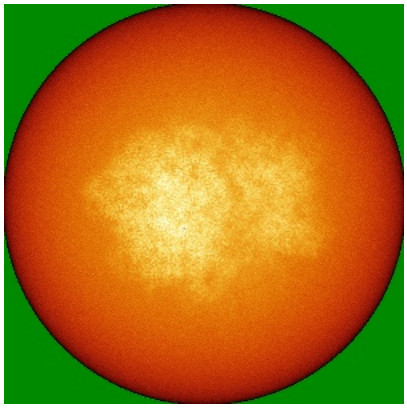


Z

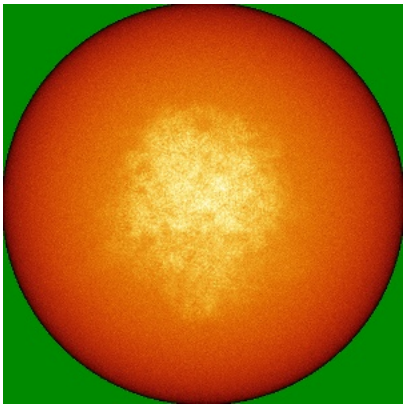
6.4.2 Raw map



X



Y

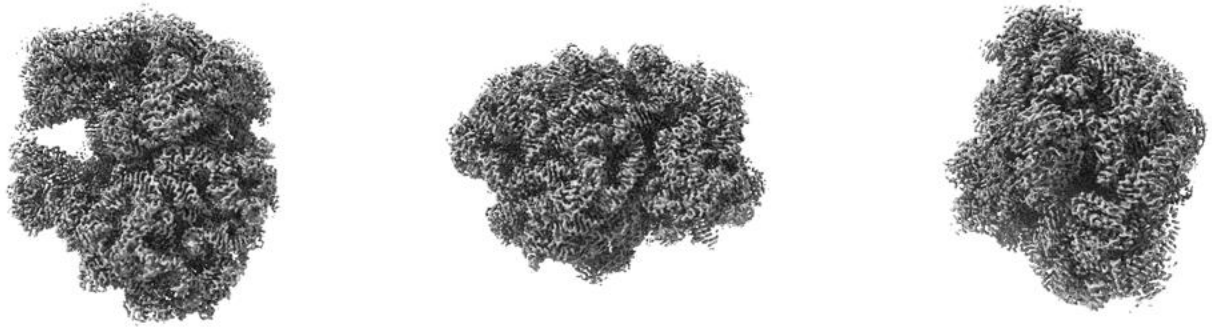


Z

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)

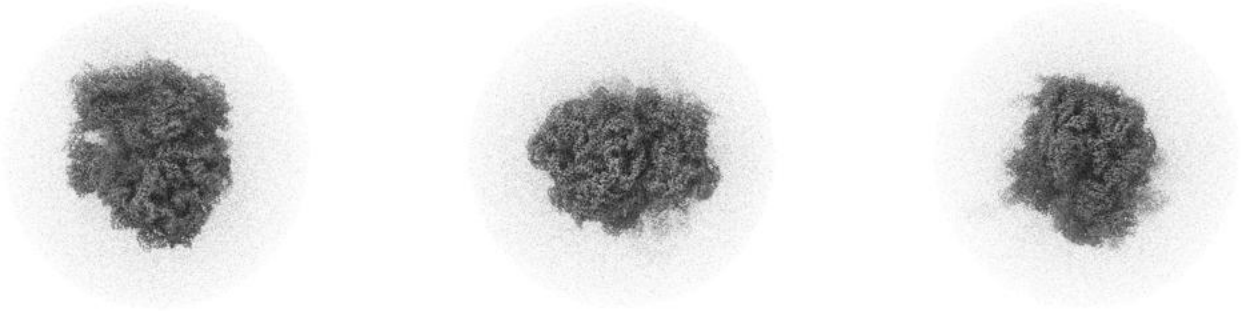
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.02. 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



X Y Z

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.

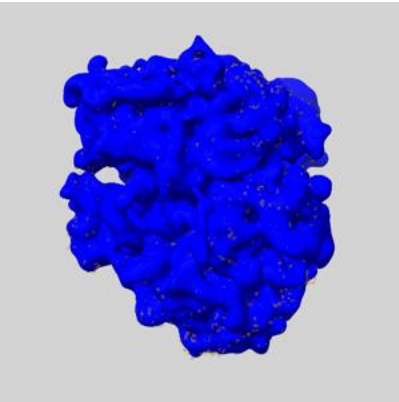
6.6 Mask visualisation (i)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

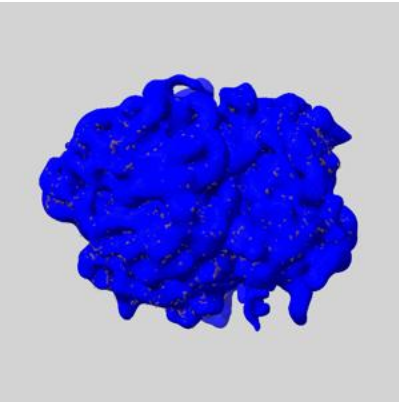
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

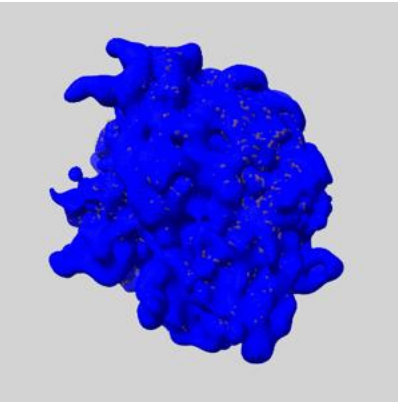
6.6.1 emd_19076_msk_1.map (i)



X



Y

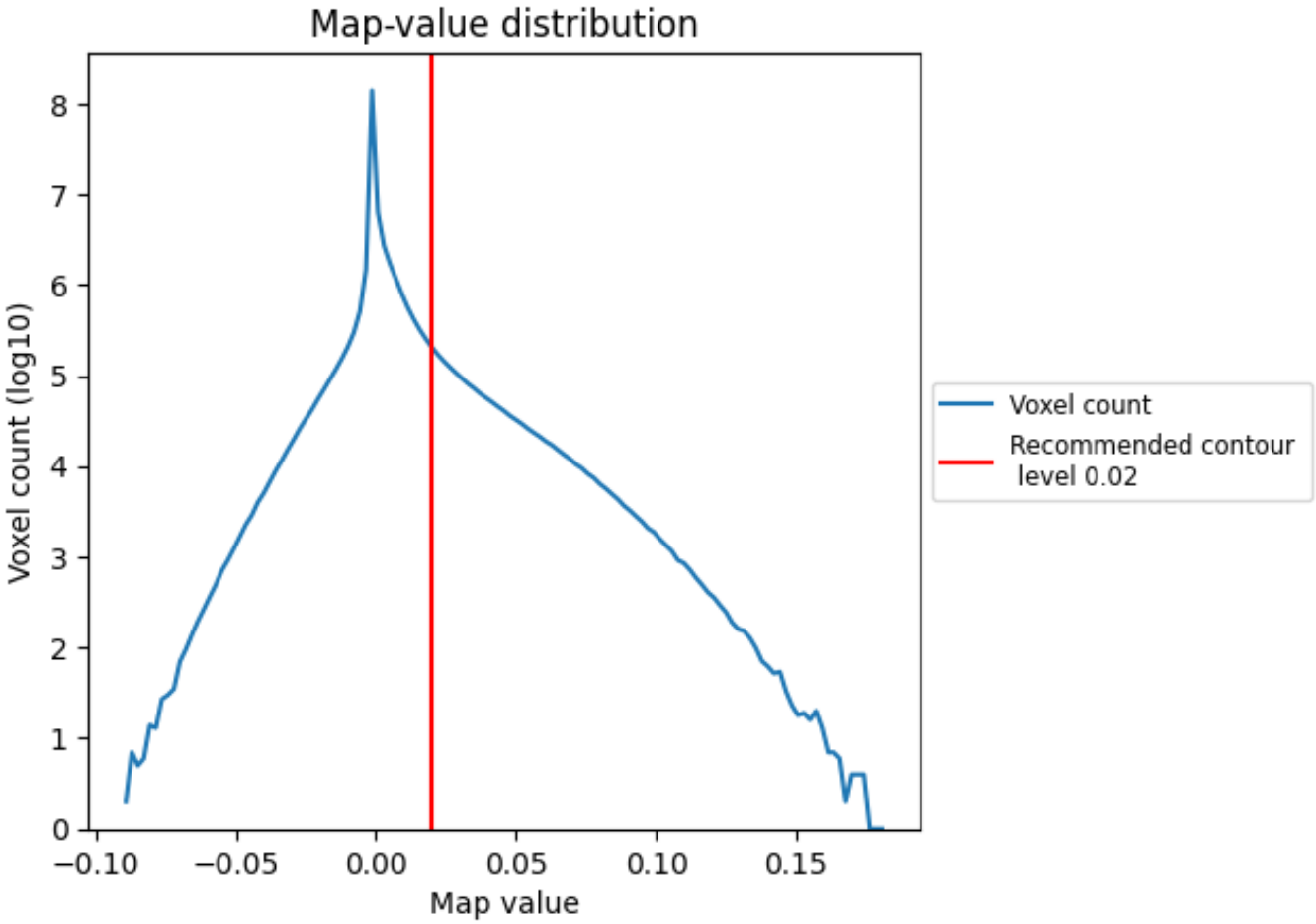


Z

7 Map analysis

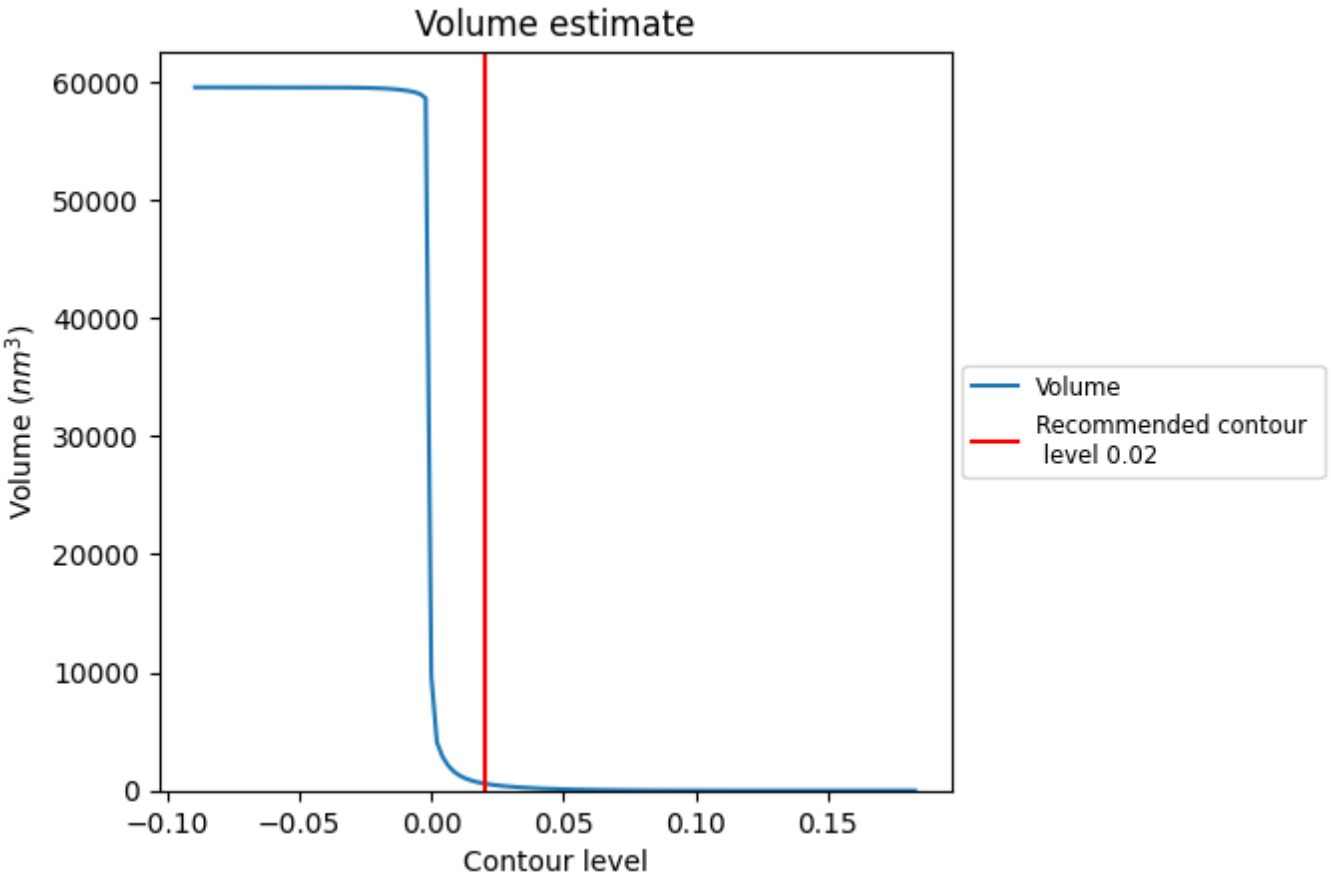
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

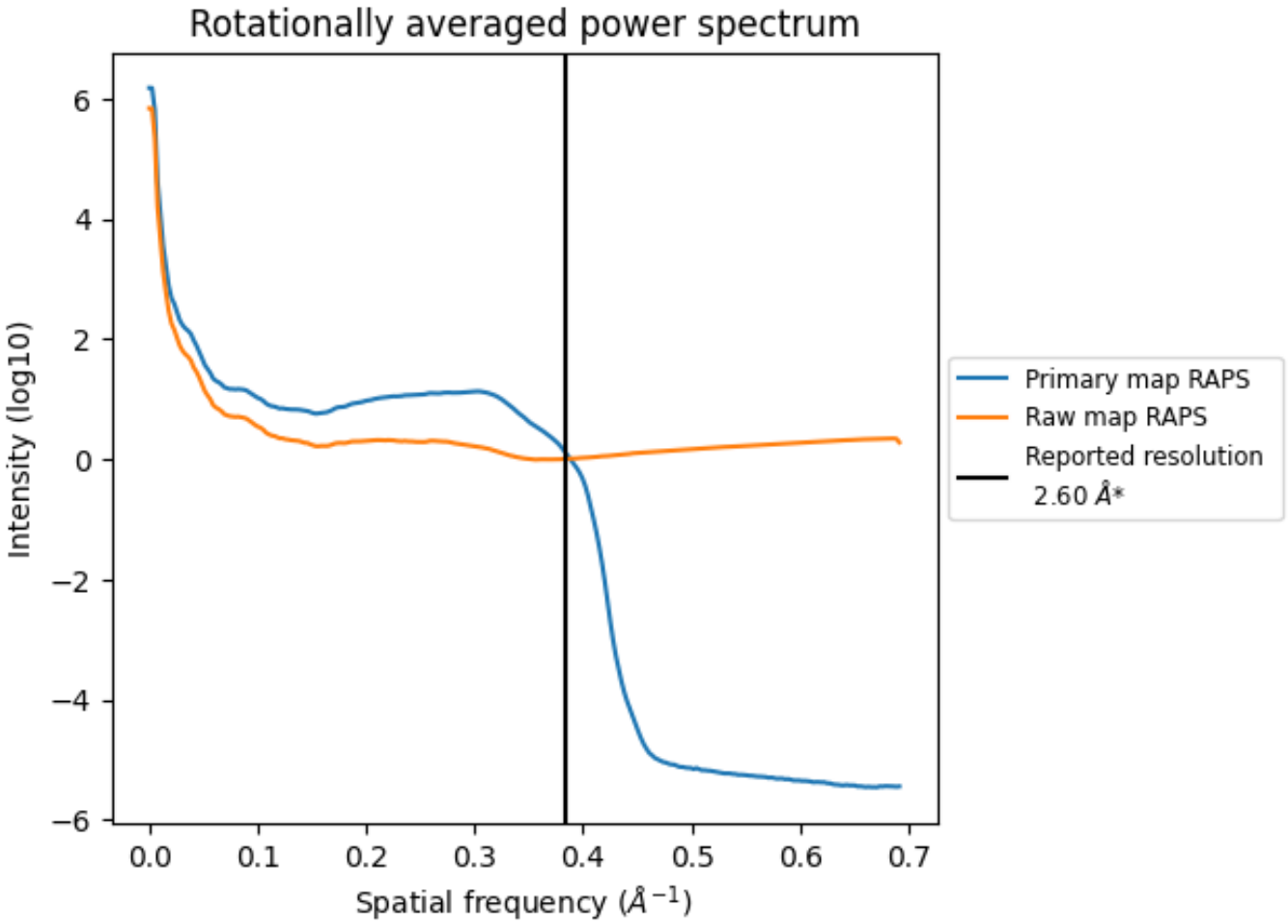
7.2 Volume estimate



The volume at the recommended contour level is 599 nm^3; this corresponds to an approximate mass of 541 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)

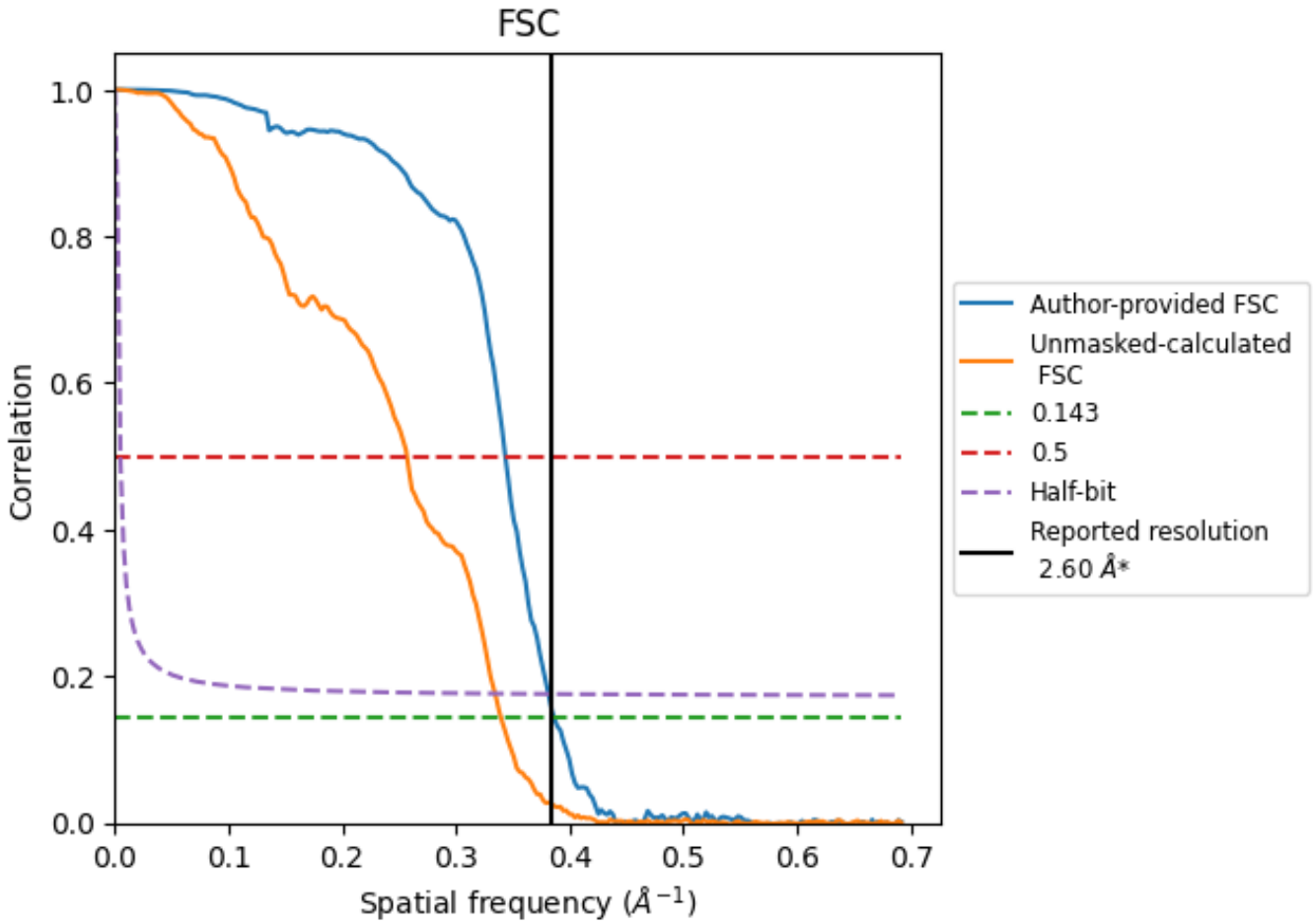


*Reported resolution corresponds to spatial frequency of 0.385 Å^{-1}

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.385 $Å^{-1}$

8.2 Resolution estimates (i)

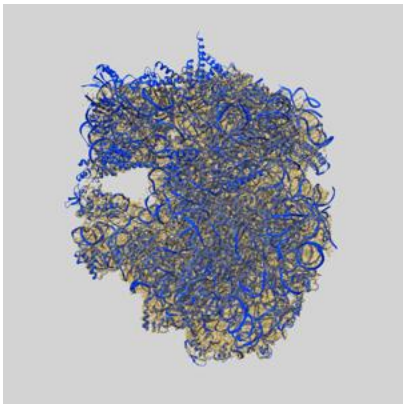
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.60	-	-
Author-provided FSC curve	2.59	2.91	2.62
Unmasked-calculated*	2.94	3.89	2.99

*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 2.94 differs from the reported value 2.6 by more than 10 %

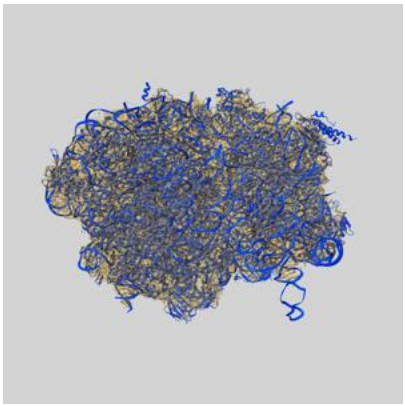
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-19076 and PDB model 8RDV. Per-residue inclusion information can be found in section 3 on page 14.

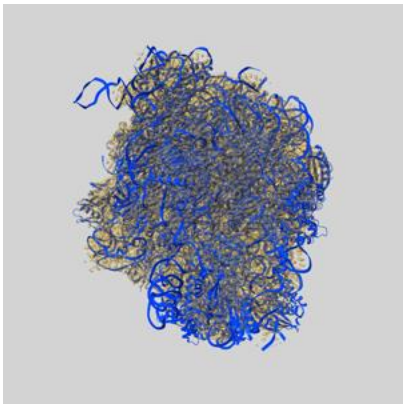
9.1 Map-model overlay



X



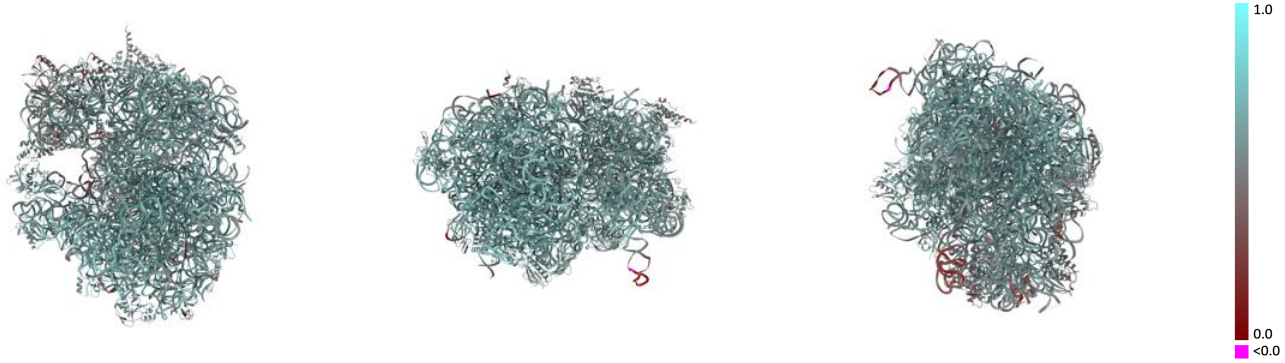
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.02 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

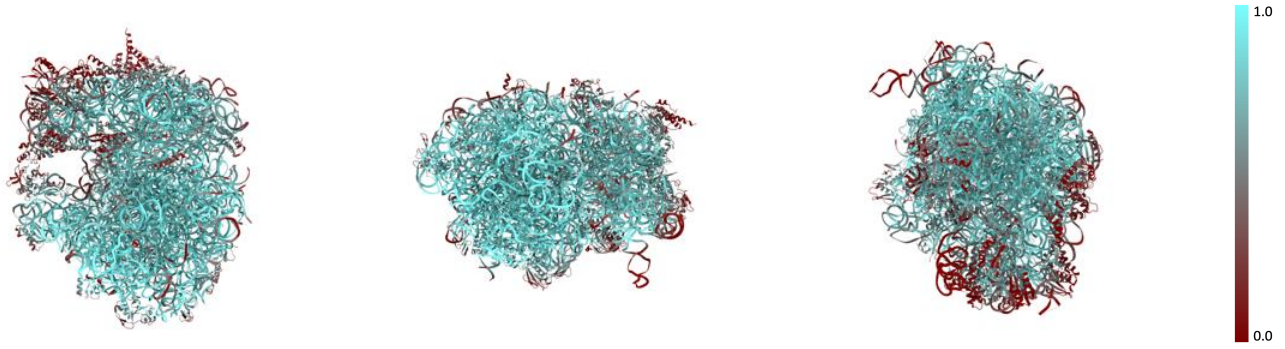
9.2 Q-score mapped to coordinate model



X Y Z

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

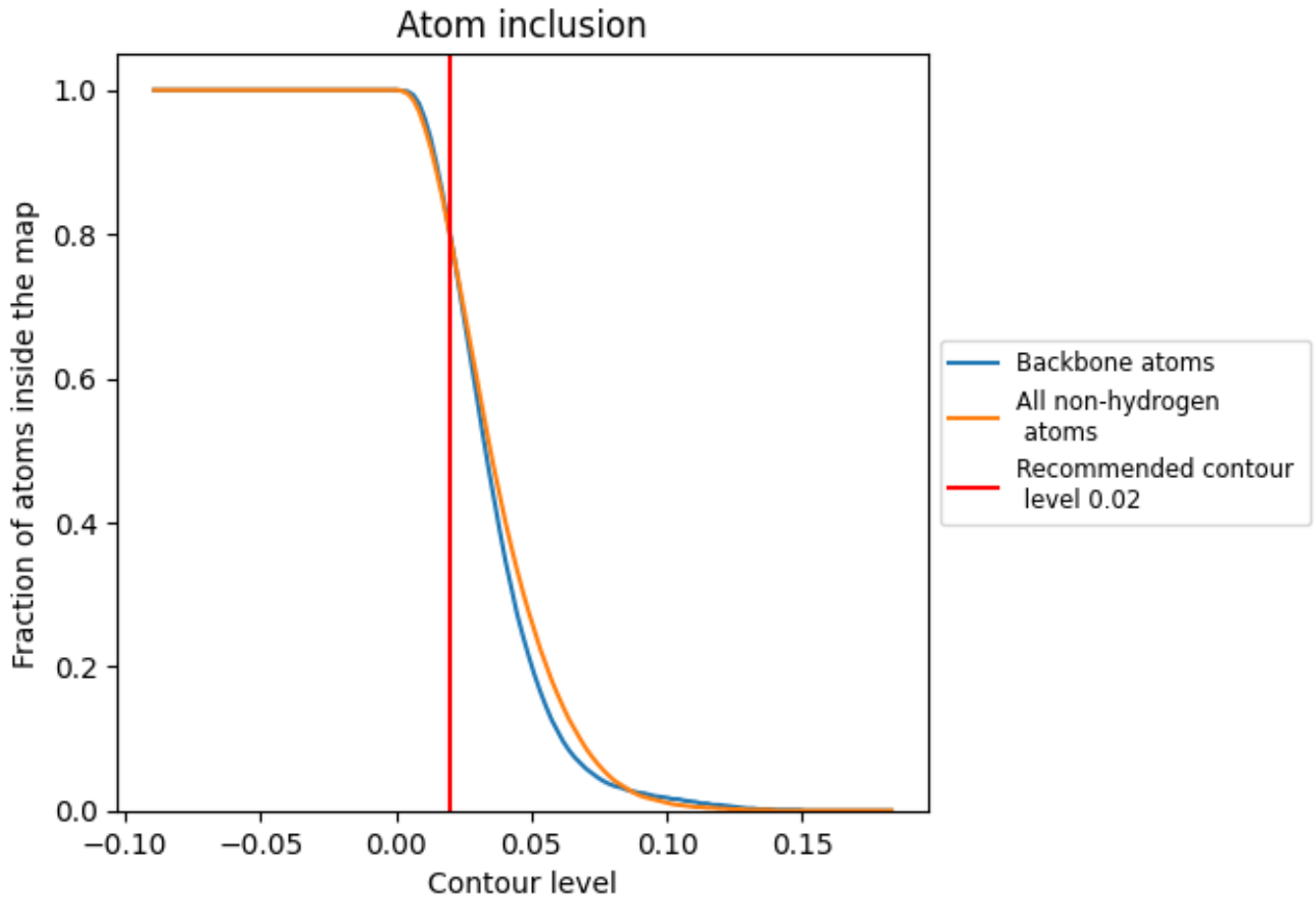
9.3 Atom inclusion mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.02).

9.4 Atom inclusion (i)



At the recommended contour level, 80% of all backbone atoms, 80% 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 (0.02) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7960	0.6270
A4	0.3010	0.5170
Af	0.8940	0.6670
B	0.7040	0.6230
BQ	0.7260	0.6320
Ba	0.9860	0.6950
C1	0.4340	0.5300
CT	0.4160	0.5710
Cl	0.9330	0.6720
D8	0.8340	0.6280
Dm	0.4440	0.5650
E5	0.7520	0.6260
E9	0.7720	0.6430
F	0.3750	0.5310
F7	0.4600	0.5900
FG	0.4350	0.5390
GR	0.5420	0.5910
GS	0.3030	0.4890
H	0.1710	0.5690
HK	0.3830	0.5170
IX	0.9070	0.6640
JY	0.2900	0.4670
Je	0.8960	0.6650
KU	0.5390	0.5710
Kd	0.8550	0.6530
L6	0.8240	0.6340
Lg	0.8750	0.6510
MB	0.9450	0.6780
MM	0.2540	0.5480
NV	0.4180	0.5520
Nc	0.7180	0.6250
OL	0.7440	0.6140
Oi	0.8800	0.6490
PO	0.9180	0.6760
Pj	0.7080	0.6100

Continued on next page...

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Chain	Atom inclusion	Q-score
QZ	0.6720	0.6010
Qb	0.7370	0.6280
R3	0.6570	0.5770
RF	0.8940	0.6670
SP	0.1690	0.5220
Sn	0.7940	0.6350
TI	0.6060	0.5740
To	0.6900	0.6150
UC	0.7440	0.6300
V	0.5730	0.5220
VH	0.9020	0.6670
WD	0.8370	0.6410
XE	0.5350	0.5690
Y	0.7750	0.5720
YW	0.8920	0.6730
Z2	0.9260	0.6590
aA	0.8840	0.6670
bk	0.8840	0.6610
dh	0.9800	0.6950
ep	0.9240	0.6580
fJ	0.2000	0.5460
iN	0.7790	0.6060